Appendix H

Traffic Impact Analysis

Revised Traffic Impact Analysis

NISQUALLY QUIEMUTH VILLAGE MIXED-USE PROJECT

Prepared for:
Acorn Environmental

July 2025

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Introduction

This traffic impact analysis (TIA) identifies potential transportation-related impacts associated with the construction of the Nisqually Quiemuth Village Mixed Use Project (referred to as the project or Village) proposed west of Marvin Rd NE and south of Britton Pkwy NE, located in the city of Lacey, Washington. The project site is owned by the Tribe, and once taken into trust, it will be under Tribal and Federal jurisdiction only. As necessary and defined by local agency standards, mitigation measures are identified that would reduce or offset transportation related impacts that the project may have on the surrounding transportation system.

Project Description

The approximately 174-acre project site is located in Thurston County in the City of Lacey, along the west side of Marvin Road NE. Figure 1 shows the site vicinity of the project site. Two development alternatives are being considered for the Village. These alternatives are described in Table 1. Preliminary site plans for Alternatives 1 and 2 are included in Figures 2 and 3, respectively. A horizon year of 2027 was identified as the soonest the project would be constructed and occupied. However, given the size of the project, under either alternative, development will likely occur in a number of phases, which may extend beyond the 2027 horizon year.

Table 1. Alternatives Descriptions

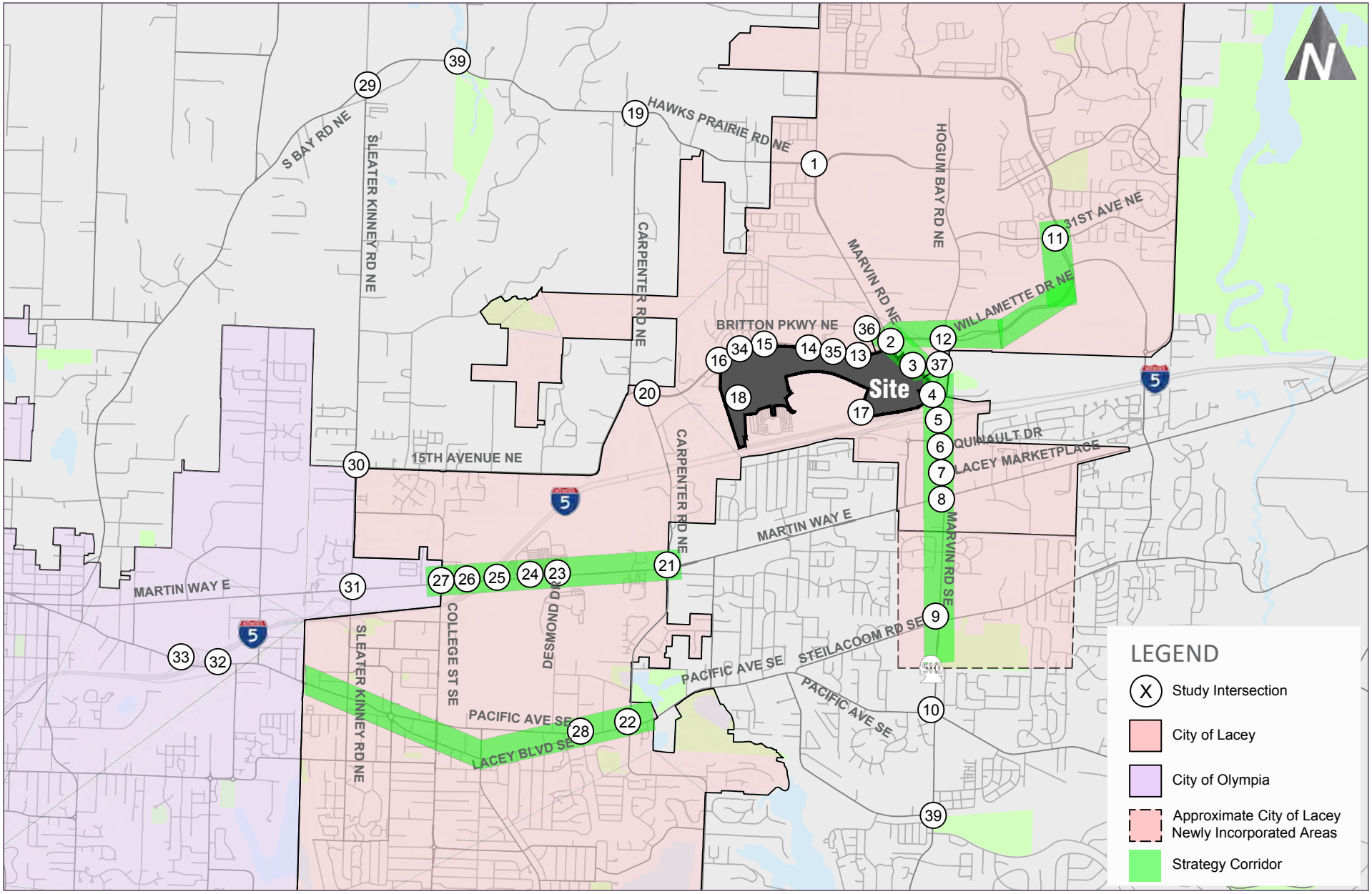
Facilities	Unit	Size for Alternative	
		Alternative 1	Alternative 2
Retail/Office Commercial	sf	863,500	368,500
Hotel	rooms	200	200
Residential	du	320	320
Truck Stop	VFP/sf	26 / 36,000	-
Convenience Store/Gas Station	VFP/sf	-	10 / 10,000
Car Dealership	sf	30,000	10,000
Top Golf	bays	93	93
School K-8	students	-	150 to 200
Athletic Complex	sf/fields	-	8 softball/4 soccer fields + 200,000 sf indoor recreation

Notes: sf = square feet, du = dwelling units, VFP = vehicle fueling positions

Access to the site for the alternatives is proposed via multiple locations along Britton Pkwy NE and Marvin Rd NE and are generally the same apart from one less access via Britton Pkwy NE under Alternative 2 as compared with Alternative 1. Additionally, access is anticipated to be provided via the Interstate 5 (I-5) collector-distributor (CD) road along the southern project frontage which was established through a Memorandum of Understanding (MOU) between the City of Lacey and Washington State Department of Transportation (WSDOT). A copy of the MOU for reference is included in Appendix A. As indicated in the MOU, the opening of the frontage road must first meet the requirements as outlined in section IV which states the following:

> *"The frontage road and access points will be opened to traffic concurrently when:*
>
> 1. *The local network connections to both access points are open to traffic.*
> 2. *A traffic analysis of the local network shows additional capacity is needed and addressed by the access points from the frontage road.*
>
> *The local network connections shall be city streets, not private roads...The City will be responsible for the work to open the frontage road."*

Given this condition, access for the project is also reviewed without inclusion of the CD road connection.



Site Vicinity and Study Intersections

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 1

transpogroup

Mar 13, 2025 - 9:07am lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 1.Site Vicinity



Preliminary Site Plan - Village Alternative 1

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 2

transpogroup

Mar 13, 2025 - 5:07pm lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 2.Alt1-SitePlan



Preliminary Site Plan - Village Alternative 2

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 3

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Mar 13, 2025 - 9:16am lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 3.Alt2-SitePlan

Previous Site Planning

This project site has been studied under multiple land use scenarios over the past decade or more. Most recently a plan entitled “Lacey Gateway Town Center” was conducted in 2010. A Final Supplemental Environmental Impact Statement (FSEIS) was prepared for the Lacey Gateway Town Center in 2010. The TIA of the FSEIS studied 27 intersections based on the associated trip generation and the City’s requirements. The study evaluated a land use scenario for this specific property that included 1,026,000 sf of shopping center, 100,000 sf General Office, 30,000 sf Civic (Library), 119 Hotel rooms with Conference Center, and 500 Residential Townhouses as the first phase of development, with additional phases to follow on the site. Access to the I-5 CD ramp was also established as part of this prior planning process, anticipating development of this level.

Compared to the previous work, the proposed mixed use project includes fewer units and smaller building areas when comparing retail, general office, hotel rooms, and residential units individually; however, additional uses such as TopGolf, a Truck Stop, a K-8 school, Recreational Ball Fields and Athletic Complexes are proposed under the Village alternatives. The anticipated trip generation from the project is forecast to be lower than what was presented in the 2010 Lacey Gateway Town Center study. Additionally, a project titled the Nisqually Quiemuth Casino Resort (herein referred to as the Casino) is being proposed adjacent to the Village under a separate application. Overall, the anticipated trip generation from the standalone Village and Casino projects are forecast to be similar to what was presented in the 2010 Lacey Gateway Town Center Phase 1 study and to be slightly higher under the Combined Development of the Village and Casino.

Study Approach

The scope of the analysis was determined through coordination with the City of Lacey staff as well as Thurston County, City of Olympia, and WSDOT. Additionally, the report responds to comments which have been received from City of Lacey, Thurston County, and WSDOT staff. The scope of this analysis includes a review of existing (2023) and future (2027 and 2050) both without-project and with-project (Alternatives 1 and 2) during the weekday PM peak hour conditions. Two future horizon years were assumed in the analysis to evaluate both near-term and long-term impacts with 2027 aligning with the anticipated initial occupancy of the project (near-term) and 2050 aligning with Thurston Regional Planning Council’s (TRPC) travel demand (long-term).

The following intersections were selected for analysis:

1. Marvin Rd NE/Hawks Prairie Rd NE
2. Marvin Rd NE/Britton Pkwy NE
3. Marvin Rd NE/Main St NE
4. Marvin Rd NE/I-5 SB Ramp
5. Marvin Rd NE/I-5 NB Ramp
6. Marvin Rd NE (SR 510)/Quinault Dr NE
7. Marvin Rd NE (SR 510)/Lacey Marketplace
8. Marvin Rd NE (SR 510)/Martin Way E
9. Marvin Rd SE (SR 510)/Steilacoom Rd SE
10. Marvin Rd SE (SR 510)/Pacific Rd SE
11. Willamette Drive NE/31st Ave NE
12. Hogum Bay Rd NE/Willamette Dr NE
13. Eastern Pkwy NE/Britton Pkwy NE
14. Central Pkwy NE/Britton Pkwy NE
15. Gateway Blvd NE/Britton Pkwy NE
16. Britton Parkway NE/Western Pkwy NE
19. Hawks Prairie Rd NE/Carpenter Rd NE
20. Carpenter Rd NE/Britton Pkwy NE
21. Carpenter Rd NE/Martin Way E
22. Pacific Avenue SE/Carpenter Rd SE
23. Martin Way E/Desmond Dr
24. Martin Way E/Regal Cinemas
25. Martin Way E/I-5 NB Ramps
26. Martin Way E/I-5 SB Ramps
27. Martin Way E/College St
28. Pacific Ave SE/Lacey Blvd SE
29. Sleater Kinney Rd NE/South Bay Rd NE
30. Sleater Kinney Rd NE/15th Ave NE
31. Martin Way E/Sleater Kinney Rd
32. Pacific Ave SE/I-5 NB Ramps

33. Pacific Ave SE/I-5 SB Ramps
38. Marvin Rd SE/Union Mills Rd SE
39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE

In addition to the intersections listed above, the following locations are also studied under the future with-project conditions:

17. I-5 RIRO Ramp/I-5 CD Rd
18. I-5 CD Road/Western Pkwy NE
34. Dwy A/Britton Pkwy NE
35. Dwy B/Britton Pkwy NE *(does not exist under Alternative 2)*
36. Dwy C/Britton Pkwy NE
37. Marvin Rd NE/Dwy D

Note that the analysis identified the four driveways proposed along Britton Parkway NE and Marvin Road NE. Recommendations for access control at these locations are identified in the report.

As described above, the Casino is being proposed within the Village area under a separate application. As such, in addition to Alternatives 1 and 2 with-project conditions, this report also includes a Combined Development Alternative with both the development of the Casino Project (Alternative A) and the Village (Alternative 1).

The project's impacts on the surrounding transportation system were identified by comparing the future with-project conditions to the future without-project conditions. Improvements are identified for all locations that are found to be operating below agency standards.

Existing and Future Without-Project Conditions

This section describes the existing and future 2027 and 2050 without-project conditions within the identified study area. Characteristics are provided for the roadway network, transit service, non-motorized facilities, traffic volumes, traffic operations, and traffic safety.

Roadway Network

The following sections describe the existing street network within the vicinity of the Project Site, define the City of Lacey's strategy corridors, and identify anticipated changes to traffic circulation resulting from planned improvements.

Existing

The primary roadways within the study area and their characteristics near the study intersections are described in Table 2.

Table 2. Existing Conditions Summary

Roadway	Street Classification[12]	Speed Limit	No. of Lanes	Pedestrian Facilities	Bicycle Facilities
Marvin Rd NE (SR 510)	Arterial	35	2-6[2]	Sidewalks	Bicycle Lanes
Martin Way E	Arterial	40	5/6[3]	Intermittent Sidewalks	Intermittent Bicycle Lanes
Britton Pkwy NE	Boulevard	40	2/4[4]	Sidewalks	Bicycle Lanes
Hogum Bay Rd NE	Arterial	35	2/3[5]	Sidewalks	Bicycle Lanes
Willamette Dr NE	Boulevard	35	4	Sidewalks	Bicycle Lanes
Gateway Blvd NE	Collector	25/30[6]	3/4[6]	Sidewalks	None
Carpenter Rd NE	Arterial	35/50[7]	2	None	None
Pacific Ave SE	Arterial	35	5	Sidewalks	Bicycle Lanes
Sleater Kinney Rd NE	Arterial	25/30	3/4/5	Sidewalks	Bicycle Lanes
College St SE	Collector/Arterial[11]	35	4/5[8]	Sidewalks	None
Steilacoom Rd SE	Collector	35	2	Intermittent	Intermittent
Quinault Dr NE	Collector	30	3	Sidewalks	None
Hawks Prairie Rd NE[9]	Collector	35	2	Sidewalks	Bicycle Lanes

1. Based on City of Lacey Functional Classification Plan.
2. Marvin Rd NE includes 2 lanes from 31st Ave NE to Evelyne Ln NE, 4 lanes between Evelyne Ln NE and the I-5 SB Ramps, 6 lanes between the I-5 SB Ramps and I-5 NB Ramps, and 4-6 lanes south of the I-5 NB ramps including turn lanes at intersections.
3. Martin Way E has 6 lanes west of Carpenter Rd NE and 5 lanes east of it.
4. Britton Pkwy NE has 2 lanes west of Western Blvd NE, 3 lanes between Western Blvd NE and Gateway Blvd NE, and 4 lanes east of Gateway Blvd NE.
5. Gateway Blvd NE includes 3 lanes with a posted speed limit of 25 mph north of Britton Pkwy NE, and it changes to 4 lanes with a posted speed limit of 30 mph south of Britton Pkwy NE.
6. Carpenter Rd NE includes 3 lanes with a posted speed limit of 50 mph north of Britton Pkwy NE, and it changes to 2 lanes with a posted speed limit of 35 mph south of Britton Pkwy NE.
7. Sleater Kinney Rd NE includes 4 lanes with a 30-mph speed limit south of Pacific Ave SE, 4-5 lanes between Pacific Ave SE and Martin Way E, and 3 lanes north of Martin Way E.
8. College St SE is classified as a Collector with 4 lanes north of Martin Way E and Arterial with 5 lanes south of Martin Way E.
9. Portion of roadway that is inside City of Lacey boundaries (east of Hepburn St NE)

The I-5 CD Road, the southern border of the project site, connects to the I-5/Marvin Road interchange located to the southeast of the project site and currently serves as the I-5 southbound on-ramp. This is an existing diverging diamond interchange (DDI) which began operating in 2020. The interchange type of a DDI was assessed, selected, and ultimately constructed with analysis documented in the Interchange Justification Report (IJR)[1].

[1] *I-5/SR 510 Interchange Improvements: Interchange Justification Report Amendment Methods and Assumptions Document* (CH2M, December 2016)

Strategy Corridors

City of Lacey also defines "Strategy Corridors". According to the City of Lacey's 2030 Transportation Comprehensive Plan,

"*Strategy corridors are those streets or intersections which typically have been constructed or improved to four or five lanes in width between intersections, or are streets or intersections bounded by existing land use or environmental features that preclude further widening. These strategy corridors are in areas where growth is encouraged and typically coincide with the designation of a high density corridor, city center, core area or activity center where a concentration of commercial and other uses is desired, especially when that growth increases densities and proximity of different types of land uses. Peak hour vehicular congestion in these corridors is likely to exceed levels of service, which would otherwise be acceptable within the transportation system.*"

The following corridors are identified as strategy corridors based on the City's 2030 Transportation Comprehensive Plan that are located in the study area:

- Willamette Drive NE between Marvin Road NE and 31st Ave NE
- Marvin Road between Willamette Drive NE and south city limit line
- Martin Way from the west city limit line to Carpenter Road
- Martin Way from Galaxy Drive NE to Marvin Road
- College Street between Martin Way and Yelm Highway SE
- Pacific Avenue SE from the west city limit line to east city limit line
- Lacey Boulevard SE from Golf Club Road SE to Homann Drive SE
- Sleater-Kinney Road SE from Interstate 5 to Pacific Avenue SE

The strategy corridors are identified on Figure 1. Additional detail related to strategy corridors is provided in the subsequent operational discussion.

Planned Improvements

The *Thurston County 2025-2028 Regional Transportation Improvement Program (Adopted October 2024) and City of Lacey 2023-2028 Transportation Improvement Program (TIP)* were reviewed as well as discussions with City staff through the scoping of the project to determine planned improvements in the vicinity of the Project Site. The projects were separated into the following 3 categories:

- Near Term – The near term projects were identified to be funded and in place by 2027. These projects were therefore included in the near term 2027 analysis.
    - **Carpenter Road NE/Britton Parkway NE** – Installation of a roundabout at the existing stop-controlled intersection. This change in traffic control was completed in July 2024, although only assumed in the future (2027 and 2050) operational analyses as the roundabout was not yet constructed when existing traffic counts were collected.
    - **Carpenter Road Pedestrian Improvement** – **Regional Transition Center**– An ADA-compliant sidewalk will be built from the Martin Way bus stop next to Carpenter Road to the location of the future Regional Transition Center, north on Carpenter, as part of this project. This project does not result in changes to the operational analyses.
    - **Sleater Kinney Road NE/15th Avenue NE** – Installation of a traffic signal at the existing stop-controlled intersection. The channelization will include a northbound through and right turn lane, southbound through and left turn lanes, and a westbound left and right turn lane. This change in traffic control was assumed in the future (2027 and 2050) operational analyses under the without-project condition.

  - **Johnson Point Road/Hawks Prairie Road/South Bay Road –** Install a single lane roundabout at this existing side street stop controlled intersection. This change in traffic control was assumed in the future (2027 and 2050) operational analyses under the without-project condition.

- Long Term Thurston Regional Planning Council (TRPC) projects – These projects are identified to be funded within the long term (2050) horizon year analysis and were included within the TRPC travel demand model.[2] Although anticipated to be funded by 2050, the roadway network for the operational analysis was not modified to include the adjustments to provide a conservative operational analysis.
  - **Carpenter Road Capacity and Safety Improvements** – Widening roadway to taper from 5 lane section to 3-lane section from Pacific Avenue SE to Shady Lane with bike lanes and sidewalks.
  - **Carpenter Road Widening from Martin Way to Britton Parkway** – Widening roadway to 5 lanes with auxiliary turn lanes, bike lanes, sidewalks, and other urban amenities. The funded base travel demand model assumed the widening applied to the entire section, including the bridge. Through conversations with City and WSDOT staff, it was identified that current funding does not include the widening of the bridge over I-5, but the City has identified the bridge as a committed project by 2050.
  - **Marvin Road from Britton Parkway to Columbia Drive** – Widening Marvin Road from 2 lanes to 5 lanes to Hawks Prairie Rd then transition to 3 lane section with bike lanes and sidewalks.
  - **Britton Parkway -- Phase II** – Widening remaining portion of Britton Parkway to 4 lane boulevard.

- Long Term Unfunded: These projects are not fully funded and/or the timing is currently unknown and therefore were not included in the analysis.
  - **Martin Way East Roadway Improvements** – Galaxy Drive to River Ridge Drive, access management, bike lanes, sidewalks, and other urban amenities
  - **Martin Way / I-5 Interchange Improvements** – Constructing interchange per approved IJR for mileposts 108 to 113 (Martin Way being exit 109).
  - **I-5 Corridor Improvements, Marvin Rd to Mounts Rd** – The project proposes a corridor improvement between Marvin Rd to Mounts Rd which considers widening I-5 to include a high vehicle occupancy (HOV) lane. The Planning and Environmental Linkages (PEL) study was completed in July 2023 and a NEPA process is underway.
  - **Marvin Road Upgrade Phase 3** – The project will reconstruct Marvin Road between Union Mills Road and Pacific Avenue to include 2 to 3 lanes of travel with bike lanes, pedestrian refuge areas, medians and sidewalks. The preliminary engineering phase of this project is currently planned to be completed by 2028.

[2] Additional discussion of use of TRPC model included in the volume section below as well as the Volume Forecasting Methodology memo provided in Appendix C. Appendix C also provides the complete list of TRPC's funded base model projects.

Transit Service

Transit service in the study area is provided by Intercity Transit. There are multiple bus stops along Britton Pkwy NE that are within walking distance of the site. There are two stops at Britton Pkwy NE/Gateway Blvd NE (one eastbound and one westbound), one westbound stop at Britton Pkwy NE/Central Pkwy NE, and two stops at Britton Pkwy NE/Marvin Rd NE (one eastbound and one westbound). These stops are served by bus route 65 that passes through Britton Pkwy NE with service between Lacey Transit Center to Marvin Rd at Spencer Ave, operating with 30-minute headways throughout the weekdays and weekends.

In addition to those noted above, there is another bus stop at Britton Pkwy NE/Marvin Rd NE served by Route 62A with service between Orion Dr NE/Willamette Dr NE and the Olympia Transit Center, with half-hour headways throughout the day on both the weekdays and weekends. This route stops at this location only in its westbound direction heading to downtown Olympia, and does not travel close to the site in its eastbound heading.

Non-Motorized Facilities

Most of the roadways around the project area include sidewalks on both sides of the roadway. Marvin Road NE and Britton Pkwy NE include intermittent sidewalks along the study area and Carpenter Rd NE does not include any pedestrian facilities. Signalized crossings are provided at all of the intersections along the Marvin Rd NE and at the intersection of Carpenter Rd NE/Martin Way E.

Traffic Volumes

The following sections summarize existing and future 2027 and 2050 without-project traffic volumes within the study area. A detailed traffic volumes forecasting methodology memorandum was prepared and is included in Appendix C.

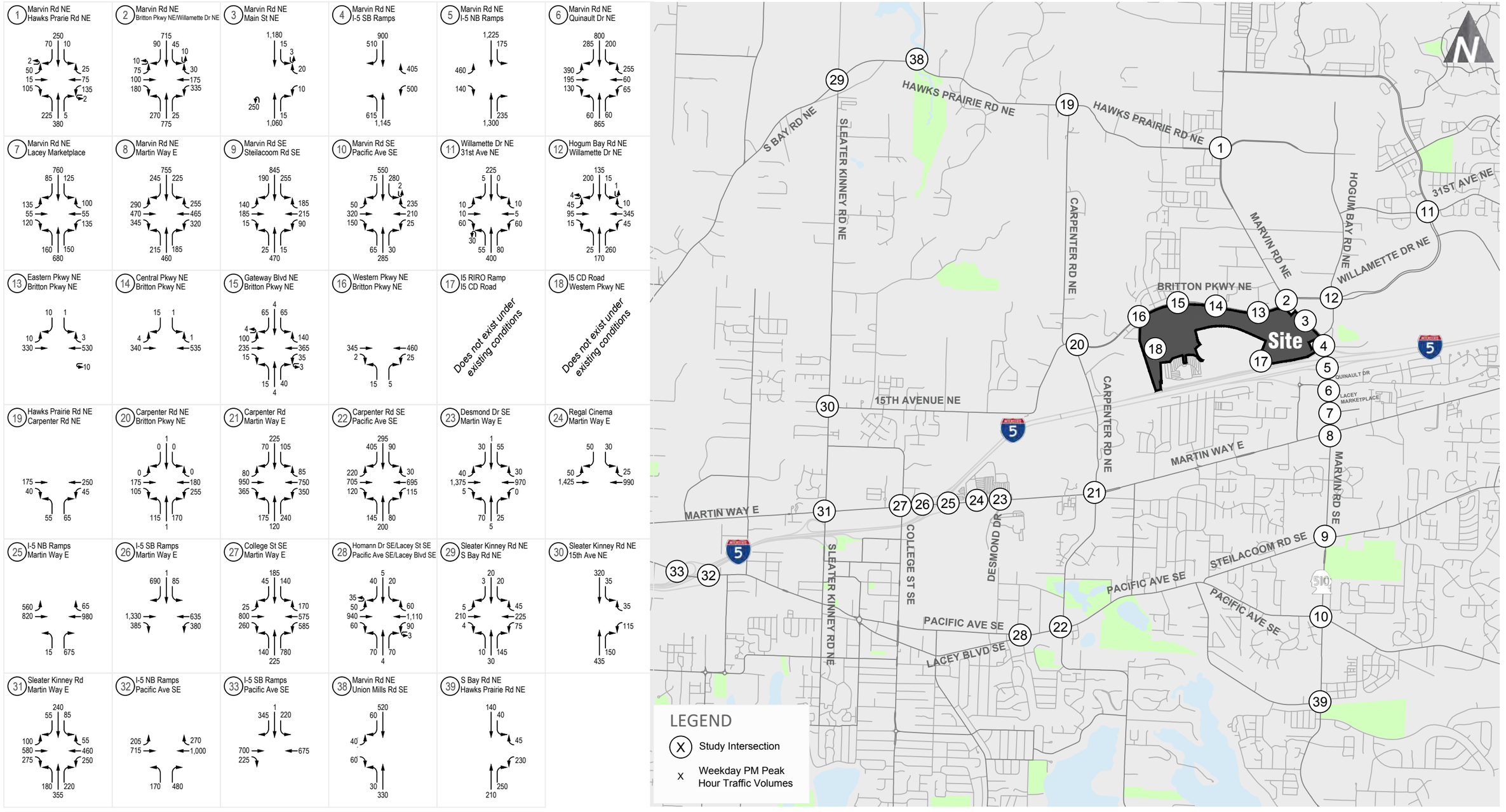
Existing

Traffic counts were collected for the existing weekday PM peak period (4:00 – 6:00 PM) in January and February 2023[3]. The PM peak hour is an hour with the highest traffic volumes within the PM peak period. The existing PM peak hour traffic volumes are shown on Figure 4, rounded to the nearest 5 vehicles. Detailed traffic counts are provided in Appendix B.

Future Without-Project Traffic Volumes

The future 2027 and 2050 without-project traffic volumes forecasts are described in the sections below. It is important to emphasize that the methodologies used to forecast the long term volumes and near term volumes are different. The long term forecasts are based on the comprehensive travel demand model whereas the near term forecasts assume the application of static growth rate and traffic generated by pipeline developments. Although each methodology is commonly applied for the near term and long term forecasts, respectively, the short term methodology (pipeline and growth) tends to result in overly conservative estimates as it does not consider roadway network constraints and shifts in travel patterns.

[3] Comments on the Environmental Assessment received from Thurston County in October 2024 requested that 2 study intersections be added to the analysis. Weekday PM peak period counts at these added locations were collected in March 2025.



Existing Weekday PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 4

transpogroup

2027 Horizon Year Opening Year

2027 without-project traffic volumes are comprised of background traffic growth and traffic generated from the planned "pipeline" developments. A background growth rate for the study area was based on review of the latest travel demand model prepared by TRPC and provided for the long-term (2050) forecasts. The model showed annual growth rates of approximately 0.5 percent in the study area.[5] Increases in traffic associated with specific pipeline development projects to be included in the report were also provided by City of Lacey staff representing growth generally ranging between 15 and 35 percent at the study intersections in the vicinity of the site.

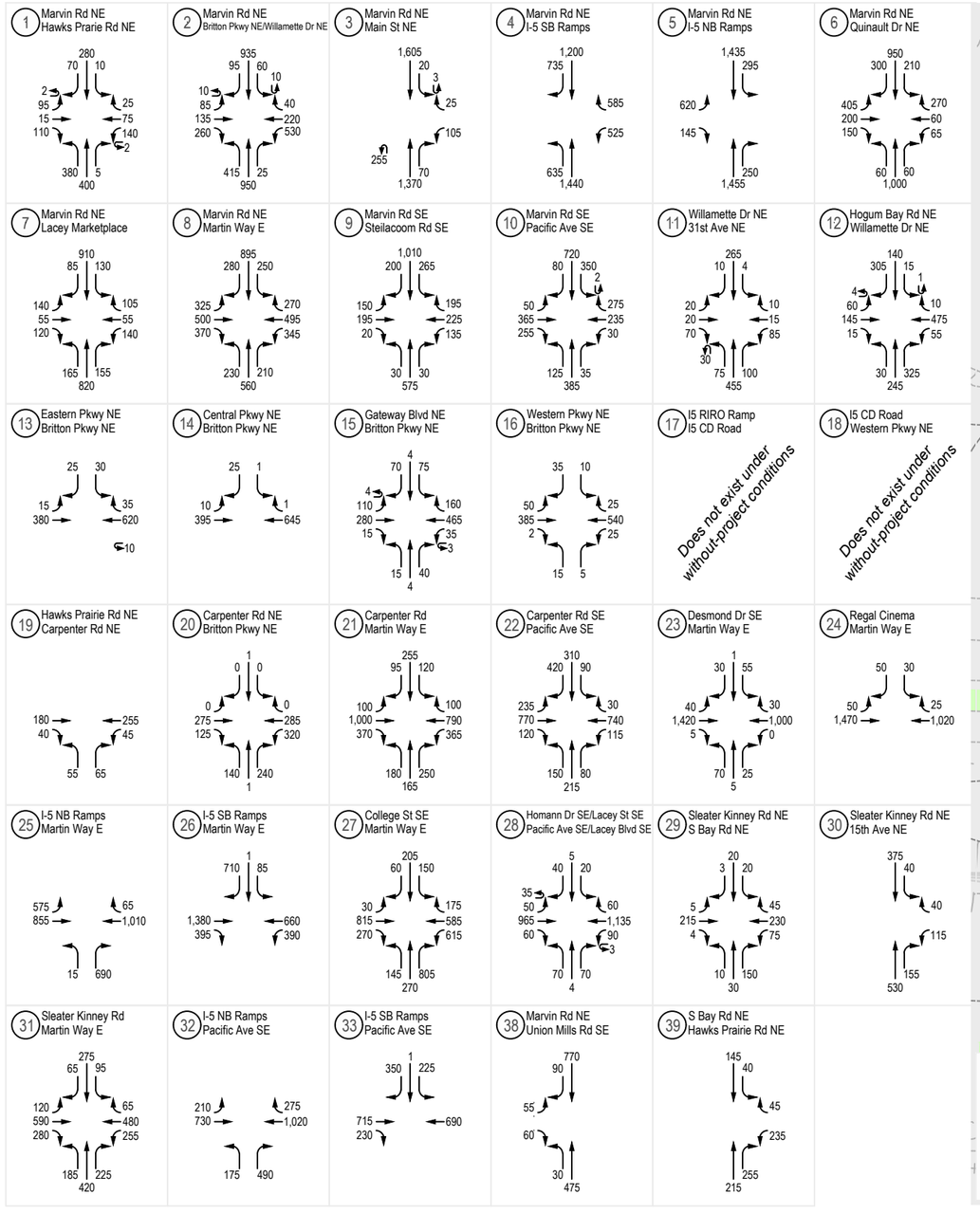
The forecast future 2027 without-project weekday peak hour traffic volumes are shown in Figure 5.

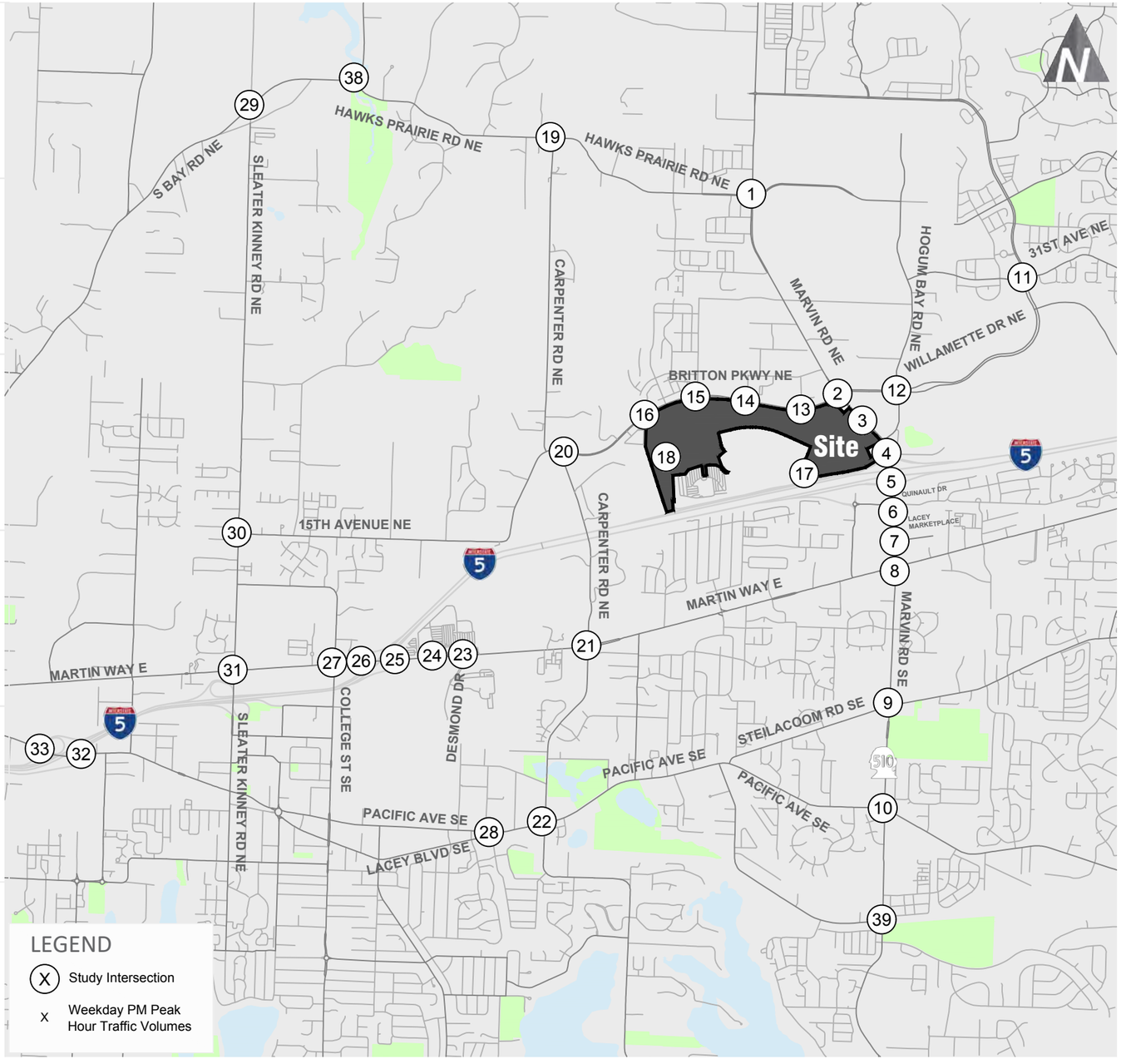
2050 Horizon Year

The year 2050 without-project traffic volumes were developed in coordination with the Thurston Regional Planning Council (TRPC). TRPC has developed a regional year 2050 travel demand model and provided the future 2050 volumes. A travel demand model provides a comprehensive estimate of traffic volume forecasts and growth by taking into account growth, land use changes, congestion and associated changes in travel patterns. The 2050 and 2022 model volumes provided for use in this TIA by TRCP are a subset of model volumes for the region as a whole, and were also reviewed and approved for use in the TIA by City of Lacey staff.

2050 forecasts were developed by adding the growth from the 2022 and 2050 TRPC model to the existing traffic volumes. The growth identified in the TRPC model was prorated to account for the project's 2023 existing traffic counts. Model growth volumes were also checked for reasonability. The resulting forecast future 2050 without-project weekday peak hour traffic volumes are shown in Figure 6.

[5] Note that this is lower than the City of Lacey's typical 4 percent annual growth typically used; however, the travel demand model data specifically reflects the anticipated growth in the area as well as changes to travel behavior resulting from planned transportation improvements and heavily congested corridors. Furthermore, the lower growth rate is being applied in addition to the pipeline development in the vicinity.



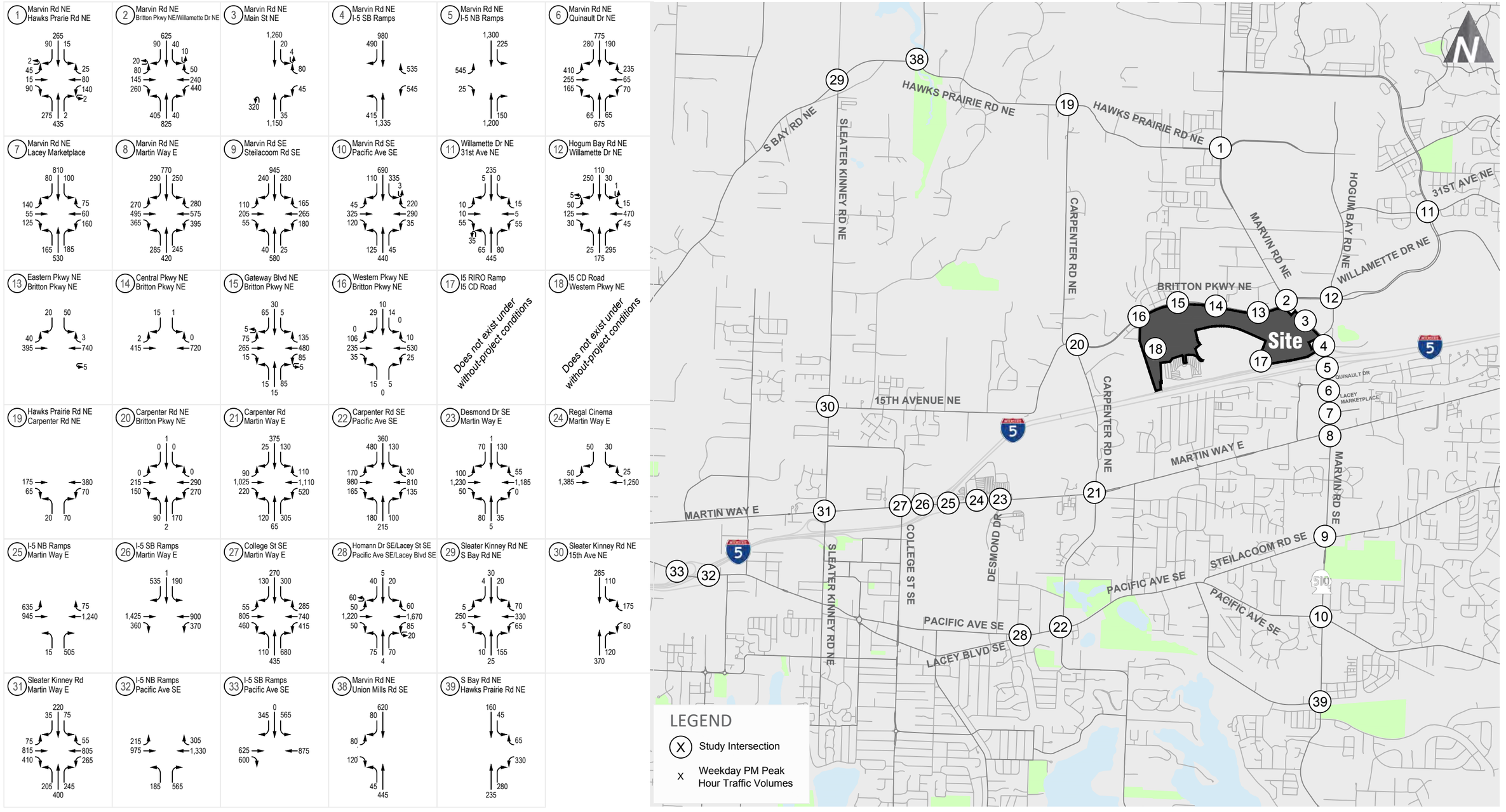


Near Term (2027) Without-Project Weekday PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE **5**

transpogroup



Long Term (2050) Without-Project Weekday PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 6

transpogroup

Traffic Operations

The operational characteristics of an intersection are determined by calculating the intersection level of service (LOS). At signalized, all-way stop-controlled, and roundabout-controlled intersections, LOS is measured in average control delay per vehicle and is reported using the intersection delay. Traffic operations and average vehicle delay 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 D contains a detailed explanation of LOS criteria and definitions.

Level of service standards of the respective jurisdictions in the study area include:

Lacey: City of Lacey has adopted an LOS D standard, except for the core area[6] where LOS E is acceptable and on strategy corridors where the LOS may exceed standards. The strategy corridors are shown on Figure 1 and study intersections that are on the strategy corridors are shaded in the LOS summary table.

Olympia: Urban corridors (which include Martin Way and Pacific Avenue) have an adopted LOS E standard as defined in the City of Olympia Transportation Plan and shown in the Transportation Corridors map.

WSDOT: WSDOT has adopted an LOS D standard at the I-5 ramp and SR 510 intersections within the study area. WSDOT guidance also considers a volume to capacity (v/c) ratio of 1.0 or less as operating acceptably for a roundabout controlled intersection.

Weekday PM peak hour traffic operations for existing and 2027 without-project conditions were evaluated based on the procedures identified in the *Highway Capacity Manual* (HCM 7) using *Synchro 12* for stop-controlled and signalized intersections. *Synchro 12* is a software program that uses *HCM* methodology to evaluate intersection LOS and average vehicle delay. The roundabouts were evaluated using *SIDRA Intersection* 9.1, and the WSDOT SIDRA protocol was followed to implement the correct parameters and environmental factors.

For the majority of the study area, signal timing was obtained from the City of Lacey and City of Olympia. Due to the non-traditional layout of the diverging diamond interchange (DDI) at I-5 and Marvin Road, WSDOT provided their methodology for modeling and evaluating the DDI using Synchro.[7] WSDOT's methodology for the DDI was assumed in the analysis.

Adjustments to the existing conditions for the future (2027) without project conditions included:

- The inclusion of the planned improvements as described previously, which result in updates at the following study intersections:
    20. Carpenter Rd NE/Britton Pkwy NE – installation of a roundabout
    30. Sleater Kinney Rd NE/15th Ave NE – installation of traffic signal
    39. Johnson Point Road/Hawks Prairie Road/South Bay Road – installation of a roundabout
- Signal timing optimization for actuated signals. Cycle lengths along coordinated corridors were maintained.

[6] "*The Lacey Core Area is defined as the area bounded by the northerly right-of-way line of Martin Way on the north, the southerly right-of-way line of Lacey Boulevard on the south, the westerly city limit line on the west and the easterly right-of-way line of Carpenter Road on the east." From City of Lacey Development Guidelines and Public Works Standards – Chapter 4: Transportation, 08/2017.*

[7] WSDOT's modeling of the interchange using Synchro has been completed for the current Marvin to Mounts study, a study following the analysis per the IJR as described above. The IJR for the interchange was completed using VISSIM, which is a microsimulation modeling tool which can allow for more detailed calibration of operations than Synchro. Note that the assumed modeling and methodology provided from WSDOT using Synchro also reflects an update in modeling than previously provided from City of Lacey.

- Peak hour factors (PHF) were reviewed and increased per *NCHRP Report 599* traffic volume thresholds per the traffic volume forecasts and review of traffic operations.

The adjustments as noted for the 2027 condition were also applied to the 2050 without-project condition, as well as a further adjustment of the PHF. The PHFs at the study intersections were adjusted to be 1.0 (reflecting a consistent flow of traffic throughout the hour) which is consistent with the guidance of WSDOT for the design year condition for both Synchro and Sidra analyses.

Results for the existing and future (2027 and 2050) without-project operations analyses are summarized in Table 3. The detailed LOS worksheets are included in Appendix E. Table 3 shows that all intersections are operating at LOS D or better under existing conditions during the PM peak hour except for the Carpenter Rd NE/Britton Pkwy NE intersection. The northbound left turn stop-controlled movement at the Carpenter Rd NE/Britton Pkwy NE currently operates at LOS F during the weekday PM peak hour in its current intersection configuration. However, with the construction of the planned roundabout in the future year (per the City of Lacey Plan), the intersection is forecast to improve to operate at LOS A under both future 2027 and 2050 conditions during the weekday PM peak hour.

Under future without-project conditions, all intersections are forecast to operate at standard during each of the horizon years; however, Britton Parkway NE and Steilacoom Rd SE along Marvin Road NE are near the respective standards under near term conditions and the Pacific Avenue SE/Carpenter Road SE intersection is near the LOS standard under long term conditions.

Table 3. Existing and Future Without-Project PM Peak Hour LOS Summary

Intersection	Jurisdiction	LOS Standard	Current / *Future* Traffic Control	Existing			2027 Without-Project			2050 Without-Project		
				LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C	LOS	Delay	WM or V/C
1. Marvin Rd NE/Hawks Prairie Rd NE	Lacey	D	RAB	A	7.0	0.29	A	7.9	0.33	A	7.0	0.27
2. Marvin Rd NE/Britton Pkwy NE	Lacey	D/SC	RAB	A	8.2	0.53	B	17.2	0.95	A	9.4	0.55
3. Marvin Rd NE/Main St NE	Lacey	D/SC	RAB	A	5.7	0.52	A	7.7	0.76	A	6.2	0.53
4. Marvin Rd NE/I-5 SB Ramp[5]	Lacey/WSDOT	D/SC	Signal*	C	33.7	-	C	25.8	-	C	21.1	-
5. Marvin Rd NE/I-5 NB Ramp[5]	Lacey/WSDOT	D/SC	Signal*	D	37.5	-	C	20.9	-	B	17.7	-
6. Marvin Rd NE (SR 510)/Quinault Dr NE	Lacey/WSDOT	D/SC	Signal	D	45.5	-	D	46.2	-	D	53.5	-
7. Marvin Rd NE (SR 510)/Lacey Marketplace	Lacey/WSDOT	D/SC	Signal	D	48.3	-	D	49.2	-	D	48.9	-
8. Marvin Rd NE (SR 510)/Martin Way E	Lacey/WSDOT	D/SC	Signal	D	51.6	-	D	50.3	-	D	49.5	-
9. Marvin Road SE (SR 510)/Steilacoom Rd SE	Lacey/WSDOT	D/SC	Signal	D	39.8	-	D	53.1	-	D	42.8	-
10. Marvin Road SE (SR 510)/Pacific Rd SE	WSDOT	D	RAB	A	7.4	0.43	A	8.8	0.58	A	8.1	0.51
11. Willamette Dr NE/31st Ave NE	Lacey	D/SC	RAB	A	5.5	0.20	A	5.8	0.24	A	5.5	0.20
12. Hogum Bay Rd NE/Willamette Dr NE	Lacey	D/SC	RAB	A	5.9	0.47	A	7.1	0.66	A	6.1	0.49
13. Eastern Pkwy NE/Britton Pkwy NE	Lacey	D	TWSC	B	10.9	SB	C	19.2	SB	D	27.9	SB
14. Central Pkwy NE/Britton Pkwy NE	Lacey	D	TWSC	B	10.6	SB	B	11.1	SB	B	11.4	SB
15. Gateway Blvd NE/Britton Pkwy NE	Lacey	D	RAB	A	5.6	0.21	A	5.6	0.26	A	5.2	0.24
16. Britton Pkwy NE/Western Pkwy NE	Lacey	D	TWSC	C	16.1	NB	C	23.7	SB	D	25.4	SB
19. Hawks Prairie Rd NE/Carpenter Rd NE	Thurston County	D	TWSC	B	12.9	NB	B	13.0	NB	B	11.4	NB
20. Carpenter Rd NE/Britton Pkwy NE	Lacey	D	TWSC/*RAB*	**F**	**141.0**	**NBL**	A	7.3	0.54	A	6.5	0.43
21. Carpenter Rd NE/Martin Way E	Lacey	E/SC	Signal	D	36.7	-	D	50.4	-	E	58.7	-
22. Pacific Ave SE/Carpenter Rd SE	Lacey	E/SC	Signal	D	52.4	-	E	59.3	-	E	77.9	-
23. Martin Way E/Desmond Dr	Lacey	E/SC	Signal	A	7.4	-	A	7.2	-	B	12.1	-
24. Martin Way E/Regal Cinemas	Lacey	E/SC	Signal	B	15.7	-	B	15.3	-	B	14.9	-
25. Martin Way E/I-5 NB Ramps	Lacey	E/SC	Signal	D	41.4	-	D	43.7	-	D	45.6	-
26. Martin Way E/I-5 SB Ramps	Lacey	E/SC	Signal*	C	28.1	-	C	32.9	-	C	22.8	-
27. Martin Way E/College St	Lacey	E/SC	Signal	D	40.5	-	D	45.8	-	D	49.8	-
28. Pacific Ave SE/Lacey Blvd SE	Lacey	E/SC	RAB	A	4.7	0.44	A	4.7	0.45	A	4.9	0.62
29. Sleater Kinney Rd NE/South Bay Rd NE	Thurston County	D	AWSC	B	11.9	-	B	12.2	-	B	13.5	-
30. Sleater Kinney Rd NE/15th Ave NE	Lacey	D	TWSC/*Signal*	C	22.5	WB	A	9.1	-	B	12.7	-
31. Martin Way E/Sleater Kinney Rd	Olympia	E	Signal	D	37.6	-	D	41.3	-	D	48.7	-
32. Pacific Ave SE/I-5 NB Ramps	Olympia/WSDOT	D	Signal	B	17.6	-	B	18.1	-	B	17.7	-
33. Pacific Ave SE/I-5 SB Ramps	Olympia/WSDOT	D	Signal	B	18.2	-	B	18.4	-	C	33.3	-
38. Marvin Rd SE/Union Mills Rd SE	Thurston County	D	TWSC	C	15.0	EB	C	23.0	EB	C	22.6	EB
39. Johnson Point Rd NE/Hawks Prairie Rd NE	Thurston County	D	TWSC/*RAB*	C	22.3	WB	A	6.1	0.34	A	6.5	0.38

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, SC = strategy corridor, RIRO = right-in/right-out. Location 17 evaluated in subsequent section.
* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000 and*
***BOLD** indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. Average delay per vehicle reported in seconds for signalized, all-way stop-controlled, and roundabout intersections. Worst movement delay reported for side-street stop-controlled intersections.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.
5. DDI interchange intersection assumes methodology as provided by WSDOT.

Traffic Safety

Five years of collision records (January 1, 2017 to December 31, 2021) provided by the Washington State Department of Transportation (WSDOT) were reviewed within the study area to identify any existing traffic safety issues at the study intersections. A summary of the total and average annual number of reported collisions at the study intersections are provided in Table 4. The severity of the reported collisions at the intersections is shown in Table 5.

Table 4. Five-Year Collision Summary (2017-2021)

Location	Current/ *Future* Traffic Control	Number of Collisions					5-Year Total	Annual Average
		2017	2018	2019	2020	2021		
1. Marvin Rd NE/Hawks Prairie Rd NE	RAB	1	2	1	2	1	7	1.4
2. Marvin Rd NE/Britton Pkwy NE	RAB	**39**	**25**	**34**	**27**	**25**	**150**	**30.0**
3. Marvin Rd NE/Main St NE	RAB	4	2	3	3	5	17	3.4
4. Marvin Rd NE/I-5 SB Ramp	Signal	5	4	6	6	10	31	6.2
5. Marvin Rd NE/I-5 NB Ramp	Signal	3	5	8	4	7	27	5.4
6. Marvin Rd NE (SR 510)/Quinault Dr NE	Signal	12	10	8	7	5	42	8.4
7. Marvin Rd NE (SR 510)/Lacey Marketplace	Signal	4	2	2	4	3	15	3.0
8. Marvin Rd NE (SR 510)/Martin Way E	Signal	**24**	**17**	**14**	**15**	**24**	**94**	**18.8**
9. Marvin Road SE (SR 510)/Steilacoom Rd SE	Signal	14	3	4	3	6	30	6.0
10. Marvin Road SE (SR 510)/Pacific Rd SE	RAB	**20**	**29**	**19**	**12**	**10**	**90**	**18.0**
11. Willamette Dr NE/31st Ave NE	RAB	0	1	2	1	4	8	1.6
12. Hogum Bay Rd NE/Willamette Dr NE	RAB	4	2	2	3	0	11	2.2
13. Eastern Pkwy NE/Britton Pkwy NE	TWSC	0	0	0	0	0	0	0.0
14. Central Pkwy NE/Britton Pkwy NE	TWSC	1	1	0	0	0	2	0.4
15. Gateway Blvd NE/Britton Pkwy NE	RAB	2	3	2	3	3	13	2.6
16. Britton Pkwy NE/Western Pkwy NE	TWSC	0	0	0	0	0	0	0.0
19. Hawks Prairie Rd NE/Carpenter Rd NE	TWSC	2	0	1	3	1	7	1.4
20. Carpenter Rd NE/Britton Pkwy NE	TWSC/*RAB*	3	0	5	4	3	15	3.0
21. Carpenter Rd NE/Martin Way E	Signal	8	8	9	6	7	38	7.6
22. Pacific Ave SE/Carpenter Rd SE	Signal	6	11	10	8	5	40	8.0
23. Martin Way E/Desmond Dr	Signal	15	9	12	0	5	41	8.2
24. Martin Way E/Regal Cinemas	Signal	5	3	0	1	0	9	1.8
25. Martin Way E/I-5 NB Ramps	Signal	10	7	7	6	3	33	6.6
26. Martin Way E/I-5 SB Ramps	Signal	15	13	14	9	9	60	12.0
27. Martin Way E/College St	Signal	7	9	4	3	8	31	6.2
28. Pacific Ave SE/Lacey Blvd SE	RAB	12	16	7	7	6	48	9.6
29. Sleater Kinney Rd NE/South Bay Rd NE	AWSC	1	0	1	0	1	3	0.6
30. Sleater Kinney Rd NE/15th Ave NE	TWSC/*Signal*	5	4	6	6	8	29	5.8
31. Martin Way E/Sleater Kinney Rd	Signal	14	11	9	6	14	54	10.8
32. Pacific Ave SE/I-5 NB Ramps	Signal	14	14	11	12	8	59	11.8
33. Pacific Ave SE/I-5 SB Ramps	Signal	3	5	6	4	1	19	3.8
38. Marvin Rd SE/Union Mills Rd SE	TWSC	0	1	0	0	0	1	0.2
39. Johnson Point Rd NE/Hawks Prairie Rd NE	TWSC/*RAB*	3	0	3	1	2	9	1.8

Source: WSDOT September 2022
Note: **Bold** text indicates highest collision locations.

As shown in the tables, the greatest number of collisions within the study area occurred at the intersections along Marvin Road SE at Britton Parkway, Martin Way and Pacific Road SE each of which had an annual average of 18 to 30 collisions whereas the remaining study intersections

had 12 or fewer collisions per year on average. At these three intersections, 1 collision involving a bicyclist resulted in a serious injury at the Marvin Road NE/Britton Parkway NE intersection and 2 collisions were reported at the Marvin Rd NE (SR 510)/Martin Way E intersection which involved a bicyclist and resulted in minor or possible injury. The remaining 331 collisions which were reported at these 3 intersections during the 5-year review period were property damage only or non-serious injury collisions.

Table 5. Severity and Non-Motorized Collision Summary (2017-2021)

Location	Collisions involving a pedestrian or Bicycle	Severity				5-Year Total
		PDO[1]	Injury		Fatality	
			Non-serious	Serious		
1. Marvin Rd NE/Hawks Prairie Rd NE	0	5	2	0	0	7
2. Marvin Rd NE/Britton Pkwy NE	**1**	**140**	**9**	**1**	**0**	**150**
3. Marvin Rd NE/Main St NE	1	13	4	0	0	17
4. Marvin Rd NE/I-5 SB Ramp	1	27	4	0	0	31
5. Marvin Rd NE/I-5 NB Ramp	1	20	7	0	0	27
6. Marvin Rd NE (SR 510)/Quinault Dr NE	1	28	14	0	0	42
7. Marvin Rd NE (SR 510)/Lacey Marketplace	0	10	5	0	0	15
8. Marvin Rd NE (SR 510)/Martin Way E	**2**	**71**	**23**	**0**	**0**	**94**
9. Marvin Road SE (SR 510)/Steilacoom Rd SE	0	21	9	0	0	30
10. Marvin Road SE (SR 510)/Pacific Rd SE	**0**	**82**	**8**	**0**	**0**	**90**
11. Willamette Dr NE/31st Ave NE	0	6	2	0	0	8
12. Hogum Bay Rd NE/Willamette Dr NE	0	11	0	0	0	11
13. Eastern Pkwy NE/Britton Pkwy NE	0	0	0	0	0	0
14. Central Pkwy NE/Britton Pkwy NE	0	2	0	0	0	2
15. Gateway Blvd NE/Britton Pkwy NE	0	12	1	0	0	13
16. Britton Pkwy NE/Western Pkwy NE	0	0	0	0	0	0
19. Hawks Prairie Rd NE/Carpenter Rd NE	0	3	4	0	0	7
20. Carpenter Rd NE/Britton Pkwy NE	0	11	4	0	0	15
21. Carpenter Rd NE/Martin Way E	0	28	10	0	0	38
22. Pacific Ave SE/Carpenter Rd SE	0	30	10	0	0	40
23. Martin Way E/Desmond Dr	1	27	14	0	0	41
24. Martin Way E/Regal Cinemas	0	6	3	0	0	9
25. Martin Way E/I-5 NB Ramps	0	23	10	0	0	33
26. Martin Way E/I-5 SB Ramps	1	42	18	0	0	60
27. Martin Way E/College St	0	21	10	0	0	31
28. Pacific Ave SE/Lacey Blvd SE	0	43	5	0	0	48
29. Sleater Kinney Rd NE/South Bay Rd NE	0	3	0	0	0	3
30. Sleater Kinney Rd NE/15th Ave NE	0	21	8	0	0	29
31. Martin Way E/Sleater Kinney Rd	0	43	10	0	1	54
32. Pacific Ave SE/I-5 NB Ramps	0	47	12	0	0	59
33. Pacific Ave SE/I-5 SB Ramps	1	13	6	0	0	19
38. Marvin Rd SE/Union Mills Rd SE	0	0	1	0	0	1
39. Johnson Point Rd NE/Hawks Prairie Rd NE	0	6	3	0	0	9

Source: WSDOT September 2022.
Note: **Bold** text indicates highest collision locations. Shading indicates intersection with non-motorized, serious injury, or fatality collision reported.
1. PDO = Property Damage Only.

At the remaining study intersections, 7 collisions were reported which involved a pedestrian or bicyclist which occurred at the following locations:

3. Marvin Rd NE/Main St NE
4. Marvin Rd NE/I-5 SB Ramp
5. Marvin Rd NE/I-5 NB Ramp
6. Marvin Rd NE (SR 510)/Quinault Dr NE
23. Martin Way E/Desmond Dr
26. Martin Way E/I-5 SB Ramps
33. Pacific Ave SE/I-5 SB Ramps

Each of these collisions resulted in a non-serious collision.

Additionally, within the study area, 1 collision resulted in a fatality. The fatality occurred at the Martin Way E/Sleater Kinney Road signalized intersection when a truck taking an eastbound left turn struck a motorcycle traveling westbound through the intersection.

Of the 5 existing intersections along the project frontages of Marvin Road SE and Britton Parkway, there were 32 total collisions reported or an annual average of 3 or fewer collisions per year with only 5 total collisions resulting in an injury (approximately 15 percent). No needed safety improvements were identified at the study intersections located adjacent to the project site.

Village Alternative 1 Project Impacts

This section summarizes the analysis results for Alternative 1. Traffic volumes generated by Alternative 1 are estimated and then distributed and assigned to adjacent roadways within the study area. Next, project trips are added to 2027 without-project traffic volumes for an opening year analysis and to 2050 without-project traffic volumes for a horizon year analysis. In addition to the review of off-site intersection impacts, the results of the site access analysis are summarized.

Trip Generation

Trip generation information presented in this report was previously presented to, reviewed, and approved by agency staff during the scoping process. Trip generation estimates for the project are based on trip rates using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021) as available. The land uses used include Shopping Center (>150k sf) (LU #821), Hotel (LU #310), Multifamily Housing Mid-Rise (LU #221), General Office (LU #710), Truck Stop (LU #950), and Car Dealership (LU #840). One specific use known to be proposed for the site is Topgolf which is an entertainment facility. There is not an applicable ITE land use for the specific Topgolf facility. Transpo recently completed a TIA[8] for a Topgolf site in Renton, WA. Rates for several existing sites were provided to support that study and have been utilized in these estimates. Only rates for the PM peak hour were available in this study. To forecast AM peak hour and total daily trips, a 2016 study for a Topgolf facility in El Segundo, CA was used to find the relationship between the number of AM peak hour and daily trips and the number of PM peak hour trips.

The proposed project estimated gross trip generation was adjusted for internal trips as well as pass-by and diverted trips, each of which are discussed below. All were applied per the methodology as identified in *ITE Trip Generation Handbook* (3rd edition).

Internal Capture: Those trips which occur between uses on-site of a mixed-use development. As noted above, the inclusion of internal capture was assumed based on a review of *ITE Trip Generation Handbook* (3rd edition) and completed using the method presented in the handbook utilizing the NCHRP 684 Internal Trip Capture Estimation Tool. The estimated internal reduction in trips relative to the gross trip generation for the project was 2 and 7 percent during the weekday AM and PM peak hours, respectively.

Diverted Trips: Diverted trips are trips which divert from their route (assumed along I-5 in this case) and continue on their route following the stop at the site and do not return to their point of origin as occurs for the primary trip patterns. The diverted rate for the truck stop use is 75 percent based on ITE's *Trip Generation Manual* (11th Edition, 2021).

Pass-by Trips: Pass-by trips reflect traffic already on streets adjacent to the site that would add a stop at the project on the way to their final destination. The pass-by rate for the retail use is 19 percent based on ITE's *Trip Generation Manual* (11th Edition, 2021).

Table 6 summarizes the resulting net new weekday daily, AM and PM peak hour vehicle trip generation for Alternative 1. Detailed trip generation calculations including reductions for internal trips as well as pass-by and diverted trips are provided in Appendix G.

[8] *Topgolf Renton Transportation Impact Analysis* (Transpo Group, July 2019).

Table 6. Estimated New Primary Weekday Vehicle Trip Generation for Alternative 1

Land Uses	Size	ITE LU Number[1]	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Shopping Center (>150k sf)	833,500 sf	820	24,294	361	198	559	1,050	1,147	2,197
Hotel	200 rooms	310	1,396	52	33	85	48	49	97
Multifamily Housing Mid-Rise	320 du	221	1,068	26	89	115	37	25	62
General Office	30,000 sf	710	230	27	4	31	2	22	24
Truck Stop	26 VFP / 36,000 sf	950	1,456	40	47	87	63	38	101
Car Dealership	30,000	840	812	40	15	55	28	42	70
Topgolf	93 bays	per Topgolf Study[2]	1,340	32	4	36	67	58	125
Total			***30,596***	***578***	***390***	***968***	***1,295***	***1,381***	***2,676***

Note: du = dwelling unit, sf = square-feet, VFP = vehicle fueling position.
1. ITE's Land Use Number per the *Trip Generation Manual* (11th Edition, 2021)
2. Topgolf rates per a traffic impact analysis (TIA) completed by Transpo Group in 2019 for a Topgolf site in Renton, WA

As shown in the table, Alternative 1 of the proposed development is anticipated to generate 30,596 new weekday daily trips with 968 trips occurring during the weekday AM peak hour and 2,676 trips occurring during the weekday PM peak hour.

Trip Distribution & Assignment

The TRPC Traffic Demand model was utilized to identify trip distribution patterns of the site generated traffic for the broad study area. The model plot provided by TRPC is included in Appendix H. As identified above, TRPC's travel demand model included the funded projects anticipated to be in place by future (2050) long term conditions and also included the CD road connection in place.[9] The project trip distribution as identified per the model was assumed for both future horizon years. As noted above, a horizon year of 2027 was identified as the soonest the project would be constructed and occupied; however, given the size of the project, development will likely occur in a number of phases, which is likely to extend beyond the 2027 horizon year and therefore the project trip distribution patterns were assumed to align with the more comprehensive review of patterns in the vicinity. The distribution patterns assumed in the analysis as derived from the TRPC model consider multiple factors. These factors include planned projects and congestion identified in the area.

The Alternative 1 primary weekday PM peak hour traffic volumes as shown in Table 6 were assigned to the network based on TRPC model review which reflects the distribution patterns anticipated for primary trips. Note that the localized assignment of traffic at the site driveways was based on site development density, location of parking on the site, inbound/outbound travel patterns, and site access restrictions.[10] The localized trip distribution patterns surrounding the site are shown in Figure 7.

Additionally, the diverted trips associated with the fueling station were assigned to/from the site and the I-5 ramps and the pass-by trips were assigned at the site accesses to/from the adjacent roadways. Assignment of the diverted trips to/from I-5 result in additional trips being added to the I-5 northbound and southbound ramps at Marvin Road. For each diverted trip a new inbound and outbound trip is added to the ramp intersections. This is a similar impact at the ramps as would be expected if the trips all treated as "primary trips".

[9] Additional review of the CD road connection per the MOU conditions is provided in the Alternative 2 section below which was evaluated as it is the Alternative with the lowest trip generation.

[10] Full access was assumed at the existing intersections providing site access (study intersections 3, 13-16) whereas limited right-in/right-out (RIRO) access was assumed at the additional site access intersections proposed with the project (study intersections 34-37) given the existing roadway median restrictions.

Figure 8 shows the overall project trip assignment at all study intersections including the assignment of the primary, diverted, and pass-by trips.

The project trip assignment was added to future (2027 and 2050) without-project volumes at study intersections. The resulting future (2027 and 2050) Alternative 1 PM peak hour traffic volumes are illustrated in Figure 9 and Figure 10, respectively.



Project Vicinity (Village Alternative 1) PM Peak Hour Trip Distribution

Nisqually Quiemuth Village Mixed-Use Project

FIGURE
7

transpogroup

Mar 13, 2025 - 5:04pm lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 7. Alt 1 Distribution

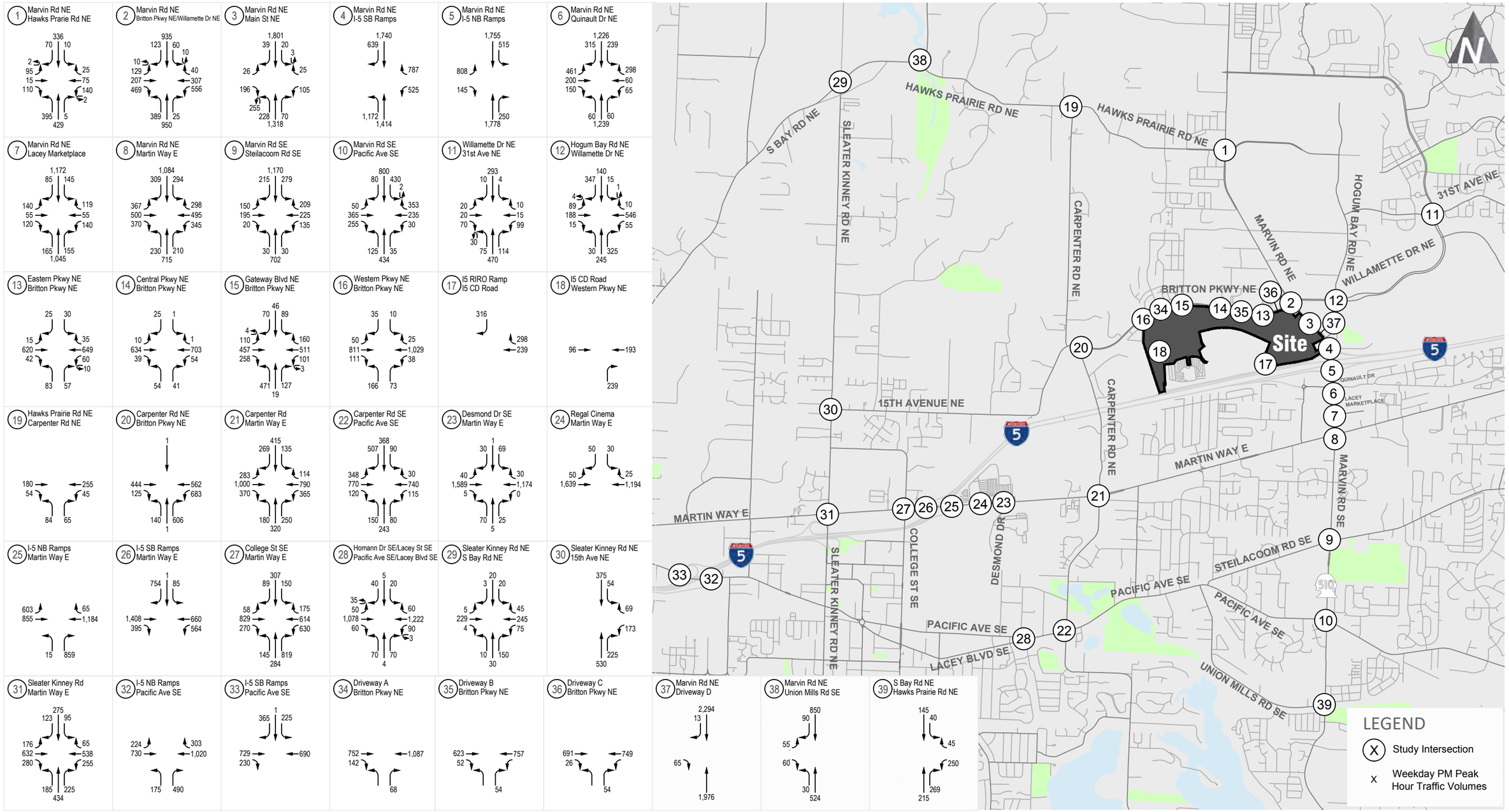


Project (Village Alternative 1) PM Peak Hour Trip Assignment

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 8

transpogroup



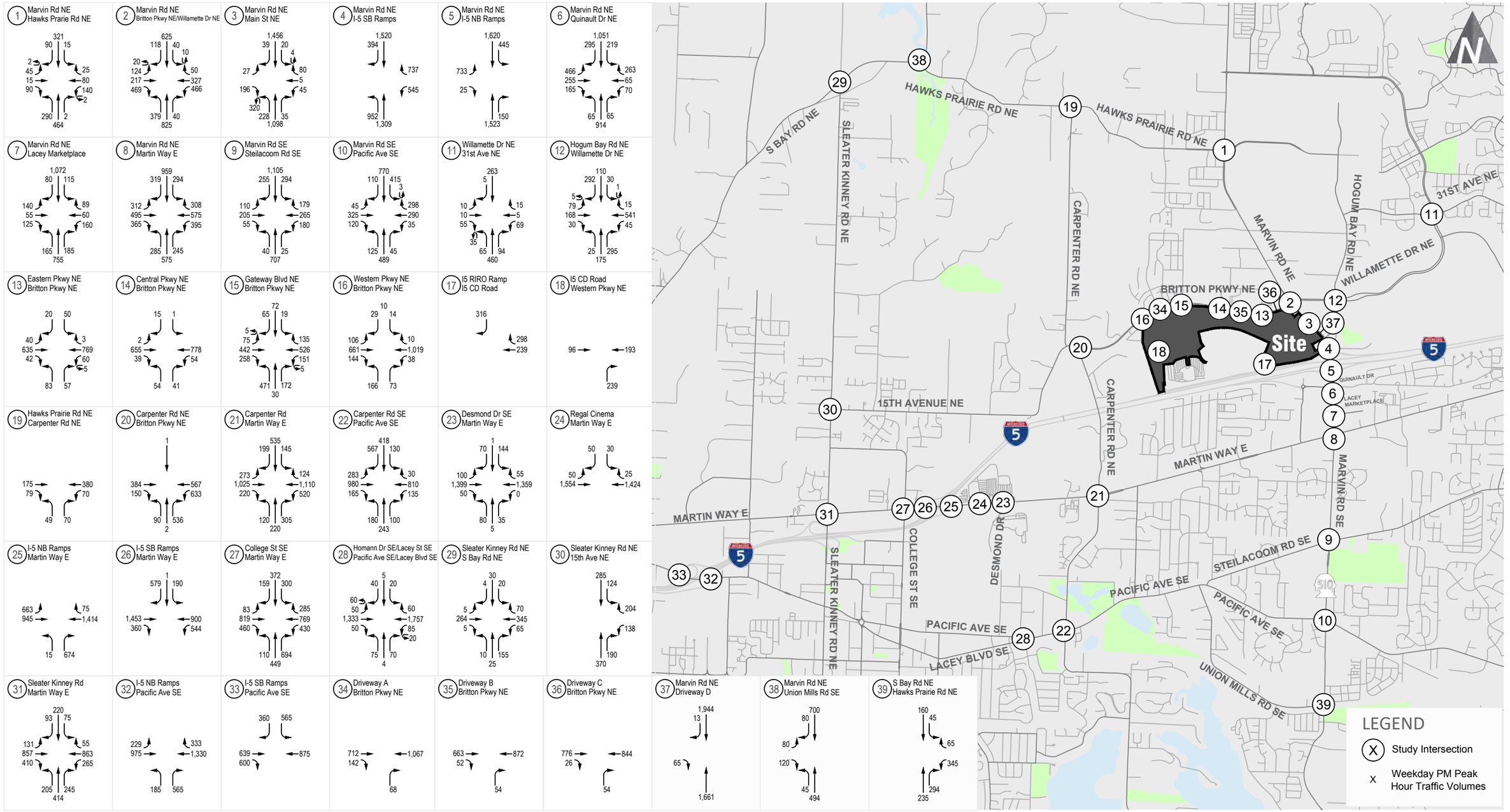
Near Term (2027) With-Project Alternative 1 Weekday PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 9

transpogroup

Mar 13, 2025 - 4:31pm lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 9. WP Alt 1_2027



Long Term (2050) With-Project Alternative 1 Weekday PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE **10**

transpogroup

Traffic Operations Impact

The following sections summarize future (2027 and 2050) Alternative 1 traffic operations within the study area including the intersection level of service and the future I-5 Ramp interchange. The same methodologies for the intersection LOS were applied as described for existing and future without-project conditions. Results for both the 2027 and 2050 analysis years are provided. The future (2027 and 2050) Alternative 1 with-project level of service analysis was conducted for the weekday PM peak hour to analyze the traffic impacts. All intersection parameters such as channelization, intersection control, and signal timing were consistent with those used in the evaluation of future (2027 and 2050) without-project conditions with the exception of the added site accesses. Detailed LOS worksheets are provided in Appendix E.

Alternative 1 Intersection LOS

A comparison of 2027 without-project and with-project weekday peak hour traffic operations is summarized in Table 7. As shown in Table 7, with the development of Alternative 1 of the Village under future (2027) conditions, there are 5 intersections forecast to operate below the respective LOS standards during the weekday PM peak hour. The near term intersections operating below the LOS standard are generally a site access or located on a strategy corridor.

Future 2050 without-project and with-project weekday peak hour traffic operations are summarized in Table 8. Table 8 shows with the development of Alternative 1 of the Village under future (2050) conditions, there are 4 intersections forecast to operate below the respective LOS standards during the weekday PM peak hour with 3 being a site access and 1 located along a strategy corridor.

Each of the intersections forecast to operate below the respective LOS standards under the future 2027 and/or 2050 conditions is discussed below.

- **Marvin Road SE (SR 510)/Steilacoom Rd SE (Study intersection 9)** – This signalized intersection is forecast to operate below the LOS standard under near term conditions for Alternative 1 during the PM peak hour. This intersection is forecast to operate acceptably under the long term forecasts.
- **Site Access Intersections at Eastern Parkway NE, Central Parkway NE, and Western Parkway NE along Britton Parkway NE (Study intersections 13, 14, and 16)** – These are assumed to be full access two-way stop-controlled site access intersections, all of which are aligned with roadways to the north. These are forecast to operate LOS E or F under both future (2027 and 2050) Alternative 1 conditions during the weekday PM peak hour, exceeding the LOS D standard.
- **Pacific Avenue SE/Carpenter Road SE (Study intersection 22)** – This signalized intersection is forecast to operate acceptably at LOS E under future (2027 and 2050) without project conditions as well as with Alternative 1 under near term conditions during the PM peak hour. Under long term conditions with Alternative 1, the intersection is forecast to degrade to operating below standard at LOS F.
- **Site Access Driveway D/Marvin Road NE (Study intersection 37)** – The eastbound right-turn movement (outbound from the project site) at the proposed right-in/right-out (RIRO) driveway is forecast to operate at LOS E under near term conditions for Alternative 1 during the PM peak hour. This approach is forecast to operate acceptably under the long term forecasts.

Table 7. Near Term (2027) Village Alternative 1 Weekday PM Peak Hour LOS Summary

Intersection	LOS Standard	Traffic Control	Without-Project			With-Project Village Alt 1		
			LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C
1. Marvin Rd NE/Hawks Prairie Rd NE	D	RAB	A	7.9	0.33	A	8.0	0.34
2. Marvin Rd NE/Britton Pkwy NE	D/SC	RAB	B	17.2	0.95	C	23.8	1.04
3. Marvin Rd NE/Main St NE	D/SC	RAB	A	7.7	0.76	C	30.3	1.07
4. Marvin Rd NE/I-5 SB Ramp[5]	D/SC	Signal*	C	25.8	-	D	50.7	-
5. Marvin Rd NE/I-5 NB Ramp[5]	D/SC	Signal*	C	20.9	-	D	40.2	-
6. Marvin Rd NE (SR 510)/Quinault Dr NE	D/SC	Signal	D	46.2	-	D	49.3	-
7. Marvin Rd NE (SR 510)/Lacey Marketplace	D/SC	Signal	D	49.2	-	D	52.1	-
8. Marvin Rd NE (SR 510)/Martin Way E	D/SC	Signal	D	50.3	-	D	52.5	-
9. Marvin Rd SE (SR 510)/Steilacoom Rd SE	D/SC	Signal	D	53.1	-	**E**	**64.2**	-
10. Marvin Road SE (SR 510)/Pacific Rd SE	D	RAB	A	8.8	0.58	B	10.1	0.65
11. Willamette Dr NE/31st Ave NE	D/SC	RAB	A	5.8	0.24	A	5.8	0.25
12. Hogum Bay Rd NE/Willamette Dr NE	D/SC	RAB	A	7.1	0.66	A	7.8	0.70
13. Eastern Pkwy NE/Britton Pkwy NE	D	TWSC	C	19.2	SB	**F**	**77.1**	**NB**
14. Central Pkwy NE/Britton Pkwy NE	D	TWSC	B	11.1	SB	**E**	**44**	**NB**
15. Gateway Blvd NE/Britton Pkwy NE	D	RAB	A	5.6	0.26	A	8.4	0.47
16. Britton Pkwy NE/Western Pkwy NE	D	TWSC	C	23.7	SB	**F**	**>200**	**NB**
18. I-5 CD Rd/Western Parkway NE	D	TWSC	On-Site Intersection			B	10.2	NB
19. Hawks Prairie Rd NE/Carpenter Rd NE	D	TWSC	B	13.0	NB	B	14.6	NB
20. Carpenter Rd NE/Britton Pkwy NE	D	RAB	A	7.3	0.54	D	38.7	1.10
21. Carpenter Rd NE/Martin Way E	E/SC	Signal	D	50.4	-	E	60.1	-
22. Pacific Ave SE/Carpenter Rd SE	E/SC	Signal	E	59.3	-	E	79.8	-
23. Martin Way E/Desmond Dr	E/SC	Signal	A	7.2	-	A	7.4	-
24. Martin Way E/Regal Cinemas	E/SC	Signal	B	15.3	-	B	13.8	-
25. Martin Way E/I-5 NB Ramps	E/SC	Signal	D	43.7	-	D	49.9	-
26. Martin Way E/I-5 SB Ramps	E/SC	Signal*	C	32.9	-	D	51.8	-
27. Martin Way E/College St	E/SC	Signal	D	45.8	-	D	45.4	-
28. Pacific Ave SE/Lacey Blvd SE	E/SC	RAB	A	4.7	0.45	A	4.7	0.48
29. Sleater Kinney Rd NE/South Bay Rd NE	D	AWSC	B	12.2	-	B	12.7	-
30. Sleater Kinney Rd NE/15th Ave NE	D	Signal	A	9.1	-	B	11.1	-
31. Martin Way E/Sleater Kinney Rd	E	Signal	D	41.3	-	D	50.7	-
32. Pacific Ave SE/I-5 NB Ramps	D	Signal	B	18.1	-	B	18.9	-
33. Pacific Ave SE/I-5 SB Ramps	D	Signal	B	18.4	-	B	19.0	-
34. Driveway A/Britton Pkwy NE	D	TWSC	Site Access			B	12.7	NB
35. Driveway B/Britton Pkwy NE	D	TWSC	Site Access			B	11.2	NB
36. Driveway C/Britton Pkwy NE	D	TWSC	Site Access			B	11.4	NB
37. Driveway D/Marvin Rd NE	D	TWSC	Site Access			**E**	**46.5**	**EB**
38. Marvin Rd SE/Union Mills Rd SE	D	TWSC	C	23.0	EB	D	26.4	EB
39. Johnson Point Rd NE/Hawks Prairie Rd NE	D	RAB	A	6.1	0.34	A	6.2	0.35

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, SC = strategy corridor, RIRO = right-in/right-out. Location 17 evaluated in subsequent section. Shading indicates site access or on-site intersection.

* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000.*

***BOLD** indicates intersection operating below respective LOS standard.*

1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. Average delay per vehicle reported in seconds for signalized, all-way stop-controlled, and roundabout intersections. Worst movement delay reported for side-street stop-controlled intersections.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.
5. DDI interchange intersection assumes methodology as provided by WSDOT.

Table 8. Long Term (2050) Village Alternative 1 Weekday PM Peak Hour LOS Summary

Intersection	LOS Standard	Traffic Control	Without-Project			With-Project Village Alt 1		
			LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C
1. Marvin Rd NE/Hawks Prairie Rd NE	D	RAB	A	7.0	0.27	A	7.1	0.28
2. Marvin Rd NE/Britton Pkwy NE	D/SC	RAB	A	9.4	0.55	B	10.2	0.63
3. Marvin Rd NE/Main St NE	D/SC	RAB	A	6.2	0.53	B	9.5	0.76
4. Marvin Rd NE/I-5 SB Ramp[5]	D/SC	Signal*	C	21.1	-	C	28.1	-
5. Marvin Rd NE/I-5 NB Ramp[5]	D/SC	Signal*	B	17.7	-	C	24.2	-
6. Marvin Rd NE (SR 510)/Quinault Dr NE	D/SC	Signal	D	53.5	-	D	50.5	-
7. Marvin Rd NE (SR 510)/Lacey Marketplace	D/SC	Signal	D	48.9	-	D	48.5	-
8. Marvin Rd NE (SR 510)/Martin Way E	D/SC	Signal	D	49.5	-	D	53.2	-
9. Marvin Rd SE (SR 510)/Steilacoom Rd SE	D/SC	Signal	D	42.8	-	D	53.1	-
10. Marvin Road SE (SR 510)/Pacific Rd SE	D	RAB	A	8.1	0.51	A	8.7	0.58
11. Willamette Dr NE/31st Ave NE	D/SC	RAB	A	5.5	0.20	A	5.5	0.21
12. Hogum Bay Rd NE/Willamette Dr NE	D/SC	RAB	A	6.1	0.49	A	6.5	0.53
13. Eastern Pkwy NE/Britton Pkwy NE	D	TWSC	D	27.9	SB	**F**	**83.0**	**NB**
14. Central Pkwy NE/Britton Pkwy NE	D	TWSC	B	11.4	SB	**E**	**37.2**	**NB**
15. Gateway Blvd NE/Britton Pkwy NE	D	RAB	A	5.2	0.24	A	7.6	0.40
16. Britton Pkwy NE/Western Pkwy NE	D	TWSC	D	25.4	SB	**F**	**>200**	**NB**
18. I-5 CD Rd/Western Parkway NE	D	TWSC	On-Site Intersection			A	10.0	NB
19. Hawks Prairie Rd NE/Carpenter Rd NE	D	TWSC	B	11.4	NB	B	13.5	NB
20. Carpenter Rd NE/Britton Pkwy NE	D	RAB	A	6.5	0.43	B	10.0	0.94
21. Carpenter Rd NE/Martin Way E	E/SC	Signal	E	58.7	-	E	67.9	-
22. Pacific Ave SE/Carpenter Rd SE	E/SC	Signal	E	77.9	-	**F**	**94.1**	**-**
23. Martin Way E/Desmond Dr	E/SC	Signal	B	12.1	-	B	12.0	-
24. Martin Way E/Regal Cinemas	E/SC	Signal	B	14.9	-	B	18.9	-
25. Martin Way E/I-5 NB Ramps	E/SC	Signal	D	45.6	-	D	51.2	-
26. Martin Way E/I-5 SB Ramps	E/SC	Signal*	C	22.8	-	D	39.7	-
27. Martin Way E/College St	E/SC	Signal	D	49.8	-	D	52.0	-
28. Pacific Ave SE/Lacey Blvd SE	E/SC	RAB	A	4.9	0.62	A	5.0	0.65
29. Sleater Kinney Rd NE/South Bay Rd NE	D	AWSC	B	13.5	-	B	14.2	-
30. Sleater Kinney Rd NE/15th Ave NE	D	Signal	B	12.7	-	B	14.3	-
31. Martin Way E/Sleater Kinney Rd	E	Signal	D	48.7	-	E	58.8	-
32. Pacific Ave SE/I-5 NB Ramps	D	Signal	B	17.7	-	B	18.4	-
33. Pacific Ave SE/I-5 SB Ramps	D	Signal	C	33.3	-	C	33.5	-
34. Driveway A/Britton Pkwy NE	D	TWSC	RIRO Site Access			B	12.1	NB
35. Driveway B/Britton Pkwy NE	D	TWSC	RIRO Site Access			B	11.2	NB
36. Driveway C/Britton Pkwy NE	D	TWSC	RIRO Site Access			B	11.6	NB
37. Driveway D/Marvin Rd NE	D	TWSC	RIRO Site Access			D	28.9	EB
38. Marvin Rd SE/Union Mills Rd SE	D	TWSC	C	22.6	EB	D	26.6	EB
39. Johnson Point Rd NE/Hawks Prairie Rd NE	D	RAB	A	6.5	0.38	A	6.6	0.39

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, SC = strategy corridor, RIRO = right-in/right-out. Location 17 evaluated in subsequent section. Shading indicates site access or on-site intersection.
* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000.*
***BOLD** indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. Average delay per vehicle reported in seconds for signalized, all-way stop-controlled, and roundabout intersections. Worst movement delay reported for side-street stop-controlled intersections.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.
5. DDI interchange intersection assumes methodology as provided by WSDOT.

As shown above, multiple locations are forecast to have near term only LOS deficiencies which is associated with the two different methodologies used to forecast the near term and long term traffic volumes. The near term forecasts assume the application of a static growth rate and pipeline

developments which is consistent with City requirements. These forecasts typically provide conservative estimates of near term volumes because they do not account for changes in travel patterns related to congestion and capacity constraints created by the pipeline projects. It should also be noted that near-term forecasts do not consider the change in travel patterns that may result from completion of the planned improvements which are captured in the long term forecasts. Note that the project is required to contribute to several local improvements in the area on a pro-rata basis.

Additional discussion regarding mitigation measures at the locations identified to operate below the LOS standard is provided in the Mitigation section below. These measures include but are not limited to transportation demand management (TDM) strategies to reduce the overall level of project-related traffic during peak hour conditions.

Interstate 5 (I-5) RIRO/CD Road Interchange Operations

As part of the Marvin Road interchange project a collector-distributor road was constructed along the site frontage. This roadway today serves as the I-5 southbound on-ramp. With the opening of the CD Road connection to the site, a weaving section is created as illustrated in Figure 11.

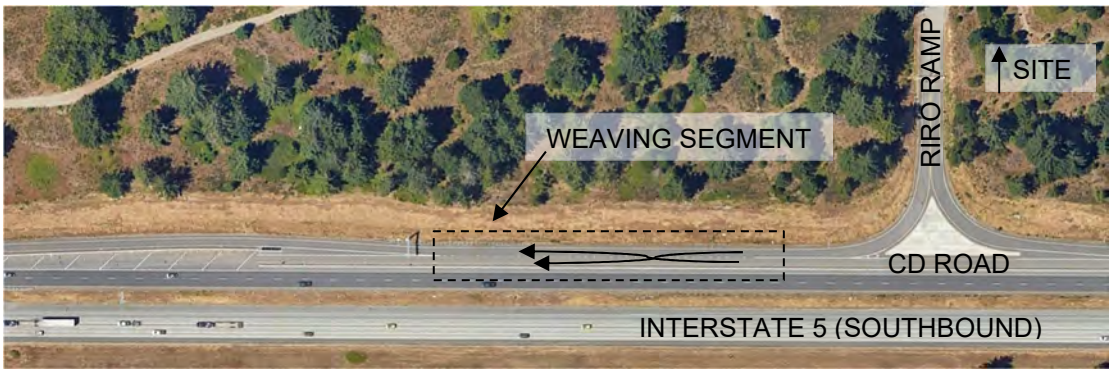


Figure 11. I-5 RIRO Ramp at the I-5 CD Road Evaluation Segment

Note that additional analysis of the CD road connection per the MOU conditions is provided in the Alternative 2 section below, as it is the alternative with the lowest trip generation for purposes of the capacity analysis.

The future (2027 and 2050) Alternative 1 weekday PM peak hour operational performance at the future I-5 RIRO Ramp at the I-5 CD Road was determined based on the procedures identified in the *Highway Capacity Manual (HCM)* (7th Edition) and was evaluated using the *Highway Capacity Software (HCS2025)* program. The performance of this ramp was evaluated based on weaving analysis[11]. Table 9 provides a summary of the weaving operations for the weekday PM peak hour. LOS worksheets are included in Appendix I.

Table 9. Village Alternative 1 Weekday PM Peak Hour Interchange LOS Summary

		2027 With-Project Village Alt 1		2050 With-Project Village Alt 1	
Location	**LOS Standard**	**LOS[1]**	**Density (pc/mi/ln)[2]**	**LOS**	**Density (pc/mi/ln)**
I-5 RIRO Ramp at the I-5 CD Road	D	B	10.8	B	10.3

1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition.*
2. pc/mi/ln = passenger cars per mile per lane.

As shown in the table, the proposed ramp is forecast to operate acceptably at LOS B with the Alternative 1 development during the weekday PM peak hour under both future 2027 and 2050 conditions.

[11] A weaving analysis evaluates the operation of a highway segment where there is the crossing of two or more traffic streams traveling in the same direction without the aid of traffic control devices.

Village Alternative 2 Project Impacts

This section summarizes the analysis results for Alternative 2. Consistent with Alternative 1, traffic volumes generated by Alternative 2 are estimated and then distributed and assigned to adjacent roadways within the study area. Next, project trips are added to 2027 without-project traffic volumes for an opening year analysis and to 2050 without-project traffic volumes for a horizon year analysis for both off-site and site access intersections.

Trip Generation

Trip generation information presented in this report was previously presented to, reviewed, and approved by agency staff during the scoping process. Trip generation estimates for the project are based on trip rates using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021) as available. The ITE land uses used include Shopping Center (>150k sf) (LU #821), Hotel (LU #310), Multifamily Housing Mid-Rise (LU #221), General Office (LU #710), Private School (K-8) (LU #530), Recreational Community Center (LU #495), Athletic Complex (LU #488), Convenience Store/Gas Station (LU #945), and Car Dealership (LU #840). Consistent with Alternative 1, one specific use known to be proposed for the site is Topgolf which is an entertainment facility. Transpo recently completed a TIA for a Topgolf site in Renton, WA. Rates for several existing sites were provided to support the estimates. Only rates for the PM peak hour were available in this study. To forecast AM peak hour and total daily trips, a 2016 study for a Topgolf facility in El Segundo, CA was used to find the relationship between the number of AM peak hour and daily trips and the number of PM peak hour trips. The daily trips and AM peak hour trips were respectively 9.07 times and 0.21 times the number of PM peak hour trips. Related pages from the study are made available in Appendix F. Note that these ratios are applied to the gross trip rate, and the net new primary trips shown in Table 10 are after internal trip reductions and may not follow the same ratios.

Table 10 summarizes the resulting weekday daily, AM and PM peak hour vehicle trip generation for Alternative 2. Detailed trip generation calculations including reductions for pass-by, diverted and internal trips are provided in Appendix G.

Table 10. Estimated New Primary Weekday Vehicle Trip Generation for Alternative 2

Land Uses	Size	ITE LU Number[1]	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Shopping Center (>150k sf)	338,500 sf	820	9,560	145	80	225	402	438	840
Hotel	200 rooms	310	1,396	52	33	85	48	49	97
Multifamily Housing Mid-Rise	320 du	221	1,068	26	89	115	37	25	62
General Office	30,000 sf	710	230	27	4	31	2	22	24
Private School (K-8)	200 students	530	822	113	89	202	24	28	52
Recreational Community Center	200,000 sf	495	5,556	252	130	382	220	244	464
Athletic Complex	12 fields	488	826	7	5	12	121	62	183
Convenience Store/Gas Station (GFA (5.5-10k)	10 VFP	950	816	36	39	75	32	29	61
Car Dealership	30,000	840	266	14	5	19	9	13	22
Topgolf	93 bays	per Topgolf Study[2]	1,490	32	4	36	85	73	158
Total			***22,030***	***704***	***478***	***1,182***	***980***	***983***	***1,963***

Note: du = dwelling unit, sf = square-feet, VFP = vehicle fueling position.
1. ITE's Land Use Number per the *Trip Generation Manual* (11th Edition, 2021)
2. Topgolf rates per a traffic impact analysis (TIA) completed by Transpo Group in 2019 for a Topgolf site in Renton, WA

Table 10 shows Alternative 2 of the Village is anticipated to generate 22,030 daily, 1,182 AM peak hour, and 1,963 PM peak hour weekday trips.

Trip Distribution & Assignment

The off-site trip distribution patterns for Alternative 2 are consistent with Alternative 1 with localized adjustments to the site driveways to reflect the different site layouts. The local project trip distribution around the site is shown in Figure 12 and the resulting trip assignment at all study intersections is included in Figure 13. As shown in the figures, access is assumed to include the CD road connection. Additional review of the CD road connection per the MOU conditions is provided in a separate section below.

Future (2027) with-project traffic volumes, PM peak hour project trips were added to the 2027 without-project traffic volumes. The 2027 with-project volumes are displayed in Figure 14. Future (2050) with-project traffic volumes were similarly calculated by adding the PM peak hour project trips to the 2050 without-project traffic volumes and are shown in Figure 15.

Traffic Operations Impact

The following sections summarize future (2027 and 2050) Alternative 2 traffic operations within the study area including the intersection level of service and the future I-5 Ramp interchange. The same methodologies for the intersection LOS were applied as described for existing and future without-project conditions. Results for both the 2027 and 2050 analysis years are provided.

Alternative 2 Intersection LOS

The future (2027 and 2050) Alternative 2 with-project level of service analysis was conducted for the weekday PM peak hour to analyze the traffic impacts. All intersection parameters such as channelization, intersection control, and signal timing were consistent with those used in the evaluation of future (2027 and 2050) without-project conditions with the exception of the added site accesses. Detailed LOS worksheets are provided in Appendix E.

A comparison of 2027 without-project and with-project weekday peak hour traffic operations is summarized in Table 11. Future 2050 without-project and with-project weekday peak hour traffic operations are summarized in Table 12.



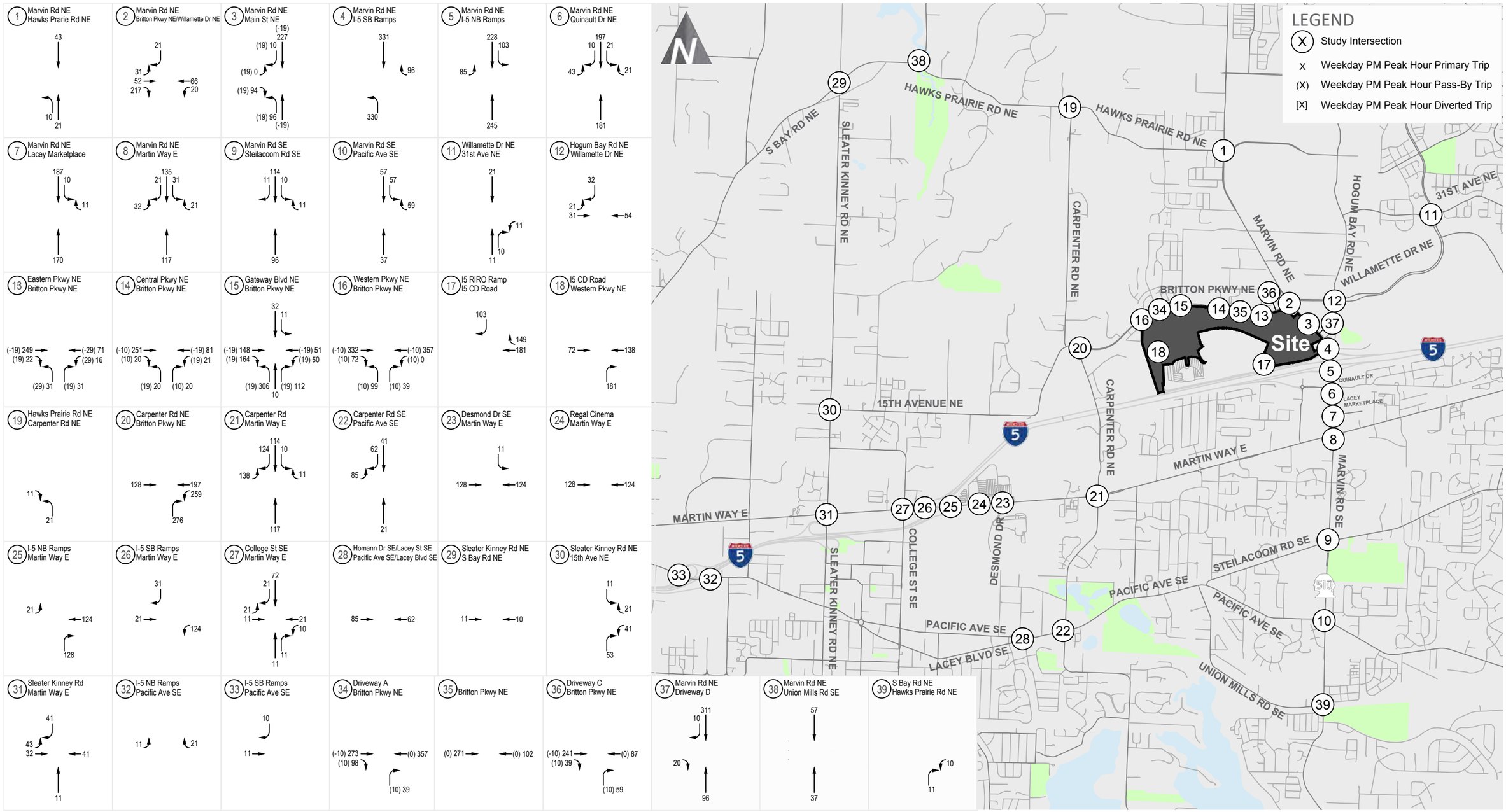
Project Vicinity (Village Alternative 2) PM Peak Hour Trip Distribution

Nisqually Quiemuth Village Mixed-Use Project

FIGURE
12

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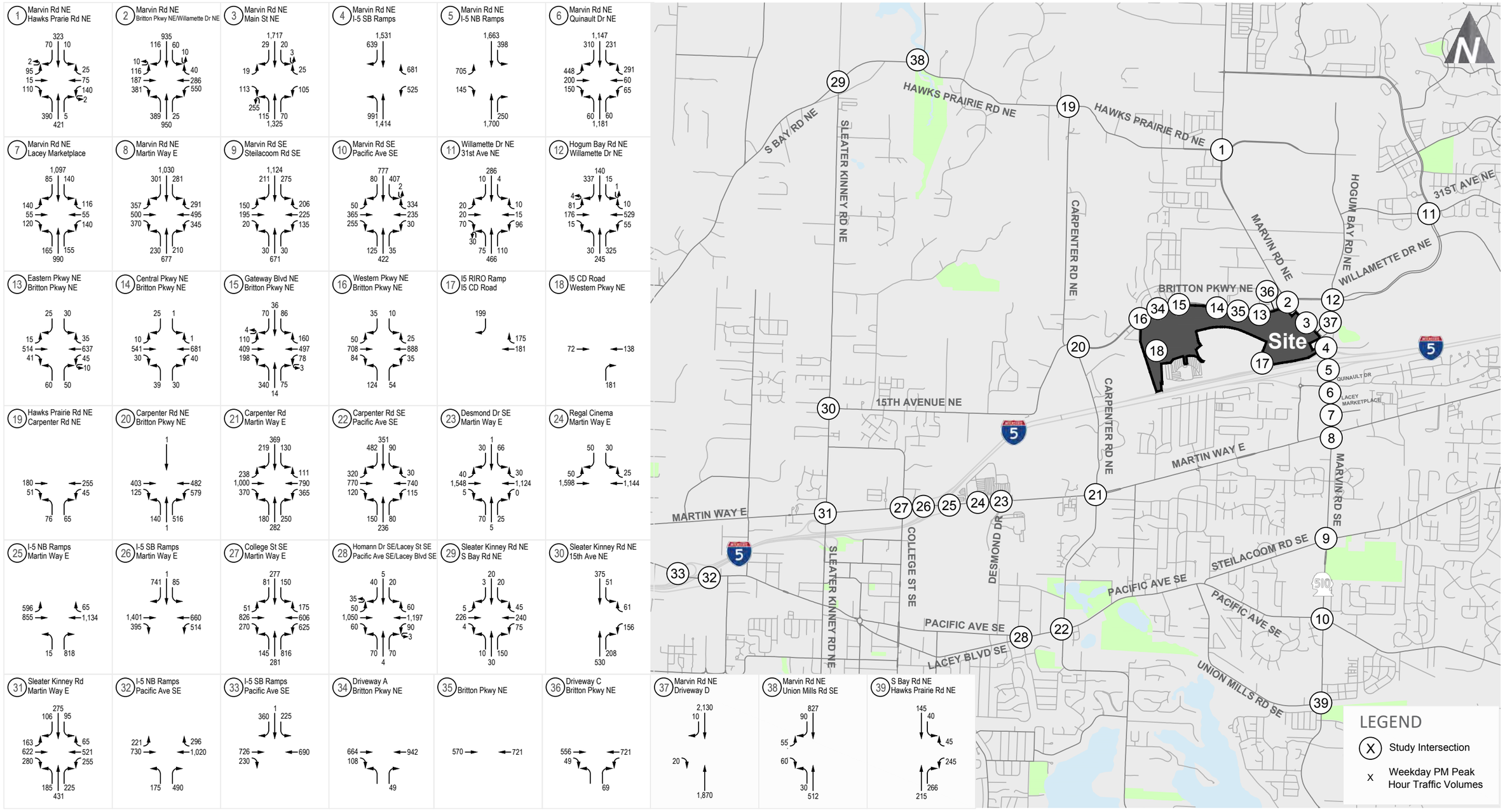


Project (Village Alternative 2) PM Peak Hour Trip Assignment

Nisqually Quiemuth Village Mixed-Use Project

FIGURE
13

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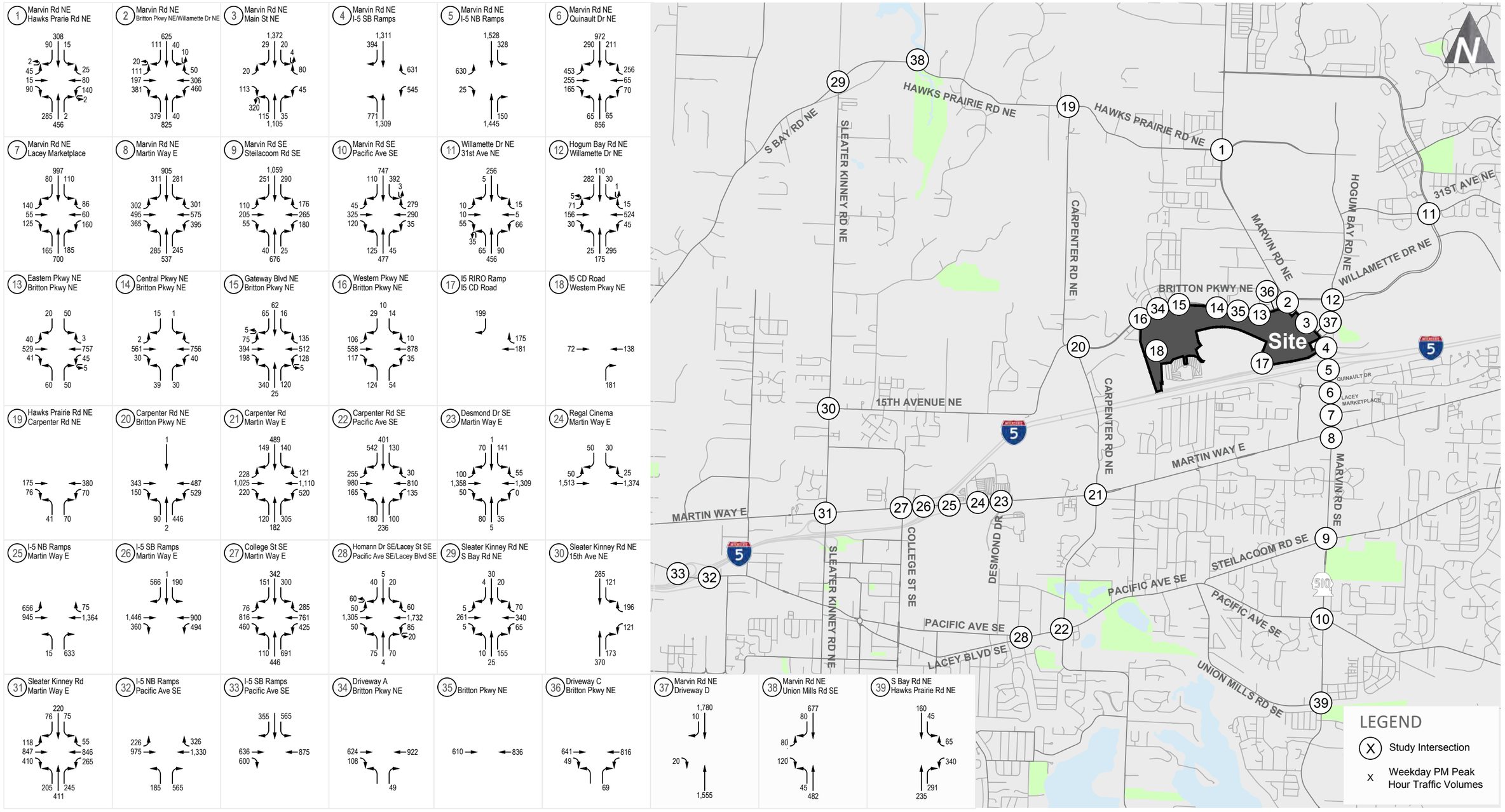


Near Term (2027) With-Project Alternative 2 Weekday PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 14

transpogroup



Long Term (2050) With-Project Alternative 2 Weekday PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 15

transpogroup

Table 11. Near Term (2027) Village Alternative 2 Weekday PM Peak Hour LOS Summary

Intersection	LOS Standard	Traffic Control	Without-Project			With-Project Village Alt 2		
			LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C
1. Marvin Rd NE/Hawks Prairie Rd NE	D	RAB	A	7.9	0.33	A	8.0	0.33
2. Marvin Rd NE/Britton Pkwy NE	D/SC	RAB	B	17.2	0.95	C	21.3	1.01
3. Marvin Rd NE/Main St NE	D/SC	RAB	A	7.7	0.76	B	12.5	0.91
4. Marvin Rd NE/I-5 SB Ramp[5]	D/SC	Signal*	C	25.8	-	D	44.7	-
5. Marvin Rd NE/I-5 NB Ramp[5]	D/SC	Signal*	C	20.9	-	D	38.0	-
6. Marvin Rd NE/Quinault Dr NE	D/SC	Signal	D	46.2	-	D	47.9	-
7. Marvin Rd NE/Lacey Marketplace	D/SC	Signal	D	49.2	-	D	51.1	-
8. Marvin Rd NE/Martin Way E	D/SC	Signal	D	50.3	-	D	51.4	-
9. Marvin Road SE/Steilacoom Road SE	D/SC	Signal	D	53.1	-	**E**	**60.9**	-
10. Marvin Road SE/Pacific Road SE	D	RAB	A	8.8	0.58	A	9.7	0.63
11. Willamette Dr NE/31st Ave NE	D/SC	RAB	A	5.8	0.24	A	5.8	0.25
12. Hogum Bay Rd NE/Willamette Dr NE	D/SC	RAB	A	7.1	0.66	A	7.6	0.69
13. Eastern Pkwy NE/Britton Pkwy NE	D	TWSC	C	19.2	SB	D	31.7	NB
14. Central Pkwy NE/Britton Pkwy NE	D	TWSC	B	11.1	SB	D	26.2	NB
15. Gateway Blvd NE/Britton Pkwy NE	D	RAB	A	5.6	0.26	A	6.9	0.38
16. Britton Pkwy NE/Western Pkwy NE	D	TWSC	C	23.7	SB	**F**	**>200**	**NB**
18. I-5 CD Rd/Western Parkway NE	D	TWSC	On-Site Intersection			A	9.6	NB
19. Hawks Prairie Rd NE/Carpenter Rd NE	D	TWSC	B	13.0	NB	B	14.2	NB
20. Carpenter Rd NE/Britton Pkwy NE	D	RAB	A	7.3	0.54	B	14.1	0.95
21. Carpenter Rd NE/Martin Way E	E/SC	Signal	D	50.4	-	E	55.4	-
22. Pacific Ave SE/Carpenter Rd SE	E/SC	Signal	E	59.3	-	E	73.2	-
23. Martin Way E/Desmond Dr	E/SC	Signal	A	7.2	-	A	7.3	-
24. Martin Way E/Regal Cinemas	E/SC	Signal	B	15.3	-	B	14.2	-
25. Martin Way E/I-5 NB Ramps	E/SC	Signal	D	43.7	-	D	48.5	-
26. Martin Way E/I-5 SB Ramps	E/SC	Signal*	C	32.9	-	D	41.4	-
27. Martin Way E/College St	E/SC	Signal	D	45.8	-	D	46.7	-
28. Pacific Ave SE/Lacey Blvd SE	E/SC	RAB	A	4.7	0.45	A	4.7	0.47
29. Sleater Kinney Rd NE/South Bay Rd NE	D	AWSC	B	12.2	-	B	12.5	-
30. Sleater Kinney Rd NE/15th Ave NE	D	Signal	A	9.1	-	B	10.6	-
31. Martin Way E/Sleater Kinney Rd	E	Signal	D	41.3	-	D	47.5	-
32. Pacific Ave SE/I-5 NB Ramps	D	Signal	B	18.1	-	B	18.7	-
33. Pacific Ave SE/I-5 SB Ramps	D	Signal	B	18.4	-	B	18.8	-
34. Driveway A/Britton Pkwy NE	D	TWSC	RIRO Site Access			B	11.6	NB
35. Driveway B/Britton Pkwy NE *(Does not exist under Alt 2)*				-			-	
36. Driveway C/Britton Pkwy NE	D	TWSC	RIRO Site Access			B	11.0	NB
37. Driveway D/Marvin Rd NE	D	TWSC	RIRO Site Access			D	28.5	EB
38. Marvin Rd SE/Union Mills Rd SE	D	TWSC	C	23.0	EB	D	25.3	EB
39. Johnson Point Rd NE/Hawks Prairie Rd NE	D	RAB	A	6.1	0.34	A	6.1	0.35

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, SC = strategy corridor, RIRO = right-in/right-out. Location 17 evaluated in subsequent section. Shading indicates site access or on-site intersection.
* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000.*
***BOLD** indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. Average delay per vehicle reported in seconds for signalized, all-way stop-controlled, and roundabout intersections. Worst movement delay reported for side-street stop-controlled intersections.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.
5. DDI interchange intersection assumes methodology as provided by WSDOT.

Table 12. Long Term (2050) Village Alternative 2 Weekday PM Peak Hour LOS Summary

Intersection	LOS Standard	Traffic Control	Without-Project			With-Project Village Alt 2		
			LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C
1. Marvin Rd NE/Hawks Prairie Rd NE	D	RAB	A	7.0	0.27	A	7.1	0.28
2. Marvin Rd NE/Britton Pkwy NE	D/SC	RAB	A	9.4	0.55	A	9.9	0.60
3. Marvin Rd NE/Main St NE	D/SC	RAB	A	6.2	0.53	A	7.5	0.64
4. Marvin Rd NE/I-5 SB Ramp[5]	D/SC	Signal*	C	21.1	-	C	24.9	-
5. Marvin Rd NE/I-5 NB Ramp[5]	D/SC	Signal*	B	17.7	-	C	21.2	-
6. Marvin Rd NE/Quinault Dr NE	D/SC	Signal	D	53.5	-	D	51.2	-
7. Marvin Rd NE/Lacey Marketplace	D/SC	Signal	D	48.9	-	D	48.4	-
8. Marvin Rd NE/Martin Way E	D/SC	Signal	D	49.5	-	D	51.7	-
9. Marvin Road SE/Steilacoom Road SE	D/SC	Signal	D	42.8	-	D	50.2	-
10. Marvin Road SE/Pacific Road SE	D	RAB	A	8.1	0.51	A	8.5	0.56
11. Willamette Dr NE/31st Ave NE	D/SC	RAB	A	5.5	0.20	A	5.5	0.21
12. Hogum Bay Rd NE/Willamette Dr NE	D/SC	RAB	A	6.1	0.49	A	6.4	0.51
13. Eastern Pkwy NE/Britton Pkwy NE	D	TWSC	D	27.9	SB	**E**	**45.0**	**SB**
14. Central Pkwy NE/Britton Pkwy NE	D	TWSC	B	11.4	SB	C	24.1	NB
15. Gateway Blvd NE/Britton Pkwy NE	D	RAB	A	5.2	0.24	A	6.9	0.34
16. Britton Pkwy NE/Western Pkwy NE	D	TWSC	D	25.4	SB	**F**	**>200**	**NB**
18. I-5 CD Rd/Western Parkway NE	D	TWSC	On-Site Intersection			A	9.4	NB
19. Hawks Prairie Rd NE/Carpenter Rd NE	D	TWSC	B	11.4	NB	B	13.0	NB
20. Carpenter Rd NE/Britton Pkwy NE	D	RAB	A	6.5	0.35	A	7.3	0.55
21. Carpenter Rd NE/Martin Way E	E/SC	Signal	E	58.7	-	E	61.8	-
22. Pacific Ave SE/Carpenter Rd SE	E/SC	Signal	E	77.9	-	**F**	**87.9**	**-**
23. Martin Way E/Desmond Dr	E/SC	Signal	B	12.1	-	B	12.0	-
24. Martin Way E/Regal Cinemas	E/SC	Signal	B	14.9	-	B	10.4	-
25. Martin Way E/I-5 NB Ramps	E/SC	Signal	D	45.6	-	D	49.7	-
26. Martin Way E/I-5 SB Ramps	E/SC	Signal*	C	22.8	-	C	32.5	-
27. Martin Way E/College St	E/SC	Signal	D	49.8	-	D	50.6	-
28. Pacific Ave SE/Lacey Blvd SE	E/SC	RAB	A	4.9	0.62	A	4.9	0.65
29. Sleater Kinney Rd NE/South Bay Rd NE	D	AWSC	B	13.5	-	B	14.0	-
30. Sleater Kinney Rd NE/15th Ave NE	D	Signal	B	12.7	-	B	14.0	-
31. Martin Way E/Sleater Kinney Rd	E	Signal	D	48.7	-	E	55.7	-
32. Pacific Ave SE/I-5 NB Ramps	D	Signal	B	17.7	-	B	18.2	-
33. Pacific Ave SE/I-5 SB Ramps	D	Signal	C	33.3	-	C	33.4	-
34. Driveway A/Britton Pkwy NE	D	TWSC	RIRO Site Access			B	11.2	NB
35. Driveway B/Britton Pkwy NE *(Does not exist under Alt 2)*				-			-	-
36. Driveway C/Britton Pkwy NE	D	TWSC	RIRO Site Access			B	11.2	NB
37. Driveway D/Marvin Rd NE	D	TWSC	RIRO Site Access			C	21.1	EB
38. Marvin Rd SE/Union Mills Rd SE	D	TWSC	C	22.6	EB	D	25.3	EB
39. Johnson Point Rd NE/Hawks Prairie Rd NE	D	RAB	A	6.5	0.38	A	6.6	0.39

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, SC = strategy corridor, RIRO = right-in/right-out. Location 17 evaluated in subsequent section. Shading indicates site access or on-site intersection.
* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000.*
***BOLD** indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. Average delay per vehicle reported in seconds for signalized, all-way stop-controlled, and roundabout intersections. Worst movement delay reported for side-street stop-controlled intersections.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.
5. DDI interchange intersection assumes methodology as provided by WSDOT.

Each of the intersections forecast to operate below the respective LOS standards under the future 2027 and/or 2050 conditions are discussed below.

Marvin Road SE (SR 510)/Steilacoom Rd SE (Study intersection 9) – This signalized intersection is forecast to operate below the LOS standard under near term conditions for Alternative 2 during the PM peak hour. This intersection is forecast to operate acceptably under the long term forecasts.

Eastern Parkway NE and Western Parkway NE along Britton Parkway NE (Study intersections 13 and 16) – These are assumed to be full access two-way stop-controlled site access intersections, both of which are aligned with roadways to the north. These are forecast to operate LOS E or F under the future (2027 and 2050) Alternative 2 conditions during the weekday PM peak hour, exceeding the LOS D standard.

Pacific Avenue SE/Carpenter Road SE (Study intersection 22) – This signalized intersection is forecast to operate at LOS E under future (2027 and 2050) without project conditions as well as with Alternative 2 under near term conditions during the PM peak hour. Under long term conditions with Alternative 2, the intersection is forecast to degrade to operating below standard at LOS F.

Mitigation for the above intersections is reviewed further in the mitigation section below.

As described, the intersections operating below standard along the Marvin Road NE strategy corridor are a near-term only condition under Alternative 2 which is consistent with Alternative 1 conditions. As described in Alternative 1 above, the near-term only impact is due to the varying traffic volume forecasting methodologies. The near term forecasts assume the application of a static growth rate and pipeline developments whereas the long term forecasts are based on regional review of future planned improvements, congestion, and development (refer to Appendix C for additional explanation).

I-5 RIRO/CD Road Interchange Operations

The future (2027 and 2050) Alternative 2 weekday PM peak hour operational performance at the future I-5 RIRO Ramp at the I-5 CD Road was determined consistent with the methodology as described above for Alternative 1. Table 13 provides a summary of the weaving operations for the weekday PM peak hour. LOS worksheets are included in Appendix I.

Table 13. Village Alternative 2 Weekday PM Peak Hour Interchange LOS Summary

		2027 With-Project Village Alt 2		2050 With-Project Village Alt 2	
Location	**LOS Standard**	**LOS[1]**	**Density (pc/mi/ln)[2]**	**LOS**	**Density (pc/mi/ln)**
I-5 RIRO Ramp at the I-5 CD Road	D	A	7.0	A	6.7

1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition.*
2. pc/mi/ln = passenger cars per mile per lane.

As shown in the table, the proposed ramp is forecast to operate acceptably at LOS A with the Alternative 2 development during the weekday PM peak hour under both future 2027 and 2050 conditions.

Collector-Distributor Road Connectivity Review

As described above, the I-5 collector-distributor (CD) road connection along the southern project frontage was established through a Memorandum of Understanding (MOU) between the City of Lacey and Washington State Department of Transportation (WSDOT), included in Appendix A. The MOU states the opening of the frontage road must first meet the following requirements:

"The frontage road and access points will be opened to traffic concurrently when:

1. *The local network connections to both access points are open to traffic.*
2. *A traffic analysis of the local network shows additional capacity is needed and addressed by the access points from the frontage road.*

The local network connections shall be city streets, not private roads...The City will be responsible for the work to open the frontage road."

A site plan showing the on-site road connections which are open to public (item 1 above of the MOU) between the CD Road and the City roadways (Marvin Road NE and Britton Parkway) is provided in Figure 16.

A traffic analysis demonstrating capacity is needed for the project was also completed (item 2 above of the MOU) and is summarized in the subsequent sections. The trip distribution without the CD road connection, resulting with-project traffic volumes and traffic operations of the study intersections surrounding the site were evaluated. **Note that the Alternative 2 conditions were evaluated given that is the lower trip generating condition, such that if the Alternative 2 demonstrates capacity is needed, it is also necessary for Alternative 1 conditions.**

Trip Distribution and Assignment

The Alternative 2 distribution patterns were revised to eliminate the CD Road connection to the site. The local project trip distribution around the site is shown in Figure 17. The resulting trip assignment and Alternative 2 traffic volumes at the study intersections surrounding the site is included in Figure 18. The analysis assumed near term future (2027) conditions to confirm the CD road connection would be needed at year of opening for the project to provide sufficient capacity for the project.

Traffic Operations

The future (2027) Alternative 2 with-project without CD road level of service analysis was conducted for the weekday PM peak hour and is compared to Alternative 2 conditions (see Table 14). The methodology is consistent with the above analysis. Detailed LOS worksheets are provided in Appendix E.



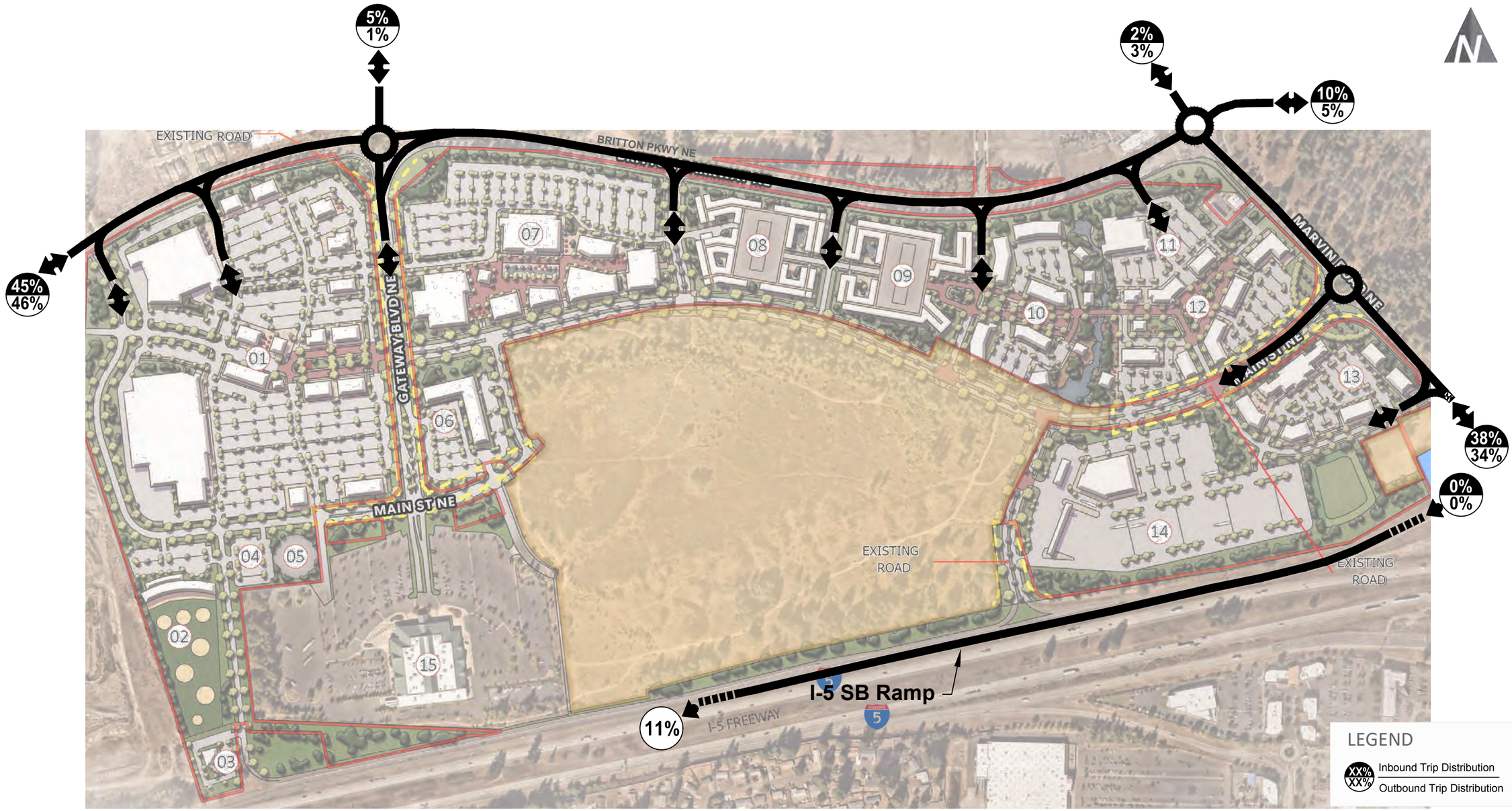
Site Roadway Connectivity

Nisqually Quiemuth Village Mixed-Use Project

FIGURE
16

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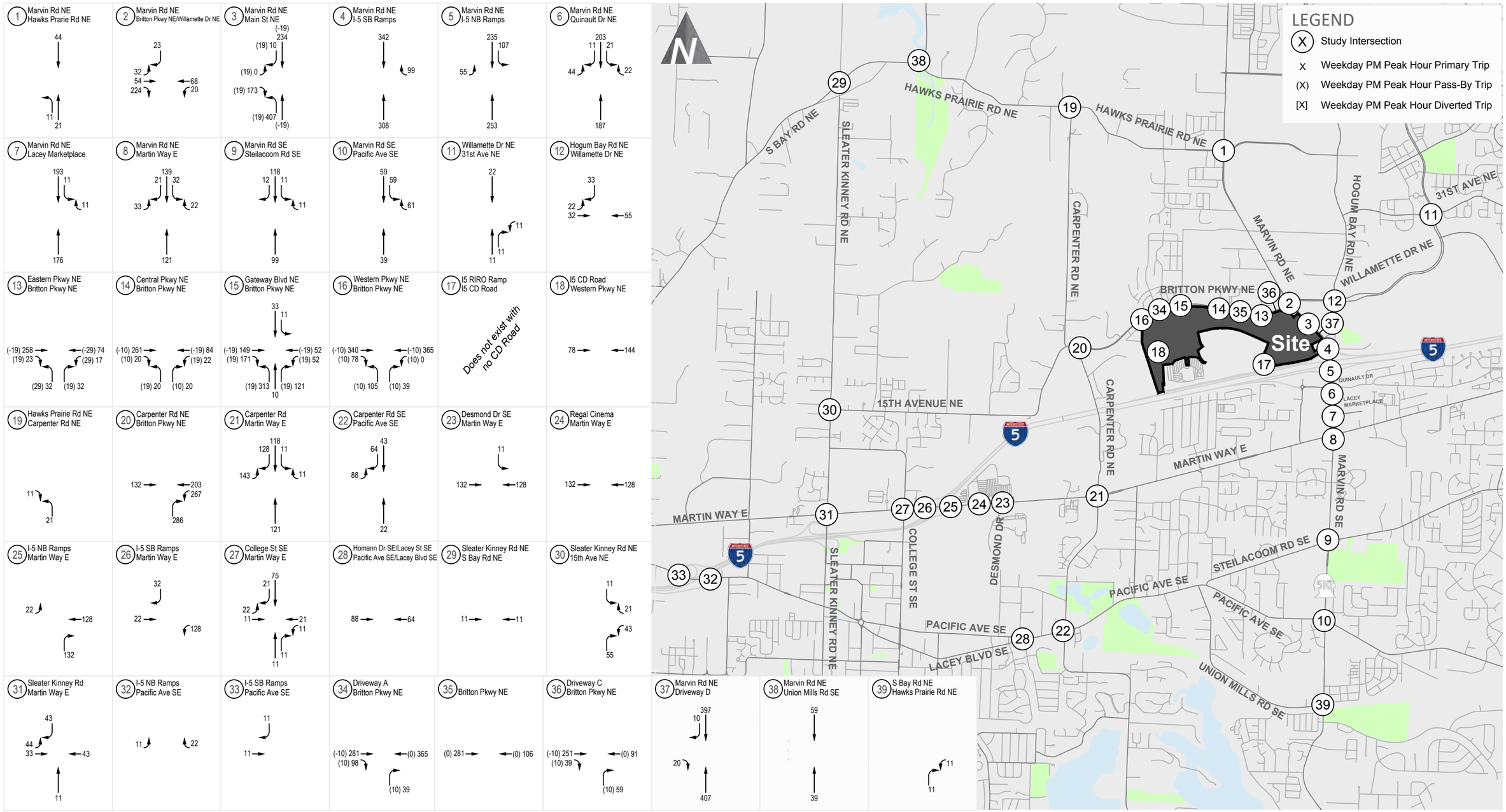
No CD Road PM Peak Hour Trip Distribution

Nisqually Quiemuth Village Mixed-Use Project

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FIGURE
17

Mar 14, 2025 - 8:29am lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 17. No CD Rd Distribution



No CD Road PM Peak Hour Trip Assignment & Alternative 2 Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

FIGURE **18**

transpogroup

Table 14. No CD Road Connection LOS Review - (2027) Village Alt. 2 PM Peak Hour

Intersection	With-Project Village Alt 2 W/ CD Road			With-Project Village Alt 2 – No CD Road		
	LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C
2. Marvin Rd NE/Britton Pkwy NE	C	21.3	1.01	C	23.5	1.04
3. Marvin Rd NE/Main St NE	B	12.5	0.91	**F**	**80.1**	**1.35**
13. Eastern Pkwy NE/Britton Pkwy NE	D	31.7	NB	**E**	**48.0**	**NB**
14. Central Pkwy NE/Britton Pkwy NE	D	26.2	NB	D	33.8	NB
15. Gateway Blvd NE/Britton Pkwy NE	A	6.9	0.38	A	7.5	0.40
16. Britton Pkwy NE/Western Pkwy NE	**F**	**>200**	**NB**	**F**	**>200**	**NB**
34. Driveway A/Britton Pkwy NE	B	11.6	NB	B	11.7	NB
36. Driveway C/Britton Pkwy NE	B	11.0	NB	B	11.6	NB
37. Driveway D/Marvin Rd NE	D	28.5	EB	D	32.8	EB

Note: ***BOLD*** *indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th edition.*
2. Average delay per vehicle reported in seconds.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.

As shown in the table, without the CD road connection, the operations at the intersections surrounding the site result in increases in delay and degrade to operating below standard at both the Marvin Road NE/Main Street NE and Eastern Parkway NE/Britton Parkway NE intersections. The increase in delay at the Marvin Road NE/Main Street NE roundabout supports the need for the CD connection and identifies the benefit that connection provides in the area.

Combined Development Project Impacts (Village Alternative 1 & Casino Alternative A)

The following sections summarize the impacts on the surrounding street system for the Combined Development scenario which assumes the Village Alternative 1 development as well as the adjacent Casino Alternative A development that is planned to be constructed.[12] As identified in the Study Approach section above, the Casino Resort will utilize the access points of the proposed Village development including:

3. Marvin Rd NE/Main St NE
15. Gateway Blvd NE/Britton Pkwy NE
17. I-5 RIRO Ramp/I-5 CD Rd
37. Marvin Rd NE/Dwy D

The Casino Resort Project is being processed under a separate application, but a Combined Development analysis is presented in this report highlighting the traffic impacts of the combined projects.

Trip Generation

Trip generation estimates for the proposed Village Mixed-Use project are consistent with Alternative 1 land uses and methodology as described above with additional reductions for internal capture associated with the adjacent Casino Resort Project that is included as part of the Combined Development condition. The Casino Report Alternative A development is assumed to include the following:[13]

- Casino - 2,360 gaming positions[14]
- Hotel - 350 rooms
- Event/Multi-purpose Center - 52,000 sf
- Museum/Cultural Center - 20,000 sf

Table 15 summarizes the resulting weekday daily, AM and PM peak hour vehicle trip generation for the Combined Development. Detailed trip generation calculations including reductions for pass-by, diverted and internal trips are provided in Appendix G. The trip generation estimates for the Combined Development traffic scenario were approved through the scoping process with the local jurisdictions (February 2023).

Table 15. Combined Development Estimated New Primary Vehicle Trip Generation

Project	Daily	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Village Mixed-Use – Alternative 1	30,338	578	390	968	1,272	1,360	2,632
Casino Resort – Alternative A	7,334	200	136	336	238	262	500
Combined Development Total	**37,672**	**778**	**526**	**1,304**	**1,510**	**1,622**	**3,132**

As shown in the table, the Village Mixed-Use Project Alternative 1 is anticipated to generate 30,338 new daily primary trips with 968 and 2,632 trips occurring during the weekday AM and PM peak hours, respectively, under the Combined Development condition due to additional internal capture reductions associated with the adjacent Casino Resort project. The total combined development, including the Casino Resort project's Alternative A, is estimated to generate a total

[12] There are two other alternatives (B and C) for the Casino Resort, and they both generate fewer trips than Alternative A. Alternative 1 for the Village and Alternative A for the Casino Resort each reflect the highest density development conditions for each project, providing a worst-case scenario for the Combined Development review.

[13] The detailed trip generation calculations for the Casino Resort are included in Appendix G as well as detailed in the separate application for that development. Note that the methodology is consistent with that assumed for the Village Alternatives and was similarly approved during scoping for both development projects.

[14] This number includes 2,000 slot machine positions plus 360 table gaming positions (60 tables at 6 positions per table).

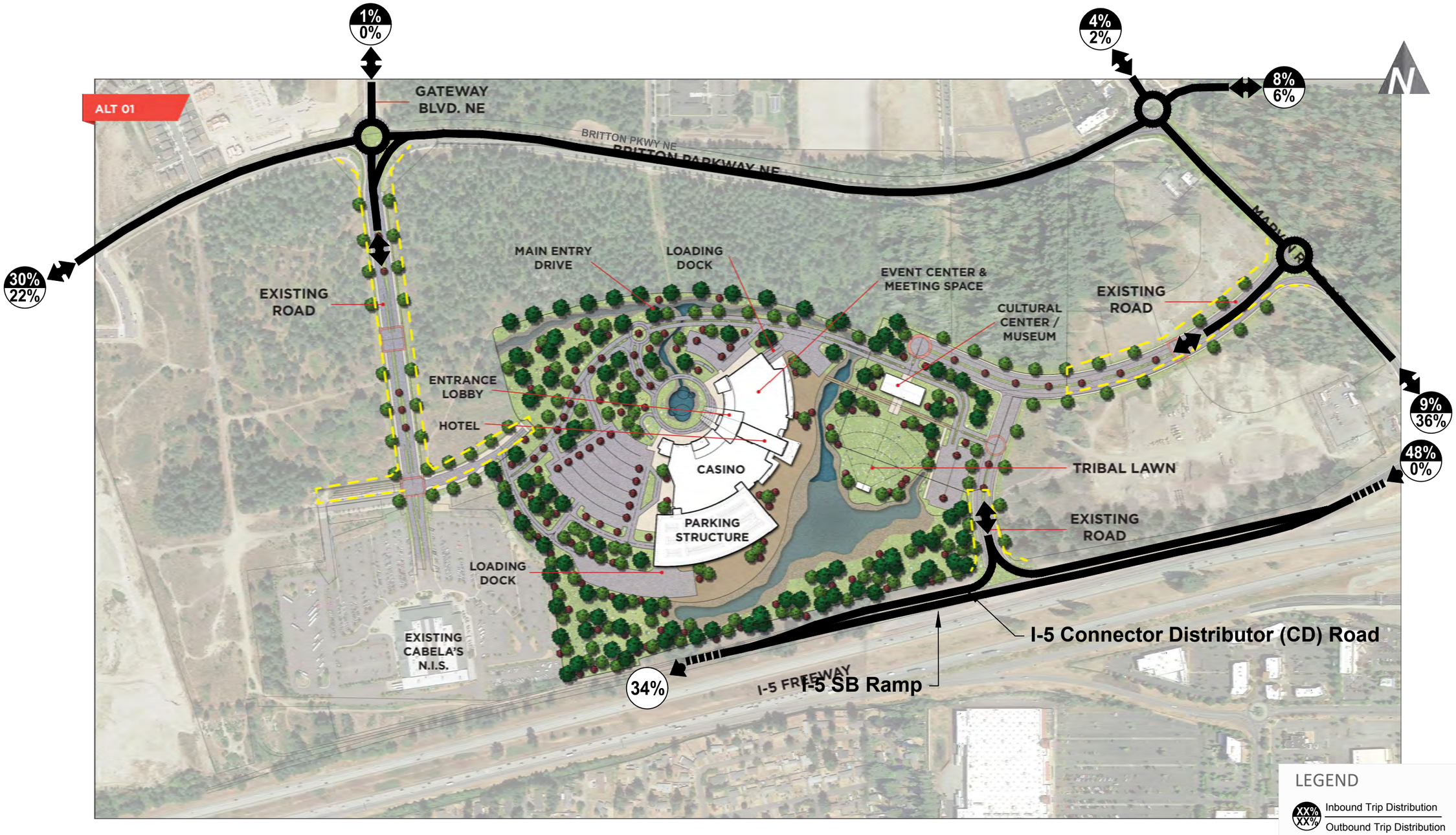
of 37,672 daily trips with 1,304 trips during the weekday AM peak hour and 3,132 trips during the weekday PM peak hour.

Trip Distribution & Assignment

The distribution of the Village project trips is consistent with Alternative 1 as presented in the section above (see Figure 7). Consistent with the Village distribution, the TRPC Traffic Demand model was also utilized to identify trip distribution patterns for the Casino project. The model plot provided by TRPC is included in Appendix H. The localized trip distribution patterns surrounding the site for the Casino is shown in Figure 19.

The Village Alternative 1 and Casino Alternative A generated weekday PM peak hour traffic volumes as shown in Table 15 were assigned to the network based on the distributions for each project. Additionally, the diverted trips associated with the fueling station were assigned to/from the site and the I-5 ramps and the pass-by trips were assigned at the site accesses to/from the adjacent roadways. The overall combined trip assignment at the study intersections is shown in Figure 20.

The combined PM peak hour project trips were added to the 2027 and 2050 without-project traffic volumes. The resulting 2027 and 2050 with-project volumes are displayed in Figure 21 and Figure 22, respectively.



Casino PM Peak Hour Trip Distribution

Nisqually Quiemuth Village Mixed-Use Project

FIGURE
19

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Mar 14, 2025 - 9:29am lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 19. Casino Distribution

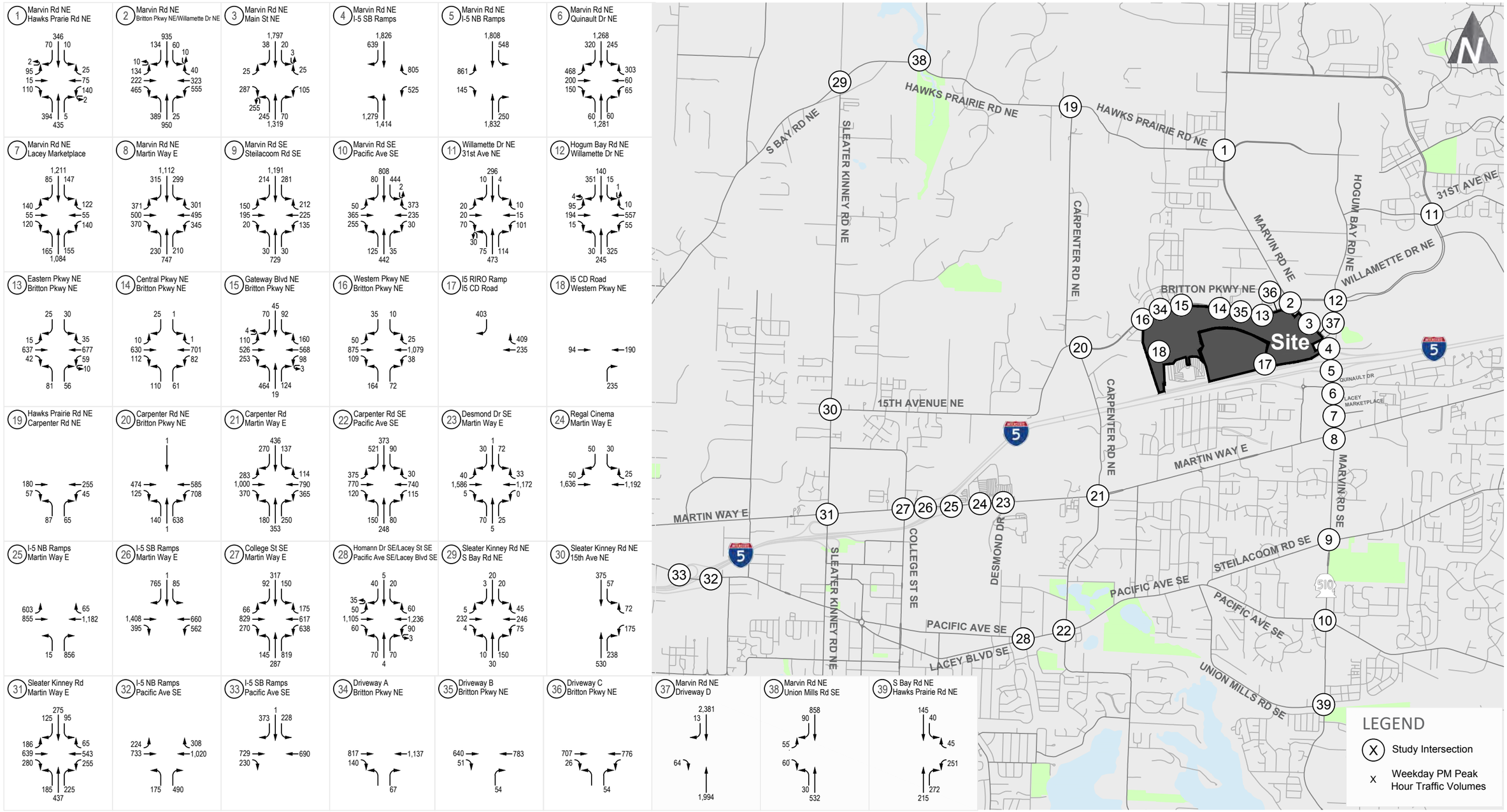


Combined PM Peak Hour Trip Assignment

Nisqually Quiemuth Village Mixed-Use Project

FIGURE
20

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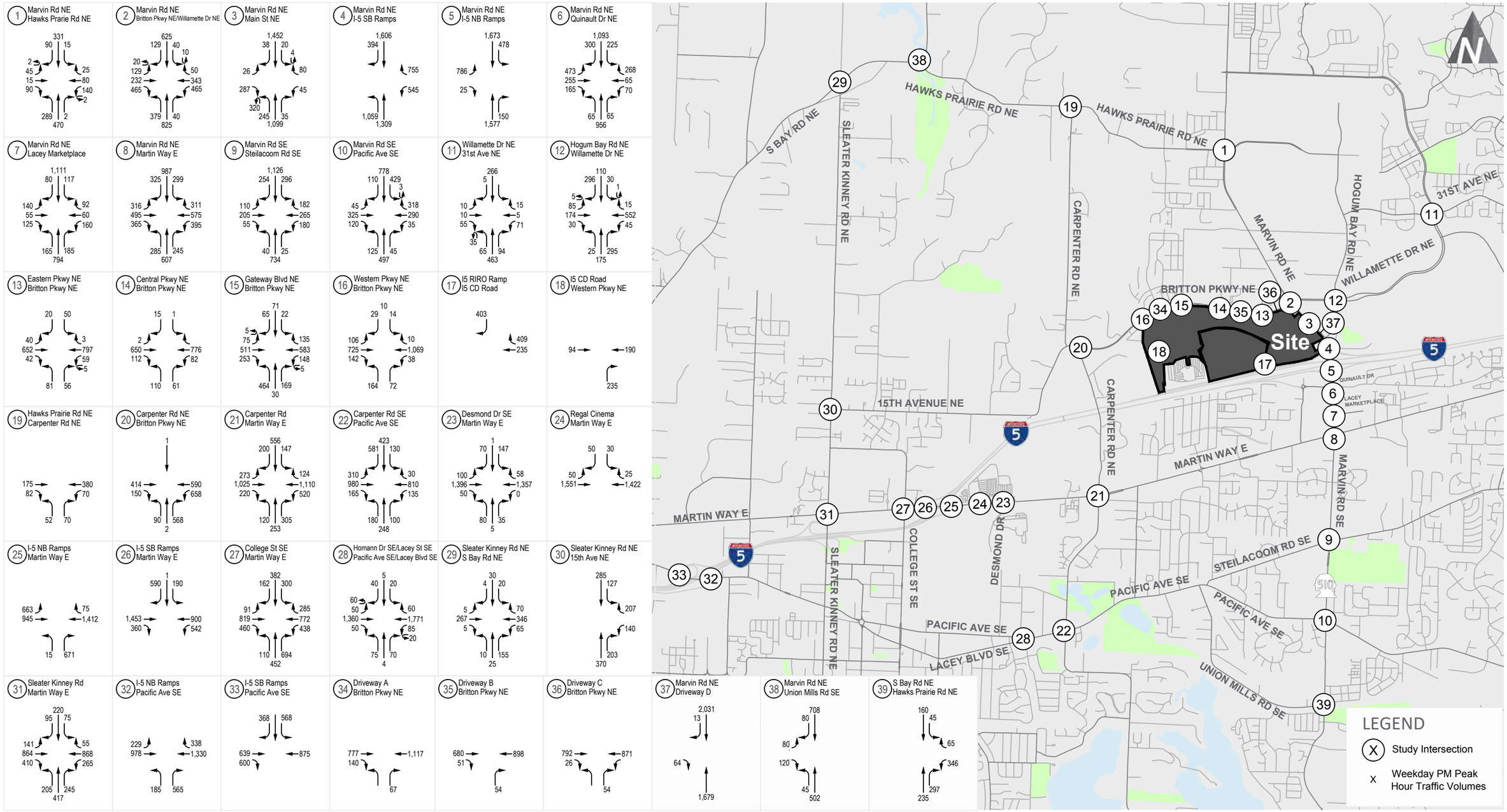


Near Term (2027) Combined Development PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

transpogroup

FIGURE
21



Long Term (2050) Combined Development PM Peak Hour Traffic Volumes

Nisqually Quiemuth Village Mixed-Use Project

transpogroup

FIGURE **22**

Traffic Operations Impact

The following sections summarize future (2027 and 2050) Combined Development traffic operations within the study area. The same methodologies were applied as described for existing and future without-project conditions. Results for both the 2027 and 2050 analysis years are provided.

Combined Development Intersection LOS

The future (2027 and 2050) Combined Development level of service analysis was conducted for the weekday PM peak hour. All intersection parameters such as channelization, intersection control, and signal timing were consistent with those used in the evaluation of Alternative 1 conditions. Detailed LOS worksheets are provided in Appendix E.

A comparison of without-project, Village Alternative 1, and Combined Development weekday PM peak hour traffic operations is summarized in Table 16 and Table 17 during the future 2027 and 2050 conditions, respectively. As shown in Table 16, with the combined development under future (2027) conditions, there are 7 intersections forecast to operate below the respective LOS standards during the weekday PM peak hour. Table 17 shows with the combined development under future (2050) conditions, there are 4 intersections forecast to operate below the respective LOS standards during the weekday PM peak hour.

The overall locations identified under the combined development condition are generally consistent with those identified above under the Alternative 1 conditions with 2 exceptions. These include Pacific Ave SE/Carpenter Rd SE and the I-5 southbound ramp/Marvin Road intersections which are discussed below.

I-5 Southbound Ramp/Marvin Road (Study intersection 4) – The southbound ramp of the I-5 DDI is forecast to operate acceptably at LOS D or better under Alternatives 1 and 2 under both future (2027 and 2050) PM peak hour conditions. With the future (2027) Combined Development condition, the intersection is forecast to degrade to operating with approximately 57 seconds of delay, exceeding the LOS D threshold by approximately 2 seconds. Under long term conditions with the Combined Development, the intersection is forecast to again operate acceptably.

Pacific Avenue SE/Carpenter Road SE (Study intersection 22) – This signalized intersection is forecast to operate at LOS E under future (2027 and 2050) without project conditions as well as with Alternatives 1 and 2 under near term conditions during the PM peak hour. With the Combined Development near term as well as under long term conditions with Alternative 1, 2, and the Combined Development, the intersection is forecast to degrade to operating below standard at LOS F.

There are 7 overall intersections operating below the LOS standard under future 2027 and/or 2050 conditions during the PM peak hour. Mitigation for these intersections is reviewed further in the mitigation section below.

Table 16. Near Term (2027) Combined Development PM Peak Hour LOS Summary

Intersection	Without-Project			With-Project Village Alt 1			Combined Development		
	LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C	LOS	Delay	WM or V/C
1. Marvin Rd NE/Hawks Prairie Rd NE	A	7.9	0.33	A	8.0	0.34	A	8.0	0.34
2. Marvin Rd NE/Britton Pkwy NE	B	17.2	0.95	C	23.8	1.04	C	26.2	1.07
3. Marvin Rd NE/Main St NE	A	7.7	0.76	C	30.3	1.07	C	32.2	1.09
4. Marvin Rd NE/I-5 SB Ramp[5]	C	25.8	-	D	50.7	-	**E**	**56.6**	-
5. Marvin Rd NE/I-5 NB Ramp[5]	C	20.9	-	D	40.2	-	D	45.8	-
6. Marvin Rd NE/Quinault Dr NE	D	46.2	-	D	49.3	-	D	51.0	-
7. Marvin Rd NE/Lacey Marketplace	D	49.2	-	D	52.1	-	D	52.9	-
8. Marvin Rd NE/Martin Way E	D	50.3	-	D	52.5	-	D	53.6	-
9. Marvin Road SE/Steilacoom Road SE	D	53.1	-	**E**	**64.2**	-	**E**	**66.2**	-
10. Marvin Road SE/Pacific Road SE	A	8.8	0.58	B	10.1	0.65	B	10.4	0.67
11. Willamette Dr NE/31st Ave NE	A	5.8	0.24	A	5.8	0.25	A	5.8	0.25
12. Hogum Bay Rd NE/Willamette Dr NE	A	7.1	0.66	A	7.8	0.70	A	7.9	0.71
13. Eastern Pkwy NE/Britton Pkwy NE	C	19.2	SB	**F**	**77.1**	**NB**	**F**	**83.7**	**NB**
14. Central Pkwy NE/Britton Pkwy NE	B	11.1	SB	**E**	**44**	**NB**	**F**	**225.6**	**NB**
15. Gateway Blvd NE/Britton Pkwy NE	A	5.6	0.26	A	8.4	0.47	A	8.5	0.50
16. Britton Pkwy NE/Western Pkwy NE	C	23.7	SB	**F**	**>200**	**NB**	**F**	**>200**	**NB**
18. I-5 CD Rd/Western Parkway NE	On-Site Intersection			B	10.2	NB	B	10.2	NB
19. Hawks Prairie Rd NE/Carpenter Rd NE	B	13.0	NB	B	14.6	NB	B	14.8	NB
20. Carpenter Rd NE/Britton Pkwy NE	A	7.3	0.54	D	38.7	1.10	D	50.8	1.14
21. Carpenter Rd NE/Martin Way E	D	50.4	-	E	60.1	-	E	61.6	-
22. Pacific Ave SE/Carpenter Rd SE	E	59.3	-	E	79.8	-	**F**	**85.7**	-
23. Martin Way E/Desmond Dr	A	7.2	-	A	7.4	-	A	7.4	-
24. Martin Way E/Regal Cinemas	B	15.3	-	B	13.8	-	B	13.9	-
25. Martin Way E/I-5 NB Ramps	D	43.7	-	D	49.9	-	D	50.0	-
26. Martin Way E/I-5 SB Ramps	C	32.9	-	D	51.8	-	D	53.7	-
27. Martin Way E/College St	D	45.8	-	D	45.4	-	D	45.4	-
28. Pacific Ave SE/Lacey Blvd SE	A	4.7	0.45	A	4.7	0.48	A	4.7	0.49
29. Sleater Kinney Rd NE/South Bay Rd NE	B	12.2	-	B	12.7	-	B	12.8	-
30. Sleater Kinney Rd NE/15th Ave NE	A	9.1	-	B	11.1	-	B	11.3	-
31. Martin Way E/Sleater Kinney Rd	D	41.3	-	D	50.7	-	D	52.8	-
32. Pacific Ave SE/I-5 NB Ramps	B	18.1	-	B	18.9	-	B	18.8	-
33. Pacific Ave SE/I-5 SB Ramps	B	18.4	-	B	19.0	-	B	19.5	-
34. Driveway A/Britton Pkwy NE	RIRO Site Access			B	12.7	NB	B	13.1	NB
35. Driveway B/Britton Pkwy NE	RIRO Site Access			B	11.2	NB	B	11.3	NB
36. Driveway C/Britton Pkwy NE	RIRO Site Access			B	11.4	NB	B	11.5	NB
37. Driveway D/Marvin Rd NE	RIRO Site Access			**E**	**46.5**	**EB**	**F**	**51.2**	**EB**
38. Marvin Rd SE/Union Mills Rd SE	C	23.0	EB	D	26.4	EB	D	26.8	EB
39. Johnson Point Rd NE/Hawks Prairie Rd NE	A	6.1	0.34	A	6.2	0.35	A	6.2	0.36

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, SC = strategy corridor, RIRO = right-in/right-out. Location 17 evaluated in subsequent section. Shading indicates site access or on-site intersection.
* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000.*
***BOLD** indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*
2. Average delay per vehicle reported in seconds for signalized, all-way stop-controlled, and roundabout intersections. Worst movement delay reported for side-street stop-controlled intersections.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.
5. DDI interchange intersection assumes methodology as provided by WSDOT.

Table 17. Long Term (2050) Combined Development PM Peak Hour LOS Summary

Intersection	2050 Without-Project			2050 With-Project Village Alt 1			2050 Combined Development		
	LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C	LOS	Delay	WM or V/C
1. Marvin Rd NE/Hawks Prairie Rd NE	A	7.0	0.27	A	7.1	0.28	A	7.1	0.28
2. Marvin Rd NE/Britton Pkwy NE	A	9.4	0.55	B	10.2	0.63	B	10.4	0.65
3. Marvin Rd NE/Main St NE	A	6.2	0.53	B	9.5	0.76	A	9.6	0.76
4. Marvin Rd NE/I-5 SB Ramp[5]	C	21.1	-	C	28.1	-	C	30.7	-
5. Marvin Rd NE/I-5 NB Ramp[5]	B	17.7	-	C	24.2	-	C	26.3	-
6. Marvin Rd NE/Quinault Dr NE	D	53.5	-	D	50.5	-	D	50.3	-
7. Marvin Rd NE/Lacey Marketplace	D	48.9	-	D	48.5	-	D	48.6	-
8. Marvin Rd NE/Martin Way E	D	49.5	-	D	53.2	-	D	54.2	-
9. Marvin Road SE/Steilacoom Road SE	D	42.8	-	D	53.1	-	D	54.2	-
10. Marvin Road SE/Pacific Road SE	A	8.1	0.51	A	8.7	0.58	A	8.9	0.59
11. Willamette Dr NE/31st Ave NE	A	5.5	0.20	A	5.5	0.21	A	5.5	0.21
12. Hogum Bay Rd NE/Willamette Dr NE	A	6.1	0.49	A	6.5	0.53	A	6.6	0.54
13. Eastern Pkwy NE/Britton Pkwy NE	D	27.9	SB	**F**	**83.0**	**NB**	**F**	**89.5**	**NB**
14. Central Pkwy NE/Britton Pkwy NE	B	11.4	SB	**E**	**37.2**	**NB**	**F**	**155.4**	**NB**
15. Gateway Blvd NE/Britton Pkwy NE	A	5.2	0.24	A	7.6	0.40	A	7.5	0.43
16. Britton Pkwy NE/Western Pkwy NE	D	25.4	SB	**F**	**>200**	**NB**	**F**	**>200**	**NB**
18. I-5 CD Rd/Western Parkway NE	On-Site Intersection			A	10.0	NB	A	9.9	NB
19. Hawks Prairie Rd NE/Carpenter Rd NE	B	11.4	NB	B	13.5	NB	B	13.8	NB
20. Carpenter Rd NE/Britton Pkwy NE	A	6.5	0.43	B	10.0	0.94	B	12.1	0.98
21. Carpenter Rd NE/Martin Way E	E	58.7	-	E	67.9	-	E	69.1	-
22. Pacific Ave SE/Carpenter Rd SE	E	77.9	-	**F**	**94.1**	**-**	**F**	**98.6**	**-**
23. Martin Way E/Desmond Dr	B	12.1	-	B	12.0	-	B	12.1	-
24. Martin Way E/Regal Cinemas	B	14.9	-	B	18.9	-	B	18.2	-
25. Martin Way E/I-5 NB Ramps	D	45.6	-	D	51.2	-	D	51.2	-
26. Martin Way E/I-5 SB Ramps	C	22.8	-	D	39.7	-	D	39.4	-
27. Martin Way E/College St	D	49.8	-	D	52.0	-	D	52.4	-
28. Pacific Ave SE/Lacey Blvd SE	A	4.9	0.62	A	5.0	0.65	A	5.0	0.66
29. Sleater Kinney Rd NE/South Bay Rd NE	B	13.5	-	B	14.2	-	B	14.2	-
30. Sleater Kinney Rd NE/15th Ave NE	B	12.7	-	B	14.3	-	B	14.5	-
31. Martin Way E/Sleater Kinney Rd	D	48.7	-	E	58.8	-	E	60.1	-
32. Pacific Ave SE/I-5 NB Ramps	B	17.7	-	B	18.4	-	B	18.4	-
33. Pacific Ave SE/I-5 SB Ramps	C	33.3	-	C	33.5	-	C	34.2	-
34. Driveway A/Britton Pkwy NE	RIRO Site Access			B	12.1	NB	B	12.5	NB
35. Driveway B/Britton Pkwy NE	RIRO Site Access			B	11.2	NB	B	11.2	NB
36. Driveway C/Britton Pkwy NE	RIRO Site Access			B	11.6	NB	B	11.7	NB
37. Driveway D/Marvin Rd NE	RIRO Site Access			D	28.9	EB	D	31.1	EB
38. Marvin Rd SE/Union Mills Rd SE	C	22.6	EB	D	26.6	EB	D	27.1	EB
39. Johnson Point Rd NE/Hawks Prairie Rd NE	A	6.5	0.38	A	6.6	0.39	A	6.6	0.39

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, SC = strategy corridor, RIRO = right-in/right-out. Location 17 evaluated in subsequent section. Shading indicates site access or on-site intersection.
* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000.*
***BOLD** indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*
2. Average delay per vehicle reported in seconds for signalized, all-way stop-controlled, and roundabout intersections. Worst movement delay reported for side-street stop-controlled intersections.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.
5. DDI interchange intersection assumes methodology as provided by WSDOT.

I-5 RIRO/CD Road Interchange Operations

The future (2027 and 2050) Combined Development weekday PM peak hour operational performance at the future I-5 RIRO Ramp at the I-5 CD Road was determined using methodology consistent to that described above for Alternative 1. Table 18 provides a summary of the weaving operations for the weekday PM peak hour. LOS worksheets are included in Appendix I.

Table 18. Future (2027 and 2050) PM Peak Hour Interchange LOS Summary

		2027		2050	
Scenario	**LOS Standard**	**LOS[1]**	**Density (pc/mi/ln)[2]**	**LOS**	**Density (pc/mi/ln)**
With-Project Village Alternative 1	D	B	10.8	B	10.3
With-Project Combined Development	D	B	13.0	B	12.4

1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. pc/mi/ln = passenger cars per mile per lane.

As shown in the table, the proposed ramp is forecast to operate acceptably at LOS C or better with both the Alternative 1 and Combined Development scenarios during the weekday PM peak hour under both future 2027 and 2050 conditions.

Mitigation

This section summarizes recommended mitigation measures at the study intersections and reviews the required Traffic Impact Fees.

Transportation Improvements

A summary of the intersections operating below the LOS standards is shown in Table 19 below for both future (2027 and 2050) conditions for all alternatives.

Table 19. Future PM Peak Hour LOS Summary

Intersection	Traffic Control	Without-Project			Alternative 1			Alternative 2			Combined Development		
		LOS[1]	Delay[2]	WM[3] or V/C[4]	LOS	Delay	WM or V/C	LOS	Delay	WM or V/C	LOS	Delay	WM or V/C
Near Term (2027)													
4. Marvin Rd NE/I-5 SB Ramp	Signal*	C	25.8	-	D	50.7	-	D	44.7	-	**E**	**56.6**	**-**
9. Marvin Road SE (SR 510)/Steilacoom Rd SE	Signal	D	53.1	-	**E**	**64.2**	**-**	**E**	**60.9**	**-**	**E**	**66.2**	**-**
13. Eastern Pkwy NE/Britton Pkwy NE	TWSC	C	19.2	SB	**F**	**77.1**	**NB**	D	31.7	NB	**F**	**83.7**	**NB**
14. Central Pkwy NE/Britton Pkwy NE	TWSC	B	11.1	SB	**E**	**44**	**NB**	D	26.2	NB	**F**	**225.6**	**NB**
16. Britton Pkwy NE/Western Pkwy NE	TWSC	C	23.7	SB	**F**	**>200**	**NB**	**F**	**>200**	**NB**	**F**	**>200**	**NB**
22. Pacific Ave SE/Carpenter Rd SE	Signal	E	59.3	-	E	79.8	-	E	73.2	-	**F**	**85.7**	**-**
37. Driveway D/Marvin Rd NE	TWSC (RIRO)	-	-	-	**E**	**46.5**	**EB**	D	28.5	EB	**F**	**51.2**	**EB**
Long Term (2050)													
13. Eastern Pkwy NE/Britton Pkwy NE	TWSC	D	27.9	SB	**F**	**83.0**	**NB**	**E**	**45.0**	**SB**	**F**	**89.5**	**NB**
14. Central Pkwy NE/Britton Pkwy NE	TWSC	B	11.4	SB	**E**	**37.2**	**NB**	C	24.1	NB	**F**	**155.4**	**NB**
16. Britton Pkwy NE/Western Pkwy NE	TWSC	D	25.4	SB	**F**	**>200**	**NB**	**F**	**>200**	**NB**	**F**	**>200**	**NB**
22. Pacific Ave SE/Carpenter Rd SE	Signal	E	77.9	-	**F**	**94.1**	**-**	**F**	**87.9**	**-**	**F**	**98.6**	**-**

Note: TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled; RAB = Roundabout, RIRO = right-in/right-out.
* *Asterisk next to the "Signal" traffic control means results are reported based on HCM 2000.*
***BOLD** indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. Average delay per vehicle reported in seconds.
3. Worst movement or approach reported for side-street stop-controlled intersections.
4. Volume to capacity ratio reported for roundabouts.

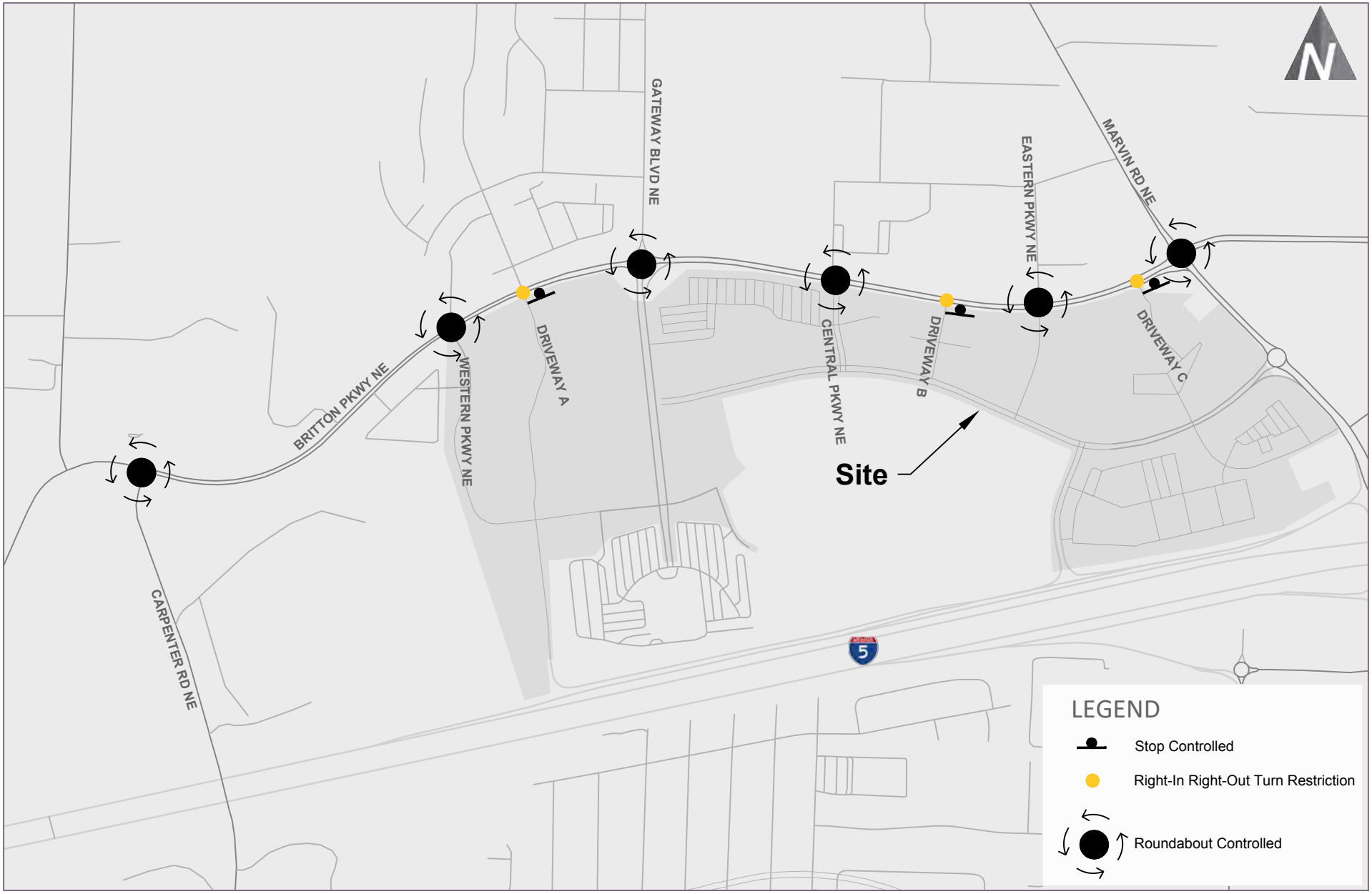
As shown in the table, there are 7 overall intersections operating below the LOS standard under future 2027 and/or 2050 conditions during the PM peak hour. Mitigation or discussion for each intersection has been included in the following. The mitigation identified for the intersections include reduction in site traffic demand through the implementation of a site-wide transportation management program (TMP), payment of traffic impact fees (TIFs), intersection improvements, and modifications to the proposed land use to reduce project trips (e.g. change in land use or reduction in density of Alternative 1). The mitigation applicable to each intersection is illustrated in Table 20.

Table 20. Proposed Mitigation for Village Alternatives

Intersection	Jurisdiction	Impact	Mitigation
Mitigation applicable to all alternatives includes the following:			
Payment of City of Lacey traffic impact fees for regional transportation infrastructure enhancements that would generally increase capacity in the vicinity. A summary of the projects and estimated contribution based on the land uses defined within this report are provided in a subsequent section. TMP Strategies to be implemented for the project generally resulting in lower trip generation for the project and therefore lower traffic volumes throughout the study area: • Transit improvements • Pedestrian enhancements and connectivity • Carpool/vanpool coordination • Alternative mode incentives			
4. Marvin Rd NE/ I-5 SB Ramp	Lacey/ WSDOT	Near term LOS exceed standard for Combined Development only but **long term within standards.**	Combined development near term only impact identified. Due to the physical constraints and signal timing limitations of the DDI, no reasonable infrastructure modifications in this location are feasible. Implementation of the TMP strategies is anticipated to result in reductions in trip generation. The TMP strategies in tandem with the general improvements in the study area with the implementation of the projects being contributed toward through the payment of the TIF, operations are anticipated to be improved relative to the operations reflected in the primary analysis above. Furthermore, a sensitivity analysis was conducted to determine the operating conditions at the intersection assuming a reduction in trip generation for the site. The analysis showed with a 5% reduction in trip generation, the Marvin Rd NE/I-5 SB Ramp is operating acceptably under all conditions, including the future (2027) Combined Development PM peak hour. The reduction in trip generation could occur through the implementation of a TMP as noted previously, change in land uses, or reduction in density of the development.
9. Marvin Rd SE (SR 510)/ Steilacoom Rd SE	Lacey/ WSDOT	Near term LOS exceed standard (Alt 1, Alt 2, Combined Development) but **long term within standards**.	Add a westbound right-turn or southbound right-turn lane at the intersection.
13. Eastern Pkwy NE/ Britton Pkwy NE	Lacey	LOS exceeding standard Alt 1, Combined Development both near term and long term as well as long term Alt 2	Install Roundabout[1]
14. Central Pkwy NE/ Britton Pkwy NE	Lacey	LOS exceeding standard Alt 1, Combined Development	Install Roundabout[1]
16. Britton Pkwy NE/ Western Pkwy NE	Lacey	LOS exceeding standard Alt 1, Alt 2, Combined Development	Install Roundabout[1]
22. Pacific Ave SE/ Carpenter Rd SE	Lacey	LOS exceeding standard long term Alt 1, Alt 2, Combined Development and near term combined development	Modify southbound approach to provide dedicated through and right turn lanes and implement a southbound right turn overlap. Additionally, updates to the southern approach would include restriping and removing the receiving lane on the south side of the intersection with curb and gutter. The project would be built to City standards.
37. Driveway D/ Marvin Rd NE	Lacey	Near term LOS exceed standard (Alt 1, Combined Development) but **long term within standards**.	No mitigation is proposed at this location. The LOS deficit is limited to the on-site outbound approach at this RIRO intersection, and is therefore not a significant impact to existing traffic circulation.

1. The overall traffic control recommendation with mitigation along the Britton Parkway NE corridor is shown in Figure 23.

The recommended physical mitigation recommendations as summarized in Table 20 were evaluated, and the resulting LOS is summarized in Table 21 below.



Recommended Mitigated Britton Parkway Traffic Control

Nisqually Quiemuth Village Mixed-Use Project

FIGURE 23

transpogroup

Jun 03, 2025 - 12:56pm lilyh M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Graphics\DWG\2. Village TIA\Graphics_21359_TIA_2025.dwg Layout: 23. Mitigated Control

Table 21. Mitigated (Physical Improvements) - Future PM Peak Hour LOS Summary

Intersection	Mitigation	Alternative 1			Alternative 2			Combined Development		
		LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C	LOS	Delay	V/C
Near Term (2027)										
9. Marvin Road SE (SR 510)/ Steilacoom Rd SE	Added WBR	D	39.3	-	D	37.1	-	D	40.5	-
	Added SBR	D	52.8	-	D	50.0	-	D	54.5	-
13. Eastern Pkwy NE/Britton Pkwy NE	Install RAB	A	5.2	0.30	A	4.9	0.28	A	5.1	0.31
14. Central Pkwy NE/Britton Pkwy NE	Install RAB	A	4.6	0.29	A	4.4	0.27	A	5.2	0.31
16. Britton Pkwy NE/Western Pkwy NE	Install RAB	A	5.5	0.46	A	5.2	0.39	A	5.5	0.48
22. Pacific Ave SE/Carpenter Rd SE	Modify SB Approach	D	51.1	-	D	46.7	-	D	54.3	-
Long Term (2050)										
9. Marvin Road SE (SR 510)/ Steilacoom Rd SE	Added WBR	D	40.0	-	D	37.5	-	D	40.4	-
	Added SBR	D	41.8	-	D	40.0	-	D	43.3	-
13. Eastern Pkwy NE/Britton Pkwy NE	Install RAB	A	5.2	0.29	A	5.0	0.27	A	5.1	0.30
14. Central Pkwy NE/Britton Pkwy NE	Install RAB	A	4.4	0.27	A	4.2	0.26	A	4.9	0.30
16. Britton Pkwy NE/Western Pkwy NE	Install RAB	A	5.6	0.40	A	5.4	0.34	A	5.5	0.42
22. Pacific Ave SE/Carpenter Rd SE	Modify SB Approach	E	59.4	-	E	56.7	-	E	61.3	-

Note: RAB = Roundabout, WBR = westbound right-turn, SBR = southbound right-turn, SB = southbound.
BOLD *indicates intersection operating below respective LOS standard.*
1. Level of Service (A – F) as defined by the *Highway Capacity Manual, 7th Edition*.
2. Average delay per vehicle reported in seconds.
3. Volume to capacity ratio reported for roundabouts.

As shown in the table, the proposed physical mitigation would result in the intersections meeting their respective LOS standards under both future 2027 and 2050 conditions for all with project conditions (Alternative 1, Alternative 2, and the Combined Development). The operations as reflected in Table 21 do not consider any reductions in trip generation associated with TMP strategies being implemented. Note that the timing of all identified mitigation would be in place prior to operation of the project given the mitigation being at a site driveway.

Marvin Rd NE/I-5 SB Ramp Mitigation Analysis

No physical improvements were identified at the intersection of Marvin Rd NE/I-5 SB Ramp as it is part of a diverging diamond interchange (DDI). A DDI reduces conflicts associated with left turning movements; however, the primary north/south movements are unable to be operated simultaneously which is the forecasted failing movements. Improvements to the recently constructed DDI to add capacity to the primary north/south movements are not feasible within the current structure. The project is providing mitigation through the payment of City of Lacey TIF for regional transportation infrastructure enhancements that would generally increase capacity in the vicinity as well as the implementation of a TMP that includes strategies that reduce the overall trip generation for the project and therefore lower traffic volumes throughout the study area.

Although it is anticipated that the application of TMP strategies will result in reductions in trip generation including reductions in project trips at the Marvin Rd NE/I-5 SB Ramp intersection, a reduced Combined Development condition is also proposed as additional mitigation. This reduced development Combined Development condition identifies the amount of development allowable for the intersection to continue to operate acceptably at LOS D or better.

As identified above, under the future (2027) Combined Development weekday PM peak hour conditions, the intersection is forecast to operate at LOS E, exceeding the acceptable delay threshold by less than 2 seconds. Through an iterative analysis of operations at the intersection, a mitigated development condition showed a reduction in project trips of less than 5 percent was needed for the intersection to improve to operate acceptably at LOS D (less than 55 seconds of delay). This mitigated trip threshold at the intersection is shaded in the table below.

There are numerous development modifications that would result in this lower level of development trips at the intersection such as reduced sizes/units or general changes in land uses. Two examples of reduced Village development options were identified which have lower trips through the intersection and therefore, operate acceptably at LOS D or better. These options are outlined below and are summarized in the table.

- Reduced Alternative 1 development - Replace the proposed truck stop with a gas station, the same land use proposed in this location under Alternative 2.[15]
- Alternative 2 – If Alternative 2 were assumed in the Combined Development instead of Alternative 1.

Table 22. Combined Development TEV Sensitivity Review at the Marvin Rd NE/I-5 SB Ramp Intersection

Combined Development Weekday PM Peak Hour Condition	TEV at Marvin Rd NE/I-5 SB Ramp Intersection	
	Project Trips[1]	Future (2027) Combined Development With-Project
Combined Development (unadjusted)	1,464	6,488
Mitigated Combined Development Threshold[2]	1,412	6,436
Reduced Alternative 1 Development Option: *Change in land use from Truck to Gas*[3]	1,223	6,247
Combined Development with Alternative 2[4]	1,027	6,051

Note: TEV = Total Entering Vehicles.
1. Project trips at the intersection are inclusive of primary and diverted trips as applicable for the alternative.
2. Mitigated Combined development is the equivalent reduction in trips at the intersection of Marvin Rd NE/I-5 SB Ramp such that the intersection operates acceptably at LOS D.
3. This option would include 10 VFP gas station with 10,000 sf convenience store in lieu of the 26 VFP and 36,000 sf truck stop assumed with Alternative 1.
4. This option assumes Alternative 2 in the combined condition opposed to Alternative 1.

The identified trip cap is proposed as mitigation for the Village development such that intersection would continue to operate acceptably.

Further assessment of the operations at the southbound I-5 Ramp/Marvin Road intersection of the DDI was completed by comparing results of this analysis to the Interchange Justification Report (IJR). As noted above, the analysis completed for the IJR utilized VISSIM whereas the Village Mixed-Use development analysis was conducted using Synchro. Both software programs are able to calculate the average delay and equivalent LOS of the intersection; however, VISSIM, the microsimulation tool, allows for more detailed calibration of operations than Synchro. The IJR showed the total entering vehicles at the intersection and equivalent operations with the DDI as follows: 6,280 vehicles operating at LOS D with 48 seconds of delay and 7,680 vehicles operating at LOS E with 69 seconds of delay.

Comparing the future (2027) Combined Development forecast volumes as summarized in Table 22 to the IJR's forecast volumes, the volumes are most similar to the LOS D equivalent conditions as modeled by VISSIM in the IJR. The reduced Alternative 1 and Alternative 2 combined development conditions specifically have lower volumes than the IJR equivalent LOS D conditions. This additional review of operations provides a validation of the anticipated acceptable operations at the southbound I-5 Ramp/Marvin Road intersection.

[15] The reduced Alternative 1 option assumes 10 VFP gas station with 10,000 sf convenience store in lieu of the 26 VFP and 36,000 sf truck stop. The detailed Mitigated option trip generation is included in Appendix J.

Traffic Impact Fees

Although local permitting and development fees do not apply on tribal lands, because the project alternatives would contribute to near-term unacceptable traffic conditions, payment of traffic impact fees (TIF) is warranted to ensure that the project provides a fair share towards regional transportation infrastructure improvements that contribute towards future year acceptable operating conditions at the study intersections as predicted in the traffic model. TIF were estimated for both Alternatives 1 and 2 per City of Lacey *2024/2025 Transportation Improvement Mitigation List* which identifies a cost per trip specific to their project list.

Table 23. City of Lacey Traffic Impact Fees Calculation for Village Alternatives 1 & 2

Project	City of Lacey Cost Per Trip[1]	Alternative 1		Alternative 2	
		Trips	Fee	Trips	Fee
Completed					
45th Avenue and College Street Improvements	$ 446.10	-	-	-	-
Marvin Rd and Britton Pkwy Intersection Improvements	$ 122.00	742	$ 90,524.00	427	$ 52,094.00
Golf Club Road Extension	$ 207.25	-	-		-
Martin Way / Hoh Street Intersection Improvements	$ 276.33	72	$ 19,895.76	52	$ 14,369.16
Willamette Drive / 31st Ave Intersection Improvements	$ 345.42	71	$ 24,524.82	53	$ 18,307.26
Carpenter Rd/Mullen Rd Intersection Improvements	$ 402.10	43	$ 17,290.30	31	$ 12,465.10
Fixed Completed					
Mullen Rd Capacity/Safety Improvements East of Ruddell	$ 1,522.51	-	-		-
6th Avenue / Sleater Kinney Improvements	$ 1,522.51	-	-		-
Carpenter Rd from Martin Way to Britton Parkway	$ 1,522.51	729	$ 1,109,909.79	535	$ 814,542.85
Hogum Bay Road Improvements	$ 1,522.51	71	$ 108,098.21	53	$ 80,693.03
31st Avenue Extension Hogum Bay to Marvin Road	$ 1,522.51	-	-		-
Fixed					
College St Reconstruction -- Lacey Blvd to 37th Ave	$ 1,522.51	145	$220,763.95	104	$ 158,341.04
Marvin Road-- Britton to Columbia Drive NE	$ 1,522.51	72	$ 109,620.72	52	$ 79,170.52
Yelm Hwy Improvements Ruddell Rd to East City Limits	$ 1,522.51	-	-		-
Martin Way & I-5 Interchange Improvements	$ 1,522.51	72	$109,620.72	52	$ 79,170.52
Active		-	-		-
College Street Extension NE	$ 1,184.05	-	-		-
Carpenter Rd Capacity /Safety Improvements Pacific to Shady Ln	$ 1,381.39	-	-		-
Rainier Rd from Yelm Hwy to City Limits (near Beckonridge)	$ 897.91	-	-		-
Britton Pkwy/Carpenter Rd Intersection Improvements	$ 588.69	43	$ 25,313.67	32	$ 18,838.08
Willamette Drive / Campus Glen Dr Roundabout	$ 1,184.05	-	-		-
Total			$2,557,455.99		$ 1,853,084.79

1. Cost per trip per City of Lacey *20224/2025 TRANSPORTATION IMPROVEMENT MITIGATION LIST*, Table 14T-15

As shown in Table 23, the preliminary estimate of the City of Lacey TIF is approximately $2.56 and $1.85 million for Alternative 1 and Alternative 2, respectively. The TIF for each development project will be assessed at the time of each building permit.

Findings and Recommendations

This TIA summarizes the transportation impacts associated with the construction of the Nisqually Quiemuth Village Mixed Use Project (referred to as the Village) proposed west of Marvin Rd NE and south of Britton Pkwy NE, located in the city of Lacey, Washington. General findings and recommendations include:

Project Description – A horizon year of 2027 was identified as the soonest the project would be constructed and occupied. However, given the size of the project, under either alternative, development will likely occur in a number of phases, which may extend beyond the 2027 horizon year. Two alternatives are being considered for the Village both of which are mixed-use with Alternative 1 having a higher retail density (approximately 2.5 times the gross floor area) compared to Alternative 2. There are eleven site access locations for Alternative 1 and ten access locations for Alternative 2, three of which exist today: Western Pkwy NE and Gateway Blvd NE along Britton Pkwy NE as well as Main St NE/Marvin Blvd NE.

The Nisqually Quiemuth Casino Resort Project is being proposed adjacent to the Village under a separate application. This report also presents a Combined Development scenario with both projects assuming the highest development scenarios.

Trip Generation –

- Alternative 1: The Village Alternative 1 is anticipated to generate 30,596 weekday primary new daily trips with 968 and 2,676 trips occurring during the weekday AM and PM peak hours, respectively.
- Alternative 2: The Village Alternative 2 is anticipated to generate 22,030 weekday primary new daily trips with 1,182 and 1,963 trips occurring during the weekday AM and PM peak hours, respectively.
- Combined Development: The Village Alternative 1 is anticipated to generate 30,338 new daily primary trips with 968 and 2,632 trips occurring during the weekday AM and PM peak hours, respectively, under the Combined Development condition due to internal capture reductions associated with the adjacent Casino Resort project. The total combined development, including the Casino Resort project's Alternative A, is estimated to generate a total of 37,672 daily trips with 1,304 trips during the weekday AM peak hour and 3,132 trips during the weekday PM peak hour.

Traffic Operations –

- Under existing conditions, only the existing *Carpenter Rd NE/Britton Pkwy NE* two-way stop controlled intersection operates below the respective standards during the weekday PM peak hour condition. Under future (2027 and 2050) without-project conditions, all intersections meet the respective operational standards, including the *Carpenter Rd NE/Britton Pkwy NE* which reflects the now constructed roundabout at the intersection.
- Under the future (2027 and 2050) development scenarios reviewed (Alternative 1, Alternative 2, and Combined Development), 7 study intersections were identified to operate below the LOS standards under at least an Alternative in the future 2027 and/or 2050 conditions. The locations were generally either along a Strategy Corridor or a site access location.

Mitigation – Proposed mitigation for the project includes payment of TIF fees to contribute to regional enhancements to the transportation infrastructure that contribute towards alleviated traffic conditions in the 2050 future year, implementation of a TMP, and physical improvements at a number of locations. With the proposed intersection improvements, the associated study intersections are forecast to operate acceptably under all future alternatives in both future (2027 and 2050) horizon years for the Action Alternatives.

The project's mitigation of payment of TIF and implementation of TMP strategies is anticipated to result in improved operations throughout the study area including the intersection of Marvin Road NE/I-5 SB Ramp. No additional physical improvements at this DDI intersection were identified as feasible to further improve operations to the LOS standard which was forecast to operate with 2 seconds of delay in excess of the LOS standard under the Combined Development near term only condition; however, a Mitigated development threshold was identified and is proposed such that the Marvin Road NE/I-5 SB Ramp intersection would continue to operate acceptably. Options in the Village development were identified to achieve this reduced trip threshold at the intersection. The final Mitigated development proposed for the Village development will be determined as development progresses, but will not exceed the project trip threshold identified at the intersection.

Appendix A: Memorandum of Understanding (MOU) Between City of Lacey and WSDOT

Washington State Department of Transportation

Olympic Region
5720 Capitol Boulevard, Tumwater
P.O. Box 47440
Olympia, WA 98504-7440
360-357-2600 / FAX: 360-357-2601
TTY: 1-800-833-6388
www.wsdot.wa.gov

RECEIVED
CITY OF LACEY
SEP 07 2018
PUBLIC WORKS
BY: _____

September 4, 2018

City of Lacey
Attn: Roger Schoessel
420 College St. SE
Lacey, WA 98509

Re: I-5/SR 510 Interchange – Reconstruction Interchange Project
Memorandum of Understanding

Dear Roger,

Enclosed for your record is the City's original of the above mentioned agreement.

If you have any questions please call me at (360) 704-3263.

Sincerely,

Roscoe Ames
Olympic Region Plans Office
Agreements Liaison

RDA:rda

cc: Kim Mueller
File

Memorandum of Understanding
between
City of Lacey
and
Washington State Department of Transportation (WSDOT)
for the
I-5/SR 510 Interchange – Reconstruct Interchange Project

I. Purpose

This memorandum of understanding is to document the conversations and agreements that WSDOT and the City of Lacey have agreed to during the design phase of the I-5/SR 510 Interchange - Reconstruct Interchange Project.

II. Maintenance Responsibilities

In coordination with the City of Lacey, WSDOT created Exhibit 1, Marvin Road Maintenance, which highlights the portion of SR 510 Marvin Rd within I-5 Limited Access that the City of Lacey has some maintenance responsibilities. This is in accordance with the City Streets as Part of State Highways guidelines and RCW 47.24.020. The City of Lacey has also agreed to maintain the special concrete islands requested by the City. The State will maintain the bridge structure and approach slabs. The parties expect to negotiate a comprehensive maintenance agreement to further define City maintenance responsibilities within state owned right of way.

III. Future Turn Back Lines

With the construction of the collector-distributor and the frontage road, the project will add two access points to the planned city street network. Since WSDOT will build the access points prior to the City of Lacey's street network, the turnback agreement couldn't be finalized. WSDOT and the City of Lacey have agreed on the location of the turnback lines for when the city street network is complete, see Exhibit 2.

IV. Opening the Frontage Road to Traffic

The I-5/ SR 510 Interchange project will construct the frontage road and access points; however, WSDOT will place temporary concrete barrier to prevent traffic from entering the constructed frontage road until all the requirements from the Interchange Justification Report (IJR) Amendment (November 2017) have been met. The IJR Amendment states:

> The frontage road and access points will be opened to traffic concurrently when:
> 1. The local network connections to both access points are open to traffic.
> 2. A traffic analysis of the local network shows additional capacity is needed and addressed by the access points from the frontage road.

The local network connections shall be city streets, not private roads. Once these items have been satisfied, the turn back lines and the R/W plan will be finalized and WSDOT will allow opening the frontage road. The City will be responsible for the work to open the frontage road. This work includes, but is not limited to (see Exhibit 3):

- Traffic analysis showing additional capacity is needed
- Acquire all necessary permits, including a general permit from the State
- Remove concrete barrier and type 3 barricades for both access points
- Deliver all removed traffic control devices to WSDOT Maintenance
- Remove stripe as required for the new traffic movement
- Apply striping not completed in the WSDOT contract
- Install guide signs for the frontage road

The City will also coordinate with WSDOT for review and approval of final striping and signing plans. All work shall meet WSDOT standards and specifications.

V. New Permanent Signs Within City

As part of the design, WSDOT has determined that guide signs in conjunction with Interstate 5 shield pavement markings are necessary along Marvin Road southbound, north of the interchange, to help drivers move into the appropriate lane to minimize weaving at the DDI crossover intersection. This will add approximately 5 guide signs north of the interchange outside of limited access. On Quinault Drive NE, WSDOT will remove 6 Motorist Information and guide signs and relocate them to the northbound off ramp since WSDOT will not be restricting right turn movements onto Marvin Rd any more. Other regulatory signs in the project area will be removed and replaced in kind. Locations for the signs are shown on Exhibit 4.

VI. Authorization

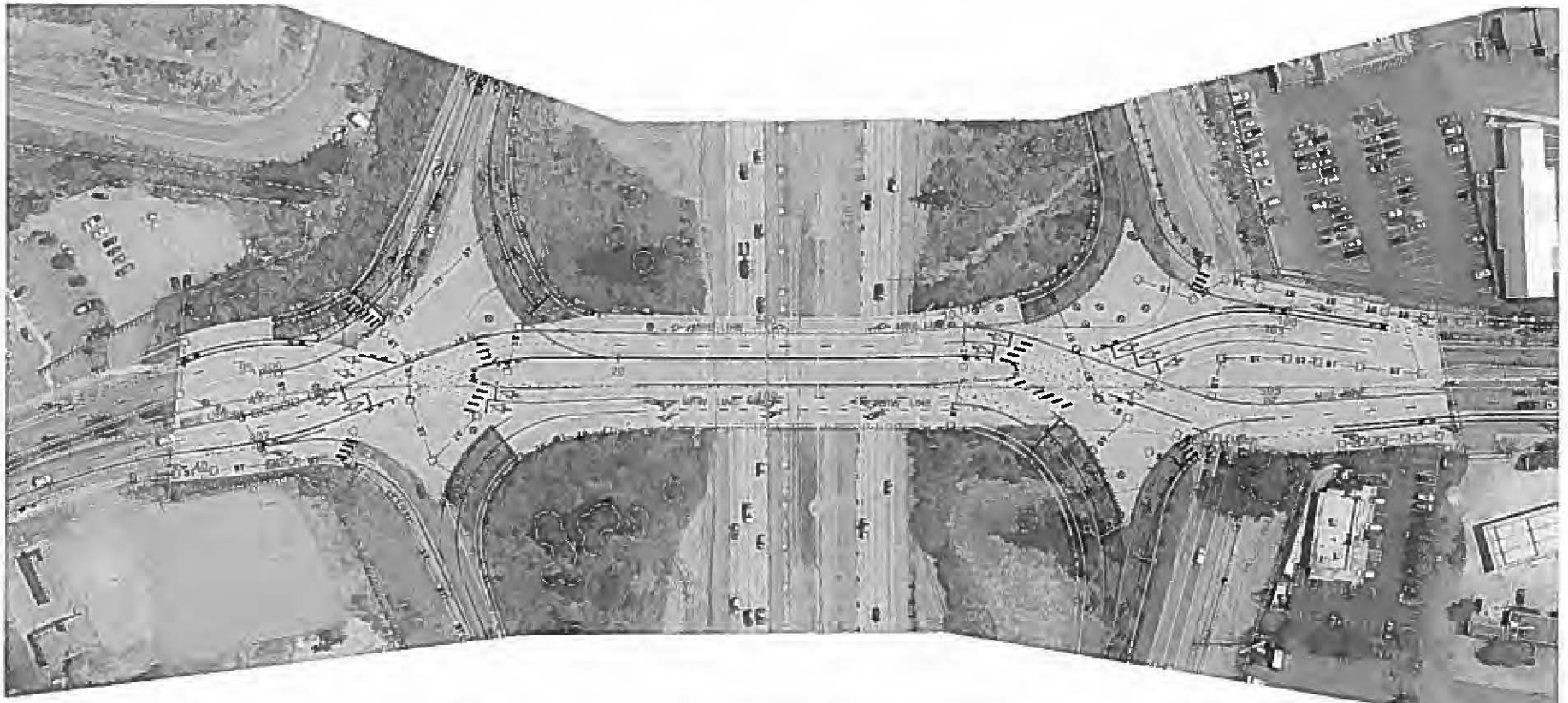
City of Lacey

Scott Spence, City Manager — Date 8/21/2018

Washington State Department of Transportation

John Wynands, WSDOT Olympic Region Administrator — Date 8/23/18

T.18N. R.1W. W.M.



NOTE:

1. HIGHLIGHTED AREA REPRESENTS THE MAINTENANCE AND PRESERVATION RESPONSIBILITY FOR THE CITY OF LACEY WITHIN I-5 STATE-OWNED RIGHT OF WAY.

LEGEND

- EXISTING ALIGNMENT
- CONSTRUCTION ALIGNMENT
- HIGHWAY RIGHT OF WAY
- LIMITED ACCESS RIGHT OF WAY
- TURN BACK LINE
- NEW LANE EDGE WHITE
- NEW DOTTED LANE LINE
- NEW BARRIER
- NEW SHOULDER PAVED EDGE
- NEW LANE LINE YELLOW
- CUT — NEW CUT LINE
- FILL — NEW FILL LINE
- NEW CONTOUR LINE
- GLOBAL POSITIONING POINT
- FILL TOE
- IMPACT ATTENUATOR
- PEDESTRIAN PUSH BUTTON
- SIGNAL HEAD
- DATA STATION
- CCTV CAMERA
- ADVANCED WARNING SIGN
- RETAINING WALL
- ILLUMINATION
- GRATE INLET
- CATCH BASIN
- ST — ST STORM DRAIN PIPE
- LANE LINE
- DIRECTIONAL ARROWS
- DETECTION LOOPS
- CURBING
- BRIDGE
- CONDUIT

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SCALE IN FEET

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ENTERED BY	T. BLEAZARD
CHECKED BY	J. DUREM
PROJ. ENGR.	K. MOELLER
REGIONAL ADM.	J. WYNANDS

REVISION	DATE	BY

10	WASH
FED.AID PROJ.NO.	
XL5100	

Washington State Department of Transportation

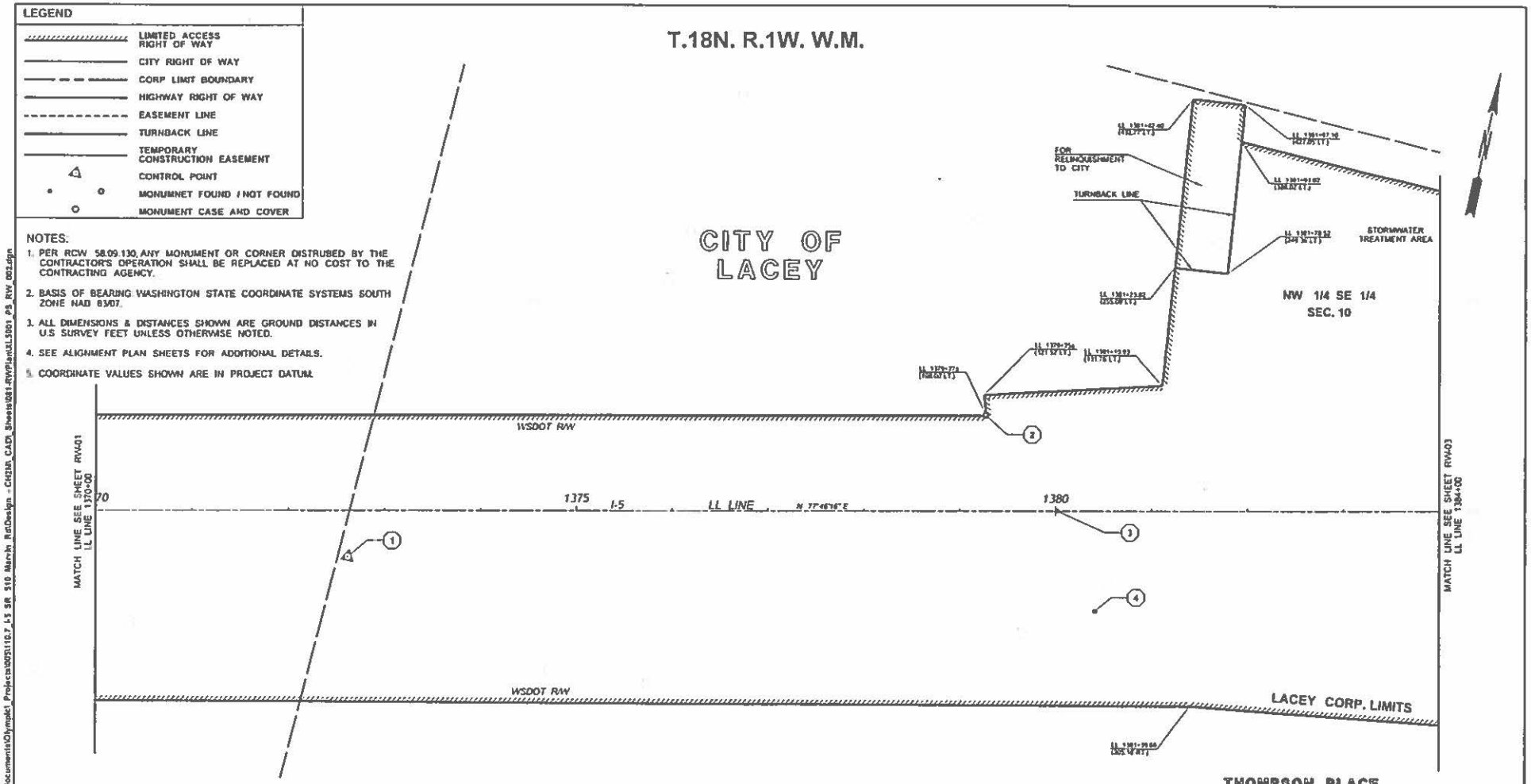
Exhibit 1

I-5
SR510 INTERCHANGE
RECONSTRUCT INTERCHANGE

MARVIN ROAD MAINTENANCE AGREEMENT

CPE1

SHEET 1 OF 1 SHEETS



MONUMENT TABLE LIST

#	STATION	OFFSET	COORDINATES NORTHING	COORDINATES EASTING	DESCRIPTION	ACTION
1	LL 1372+61.69	48.25' RT	965840.70	1397575.63	TS34-59 WSDOT BRASS DISK	DO NOT DISTURB
2	LL 1379+27.06	100.89' LT	966127.40	1398194.31	5/8" REBAR & CAP FSP 28073	DO NOT DISTURB
3	LL 1380+02.00	0.09' LT	966044.76	1398288.90	3" BRASS DISK	DO NOT DISTURB
4	LL 1380+40.92	104.77' RT	965950.52	1398349.15	3" BRASS DISK	DO NOT DISTURB

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ENTERED BY	T. BLEAZARD
CHECKED BY	J. QUEEN
PROJ. ENGR.	K. MUELLER
REGIONAL ADM.	J. WYNANDS

REVISION	DATE	BY

REGION NO. 10 | STATE WASH
JOB NUMBER 17C521
FED.AID PROJ.NO.
CONTRACT NO.
LOCATION NO. XL5001

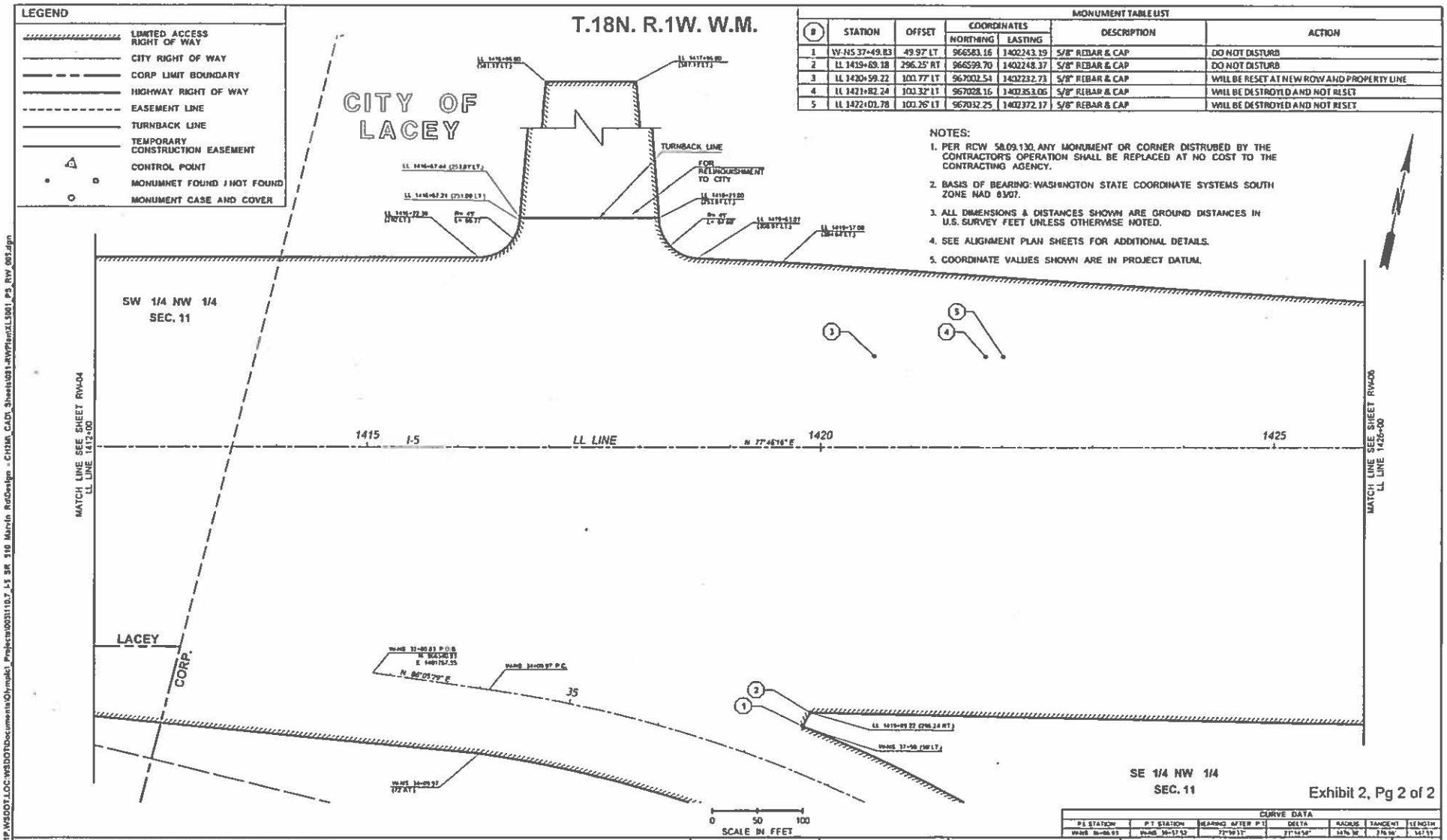
Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE
RIGHT OF WAY PLAN

PLAN REF NO. RW-02
SHEET 92 OF 792 SHEETS

Exhibit 2, Pg 1 of 2

Drw:\\SOL1\WAPPWGP\P:\WSDOT\LOC\WSDOT\Documents\Olympic_Projects\005110.7_I-5 SR 510 Marvin ReDesign - CH2M_CAD_Sheets\001-RW\Plan\XL5001_PS_RW_002.dgn



MONUMENT TABLE LIST

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1	W-NS 37+49.83	49.97' LT	966583.16	1402243.19	5/8" REBAR & CAP	DO NOT DISTURB
2	LL 1419+69.18	296.25' RT	966599.70	1402248.37	5/8" REBAR & CAP	DO NOT DISTURB
3	LL 1420+59.22	100.77' LT	967002.54	1402232.73	5/8" REBAR & CAP	WILL BE RESET AT NEW ROW AND PROPERTY LINE
4	LL 1421+82.24	100.32' LT	967028.16	1402353.06	5/8" REBAR & CAP	WILL BE DESTROYED AND NOT RESET
5	LL 1422+01.78	100.26' LT	967032.25	1402372.17	5/8" REBAR & CAP	WILL BE DESTROYED AND NOT RESET

NOTES:

1. PER RCW 58.09.130, ANY MONUMENT OR CORNER DISTRUBED BY THE CONTRACTOR'S OPERATION SHALL BE REPLACED AT NO COST TO THE CONTRACTING AGENCY.
2. BASIS OF BEARING: WASHINGTON STATE COORDINATE SYSTEMS SOUTH ZONE NAD 83/07.
3. ALL DIMENSIONS & DISTANCES SHOWN ARE GROUND DISTANCES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
4. SEE ALIGNMENT PLAN SHEETS FOR ADDITIONAL DETAILS.
5. COORDINATE VALUES SHOWN ARE IN PROJECT DATUM.

CURVE DATA

P.I. STATION	P.T. STATION	BEARING AFTER P.T.	DELTA	RADIUS	TANGENT	LENGTH
W-NS 36+66.93	W-NS 36+17.53	72°59'31"	71°14'56"	345.36'	276.96'	347.19'

Exhibit 2, Pg 2 of 2

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PROJ. ENGR.	K. MUELLER
REGIONAL ADM.	J. WYNANDS

REVISION | DATE | BY

REGION NO. 10 | STATE WASH

FED.AID PROJ.NO.

JOB NUMBER 17C521

CONTRACT NO.

LOCATION NO. XL5001

Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE

RIGHT OF WAY PLAN

PLAN REF NO. RW-05

SHEET 95 OF 792 SHEETS

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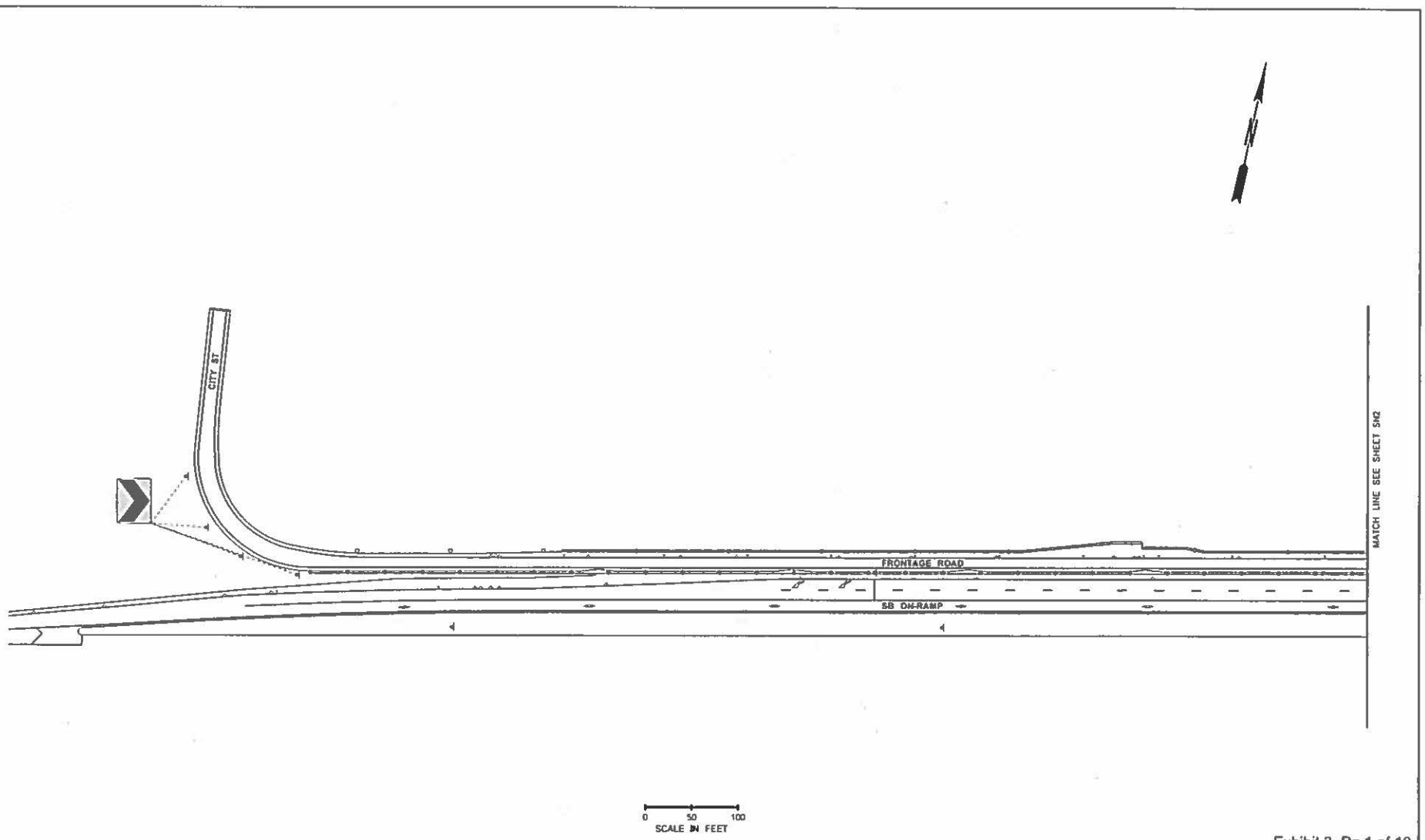


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REGION NO.	STATE	FED.AID PROJ.NO.
10	WASH	
JOB NUMBER		
CONTRACT NO.		LOCATION NO.

Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE

CONCEPTUAL SIGN PLAN

SN1

SHEET OF SHEETS

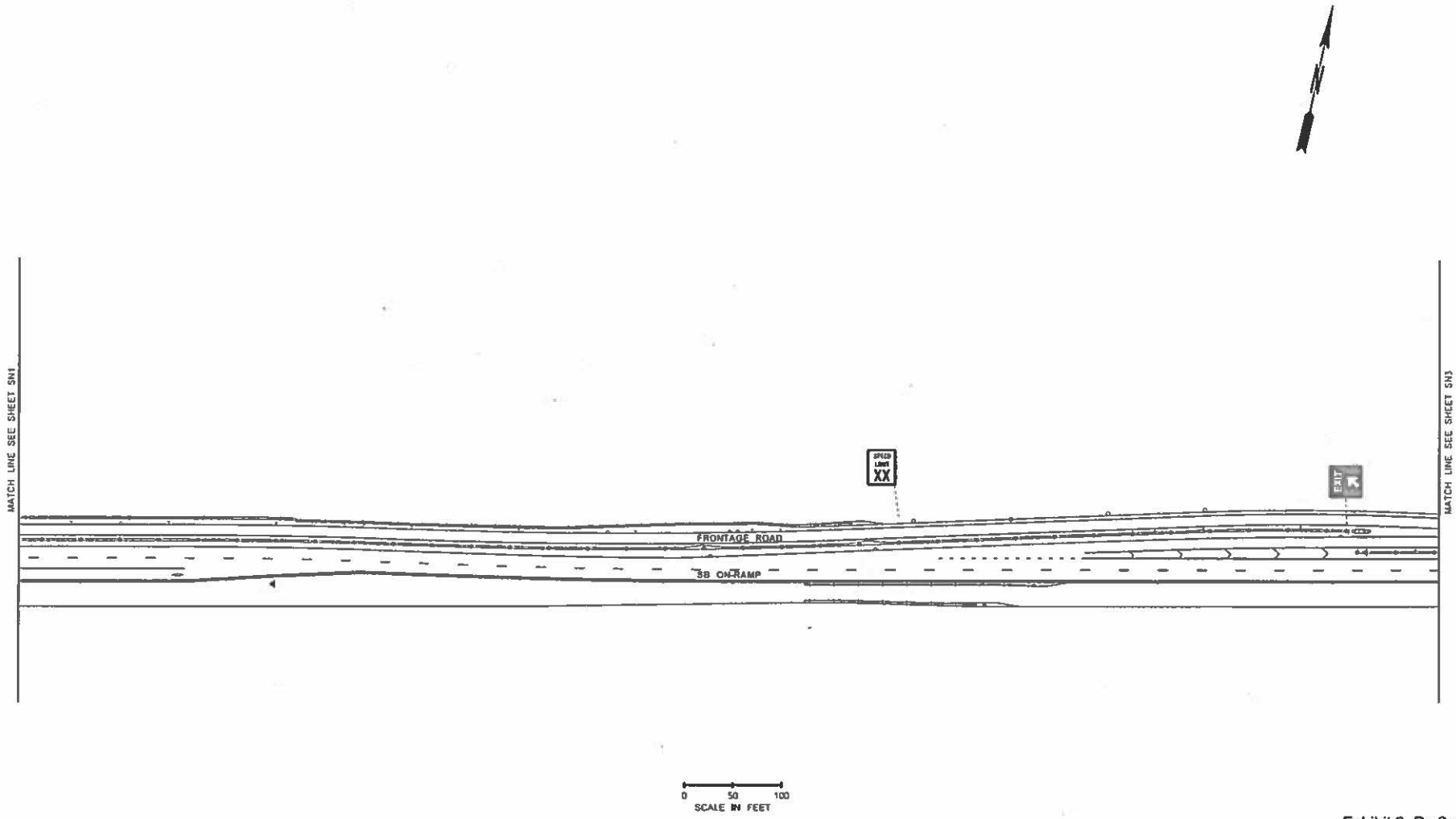


Exhibit 3, Pg 2 of 10

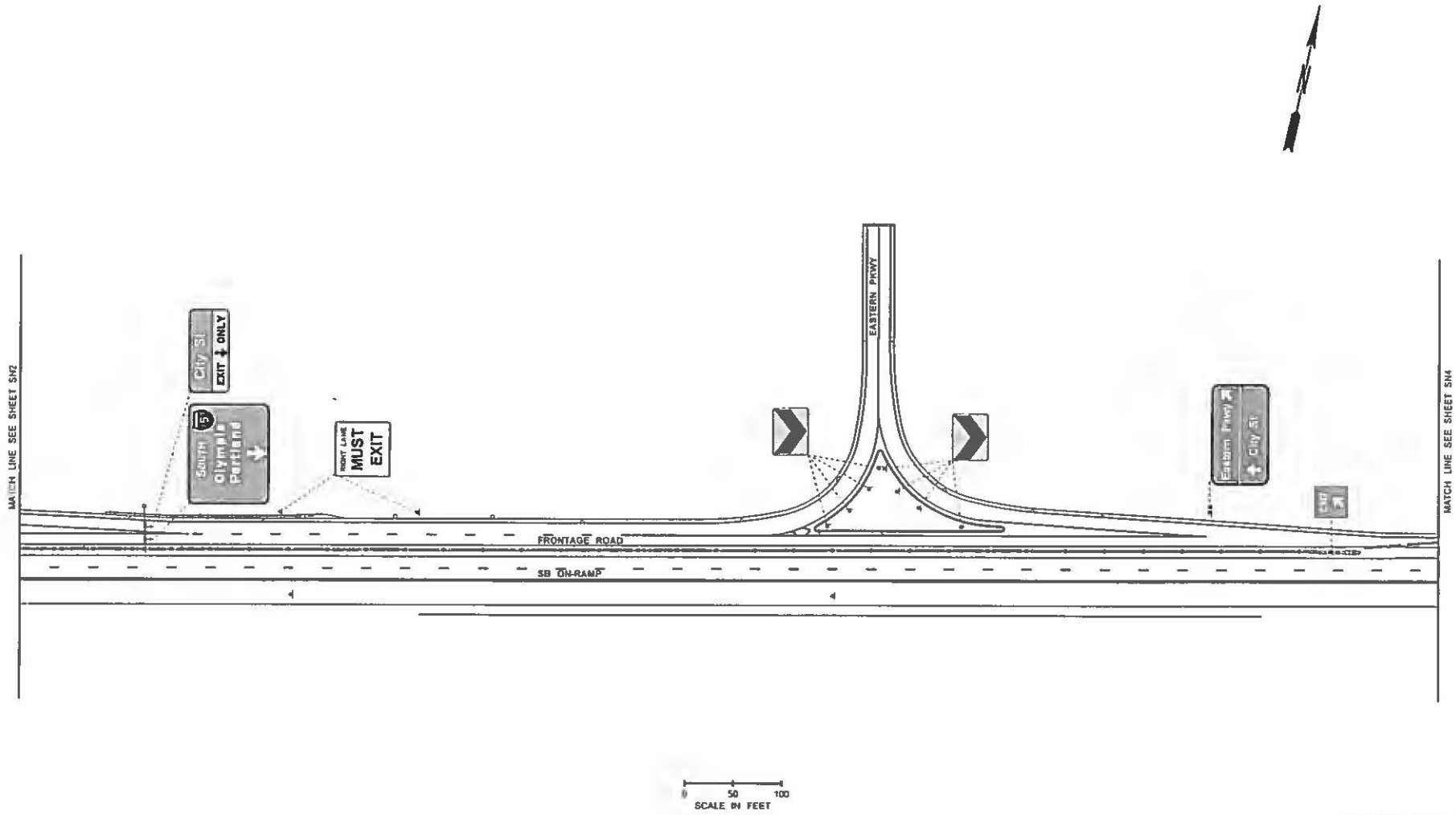
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Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE

CONCEPTUAL SIGN PLAN

SN2



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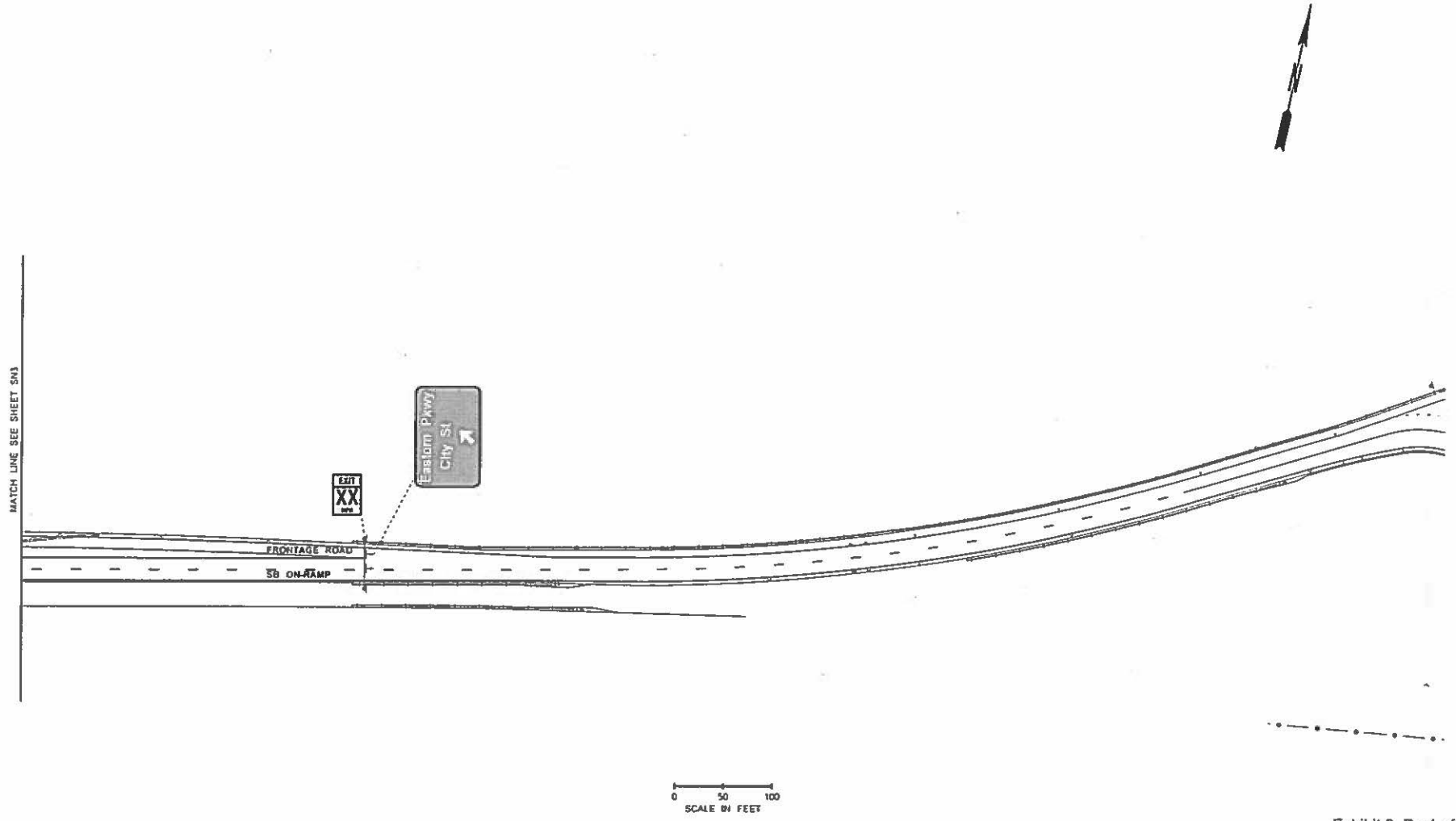
Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE

CONCEPTUAL SIGN PLAN

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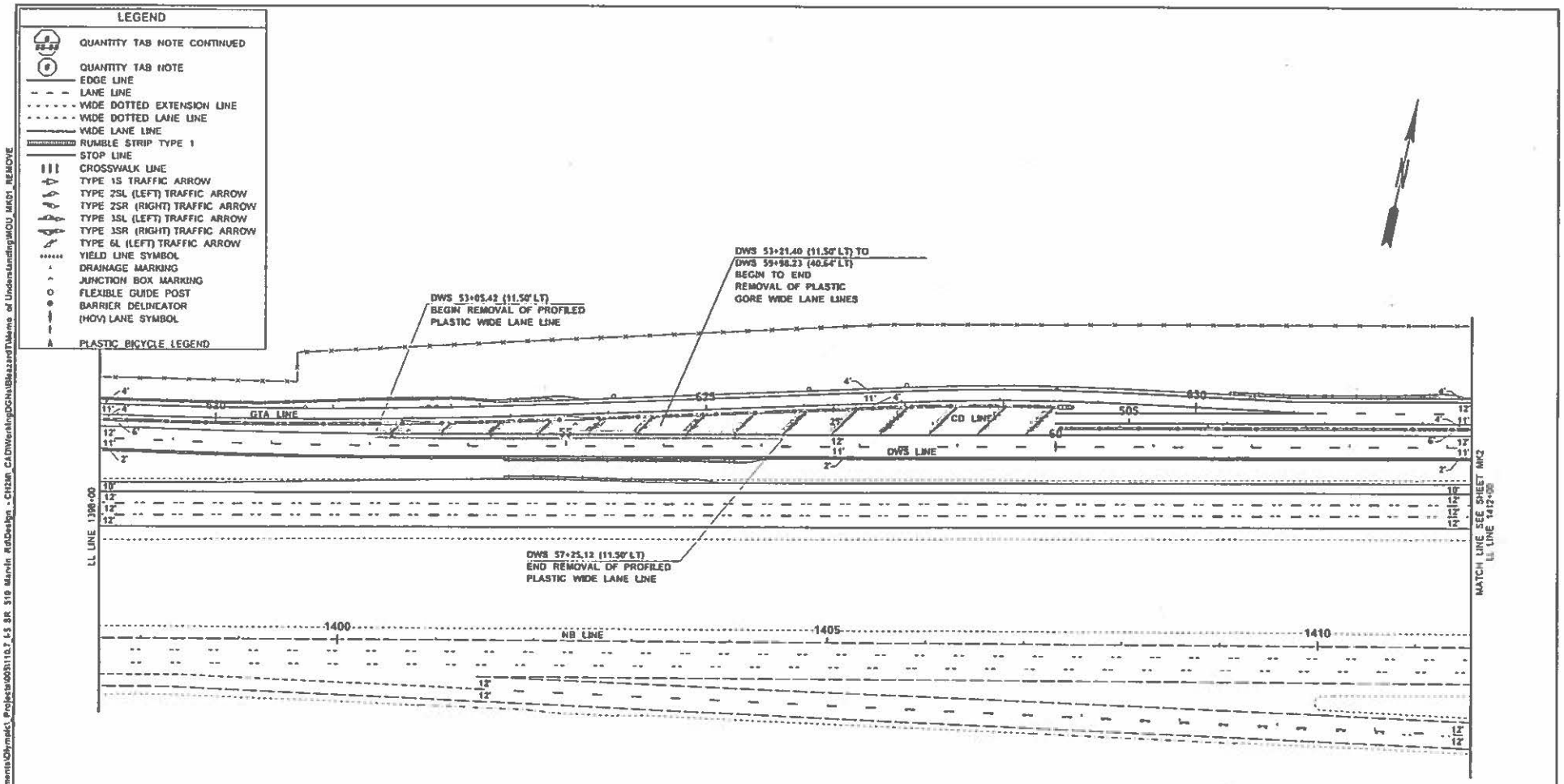
Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE

CONCEPTUAL SIGN PLAN

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SHEET OF SHEETS



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Washington State Department of Transportation

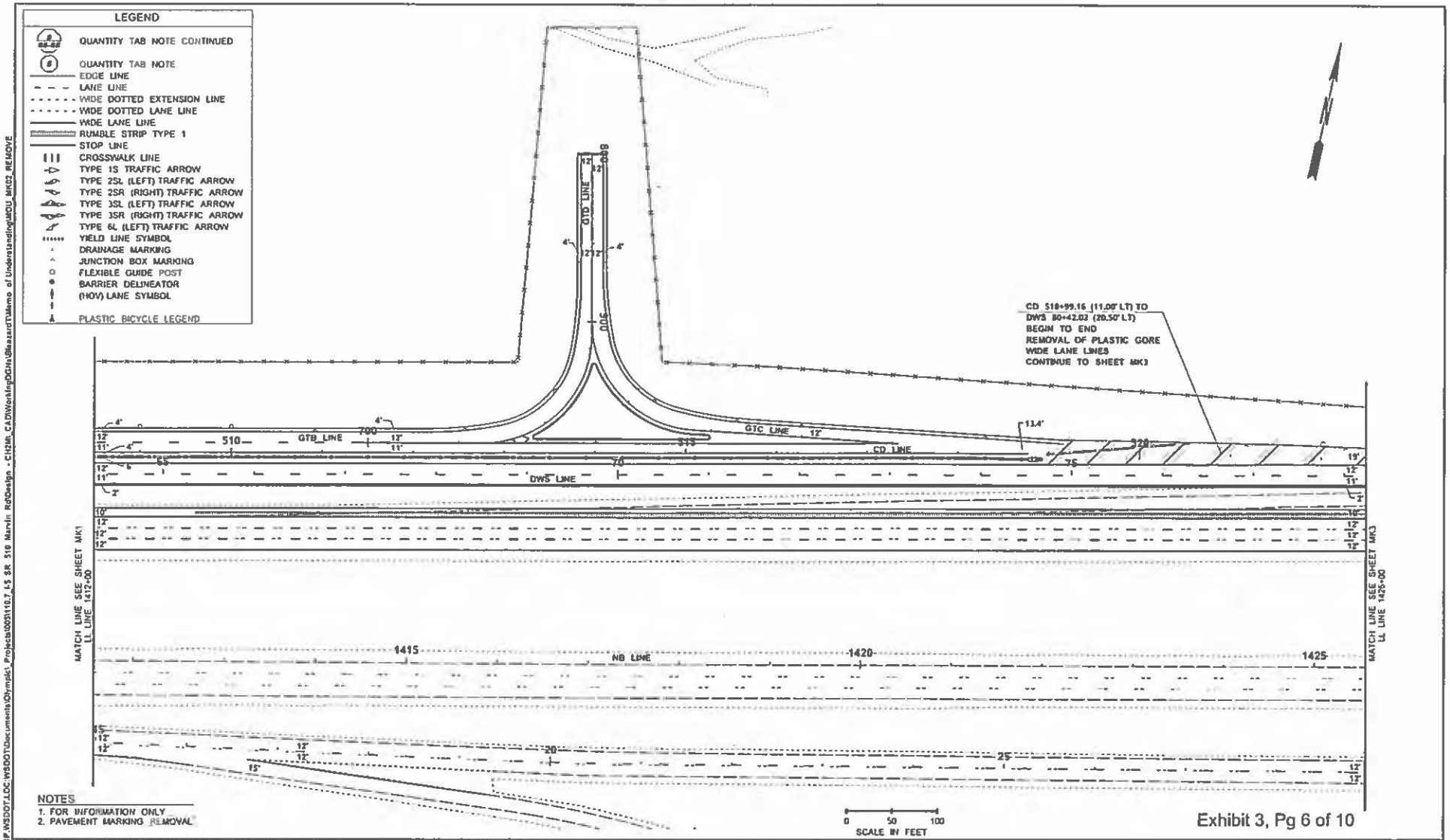
MOU WITH
CITY OF LACEY
EXHIBIT 3

CONCEPTUAL PAVEMENT MARKING PLAN

PLAN REF NO. MK1

SHEET 1 OF 6 SHEETS

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NOTES
1. FOR INFORMATION ONLY
2. PAVEMENT MARKING REMOVAL

Exhibit 3, Pg 6 of 10

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Washington State Department of Transportation

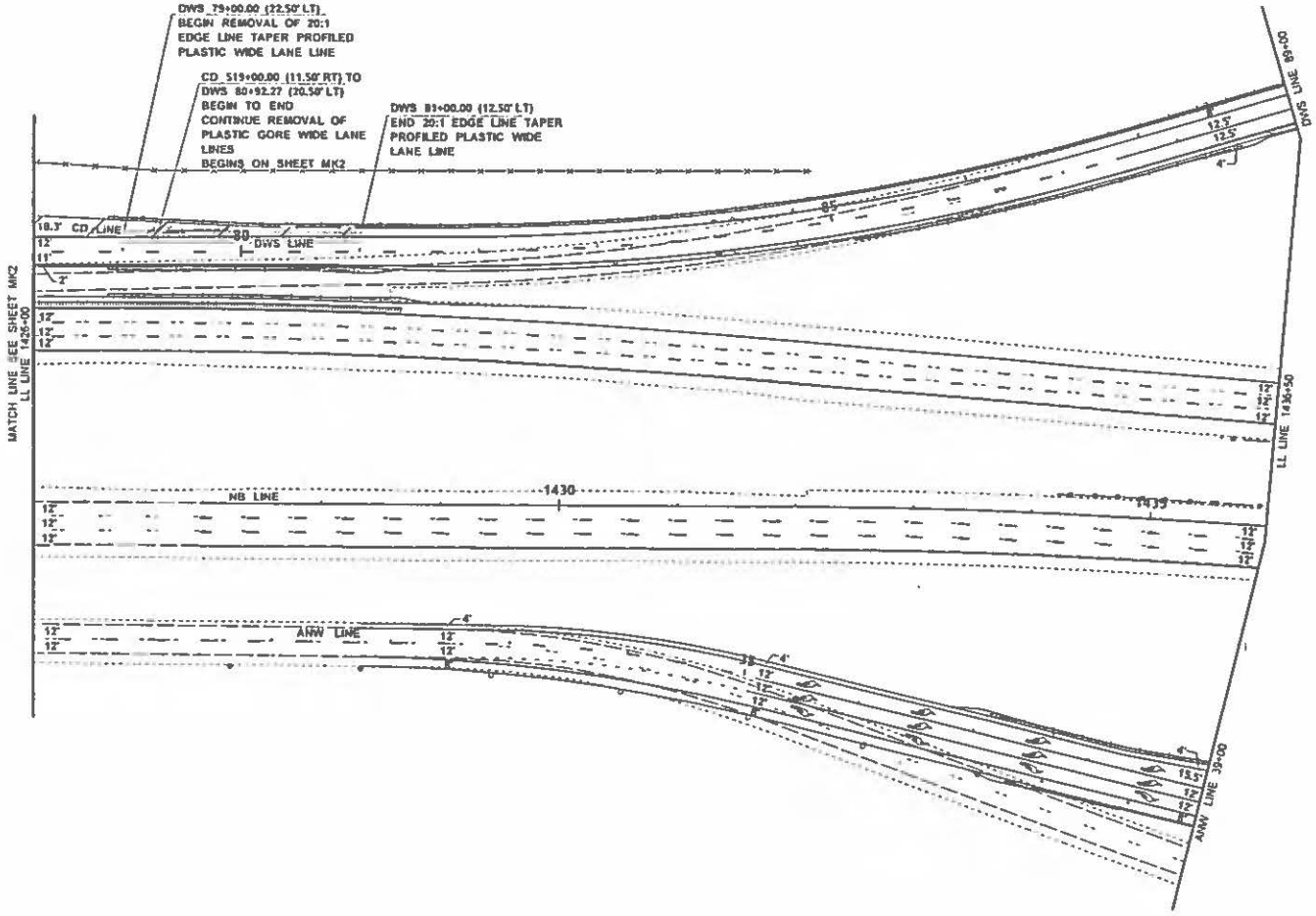
MOU WITH
CITY OF LACEY
EXHIBIT 3

CONCEPTUAL PAVEMENT MARKING PLAN

PLAN SHT NO. MK2

SHEET 2 OF 6 SHEETS

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LEGEND

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- QUANTITY TAB NOTE
- EDGE LINE
- LANE LINE
- WIDE DOTTED EXTENSION LINE
- WIDE DOTTED LANE LINE
- WIDE LANE LINE
- RUMBLE STRIP TYPE 1
- STOP LINE
- CROSSWALK LINE
- TYPE 1S TRAFFIC ARROW
- TYPE 2SL (LEFT) TRAFFIC ARROW
- TYPE 2SR (RIGHT) TRAFFIC ARROW
- TYPE 3SL (LEFT) TRAFFIC ARROW
- TYPE 3SR (RIGHT) TRAFFIC ARROW
- TYPE 6L (LEFT) TRAFFIC ARROW
- YIELD LINE SYMBOL
- DRAINAGE MARKING
- JUNCTION BOX MARKING
- FLEXIBLE GUIDE POST
- BARRIER DELINEATOR
- (HOV) LANE SYMBOL
- PLASTIC BICYCLE LEGEND

NOTES
1 FOR INFORMATION ONLY
2. PAVEMENT MARKING 'REMOVAL'

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SCALE IN FEET

Exhibit 3, Pg 7 of 10

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PROJ. ENGR.	
REGIONAL ADM.	J. WYNANDS

REVISION	DATE	BY

DESIGN DIST 10 STATE WASH
JOB NUMBER
CONTRACT NO.
FED.AID PROJ.NO.
LOCATION NO.

P.E. STAMP DATE
P.E. STAMP DATE

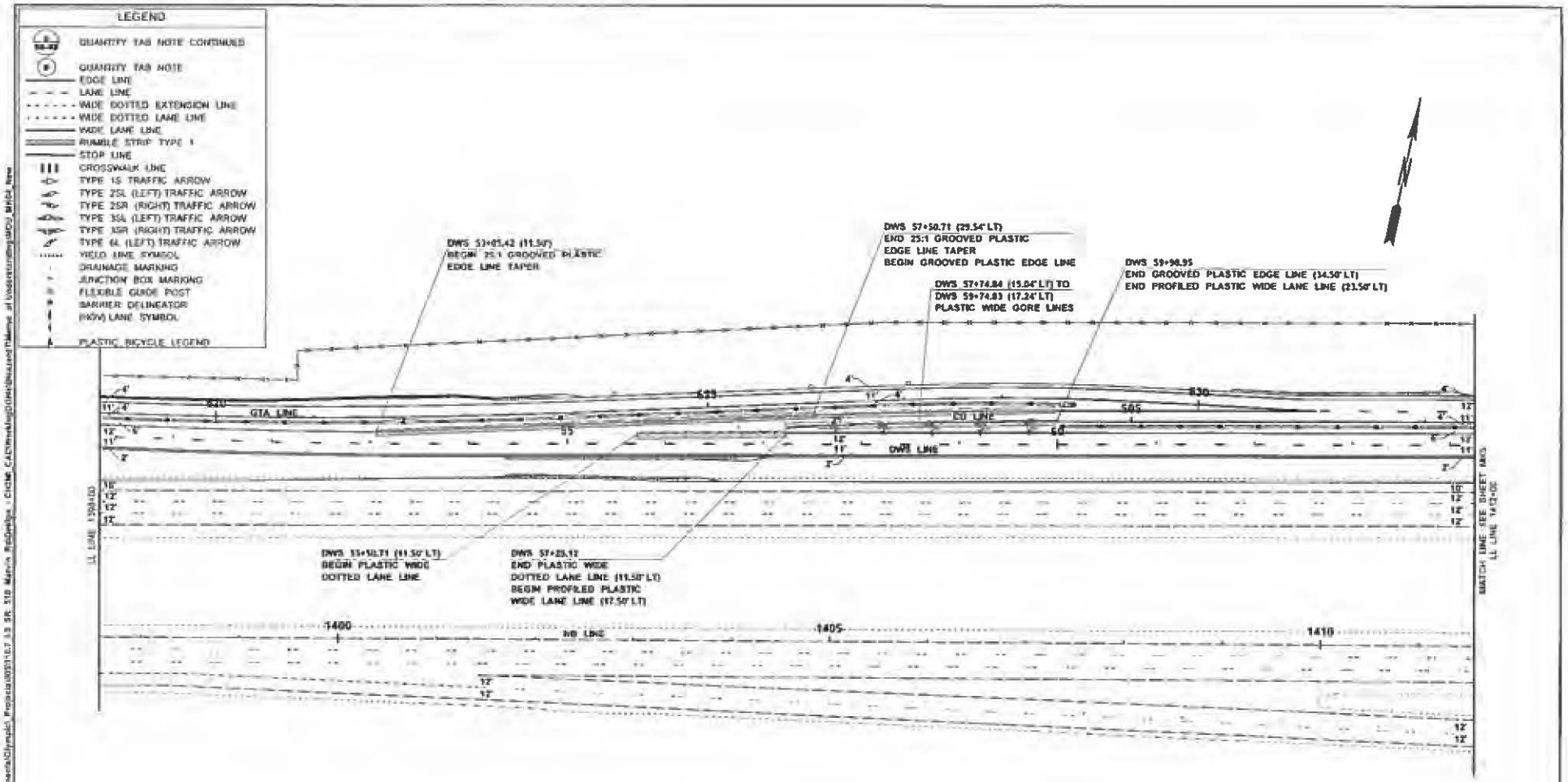
Washington State Department of Transportation

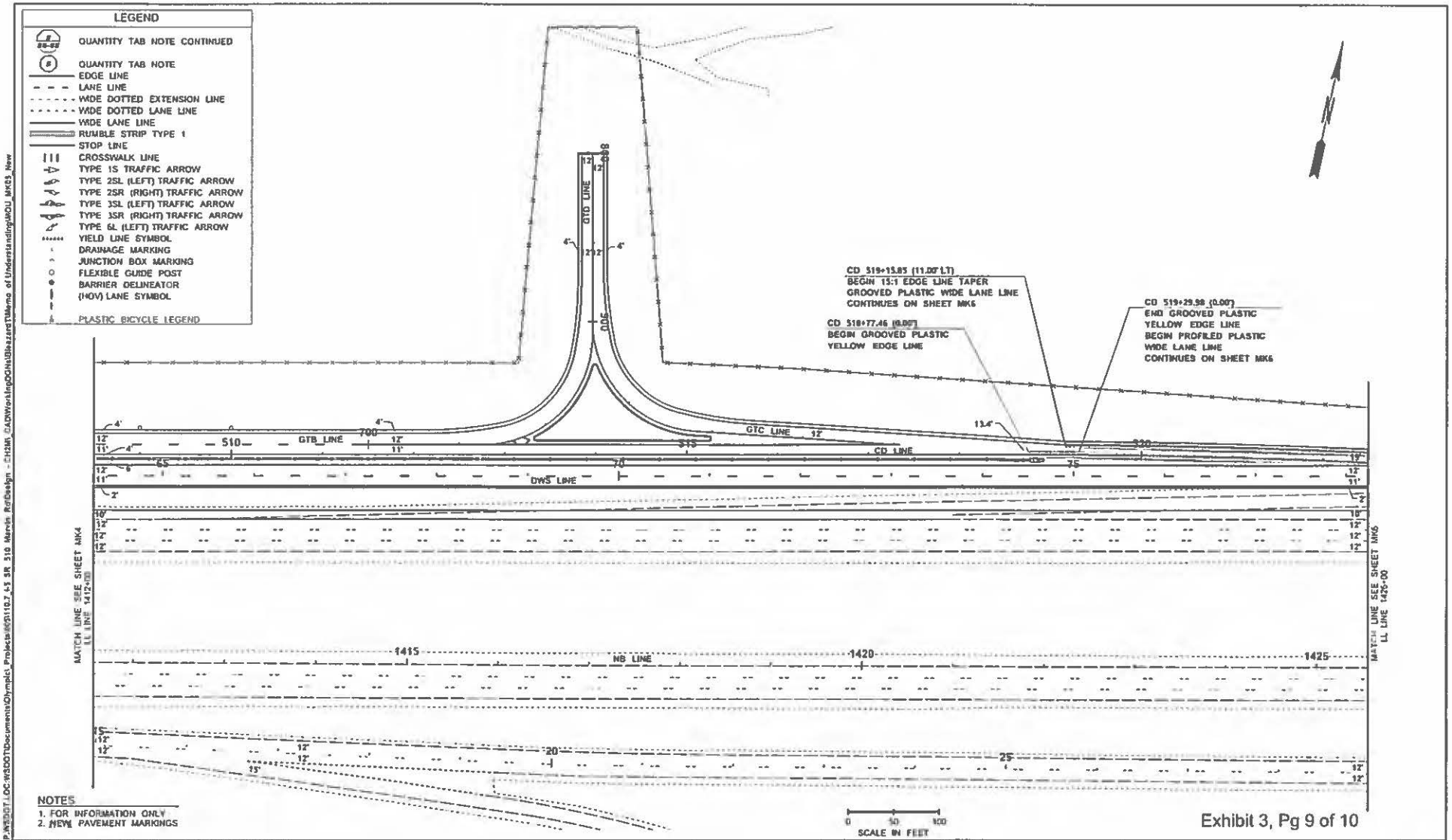
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CITY OF LACEY
EXHIBIT 3

CONCEPTUAL PAVEMENT MARKING PLAN

PLAN SHT NO. MK3
SHEET 3 OF 6 SHEETS

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WIDE DOTTED EXTENSION LINE
WIDE DOTTED LANE LINE
WIDE LANE LINE
RUMBLE STRIP TYPE 1
STOP LINE
CROSSWALK LINE
TYPE 1S TRAFFIC ARROW
TYPE 2SL (LEFT) TRAFFIC ARROW
TYPE 2SR (RIGHT) TRAFFIC ARROW
TYPE 3SL (LEFT) TRAFFIC ARROW
TYPE 3SR (RIGHT) TRAFFIC ARROW
TYPE 6L (LEFT) TRAFFIC ARROW
YIELD LINE SYMBOL
DRAINAGE MARKING
JUNCTION BOX MARKING
FLEXIBLE GUIDE POST
BARRIER DELINEATOR
(HOV) LANE SYMBOL
PLASTIC BICYCLE LEGEND
DWS 53+05.42 (11.34')
BEGIN 25:1 GROOVED PLASTIC
EDGE LINE TAPER
DWS 57+50.71 (29.54' LT)
END 25:1 GROOVED PLASTIC
EDGE LINE TAPER
BEGIN GROOVED PLASTIC EDGE LINE
DWS 57+74.84 (15.04' LT) TO
DWS 59+74.83 (17.24' LT)
PLASTIC WIDE GORE LINES
DWS 59+96.95
END GROOVED PLASTIC EDGE LINE (34.50' LT)
END PROFILED PLASTIC WIDE LANE LINE (23.50' LT)
GTA LINE
CU LINE
DWS LINE
DWS 53+10.71 (11.50' LT)
BEGIN PLASTIC WIDE
DOTTED LANE LINE
DWS 57+23.12
END PLASTIC WIDE
DOTTED LANE LINE (11.50' LT)
BEGIN PROFILED PLASTIC
WIDE LANE LINE (17.50' LT)
WD LINE
MATCH LINE SEE SHEET MK5
LL LINE 142+00
LL LINE 139+00
1400
1405
1410
620
625
630
635
640
645
650
655
660
665
670
675
680
685
690
695
700
705
710
715
720
725
730
735
740
745
750
755
760
765
770
775
780
785
790
795
800
805
810
815



NOTES

1. FOR INFORMATION ONLY
2. NEW PAVEMENT MARKINGS

Exhibit 3, Pg 9 of 10

FILE NAME	c:\users\bleazat\pw_wsdot\d01871\80\MOU_MK05_New.dgn						
TIME	8:18:59 AM						
DATE	7/13/2018						
PLOTTED BY	bleazat						
DESIGNED BY							
ENTERED BY							
CHECKED BY							
PROJ. ENGR.							
REGIONAL ADM. J. WYNANDS	REVISION	DATE	BY				

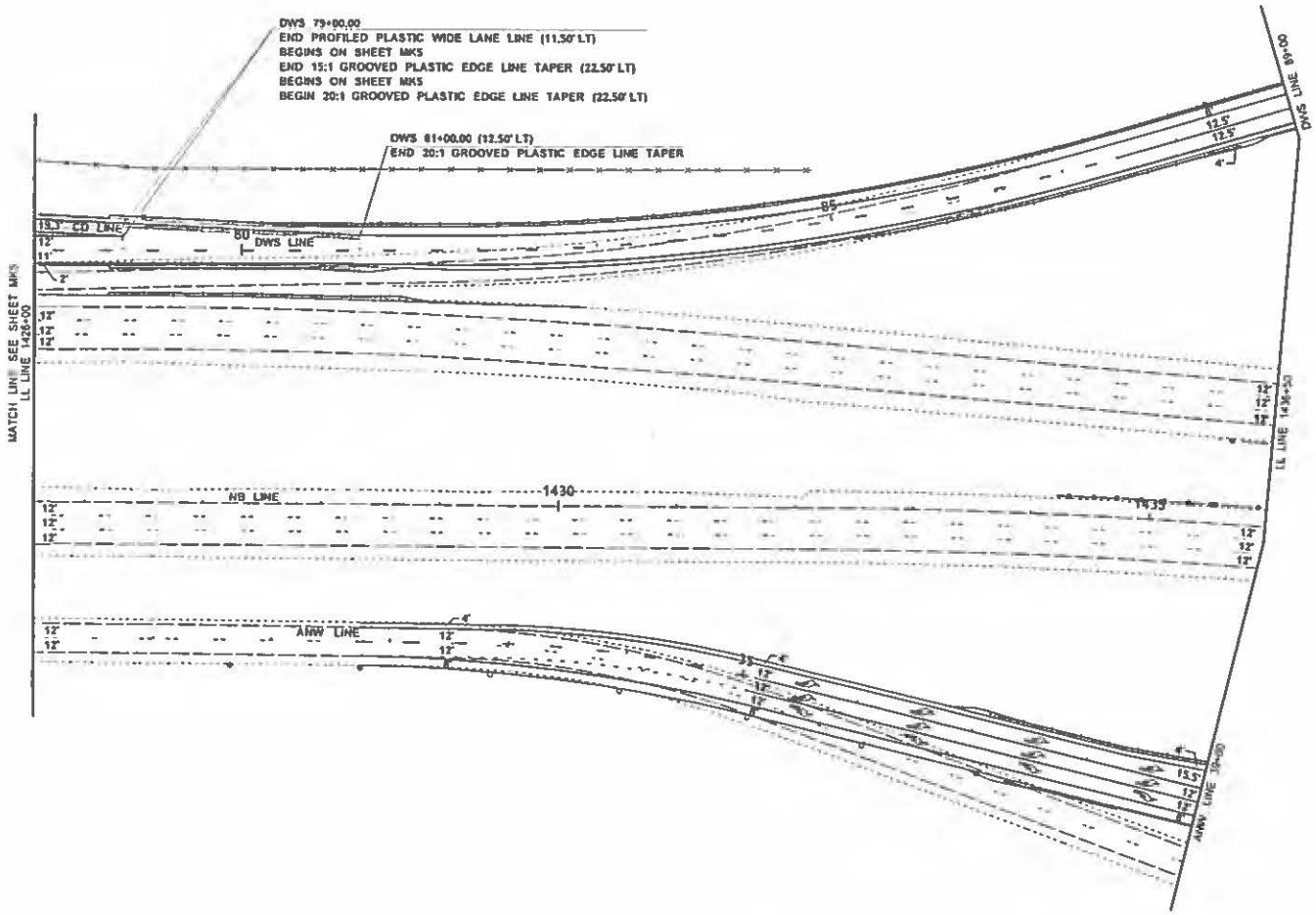
10	WASH	FED.AID PROJ.NO.	

Washington State Department of Transportation

MOU WITH CITY OF LACEY EXHIBIT J

CONCEPTUAL PAVEMENT MARKING PLAN

MK5





LEGEND

- QUANTITY TAB NOTE CONTINUED
- QUANTITY TAB NOTE
- EDGE LINE
- LANE LINE
- WIDE DOTTED EXTENSION LINE
- WIDE DOTTED LANE LINE
- WIDE LANE LINE
- RUMBLE STRIP TYPE 1
- STOP LINE
- CROSSWALK LINE
- TYPE 1S TRAFFIC ARROW
- TYPE 2SL (LEFT) TRAFFIC ARROW
- TYPE 2SR (RIGHT) TRAFFIC ARROW
- TYPE 3SL (LEFT) TRAFFIC ARROW
- TYPE 3SR (RIGHT) TRAFFIC ARROW
- TYPE 6L (LEFT) TRAFFIC ARROW
- YIELD LINE SYMBOL
- DRAINAGE MARKING
- JUNCTION BOX MARKING
- FLEXIBLE GUIDE POST
- BARRIER DELINEATOR
- (HOV) LANE SYMBOL
- PLASTIC BICYCLE LEGEND

NOTES
1. FOR INFORMATION ONLY
2. NEW PAVEMENT MARKINGS

0 50 100
SCALE IN FEET

Exhibit 3, Pg 10 of 10

FILE NAME	c:\users\bleazat\pw_wsdot\d0187189\MOU_MK06_New.dgn
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DATE	7/13/2016
PLOTTED BY	bleazat
DESIGNED BY	
ENTERED BY	
CHECKED BY	
PROJ. ENGR.	
REGIONAL ADM.	J. WYNANDS

REVISION	DATE	BY

REGION NO. 10 | STATE WASH | FED.AID PROJ.NO.

Washington State Department of Transportation

MOU WITH
CITY OF LACEY
EXHIBIT 3

CONCEPTUAL PAVEMENT MARKING PLAN

PLAN NO. MK6

pw:\\HOOLYMAPPPW01P.WSDOT.LOC:WSDOT\Documents\Olympic\Projects\0051110.7_s SR 510 Marvin Rd\Design - CH2M_CADWork\dgnDGNs\Bleazat\TMemo of Understanding\MOU_MK06_New

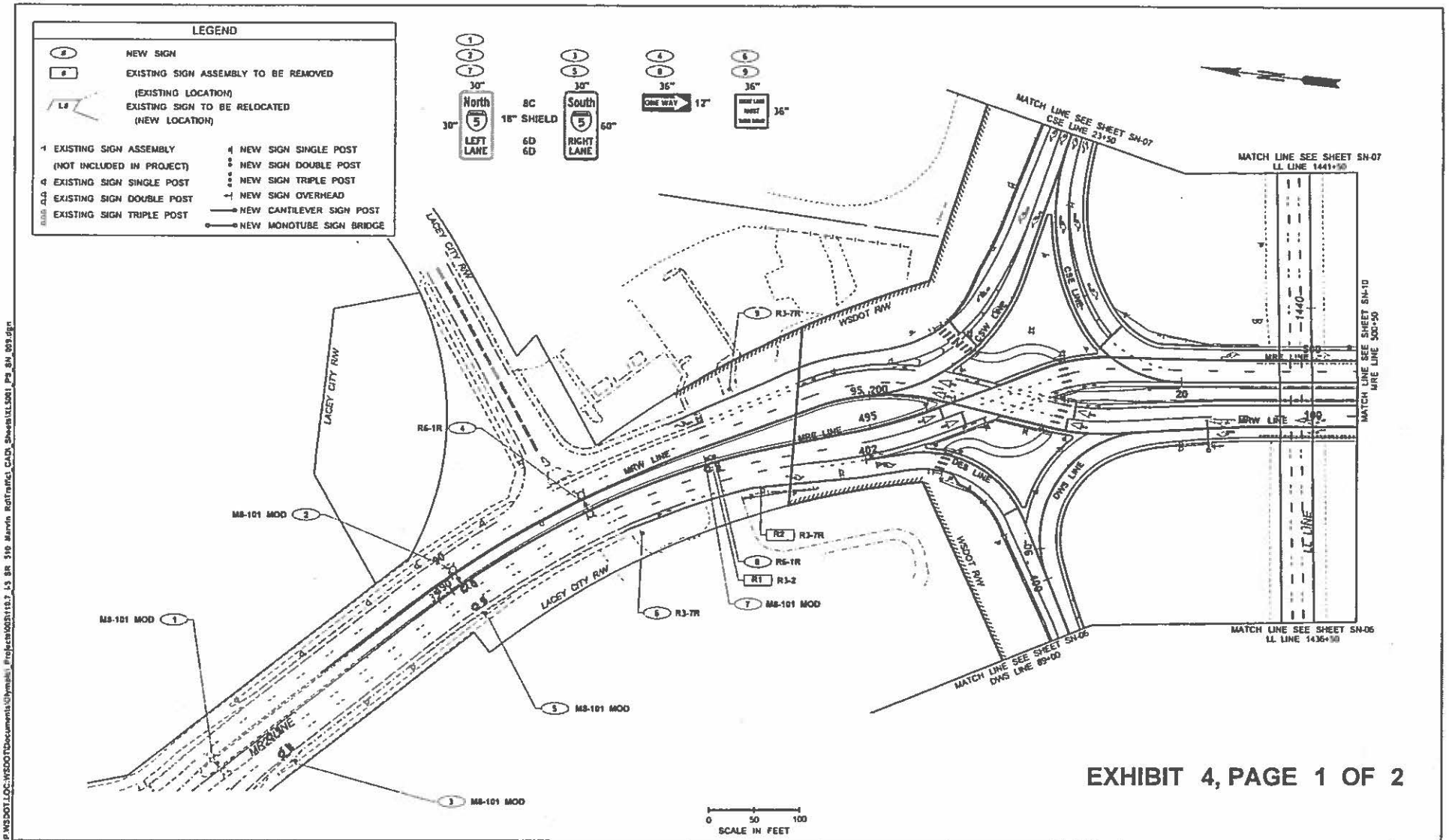


EXHIBIT 4, PAGE 1 OF 2

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FILE NAME	c:\users\mieum\pw_weden\d0126940\AdCopyReview.dgn
TIME	08:26:05
DATE	01/25/19
PLOTTED BY	Mieum
DESIGNED BY	J. VARADY/F. SHULER
ENTERED BY	J. VARADY/F. SHULER
CHECKED BY	R. CRUMBLEY
PROJ. ENGR.	K. MUELLER
REGIONAL ADM.	J. WYNANDS

REVISION	DATE	BY

REGION NO.	STATE
10	WASH
JOB NUMBER	
17C521	
CONTRACT NO.	
FED.AID PROJ.NO.	
LOCATION NO.	
XL5001	

P.E. STAMP DATE

P.E. STAMP DATE

Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE

SIGN PLAN

PLAN REF NO.	SN-09
SHEET	528
OF	792
SHEETS	

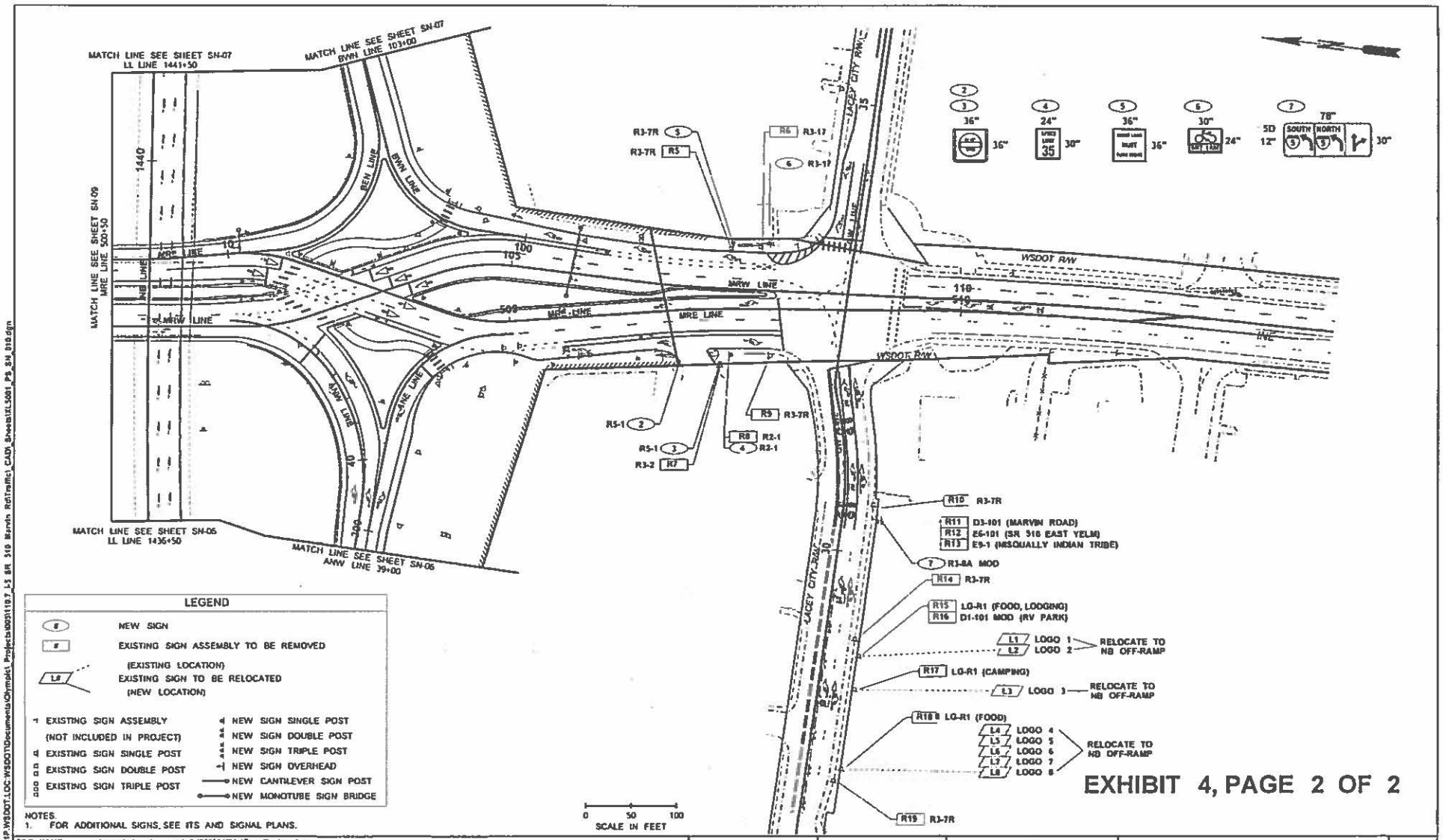


EXHIBIT 4, PAGE 2 OF 2

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TIME	09:29:27
DATE	05/25/16
PLOTTED BY	Mike M
DESIGNED BY	J. VARADY/F. SHULER
ENTERED BY	J. VARADY/F. SHULER
CHECKED BY	R. CRUMBLEY
PROJ.ENGR.	K. MUELLER
REGIONAL ADM.	J. WYNANDS

REVISION | DATE | BY

REGION NO. 10 | STATE WASH

JOB NUMBER 17C521

CONTRACT NO.

FED.AID PROJ.NO.

LOCATION NO. XL5001

P.E. STAMP DATE

P.E. STAMP DATE

Washington State Department of Transportation

I-5
SR 510 INTERCHANGE
RECONSTRUCT INTERCHANGE

SIGN PLAN

PLAN SHEET NO. SN-10

SHEET 529 OF 732 SHEETS

pw:\\HOOLYAPPFWDP.WSDOT.LOC:WSDOTDocuments\Olympic_Projects\00311107_I-5 SR 510 Marvin Rd Traffic_CADD_Sheets\XL5001_PS_SN_010.dgn

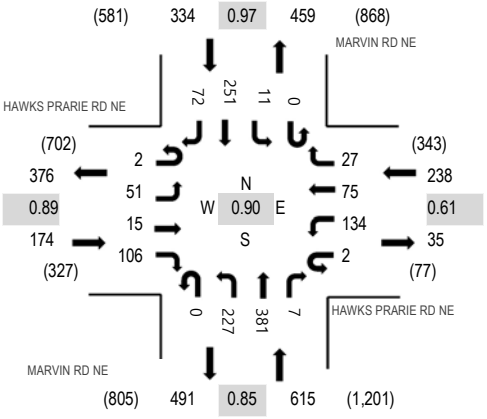
Appendix B: Traffic Counts

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

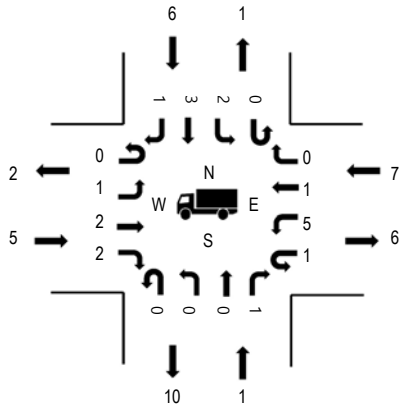
Location: 1 MARVIN RD NE & HAWKS PRARIE RD NE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour

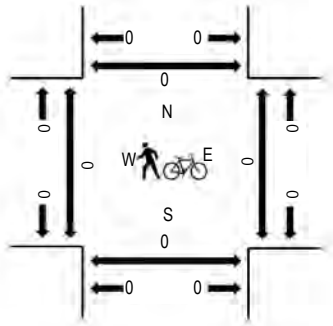
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.9%	0.89
WB	2.9%	0.61
NB	0.2%	0.85
SB	1.8%	0.97
All	1.4%	0.90

Traffic Counts - Motorized Vehicles

Interval Start Time	HAWKS PRARIE RD NE Eastbound				HAWKS PRARIE RD NE Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	1	19	6	24	0	25	10	2	0	64	86	3	0	4	48	25	317	1,302
4:15 PM	1	17	2	32	1	12	17	5	0	52	85	2	0	2	61	20	309	1,361
4:30 PM	1	13	3	27	1	55	27	14	0	48	91	0	0	1	65	19	365	1,334
4:45 PM	0	10	5	25	0	26	11	3	0	58	93	0	0	5	65	10	311	1,228
5:00 PM	0	11	5	22	0	41	20	5	0	69	112	5	0	3	60	23	376	1,150
5:15 PM	1	14	6	18	0	11	13	2	0	68	85	1	0	2	46	15	282	
5:30 PM	1	11	4	20	0	12	6	5	0	44	96	4	0	1	46	9	259	
5:45 PM	2	9	2	15	0	8	9	2	0	54	77	4	1	5	41	4	233	
Count Total	7	104	33	183	2	190	113	38	0	457	725	19	1	23	432	125	2,452	
Peak Hour	2	51	15	106	2	134	75	27	0	227	381	7	0	11	251	72	1,361	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

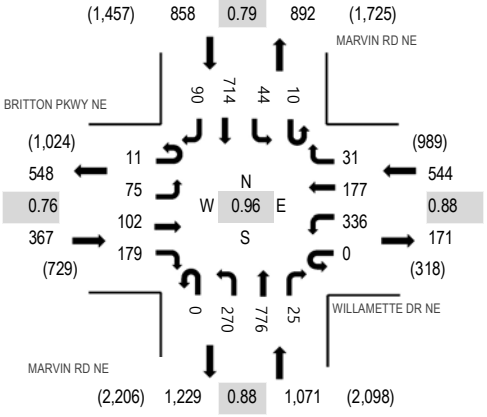
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	2	1	4	4:00 PM	0	0	0	0	0
4:15 PM	1	0	2	2	5	4:15 PM	0	0	0	0	0
4:30 PM	0	0	3	1	4	4:30 PM	0	0	0	0	0
4:45 PM	0	0	1	3	4	4:45 PM	0	0	0	0	0
5:00 PM	4	1	1	0	6	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0
5:30 PM	0	2	0	0	2	5:30 PM	0	0	0	0	0
5:45 PM	0	3	1	1	5	5:45 PM	0	0	0	0	0
Count Total	6	6	10	9	31	Count Total	0	0	0	0	0
Peak Hour	5	1	7	6	19	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 MARVIN RD NE & WILLAMETTE DR NE PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

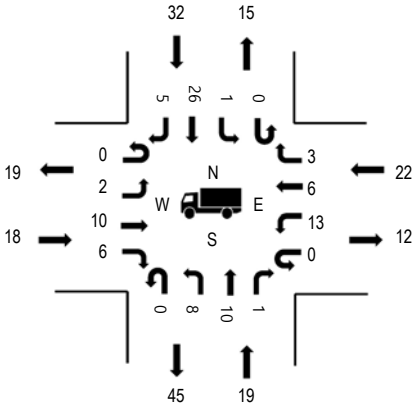
Motorized Vehicles



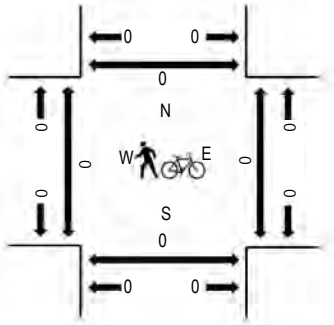
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.9%	0.76
WB	4.0%	0.88
NB	1.8%	0.88
SB	3.7%	0.79
All	3.2%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	BRITTON PKWY NE Eastbound				WILLAMETTE DR NE Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	4	19	33	65	0	100	47	8	0	55	174	7	1	7	177	19	716	2,840
4:15 PM	1	20	25	38	0	79	37	11	0	66	185	8	2	12	164	18	666	2,804
4:30 PM	2	16	22	34	0	88	38	5	0	64	196	6	6	11	222	32	742	2,754
4:45 PM	4	20	22	42	0	69	55	7	0	85	221	4	1	14	151	21	716	2,592
5:00 PM	2	13	28	59	0	76	42	7	0	61	179	6	0	6	174	27	680	2,433
5:15 PM	4	11	32	42	0	68	34	15	0	68	195	12	1	8	115	11	616	
5:30 PM	2	16	17	48	0	65	33	12	0	80	175	9	3	4	104	12	580	
5:45 PM	0	18	10	60	0	52	30	11	0	61	174	7	3	8	114	9	557	
Count Total	19	133	189	388	0	597	316	76	0	540	1,499	59	17	70	1,221	149	5,273	
Peak Hour	11	75	102	179	0	336	177	31	0	270	776	25	10	44	714	90	2,840	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

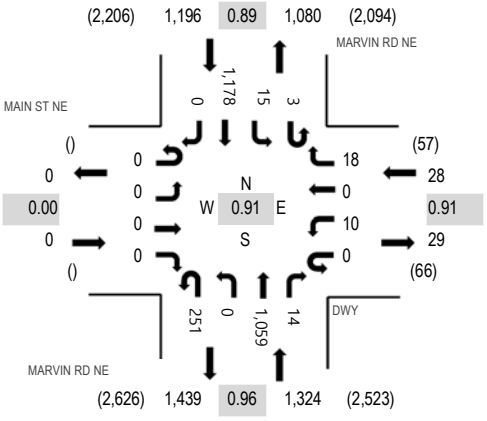
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	5	9	14	32	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	4	3	6	5	18	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	9	7	4	7	27	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	1	4	3	6	14	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	2	3	2	4	11	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	2	4	1	7	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	1	3	5	1	10	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	1	0	4	5	10	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	22	27	37	43	129	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	18	19	22	32	91	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 MARVIN RD NE & DWY PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

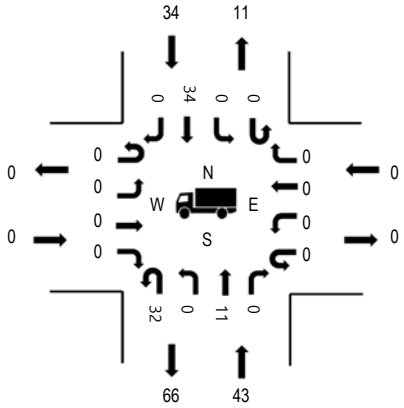
Motorized Vehicles



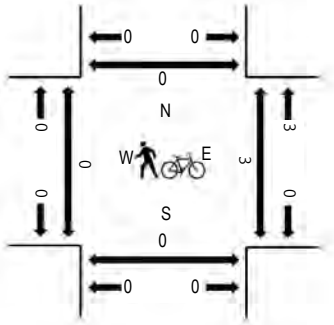
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.0%	0.91
NB	3.2%	0.96
SB	2.8%	0.89
All	3.0%	0.91

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST NE Eastbound				DWY Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	0	0	0	1	0	6	61	0	210	6	0	7	335	0	626	2,536
4:15 PM	0	0	0	0	0	3	0	5	71	0	249	6	0	5	276	0	615	2,548
4:30 PM	0	0	0	0	0	3	0	4	77	0	267	3	0	4	340	0	698	2,506
4:45 PM	0	0	0	0	0	2	0	5	50	0	275	3	0	5	257	0	597	2,348
5:00 PM	0	0	0	0	0	2	0	4	53	0	268	2	3	1	305	0	638	2,250
5:15 PM	0	0	0	0	0	4	0	4	44	0	290	6	0	4	221	0	573	
5:30 PM	0	0	0	0	0	3	0	3	44	0	269	4	1	2	214	0	540	
5:45 PM	0	0	0	0	0	2	0	6	36	0	224	5	1	3	222	0	499	
Count Total	0	0	0	0	0	20	0	37	436	0	2,052	35	5	31	2,170	0	4,786	
Peak Hour	0	0	0	0	0	10	0	18	251	0	1,059	14	3	15	1,178	0	2,548	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

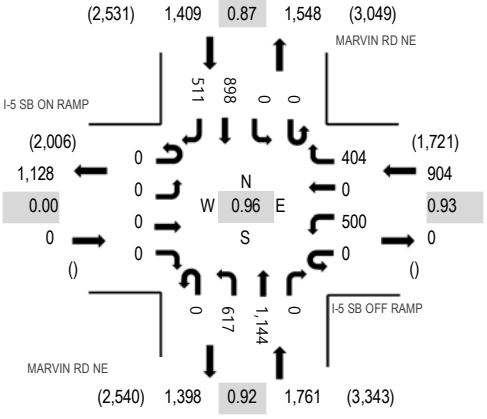
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	10	0	16	26	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	0	9	0	8	17	4:15 PM	0	0	0	0	0	4:15 PM	0	0	2	0	2
4:30 PM	0	10	0	14	24	4:30 PM	0	0	0	0	0	4:30 PM	0	0	1	0	1
4:45 PM	0	11	0	7	18	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	0	13	0	5	18	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	9	0	1	10	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	12	0	4	16	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	8	0	7	15	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	82	0	62	144	Count Total	0	0	0	0	0	Count Total	0	0	3	0	3
Peak Hour	0	43	0	34	77	Peak Hour	0	0	0	0	0	Peak Hour	0	0	3	0	3

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 MARVIN RD NE & I-5 SB OFF RAMP PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

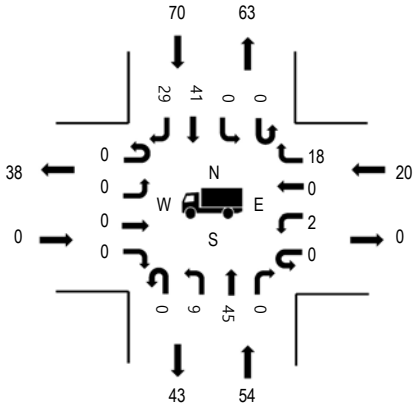
Motorized Vehicles



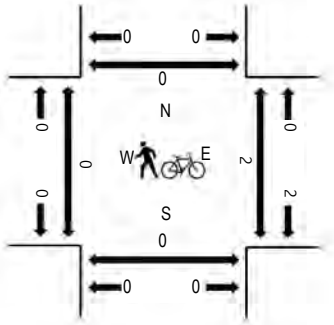
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	2.2%	0.93
NB	3.1%	0.92
SB	5.0%	0.87
All	3.5%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	I-5 SB ON RAMP Eastbound				I-5 SB OFF RAMP Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	0	0	0	131	0	95	0	150	236	0	0	0	240	166	1,018	4,074
4:15 PM	0	0	0	0	0	115	0	93	0	138	273	0	0	0	214	119	952	4,009
4:30 PM	0	0	0	0	0	121	0	107	0	187	296	0	0	0	229	125	1,065	3,967
4:45 PM	0	0	0	0	0	133	0	109	0	142	339	0	0	0	215	101	1,039	3,755
5:00 PM	0	0	0	0	0	105	0	105	0	132	245	0	0	0	240	126	953	3,521
5:15 PM	0	0	0	0	0	109	0	108	0	114	318	0	0	0	163	98	910	
5:30 PM	0	0	0	0	0	91	0	102	0	121	276	0	0	0	172	91	853	
5:45 PM	0	0	0	0	0	116	0	81	0	110	266	0	0	0	146	86	805	
Count Total	0	0	0	0	0	921	0	800	0	1,094	2,249	0	0	0	1,619	912	7,595	
Peak Hour	0	0	0	0	0	500	0	404	0	617	1,144	0	0	0	898	511	4,074	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

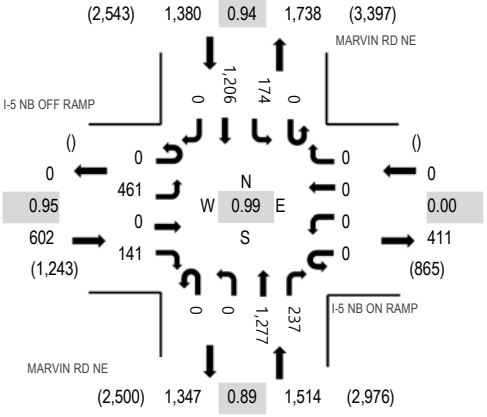
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	17	6	23	46	4:00 PM	0	0	0	0	0	4:00 PM	0	0	1	0	1
4:15 PM	0	10	7	15	32	4:15 PM	0	0	0	0	0	4:15 PM	0	0	1	0	1
4:30 PM	0	16	4	16	36	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	11	3	16	30	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	0	11	8	11	30	5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0
5:15 PM	0	7	7	11	25	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	6	12	11	29	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	8	5	13	26	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	86	52	116	254	Count Total	0	0	0	1	1	Count Total	0	0	2	0	2
Peak Hour	0	54	20	70	144	Peak Hour	0	0	0	0	0	Peak Hour	0	0	2	0	2

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 5 MARVIN RD NE & I-5 NB ON RAMP PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour

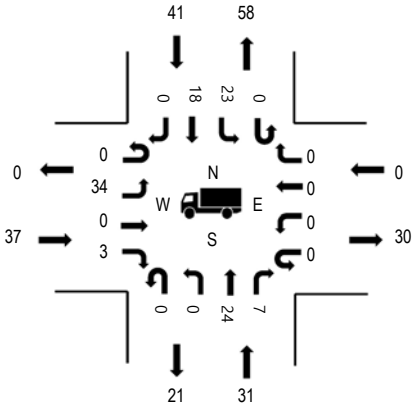
Motorized Vehicles



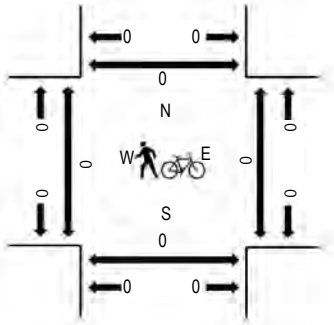
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	6.1%	0.95
WB	0.0%	0.00
NB	2.0%	0.89
SB	3.0%	0.94
All	3.1%	0.99

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	I-5 NB OFF RAMP Eastbound				I-5 NB ON RAMP Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	99	0	31	0	0	0	0	0	0	312	58	0	46	313	0	859	3,496
4:15 PM	0	111	0	29	0	0	0	0	0	0	302	56	0	57	309	0	864	3,492
4:30 PM	0	109	0	44	0	0	0	0	0	0	357	68	0	39	269	0	886	3,465
4:45 PM	0	142	0	37	0	0	0	0	0	0	306	55	0	32	315	0	887	3,401
5:00 PM	0	108	0	45	0	0	0	0	0	0	308	52	0	64	278	0	855	3,266
5:15 PM	0	129	0	50	0	0	0	0	0	0	301	66	0	48	243	0	837	
5:30 PM	0	117	0	49	0	0	0	0	0	0	328	85	0	42	201	0	822	
5:45 PM	0	108	0	35	0	0	0	0	0	0	260	62	0	35	252	0	752	
Count Total	0	923	0	320	0	0	0	0	0	0	2,474	502	0	363	2,180	0	6,762	
Peak Hour	0	461	0	141	0	0	0	0	0	0	1,277	237	0	174	1,206	0	3,496	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

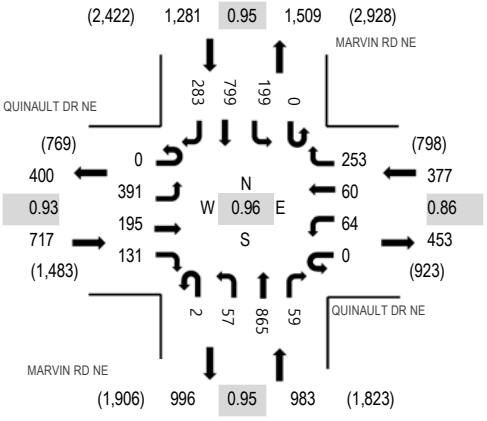
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	11	11	0	13	35	4:00 PM	0	0	0	1	1	4:00 PM	0	0	0	0	0
4:15 PM	7	6	0	9	22	4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:30 PM	9	11	0	9	29	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	10	3	0	10	23	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	8	8	0	8	24	5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0
5:15 PM	7	3	0	11	21	5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0
5:30 PM	5	5	0	9	19	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	8	1	0	11	20	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	65	48	0	80	193	Count Total	0	0	0	4	4	Count Total	0	0	0	0	0
Peak Hour	37	31	0	41	109	Peak Hour	0	0	0	2	2	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 6 MARVIN RD NE & QUINAULT DR NE PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour

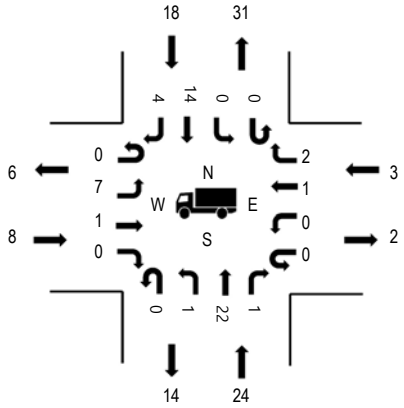
Motorized Vehicles



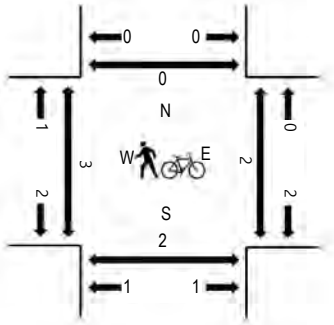
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.1%	0.93
WB	0.8%	0.86
NB	2.4%	0.95
SB	1.4%	0.95
All	1.6%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	QUINAULT DR NE Eastbound				QUINAULT DR NE Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	94	47	28	0	17	14	42	0	14	215	7	0	55	192	91	816	3,358
4:15 PM	0	102	52	28	0	21	14	63	2	15	207	21	0	51	182	63	821	3,328
4:30 PM	0	104	41	38	0	7	17	73	0	11	215	16	0	50	212	61	845	3,334
4:45 PM	0	91	55	37	0	19	15	75	0	17	228	15	0	43	213	68	876	3,279
5:00 PM	0	96	49	32	0	16	12	62	0	19	172	13	0	55	195	65	786	3,168
5:15 PM	0	113	51	41	0	22	20	72	0	9	176	26	0	45	184	68	827	
5:30 PM	0	114	54	32	0	13	16	65	0	15	191	22	0	47	158	63	790	
5:45 PM	0	106	49	29	0	24	16	83	0	9	169	19	0	40	164	57	765	
Count Total	0	820	398	265	0	139	124	535	2	109	1,573	139	0	386	1,500	536	6,526	
Peak Hour	0	391	195	131	0	64	60	253	2	57	865	59	0	199	799	283	3,358	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

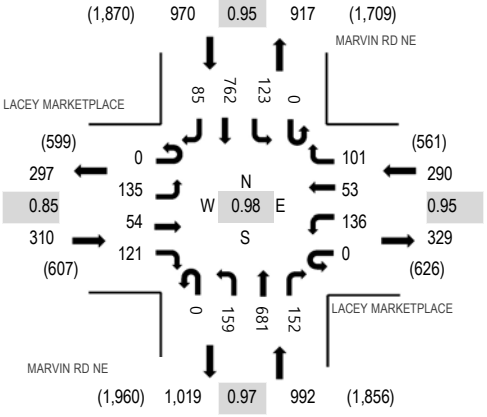
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	9	2	10	22	4:00 PM	0	0	0	1	1	4:00 PM	1	0	0	0	1
4:15 PM	2	7	0	3	12	4:15 PM	0	1	0	0	1	4:15 PM	2	1	0	0	3
4:30 PM	4	7	0	2	13	4:30 PM	0	0	0	1	1	4:30 PM	0	1	0	0	1
4:45 PM	1	1	1	3	6	4:45 PM	0	0	0	1	1	4:45 PM	0	0	2	0	2
5:00 PM	1	5	0	5	11	5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	2	2	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	1	2	0	1	4	5:30 PM	0	0	0	0	0	5:30 PM	0	3	0	0	3
5:45 PM	1	1	0	4	6	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	11	32	3	30	76	Count Total	0	1	0	4	5	Count Total	3	5	2	0	10
Peak Hour	8	24	3	18	53	Peak Hour	0	1	0	3	4	Peak Hour	3	2	2	0	7

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 7 MARVIN RD NE & LACEY MARKETPLACE PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

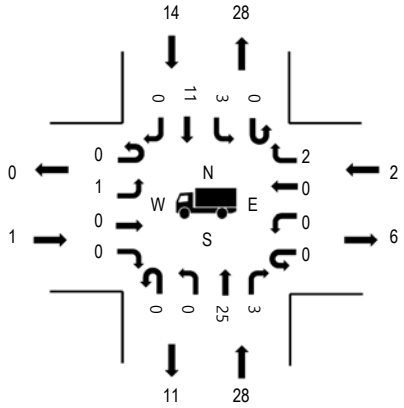
Motorized Vehicles



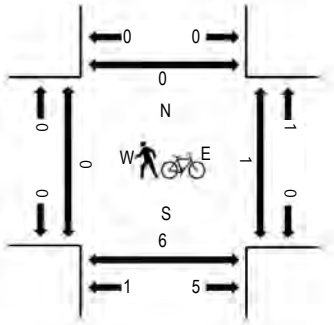
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.3%	0.85
WB	0.7%	0.95
NB	2.8%	0.97
SB	1.4%	0.95
All	1.8%	0.98

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	LACEY MARKETPLACE Eastbound				LACEY MARKETPLACE Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	30	13	28	0	35	18	22	0	40	174	32	0	28	188	31	639	2,562
4:15 PM	0	41	20	32	0	33	15	24	0	46	165	42	0	32	162	18	630	2,549
4:30 PM	0	31	13	26	0	38	8	26	0	30	179	46	0	34	203	17	651	2,511
4:45 PM	0	33	8	35	0	30	12	29	0	43	163	32	0	29	209	19	642	2,437
5:00 PM	0	35	16	28	0	41	18	18	0	37	152	32	0	40	187	22	626	2,332
5:15 PM	0	36	9	38	0	46	18	15	0	45	139	25	0	27	174	20	592	
5:30 PM	0	31	11	19	0	29	11	17	0	26	180	32	0	35	160	26	577	
5:45 PM	0	33	15	26	0	31	12	15	0	42	121	33	0	22	162	25	537	
Count Total	0	270	105	232	0	283	112	166	0	309	1,273	274	0	247	1,445	178	4,894	
Peak Hour	0	135	54	121	0	136	53	101	0	159	681	152	0	123	762	85	2,562	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

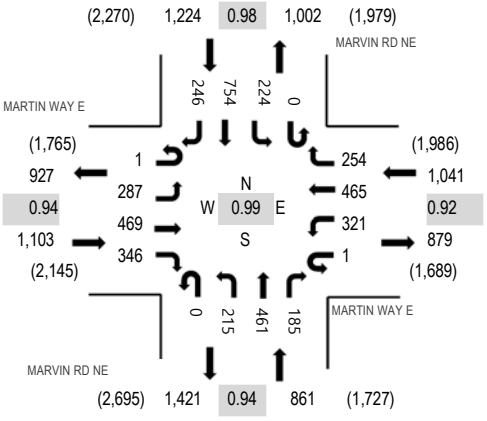
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	11	0	7	19	4:00 PM	0	0	0	0	0	4:00 PM	0	0	1	0	1
4:15 PM	0	6	0	3	9	4:15 PM	0	0	0	0	0	4:15 PM	0	3	0	0	3
4:30 PM	0	6	1	1	8	4:30 PM	0	0	0	0	0	4:30 PM	0	1	0	0	1
4:45 PM	0	5	1	3	9	4:45 PM	0	0	0	0	0	4:45 PM	0	2	0	0	2
5:00 PM	1	2	0	5	8	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	1	0	0	1	2	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	1	0	1	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	3	0	4	7	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	3	34	2	25	64	Count Total	0	0	0	0	0	Count Total	0	6	1	0	7
Peak Hour	1	28	2	14	45	Peak Hour	0	0	0	0	0	Peak Hour	0	6	1	0	7

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 8 MARVIN RD NE & MARTIN WAY E PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

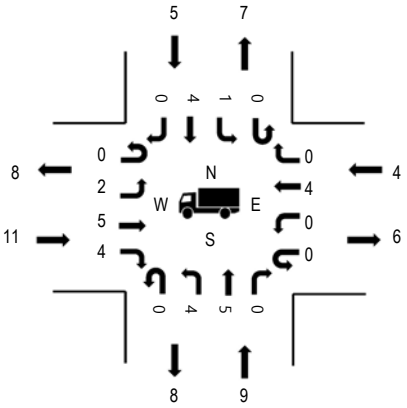
Motorized Vehicles



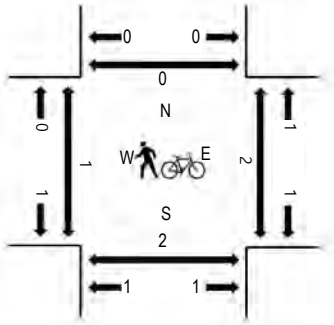
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.0%	0.94
WB	0.4%	0.92
NB	1.0%	0.94
SB	0.4%	0.98
All	0.7%	0.99

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				MARVIN RD NE Northbound				MARVIN RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	60	96	79	0	86	98	68	0	54	124	34	0	60	162	66	987	4,172
4:15 PM	1	79	130	92	0	91	117	56	0	50	128	33	0	57	149	61	1,044	4,226
4:30 PM	0	71	113	83	1	69	120	72	0	62	124	48	0	52	182	74	1,071	4,229
4:45 PM	0	84	112	82	0	88	129	74	0	38	103	49	0	58	187	66	1,070	4,118
5:00 PM	0	67	131	93	0	74	106	45	0	63	123	38	0	56	193	52	1,041	3,956
5:15 PM	1	65	113	88	0	90	110	63	0	52	111	50	0	58	192	54	1,047	
5:30 PM	0	63	105	93	0	73	85	52	0	50	132	52	0	59	147	49	960	
5:45 PM	0	64	99	81	0	76	101	42	0	55	109	45	0	40	145	51	908	
Count Total	2	553	899	691	1	647	866	472	0	424	954	349	0	440	1,357	473	8,128	
Peak Hour	1	287	469	346	1	321	465	254	0	215	461	185	0	224	754	246	4,229	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

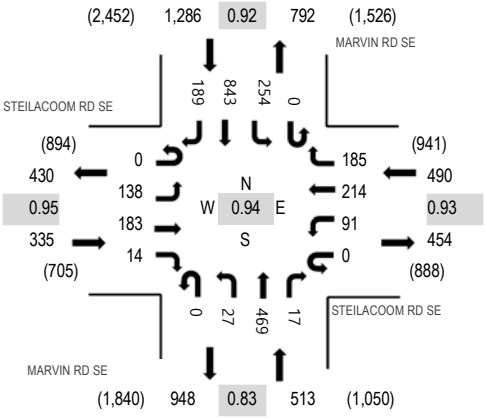
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	6	8	0	6	20	4:00 PM	1	0	0	1	2	4:00 PM	2	2	0	0	4
4:15 PM	7	3	0	2	12	4:15 PM	0	0	1	1	2	4:15 PM	3	1	0	0	4
4:30 PM	4	3	0	1	8	4:30 PM	0	0	0	0	0	4:30 PM	0	2	1	0	3
4:45 PM	1	1	2	0	4	4:45 PM	0	0	0	0	0	4:45 PM	0	0	1	0	1
5:00 PM	5	5	2	3	15	5:00 PM	0	0	0	0	0	5:00 PM	1	0	0	0	1
5:15 PM	1	0	0	1	2	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	2	3	0	1	6	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	3	0	0	2	5	5:45 PM	0	0	1	0	1	5:45 PM	0	0	0	0	0
Count Total	29	23	4	16	72	Count Total	1	0	2	2	5	Count Total	6	5	2	0	13
Peak Hour	11	9	4	5	29	Peak Hour	0	0	0	0	0	Peak Hour	1	2	2	0	5

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 9 MARVIN RD SE & STEILACOOM RD SE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour

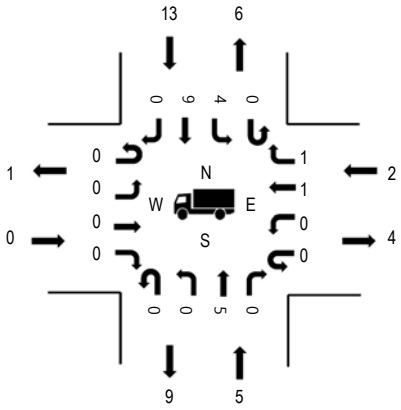
Motorized Vehicles



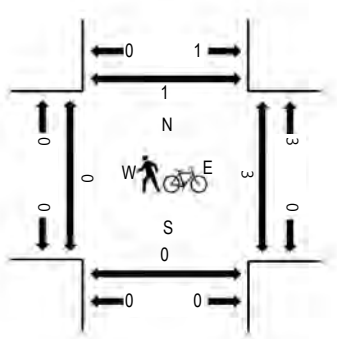
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.95
WB	0.4%	0.93
NB	1.0%	0.83
SB	1.0%	0.92
All	0.8%	0.94

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	STEILACOOM RD SE Eastbound				STEILACOOM RD SE Westbound				MARVIN RD SE Northbound				MARVIN RD SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	43	42	4	0	22	49	25	0	13	130	7	0	55	175	36	601	2,525
4:15 PM	0	31	50	8	0	38	63	34	0	20	116	10	0	52	211	55	688	2,611
4:30 PM	0	38	32	1	0	24	61	38	0	12	106	2	0	55	222	46	637	2,624
4:45 PM	0	36	45	6	0	26	55	42	0	4	100	5	0	47	185	48	599	2,622
5:00 PM	0	32	53	4	0	11	56	56	0	5	113	7	0	73	228	49	687	2,623
5:15 PM	0	32	53	3	0	30	42	49	0	6	150	3	0	79	208	46	701	
5:30 PM	0	38	41	18	0	25	53	32	0	4	114	4	0	57	191	58	635	
5:45 PM	0	39	44	12	0	20	57	33	0	4	99	16	0	56	168	52	600	
Count Total	0	289	360	56	0	196	436	309	0	68	928	54	0	474	1,588	390	5,148	
Peak Hour	0	138	183	14	0	91	214	185	0	27	469	17	0	254	843	189	2,624	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

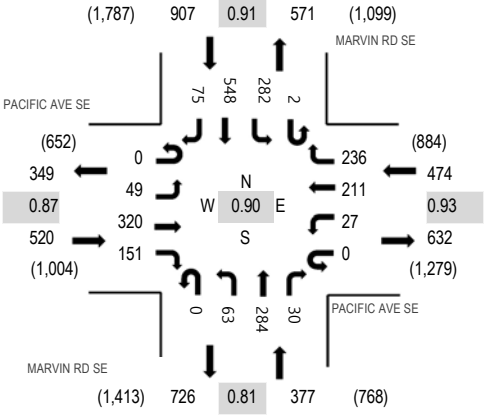
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	4	6	5	16	4:00 PM	2	0	0	1	3
4:15 PM	0	3	1	2	6	4:15 PM	0	2	1	1	4
4:30 PM	0	0	2	5	7	4:30 PM	0	0	3	1	4
4:45 PM	0	1	0	3	4	4:45 PM	0	0	0	0	0
5:00 PM	0	3	0	2	5	5:00 PM	0	0	0	0	0
5:15 PM	0	1	0	3	4	5:15 PM	0	0	0	0	0
5:30 PM	1	2	1	5	9	5:30 PM	0	0	0	0	0
5:45 PM	1	1	1	0	3	5:45 PM	0	0	0	0	0
Count Total	3	15	11	25	54	Count Total	2	2	4	3	11
Peak Hour	0	5	2	13	20	Peak Hour	0	0	3	1	4

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 10 MARVIN RD SE & PACIFIC AVE SE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour

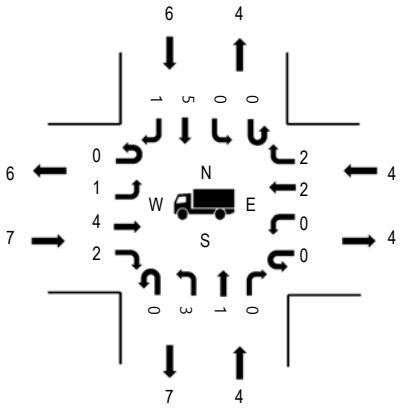
Motorized Vehicles



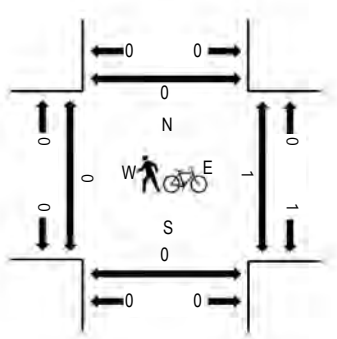
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.3%	0.87
WB	0.8%	0.93
NB	1.1%	0.81
SB	0.7%	0.91
All	0.9%	0.90

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE SE Eastbound				PACIFIC AVE SE Westbound				MARVIN RD SE Northbound				MARVIN RD SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	5	81	36	0	6	43	60	0	9	86	12	0	67	116	17	538	2,202
4:15 PM	0	10	84	34	0	14	49	60	0	14	64	5	0	93	146	16	589	2,232
4:30 PM	0	13	82	25	0	6	56	46	0	25	59	6	0	64	146	16	544	2,278
4:45 PM	0	10	83	32	0	7	55	55	0	13	59	6	0	72	121	18	531	2,273
5:00 PM	0	12	68	44	0	7	51	63	0	5	71	7	2	67	144	27	568	2,241
5:15 PM	0	14	87	50	0	7	49	72	0	20	95	11	0	79	137	14	635	
5:30 PM	0	4	79	42	0	7	38	43	0	19	73	9	0	80	122	23	539	
5:45 PM	0	8	59	42	0	8	39	43	0	21	72	7	0	71	114	15	499	
Count Total	0	76	623	305	0	62	380	442	0	126	579	63	2	593	1,046	146	4,443	
Peak Hour	0	49	320	151	0	27	211	236	0	63	284	30	2	282	548	75	2,278	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

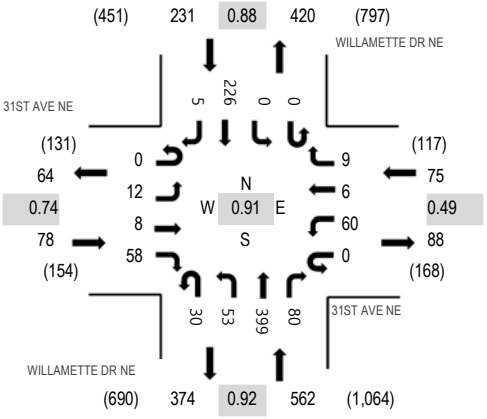
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	3	1	1	2	7	4:00 PM	0	0	1	0	1
4:15 PM	1	0	3	1	5	4:15 PM	0	0	0	0	0
4:30 PM	0	3	0	4	7	4:30 PM	0	0	0	0	0
4:45 PM	1	0	1	1	3	4:45 PM	0	0	0	0	0
5:00 PM	4	0	1	1	6	5:00 PM	0	0	1	0	1
5:15 PM	2	1	2	0	5	5:15 PM	0	0	0	0	0
5:30 PM	0	1	1	2	4	5:30 PM	0	0	0	0	0
5:45 PM	1	2	2	0	5	5:45 PM	0	0	0	0	0
Count Total	12	8	11	11	42	Count Total	0	0	2	0	2
Peak Hour	7	4	4	6	21	Peak Hour	0	0	1	0	1

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 11 WILLAMETTE DR NE & 31ST AVE NE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour

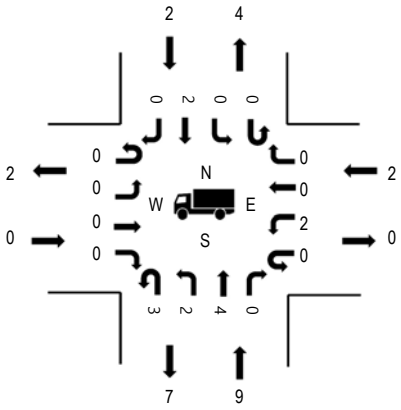
Motorized Vehicles



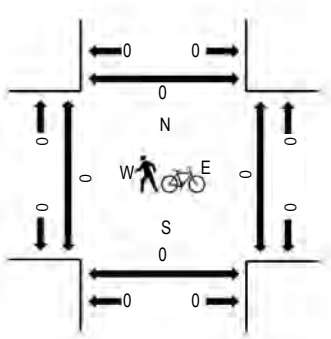
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.74
WB	2.7%	0.49
NB	1.6%	0.92
SB	0.9%	0.88
All	1.4%	0.91

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	31ST AVE NE Eastbound				31ST AVE NE Westbound				WILLAMETTE DR NE Northbound				WILLAMETTE DR NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	6	1	11	0	30	2	6	13	13	94	17	0	0	65	1	259	946
4:15 PM	0	4	3	8	0	9	4	1	9	12	104	19	0	0	57	2	232	906
4:30 PM	0	1	2	26	0	9	0	1	5	18	109	20	0	0	53	1	245	902
4:45 PM	0	1	2	13	0	12	0	1	3	10	92	24	0	0	51	1	210	871
5:00 PM	0	3	2	20	0	8	0	1	2	13	97	15	0	0	57	1	219	840
5:15 PM	0	2	2	12	0	8	2	3	3	13	103	17	0	0	63	0	228	
5:30 PM	0	1	5	14	0	5	3	1	5	15	82	25	0	0	57	1	214	
5:45 PM	0	1	1	13	0	10	0	1	1	16	82	13	0	0	38	3	179	
Count Total	0	19	18	117	0	91	11	15	41	110	763	150	0	0	441	10	1,786	
Peak Hour	0	12	8	58	0	60	6	9	30	53	399	80	0	0	226	5	946	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

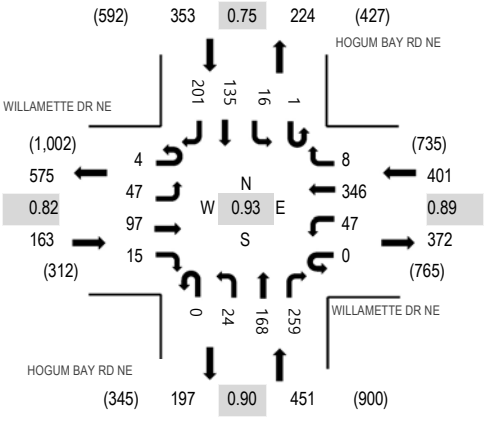
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	1	0	3	4:00 PM	0	0	0	0	0
4:15 PM	0	2	0	1	3	4:15 PM	0	0	0	0	0
4:30 PM	0	3	0	1	4	4:30 PM	0	0	0	0	0
4:45 PM	0	2	1	0	3	4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	1	1
5:15 PM	0	2	0	0	2	5:15 PM	0	0	0	0	0
5:30 PM	1	3	0	1	5	5:30 PM	0	0	1	1	2
5:45 PM	0	1	1	0	2	5:45 PM	0	0	0	0	0
Count Total	1	15	3	3	22	Count Total	0	0	1	2	3
Peak Hour	0	9	2	2	13	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 12 HOGUM BAY RD NE & WILLAMETTE DR NE PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour

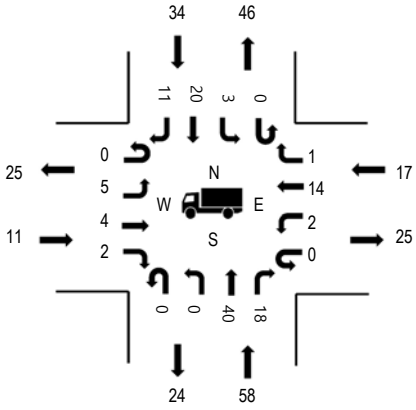
Motorized Vehicles



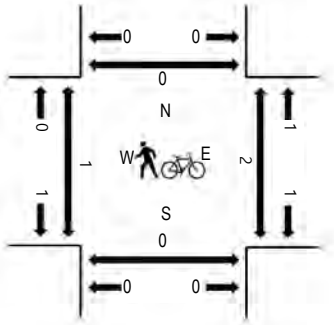
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	6.7%	0.82
WB	4.2%	0.89
NB	12.9%	0.90
SB	9.6%	0.75
All	8.8%	0.93

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	WILLAMETTE DR NE Eastbound				WILLAMETTE DR NE Westbound				HOGUM BAY RD NE Northbound				HOGUM BAY RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	8	31	6	0	7	88	4	0	5	40	60	0	9	42	67	367	1,368
4:15 PM	2	18	20	2	0	6	97	2	0	9	46	53	1	2	35	53	346	1,330
4:30 PM	1	10	22	4	0	19	93	1	0	2	32	69	0	3	31	47	334	1,305
4:45 PM	1	11	24	3	0	15	68	1	0	8	50	77	0	2	27	34	321	1,244
5:00 PM	0	4	34	2	0	9	79	5	0	5	39	72	0	0	38	42	329	1,171
5:15 PM	0	10	39	2	0	8	75	3	0	5	37	84	0	2	28	28	321	
5:30 PM	0	4	26	0	0	11	63	5	0	2	38	69	0	0	21	34	273	
5:45 PM	0	7	19	2	0	13	61	2	0	3	49	46	0	2	14	30	248	
Count Total	4	72	215	21	0	88	624	23	0	39	331	530	1	20	236	335	2,539	
Peak Hour	4	47	97	15	0	47	346	8	0	24	168	259	1	16	135	201	1,368	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

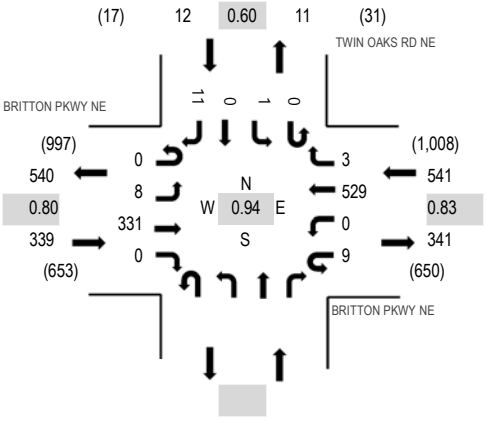
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	20	5	12	41	4:00 PM	0	0	0	0	0	4:00 PM	0	0	2	0	2
4:15 PM	3	16	5	8	32	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	4	8	6	6	24	4:30 PM	0	0	0	0	0	4:30 PM	1	0	0	0	1
4:45 PM	0	14	1	8	23	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	3	13	6	7	29	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	10	3	11	24	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	14	4	8	26	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	1	13	1	9	24	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	15	108	31	69	223	Count Total	0	0	0	0	0	Count Total	1	0	2	0	3
Peak Hour	11	58	17	34	120	Peak Hour	0	0	0	0	0	Peak Hour	1	0	2	0	3

ALL TRAFFIC DATA SERVICES
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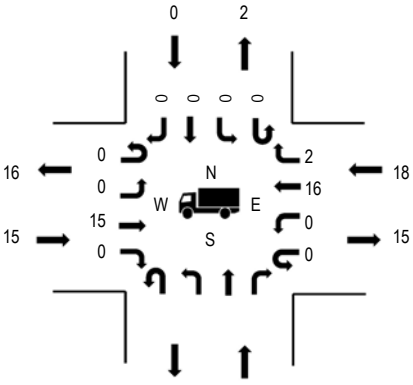
Location: 13 TWIN OAKS RD NE & BRITTON PKWY NE PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour

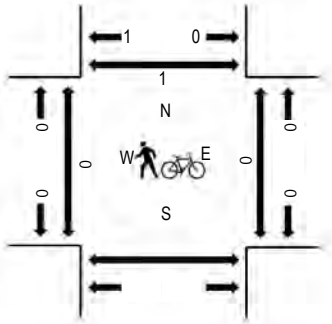
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.4%	0.80
WB	3.3%	0.83
NB		
SB	0.0%	0.60
All	3.7%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	BRITTON PKWY NE Eastbound				BRITTON PKWY NE Westbound				Northbound				TWIN OAKS RD NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	4	102	0	1	0	122	0					0	0	0	5	234	892
4:15 PM	0	2	80	0	2	0	120	2					0	0	0	0	206	874
4:30 PM	0	2	78	0	1	0	129	1					0	1	0	3	215	868
4:45 PM	0	0	71	0	5	0	158	0					0	0	0	3	237	857
5:00 PM	0	6	86	0	2	0	121	1					0	0	0	0	216	786
5:15 PM	0	6	76	0	5	0	110	0					0	0	0	3	200	
5:30 PM	0	2	73	0	3	0	122	2					0	1	0	1	204	
5:45 PM	0	3	62	0	1	0	100	0					0	0	0	0	166	
Count Total	0	25	628	0	20	0	982	6					0	2	0	15	1,678	
Peak Hour	0	8	331	0	9	0	529	3					0	1	0	11	892	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

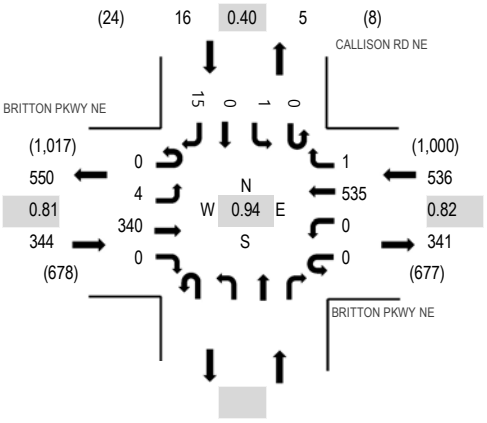
Interval Start Time	Heavy Vehicles EB	NB	WB	SB	Total	Interval Start Time	Bicycles on Roadway EB	NB	WB	SB	Total	Interval Start Time	Pedestrians/Bicycles on Crosswalk EB	NB	WB	SB	Total
4:00 PM	5		7	0	12	4:00 PM	0		0	0	0	4:00 PM	0		0	1	1
4:15 PM	5		4	0	9	4:15 PM	0		0	0	0	4:15 PM	0		0	0	0
4:30 PM	5		4	0	9	4:30 PM	0		0	0	0	4:30 PM	0		0	0	0
4:45 PM	0		3	0	3	4:45 PM	0		0	0	0	4:45 PM	0		0	0	0
5:00 PM	1		1	0	2	5:00 PM	0		0	0	0	5:00 PM	0		0	1	1
5:15 PM	0		2	0	2	5:15 PM	0		0	0	0	5:15 PM	0		0	1	1
5:30 PM	1		3	0	4	5:30 PM	0		0	0	0	5:30 PM	0		0	0	0
5:45 PM	0		2	0	2	5:45 PM	0		0	0	0	5:45 PM	0		0	0	0
Count Total	17		26	0	43	Count Total	0		0	0	0	Count Total	0		0	3	3
Peak Hour	15		18	0	33	Peak Hour	0		0	0	0	Peak Hour	0		0	1	1

(303) 216-2439
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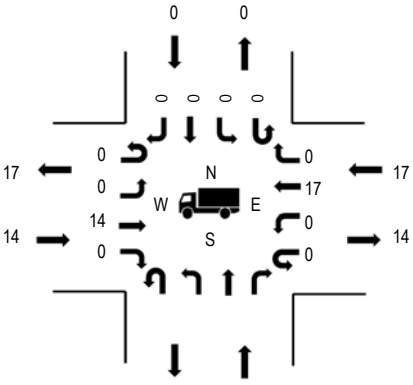
Location: 14 CALLISON RD NE & BRITTON PKWY NE PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour

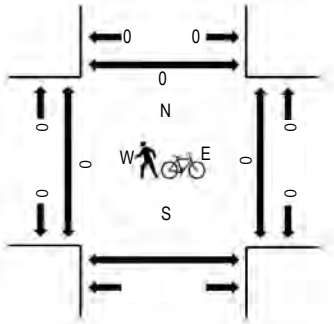
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.1%	0.81
WB	3.2%	0.82
NB		
SB	0.0%	0.40
All	3.5%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	BRITTON PKWY NE Eastbound				BRITTON PKWY NE Westbound				Northbound				CALLISON RD NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	1	105	0	0	0	123	0					0	1	0	9	239	896
4:15 PM	0	1	84	0	0	0	126	0					0	0	0	2	213	874
4:30 PM	0	1	78	0	0	0	124	0					0	0	0	3	206	862
4:45 PM	0	1	73	0	0	0	162	1					0	0	0	1	238	878
5:00 PM	0	0	91	0	0	0	123	0					0	1	0	2	217	806
5:15 PM	0	1	84	0	0	0	114	1					0	0	0	1	201	
5:30 PM	0	0	94	0	0	0	125	0					0	1	0	2	222	
5:45 PM	0	0	64	0	0	0	100	1					0	1	0	0	166	
Count Total	0	5	673	0	0	0	997	3					0	4	0	20	1,702	
Peak Hour	0	4	340	0	0	0	535	1					0	1	0	15	896	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

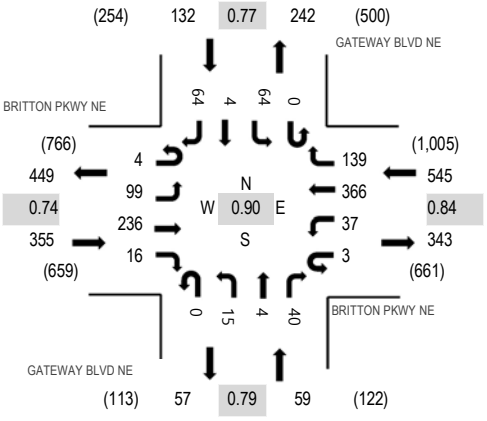
Interval Start Time	Heavy Vehicles EB	NB	WB	SB	Total	Interval Start Time	Bicycles on Roadway EB	NB	WB	SB	Total	Interval Start Time	Pedestrians/Bicycles on Crosswalk EB	NB	WB	SB	Total
4:00 PM	3		8	0	11	4:00 PM	0		0	0	0	4:00 PM	0		0	0	0
4:15 PM	5		3	0	8	4:15 PM	0		0	0	0	4:15 PM	0		0	0	0
4:30 PM	6		3	0	9	4:30 PM	0		0	0	0	4:30 PM	0		0	0	0
4:45 PM	0		3	0	3	4:45 PM	0		0	0	0	4:45 PM	0		0	0	0
5:00 PM	1		0	0	1	5:00 PM	0		0	0	0	5:00 PM	0		0	1	1
5:15 PM	0		1	0	1	5:15 PM	0		0	0	0	5:15 PM	0		0	1	1
5:30 PM	1		1	0	2	5:30 PM	0		0	0	0	5:30 PM	0		0	0	0
5:45 PM	0		1	0	1	5:45 PM	0		0	0	0	5:45 PM	0		0	0	0
Count Total	16		20	0	36	Count Total	0		0	0	0	Count Total	0		0	2	2
Peak Hour	14		17	0	31	Peak Hour	0		0	0	0	Peak Hour	0		0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 15 GATEWAY BLVD NE & BRITTON PKWY NE PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour

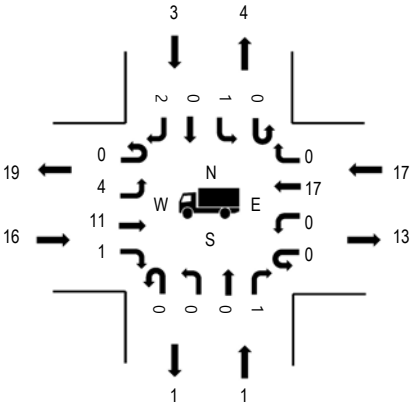
Motorized Vehicles



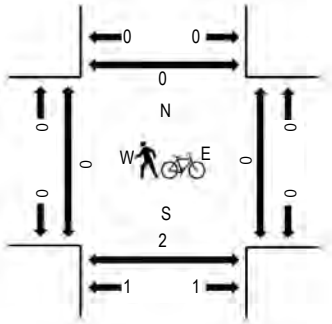
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.5%	0.74
WB	3.1%	0.84
NB	1.7%	0.79
SB	2.3%	0.77
All	3.4%	0.90

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	BRITTON PKWY NE Eastbound				BRITTON PKWY NE Westbound				GATEWAY BLVD NE Northbound				GATEWAY BLVD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	2	37	77	4	2	13	92	24	0	5	2	10	0	15	1	18	302	1,091
4:15 PM	0	23	56	3	1	9	87	30	0	3	1	13	0	17	0	17	260	1,052
4:30 PM	2	19	51	5	0	6	90	29	0	5	0	10	0	19	2	22	260	1,042
4:45 PM	0	20	52	4	0	9	97	56	0	2	1	7	0	13	1	7	269	1,018
5:00 PM	1	25	60	4	0	7	89	31	0	2	0	10	0	24	2	8	263	949
5:15 PM	1	29	56	10	0	7	59	42	0	7	0	13	0	16	1	9	250	
5:30 PM	0	19	37	4	0	9	73	44	0	2	1	12	0	25	0	10	236	
5:45 PM	1	21	33	3	1	9	45	44	0	2	2	12	0	19	0	8	200	
Count Total	7	193	422	37	4	69	632	300	0	28	7	87	0	148	7	99	2,040	
Peak Hour	4	99	236	16	3	37	366	139	0	15	4	40	0	64	4	64	1,091	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

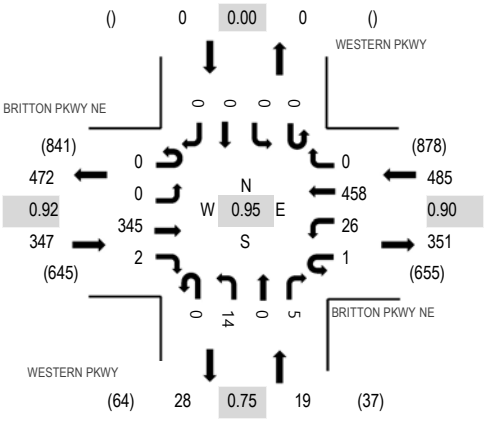
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	8	0	9	0	17	4:00 PM	0	0	0	0	0	4:00 PM	0	1	0	0	1
4:15 PM	5	0	3	3	11	4:15 PM	0	0	0	0	0	4:15 PM	0	1	0	0	1
4:30 PM	3	1	3	0	7	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	0	2	0	2	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	2	0	2	0	4	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	1	1	3	0	5	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	1	0	1	2
Count Total	19	2	22	4	47	Count Total	0	0	0	0	0	Count Total	0	3	0	1	4
Peak Hour	16	1	17	3	37	Peak Hour	0	0	0	0	0	Peak Hour	0	2	0	0	2

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 16 WESTERN PKWY & BRITTON PKWY NE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour

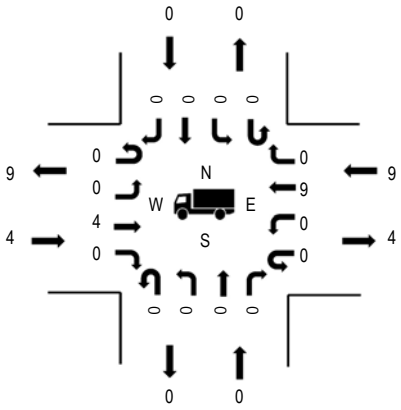
Motorized Vehicles



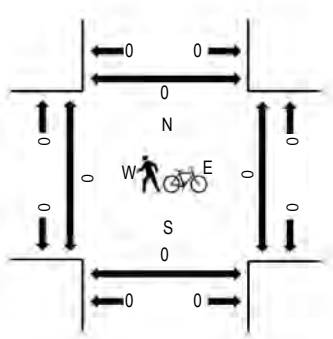
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.2%	0.92
WB	1.9%	0.90
NB	0.0%	0.75
SB	0.0%	0.00
All	1.5%	0.95

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	BRITTON PKWY NE Eastbound				BRITTON PKWY NE Westbound				WESTERN PKWY Northbound				WESTERN PKWY Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	81	0	0	5	115	0	0	2	0	0	0	0	0	0	203	851
4:15 PM	0	0	79	1	0	7	130	0	0	5	0	2	0	0	0	0	224	845
4:30 PM	0	0	93	1	0	6	111	0	0	5	0	2	0	0	0	0	218	811
4:45 PM	0	0	92	0	1	8	102	0	0	2	0	1	0	0	0	0	206	747
5:00 PM	0	0	63	0	0	5	125	0	0	3	0	1	0	0	0	0	197	709
5:15 PM	0	0	84	2	1	8	91	0	0	1	0	3	0	0	0	0	190	
5:30 PM	0	0	54	1	0	9	85	0	0	1	0	4	0	0	0	0	154	
5:45 PM	0	0	91	3	0	8	61	0	0	2	0	3	0	0	0	0	168	
Count Total	0	0	637	8	2	56	820	0	0	21	0	16	0	0	0	0	1,560	
Peak Hour	0	0	345	2	1	26	458	0	0	14	0	5	0	0	0	0	851	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

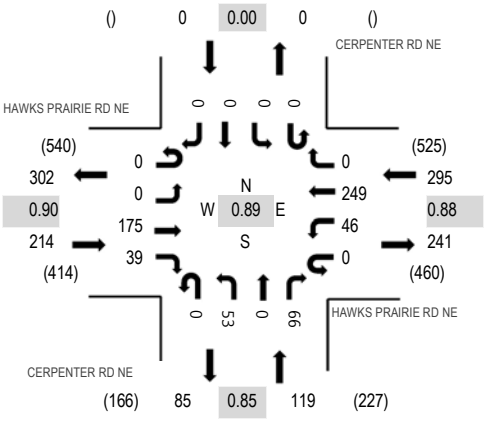
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	2	0	4	0	6	4:00 PM	0	0	0	0	0
4:15 PM	1	0	2	0	3	4:15 PM	0	0	0	0	0
4:30 PM	1	0	1	0	2	4:30 PM	0	0	0	0	0
4:45 PM	0	0	2	0	2	4:45 PM	0	0	0	0	0
5:00 PM	3	0	1	0	4	5:00 PM	0	0	0	0	0
5:15 PM	0	0	1	0	1	5:15 PM	0	0	0	0	0
5:30 PM	0	0	1	0	1	5:30 PM	0	0	0	0	0
5:45 PM	0	0	1	0	1	5:45 PM	0	2	0	0	2
Count Total	7	0	13	0	20	Count Total	0	2	0	0	2
Peak Hour	4	0	9	0	13	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
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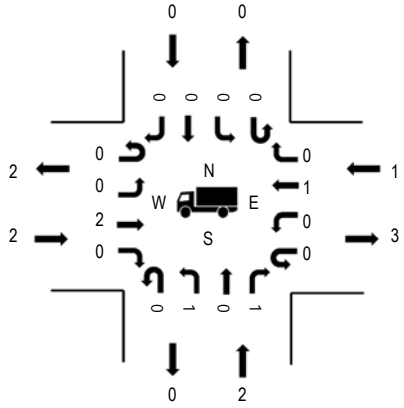
Location: 19 CERPENTER RD NE & HAWKS PRAIRIE RD NE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour

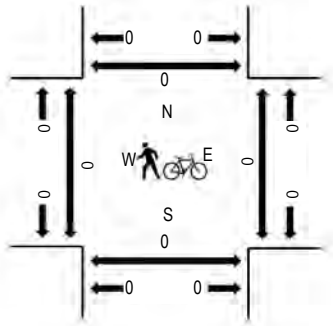
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.9%	0.90
WB	0.3%	0.88
NB	1.7%	0.85
SB	0.0%	0.00
All	0.8%	0.89

Traffic Counts - Motorized Vehicles

Interval Start Time	HAWKS PRAIRIE RD NE Eastbound				HAWKS PRAIRIE RD NE Westbound				CERPENTER RD NE Northbound				CERPENTER RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	46	11	0	16	65	0	0	21	0	18	0	0	0	0	177	618
4:15 PM	0	0	46	8	0	13	57	0	0	9	0	11	0	0	0	0	144	617
4:30 PM	0	0	49	12	0	17	62	0	0	15	0	20	0	0	0	0	175	628
4:45 PM	0	0	38	8	0	9	47	0	0	8	0	12	0	0	0	0	122	553
5:00 PM	0	0	50	12	0	6	78	0	0	16	0	14	0	0	0	0	176	548
5:15 PM	0	0	38	7	0	14	62	0	0	14	0	20	0	0	0	0	155	
5:30 PM	0	0	26	13	0	4	30	0	0	9	0	18	0	0	0	0	100	
5:45 PM	0	0	39	11	0	5	40	0	0	7	0	15	0	0	0	0	117	
Count Total	0	0	332	82	0	84	441	0	0	99	0	128	0	0	0	0	1,166	
Peak Hour	0	0	175	39	0	46	249	0	0	53	0	66	0	0	0	0	628	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

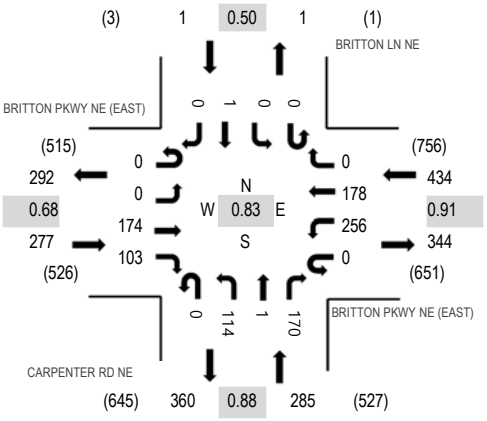
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	3	1	1	0	5	4:00 PM	0	0	0	0	0
4:15 PM	0	0	3	0	3	4:15 PM	0	0	0	0	0
4:30 PM	0	1	0	0	1	4:30 PM	0	0	0	0	0
4:45 PM	0	1	0	0	1	4:45 PM	0	0	0	0	0
5:00 PM	2	0	1	0	3	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	5	3	5	0	13	Count Total	0	0	0	0	0
Peak Hour	2	2	1	0	5	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 20 CARPENTER RD NE & BRITTON PKWY NE (EAST) PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

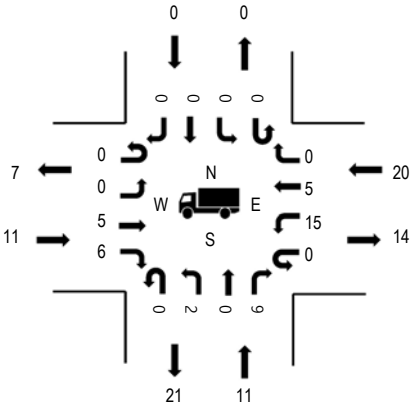
Peak Hour

Motorized Vehicles

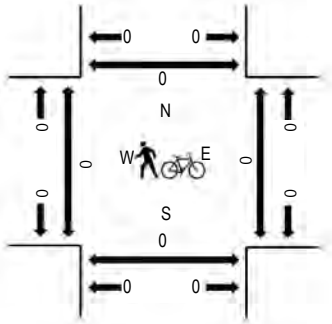


Note: Total study counts contained in parentheses.

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



	HV%	PHF
EB	4.0%	0.68
WB	4.6%	0.91
NB	3.9%	0.88
SB	0.0%	0.50
All	4.2%	0.83

Traffic Counts - Motorized Vehicles

Interval Start Time	BRITTON PKWY NE (EAST) Eastbound				BRITTON PKWY NE (EAST) Westbound				CARPENTER RD NE Northbound				BRITTON LN NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	72	30	0	72	45	0	0	34	1	46	0	0	0	0	300	997
4:15 PM	0	0	38	17	0	58	44	0	0	28	0	38	0	0	0	0	223	936
4:30 PM	0	0	29	34	0	70	49	0	0	29	0	49	0	0	1	0	261	933
4:45 PM	0	0	35	22	0	56	40	0	0	23	0	37	0	0	0	0	213	855
5:00 PM	0	0	58	24	0	64	34	0	0	25	0	34	0	0	0	0	239	815
5:15 PM	0	0	40	27	0	45	35	0	0	23	0	49	0	1	0	0	220	
5:30 PM	0	0	29	20	0	47	33	0	0	23	0	30	0	0	0	1	183	
5:45 PM	0	0	29	22	0	36	28	0	0	21	0	37	0	0	0	0	173	
Count Total	0	0	330	196	0	448	308	0	0	206	1	320	0	1	1	1	1,812	
Peak Hour	0	0	174	103	0	256	178	0	0	114	1	170	0	0	1	0	997	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

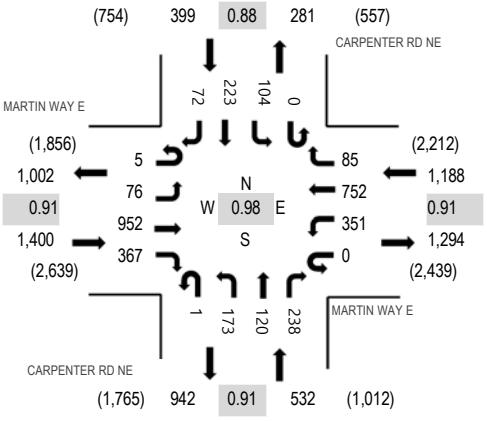
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	3	12	0	19	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	4	5	3	0	12	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	3	2	3	0	8	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	1	2	0	3	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	1	1	1	0	3	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	1	4	0	5	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	12	14	25	0	51	Count Total	0	0	0	0	0	Count Total	0	0	0	0	0
Peak Hour	11	11	20	0	42	Peak Hour	0	0	0	0	0	Peak Hour	0	0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 21 CARPENTER RD NE & MARTIN WAY E PM
Date: Tuesday, January 24, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

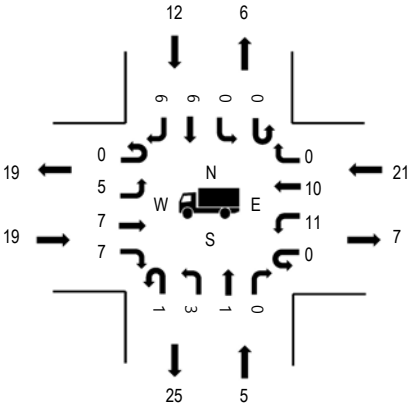
Motorized Vehicles



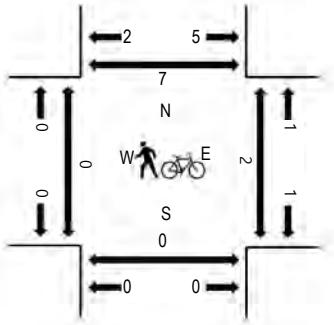
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.4%	0.91
WB	1.8%	0.91
NB	0.9%	0.91
SB	3.0%	0.88
All	1.6%	0.98

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				CARPENTER RD NE Northbound				CARPENTER RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	1	15	227	77	0	80	164	26	0	40	41	57	0	34	69	20	851	3,455
4:15 PM	0	18	238	73	0	72	189	19	0	35	33	53	0	17	56	21	824	3,461
4:30 PM	1	19	208	78	0	97	202	27	0	45	32	69	0	32	73	12	895	3,519
4:45 PM	1	18	247	88	0	95	190	23	0	41	26	58	0	21	51	26	885	3,349
5:00 PM	1	14	250	89	0	63	187	14	1	45	35	57	0	26	56	19	857	3,162
5:15 PM	2	25	247	112	0	96	173	21	0	42	27	54	0	25	43	15	882	
5:30 PM	2	19	211	74	0	55	159	18	0	40	22	49	0	16	50	10	725	
5:45 PM	0	25	173	86	0	89	136	17	0	31	23	56	0	14	42	6	698	
Count Total	8	153	1,801	677	0	647	1,400	165	1	319	239	453	0	185	440	129	6,617	
Peak Hour	5	76	952	367	0	351	752	85	1	173	120	238	0	104	223	72	3,519	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

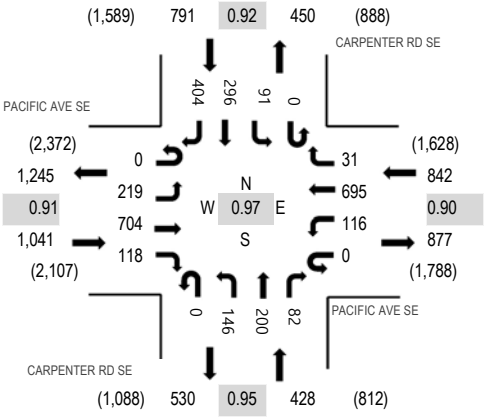
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	6	1	10	22	4:00 PM	0	0	0	0	0	4:00 PM	0	0	1	1	2
4:15 PM	4	6	7	4	21	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	5	1	12	8	26	4:30 PM	0	0	0	0	0	4:30 PM	0	0	1	2	3
4:45 PM	7	2	3	2	14	4:45 PM	0	0	0	0	0	4:45 PM	0	0	1	1	2
5:00 PM	4	1	5	2	12	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	3	3
5:15 PM	3	1	1	0	5	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	1	1
5:30 PM	4	1	2	4	11	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	2	0	2	0	4	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	34	18	33	30	115	Count Total	0	0	0	0	0	Count Total	0	0	3	8	11
Peak Hour	19	5	21	12	57	Peak Hour	0	0	0	0	0	Peak Hour	0	0	2	7	9

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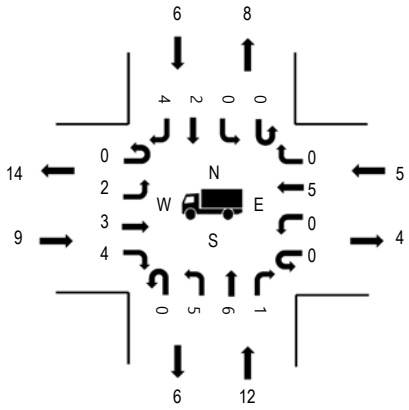
Location: 22 CARPENTER RD SE & PACIFIC AVE SE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour

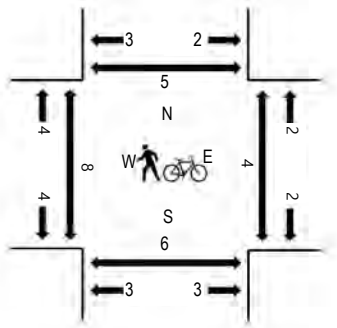
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.9%	0.91
WB	0.6%	0.90
NB	2.8%	0.95
SB	0.8%	0.92
All	1.0%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE SE Eastbound				PACIFIC AVE SE Westbound				CARPENTER RD SE Northbound				CARPENTER RD SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	67	201	26	0	28	147	2	0	34	50	32	0	28	78	72	765	3,093
4:15 PM	0	67	188	40	0	27	185	6	0	31	53	22	0	23	65	95	802	3,102
4:30 PM	0	51	163	20	0	22	179	5	0	45	48	19	0	22	73	94	741	3,080
4:45 PM	0	55	169	21	0	35	186	13	0	35	47	23	0	26	74	101	785	3,100
5:00 PM	0	46	184	37	0	32	145	7	0	35	52	18	0	20	84	114	774	3,043
5:15 PM	0	58	174	32	0	29	145	13	0	31	46	23	0	23	101	105	780	
5:30 PM	0	54	179	33	0	28	169	11	0	28	47	19	0	26	77	90	761	
5:45 PM	0	49	171	22	0	27	180	7	0	26	34	14	0	21	77	100	728	
Count Total	0	447	1,429	231	0	228	1,336	64	0	265	377	170	0	189	629	771	6,136	
Peak Hour	0	219	704	118	0	116	695	31	0	146	200	82	0	91	296	404	3,102	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

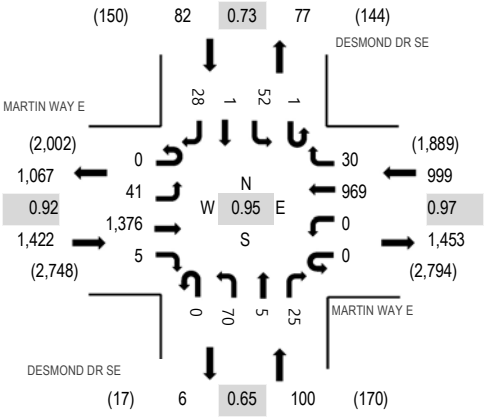
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	6	5	4	4	19	4:00 PM	1	0	1	1	3
4:15 PM	0	5	0	2	7	4:15 PM	0	0	0	1	1
4:30 PM	5	2	2	1	10	4:30 PM	6	2	0	1	9
4:45 PM	1	1	1	1	4	4:45 PM	1	3	4	3	11
5:00 PM	3	4	2	2	11	5:00 PM	1	1	0	0	2
5:15 PM	0	0	1	2	3	5:15 PM	2	0	0	0	2
5:30 PM	4	1	3	3	11	5:30 PM	0	0	0	2	2
5:45 PM	3	0	2	3	8	5:45 PM	0	0	1	1	2
Count Total	22	18	15	18	73	Count Total	11	6	6	9	32
Peak Hour	9	12	5	6	32	Peak Hour	8	6	4	5	23

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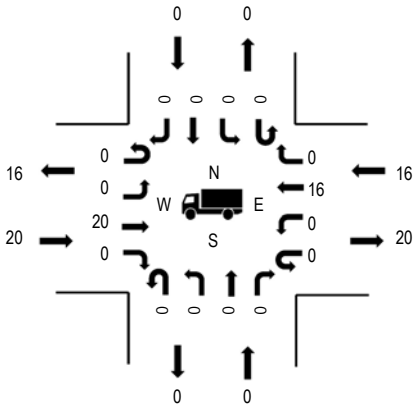
Location: 23 DESMOND DR SE & MARTIN WAY E PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour

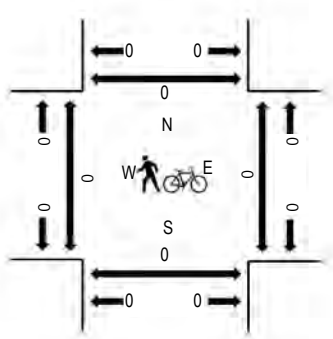
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.4%	0.92
WB	1.6%	0.97
NB	0.0%	0.65
SB	0.0%	0.73
All	1.4%	0.95

Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				DESMOND DR SE Northbound				DESMOND DR SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	6	324	1	0	1	242	9	0	13	0	8	0	13	0	5	622	2,562
4:15 PM	0	10	346	0	0	0	253	6	0	7	0	5	1	12	0	6	646	2,603
4:30 PM	0	6	303	2	0	0	231	11	0	18	0	7	0	19	0	9	606	2,577
4:45 PM	0	12	381	1	0	0	253	4	0	17	2	2	0	12	1	3	688	2,564
5:00 PM	0	13	346	2	0	0	232	9	0	28	3	11	0	9	0	10	663	2,395
5:15 PM	0	11	356	5	0	0	205	4	0	16	0	5	0	13	0	5	620	
5:30 PM	0	10	311	3	0	0	227	6	0	13	1	2	0	11	0	9	593	
5:45 PM	0	15	283	1	0	0	191	5	0	6	0	6	0	9	0	3	519	
Count Total	0	83	2,650	15	0	1	1,834	54	0	118	6	46	1	98	1	50	4,957	
Peak Hour	0	41	1,376	5	0	0	969	30	0	70	5	25	1	52	1	28	2,603	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

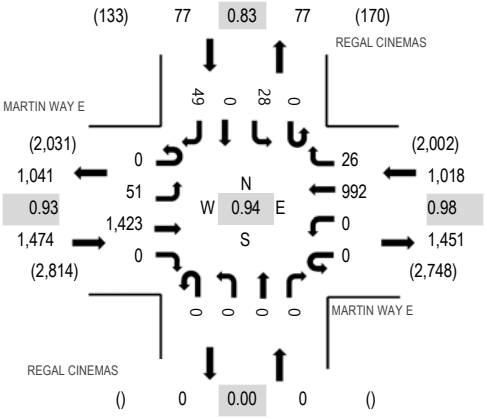
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	0	2	0	7	4:00 PM	0	0	0	0	0
4:15 PM	5	0	4	0	9	4:15 PM	0	0	0	0	0
4:30 PM	4	0	3	0	7	4:30 PM	0	0	0	0	0
4:45 PM	7	0	3	0	10	4:45 PM	0	0	0	0	0
5:00 PM	4	0	6	0	10	5:00 PM	0	0	0	0	0
5:15 PM	5	0	3	0	8	5:15 PM	0	0	0	0	0
5:30 PM	3	0	3	0	6	5:30 PM	0	0	0	0	0
5:45 PM	2	0	3	0	5	5:45 PM	0	0	0	0	0
Count Total	35	0	27	0	62	Count Total	0	0	0	0	0
Peak Hour	20	0	16	0	36	Peak Hour	0	0	0	0	0

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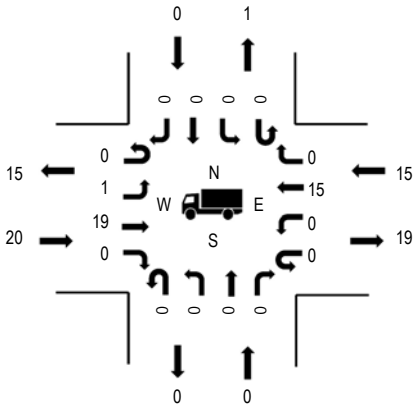
Location: 24 REGAL CINEMAS & MARTIN WAY E PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour

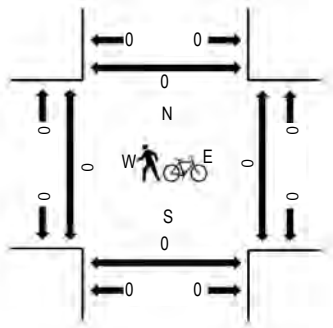
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.4%	0.93
WB	1.5%	0.98
NB	0.0%	0.00
SB	0.0%	0.83
All	1.4%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				REGAL CINEMAS Northbound				REGAL CINEMAS Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	21	321	0	0	0	255	5	0	0	0	0	0	10	0	4	616	2,531
4:15 PM	0	30	350	0	0	0	261	5	0	0	0	0	0	6	0	0	652	2,565
4:30 PM	0	11	303	0	0	0	254	4	0	0	0	0	0	8	0	2	582	2,546
4:45 PM	0	11	384	0	0	0	270	3	0	0	0	0	0	10	0	3	681	2,569
5:00 PM	0	8	357	0	0	0	259	11	0	0	0	0	0	4	0	11	650	2,418
5:15 PM	0	16	369	0	0	0	220	6	0	0	0	0	0	3	0	19	633	
5:30 PM	0	16	313	0	0	0	243	6	0	0	0	0	0	11	0	16	605	
5:45 PM	0	11	293	0	0	0	194	6	0	0	0	0	0	6	0	20	530	
Count Total	0	124	2,690	0	0	0	1,956	46	0	0	0	0	0	58	0	75	4,949	
Peak Hour	0	51	1,423	0	0	0	992	26	0	0	0	0	0	28	0	49	2,569	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

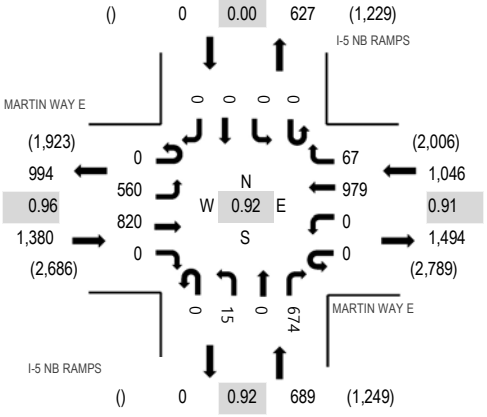
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	5	0	2	0	7	4:00 PM	0	0	0	0	0
4:15 PM	5	0	4	0	9	4:15 PM	0	0	0	0	0
4:30 PM	5	0	3	0	8	4:30 PM	0	0	0	0	0
4:45 PM	7	0	3	0	10	4:45 PM	0	0	0	0	0
5:00 PM	4	0	6	0	10	5:00 PM	0	0	0	0	0
5:15 PM	5	0	3	0	8	5:15 PM	0	0	0	0	0
5:30 PM	4	0	3	0	7	5:30 PM	0	0	0	0	0
5:45 PM	2	0	3	0	5	5:45 PM	0	0	0	0	0
Count Total	37	0	27	0	64	Count Total	0	0	0	0	0
Peak Hour	20	0	15	0	35	Peak Hour	0	0	0	0	0

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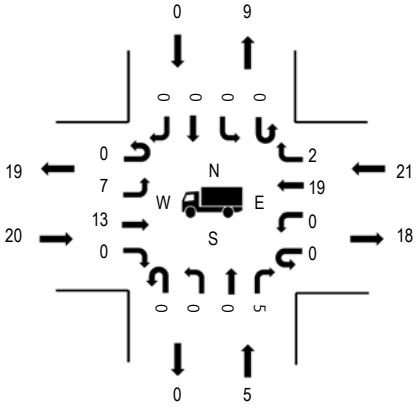
Location: 25 I-5 NB RAMPS & MARTIN WAY E PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour

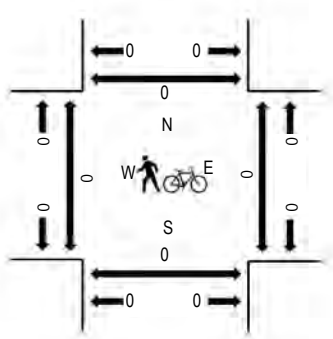
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.4%	0.96
WB	2.0%	0.91
NB	0.7%	0.92
SB	0.0%	0.00
All	1.5%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				I-5 NB RAMPS Northbound				I-5 NB RAMPS Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	125	213	0	0	0	255	16	0	7	0	132	0	0	0	0	748	3,013
4:15 PM	0	164	191	0	0	0	225	12	0	5	0	140	0	0	0	0	737	3,110
4:30 PM	0	138	221	0	0	0	256	14	0	2	0	129	0	0	0	0	760	3,115
4:45 PM	0	156	179	0	0	0	237	17	0	1	0	178	0	0	0	0	768	3,082
5:00 PM	0	124	243	0	0	0	274	15	0	6	0	183	0	0	0	0	845	2,928
5:15 PM	0	142	177	0	0	0	212	21	0	6	0	184	0	0	0	0	742	
5:30 PM	0	132	192	0	0	0	247	12	0	3	0	141	0	0	0	0	727	
5:45 PM	0	132	157	0	1	0	183	9	0	4	0	128	0	0	0	0	614	
Count Total	0	1,113	1,573	0	1	0	1,889	116	0	34	0	1,215	0	0	0	0	5,941	
Peak Hour	0	560	820	0	0	0	979	67	0	15	0	674	0	0	0	0	3,115	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

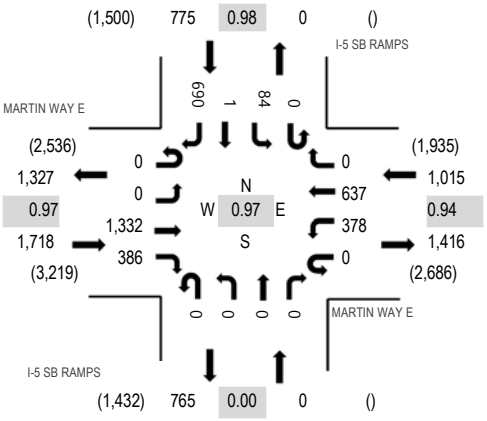
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	4	1	5	0	10	4:00 PM	0	0	0	0	0
4:15 PM	3	0	4	0	7	4:15 PM	0	0	0	0	0
4:30 PM	6	0	4	0	10	4:30 PM	0	0	0	0	0
4:45 PM	3	1	4	0	8	4:45 PM	0	0	0	0	0
5:00 PM	4	3	8	0	15	5:00 PM	0	0	0	0	0
5:15 PM	7	1	5	0	13	5:15 PM	0	0	0	0	0
5:30 PM	6	1	3	0	10	5:30 PM	0	0	0	0	0
5:45 PM	3	0	2	0	5	5:45 PM	0	3	0	0	3
Count Total	36	7	35	0	78	Count Total	0	3	0	0	3
Peak Hour	20	5	21	0	46	Peak Hour	0	0	0	0	0

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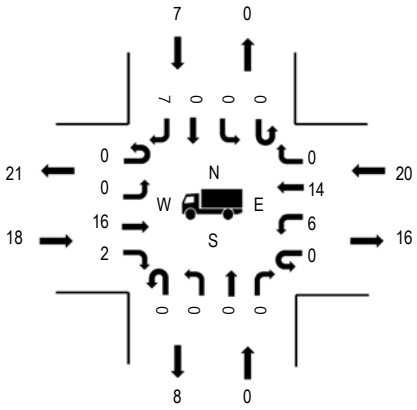
Location: 26 I-5 SB RAMPS & MARTIN WAY E PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour

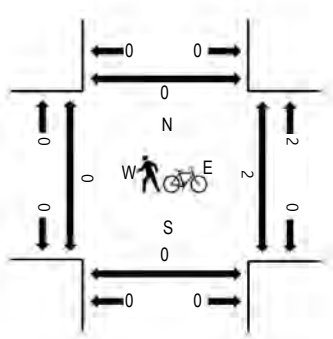
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.0%	0.97
WB	2.0%	0.94
NB	0.0%	0.00
SB	0.9%	0.98
All	1.3%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				I-5 SB RAMPS Northbound				I-5 SB RAMPS Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	312	113	0	93	163	0	0	0	0	0	0	26	1	168	876	3,481
4:15 PM	0	0	344	93	0	93	146	0	0	0	0	0	0	11	1	188	876	3,508
4:30 PM	0	0	338	105	0	92	164	0	0	0	0	0	0	21	0	175	895	3,413
4:45 PM	0	0	305	89	0	88	161	0	0	0	0	0	0	30	0	161	834	3,301
5:00 PM	0	0	345	99	0	105	166	0	0	0	0	0	0	22	0	166	903	3,173
5:15 PM	0	0	298	69	0	93	144	0	0	0	0	0	0	21	0	156	781	
5:30 PM	0	0	308	78	0	78	156	0	0	0	0	0	0	16	0	147	783	
5:45 PM	0	0	264	59	0	83	110	0	0	0	0	0	0	25	0	165	706	
Count Total	0	0	2,514	705	0	725	1,210	0	0	0	0	0	0	172	2	1,326	6,654	
Peak Hour	0	0	1,332	386	0	378	637	0	0	0	0	0	0	84	1	690	3,508	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

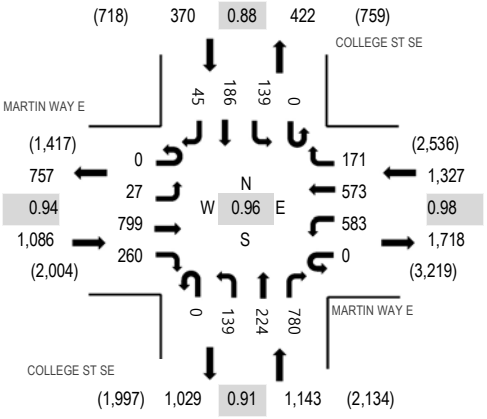
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	7	0	6	3	16	4:00 PM	0	0	2	0	2
4:15 PM	5	0	4	1	10	4:15 PM	0	0	1	0	1
4:30 PM	6	0	4	2	12	4:30 PM	0	0	1	0	1
4:45 PM	3	0	4	2	9	4:45 PM	0	0	0	0	0
5:00 PM	4	0	8	2	14	5:00 PM	0	0	0	0	0
5:15 PM	8	0	3	2	13	5:15 PM	0	0	0	0	0
5:30 PM	7	0	2	3	12	5:30 PM	0	0	0	0	0
5:45 PM	2	0	3	1	6	5:45 PM	0	0	0	0	0
Count Total	42	0	34	16	92	Count Total	0	0	4	0	4
Peak Hour	18	0	20	7	45	Peak Hour	0	0	2	0	2

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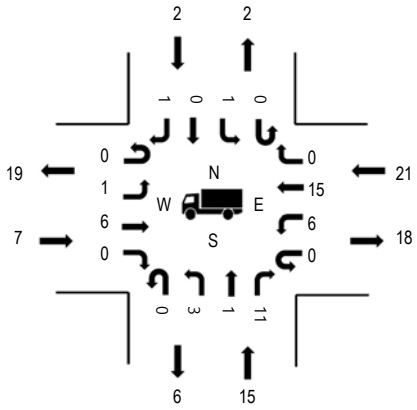
Location: 27 COLLEGE ST SE & MARTIN WAY E PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour

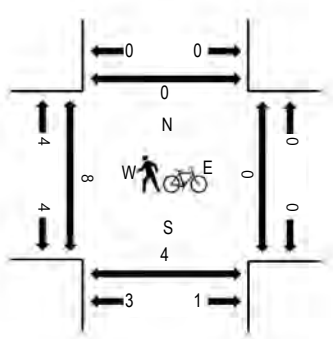
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.6%	0.94
WB	1.6%	0.98
NB	1.3%	0.91
SB	0.5%	0.88
All	1.1%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				COLLEGE ST SE Northbound				COLLEGE ST SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	6	201	61	0	166	124	41	0	28	46	191	0	33	44	15	956	3,898
4:15 PM	0	10	183	67	0	139	154	41	0	33	70	212	0	42	57	13	1,021	3,926
4:30 PM	0	5	214	69	0	161	139	39	0	36	55	183	0	46	44	14	1,005	3,741
4:45 PM	0	5	191	54	0	135	150	37	0	38	48	172	0	31	46	9	916	3,625
5:00 PM	0	7	211	70	0	148	130	54	0	32	51	213	0	20	39	9	984	3,494
5:15 PM	0	6	162	43	0	140	128	32	0	45	42	174	0	31	24	9	836	
5:30 PM	0	7	172	49	0	153	115	35	0	38	46	161	0	53	49	11	889	
5:45 PM	0	9	147	55	0	149	98	28	0	43	39	138	0	38	35	6	785	
Count Total	0	55	1,481	468	0	1,191	1,038	307	0	293	397	1,444	0	294	338	86	7,392	
Peak Hour	0	27	799	260	0	583	573	171	0	139	224	780	0	139	186	45	3,926	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

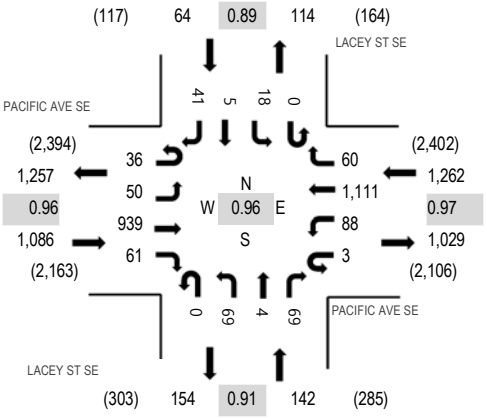
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	2	5	7	1	15	4:00 PM	1	1	0	0	2
4:15 PM	1	5	3	1	10	4:15 PM	1	2	0	0	3
4:30 PM	1	4	4	1	10	4:30 PM	5	2	0	0	7
4:45 PM	3	1	5	0	9	4:45 PM	2	0	0	0	2
5:00 PM	2	5	9	0	16	5:00 PM	0	0	0	0	0
5:15 PM	5	7	3	1	16	5:15 PM	0	0	0	0	0
5:30 PM	6	2	5	1	14	5:30 PM	0	4	0	0	4
5:45 PM	1	1	3	0	5	5:45 PM	0	2	0	3	5
Count Total	21	30	39	5	95	Count Total	9	11	0	3	23
Peak Hour	7	15	21	2	45	Peak Hour	8	4	0	0	12

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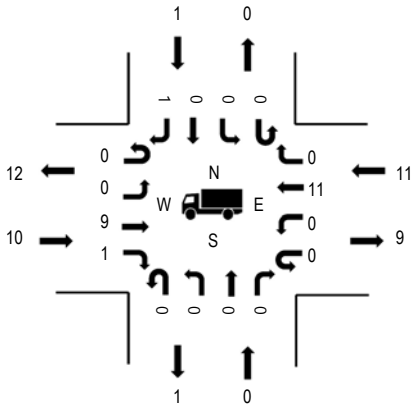
Location: 28 LACEY ST SE & PACIFIC AVE SE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour

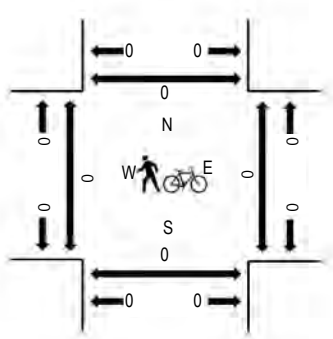
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.9%	0.96
WB	0.9%	0.97
NB	0.0%	0.91
SB	1.6%	0.89
All	0.9%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE SE Eastbound				PACIFIC AVE SE Westbound				LACEY ST SE Northbound				LACEY ST SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	3	5	277	9	0	23	234	2	0	14	0	27	0	5	2	7	608	2,535
4:15 PM	8	5	261	12	2	32	284	8	0	15	0	21	0	5	1	12	666	2,554
4:30 PM	11	11	215	14	1	12	290	16	0	19	0	15	0	3	0	9	616	2,499
4:45 PM	11	24	206	22	0	18	278	30	0	17	2	19	0	5	3	10	645	2,500
5:00 PM	6	10	257	13	0	26	259	6	0	18	2	14	0	5	1	10	627	2,432
5:15 PM	14	7	239	14	2	19	256	8	0	18	3	16	0	6	2	7	611	
5:30 PM	6	9	253	8	1	26	262	7	0	13	1	18	0	2	1	10	617	
5:45 PM	1	3	205	24	2	20	273	5	0	14	0	19	0	5	1	5	577	
Count Total	60	74	1,913	116	8	176	2,136	82	0	128	8	149	0	36	11	70	4,967	
Peak Hour	36	50	939	61	3	88	1,111	60	0	69	4	69	0	18	5	41	2,554	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

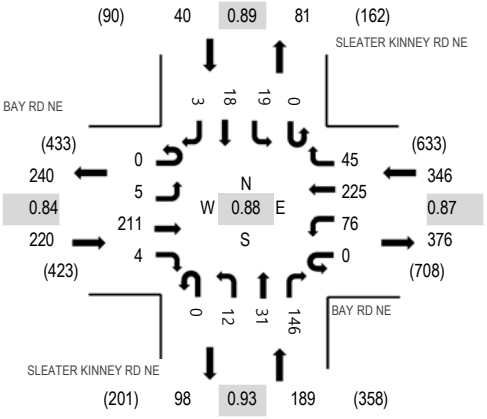
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	6	0	4	0	10	4:00 PM	0	0	0	0	0
4:15 PM	0	0	1	0	1	4:15 PM	0	0	0	0	0
4:30 PM	5	0	4	0	9	4:30 PM	0	0	0	0	0
4:45 PM	1	0	2	0	3	4:45 PM	0	0	0	0	0
5:00 PM	4	0	4	1	9	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	1	0	1
5:30 PM	3	0	3	0	6	5:30 PM	0	0	2	0	2
5:45 PM	1	0	3	0	4	5:45 PM	0	0	0	0	0
Count Total	20	0	21	1	42	Count Total	0	0	3	0	3
Peak Hour	10	0	11	1	22	Peak Hour	0	0	0	0	0

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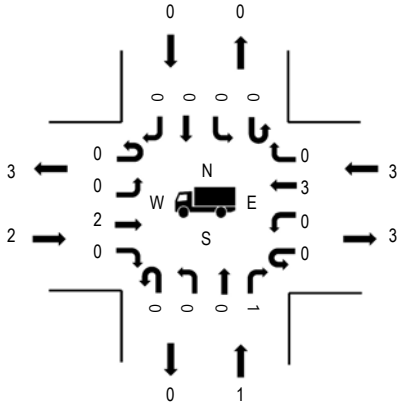
Location: 29 SLEATER KINNEY RD NE & BAY RD NE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour

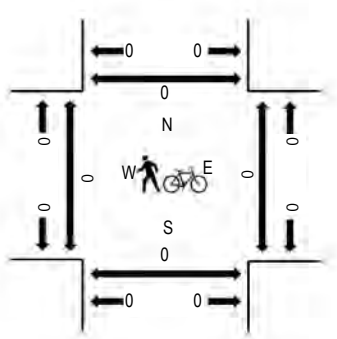
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.9%	0.84
WB	0.9%	0.87
NB	0.5%	0.93
SB	0.0%	0.89
All	0.8%	0.88

Traffic Counts - Motorized Vehicles

Interval Start Time	BAY RD NE Eastbound				BAY RD NE Westbound				SLEATER KINNEY RD NE Northbound				SLEATER KINNEY RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	50	0	0	29	57	16	0	4	13	33	0	7	4	1	214	775
4:15 PM	0	2	51	2	0	26	44	4	0	2	9	30	0	8	4	2	184	786
4:30 PM	0	1	59	1	0	21	60	10	0	2	10	36	0	6	6	1	213	795
4:45 PM	0	0	39	2	0	21	37	12	0	4	4	34	0	6	4	1	164	749
5:00 PM	0	2	63	1	0	14	72	14	0	2	12	37	0	4	4	0	225	729
5:15 PM	0	2	50	0	0	20	56	9	0	4	5	39	0	3	4	1	193	
5:30 PM	0	3	52	0	0	14	40	3	0	1	12	29	0	2	10	1	167	
5:45 PM	0	2	41	0	0	10	38	6	0	1	11	24	0	5	4	2	144	
Count Total	0	12	405	6	0	155	404	74	0	20	76	262	0	41	40	9	1,504	
Peak Hour	0	5	211	4	0	76	225	45	0	12	31	146	0	19	18	3	795	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

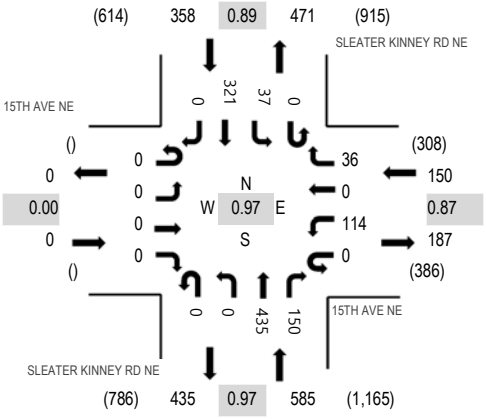
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	1	0	1	4:00 PM	0	0	0	0	0
4:15 PM	0	0	2	0	2	4:15 PM	0	0	0	0	0
4:30 PM	1	0	2	0	3	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	1	1	1	0	3	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	1	0	1	5:45 PM	0	0	0	0	0
Count Total	2	1	7	0	10	Count Total	0	0	0	0	0
Peak Hour	2	1	3	0	6	Peak Hour	0	0	0	0	0

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Location: 30 SLEATER KINNEY RD NE & 15TH AVE NE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour

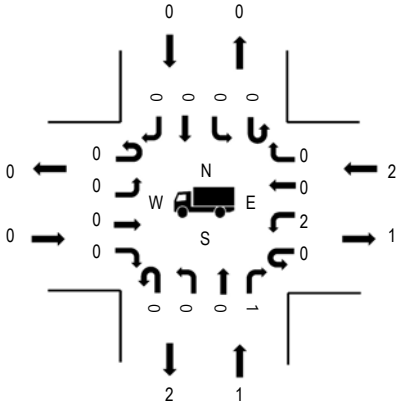
Motorized Vehicles



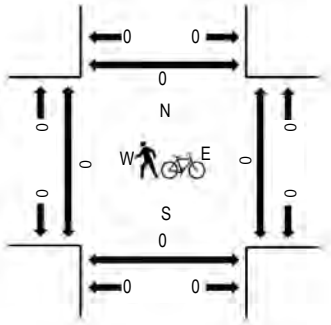
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	1.3%	0.87
NB	0.2%	0.97
SB	0.0%	0.89
All	0.3%	0.97

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	15TH AVE NE Eastbound				15TH AVE NE Westbound				SLEATER KINNEY RD NE Northbound				SLEATER KINNEY RD NE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	31	0	5	0	0	103	42	0	14	87	0	282	1,093
4:15 PM	0	0	0	0	0	28	0	13	0	0	109	37	0	9	78	0	274	1,075
4:30 PM	0	0	0	0	0	29	0	10	0	0	117	34	0	6	81	0	277	1,054
4:45 PM	0	0	0	0	0	26	0	8	0	0	106	37	0	8	75	0	260	1,009
5:00 PM	0	0	0	0	0	33	0	13	0	0	103	32	0	9	74	0	264	994
5:15 PM	0	0	0	0	0	32	0	9	0	0	103	52	0	6	51	0	253	
5:30 PM	0	0	0	0	0	28	0	7	0	0	106	33	0	8	50	0	232	
5:45 PM	0	0	0	0	0	31	0	5	0	0	98	53	0	6	52	0	245	
Count Total	0	0	0	0	0	238	0	70	0	0	845	320	0	66	548	0	2,087	
Peak Hour	0	0	0	0	0	114	0	36	0	0	435	150	0	37	321	0	1,093	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

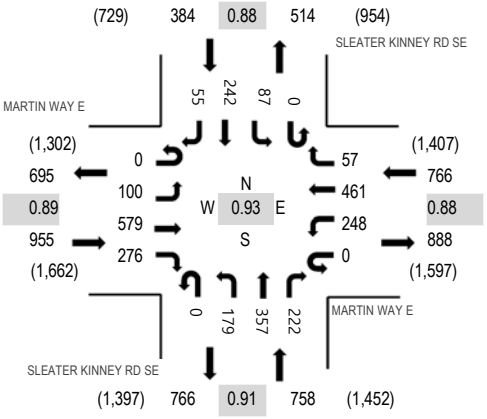
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	0	1	2	0	3	4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
5:00 PM	0	2	0	1	3	5:00 PM	0	0	0	0	0
5:15 PM	0	1	1	0	2	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	4	3	1	8	Count Total	0	0	0	0	0
Peak Hour	0	1	2	0	3	Peak Hour	0	0	0	0	0

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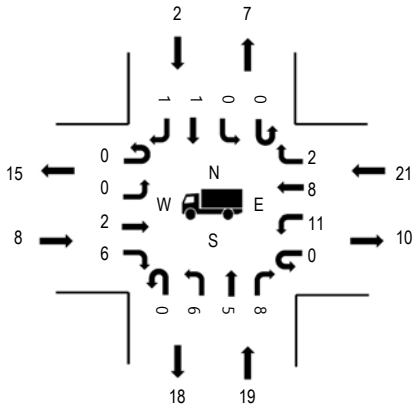
Location: 31 SLEATER KINNEY RD SE & MARTIN WAY E PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:15 PM - 05:15 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour

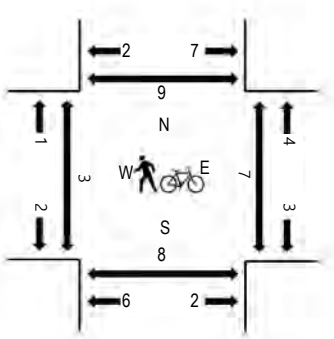
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.8%	0.89
WB	2.7%	0.88
NB	2.5%	0.91
SB	0.5%	0.88
All	1.7%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	MARTIN WAY E Eastbound				MARTIN WAY E Westbound				SLEATER KINNEY RD SE Northbound				SLEATER KINNEY RD SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	30	132	64	0	55	102	20	1	40	35	71	0	25	69	7	651	2,834
4:15 PM	0	23	149	57	0	62	107	14	0	40	100	60	0	16	54	13	695	2,863
4:30 PM	0	21	147	88	0	58	120	15	0	50	69	88	0	27	67	17	767	2,814
4:45 PM	0	21	127	53	0	62	144	15	0	48	94	67	0	17	60	13	721	2,577
5:00 PM	0	35	156	78	0	66	90	13	0	41	94	7	0	27	61	12	680	2,416
5:15 PM	0	29	86	56	0	59	108	15	0	54	91	60	0	10	56	22	646	
5:30 PM	0	20	89	42	0	55	64	15	0	45	68	52	0	13	45	22	530	
5:45 PM	0	24	99	36	0	44	88	16	0	37	77	63	0	9	49	18	560	
Count Total	0	203	985	474	0	461	823	123	1	355	628	468	0	144	461	124	5,250	
Peak Hour	0	100	579	276	0	248	461	57	0	179	357	222	0	87	242	55	2,863	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles				
	EB	NB	WB	SB	Total
4:00 PM	1	3	0	0	4
4:15 PM	2	7	5	1	15
4:30 PM	2	2	5	0	9
4:45 PM	2	5	3	0	10
5:00 PM	2	5	8	1	16
5:15 PM	3	6	5	0	14
5:30 PM	3	3	4	0	10
5:45 PM	2	3	0	0	5
Count Total	17	34	30	2	83
Peak Hour	8	19	21	2	50

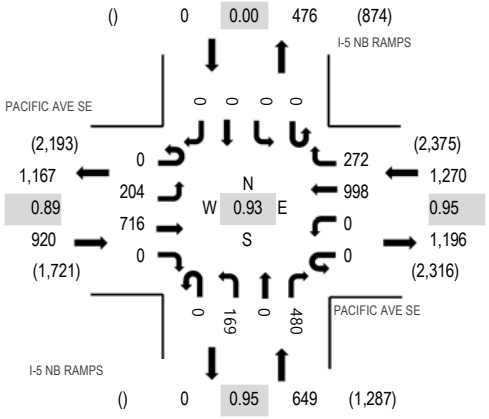
Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total
4:00 PM	0	0	0	2	2
4:15 PM	0	2	0	0	2
4:30 PM	1	2	2	1	6
4:45 PM	1	1	4	3	9
5:00 PM	1	3	1	5	10
5:15 PM	1	0	0	1	2
5:30 PM	0	0	0	1	1
5:45 PM	3	2	0	3	8
Count Total	7	10	7	16	40
Peak Hour	3	8	7	9	27

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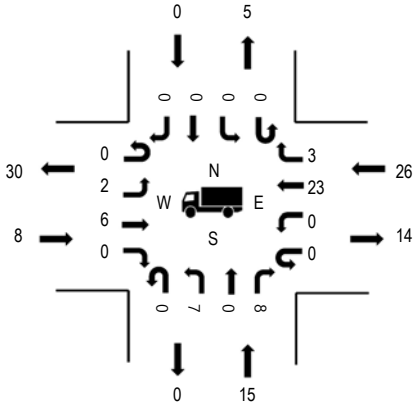
Location: 32 I-5 NB RAMPS & PACIFIC AVE SE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour

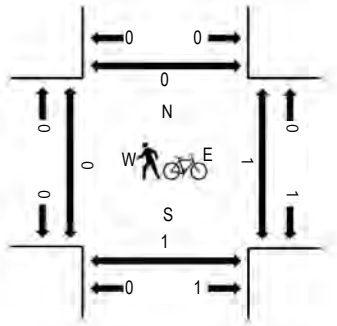
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.9%	0.89
WB	2.0%	0.95
NB	2.3%	0.95
SB	0.0%	0.00
All	1.7%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE SE Eastbound				PACIFIC AVE SE Westbound				I-5 NB RAMPS Northbound				I-5 NB RAMPS Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	52	174	0	0	0	223	67	0	31	0	138	0	0	0	0	685	2,721
4:15 PM	0	41	171	0	0	0	244	63	0	51	0	117	0	0	0	0	687	2,763
4:30 PM	0	43	177	0	0	0	243	73	0	44	0	110	0	0	0	0	690	2,839
4:45 PM	0	60	155	0	0	0	239	54	0	41	0	110	0	0	0	0	659	2,798
5:00 PM	0	52	175	0	0	0	253	73	0	39	0	135	0	0	0	0	727	2,662
5:15 PM	0	49	209	0	0	0	263	72	0	45	0	125	0	0	0	0	763	
5:30 PM	0	37	162	0	0	0	224	57	0	39	0	130	0	0	0	0	649	
5:45 PM	0	29	135	0	0	0	175	52	0	39	0	93	0	0	0	0	523	
Count Total	0	363	1,358	0	0	0	1,864	511	0	329	0	958	0	0	0	0	5,383	
Peak Hour	0	204	716	0	0	0	998	272	0	169	0	480	0	0	0	0	2,839	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

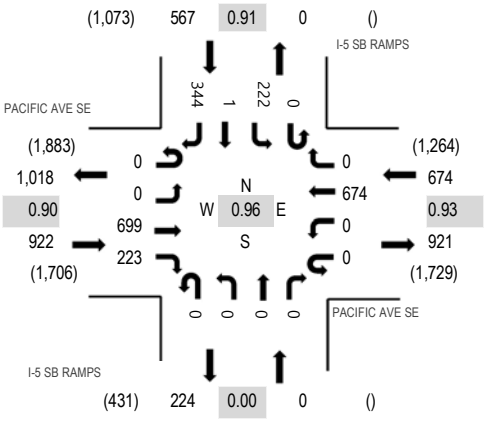
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	6	2	6	0	14	4:00 PM	0	0	0	0	0
4:15 PM	2	6	8	0	16	4:15 PM	0	2	0	0	2
4:30 PM	4	2	7	0	13	4:30 PM	0	0	0	0	0
4:45 PM	1	2	8	0	11	4:45 PM	0	0	0	0	0
5:00 PM	0	6	5	0	11	5:00 PM	0	1	0	0	1
5:15 PM	3	5	6	0	14	5:15 PM	0	0	1	0	1
5:30 PM	4	2	3	0	9	5:30 PM	0	0	0	0	0
5:45 PM	3	2	5	0	10	5:45 PM	0	0	0	0	0
Count Total	23	27	48	0	98	Count Total	0	3	1	0	4
Peak Hour	8	15	26	0	49	Peak Hour	0	1	1	0	2

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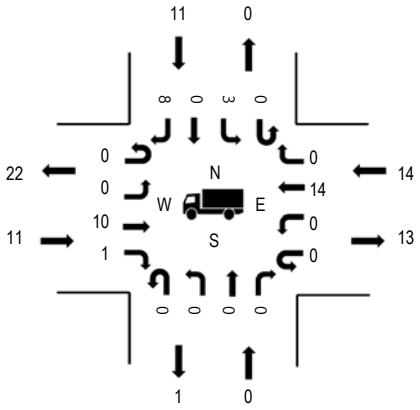
Location: 33 I-5 SB RAMPS & PACIFIC AVE SE PM
Date: Wednesday, February 22, 2023
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour

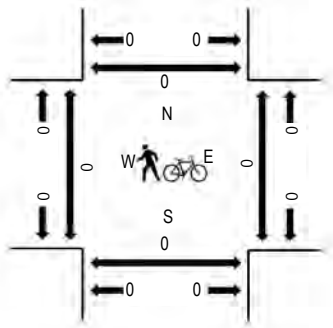
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.2%	0.90
WB	2.1%	0.93
NB	0.0%	0.00
SB	1.9%	0.91
All	1.7%	0.96

Traffic Counts - Motorized Vehicles

Interval Start Time	PACIFIC AVE SE Eastbound				PACIFIC AVE SE Westbound				I-5 SB RAMPS Northbound				I-5 SB RAMPS Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	163	60	0	1	144	0	0	0	0	0	0	67	0	73	508	2,114
4:15 PM	0	0	151	56	0	0	168	0	0	0	0	0	0	60	0	82	517	2,115
4:30 PM	0	0	167	61	0	0	182	0	0	0	0	0	0	62	0	75	547	2,163
4:45 PM	0	0	155	64	0	0	164	0	0	0	0	0	0	49	0	110	542	2,051
5:00 PM	0	0	200	57	0	0	150	0	0	0	0	0	0	40	0	62	509	1,929
5:15 PM	0	0	177	41	0	0	178	0	0	0	0	0	0	71	1	97	565	
5:30 PM	0	0	135	43	0	0	144	0	0	0	0	0	0	52	0	61	435	
5:45 PM	0	0	131	45	0	2	131	0	0	0	0	0	0	49	0	62	420	
Count Total	0	0	1,279	427	0	3	1,261	0	0	0	0	0	0	450	1	622	4,043	
Peak Hour	0	0	699	223	0	0	674	0	0	0	0	0	0	222	1	344	2,163	

Traffic Counts - Heavy Vehicles and Pedestrians/Bicycles in Crosswalk

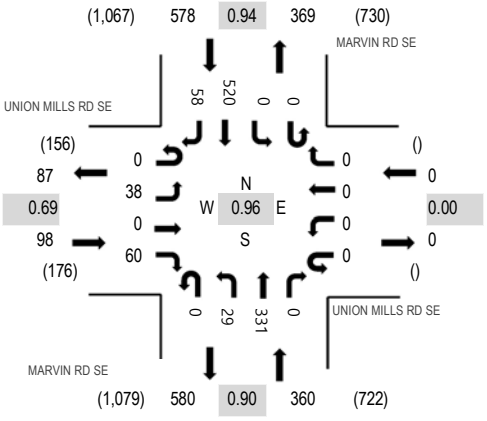
Interval Start Time	Heavy Vehicles					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	2	0	3	6	11	4:00 PM	0	0	0	0	0
4:15 PM	2	0	8	1	11	4:15 PM	1	0	0	1	2
4:30 PM	4	0	6	2	12	4:30 PM	0	0	0	0	0
4:45 PM	1	0	0	4	5	4:45 PM	0	0	0	0	0
5:00 PM	2	0	2	3	7	5:00 PM	0	0	0	0	0
5:15 PM	4	0	6	2	12	5:15 PM	0	0	0	0	0
5:30 PM	1	0	2	5	8	5:30 PM	0	0	0	0	0
5:45 PM	5	0	2	0	7	5:45 PM	0	0	0	0	0
Count Total	21	0	29	23	73	Count Total	1	0	0	1	2
Peak Hour	11	0	14	11	36	Peak Hour	0	0	0	0	0

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Location: 38 MARVIN RD SE & UNION MILLS RD SE PM
Date: Thursday, March 6, 2025
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour

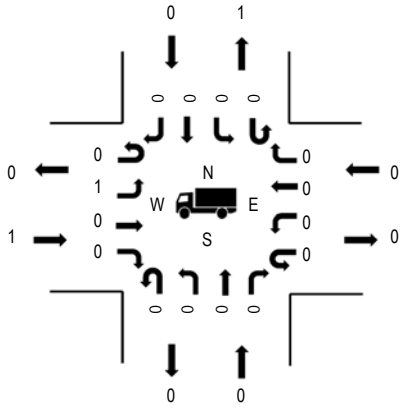
Motorized Vehicles



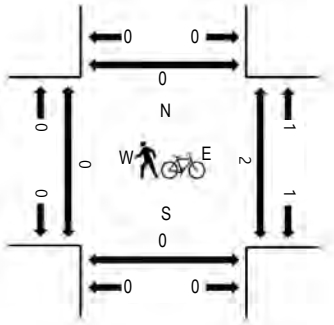
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.0%	0.69
WB	0.0%	0.00
NB	0.0%	0.90
SB	0.0%	0.94
All	0.1%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	UNION MILLS RD SE Eastbound				UNION MILLS RD SE Westbound				MARVIN RD SE Northbound				MARVIN RD SE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	9	0	11	0	0	0	0	0	7	82	0	0	0	128	6	243	966
4:15 PM	0	6	0	15	0	0	0	0	0	7	87	0	0	0	97	8	220	964
4:30 PM	0	8	0	13	0	0	0	0	0	9	93	0	0	0	104	10	237	1,002
4:45 PM	0	17	0	19	0	0	0	0	0	6	70	0	0	0	137	17	266	1,036
5:00 PM	0	8	0	13	0	0	0	0	0	6	83	0	0	0	114	17	241	999
5:15 PM	0	6	0	12	0	0	0	0	0	8	92	0	0	0	125	15	258	
5:30 PM	0	7	0	16	0	0	0	0	0	9	86	0	0	0	144	9	271	
5:45 PM	0	3	0	13	0	0	0	0	0	4	73	0	0	0	118	18	229	
Count Total	0	64	0	112	0	0	0	0	0	56	666	0	0	0	967	100	1,965	
Peak Hour	0	38	0	60	0	0	0	0	0	29	331	0	0	0	520	58	1,036	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

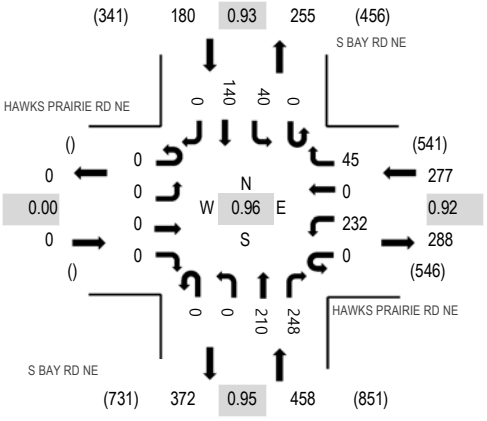
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	1	1	4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	1	1	5:00 PM	0	0	1	0	1
5:15 PM	1	0	0	0	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	1	0	1
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	1	1	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	1	0	0	1	2	Count Total	0	0	0	2	2	Count Total	0	0	2	0	2
Peak Hour	1	0	0	0	1	Peak Hour	0	0	0	2	2	Peak Hour	0	0	2	0	2

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Location: 39 S BAY RD NE & HAWKS PRAIRIE RD NE PM
Date: Thursday, March 6, 2025
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour

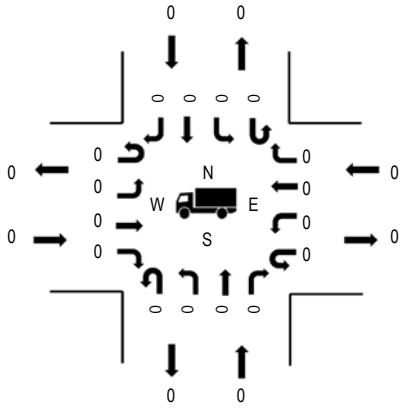
Motorized Vehicles



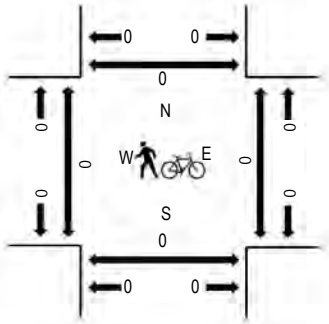
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.0%	0.92
NB	0.0%	0.95
SB	0.0%	0.93
All	0.0%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	HAWKS PRAIRIE RD NE Eastbound				HAWKS PRAIRIE RD NE Westbound				S BAY RD NE Northbound				S BAY RD NE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	0	0	0	0	58	0	9	0	0	40	62	0	5	37	0	211	896
4:15 PM	0	0	0	0	0	53	0	9	0	0	46	58	0	8	38	0	212	901
4:30 PM	0	0	0	0	0	58	0	16	0	0	59	52	0	13	36	0	234	915
4:45 PM	0	0	0	0	0	62	0	11	0	0	50	71	0	8	37	0	239	891
5:00 PM	0	0	0	0	0	51	0	9	0	0	48	65	0	9	34	0	216	837
5:15 PM	0	0	0	0	0	61	0	9	0	0	53	60	0	10	33	0	226	
5:30 PM	0	0	0	0	0	65	0	11	0	0	42	54	0	6	32	0	210	
5:45 PM	0	0	0	0	0	47	0	12	0	0	32	59	0	6	29	0	185	
Count Total	0	0	0	0	0	455	0	86	0	0	370	481	0	65	276	0	1,733	
Peak Hour	0	0	0	0	0	232	0	45	0	0	210	248	0	40	140	0	915	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	2	0	0	2	4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0	4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	1	0	0	1	4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	2	0	2	4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
Count Total	0	0	0	0	0	Count Total	0	4	2	0	6	Count Total	0	0	0	0	0
Peak Hour	0	0	0	0	0	Peak Hour	0	1	2	0	3	Peak Hour	0	0	0	0	0

Appendix C: Traffic Volume Forecasting Methodology Memorandum

transpogroup
WHAT TRANSPORTATION CAN BE.

MEMORANDUM

Date:	June 10, 2025	**TG:**	1.21359.00
To:	Martin Hoppe – City of Lacey Andy Larson - WSDOT		
From:	Mike Swenson PE, PTOE and Kassi Leingang, PE – Transpo Group		
cc:	Ryan Sawyer and Kristen Miner – Acorn		
Subject:	Nisqually Quiemuth Village Mixed-Use Project – Traffic Volume Methodology		

This memorandum presents the traffic volume forecast methodology used for the Nisqually Quiemuth Village Mixed-Use Project Traffic Impact Analysis (TIA). The TIA for the project evaluates two horizon years, focusing on the weekday PM peak hour. The without-project traffic volume forecasts were developed using different methodologies for the near- and long-term horizon years.

- **Near-Term** represents 2027 conditions, the earliest year the project could be constructed and occupied. The project will likely be occupied in phases, with the earliest phase starting in 2027. Since the timing is uncertain as to the pace of development, conservatively, it has all been included in the 2027 horizon year. The near-term without-project traffic volume forecast methodology applies an annual growth rate and adds traffic from approved or in-process pipeline development projects to existing traffic volumes. This is consistent with City of Lacey requirements.
- **Long-Term** conditions represent 2050 and aligns with Thurston Regional Planning Council's (TRPC) long range planning and the TRPC travel demand model. The long-term without-project traffic volume forecast methodology is based on growth from the TRPC travel demand model. It should be noted that updates to the TIA were delayed until such time as the 2050 forecasts were completed based on coordination between the City of Lacey and TRPC staff.

The forecasting approach was coordinated with the local jurisdictions including City of Lacey and WSDOT throughout the TIA scoping and agency review process.[1] A detailed review of each forecast method and a comparison of the results and findings are provided below.

Traffic Volume Forecast Methodology

The near term and long term traffic forecast methodologies are described below.

2027 Horizon Year (Near-Term)

The 2027 without-project traffic volumes are comprised of existing traffic, background traffic growth, and traffic generated from the planned "pipeline" developments (see calculation below).

Existing PM Peak Hour Volumes	+	Background Growth *(0.5% applied to existing volumes)*	+	Pipeline traffic volumes *(data provided by the City of Lacey staff)*	=	**Near-Term** Without-Project PM Peak Hour Volumes

The background growth rate for the study area was based on review of the latest travel demand model prepared by TRPC and provided for the long-term (2050) forecasts. The model showed annual growth rates of approximately 0.5 percent in the study area (excluding growth associated

[1] The scoping memorandum from City of Lacey identifying the coordination between jurisdictions is provided in Attachment C.

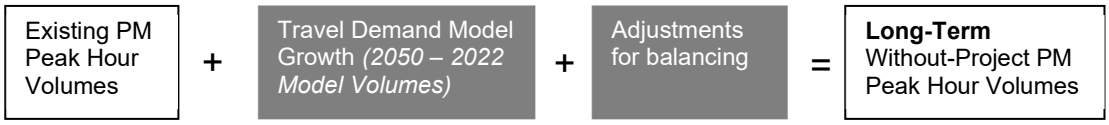
with the Nisqually Quiemuth Village Mixed-Use Project). It is noted that this growth rate projection from the travel demand model is inclusive of future development of land uses consistent with City zoning. The development of the vacant land in the City and areas surrounding the project site are also captured in the pipeline development. The approach to near-term forecasting is conservative because it applies both the annual growth rate and includes the pipeline development traffic volumes. Increases in traffic associated with the pipeline development projects in the area were provided by City of Lacey staff representing growth generally ranging between 15 and 35 percent at the study intersections, which is significantly higher than the annual growth rate projected by the TRPC travel demand model.

2050 Horizon Year (Long-Term)

The 2050 without-project traffic volumes were developed based on the projections from the TRPC regional year 2050 travel demand model. The TRPC travel demand model provides a comprehensive forecast of future traffic volume by accounting for regional changes in land use consistent with local Comprehensive Plans, current and future changes in the street network, modes of travel, traffic congestion and associated changes in travel patterns from growth in traffic. By accounting for these various factors in a regional model, a travel demand model assigns traffic to the network where congestion is minimized resulting in a more even distribution in traffic in instances where there are multiple corridors available to accommodate that added demand. This dispersion of traffic to reduce delays is consistent with natural driver behaviors.

TRPC developed and calibrated the regional travel demand model for both 2022 (existing) and future (2050) conditions which incorporated the factors as noted above (e.g. land uses, street network, etc.). The future (2050) model utilized for the analysis considers only transportation improvement projects that are funded[2] and/or committed as detailed in the TIA.

To develop weekday PM peak hour traffic volumes for 2050 conditions, the model growth at each intersection (changes in volumes between the 2050 and 2022 models) was added to existing traffic volumes at each study intersection. Adjustments for volume balancing was also performed. This methodology is an industry standard practice for post-processing raw travel demand model results into forecast traffic volumes (see illustration below).



The 2022 and 2050 traffic volumes as provided by TRPC are maps showing the link volumes throughout the study area (see Attachment B[3]). The 2050 PM peak hour volumes provided by TRPC included the project trips, which were removed for purposes of estimating future without-project volumes. TRPC provided both the 2050 volumes as well as the corresponding project trip assignment volumes and project distribution specific to the Village and Casino projects.[4]

Resulting Traffic Volume Forecasts

The near-term and long-term volume forecasts for the without-project conditions are summarized in Table 1.

[2] The list of projects included in TRPC's funded base model is included in Attachment A. Note that the Carpenter Road roadway and bridge widening project was included in the model. The roadway being identified as a funded project and the bridge being identified as a committed project.

[3] Note that due to the size of study area covered for the plot the volumes per link volume are small in scale; however, the volumes are legible if zoomed in.

[4] The Village and Casino development projects are further defined in the Nisqually Quiemuth Village Mixed-Use Project Traffic Impact Analysis (TIA). Note that TRPC modeling assumed the larger of each of the development alternatives for each project: Alternative 1 for the Village and Alternative A for the Casino.

Table 1. Existing and Future Without-Project PM Peak Hour Traffic Volume Comparison

Intersection	Existing Weekday PM Peak Hour TEV	Near-Term				Long-Term		
		Pipeline Growth TEV	Additional Background Growth TEV	Without-Project TEV	*Percent Increase relative to Existing*	Travel Demand Model Forecast Growth TEV	Without-Project TEV	*Percent Increase relative to Existing*
1. Marvin Rd NE/Hawks Prairie Rd NE	1,349	236	24	1,609	19%	132	1,481	10%
2. Marvin Rd NE/Britton Pkwy NE	2,835	873	62	3,770	33%	435	3,270	15%
3. Marvin Rd NE/Main St NE	2,553	860	40	3,453	35%	367	2,920	14%
4. Marvin Rd NE/I-5 SB Ramp	4,075	970	75	5,120	26%	225	4,300	6%
5. Marvin Rd NE/I-5 NB Ramp	3,535	591	74	4,200	19%	-90	3,445	-3%
6. Marvin Rd NE (SR 510)/Quinault Dr NE	3,365	297	68	3,730	11%	-115	3,250	-3%
7. Marvin Rd NE (SR 510)/Lacey Marketplace	2,560	265	55	2,880	13%	-75	2,485	-3%
8. Marvin Rd NE (SR 510)/Martin Way E	4,230	424	76	4,730	12%	410	4,640	10%
9. Marvin Road SE (SR 510)/Steilacoom Rd SE	2,630	351	49	3,030	15%	460	3,090	17%
10. Marvin Road SE (SR 510)/Pacific Rd SE	2,277	579	51	2,907	28%	506	2,783	22%
11. Willamette Dr NE/31st Ave NE	950	196	13	1,159	22%	65	1,015	7%
12. Hogum Bay Rd NE/Willamette Dr NE	1,365	434	26	1,825	34%	261	1,626	19%
13. Eastern Pkwy NE/Britton Pkwy NE	894	202	19	1,115	25%	359	1,253	40%
14. Central Pkwy NE/Britton Pkwy NE	896	159	22	1,077	20%	257	1,153	29%
15. Gateway Blvd NE/Britton Pkwy NE	1,090	173	17	1,280	17%	190	1,280	17%
16. Britton Pkwy NE/Western Pkwy NE	852	224	16	1,092	28%	162	1,014	19%
19. Hawks Prairie Rd NE/Carpenter Rd NE	630	0	10	640	2%	150	780	24%
20. Carpenter Rd NE/Britton Pkwy NE	1,002	367	18	1,387	38%	186	1,188	19%
21. Carpenter Rd NE/Martin Way E	3,515	209	66	3,790	8%	580	4,095	17%
22. Pacific Ave SE/Carpenter Rd SE	3,100	113	62	3,275	6%	655	3,755	21%
23. Martin Way E/Desmond Dr	2,606	27	48	2,681	3%	335	2,941	13%
24. Martin Way E/Regal Cinemas	2,570	27	48	2,645	3%	220	2,790	9%
25. Martin Way E/I-5 NB Ramps	3,115	35	60	3,210	3%	300	3,415	10%
26. Martin Way E/I-5 SB Ramps	3,506	40	75	3,621	3%	275	3,781	8%
27. Martin Way E/College St	3,930	121	74	4,125	5%	755	4,685	19%
28. Pacific Ave SE/Lacey Blvd SE	2,557	9	41	2,607	2%	872	3,429	34%
29. Sleater Kinney Rd NE/South Bay Rd NE	792	0	15	807	2%	177	969	22%
30. Sleater Kinney Rd NE/15th Ave NE	1,090	146	19	1,255	15%	50	1,140	5%
31. Martin Way E/Sleater Kinney Rd	2,855	144	56	3,055	7%	750	3,605	26%
32. Pacific Ave SE/I-5 NB Ramps	2,840	0	60	2,900	2%	735	3,575	26%
33. Pacific Ave SE/I-5 SB Ramps	2,166	0	45	2,211	2%	844	3,010	39%
38. Marvin Rd SE/Union Mills Rd SE	1,040	419	21	1,480	42%	350	1,390	34%
39. Johnson Point Rd NE/Hawks Prairie Rd NE	915	0	20	935	2%	200	1,115	22%
Overall Study Area	**78,990**	**8,491**	**2,941**	**90,422**	**14%**	**12,108**	**91,098**	**15%**

Note: TEV = total entering vehicles.

As shown in the table, the intersections most proximate to the project site along Marvin Road NE and Britton Parkway show the highest growth in traffic volumes under the near-term forecasts. However, the long-term forecasts suggest more dispersed traffic growth throughout the study area because traffic shifts to alternative routes to avoid congestion (i.e., the travel demand model assumes drivers will use routes with the shortest travel time whereas the near-term forecast method assumes drivers will continue to take the same routes as existing even if travel times are longer).

The table also shows that there are individual intersections where the total entering vehicles (TEV) for the long-term condition are less than that of the near-term volumes, but that the TEV for the overall study area is greater under the long-term than the near-term. Both models show that traffic growth occurs relative to existing conditions; however, the amount, timing, and location of growth is distributed through the transportation network differently in each case.

The forecasts reflect a shift in growth from I-5 to the surrounding network based on future I-5 traffic volumes. The project site is located adjacent to the I-5 corridor with three interchanges in the vicinity of the site, including Marvin Street, Martin Way, and Pacific Avenue. The I-5 corridor is congested during the PM peak period (the study period reviewed in the TIA) today. As growth in the region occurs, the associated congestion on I-5 will continue to grow and influence driving patterns, resulting in traffic growth on the local roadway network at less constrained locations consistent with the 2050 forecasts. The likelihood that drivers will shift between I-5 ramps to utilize a path of least resistance is taken into account as part of the 2050 travel demand model, but not in the 2027 scenario. Figure 1 illustrates how drivers shift from the more congested Marvin Street interchange to the less congested Martin Way and Pacific Avenue interchanges.

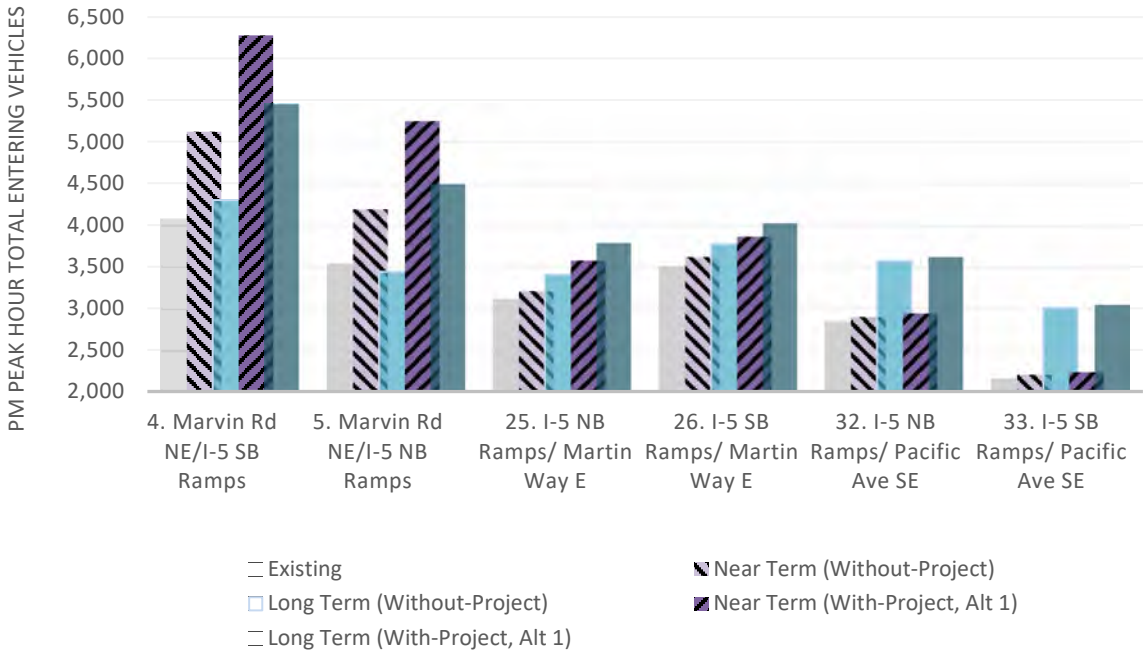


Figure 1: Weekday PM Peak Hour Traffic Volumes at I-5 Ramps

As shown in the figure, the near-term forecasts assign the highest traffic growth to the highest existing volume interchange, at Marvin Road. Conversely, the long-term forecasts show, with consideration for congestion and capacity at all nearby I-5 interchanges, most of the traffic growth would occur at Pacific Avenue. If looking at the three interchanges together, the combined PM peak hour volumes at the I-5 ramps (Marvin Road, Martin Way, and Pacific Avenue) are higher under the long-term condition than under the near-term condition. The combined volume comparison at the I-5 ramps is as follows:

- Without-Project - PM Peak Hour: *Near-Term (21,262 TEV)* ***< Long-Term (21,526 TEV)***
- With-Project (Alternative 1) – PM Peak Hour: *Near-Term (24,159 TEV)* ***< Long-Term (24,423 TEV)***

Conclusion

Two different approaches were utilized in developing the traffic forecasts for the near-term and long-term horizon years.

The near-term forecast method utilized was consistent with the City of Lacey concurrency requirements as defined in Lacey Municipal Code (LMC) 14.21. The section identifies the following:

> *A proposed development will not be approved under this chapter if traffic generated by such development, when added to the background traffic volumes, causes the level of service on a transportation facility to decline below the level of service standard set forth in LMC 14.21.010(H), unless transportation improvements or strategies to cure such decline are made concurrent with the development. The city may require the submittal of supplementary information and studies by a developer for any development which may reasonably cause a transportation facility to decline below such level of service standard. Further, for identified Strategy Corridors, the City may require a combination of those strategies set forth in LMC 14.21.010(M) to be constructed or instituted.*

Additionally, LMC 14.21 defines that background traffic includes *"anticipated traffic from all other approved developments located inside or outside of the city except those developments where governmental approval has lapsed."* Per this definition, the near-term forecasts include the pipeline development trips as provided by City staff along with the general application of a background annual growth rate. This requirement is applicable to the near-term analysis only and does not apply to the 2050 analysis.

The long-term forecasting methodology was completed using the travel demand model to provide a wholistic review of the future volumes particularly given the project site's proximity to I-5. The travel demand model as prepared by TRPC incorporates changes in land use, current and future changes in the street network, modes of travel, traffic congestion and associated changes in travel patterns with growth in traffic. As the travel demand model accounts for land use throughout the region, changes in background traffic and development (e.g. pipeline development traffic) is included in the forecasts; however, the assignment of the trips and specific anticipated trip generation of each development varies between the models. The pipeline project trips as assumed in the near-term forecasts typically assign trips based on current travel patterns and do not consider any roadway or intersection capacities and associated changes in travel patterns as considered with the TRPC travel demand model.

Attachment A: TRPC's Funded Base Model Project List

Funded Base Projects			EMME Update Network
Project Number	**Jursidiction**	**Location Limits/Extent**	**Improvement**
4	Lacey	College Street NE Extension from Martin Way to 15th Avenue NE	College Street NE, from Martin Way to 15th Avenue NE
6	Lacey	Britton Parkway	Britton Parkway, Gateway Boulevard to Carpenter Road
8	Lacey	Carpenter Road Widening from Martin Way to Britton Parkway	Carpenter Road, Martin Way to Britton Parkway
10	Lacey	College Street Corridor Improvements	College and 16th, College and 29th Ave/Belair Dr roundabouts
14	Lacey	Carpenter Road Improvements from Pacific Avenue to Shady Lane	Carpenter Road SE, Pacific Avenue SE to Shady Lane SE
15	Lacey	Marvin Road Widening	Marvin Road NE, Britton Parkway NE to Columbia Way NE
16	Lacey	Lacey Hawks Prairie Business District Commercial Corridors	Hawks Prairie Business District
23	Olympia	Fones Road Widen - Pacific to 18th Ave	Lanes and roundabout
29	Thurston County	Mullen Road at Marvin Road	New roundabout
33	Thurston County	Marvin Road at 15th Ave --Roundabout	Added roundabout
35	Thurston County	Marvin Road at 19th Ave -- Roundabout	Added roundabout
52	Tumwater	Capitol Blvd – M St to Israel Rd	Capitol Blvd, M Street to Israel Road - 3 roundabouts
59	DOT/ Yelm	SR 510 Yelm Loop – North Section (Y3) Stage 2	SR 510 Spur Yelm Loop – Cullen Road SE to SR 507 at Walmart Boulevard Intersection (SR 510 Spur Milepost 14.70 and SR 507
63	Yelm	SR 507/Bald Hills to SR 702 Intersection Improvements	SR 507 at Bald Hills Road roundabout
66	Yelm	Coates Avenue Extension	Coates Avenue SW, from Cullen Road NW to Killion Road SE
71	Olympia	US 101/West Olympia Access Project	US 101 and Kaiser Road; Yauger Way, between Kaiser Road and Yauger Way in the vicinity of US 101
76	Thurston County	SR 507/Bald Hills to SR 702 Intersection Improvements	SR 507 at Vail Rd roundabout

Funded Base Projects			EMME Update Network
Project Number	**Jursidiction**	**Location Limits/Extent**	**Improvement**
84	IT/Thurston County	E Martin Way Gateway Transit Facility Meridian/Martin Way	Meridian/ Dutrrow intersection Martin Way RaB
87	Tumwater	Tumwater Blvd @ I-5 interchange Improvement	Tumwater Boulevard at I-5
88	Tumwater	Tyee Dr extension Israel to Tumwater Blvd	Israel to Tumwater Blvd
90	Thurston County	Marvin Road Upgrade	Marvin Rd, Pacific Avenue to Mullen Road
111	Lacey	Hoh Street Extension	New street connection
150	Yelm	Prairie Line Trail	Extend Yelm-Tenio Trail to Roy
151	Tumwater	Deschutes Valley Trail	Extend trail to Pioneer Park
152	Thurston County	Gate Belmore Trail	New Trail - Mima-Gate Rd/Moon Rd to 60th SW

Attachment B: TRPC Traffic Volume Model Plots

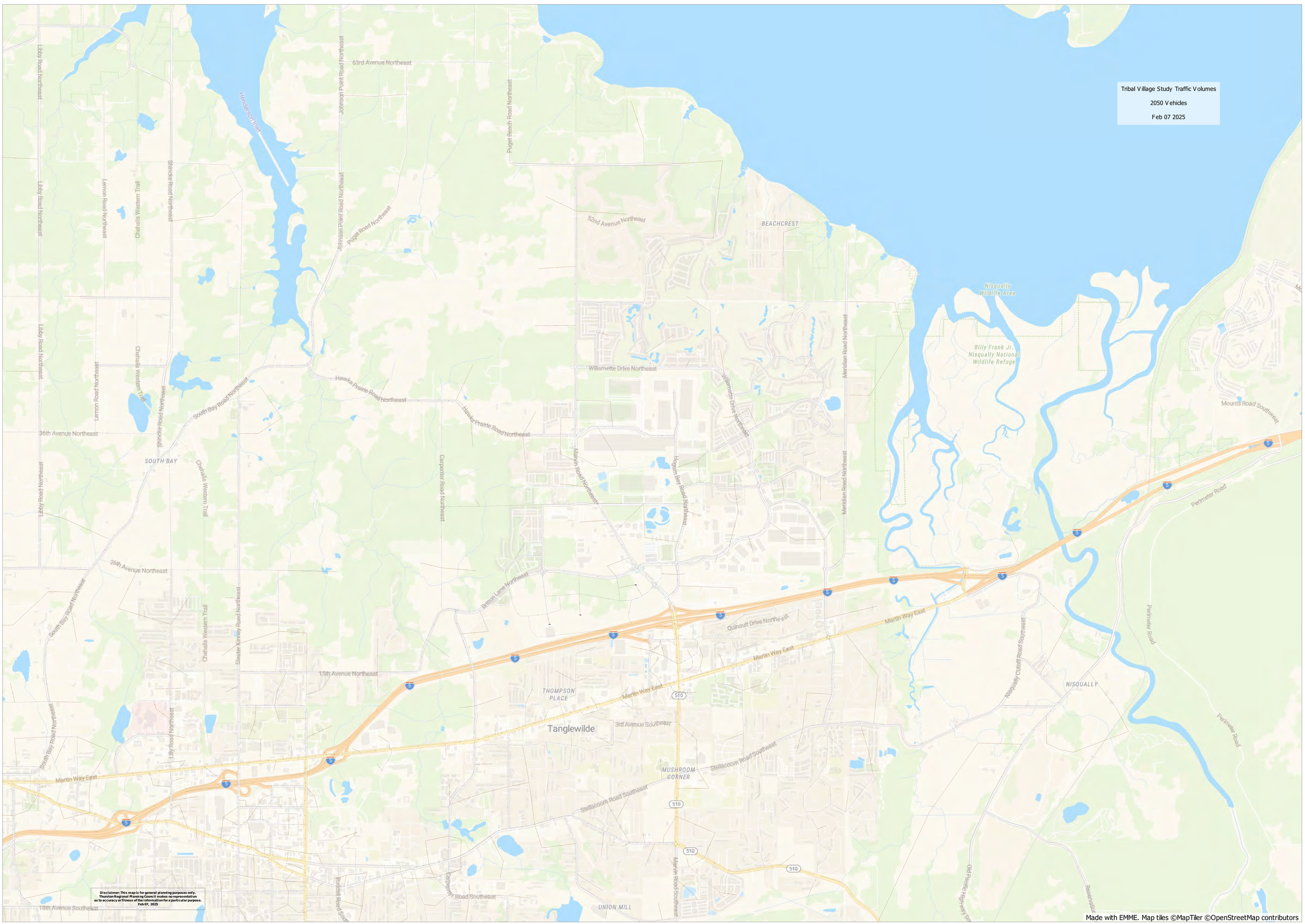
Tribal Village Study Traffic Volumes

2022 Vehicles

Feb 07 2025

Disclaimer: This map is for general planning purposes only. Thurston Regional Planning Council makes no representation as to accuracy or fitness of the information for a particular purpose. Feb 07, 2025

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Made with EMME. Map tiles ©MapTiler ©OpenStreetMap contributors

Attachment C: Scoping Memorandum

Shaping
our community
together

CITY OF LACEY

CITY COUNCIL
ANDY RYDER
Mayor

MALCOLM MILLER
Deputy Mayor

LENNY GREENSTEIN
MICHAEL STEADMAN
CAROLYN COX
ED KUNKEL
ROBIN VAZQUEZ

INTERIM CITY MANAGER
RICK WALK

February 16th, 2023

Borna Khedri
Transpo Group
12131 113th Ave NE #203
Kirkland, WA 98034

SUBJECT: Nisqually Tribe TIA(s)

Dear Mr. Khedri,

I have reviewed the materials submitted for this project. In my review, I found a few errors in the project distribution. Please fix the following:

- Marvin Road NE & I-5 SB Ramps – The northbound turning volumes are incorrect. I believe that northbound thru and northbound left volumes were likely switched.
- Marvin Road SE & Steilacoom Road SE – The northbound and southbound thru volumes are incorrect. It looks like the may have been swapped for one of the TAZs.
- Sleater Kinney Road and Martin Way E – in your distribution for Sleater Kinney and 15th Ave NE, the volumes for the future west leg of the intersection are assigned to the south leg, which is currently the best way to reach their ultimate origin/destination. If these trips are being routed onto Sleater Kinney Road NE, then they should also be included at the intersection of Sleater Kinney Road & Martin Way E.

Based on the submitted materials, I have determined there are transportation impacts that require a Traffic Impact Analysis. The overall project may be separated into two TIAs, one for the proposed mixed-use project, and another for the proposed resort and casino, as long as one TIA includes the other as pipeline volume. The methodology for completing a Traffic Impact Analysis is identified in Chapter 4 of the City of Lacey Development Guidelines and Public Works Standards, and mitigation and concurrency measures are identified in Lacey Municipal Code Chapter 14.21. The TIAs, must be stamped and signed by a licensed engineer with experience and training in traffic engineering.

Please analyze these intersections in your report:

1. Marvin Road NE & Hawks Prairie Road NE
2. Marvin Road NE & Britton Parkway NE/Willamette Drive NE
3. Marvin Road NE & Main St NE
4. Marvin Road NE & I-5 SB Ramps
5. Marvin Road NE & I-5 NB Ramps
6. Marvin Road NE @ Quinault Drive NE
7. Marvin Road NE & Lacey Marketplace

8. Marvin Road & Martin Way E
9. Marvin Road SE & Steilacoom Road SE
10. Marvin Road SE & Pacific Road SE
11. Willamette Drive NE & 31st Avenue NE
12. Willamette Drive NE & Hogum Bay Road NE
13. Britton Parkway NE & Eastern Parkway NE
14. Britton Parkway NE & Central Parkway NE
15. Britton Parkway NE & Gateway Boulevard NE
16. Britton Parkway NE & Western Parkway NE
17. I-5 SB Ramp & CD Road
18. CD Road & Western Parkway NE
19. Hawks Prairie Road NE & Carpenter Road NE
20. Britton Parkway NE & Carpenter Road NE (as a roundabout)
21. Martin Way E & Carpenter Road
22. Pacific Avenue SE & Carpenter Road SE
23. Martin Way E & Desmond Drive
24. Martin Way E & Regal Cinemas
25. Martin Way E & I-5 NB Ramps
26. Martin Way E & I-5 SB Ramps
27. Martin Way E & College Street
28. Pacific Avenue SE & Lacey Boulevard SE
29. Sleater Kinney Road NE & South Bay Road NE
30. Sleater Kinney Road NE & 15th Avenue NE (as a signal)
31. Martin Way E & Sleater Kinney Road
32. Pacific Avenue SE & I-5 NB Ramps
33. Pacific Avenue SE & I-5 SB Ramps
34. All access points to the site not listed above.

The above list includes intersections requested by Thurston County, the City of Olympia, and WSDOT. WSDOT made a comment that a condition of their agreement for opening the CD road on the I-5 SB ramp is that the extra capacity is required. An analysis of the traffic conditions with and without the CD road access should be included to justify opening the road.

I will provide pipeline volumes for the study intersections and a printout of the signal programming for signalized intersections.

Please provide 5 signed and stamped Traffic Impact Analysis for distribution for the review necessary to evaluate this project. If you have any questions, do not hesitate to call me at (360) 438-2640.

Sincerely,

Christopher Stolberg

Christopher Stolberg, EIT
Transportation Engineer

CC: Tom Stiles, Development Review Manager
File

Appendix D: LOS Definitions

Highway Capacity Manual 7th 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* 7th Edition (Transportation Research Board, 2022).

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 7th Edition*, Transportation Research Board, 2022, 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 controlled. All-way stop controlled 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 7th Edition*, Transportation Research Board, 2022, 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.

Highway Capacity Manual, 2000

Signalized intersection level of service (LOS) is defined in terms of the average total vehicle delay of all movements through an intersection. Vehicle delay is a method of quantifying several intangible factors, including driver discomfort, frustration, and lost travel time. Specifically, LOS criteria are stated in terms of average delay per vehicle during a specified time period (for example, the PM peak hour). Vehicle delay is a complex measure based on many variables, including signal phasing (i.e., progression of movements through the intersection), signal cycle length, and traffic volumes with respect to intersection capacity. Table 1 shows LOS criteria for signalized intersections, as described in the *Highway Capacity Manual* (Transportation Research Board, Special Report 209, 2000).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
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	>80	Forced flow (jammed)

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop-controlled and two-way stop-controlled. All-way, stop-controlled intersection LOS is expressed in terms of the average vehicle delay of all of the movements, much like that of a signalized intersection. Two-way, stop-controlled intersection LOS is defined in terms of the average vehicle delay of an individual movement(s). This is because the performance of a two-way, stop-controlled intersection is more closely reflected in terms of its individual movements, rather than its performance overall. For this reason, LOS for a two-way, stop-controlled intersection is defined in terms of its individual movements. With this in mind, total average vehicle delay (i.e., average delay of all movements) for a two-way, stop-controlled intersection should be viewed with discretion. Table 2 shows LOS criteria for unsignalized intersections (both all-way and two-way, stop-controlled).

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Source: *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 2000.

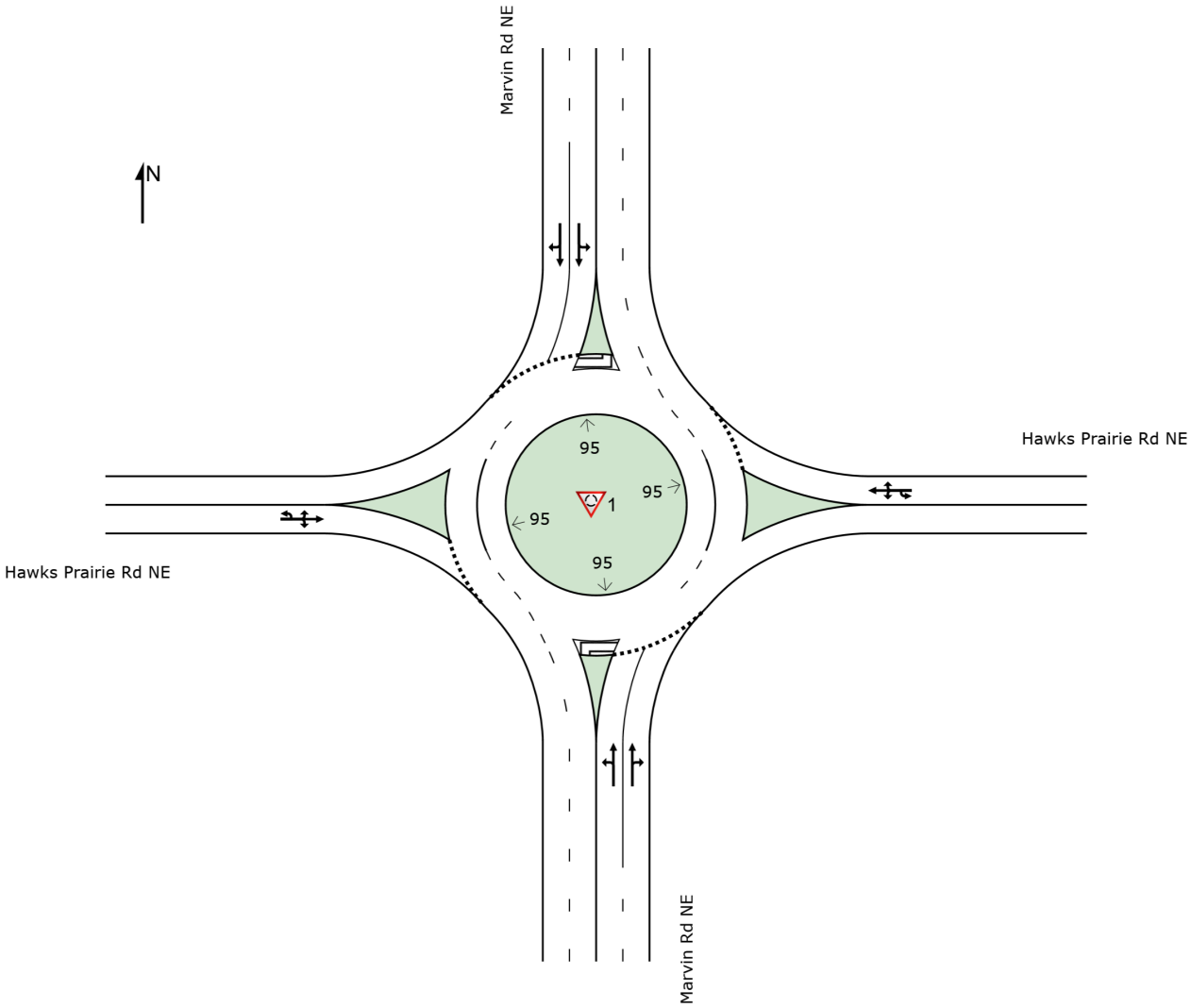
Appendix E: Intersection LOS Worksheets

SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	250	0.0	250	0.0	0.226	10.1	LOS B	1.3	32.5	0.26	0.58	0.26	33.1
8	T1	All MCs	422	0.0	422	0.0	0.226	4.3	LOS A	1.3	33.2	0.25	0.42	0.25	35.4
18	R2	All MCs	6	0.0	6	0.0	0.226	4.4	LOS A	1.3	33.2	0.25	0.39	0.25	35.4
Approach			678	0.0	678	0.0	0.226	6.4	LOS A	1.3	33.2	0.25	0.48	0.25	34.5
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.289	14.2	LOS B	1.1	27.4	0.51	0.71	0.51	32.9
1	L2	All MCs	150	3.0	150	3.0	0.289	11.8	LOS B	1.1	27.4	0.51	0.71	0.51	32.9
6	T1	All MCs	83	3.0	83	3.0	0.289	6.1	LOS A	1.1	27.4	0.51	0.71	0.51	33.6
16	R2	All MCs	28	3.0	28	3.0	0.289	6.0	LOS A	1.1	27.4	0.51	0.71	0.51	33.3
Approach			263	3.0	263	3.0	0.289	9.4	LOS A	1.1	27.4	0.51	0.71	0.51	33.2
North: Marvin Rd NE															
7	L2	All MCs	11	2.0	11	2.0	0.166	12.1	LOS B	0.9	23.1	0.57	0.58	0.57	33.8
4	T1	All MCs	278	2.0	278	2.0	0.166	6.2	LOS A	1.0	24.7	0.56	0.57	0.56	34.6
14	R2	All MCs	78	2.0	78	2.0	0.166	6.0	LOS A	1.0	24.7	0.55	0.56	0.55	34.4
Approach			367	2.0	367	2.0	0.166	6.3	LOS A	1.0	24.7	0.56	0.57	0.56	34.6
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.193	13.6	LOS B	0.7	19.1	0.43	0.63	0.43	33.9
5	L2	All MCs	56	3.0	56	3.0	0.193	11.1	LOS B	0.7	19.1	0.43	0.63	0.43	33.9
2	T1	All MCs	17	3.0	17	3.0	0.193	5.4	LOS A	0.7	19.1	0.43	0.63	0.43	34.6
12	R2	All MCs	117	3.0	117	3.0	0.193	5.3	LOS A	0.7	19.1	0.43	0.63	0.43	34.3
Approach			191	3.0	191	3.0	0.193	7.1	LOS A	0.7	19.1	0.43	0.63	0.43	34.2
All Vehicles			1499	1.4	1499	1.4	0.289	7.0	LOS A	1.3	33.2	0.40	0.56	0.40	34.2

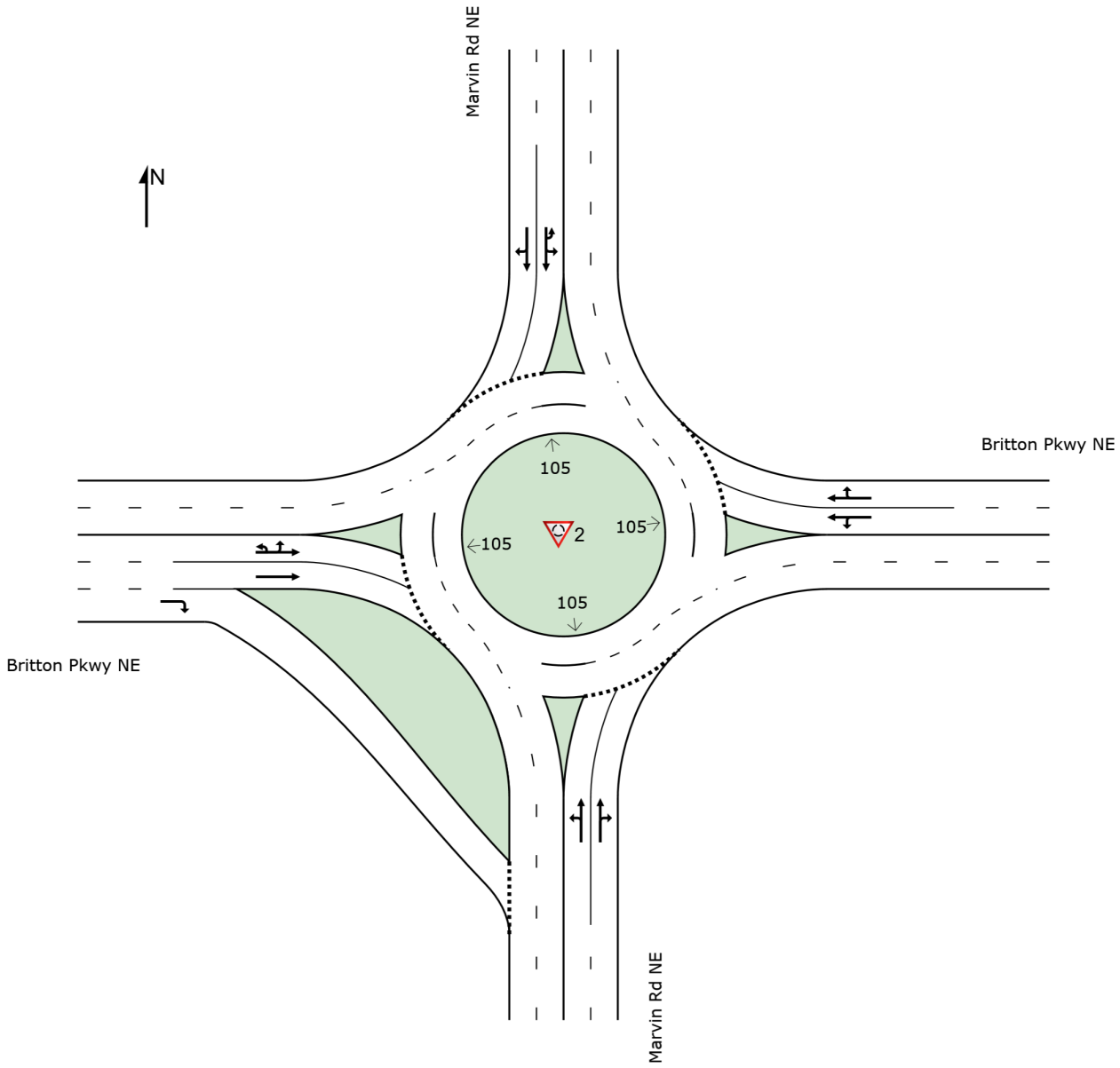
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	281	2.0	281	2.0	0.453	11.0	LOS B	2.5	64.2	0.47	0.59	0.47	33.2
8	T1	All MCs	807	2.0	807	2.0	0.453	5.0	LOS A	2.6	65.5	0.46	0.50	0.46	34.7
18	R2	All MCs	26	2.0	26	2.0	0.453	5.0	LOS A	2.6	65.5	0.45	0.46	0.45	34.7
Approach			1115	2.0	1115	2.0	0.453	6.5	LOS A	2.6	65.5	0.46	0.52	0.46	34.3
East: Britton Pkwy NE															
1	L2	All MCs	349	4.0	349	4.0	0.395	13.1	LOS B	2.0	51.9	0.71	0.85	0.77	31.5
6	T1	All MCs	182	4.0	182	4.0	0.327	7.9	LOS A	1.4	36.5	0.69	0.76	0.72	34.2
16	R2	All MCs	31	4.0	31	4.0	0.327	8.0	LOS A	1.4	36.5	0.69	0.76	0.72	33.9
Approach			563	4.0	563	4.0	0.395	11.1	LOS B	2.0	51.9	0.70	0.82	0.75	32.4
North: Marvin Rd NE															
7u	U	All MCs	11	4.0	11	4.0	0.525	17.3	LOS B	3.3	84.9	0.75	0.82	0.90	32.9
7	L2	All MCs	47	4.0	47	4.0	0.525	14.8	LOS B	3.3	84.9	0.75	0.82	0.90	32.9
4	T1	All MCs	745	4.0	745	4.0	0.525	8.3	LOS A	3.5	90.9	0.75	0.80	0.88	33.8
14	R2	All MCs	94	4.0	94	4.0	0.525	7.9	LOS A	3.5	90.9	0.74	0.78	0.87	33.7
Approach			896	4.0	896	4.0	0.525	8.7	LOS A	3.5	90.9	0.75	0.80	0.88	33.8
West: Britton Pkwy NE															
5u	U	All MCs	10	5.0	10	5.0	0.119	15.3	LOS B	0.5	13.7	0.66	0.81	0.66	31.4
5	L2	All MCs	78	5.0	78	5.0	0.119	12.8	LOS B	0.5	13.7	0.66	0.81	0.66	31.4
2	T1	All MCs	104	5.0	104	5.0	0.099	6.1	LOS A	0.5	13.5	0.68	0.57	0.68	34.2
12	R2	All MCs	188	5.0	188	5.0	0.170	6.1	LOS A	0.9	23.0	0.67	0.69	0.67	34.4
Approach			380	5.0	380	5.0	0.170	7.7	LOS A	0.9	23.0	0.67	0.69	0.67	33.6
All Vehicles			2954	3.4	2954	3.4	0.525	8.2	LOS A	3.5	90.9	0.62	0.68	0.67	33.7

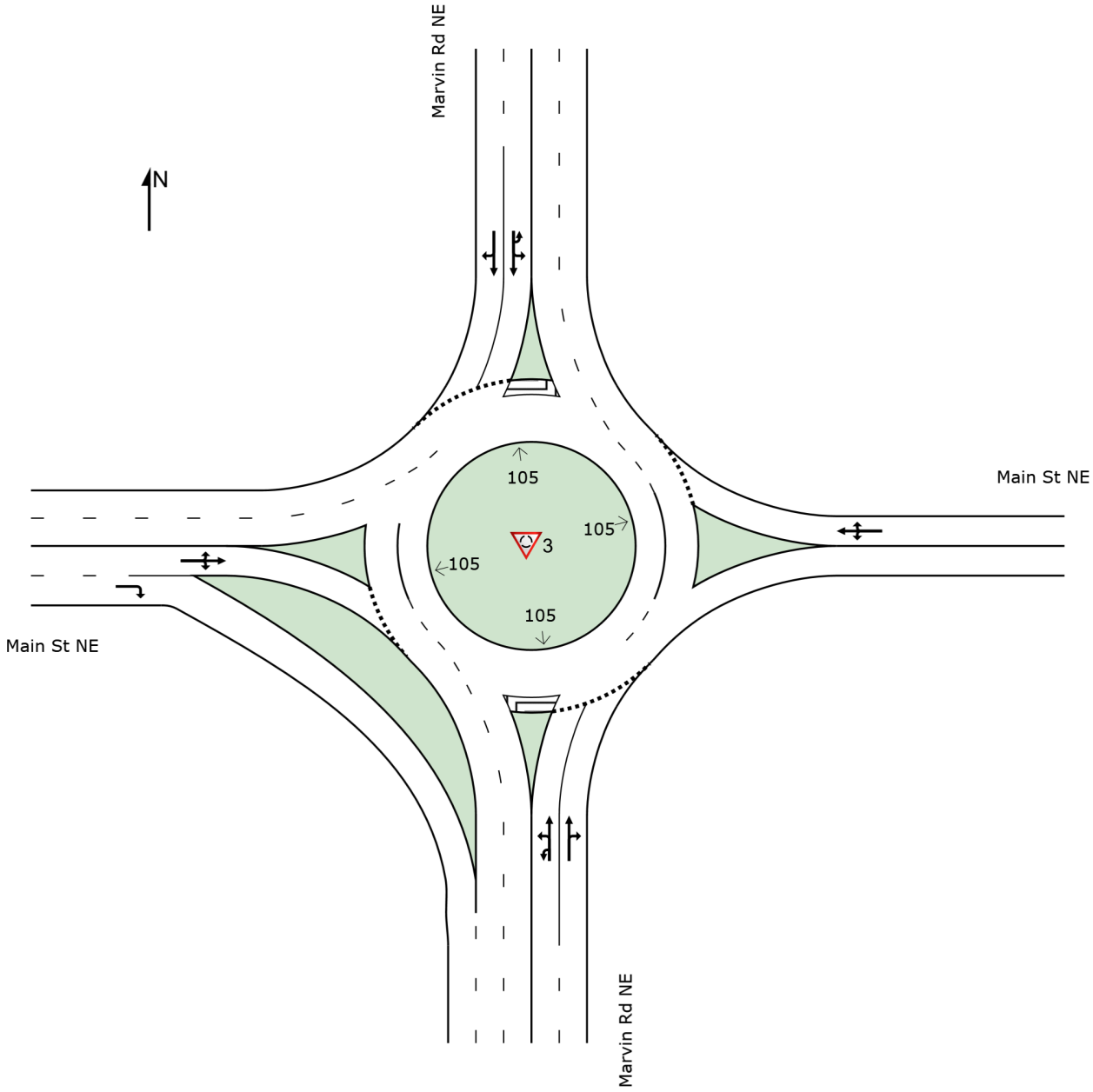
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Existing)]

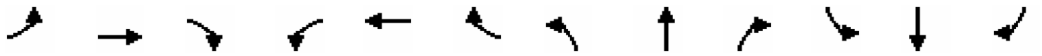
Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	275	3.0	275	3.0	0.470	12.5	LOS B	4.0	101.5	0.17	0.51	0.17	28.4
3	L2	All MCs	1	3.0	1	3.0	0.470	10.0	LOS B	4.0	101.5	0.17	0.51	0.17	31.8
8	T1	All MCs	1165	3.0	1165	3.0	0.470	4.0	LOS A	4.0	102.5	0.17	0.41	0.17	31.4
18	R2	All MCs	16	3.0	16	3.0	0.470	4.1	LOS A	4.0	102.5	0.16	0.35	0.16	34.2
Approach			1457	3.0	1457	3.0	0.470	5.6	LOS A	4.0	102.5	0.17	0.43	0.17	30.9
East: Main St NE															
1	L2	All MCs	11	0.0	11	0.0	0.043	12.8	LOS B	0.2	3.9	0.58	0.76	0.58	31.3
6	T1	All MCs	1	0.0	1	0.0	0.043	6.8	LOS A	0.2	3.9	0.58	0.76	0.58	34.1
16	R2	All MCs	22	0.0	22	0.0	0.043	6.8	LOS A	0.2	3.9	0.58	0.76	0.58	32.3
Approach			34	0.0	34	0.0	0.043	8.7	LOS A	0.2	3.9	0.58	0.76	0.58	32.0
North: Marvin Rd NE															
7u	U	All MCs	3	3.0	3	3.0	0.515	14.4	LOS B	3.6	93.1	0.59	0.54	0.59	29.5
7	L2	All MCs	16	3.0	16	3.0	0.515	11.9	LOS B	3.6	93.1	0.59	0.54	0.59	32.3
4	T1	All MCs	1297	3.0	1297	3.0	0.515	5.6	LOS A	3.8	96.9	0.57	0.53	0.57	29.9
14	R2	All MCs	1	3.0	1	3.0	0.515	5.6	LOS A	3.8	96.9	0.56	0.51	0.56	32.9
Approach			1318	3.0	1318	3.0	0.515	5.7	LOS A	3.8	96.9	0.57	0.53	0.57	30.0
West: Main St NE															
5	L2	All MCs	1	2.0	1	2.0	0.003	12.7	LOS B	0.0	0.3	0.70	0.63	0.70	30.8
2	T1	All MCs	1	2.0	1	2.0	0.003	6.7	LOS A	0.0	0.3	0.70	0.63	0.70	33.3
12	R2	All MCs	1	2.0	1	2.0	0.001	3.6	LOS A	0.0	0.0	0.00	0.43	0.00	35.3
Approach			3	2.0	3	2.0	0.003	7.7	LOS A	0.0	0.3	0.46	0.57	0.46	33.0
All Vehicles			2812	3.0	2812	3.0	0.515	5.7	LOS A	4.0	102.5	0.36	0.48	0.36	30.5

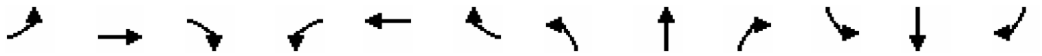
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	500	0	0	405	0	1145	615	0	900	510
Future Volume (vph)	0	0	500	0	0	405	0	1145	615	0	900	510
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.99	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3143	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3143	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	521	0	0	422	0	1193	641	0	938	531
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	521	0	0	422	0	1283	551	0	938	531
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			64.5			46.5		62.5	120.0		43.5	120.0
Effective Green, g (s)			64.5			46.5		62.5	120.0		43.5	120.0
Actuated g/C Ratio			0.54			0.39		0.52	1.00		0.36	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1419			1023		1636	1335		1180	1457
v/s Ratio Prot			0.20			0.16		c0.41			c0.29	
v/s Ratio Perm									0.41			0.36
v/c Ratio			0.37			0.41		0.78	0.41		0.79	0.36
Uniform Delay, d1			16.0			26.8		23.3	0.0		34.3	0.0
Progression Factor			1.00			1.00		0.58	1.00		1.00	1.00
Incremental Delay, d2			0.2			0.3		3.1	0.7		5.6	0.7
Delay (s)			16.2			27.1		16.6	0.7		39.8	0.7
Level of Service			B			C		B	A		D	A
Approach Delay (s/veh)		16.2			27.1			11.9			25.7	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

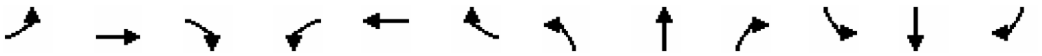
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	140	0	0	460	0	1300	235	0	1225	175
Future Volume (vph)	0	0	140	0	0	460	0	1300	235	0	1225	175
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	0	141	0	0	465	0	1313	237	0	1237	177
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	141	0	0	465	0	1313	237	0	1237	177
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			46.5			64.5		44.5	120.0		62.5	120.0
Effective Green, g (s)			46.5			64.5		44.5	120.0		62.5	120.0
Actuated g/C Ratio			0.39			0.54		0.37	1.00		0.52	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			569			1365		1786	1500		1729	1455
v/s Ratio Prot			0.10			0.18		c0.27			c0.37	
v/s Ratio Perm									0.16			0.12
v/c Ratio			0.25			0.34		0.74	0.16		0.72	0.12
Uniform Delay, d1			24.9			15.7		32.7	0.0		22.0	0.0
Progression Factor			1.00			1.00		0.78	1.00		0.62	1.00
Incremental Delay, d2			0.2			0.1		2.1	0.2		2.0	0.1
Delay (s)			25.1			15.9		27.7	0.2		15.6	0.1
Level of Service			C			B		C	A		B	A
Approach Delay (s/veh)		25.1			15.9			23.5			13.6	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



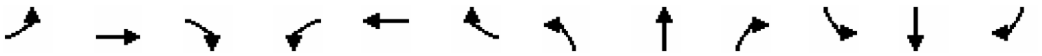
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	390	195	130	65	60	255	60	865	60	200	800	285
Future Volume (veh/h)	390	195	130	65	60	255	60	865	60	200	800	285
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	406	203	135	68	62	266	62	901	62	208	833	297
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	491	219	146	71	192	370	330	1322	91	234	1208	524
Arrive On Green	0.15	0.22	0.22	0.04	0.11	0.11	0.20	0.41	0.41	0.14	0.36	0.36
Sat Flow, veh/h	3300	999	665	1701	1786	1505	1688	3190	219	1701	3393	1472
Grp Volume(v), veh/h	406	0	338	68	62	266	62	475	488	208	833	297
Grp Sat Flow(s),veh/h/ln	1650	0	1664	1701	1786	1505	1688	1683	1726	1701	1697	1472
Q Serve(g_s), s	14.3	0.0	23.9	4.8	3.9	12.9	3.7	27.7	27.7	14.4	25.1	12.1
Cycle Q Clear(g_c), s	14.3	0.0	23.9	4.8	3.9	12.9	3.7	27.7	27.7	14.4	25.1	12.1
Prop In Lane	1.00		0.40	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	491	0	365	71	192	370	330	698	715	234	1208	524
V/C Ratio(X)	0.83	0.00	0.93	0.96	0.32	0.72	0.19	0.68	0.68	0.89	0.69	0.57
Avail Cap(c_a), veh/h	619	0	374	71	192	370	330	698	715	241	1654	718
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	1.00	1.00	1.00	1.00	0.69	0.69	0.69	0.69	0.69	0.69
Uniform Delay (d), s/veh	49.6	0.0	45.9	57.4	49.5	41.5	40.3	28.7	28.7	50.9	33.0	12.0
Incr Delay (d2), s/veh	9.8	0.0	29.5	93.7	2.0	8.2	0.4	3.7	3.6	24.6	2.2	3.0
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	6.6	0.0	12.8	3.9	1.8	8.0	1.6	11.7	12.0	7.7	10.6	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.3	0.0	75.4	151.1	51.5	49.7	40.7	32.4	32.3	75.5	35.2	15.0
LnGrp LOS	E		E	F	D	D	D	C	C	E	D	B
Approach Vol, veh/h		744			396			1025			1338	
Approach Delay, s/veh		66.6			67.4			32.9			37.0	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.5	48.7	23.4	18.4	22.5	55.7	10.0	31.8
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	5.7	27.1	16.3	14.9	16.4	29.7	6.8	25.9
Green Ext Time (p_c), s	0.0	15.6	1.5	0.0	0.1	10.4	0.0	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	45.5
HCM 7th LOS	D

Notes

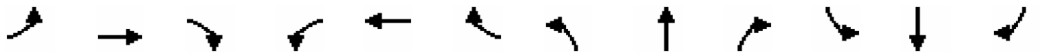
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	55	120	135	55	100	160	680	150	125	760	85
Future Volume (veh/h)	135	55	120	135	55	100	160	680	150	125	760	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	138	56	122	138	56	102	163	694	153	128	776	87
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	177	68	149	156	70	128	189	888	196	502	1565	175
Arrive On Green	0.10	0.14	0.14	0.09	0.13	0.13	0.11	0.33	0.33	0.10	0.17	0.17
Sat Flow, veh/h	1714	499	1088	1701	562	1023	1674	2720	599	1701	3075	345
Grp Volume(v), veh/h	138	0	178	138	0	158	163	426	421	128	428	435
Grp Sat Flow(s),veh/h/ln	1714	0	1587	1701	0	1584	1674	1670	1649	1701	1697	1724
Q Serve(g_s), s	9.4	0.0	13.1	9.6	0.0	11.6	11.5	27.7	27.7	8.4	27.5	27.5
Cycle Q Clear(g_c), s	9.4	0.0	13.1	9.6	0.0	11.6	11.5	27.7	27.7	8.4	27.5	27.5
Prop In Lane	1.00		0.69	1.00		0.65	1.00		0.36	1.00		0.20
Lane Grp Cap(c), veh/h	177	0	217	156	0	198	189	545	538	502	863	877
V/C Ratio(X)	0.78	0.00	0.82	0.89	0.00	0.80	0.86	0.78	0.78	0.25	0.50	0.50
Avail Cap(c_a), veh/h	177	0	317	156	0	317	237	682	673	502	863	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	52.5	0.0	50.4	53.9	0.0	51.0	52.3	36.5	36.6	41.9	35.9	36.0
Incr Delay (d2), s/veh	19.0	0.0	9.0	40.3	0.0	5.4	21.3	4.9	5.0	0.2	0.4	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	5.0	0.0	5.8	5.9	0.0	4.9	5.9	11.9	11.8	3.8	12.6	12.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.4	0.0	59.3	94.2	0.0	56.4	73.6	41.5	41.6	42.1	36.4	36.4
LnGrp LOS	E		E	F		E	E	D	D	D	D	D
Approach Vol, veh/h		316			296			1010			991	
Approach Delay, s/veh		64.6			74.0			46.7			37.1	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.5	66.1	16.4	19.0	40.4	44.2	15.0	20.4
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.5	29.5	11.4	13.6	10.4	29.7	11.6	15.1
Green Ext Time (p_c), s	0.1	6.5	0.0	0.5	0.1	6.3	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	48.3
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	290	470	345	320	465	255	215	460	185	225	755	245
Future Volume (veh/h)	290	470	345	320	465	255	215	460	185	225	755	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	293	475	0	323	470	0	217	465	187	227	763	247
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	379	571		383	576		463	563	225	528	936	417
Arrive On Green	0.11	0.17	0.00	0.12	0.17	0.00	0.27	0.24	0.24	0.31	0.27	0.27
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2366	944	1714	3420	1522
Grp Volume(v), veh/h	293	475	0	323	470	0	217	332	320	227	763	247
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1613	1714	1710	1522
Q Serve(g_s), s	10.4	16.2	0.0	11.4	15.9	0.0	12.8	22.3	22.6	12.7	25.0	16.9
Cycle Q Clear(g_c), s	10.4	16.2	0.0	11.4	15.9	0.0	12.8	22.3	22.6	12.7	25.0	16.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.59	1.00		1.00
Lane Grp Cap(c), veh/h	379	571		383	576		463	404	384	528	936	417
V/C Ratio(X)	0.77	0.83		0.84	0.82		0.47	0.82	0.83	0.43	0.81	0.59
Avail Cap(c_a), veh/h	550	693		582	727		463	608	578	528	1254	558
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	48.3	0.0	52.0	48.1	0.0	36.4	43.3	43.4	33.1	40.7	37.8
Incr Delay (d2), s/veh	2.2	7.6	0.0	4.3	6.1	0.0	0.3	17.1	18.6	0.2	7.7	6.1
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	4.4	7.4	0.0	4.9	7.2	0.0	5.4	11.2	11.0	5.3	11.5	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.8	55.8	0.0	56.4	54.2	0.0	36.7	60.4	62.1	33.3	48.5	43.9
LnGrp LOS	D	E		E	D		D	E	E	C	D	D
Approach Vol, veh/h		768			793			869			1237	
Approach Delay, s/veh		55.1			55.1			55.1			44.8	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	37.7	37.9	18.8	25.7	41.9	33.6	18.8	25.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	10.0	44.0	20.0	25.5	11.0	43.0	21.0	24.5
Max Q Clear Time (g_c+I1), s	14.8	27.0	12.4	17.9	14.7	24.6	13.4	18.2
Green Ext Time (p_c), s	0.0	5.8	0.3	2.0	0.0	4.0	0.4	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	51.6
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	185	15	90	215	185	25	470	15	255	845	190
Future Volume (veh/h)	140	185	15	90	215	185	25	470	15	255	845	190
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	149	197	16	96	229	197	27	500	16	271	899	202
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	183	504	41	121	245	211	56	742	24	312	1023	230
Arrive On Green	0.11	0.31	0.31	0.07	0.27	0.27	0.03	0.22	0.22	0.18	0.37	0.37
Sat Flow, veh/h	1688	1617	131	1714	893	768	1701	3355	107	1701	2751	618
Grp Volume(v), veh/h	149	0	213	96	0	426	27	253	263	271	554	547
Grp Sat Flow(s),veh/h/ln	1688	0	1748	1714	0	1661	1701	1697	1766	1701	1697	1672
Q Serve(g_s), s	7.6	0.0	8.4	4.8	0.0	22.0	1.4	12.0	12.0	13.6	26.8	26.9
Cycle Q Clear(g_c), s	7.6	0.0	8.4	4.8	0.0	22.0	1.4	12.0	12.0	13.6	26.8	26.9
Prop In Lane	1.00		0.08	1.00		0.46	1.00		0.06	1.00		0.37
Lane Grp Cap(c), veh/h	183	0	545	121	0	456	56	375	391	312	631	621
V/C Ratio(X)	0.81	0.00	0.39	0.79	0.00	0.93	0.48	0.67	0.67	0.87	0.88	0.88
Avail Cap(c_a), veh/h	391	0	545	203	0	461	201	696	724	704	696	686
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	0.0	23.7	40.2	0.0	31.2	41.8	31.3	31.4	34.9	25.8	25.8
Incr Delay (d2), s/veh	6.4	0.0	0.5	8.2	0.0	26.3	4.7	1.9	1.8	5.6	11.5	11.7
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	3.4	0.0	3.4	2.3	0.0	11.8	0.6	5.0	5.2	6.0	12.3	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.8	0.0	24.2	48.5	0.0	57.5	46.5	33.3	33.2	40.5	37.3	37.5
LnGrp LOS	D		C	D		E	D	C	C	D	D	D
Approach Vol, veh/h		362			522			543			1372	
Approach Delay, s/veh		32.7			55.8			33.9			38.0	
Approach LOS		C			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	37.6	14.1	28.7	20.7	24.4	10.8	32.0
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	3.4	28.9	9.6	24.0	15.6	14.0	6.8	10.4
Green Ext Time (p_c), s	0.0	3.8	0.2	0.1	0.6	2.9	0.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	39.8
HCM 7th LOS	D

Notes

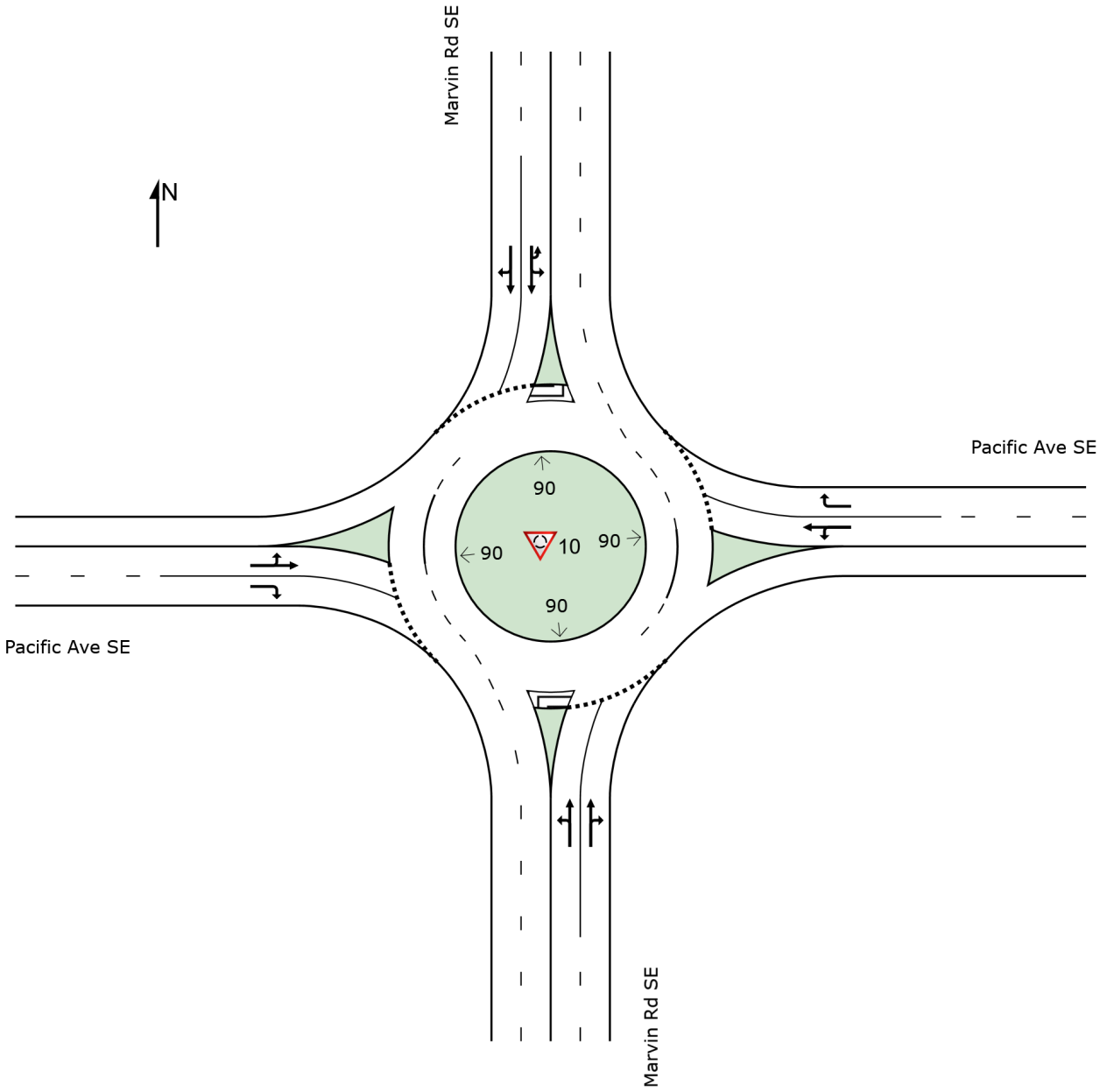
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	72	1.0	72	1.0	0.237	14.0	LOS B	1.5	37.6	0.75	0.71	0.75	32.4
8	T1	All MCs	317	1.0	317	1.0	0.237	7.9	LOS A	1.7	41.8	0.75	0.67	0.75	33.7
18	R2	All MCs	33	1.0	33	1.0	0.237	7.7	LOS A	1.7	41.8	0.75	0.65	0.75	33.7
Approach			422	1.0	422	1.0	0.237	8.9	LOS A	1.7	41.8	0.75	0.68	0.75	33.5
East: Pacific Ave SE															
1	L2	All MCs	28	1.0	28	1.0	0.251	11.0	LOS B	1.1	28.6	0.49	0.55	0.49	34.0
6	T1	All MCs	233	1.0	233	1.0	0.251	5.5	LOS A	1.1	28.6	0.49	0.55	0.49	34.6
16	R2	All MCs	261	1.0	261	1.0	0.225	5.3	LOS A	1.0	25.8	0.47	0.59	0.47	34.8
Approach			522	1.0	522	1.0	0.251	5.7	LOS A	1.1	28.6	0.48	0.57	0.48	34.7
North: Marvin Rd SE															
7u	U	All MCs	2	1.0	2	1.0	0.411	14.0	LOS B	2.7	69.2	0.59	0.64	0.59	32.6
7	L2	All MCs	311	1.0	311	1.0	0.411	11.6	LOS B	2.7	69.2	0.59	0.64	0.59	32.6
4	T1	All MCs	611	1.0	611	1.0	0.411	5.7	LOS A	2.9	72.7	0.57	0.56	0.57	34.3
14	R2	All MCs	83	1.0	83	1.0	0.411	5.7	LOS A	2.9	72.7	0.56	0.54	0.56	34.3
Approach			1008	1.0	1008	1.0	0.411	7.6	LOS A	2.9	72.7	0.57	0.58	0.57	33.7
West: Pacific Ave SE															
5	L2	All MCs	56	1.0	56	1.0	0.431	12.3	LOS B	2.3	58.3	0.68	0.69	0.74	33.3
2	T1	All MCs	356	1.0	356	1.0	0.431	6.7	LOS A	2.3	58.3	0.68	0.69	0.74	33.9
12	R2	All MCs	167	1.0	167	1.0	0.244	7.2	LOS A	1.0	25.4	0.63	0.76	0.63	34.4
Approach			578	1.0	578	1.0	0.431	7.4	LOS A	2.3	58.3	0.67	0.71	0.71	34.0
All Vehicles			2530	1.0	2530	1.0	0.431	7.4	LOS A	2.9	72.7	0.61	0.63	0.62	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

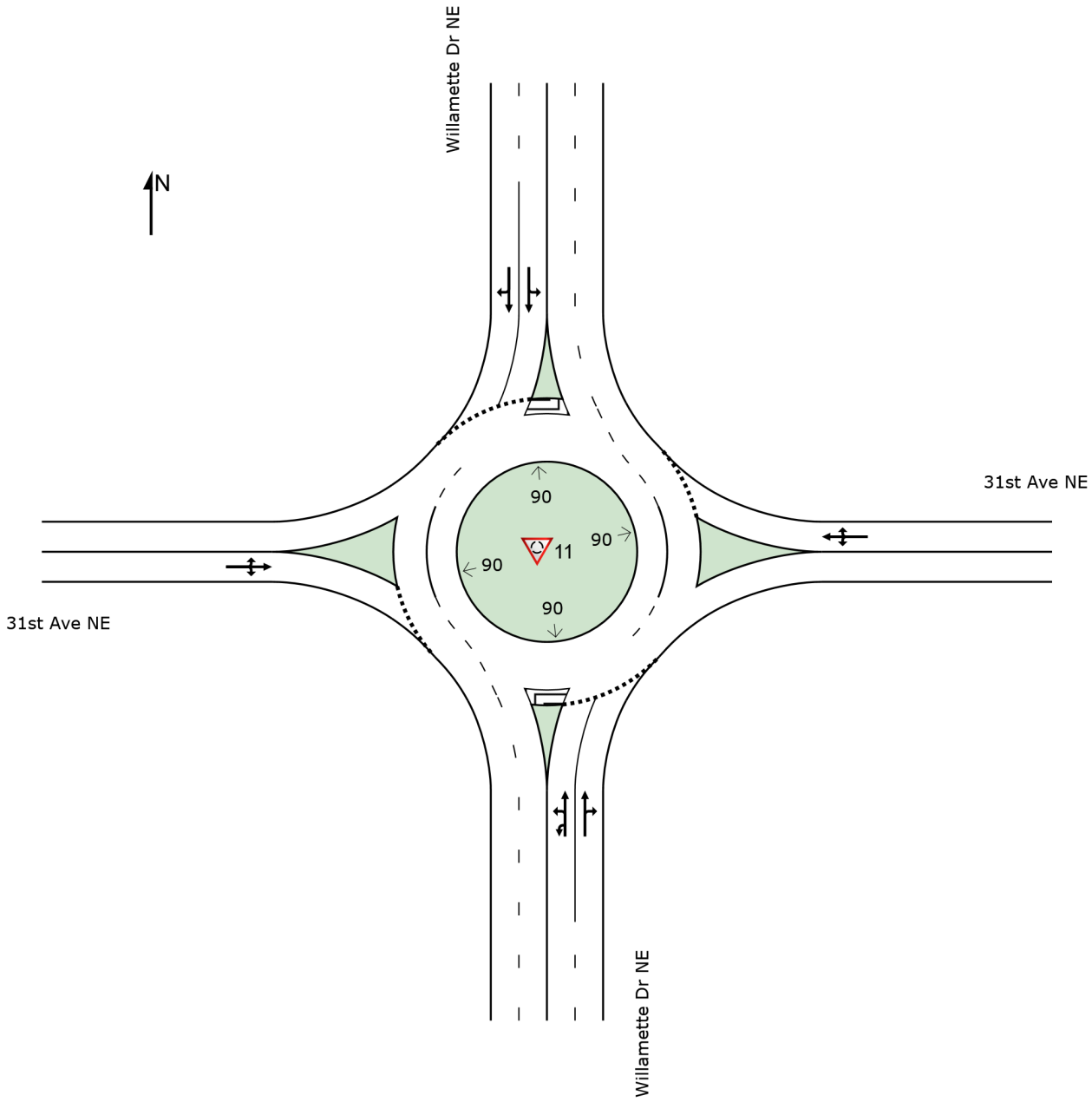
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SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	33	2.0	33	2.0	0.202	12.1	LOS B	1.1	28.5	0.12	0.49	0.12	34.4
3	L2	All MCs	60	2.0	60	2.0	0.202	9.7	LOS A	1.1	28.5	0.12	0.49	0.12	34.4
8	T1	All MCs	440	2.0	440	2.0	0.202	4.2	LOS A	1.1	28.8	0.11	0.44	0.11	35.7
18	R2	All MCs	88	2.0	88	2.0	0.202	4.3	LOS A	1.1	28.8	0.11	0.40	0.11	35.7
Approach			621	2.0	621	2.0	0.202	5.2	LOS A	1.1	28.8	0.11	0.44	0.11	35.5
East: 31st Ave NE															
1	L2	All MCs	66	3.0	66	3.0	0.084	11.1	LOS B	0.3	6.8	0.39	0.70	0.39	32.7
6	T1	All MCs	5	3.0	5	3.0	0.084	5.5	LOS A	0.3	6.8	0.39	0.70	0.39	33.3
16	R2	All MCs	11	3.0	11	3.0	0.084	5.4	LOS A	0.3	6.8	0.39	0.70	0.39	33.1
Approach			82	3.0	82	3.0	0.084	10.0	LOS A	0.3	6.8	0.39	0.70	0.39	32.8
North: Willamette Dr NE															
7	L2	All MCs	1	1.0	1	1.0	0.091	10.3	LOS B	0.4	11.0	0.31	0.43	0.31	34.7
4	T1	All MCs	247	1.0	247	1.0	0.091	4.7	LOS A	0.4	11.2	0.30	0.43	0.30	35.5
14	R2	All MCs	5	1.0	5	1.0	0.091	4.7	LOS A	0.4	11.2	0.29	0.42	0.29	35.1
Approach			254	1.0	254	1.0	0.091	4.7	LOS A	0.4	11.2	0.30	0.43	0.30	35.5
West: 31st Ave NE															
5	L2	All MCs	11	0.0	11	0.0	0.080	10.6	LOS B	0.3	6.7	0.33	0.56	0.33	34.6
2	T1	All MCs	11	0.0	11	0.0	0.080	5.0	LOS A	0.3	6.7	0.33	0.56	0.33	35.3
12	R2	All MCs	66	0.0	66	0.0	0.080	4.9	LOS A	0.3	6.7	0.33	0.56	0.33	35.1
Approach			88	0.0	88	0.0	0.080	5.6	LOS A	0.3	6.7	0.33	0.56	0.33	35.0
All Vehicles			1045	1.7	1045	1.7	0.202	5.5	LOS A	1.1	28.8	0.20	0.47	0.20	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

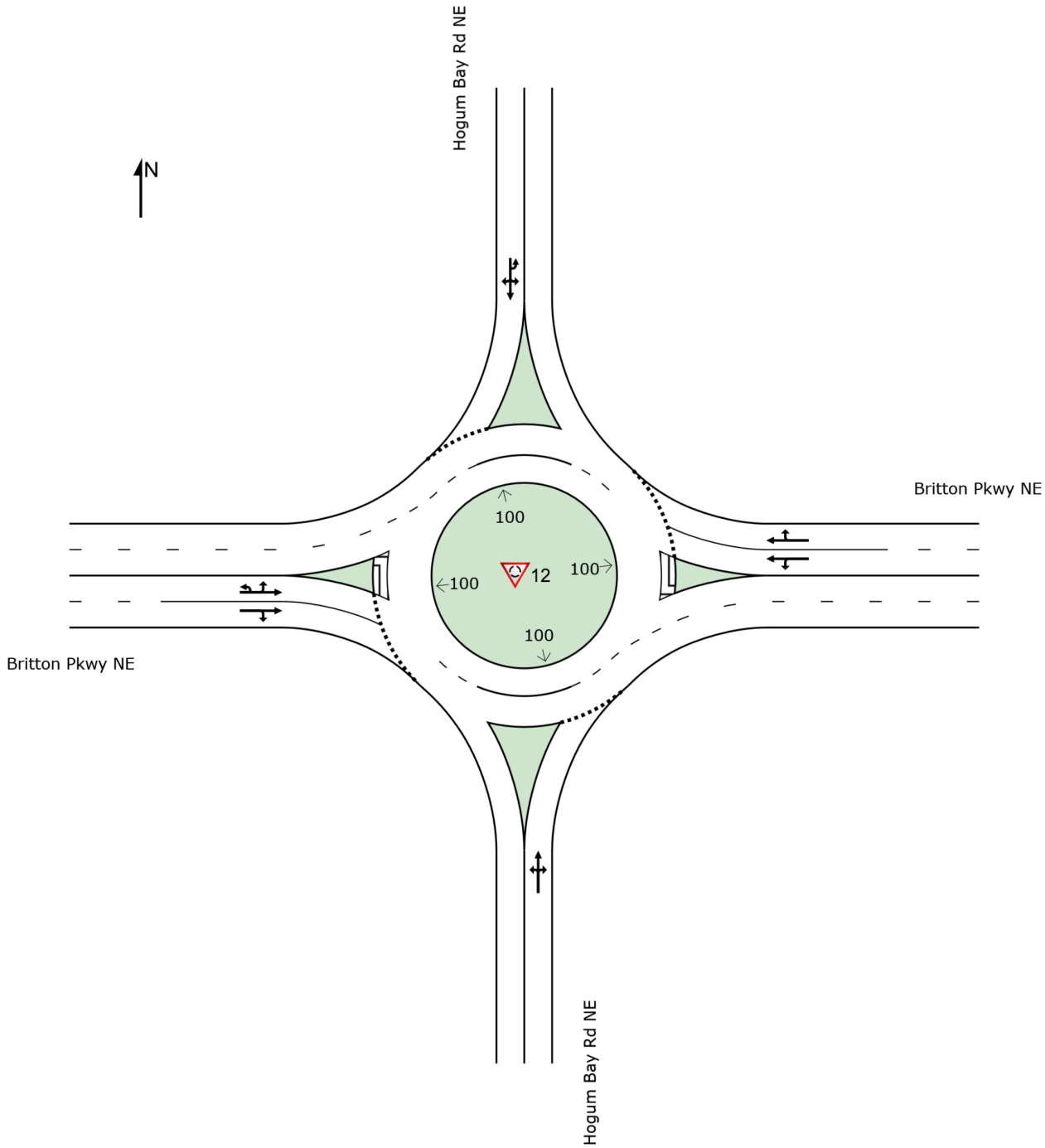
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	27	13.0	27	13.0	0.473	11.1	LOS B	2.4	67.0	0.40	0.51	0.40	34.2
8	T1	All MCs	183	13.0	183	13.0	0.473	5.1	LOS A	2.4	67.0	0.40	0.51	0.40	35.1
18	R2	All MCs	280	13.0	280	13.0	0.473	5.1	LOS A	2.4	67.0	0.40	0.51	0.40	34.8
Approach			489	13.0	489	13.0	0.473	5.5	LOS A	2.4	67.0	0.40	0.51	0.40	34.9
East: Britton Pkwy NE															
1	L2	All MCs	48	4.0	48	4.0	0.173	11.2	LOS B	0.9	23.9	0.45	0.54	0.45	33.8
6	T1	All MCs	371	4.0	371	4.0	0.173	5.1	LOS A	1.0	24.9	0.44	0.50	0.44	34.9
16	R2	All MCs	11	4.0	11	4.0	0.173	5.1	LOS A	1.0	24.9	0.43	0.47	0.43	34.7
Approach			430	4.0	430	4.0	0.173	5.8	LOS A	1.0	24.9	0.44	0.50	0.44	34.8
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.420	14.5	LOS B	1.9	50.1	0.52	0.63	0.54	34.0
7	L2	All MCs	16	10.0	16	10.0	0.420	12.0	LOS B	1.9	50.1	0.52	0.63	0.54	34.0
4	T1	All MCs	145	10.0	145	10.0	0.420	6.1	LOS A	1.9	50.1	0.52	0.63	0.54	34.8
14	R2	All MCs	215	10.0	215	10.0	0.420	6.1	LOS A	1.9	50.1	0.52	0.63	0.54	34.5
Approach			377	10.0	377	10.0	0.420	6.4	LOS A	1.9	50.1	0.52	0.63	0.54	34.6
West: Britton Pkwy NE															
5u	U	All MCs	4	7.0	4	7.0	0.068	13.3	LOS B	0.3	8.9	0.38	0.60	0.38	32.9
5	L2	All MCs	48	7.0	48	7.0	0.068	10.8	LOS B	0.3	8.9	0.38	0.60	0.38	32.9
2	T1	All MCs	102	7.0	102	7.0	0.068	4.8	LOS A	0.4	9.3	0.37	0.48	0.37	34.9
12	R2	All MCs	16	7.0	16	7.0	0.068	4.9	LOS A	0.4	9.3	0.36	0.45	0.36	34.9
Approach			171	7.0	171	7.0	0.068	6.7	LOS A	0.4	9.3	0.37	0.51	0.37	34.2
All Vehicles			1468	8.9	1468	8.9	0.473	5.9	LOS A	2.4	67.0	0.44	0.54	0.44	34.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	10	330	0	10	0	530	3	0	0	0	1	0	10
Future Vol, veh/h	10	330	0	10	0	530	3	0	0	0	1	0	10
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	351	0	11	0	564	3	0	0	0	1	0	11

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	568	0	0	351	351	0	0	677	962	177	786	960	286
Stage 1	-	-	-	-	-	-	-	372	372	-	588	588	-
Stage 2	-	-	-	-	-	-	-	304	589	-	198	372	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	987	-	-	855	1197	-	-	339	255	836	286	259	717
Stage 1	-	-	-	-	-	-	-	620	617	-	467	499	-
Stage 2	-	-	-	-	-	-	-	680	494	-	791	622	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	986	-	-	855	855	-	-	326	248	835	279	252	716
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	326	248	-	279	252	-
Stage 1	-	-	-	-	-	-	-	614	610	-	461	493	-
Stage 2	-	-	-	-	-	-	-	661	487	-	782	615	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.26	0.17	0	10.85
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	986	-	-	855	-	-	627
HCM Lane V/C Ratio	-	0.011	-	-	0.012	-	-	0.019
HCM Ctrl Dly (s/v)	0	8.7	-	-	9.3	-	-	10.9
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	340	0	0	535	1	0	0	0	1	0	15
Future Vol, veh/h	4	340	0	0	535	1	0	0	0	1	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	4	362	0	0	569	1	0	0	0	1	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	570	0	0	362	0	0	655	940	181	759	940	285
Stage 1	-	-	-	-	-	-	370	370	-	570	570	-
Stage 2	-	-	-	-	-	-	285	570	-	189	370	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	985	-	-	1186	-	-	351	262	831	299	266	718
Stage 1	-	-	-	-	-	-	622	618	-	479	509	-
Stage 2	-	-	-	-	-	-	699	503	-	800	624	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	985	-	-	1186	-	-	342	261	831	298	265	718
Mov Cap-2 Maneuver	-	-	-	-	-	-	342	261	-	298	265	-
Stage 1	-	-	-	-	-	-	619	616	-	479	509	-
Stage 2	-	-	-	-	-	-	683	503	-	797	621	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.1	0	0	10.6
HCM LOS			A	B

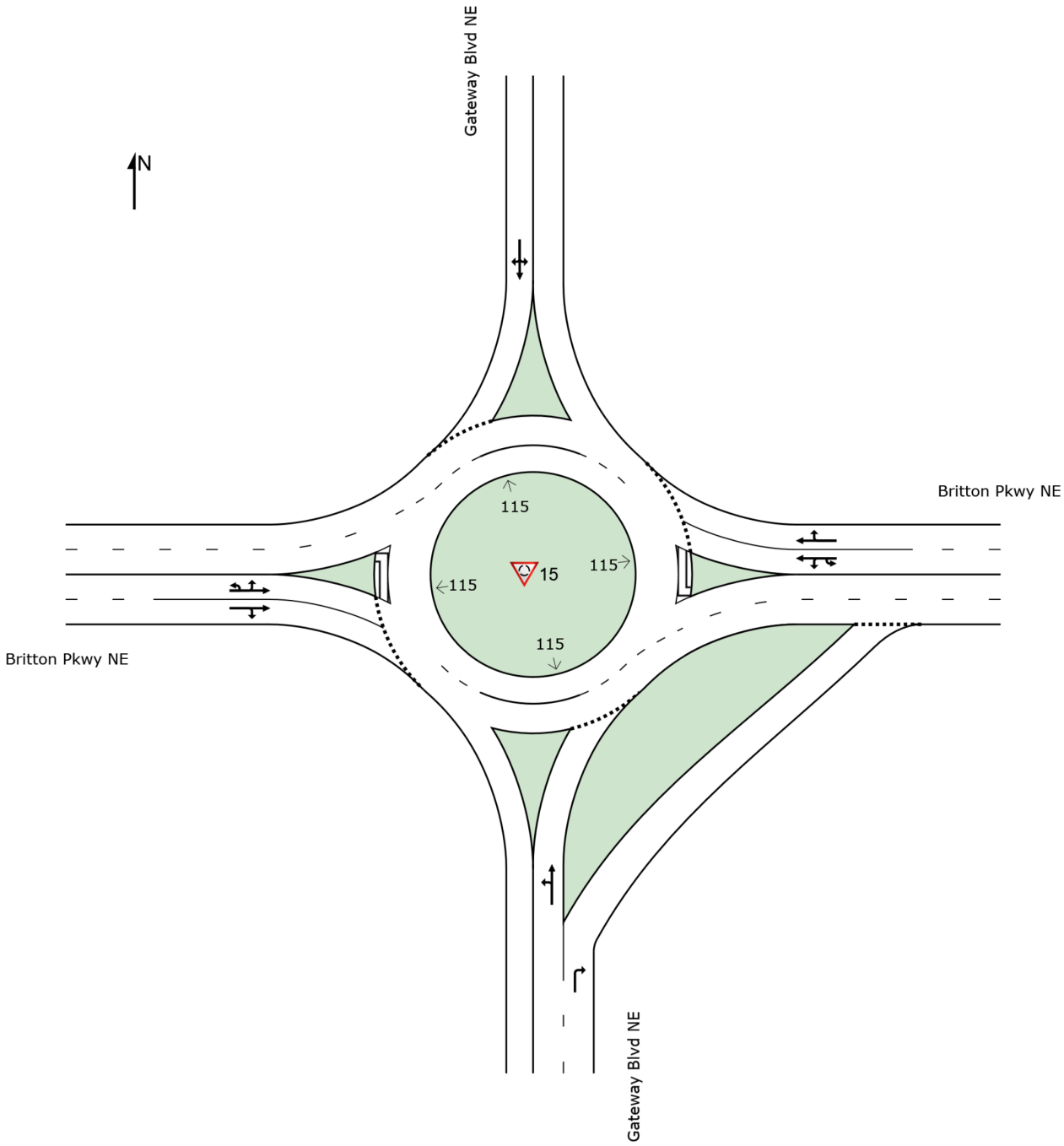
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	985	-	-	1186	-	-	660
HCM Lane V/C Ratio	-	0.004	-	-	-	-	-	0.026
HCM Ctrl Dly (s/v)	0	8.7	-	-	0	-	-	10.6
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	17	2.0	17	2.0	0.016	10.5	LOS B	0.0	1.1	0.28	0.62	0.28	33.1
8	T1	All MCs	4	2.0	4	2.0	0.016	4.2	LOS A	0.0	1.1	0.28	0.62	0.28	33.7
18	R2	All MCs	44	2.0	44	2.0	0.032	4.2	LOS A	0.1	2.2	0.25	0.48	0.25	35.9
Approach			66	2.0	66	2.0	0.032	5.8	LOS A	0.1	2.2	0.26	0.53	0.26	34.9
East: Britton Pkwy NE															
1u	U	All MCs	3	3.0	3	3.0	0.209	13.2	LOS B	1.1	28.9	0.32	0.44	0.32	34.6
1	L2	All MCs	39	3.0	39	3.0	0.209	10.6	LOS B	1.1	28.9	0.32	0.44	0.32	34.6
6	T1	All MCs	406	3.0	406	3.0	0.209	4.2	LOS A	1.2	29.6	0.31	0.43	0.31	35.6
16	R2	All MCs	156	3.0	156	3.0	0.209	4.4	LOS A	1.2	29.6	0.29	0.42	0.29	35.5
Approach			603	3.0	603	3.0	0.209	4.7	LOS A	1.2	29.6	0.30	0.43	0.30	35.5
North: Gateway Blvd NE															
7	L2	All MCs	72	2.0	72	2.0	0.144	11.2	LOS B	0.5	13.1	0.41	0.64	0.41	33.6
4	T1	All MCs	6	2.0	6	2.0	0.144	4.9	LOS A	0.5	13.1	0.41	0.64	0.41	34.4
14	R2	All MCs	72	2.0	72	2.0	0.144	5.0	LOS A	0.5	13.1	0.41	0.64	0.41	34.1
Approach			150	2.0	150	2.0	0.144	8.0	LOS A	0.5	13.1	0.41	0.64	0.41	33.9
West: Britton Pkwy NE															
5u	U	All MCs	4	5.0	4	5.0	0.137	13.1	LOS B	0.7	18.1	0.28	0.56	0.28	33.4
5	L2	All MCs	111	5.0	111	5.0	0.137	10.5	LOS B	0.7	18.1	0.28	0.56	0.28	33.4
2	T1	All MCs	261	5.0	261	5.0	0.137	4.1	LOS A	0.7	18.6	0.26	0.42	0.26	35.5
12	R2	All MCs	17	5.0	17	5.0	0.137	4.3	LOS A	0.7	18.6	0.26	0.38	0.26	35.6
Approach			393	5.0	393	5.0	0.137	6.0	LOS A	0.7	18.6	0.27	0.46	0.27	34.8
All Vehicles			1212	3.5	1212	3.5	0.209	5.6	LOS A	1.2	29.6	0.30	0.47	0.30	35.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	345	2	25	460	0	15	0	5	0	0	0
Future Vol, veh/h	0	345	2	25	460	0	15	0	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	0	363	2	26	484	0	16	0	5	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	484	0	0	365	0	0	659	901	183	718	902	242
Stage 1	-	-	-	-	-	-	364	364	-	537	537	-
Stage 2	-	-	-	-	-	-	295	537	-	182	365	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	1082	-	-	1190	-	-	349	276	829	320	280	765
Stage 1	-	-	-	-	-	-	627	622	-	501	526	-
Stage 2	-	-	-	-	-	-	689	521	-	808	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1082	-	-	1190	-	-	341	270	829	311	273	765
Mov Cap-2 Maneuver	-	-	-	-	-	-	341	270	-	311	273	-
Stage 1	-	-	-	-	-	-	627	622	-	490	515	-
Stage 2	-	-	-	-	-	-	674	510	-	803	627	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0.42	14.39	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	341	829	1082	-	-	1190	-	-	-	-
HCM Lane V/C Ratio	0.046	0.006	-	-	-	0.022	-	-	-	-
HCM Ctrl Dly (s/v)	16.1	9.4	0	-	-	8.1	-	-	0	0
HCM Lane LOS	C	A	A	-	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0.1	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	1	0	0	2	2	1	2	2	1
Stage 1	-	-	-	-	-	-	1	1	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	1	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1083	1020	894	1083
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1083	1020	894	1083
Mov Cap-2 Maneuver	-	-	-	-	-	-	1020	894	-	1020	894	-
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1622	-	-	1622	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	40	45	250	55	65
Future Vol, veh/h	175	40	45	250	55	65
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	197	45	51	281	62	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	242	0	601	219
Stage 1	-	-	-	-	219	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1337	-	463	821
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	690	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1337	-	442	821
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	659	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.19	12.91
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	590	-	-	275	-
HCM Lane V/C Ratio	0.229	-	-	0.038	-
HCM Ctrl Dly (s/v)	12.9	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	20.5

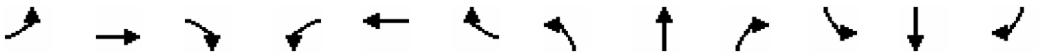
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	175	105	255	180	0	115	1	170	0	1	0
Future Vol, veh/h	0	175	105	255	180	0	115	1	170	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	235	-	-	135	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	4	4	4	5	5	5	4	4	4	0	0	0
Mvmt Flow	0	211	127	307	217	0	139	1	205	0	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	217	0	0	337	0	0	1106	1105	274	1043	1169	217
Stage 1	-	-	-	-	-	-	274	274	-	831	831	-
Stage 2	-	-	-	-	-	-	832	831	-	211	337	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.14	6.54	6.24	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.54	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.54	-	6.1	5.5	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.536	4.036	3.336	3.5	4	3.3
Pot Cap-1 Maneuver	1341	-	-	1205	-	-	186	209	760	209	195	828
Stage 1	-	-	-	-	-	-	728	679	-	367	387	-
Stage 2	-	-	-	-	-	-	361	382	-	795	645	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1341	-	-	1205	-	-	~ 138	156	760	113	145	828
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 138	156	-	113	145	-
Stage 1	-	-	-	-	-	-	728	679	-	273	288	-
Stage 2	-	-	-	-	-	-	268	284	-	580	645	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	5.28	63.68	30
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	138	743	1341	-	-	1205	-	-	145
HCM Lane V/C Ratio	1.005	0.277	-	-	-	0.255	-	-	0.008
HCM Ctrl Dly (s/v)	141	11.7	0	-	-	9	-	-	30
HCM Lane LOS	F	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	7.3	1.1	0	-	-	1	-	-	0

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



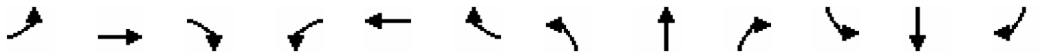
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	950	365	350	750	85	175	120	240	105	225	70
Future Volume (veh/h)	80	950	365	350	750	85	175	120	240	105	225	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	82	969	372	357	765	87	179	122	245	107	230	71
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	102	1497	846	414	1544	176	204	302	447	134	326	98
Arrive On Green	0.06	0.44	0.44	0.13	0.51	0.51	0.12	0.17	0.17	0.08	0.13	0.13
Sat Flow, veh/h	1701	3393	1506	3274	3044	346	1701	1786	1508	1674	2527	760
Grp Volume(v), veh/h	82	969	372	357	423	429	179	122	245	107	150	151
Grp Sat Flow(s),veh/h/ln	1701	1697	1506	1637	1683	1707	1701	1786	1508	1674	1670	1617
Q Serve(g_s), s	5.7	26.8	17.3	12.8	19.8	19.9	12.4	7.3	16.4	7.5	10.3	10.8
Cycle Q Clear(g_c), s	5.7	26.8	17.3	12.8	19.8	19.9	12.4	7.3	16.4	7.5	10.3	10.8
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	102	1497	846	414	854	866	204	302	447	134	216	209
V/C Ratio(X)	0.80	0.65	0.44	0.86	0.50	0.50	0.88	0.40	0.55	0.80	0.70	0.72
Avail Cap(c_a), veh/h	135	1497	846	532	854	866	206	439	562	202	411	397
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)	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.7	26.2	15.4	51.4	19.4	19.5	51.9	44.5	35.5	54.3	50.0	50.2
Incr Delay (d2), s/veh	14.7	1.9	1.4	9.4	2.0	2.0	30.9	1.0	1.2	6.7	4.0	4.7
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	2.9	11.1	6.1	5.8	8.1	8.2	7.0	3.3	6.2	3.4	4.5	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.3	28.1	16.8	60.8	21.5	21.5	82.9	45.5	36.8	60.9	54.0	54.9
LnGrp LOS	E	C	B	E	C	C	F	D	D	E	D	D
Approach Vol, veh/h		1423			1209			546			408	
Approach Delay, s/veh		27.6			33.1			53.8			56.1	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	66.4	15.1	25.8	20.7	58.4	19.9	21.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	9.5	44.5	14.5	29.5	19.5	34.5	14.5	29.5
Max Q Clear Time (g_c+I1), s	7.7	21.9	9.5	18.4	14.8	28.8	14.4	12.8
Green Ext Time (p_c), s	0.0	6.7	0.0	1.4	0.3	3.9	0.0	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	36.7
HCM 7th LOS	D

Notes

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



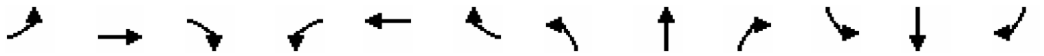
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	705	120	115	695	30	145	200	80	90	295	405
Future Volume (veh/h)	220	705	120	115	695	30	145	200	80	90	295	405
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	227	727	124	119	716	31	149	206	82	93	304	418
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	255	948	162	145	855	37	175	723	278	116	460	406
Arrive On Green	0.15	0.33	0.33	0.09	0.26	0.26	0.10	0.31	0.31	0.07	0.27	0.27
Sat Flow, veh/h	1701	2897	494	1701	3312	143	1674	2352	904	1701	1697	1500
Grp Volume(v), veh/h	227	426	425	119	367	380	149	144	144	93	304	418
Grp Sat Flow(s),veh/h/ln	1701	1697	1694	1701	1697	1759	1674	1670	1587	1701	1697	1500
Q Serve(g_s), s	14.5	25.0	25.0	7.6	22.6	22.7	9.7	7.2	7.6	6.0	17.6	30.0
Cycle Q Clear(g_c), s	14.5	25.0	25.0	7.6	22.6	22.7	9.7	7.2	7.6	6.0	17.6	30.0
Prop In Lane	1.00		0.29	1.00		0.08	1.00		0.57	1.00		1.00
Lane Grp Cap(c), veh/h	255	555	554	145	438	454	175	513	488	116	460	406
V/C Ratio(X)	0.89	0.77	0.77	0.82	0.84	0.84	0.85	0.28	0.30	0.80	0.66	1.03
Avail Cap(c_a), veh/h	292	613	612	223	544	564	181	513	488	184	460	406
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.2	33.5	33.5	49.8	38.9	38.9	48.7	29.1	29.2	50.9	35.9	40.4
Incr Delay (d2), s/veh	23.3	5.3	5.3	7.5	9.6	9.3	27.9	0.3	0.3	5.3	3.5	52.2
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	7.7	10.9	10.9	3.5	10.5	10.9	5.4	2.9	3.0	2.7	7.7	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.5	38.7	38.8	57.3	48.4	48.2	76.7	29.4	29.6	56.2	39.4	92.5
LnGrp LOS	E	D	D	E	D	D	E	C	C	E	D	F
Approach Vol, veh/h		1078			866			437			815	
Approach Delay, s/veh		45.2			49.5			45.6			68.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.6	34.6	13.5	40.0	14.9	42.2	17.6	36.0
Change Period (Y+Rc), s	6.0	* 6	6.0	6.0	5.5	6.0	6.0	6.0
Max Green Setting (Gmax), s	19.0	* 36	12.0	30.0	14.5	40.0	12.0	30.0
Max Q Clear Time (g_c+I1), s	16.5	24.7	8.0	9.6	9.6	27.0	11.7	32.0
Green Ext Time (p_c), s	0.1	3.9	0.0	1.6	0.1	4.5	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	52.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



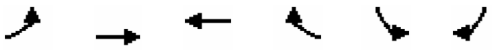
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1375	5	0	970	30	70	5	25	55	1	30
Future Volume (veh/h)	40	1375	5	0	970	30	70	5	25	55	1	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	1447	0	0	1021	32	74	5	26	58	1	32
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, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	83	2748		1	2503	78	158	200	169	210	3	169
Arrive On Green	0.05	1.00	0.00	0.00	0.75	0.75	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	3300	3393	1514	1688	3332	104	1398	1800	1525	1353	28	1525
Grp Volume(v), veh/h	42	1447	0	0	516	537	74	5	26	59	0	32
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1753	1398	1800	1525	1381	0	1525
Q Serve(g_s), s	1.5	0.0	0.0	0.0	13.2	13.2	6.2	0.3	1.8	4.6	0.0	2.3
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.0	13.2	13.2	11.1	0.3	1.8	4.9	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	0.98		1.00
Lane Grp Cap(c), veh/h	83	2748		1	1265	1317	158	200	169	213	0	169
V/C Ratio(X)	0.51	0.53		0.00	0.41	0.41	0.47	0.03	0.15	0.28	0.00	0.19
Avail Cap(c_a), veh/h	275	2748		77	1265	1317	480	615	521	537	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.00	0.00	0.79	0.79	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	0.0	5.4	5.4	54.8	47.5	48.2	49.7	0.0	48.4
Incr Delay (d2), s/veh	3.3	0.7	0.0	0.0	0.8	0.7	1.6	0.0	0.3	0.5	0.0	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	0.7	0.3	0.0	0.0	4.3	4.5	2.3	0.1	0.7	1.7	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.6	0.7	0.0	0.0	6.1	6.1	56.4	47.6	48.5	50.2	0.0	48.8
LnGrp LOS	E	A			A	A	E	D	D	D		D
Approach Vol, veh/h		1489			1053			105			91	
Approach Delay, s/veh		2.4			6.1			54.0			49.7	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	95.7		17.3	0.0	102.7		17.3				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	3.5	15.2		13.1	0.0	2.0		6.9				
Green Ext Time (p_c), s	0.0	10.4		0.2	0.0	20.7		0.3				

Intersection Summary		
HCM 7th Control Delay, s/veh	7.4	
HCM 7th LOS	A	

Notes

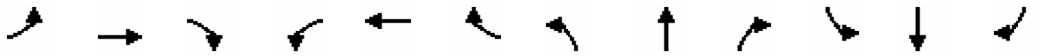
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1425	990	25	30	50
Future Volume (veh/h)	50	1425	990	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	53	1516	1053	27	32	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	920	4252	1184	30	84	74
Arrive On Green	0.47	0.87	0.71	0.71	0.05	0.05
Sat Flow, veh/h	1701	5036	3442	86	1714	1525
Grp Volume(v), veh/h	53	1516	528	552	32	53
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1756	1714	1525
Q Serve(g_s), s	0.0	6.9	29.8	29.8	2.2	4.1
Cycle Q Clear(g_c), s	0.0	6.9	29.8	29.8	2.2	4.1
Prop In Lane	1.00			0.05	1.00	1.00
Lane Grp Cap(c), veh/h	920	4252	594	620	84	74
V/C Ratio(X)	0.06	0.36	0.89	0.89	0.38	0.71
Avail Cap(c_a), veh/h	920	4252	975	1017	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.92	0.92	1.00	1.00
Uniform Delay (d), s/veh	11.9	1.4	15.8	15.8	55.3	56.2
Incr Delay (d2), s/veh	0.0	0.2	16.7	16.2	1.1	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.1	8.5	8.7	1.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	11.9	1.7	32.5	32.0	56.4	60.9
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1569	1080		85	
Approach Delay, s/veh		2.0	32.2		59.2	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	62.3	47.9			110.2	9.8
Change Period (Y+Rc), s	5.5	5.5			5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5			82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	31.8			8.9	6.1
Green Ext Time (p_c), s	0.0	10.6			22.3	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	15.7
HCM 7th LOS	B



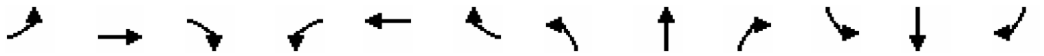
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	560	820	0	0	980	65	15	0	675	0	0	0
Future Volume (veh/h)	560	820	0	0	980	65	15	0	675	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	609	891	0	0	1065	0	16	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3078	0	0	1875		23	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	609	891	0	0	1065	0	16	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	15.0	0.0	0.0	24.6	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	15.0	0.0	0.0	24.6	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3078	0	0	1875		23	0				
V/C Ratio(X)	1.18	0.29	0.00	0.00	0.57		0.68	0.00				
Avail Cap(c_a), veh/h	517	3078	0	0	1875		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.26	0.26	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.1	0.0	0.0	17.2	0.0	58.9	0.0	0.0			
Incr Delay (d2), s/veh	85.3	0.1	0.0	0.0	1.3	0.0	29.6	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	28.2	6.1	0.0	0.0	9.6	0.0	0.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	133.1	5.2	0.0	0.0	18.5	0.0	88.5	0.0	0.0			
LnGrp LOS	F	A			B		F					
Approach Vol, veh/h		1500			1065			16				
Approach Delay, s/veh		57.1			18.5			88.5				
Approach LOS		E			B			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.3		5.7		114.3			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	26.6		3.1		17.0			
Green Ext Time (p_c), s	0.0	7.8		0.0		9.6			

Intersection Summary		
HCM 7th Control Delay, s/veh	41.4	
HCM 7th LOS	D	

Notes

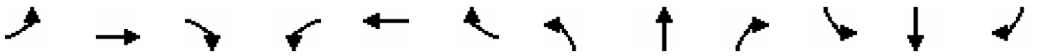
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1330	385	380	635	0	0	0	0	85	1	690
Future Volume (vph)	0	1330	385	380	635	0	0	0	0	85	1	690
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1694	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1694	1515
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1371	397	392	655	0	0	0	0	88	1	711
RTOR Reduction (vph)	0	0	223	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	1371	174	392	655	0	0	0	0	0	89	664
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		52.6	52.6	36.3	41.3						16.1	69.2
Effective Green, g (s)		52.6	52.6	36.3	41.3						16.1	69.2
Actuated g/C Ratio		0.44	0.44	0.30	0.34						0.13	0.58
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1484	664	506	1153						227	873
v/s Ratio Prot		c0.40		c0.23	0.20							c0.44
v/s Ratio Perm			0.11								0.05	
v/c Ratio		0.92	0.26	0.77	0.57						0.39	0.76
Uniform Delay, d1		31.8	21.4	38.1	32.1						47.5	19.2
Progression Factor		0.88	1.65	0.57	0.28						1.00	1.00
Incremental Delay, d2		8.5	0.7	3.4	0.9						1.3	4.2
Delay (s)		36.6	35.9	25.3	9.9						48.8	23.3
Level of Service		D	D	C	A						D	C
Approach Delay (s/veh)		36.4			15.6			0.0			26.2	
Approach LOS		D			B			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	800	260	585	575	170	140	225	780	140	185	45
Future Volume (veh/h)	25	800	260	585	575	170	140	225	780	140	185	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	26	833	0	609	599	0	146	234	812	146	193	47
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	33	1302		676	1936		172	253	917	173	362	86
Arrive On Green	0.02	0.38	0.00	0.34	0.96	0.00	0.10	0.14	0.14	0.10	0.13	0.13
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2589	1701	2710	643
Grp Volume(v), veh/h	26	833	0	609	599	0	146	234	812	146	119	121
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1294	1701	1697	1656
Q Serve(g_s), s	1.8	24.1	0.0	21.2	1.2	0.0	10.1	15.5	17.0	10.1	7.8	8.2
Cycle Q Clear(g_c), s	1.8	24.1	0.0	21.2	1.2	0.0	10.1	15.5	17.0	10.1	7.8	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	33	1302		676	1936		172	253	917	173	227	221
V/C Ratio(X)	0.79	0.64		0.90	0.31		0.85	0.92	0.89	0.85	0.52	0.55
Avail Cap(c_a), veh/h	85	1302		805	1936		241	253	917	340	339	331
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.68	0.68	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.6	30.2	0.0	38.1	1.0	0.0	53.0	50.9	37.0	53.0	48.4	48.6
Incr Delay (d2), s/veh	14.4	2.4	0.0	8.8	0.3	0.0	16.0	36.7	10.3	4.3	0.7	0.8
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	10.2	0.0	8.3	0.4	0.0	5.1	9.5	12.4	4.5	3.4	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.0	32.6	0.0	46.9	1.3	0.0	69.0	87.6	47.3	57.3	49.1	49.4
LnGrp LOS	E	C		D	A		E	F	D	E	D	D
Approach Vol, veh/h		859			1208			1192			386	
Approach Delay, s/veh		33.8			24.3			57.8			52.3	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	74.5	16.2	22.0	30.3	51.5	17.1	21.0
Change Period (Y+Rc), s	5.0	5.5	4.0	5.0	5.5	* 5.5	5.0	* 5
Max Green Setting (Gmax), s	6.0	53.5	24.0	17.0	29.5	* 30	17.0	* 24
Max Q Clear Time (g_c+I1), s	3.8	3.2	12.1	19.0	23.2	26.1	12.1	10.2
Green Ext Time (p_c), s	0.0	5.6	0.1	0.0	1.6	2.2	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	40.5
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

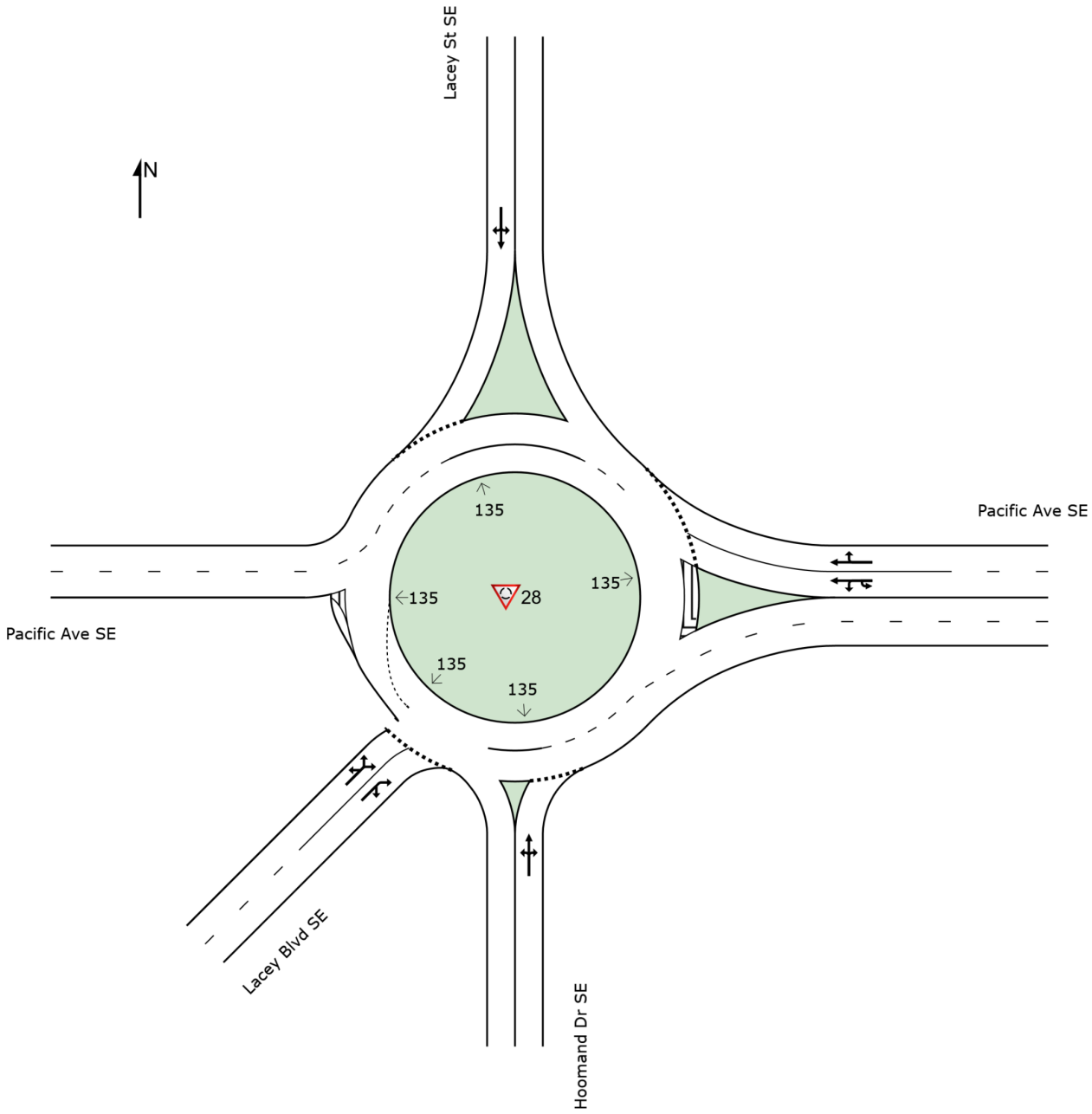
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Existing)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Existing PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	73	2.0	73	2.0	0.173	12.4	LOS B	0.6	16.2	0.56	0.74	0.56	33.4
8	T1	All MCs	5	2.0	5	2.0	0.173	5.5	LOS A	0.6	16.2	0.56	0.74	0.56	34.1
18	R2	All MCs	73	2.0	73	2.0	0.173	5.8	LOS A	0.6	16.2	0.56	0.74	0.56	33.8
Approach			151	2.0	151	2.0	0.173	9.0	LOS A	0.6	16.2	0.56	0.74	0.56	33.6
East: Pacific Ave SE															
1u	U	All MCs	3	1.0	3	1.0	0.441	13.8	LOS B	3.1	77.1	0.43	0.46	0.43	34.4
1	L2	All MCs	94	1.0	94	1.0	0.441	11.1	LOS B	3.1	77.1	0.43	0.46	0.43	34.5
6	T1	All MCs	1156	1.0	1156	1.0	0.441	4.0	LOS A	3.1	79.1	0.41	0.42	0.41	35.6
16	R2	All MCs	63	1.0	63	1.0	0.441	4.3	LOS A	3.1	79.1	0.39	0.39	0.39	35.5
Approach			1316	1.0	1316	1.0	0.441	4.6	LOS A	3.1	79.1	0.41	0.42	0.41	35.5
North: Lacey St SE															
7	L2	All MCs	21	2.0	21	2.0	0.091	13.0	LOS B	0.3	8.8	0.61	0.76	0.61	33.7
4	T1	All MCs	5	2.0	5	2.0	0.091	6.1	LOS A	0.3	8.8	0.61	0.76	0.61	34.4
14	R2	All MCs	42	2.0	42	2.0	0.091	6.3	LOS A	0.3	8.8	0.61	0.76	0.61	34.1
Approach			68	2.0	68	2.0	0.091	8.3	LOS A	0.3	8.8	0.61	0.76	0.61	34.0
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	36	1.0	36	1.0	0.402	12.1	LOS B	2.3	57.9	0.31	0.43	0.31	35.1
5ax	L1	All MCs	52	1.0	52	1.0	0.402	9.4	LOS A	2.3	57.9	0.31	0.43	0.31	35.1
12ax	R1	All MCs	979	1.0	979	1.0	0.402	3.5	LOS A	2.3	58.8	0.30	0.40	0.30	36.1
12bx	R3	All MCs	62	1.0	62	1.0	0.402	4.2	LOS A	2.3	58.8	0.30	0.38	0.30	35.8
Approach			1130	1.0	1130	1.0	0.402	4.1	LOS A	2.3	58.8	0.30	0.41	0.30	36.0
All Vehicles			2665	1.1	2665	1.1	0.441	4.7	LOS A	3.1	79.1	0.38	0.44	0.38	35.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	210	4	75	225	45	10	30	145	20	20	3
Future Vol, veh/h	5	210	4	75	225	45	10	30	145	20	20	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	6	239	5	85	256	51	11	34	165	23	23	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.1	13.8	10	9.7
HCM LOS	B	B	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	2%	22%	47%
Vol Thru, %	75%	0%	96%	65%	47%
Vol Right, %	0%	100%	2%	13%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	145	219	345	43
LT Vol	10	0	5	75	20
Through Vol	30	0	210	225	20
RT Vol	0	145	4	45	3
Lane Flow Rate	45	165	249	392	49
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.08	0.252	0.359	0.545	0.083
Departure Headway (Hd)	6.35	5.512	5.189	5.002	6.091
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	564	651	692	725	587
Service Time	4.093	3.254	3.224	3.002	4.143
HCM Lane V/C Ratio	0.08	0.253	0.36	0.541	0.083
HCM Control Delay, s/veh	9.6	10.1	11.1	13.8	9.7
HCM Lane LOS	A	B	B	B	A
HCM 95th-tile Q	0.3	1	1.6	3.3	0.3

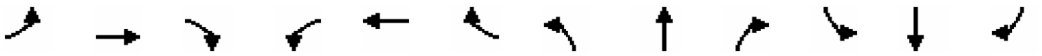
Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	115	35	435	150	35	320
Future Vol, veh/h	115	35	435	150	35	320
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	-	-	350	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	119	36	448	155	36	330

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	851	448	0	0	603	0
Stage 1	448	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.1	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.2	-
Pot Cap-1 Maneuver	332	612	-	-	984	-
Stage 1	646	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	317	612	-	-	984	-
Mov Cap-2 Maneuver	317	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	647	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	22.55	0	0.87
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	357	984	-
HCM Lane V/C Ratio	-	-	0.433	0.037	-
HCM Ctrl Dly (s/v)	-	-	22.5	8.8	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	2.1	0.1	-



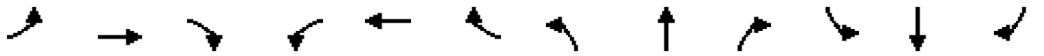
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	580	275	250	460	55	180	355	220	85	240	55
Future Volume (veh/h)	100	580	275	250	460	55	180	355	220	85	240	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	108	624	296	269	495	59	192	385	237	91	258	59
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	135	790	344	303	1119	495	372	781	323	253	418	94
Arrive On Green	0.08	0.23	0.23	0.18	0.34	0.34	0.22	0.22	0.22	0.15	0.15	0.15
Sat Flow, veh/h	1701	3393	1477	1674	3340	1478	1674	3516	1457	1701	2816	631
Grp Volume(v), veh/h	108	624	296	269	495	59	192	385	237	91	162	155
Grp Sat Flow(s),veh/h/ln	1701	1697	1477	1674	1670	1478	1674	1758	1457	1701	1786	1662
Q Serve(g_s), s	5.8	16.1	17.9	14.6	10.7	2.6	9.4	8.9	14.0	4.5	7.9	8.2
Cycle Q Clear(g_c), s	5.8	16.1	17.9	14.6	10.7	2.6	9.4	8.9	14.0	4.5	7.9	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	135	790	344	303	1119	495	372	781	323	253	265	247
V/C Ratio(X)	0.80	0.79	0.86	0.89	0.44	0.12	0.52	0.49	0.73	0.36	0.61	0.63
Avail Cap(c_a), veh/h	183	840	366	396	1258	557	649	1362	564	622	654	608
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.1	33.5	34.2	37.1	24.1	21.4	31.8	31.6	33.6	35.6	37.0	37.2
Incr Delay (d2), s/veh	14.5	4.6	17.2	16.2	0.2	0.1	0.8	0.4	2.4	0.6	1.7	2.0
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	2.9	7.0	7.9	7.2	4.2	0.9	3.8	3.8	5.1	1.9	3.5	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.6	38.1	51.4	53.3	24.3	21.5	32.6	31.9	36.0	36.2	38.7	39.1
LnGrp LOS	E	D	D	D	C	C	C	C	D	D	D	D
Approach Vol, veh/h		1028			823			814			408	
Approach Delay, s/veh		43.9			33.6			33.3			38.3	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.4	36.1		25.6	21.8	26.6		18.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	7.8	12.7		16.0	16.6	19.9		10.2				
Green Ext Time (p_c), s	0.0	2.9		3.1	0.3	1.4		1.7				

Intersection Summary		
HCM 7th Control Delay, s/veh		37.6
HCM 7th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



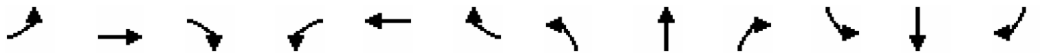
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	715	0	0	1000	270	170	0	480	0	0	0
Future Volume (veh/h)	205	715	0	0	1000	270	170	0	480	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	220	769	0	0	1075	0	183	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	253	2558	0	0	1849		228	0				
Arrive On Green	0.15	0.75	0.00	0.00	0.55	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	220	769	0	0	1075	0	183	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	11.4	6.5	0.0	0.0	19.0	0.0	9.5	0.0	0.0			
Cycle Q Clear(g_c), s	11.4	6.5	0.0	0.0	19.0	0.0	9.5	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	253	2558	0	0	1849		228	0				
V/C Ratio(X)	0.87	0.30	0.00	0.00	0.58		0.80	0.00				
Avail Cap(c_a), veh/h	283	2558	0	0	1849		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.4	3.5	0.0	0.0	13.4	0.0	37.8	0.0	0.0			
Incr Delay (d2), s/veh	21.5	0.3	0.0	0.0	1.3	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.2	1.7	0.0	0.0	7.0	0.0	4.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.9	3.8	0.0	0.0	14.8	0.0	42.6	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		989			1075			183				
Approach Delay, s/veh		16.1			14.8			42.6				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	18.4	54.4		17.2		72.8			
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0			
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0			
Max Q Clear Time (g_c+I1), s	13.4	21.0		11.5		8.5			
Green Ext Time (p_c), s	0.1	5.7		0.6		5.2			

Intersection Summary		
HCM 7th Control Delay, s/veh		17.6
HCM 7th LOS		B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	700	225	0	675	0	0	0	0	220	1	345
Future Volume (veh/h)	0	700	225	0	675	0	0	0	0	220	1	345
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	729	0	0	703	0				229	1	359
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	2116		0	2099	0				446	2	398
Arrive On Green	0.00	0.62	0.00	0.00	0.62	0.00				0.27	0.27	0.27
Sat Flow, veh/h	0	3572	0	0	3544	0				1681	7	1502
Grp Volume(v), veh/h	0	729	0	0	703	0				230	0	359
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	9.3	0.0	0.0	8.9	0.0				10.4	0.0	20.8
Cycle Q Clear(g_c), s	0.0	9.3	0.0	0.0	8.9	0.0				10.4	0.0	20.8
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2116		0	2099	0				448	0	398
V/C Ratio(X)	0.00	0.34		0.00	0.33	0.00				0.51	0.00	0.90
Avail Cap(c_a), veh/h	0	2116		0	2099	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.1	0.0	0.0	8.1	0.0				28.1	0.0	31.9
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.4	0.0				0.7	0.0	18.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.2	0.0	0.0	3.0	0.0				4.2	0.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	8.6	0.0	0.0	8.5	0.0				28.8	0.0	49.9
LnGrp LOS		A			A					C		D
Approach Vol, veh/h		729			703						589	
Approach Delay, s/veh		8.6			8.5						41.6	
Approach LOS		A			A						D	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		61.1				61.1		28.9				
Change Period (Y+Rc), s		5.0				5.0		5.0				
Max Green Setting (Gmax), s		52.0				52.0		28.0				
Max Q Clear Time (g_c+I1), s		10.9				11.3		22.8				
Green Ext Time (p_c), s		4.6				4.8		1.1				

Intersection Summary												
HCM 7th Control Delay, s/veh			18.2									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	60	30	330	520	60
Future Vol, veh/h	40	60	30	330	520	60
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	42	63	31	344	542	63

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	979	573	604	0	-	0
Stage 1	573	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	279	521	983	-	-	-
Stage 1	566	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	270	521	983	-	-	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	548	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	15.02	0.73	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	983	-	463	-	-
HCM Lane V/C Ratio	0.032	-	0.225	-	-
HCM Ctrl Dly (s/v)	8.8	-	15	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Intersection	
Int Delay, s/veh	7.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	230	45	210	250	40	140
Future Vol, veh/h	230	45	210	250	40	140
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	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	240	47	219	260	42	146

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	578	349	0	0	479	0
Stage 1	349	-	-	-	-	-
Stage 2	229	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	481	699	-	-	1094	-
Stage 1	719	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	461	699	-	-	1094	-
Mov Cap-2 Maneuver	461	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	780	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	22.3	0	1.87
HCM LOS	C		

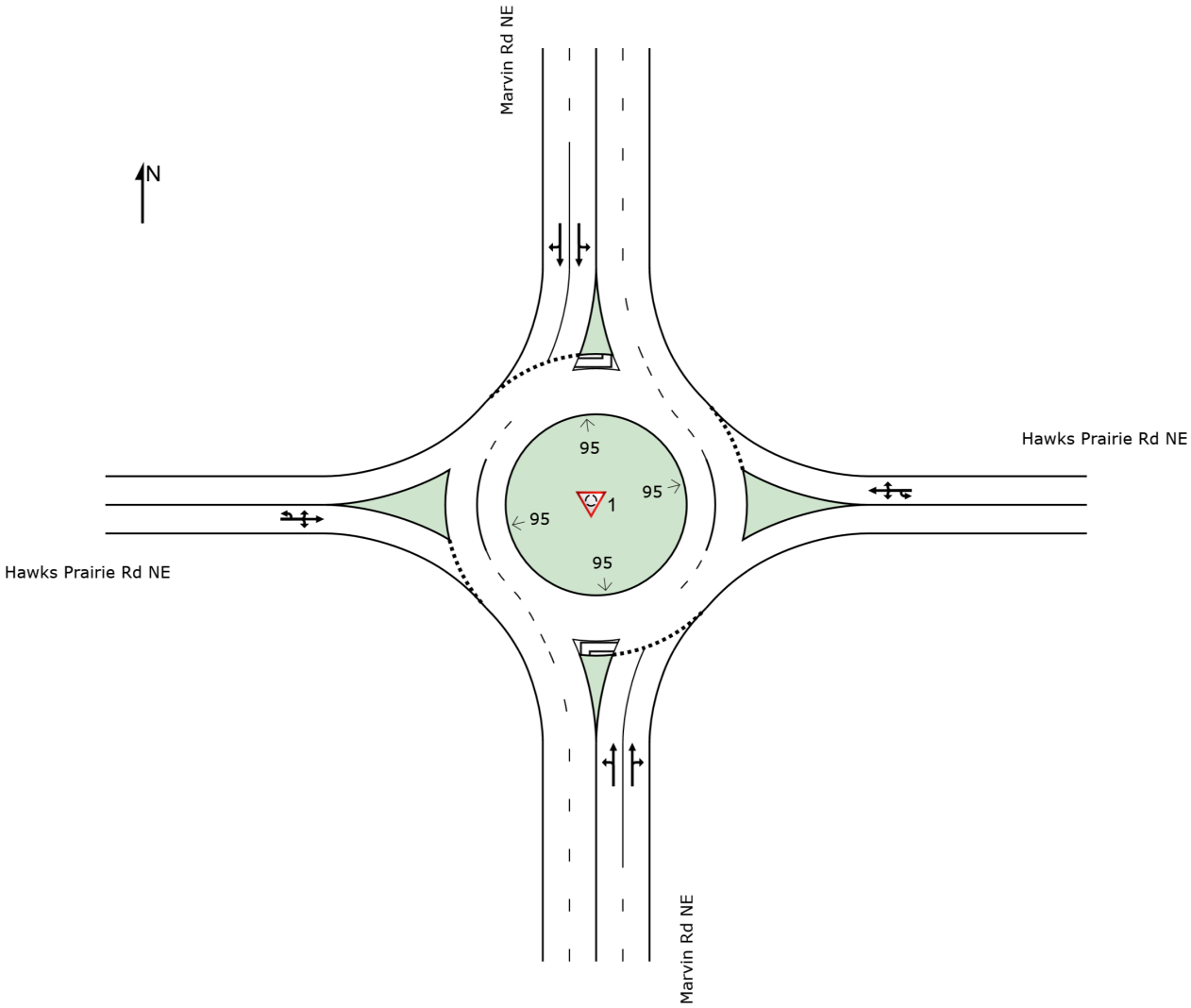
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	488	400	-
HCM Lane V/C Ratio	-	-	0.587	0.038	-
HCM Ctrl Dly (s/v)	-	-	22.3	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	3.7	0.1	-

SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	422	0.0	422	0.0	0.315	10.4	LOS B	2.0	50.0	0.36	0.61	0.36	32.3
8	T1	All MCs	444	0.0	444	0.0	0.291	4.5	LOS A	1.8	46.1	0.34	0.42	0.34	35.5
18	R2	All MCs	6	0.0	6	0.0	0.291	4.6	LOS A	1.8	46.1	0.34	0.42	0.34	35.1
Approach			872	0.0	872	0.0	0.315	7.4	LOS A	2.0	50.0	0.35	0.51	0.35	33.8
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.330	14.9	LOS B	1.3	34.1	0.60	0.77	0.61	32.6
1	L2	All MCs	156	3.0	156	3.0	0.330	12.5	LOS B	1.3	34.1	0.60	0.77	0.61	32.6
6	T1	All MCs	83	3.0	83	3.0	0.330	6.8	LOS A	1.3	34.1	0.60	0.77	0.61	33.2
16	R2	All MCs	28	3.0	28	3.0	0.330	6.7	LOS A	1.3	34.1	0.60	0.77	0.61	33.0
Approach			269	3.0	269	3.0	0.330	10.2	LOS B	1.3	34.1	0.60	0.77	0.61	32.8
North: Marvin Rd NE															
7	L2	All MCs	11	2.0	11	2.0	0.207	13.5	LOS B	1.2	30.6	0.68	0.65	0.68	33.4
4	T1	All MCs	311	2.0	311	2.0	0.207	7.5	LOS A	1.3	33.7	0.68	0.63	0.68	34.3
14	R2	All MCs	78	2.0	78	2.0	0.207	7.1	LOS A	1.3	33.7	0.67	0.62	0.67	34.1
Approach			400	2.0	400	2.0	0.207	7.6	LOS A	1.3	33.7	0.67	0.63	0.67	34.2
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.257	13.7	LOS B	1.1	27.0	0.48	0.66	0.48	33.4
5	L2	All MCs	106	3.0	106	3.0	0.257	11.3	LOS B	1.1	27.0	0.48	0.66	0.48	33.4
2	T1	All MCs	17	3.0	17	3.0	0.257	5.6	LOS A	1.1	27.0	0.48	0.66	0.48	34.1
12	R2	All MCs	122	3.0	122	3.0	0.257	5.5	LOS A	1.1	27.0	0.48	0.66	0.48	33.9
Approach			247	3.0	247	3.0	0.257	8.1	LOS A	1.1	27.0	0.48	0.66	0.48	33.7
All Vehicles			1788	1.3	1788	1.3	0.330	7.9	LOS A	2.0	50.0	0.48	0.60	0.48	33.7

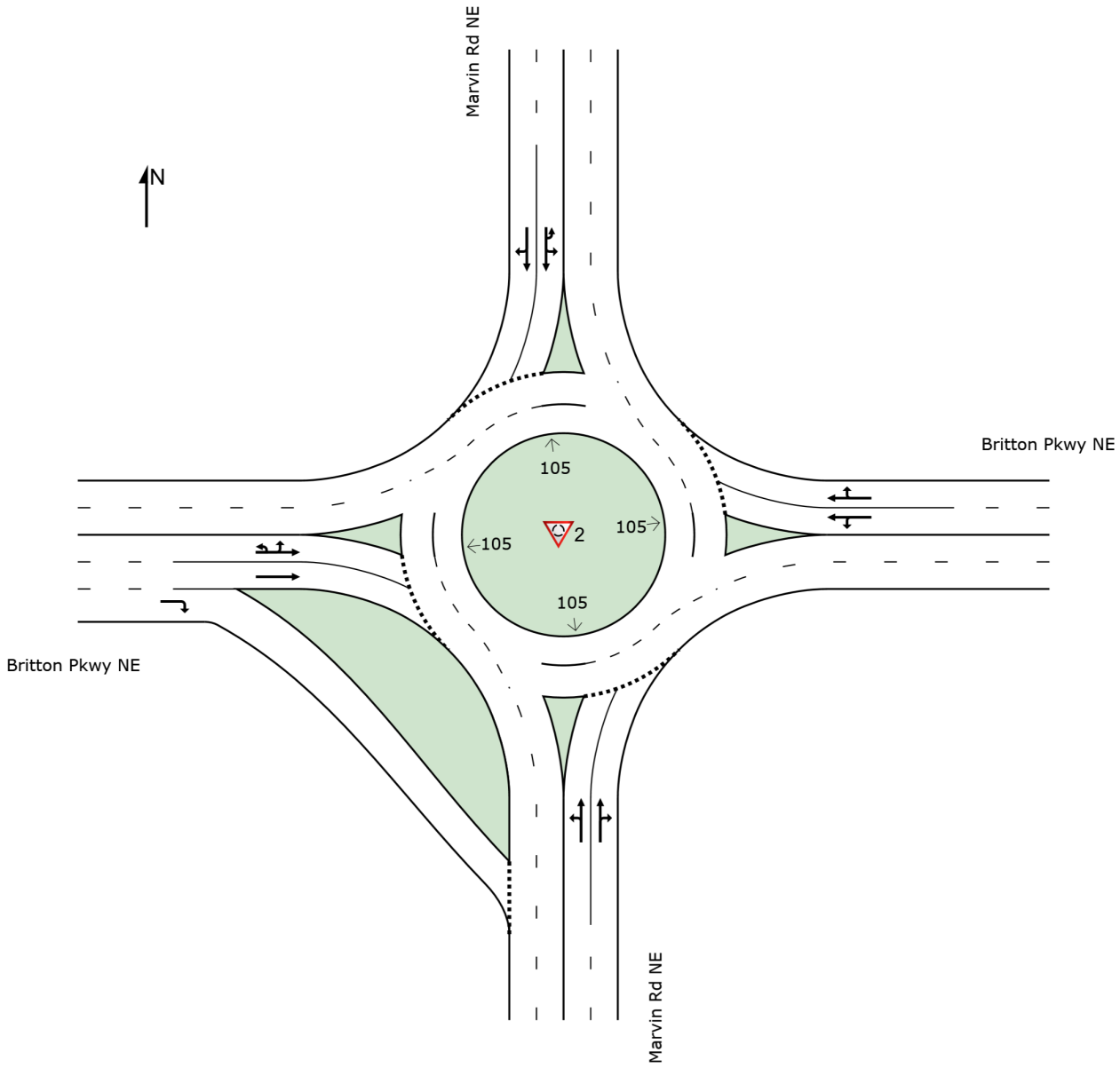
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	432	2.0	432	2.0	0.619	12.1	LOS B	4.6	117.7	0.63	0.69	0.68	32.6
8	T1	All MCs	990	2.0	990	2.0	0.619	5.8	LOS A	4.7	118.3	0.61	0.59	0.65	34.2
18	R2	All MCs	26	2.0	26	2.0	0.619	5.8	LOS A	4.7	118.3	0.61	0.55	0.64	34.2
Approach			1448	2.0	1448	2.0	0.619	7.7	LOS A	4.7	118.3	0.62	0.62	0.66	33.7
East: Britton Pkwy NE															
1	L2	All MCs	552	4.0	552	4.0	0.764	18.7	LOS B	6.3	163.3	0.91	1.11	1.42	29.4
6	T1	All MCs	229	4.0	229	4.0	0.533	11.2	LOS B	2.9	74.2	0.82	0.95	1.04	32.9
16	R2	All MCs	42	4.0	42	4.0	0.533	11.3	LOS B	2.9	74.2	0.82	0.95	1.04	32.6
Approach			823	4.0	823	4.0	0.764	16.2	LOS B	6.3	163.3	0.88	1.06	1.30	30.4
North: Marvin Rd NE															
7u	U	All MCs	11	4.0	11	4.0	0.948	43.2	LOS D	14.0	360.0	1.00	1.49	2.55	24.0
7	L2	All MCs	63	4.0	63	4.0	0.948	40.7	LOS D	14.0	360.0	1.00	1.49	2.55	24.0
4	T1	All MCs	974	4.0	974	4.0	0.948	32.7	LOS D	16.9	436.7	1.00	1.52	2.58	25.0
14	R2	All MCs	99	4.0	99	4.0	0.948	31.3	LOS D	16.9	436.7	1.00	1.54	2.59	25.3
Approach			1146	4.0	1146	4.0	0.948	33.2	LOS C	16.9	436.7	1.00	1.52	2.58	25.0
West: Britton Pkwy NE															
5u	U	All MCs	10	5.0	10	5.0	0.194	17.6	LOS B	1.0	25.8	0.82	0.88	0.82	30.7
5	L2	All MCs	89	5.0	89	5.0	0.194	15.0	LOS B	1.0	25.8	0.82	0.88	0.82	30.7
2	T1	All MCs	141	5.0	141	5.0	0.194	8.5	LOS A	1.3	34.1	0.91	0.79	0.91	33.4
12	R2	All MCs	271	5.0	271	5.0	0.346	8.2	LOS A	2.3	61.0	0.91	0.81	0.91	33.8
Approach			510	5.0	510	5.0	0.346	9.7	LOS A	2.3	61.0	0.89	0.82	0.89	33.0
All Vehicles			3928	3.4	3928	3.4	0.948	17.2	LOS B	16.9	436.7	0.82	1.00	1.38	29.9

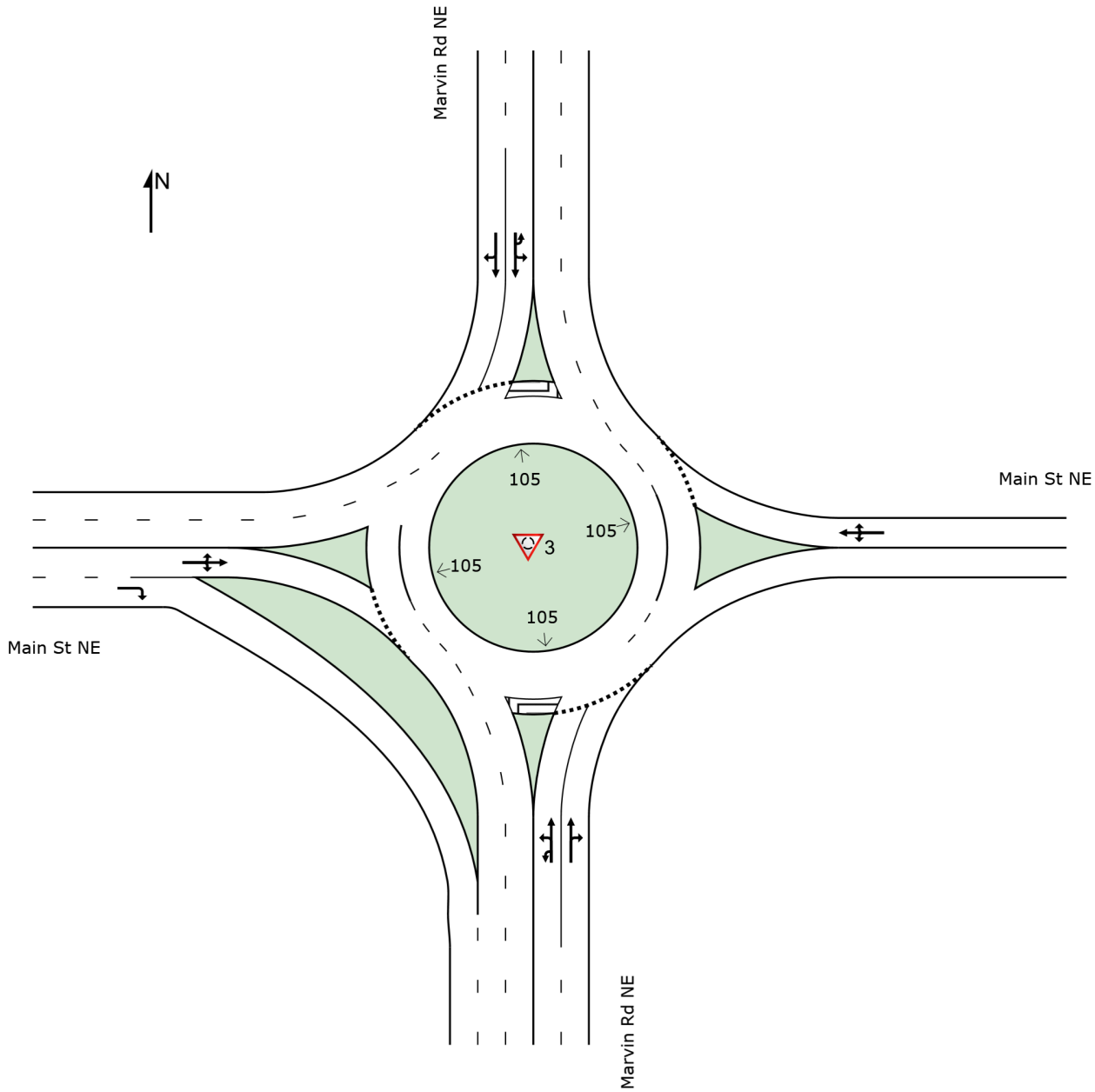
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

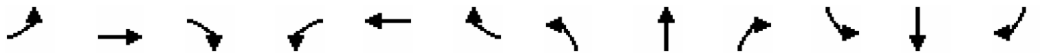
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	280	3.0	280	3.0	0.606	12.6	LOS B	7.0	178.2	0.27	0.47	0.27	28.4
3	L2	All MCs	1	3.0	1	3.0	0.606	10.1	LOS B	7.0	178.2	0.27	0.47	0.27	31.9
8	T1	All MCs	1505	3.0	1505	3.0	0.606	4.1	LOS A	7.0	179.8	0.25	0.40	0.25	31.0
18	R2	All MCs	77	3.0	77	3.0	0.606	4.2	LOS A	7.0	179.8	0.25	0.36	0.25	33.8
Approach			1864	3.0	1864	3.0	0.606	5.4	LOS A	7.0	179.8	0.26	0.41	0.26	30.8
East: Main St NE															
1	L2	All MCs	115	0.0	115	0.0	0.214	14.3	LOS B	0.9	22.5	0.70	0.87	0.70	29.1
6	T1	All MCs	1	0.0	1	0.0	0.214	8.3	LOS A	0.9	22.5	0.70	0.87	0.70	32.2
16	R2	All MCs	27	0.0	27	0.0	0.214	8.3	LOS A	0.9	22.5	0.70	0.87	0.70	30.1
Approach			144	0.0	144	0.0	0.214	13.1	LOS B	0.9	22.5	0.70	0.87	0.70	29.3
North: Marvin Rd NE															
7u	U	All MCs	3	3.0	3	3.0	0.756	19.1	LOS B	9.8	250.6	0.86	0.81	1.12	27.5
7	L2	All MCs	22	3.0	22	3.0	0.756	16.6	LOS B	9.8	250.6	0.86	0.81	1.12	30.6
4	T1	All MCs	1764	3.0	1764	3.0	0.756	9.6	LOS A	10.0	257.1	0.84	0.79	1.06	28.2
14	R2	All MCs	1	3.0	1	3.0	0.756	9.1	LOS A	10.0	257.1	0.82	0.77	1.01	31.9
Approach			1790	3.0	1790	3.0	0.756	9.7	LOS A	10.0	257.1	0.84	0.79	1.06	28.2
West: Main St NE															
5	L2	All MCs	1	2.0	1	2.0	0.005	16.3	LOS B	0.0	0.7	0.89	0.69	0.89	29.4
2	T1	All MCs	1	2.0	1	2.0	0.005	10.3	LOS B	0.0	0.7	0.89	0.69	0.89	32.1
12	R2	All MCs	1	2.0	1	2.0	0.001	3.6	LOS A	0.0	0.0	0.00	0.43	0.00	35.3
Approach			3	2.0	3	2.0	0.005	10.1	LOS B	0.0	0.7	0.60	0.61	0.60	32.0
All Vehicles			3801	2.9	3801	2.9	0.756	7.7	LOS A	10.0	257.1	0.55	0.61	0.65	29.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	525	0	0	585	0	1440	635	0	1200	735
Future Volume (vph)	0	0	525	0	0	585	0	1440	635	0	1200	735
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.99	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3158	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3158	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	547	0	0	609	0	1500	661	0	1250	766
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	547	0	0	609	0	1566	595	0	1250	766
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			57.5			53.5		55.5	120.0		50.5	120.0
Effective Green, g (s)			57.5			53.5		55.5	120.0		50.5	120.0
Actuated g/C Ratio			0.48			0.45		0.46	1.00		0.42	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1265			1177		1460	1335		1370	1457
v/s Ratio Prot			0.21			0.23		c0.50			c0.38	
v/s Ratio Perm									0.45			0.53
v/c Ratio			0.43			0.52		1.07	0.45		0.91	0.53
Uniform Delay, d1			20.5			24.0		32.3	0.0		32.7	0.0
Progression Factor			1.00			1.00		0.78	1.00		1.00	1.00
Incremental Delay, d2			0.2			0.4		42.6	0.8		10.8	1.4
Delay (s)			20.8			24.3		67.7	0.8		43.4	1.4
Level of Service			C			C		E	A		D	A
Approach Delay (s/veh)		20.8			24.3			49.3			27.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

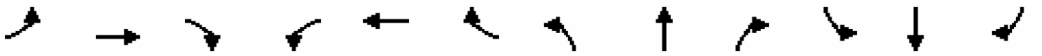
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	145	0	0	620	0	1455	250	0	1435	295
Future Volume (vph)	0	0	145	0	0	620	0	1455	250	0	1435	295
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	0	146	0	0	626	0	1470	253	0	1449	298
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	146	0	0	626	0	1470	253	0	1449	298
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			46.5			64.5		44.5	120.0		62.5	120.0
Effective Green, g (s)			46.5			64.5		44.5	120.0		62.5	120.0
Actuated g/C Ratio			0.39			0.54		0.37	1.00		0.52	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			569			1365		1786	1500		1729	1455
v/s Ratio Prot			0.10			0.25		c0.31			c0.44	
v/s Ratio Perm									0.17			0.20
v/c Ratio			0.26			0.46		0.82	0.17		0.84	0.20
Uniform Delay, d1			25.0			17.0		34.2	0.0		24.4	0.0
Progression Factor			1.00			1.00		0.78	1.00		0.52	1.00
Incremental Delay, d2			0.2			0.2		3.0	0.2		3.2	0.2
Delay (s)			25.2			17.3		29.5	0.2		16.0	0.2
Level of Service			C			B		C	A		B	A
Approach Delay (s/veh)		25.2			17.3			25.2			13.3	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



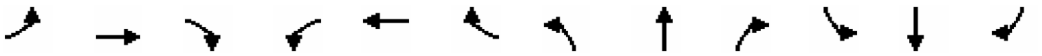
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	405	200	150	65	60	270	60	1000	60	210	950	300
Future Volume (veh/h)	405	200	150	65	60	270	60	1000	60	210	950	300
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	422	208	156	68	62	281	62	1042	62	219	990	312
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	506	213	160	71	195	379	243	1303	77	241	1364	593
Arrive On Green	0.15	0.22	0.22	0.04	0.11	0.11	0.14	0.40	0.40	0.14	0.40	0.40
Sat Flow, veh/h	3300	946	710	1701	1786	1505	1688	3223	192	1701	3393	1474
Grp Volume(v), veh/h	422	0	364	68	62	281	62	544	560	219	990	312
Grp Sat Flow(s),veh/h/ln	1650	0	1656	1701	1786	1505	1688	1683	1732	1701	1697	1474
Q Serve(g_s), s	14.9	0.0	26.2	4.8	3.8	13.1	3.9	34.1	34.2	15.2	29.6	11.2
Cycle Q Clear(g_c), s	14.9	0.0	26.2	4.8	3.8	13.1	3.9	34.1	34.2	15.2	29.6	11.2
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	506	0	373	71	195	379	243	680	700	241	1364	593
V/C Ratio(X)	0.83	0.00	0.98	0.96	0.32	0.74	0.26	0.80	0.80	0.91	0.73	0.53
Avail Cap(c_a), veh/h	619	0	373	71	195	379	243	680	700	241	1654	718
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	1.00	1.00	1.00	1.00	0.56	0.56	0.56	0.52	0.52	0.52
Uniform Delay (d), s/veh	49.3	0.0	46.2	57.4	49.3	41.4	45.7	31.5	31.5	50.7	30.3	9.3
Incr Delay (d2), s/veh	10.4	0.0	40.6	93.7	2.0	9.1	0.7	5.6	5.4	22.5	1.8	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	6.9	0.0	14.9	3.9	1.8	8.6	1.7	14.7	15.1	8.0	12.2	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.7	0.0	86.8	151.1	51.3	50.5	46.3	37.0	36.9	73.3	32.1	11.0
LnGrp LOS	E		F	F	D	D	D	D	D	E	C	B
Approach Vol, veh/h		786			411			1166			1521	
Approach Delay, s/veh		72.2			67.3			37.5			33.7	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.2	54.3	23.9	18.6	23.0	54.5	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	5.9	31.6	16.9	15.1	17.2	36.2	6.8	28.2
Green Ext Time (p_c), s	0.0	16.7	1.5	0.0	0.0	8.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	46.2
HCM 7th LOS	D

Notes

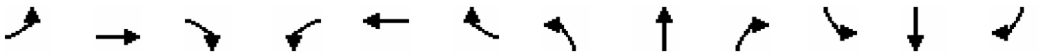
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	120	140	55	105	165	820	155	130	910	85
Future Volume (veh/h)	140	55	120	140	55	105	165	820	155	130	910	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	143	56	122	143	56	107	168	837	158	133	929	87
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	172	68	149	156	70	133	194	1042	197	425	1587	149
Arrive On Green	0.10	0.14	0.14	0.09	0.13	0.13	0.12	0.37	0.37	0.08	0.17	0.17
Sat Flow, veh/h	1714	499	1088	1701	543	1038	1674	2803	529	1701	3136	294
Grp Volume(v), veh/h	143	0	178	143	0	163	168	499	496	133	503	513
Grp Sat Flow(s),veh/h/ln	1714	0	1587	1701	0	1582	1674	1670	1662	1701	1697	1733
Q Serve(g_s), s	9.8	0.0	13.1	10.0	0.0	12.0	11.8	32.1	32.1	8.8	32.8	32.8
Cycle Q Clear(g_c), s	9.8	0.0	13.1	10.0	0.0	12.0	11.8	32.1	32.1	8.8	32.8	32.8
Prop In Lane	1.00		0.69	1.00		0.66	1.00		0.32	1.00		0.17
Lane Grp Cap(c), veh/h	172	0	217	156	0	203	194	621	618	425	858	877
V/C Ratio(X)	0.83	0.00	0.82	0.92	0.00	0.80	0.87	0.80	0.80	0.31	0.59	0.59
Avail Cap(c_a), veh/h	172	0	317	156	0	316	237	682	679	425	858	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.75	0.75	0.75
Uniform Delay (d), s/veh	53.0	0.0	50.4	54.0	0.0	50.9	52.2	33.8	33.8	45.3	38.4	38.4
Incr Delay (d2), s/veh	27.4	0.0	9.0	48.1	0.0	6.3	22.5	6.6	6.6	0.2	0.8	0.8
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	5.6	0.0	5.8	6.4	0.0	5.1	6.2	14.0	13.9	4.0	15.1	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.4	0.0	59.3	102.1	0.0	57.2	74.7	40.4	40.4	45.6	39.2	39.2
LnGrp LOS	F		E	F		E	E	D	D	D	D	D
Approach Vol, veh/h		321			306			1163			1149	
Approach Delay, s/veh		68.7			78.2			45.3			39.9	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	65.7	16.0	19.4	35.0	49.6	15.0	20.4
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.8	34.8	11.8	14.0	10.8	34.1	12.0	15.1
Green Ext Time (p_c), s	0.1	6.7	0.0	0.5	0.1	6.6	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	49.2
HCM 7th LOS	D



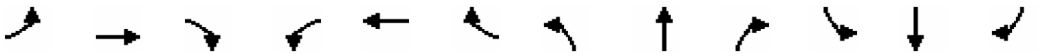
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	325	500	370	345	495	270	230	560	210	250	895	280
Future Volume (veh/h)	325	500	370	345	495	270	230	560	210	250	895	280
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	328	505	0	348	500	0	232	566	212	253	904	283
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	388	606		408	627		367	666	249	433	1069	476
Arrive On Green	0.12	0.18	0.00	0.12	0.18	0.00	0.22	0.28	0.28	0.25	0.31	0.31
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2415	902	1714	3420	1522
Grp Volume(v), veh/h	328	505	0	348	500	0	232	397	381	253	904	283
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1621	1714	1710	1522
Q Serve(g_s), s	11.7	17.2	0.0	12.3	16.8	0.0	14.9	26.6	26.7	15.5	29.6	13.3
Cycle Q Clear(g_c), s	11.7	17.2	0.0	12.3	16.8	0.0	14.9	26.6	26.7	15.5	29.6	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.56	1.00		1.00
Lane Grp Cap(c), veh/h	388	606		408	627		367	467	447	433	1069	476
V/C Ratio(X)	0.85	0.83		0.85	0.80		0.63	0.85	0.85	0.58	0.85	0.59
Avail Cap(c_a), veh/h	605	749		582	727		367	608	581	433	1254	558
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	47.6	0.0	51.6	46.9	0.0	42.7	41.1	41.2	39.3	38.5	17.4
Incr Delay (d2), s/veh	3.8	7.0	0.0	6.1	5.7	0.0	2.7	17.3	18.3	1.4	8.3	5.4
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	5.0	7.8	0.0	5.4	7.5	0.0	6.5	13.3	12.9	6.7	13.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.7	54.6	0.0	57.7	52.5	0.0	45.4	58.4	59.4	40.7	46.8	22.8
LnGrp LOS	E	D		E	D		D	E	E	D	D	C
Approach Vol, veh/h		833			848			1010			1440	
Approach Delay, s/veh		55.0			54.7			55.8			41.0	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.9	42.5	19.1	27.5	35.3	38.1	19.7	26.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	8.0	44.0	22.0	25.5	9.0	43.0	21.0	26.5
Max Q Clear Time (g_c+I1), s	16.9	31.6	13.7	18.8	17.5	28.7	14.3	19.2
Green Ext Time (p_c), s	0.0	5.9	0.4	1.9	0.0	4.4	0.4	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	50.3
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	195	30	575	30	265	1010	200
Future Volume (veh/h)	150	195	20	135	225	195	30	575	30	265	1010	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	207	32	612	32	282	1074	213
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	183	248	25	401	251	217	55	910	48	310	1207	238
Arrive On Green	0.11	0.16	0.16	0.23	0.28	0.28	0.03	0.28	0.28	0.18	0.43	0.43
Sat Flow, veh/h	1688	1582	161	1714	890	771	1701	3279	171	1701	2822	558
Grp Volume(v), veh/h	160	0	228	144	0	446	32	316	328	282	644	643
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1660	1701	1697	1754	1701	1697	1683
Q Serve(g_s), s	11.7	0.0	15.9	8.8	0.0	33.0	2.3	20.7	20.8	20.3	43.8	44.3
Cycle Q Clear(g_c), s	11.7	0.0	15.9	8.8	0.0	33.0	2.3	20.7	20.8	20.3	43.8	44.3
Prop In Lane	1.00		0.09	1.00		0.46	1.00		0.10	1.00		0.33
Lane Grp Cap(c), veh/h	183	0	273	401	0	468	55	471	487	310	725	720
V/C Ratio(X)	0.87	0.00	0.83	0.36	0.00	0.95	0.58	0.67	0.67	0.91	0.89	0.89
Avail Cap(c_a), veh/h	183	0	512	401	0	478	82	471	487	454	823	816
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	0.0	51.2	40.1	0.0	44.1	59.7	40.1	40.2	50.2	33.1	33.2
Incr Delay (d2), s/veh	33.4	0.0	6.6	0.4	0.0	29.1	7.1	3.6	3.5	15.4	10.6	11.2
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	6.7	0.0	7.4	3.8	0.0	17.2	1.1	9.1	9.4	10.0	19.8	19.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	88.3	0.0	57.8	40.5	0.0	73.1	66.9	43.8	43.7	65.6	43.6	44.3
LnGrp LOS	F		E	D		E	E	D	D	E	D	D
Approach Vol, veh/h		388			590			676			1569	
Approach Delay, s/veh		70.3			65.2			44.8			47.9	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	58.4	18.2	39.9	27.4	39.6	33.9	24.2
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.3	46.3	13.7	35.0	22.3	22.8	10.8	17.9
Green Ext Time (p_c), s	0.0	7.2	0.0	0.3	0.5	2.7	0.1	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	53.1
HCM 7th LOS	D

Notes

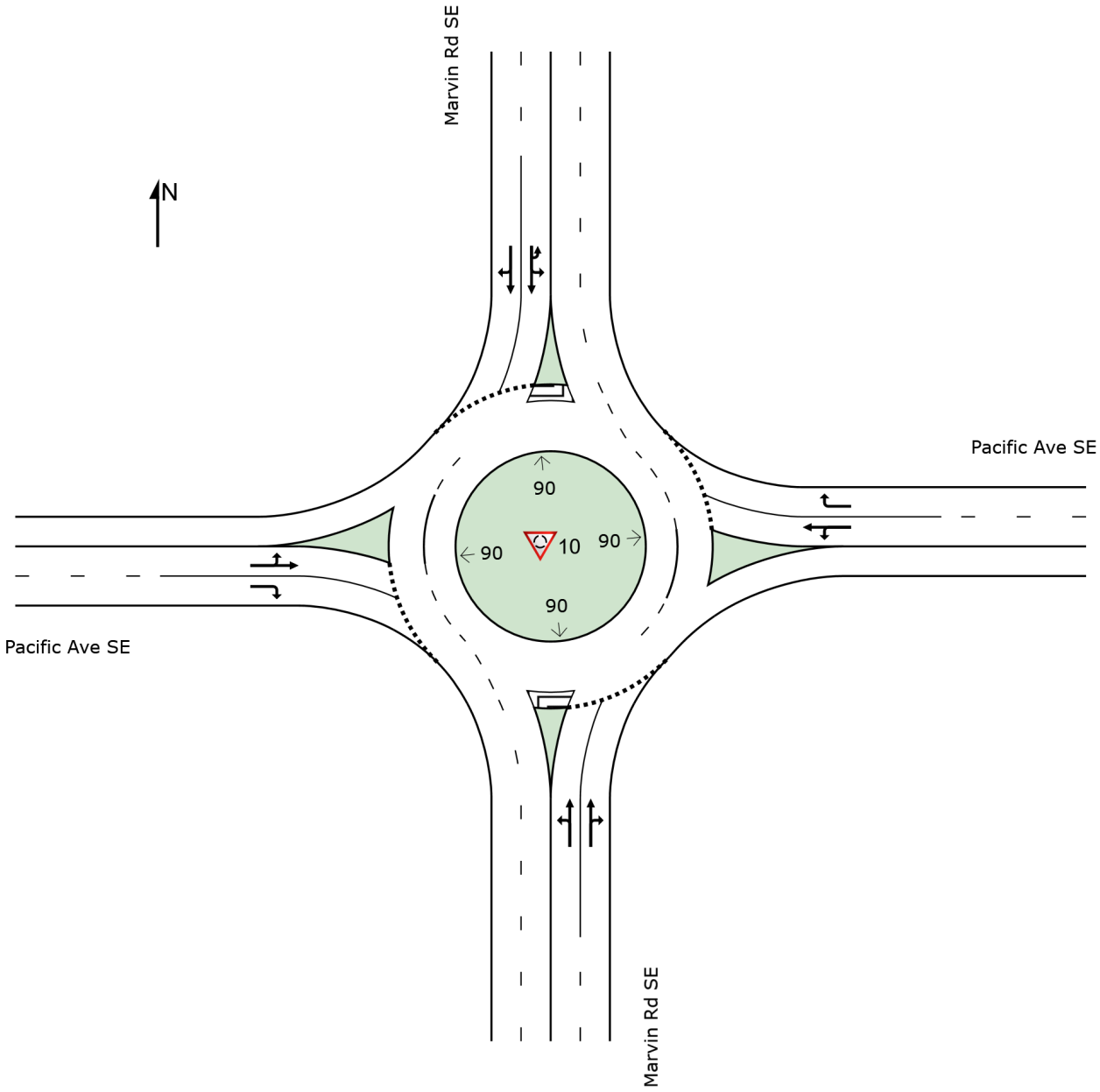
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	139	1.0	139	1.0	0.395	16.1	LOS B	2.8	71.4	0.87	0.79	0.90	31.2
8	T1	All MCs	428	1.0	428	1.0	0.395	9.6	LOS A	3.2	79.6	0.88	0.74	0.89	33.0
18	R2	All MCs	39	1.0	39	1.0	0.395	9.2	LOS A	3.2	79.6	0.89	0.72	0.89	33.2
Approach			606	1.0	606	1.0	0.395	11.1	LOS B	3.2	79.6	0.88	0.75	0.89	32.6
East: Pacific Ave SE															
1	L2	All MCs	33	1.0	33	1.0	0.325	11.5	LOS B	1.6	39.1	0.60	0.60	0.60	33.6
6	T1	All MCs	261	1.0	261	1.0	0.325	6.0	LOS A	1.6	39.1	0.60	0.60	0.60	34.3
16	R2	All MCs	306	1.0	306	1.0	0.293	5.7	LOS A	1.4	36.0	0.58	0.65	0.58	34.6
Approach			600	1.0	600	1.0	0.325	6.2	LOS A	1.6	39.1	0.59	0.63	0.59	34.4
North: Marvin Rd SE															
7u	U	All MCs	2	1.0	2	1.0	0.565	15.8	LOS B	4.8	121.5	0.74	0.73	0.82	32.0
7	L2	All MCs	389	1.0	389	1.0	0.565	13.4	LOS B	4.8	121.5	0.74	0.73	0.82	32.0
4	T1	All MCs	800	1.0	800	1.0	0.565	7.1	LOS A	4.9	123.6	0.73	0.66	0.77	33.8
14	R2	All MCs	89	1.0	89	1.0	0.565	6.9	LOS A	4.9	123.6	0.72	0.64	0.76	33.8
Approach			1280	1.0	1280	1.0	0.565	9.0	LOS A	4.9	123.6	0.73	0.68	0.79	33.2
West: Pacific Ave SE															
5	L2	All MCs	56	1.0	56	1.0	0.579	13.9	LOS B	3.8	95.6	0.82	0.87	1.00	32.9
2	T1	All MCs	406	1.0	406	1.0	0.579	8.3	LOS A	3.8	95.6	0.82	0.87	1.00	33.5
12	R2	All MCs	283	1.0	283	1.0	0.473	8.9	LOS A	2.5	63.6	0.78	0.89	0.91	33.5
Approach			744	1.0	744	1.0	0.579	9.0	LOS A	3.8	95.6	0.81	0.88	0.97	33.4
All Vehicles			3230	1.0	3230	1.0	0.579	8.8	LOS A	4.9	123.6	0.75	0.73	0.81	33.3

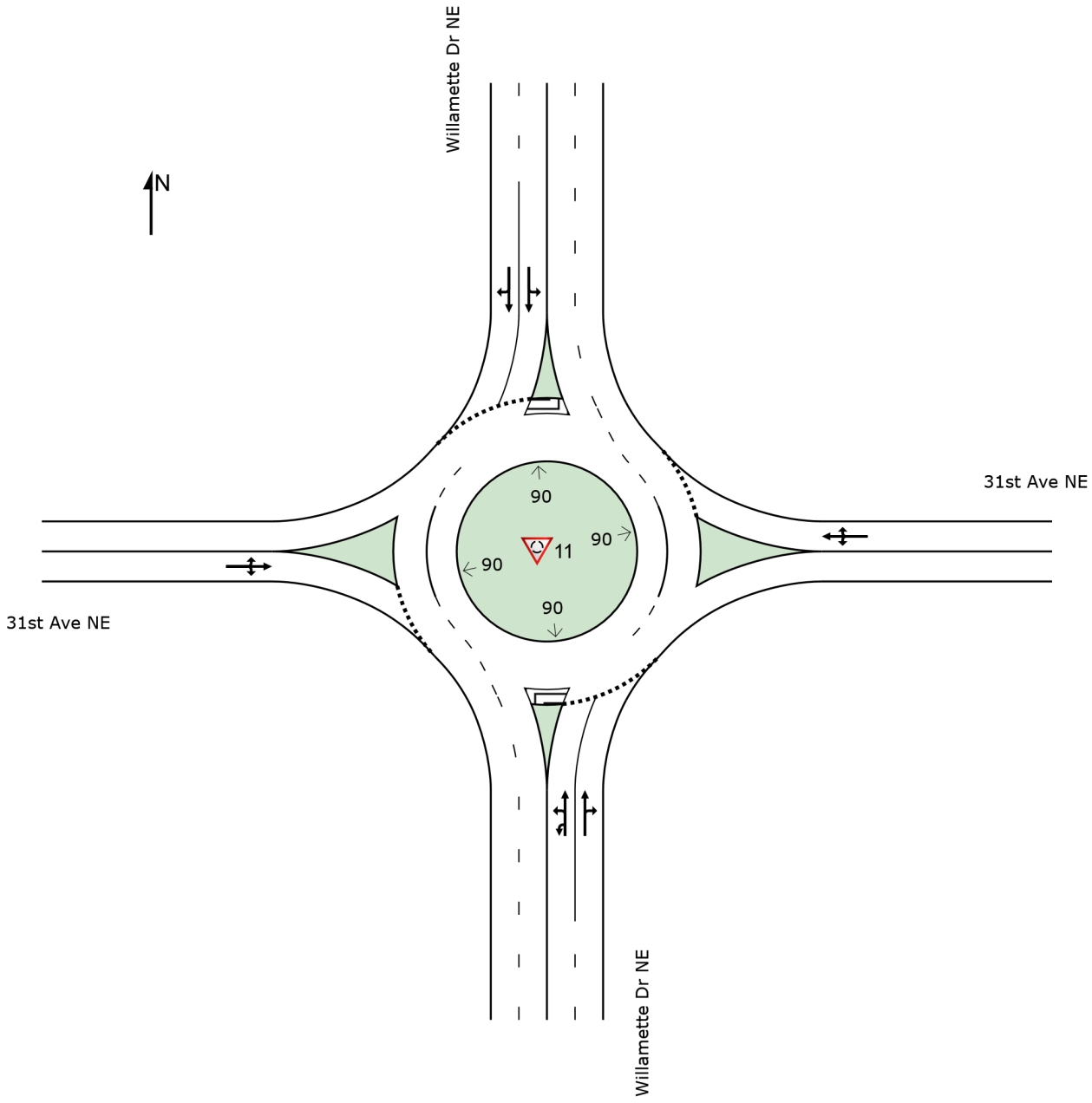
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	33	2.0	33	2.0	0.241	12.3	LOS B	1.4	35.7	0.19	0.49	0.19	34.2
3	L2	All MCs	82	2.0	82	2.0	0.241	9.9	LOS A	1.4	35.7	0.19	0.49	0.19	34.2
8	T1	All MCs	500	2.0	500	2.0	0.241	4.3	LOS A	1.4	36.2	0.18	0.44	0.18	35.4
18	R2	All MCs	110	2.0	110	2.0	0.241	4.4	LOS A	1.4	36.2	0.18	0.40	0.18	35.5
Approach			725	2.0	725	2.0	0.241	5.3	LOS A	1.4	36.2	0.18	0.45	0.18	35.2
East: 31st Ave NE															
1	L2	All MCs	93	3.0	93	3.0	0.129	11.4	LOS B	0.4	11.0	0.44	0.71	0.44	32.7
6	T1	All MCs	16	3.0	16	3.0	0.129	5.8	LOS A	0.4	11.0	0.44	0.71	0.44	33.3
16	R2	All MCs	11	3.0	11	3.0	0.129	5.7	LOS A	0.4	11.0	0.44	0.71	0.44	33.1
Approach			121	3.0	121	3.0	0.129	10.1	LOS B	0.4	11.0	0.44	0.71	0.44	32.8
North: Willamette Dr NE															
7	L2	All MCs	4	1.0	4	1.0	0.115	10.6	LOS B	0.6	14.4	0.37	0.47	0.37	34.5
4	T1	All MCs	291	1.0	291	1.0	0.115	4.9	LOS A	0.6	14.8	0.36	0.46	0.36	35.2
14	R2	All MCs	11	1.0	11	1.0	0.115	4.9	LOS A	0.6	14.8	0.35	0.45	0.35	34.9
Approach			307	1.0	307	1.0	0.115	5.0	LOS A	0.6	14.8	0.36	0.46	0.36	35.2
West: 31st Ave NE															
5	L2	All MCs	22	0.0	22	0.0	0.115	10.8	LOS B	0.4	10.0	0.38	0.59	0.38	34.4
2	T1	All MCs	22	0.0	22	0.0	0.115	5.2	LOS A	0.4	10.0	0.38	0.59	0.38	35.0
12	R2	All MCs	77	0.0	77	0.0	0.115	5.1	LOS A	0.4	10.0	0.38	0.59	0.38	34.8
Approach			121	0.0	121	0.0	0.115	6.2	LOS A	0.4	10.0	0.38	0.59	0.38	34.7
All Vehicles			1274	1.7	1274	1.7	0.241	5.8	LOS A	1.4	36.2	0.27	0.49	0.27	34.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
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Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	32	13.0	32	13.0	0.658	12.6	LOS B	4.8	133.8	0.58	0.62	0.64	33.7
8	T1	All MCs	263	13.0	263	13.0	0.658	6.7	LOS A	4.8	133.8	0.58	0.62	0.64	34.6
18	R2	All MCs	349	13.0	349	13.0	0.658	6.7	LOS A	4.8	133.8	0.58	0.62	0.64	34.2
Approach			645	13.0	645	13.0	0.658	7.0	LOS A	4.8	133.8	0.58	0.62	0.64	34.4
East: Britton Pkwy NE															
1	L2	All MCs	59	4.0	59	4.0	0.258	12.0	LOS B	1.5	39.7	0.58	0.59	0.58	33.4
6	T1	All MCs	511	4.0	511	4.0	0.258	5.8	LOS A	1.6	42.4	0.57	0.56	0.57	34.5
16	R2	All MCs	11	4.0	11	4.0	0.258	5.8	LOS A	1.6	42.4	0.56	0.53	0.56	34.3
Approach			581	4.0	581	4.0	0.258	6.4	LOS A	1.6	42.4	0.57	0.56	0.57	34.4
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.609	16.4	LOS B	3.7	99.5	0.68	0.80	0.84	33.3
7	L2	All MCs	16	10.0	16	10.0	0.609	14.0	LOS B	3.7	99.5	0.68	0.80	0.84	33.3
4	T1	All MCs	151	10.0	151	10.0	0.609	8.0	LOS A	3.7	99.5	0.68	0.80	0.84	34.1
14	R2	All MCs	328	10.0	328	10.0	0.609	8.0	LOS A	3.7	99.5	0.68	0.80	0.84	33.8
Approach			496	10.0	496	10.0	0.609	8.2	LOS A	3.7	99.5	0.68	0.80	0.84	33.9
West: Britton Pkwy NE															
5u	U	All MCs	4	7.0	4	7.0	0.098	13.4	LOS B	0.5	13.5	0.41	0.59	0.41	32.9
5	L2	All MCs	65	7.0	65	7.0	0.098	10.9	LOS B	0.5	13.5	0.41	0.59	0.41	32.9
2	T1	All MCs	156	7.0	156	7.0	0.098	4.9	LOS A	0.5	14.1	0.40	0.49	0.40	34.8
12	R2	All MCs	16	7.0	16	7.0	0.098	5.0	LOS A	0.5	14.1	0.39	0.45	0.39	34.8
Approach			241	7.0	241	7.0	0.098	6.7	LOS A	0.5	14.1	0.40	0.52	0.40	34.2
All Vehicles			1962	8.8	1962	8.8	0.658	7.1	LOS A	4.8	133.8	0.58	0.64	0.64	34.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	15	380	0	10	0	620	35	0	0	0	30	0	25
Future Vol, veh/h	15	380	0	10	0	620	35	0	0	0	30	0	25
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	16	404	0	11	0	660	37	0	0	0	32	0	27

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	698	0	0	404	404	0	0	788	1155	203	936	1137	350
Stage 1	-	-	-	-	-	-	-	436	436	-	700	700	-
Stage 2	-	-	-	-	-	-	-	352	719	-	235	436	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	881	-	-	791	1144	-	-	281	195	804	223	204	652
Stage 1	-	-	-	-	-	-	-	569	578	-	400	444	-
Stage 2	-	-	-	-	-	-	-	638	431	-	753	583	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	880	-	-	791	791	-	-	261	189	803	216	197	650
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	261	189	-	216	197	-
Stage 1	-	-	-	-	-	-	-	558	568	-	395	438	-
Stage 2	-	-	-	-	-	-	-	603	425	-	738	573	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.35	0.14	0	19.31
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	880	-	-	791	-	-	310
HCM Lane V/C Ratio	-	0.018	-	-	0.013	-	-	0.189
HCM Ctrl Dly (s/v)	0	9.2	-	-	9.6	-	-	19.3
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.7

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	395	0	0	645	1	0	0	0	1	0	25
Future Vol, veh/h	10	395	0	0	645	1	0	0	0	1	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	420	0	0	686	1	0	0	0	1	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	687	0	0	420	0	0	785	1129	210	918	1128	344
Stage 1	-	-	-	-	-	-	441	441	-	687	687	-
Stage 2	-	-	-	-	-	-	343	687	-	231	441	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	889	-	-	1128	-	-	283	203	796	230	206	658
Stage 1	-	-	-	-	-	-	565	575	-	408	451	-
Stage 2	-	-	-	-	-	-	645	445	-	756	580	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	889	-	-	1128	-	-	269	200	796	227	203	658
Mov Cap-2 Maneuver	-	-	-	-	-	-	269	200	-	227	203	-
Stage 1	-	-	-	-	-	-	558	568	-	408	451	-
Stage 2	-	-	-	-	-	-	619	445	-	747	573	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.22	0	0	11.15
HCM LOS			A	B

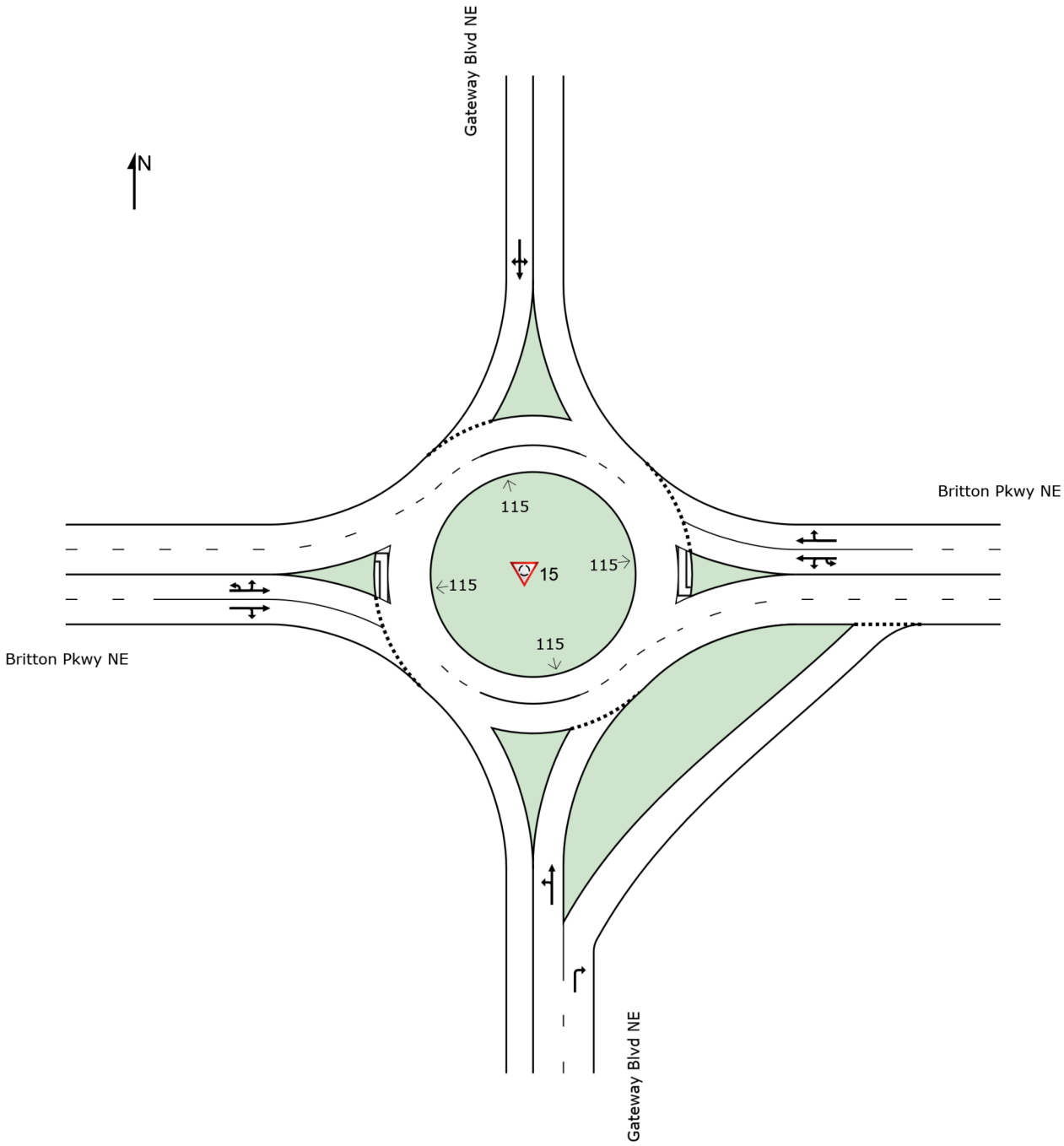
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	889	-	-	1128	-	-	613
HCM Lane V/C Ratio	-	0.012	-	-	-	-	-	0.045
HCM Ctrl Dly (s/v)	0	9.1	-	-	0	-	-	11.1
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	17	2.0	17	2.0	0.016	10.6	LOS B	0.0	1.1	0.30	0.63	0.30	33.0
8	T1	All MCs	4	2.0	4	2.0	0.016	4.3	LOS A	0.0	1.1	0.30	0.63	0.30	33.7
18	R2	All MCs	44	2.0	44	2.0	0.033	4.3	LOS A	0.1	2.3	0.27	0.49	0.27	35.8
Approach			66	2.0	66	2.0	0.033	5.9	LOS A	0.1	2.3	0.28	0.54	0.28	34.9
East: Britton Pkwy NE															
1u	U	All MCs	3	3.0	3	3.0	0.258	13.3	LOS B	1.5	37.5	0.34	0.44	0.34	34.6
1	L2	All MCs	39	3.0	39	3.0	0.258	10.7	LOS B	1.5	37.5	0.34	0.44	0.34	34.6
6	T1	All MCs	517	3.0	517	3.0	0.258	4.3	LOS A	1.5	38.4	0.34	0.44	0.34	35.6
16	R2	All MCs	178	3.0	178	3.0	0.258	4.4	LOS A	1.5	38.4	0.32	0.43	0.32	35.4
Approach			737	3.0	737	3.0	0.258	4.7	LOS A	1.5	38.4	0.33	0.43	0.33	35.5
North: Gateway Blvd NE															
7	L2	All MCs	83	2.0	83	2.0	0.167	11.5	LOS B	0.6	15.6	0.45	0.67	0.45	33.5
4	T1	All MCs	4	2.0	4	2.0	0.167	5.2	LOS A	0.6	15.6	0.45	0.67	0.45	34.2
14	R2	All MCs	78	2.0	78	2.0	0.167	5.2	LOS A	0.6	15.6	0.45	0.67	0.45	33.9
Approach			166	2.0	166	2.0	0.167	8.4	LOS A	0.6	15.6	0.45	0.67	0.45	33.7
West: Britton Pkwy NE															
5u	U	All MCs	4	5.0	4	5.0	0.160	13.2	LOS B	0.8	21.8	0.30	0.55	0.30	33.4
5	L2	All MCs	122	5.0	122	5.0	0.160	10.6	LOS B	0.8	21.8	0.30	0.55	0.30	33.4
2	T1	All MCs	311	5.0	311	5.0	0.160	4.1	LOS A	0.9	22.4	0.28	0.43	0.28	35.4
12	R2	All MCs	17	5.0	17	5.0	0.160	4.4	LOS A	0.9	22.4	0.28	0.38	0.28	35.5
Approach			454	5.0	454	5.0	0.160	6.0	LOS A	0.9	22.4	0.29	0.46	0.29	34.8
All Vehicles			1422	3.5	1422	3.5	0.258	5.6	LOS A	1.5	38.4	0.33	0.47	0.33	35.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	385	2	25	540	25	15	0	5	10	0	35
Future Vol, veh/h	50	385	2	25	540	25	15	0	5	10	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	405	2	26	568	26	16	0	5	11	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	595	0	0	407	0	0	848	1159	204	942	1147	297
Stage 1	-	-	-	-	-	-	512	512	-	634	634	-
Stage 2	-	-	-	-	-	-	337	647	-	308	513	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	984	-	-	1148	-	-	255	194	803	221	201	705
Stage 1	-	-	-	-	-	-	513	535	-	438	476	-
Stage 2	-	-	-	-	-	-	651	464	-	683	539	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	984	-	-	1148	-	-	223	180	803	203	186	705
Mov Cap-2 Maneuver	-	-	-	-	-	-	223	180	-	203	186	-
Stage 1	-	-	-	-	-	-	486	506	-	428	465	-
Stage 2	-	-	-	-	-	-	603	454	-	642	511	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.01	0.35	19.15	13.35
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	223	803	984	-	-	1148	-	-	203	705
HCM Lane V/C Ratio	0.071	0.007	0.053	-	-	0.023	-	-	0.052	0.052
HCM Ctrl Dly (s/v)	22.4	9.5	8.9	-	-	8.2	-	-	23.7	10.4
HCM Lane LOS	C	A	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	0	0.2	-	-	0.1	-	-	0.2	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	1	0	0	2	2	1	2	2	1
Stage 1	-	-	-	-	-	-	1	1	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	1	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1083	1020	894	1083
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1083	1020	894	1083
Mov Cap-2 Maneuver	-	-	-	-	-	-	1020	894	-	1020	894	-
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1622	-	-	1622	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	40	45	255	55	65
Future Vol, veh/h	180	40	45	255	55	65
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	202	45	51	287	62	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	247	0	612	225
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	388	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1330	-	456	815
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1330	-	436	815
Mov Cap-2 Maneuver	-	-	-	-	436	-
Stage 1	-	-	-	-	813	-
Stage 2	-	-	-	-	655	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.17	13.03
HCM LOS			B

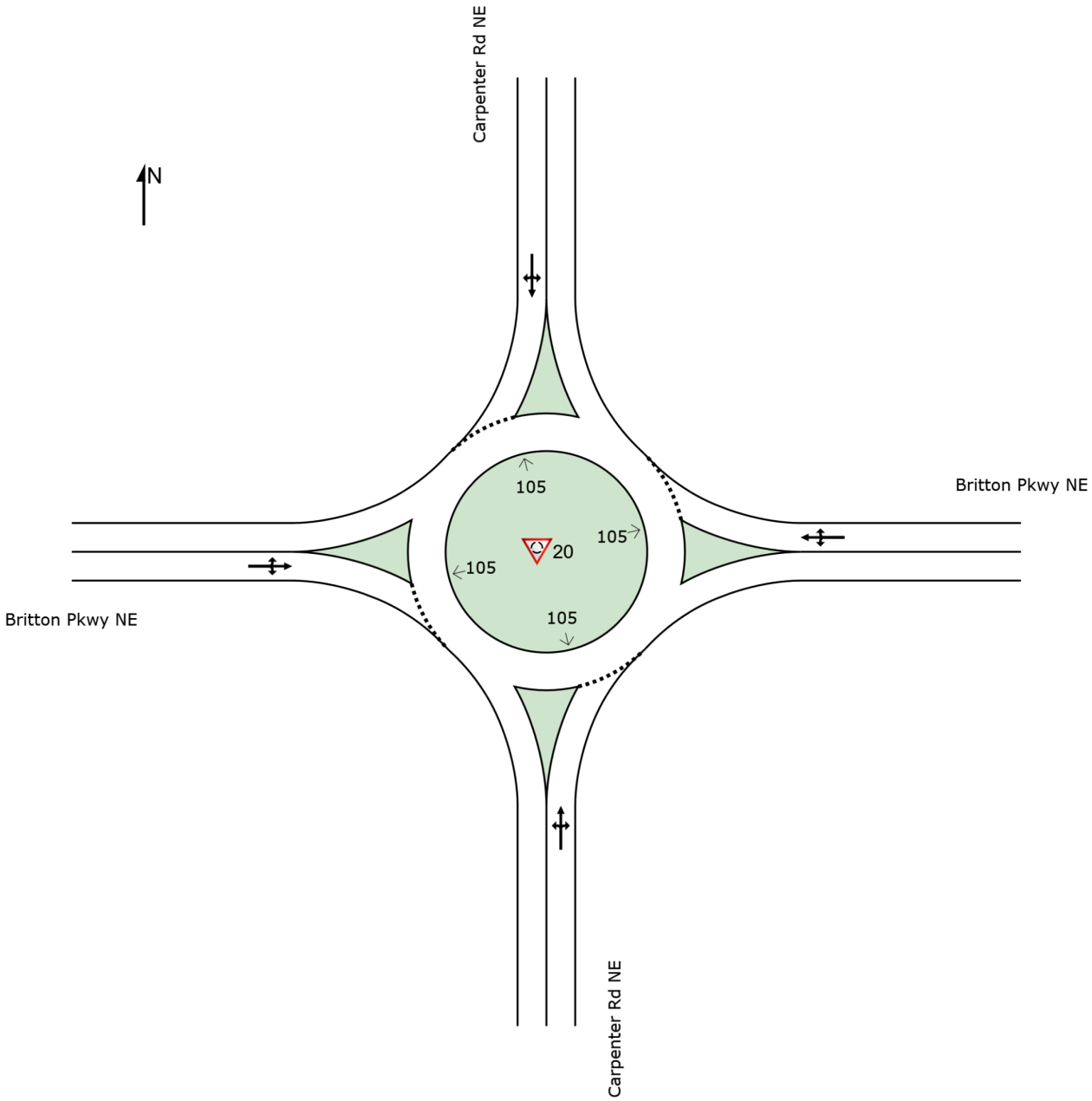
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	582	-	-	270	-
HCM Lane V/C Ratio	0.231	-	-	0.038	-
HCM Ctrl Dly (s/v)	13	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2027)]

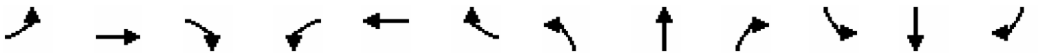
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Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	154	4.0	154	4.0	0.382	11.5	LOS B	2.5	63.3	0.56	0.61	0.56	31.3
8	T1	All MCs	1	4.0	1	4.0	0.382	5.3	LOS A	2.5	63.3	0.56	0.61	0.56	29.1
18	R2	All MCs	264	4.0	264	4.0	0.382	5.5	LOS A	2.5	63.3	0.56	0.61	0.56	31.9
Approach			419	4.0	419	4.0	0.382	7.7	LOS A	2.5	63.3	0.56	0.61	0.56	31.7
East: Britton Pkwy NE															
1	L2	All MCs	352	5.0	352	5.0	0.544	11.0	LOS B	4.3	112.0	0.50	0.56	0.50	30.8
6	T1	All MCs	313	5.0	313	5.0	0.544	4.8	LOS A	4.3	112.0	0.50	0.56	0.50	33.9
16	R2	All MCs	1	5.0	1	5.0	0.544	5.0	LOS A	4.3	112.0	0.50	0.56	0.50	31.8
Approach			666	5.0	666	5.0	0.544	8.1	LOS A	4.3	112.0	0.50	0.56	0.50	32.5
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.004	13.8	LOS B	0.0	0.7	0.73	0.58	0.73	31.1
4	T1	All MCs	1	0.0	1	0.0	0.004	7.6	LOS A	0.0	0.7	0.73	0.58	0.73	28.3
14	R2	All MCs	1	0.0	1	0.0	0.004	7.8	LOS A	0.0	0.7	0.73	0.58	0.73	31.6
Approach			3	0.0	3	0.0	0.004	9.7	LOS A	0.0	0.7	0.73	0.58	0.73	30.6
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.415	11.9	LOS B	2.7	69.4	0.60	0.57	0.60	32.4
2	T1	All MCs	302	4.0	302	4.0	0.415	5.7	LOS A	2.7	69.4	0.60	0.57	0.60	34.9
12	R2	All MCs	137	4.0	137	4.0	0.415	5.9	LOS A	2.7	69.4	0.60	0.57	0.60	32.5
Approach			441	4.0	441	4.0	0.415	5.8	LOS A	2.7	69.4	0.60	0.57	0.60	34.3
All Vehicles			1529	4.4	1529	4.4	0.544	7.3	LOS A	4.3	112.0	0.55	0.58	0.55	32.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



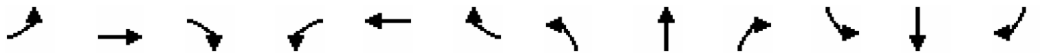
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1000	370	365	790	100	180	165	250	120	255	95
Future Volume (veh/h)	100	1000	370	365	790	100	180	165	250	120	255	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	102	1020	378	372	806	102	184	168	255	122	260	97
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	467	1478	826	401	850	108	191	246	393	203	350	127
Arrive On Green	0.27	0.44	0.44	0.12	0.28	0.28	0.11	0.14	0.14	0.12	0.15	0.15
Sat Flow, veh/h	1701	3393	1506	3274	3001	380	1701	1786	1507	1674	2396	871
Grp Volume(v), veh/h	102	1020	378	372	452	456	184	168	255	122	179	178
Grp Sat Flow(s),veh/h/ln	1701	1697	1506	1637	1683	1698	1701	1786	1507	1674	1670	1597
Q Serve(g_s), s	5.6	29.1	18.2	13.5	31.6	31.6	12.9	10.7	11.8	8.3	12.3	12.8
Cycle Q Clear(g_c), s	5.6	29.1	18.2	13.5	31.6	31.6	12.9	10.7	11.8	8.3	12.3	12.8
Prop In Lane	1.00		1.00	1.00		0.22	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	467	1478	826	401	477	481	191	246	393	203	244	234
V/C Ratio(X)	0.22	0.69	0.46	0.93	0.95	0.95	0.96	0.68	0.65	0.60	0.73	0.76
Avail Cap(c_a), veh/h	467	1478	826	401	477	481	191	441	557	203	417	399
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)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	27.3	16.4	52.1	42.1	42.1	53.0	49.2	18.7	50.0	49.0	49.2
Incr Delay (d2), s/veh	0.1	2.3	1.6	27.2	30.0	29.9	53.5	3.9	2.1	3.5	4.2	5.1
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	2.3	12.1	6.5	7.0	16.9	17.1	8.3	5.1	4.3	3.7	5.4	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.7	29.6	17.9	79.3	72.2	72.0	106.5	53.1	20.8	53.5	53.2	54.3
LnGrp LOS	C	C	B	E	E	E	F	D	C	D	D	D
Approach Vol, veh/h		1500			1280			607			479	
Approach Delay, s/veh		26.9			74.2			55.7			53.7	
Approach LOS		C			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.5	39.5	20.0	22.0	20.2	57.8	19.0	23.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	20.5	34.0	13.9	29.6	14.7	39.8	13.5	30.0
Max Q Clear Time (g_c+I1), s	7.6	33.6	10.3	13.8	15.5	31.1	14.9	14.8
Green Ext Time (p_c), s	0.1	0.3	0.0	2.0	0.0	5.7	0.0	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	50.4
HCM 7th LOS	D

Notes

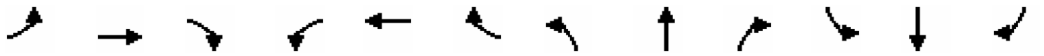
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	770	120	115	740	30	150	215	80	90	310	420
Future Volume (veh/h)	235	770	120	115	740	30	150	215	80	90	310	420
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	242	794	124	119	763	31	155	222	82	93	320	433
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	269	951	148	145	832	34	132	763	273	116	520	461
Arrive On Green	0.16	0.32	0.32	0.09	0.25	0.25	0.08	0.32	0.32	0.07	0.31	0.31
Sat Flow, veh/h	1701	2938	459	1701	3322	135	1674	2404	861	1701	1697	1502
Grp Volume(v), veh/h	242	458	460	119	390	404	155	152	152	93	320	433
Grp Sat Flow(s),veh/h/ln	1701	1697	1700	1701	1697	1761	1674	1670	1595	1701	1697	1502
Q Serve(g_s), s	15.9	28.6	28.6	7.9	25.5	25.5	9.0	7.8	8.2	6.2	18.4	32.1
Cycle Q Clear(g_c), s	15.9	28.6	28.6	7.9	25.5	25.5	9.0	7.8	8.2	6.2	18.4	32.1
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.54	1.00		1.00
Lane Grp Cap(c), veh/h	269	549	550	145	425	441	132	530	506	116	520	461
V/C Ratio(X)	0.90	0.84	0.84	0.82	0.92	0.92	1.17	0.29	0.30	0.80	0.61	0.94
Avail Cap(c_a), veh/h	328	549	550	261	438	455	132	530	506	238	535	473
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	35.8	35.8	51.4	41.6	41.7	52.6	29.3	29.4	52.4	33.8	38.6
Incr Delay (d2), s/veh	21.0	10.7	10.7	4.4	23.9	23.3	132.8	0.3	0.3	4.8	2.0	26.7
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	8.3	13.3	13.3	3.5	13.4	13.8	8.6	3.2	3.2	2.8	7.8	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.2	46.5	46.5	55.8	65.5	65.0	185.4	29.6	29.7	57.2	35.8	65.2
LnGrp LOS	E	D	D	E	E	E	F	C	C	E	D	E
Approach Vol, veh/h		1160			913			459			846	
Approach Delay, s/veh		51.1			64.0			82.3			53.2	
Approach LOS		D			E			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.1	34.1	13.8	42.2	15.2	42.9	15.0	41.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	29.5	16.0	29.0	17.5	34.0	9.0	36.0
Max Q Clear Time (g_c+I1), s	17.9	27.5	8.2	10.2	9.9	30.6	11.0	34.1
Green Ext Time (p_c), s	0.1	1.1	0.1	1.7	0.1	1.8	0.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	59.3
HCM 7th LOS	E



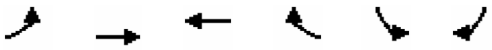
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1420	5	0	1000	30	70	5	25	55	1	30
Future Volume (veh/h)	40	1420	5	0	1000	30	70	5	25	55	1	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	1495	0	0	1053	32	74	5	26	58	1	32
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, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	83	2748		1	2506	76	158	200	169	210	3	169
Arrive On Green	0.05	1.00	0.00	0.00	0.75	0.75	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	3300	3393	1514	1688	3336	101	1398	1800	1525	1353	28	1525
Grp Volume(v), veh/h	42	1495	0	0	531	554	74	5	26	59	0	32
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1754	1398	1800	1525	1381	0	1525
Q Serve(g_s), s	1.5	0.0	0.0	0.0	13.8	13.8	6.2	0.3	1.8	4.6	0.0	2.3
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.0	13.8	13.8	11.1	0.3	1.8	4.9	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	0.98		1.00
Lane Grp Cap(c), veh/h	83	2748		1	1265	1318	158	200	169	213	0	169
V/C Ratio(X)	0.51	0.54		0.00	0.42	0.42	0.47	0.03	0.15	0.28	0.00	0.19
Avail Cap(c_a), veh/h	275	2748		77	1265	1318	480	615	521	537	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.00	0.00	0.55	0.55	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	0.0	5.4	5.4	54.8	47.5	48.2	49.7	0.0	48.4
Incr Delay (d2), s/veh	3.3	0.7	0.0	0.0	0.6	0.5	1.6	0.0	0.3	0.5	0.0	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	0.7	0.3	0.0	0.0	4.4	4.6	2.3	0.1	0.7	1.7	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.6	0.7	0.0	0.0	6.0	6.0	56.4	47.6	48.5	50.2	0.0	48.8
LnGrp LOS	E	A			A	A	E	D	D	D		D
Approach Vol, veh/h		1537			1085			105			91	
Approach Delay, s/veh		2.3			6.0			54.0			49.7	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	95.7		17.3	0.0	102.7		17.3				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	3.5	15.8		13.1	0.0	2.0		6.9				
Green Ext Time (p_c), s	0.0	10.8		0.2	0.0	22.0		0.3				

Intersection Summary		
HCM 7th Control Delay, s/veh	7.2	
HCM 7th LOS	A	

Notes

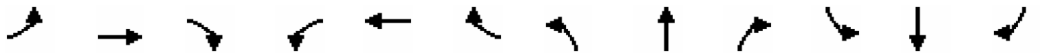
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1470	1020	25	30	50
Future Volume (veh/h)	50	1470	1020	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	53	1564	1085	27	32	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	906	4252	1214	30	84	74
Arrive On Green	0.46	0.87	0.72	0.72	0.05	0.05
Sat Flow, veh/h	1701	5036	3445	84	1714	1525
Grp Volume(v), veh/h	53	1564	544	568	32	53
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1757	1714	1525
Q Serve(g_s), s	0.0	7.2	30.3	30.4	2.2	4.1
Cycle Q Clear(g_c), s	0.0	7.2	30.3	30.4	2.2	4.1
Prop In Lane	1.00			0.05	1.00	1.00
Lane Grp Cap(c), veh/h	906	4252	609	635	84	74
V/C Ratio(X)	0.06	0.37	0.89	0.89	0.38	0.71
Avail Cap(c_a), veh/h	906	4252	975	1018	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	12.2	1.4	14.8	14.8	55.3	56.2
Incr Delay (d2), s/veh	0.0	0.2	16.7	16.2	1.1	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.2	8.1	8.4	1.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	12.2	1.7	31.5	31.0	56.4	60.9
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1617	1112		85	
Approach Delay, s/veh		2.0	31.3		59.2	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	61.3	48.9				110.2	9.8
Change Period (Y+Rc), s	5.5	5.5				5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5				82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	32.4				9.2	6.1
Green Ext Time (p_c), s	0.0	11.0				23.6	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	15.3
HCM 7th LOS	B



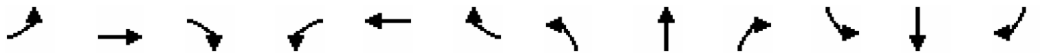
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	575	855	0	0	1010	65	15	0	690	0	0	0
Future Volume (veh/h)	575	855	0	0	1010	65	15	0	690	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	625	929	0	0	1098	0	16	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3078	0	0	1875		23	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	625	929	0	0	1098	0	16	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	15.8	0.0	0.0	25.7	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	15.8	0.0	0.0	25.7	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3078	0	0	1875		23	0				
V/C Ratio(X)	1.21	0.30	0.00	0.00	0.59		0.68	0.00				
Avail Cap(c_a), veh/h	517	3078	0	0	1875		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.10	0.10	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	17.5	0.0	58.9	0.0	0.0			
Incr Delay (d2), s/veh	95.6	0.0	0.0	0.0	1.3	0.0	29.6	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	29.7	6.4	0.0	0.0	10.0	0.0	0.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	143.4	5.3	0.0	0.0	18.8	0.0	88.5	0.0	0.0			
LnGrp LOS	F	A			B		F					
Approach Vol, veh/h		1554			1098			16				
Approach Delay, s/veh		60.8			18.8			88.5				
Approach LOS		E			B			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.3		5.7		114.3			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	27.7		3.1		17.8			
Green Ext Time (p_c), s	0.0	7.6		0.0		10.2			

Intersection Summary		
HCM 7th Control Delay, s/veh	43.7	
HCM 7th LOS	D	

Notes

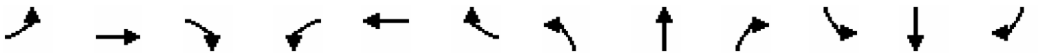
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1380	395	390	660	0	0	0	0	85	1	710
Future Volume (vph)	0	1380	395	390	660	0	0	0	0	85	1	710
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1694	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1694	1515
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1423	407	402	680	0	0	0	0	88	1	732
RTOR Reduction (vph)	0	0	235	0	0	0	0	0	0	0	0	43
Lane Group Flow (vph)	0	1423	172	402	680	0	0	0	0	0	89	689
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.7	50.7	37.0	41.4						17.3	69.1
Effective Green, g (s)		50.7	50.7	37.0	41.4						17.3	69.1
Actuated g/C Ratio		0.42	0.42	0.31	0.35						0.14	0.58
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1430	640	516	1156						244	872
v/s Ratio Prot		c0.42		c0.24	0.20							c0.45
v/s Ratio Perm			0.11								0.05	
v/c Ratio		1.00	0.27	0.78	0.59						0.36	0.79
Uniform Delay, d1		34.5	22.6	37.8	32.3						46.4	19.8
Progression Factor		0.90	1.59	0.53	0.25						1.00	1.00
Incremental Delay, d2		18.0	0.7	3.1	0.9						1.1	5.2
Delay (s)		49.2	36.5	23.0	8.9						47.4	25.0
Level of Service		D	D	C	A						D	C
Approach Delay (s/veh)		46.4			14.1			0.0			27.4	
Approach LOS		D			B			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	815	270	615	585	175	145	270	805	150	205	60
Future Volume (veh/h)	30	815	270	615	585	175	145	270	805	150	205	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	31	849	0	641	609	0	151	281	839	156	214	62
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	38	1253		704	1905		177	253	940	183	355	100
Arrive On Green	0.02	0.37	0.00	0.36	0.95	0.00	0.10	0.14	0.14	0.11	0.14	0.14
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2589	1701	2602	733
Grp Volume(v), veh/h	31	849	0	641	609	0	151	281	839	156	137	139
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1294	1701	1697	1639
Q Serve(g_s), s	2.2	25.3	0.0	22.4	1.7	0.0	10.5	17.0	17.0	10.8	9.1	9.6
Cycle Q Clear(g_c), s	2.2	25.3	0.0	22.4	1.7	0.0	10.5	17.0	17.0	10.8	9.1	9.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	38	1253		704	1905		177	253	940	183	232	224
V/C Ratio(X)	0.81	0.68		0.91	0.32		0.85	1.11	0.89	0.85	0.59	0.62
Avail Cap(c_a), veh/h	85	1253		805	1905		241	253	940	340	339	328
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.65	0.65	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.4	31.8	0.0	37.4	1.5	0.0	52.8	51.5	36.6	52.6	48.7	48.9
Incr Delay (d2), s/veh	14.0	3.0	0.0	9.5	0.3	0.0	17.3	89.5	10.7	4.3	0.9	1.0
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	1.1	10.8	0.0	8.8	0.5	0.0	5.3	13.9	12.8	4.8	3.9	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.4	34.8	0.0	46.9	1.8	0.0	70.2	141.0	47.3	56.9	49.6	49.9
LnGrp LOS	E	C		D	A		E	F	D	E	D	D
Approach Vol, veh/h		880			1250			1271			432	
Approach Delay, s/veh		36.1			24.9			70.7			52.3	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	73.4	16.9	22.0	31.3	49.8	17.5	21.4
Change Period (Y+Rc), s	5.0	5.5	4.0	5.0	5.5	* 5.5	5.0	* 5
Max Green Setting (Gmax), s	6.0	53.5	24.0	17.0	29.5	* 30	17.0	* 24
Max Q Clear Time (g_c+I1), s	4.2	3.7	12.8	19.0	24.4	27.3	12.5	11.6
Green Ext Time (p_c), s	0.0	5.7	0.1	0.0	1.4	1.6	0.1	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	45.8
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

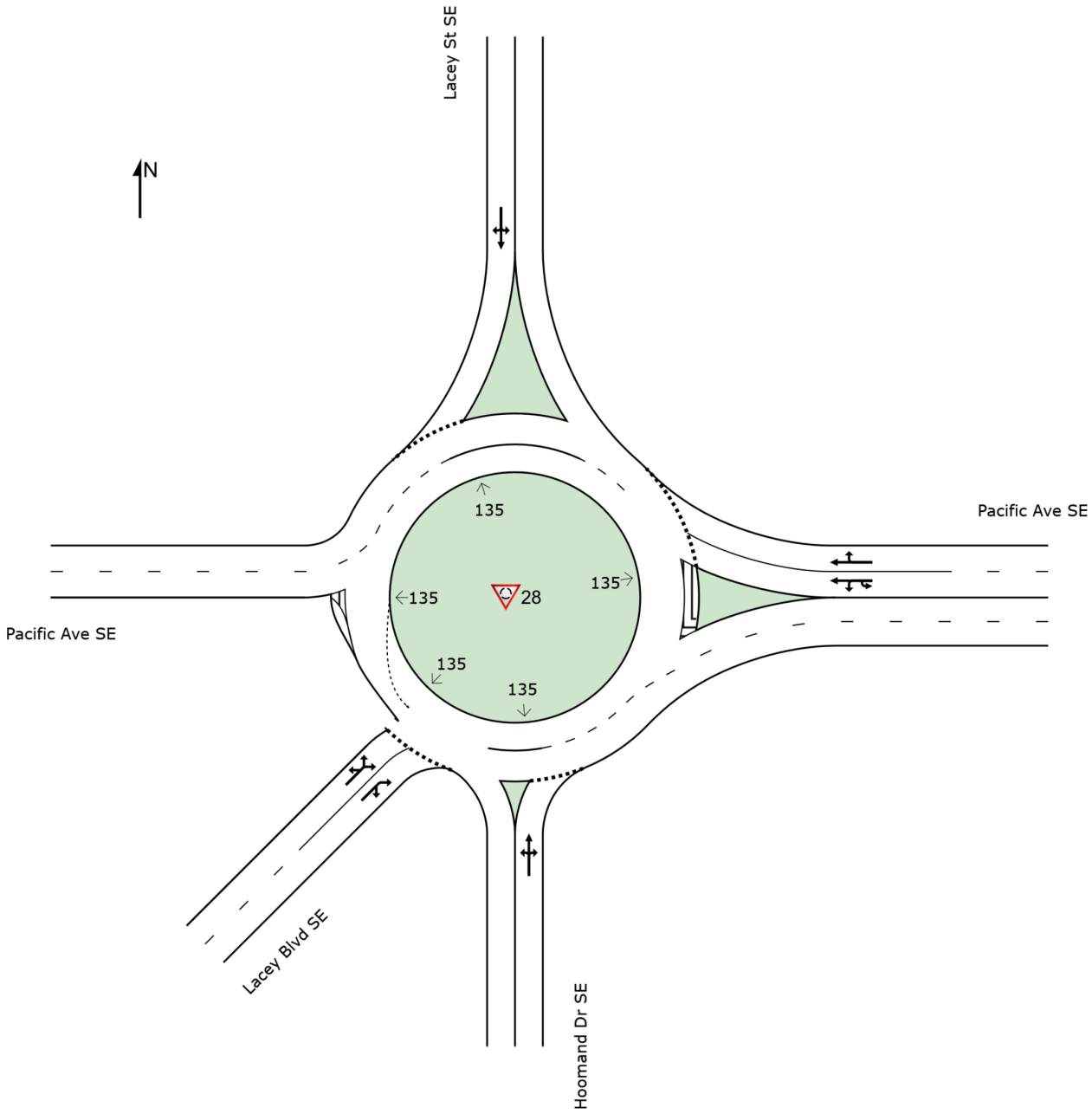
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	73	2.0	73	2.0	0.173	12.5	LOS B	0.6	16.3	0.56	0.75	0.56	33.3
8	T1	All MCs	4	2.0	4	2.0	0.173	5.5	LOS A	0.6	16.3	0.56	0.75	0.56	34.1
18	R2	All MCs	73	2.0	73	2.0	0.173	5.8	LOS A	0.6	16.3	0.56	0.75	0.56	33.8
Approach			150	2.0	150	2.0	0.173	9.0	LOS A	0.6	16.3	0.56	0.75	0.56	33.6
East: Pacific Ave SE															
1u	U	All MCs	3	1.0	3	1.0	0.449	13.8	LOS B	3.1	79.4	0.43	0.46	0.43	34.4
1	L2	All MCs	94	1.0	94	1.0	0.449	11.1	LOS B	3.1	79.4	0.43	0.46	0.43	34.5
6	T1	All MCs	1182	1.0	1182	1.0	0.449	4.0	LOS A	3.2	81.4	0.41	0.42	0.41	35.6
16	R2	All MCs	63	1.0	63	1.0	0.449	4.3	LOS A	3.2	81.4	0.40	0.39	0.40	35.5
Approach			1342	1.0	1342	1.0	0.449	4.6	LOS A	3.2	81.4	0.41	0.42	0.41	35.5
North: Lacey St SE															
7	L2	All MCs	21	2.0	21	2.0	0.092	13.0	LOS B	0.4	8.9	0.62	0.76	0.62	33.6
4	T1	All MCs	5	2.0	5	2.0	0.092	6.1	LOS A	0.4	8.9	0.62	0.76	0.62	34.4
14	R2	All MCs	42	2.0	42	2.0	0.092	6.3	LOS A	0.4	8.9	0.62	0.76	0.62	34.1
Approach			68	2.0	68	2.0	0.092	8.4	LOS A	0.4	8.9	0.62	0.76	0.62	34.0
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	36	1.0	36	1.0	0.411	12.1	LOS B	2.4	59.9	0.32	0.43	0.32	35.1
5ax	L1	All MCs	52	1.0	52	1.0	0.411	9.4	LOS A	2.4	59.9	0.32	0.43	0.32	35.1
12ax	R1	All MCs	1005	1.0	1005	1.0	0.411	3.5	LOS A	2.4	60.9	0.31	0.40	0.31	36.1
12bx	R3	All MCs	62	1.0	62	1.0	0.411	4.2	LOS A	2.4	60.9	0.30	0.38	0.30	35.8
Approach			1156	1.0	1156	1.0	0.411	4.1	LOS A	2.4	60.9	0.31	0.41	0.31	36.0
All Vehicles			2716	1.1	2716	1.1	0.449	4.7	LOS A	3.2	81.4	0.38	0.44	0.38	35.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	215	4	75	230	45	10	30	150	20	20	3
Future Vol, veh/h	5	215	4	75	230	45	10	30	150	20	20	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	6	244	5	85	261	51	11	34	170	23	23	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.3	14.2	10.2	9.8
HCM LOS	B	B	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	2%	21%	47%
Vol Thru, %	75%	0%	96%	66%	47%
Vol Right, %	0%	100%	2%	13%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	150	224	350	43
LT Vol	10	0	5	75	20
Through Vol	30	0	215	230	20
RT Vol	0	150	4	45	3
Lane Flow Rate	45	170	255	398	49
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.081	0.263	0.369	0.556	0.083
Departure Headway (Hd)	6.388	5.55	5.223	5.035	6.145
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	560	646	687	720	581
Service Time	4.129	3.29	3.259	3.035	4.199
HCM Lane V/C Ratio	0.08	0.263	0.371	0.553	0.084
HCM Control Delay, s/veh	9.7	10.3	11.3	14.2	9.8
HCM Lane LOS	A	B	B	B	A
HCM 95th-tile Q	0.3	1.1	1.7	3.5	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	115	40	530	155	40	375
Future Volume (veh/h)	115	40	530	155	40	375
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	119	41	546	160	41	387
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	177	158	942	799	78	1220
Arrive On Green	0.10	0.10	0.52	0.52	0.05	0.68
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	119	41	546	160	41	387
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	2.8	1.0	8.6	2.3	1.0	3.6
Cycle Q Clear(g_c), s	2.8	1.0	8.6	2.3	1.0	3.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	177	158	942	799	78	1220
V/C Ratio(X)	0.67	0.26	0.58	0.20	0.53	0.32
Avail Cap(c_a), veh/h	741	660	942	799	208	1220
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.8	17.0	6.7	5.2	19.3	2.7
Incr Delay (d2), s/veh	4.4	0.9	2.6	0.6	5.4	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.3	2.7	0.6	0.5	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	22.2	17.9	9.3	5.8	24.7	3.4
LnGrp LOS	C	B	A	A	C	A
Approach Vol, veh/h	160		706			428
Approach Delay, s/veh	21.1		8.5			5.5
Approach LOS	C		A			A

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	6.4	26.1				32.5	8.8
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	3.0	10.6				5.6	4.8
Green Ext Time (p_c), s	0.0	2.6				2.4	0.3

Intersection Summary							
HCM 7th Control Delay, s/veh			9.1				
HCM 7th LOS			A				

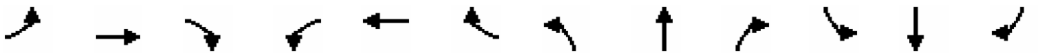
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	590	280	255	480	65	185	420	225	95	275	65
Future Volume (veh/h)	120	590	280	255	480	65	185	420	225	95	275	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	129	634	301	274	516	70	199	452	242	102	296	70
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	157	773	337	306	1064	470	377	791	328	273	449	104
Arrive On Green	0.09	0.23	0.23	0.18	0.32	0.32	0.22	0.22	0.22	0.16	0.16	0.16
Sat Flow, veh/h	1701	3393	1476	1674	3340	1477	1674	3516	1457	1701	2795	649
Grp Volume(v), veh/h	129	634	301	274	516	70	199	452	242	102	187	179
Grp Sat Flow(s),veh/h/ln	1701	1697	1476	1674	1670	1477	1674	1758	1457	1701	1786	1659
Q Serve(g_s), s	7.3	17.4	19.4	15.7	12.2	3.3	10.3	11.2	15.2	5.3	9.6	10.0
Cycle Q Clear(g_c), s	7.3	17.4	19.4	15.7	12.2	3.3	10.3	11.2	15.2	5.3	9.6	10.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	157	773	337	306	1064	470	377	791	328	273	287	266
V/C Ratio(X)	0.82	0.82	0.89	0.90	0.49	0.15	0.53	0.57	0.74	0.37	0.65	0.67
Avail Cap(c_a), veh/h	173	795	346	375	1191	527	614	1289	534	589	619	575
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	36.0	36.7	39.2	27.0	23.9	33.5	33.8	35.4	36.8	38.6	38.8
Incr Delay (d2), s/veh	23.5	6.5	23.7	19.5	0.3	0.1	0.9	0.5	2.4	0.6	1.9	2.2
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	4.1	7.8	9.1	8.0	4.8	1.2	4.2	4.8	5.5	2.2	4.3	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.2	42.4	60.4	58.7	27.2	24.0	34.3	34.3	37.8	37.4	40.5	40.9
LnGrp LOS	E	D	E	E	C	C	C	C	D	D	D	D
Approach Vol, veh/h		1064			860			893			468	
Approach Delay, s/veh		50.5			37.0			35.3			40.0	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.1	36.3		27.1	22.9	27.4		20.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	9.3	14.2		17.2	17.7	21.4		12.0				
Green Ext Time (p_c), s	0.0	3.0		3.5	0.3	0.8		1.9				

Intersection Summary	
HCM 7th Control Delay, s/veh	41.3
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



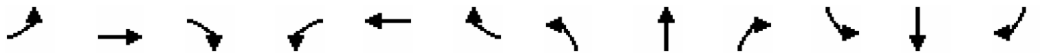
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	730	0	0	1020	275	175	0	490	0	0	0
Future Volume (veh/h)	210	730	0	0	1020	275	175	0	490	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	226	785	0	0	1097	0	188	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	259	2547	0	0	1827		233	0				
Arrive On Green	0.15	0.75	0.00	0.00	0.54	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	226	785	0	0	1097	0	188	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	11.7	6.8	0.0	0.0	19.9	0.0	9.7	0.0	0.0			
Cycle Q Clear(g_c), s	11.7	6.8	0.0	0.0	19.9	0.0	9.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	259	2547	0	0	1827		233	0				
V/C Ratio(X)	0.87	0.31	0.00	0.00	0.60		0.81	0.00				
Avail Cap(c_a), veh/h	283	2547	0	0	1827		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.3	3.6	0.0	0.0	14.0	0.0	37.6	0.0	0.0			
Incr Delay (d2), s/veh	22.5	0.3	0.0	0.0	1.5	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.4	1.8	0.0	0.0	7.3	0.0	4.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.8	4.0	0.0	0.0	15.4	0.0	42.5	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1011			1097			188				
Approach Delay, s/veh		16.4			15.4			42.5				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	18.7	53.9		17.4		72.6			
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0			
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0			
Max Q Clear Time (g_c+I1), s	13.7	21.9		11.7		8.8			
Green Ext Time (p_c), s	0.1	5.6		0.7		5.3			

Intersection Summary		
HCM 7th Control Delay, s/veh		18.1
HCM 7th LOS		B

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	715	230	0	690	0	0	0	0	225	1	350
Future Volume (veh/h)	0	715	230	0	690	0	0	0	0	225	1	350
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	745	0	0	719	0				234	1	365
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	2104		0	2087	0				452	2	404
Arrive On Green	0.00	0.62	0.00	0.00	0.62	0.00				0.27	0.27	0.27
Sat Flow, veh/h	0	3572	0	0	3544	0				1681	7	1502
Grp Volume(v), veh/h	0	745	0	0	719	0				235	0	365
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	9.6	0.0	0.0	9.3	0.0				10.6	0.0	21.1
Cycle Q Clear(g_c), s	0.0	9.6	0.0	0.0	9.3	0.0				10.6	0.0	21.1
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2104		0	2087	0				454	0	404
V/C Ratio(X)	0.00	0.35		0.00	0.34	0.00				0.52	0.00	0.90
Avail Cap(c_a), veh/h	0	2104		0	2087	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.3	0.0	0.0	8.3	0.0				27.9	0.0	31.8
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.5	0.0				0.7	0.0	18.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.3	0.0	0.0	3.1	0.0				4.3	0.0	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	8.8	0.0	0.0	8.7	0.0				28.6	0.0	50.4
LnGrp LOS		A			A					C		D
Approach Vol, veh/h		745			719						600	
Approach Delay, s/veh		8.8			8.7						41.8	
Approach LOS		A			A						D	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	60.8	60.8	29.2
Change Period (Y+Rc), s	5.0	5.0	5.0
Max Green Setting (Gmax), s	52.0	52.0	28.0
Max Q Clear Time (g_c+I1), s	11.3	11.6	23.1
Green Ext Time (p_c), s	4.7	4.9	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.4
HCM 7th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	60	30	475	770	90
Future Vol, veh/h	55	60	30	475	770	90
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	57	63	31	495	802	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1406	849	896	0	-	0
Stage 1	849	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	154	362	766	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	362	766	-	-	-
Mov Cap-2 Maneuver	281	-	-	-	-	-
Stage 1	404	-	-	-	-	-
Stage 2	575	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	22.97	0.59	0
HCM LOS	C		

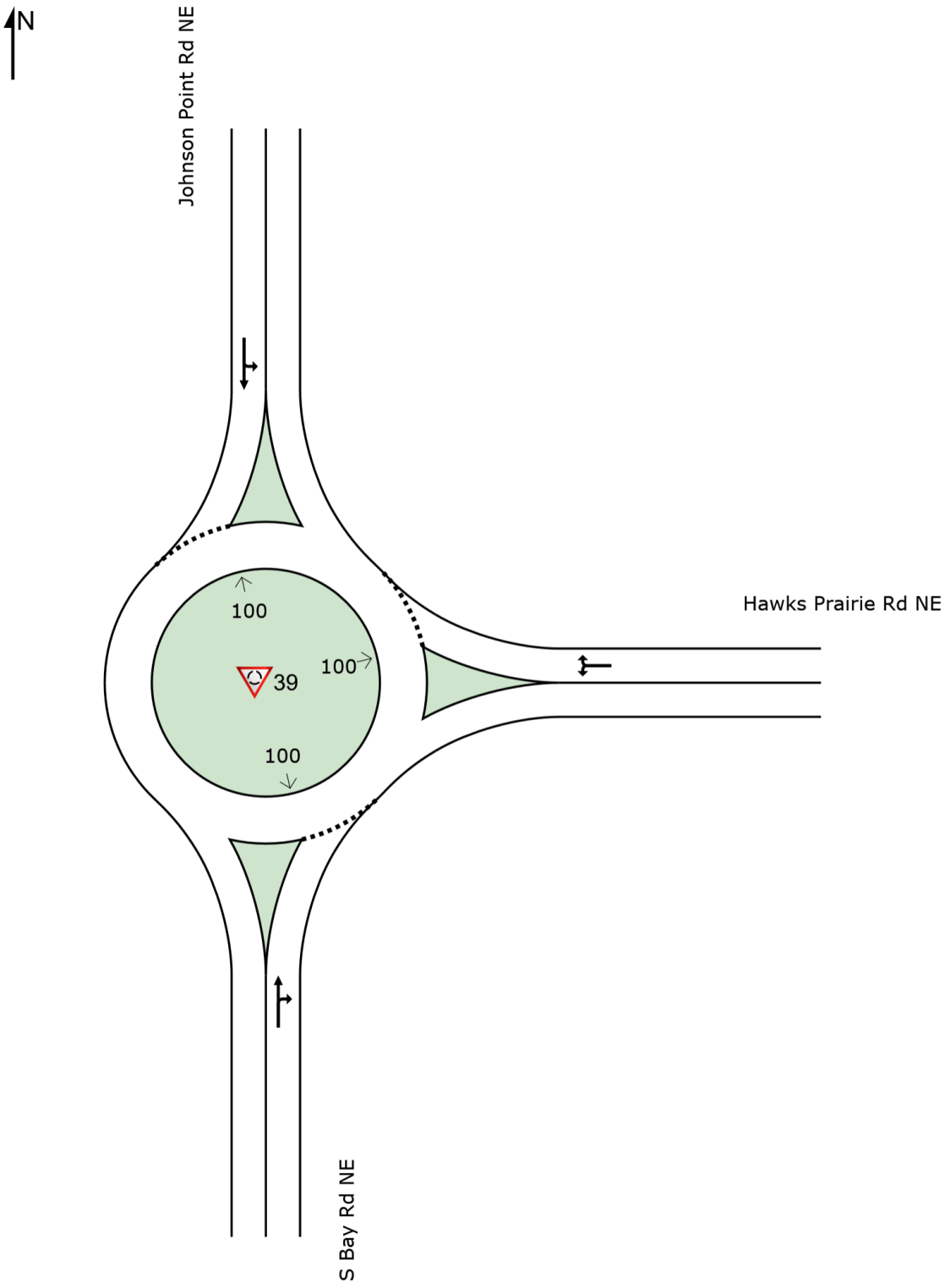
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	766	-	318	-	-
HCM Lane V/C Ratio	0.041	-	0.376	-	-
HCM Ctrl Dly (s/v)	9.9	-	23	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.7	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2027) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	224	0.0	224	0.0	0.344	4.0	LOS A	2.1	53.7	0.18	0.41	0.18	36.2
18	R2	All MCs	266	0.0	266	0.0	0.344	4.0	LOS A	2.1	53.7	0.18	0.41	0.18	35.9
Approach			490	0.0	490	0.0	0.344	4.0	LOS A	2.1	53.7	0.18	0.41	0.18	36.1
East: Hawks Prairie Rd NE															
1	L2	All MCs	245	0.0	245	0.0	0.230	10.6	LOS B	1.2	29.6	0.37	0.62	0.37	32.7
16	R2	All MCs	47	0.0	47	0.0	0.230	4.8	LOS A	1.2	29.6	0.37	0.62	0.37	33.1
Approach			292	0.0	292	0.0	0.230	9.7	LOS A	1.2	29.6	0.37	0.62	0.37	32.8
North: Johnson Point Rd NE															
7	L2	All MCs	42	0.0	42	0.0	0.156	10.6	LOS B	0.8	19.9	0.39	0.51	0.39	34.3
4	T1	All MCs	151	0.0	151	0.0	0.156	4.7	LOS A	0.8	19.9	0.39	0.51	0.39	35.0
Approach			193	0.0	193	0.0	0.156	6.0	LOS A	0.8	19.9	0.39	0.51	0.39	34.8
All Vehicles			974	0.0	974	0.0	0.344	6.1	LOS A	2.1	53.7	0.28	0.49	0.28	34.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

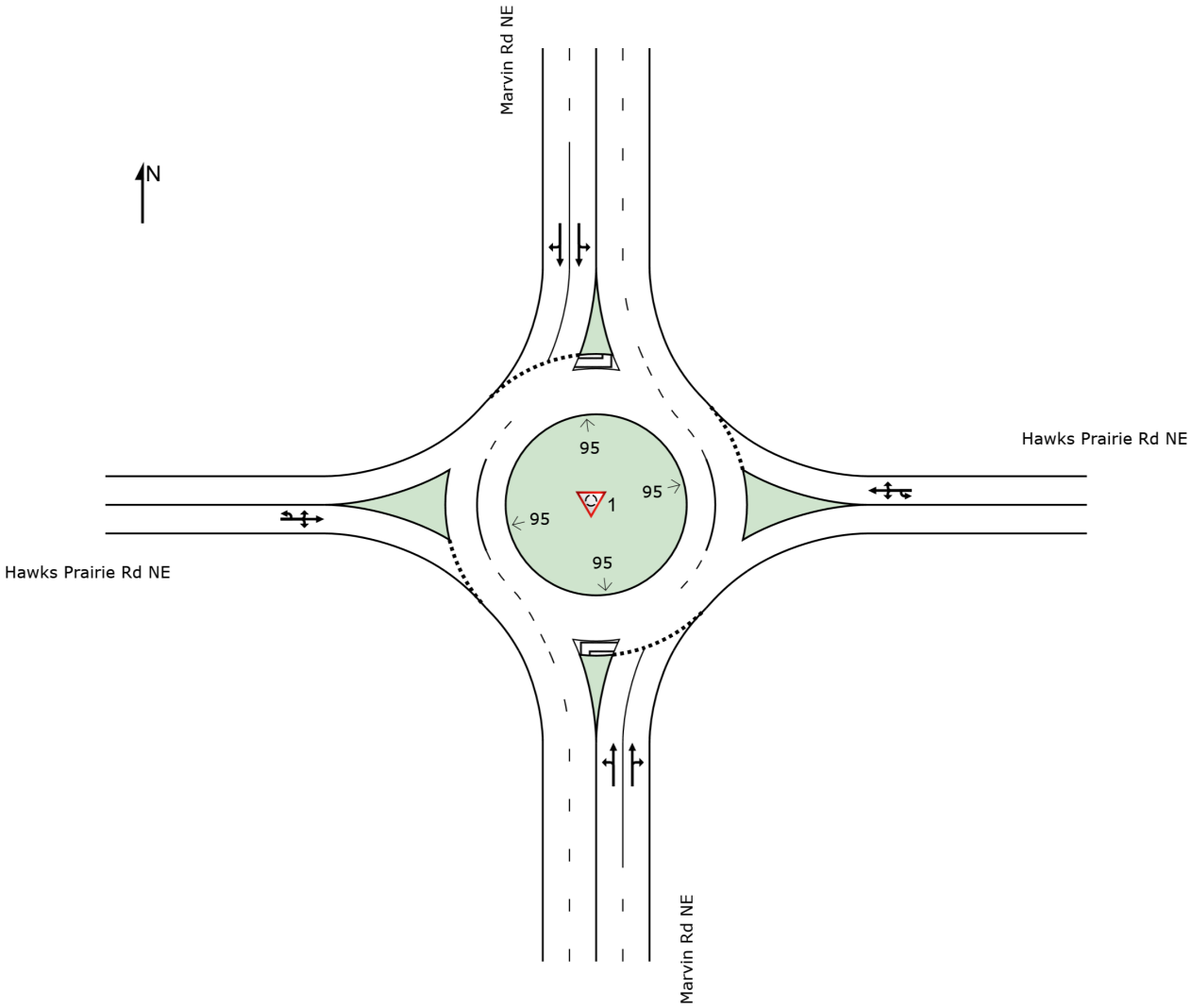
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	275	0.0	275	0.0	0.236	10.0	LOS B	1.4	33.8	0.24	0.59	0.24	33.0
8	T1	All MCs	435	0.0	435	0.0	0.236	4.3	LOS A	1.4	34.4	0.23	0.41	0.23	35.5
18	R2	All MCs	2	0.0	2	0.0	0.236	4.4	LOS A	1.4	34.4	0.23	0.39	0.23	35.4
Approach			712	0.0	712	0.0	0.236	6.5	LOS A	1.4	34.4	0.24	0.48	0.24	34.5
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.273	14.2	LOS B	1.0	25.3	0.51	0.72	0.51	32.9
1	L2	All MCs	140	3.0	140	3.0	0.273	11.8	LOS B	1.0	25.3	0.51	0.72	0.51	32.9
6	T1	All MCs	80	3.0	80	3.0	0.273	6.1	LOS A	1.0	25.3	0.51	0.72	0.51	33.6
16	R2	All MCs	25	3.0	25	3.0	0.273	6.0	LOS A	1.0	25.3	0.51	0.72	0.51	33.3
Approach			247	3.0	247	3.0	0.273	9.4	LOS A	1.0	25.3	0.51	0.72	0.51	33.2
North: Marvin Rd NE															
7	L2	All MCs	15	2.0	15	2.0	0.168	12.2	LOS B	0.9	23.4	0.58	0.59	0.58	33.7
4	T1	All MCs	265	2.0	265	2.0	0.168	6.3	LOS A	1.0	25.1	0.57	0.58	0.57	34.6
14	R2	All MCs	90	2.0	90	2.0	0.168	6.1	LOS A	1.0	25.1	0.56	0.56	0.56	34.4
Approach			370	2.0	370	2.0	0.168	6.5	LOS A	1.0	25.1	0.57	0.57	0.57	34.5
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.152	13.4	LOS B	0.6	14.6	0.41	0.62	0.41	33.9
5	L2	All MCs	45	3.0	45	3.0	0.152	11.0	LOS B	0.6	14.6	0.41	0.62	0.41	33.9
2	T1	All MCs	15	3.0	15	3.0	0.152	5.3	LOS A	0.6	14.6	0.41	0.62	0.41	34.6
12	R2	All MCs	90	3.0	90	3.0	0.152	5.2	LOS A	0.6	14.6	0.41	0.62	0.41	34.3
Approach			152	3.0	152	3.0	0.152	7.1	LOS A	0.6	14.6	0.41	0.62	0.41	34.2
All Vehicles			1481	1.3	1481	1.3	0.273	7.0	LOS A	1.4	34.4	0.38	0.56	0.38	34.2

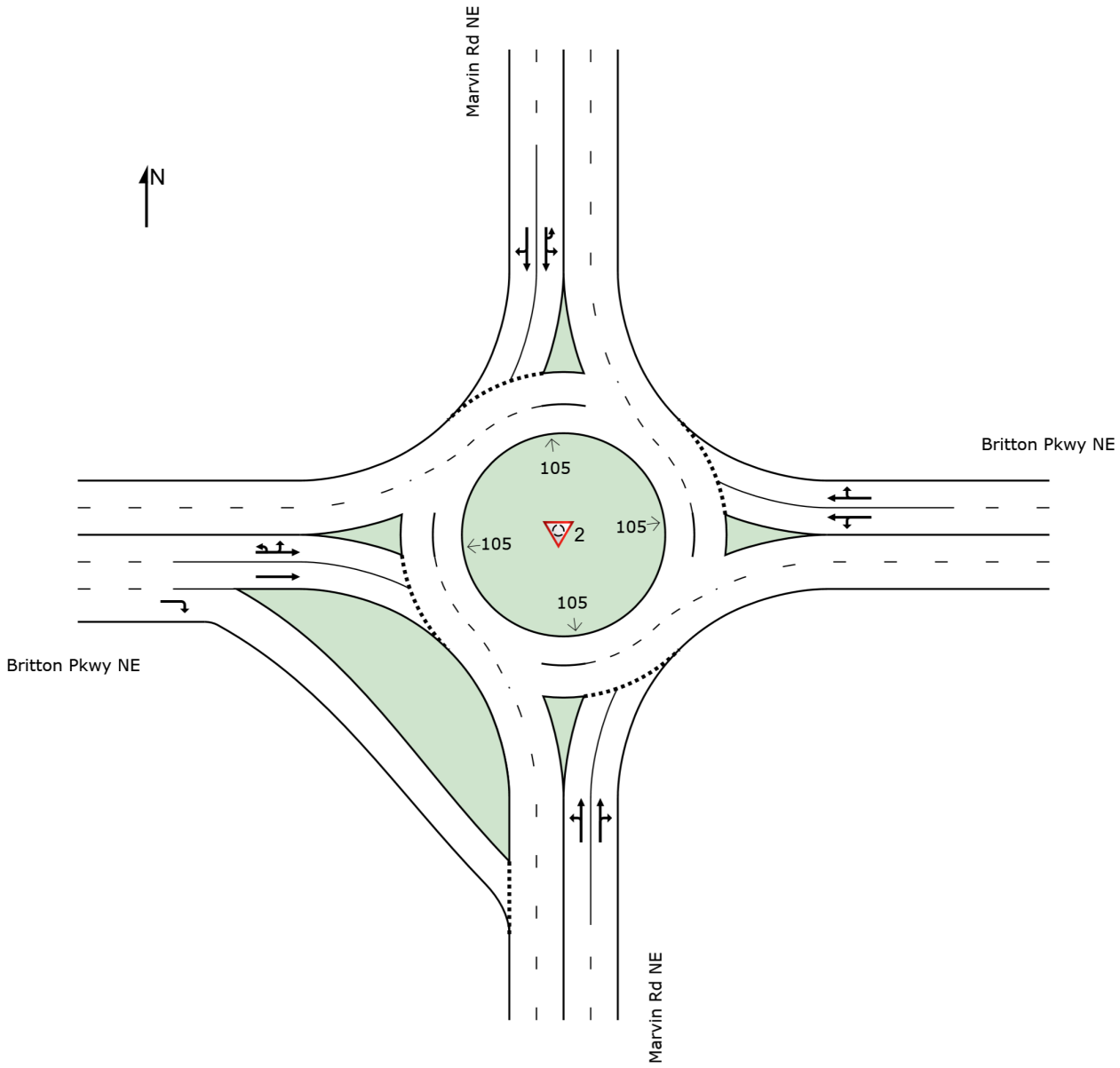
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	405	2.0	405	2.0	0.532	11.4	LOS B	3.2	82.2	0.54	0.65	0.55	32.7
8	T1	All MCs	825	2.0	825	2.0	0.532	5.2	LOS A	3.2	82.3	0.53	0.52	0.53	34.5
18	R2	All MCs	40	2.0	40	2.0	0.532	5.2	LOS A	3.2	82.3	0.52	0.49	0.52	34.5
Approach			1270	2.0	1270	2.0	0.532	7.2	LOS A	3.2	82.3	0.53	0.56	0.54	33.9
East: Britton Pkwy NE															
1	L2	All MCs	440	4.0	440	4.0	0.542	14.6	LOS B	3.4	86.9	0.80	0.94	0.99	31.0
6	T1	All MCs	240	4.0	240	4.0	0.490	9.8	LOS A	2.6	66.2	0.77	0.90	0.95	33.5
16	R2	All MCs	50	4.0	50	4.0	0.490	9.9	LOS A	2.6	66.2	0.77	0.90	0.95	33.2
Approach			730	4.0	730	4.0	0.542	12.7	LOS B	3.4	86.9	0.79	0.92	0.98	31.9
North: Marvin Rd NE															
7u	U	All MCs	10	4.0	10	4.0	0.548	19.8	LOS B	3.6	92.2	0.83	0.92	1.07	31.8
7	L2	All MCs	40	4.0	40	4.0	0.548	17.2	LOS B	3.6	92.2	0.83	0.92	1.07	31.8
4	T1	All MCs	625	4.0	625	4.0	0.548	10.5	LOS B	4.0	103.1	0.84	0.89	1.06	33.0
14	R2	All MCs	90	4.0	90	4.0	0.548	9.9	LOS A	4.0	103.1	0.84	0.88	1.05	33.2
Approach			765	4.0	765	4.0	0.548	10.9	LOS B	4.0	103.1	0.84	0.89	1.06	33.0
West: Britton Pkwy NE															
5u	U	All MCs	20	5.0	20	5.0	0.135	15.4	LOS B	0.6	16.0	0.67	0.80	0.67	31.4
5	L2	All MCs	80	5.0	80	5.0	0.135	12.8	LOS B	0.6	16.0	0.67	0.80	0.67	31.4
2	T1	All MCs	145	5.0	145	5.0	0.135	6.2	LOS A	0.7	19.1	0.69	0.58	0.69	34.1
12	R2	All MCs	260	5.0	260	5.0	0.236	6.2	LOS A	1.3	33.5	0.69	0.70	0.69	34.4
Approach			505	5.0	505	5.0	0.236	7.6	LOS A	1.3	33.5	0.69	0.69	0.69	33.6
All Vehicles			3270	3.4	3270	3.4	0.548	9.4	LOS A	4.0	103.1	0.69	0.74	0.78	33.2

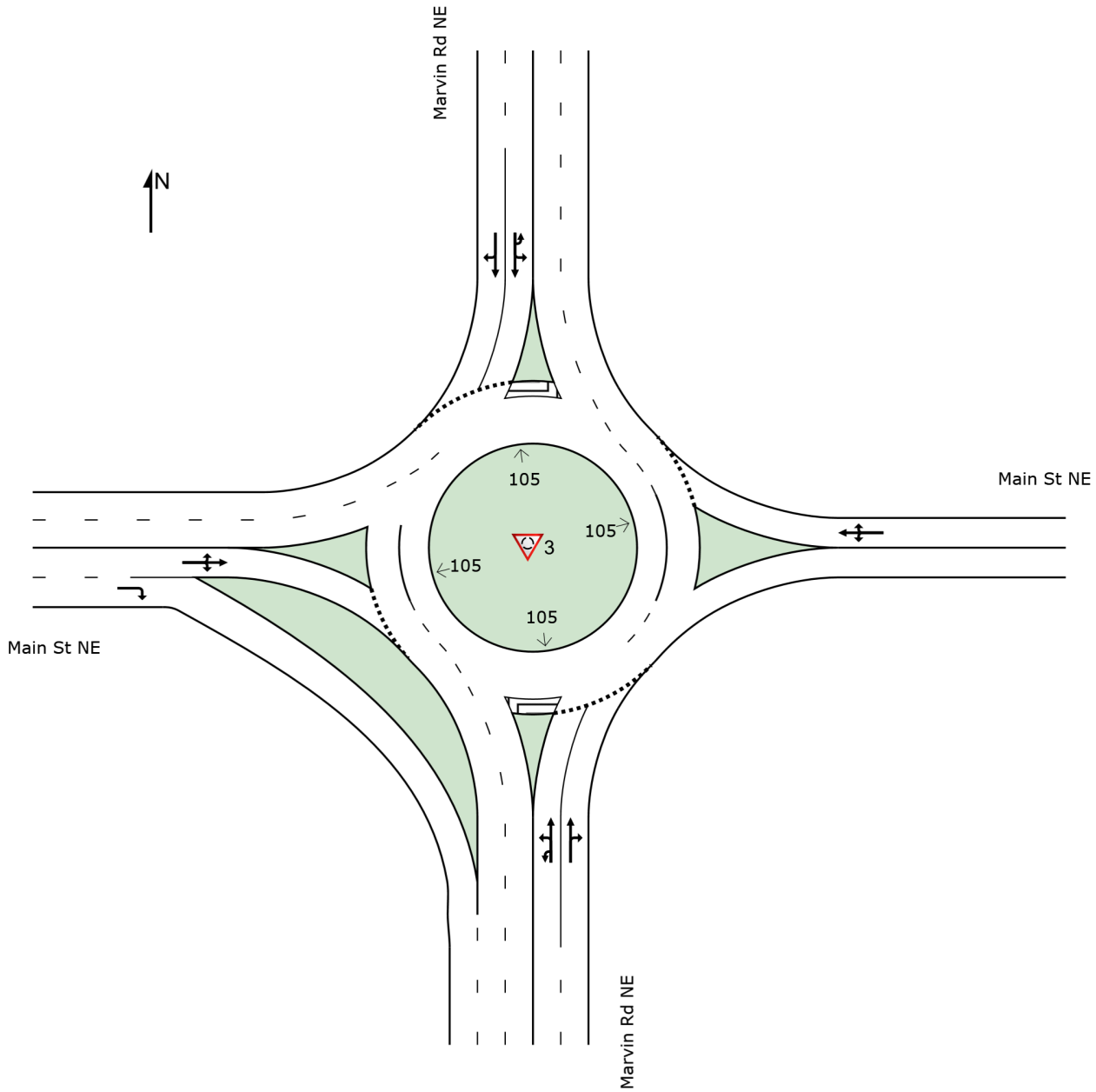
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

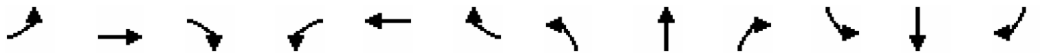
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	320	3.0	320	3.0	0.488	12.6	LOS B	4.3	110.5	0.20	0.53	0.20	28.0
3	L2	All MCs	1	3.0	1	3.0	0.488	10.0	LOS B	4.3	110.5	0.20	0.53	0.20	31.5
8	T1	All MCs	1150	3.0	1150	3.0	0.488	4.0	LOS A	4.4	111.9	0.19	0.41	0.19	31.2
18	R2	All MCs	35	3.0	35	3.0	0.488	4.2	LOS A	4.4	111.9	0.19	0.35	0.19	34.1
Approach			1506	3.0	1506	3.0	0.488	5.8	LOS A	4.4	111.9	0.19	0.43	0.19	30.6
East: Main St NE															
1	L2	All MCs	45	0.0	45	0.0	0.167	13.2	LOS B	0.6	16.0	0.62	0.79	0.62	31.0
6	T1	All MCs	5	0.0	5	0.0	0.167	7.1	LOS A	0.6	16.0	0.62	0.79	0.62	33.9
16	R2	All MCs	80	0.0	80	0.0	0.167	7.1	LOS A	0.6	16.0	0.62	0.79	0.62	32.0
Approach			130	0.0	130	0.0	0.167	9.2	LOS A	0.6	16.0	0.62	0.79	0.62	31.8
North: Marvin Rd NE															
7u	U	All MCs	4	3.0	4	3.0	0.532	15.2	LOS B	3.9	101.0	0.66	0.60	0.68	29.2
7	L2	All MCs	20	3.0	20	3.0	0.532	12.7	LOS B	3.9	101.0	0.66	0.60	0.68	32.0
4	T1	All MCs	1260	3.0	1260	3.0	0.532	6.2	LOS A	4.0	101.8	0.64	0.58	0.65	29.5
14	R2	All MCs	1	3.0	1	3.0	0.532	6.1	LOS A	4.0	101.8	0.63	0.56	0.63	32.6
Approach			1285	3.0	1285	3.0	0.532	6.4	LOS A	4.0	101.8	0.64	0.58	0.65	29.6
West: Main St NE															
5	L2	All MCs	1	2.0	1	2.0	0.003	13.1	LOS B	0.0	0.3	0.73	0.63	0.73	30.7
2	T1	All MCs	1	2.0	1	2.0	0.003	7.0	LOS A	0.0	0.3	0.73	0.63	0.73	33.2
12	R2	All MCs	1	2.0	1	2.0	0.001	3.6	LOS A	0.0	0.0	0.00	0.43	0.00	35.3
Approach			3	2.0	3	2.0	0.003	7.9	LOS A	0.0	0.3	0.49	0.57	0.49	32.9
All Vehicles			2924	2.9	2924	2.9	0.532	6.2	LOS A	4.4	111.9	0.41	0.51	0.41	30.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	545	0	0	535	0	1335	415	0	980	490
Future Volume (vph)	0	0	545	0	0	535	0	1335	415	0	980	490
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3164	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3164	1335		3257	1457
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	545	0	0	535	0	1335	415	0	980	490
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	545	0	0	535	0	1377	373	0	980	490
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			56.5			54.5		54.5	120.0		51.5	120.0
Effective Green, g (s)			56.5			54.5		54.5	120.0		51.5	120.0
Actuated g/C Ratio			0.47			0.45		0.45	1.00		0.43	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1243			1199		1436	1335		1397	1457
v/s Ratio Prot			0.21			0.20		c0.44			c0.30	
v/s Ratio Perm									0.28			0.34
v/c Ratio			0.44			0.45		0.96	0.28		0.70	0.34
Uniform Delay, d1			21.2			22.4		31.7	0.0		28.0	0.0
Progression Factor			1.00			1.00		0.63	1.00		1.00	1.00
Incremental Delay, d2			0.2			0.3		13.5	0.4		3.0	0.6
Delay (s)			21.4			22.7		33.4	0.4		30.9	0.6
Level of Service			C			C		C	A		C	A
Approach Delay (s/veh)		21.4			22.7			26.4			20.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

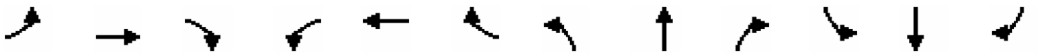
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	25	0	0	545	0	1200	150	0	1300	225
Future Volume (vph)	0	0	25	0	0	545	0	1200	150	0	1300	225
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	25	0	0	545	0	1200	150	0	1300	225
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	25	0	0	545	0	1200	150	0	1300	225
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			44.5			66.5		42.5	120.0		64.5	120.0
Effective Green, g (s)			44.5			66.5		42.5	120.0		64.5	120.0
Actuated g/C Ratio			0.37			0.55		0.35	1.00		0.54	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			544			1407		1706	1500		1784	1455
v/s Ratio Prot			0.02			0.21		c0.25			c0.39	
v/s Ratio Perm									0.10			0.15
v/c Ratio			0.05			0.39		0.70	0.10		0.73	0.15
Uniform Delay, d1			24.2			15.2		33.3	0.0		21.1	0.0
Progression Factor			1.00			1.00		0.76	1.00		0.66	1.00
Incremental Delay, d2			0.0			0.2		2.1	0.1		2.1	0.2
Delay (s)			24.2			15.4		27.5	0.1		16.0	0.2
Level of Service			C			B		C	A		B	A
Approach Delay (s/veh)		24.2			15.4			24.5			13.7	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



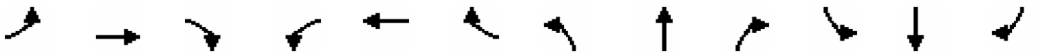
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	410	255	165	70	65	235	65	675	65	190	775	280
Future Volume (veh/h)	410	255	165	70	65	235	65	675	65	190	775	280
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	410	255	165	70	65	235	65	675	65	190	775	280
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	495	228	147	71	201	363	354	1294	124	217	1140	494
Arrive On Green	0.15	0.22	0.22	0.04	0.11	0.11	0.21	0.42	0.42	0.13	0.34	0.34
Sat Flow, veh/h	3300	1012	655	1701	1786	1505	1688	3095	298	1701	3393	1472
Grp Volume(v), veh/h	410	0	420	70	65	235	65	367	373	190	775	280
Grp Sat Flow(s),veh/h/ln	1650	0	1666	1701	1786	1505	1688	1683	1710	1701	1697	1472
Q Serve(g_s), s	14.5	0.0	27.0	4.9	4.0	13.5	3.8	19.5	19.5	13.2	23.6	11.8
Cycle Q Clear(g_c), s	14.5	0.0	27.0	4.9	4.0	13.5	3.8	19.5	19.5	13.2	23.6	11.8
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	495	0	375	71	201	363	354	704	715	217	1140	494
V/C Ratio(X)	0.83	0.00	1.12	0.99	0.32	0.65	0.18	0.52	0.52	0.87	0.68	0.57
Avail Cap(c_a), veh/h	619	0	375	71	201	363	354	704	715	241	1654	717
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	1.00	1.00	1.00	1.00	0.78	0.78	0.78	0.63	0.63	0.63
Uniform Delay (d), s/veh	49.5	0.0	46.5	57.5	49.0	41.0	39.0	26.0	26.0	51.4	34.3	13.0
Incr Delay (d2), s/veh	9.9	0.0	83.3	102.8	2.0	5.5	0.4	2.1	2.1	20.6	2.1	3.0
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	6.6	0.0	19.8	4.2	1.9	6.8	1.6	8.2	8.3	6.8	10.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.4	0.0	129.8	160.3	51.0	46.5	39.4	28.1	28.1	72.0	36.4	15.9
LnGrp LOS	E		F	F	D	D	D	C	C	E	D	B
Approach Vol, veh/h		830			370			805			1245	
Approach Delay, s/veh		95.0			68.8			29.0			37.2	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.2	46.3	23.5	19.0	21.3	56.2	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	5.8	25.6	16.5	15.5	15.2	21.5	6.9	29.0
Green Ext Time (p_c), s	0.0	14.7	1.5	0.0	0.2	9.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	53.5
HCM 7th LOS	D

Notes

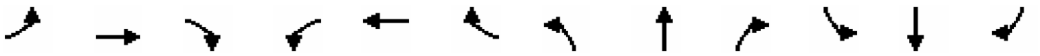
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	125	160	60	75	165	530	185	100	810	80
Future Volume (veh/h)	140	55	125	160	60	75	165	530	185	100	810	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	140	55	125	160	60	75	165	530	185	100	810	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	205	67	152	156	79	99	191	857	298	455	1580	156
Arrive On Green	0.12	0.14	0.14	0.09	0.11	0.11	0.11	0.35	0.35	0.09	0.17	0.17
Sat Flow, veh/h	1714	484	1101	1701	715	893	1674	2430	845	1701	3119	308
Grp Volume(v), veh/h	140	0	180	160	0	135	165	364	351	100	441	449
Grp Sat Flow(s),veh/h/ln	1714	0	1585	1701	0	1608	1674	1670	1604	1701	1697	1730
Q Serve(g_s), s	9.4	0.0	13.3	11.0	0.0	9.8	11.6	21.6	21.8	6.6	28.4	28.4
Cycle Q Clear(g_c), s	9.4	0.0	13.3	11.0	0.0	9.8	11.6	21.6	21.8	6.6	28.4	28.4
Prop In Lane	1.00		0.69	1.00		0.56	1.00		0.53	1.00		0.18
Lane Grp Cap(c), veh/h	205	0	219	156	0	177	191	589	566	455	859	876
V/C Ratio(X)	0.68	0.00	0.82	1.03	0.00	0.76	0.87	0.62	0.62	0.22	0.51	0.51
Avail Cap(c_a), veh/h	205	0	317	156	0	322	237	682	655	455	859	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	50.7	0.0	50.3	54.5	0.0	51.8	52.3	32.2	32.2	43.0	36.5	36.5
Incr Delay (d2), s/veh	8.4	0.0	9.4	79.1	0.0	5.0	21.8	1.5	1.6	0.2	0.5	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	4.5	0.0	5.9	8.1	0.0	4.2	6.0	8.9	8.7	2.9	13.1	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.1	0.0	59.7	133.6	0.0	56.8	74.1	33.6	33.8	43.2	37.0	37.0
LnGrp LOS	E		E	F		E	E	C	C	D	D	D
Approach Vol, veh/h		320			295			880			990	
Approach Delay, s/veh		59.4			98.5			41.3			37.6	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	65.8	18.3	17.2	37.1	47.3	15.0	20.6
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.6	30.4	11.4	11.8	8.6	23.8	13.0	15.3
Green Ext Time (p_c), s	0.1	6.6	0.0	0.4	0.1	5.7	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	48.9
HCM 7th LOS	D



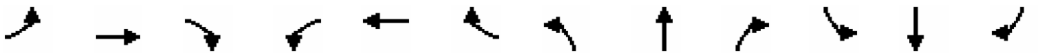
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	495	365	395	575	280	285	420	245	250	770	290
Future Volume (veh/h)	270	495	365	395	575	280	285	420	245	250	770	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	270	495	0	395	575	0	285	420	245	250	770	290
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	328	587		452	716		432	742	429	277	910	405
Arrive On Green	0.10	0.17	0.00	0.14	0.21	0.00	0.25	0.36	0.36	0.16	0.27	0.27
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2070	1195	1714	3420	1522
Grp Volume(v), veh/h	270	495	0	395	575	0	285	344	321	250	770	290
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1568	1714	1710	1522
Q Serve(g_s), s	9.6	16.9	0.0	14.0	19.2	0.0	18.0	19.5	19.8	17.2	25.6	15.6
Cycle Q Clear(g_c), s	9.6	16.9	0.0	14.0	19.2	0.0	18.0	19.5	19.8	17.2	25.6	15.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	328	587		452	716		432	608	562	277	910	405
V/C Ratio(X)	0.82	0.84		0.87	0.80		0.66	0.56	0.57	0.90	0.85	0.72
Avail Cap(c_a), veh/h	522	693		554	727		432	608	562	386	1055	469
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	48.0	0.0	50.8	45.1	0.0	40.1	31.0	31.1	49.4	41.7	22.5
Incr Delay (d2), s/veh	2.7	8.4	0.0	10.9	6.5	0.0	2.9	3.8	4.2	15.6	9.6	10.4
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	4.1	7.8	0.0	6.4	8.7	0.0	7.9	8.6	8.1	8.5	11.9	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.7	56.5	0.0	61.7	51.6	0.0	43.0	34.7	35.2	64.9	51.3	32.9
LnGrp LOS	E	E		E	D		D	C	D	E	D	C
Approach Vol, veh/h		765			970			950			1310	
Approach Delay, s/veh		56.2			55.7			37.4			49.8	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.5	36.9	16.9	30.6	24.4	48.0	21.3	26.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	18.0	37.0	19.0	25.5	27.0	28.0	20.0	24.5
Max Q Clear Time (g_c+I1), s	20.0	27.6	11.6	21.2	19.2	21.8	16.0	18.9
Green Ext Time (p_c), s	0.0	4.3	0.3	1.6	0.2	2.2	0.3	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	49.5
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	165	40	580	25	280	945	240
Future Volume (veh/h)	110	205	55	180	265	165	40	580	25	280	945	240
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	165	40	580	25	280	945	240
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	139	320	86	202	284	177	72	806	35	321	1043	264
Arrive On Green	0.08	0.24	0.24	0.12	0.27	0.27	0.04	0.24	0.24	0.19	0.39	0.39
Sat Flow, veh/h	1688	1345	361	1714	1037	646	1701	3313	143	1701	2679	679
Grp Volume(v), veh/h	110	0	260	180	0	430	40	297	308	280	598	587
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	0	1683	1701	1697	1759	1701	1697	1661
Q Serve(g_s), s	5.6	0.0	12.1	9.1	0.0	22.0	2.0	14.1	14.2	14.1	29.3	29.4
Cycle Q Clear(g_c), s	5.6	0.0	12.1	9.1	0.0	22.0	2.0	14.1	14.2	14.1	29.3	29.4
Prop In Lane	1.00		0.21	1.00		0.38	1.00		0.08	1.00		0.41
Lane Grp Cap(c), veh/h	139	0	406	202	0	460	72	413	428	321	661	647
V/C Ratio(X)	0.79	0.00	0.64	0.89	0.00	0.93	0.55	0.72	0.72	0.87	0.90	0.91
Avail Cap(c_a), veh/h	391	0	472	202	0	466	201	695	721	703	695	680
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.7	0.0	30.2	38.3	0.0	31.2	41.4	30.6	30.6	34.7	25.4	25.4
Incr Delay (d2), s/veh	7.3	0.0	2.3	34.5	0.0	25.9	4.8	2.2	2.1	5.6	14.9	15.5
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	2.6	0.0	5.1	5.7	0.0	11.9	0.9	5.9	6.1	6.2	13.9	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.0	0.0	32.5	72.8	0.0	57.2	46.2	32.7	32.7	40.3	40.2	40.9
LnGrp LOS	D		C	E		E	D	C	C	D	D	D
Approach Vol, veh/h		370			610			645			1465	
Approach Delay, s/veh		36.8			61.8			33.6			40.5	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	39.2	11.9	28.7	21.2	26.3	15.0	25.6
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.0	31.4	7.6	24.0	16.1	16.2	11.1	14.1
Green Ext Time (p_c), s	0.0	2.9	0.1	0.1	0.6	3.4	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	42.8
HCM 7th LOS	D

Notes

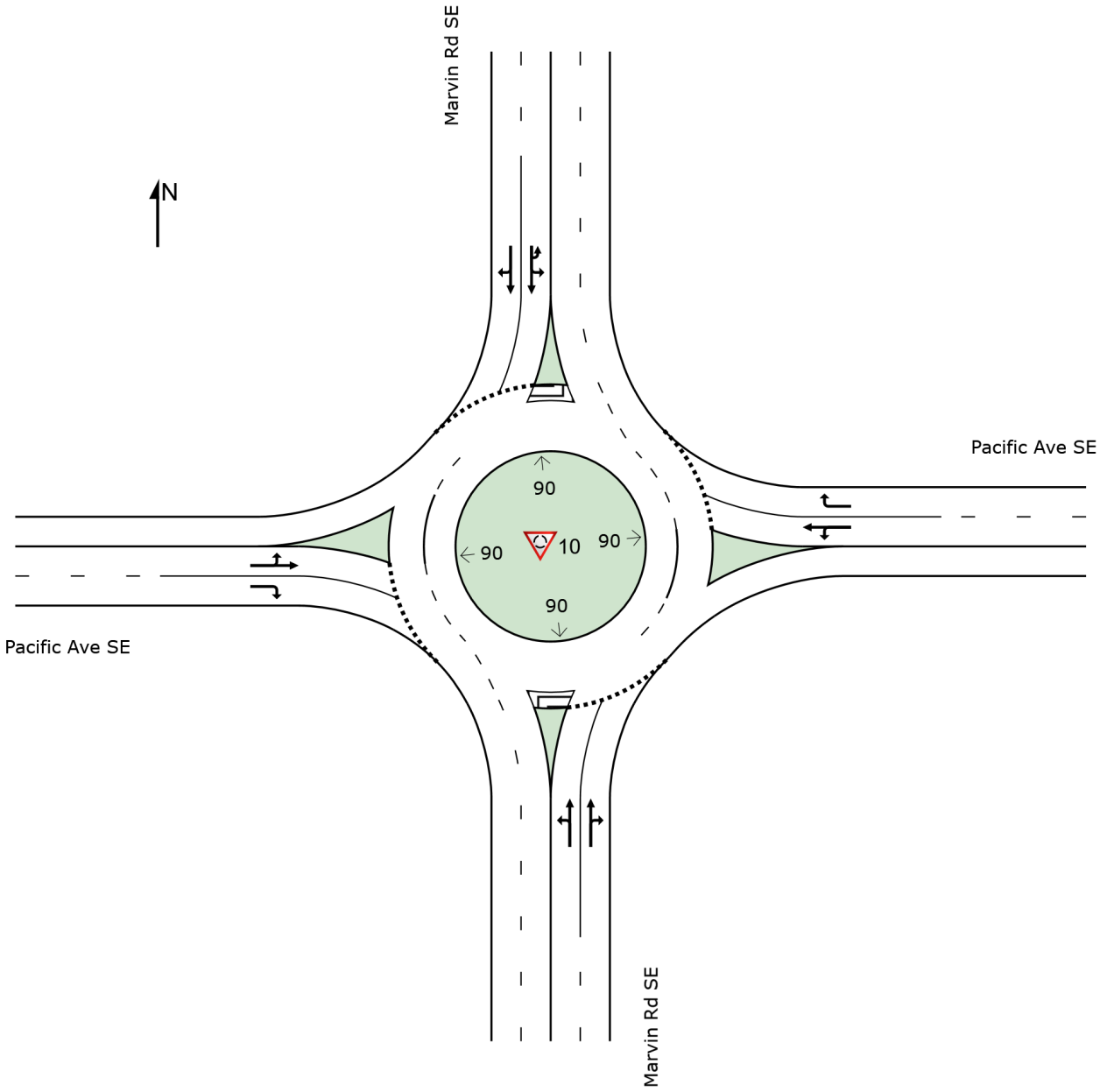
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	125	1.0	125	1.0	0.337	14.1	LOS B	2.2	55.9	0.77	0.73	0.77	32.2
8	T1	All MCs	440	1.0	440	1.0	0.337	8.0	LOS A	2.5	62.1	0.77	0.68	0.77	33.6
18	R2	All MCs	45	1.0	45	1.0	0.337	7.8	LOS A	2.5	62.1	0.77	0.66	0.77	33.6
Approach			610	1.0	610	1.0	0.337	9.2	LOS A	2.5	62.1	0.77	0.69	0.77	33.3
East: Pacific Ave SE															
1	L2	All MCs	35	1.0	35	1.0	0.305	11.2	LOS B	1.5	37.0	0.57	0.57	0.57	33.7
6	T1	All MCs	290	1.0	290	1.0	0.305	5.6	LOS A	1.5	37.0	0.57	0.57	0.57	34.4
16	R2	All MCs	220	1.0	220	1.0	0.251	6.1	LOS A	1.1	27.9	0.56	0.67	0.56	34.6
Approach			545	1.0	545	1.0	0.305	6.2	LOS A	1.5	37.0	0.56	0.61	0.56	34.4
North: Marvin Rd SE															
7u	U	All MCs	3	1.0	3	1.0	0.508	15.3	LOS B	3.9	97.8	0.72	0.71	0.75	32.2
7	L2	All MCs	335	1.0	335	1.0	0.508	12.9	LOS B	3.9	97.8	0.72	0.71	0.75	32.2
4	T1	All MCs	690	1.0	690	1.0	0.508	6.7	LOS A	3.9	99.3	0.71	0.64	0.71	33.9
14	R2	All MCs	110	1.0	110	1.0	0.508	6.6	LOS A	3.9	99.3	0.70	0.61	0.70	33.9
Approach			1138	1.0	1138	1.0	0.508	8.5	LOS A	3.9	99.3	0.71	0.65	0.72	33.3
West: Pacific Ave SE															
5	L2	All MCs	45	1.0	45	1.0	0.424	12.5	LOS B	2.4	59.4	0.73	0.71	0.80	33.2
2	T1	All MCs	325	1.0	325	1.0	0.424	6.9	LOS A	2.4	59.4	0.73	0.71	0.80	33.8
12	R2	All MCs	120	1.0	120	1.0	0.204	7.6	LOS A	0.8	21.4	0.67	0.79	0.67	34.2
Approach			490	1.0	490	1.0	0.424	7.6	LOS A	2.4	59.4	0.72	0.73	0.76	33.8
All Vehicles			2783	1.0	2783	1.0	0.508	8.1	LOS A	3.9	99.3	0.70	0.67	0.71	33.6

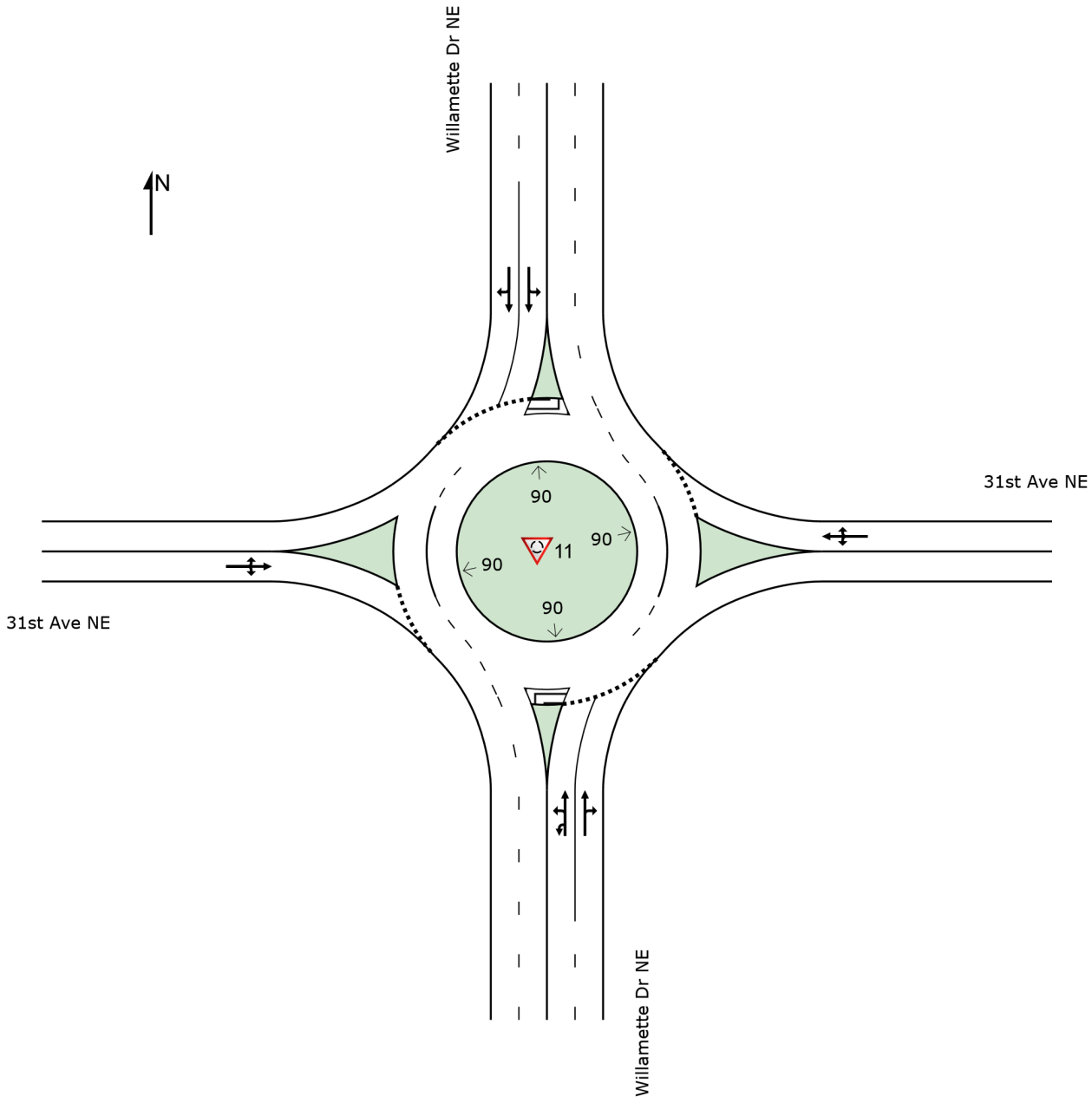
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: THE TRANSPO GROUP | Licence: NETWORK / 1PC | Created: Wednesday, March 12, 2025 4:18:11 PM
Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	35	2.0	35	2.0	0.203	12.1	LOS B	1.1	28.5	0.11	0.50	0.11	34.3
3	L2	All MCs	65	2.0	65	2.0	0.203	9.7	LOS A	1.1	28.5	0.11	0.50	0.11	34.3
8	T1	All MCs	445	2.0	445	2.0	0.203	4.2	LOS A	1.1	28.8	0.11	0.44	0.11	35.7
18	R2	All MCs	80	2.0	80	2.0	0.203	4.3	LOS A	1.1	28.8	0.10	0.40	0.10	35.7
Approach			625	2.0	625	2.0	0.203	5.2	LOS A	1.1	28.8	0.11	0.45	0.11	35.5
East: 31st Ave NE															
1	L2	All MCs	55	3.0	55	3.0	0.077	11.1	LOS B	0.2	6.1	0.39	0.69	0.39	32.9
6	T1	All MCs	5	3.0	5	3.0	0.077	5.6	LOS A	0.2	6.1	0.39	0.69	0.39	33.5
16	R2	All MCs	15	3.0	15	3.0	0.077	5.4	LOS A	0.2	6.1	0.39	0.69	0.39	33.3
Approach			75	3.0	75	3.0	0.077	9.6	LOS A	0.2	6.1	0.39	0.69	0.39	33.0
North: Willamette Dr NE															
7	L2	All MCs	1	1.0	1	1.0	0.086	10.3	LOS B	0.4	10.2	0.30	0.43	0.30	34.7
4	T1	All MCs	235	1.0	235	1.0	0.086	4.7	LOS A	0.4	10.4	0.29	0.42	0.29	35.5
14	R2	All MCs	5	1.0	5	1.0	0.086	4.7	LOS A	0.4	10.4	0.28	0.42	0.28	35.2
Approach			241	1.0	241	1.0	0.086	4.7	LOS A	0.4	10.4	0.29	0.42	0.29	35.5
West: 31st Ave NE															
5	L2	All MCs	10	0.0	10	0.0	0.068	10.5	LOS B	0.2	5.6	0.32	0.55	0.32	34.6
2	T1	All MCs	10	0.0	10	0.0	0.068	4.9	LOS A	0.2	5.6	0.32	0.55	0.32	35.3
12	R2	All MCs	55	0.0	55	0.0	0.068	4.8	LOS A	0.2	5.6	0.32	0.55	0.32	35.1
Approach			75	0.0	75	0.0	0.068	5.6	LOS A	0.2	5.6	0.32	0.55	0.32	35.0
All Vehicles			1016	1.7	1016	1.7	0.203	5.5	LOS A	1.1	28.8	0.19	0.47	0.19	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

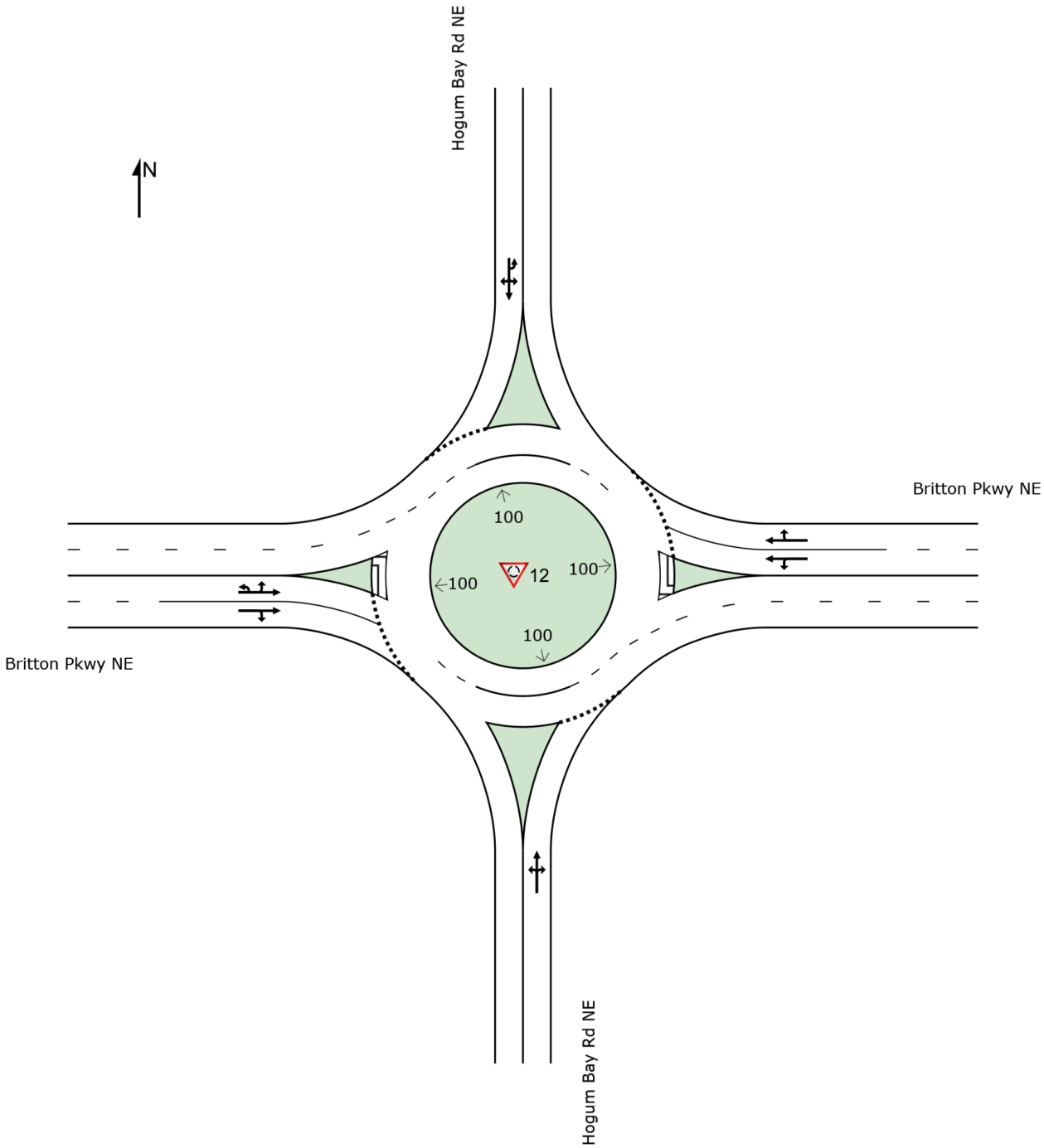
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	25	13.0	25	13.0	0.492	11.3	LOS B	2.5	69.2	0.44	0.53	0.44	34.1
8	T1	All MCs	175	13.0	175	13.0	0.492	5.4	LOS A	2.5	69.2	0.44	0.53	0.44	35.0
18	R2	All MCs	295	13.0	295	13.0	0.492	5.4	LOS A	2.5	69.2	0.44	0.53	0.44	34.7
Approach			495	13.0	495	13.0	0.492	5.7	LOS A	2.5	69.2	0.44	0.53	0.44	34.8
East: Britton Pkwy NE															
1	L2	All MCs	45	4.0	45	4.0	0.212	11.2	LOS B	1.2	30.3	0.46	0.53	0.46	33.9
6	T1	All MCs	470	4.0	470	4.0	0.212	5.1	LOS A	1.2	31.7	0.45	0.49	0.45	34.9
16	R2	All MCs	15	4.0	15	4.0	0.212	5.2	LOS A	1.2	31.7	0.44	0.47	0.44	34.7
Approach			530	4.0	530	4.0	0.212	5.7	LOS A	1.2	31.7	0.45	0.50	0.45	34.8
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.457	15.0	LOS B	2.2	58.1	0.57	0.70	0.62	33.8
7	L2	All MCs	30	10.0	30	10.0	0.457	12.6	LOS B	2.2	58.1	0.57	0.70	0.62	33.8
4	T1	All MCs	110	10.0	110	10.0	0.457	6.7	LOS A	2.2	58.1	0.57	0.70	0.62	34.6
14	R2	All MCs	250	10.0	250	10.0	0.457	6.7	LOS A	2.2	58.1	0.57	0.70	0.62	34.3
Approach			391	10.0	391	10.0	0.457	7.1	LOS A	2.2	58.1	0.57	0.70	0.62	34.3
West: Britton Pkwy NE															
5u	U	All MCs	5	7.0	5	7.0	0.082	13.2	LOS B	0.4	11.0	0.36	0.57	0.36	33.2
5	L2	All MCs	50	7.0	50	7.0	0.082	10.7	LOS B	0.4	11.0	0.36	0.57	0.36	33.2
2	T1	All MCs	125	7.0	125	7.0	0.082	4.7	LOS A	0.4	11.3	0.35	0.49	0.35	34.9
12	R2	All MCs	30	7.0	30	7.0	0.082	4.8	LOS A	0.4	11.3	0.35	0.44	0.35	35.0
Approach			210	7.0	210	7.0	0.082	6.4	LOS A	0.4	11.3	0.35	0.50	0.35	34.4
All Vehicles			1626	8.6	1626	8.6	0.492	6.1	LOS A	2.5	69.2	0.46	0.56	0.48	34.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	40	395	0	5	0	740	3	0	0	0	50	0	20
Future Vol, veh/h	40	395	0	5	0	740	3	0	0	0	50	0	20
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	40	395	0	5	0	740	3	0	0	0	50	0	20

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	744	0	0	395	395	0	0	856	1229	199	1031	1228	374
Stage 1	-	-	-	-	-	-	-	475	475	-	753	753	-
Stage 2	-	-	-	-	-	-	-	381	754	-	279	475	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	846	-	-	802	1153	-	-	251	177	809	190	180	630
Stage 1	-	-	-	-	-	-	-	539	556	-	373	421	-
Stage 2	-	-	-	-	-	-	-	613	415	-	710	561	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	846	-	-	802	802	-	-	230	167	809	180	170	628
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	230	167	-	180	170	-
Stage 1	-	-	-	-	-	-	-	514	529	-	370	418	-
Stage 2	-	-	-	-	-	-	-	589	412	-	676	534	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.87	0.06	0	27.96
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	846	-	-	802	-	-	226
HCM Lane V/C Ratio	-	0.047	-	-	0.006	-	-	0.31
HCM Ctrl Dly (s/v)	0	9.5	-	-	9.5	-	-	28
HCM Lane LOS	A	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.3

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	415	0	0	720	0	0	0	0	1	0	15
Future Vol, veh/h	2	415	0	0	720	0	0	0	0	1	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	2	415	0	0	720	0	0	0	0	1	0	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	720	0	0	415	0	0	779	1139	208	932	1139	360
Stage 1	-	-	-	-	-	-	419	419	-	720	720	-
Stage 2	-	-	-	-	-	-	360	720	-	212	419	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	864	-	-	1133	-	-	286	200	799	225	203	642
Stage 1	-	-	-	-	-	-	582	588	-	390	435	-
Stage 2	-	-	-	-	-	-	631	430	-	777	593	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	864	-	-	1133	-	-	279	199	799	224	202	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	279	199	-	224	202	-
Stage 1	-	-	-	-	-	-	581	587	-	390	435	-
Stage 2	-	-	-	-	-	-	616	430	-	775	592	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.04	0	0	11.44
HCM LOS			A	B

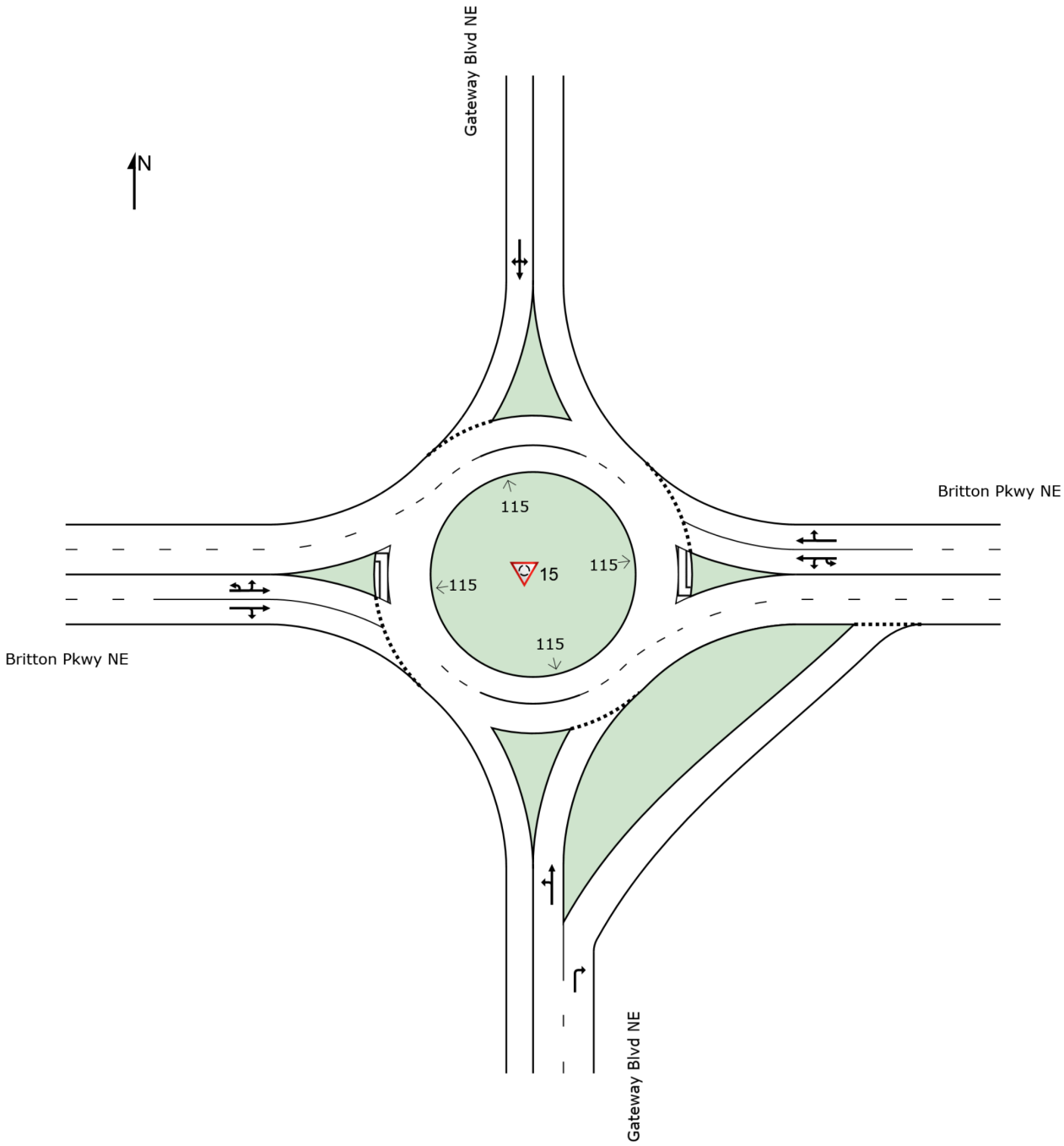
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	864	-	-	1133	-	-	575
HCM Lane V/C Ratio	-	0.002	-	-	-	-	-	0.028
HCM Ctrl Dly (s/v)	0	9.2	-	-	0	-	-	11.4
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	15	2.0	15	2.0	0.022	10.4	LOS B	0.1	1.5	0.25	0.55	0.25	33.9
8	T1	All MCs	15	2.0	15	2.0	0.022	4.1	LOS A	0.1	1.5	0.25	0.55	0.25	34.6
18	R2	All MCs	85	2.0	85	2.0	0.061	4.2	LOS A	0.2	4.4	0.24	0.48	0.24	35.9
Approach			115	2.0	115	2.0	0.061	5.0	LOS A	0.2	4.4	0.24	0.50	0.24	35.4
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.239	13.1	LOS B	1.3	33.8	0.29	0.47	0.29	34.4
1	L2	All MCs	85	3.0	85	3.0	0.239	10.5	LOS B	1.3	33.8	0.29	0.47	0.29	34.4
6	T1	All MCs	480	3.0	480	3.0	0.239	4.1	LOS A	1.3	34.4	0.28	0.43	0.28	35.6
16	R2	All MCs	135	3.0	135	3.0	0.239	4.3	LOS A	1.3	34.4	0.27	0.40	0.27	35.6
Approach			705	3.0	705	3.0	0.239	5.0	LOS A	1.3	34.4	0.28	0.43	0.28	35.4
North: Gateway Blvd NE															
7	L2	All MCs	5	2.0	5	2.0	0.100	11.4	LOS B	0.3	8.7	0.43	0.57	0.43	34.7
4	T1	All MCs	30	2.0	30	2.0	0.100	5.1	LOS A	0.3	8.7	0.43	0.57	0.43	35.5
14	R2	All MCs	65	2.0	65	2.0	0.100	5.1	LOS A	0.3	8.7	0.43	0.57	0.43	35.2
Approach			100	2.0	100	2.0	0.100	5.4	LOS A	0.3	8.7	0.43	0.57	0.43	35.2
West: Britton Pkwy NE															
5u	U	All MCs	5	5.0	5	5.0	0.126	13.1	LOS B	0.6	16.2	0.28	0.53	0.28	33.8
5	L2	All MCs	75	5.0	75	5.0	0.126	10.5	LOS B	0.6	16.2	0.28	0.53	0.28	33.8
2	T1	All MCs	265	5.0	265	5.0	0.126	4.1	LOS A	0.6	16.6	0.26	0.43	0.26	35.5
12	R2	All MCs	15	5.0	15	5.0	0.126	4.3	LOS A	0.6	16.6	0.26	0.38	0.26	35.6
Approach			360	5.0	360	5.0	0.126	5.6	LOS A	0.6	16.6	0.27	0.45	0.27	35.1
All Vehicles			1280	3.4	1280	3.4	0.239	5.2	LOS A	1.3	34.4	0.28	0.45	0.28	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	235	35	25	530	10	15	0	5	14	10	29
Future Vol, veh/h	106	235	35	25	530	10	15	0	5	14	10	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	106	235	35	25	530	10	15	0	5	14	10	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	540	0	0	270	0	0	785	1055	135	915	1067	270
Stage 1	-	-	-	-	-	-	465	465	-	585	585	-
Stage 2	-	-	-	-	-	-	320	590	-	330	482	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	1032	-	-	1290	-	-	283	224	889	231	224	734
Stage 1	-	-	-	-	-	-	547	562	-	469	501	-
Stage 2	-	-	-	-	-	-	666	493	-	663	557	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1032	-	-	1290	-	-	229	197	889	202	197	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	229	197	-	202	197	-
Stage 1	-	-	-	-	-	-	491	504	-	460	491	-
Stage 2	-	-	-	-	-	-	615	484	-	592	499	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.51	0.35	18.66	17.05
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	229	889	1032	-	-	1290	-	-	200	734
HCM Lane V/C Ratio	0.066	0.006	0.103	-	-	0.019	-	-	0.12	0.04
HCM Ctrl Dly (s/v)	21.9	9.1	8.9	-	-	7.8	-	-	25.4	10.1
HCM Lane LOS	C	A	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	0	0.3	-	-	0.1	-	-	0.4	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	1	0	0	2	2	1	2	2	1
Stage 1	-	-	-	-	-	-	1	1	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	1	1	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1020	894	1084
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1622	-	-	1622	-	-	1020	894	1084	1020	894	1084
Mov Cap-2 Maneuver	-	-	-	-	-	-	1020	894	-	1020	894	-
Stage 1	-	-	-	-	-	-	1022	895	-	1022	895	-
Stage 2	-	-	-	-	-	-	1022	895	-	1022	895	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1622	-	-	1622	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	65	70	380	20	70
Future Vol, veh/h	175	65	70	380	20	70
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	175	65	70	380	20	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	240	0	728	208
Stage 1	-	-	-	-	208	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1339	-	391	833
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1339	-	365	833
Mov Cap-2 Maneuver	-	-	-	-	365	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	557	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.22	11.45
HCM LOS			B

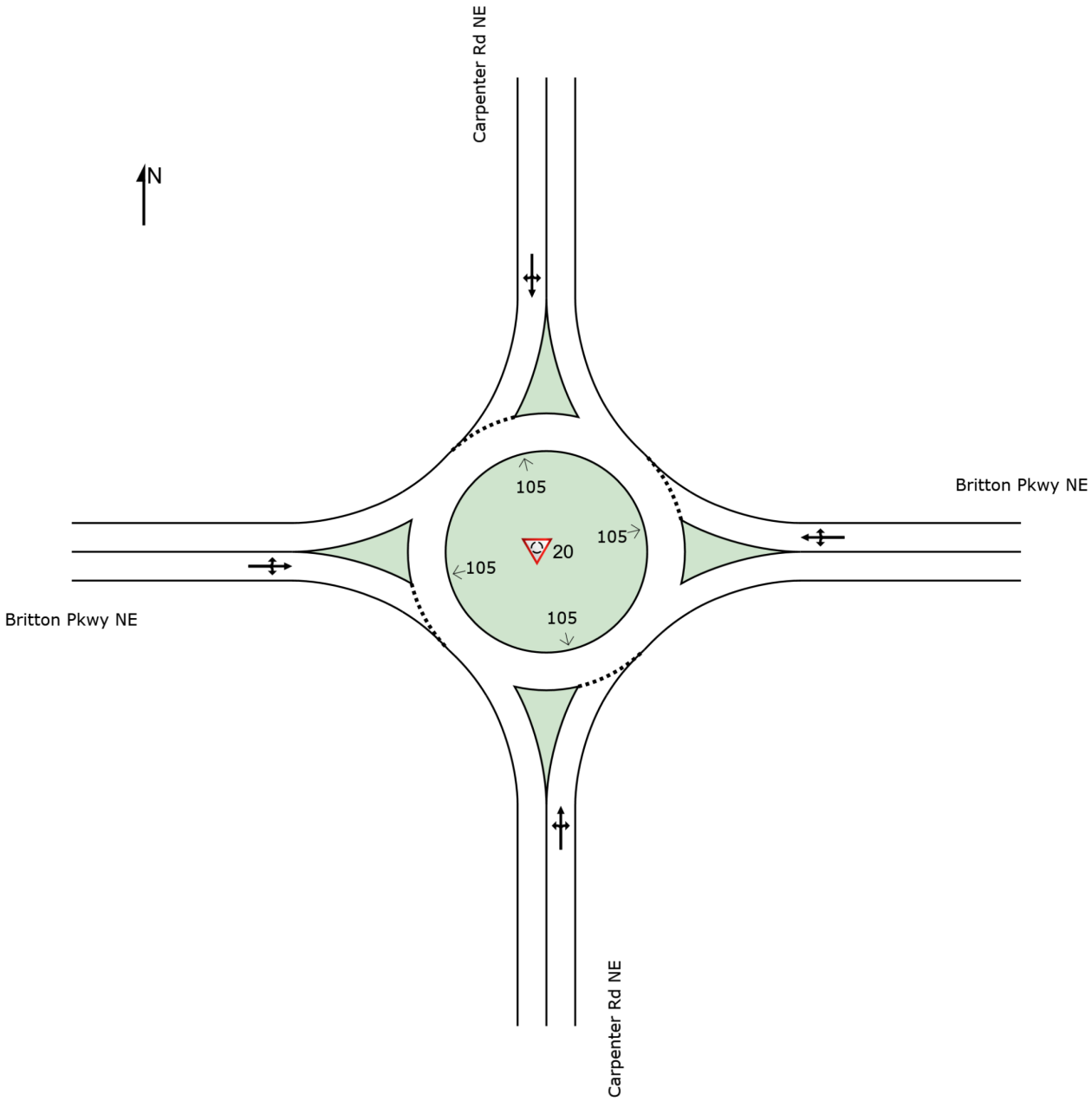
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	648	-	-	280	-
HCM Lane V/C Ratio	0.139	-	-	0.052	-
HCM Ctrl Dly (s/v)	11.4	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Future Without-Project - 2050)]

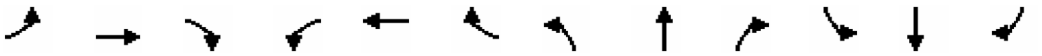
Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	90	4.0	90	4.0	0.221	10.8	LOS B	1.2	30.9	0.41	0.56	0.41	31.8
8	T1	All MCs	2	4.0	2	4.0	0.221	4.6	LOS A	1.2	30.9	0.41	0.56	0.41	29.7
18	R2	All MCs	170	4.0	170	4.0	0.221	4.8	LOS A	1.2	30.9	0.41	0.56	0.41	32.4
Approach			262	4.0	262	4.0	0.221	6.9	LOS A	1.2	30.9	0.41	0.56	0.41	32.2
East: Britton Pkwy NE															
1	L2	All MCs	270	5.0	270	5.0	0.432	10.4	LOS B	2.9	76.4	0.33	0.52	0.33	31.5
6	T1	All MCs	290	5.0	290	5.0	0.432	4.2	LOS A	2.9	76.4	0.33	0.52	0.33	34.5
16	R2	All MCs	1	5.0	1	5.0	0.432	4.4	LOS A	2.9	76.4	0.33	0.52	0.33	32.4
Approach			561	5.0	561	5.0	0.432	7.2	LOS A	2.9	76.4	0.33	0.52	0.33	33.2
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.003	12.4	LOS B	0.0	0.4	0.61	0.55	0.61	31.8
4	T1	All MCs	1	0.0	1	0.0	0.003	6.3	LOS A	0.0	0.4	0.61	0.55	0.61	29.2
14	R2	All MCs	1	0.0	1	0.0	0.003	6.4	LOS A	0.0	0.4	0.61	0.55	0.61	32.3
Approach			3	0.0	3	0.0	0.003	8.4	LOS A	0.0	0.4	0.61	0.55	0.61	31.3
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.319	11.2	LOS B	1.8	47.1	0.48	0.51	0.48	32.9
2	T1	All MCs	215	4.0	215	4.0	0.319	5.1	LOS A	1.8	47.1	0.48	0.51	0.48	35.3
12	R2	All MCs	150	4.0	150	4.0	0.319	5.2	LOS A	1.8	47.1	0.48	0.51	0.48	33.1
Approach			366	4.0	366	4.0	0.319	5.2	LOS A	1.8	47.1	0.48	0.51	0.48	34.6
All Vehicles			1192	4.5	1192	4.5	0.432	6.5	LOS A	2.9	76.4	0.39	0.53	0.39	33.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



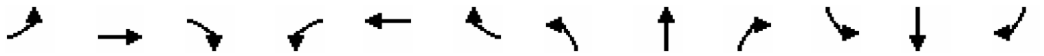
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1025	220	520	1110	110	120	65	305	130	375	25
Future Volume (veh/h)	90	1025	220	520	1110	110	120	65	305	130	375	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	90	1025	220	520	1110	110	120	65	305	130	375	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	389	1402	729	543	1082	107	120	268	477	146	530	35
Arrive On Green	0.23	0.41	0.41	0.17	0.35	0.35	0.07	0.15	0.15	0.09	0.17	0.17
Sat Flow, veh/h	1701	3393	1506	3274	3091	306	1701	1786	1507	1674	3178	211
Grp Volume(v), veh/h	90	1025	220	520	604	616	120	65	305	130	196	204
Grp Sat Flow(s),veh/h/ln	1701	1697	1506	1637	1683	1713	1701	1786	1507	1674	1670	1719
Q Serve(g_s), s	5.2	30.5	10.6	18.9	42.0	42.0	8.5	3.9	14.0	9.2	13.3	13.4
Cycle Q Clear(g_c), s	5.2	30.5	10.6	18.9	42.0	42.0	8.5	3.9	14.0	9.2	13.3	13.4
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	389	1402	729	543	589	600	120	268	477	146	279	287
V/C Ratio(X)	0.23	0.73	0.30	0.96	1.03	1.03	1.00	0.24	0.64	0.89	0.70	0.71
Avail Cap(c_a), veh/h	389	1402	729	543	589	600	120	417	603	146	417	430
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)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	29.6	18.7	49.6	39.0	39.0	55.7	45.0	17.2	54.2	47.2	47.2
Incr Delay (d2), s/veh	0.1	3.0	0.9	28.0	43.6	43.9	80.6	0.5	1.7	42.0	3.2	3.2
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	2.2	12.8	3.9	9.8	24.2	24.6	6.3	1.8	5.0	5.6	5.8	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.8	32.6	19.7	77.7	82.6	82.9	136.4	45.5	18.9	96.2	50.4	50.5
LnGrp LOS	D	C	B	E	F	F	F	D	B	F	D	D
Approach Vol, veh/h		1335			1740			490			530	
Approach Delay, s/veh		30.9			81.2			51.2			61.7	
Approach LOS		C			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	47.5	16.0	23.5	25.4	55.1	14.0	25.5
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	17.5	42.0	10.5	28.0	19.9	39.6	8.5	30.0
Max Q Clear Time (g_c+I1), s	7.2	44.0	11.2	16.0	20.9	32.5	10.5	15.4
Green Ext Time (p_c), s	0.1	0.0	0.0	1.4	0.0	4.6	0.0	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	58.7
HCM 7th LOS	E

Notes

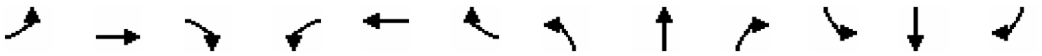
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	980	165	135	810	30	180	215	100	130	360	480
Future Volume (veh/h)	170	980	165	135	810	30	180	215	100	130	360	480
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	170	980	165	135	810	30	180	215	100	130	360	480
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	246	938	158	158	906	34	203	715	320	156	498	441
Arrive On Green	0.14	0.32	0.32	0.09	0.27	0.27	0.12	0.32	0.32	0.09	0.29	0.29
Sat Flow, veh/h	1701	2903	488	1701	3336	124	1674	2237	1002	1701	1697	1501
Grp Volume(v), veh/h	170	572	573	135	412	428	180	158	157	130	360	480
Grp Sat Flow(s),veh/h/ln	1701	1697	1695	1701	1697	1763	1674	1670	1569	1701	1697	1501
Q Serve(g_s), s	12.9	44.0	44.0	10.6	31.8	31.8	14.4	9.7	10.3	10.2	25.9	40.0
Cycle Q Clear(g_c), s	12.9	44.0	44.0	10.6	31.8	31.8	14.4	9.7	10.3	10.2	25.9	40.0
Prop In Lane	1.00		0.29	1.00		0.07	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	246	548	548	158	461	479	203	534	501	156	498	441
V/C Ratio(X)	0.69	1.04	1.05	0.85	0.89	0.89	0.89	0.30	0.31	0.83	0.72	1.09
Avail Cap(c_a), veh/h	312	548	548	269	505	524	264	534	501	312	498	441
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	46.1	46.1	60.8	47.7	47.7	58.9	34.8	35.0	60.8	43.1	48.1
Incr Delay (d2), s/veh	2.6	50.4	51.0	5.2	17.5	17.0	20.5	0.3	0.4	10.9	5.1	68.9
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	5.7	26.1	26.1	4.8	15.7	16.2	7.3	4.0	4.0	4.9	11.6	23.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.0	96.5	97.1	66.0	65.2	64.7	79.4	35.1	35.4	71.8	48.2	117.0
LnGrp LOS	E	F	F	E	E	E	E	D	D	E	D	F
Approach Vol, veh/h		1315			975			495			970	
Approach Delay, s/veh		91.8			65.1			51.3			85.4	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.7	42.5	18.5	49.5	18.2	50.0	22.0	46.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	25.0	40.5	25.0	36.0	21.5	44.0	21.5	40.0
Max Q Clear Time (g_c+I1), s	14.9	33.8	12.2	12.3	12.6	46.0	16.4	42.0
Green Ext Time (p_c), s	0.2	3.2	0.2	1.9	0.1	0.0	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	77.9
HCM 7th LOS	E



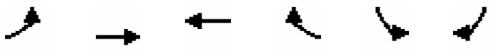
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1230	50	0	1185	55	80	5	35	130	1	70
Future Volume (veh/h)	100	1230	50	0	1185	55	80	5	35	130	1	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	100	1230	0	0	1185	55	80	5	35	130	1	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	148	2563		1	2218	103	163	298	252	285	2	252
Arrive On Green	0.09	1.00	0.00	0.00	0.68	0.68	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3300	3393	1514	1688	3276	152	1350	1800	1525	1362	10	1525
Grp Volume(v), veh/h	100	1230	0	0	609	631	80	5	35	131	0	70
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1745	1350	1800	1525	1373	0	1525
Q Serve(g_s), s	3.5	0.0	0.0	0.0	21.9	22.0	7.0	0.3	2.4	10.4	0.0	4.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	21.9	22.0	17.6	0.3	2.4	10.7	0.0	4.8
Prop In Lane	1.00		1.00	1.00		0.09	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	148	2563		1	1140	1181	163	298	252	287	0	252
V/C Ratio(X)	0.67	0.48		0.00	0.53	0.53	0.49	0.02	0.14	0.46	0.00	0.28
Avail Cap(c_a), veh/h	275	2563		77	1140	1181	401	615	521	532	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.00	0.00	0.39	0.39	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	0.0	9.8	9.8	54.4	41.9	42.8	46.4	0.0	43.8
Incr Delay (d2), s/veh	3.8	0.6	0.0	0.0	0.7	0.7	1.7	0.0	0.2	0.8	0.0	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	1.5	0.2	0.0	0.0	7.7	8.0	2.4	0.1	0.9	3.7	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.5	0.6	0.0	0.0	10.5	10.5	56.1	41.9	42.9	47.2	0.0	44.2
LnGrp LOS	E	A			B	B	E	D	D	D		D
Approach Vol, veh/h		1330			1240			120			201	
Approach Delay, s/veh		4.9			10.5			51.6			46.2	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	86.7		23.9	0.0	96.1		23.9				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	5.5	24.0		19.6	0.0	2.0		12.7				
Green Ext Time (p_c), s	0.1	12.3		0.2	0.0	15.7		0.8				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.1	
HCM 7th LOS		B	

Notes

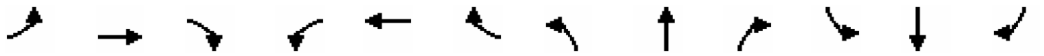
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1385	1250	25	30	50
Future Volume (veh/h)	50	1385	1250	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	50	1385	1250	25	30	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	839	4264	1361	27	79	71
Arrive On Green	0.43	0.87	0.81	0.81	0.05	0.05
Sat Flow, veh/h	1701	5036	3464	67	1714	1525
Grp Volume(v), veh/h	50	1385	623	652	30	50
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1760	1714	1525
Q Serve(g_s), s	0.0	6.0	33.1	33.2	2.0	3.9
Cycle Q Clear(g_c), s	0.0	6.0	33.1	33.2	2.0	3.9
Prop In Lane	1.00			0.04	1.00	1.00
Lane Grp Cap(c), veh/h	839	4264	679	710	79	71
V/C Ratio(X)	0.06	0.32	0.92	0.92	0.38	0.71
Avail Cap(c_a), veh/h	839	4264	975	1019	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.83	0.83	1.00	1.00
Uniform Delay (d), s/veh	13.6	1.3	10.1	10.1	55.5	56.4
Incr Delay (d2), s/veh	0.0	0.2	16.9	16.4	1.1	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.9	7.1	7.3	0.9	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	13.6	1.5	27.0	26.5	56.6	61.2
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1435	1275		80	
Approach Delay, s/veh		1.9	26.8		59.5	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	56.5	53.9			110.4	9.6
Change Period (Y+Rc), s	5.5	5.5			5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5			82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	35.2			8.0	5.9
Green Ext Time (p_c), s	0.0	13.2			19.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	14.9
HCM 7th LOS	B



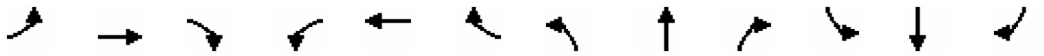
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	635	945	0	0	1240	75	15	0	505	0	0	0
Future Volume (veh/h)	635	945	0	0	1240	75	15	0	505	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	635	945	0	0	1240	0	15	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3080	0	0	1878		22	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	635	945	0	0	1240	0	15	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	16.1	0.0	0.0	30.9	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	16.1	0.0	0.0	30.9	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3080	0	0	1878		22	0				
V/C Ratio(X)	1.23	0.31	0.00	0.00	0.66		0.67	0.00				
Avail Cap(c_a), veh/h	517	3080	0	0	1878		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.19	0.19	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	18.6	0.0	59.0	0.0	0.0			
Incr Delay (d2), s/veh	105.8	0.0	0.0	0.0	1.8	0.0	29.8	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	31.2	6.5	0.0	0.0	12.1	0.0	0.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	153.5	5.4	0.0	0.0	20.4	0.0	88.7	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1580			1240			15				
Approach Delay, s/veh		64.9			20.4			88.7				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.4		5.6		114.4			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	32.9		3.1		18.1			
Green Ext Time (p_c), s	0.0	6.2		0.0		10.5			

Intersection Summary		
HCM 7th Control Delay, s/veh	45.6	
HCM 7th LOS	D	

Notes

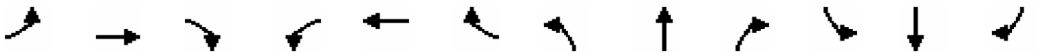
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1425	360	370	900	0	0	0	0	190	1	535
Future Volume (vph)	0	1425	360	370	900	0	0	0	0	190	1	535
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1693	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1693	1515
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1425	360	370	900	0	0	0	0	190	1	535
RTOR Reduction (vph)	0	0	202	0	0	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	1425	158	370	900	0	0	0	0	0	191	502
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		52.8	52.8	30.9	44.3						21.3	66.2
Effective Green, g (s)		52.8	52.8	30.9	44.3						21.3	66.2
Actuated g/C Ratio		0.44	0.44	0.26	0.37						0.18	0.55
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1489	666	431	1237						300	835
v/s Ratio Prot		c0.42		c0.22	0.27							c0.33
v/s Ratio Perm			0.10								0.11	
v/c Ratio		0.96	0.24	0.86	0.73						0.64	0.60
Uniform Delay, d1		32.5	21.0	42.5	32.6						45.8	18.0
Progression Factor		0.74	0.36	0.69	0.12						1.00	1.00
Incremental Delay, d2		9.9	0.5	1.7	0.3						4.5	1.4
Delay (s)		33.9	8.0	31.0	4.1						50.3	19.5
Level of Service		C	A	C	A						D	B
Approach Delay (s/veh)		28.7			12.0			0.0			27.6	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	805	460	415	740	285	110	435	680	300	270	130
Future Volume (veh/h)	55	805	460	415	740	285	110	435	680	300	270	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	55	805	0	415	740	0	110	435	680	300	270	130
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	229	853		477	869		134	459	1062	312	791	370
Arrive On Green	0.13	0.25	0.00	0.19	0.34	0.00	0.08	0.26	0.26	0.18	0.35	0.35
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2622	1701	2239	1047
Grp Volume(v), veh/h	55	805	0	415	740	0	110	435	680	300	203	197
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1311	1701	1697	1589
Q Serve(g_s), s	3.5	27.9	0.0	14.8	24.5	0.0	7.6	28.7	9.1	21.0	10.5	11.0
Cycle Q Clear(g_c), s	3.5	27.9	0.0	14.8	24.5	0.0	7.6	28.7	9.1	21.0	10.5	11.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.66
Lane Grp Cap(c), veh/h	229	853		477	869		134	459	1062	312	599	561
V/C Ratio(X)	0.24	0.94		0.87	0.85		0.82	0.95	0.64	0.96	0.34	0.35
Avail Cap(c_a), veh/h	229	857		477	1080		213	461	1065	312	599	561
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.67	0.67	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.4	44.1	0.0	47.3	37.3	0.0	54.4	43.8	10.7	48.6	28.5	28.6
Incr Delay (d2), s/veh	0.2	19.9	0.0	11.5	7.2	0.0	10.2	28.7	1.2	40.4	0.1	0.1
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	1.5	14.0	0.0	6.5	10.3	0.0	3.7	16.2	3.3	12.4	4.3	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.6	64.0	0.0	58.8	44.5	0.0	64.7	72.4	11.9	89.0	28.6	28.8
LnGrp LOS	D	E		E	D		E	E	B	F	C	C
Approach Vol, veh/h		860			1155			1225			700	
Approach Delay, s/veh		62.9			49.6			38.1			54.5	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	36.5	26.0	35.9	23.0	35.2	14.5	47.4
Change Period (Y+Rc), s	5.5	* 5.5	4.0	5.0	5.5	5.0	5.0	* 5
Max Green Setting (Gmax), s	9.0	* 39	22.0	31.0	17.2	30.3	15.0	* 38
Max Q Clear Time (g_c+I1), s	5.5	26.5	23.0	30.7	16.8	29.9	9.6	13.0
Green Ext Time (p_c), s	0.0	4.5	0.0	0.2	0.1	0.2	0.1	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	49.8
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

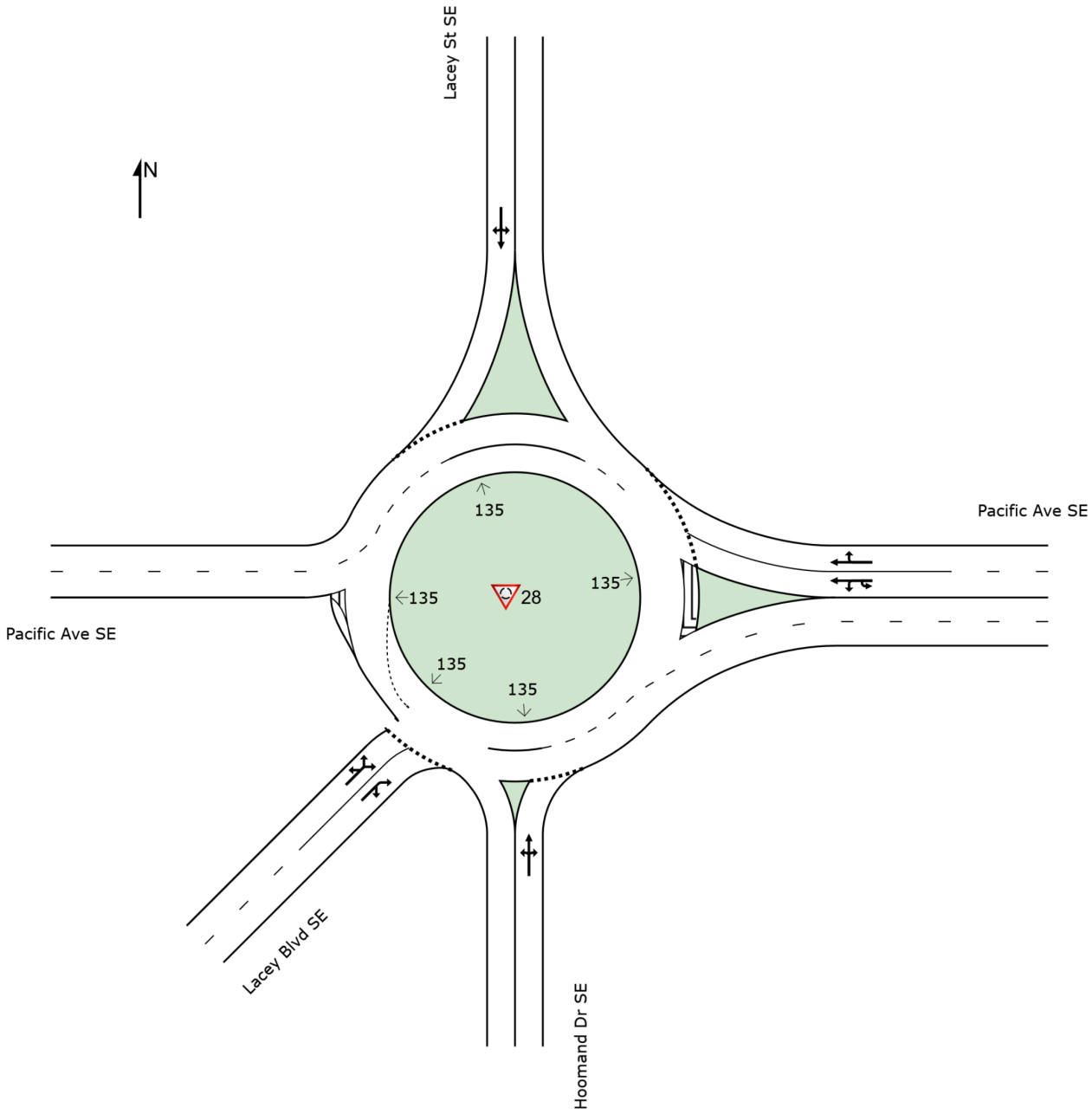
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	75	2.0	75	2.0	0.191	13.0	LOS B	0.8	19.1	0.63	0.79	0.63	33.1
8	T1	All MCs	4	2.0	4	2.0	0.191	6.1	LOS A	0.8	19.1	0.63	0.79	0.63	33.8
18	R2	All MCs	70	2.0	70	2.0	0.191	6.3	LOS A	0.8	19.1	0.63	0.79	0.63	33.5
Approach			149	2.0	149	2.0	0.191	9.7	LOS A	0.8	19.1	0.63	0.79	0.63	33.3
East: Pacific Ave SE															
1u	U	All MCs	20	1.0	20	1.0	0.624	14.3	LOS B	5.5	137.8	0.57	0.49	0.57	34.0
1	L2	All MCs	85	1.0	85	1.0	0.624	11.6	LOS B	5.5	137.8	0.57	0.49	0.57	34.1
6	T1	All MCs	1670	1.0	1670	1.0	0.624	4.4	LOS A	5.6	140.6	0.54	0.46	0.54	35.2
16	R2	All MCs	60	1.0	60	1.0	0.624	4.7	LOS A	5.6	140.6	0.52	0.43	0.52	35.0
Approach			1835	1.0	1835	1.0	0.624	4.9	LOS A	5.6	140.6	0.54	0.46	0.54	35.1
North: Lacey St SE															
7	L2	All MCs	20	2.0	20	2.0	0.115	14.6	LOS B	0.5	12.8	0.74	0.84	0.74	33.0
4	T1	All MCs	5	2.0	5	2.0	0.115	7.7	LOS A	0.5	12.8	0.74	0.84	0.74	33.7
14	R2	All MCs	40	2.0	40	2.0	0.115	7.9	LOS A	0.5	12.8	0.74	0.84	0.74	33.4
Approach			65	2.0	65	2.0	0.115	9.9	LOS A	0.5	12.8	0.74	0.84	0.74	33.3
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	60	1.0	60	1.0	0.495	12.2	LOS B	3.3	83.5	0.37	0.45	0.37	34.8
5ax	L1	All MCs	50	1.0	50	1.0	0.495	9.5	LOS A	3.3	83.5	0.37	0.45	0.37	34.8
12ax	R1	All MCs	1220	1.0	1220	1.0	0.495	3.6	LOS A	3.4	85.1	0.37	0.42	0.37	35.9
12bx	R3	All MCs	50	1.0	50	1.0	0.495	4.3	LOS A	3.4	85.1	0.36	0.39	0.36	35.6
Approach			1380	1.0	1380	1.0	0.495	4.2	LOS A	3.4	85.1	0.37	0.42	0.37	35.8
All Vehicles			3429	1.1	3429	1.1	0.624	4.9	LOS A	5.6	140.6	0.48	0.46	0.48	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	250	5	65	330	70	10	25	155	20	30	4
Future Vol, veh/h	5	250	5	65	330	70	10	25	155	20	30	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	5	250	5	65	330	70	10	25	155	20	30	4
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.5	16.4	10.3	10
HCM LOS	B	C	B	A

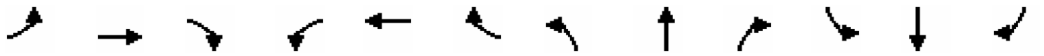
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	2%	14%	37%
Vol Thru, %	71%	0%	96%	71%	56%
Vol Right, %	0%	100%	2%	15%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	155	260	465	54
LT Vol	10	0	5	65	20
Through Vol	25	0	250	330	30
RT Vol	0	155	5	70	4
Lane Flow Rate	35	155	260	465	54
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.064	0.247	0.381	0.64	0.094
Departure Headway (Hd)	6.587	5.729	5.271	4.954	6.269
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	544	626	681	730	570
Service Time	4.331	3.472	3.308	2.984	4.324
HCM Lane V/C Ratio	0.064	0.248	0.382	0.637	0.095
HCM Control Delay, s/veh	9.8	10.4	11.5	16.4	10
HCM Lane LOS	A	B	B	C	A
HCM 95th-tile Q	0.2	1	1.8	4.7	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	175	370	120	110	285
Future Volume (veh/h)	80	175	370	120	110	285
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	80	175	370	120	110	285
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	274	244	808	685	144	1143
Arrive On Green	0.16	0.16	0.45	0.45	0.08	0.63
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	80	175	370	120	110	285
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	1.8	4.8	6.3	2.1	2.8	3.0
Cycle Q Clear(g_c), s	1.8	4.8	6.3	2.1	2.8	3.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	274	244	808	685	144	1143
V/C Ratio(X)	0.29	0.72	0.46	0.18	0.76	0.25
Avail Cap(c_a), veh/h	694	618	808	685	194	1143
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.3	17.5	8.4	7.3	19.8	3.5
Incr Delay (d2), s/veh	0.6	3.9	1.9	0.6	11.7	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	2.2	0.6	1.4	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	16.9	21.5	10.3	7.8	31.5	4.0
LnGrp LOS	B	C	B	A	C	A
Approach Vol, veh/h	255		490			395
Approach Delay, s/veh	20.0		9.7			11.7
Approach LOS	C		A			B

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.2	24.3				32.5	11.6
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	4.8	8.3				5.0	6.8
Green Ext Time (p_c), s	0.0	1.9				1.6	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	12.7
HCM 7th LOS	B



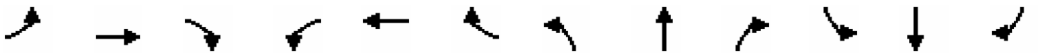
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	815	410	265	805	55	205	400	245	75	220	35
Future Volume (veh/h)	75	815	410	265	805	55	205	400	245	75	220	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	75	815	410	265	805	55	202	405	245	75	220	35
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	95	842	367	300	1240	549	382	802	332	219	388	61
Arrive On Green	0.06	0.25	0.25	0.18	0.37	0.37	0.23	0.23	0.23	0.13	0.13	0.13
Sat Flow, veh/h	1701	3393	1478	1674	3340	1479	1674	3516	1457	1701	3008	470
Grp Volume(v), veh/h	75	815	410	265	805	55	202	405	245	75	129	126
Grp Sat Flow(s),veh/h/ln	1701	1697	1478	1674	1670	1479	1674	1758	1457	1701	1786	1692
Q Serve(g_s), s	4.0	22.0	23.0	14.3	18.5	2.3	9.8	9.3	14.5	3.7	6.3	6.5
Cycle Q Clear(g_c), s	4.0	22.0	23.0	14.3	18.5	2.3	9.8	9.3	14.5	3.7	6.3	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	95	842	367	300	1240	549	382	802	332	219	230	218
V/C Ratio(X)	0.79	0.97	1.12	0.88	0.65	0.10	0.53	0.50	0.74	0.34	0.56	0.58
Avail Cap(c_a), veh/h	184	842	367	397	1261	558	650	1366	566	624	655	621
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	34.5	34.8	37.1	24.1	19.0	31.4	31.2	33.2	36.8	37.9	38.0
Incr Delay (d2), s/veh	10.2	23.3	82.9	15.6	1.0	0.1	0.8	0.4	2.4	0.7	1.6	1.8
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	1.9	11.6	16.5	7.0	7.2	0.8	4.0	3.9	5.2	1.6	2.8	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.4	57.8	117.7	52.7	25.2	19.1	32.2	31.6	35.6	37.5	39.5	39.8
LnGrp LOS	D	E	F	D	C	B	C	C	D	D	D	D
Approach Vol, veh/h		1300			1125			852			330	
Approach Delay, s/veh		76.4			31.4			32.9			39.1	
Approach LOS		E			C			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.2	39.4		26.2	21.6	28.0		16.9				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	6.0	20.5		16.5	16.3	25.0		8.5				
Green Ext Time (p_c), s	0.0	4.3		3.3	0.3	0.0		1.3				

Intersection Summary		
HCM 7th Control Delay, s/veh		48.7
HCM 7th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



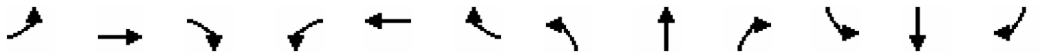
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	975	0	0	1330	305	185	0	565	0	0	0
Future Volume (veh/h)	215	975	0	0	1330	305	185	0	565	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	215	975	0	0	1330	0	185	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	248	2554	0	0	1855		230	0				
Arrive On Green	0.15	0.75	0.00	0.00	0.55	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	215	975	0	0	1330	0	185	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	11.1	9.0	0.0	0.0	26.4	0.0	9.6	0.0	0.0			
Cycle Q Clear(g_c), s	11.1	9.0	0.0	0.0	26.4	0.0	9.6	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	248	2554	0	0	1855		230	0				
V/C Ratio(X)	0.87	0.38	0.00	0.00	0.72		0.80	0.00				
Avail Cap(c_a), veh/h	283	2554	0	0	1855		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.6	3.9	0.0	0.0	15.0	0.0	37.7	0.0	0.0			
Incr Delay (d2), s/veh	20.6	0.4	0.0	0.0	2.4	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.0	2.4	0.0	0.0	9.8	0.0	4.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.2	4.3	0.0	0.0	17.4	0.0	42.6	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1190			1330			185				
Approach Delay, s/veh		14.0			17.4			42.6				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	18.1	54.6		17.3		72.7			
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0			
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0			
Max Q Clear Time (g_c+I1), s	13.1	28.4		11.6		11.0			
Green Ext Time (p_c), s	0.1	4.2		0.7		7.1			

Intersection Summary		
HCM 7th Control Delay, s/veh	17.7	
HCM 7th LOS	B	

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	625	600	0	875	0	0	0	0	565	0	345
Future Volume (veh/h)	0	625	600	0	875	0	0	0	0	565	0	345
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	625	0	0	875	0				565	0	345
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	1961		0	1945	0				525	0	467
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3572	0	0	3544	0				1688	0	1502
Grp Volume(v), veh/h	0	625	0	0	875	0				565	0	345
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	8.6	0.0	0.0	13.3	0.0				28.0	0.0	18.5
Cycle Q Clear(g_c), s	0.0	8.6	0.0	0.0	13.3	0.0				28.0	0.0	18.5
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1961		0	1945	0				525	0	467
V/C Ratio(X)	0.00	0.32		0.00	0.45	0.00				1.08	0.00	0.74
Avail Cap(c_a), veh/h	0	1961		0	1945	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.8	0.0	0.0	10.8	0.0				31.0	0.0	27.7
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.8	0.0				61.3	0.0	5.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.1	0.0	0.0	4.7	0.0				19.9	0.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	10.3	0.0	0.0	11.6	0.0				92.3	0.0	33.5
LnGrp LOS		B			B					F		C
Approach Vol, veh/h		625			875						910	
Approach Delay, s/veh		10.3			11.6						70.0	
Approach LOS		B			B						E	

Timer - Assigned Phs	2				6		8					
Phs Duration (G+Y+Rc), s	57.0				57.0		33.0					
Change Period (Y+Rc), s	5.0				5.0		5.0					
Max Green Setting (Gmax), s	52.0				52.0		28.0					
Max Q Clear Time (g_c+I1), s	15.3				10.6		30.0					
Green Ext Time (p_c), s	6.0				4.0		0.0					

Intersection Summary	
HCM 7th Control Delay, s/veh	33.3
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	120	45	445	620	80
Future Vol, veh/h	80	120	45	445	620	80
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	80	120	45	445	620	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1195	660	700	0	-	0
Stage 1	660	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	207	465	906	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	197	465	906	-	-	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	490	-	-	-	-	-
Stage 2	589	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	22.57	0.84	0
HCM LOS	C		

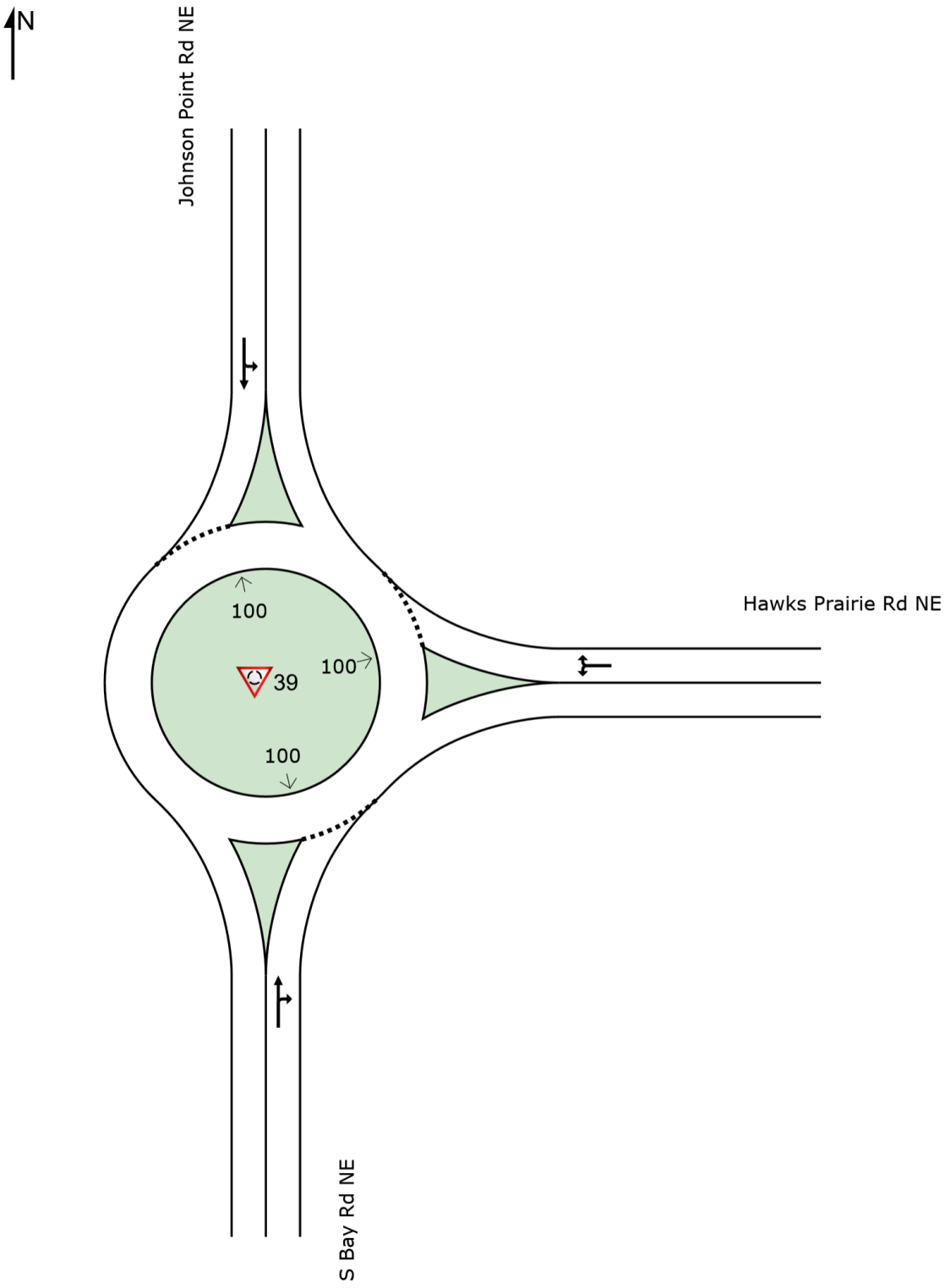
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	906	-	401	-	-
HCM Lane V/C Ratio	0.05	-	0.499	-	-
HCM Ctrl Dly (s/v)	9.2	-	22.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2.7	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Future Without-Project - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future Without Project (2050) PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	245	0.0	245	0.0	0.378	4.0	LOS A	2.5	63.5	0.21	0.41	0.21	36.2
18	R2	All MCs	292	0.0	292	0.0	0.378	4.1	LOS A	2.5	63.5	0.21	0.41	0.21	35.8
Approach			536	0.0	536	0.0	0.378	4.0	LOS A	2.5	63.5	0.21	0.41	0.21	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	344	0.0	344	0.0	0.329	10.8	LOS B	1.9	46.9	0.43	0.63	0.43	32.6
16	R2	All MCs	68	0.0	68	0.0	0.329	5.0	LOS A	1.9	46.9	0.43	0.63	0.43	33.0
Approach			411	0.0	411	0.0	0.329	9.9	LOS A	1.9	46.9	0.43	0.63	0.43	32.7
North: Johnson Point Rd NE															
7	L2	All MCs	47	0.0	47	0.0	0.184	11.1	LOS B	1.0	25.1	0.48	0.55	0.48	34.0
4	T1	All MCs	167	0.0	167	0.0	0.184	5.1	LOS A	1.0	25.1	0.48	0.55	0.48	34.7
Approach			214	0.0	214	0.0	0.184	6.4	LOS A	1.0	25.1	0.48	0.55	0.48	34.5
All Vehicles			1161	0.0	1161	0.0	0.378	6.5	LOS A	2.5	63.5	0.34	0.51	0.34	34.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

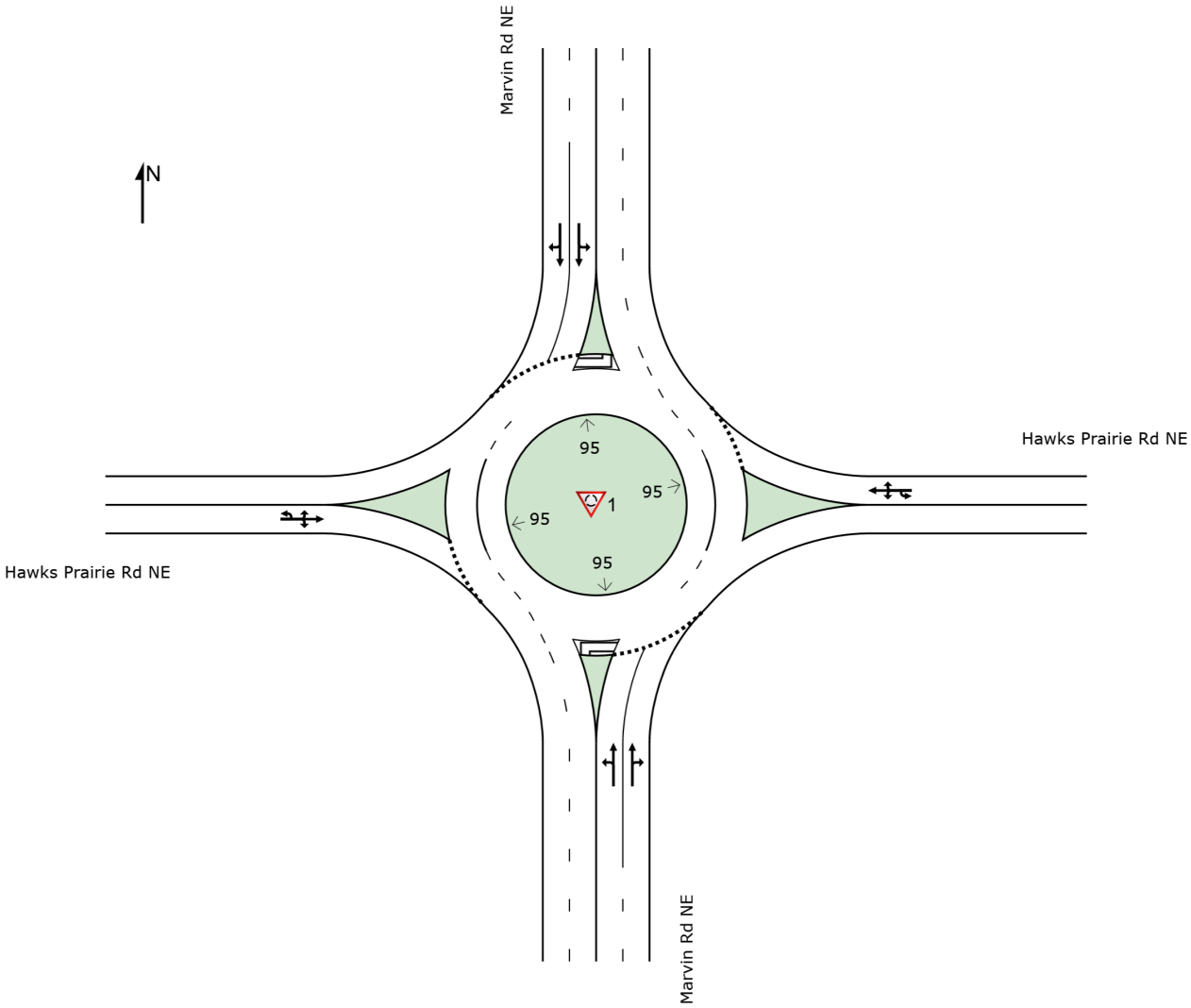
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	439	0.0	439	0.0	0.329	10.4	LOS B	2.1	53.3	0.37	0.61	0.37	32.3
8	T1	All MCs	477	0.0	477	0.0	0.312	4.5	LOS A	2.0	50.9	0.35	0.42	0.35	35.4
18	R2	All MCs	6	0.0	6	0.0	0.312	4.7	LOS A	2.0	50.9	0.35	0.42	0.35	35.0
Approach			921	0.0	921	0.0	0.329	7.3	LOS A	2.1	53.3	0.36	0.51	0.36	33.8
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.336	15.1	LOS B	1.4	35.1	0.61	0.79	0.63	32.5
1	L2	All MCs	156	3.0	156	3.0	0.336	12.7	LOS B	1.4	35.1	0.61	0.79	0.63	32.5
6	T1	All MCs	83	3.0	83	3.0	0.336	6.9	LOS A	1.4	35.1	0.61	0.79	0.63	33.2
16	R2	All MCs	28	3.0	28	3.0	0.336	6.9	LOS A	1.4	35.1	0.61	0.79	0.63	32.9
Approach			269	3.0	269	3.0	0.336	10.3	LOS B	1.4	35.1	0.61	0.79	0.63	32.8
North: Marvin Rd NE															
7	L2	All MCs	11	2.0	11	2.0	0.242	13.8	LOS B	1.5	36.8	0.70	0.66	0.70	33.3
4	T1	All MCs	373	2.0	373	2.0	0.242	7.7	LOS A	1.6	40.7	0.70	0.64	0.70	34.2
14	R2	All MCs	78	2.0	78	2.0	0.242	7.3	LOS A	1.6	40.7	0.70	0.63	0.70	33.9
Approach			462	2.0	462	2.0	0.242	7.8	LOS A	1.6	40.7	0.70	0.64	0.70	34.1
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.266	13.9	LOS B	1.1	28.3	0.51	0.68	0.51	33.4
5	L2	All MCs	106	3.0	106	3.0	0.266	11.5	LOS B	1.1	28.3	0.51	0.68	0.51	33.4
2	T1	All MCs	17	3.0	17	3.0	0.266	5.8	LOS A	1.1	28.3	0.51	0.68	0.51	34.1
12	R2	All MCs	122	3.0	122	3.0	0.266	5.7	LOS A	1.1	28.3	0.51	0.68	0.51	33.8
Approach			247	3.0	247	3.0	0.266	8.3	LOS A	1.1	28.3	0.51	0.68	0.51	33.6
All Vehicles			1899	1.3	1899	1.3	0.336	8.0	LOS A	2.1	53.3	0.50	0.60	0.50	33.7

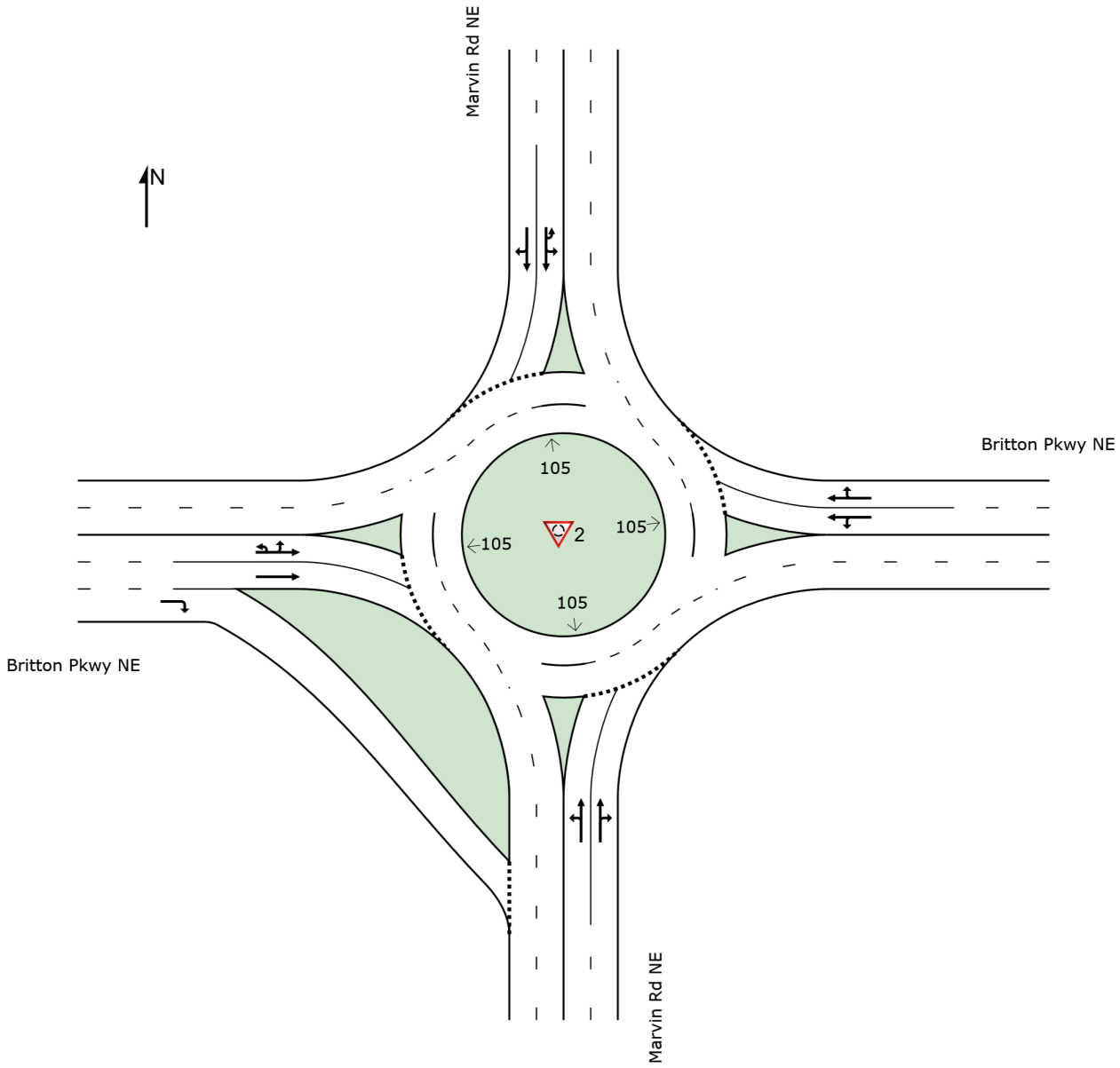
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: FFuture (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: FFuture (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	405	2.0	405	2.0	0.656	13.1	LOS B	5.1	130.6	0.71	0.78	0.83	32.3
8	T1	All MCs	990	2.0	990	2.0	0.656	6.7	LOS A	5.3	133.8	0.70	0.69	0.80	33.9
18	R2	All MCs	26	2.0	26	2.0	0.656	6.6	LOS A	5.3	133.8	0.69	0.65	0.79	33.9
Approach			1421	2.0	1421	2.0	0.656	8.5	LOS A	5.3	133.8	0.70	0.71	0.81	33.4
East: Britton Pkwy NE															
1	L2	All MCs	579	4.0	579	4.0	0.845	22.1	LOS C	8.3	214.1	0.95	1.21	1.71	28.2
6	T1	All MCs	320	4.0	320	4.0	0.747	15.5	LOS B	5.1	132.5	0.90	1.09	1.40	31.0
16	R2	All MCs	42	4.0	42	4.0	0.747	15.5	LOS B	5.1	132.5	0.90	1.09	1.40	30.7
Approach			941	4.0	941	4.0	0.845	19.6	LOS B	8.3	214.1	0.93	1.16	1.59	29.2
North: Marvin Rd NE															
7u	U	All MCs	11	4.0	11	4.0	1.041	64.4	LOS F	20.6	531.4	1.00	1.84	3.55	19.7
7	L2	All MCs	63	4.0	63	4.0	1.041	61.9	LOS F	20.6	531.4	1.00	1.84	3.55	19.7
4	T1	All MCs	974	4.0	974	4.0	1.041	53.8	LOS F	26.0	671.9	1.00	1.91	3.66	20.3
14	R2	All MCs	128	4.0	128	4.0	1.041	52.2	LOS F	26.0	671.9	1.00	1.97	3.75	20.5
Approach			1175	4.0	1175	4.0	1.041	54.1	LOS D	26.0	671.9	1.00	1.91	3.66	20.3
West: Britton Pkwy NE															
5u	U	All MCs	10	5.0	10	5.0	0.295	18.0	LOS B	1.5	40.2	0.84	0.88	0.84	30.6
5	L2	All MCs	134	5.0	134	5.0	0.295	15.4	LOS B	1.5	40.2	0.84	0.88	0.84	30.6
2	T1	All MCs	216	5.0	216	5.0	0.295	8.9	LOS A	2.0	52.9	0.93	0.81	0.93	33.3
12	R2	All MCs	489	5.0	489	5.0	0.631	12.5	LOS B	5.8	151.2	0.98	0.99	1.34	31.8
Approach			849	5.0	849	5.0	0.631	12.1	LOS B	5.8	151.2	0.95	0.93	1.15	32.0
All Vehicles			4386	3.5	4386	3.5	1.041	23.8	LOS C	26.0	671.9	0.88	1.17	1.81	27.6

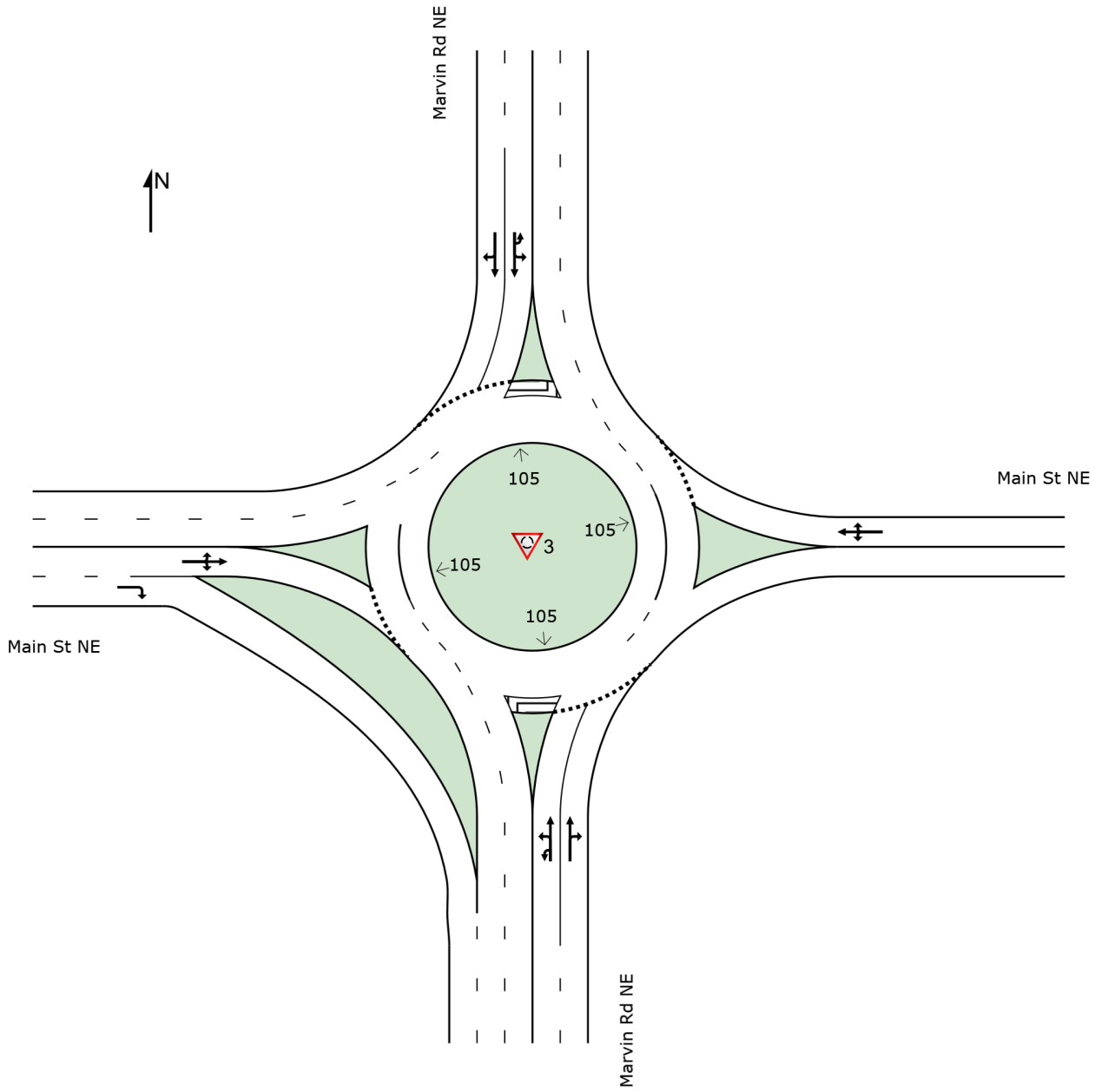
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 - 2027)]

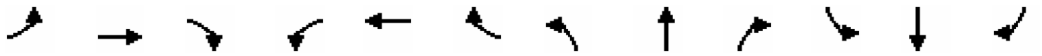
Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	280	3.0	280	3.0	0.682	12.9	LOS B	8.2	209.8	0.41	0.52	0.41	27.1
3	L2	All MCs	251	3.0	251	3.0	0.682	10.4	LOS B	8.2	209.8	0.41	0.52	0.41	30.8
8	T1	All MCs	1448	3.0	1448	3.0	0.682	4.3	LOS A	8.2	209.8	0.38	0.42	0.38	30.3
18	R2	All MCs	77	3.0	77	3.0	0.682	4.5	LOS A	8.2	209.2	0.37	0.38	0.37	33.3
Approach			2056	3.0	2056	3.0	0.682	6.2	LOS A	8.2	209.8	0.39	0.45	0.39	30.1
East: Main St NE															
1	L2	All MCs	115	0.0	115	0.0	0.253	15.4	LOS B	1.2	29.0	0.77	0.90	0.77	28.5
6	T1	All MCs	1	0.0	1	0.0	0.253	9.4	LOS A	1.2	29.0	0.77	0.90	0.77	31.7
16	R2	All MCs	27	0.0	27	0.0	0.253	9.4	LOS A	1.2	29.0	0.77	0.90	0.77	29.6
Approach			144	0.0	144	0.0	0.253	14.2	LOS B	1.2	29.0	0.77	0.90	0.77	28.8
North: Marvin Rd NE															
7u	U	All MCs	3	3.0	3	3.0	1.070	69.2	LOS F	41.5	1062.5	1.00	2.19	3.94	12.8
7	L2	All MCs	22	3.0	22	3.0	1.070	66.7	LOS F	41.5	1062.5	1.00	2.19	3.94	16.3
4	T1	All MCs	1979	3.0	1979	3.0	1.070	58.4	LOS F	50.6	1295.5	1.00	2.26	3.98	12.2
14	R2	All MCs	43	3.0	43	3.0	1.070	56.8	LOS F	50.6	1295.5	1.00	2.32	4.01	17.0
Approach			2047	3.0	2047	3.0	1.070	58.4	LOS E	50.6	1295.5	1.00	2.26	3.98	12.4
West: Main St NE															
5	L2	All MCs	29	2.0	29	2.0	0.122	18.0	LOS B	0.7	18.3	0.95	0.89	0.95	28.3
2	T1	All MCs	1	2.0	1	2.0	0.122	12.0	LOS B	0.7	18.3	0.95	0.89	0.95	31.0
12	R2	All MCs	215	2.0	215	2.0	0.122	4.2	LOS A	0.7	18.3	0.07	0.47	0.07	34.6
Approach			245	2.0	245	2.0	0.122	5.8	LOS A	0.7	18.3	0.17	0.52	0.17	33.6
All Vehicles			4492	2.8	4492	2.8	1.070	30.3	LOS C	50.6	1295.5	0.67	1.29	2.03	18.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	525	0	0	787	0	1414	1172	0	1740	639
Future Volume (vph)	0	0	525	0	0	787	0	1414	1172	0	1740	639
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.97	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3069	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3069	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	547	0	0	820	0	1473	1221	0	1812	666
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	547	0	0	820	0	1864	830	0	1813	666
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			57.5			53.5		55.5	120.0		50.5	120.0
Effective Green, g (s)			57.5			53.5		55.5	120.0		50.5	120.0
Actuated g/C Ratio			0.48			0.45		0.46	1.00		0.42	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1265			1177		1419	1335		1370	1457
v/s Ratio Prot			0.21			0.31		c0.61			c0.56	
v/s Ratio Perm									0.62			0.46
v/c Ratio			0.43			0.70		1.31	0.62		1.32	0.46
Uniform Delay, d1			20.5			26.7		32.3	0.0		34.8	0.0
Progression Factor			1.00			1.00		0.86	1.00		1.00	1.00
Incremental Delay, d2			0.2			1.8		143.7	1.1		150.7	1.0
Delay (s)			20.8			28.5		171.4	1.1		185.5	1.0
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		20.8			28.5			119.0			135.9	
Approach LOS		C			C			F			F	

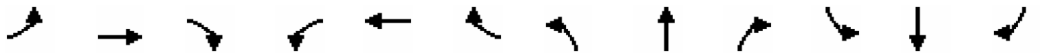
Intersection Summary			
HCM 2000 Control Delay (s/veh)	105.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	145	0	0	808	0	1779	250	0	1755	515
Future Volume (vph)	0	0	145	0	0	808	0	1779	250	0	1755	515
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	0	146	0	0	816	0	1797	253	0	1773	520
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	146	0	0	816	0	1797	253	0	1773	520
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			46.5			64.5		44.5	120.0		62.5	120.0
Effective Green, g (s)			46.5			64.5		44.5	120.0		62.5	120.0
Actuated g/C Ratio			0.39			0.54		0.37	1.00		0.52	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			569			1365		1786	1500		1729	1455
v/s Ratio Prot			0.10			0.32		c0.37			c0.53	
v/s Ratio Perm									0.17			0.36
v/c Ratio			0.26			0.60		1.01	0.17		1.03	0.36
Uniform Delay, d1			25.0			18.9		37.8	0.0		28.7	0.0
Progression Factor			1.00			1.00		0.76	1.00		0.36	1.00
Incremental Delay, d2			0.2			0.7		15.9	0.1		14.4	0.1
Delay (s)			25.2			19.6		44.6	0.1		24.8	0.1
Level of Service			C			B		D	A		C	A
Approach Delay (s/veh)		25.2			19.6			39.1			19.2	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	461	200	150	65	60	298	60	1239	60	239	1226	315
Future Volume (veh/h)	461	200	150	65	60	298	60	1239	60	239	1226	315
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	480	208	156	68	62	310	62	1291	62	249	1277	328
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	555	213	160	71	169	356	144	1320	63	241	1563	680
Arrive On Green	0.17	0.22	0.22	0.04	0.09	0.09	0.09	0.40	0.40	0.14	0.46	0.46
Sat Flow, veh/h	3300	946	710	1701	1786	1504	1688	3266	157	1701	3393	1475
Grp Volume(v), veh/h	480	0	364	68	62	310	62	665	688	249	1277	328
Grp Sat Flow(s),veh/h/ln	1650	0	1656	1701	1786	1504	1688	1683	1739	1701	1697	1475
Q Serve(g_s), s	17.0	0.0	26.2	4.8	3.9	11.3	4.2	46.6	46.9	17.0	39.0	9.5
Cycle Q Clear(g_c), s	17.0	0.0	26.2	4.8	3.9	11.3	4.2	46.6	46.9	17.0	39.0	9.5
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	555	0	373	71	169	356	144	680	703	241	1563	680
V/C Ratio(X)	0.87	0.00	0.98	0.96	0.37	0.87	0.43	0.98	0.98	1.03	0.82	0.48
Avail Cap(c_a), veh/h	619	0	373	71	169	356	144	680	703	241	1654	719
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	1.00	1.00	1.00	1.00	0.28	0.28	0.28	0.17	0.17	0.17
Uniform Delay (d), s/veh	48.6	0.0	46.2	57.4	51.0	44.1	52.1	35.2	35.3	51.5	28.0	5.9
Incr Delay (d2), s/veh	13.0	0.0	40.6	93.7	2.8	21.3	1.2	13.6	13.8	32.9	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	8.0	0.0	14.9	3.9	1.9	10.9	1.8	21.2	22.0	9.4	15.7	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.6	0.0	86.8	151.1	53.8	65.4	53.4	48.8	49.0	84.4	28.8	6.3
LnGrp LOS	E		F	F	D	E	D	D	D	F	C	A
Approach Vol, veh/h		844			440			1415			1854	
Approach Delay, s/veh		72.5			77.0			49.1			32.3	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.2	61.3	25.7	16.8	23.0	54.5	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	6.2	41.0	19.0	13.3	19.0	48.9	6.8	28.2
Green Ext Time (p_c), s	0.0	14.2	1.2	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	49.3
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	120	140	55	119	165	1045	155	145	1172	85
Future Volume (veh/h)	140	55	120	140	55	119	165	1045	155	145	1172	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	143	56	122	143	56	121	168	1066	158	148	1196	87
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	157	68	149	156	68	147	194	1222	181	345	1623	118
Arrive On Green	0.09	0.14	0.14	0.09	0.14	0.14	0.12	0.42	0.42	0.07	0.17	0.17
Sat Flow, veh/h	1714	499	1088	1701	498	1077	1674	2918	432	1701	3207	233
Grp Volume(v), veh/h	143	0	178	143	0	177	168	609	615	148	632	651
Grp Sat Flow(s),veh/h/ln	1714	0	1587	1701	0	1575	1674	1670	1680	1701	1697	1744
Q Serve(g_s), s	9.9	0.0	13.1	10.0	0.0	13.1	11.8	40.1	40.3	10.0	42.5	42.6
Cycle Q Clear(g_c), s	9.9	0.0	13.1	10.0	0.0	13.1	11.8	40.1	40.3	10.0	42.5	42.6
Prop In Lane	1.00		0.69	1.00		0.68	1.00		0.26	1.00		0.13
Lane Grp Cap(c), veh/h	157	0	217	156	0	215	194	699	703	345	858	882
V/C Ratio(X)	0.91	0.00	0.82	0.92	0.00	0.82	0.87	0.87	0.87	0.43	0.74	0.74
Avail Cap(c_a), veh/h	157	0	317	156	0	315	237	699	703	345	858	882
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.58	0.58	0.58
Uniform Delay (d), s/veh	54.0	0.0	50.4	54.0	0.0	50.4	52.2	31.9	32.0	49.3	42.4	42.4
Incr Delay (d2), s/veh	45.9	0.0	9.0	48.1	0.0	9.2	22.5	11.7	11.9	0.4	2.0	2.0
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	6.3	0.0	5.8	6.4	0.0	5.7	6.2	18.1	18.3	4.6	19.8	20.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	99.9	0.0	59.3	102.1	0.0	59.6	74.7	43.7	43.9	49.7	44.4	44.4
LnGrp LOS	F		E	F		E	E	D	D	D	D	D
Approach Vol, veh/h		321			320			1392			1431	
Approach Delay, s/veh		77.4			78.6			47.5			44.9	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	65.7	15.0	20.4	29.4	55.2	15.0	20.4
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.8	44.6	11.9	15.1	12.0	42.3	12.0	15.1
Green Ext Time (p_c), s	0.1	3.9	0.0	0.5	0.1	4.5	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	52.1
HCM 7th LOS	D

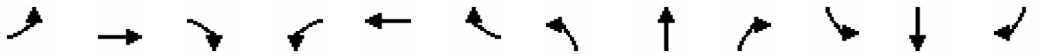
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	367	500	370	345	495	298	230	715	210	294	1084	309
Future Volume (veh/h)	367	500	370	345	495	298	230	715	210	294	1084	309
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	371	505	0	348	500	0	232	722	212	297	1095	312
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	431	624		408	601		290	817	240	355	1205	537
Arrive On Green	0.13	0.18	0.00	0.12	0.18	0.00	0.17	0.32	0.32	0.21	0.35	0.35
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2585	759	1714	3420	1523
Grp Volume(v), veh/h	371	505	0	348	500	0	232	474	460	297	1095	312
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1648	1714	1710	1523
Q Serve(g_s), s	13.2	17.1	0.0	12.3	16.9	0.0	15.7	31.8	31.8	19.9	36.6	13.4
Cycle Q Clear(g_c), s	13.2	17.1	0.0	12.3	16.9	0.0	15.7	31.8	31.8	19.9	36.6	13.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.46	1.00		1.00
Lane Grp Cap(c), veh/h	431	624		408	601		290	536	520	355	1205	537
V/C Ratio(X)	0.86	0.81		0.85	0.83		0.80	0.88	0.88	0.84	0.91	0.58
Avail Cap(c_a), veh/h	605	749		582	727		290	608	590	355	1254	558
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	47.0	0.0	51.6	47.7	0.0	47.8	39.0	39.0	45.6	37.0	14.2
Incr Delay (d2), s/veh	6.8	5.9	0.0	6.1	7.2	0.0	13.7	18.8	19.3	15.1	11.6	4.6
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	5.8	7.7	0.0	5.4	7.7	0.0	7.8	15.9	15.5	9.9	17.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.9	52.8	0.0	57.7	54.9	0.0	61.5	57.8	58.3	60.8	48.6	18.8
LnGrp LOS	E	D		E	D		E	E	E	E	D	B
Approach Vol, veh/h		876			848			1166			1704	
Approach Delay, s/veh		55.0			56.1			58.7			45.3	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.5	47.3	20.7	26.6	29.8	42.9	19.7	27.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	8.0	44.0	22.0	25.5	9.0	43.0	21.0	26.5
Max Q Clear Time (g_c+I1), s	17.7	38.6	15.2	18.9	21.9	33.8	14.3	19.1
Green Ext Time (p_c), s	0.0	3.7	0.4	1.9	0.0	4.1	0.4	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	52.5
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	209	30	702	30	279	1170	215
Future Volume (veh/h)	150	195	20	135	225	209	30	702	30	279	1170	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	222	32	747	32	297	1245	229
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	173	246	25	375	233	216	53	979	42	323	1300	237
Arrive On Green	0.10	0.16	0.16	0.22	0.27	0.27	0.03	0.30	0.30	0.19	0.45	0.45
Sat Flow, veh/h	1688	1582	161	1714	858	797	1701	3314	142	1701	2864	522
Grp Volume(v), veh/h	160	0	228	144	0	461	32	382	397	297	733	741
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1655	1701	1697	1760	1701	1697	1690
Q Serve(g_s), s	12.5	0.0	16.9	9.5	0.0	36.0	2.5	27.2	27.2	22.7	55.1	56.6
Cycle Q Clear(g_c), s	12.5	0.0	16.9	9.5	0.0	36.0	2.5	27.2	27.2	22.7	55.1	56.6
Prop In Lane	1.00		0.09	1.00		0.48	1.00		0.08	1.00		0.31
Lane Grp Cap(c), veh/h	173	0	270	375	0	449	53	501	520	323	770	767
V/C Ratio(X)	0.93	0.00	0.84	0.38	0.00	1.03	0.60	0.76	0.76	0.92	0.95	0.97
Avail Cap(c_a), veh/h	173	0	483	375	0	449	77	501	520	428	776	773
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.0	0.0	54.5	44.2	0.0	48.3	63.4	42.5	42.5	52.8	34.8	35.2
Incr Delay (d2), s/veh	46.9	0.0	7.0	0.5	0.0	49.4	7.8	6.7	6.5	20.0	21.3	24.1
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	7.6	0.0	7.9	4.1	0.0	20.9	1.2	12.3	12.8	11.5	26.8	27.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	106.0	0.0	61.5	44.7	0.0	97.7	71.3	49.2	49.0	72.8	56.1	59.3
LnGrp LOS	F		E	D		F	E	D	D	E	E	E
Approach Vol, veh/h		388			605			811			1771	
Approach Delay, s/veh		79.8			85.1			50.0			60.2	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	65.1	18.2	40.6	29.8	44.1	33.6	25.2
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.5	58.6	14.5	38.0	24.7	29.2	11.5	18.9
Green Ext Time (p_c), s	0.0	1.7	0.0	0.0	0.4	1.7	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	64.2
HCM 7th LOS	E

Notes

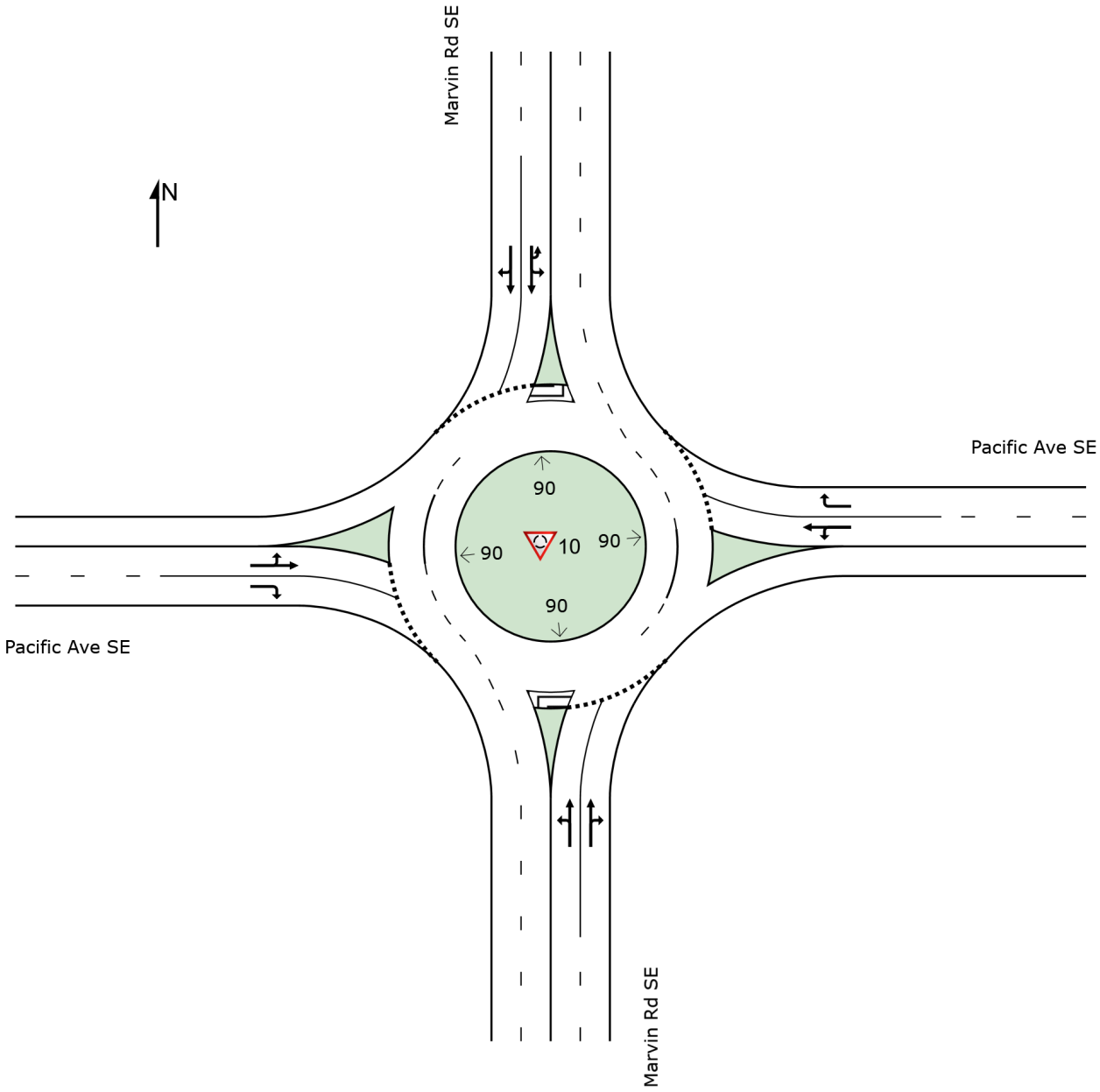
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	139	1.0	139	1.0	0.474	19.4	LOS B	3.9	98.5	0.93	0.87	1.10	30.0
8	T1	All MCs	482	1.0	482	1.0	0.474	12.2	LOS B	4.4	110.2	0.95	0.82	1.08	32.0
18	R2	All MCs	39	1.0	39	1.0	0.474	11.6	LOS B	4.4	110.2	0.96	0.80	1.07	32.3
Approach			660	1.0	660	1.0	0.474	13.7	LOS B	4.4	110.2	0.95	0.83	1.08	31.6
East: Pacific Ave SE															
1	L2	All MCs	33	1.0	33	1.0	0.353	11.8	LOS B	1.7	43.2	0.64	0.62	0.64	33.5
6	T1	All MCs	261	1.0	261	1.0	0.353	6.2	LOS A	1.7	43.2	0.64	0.62	0.64	34.1
16	R2	All MCs	392	1.0	392	1.0	0.391	6.0	LOS A	2.1	52.2	0.64	0.68	0.65	34.4
Approach			687	1.0	687	1.0	0.391	6.4	LOS A	2.1	52.2	0.64	0.66	0.64	34.3
North: Marvin Rd SE															
7u	U	All MCs	2	1.0	2	1.0	0.645	16.8	LOS B	6.6	165.2	0.80	0.78	0.95	31.5
7	L2	All MCs	478	1.0	478	1.0	0.645	14.4	LOS B	6.6	165.2	0.80	0.78	0.95	31.5
4	T1	All MCs	889	1.0	889	1.0	0.645	8.0	LOS A	6.8	170.3	0.79	0.71	0.90	33.5
14	R2	All MCs	89	1.0	89	1.0	0.645	7.9	LOS A	6.8	170.3	0.78	0.70	0.88	33.6
Approach			1458	1.0	1458	1.0	0.645	10.1	LOS B	6.8	170.3	0.79	0.73	0.91	32.8
West: Pacific Ave SE															
5	L2	All MCs	56	1.0	56	1.0	0.653	15.4	LOS B	4.7	118.0	0.89	0.97	1.15	32.6
2	T1	All MCs	406	1.0	406	1.0	0.653	9.8	LOS A	4.7	118.0	0.89	0.97	1.15	33.2
12	R2	All MCs	283	1.0	283	1.0	0.545	10.4	LOS B	3.1	78.3	0.84	0.96	1.03	32.8
Approach			744	1.0	744	1.0	0.653	10.4	LOS B	4.7	118.0	0.87	0.97	1.10	33.0
All Vehicles			3549	1.0	3549	1.0	0.653	10.1	LOS B	6.8	170.3	0.81	0.79	0.93	32.9

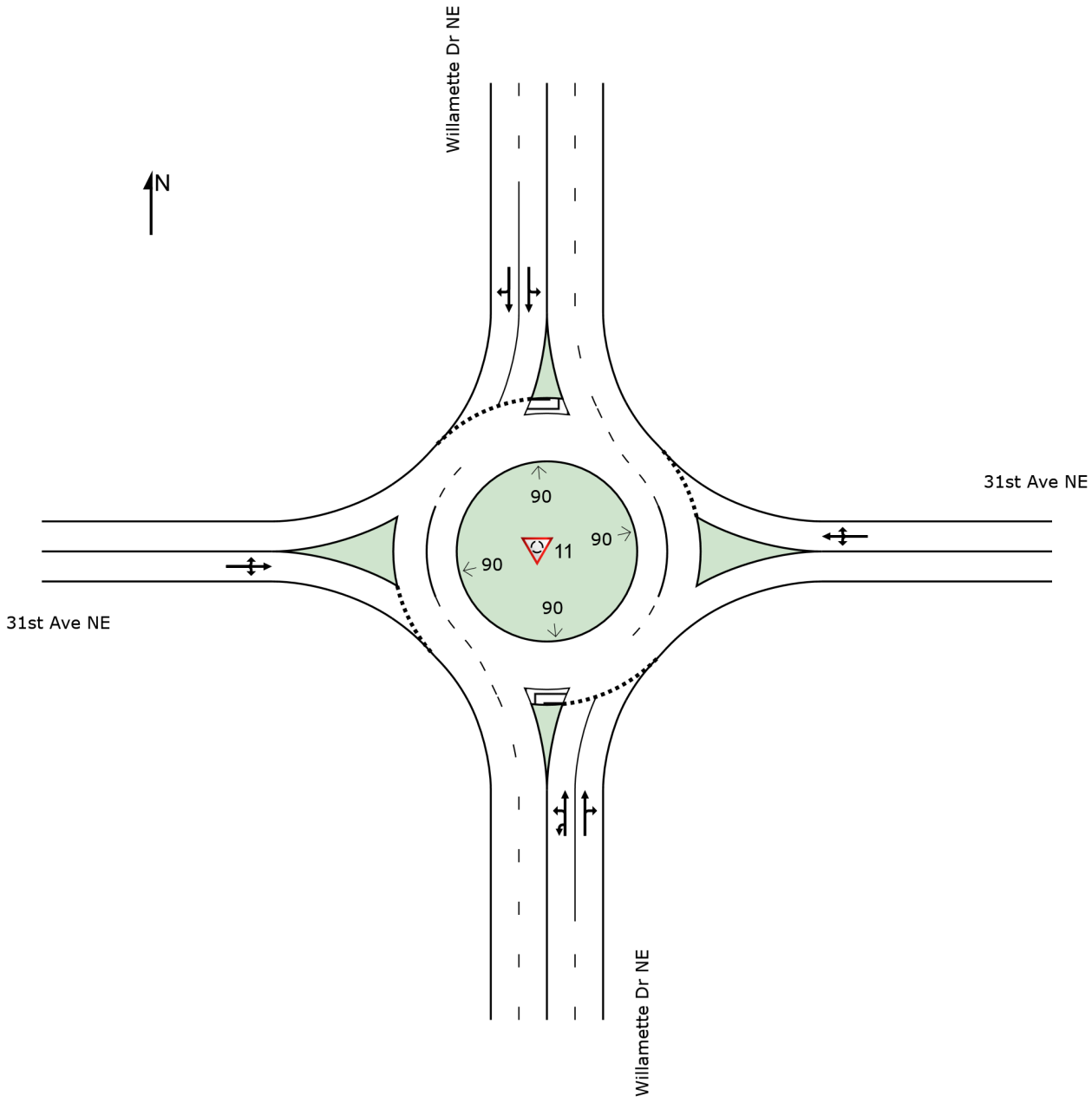
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	33	2.0	33	2.0	0.252	12.3	LOS B	1.5	38.0	0.19	0.49	0.19	34.2
3	L2	All MCs	82	2.0	82	2.0	0.252	9.9	LOS A	1.5	38.0	0.19	0.49	0.19	34.2
8	T1	All MCs	516	2.0	516	2.0	0.252	4.3	LOS A	1.5	38.5	0.19	0.44	0.19	35.4
18	R2	All MCs	126	2.0	126	2.0	0.252	4.4	LOS A	1.5	38.5	0.18	0.41	0.18	35.5
Approach			758	2.0	758	2.0	0.252	5.3	LOS A	1.5	38.5	0.19	0.45	0.19	35.2
East: 31st Ave NE															
1	L2	All MCs	109	3.0	109	3.0	0.147	11.5	LOS B	0.5	12.7	0.45	0.72	0.45	32.6
6	T1	All MCs	16	3.0	16	3.0	0.147	5.9	LOS A	0.5	12.7	0.45	0.72	0.45	33.2
16	R2	All MCs	11	3.0	11	3.0	0.147	5.8	LOS A	0.5	12.7	0.45	0.72	0.45	33.0
Approach			136	3.0	136	3.0	0.147	10.3	LOS B	0.5	12.7	0.45	0.72	0.45	32.7
North: Willamette Dr NE															
7	L2	All MCs	4	1.0	4	1.0	0.128	10.6	LOS B	0.6	16.3	0.39	0.47	0.39	34.4
4	T1	All MCs	322	1.0	322	1.0	0.128	5.0	LOS A	0.7	16.9	0.38	0.46	0.38	35.2
14	R2	All MCs	11	1.0	11	1.0	0.128	5.0	LOS A	0.7	16.9	0.37	0.46	0.37	34.9
Approach			337	1.0	337	1.0	0.128	5.1	LOS A	0.7	16.9	0.38	0.46	0.38	35.2
West: 31st Ave NE															
5	L2	All MCs	22	0.0	22	0.0	0.117	10.9	LOS B	0.4	10.3	0.40	0.60	0.40	34.3
2	T1	All MCs	22	0.0	22	0.0	0.117	5.3	LOS A	0.4	10.3	0.40	0.60	0.40	35.0
12	R2	All MCs	77	0.0	77	0.0	0.117	5.2	LOS A	0.4	10.3	0.40	0.60	0.40	34.7
Approach			121	0.0	121	0.0	0.117	6.3	LOS A	0.4	10.3	0.40	0.60	0.40	34.7
All Vehicles			1353	1.7	1353	1.7	0.252	5.8	LOS A	1.5	38.5	0.28	0.49	0.28	34.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

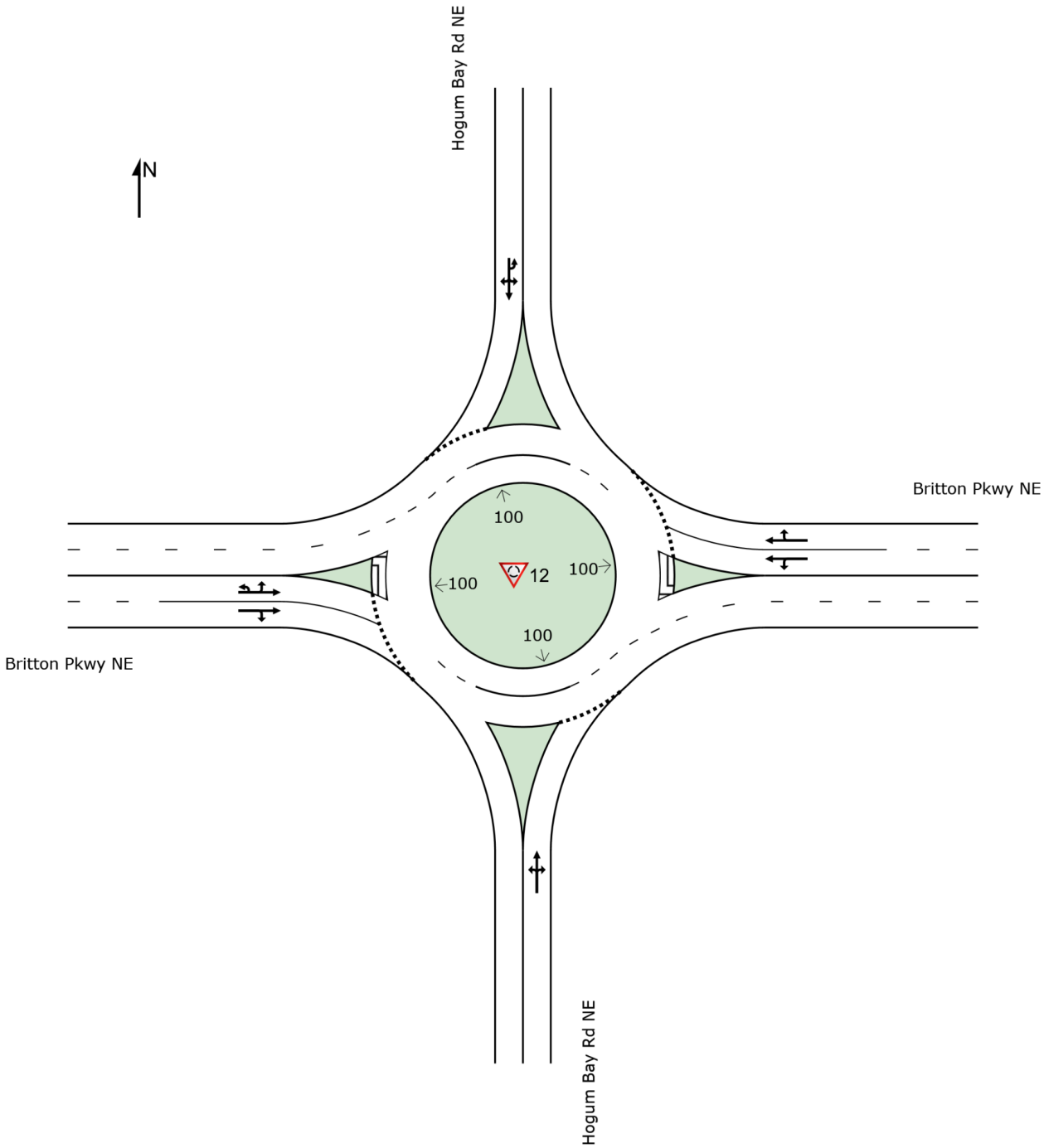
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	32	13.0	32	13.0	0.695	13.7	LOS B	5.4	149.8	0.66	0.71	0.78	33.3
8	T1	All MCs	263	13.0	263	13.0	0.695	7.8	LOS A	5.4	149.8	0.66	0.71	0.78	34.1
18	R2	All MCs	349	13.0	349	13.0	0.695	7.8	LOS A	5.4	149.8	0.66	0.71	0.78	33.8
Approach			645	13.0	645	13.0	0.695	8.1	LOS A	5.4	149.8	0.66	0.71	0.78	33.9
East: Britton Pkwy NE															
1	L2	All MCs	59	4.0	59	4.0	0.301	12.3	LOS B	1.9	48.0	0.62	0.61	0.62	33.3
6	T1	All MCs	587	4.0	587	4.0	0.301	6.1	LOS A	2.0	51.6	0.61	0.58	0.61	34.3
16	R2	All MCs	11	4.0	11	4.0	0.301	6.0	LOS A	2.0	51.6	0.61	0.55	0.61	34.1
Approach			657	4.0	657	4.0	0.301	6.6	LOS A	2.0	51.6	0.61	0.58	0.61	34.2
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.696	17.7	LOS B	4.8	129.9	0.76	0.89	1.01	32.7
7	L2	All MCs	16	10.0	16	10.0	0.696	15.2	LOS B	4.8	129.9	0.76	0.89	1.01	32.8
4	T1	All MCs	151	10.0	151	10.0	0.696	9.3	LOS A	4.8	129.9	0.76	0.89	1.01	33.5
14	R2	All MCs	373	10.0	373	10.0	0.696	9.3	LOS A	4.8	129.9	0.76	0.89	1.01	33.2
Approach			541	10.0	541	10.0	0.696	9.5	LOS A	4.8	129.9	0.76	0.89	1.01	33.3
West: Britton Pkwy NE															
5u	U	All MCs	4	7.0	4	7.0	0.131	13.5	LOS B	0.7	18.6	0.43	0.60	0.43	32.8
5	L2	All MCs	96	7.0	96	7.0	0.131	11.0	LOS B	0.7	18.6	0.43	0.60	0.43	32.8
2	T1	All MCs	203	7.0	203	7.0	0.131	4.9	LOS A	0.7	19.4	0.41	0.49	0.41	34.8
12	R2	All MCs	16	7.0	16	7.0	0.131	5.0	LOS A	0.7	19.4	0.41	0.46	0.41	34.7
Approach			319	7.0	319	7.0	0.131	6.8	LOS A	0.7	19.4	0.42	0.52	0.42	34.1
All Vehicles			2162	8.6	2162	8.6	0.696	7.8	LOS A	5.4	149.8	0.63	0.69	0.74	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	15	620	42	10	60	649	35	83	0	57	30	0	25
Future Vol, veh/h	15	620	42	10	60	649	35	83	0	57	30	0	25
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	16	660	45	11	64	690	37	88	0	61	32	0	27

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	729	0	0	704	704	0	0	1209	1591	353	1222	1595	366
Stage 1	-	-	-	-	-	-	-	714	714	-	859	859	-
Stage 2	-	-	-	-	-	-	-	495	878	-	363	736	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	858	-	-	510	883	-	-	139	106	643	138	108	637
Stage 1	-	-	-	-	-	-	-	388	433	-	322	376	-
Stage 2	-	-	-	-	-	-	-	525	364	-	634	428	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	857	-	-	781	781	-	-	118	94	643	111	96	636
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	118	94	-	111	96	-
Stage 1	-	-	-	-	-	-	-	381	425	-	291	340	-
Stage 2	-	-	-	-	-	-	-	454	329	-	563	420	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.21	0.94	85.07	35.02
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	857	-	-	781	-	-	177
HCM Lane V/C Ratio	0.844	0.019	-	-	0.095	-	-	0.33
HCM Ctrl Dly (s/v)	85.1	9.3	-	-	10.1	-	-	35
HCM Lane LOS	F	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	5.9	0.1	-	-	0.3	-	-	1.4

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	634	39	54	703	1	54	0	41	1	0	25
Future Vol, veh/h	10	634	39	54	703	1	54	0	41	1	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	674	41	57	748	1	57	0	44	1	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	749	0	0	716	0	0	1205	1580	358	1222	1601	374
Stage 1	-	-	-	-	-	-	716	716	-	863	863	-
Stage 2	-	-	-	-	-	-	489	864	-	359	737	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	843	-	-	874	-	-	139	108	639	138	107	629
Stage 1	-	-	-	-	-	-	387	432	-	320	374	-
Stage 2	-	-	-	-	-	-	529	369	-	638	427	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	843	-	-	874	-	-	123	100	639	118	99	629
Mov Cap-2 Maneuver	-	-	-	-	-	-	123	100	-	118	99	-
Stage 1	-	-	-	-	-	-	382	427	-	299	350	-
Stage 2	-	-	-	-	-	-	474	345	-	587	422	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.14	0.67	44.01	12.03
HCM LOS			E	B

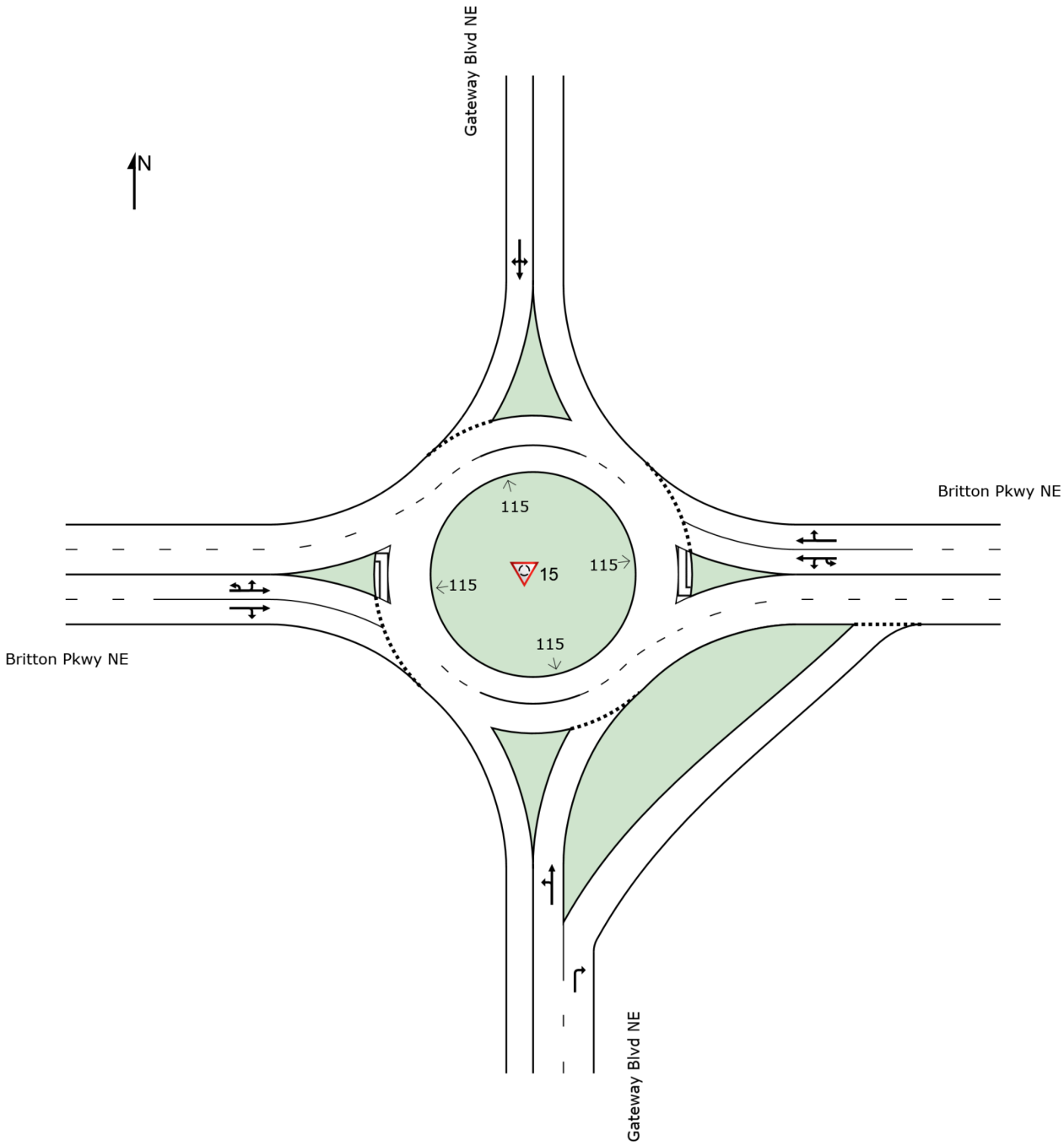
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	189	843	-	-	874	-	-	539
HCM Lane V/C Ratio	0.535	0.013	-	-	0.066	-	-	0.051
HCM Ctrl Dly (s/v)	44	9.3	-	-	9.4	-	-	12
HCM Lane LOS	E	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	2.8	0	-	-	0.2	-	-	0.2

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	523	2.0	523	2.0	0.469	11.9	LOS B	2.5	62.5	0.59	0.78	0.64	31.9
8	T1	All MCs	21	2.0	21	2.0	0.469	5.6	LOS A	2.5	62.5	0.59	0.78	0.64	32.5
18	R2	All MCs	141	2.0	141	2.0	0.114	4.7	LOS A	0.4	10.0	0.40	0.55	0.40	35.5
Approach			686	2.0	686	2.0	0.469	10.2	LOS B	2.5	62.5	0.55	0.73	0.59	32.5
East: Britton Pkwy NE															
1u	U	All MCs	3	3.0	3	3.0	0.464	17.9	LOS B	3.6	91.3	0.83	0.76	0.90	32.4
1	L2	All MCs	112	3.0	112	3.0	0.464	15.3	LOS B	3.6	91.3	0.83	0.76	0.90	32.4
6	T1	All MCs	568	3.0	568	3.0	0.464	8.1	LOS A	3.8	97.6	0.83	0.72	0.87	33.7
16	R2	All MCs	178	3.0	178	3.0	0.464	7.6	LOS A	3.8	97.6	0.83	0.68	0.85	33.8
Approach			861	3.0	861	3.0	0.464	9.0	LOS A	3.8	97.6	0.83	0.72	0.87	33.5
North: Gateway Blvd NE															
7	L2	All MCs	99	2.0	99	2.0	0.344	14.4	LOS B	1.8	45.1	0.75	0.83	0.79	32.5
4	T1	All MCs	51	2.0	51	2.0	0.344	8.0	LOS A	1.8	45.1	0.75	0.83	0.79	33.2
14	R2	All MCs	78	2.0	78	2.0	0.344	8.1	LOS A	1.8	45.1	0.75	0.83	0.79	32.9
Approach			228	2.0	228	2.0	0.344	10.8	LOS B	1.8	45.1	0.75	0.83	0.79	32.8
West: Britton Pkwy NE															
5u	U	All MCs	4	5.0	4	5.0	0.363	14.1	LOS B	2.3	60.4	0.52	0.55	0.52	33.6
5	L2	All MCs	122	5.0	122	5.0	0.363	11.5	LOS B	2.3	60.4	0.52	0.55	0.52	33.6
2	T1	All MCs	508	5.0	508	5.0	0.363	5.0	LOS A	2.4	63.5	0.51	0.53	0.51	34.8
12	R2	All MCs	287	5.0	287	5.0	0.363	5.1	LOS A	2.4	63.5	0.49	0.50	0.49	34.9
Approach			921	5.0	921	5.0	0.363	6.0	LOS A	2.4	63.5	0.51	0.52	0.51	34.6
All Vehicles			2696	3.3	2696	3.3	0.469	8.4	LOS A	3.8	97.6	0.64	0.66	0.67	33.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	86.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	811	111	38	1029	25	166	0	73	10	0	35
Future Vol, veh/h	50	811	111	38	1029	25	166	0	73	10	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	854	117	40	1083	26	175	0	77	11	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1109	0	0	971	0	0	1639	2207	485	1708	2252	555
Stage 1	-	-	-	-	-	-	1017	1017	-	1176	1176	-
Stage 2	-	-	-	-	-	-	622	1189	-	532	1076	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	631	-	-	706	-	-	~ 66	44	528	60	42	481
Stage 1	-	-	-	-	-	-	254	313	-	206	267	-
Stage 2	-	-	-	-	-	-	441	259	-	504	298	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	631	-	-	706	-	-	~ 53	38	528	44	36	481
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 53	38	-	44	36	-
Stage 1	-	-	-	-	-	-	233	287	-	195	252	-
Stage 2	-	-	-	-	-	-	384	245	-	395	273	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.58	0.36	$ 836.49	34.6
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	53	528	631	-	-	706	-	-	44	481
HCM Lane V/C Ratio	3.302	0.146	0.083	-	-	0.057	-	-	0.237	0.077
HCM Ctrl Dly (s/v)	$ 1198.6	13	11.2	-	-	10.4	-	-	109.8	13.1
HCM Lane LOS	F	B	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	18.7	0.5	0.3	-	-	0.2	-	-	0.8	0.2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	96	0	0	193	0	0	0	239	0	0	0
Future Vol, veh/h	0	96	0	0	193	0	0	0	239	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	104	0	0	210	0	0	0	260	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	210	0	0	104	0	0	314	314	104	314	314	210
Stage 1	-	-	-	-	-	-	104	104	-	210	210	-
Stage 2	-	-	-	-	-	-	210	210	-	104	104	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1361	-	-	1487	-	-	638	601	950	638	601	830
Stage 1	-	-	-	-	-	-	901	809	-	792	729	-
Stage 2	-	-	-	-	-	-	792	729	-	901	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1361	-	-	1487	-	-	638	601	950	464	601	830
Mov Cap-2 Maneuver	-	-	-	-	-	-	638	601	-	464	601	-
Stage 1	-	-	-	-	-	-	901	809	-	792	729	-
Stage 2	-	-	-	-	-	-	792	729	-	655	809	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	10.21	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	950	1361	-	-	1487	-	-	-
HCM Lane V/C Ratio	0.273	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	10.2	0	-	-	0	-	-	0
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	54	45	255	84	65
Future Vol, veh/h	180	54	45	255	84	65
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	202	61	51	287	94	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	263	0	620	233
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	388	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1313	-	451	807
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1313	-	431	807
Mov Cap-2 Maneuver	-	-	-	-	431	-
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	654	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.18	14.62
HCM LOS			B

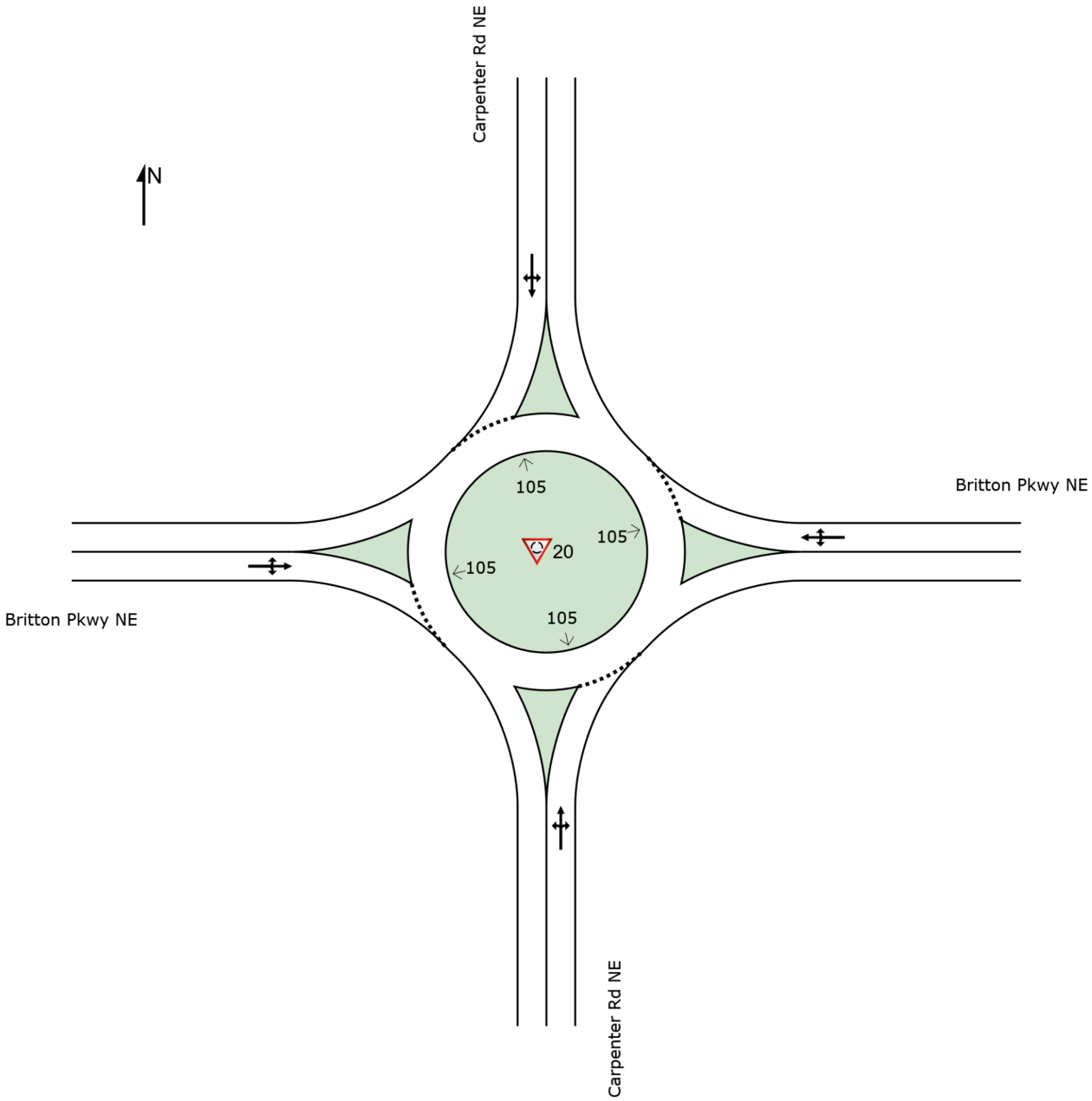
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	541	-	-	270	-
HCM Lane V/C Ratio	0.31	-	-	0.039	-
HCM Ctrl Dly (s/v)	14.6	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	149	4.0	149	4.0	0.888	23.0	LOS D	16.6	427.8	1.00	1.14	1.64	26.1
8	T1	All MCs	1	4.0	1	4.0	0.888	16.8	LOS D	16.6	427.8	1.00	1.14	1.64	22.6
18	R2	All MCs	645	4.0	645	4.0	0.888	17.0	LOS D	16.6	427.8	1.00	1.14	1.64	26.5
Approach			795	4.0	795	4.0	0.888	18.1	LOS B	16.6	427.8	1.00	1.14	1.64	26.4
East: Britton Pkwy NE															
1	L2	All MCs	727	5.0	727	5.0	1.100	62.2	LOS F	70.0	1821.2	1.00	1.82	2.43	15.8
6	T1	All MCs	598	5.0	598	5.0	1.100	56.0	LOS F	70.0	1821.2	1.00	1.82	2.43	19.5
16	R2	All MCs	1	5.0	1	5.0	1.100	56.2	LOS F	70.0	1821.2	1.00	1.82	2.43	16.7
Approach			1326	5.0	1326	5.0	1.100	59.4	LOS E	70.0	1821.2	1.00	1.82	2.43	17.6
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.014	28.9	LOS C	0.1	2.9	1.00	0.77	1.00	24.6
4	T1	All MCs	1	0.0	1	0.0	0.014	22.7	LOS C	0.1	2.9	1.00	0.77	1.00	20.2
14	R2	All MCs	1	0.0	1	0.0	0.014	22.9	LOS C	0.1	2.9	1.00	0.77	1.00	24.9
Approach			3	0.0	3	0.0	0.014	24.8	LOS C	0.1	2.9	1.00	0.77	1.00	23.5
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.863	26.6	LOS D	13.9	359.7	1.00	1.20	1.74	25.9
2	T1	All MCs	472	4.0	472	4.0	0.863	20.4	LOS D	13.9	359.7	1.00	1.20	1.74	29.0
12	R2	All MCs	133	4.0	133	4.0	0.863	20.6	LOS D	13.9	359.7	1.00	1.20	1.74	25.5
Approach			606	4.0	606	4.0	0.863	20.5	LOS C	13.9	359.7	1.00	1.20	1.74	28.3
All Vehicles			2730	4.5	2730	4.5	1.100	38.7	LOS D	70.0	1821.2	1.00	1.48	2.04	21.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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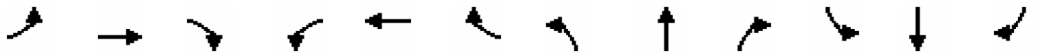
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	1000	370	365	790	114	180	320	250	135	415	269
Future Volume (veh/h)	283	1000	370	365	790	114	180	320	250	135	415	269
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	289	1020	378	372	806	116	184	327	255	138	423	274
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	308	1161	685	401	835	120	191	376	503	237	467	300
Arrive On Green	0.18	0.34	0.34	0.12	0.28	0.28	0.11	0.21	0.21	0.14	0.24	0.24
Sat Flow, veh/h	1701	3393	1504	3274	2948	424	1701	1786	1509	1674	1948	1251
Grp Volume(v), veh/h	289	1020	378	372	460	462	184	327	255	138	362	335
Grp Sat Flow(s),veh/h/ln	1701	1697	1504	1637	1683	1689	1701	1786	1509	1674	1670	1529
Q Serve(g_s), s	20.1	33.9	22.0	13.5	32.4	32.4	12.9	21.2	9.5	9.3	25.3	25.6
Cycle Q Clear(g_c), s	20.1	33.9	22.0	13.5	32.4	32.4	12.9	21.2	9.5	9.3	25.3	25.6
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.82
Lane Grp Cap(c), veh/h	308	1161	685	401	477	479	191	376	503	237	400	366
V/C Ratio(X)	0.94	0.88	0.55	0.93	0.96	0.96	0.96	0.87	0.51	0.58	0.90	0.91
Avail Cap(c_a), veh/h	308	1161	685	401	477	479	191	441	558	237	417	382
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)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	37.1	23.8	52.1	42.4	42.4	53.0	45.8	13.4	48.2	44.3	44.4
Incr Delay (d2), s/veh	29.7	7.8	2.5	27.2	33.3	33.3	53.5	15.6	0.9	2.4	22.3	25.5
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	11.0	15.1	8.2	7.0	17.7	17.8	8.3	11.0	3.2	4.0	12.9	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.1	44.9	26.4	79.3	75.7	75.7	106.5	61.4	14.3	50.6	66.6	69.9
LnGrp LOS	E	D	C	E	E	E	F	E	B	D	E	E
Approach Vol, veh/h		1687			1294			766			835	
Approach Delay, s/veh		46.4			76.7			56.5			65.3	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.3	39.5	22.5	30.7	20.2	46.6	19.0	34.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	20.5	34.0	13.9	29.6	14.7	39.8	13.5	30.0
Max Q Clear Time (g_c+I1), s	22.1	34.4	11.3	23.2	15.5	35.9	14.9	27.6
Green Ext Time (p_c), s	0.0	0.0	0.0	1.8	0.0	2.9	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	60.1
HCM 7th LOS	E

Notes

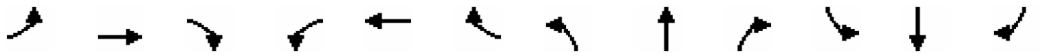
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	348	770	120	115	740	30	150	243	80	90	368	507
Future Volume (veh/h)	348	770	120	115	740	30	150	243	80	90	368	507
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	359	794	124	119	763	31	155	251	82	93	379	523
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	312	1009	158	144	812	33	126	765	244	115	510	451
Arrive On Green	0.18	0.34	0.34	0.08	0.24	0.24	0.08	0.31	0.31	0.07	0.30	0.30
Sat Flow, veh/h	1701	2938	459	1701	3322	135	1674	2486	792	1701	1697	1501
Grp Volume(v), veh/h	359	458	460	119	390	404	155	167	166	93	379	523
Grp Sat Flow(s),veh/h/ln	1701	1697	1701	1701	1697	1760	1674	1670	1608	1701	1697	1501
Q Serve(g_s), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	9.2	9.6	6.5	24.1	36.0
Cycle Q Clear(g_c), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	9.2	9.6	6.5	24.1	36.0
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	312	583	584	144	415	430	126	514	495	115	510	451
V/C Ratio(X)	1.15	0.79	0.79	0.83	0.94	0.94	1.23	0.32	0.34	0.81	0.74	1.16
Avail Cap(c_a), veh/h	312	583	584	249	418	434	126	514	495	227	510	451
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	35.4	35.4	54.0	44.4	44.4	55.4	31.9	32.0	55.0	37.7	41.9
Incr Delay (d2), s/veh	97.6	7.1	7.0	4.5	29.2	28.6	155.5	0.4	0.4	4.9	5.8	93.7
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	17.8	13.0	13.1	3.7	14.6	15.1	9.2	3.8	3.8	2.9	10.8	24.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	146.5	42.4	42.4	58.5	73.6	73.0	210.9	32.2	32.4	60.0	43.5	135.6
LnGrp LOS	F	D	D	E	E	E	F	C	C	E	D	F
Approach Vol, veh/h		1277			913			488			995	
Approach Delay, s/veh		71.7			71.3			89.0			93.5	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	34.8	14.1	42.9	15.6	47.1	15.0	42.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	29.5	16.0	29.0	17.5	34.0	9.0	36.0
Max Q Clear Time (g_c+I1), s	24.0	29.0	8.5	11.6	10.2	31.1	11.0	38.0
Green Ext Time (p_c), s	0.0	0.3	0.1	1.8	0.1	1.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	79.8
HCM 7th LOS	E



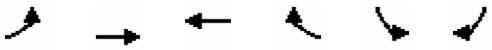
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1589	5	0	1174	30	70	5	25	69	1	30
Future Volume (veh/h)	40	1589	5	0	1174	30	70	5	25	69	1	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	1673	0	0	1236	32	74	5	26	73	1	32
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, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	83	2714		1	2486	64	158	218	185	224	3	185
Arrive On Green	0.05	1.00	0.00	0.00	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	3300	3393	1514	1688	3353	87	1398	1800	1525	1359	22	1525
Grp Volume(v), veh/h	42	1673	0	0	620	648	74	5	26	74	0	32
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1756	1398	1800	1525	1381	0	1525
Q Serve(g_s), s	1.5	0.0	0.0	0.0	18.1	18.1	6.2	0.3	1.8	5.8	0.0	2.3
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.0	18.1	18.1	12.3	0.3	1.8	6.1	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	83	2714		1	1248	1302	158	218	185	227	0	185
V/C Ratio(X)	0.51	0.62		0.00	0.50	0.50	0.47	0.02	0.14	0.33	0.00	0.17
Avail Cap(c_a), veh/h	275	2714		77	1248	1302	467	615	521	537	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.00	0.00	0.26	0.26	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	0.0	6.4	6.4	54.8	46.5	47.2	49.2	0.0	47.3
Incr Delay (d2), s/veh	3.2	1.0	0.0	0.0	0.4	0.4	1.6	0.0	0.3	0.6	0.0	0.3
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	0.7	0.4	0.0	0.0	5.8	6.0	2.3	0.1	0.7	2.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	1.0	0.0	0.0	6.7	6.7	56.4	46.5	47.4	49.8	0.0	47.7
LnGrp LOS	E	A			A	A	E	D	D	D		D
Approach Vol, veh/h		1715			1268			105			106	
Approach Delay, s/veh		2.4			6.7			53.7			49.1	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	94.5		18.5	0.0	101.5		18.5				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	3.5	20.1		14.3	0.0	2.0		8.1				
Green Ext Time (p_c), s	0.0	13.3		0.2	0.0	26.7		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.4									
HCM 7th LOS			A									

Notes

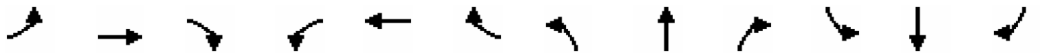
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1639	1194	25	30	50
Future Volume (veh/h)	50	1639	1194	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	53	1744	1270	27	32	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	826	4252	1378	29	84	74
Arrive On Green	0.42	0.87	0.82	0.82	0.05	0.05
Sat Flow, veh/h	1701	5036	3459	72	1714	1525
Grp Volume(v), veh/h	53	1744	634	663	32	53
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1759	1714	1525
Q Serve(g_s), s	0.0	8.5	33.4	33.5	2.2	4.1
Cycle Q Clear(g_c), s	0.0	8.5	33.4	33.5	2.2	4.1
Prop In Lane	1.00			0.04	1.00	1.00
Lane Grp Cap(c), veh/h	826	4252	688	719	84	74
V/C Ratio(X)	0.06	0.41	0.92	0.92	0.38	0.71
Avail Cap(c_a), veh/h	826	4252	975	1019	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	1.00	1.00
Uniform Delay (d), s/veh	14.1	1.5	9.5	9.5	55.3	56.2
Incr Delay (d2), s/veh	0.0	0.3	17.8	17.3	1.1	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.4	7.1	7.3	1.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	14.1	1.8	27.3	26.8	56.4	60.9
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1797	1297		85	
Approach Delay, s/veh		2.2	27.0		59.2	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	55.6	54.6				110.2	9.8
Change Period (Y+Rc), s	5.5	5.5				5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5				82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	35.5				10.5	6.1
Green Ext Time (p_c), s	0.0	13.5				28.8	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	13.8
HCM 7th LOS	B



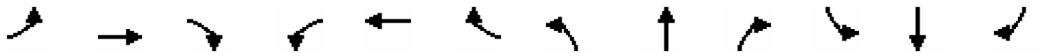
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	603	855	0	0	1184	65	15	0	859	0	0	0
Future Volume (veh/h)	603	855	0	0	1184	65	15	0	859	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	655	929	0	0	1287	0	16	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3078	0	0	1875		23	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	655	929	0	0	1287	0	16	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	15.8	0.0	0.0	32.9	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	15.8	0.0	0.0	32.9	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3078	0	0	1875		23	0				
V/C Ratio(X)	1.27	0.30	0.00	0.00	0.69		0.68	0.00				
Avail Cap(c_a), veh/h	517	3078	0	0	1875		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	19.1	0.0	58.9	0.0	0.0			
Incr Delay (d2), s/veh	121.2	0.0	0.0	0.0	2.1	0.0	29.6	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	33.4	6.4	0.0	0.0	12.9	0.0	0.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	169.0	5.3	0.0	0.0	21.1	0.0	88.5	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1584			1287			16				
Approach Delay, s/veh		73.0			21.1			88.5				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.3		5.7		114.3			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	34.9		3.1		17.8			
Green Ext Time (p_c), s	0.0	5.3		0.0		10.2			

Intersection Summary		
HCM 7th Control Delay, s/veh		49.9
HCM 7th LOS		D

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1408	395	564	660	0	0	0	0	85	1	754
Future Volume (vph)	0	1408	395	564	660	0	0	0	0	85	1	754
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1694	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1694	1515
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1452	407	581	680	0	0	0	0	88	1	777
RTOR Reduction (vph)	0	0	236	0	0	0	0	0	0	0	0	40
Lane Group Flow (vph)	0	1452	171	581	680	0	0	0	0	0	89	737
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.5	50.5	33.4	38.1						21.1	72.4
Effective Green, g (s)		50.5	50.5	33.4	38.1						21.1	72.4
Actuated g/C Ratio		0.42	0.42	0.28	0.32						0.18	0.60
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1424	637	466	1064						297	914
v/s Ratio Prot		c0.43		c0.35	0.20							c0.49
v/s Ratio Perm			0.11								0.05	
v/c Ratio		1.02	0.27	1.25	0.64						0.30	0.81
Uniform Delay, d1		34.8	22.7	43.3	35.1						43.0	18.4
Progression Factor		0.90	1.56	0.60	0.35						1.00	1.00
Incremental Delay, d2		24.0	0.7	112.8	0.3						0.7	5.5
Delay (s)		55.2	36.0	138.7	12.4						43.7	23.9
Level of Service		E	D	F	B						D	C
Approach Delay (s/veh)		51.0			70.6			0.0			26.0	
Approach LOS		D			E			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	51.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	829	270	630	614	175	145	284	819	150	307	89
Future Volume (veh/h)	58	829	270	630	614	175	145	284	819	150	307	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	60	864	0	656	640	0	151	296	853	156	320	93
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	76	1186		717	1777		177	281	992	183	396	113
Arrive On Green	0.04	0.35	0.00	0.37	0.88	0.00	0.10	0.16	0.16	0.11	0.15	0.15
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2596	1701	2595	741
Grp Volume(v), veh/h	60	864	0	656	640	0	151	296	853	156	207	206
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1298	1701	1697	1639
Q Serve(g_s), s	4.2	26.7	0.0	22.9	4.0	0.0	10.5	18.9	18.9	10.8	14.2	14.6
Cycle Q Clear(g_c), s	4.2	26.7	0.0	22.9	4.0	0.0	10.5	18.9	18.9	10.8	14.2	14.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	76	1186		717	1777		177	281	992	183	259	250
V/C Ratio(X)	0.79	0.73		0.92	0.36		0.85	1.05	0.86	0.85	0.80	0.82
Avail Cap(c_a), veh/h	85	1186		805	1777		241	281	992	340	339	328
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.60	0.60	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	34.1	0.0	37.0	3.6	0.0	52.8	50.6	34.6	52.6	49.1	49.3
Incr Delay (d2), s/veh	30.9	3.9	0.0	9.4	0.3	0.0	17.3	68.1	7.6	4.3	7.4	9.5
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	2.5	11.5	0.0	9.0	1.2	0.0	5.3	13.7	12.4	4.8	6.5	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.7	38.0	0.0	46.4	3.9	0.0	70.2	118.6	42.2	56.9	56.5	58.8
LnGrp LOS	F	D		D	A		E	F	D	E	E	E
Approach Vol, veh/h		924			1296			1300			569	
Approach Delay, s/veh		41.2			25.4			62.9			57.4	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	68.9	16.9	23.9	31.8	47.4	17.5	23.3
Change Period (Y+Rc), s	5.0	5.5	4.0	5.0	5.5	* 5.5	5.0	* 5
Max Green Setting (Gmax), s	6.0	53.5	24.0	17.0	29.5	* 30	17.0	* 24
Max Q Clear Time (g_c+I1), s	6.2	6.0	12.8	20.9	24.9	28.7	12.5	16.6
Green Ext Time (p_c), s	0.0	6.0	0.1	0.0	1.4	0.8	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	45.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

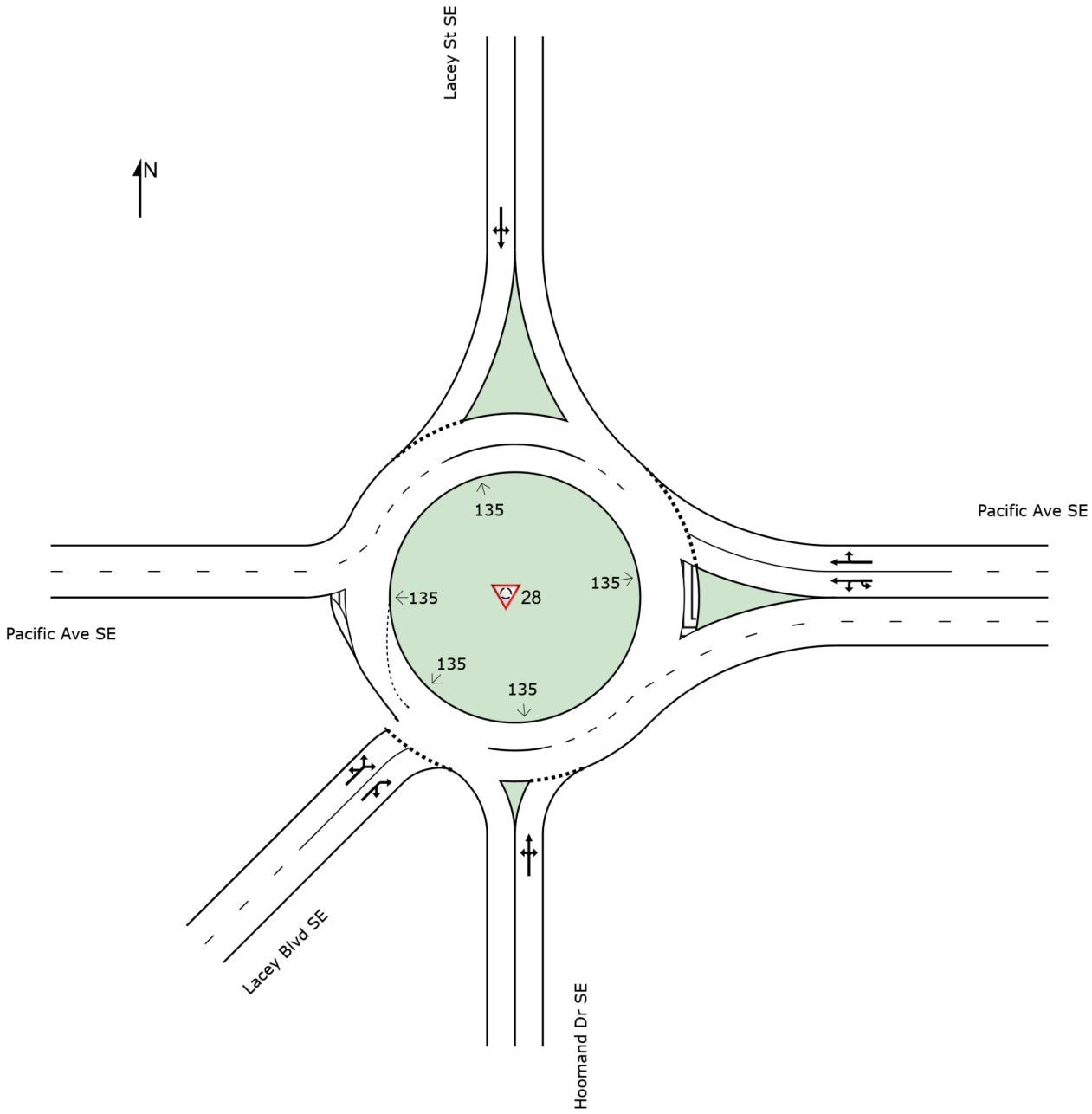
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	73	2.0	73	2.0	0.181	12.7	LOS B	0.7	17.5	0.59	0.77	0.59	33.3
8	T1	All MCs	4	2.0	4	2.0	0.181	5.8	LOS A	0.7	17.5	0.59	0.77	0.59	34.0
18	R2	All MCs	73	2.0	73	2.0	0.181	6.0	LOS A	0.7	17.5	0.59	0.77	0.59	33.7
Approach			150	2.0	150	2.0	0.181	9.3	LOS A	0.7	17.5	0.59	0.77	0.59	33.5
East: Pacific Ave SE															
1u	U	All MCs	3	1.0	3	1.0	0.480	13.9	LOS B	3.5	88.3	0.45	0.46	0.45	34.4
1	L2	All MCs	94	1.0	94	1.0	0.480	11.2	LOS B	3.5	88.3	0.45	0.46	0.45	34.5
6	T1	All MCs	1273	1.0	1273	1.0	0.480	4.1	LOS A	3.6	90.5	0.43	0.42	0.43	35.6
16	R2	All MCs	63	1.0	63	1.0	0.480	4.4	LOS A	3.6	90.5	0.41	0.40	0.41	35.4
Approach			1432	1.0	1432	1.0	0.480	4.6	LOS A	3.6	90.5	0.43	0.42	0.43	35.5
North: Lacey St SE															
7	L2	All MCs	21	2.0	21	2.0	0.095	13.2	LOS B	0.4	9.5	0.64	0.78	0.64	33.6
4	T1	All MCs	5	2.0	5	2.0	0.095	6.3	LOS A	0.4	9.5	0.64	0.78	0.64	34.3
14	R2	All MCs	42	2.0	42	2.0	0.095	6.5	LOS A	0.4	9.5	0.64	0.78	0.64	34.0
Approach			68	2.0	68	2.0	0.095	8.6	LOS A	0.4	9.5	0.64	0.78	0.64	33.9
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	36	1.0	36	1.0	0.453	12.1	LOS B	2.8	70.0	0.33	0.43	0.33	35.1
5ax	L1	All MCs	52	1.0	52	1.0	0.453	9.4	LOS A	2.8	70.0	0.33	0.43	0.33	35.1
12ax	R1	All MCs	1123	1.0	1123	1.0	0.453	3.6	LOS A	2.8	71.2	0.33	0.41	0.33	36.1
12bx	R3	All MCs	63	1.0	63	1.0	0.453	4.2	LOS A	2.8	71.2	0.32	0.39	0.32	35.8
Approach			1274	1.0	1274	1.0	0.453	4.1	LOS A	2.8	71.2	0.33	0.41	0.33	36.0
All Vehicles			2924	1.1	2924	1.1	0.480	4.7	LOS A	3.6	90.5	0.40	0.44	0.40	35.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	229	4	75	245	45	10	30	150	20	20	3
Future Vol, veh/h	5	229	4	75	245	45	10	30	150	20	20	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	6	260	5	85	278	51	11	34	170	23	23	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.7	14.9	10.3	9.9
HCM LOS	B	B	B	A

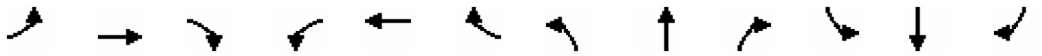
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	2%	21%	47%
Vol Thru, %	75%	0%	96%	67%	47%
Vol Right, %	0%	100%	2%	12%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	150	238	365	43
LT Vol	10	0	5	75	20
Through Vol	30	0	229	245	20
RT Vol	0	150	4	45	3
Lane Flow Rate	45	170	270	415	49
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.082	0.267	0.395	0.581	0.085
Departure Headway (Hd)	6.479	5.64	5.263	5.045	6.252
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	553	636	684	713	572
Service Time	4.219	3.379	3.299	3.077	4.304
HCM Lane V/C Ratio	0.081	0.267	0.395	0.582	0.086
HCM Control Delay, s/veh	9.8	10.4	11.7	14.9	9.9
HCM Lane LOS	A	B	B	B	A
HCM 95th-tile Q	0.3	1.1	1.9	3.8	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	173	69	530	225	54	375
Future Volume (veh/h)	173	69	530	225	54	375
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	178	71	546	232	56	387
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	256	228	870	737	97	1157
Arrive On Green	0.15	0.15	0.48	0.48	0.06	0.64
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	178	71	546	232	56	387
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	4.3	1.8	9.8	4.0	1.4	4.3
Cycle Q Clear(g_c), s	4.3	1.8	9.8	4.0	1.4	4.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	256	228	870	737	97	1157
V/C Ratio(X)	0.70	0.31	0.63	0.31	0.58	0.33
Avail Cap(c_a), veh/h	703	626	870	737	197	1157
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.6	16.5	8.3	6.9	20.0	3.5
Incr Delay (d2), s/veh	3.4	0.8	3.4	1.1	5.4	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.6	3.5	1.2	0.6	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	21.0	17.3	11.8	8.0	25.4	4.3
LnGrp LOS	C	B	B	A	C	A
Approach Vol, veh/h	249		778			443
Approach Delay, s/veh	19.9		10.6			7.0
Approach LOS	B		B			A

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.0	25.5				32.5	11.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	3.4	11.8				6.3	6.3
Green Ext Time (p_c), s	0.0	2.5				2.3	0.6

Intersection Summary		
HCM 7th Control Delay, s/veh	11.1	
HCM 7th LOS	B	



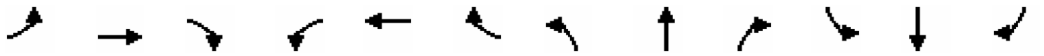
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	632	280	255	538	65	185	434	225	95	275	123
Future Volume (veh/h)	176	632	280	255	538	65	185	434	225	95	275	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	189	680	301	274	578	70	199	467	242	102	296	132
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	165	753	328	304	1023	452	373	782	324	305	422	183
Arrive On Green	0.10	0.22	0.22	0.18	0.31	0.31	0.22	0.22	0.22	0.18	0.18	0.18
Sat Flow, veh/h	1701	3393	1476	1674	3340	1477	1674	3516	1457	1701	2352	1021
Grp Volume(v), veh/h	189	680	301	274	578	70	199	467	242	102	223	205
Grp Sat Flow(s),veh/h/ln	1701	1697	1476	1674	1670	1477	1674	1758	1457	1701	1786	1588
Q Serve(g_s), s	10.0	20.1	20.5	16.5	14.9	3.6	10.8	12.2	15.9	5.4	12.0	12.5
Cycle Q Clear(g_c), s	10.0	20.1	20.5	16.5	14.9	3.6	10.8	12.2	15.9	5.4	12.0	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	165	753	328	304	1023	452	373	782	324	305	320	285
V/C Ratio(X)	1.14	0.90	0.92	0.90	0.56	0.15	0.53	0.60	0.75	0.33	0.70	0.72
Avail Cap(c_a), veh/h	165	759	330	358	1136	502	586	1230	510	562	590	525
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.4	38.9	39.1	41.2	29.9	26.0	35.3	35.8	37.3	36.8	39.6	39.8
Incr Delay (d2), s/veh	113.6	13.9	29.4	21.9	0.4	0.1	0.9	0.5	2.6	0.5	2.0	2.6
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	9.4	9.7	10.0	8.6	6.0	1.3	4.5	5.3	5.8	2.3	5.4	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	160.0	52.9	68.5	63.1	30.3	26.1	36.2	36.4	39.8	37.3	41.6	42.3
LnGrp LOS	F	D	E	E	C	C	D	D	D	D	D	D
Approach Vol, veh/h		1170			922			908			530	
Approach Delay, s/veh		74.2			39.7			37.3			41.0	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	36.5		27.9	23.7	27.8		23.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	12.0	16.9		17.9	18.5	22.5		14.5				
Green Ext Time (p_c), s	0.0	3.3		3.6	0.2	0.3		2.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			50.7									
HCM 7th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



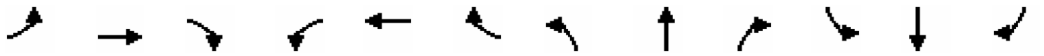
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	730	0	0	1020	303	175	0	490	0	0	0
Future Volume (veh/h)	224	730	0	0	1020	303	175	0	490	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	241	785	0	0	1097	0	188	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	273	2547	0	0	1799		233	0				
Arrive On Green	0.16	0.75	0.00	0.00	0.53	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	241	785	0	0	1097	0	188	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	12.5	6.8	0.0	0.0	20.3	0.0	9.7	0.0	0.0			
Cycle Q Clear(g_c), s	12.5	6.8	0.0	0.0	20.3	0.0	9.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	273	2547	0	0	1799		233	0				
V/C Ratio(X)	0.88	0.31	0.00	0.00	0.61		0.81	0.00				
Avail Cap(c_a), veh/h	283	2547	0	0	1799		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	36.9	3.6	0.0	0.0	14.5	0.0	37.6	0.0	0.0			
Incr Delay (d2), s/veh	25.0	0.3	0.0	0.0	1.5	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.0	1.8	0.0	0.0	7.5	0.0	4.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.9	4.0	0.0	0.0	16.0	0.0	42.5	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1026			1097			188				
Approach Delay, s/veh		17.6			16.0			42.5				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	19.5	53.1		17.4		72.6						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0						
Max Q Clear Time (g_c+I1), s	14.5	22.3		11.7		8.8						
Green Ext Time (p_c), s	0.0	5.5		0.7		5.3						

Intersection Summary												
HCM 7th Control Delay, s/veh			18.9									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	729	230	0	690	0	0	0	0	225	1	365
Future Volume (veh/h)	0	729	230	0	690	0	0	0	0	225	1	365
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	759	0	0	719	0				234	1	380
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	2075		0	2058	0				466	2	417
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	3572	0	0	3544	0				1681	7	1502
Grp Volume(v), veh/h	0	759	0	0	719	0				235	0	380
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	10.1	0.0	0.0	9.5	0.0				10.5	0.0	22.0
Cycle Q Clear(g_c), s	0.0	10.1	0.0	0.0	9.5	0.0				10.5	0.0	22.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2075		0	2058	0				468	0	417
V/C Ratio(X)	0.00	0.37		0.00	0.35	0.00				0.50	0.00	0.91
Avail Cap(c_a), veh/h	0	2075		0	2058	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.8	0.0	0.0	8.6	0.0				27.3	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.5	0.0				0.6	0.0	20.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.5	0.0	0.0	3.2	0.0				4.2	0.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	9.3	0.0	0.0	9.1	0.0				27.9	0.0	51.8
LnGrp LOS		A			A					C		D
Approach Vol, veh/h		759			719						615	
Approach Delay, s/veh		9.3			9.1						42.6	
Approach LOS		A			A						D	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	60.0	60.0	30.0
Change Period (Y+Rc), s	5.0	5.0	5.0
Max Green Setting (Gmax), s	52.0	52.0	28.0
Max Q Clear Time (g_c+I1), s	11.5	12.1	24.0
Green Ext Time (p_c), s	4.7	5.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	19.0
HCM 7th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	752	142	0	1087	0	68
Future Vol, veh/h	752	142	0	1087	0	68
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	792	149	0	1144	0	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1438	471
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	572	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	124	540
Stage 1	-	-	0	-	372	-
Stage 2	-	-	0	-	528	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	124	540
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	372	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	12.69
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	540	-	-	-
HCM Lane V/C Ratio	0.133	-	-	-
HCM Ctrl Dly (s/v)	12.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	623	52	0	757	0	54
Future Vol, veh/h	623	52	0	757	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	663	55	0	805	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1093	359
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	403	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	209	638
Stage 1	-	-	0	-	459	-
Stage 2	-	-	0	-	644	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	209	638
Mov Cap-2 Maneuver	-	-	-	-	209	-
Stage 1	-	-	-	-	459	-
Stage 2	-	-	-	-	644	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.21
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	638	-	-	-
HCM Lane V/C Ratio	0.09	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	691	26	0	749	0	54
Future Vol, veh/h	691	26	0	749	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	735	28	0	797	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1147	381
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	192	617
Stage 1	-	-	0	-	428	-
Stage 2	-	-	0	-	647	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	192	617
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	647	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.44
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	617	-	-	-
HCM Lane V/C Ratio	0.093	-	-	-
HCM Ctrl Dly (s/v)	11.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	1976	2294	13
Future Vol, veh/h	0	65	0	1976	2294	13
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	0	68	0	2058	2390	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1202	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	152	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	152	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	46.48	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	152	-	-
HCM Lane V/C Ratio	-	0.446	-	-
HCM Ctrl Dly (s/v)	-	46.5	-	-
HCM Lane LOS	-	E	-	-
HCM 95th %tile Q(veh)	-	2	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	60	30	524	850	90
Future Vol, veh/h	55	60	30	524	850	90
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	57	63	31	546	885	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1541	932	979	0	-	0
Stage 1	932	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	128	324	713	-	-	-
Stage 1	385	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	122	324	713	-	-	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	368	-	-	-	-	-
Stage 2	545	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	26.37	0.56	0
HCM LOS	D		

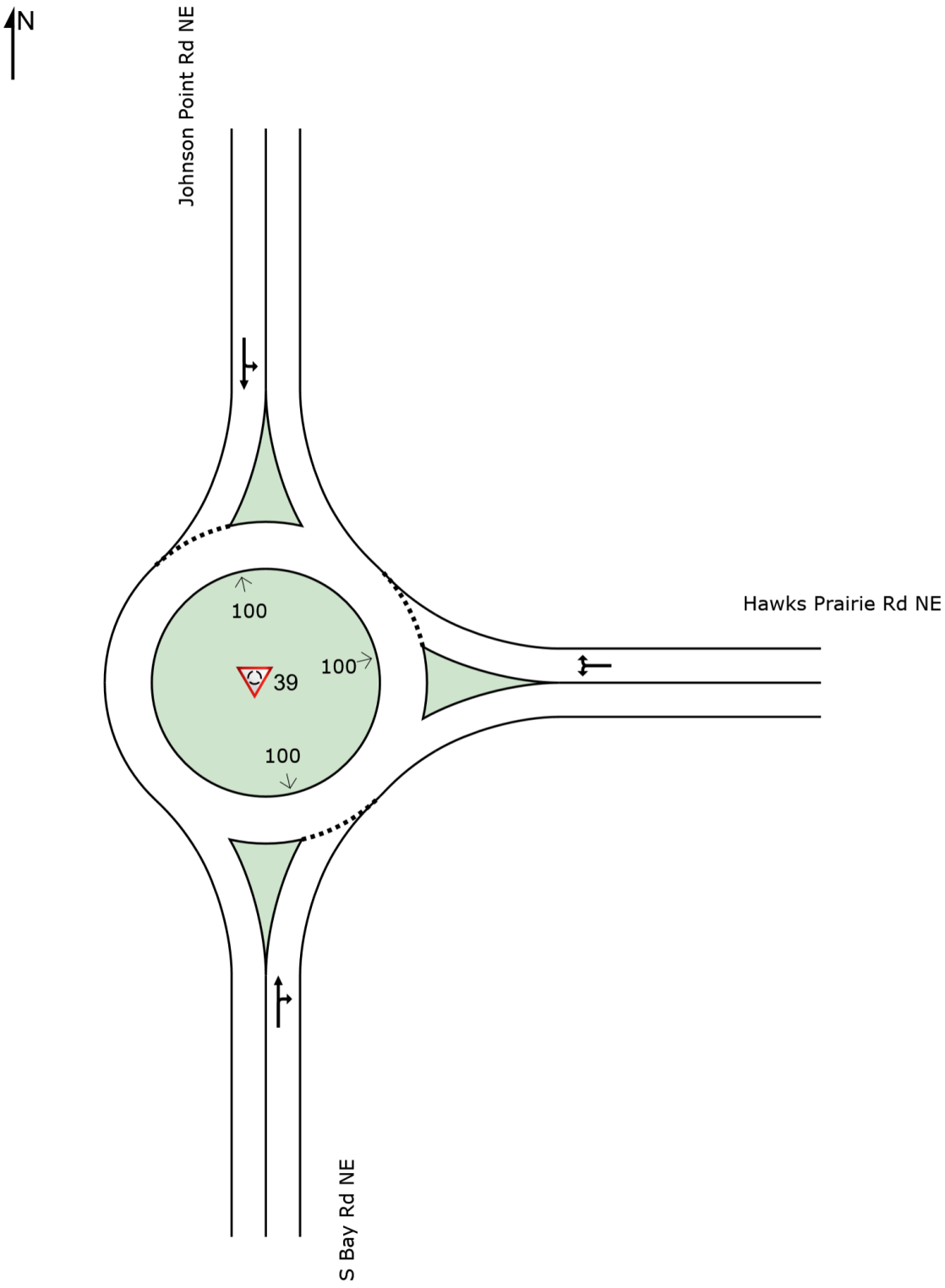
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	713	-	286	-	-
HCM Lane V/C Ratio	0.044	-	0.419	-	-
HCM Ctrl Dly (s/v)	10.3	-	26.4	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	224	0.0	224	0.0	0.354	4.0	LOS A	2.3	56.3	0.19	0.41	0.19	36.2
18	R2	All MCs	280	0.0	280	0.0	0.354	4.1	LOS A	2.3	56.3	0.19	0.41	0.19	35.9
Approach			504	0.0	504	0.0	0.354	4.0	LOS A	2.3	56.3	0.19	0.41	0.19	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	260	0.0	260	0.0	0.243	10.6	LOS B	1.3	31.6	0.38	0.62	0.38	32.7
16	R2	All MCs	47	0.0	47	0.0	0.243	4.8	LOS A	1.3	31.6	0.38	0.62	0.38	33.1
Approach			307	0.0	307	0.0	0.243	9.8	LOS A	1.3	31.6	0.38	0.62	0.38	32.8
North: Johnson Point Rd NE															
7	L2	All MCs	42	0.0	42	0.0	0.157	10.7	LOS B	0.8	20.2	0.40	0.51	0.40	34.2
4	T1	All MCs	151	0.0	151	0.0	0.157	4.7	LOS A	0.8	20.2	0.40	0.51	0.40	34.9
Approach			193	0.0	193	0.0	0.157	6.0	LOS A	0.8	20.2	0.40	0.51	0.40	34.8
All Vehicles			1004	0.0	1004	0.0	0.354	6.2	LOS A	2.3	56.3	0.29	0.49	0.29	34.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

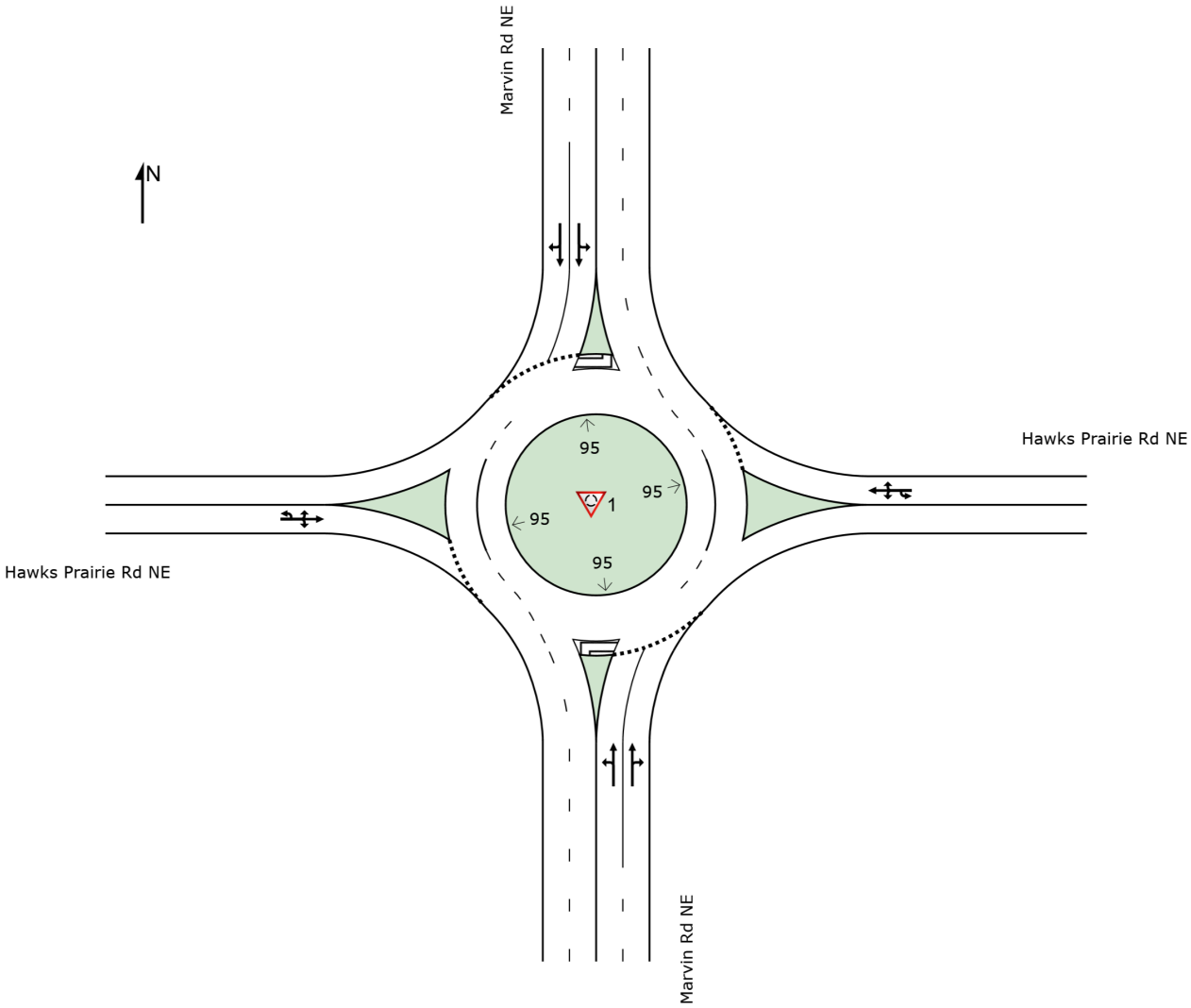
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	290	0.0	290	0.0	0.251	10.0	LOS B	1.5	36.7	0.25	0.58	0.25	33.0
8	T1	All MCs	464	0.0	464	0.0	0.251	4.3	LOS A	1.5	37.4	0.24	0.41	0.24	35.5
18	R2	All MCs	2	0.0	2	0.0	0.251	4.4	LOS A	1.5	37.4	0.24	0.39	0.24	35.4
Approach			756	0.0	756	0.0	0.251	6.5	LOS A	1.5	37.4	0.24	0.48	0.24	34.5
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.277	14.3	LOS B	1.0	25.9	0.52	0.72	0.52	32.9
1	L2	All MCs	140	3.0	140	3.0	0.277	11.9	LOS B	1.0	25.9	0.52	0.72	0.52	32.9
6	T1	All MCs	80	3.0	80	3.0	0.277	6.2	LOS A	1.0	25.9	0.52	0.72	0.52	33.5
16	R2	All MCs	25	3.0	25	3.0	0.277	6.1	LOS A	1.0	25.9	0.52	0.72	0.52	33.3
Approach			247	3.0	247	3.0	0.277	9.5	LOS A	1.0	25.9	0.52	0.72	0.52	33.1
North: Marvin Rd NE															
7	L2	All MCs	15	2.0	15	2.0	0.196	12.4	LOS B	1.1	27.8	0.59	0.60	0.59	33.7
4	T1	All MCs	321	2.0	321	2.0	0.196	6.4	LOS A	1.2	29.8	0.59	0.58	0.59	34.5
14	R2	All MCs	90	2.0	90	2.0	0.196	6.2	LOS A	1.2	29.8	0.58	0.57	0.58	34.4
Approach			426	2.0	426	2.0	0.196	6.6	LOS A	1.2	29.8	0.58	0.58	0.58	34.5
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.157	13.6	LOS B	0.6	15.2	0.44	0.63	0.44	33.8
5	L2	All MCs	45	3.0	45	3.0	0.157	11.2	LOS B	0.6	15.2	0.44	0.63	0.44	33.8
2	T1	All MCs	15	3.0	15	3.0	0.157	5.5	LOS A	0.6	15.2	0.44	0.63	0.44	34.6
12	R2	All MCs	90	3.0	90	3.0	0.157	5.4	LOS A	0.6	15.2	0.44	0.63	0.44	34.3
Approach			152	3.0	152	3.0	0.157	7.2	LOS A	0.6	15.2	0.44	0.63	0.44	34.2
All Vehicles			1581	1.3	1581	1.3	0.277	7.1	LOS A	1.5	37.4	0.40	0.56	0.40	34.2

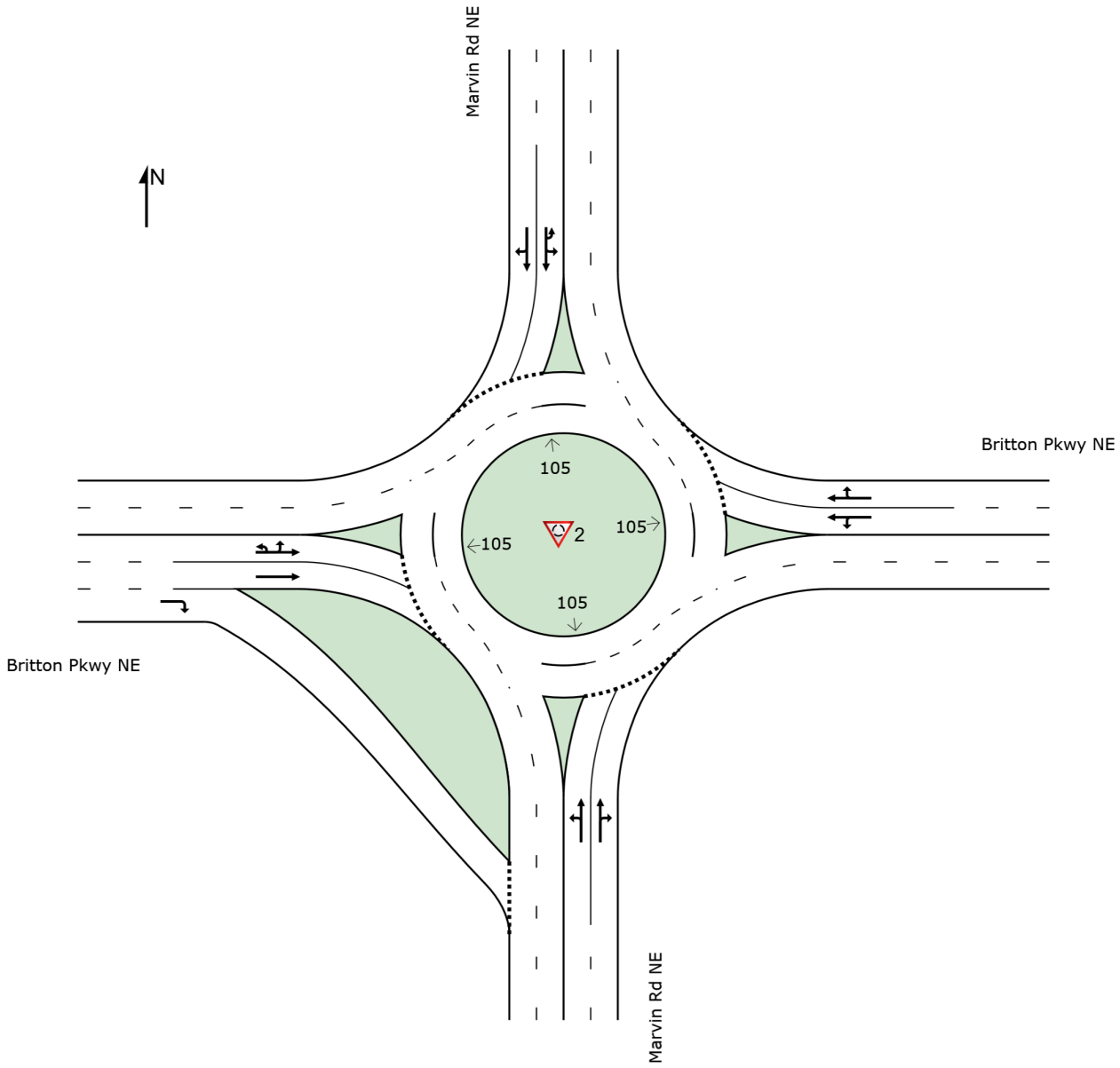
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Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: FFuture (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: FFuture (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	379	2.0	379	2.0	0.560	12.2	LOS B	3.6	92.3	0.62	0.72	0.68	32.6
8	T1	All MCs	825	2.0	825	2.0	0.560	5.9	LOS A	3.7	93.6	0.61	0.60	0.66	34.2
18	R2	All MCs	40	2.0	40	2.0	0.560	5.9	LOS A	3.7	93.6	0.61	0.57	0.65	34.2
Approach			1244	2.0	1244	2.0	0.560	7.8	LOS A	3.7	93.6	0.61	0.64	0.66	33.7
East: Britton Pkwy NE															
1	L2	All MCs	466	4.0	466	4.0	0.629	15.7	LOS B	4.4	112.8	0.85	0.99	1.13	30.6
6	T1	All MCs	327	4.0	327	4.0	0.629	11.5	LOS B	4.4	112.8	0.84	0.98	1.14	32.6
16	R2	All MCs	50	4.0	50	4.0	0.629	11.7	LOS B	3.8	99.1	0.84	0.98	1.14	32.4
Approach			843	4.0	843	4.0	0.629	13.8	LOS B	4.4	112.8	0.84	0.98	1.13	31.4
North: Marvin Rd NE															
7u	U	All MCs	10	4.0	10	4.0	0.613	21.2	LOS C	4.2	108.6	0.87	0.97	1.18	31.2
7	L2	All MCs	40	4.0	40	4.0	0.613	18.6	LOS B	4.2	108.6	0.87	0.97	1.18	31.2
4	T1	All MCs	625	4.0	625	4.0	0.613	11.7	LOS B	4.8	123.5	0.88	0.95	1.17	32.4
14	R2	All MCs	118	4.0	118	4.0	0.613	11.0	LOS B	4.8	123.5	0.89	0.94	1.17	32.7
Approach			793	4.0	793	4.0	0.613	12.1	LOS B	4.8	123.5	0.88	0.95	1.17	32.4
West: Britton Pkwy NE															
5u	U	All MCs	20	5.0	20	5.0	0.206	15.7	LOS B	1.0	25.6	0.70	0.81	0.70	31.5
5	L2	All MCs	124	5.0	124	5.0	0.206	13.1	LOS B	1.0	25.6	0.70	0.81	0.70	31.5
2	T1	All MCs	217	5.0	217	5.0	0.206	6.5	LOS A	1.2	30.7	0.73	0.61	0.73	34.0
12	R2	All MCs	469	5.0	469	5.0	0.439	7.1	LOS A	2.9	74.7	0.78	0.78	0.84	34.1
Approach			830	5.0	830	5.0	0.439	8.1	LOS A	2.9	74.7	0.75	0.74	0.79	33.6
All Vehicles			3710	3.6	3710	3.6	0.629	10.2	LOS B	4.8	123.5	0.75	0.81	0.91	32.8

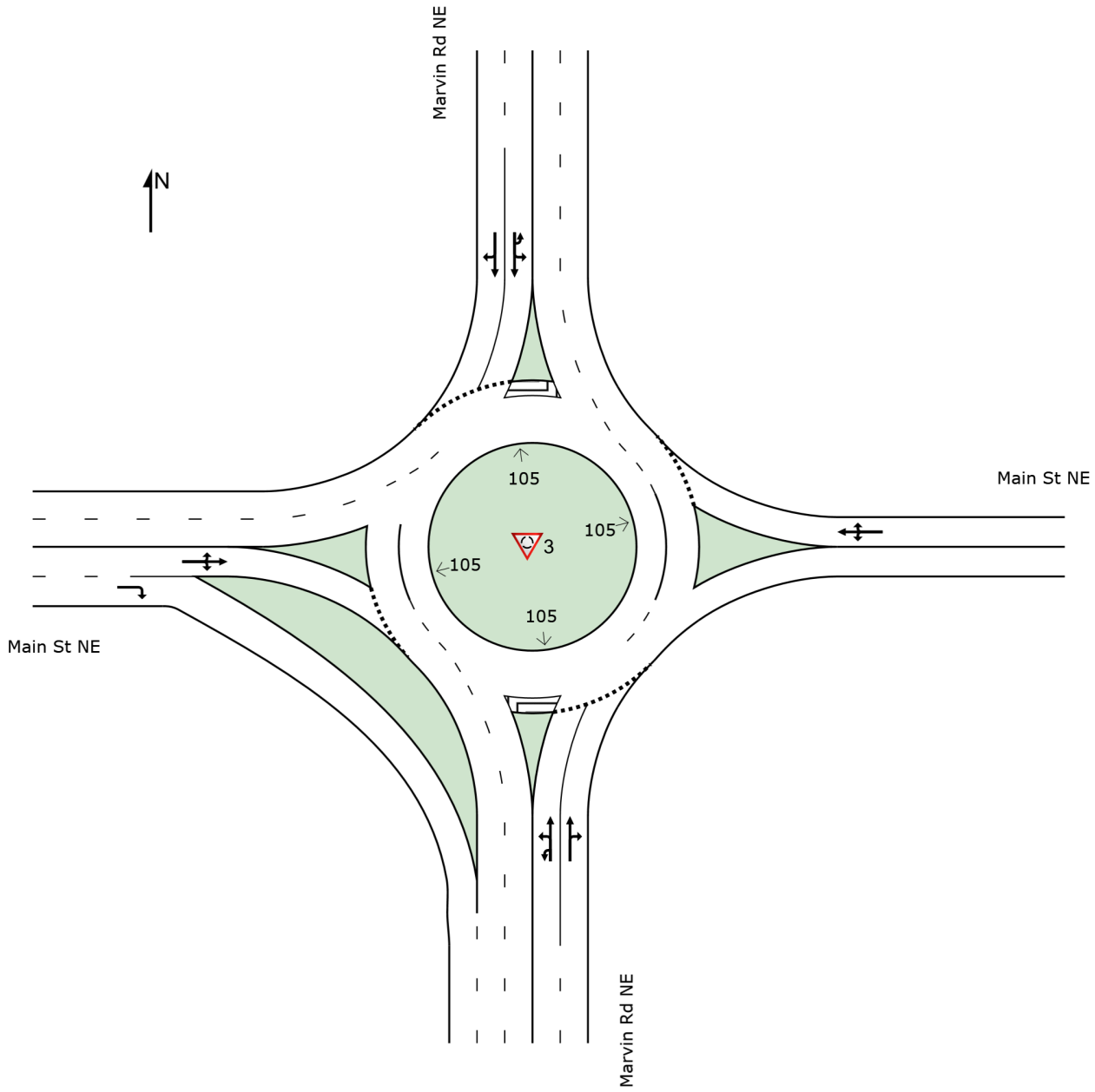
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Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	320	3.0	320	3.0	0.556	12.8	LOS B	5.1	130.9	0.31	0.56	0.31	26.7
3	L2	All MCs	228	3.0	228	3.0	0.556	10.3	LOS B	5.1	130.9	0.31	0.56	0.31	30.5
8	T1	All MCs	1098	3.0	1098	3.0	0.556	4.2	LOS A	5.1	131.8	0.29	0.41	0.29	30.7
18	R2	All MCs	35	3.0	35	3.0	0.556	4.3	LOS A	5.1	131.8	0.29	0.37	0.29	33.7
Approach			1681	3.0	1681	3.0	0.556	6.6	LOS A	5.1	131.8	0.30	0.46	0.30	30.0
East: Main St NE															
1	L2	All MCs	45	0.0	45	0.0	0.188	13.8	LOS B	0.8	19.5	0.68	0.83	0.68	30.6
6	T1	All MCs	5	0.0	5	0.0	0.188	7.8	LOS A	0.8	19.5	0.68	0.83	0.68	33.6
16	R2	All MCs	80	0.0	80	0.0	0.188	7.8	LOS A	0.8	19.5	0.68	0.83	0.68	31.6
Approach			130	0.0	130	0.0	0.188	9.9	LOS A	0.8	19.5	0.68	0.83	0.68	31.4
North: Marvin Rd NE															
7u	U	All MCs	4	3.0	4	3.0	0.755	22.8	LOS C	9.8	251.6	0.94	0.97	1.40	25.4
7	L2	All MCs	20	3.0	20	3.0	0.755	20.3	LOS C	9.8	251.6	0.94	0.97	1.40	28.7
4	T1	All MCs	1456	3.0	1456	3.0	0.755	13.0	LOS B	10.8	276.6	0.93	0.94	1.35	25.9
14	R2	All MCs	39	3.0	39	3.0	0.755	12.3	LOS B	10.8	276.6	0.93	0.93	1.31	30.3
Approach			1519	3.0	1519	3.0	0.755	13.1	LOS B	10.8	276.6	0.93	0.94	1.35	26.1
West: Main St NE															
5	L2	All MCs	27	2.0	27	2.0	0.102	14.5	LOS B	0.6	14.5	0.85	0.85	0.85	30.4
2	T1	All MCs	1	2.0	1	2.0	0.102	8.4	LOS A	0.6	14.5	0.85	0.85	0.85	32.9
12	R2	All MCs	196	2.0	196	2.0	0.102	4.3	LOS A	0.6	14.5	0.12	0.49	0.12	34.5
Approach			224	2.0	224	2.0	0.102	5.5	LOS A	0.6	14.5	0.21	0.54	0.21	33.9
All Vehicles			3554	2.8	3554	2.8	0.755	9.5	LOS A	10.8	276.6	0.58	0.68	0.76	28.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	545	0	0	737	0	1309	952	0	1520	394
Future Volume (vph)	0	0	545	0	0	737	0	1309	952	0	1520	394
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.97	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3091	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3091	1335		3257	1457
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	545	0	0	737	0	1309	952	0	1520	394
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	545	0	0	737	0	1576	685	0	1520	394
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			56.5			54.5		54.5	120.0		51.5	120.0
Effective Green, g (s)			56.5			54.5		54.5	120.0		51.5	120.0
Actuated g/C Ratio			0.47			0.45		0.45	1.00		0.43	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1243			1199		1403	1335		1397	1457
v/s Ratio Prot			0.21			0.28		c0.51			c0.47	
v/s Ratio Perm									0.51			0.27
v/c Ratio			0.44			0.61		1.12	0.51		1.09	0.27
Uniform Delay, d1			21.2			24.8		32.8	0.0		34.3	0.0
Progression Factor			1.00			1.00		0.69	1.00		1.00	1.00
Incremental Delay, d2			0.2			0.9		61.9	0.9		51.8	0.5
Delay (s)			21.4			25.7		84.5	0.9		86.0	0.5
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		21.4			25.7			59.1			68.4	
Approach LOS		C			C			E			E	

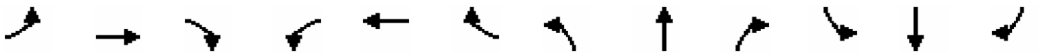
Intersection Summary			
HCM 2000 Control Delay (s/veh)	54.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	25	0	0	733	0	1524	150	0	1620	445
Future Volume (vph)	0	0	25	0	0	733	0	1524	150	0	1620	445
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	25	0	0	733	0	1524	150	0	1620	445
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	25	0	0	733	0	1524	150	0	1620	445
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			44.5			66.5		42.5	120.0		64.5	120.0
Effective Green, g (s)			44.5			66.5		42.5	120.0		64.5	120.0
Actuated g/C Ratio			0.37			0.55		0.35	1.00		0.54	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			544			1407		1706	1500		1784	1455
v/s Ratio Prot			0.02			0.29		c0.32			c0.49	
v/s Ratio Perm									0.10			0.31
v/c Ratio			0.05			0.52		0.89	0.10		0.91	0.31
Uniform Delay, d1			24.2			16.8		36.6	0.0		25.1	0.0
Progression Factor			1.00			1.00		0.89	1.00		0.53	1.00
Incremental Delay, d2			0.0			0.4		5.8	0.1		3.5	0.2
Delay (s)			24.2			17.1		38.5	0.1		16.8	0.2
Level of Service			C			B		D	A		B	A
Approach Delay (s/veh)		24.2			17.1			35.1			13.2	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	466	255	165	70	65	263	65	914	65	219	1051	295
Future Volume (veh/h)	466	255	165	70	65	263	65	914	65	219	1051	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	466	255	165	70	65	263	65	914	65	219	1051	295
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	543	228	147	71	175	362	219	1286	91	241	1412	613
Arrive On Green	0.16	0.22	0.22	0.04	0.10	0.10	0.13	0.40	0.40	0.14	0.42	0.42
Sat Flow, veh/h	3300	1012	655	1701	1786	1504	1688	3182	226	1701	3393	1474
Grp Volume(v), veh/h	466	0	420	70	65	263	65	484	495	219	1051	295
Grp Sat Flow(s),veh/h/ln	1650	0	1666	1701	1786	1504	1688	1683	1724	1701	1697	1474
Q Serve(g_s), s	16.5	0.0	27.0	4.9	4.1	11.7	4.2	28.8	28.8	15.2	31.4	9.7
Cycle Q Clear(g_c), s	16.5	0.0	27.0	4.9	4.1	11.7	4.2	28.8	28.8	15.2	31.4	9.7
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	543	0	375	71	175	362	219	680	697	241	1412	613
V/C Ratio(X)	0.86	0.00	1.12	0.99	0.37	0.73	0.30	0.71	0.71	0.91	0.74	0.48
Avail Cap(c_a), veh/h	619	0	375	71	175	362	219	680	697	241	1654	719
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	1.00	1.00	1.00	1.00	0.61	0.61	0.61	0.32	0.32	0.32
Uniform Delay (d), s/veh	48.8	0.0	46.5	57.5	50.7	42.0	47.3	29.9	29.9	50.7	29.6	7.8
Incr Delay (d2), s/veh	12.3	0.0	83.3	102.8	2.8	8.8	1.0	3.9	3.8	15.6	1.2	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	7.7	0.0	19.8	4.2	2.0	8.0	1.8	12.2	12.5	7.5	12.8	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.1	0.0	129.8	160.3	53.5	50.8	48.3	33.7	33.7	66.3	30.8	8.7
LnGrp LOS	E		F	F	D	D	D	C	C	E	C	A
Approach Vol, veh/h		886			398			1044			1565	
Approach Delay, s/veh		93.6			70.5			34.6			31.6	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	55.9	25.3	17.2	23.0	54.5	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	6.2	33.4	18.5	13.7	17.2	30.8	6.9	29.0
Green Ext Time (p_c), s	0.0	16.5	1.3	0.0	0.0	10.1	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.5
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	125	160	60	89	165	755	185	115	1072	80
Future Volume (veh/h)	140	55	125	160	60	89	165	755	185	115	1072	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	140	55	125	160	60	89	165	755	185	115	1072	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	190	67	152	156	77	114	191	1100	269	352	1621	121
Arrive On Green	0.11	0.14	0.14	0.09	0.12	0.12	0.11	0.41	0.41	0.07	0.17	0.17
Sat Flow, veh/h	1714	484	1101	1701	643	954	1674	2658	651	1701	3201	239
Grp Volume(v), veh/h	140	0	180	160	0	149	165	474	466	115	568	584
Grp Sat Flow(s),veh/h/ln	1714	0	1585	1701	0	1597	1674	1670	1640	1701	1697	1743
Q Serve(g_s), s	9.5	0.0	13.3	11.0	0.0	10.9	11.6	27.9	27.9	7.7	37.6	37.7
Cycle Q Clear(g_c), s	9.5	0.0	13.3	11.0	0.0	10.9	11.6	27.9	27.9	7.7	37.6	37.7
Prop In Lane	1.00		0.69	1.00		0.60	1.00		0.40	1.00		0.14
Lane Grp Cap(c), veh/h	190	0	219	156	0	190	191	691	678	352	859	883
V/C Ratio(X)	0.74	0.00	0.82	1.03	0.00	0.78	0.87	0.69	0.69	0.33	0.66	0.66
Avail Cap(c_a), veh/h	190	0	317	156	0	319	237	691	678	352	859	883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	51.7	0.0	50.3	54.5	0.0	51.4	52.3	28.8	28.8	48.0	40.3	40.3
Incr Delay (d2), s/veh	13.5	0.0	9.4	79.1	0.0	5.2	21.8	3.0	3.0	0.3	1.5	1.4
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	4.8	0.0	5.9	8.1	0.0	4.6	6.0	11.6	11.4	3.5	17.5	18.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.2	0.0	59.7	133.6	0.0	56.6	74.1	31.8	31.8	48.2	41.8	41.8
LnGrp LOS	E		E	F		E	E	C	C	D	D	D
Approach Vol, veh/h		320			309			1105			1267	
Approach Delay, s/veh		62.1			96.5			38.1			42.4	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	65.8	17.3	18.3	29.8	54.6	15.0	20.6
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.6	39.7	11.5	12.9	9.7	29.9	13.0	15.3
Green Ext Time (p_c), s	0.1	5.9	0.0	0.5	0.1	7.1	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	48.5
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	312	495	365	395	575	308	285	575	245	294	959	319
Future Volume (veh/h)	312	495	365	395	575	308	285	575	245	294	959	319
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	312	495	0	395	575	0	285	575	245	294	959	319
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	370	587		452	673		371	773	329	320	1034	460
Arrive On Green	0.11	0.17	0.00	0.14	0.20	0.00	0.22	0.33	0.33	0.19	0.30	0.30
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2317	986	1714	3420	1522
Grp Volume(v), veh/h	312	495	0	395	575	0	285	421	399	294	959	319
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1606	1714	1710	1522
Q Serve(g_s), s	11.1	16.9	0.0	14.0	19.5	0.0	18.9	26.4	26.5	20.2	32.6	16.0
Cycle Q Clear(g_c), s	11.1	16.9	0.0	14.0	19.5	0.0	18.9	26.4	26.5	20.2	32.6	16.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.61	1.00		1.00
Lane Grp Cap(c), veh/h	370	587		452	673		371	566	536	320	1034	460
V/C Ratio(X)	0.84	0.84		0.87	0.85		0.77	0.74	0.75	0.92	0.93	0.69
Avail Cap(c_a), veh/h	522	693		554	727		371	566	536	386	1055	469
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	48.0	0.0	50.8	46.5	0.0	44.1	35.4	35.5	47.9	40.6	19.2
Incr Delay (d2), s/veh	6.2	8.4	0.0	10.9	9.4	0.0	8.6	8.6	9.1	22.2	15.2	8.3
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	4.9	7.8	0.0	6.4	9.1	0.0	8.8	12.2	11.6	10.6	15.8	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.5	56.5	0.0	61.7	55.9	0.0	52.7	44.0	44.6	70.1	55.8	27.5
LnGrp LOS	E	E		E	E		D	D	D	E	E	C
Approach Vol, veh/h		807			970			1105			1572	
Approach Delay, s/veh		57.3			58.3			46.5			52.7	
Approach LOS		E			E			D			D	

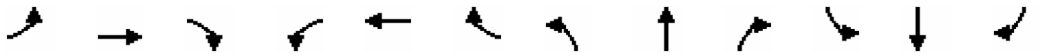
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.2	41.3	18.4	29.1	27.4	45.0	21.3	26.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	18.0	37.0	19.0	25.5	27.0	28.0	20.0	24.5
Max Q Clear Time (g_c+I1), s	20.9	34.6	13.1	21.5	22.2	28.5	16.0	18.9
Green Ext Time (p_c), s	0.0	1.6	0.3	1.5	0.2	0.0	0.3	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	53.2
HCM 7th LOS	D

Notes

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

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	179	40	707	25	294	1105	255
Future Volume (veh/h)	110	205	55	180	265	179	40	707	25	294	1105	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	179	40	707	25	294	1105	255
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	138	312	84	191	261	176	71	875	31	333	1139	261
Arrive On Green	0.08	0.23	0.23	0.11	0.26	0.26	0.04	0.26	0.26	0.20	0.42	0.42
Sat Flow, veh/h	1688	1345	361	1714	1001	676	1701	3342	118	1701	2739	628
Grp Volume(v), veh/h	110	0	260	180	0	444	40	359	373	294	682	678
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	0	1677	1701	1697	1764	1701	1697	1670
Q Serve(g_s), s	6.0	0.0	12.9	9.8	0.0	24.4	2.2	18.5	18.5	15.7	36.7	37.4
Cycle Q Clear(g_c), s	6.0	0.0	12.9	9.8	0.0	24.4	2.2	18.5	18.5	15.7	36.7	37.4
Prop In Lane	1.00		0.21	1.00		0.40	1.00		0.07	1.00		0.38
Lane Grp Cap(c), veh/h	138	0	395	191	0	437	71	444	462	333	706	695
V/C Ratio(X)	0.80	0.00	0.66	0.94	0.00	1.02	0.57	0.81	0.81	0.88	0.97	0.98
Avail Cap(c_a), veh/h	368	0	445	191	0	437	189	655	681	662	706	695
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	0.0	32.6	41.3	0.0	34.6	44.0	32.3	32.3	36.6	26.7	26.9
Incr Delay (d2), s/veh	7.5	0.0	3.0	49.2	0.0	46.9	5.2	4.4	4.3	5.9	25.6	28.1
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	2.8	0.0	5.6	6.7	0.0	15.4	1.0	8.0	8.3	6.9	19.0	19.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.7	0.0	35.6	90.5	0.0	81.5	49.2	36.8	36.6	42.5	52.3	55.0
LnGrp LOS	D		D	F		F	D	D	D	D	D	D
Approach Vol, veh/h		370			624			772			1654	
Approach Delay, s/veh		39.8			84.1			37.3			51.6	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	43.8	12.3	29.0	22.9	29.4	15.0	26.3
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.2	39.4	8.0	26.4	17.7	20.5	11.8	14.9
Green Ext Time (p_c), s	0.0	0.0	0.1	0.0	0.6	3.8	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	53.1
HCM 7th LOS	D

Notes

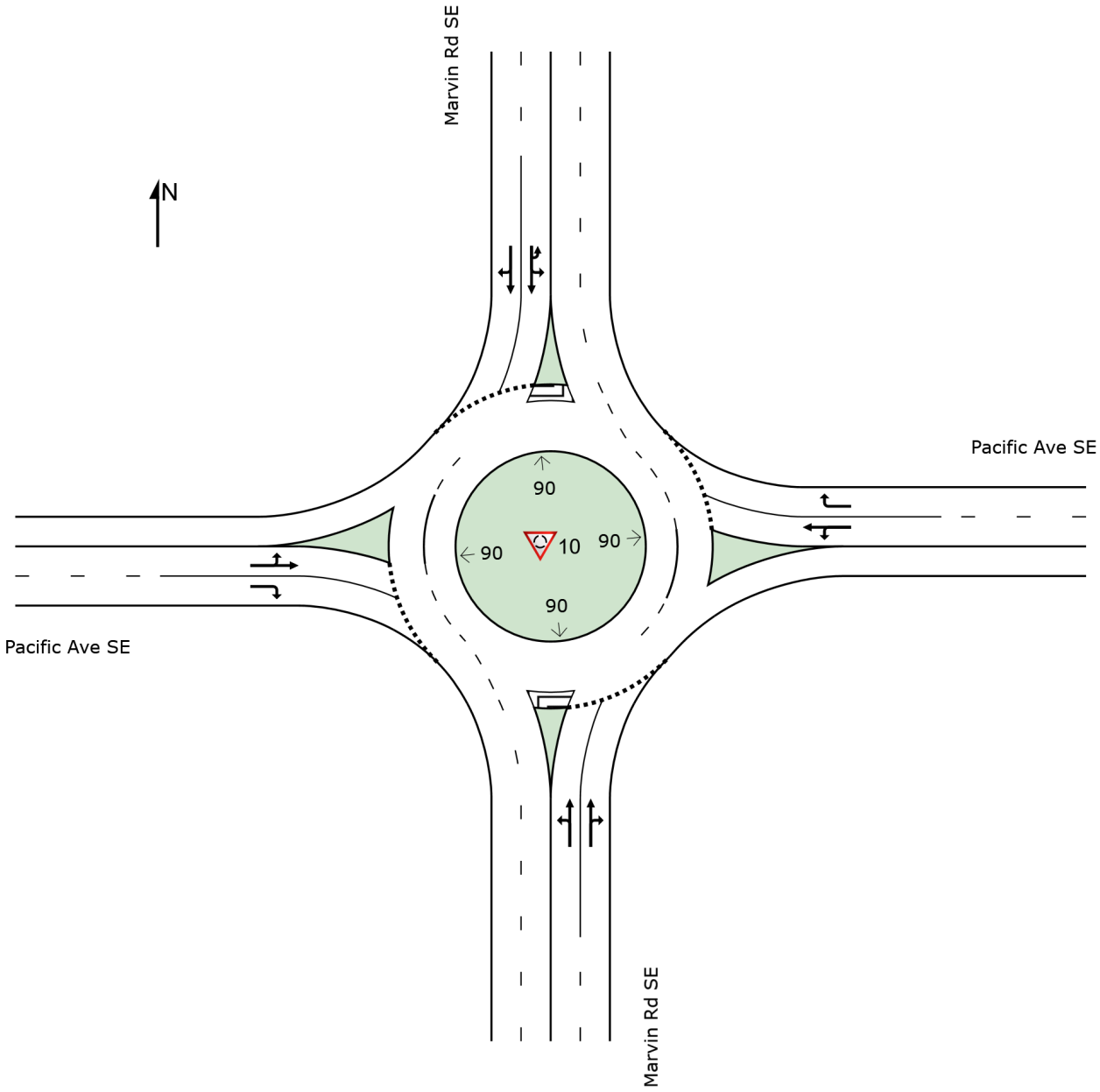
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	125	1.0	125	1.0	0.397	15.3	LOS B	2.8	70.1	0.84	0.76	0.86	31.8
8	T1	All MCs	489	1.0	489	1.0	0.397	9.0	LOS A	3.1	77.8	0.85	0.72	0.85	33.3
18	R2	All MCs	45	1.0	45	1.0	0.397	8.6	LOS A	3.1	77.8	0.85	0.70	0.85	33.3
Approach			659	1.0	659	1.0	0.397	10.1	LOS B	3.1	77.8	0.84	0.73	0.85	33.0
East: Pacific Ave SE															
1	L2	All MCs	35	1.0	35	1.0	0.316	11.3	LOS B	1.6	39.2	0.60	0.57	0.60	33.6
6	T1	All MCs	290	1.0	290	1.0	0.316	5.7	LOS A	1.6	39.2	0.60	0.57	0.60	34.3
16	R2	All MCs	298	1.0	298	1.0	0.338	6.2	LOS A	1.6	40.6	0.61	0.70	0.61	34.5
Approach			623	1.0	623	1.0	0.338	6.3	LOS A	1.6	40.6	0.60	0.63	0.60	34.3
North: Marvin Rd SE															
7u	U	All MCs	3	1.0	3	1.0	0.582	16.2	LOS B	5.2	130.7	0.77	0.75	0.86	31.8
7	L2	All MCs	415	1.0	415	1.0	0.582	13.8	LOS B	5.2	130.7	0.77	0.75	0.86	31.8
4	T1	All MCs	770	1.0	770	1.0	0.582	7.4	LOS A	5.3	134.1	0.75	0.68	0.82	33.7
14	R2	All MCs	110	1.0	110	1.0	0.582	7.3	LOS A	5.3	134.1	0.75	0.66	0.80	33.7
Approach			1298	1.0	1298	1.0	0.582	9.4	LOS A	5.3	134.1	0.76	0.70	0.83	33.0
West: Pacific Ave SE															
5	L2	All MCs	45	1.0	45	1.0	0.469	13.1	LOS B	2.8	69.6	0.79	0.77	0.89	33.0
2	T1	All MCs	325	1.0	325	1.0	0.469	7.5	LOS A	2.8	69.6	0.79	0.77	0.89	33.6
12	R2	All MCs	120	1.0	120	1.0	0.224	7.9	LOS A	1.0	24.3	0.71	0.82	0.71	34.0
Approach			490	1.0	490	1.0	0.469	8.1	LOS A	2.8	69.6	0.77	0.79	0.85	33.7
All Vehicles			3070	1.0	3070	1.0	0.582	8.7	LOS A	5.3	134.1	0.75	0.71	0.79	33.4

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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

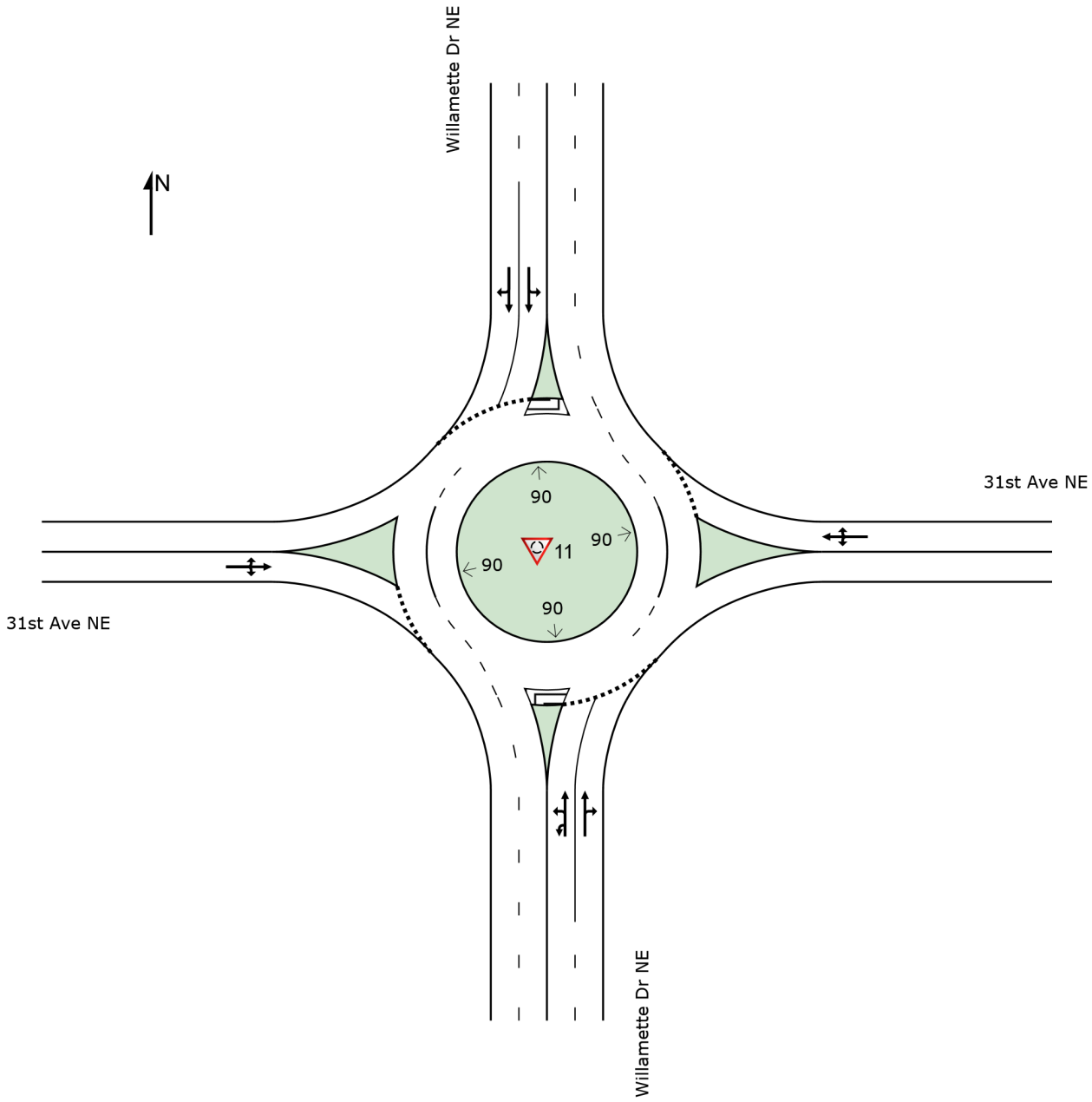
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SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	35	2.0	35	2.0	0.212	12.1	LOS B	1.2	30.3	0.11	0.50	0.11	34.4
3	L2	All MCs	65	2.0	65	2.0	0.212	9.7	LOS A	1.2	30.3	0.11	0.50	0.11	34.4
8	T1	All MCs	460	2.0	460	2.0	0.212	4.2	LOS A	1.2	30.7	0.11	0.44	0.11	35.7
18	R2	All MCs	94	2.0	94	2.0	0.212	4.3	LOS A	1.2	30.7	0.11	0.40	0.11	35.7
Approach			654	2.0	654	2.0	0.212	5.2	LOS A	1.2	30.7	0.11	0.45	0.11	35.5
East: 31st Ave NE															
1	L2	All MCs	69	3.0	69	3.0	0.092	11.2	LOS B	0.3	7.4	0.40	0.70	0.40	32.7
6	T1	All MCs	5	3.0	5	3.0	0.092	5.6	LOS A	0.3	7.4	0.40	0.70	0.40	33.4
16	R2	All MCs	15	3.0	15	3.0	0.092	5.5	LOS A	0.3	7.4	0.40	0.70	0.40	33.1
Approach			89	3.0	89	3.0	0.092	9.9	LOS A	0.3	7.4	0.40	0.70	0.40	32.8
North: Willamette Dr NE															
7	L2	All MCs	1	1.0	1	1.0	0.097	10.3	LOS B	0.5	11.8	0.32	0.44	0.32	34.7
4	T1	All MCs	263	1.0	263	1.0	0.097	4.7	LOS A	0.5	12.0	0.31	0.43	0.31	35.5
14	R2	All MCs	5	1.0	5	1.0	0.097	4.7	LOS A	0.5	12.0	0.30	0.43	0.30	35.1
Approach			269	1.0	269	1.0	0.097	4.8	LOS A	0.5	12.0	0.31	0.43	0.31	35.4
West: 31st Ave NE															
5	L2	All MCs	10	0.0	10	0.0	0.069	10.6	LOS B	0.2	5.7	0.34	0.56	0.34	34.6
2	T1	All MCs	10	0.0	10	0.0	0.069	5.0	LOS A	0.2	5.7	0.34	0.56	0.34	35.3
12	R2	All MCs	55	0.0	55	0.0	0.069	4.9	LOS A	0.2	5.7	0.34	0.56	0.34	35.0
Approach			75	0.0	75	0.0	0.069	5.7	LOS A	0.2	5.7	0.34	0.56	0.34	35.0
All Vehicles			1087	1.7	1087	1.7	0.212	5.5	LOS A	1.2	30.7	0.20	0.47	0.20	35.2

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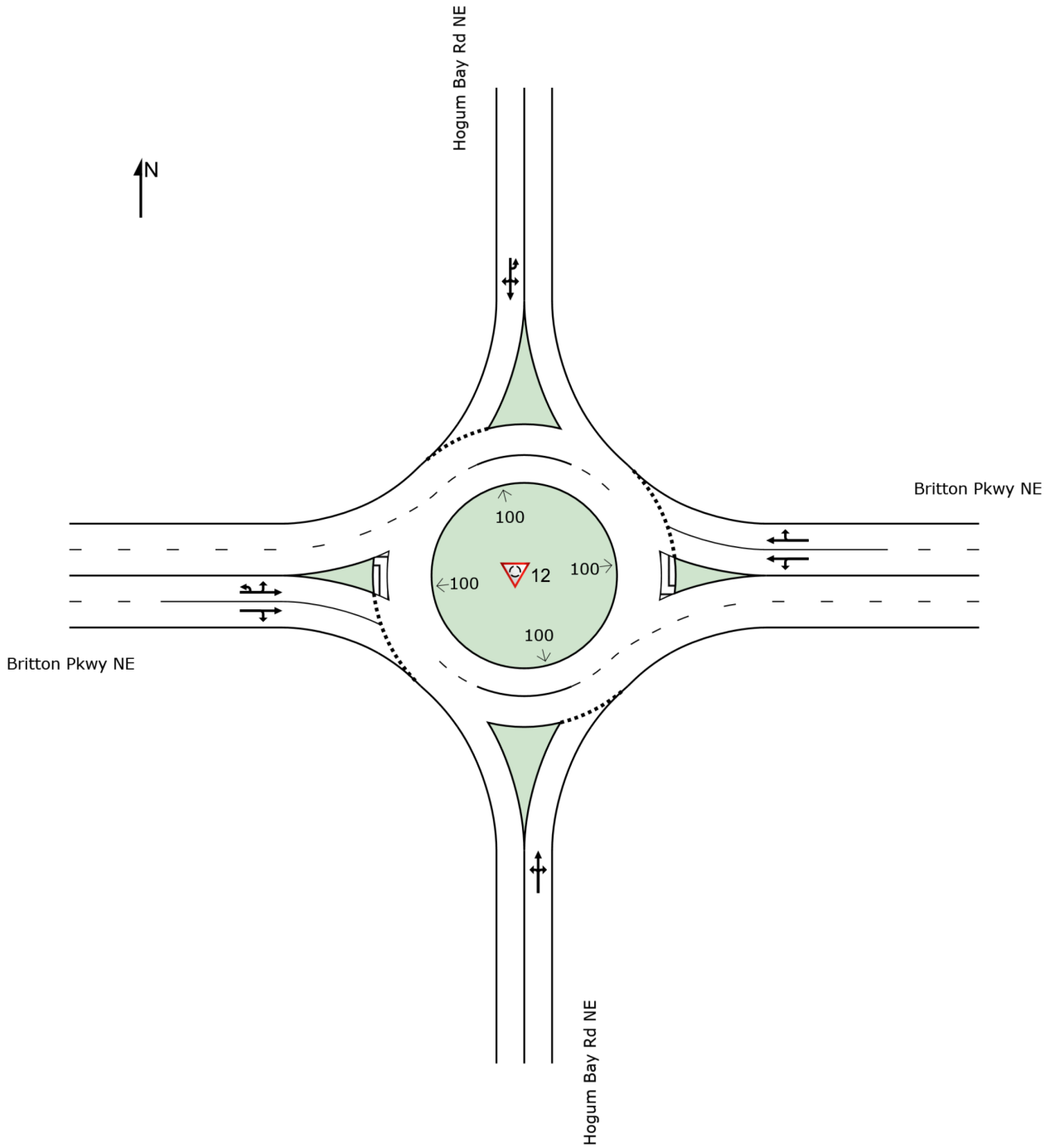
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	25	13.0	25	13.0	0.518	11.9	LOS B	2.7	75.6	0.50	0.59	0.52	33.9
8	T1	All MCs	175	13.0	175	13.0	0.518	6.0	LOS A	2.7	75.6	0.50	0.59	0.52	34.9
18	R2	All MCs	295	13.0	295	13.0	0.518	6.0	LOS A	2.7	75.6	0.50	0.59	0.52	34.5
Approach			495	13.0	495	13.0	0.518	6.3	LOS A	2.7	75.6	0.50	0.59	0.52	34.6
East: Britton Pkwy NE															
1	L2	All MCs	45	4.0	45	4.0	0.247	11.4	LOS B	1.4	36.4	0.50	0.54	0.50	33.8
6	T1	All MCs	541	4.0	541	4.0	0.247	5.3	LOS A	1.5	38.2	0.49	0.51	0.49	34.8
16	R2	All MCs	15	4.0	15	4.0	0.247	5.3	LOS A	1.5	38.2	0.48	0.49	0.48	34.6
Approach			601	4.0	601	4.0	0.247	5.8	LOS A	1.5	38.2	0.49	0.51	0.49	34.7
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.529	15.8	LOS B	2.8	75.0	0.63	0.76	0.74	33.5
7	L2	All MCs	30	10.0	30	10.0	0.529	13.3	LOS B	2.8	75.0	0.63	0.76	0.74	33.5
4	T1	All MCs	110	10.0	110	10.0	0.529	7.4	LOS A	2.8	75.0	0.63	0.76	0.74	34.3
14	R2	All MCs	292	10.0	292	10.0	0.529	7.4	LOS A	2.8	75.0	0.63	0.76	0.74	34.0
Approach			433	10.0	433	10.0	0.529	7.8	LOS A	2.8	75.0	0.63	0.76	0.74	34.0
West: Britton Pkwy NE															
5u	U	All MCs	5	7.0	5	7.0	0.111	13.2	LOS B	0.6	15.2	0.38	0.58	0.38	33.0
5	L2	All MCs	79	7.0	79	7.0	0.111	10.7	LOS B	0.6	15.2	0.38	0.58	0.38	33.0
2	T1	All MCs	168	7.0	168	7.0	0.111	4.7	LOS A	0.6	15.8	0.36	0.48	0.36	34.9
12	R2	All MCs	30	7.0	30	7.0	0.111	4.8	LOS A	0.6	15.8	0.36	0.44	0.36	34.9
Approach			282	7.0	282	7.0	0.111	6.6	LOS A	0.6	15.8	0.37	0.51	0.37	34.3
All Vehicles			1811	8.4	1811	8.4	0.529	6.5	LOS A	2.8	75.6	0.51	0.59	0.54	34.5

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Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
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Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	10.2

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	40	635	42	5	60	769	3	83	0	57	50	0	20
Future Vol, veh/h	40	635	42	5	60	769	3	83	0	57	50	0	20
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	40	635	42	5	60	769	3	83	0	57	50	0	20

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	773	0	0	677	677	0	0	1252	1639	340	1300	1659	388
Stage 1	-	-	-	-	-	-	-	736	736	-	902	902	-
Stage 2	-	-	-	-	-	-	-	516	903	-	399	757	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	825	-	-	531	904	-	-	129	99	656	121	99	616
Stage 1	-	-	-	-	-	-	-	377	423	-	303	359	-
Stage 2	-	-	-	-	-	-	-	510	354	-	604	419	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	824	-	-	847	847	-	-	109	87	656	97	87	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	109	87	-	97	87	-
Stage 1	-	-	-	-	-	-	-	358	403	-	280	332	-
Stage 2	-	-	-	-	-	-	-	455	327	-	524	398	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.53	0.75	89.24	63.32
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	166	824	-	-	847	-	-	127
HCM Lane V/C Ratio	0.845	0.049	-	-	0.077	-	-	0.55
HCM Ctrl Dly (s/v)	89.2	9.6	-	-	9.6	-	-	63.3
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	5.8	0.2	-	-	0.2	-	-	2.7

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	655	39	54	778	0	54	0	41	1	0	15
Future Vol, veh/h	2	655	39	54	778	0	54	0	41	1	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	2	655	39	54	778	0	54	0	41	1	0	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	778	0	0	694	0	0	1176	1565	347	1218	1584	389
Stage 1	-	-	-	-	-	-	679	679	-	886	886	-
Stage 2	-	-	-	-	-	-	497	886	-	332	698	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	822	-	-	891	-	-	147	110	649	139	110	615
Stage 1	-	-	-	-	-	-	408	450	-	310	365	-
Stage 2	-	-	-	-	-	-	523	361	-	661	445	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	822	-	-	891	-	-	134	104	649	122	103	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	134	104	-	122	103	-
Stage 1	-	-	-	-	-	-	407	448	-	291	343	-
Stage 2	-	-	-	-	-	-	480	339	-	618	444	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.03	0.6	37.16	12.58
HCM LOS			E	B

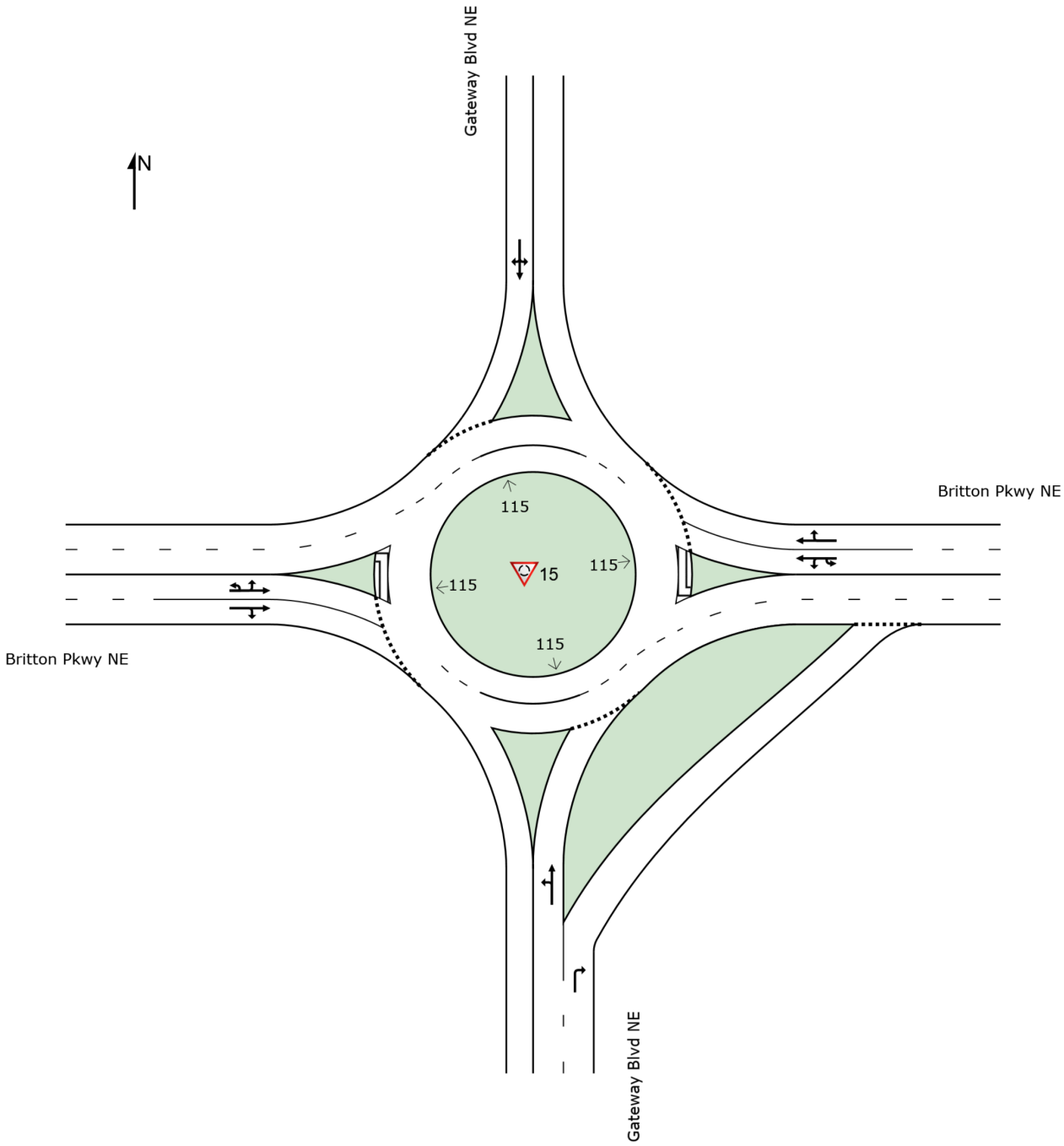
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	204	822	-	-	891	-	-	491
HCM Lane V/C Ratio	0.466	0.002	-	-	0.061	-	-	0.033
HCM Ctrl Dly (s/v)	37.2	9.4	-	-	9.3	-	-	12.6
HCM Lane LOS	E	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	2.2	0	-	-	0.2	-	-	0.1

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	471	2.0	471	2.0	0.397	11.1	LOS B	1.7	43.3	0.47	0.70	0.47	32.2
8	T1	All MCs	30	2.0	30	2.0	0.397	4.8	LOS A	1.7	43.3	0.47	0.70	0.47	32.9
18	R2	All MCs	172	2.0	172	2.0	0.132	4.4	LOS A	0.4	11.1	0.35	0.52	0.35	35.6
Approach			673	2.0	673	2.0	0.397	9.1	LOS A	1.7	43.3	0.44	0.66	0.44	33.0
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.400	16.2	LOS B	2.7	68.5	0.74	0.70	0.74	32.5
1	L2	All MCs	151	3.0	151	3.0	0.400	13.7	LOS B	2.7	68.5	0.74	0.70	0.74	32.5
6	T1	All MCs	526	3.0	526	3.0	0.400	6.8	LOS A	3.0	76.0	0.74	0.65	0.74	34.0
16	R2	All MCs	135	3.0	135	3.0	0.400	6.7	LOS A	3.0	76.0	0.73	0.62	0.73	34.1
Approach			817	3.0	817	3.0	0.400	8.1	LOS A	3.0	76.0	0.74	0.66	0.74	33.7
North: Gateway Blvd NE															
7	L2	All MCs	19	2.0	19	2.0	0.222	13.5	LOS B	1.0	26.0	0.69	0.74	0.69	33.6
4	T1	All MCs	72	2.0	72	2.0	0.222	7.1	LOS A	1.0	26.0	0.69	0.74	0.69	34.3
14	R2	All MCs	65	2.0	65	2.0	0.222	7.2	LOS A	1.0	26.0	0.69	0.74	0.69	34.1
Approach			156	2.0	156	2.0	0.222	8.0	LOS A	1.0	26.0	0.69	0.74	0.69	34.1
West: Britton Pkwy NE															
5u	U	All MCs	5	5.0	5	5.0	0.304	13.9	LOS B	1.9	48.5	0.48	0.52	0.48	33.9
5	L2	All MCs	75	5.0	75	5.0	0.304	11.3	LOS B	1.9	48.5	0.48	0.52	0.48	33.8
2	T1	All MCs	442	5.0	442	5.0	0.304	4.9	LOS A	2.0	50.9	0.47	0.51	0.47	34.9
12	R2	All MCs	258	5.0	258	5.0	0.304	4.9	LOS A	2.0	50.9	0.46	0.49	0.46	35.0
Approach			780	5.0	780	5.0	0.304	5.6	LOS A	2.0	50.9	0.47	0.50	0.47	34.8
All Vehicles			2426	3.3	2426	3.3	0.400	7.6	LOS A	3.0	76.0	0.57	0.61	0.57	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	97.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	661	144	38	1019	10	166	0	73	14	10	29
Future Vol, veh/h	106	661	144	38	1019	10	166	0	73	14	10	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	106	661	144	38	1019	10	166	0	73	14	10	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1029	0	0	805	0	0	1536	2050	403	1643	2117	515
Stage 1	-	-	-	-	-	-	945	945	-	1100	1100	-
Stage 2	-	-	-	-	-	-	591	1105	-	543	1017	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	677	-	-	815	-	-	~ 79	55	597	67	51	510
Stage 1	-	-	-	-	-	-	282	339	-	230	290	-
Stage 2	-	-	-	-	-	-	461	285	-	497	318	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	677	-	-	815	-	-	~ 48	44	597	47	41	510
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 48	44	-	47	41	-
Stage 1	-	-	-	-	-	-	237	286	-	219	277	-
Stage 2	-	-	-	-	-	-	399	271	-	368	268	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.32	0.34	$ 900.47	77.43
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	48	597	677	-	-	815	-	-	45	510
HCM Lane V/C Ratio	3.475	0.122	0.157	-	-	0.047	-	-	0.538	0.057
HCM Ctrl Dly (s/v)	$ 1291.2	11.9	11.3	-	-	9.6	-	-	155.9	12.5
HCM Lane LOS	F	B	B	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	18.2	0.4	0.6	-	-	0.1	-	-	2	0.2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	96	0	0	193	0	0	0	239	0	0	0
Future Vol, veh/h	0	96	0	0	193	0	0	0	239	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	96	0	0	193	0	0	0	239	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	193	0	0	96	0	0	289	289	96	289	289	193
Stage 1	-	-	-	-	-	-	96	96	-	193	193	-
Stage 2	-	-	-	-	-	-	193	193	-	96	96	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1380	-	-	1498	-	-	663	621	960	663	621	849
Stage 1	-	-	-	-	-	-	911	815	-	809	741	-
Stage 2	-	-	-	-	-	-	809	741	-	911	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1380	-	-	1498	-	-	663	621	960	498	621	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	663	621	-	498	621	-
Stage 1	-	-	-	-	-	-	911	815	-	809	741	-
Stage 2	-	-	-	-	-	-	809	741	-	684	815	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	9.99	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	960	1380	-	-	1498	-	-	-
HCM Lane V/C Ratio	0.249	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	10	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	79	70	380	49	70
Future Vol, veh/h	175	79	70	380	49	70
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	175	79	70	380	49	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	254	0	735	215
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1323	-	387	825
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1323	-	361	825
Mov Cap-2 Maneuver	-	-	-	-	361	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	557	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.22	13.55
HCM LOS			B

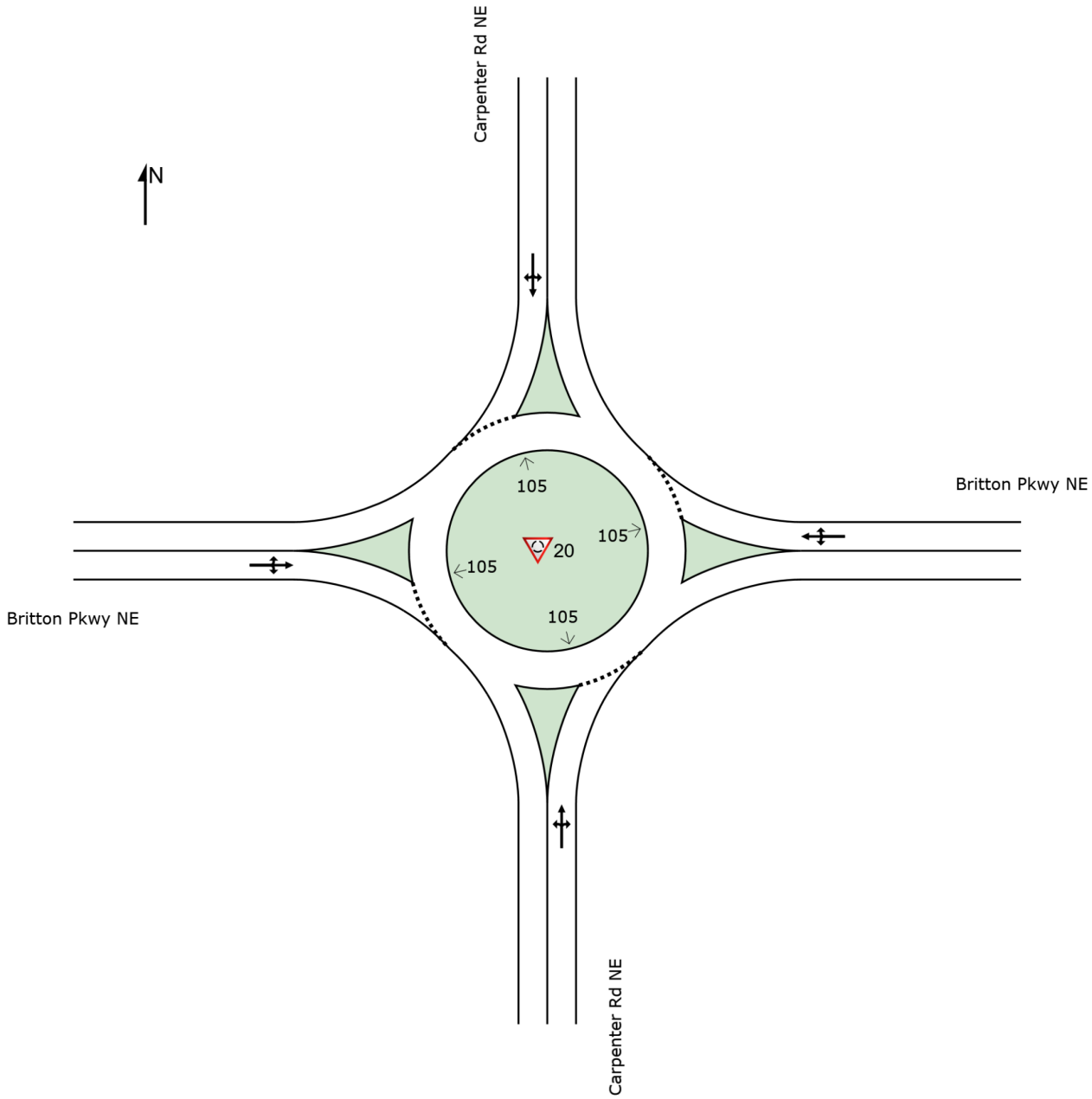
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	540	-	-	280	-
HCM Lane V/C Ratio	0.221	-	-	0.053	-
HCM Ctrl Dly (s/v)	13.5	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.2	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	90	4.0	90	4.0	0.640	13.8	LOS B	6.5	167.9	0.83	0.73	0.94	31.0
8	T1	All MCs	2	4.0	2	4.0	0.640	7.6	LOS A	6.5	167.9	0.83	0.73	0.94	28.6
18	R2	All MCs	536	4.0	536	4.0	0.640	7.8	LOS A	6.5	167.9	0.83	0.73	0.94	31.6
Approach			628	4.0	628	4.0	0.640	8.7	LOS A	6.5	167.9	0.83	0.73	0.94	31.5
East: Britton Pkwy NE															
1	L2	All MCs	633	5.0	633	5.0	0.937	12.2	LOS D	24.3	632.8	1.00	0.64	1.00	29.6
6	T1	All MCs	567	5.0	567	5.0	0.937	6.0	LOS D	24.3	632.8	1.00	0.64	1.00	32.8
16	R2	All MCs	1	5.0	1	5.0	0.937	6.2	LOS D	24.3	632.8	1.00	0.64	1.00	30.5
Approach			1201	5.0	1201	5.0	0.937	9.2	LOS A	24.3	632.8	1.00	0.64	1.00	31.3
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.012	26.2	LOS C	0.1	2.4	1.00	0.74	1.00	25.5
4	T1	All MCs	1	0.0	1	0.0	0.012	20.0	LOS C	0.1	2.4	1.00	0.74	1.00	21.3
14	R2	All MCs	1	0.0	1	0.0	0.012	20.2	LOS C	0.1	2.4	1.00	0.74	1.00	25.8
Approach			3	0.0	3	0.0	0.012	22.2	LOS C	0.1	2.4	1.00	0.74	1.00	24.5
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.730	19.4	LOS B	8.8	226.7	1.00	0.96	1.36	29.0
2	T1	All MCs	384	4.0	384	4.0	0.730	13.2	LOS B	8.8	226.7	1.00	0.96	1.36	31.9
12	R2	All MCs	150	4.0	150	4.0	0.730	13.4	LOS B	8.8	226.7	1.00	0.96	1.36	28.9
Approach			535	4.0	535	4.0	0.730	13.3	LOS B	8.8	226.7	1.00	0.96	1.36	31.2
All Vehicles			2367	4.5	2367	4.5	0.937	10.0	LOS B	24.3	632.8	0.95	0.74	1.06	31.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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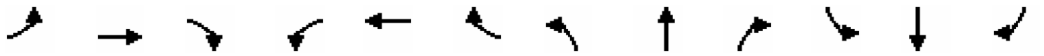
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	1025	220	520	1110	124	120	220	305	145	535	199
Future Volume (veh/h)	273	1025	220	520	1110	124	120	220	305	145	535	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	273	1025	220	520	1110	124	120	220	305	145	535	199
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	259	1142	613	543	1067	119	120	283	490	261	580	215
Arrive On Green	0.15	0.34	0.34	0.17	0.35	0.35	0.07	0.16	0.16	0.16	0.24	0.24
Sat Flow, veh/h	1701	3393	1504	3274	3050	340	1701	1786	1508	1674	2383	883
Grp Volume(v), veh/h	273	1025	220	520	612	622	120	220	305	145	374	360
Grp Sat Flow(s),veh/h/ln	1701	1697	1504	1637	1683	1707	1701	1786	1508	1674	1670	1596
Q Serve(g_s), s	18.3	34.5	12.2	18.9	42.0	42.0	8.5	14.2	11.6	9.6	26.2	26.4
Cycle Q Clear(g_c), s	18.3	34.5	12.2	18.9	42.0	42.0	8.5	14.2	11.6	9.6	26.2	26.4
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	259	1142	613	543	589	597	120	283	490	261	407	389
V/C Ratio(X)	1.05	0.90	0.36	0.96	1.04	1.04	1.00	0.78	0.62	0.56	0.92	0.93
Avail Cap(c_a), veh/h	259	1142	613	543	589	597	120	417	603	261	417	399
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)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	37.8	24.7	49.6	39.0	39.0	55.7	48.4	14.0	46.8	44.3	44.3
Incr Delay (d2), s/veh	66.0	9.6	1.4	28.0	47.5	48.0	80.6	6.1	1.6	1.6	25.2	27.0
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	12.5	15.6	4.6	9.8	24.8	25.2	6.3	6.8	4.0	4.1	13.6	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	116.9	47.5	26.1	77.7	86.5	87.0	136.4	54.5	15.6	48.4	69.4	71.3
LnGrp LOS	F	D	C	E	F	F	F	D	B	D	E	E
Approach Vol, veh/h		1518			1754			645			879	
Approach Delay, s/veh		56.8			84.1			51.4			66.7	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	47.5	24.2	24.5	25.4	45.9	14.0	34.7
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	17.5	42.0	10.5	28.0	19.9	39.6	8.5	30.0
Max Q Clear Time (g_c+I1), s	20.3	44.0	11.6	16.2	20.9	36.5	10.5	28.4
Green Ext Time (p_c), s	0.0	0.0	0.0	2.2	0.0	2.3	0.0	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	67.9
HCM 7th LOS	E

Notes

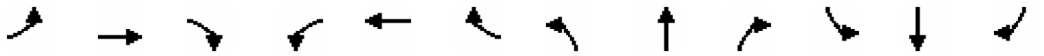
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	980	165	135	810	30	180	243	100	130	418	567
Future Volume (veh/h)	283	980	165	135	810	30	180	243	100	130	418	567
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	283	980	165	135	810	30	180	243	100	130	418	567
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	296	1010	170	157	888	33	202	709	283	155	473	418
Arrive On Green	0.17	0.35	0.35	0.09	0.27	0.27	0.12	0.30	0.30	0.09	0.28	0.28
Sat Flow, veh/h	1701	2903	488	1701	3336	124	1674	2324	928	1701	1697	1500
Grp Volume(v), veh/h	283	572	573	135	412	428	180	172	171	130	418	567
Grp Sat Flow(s),veh/h/ln	1701	1697	1695	1701	1697	1763	1674	1670	1582	1701	1697	1500
Q Serve(g_s), s	23.6	47.6	47.7	11.2	33.8	33.8	15.2	11.5	12.0	10.8	33.8	40.0
Cycle Q Clear(g_c), s	23.6	47.6	47.7	11.2	33.8	33.8	15.2	11.5	12.0	10.8	33.8	40.0
Prop In Lane	1.00		0.29	1.00		0.07	1.00		0.59	1.00		1.00
Lane Grp Cap(c), veh/h	296	590	590	157	451	469	202	509	483	155	473	418
V/C Ratio(X)	0.95	0.97	0.97	0.86	0.91	0.91	0.89	0.34	0.35	0.84	0.88	1.36
Avail Cap(c_a), veh/h	296	590	590	255	479	498	251	509	483	296	473	418
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.7	46.0	46.1	64.2	51.0	51.0	62.2	38.6	38.8	64.2	49.5	51.7
Incr Delay (d2), s/veh	39.8	29.4	29.8	8.3	21.3	20.8	23.8	0.4	0.4	11.5	17.7	174.8
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	13.5	24.8	24.9	5.2	17.0	17.6	7.8	4.8	4.8	5.2	16.7	35.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	98.4	75.4	75.9	72.4	72.3	71.8	86.0	39.0	39.3	75.7	67.2	226.6
LnGrp LOS	F	E	E	E	E	E	F	D	D	E	E	F
Approach Vol, veh/h		1428			975			523			1115	
Approach Delay, s/veh		80.2			72.1			55.3			149.2	
Approach LOS		F			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.0	43.7	19.0	49.8	18.8	55.9	22.8	46.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	25.0	40.5	25.0	36.0	21.5	44.0	21.5	40.0
Max Q Clear Time (g_c+I1), s	25.6	35.8	12.8	14.0	13.2	49.7	17.2	42.0
Green Ext Time (p_c), s	0.0	2.4	0.2	2.0	0.1	0.0	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	94.1
HCM 7th LOS	F



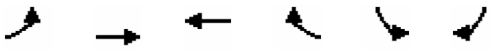
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1399	50	0	1359	55	80	5	35	144	1	70
Future Volume (veh/h)	100	1399	50	0	1359	55	80	5	35	144	1	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	100	1399	0	0	1359	55	80	5	35	144	1	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	148	2532		1	2202	89	163	315	267	298	2	267
Arrive On Green	0.09	1.00	0.00	0.00	0.67	0.67	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3300	3393	1514	1688	3298	133	1350	1800	1525	1364	9	1525
Grp Volume(v), veh/h	100	1399	0	0	693	721	80	5	35	145	0	70
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1748	1350	1800	1525	1374	0	1525
Q Serve(g_s), s	3.5	0.0	0.0	0.0	27.9	28.0	7.0	0.3	2.3	11.6	0.0	4.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	27.9	28.0	18.8	0.3	2.3	11.8	0.0	4.8
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	148	2532		1	1124	1167	163	315	267	300	0	267
V/C Ratio(X)	0.67	0.55		0.00	0.62	0.62	0.49	0.02	0.13	0.48	0.00	0.26
Avail Cap(c_a), veh/h	275	2532		77	1124	1167	389	615	521	532	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.00	0.00	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	0.0	11.3	11.3	54.4	41.0	41.8	45.9	0.0	42.8
Incr Delay (d2), s/veh	3.7	0.8	0.0	0.0	0.2	0.2	1.7	0.0	0.2	0.9	0.0	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	1.5	0.3	0.0	0.0	9.7	10.1	2.4	0.1	0.9	4.1	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.4	0.8	0.0	0.0	11.5	11.5	56.1	41.0	42.0	46.8	0.0	43.2
LnGrp LOS	E	A			B	B	E	D	D	D		D
Approach Vol, veh/h		1499			1414			120			215	
Approach Delay, s/veh		4.6			11.5			51.3			45.6	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	85.6		25.0	0.0	95.0		25.0				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	5.5	30.0		20.8	0.0	2.0		13.8				
Green Ext Time (p_c), s	0.1	13.4		0.2	0.0	19.6		0.8				

Intersection Summary	
HCM 7th Control Delay, s/veh	12.0
HCM 7th LOS	B

Notes

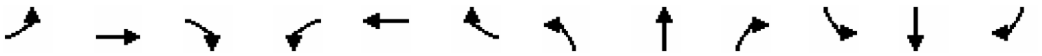
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1554	1424	25	30	50
Future Volume (veh/h)	50	1554	1424	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	50	1554	1424	25	30	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	803	4264	1438	25	79	71
Arrive On Green	0.40	0.87	0.85	0.85	0.05	0.05
Sat Flow, veh/h	1701	5036	3474	59	1714	1525
Grp Volume(v), veh/h	50	1554	708	741	30	50
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1761	1714	1525
Q Serve(g_s), s	0.0	7.0	47.6	48.0	2.0	3.9
Cycle Q Clear(g_c), s	0.0	7.0	47.6	48.0	2.0	3.9
Prop In Lane	1.00			0.03	1.00	1.00
Lane Grp Cap(c), veh/h	803	4264	715	748	79	71
V/C Ratio(X)	0.06	0.36	0.99	0.99	0.38	0.71
Avail Cap(c_a), veh/h	803	4264	975	1020	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.75	0.75	1.00	1.00
Uniform Delay (d), s/veh	13.6	1.4	8.8	8.8	55.5	56.4
Incr Delay (d2), s/veh	0.0	0.2	26.7	26.4	1.1	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.1	8.7	9.0	0.9	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	13.7	1.6	35.5	35.2	56.6	61.2
LnGrp LOS	B	A	D	D	E	E
Approach Vol, veh/h		1604	1449		80	
Approach Delay, s/veh		2.0	35.3		59.5	
Approach LOS		A	D		E	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	48.6	61.8				110.4	9.6
Change Period (Y+Rc), s	5.5	5.5				5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5				82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	50.0				9.0	5.9
Green Ext Time (p_c), s	0.0	11.6				23.3	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.9
HCM 7th LOS	B



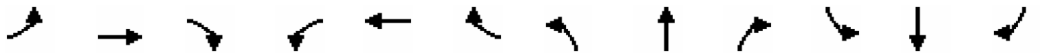
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	663	945	0	0	1414	75	15	0	674	0	0	0
Future Volume (veh/h)	663	945	0	0	1414	75	15	0	674	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	663	945	0	0	1414	0	15	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3080	0	0	1878		22	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	663	945	0	0	1414	0	15	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	16.1	0.0	0.0	38.4	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	16.1	0.0	0.0	38.4	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3080	0	0	1878		22	0				
V/C Ratio(X)	1.28	0.31	0.00	0.00	0.75		0.67	0.00				
Avail Cap(c_a), veh/h	517	3080	0	0	1878		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	20.2	0.0	59.0	0.0	0.0			
Incr Delay (d2), s/veh	128.1	0.0	0.0	0.0	2.9	0.0	29.8	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	34.4	6.5	0.0	0.0	15.2	0.0	0.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	175.9	5.3	0.0	0.0	23.1	0.0	88.7	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1608			1414			15				
Approach Delay, s/veh		75.7			23.1			88.7				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.4		5.6		114.4			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	40.4		3.1		18.1			
Green Ext Time (p_c), s	0.0	1.7		0.0		10.5			

Intersection Summary	
HCM 7th Control Delay, s/veh	51.2
HCM 7th LOS	D

Notes

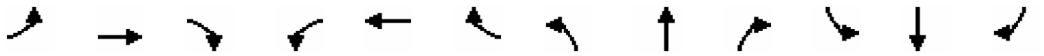
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1453	360	544	900	0	0	0	0	190	1	579
Future Volume (vph)	0	1453	360	544	900	0	0	0	0	190	1	579
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1693	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1693	1515
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1453	360	544	900	0	0	0	0	190	1	579
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	1453	152	544	900	0	0	0	0	0	191	546
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.5	50.5	33.2	44.3						21.3	66.2
Effective Green, g (s)		50.5	50.5	33.2	44.3						21.3	66.2
Actuated g/C Ratio		0.42	0.42	0.28	0.37						0.18	0.55
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1424	637	463	1237						300	835
v/s Ratio Prot		c0.43		c0.32	0.27							c0.36
v/s Ratio Perm			0.10								0.11	
v/c Ratio		1.02	0.24	1.17	0.73						0.64	0.65
Uniform Delay, d1		34.8	22.4	43.4	32.6						45.8	18.9
Progression Factor		0.75	0.34	0.64	0.17						1.00	1.00
Incremental Delay, d2		22.8	0.5	81.0	0.3						4.5	2.1
Delay (s)		48.8	8.0	108.6	5.9						50.3	20.9
Level of Service		D	A	F	A						D	C
Approach Delay (s/veh)		40.7			44.6			0.0			28.2	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	819	460	430	769	285	110	449	694	300	372	159
Future Volume (veh/h)	83	819	460	430	769	285	110	449	694	300	372	159
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	83	819	0	430	769	0	110	449	694	300	372	159
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	209	857		469	905		134	461	1059	312	823	346
Arrive On Green	0.12	0.25	0.00	0.14	0.27	0.00	0.08	0.26	0.26	0.18	0.35	0.35
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2623	1701	2322	977
Grp Volume(v), veh/h	83	819	0	430	769	0	110	449	694	300	270	261
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1311	1701	1697	1602
Q Serve(g_s), s	5.4	28.5	0.0	15.5	26.0	0.0	7.6	29.9	9.4	21.0	14.7	15.1
Cycle Q Clear(g_c), s	5.4	28.5	0.0	15.5	26.0	0.0	7.6	29.9	9.4	21.0	14.7	15.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	209	857		469	905		134	461	1059	312	601	568
V/C Ratio(X)	0.40	0.96		0.92	0.85		0.82	0.97	0.66	0.96	0.45	0.46
Avail Cap(c_a), veh/h	209	857		469	1080		213	461	1059	312	601	568
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	0.00	0.64	0.64	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.5	44.2	0.0	50.7	41.6	0.0	54.4	44.1	10.9	48.6	29.7	29.9
Incr Delay (d2), s/veh	0.5	21.7	0.0	16.4	6.6	0.0	10.2	34.8	1.3	40.4	0.2	0.2
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	2.3	14.5	0.0	7.4	11.5	0.0	3.7	17.5	3.4	12.4	6.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.0	65.9	0.0	67.1	48.1	0.0	64.7	78.9	12.2	89.0	29.9	30.1
LnGrp LOS	D	E		E	D		E	E	B	F	C	C
Approach Vol, veh/h		902			1199			1253			831	
Approach Delay, s/veh		64.4			54.9			40.7			51.3	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.2	37.8	26.0	36.0	22.7	35.3	14.5	47.5
Change Period (Y+Rc), s	5.5	* 5.5	4.0	5.0	5.5	5.0	5.0	* 5
Max Green Setting (Gmax), s	9.0	* 39	22.0	31.0	17.2	30.3	15.0	* 38
Max Q Clear Time (g_c+I1), s	7.4	28.0	23.0	31.9	17.5	30.5	9.6	17.1
Green Ext Time (p_c), s	0.0	4.3	0.0	0.0	0.0	0.0	0.1	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	52.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

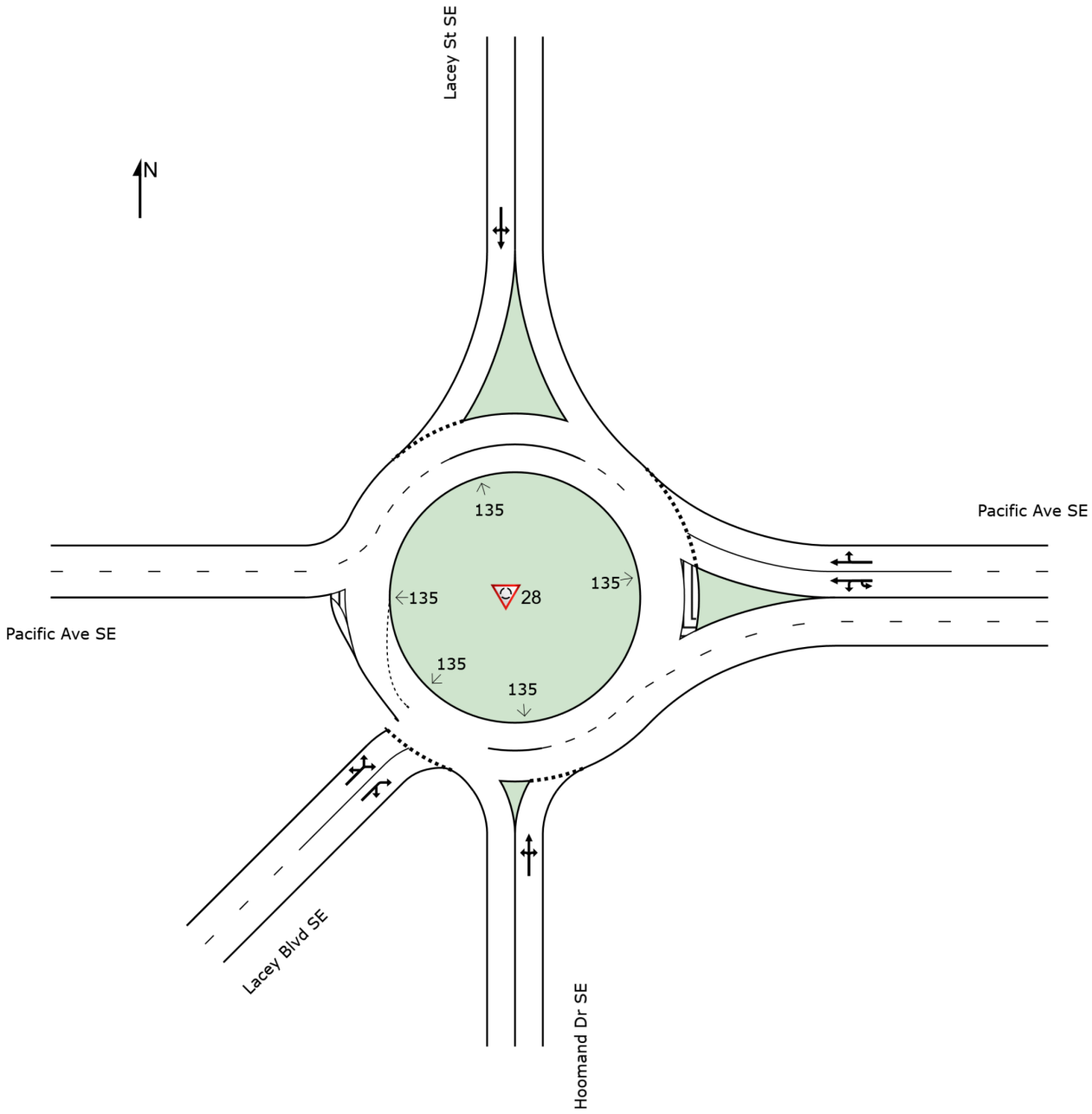
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	75	2.0	75	2.0	0.200	13.3	LOS B	0.8	20.6	0.66	0.81	0.66	33.0
8	T1	All MCs	4	2.0	4	2.0	0.200	6.3	LOS A	0.8	20.6	0.66	0.81	0.66	33.7
18	R2	All MCs	70	2.0	70	2.0	0.200	6.6	LOS A	0.8	20.6	0.66	0.81	0.66	33.4
Approach			149	2.0	149	2.0	0.200	9.9	LOS A	0.8	20.6	0.66	0.81	0.66	33.2
East: Pacific Ave SE															
1u	U	All MCs	20	1.0	20	1.0	0.654	14.4	LOS B	6.0	151.6	0.60	0.50	0.60	34.0
1	L2	All MCs	85	1.0	85	1.0	0.654	11.7	LOS B	6.0	151.6	0.60	0.50	0.60	34.1
6	T1	All MCs	1757	1.0	1757	1.0	0.654	4.5	LOS A	6.1	154.4	0.57	0.46	0.57	35.1
16	R2	All MCs	60	1.0	60	1.0	0.654	4.8	LOS A	6.1	154.4	0.54	0.44	0.54	34.9
Approach			1922	1.0	1922	1.0	0.654	4.9	LOS A	6.1	154.4	0.57	0.46	0.57	35.0
North: Lacey St SE															
7	L2	All MCs	20	2.0	20	2.0	0.122	15.0	LOS B	0.5	13.8	0.76	0.86	0.76	32.8
4	T1	All MCs	5	2.0	5	2.0	0.122	8.1	LOS A	0.5	13.8	0.76	0.86	0.76	33.5
14	R2	All MCs	40	2.0	40	2.0	0.122	8.3	LOS A	0.5	13.8	0.76	0.86	0.76	33.2
Approach			65	2.0	65	2.0	0.122	10.3	LOS B	0.5	13.8	0.76	0.86	0.76	33.1
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	60	1.0	60	1.0	0.536	12.3	LOS B	3.8	96.5	0.40	0.45	0.40	34.8
5ax	L1	All MCs	50	1.0	50	1.0	0.536	9.5	LOS A	3.8	96.5	0.40	0.45	0.40	34.8
12ax	R1	All MCs	1333	1.0	1333	1.0	0.536	3.7	LOS A	3.9	98.3	0.39	0.42	0.39	35.9
12bx	R3	All MCs	50	1.0	50	1.0	0.536	4.3	LOS A	3.9	98.3	0.38	0.40	0.38	35.5
Approach			1493	1.0	1493	1.0	0.536	4.2	LOS A	3.9	98.3	0.39	0.42	0.39	35.8
All Vehicles			3629	1.1	3629	1.1	0.654	5.0	LOS A	6.1	154.4	0.50	0.47	0.50	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	264	5	65	345	70	10	25	155	20	30	4
Future Vol, veh/h	5	264	5	65	345	70	10	25	155	20	30	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	5	264	5	65	345	70	10	25	155	20	30	4
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.9	17.4	10.4	10.1
HCM LOS	B	C	B	B

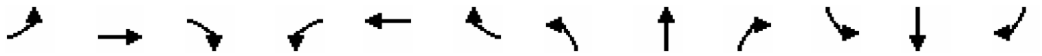
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	2%	14%	37%
Vol Thru, %	71%	0%	96%	72%	56%
Vol Right, %	0%	100%	2%	15%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	155	274	480	54
LT Vol	10	0	5	65	20
Through Vol	25	0	264	345	30
RT Vol	0	155	5	70	4
Lane Flow Rate	35	155	274	480	54
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.065	0.25	0.404	0.665	0.095
Departure Headway (Hd)	6.667	5.808	5.305	4.986	6.36
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	537	617	677	725	562
Service Time	4.413	3.554	3.345	3.02	4.42
HCM Lane V/C Ratio	0.065	0.251	0.405	0.662	0.096
HCM Control Delay, s/veh	9.9	10.5	11.9	17.4	10.1
HCM Lane LOS	A	B	B	C	B
HCM 95th-tile Q	0.2	1	2	5.1	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	138	204	370	190	124	285
Future Volume (veh/h)	138	204	370	190	124	285
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	138	204	370	190	124	285
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	317	282	767	650	156	1109
Arrive On Green	0.19	0.19	0.43	0.43	0.09	0.62
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	138	204	370	190	124	285
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	3.3	5.8	6.8	3.7	3.2	3.3
Cycle Q Clear(g_c), s	3.3	5.8	6.8	3.7	3.2	3.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	317	282	767	650	156	1109
V/C Ratio(X)	0.44	0.72	0.48	0.29	0.80	0.26
Avail Cap(c_a), veh/h	673	599	767	650	189	1109
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.4	17.4	9.4	8.6	20.3	4.0
Incr Delay (d2), s/veh	0.9	3.5	2.2	1.1	17.5	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.0	2.5	1.2	1.9	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	17.3	20.9	11.6	9.7	37.8	4.5
LnGrp LOS	B	C	B	A	D	A
Approach Vol, veh/h	342		560			409
Approach Delay, s/veh	19.5		10.9			14.6
Approach LOS	B		B			B

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.6	23.9				32.5	13.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	5.2	8.8				5.3	7.8
Green Ext Time (p_c), s	0.0	2.1				1.6	0.8

Intersection Summary			
HCM 7th Control Delay, s/veh		14.3	
HCM 7th LOS		B	



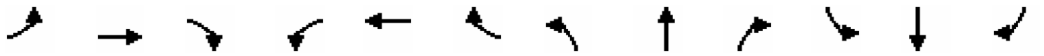
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	857	410	265	863	55	205	414	245	75	220	93
Future Volume (veh/h)	131	857	410	265	863	55	205	414	245	75	220	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	131	857	410	265	863	55	205	414	245	75	220	93
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	159	812	354	298	1081	478	379	796	330	252	356	145
Arrive On Green	0.09	0.24	0.24	0.18	0.32	0.32	0.23	0.23	0.23	0.15	0.15	0.15
Sat Flow, veh/h	1701	3393	1477	1674	3340	1477	1674	3516	1457	1701	2402	978
Grp Volume(v), veh/h	131	857	410	265	863	55	205	414	245	75	161	152
Grp Sat Flow(s),veh/h/ln	1701	1697	1477	1674	1670	1477	1674	1758	1457	1701	1786	1593
Q Serve(g_s), s	7.3	23.0	23.0	14.9	22.6	2.5	10.4	9.9	15.0	3.8	8.1	8.6
Cycle Q Clear(g_c), s	7.3	23.0	23.0	14.9	22.6	2.5	10.4	9.9	15.0	3.8	8.1	8.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	159	812	354	298	1081	478	379	796	330	252	265	236
V/C Ratio(X)	0.82	1.06	1.16	0.89	0.80	0.12	0.54	0.52	0.74	0.30	0.61	0.64
Avail Cap(c_a), veh/h	177	812	354	383	1216	538	627	1317	546	602	632	564
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	36.6	36.6	38.6	29.6	22.8	32.8	32.6	34.6	36.5	38.3	38.5
Incr Delay (d2), s/veh	22.9	47.2	98.8	17.3	3.3	0.1	0.9	0.4	2.5	0.5	1.7	2.2
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	4.0	14.6	17.8	7.4	9.3	0.9	4.2	4.2	5.5	1.6	3.6	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.6	83.8	135.3	55.9	32.9	22.9	33.7	33.0	37.1	37.0	40.0	40.7
LnGrp LOS	E	F	F	E	C	C	C	C	D	D	D	D
Approach Vol, veh/h		1398			1183			864			388	
Approach Delay, s/veh		97.2			37.6			34.3			39.7	
Approach LOS		F			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.0	36.1		26.8	22.1	28.0		19.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	9.3	24.6		17.0	16.9	25.0		10.6				
Green Ext Time (p_c), s	0.0	3.9		3.3	0.3	0.0		1.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		58.8	
HCM 7th LOS		E	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



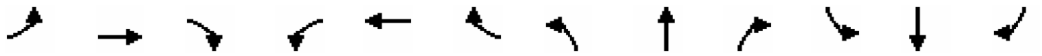
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	229	975	0	0	1330	333	185	0	565	0	0	0
Future Volume (veh/h)	229	975	0	0	1330	333	185	0	565	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	229	975	0	0	1330	0	185	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	262	2554	0	0	1828		230	0				
Arrive On Green	0.15	0.75	0.00	0.00	0.54	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	229	975	0	0	1330	0	185	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	11.8	9.0	0.0	0.0	26.9	0.0	9.6	0.0	0.0			
Cycle Q Clear(g_c), s	11.8	9.0	0.0	0.0	26.9	0.0	9.6	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	262	2554	0	0	1828		230	0				
V/C Ratio(X)	0.87	0.38	0.00	0.00	0.73		0.80	0.00				
Avail Cap(c_a), veh/h	283	2554	0	0	1828		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.2	3.9	0.0	0.0	15.5	0.0	37.7	0.0	0.0			
Incr Delay (d2), s/veh	23.0	0.4	0.0	0.0	2.6	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.5	2.4	0.0	0.0	10.1	0.0	4.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.2	4.3	0.0	0.0	18.1	0.0	42.6	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1204			1330			185				
Approach Delay, s/veh		14.9			18.1			42.6				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	18.9	53.9		17.3		72.7						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0						
Max Q Clear Time (g_c+I1), s	13.8	28.9		11.6		11.0						
Green Ext Time (p_c), s	0.1	3.9		0.7		7.1						

Intersection Summary												
HCM 7th Control Delay, s/veh			18.4									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	639	600	0	875	0	0	0	0	565	0	360
Future Volume (veh/h)	0	639	600	0	875	0	0	0	0	565	0	360
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	639	0	0	875	0				565	0	360
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	1961		0	1945	0				525	0	467
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3572	0	0	3544	0				1688	0	1502
Grp Volume(v), veh/h	0	639	0	0	875	0				565	0	360
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	8.8	0.0	0.0	13.3	0.0				28.0	0.0	19.6
Cycle Q Clear(g_c), s	0.0	8.8	0.0	0.0	13.3	0.0				28.0	0.0	19.6
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1961		0	1945	0				525	0	467
V/C Ratio(X)	0.00	0.33		0.00	0.45	0.00				1.08	0.00	0.77
Avail Cap(c_a), veh/h	0	1961		0	1945	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.9	0.0	0.0	10.8	0.0				31.0	0.0	28.1
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.8	0.0				61.3	0.0	7.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.1	0.0	0.0	4.7	0.0				19.9	0.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	10.3	0.0	0.0	11.6	0.0				92.3	0.0	35.5
LnGrp LOS		B			B					F		D
Approach Vol, veh/h		639			875						925	
Approach Delay, s/veh		10.3			11.6						70.2	
Approach LOS		B			B						E	

Timer - Assigned Phs	2				6		8					
Phs Duration (G+Y+Rc), s	57.0				57.0		33.0					
Change Period (Y+Rc), s	5.0				5.0		5.0					
Max Green Setting (Gmax), s	52.0				52.0		28.0					
Max Q Clear Time (g_c+I1), s	15.3				10.8		30.0					
Green Ext Time (p_c), s	6.0				4.1		0.0					

Intersection Summary	
HCM 7th Control Delay, s/veh	33.5
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	712	142	0	1067	0	68
Future Vol, veh/h	712	142	0	1067	0	68
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	712	142	0	1067	0	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1317	427
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	534	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	149	576
Stage 1	-	-	0	-	411	-
Stage 2	-	-	0	-	552	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	149	576
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	552	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	12.09
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	576	-	-	-
HCM Lane V/C Ratio	0.118	-	-	-
HCM Ctrl Dly (s/v)	12.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	663	52	0	872	0	54
Future Vol, veh/h	663	52	0	872	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	663	52	0	872	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1125	358
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	199	639
Stage 1	-	-	0	-	460	-
Stage 2	-	-	0	-	619	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	199	639
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	619	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.15
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	639	-	-	-
HCM Lane V/C Ratio	0.085	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	776	26	0	844	0	54
Future Vol, veh/h	776	26	0	844	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	776	26	0	844	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1211	401
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	422	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	175	599
Stage 1	-	-	0	-	408	-
Stage 2	-	-	0	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	175	599
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	629	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.61
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	599	-	-	-
HCM Lane V/C Ratio	0.09	-	-	-
HCM Ctrl Dly (s/v)	11.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	1661	1944	13
Future Vol, veh/h	0	65	0	1661	1944	13
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	0	65	0	1661	1944	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	979	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	214	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	214	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	28.94	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	214	-	-
HCM Lane V/C Ratio	-	0.303	-	-
HCM Ctrl Dly (s/v)	-	28.9	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	1.2	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	120	45	494	700	80
Future Vol, veh/h	80	120	45	494	700	80
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	80	120	45	494	700	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1324	740	780	0	-	0
Stage 1	740	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	173	418	846	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	164	418	846	-	-	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	559	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	26.59	0.79	0
HCM LOS	D		

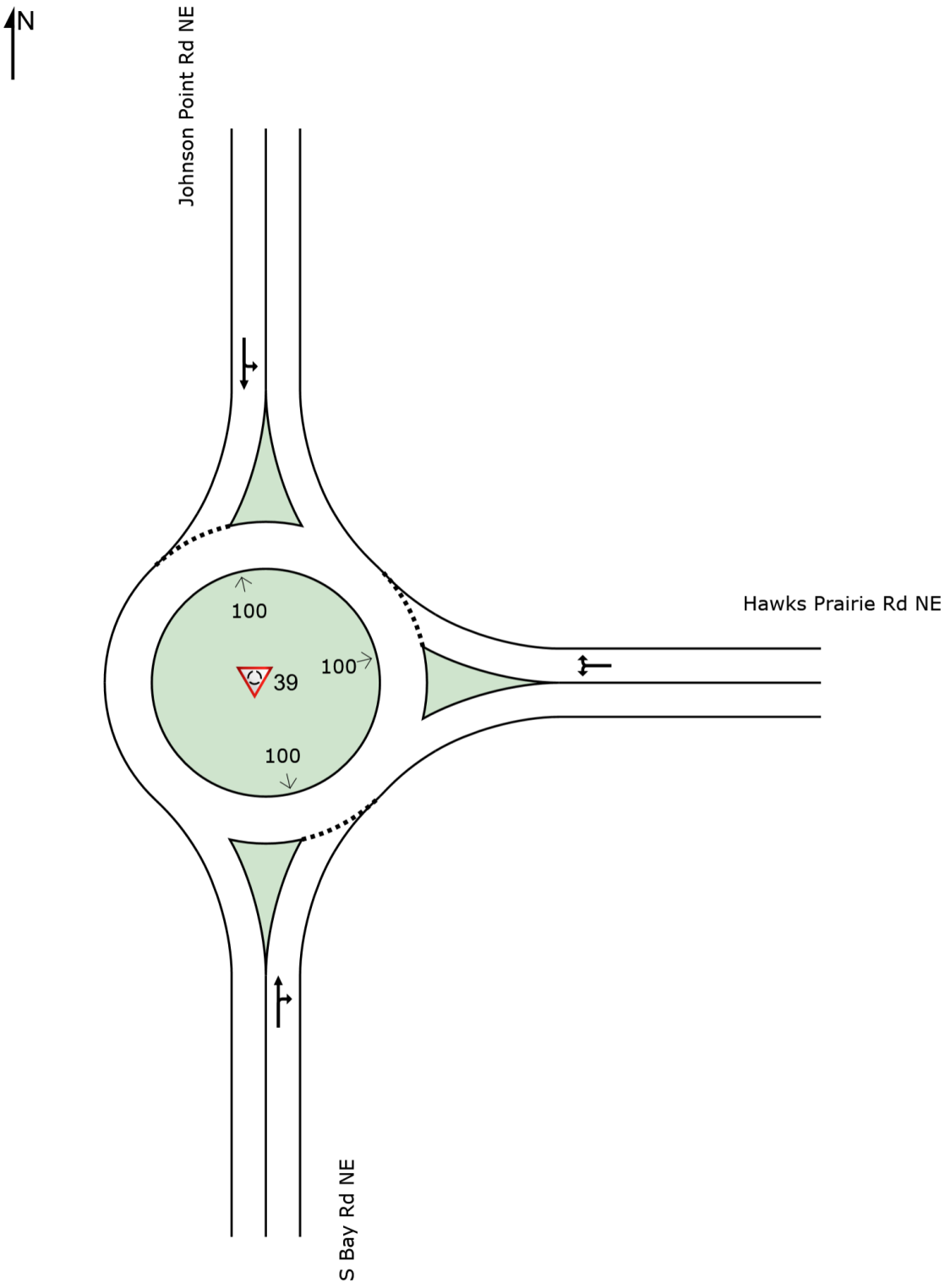
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	846	-	362	-	-
HCM Lane V/C Ratio	0.053	-	0.553	-	-
HCM Ctrl Dly (s/v)	9.5	-	26.6	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.2	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	245	0.0	245	0.0	0.389	4.0	LOS A	2.7	66.5	0.22	0.41	0.22	36.1
18	R2	All MCs	306	0.0	306	0.0	0.389	4.1	LOS A	2.7	66.5	0.22	0.41	0.22	35.8
Approach			551	0.0	551	0.0	0.389	4.0	LOS A	2.7	66.5	0.22	0.41	0.22	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	359	0.0	359	0.0	0.343	10.9	LOS B	2.0	49.5	0.44	0.63	0.44	32.6
16	R2	All MCs	68	0.0	68	0.0	0.343	5.0	LOS A	2.0	49.5	0.44	0.63	0.44	33.0
Approach			427	0.0	427	0.0	0.343	9.9	LOS A	2.0	49.5	0.44	0.63	0.44	32.7
North: Johnson Point Rd NE															
7	L2	All MCs	47	0.0	47	0.0	0.187	11.2	LOS B	1.0	25.6	0.49	0.55	0.49	33.9
4	T1	All MCs	167	0.0	167	0.0	0.187	5.2	LOS A	1.0	25.6	0.49	0.55	0.49	34.7
Approach			214	0.0	214	0.0	0.187	6.5	LOS A	1.0	25.6	0.49	0.55	0.49	34.5
All Vehicles			1192	0.0	1192	0.0	0.389	6.6	LOS A	2.7	66.5	0.34	0.51	0.34	34.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

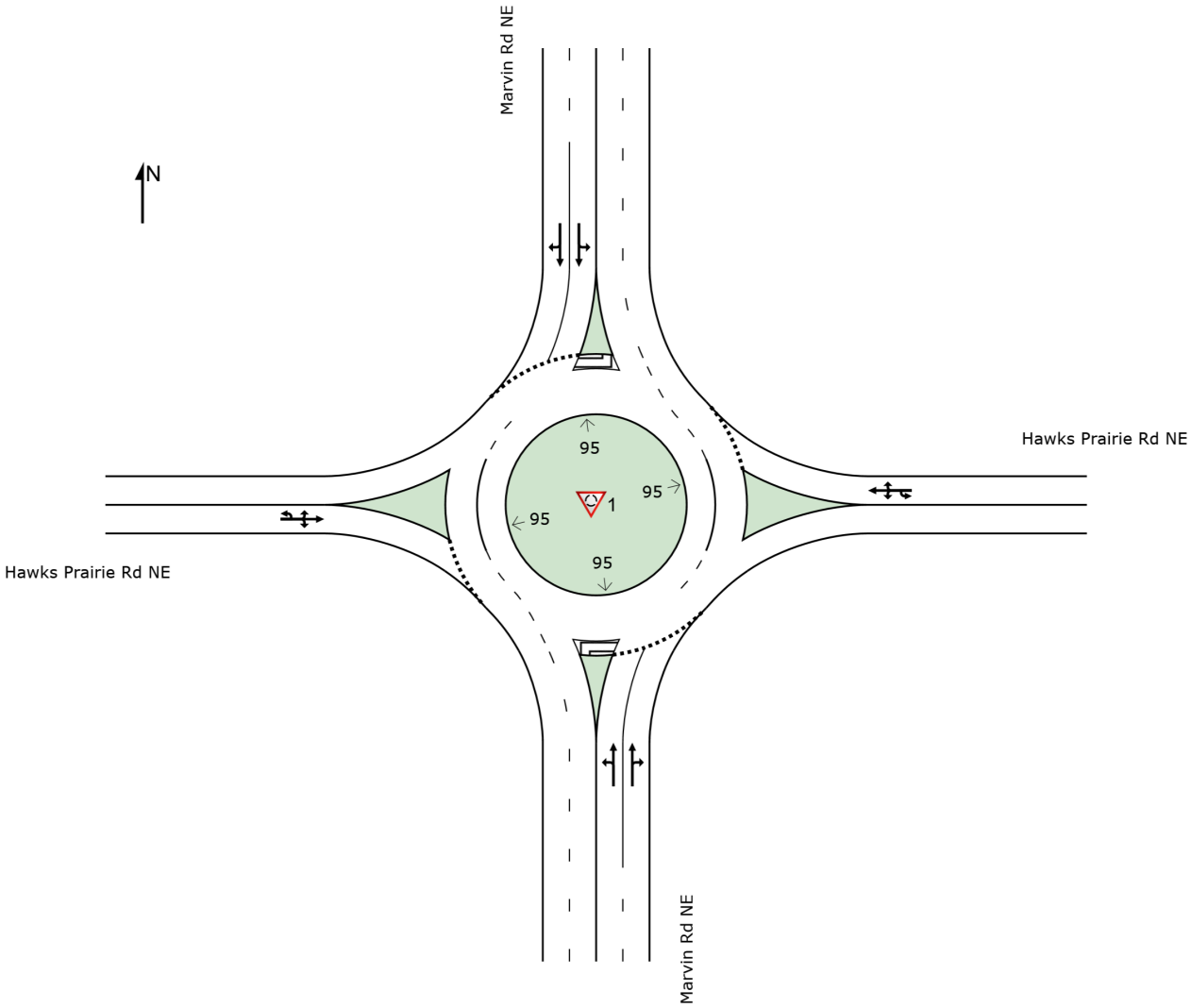
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	433	0.0	433	0.0	0.325	10.4	LOS B	2.1	52.2	0.37	0.61	0.37	32.3
8	T1	All MCs	468	0.0	468	0.0	0.306	4.5	LOS A	2.0	49.6	0.34	0.42	0.34	35.4
18	R2	All MCs	6	0.0	6	0.0	0.306	4.7	LOS A	2.0	49.6	0.34	0.42	0.34	35.0
Approach			907	0.0	907	0.0	0.325	7.3	LOS A	2.1	52.2	0.36	0.51	0.36	33.8
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.334	15.0	LOS B	1.4	34.8	0.61	0.78	0.63	32.6
1	L2	All MCs	156	3.0	156	3.0	0.334	12.6	LOS B	1.4	34.8	0.61	0.78	0.63	32.6
6	T1	All MCs	83	3.0	83	3.0	0.334	6.9	LOS A	1.4	34.8	0.61	0.78	0.63	33.2
16	R2	All MCs	28	3.0	28	3.0	0.334	6.8	LOS A	1.4	34.8	0.61	0.78	0.63	33.0
Approach			269	3.0	269	3.0	0.334	10.3	LOS B	1.4	34.8	0.61	0.78	0.63	32.8
North: Marvin Rd NE															
7	L2	All MCs	11	2.0	11	2.0	0.234	13.7	LOS B	1.4	35.3	0.69	0.66	0.69	33.4
4	T1	All MCs	359	2.0	359	2.0	0.234	7.6	LOS A	1.5	38.9	0.69	0.64	0.69	34.2
14	R2	All MCs	78	2.0	78	2.0	0.234	7.3	LOS A	1.5	38.9	0.69	0.63	0.69	34.0
Approach			448	2.0	448	2.0	0.234	7.7	LOS A	1.5	38.9	0.69	0.64	0.69	34.1
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.264	13.9	LOS B	1.1	28.0	0.50	0.68	0.50	33.4
5	L2	All MCs	106	3.0	106	3.0	0.264	11.5	LOS B	1.1	28.0	0.50	0.68	0.50	33.4
2	T1	All MCs	17	3.0	17	3.0	0.264	5.7	LOS A	1.1	28.0	0.50	0.68	0.50	34.1
12	R2	All MCs	122	3.0	122	3.0	0.264	5.7	LOS A	1.1	28.0	0.50	0.68	0.50	33.8
Approach			247	3.0	247	3.0	0.264	8.2	LOS A	1.1	28.0	0.50	0.68	0.50	33.7
All Vehicles			1870	1.3	1870	1.3	0.334	8.0	LOS A	2.1	52.2	0.49	0.60	0.49	33.7

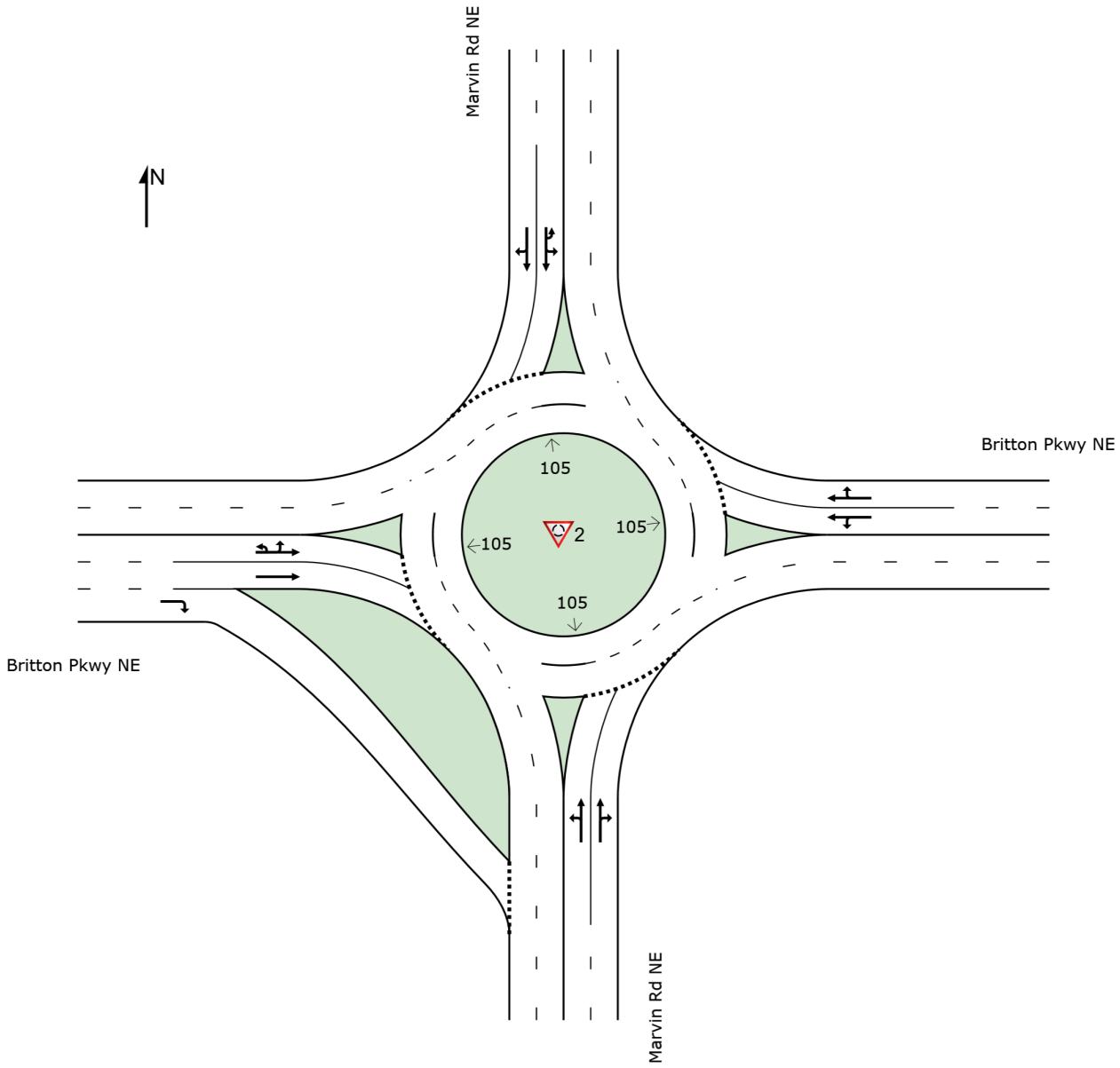
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Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	405	2.0	405	2.0	0.642	12.8	LOS B	5.0	125.9	0.69	0.76	0.79	32.4
8	T1	All MCs	990	2.0	990	2.0	0.642	6.4	LOS A	5.1	128.3	0.67	0.66	0.76	34.0
18	R2	All MCs	26	2.0	26	2.0	0.642	6.3	LOS A	5.1	128.3	0.67	0.62	0.75	34.0
Approach			1421	2.0	1421	2.0	0.642	8.2	LOS A	5.1	128.3	0.68	0.69	0.77	33.5
East: Britton Pkwy NE															
1	L2	All MCs	573	4.0	573	4.0	0.820	20.8	LOS C	7.6	196.4	0.94	1.17	1.60	28.6
6	T1	All MCs	298	4.0	298	4.0	0.689	13.8	LOS B	4.4	113.1	0.87	1.04	1.27	31.7
16	R2	All MCs	42	4.0	42	4.0	0.689	13.9	LOS B	4.4	113.1	0.87	1.04	1.27	31.4
Approach			913	4.0	913	4.0	0.820	18.2	LOS B	7.6	196.4	0.92	1.12	1.48	29.7
North: Marvin Rd NE															
7u	U	All MCs	11	4.0	11	4.0	1.012	56.1	LOS F	18.2	469.7	1.00	1.72	3.19	21.2
7	L2	All MCs	63	4.0	63	4.0	1.012	53.6	LOS F	18.2	469.7	1.00	1.72	3.19	21.2
4	T1	All MCs	974	4.0	974	4.0	1.012	45.5	LOS F	22.7	585.5	1.00	1.77	3.26	22.0
14	R2	All MCs	121	4.0	121	4.0	1.012	43.9	LOS F	22.7	585.5	1.00	1.82	3.32	22.2
Approach			1168	4.0	1168	4.0	1.012	45.8	LOS D	22.7	585.5	1.00	1.78	3.26	21.9
West: Britton Pkwy NE															
5u	U	All MCs	10	5.0	10	5.0	0.269	18.0	LOS B	1.4	36.7	0.84	0.88	0.84	30.6
5	L2	All MCs	121	5.0	121	5.0	0.269	15.5	LOS B	1.4	36.7	0.84	0.88	0.84	30.6
2	T1	All MCs	195	5.0	195	5.0	0.269	8.9	LOS A	1.9	48.6	0.93	0.80	0.93	33.3
12	R2	All MCs	397	5.0	397	5.0	0.516	10.6	LOS B	4.2	109.2	0.96	0.92	1.16	32.7
Approach			723	5.0	723	5.0	0.516	11.1	LOS B	4.2	109.2	0.93	0.88	1.04	32.4
All Vehicles			4224	3.5	4224	3.5	1.012	21.3	LOS C	22.7	585.5	0.86	1.11	1.66	28.4

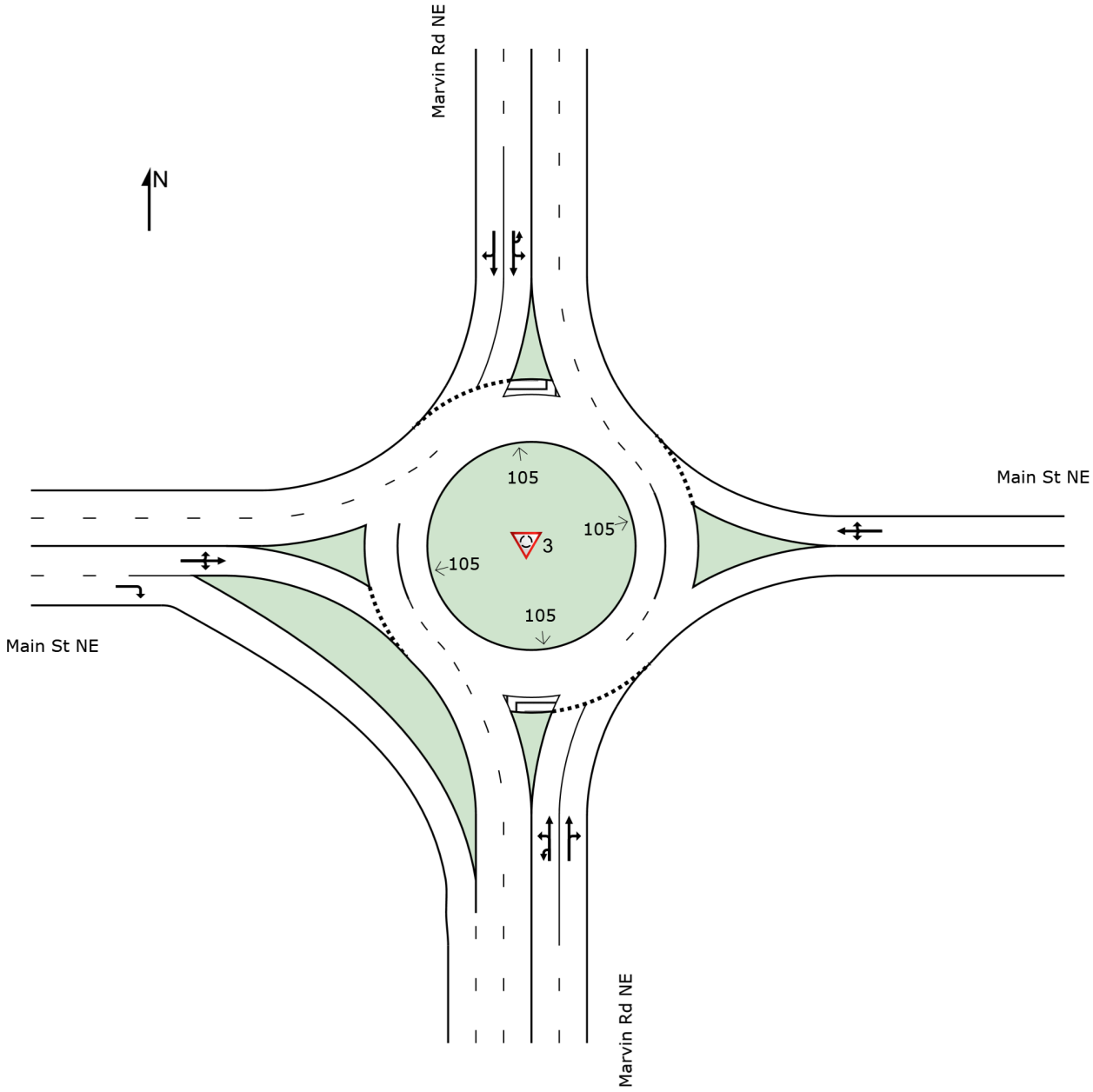
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	280	3.0	280	3.0	0.640	12.8	LOS B	7.1	181.9	0.35	0.50	0.35	27.6
3	L2	All MCs	126	3.0	126	3.0	0.640	10.3	LOS B	7.1	181.9	0.35	0.50	0.35	31.3
8	T1	All MCs	1456	3.0	1456	3.0	0.640	4.2	LOS A	7.1	182.1	0.33	0.42	0.33	30.5
18	R2	All MCs	77	3.0	77	3.0	0.640	4.4	LOS A	7.1	182.1	0.32	0.37	0.32	33.5
Approach			1940	3.0	1940	3.0	0.640	5.9	LOS A	7.1	182.1	0.34	0.43	0.34	30.3
East: Main St NE															
1	L2	All MCs	115	0.0	115	0.0	0.231	14.7	LOS B	1.0	25.4	0.74	0.89	0.74	28.9
6	T1	All MCs	1	0.0	1	0.0	0.231	8.7	LOS A	1.0	25.4	0.74	0.89	0.74	32.0
16	R2	All MCs	27	0.0	27	0.0	0.231	8.7	LOS A	1.0	25.4	0.74	0.89	0.74	29.9
Approach			144	0.0	144	0.0	0.231	13.5	LOS B	1.0	25.4	0.74	0.89	0.74	29.1
North: Marvin Rd NE															
7u	U	All MCs	3	3.0	3	3.0	0.907	29.7	LOS D	19.1	490.1	1.00	1.26	1.91	22.1
7	L2	All MCs	22	3.0	22	3.0	0.907	27.2	LOS D	19.1	490.1	1.00	1.26	1.91	25.8
4	T1	All MCs	1887	3.0	1887	3.0	0.907	19.3	LOS D	21.0	537.3	1.00	1.24	1.84	22.4
14	R2	All MCs	32	3.0	32	3.0	0.907	18.1	LOS D	21.0	537.3	1.00	1.22	1.80	27.5
Approach			1944	3.0	1944	3.0	0.907	19.4	LOS B	21.0	537.3	1.00	1.24	1.84	22.6
West: Main St NE															
5	L2	All MCs	21	2.0	21	2.0	0.073	18.4	LOS B	0.4	11.4	0.95	0.89	0.95	27.8
2	T1	All MCs	1	2.0	1	2.0	0.073	12.4	LOS B	0.4	11.4	0.95	0.89	0.95	30.5
12	R2	All MCs	124	2.0	124	2.0	0.073	3.9	LOS A	0.4	11.4	0.04	0.45	0.04	34.9
Approach			146	2.0	146	2.0	0.073	6.1	LOS A	0.4	11.4	0.18	0.52	0.18	33.5
All Vehicles			4174	2.9	4174	2.9	0.907	12.5	LOS B	21.0	537.3	0.65	0.83	1.05	26.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	525	0	0	681	0	1414	991	0	1531	639
Future Volume (vph)	0	0	525	0	0	681	0	1414	991	0	1531	639
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.98	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3099	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3099	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	547	0	0	709	0	1473	1032	0	1595	666
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	547	0	0	709	0	1741	764	0	1595	666
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			57.5			53.5		55.5	120.0		50.5	120.0
Effective Green, g (s)			57.5			53.5		55.5	120.0		50.5	120.0
Actuated g/C Ratio			0.48			0.45		0.46	1.00		0.42	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1265			1177		1433	1335		1370	1457
v/s Ratio Prot			0.21			0.27		c0.56			c0.49	
v/s Ratio Perm									0.57			0.46
v/c Ratio			0.43			0.60		1.21	0.57		1.16	0.46
Uniform Delay, d1			20.5			25.2		32.3	0.0		34.8	0.0
Progression Factor			1.00			1.00		0.84	1.00		1.00	1.00
Incremental Delay, d2			0.2			0.9		100.6	1.0		82.3	1.0
Delay (s)			20.8			26.1		127.8	1.0		117.0	1.0
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		20.8			26.1			89.1			82.9	
Approach LOS		C			C			F			F	

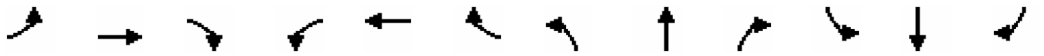
Intersection Summary			
HCM 2000 Control Delay (s/veh)	73.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	145	0	0	705	0	1700	250	0	1663	398
Future Volume (vph)	0	0	145	0	0	705	0	1700	250	0	1663	398
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	0	146	0	0	712	0	1717	253	0	1680	402
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	146	0	0	712	0	1717	253	0	1680	402
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			46.5			64.5		44.5	120.0		62.5	120.0
Effective Green, g (s)			46.5			64.5		44.5	120.0		62.5	120.0
Actuated g/C Ratio			0.39			0.54		0.37	1.00		0.52	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			569			1365		1786	1500		1729	1455
v/s Ratio Prot			0.10			0.28		c0.36			c0.51	
v/s Ratio Perm									0.17			0.28
v/c Ratio			0.26			0.52		0.96	0.17		0.97	0.28
Uniform Delay, d1			25.0			17.8		36.9	0.0		27.9	0.0
Progression Factor			1.00			1.00		0.77	1.00		0.41	1.00
Incremental Delay, d2			0.2			0.4		8.7	0.1		6.4	0.1
Delay (s)			25.2			18.2		36.9	0.1		17.9	0.1
Level of Service			C			B		D	A		B	A
Approach Delay (s/veh)		25.2			18.2			32.2			14.5	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	448	200	150	65	60	291	60	1181	60	231	1147	310
Future Volume (veh/h)	448	200	150	65	60	291	60	1181	60	231	1147	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	467	208	156	68	62	303	62	1230	62	241	1195	323
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	544	213	160	71	174	361	166	1316	66	241	1518	660
Arrive On Green	0.16	0.22	0.22	0.04	0.10	0.10	0.10	0.40	0.40	0.14	0.45	0.45
Sat Flow, veh/h	3300	946	710	1701	1786	1504	1688	3257	164	1701	3393	1475
Grp Volume(v), veh/h	467	0	364	68	62	303	62	635	657	241	1195	323
Grp Sat Flow(s),veh/h/ln	1650	0	1656	1701	1786	1504	1688	1683	1738	1701	1697	1475
Q Serve(g_s), s	16.5	0.0	26.2	4.8	3.9	11.7	4.1	43.3	43.5	17.0	36.0	9.8
Cycle Q Clear(g_c), s	16.5	0.0	26.2	4.8	3.9	11.7	4.1	43.3	43.5	17.0	36.0	9.8
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	544	0	373	71	174	361	166	680	702	241	1518	660
V/C Ratio(X)	0.86	0.00	0.98	0.96	0.36	0.84	0.37	0.93	0.94	1.00	0.79	0.49
Avail Cap(c_a), veh/h	619	0	373	71	174	361	166	680	702	241	1654	719
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	1.00	1.00	1.00	1.00	0.36	0.36	0.36	0.28	0.28	0.28
Uniform Delay (d), s/veh	48.7	0.0	46.2	57.4	50.6	43.5	50.6	34.2	34.3	51.5	28.3	6.5
Incr Delay (d2), s/veh	12.4	0.0	40.6	93.7	2.6	17.3	1.1	10.0	10.0	30.7	1.2	0.7
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	7.7	0.0	14.9	3.9	1.9	10.3	1.8	19.2	19.9	9.3	14.6	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.1	0.0	86.8	151.1	53.2	60.8	51.7	44.2	44.2	82.2	29.5	7.3
LnGrp LOS	E		F	F	D	E	D	D	D	F	C	A
Approach Vol, veh/h		831			433			1354			1759	
Approach Delay, s/veh		72.4			73.9			44.6			32.6	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.8	59.7	25.3	17.2	23.0	54.5	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	6.1	38.0	18.5	13.7	19.0	45.5	6.8	28.2
Green Ext Time (p_c), s	0.0	15.6	1.3	0.0	0.0	2.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	47.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	120	140	55	116	165	990	155	140	1097	85
Future Volume (veh/h)	140	55	120	140	55	116	165	990	155	140	1097	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	143	56	122	143	56	118	168	1010	158	143	1119	87
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	160	68	149	156	68	144	194	1185	185	361	1614	125
Arrive On Green	0.09	0.14	0.14	0.09	0.13	0.13	0.12	0.41	0.41	0.07	0.17	0.17
Sat Flow, veh/h	1714	499	1088	1701	507	1069	1674	2894	452	1701	3190	248
Grp Volume(v), veh/h	143	0	178	143	0	174	168	582	586	143	595	611
Grp Sat Flow(s),veh/h/ln	1714	0	1587	1701	0	1576	1674	1670	1676	1701	1697	1741
Q Serve(g_s), s	9.9	0.0	13.1	10.0	0.0	12.9	11.8	37.9	38.1	9.7	39.6	39.7
Cycle Q Clear(g_c), s	9.9	0.0	13.1	10.0	0.0	12.9	11.8	37.9	38.1	9.7	39.6	39.7
Prop In Lane	1.00		0.69	1.00		0.68	1.00		0.27	1.00		0.14
Lane Grp Cap(c), veh/h	160	0	217	156	0	213	194	684	686	361	858	881
V/C Ratio(X)	0.89	0.00	0.82	0.92	0.00	0.82	0.87	0.85	0.85	0.40	0.69	0.69
Avail Cap(c_a), veh/h	160	0	317	156	0	315	237	684	686	361	858	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.64	0.64	0.64
Uniform Delay (d), s/veh	53.8	0.0	50.4	54.0	0.0	50.5	52.2	32.1	32.2	48.4	41.2	41.2
Incr Delay (d2), s/veh	41.1	0.0	9.0	48.1	0.0	8.6	22.5	10.2	10.3	0.3	1.6	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	6.1	0.0	5.8	6.4	0.0	5.6	6.2	17.0	17.1	4.4	18.4	18.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	94.9	0.0	59.3	102.1	0.0	59.0	74.7	42.3	42.5	48.8	42.8	42.8
LnGrp LOS	F		E	F		E	E	D	D	D	D	D
Approach Vol, veh/h		321			317			1336			1349	
Approach Delay, s/veh		75.2			78.5			46.5			43.4	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	65.7	15.2	20.2	30.5	54.1	15.0	20.4
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.8	41.7	11.9	14.9	11.7	40.1	12.0	15.1
Green Ext Time (p_c), s	0.1	5.2	0.0	0.5	0.1	5.4	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	51.1
HCM 7th LOS	D

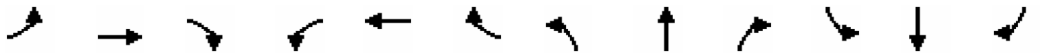
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	357	500	370	345	495	291	230	677	210	281	1030	301
Future Volume (veh/h)	357	500	370	345	495	291	230	677	210	281	1030	301
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	361	505	0	348	500	0	232	684	212	284	1040	304
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	421	614		408	601		311	782	242	376	1172	522
Arrive On Green	0.13	0.18	0.00	0.12	0.18	0.00	0.18	0.31	0.31	0.22	0.34	0.34
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2549	790	1714	3420	1523
Grp Volume(v), veh/h	361	505	0	348	500	0	232	455	441	284	1040	304
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1642	1714	1710	1523
Q Serve(g_s), s	12.9	17.2	0.0	12.3	16.9	0.0	15.5	30.5	30.5	18.6	34.5	13.4
Cycle Q Clear(g_c), s	12.9	17.2	0.0	12.3	16.9	0.0	15.5	30.5	30.5	18.6	34.5	13.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	421	614		408	601		311	520	503	376	1172	522
V/C Ratio(X)	0.86	0.82		0.85	0.83		0.74	0.88	0.88	0.76	0.89	0.58
Avail Cap(c_a), veh/h	605	749		582	727		311	608	588	376	1254	558
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	47.3	0.0	51.6	47.7	0.0	46.4	39.4	39.4	43.8	37.2	14.9
Incr Delay (d2), s/veh	6.1	6.5	0.0	6.1	7.2	0.0	8.4	18.3	18.8	7.6	10.1	4.7
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	5.6	7.7	0.0	5.4	7.7	0.0	7.3	15.2	14.8	8.7	15.9	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.4	53.8	0.0	57.7	54.9	0.0	54.7	57.7	58.2	51.5	47.3	19.6
LnGrp LOS	E	D		E	D		D	E	E	D	D	B
Approach Vol, veh/h		866			848			1128			1628	
Approach Delay, s/veh		55.3			56.1			57.3			42.9	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	46.1	20.3	26.6	31.3	41.8	19.7	27.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	8.0	44.0	22.0	25.5	9.0	43.0	21.0	26.5
Max Q Clear Time (g_c+I1), s	17.5	36.5	14.9	18.9	20.6	32.5	14.3	19.2
Green Ext Time (p_c), s	0.0	4.7	0.4	1.9	0.0	4.3	0.4	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	51.4
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	206	30	671	30	275	1124	211
Future Volume (veh/h)	150	195	20	135	225	206	30	671	30	275	1124	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	219	32	714	32	293	1196	224
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	175	246	25	381	237	217	54	967	43	319	1280	238
Arrive On Green	0.10	0.16	0.16	0.22	0.27	0.27	0.03	0.29	0.29	0.19	0.45	0.45
Sat Flow, veh/h	1688	1582	161	1714	864	792	1701	3307	148	1701	2854	531
Grp Volume(v), veh/h	160	0	228	144	0	458	32	366	380	293	708	712
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1656	1701	1697	1758	1701	1697	1688
Q Serve(g_s), s	12.3	0.0	16.7	9.4	0.0	36.0	2.4	25.6	25.6	22.2	51.8	52.9
Cycle Q Clear(g_c), s	12.3	0.0	16.7	9.4	0.0	36.0	2.4	25.6	25.6	22.2	51.8	52.9
Prop In Lane	1.00		0.09	1.00		0.48	1.00		0.08	1.00		0.31
Lane Grp Cap(c), veh/h	175	0	271	381	0	454	54	496	514	319	761	757
V/C Ratio(X)	0.92	0.00	0.84	0.38	0.00	1.01	0.60	0.74	0.74	0.92	0.93	0.94
Avail Cap(c_a), veh/h	175	0	488	381	0	454	78	496	514	433	784	780
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.3	0.0	53.9	43.4	0.0	47.7	62.8	41.9	42.0	52.4	34.3	34.5
Incr Delay (d2), s/veh	44.3	0.0	6.9	0.5	0.0	44.5	7.7	5.7	5.5	19.0	17.1	19.0
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	7.4	0.0	7.9	4.1	0.0	20.4	1.2	11.5	11.9	11.2	24.6	25.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	102.6	0.0	60.8	43.8	0.0	92.1	70.5	47.6	47.4	71.4	51.4	53.5
LnGrp LOS	F		E	D		F	E	D	D	E	D	D
Approach Vol, veh/h		388			602			778			1713	
Approach Delay, s/veh		78.1			80.6			48.5			55.7	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	63.8	18.2	40.6	29.3	43.3	33.8	25.0
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.4	54.9	14.3	38.0	24.2	27.6	11.4	18.7
Green Ext Time (p_c), s	0.0	4.0	0.0	0.0	0.5	2.1	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	60.9
HCM 7th LOS	E

Notes

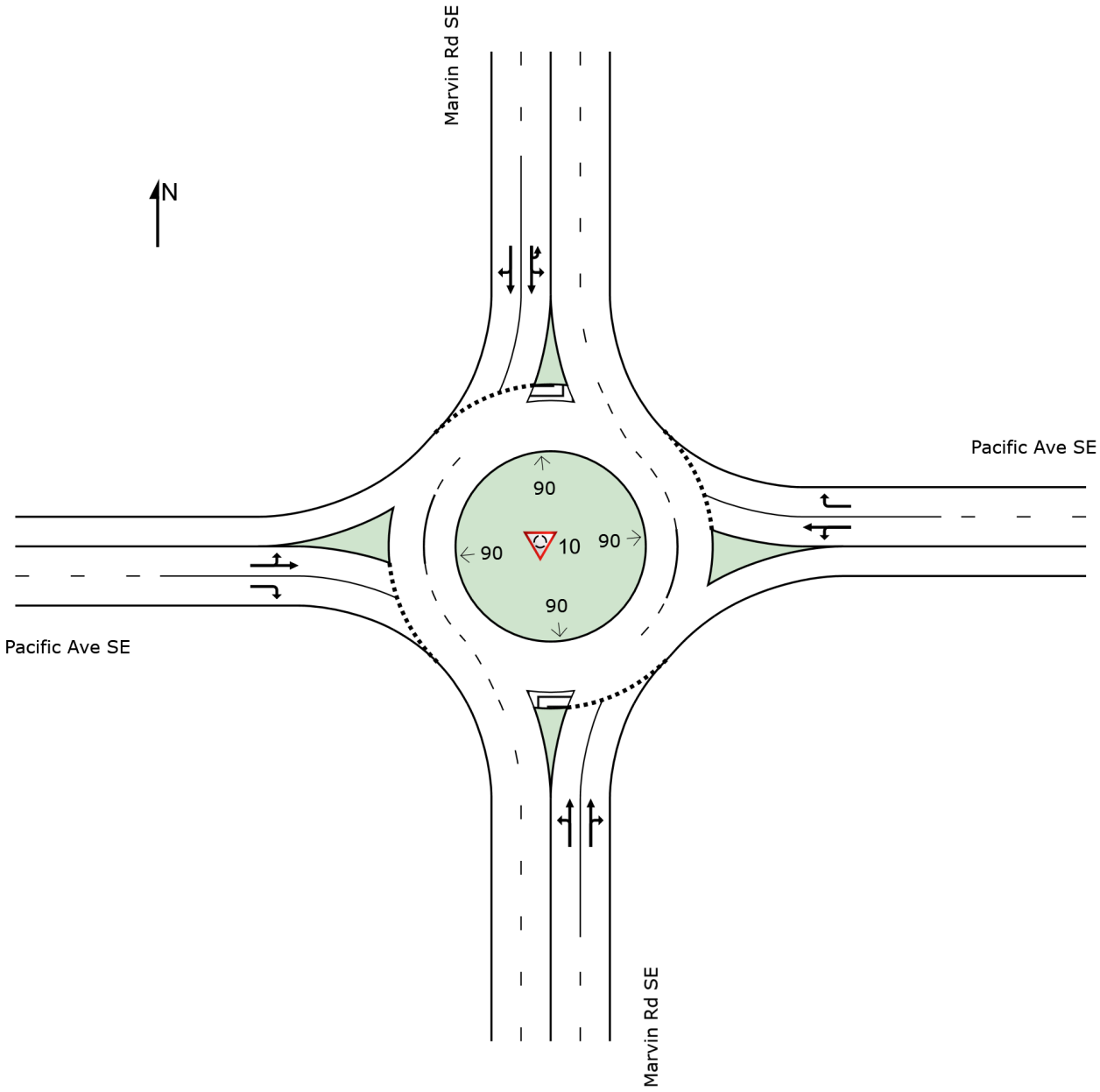
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	139	1.0	139	1.0	0.452	18.3	LOS B	3.6	90.3	0.92	0.85	1.04	30.4
8	T1	All MCs	469	1.0	469	1.0	0.452	11.3	LOS B	4.0	100.0	0.93	0.80	1.02	32.4
18	R2	All MCs	39	1.0	39	1.0	0.452	10.8	LOS B	4.0	100.0	0.94	0.77	1.00	32.7
Approach			647	1.0	647	1.0	0.452	12.8	LOS B	4.0	100.0	0.93	0.80	1.02	32.0
East: Pacific Ave SE															
1	L2	All MCs	33	1.0	33	1.0	0.346	11.7	LOS B	1.7	42.1	0.63	0.62	0.63	33.5
6	T1	All MCs	261	1.0	261	1.0	0.346	6.2	LOS A	1.7	42.1	0.63	0.62	0.63	34.2
16	R2	All MCs	371	1.0	371	1.0	0.366	5.9	LOS A	1.9	47.7	0.63	0.67	0.63	34.5
Approach			666	1.0	666	1.0	0.366	6.3	LOS A	1.9	47.7	0.63	0.65	0.63	34.3
North: Marvin Rd SE															
7u	U	All MCs	2	1.0	2	1.0	0.622	16.5	LOS B	6.0	151.4	0.79	0.77	0.91	31.6
7	L2	All MCs	452	1.0	452	1.0	0.622	14.1	LOS B	6.0	151.4	0.79	0.77	0.91	31.6
4	T1	All MCs	863	1.0	863	1.0	0.622	7.7	LOS A	6.2	155.6	0.77	0.70	0.86	33.6
14	R2	All MCs	89	1.0	89	1.0	0.622	7.6	LOS A	6.2	155.6	0.76	0.68	0.85	33.6
Approach			1407	1.0	1407	1.0	0.622	9.8	LOS A	6.2	155.6	0.77	0.72	0.87	32.9
West: Pacific Ave SE															
5	L2	All MCs	56	1.0	56	1.0	0.630	14.9	LOS B	4.4	110.7	0.87	0.95	1.11	32.7
2	T1	All MCs	406	1.0	406	1.0	0.630	9.3	LOS A	4.4	110.7	0.87	0.95	1.11	33.3
12	R2	All MCs	283	1.0	283	1.0	0.523	9.9	LOS A	2.9	73.6	0.82	0.94	0.99	33.0
Approach			744	1.0	744	1.0	0.630	9.9	LOS A	4.4	110.7	0.85	0.95	1.06	33.1
All Vehicles			3463	1.0	3463	1.0	0.630	9.7	LOS A	6.2	155.6	0.79	0.77	0.89	33.0

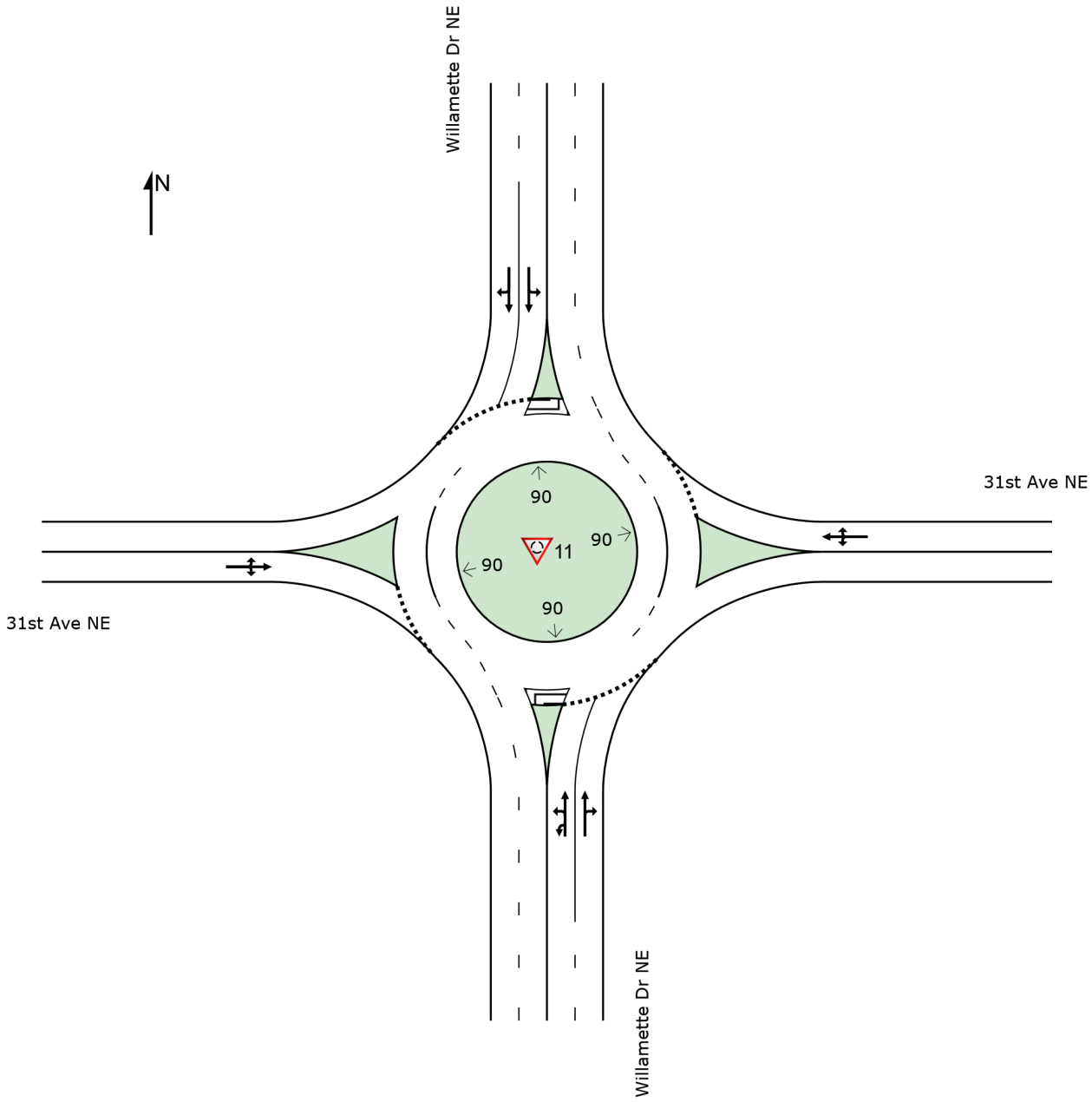
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
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Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	33	2.0	33	2.0	0.249	12.3	LOS B	1.5	37.3	0.19	0.49	0.19	34.2
3	L2	All MCs	82	2.0	82	2.0	0.249	9.9	LOS A	1.5	37.3	0.19	0.49	0.19	34.2
8	T1	All MCs	512	2.0	512	2.0	0.249	4.3	LOS A	1.5	37.8	0.18	0.44	0.18	35.4
18	R2	All MCs	121	2.0	121	2.0	0.249	4.4	LOS A	1.5	37.8	0.18	0.41	0.18	35.5
Approach			748	2.0	748	2.0	0.249	5.3	LOS A	1.5	37.8	0.19	0.45	0.19	35.2
East: 31st Ave NE															
1	L2	All MCs	105	3.0	105	3.0	0.143	11.4	LOS B	0.5	12.3	0.45	0.72	0.45	32.6
6	T1	All MCs	16	3.0	16	3.0	0.143	5.9	LOS A	0.5	12.3	0.45	0.72	0.45	33.2
16	R2	All MCs	11	3.0	11	3.0	0.143	5.8	LOS A	0.5	12.3	0.45	0.72	0.45	33.0
Approach			133	3.0	133	3.0	0.143	10.3	LOS B	0.5	12.3	0.45	0.72	0.45	32.7
North: Willamette Dr NE															
7	L2	All MCs	4	1.0	4	1.0	0.124	10.6	LOS B	0.6	15.9	0.39	0.47	0.39	34.4
4	T1	All MCs	314	1.0	314	1.0	0.124	5.0	LOS A	0.6	16.4	0.38	0.46	0.38	35.2
14	R2	All MCs	11	1.0	11	1.0	0.124	5.0	LOS A	0.6	16.4	0.37	0.45	0.37	34.9
Approach			330	1.0	330	1.0	0.124	5.1	LOS A	0.6	16.4	0.38	0.46	0.38	35.2
West: 31st Ave NE															
5	L2	All MCs	22	0.0	22	0.0	0.116	10.8	LOS B	0.4	10.2	0.39	0.59	0.39	34.3
2	T1	All MCs	22	0.0	22	0.0	0.116	5.3	LOS A	0.4	10.2	0.39	0.59	0.39	35.0
12	R2	All MCs	77	0.0	77	0.0	0.116	5.2	LOS A	0.4	10.2	0.39	0.59	0.39	34.7
Approach			121	0.0	121	0.0	0.116	6.2	LOS A	0.4	10.2	0.39	0.59	0.39	34.7
All Vehicles			1332	1.7	1332	1.7	0.249	5.8	LOS A	1.5	37.8	0.28	0.49	0.28	34.9

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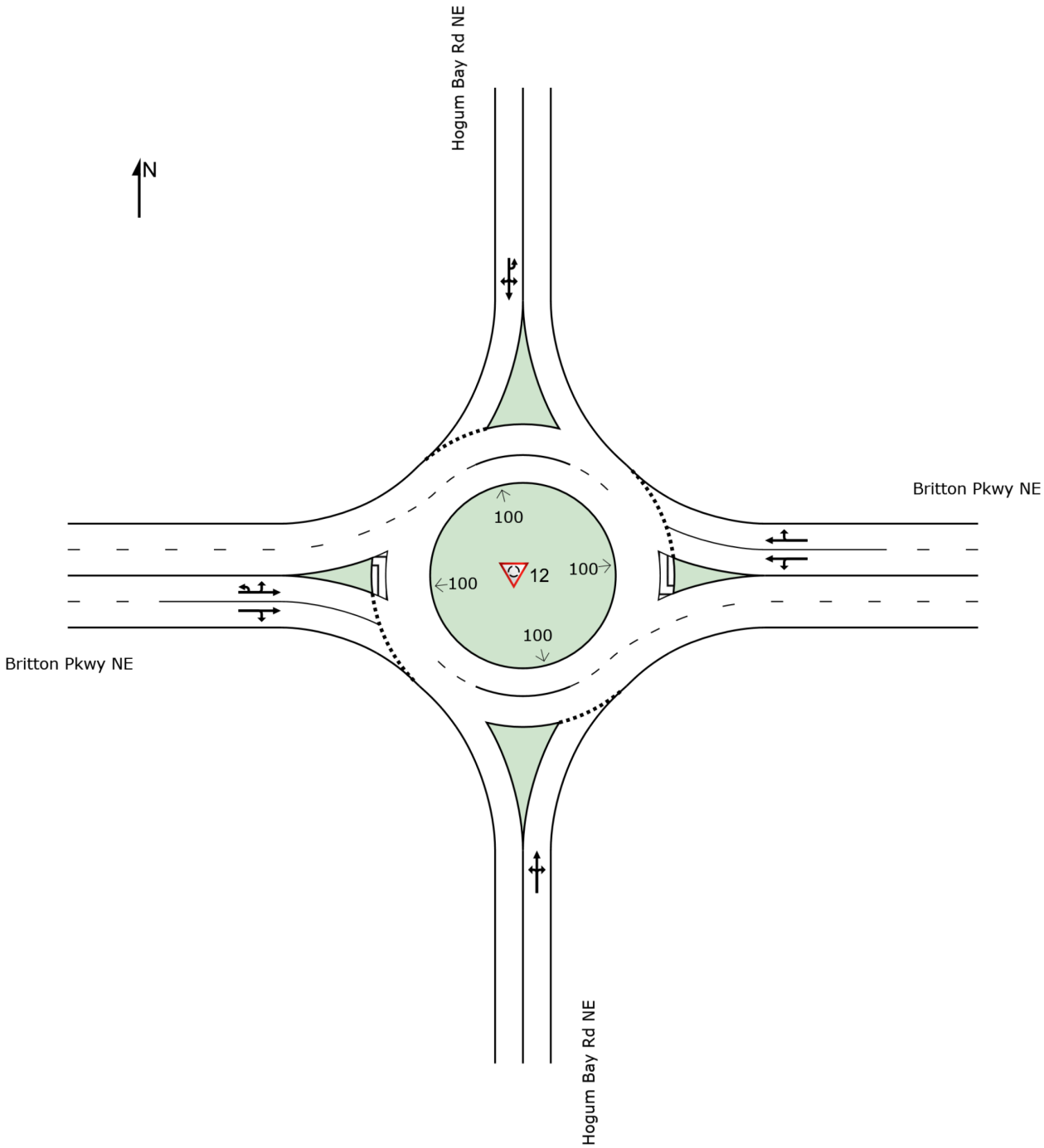
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	32	13.0	32	13.0	0.685	13.4	LOS B	5.3	145.5	0.64	0.69	0.75	33.4
8	T1	All MCs	263	13.0	263	13.0	0.685	7.5	LOS A	5.3	145.5	0.64	0.69	0.75	34.3
18	R2	All MCs	349	13.0	349	13.0	0.685	7.5	LOS A	5.3	145.5	0.64	0.69	0.75	33.9
Approach			645	13.0	645	13.0	0.685	7.8	LOS A	5.3	145.5	0.64	0.69	0.75	34.0
East: Britton Pkwy NE															
1	L2	All MCs	59	4.0	59	4.0	0.290	12.2	LOS B	1.8	45.8	0.61	0.61	0.61	33.3
6	T1	All MCs	569	4.0	569	4.0	0.290	6.0	LOS A	1.9	49.3	0.60	0.57	0.60	34.4
16	R2	All MCs	11	4.0	11	4.0	0.290	5.9	LOS A	1.9	49.3	0.60	0.55	0.60	34.2
Approach			639	4.0	639	4.0	0.290	6.6	LOS A	1.9	49.3	0.60	0.57	0.60	34.3
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.674	17.3	LOS B	4.5	121.7	0.74	0.86	0.97	32.9
7	L2	All MCs	16	10.0	16	10.0	0.674	14.9	LOS B	4.5	121.7	0.74	0.86	0.97	32.9
4	T1	All MCs	151	10.0	151	10.0	0.674	8.9	LOS A	4.5	121.7	0.74	0.86	0.97	33.7
14	R2	All MCs	362	10.0	362	10.0	0.674	8.9	LOS A	4.5	121.7	0.74	0.86	0.97	33.4
Approach			530	10.0	530	10.0	0.674	9.1	LOS A	4.5	121.7	0.74	0.86	0.97	33.5
West: Britton Pkwy NE															
5u	U	All MCs	4	7.0	4	7.0	0.122	13.4	LOS B	0.6	17.1	0.42	0.60	0.42	32.8
5	L2	All MCs	87	7.0	87	7.0	0.122	11.0	LOS B	0.6	17.1	0.42	0.60	0.42	32.8
2	T1	All MCs	189	7.0	189	7.0	0.122	4.9	LOS A	0.7	17.9	0.41	0.49	0.41	34.8
12	R2	All MCs	16	7.0	16	7.0	0.122	5.0	LOS A	0.7	17.9	0.41	0.45	0.41	34.7
Approach			297	7.0	297	7.0	0.122	6.8	LOS A	0.7	17.9	0.41	0.52	0.41	34.1
All Vehicles			2111	8.7	2111	8.7	0.685	7.6	LOS A	5.3	145.5	0.62	0.67	0.71	34.0

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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
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Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	15	514	41	10	45	637	35	60	0	50	30	0	25
Future Vol, veh/h	15	514	41	10	45	637	35	60	0	50	30	0	25
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	16	547	44	11	48	678	37	64	0	53	32	0	27

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	716	0	0	590	590	0	0	1057	1433	296	1121	1437	359
Stage 1	-	-	-	-	-	-	-	601	601	-	814	814	-
Stage 2	-	-	-	-	-	-	-	457	833	-	306	622	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	867	-	-	603	974	-	-	179	133	700	164	135	643
Stage 1	-	-	-	-	-	-	-	454	488	-	342	394	-
Stage 2	-	-	-	-	-	-	-	553	382	-	684	482	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	867	-	-	857	857	-	-	157	121	699	138	123	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	157	121	-	138	123	-
Stage 1	-	-	-	-	-	-	-	446	479	-	319	367	-
Stage 2	-	-	-	-	-	-	-	493	355	-	620	473	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.24	0.72	32.97	27.97
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	242	867	-	-	857	-	-	214
HCM Lane V/C Ratio	0.483	0.018	-	-	0.068	-	-	0.273
HCM Ctrl Dly (s/v)	33	9.2	-	-	9.5	-	-	28
HCM Lane LOS	D	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	2.4	0.1	-	-	0.2	-	-	1.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	541	30	40	681	1	39	0	30	1	0	25
Future Vol, veh/h	10	541	30	40	681	1	39	0	30	1	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	576	32	43	724	1	41	0	32	1	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	726	0	0	607	0	0	1060	1423	304	1119	1439	363
Stage 1	-	-	-	-	-	-	613	613	-	810	810	-
Stage 2	-	-	-	-	-	-	447	811	-	309	629	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	860	-	-	960	-	-	178	135	692	164	134	640
Stage 1	-	-	-	-	-	-	447	482	-	344	396	-
Stage 2	-	-	-	-	-	-	560	391	-	682	479	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	860	-	-	960	-	-	161	127	692	148	127	640
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	127	-	148	127	-
Stage 1	-	-	-	-	-	-	441	476	-	329	378	-
Stage 2	-	-	-	-	-	-	513	374	-	642	473	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.16	0.49	26.22	11.67
HCM LOS			D	B

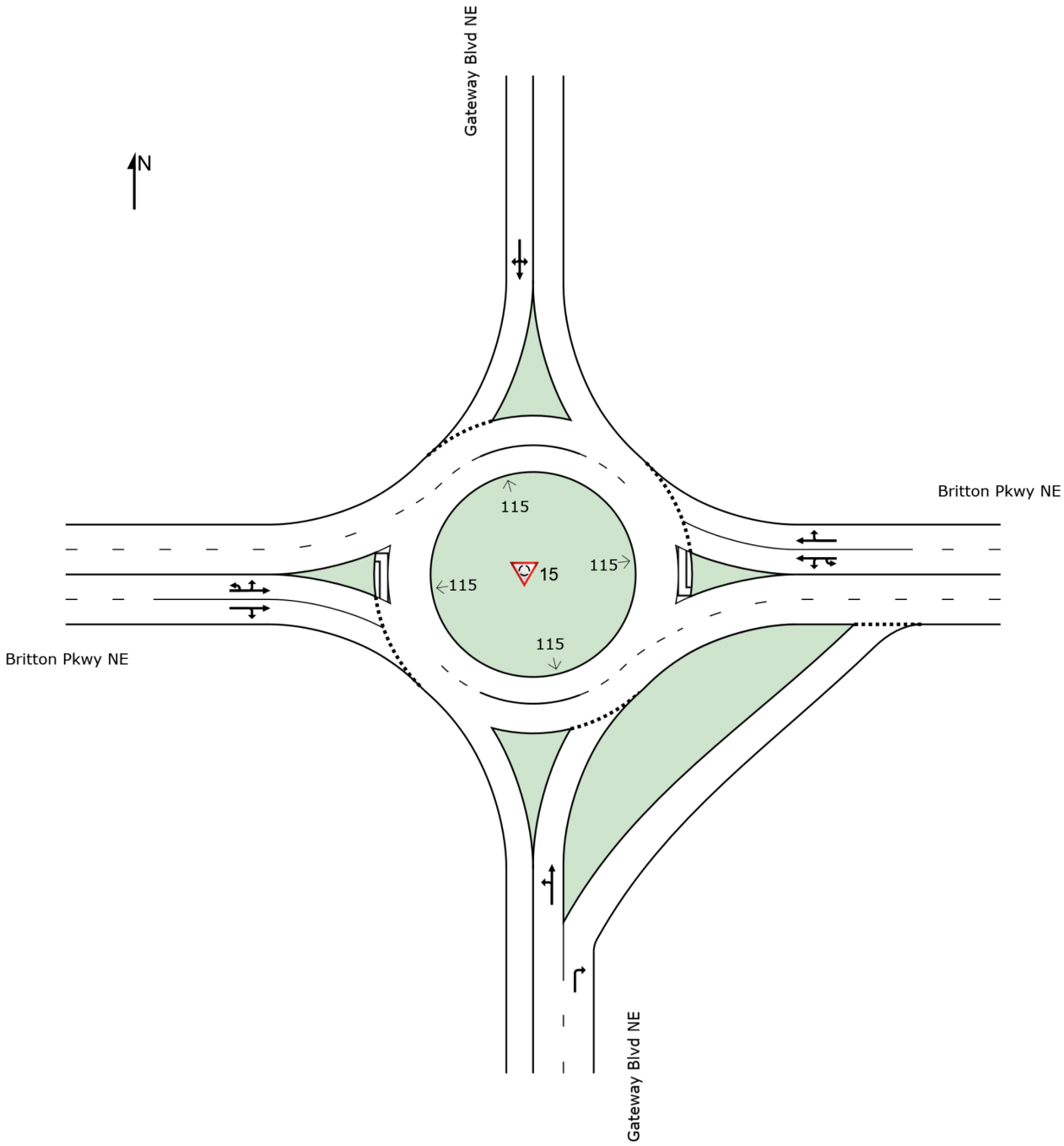
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	242	860	-	-	960	-	-	567
HCM Lane V/C Ratio	0.303	0.012	-	-	0.044	-	-	0.049
HCM Ctrl Dly (s/v)	26.2	9.2	-	-	8.9	-	-	11.7
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.2	0	-	-	0.1	-	-	0.2

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	378	2.0	378	2.0	0.326	11.3	LOS B	1.4	34.3	0.49	0.72	0.49	32.1
8	T1	All MCs	16	2.0	16	2.0	0.326	5.0	LOS A	1.4	34.3	0.49	0.72	0.49	32.7
18	R2	All MCs	83	2.0	83	2.0	0.065	4.5	LOS A	0.2	5.1	0.35	0.53	0.35	35.6
Approach			477	2.0	477	2.0	0.326	9.9	LOS A	1.4	34.3	0.47	0.69	0.47	32.7
East: Britton Pkwy NE															
1u	U	All MCs	3	3.0	3	3.0	0.380	15.7	LOS B	2.5	63.3	0.69	0.65	0.69	33.1
1	L2	All MCs	87	3.0	87	3.0	0.380	13.1	LOS B	2.5	63.3	0.69	0.65	0.69	33.1
6	T1	All MCs	552	3.0	552	3.0	0.380	6.4	LOS A	2.7	69.4	0.69	0.62	0.69	34.3
16	R2	All MCs	178	3.0	178	3.0	0.380	6.3	LOS A	2.7	69.4	0.68	0.60	0.68	34.3
Approach			820	3.0	820	3.0	0.380	7.2	LOS A	2.7	69.4	0.69	0.62	0.69	34.2
North: Gateway Blvd NE															
7	L2	All MCs	96	2.0	96	2.0	0.281	13.1	LOS B	1.3	33.0	0.67	0.77	0.67	33.0
4	T1	All MCs	40	2.0	40	2.0	0.281	6.8	LOS A	1.3	33.0	0.67	0.77	0.67	33.6
14	R2	All MCs	78	2.0	78	2.0	0.281	6.9	LOS A	1.3	33.0	0.67	0.77	0.67	33.4
Approach			213	2.0	213	2.0	0.281	9.7	LOS A	1.3	33.0	0.67	0.77	0.67	33.2
West: Britton Pkwy NE															
5u	U	All MCs	4	5.0	4	5.0	0.306	13.8	LOS B	1.9	48.3	0.46	0.54	0.46	33.7
5	L2	All MCs	122	5.0	122	5.0	0.306	11.2	LOS B	1.9	48.3	0.46	0.54	0.46	33.7
2	T1	All MCs	454	5.0	454	5.0	0.306	4.7	LOS A	1.9	50.3	0.44	0.51	0.44	34.9
12	R2	All MCs	220	5.0	220	5.0	0.306	4.8	LOS A	1.9	50.3	0.43	0.47	0.43	35.0
Approach			801	5.0	801	5.0	0.306	5.8	LOS A	1.9	50.3	0.44	0.50	0.44	34.8
All Vehicles			2311	3.4	2311	3.4	0.380	7.5	LOS A	2.7	69.4	0.56	0.61	0.56	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	28.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	708	84	35	888	25	124	0	54	10	0	35
Future Vol, veh/h	50	708	84	35	888	25	124	0	54	10	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	745	88	37	935	26	131	0	57	11	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	961	0	0	834	0	0	1436	1929	417	1499	1961	481
Stage 1	-	-	-	-	-	-	895	895	-	1022	1022	-
Stage 2	-	-	-	-	-	-	541	1035	-	478	939	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	718	-	-	795	-	-	~ 94	66	585	86	64	537
Stage 1	-	-	-	-	-	-	302	357	-	257	316	-
Stage 2	-	-	-	-	-	-	493	307	-	543	345	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	718	-	-	795	-	-	~ 77	58	585	69	57	537
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 77	58	-	69	57	-
Stage 1	-	-	-	-	-	-	280	331	-	245	301	-
Stage 2	-	-	-	-	-	-	438	293	-	454	320	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.62	0.36	$ 316.18	24.33
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	77	585	718	-	-	795	-	-	69	537
HCM Lane V/C Ratio	1.685	0.097	0.073	-	-	0.046	-	-	0.153	0.069
HCM Ctrl Dly (s/v)	$ 448.7	11.8	10.4	-	-	9.7	-	-	66.8	12.2
HCM Lane LOS	F	B	B	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	11.1	0.3	0.2	-	-	0.1	-	-	0.5	0.2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	72	0	0	138	0	0	0	181	0	0	0
Future Vol, veh/h	0	72	0	0	138	0	0	0	181	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	78	0	0	150	0	0	0	197	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	150	0	0	78	0	0	228	228	78	228	228	150
Stage 1	-	-	-	-	-	-	78	78	-	150	150	-
Stage 2	-	-	-	-	-	-	150	150	-	78	78	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1431	-	-	1520	-	-	727	671	982	727	671	896
Stage 1	-	-	-	-	-	-	931	830	-	853	773	-
Stage 2	-	-	-	-	-	-	853	773	-	931	830	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1431	-	-	1520	-	-	727	671	982	581	671	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	727	671	-	581	671	-
Stage 1	-	-	-	-	-	-	931	830	-	853	773	-
Stage 2	-	-	-	-	-	-	853	773	-	744	830	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	9.58	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	982	1431	-	-	1520	-	-	-
HCM Lane V/C Ratio	0.2	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	9.6	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	51	45	255	76	65
Future Vol, veh/h	180	51	45	255	76	65
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	202	57	51	287	85	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	260	0	619	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	388	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1317	-	452	808
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1317	-	432	808
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	654	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.18	14.17
HCM LOS			B

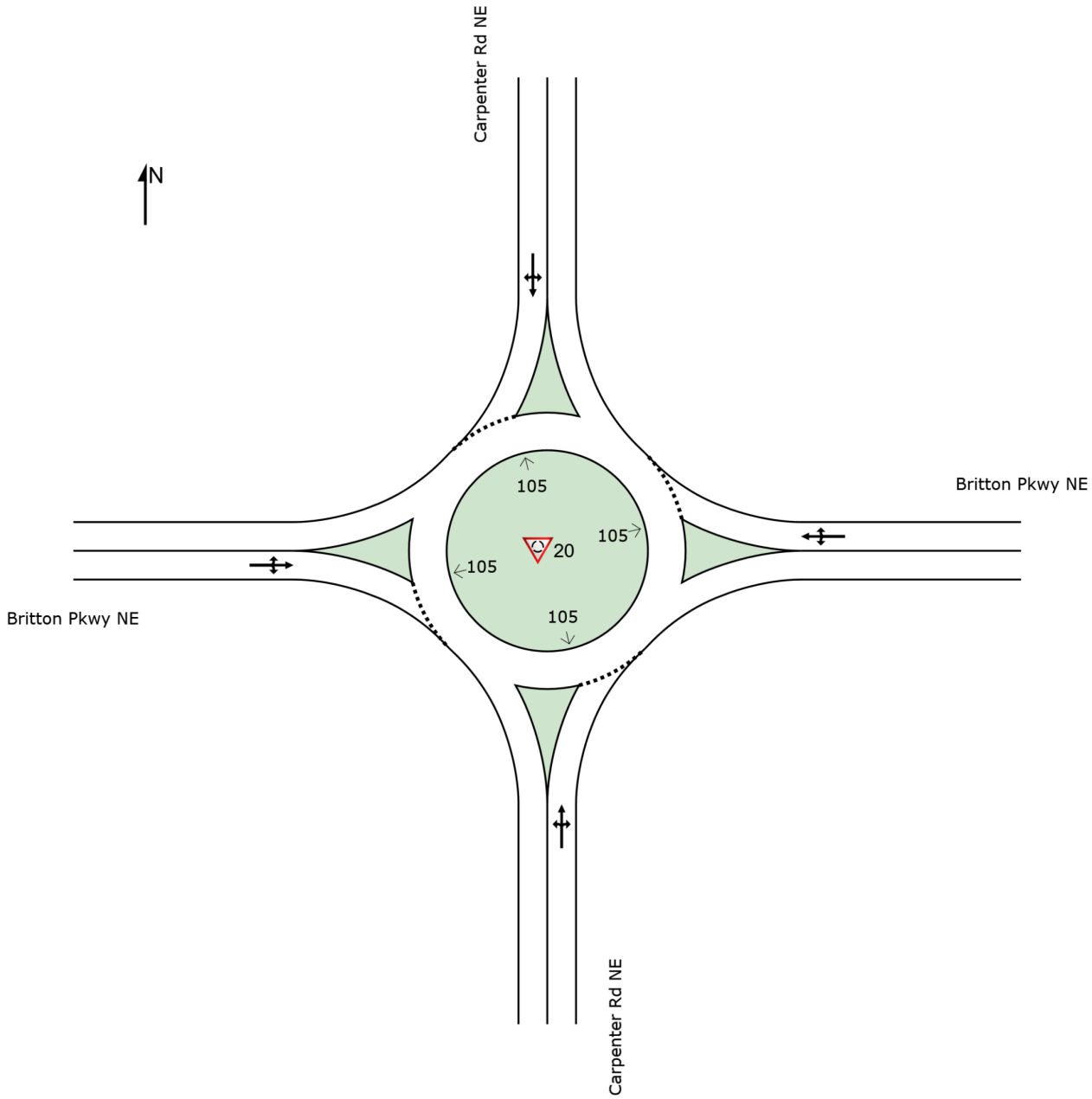
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	550	-	-	270	-
HCM Lane V/C Ratio	0.288	-	-	0.038	-
HCM Ctrl Dly (s/v)	14.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	151	4.0	151	4.0	0.757	16.6	LOS B	9.9	254.3	0.95	0.86	1.22	29.2
8	T1	All MCs	1	4.0	1	4.0	0.757	10.4	LOS B	9.9	254.3	0.95	0.86	1.22	26.3
18	R2	All MCs	555	4.0	555	4.0	0.757	10.6	LOS B	9.9	254.3	0.95	0.86	1.22	29.7
Approach			706	4.0	706	4.0	0.757	11.9	LOS B	9.9	254.3	0.95	0.86	1.22	29.6
East: Britton Pkwy NE															
1	L2	All MCs	623	5.0	623	5.0	0.947	18.2	LOS D	27.2	708.5	1.00	0.91	1.22	27.7
6	T1	All MCs	518	5.0	518	5.0	0.947	12.0	LOS D	27.2	708.5	1.00	0.91	1.22	31.1
16	R2	All MCs	1	5.0	1	5.0	0.947	12.2	LOS D	27.2	708.5	1.00	0.91	1.22	28.6
Approach			1142	5.0	1142	5.0	0.947	15.3	LOS B	27.2	708.5	1.00	0.91	1.22	29.4
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.012	25.4	LOS C	0.1	2.4	1.00	0.74	1.00	25.9
4	T1	All MCs	1	0.0	1	0.0	0.012	19.2	LOS B	0.1	2.4	1.00	0.74	1.00	21.6
14	R2	All MCs	1	0.0	1	0.0	0.012	19.4	LOS B	0.1	2.4	1.00	0.74	1.00	26.2
Approach			3	0.0	3	0.0	0.012	21.3	LOS C	0.1	2.4	1.00	0.74	1.00	24.8
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.765	20.4	LOS C	9.9	255.3	1.00	1.00	1.42	28.6
2	T1	All MCs	433	4.0	433	4.0	0.765	14.2	LOS B	9.9	255.3	1.00	1.00	1.42	31.5
12	R2	All MCs	134	4.0	134	4.0	0.765	14.4	LOS B	9.9	255.3	1.00	1.00	1.42	28.4
Approach			569	4.0	569	4.0	0.765	14.2	LOS B	9.9	255.3	1.00	1.00	1.42	30.9
All Vehicles			2420	4.5	2420	4.5	0.947	14.1	LOS B	27.2	708.5	0.99	0.92	1.27	29.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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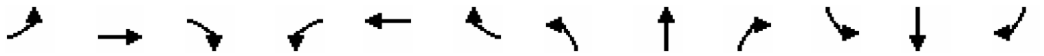
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	1000	370	365	790	111	180	282	250	130	369	219
Future Volume (veh/h)	238	1000	370	365	790	111	180	282	250	130	369	219
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	243	1020	378	372	806	113	184	288	255	133	377	223
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	346	1236	719	401	839	118	191	343	475	230	441	257
Arrive On Green	0.20	0.36	0.36	0.12	0.28	0.28	0.11	0.19	0.19	0.14	0.22	0.22
Sat Flow, veh/h	1701	3393	1505	3274	2960	415	1701	1786	1509	1674	2029	1182
Grp Volume(v), veh/h	243	1020	378	372	458	461	184	288	255	133	309	291
Grp Sat Flow(s),veh/h/ln	1701	1697	1505	1637	1683	1691	1701	1786	1509	1674	1670	1541
Q Serve(g_s), s	15.9	32.8	21.1	13.5	32.2	32.2	12.9	18.6	10.0	8.9	21.3	21.8
Cycle Q Clear(g_c), s	15.9	32.8	21.1	13.5	32.2	32.2	12.9	18.6	10.0	8.9	21.3	21.8
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.77
Lane Grp Cap(c), veh/h	346	1236	719	401	477	479	191	343	475	230	363	335
V/C Ratio(X)	0.70	0.82	0.53	0.93	0.96	0.96	0.96	0.84	0.54	0.58	0.85	0.87
Avail Cap(c_a), veh/h	346	1236	719	401	477	479	191	441	558	230	417	385
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)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	34.7	21.9	52.1	42.3	42.4	53.0	46.7	14.6	48.5	45.1	45.3
Incr Delay (d2), s/veh	4.3	5.2	2.2	27.2	32.6	32.5	53.5	11.4	1.1	2.3	14.0	16.9
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	7.1	14.2	7.8	7.0	17.5	17.6	8.3	9.3	3.4	3.9	10.2	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.7	39.9	24.2	79.3	74.9	74.9	106.5	58.1	15.7	50.8	59.1	62.2
LnGrp LOS	D	D	C	E	E	E	F	E	B	D	E	E
Approach Vol, veh/h		1641			1291			727			733	
Approach Delay, s/veh		37.6			76.2			55.4			58.9	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.9	39.5	22.0	28.6	20.2	49.2	19.0	31.6
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	20.5	34.0	13.9	29.6	14.7	39.8	13.5	30.0
Max Q Clear Time (g_c+I1), s	17.9	34.2	10.9	20.6	15.5	34.8	14.9	23.8
Green Ext Time (p_c), s	0.1	0.0	0.0	2.1	0.0	3.6	0.0	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	55.4
HCM 7th LOS	E

Notes

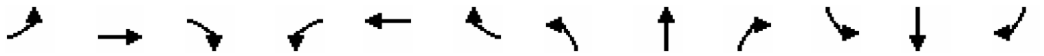
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	770	120	115	740	30	150	236	80	90	351	482
Future Volume (veh/h)	320	770	120	115	740	30	150	236	80	90	351	482
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	330	794	124	119	763	31	155	243	82	93	362	497
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	312	1009	158	144	812	33	126	759	249	115	510	451
Arrive On Green	0.18	0.34	0.34	0.08	0.24	0.24	0.08	0.31	0.31	0.07	0.30	0.30
Sat Flow, veh/h	1701	2938	459	1701	3322	135	1674	2465	810	1701	1697	1501
Grp Volume(v), veh/h	330	458	460	119	390	404	155	163	162	93	362	497
Grp Sat Flow(s),veh/h/ln	1701	1697	1701	1701	1697	1760	1674	1670	1605	1701	1697	1501
Q Serve(g_s), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	8.9	9.3	6.5	22.7	36.0
Cycle Q Clear(g_c), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	8.9	9.3	6.5	22.7	36.0
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	312	583	584	144	415	430	126	514	494	115	510	451
V/C Ratio(X)	1.06	0.79	0.79	0.83	0.94	0.94	1.23	0.32	0.33	0.81	0.71	1.10
Avail Cap(c_a), veh/h	312	583	584	249	418	434	126	514	494	227	510	451
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	35.4	35.4	54.0	44.4	44.4	55.4	31.8	31.9	55.0	37.2	41.9
Incr Delay (d2), s/veh	66.5	7.1	7.0	4.5	29.2	28.6	155.5	0.3	0.4	4.9	4.6	72.8
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	15.1	13.0	13.1	3.7	14.6	15.1	9.2	3.7	3.7	2.9	10.0	22.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	115.4	42.4	42.4	58.5	73.6	73.0	210.9	32.1	32.3	60.0	41.8	114.7
LnGrp LOS	F	D	D	E	E	E	F	C	C	E	D	F
Approach Vol, veh/h		1248			913			480			952	
Approach Delay, s/veh		61.7			71.3			89.9			81.6	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	34.8	14.1	42.9	15.6	47.1	15.0	42.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	29.5	16.0	29.0	17.5	34.0	9.0	36.0
Max Q Clear Time (g_c+I1), s	24.0	29.0	8.5	11.3	10.2	31.1	11.0	38.0
Green Ext Time (p_c), s	0.0	0.3	0.1	1.7	0.1	1.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	73.2
HCM 7th LOS	E



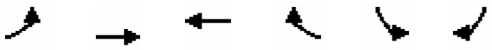
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1548	5	0	1124	30	70	5	25	66	1	30
Future Volume (veh/h)	40	1548	5	0	1124	30	70	5	25	66	1	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	1629	0	0	1183	32	74	5	26	69	1	32
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, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	83	2723		1	2491	67	158	213	181	220	3	181
Arrive On Green	0.05	1.00	0.00	0.00	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	3300	3393	1514	1688	3348	91	1398	1800	1525	1358	23	1525
Grp Volume(v), veh/h	42	1629	0	0	595	620	74	5	26	70	0	32
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1756	1398	1800	1525	1381	0	1525
Q Serve(g_s), s	1.5	0.0	0.0	0.0	16.8	16.8	6.2	0.3	1.8	5.5	0.0	2.3
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.0	16.8	16.8	12.0	0.3	1.8	5.8	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	83	2723		1	1252	1306	158	213	181	223	0	181
V/C Ratio(X)	0.51	0.60		0.00	0.47	0.48	0.47	0.02	0.14	0.31	0.00	0.18
Avail Cap(c_a), veh/h	275	2723		77	1252	1306	470	615	521	537	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.00	0.00	0.35	0.35	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	0.0	6.1	6.1	54.8	46.8	47.4	49.3	0.0	47.6
Incr Delay (d2), s/veh	3.3	0.9	0.0	0.0	0.5	0.4	1.6	0.0	0.3	0.6	0.0	0.3
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	0.7	0.3	0.0	0.0	5.4	5.6	2.3	0.1	0.7	2.0	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	0.9	0.0	0.0	6.5	6.5	56.4	46.8	47.7	49.9	0.0	48.0
LnGrp LOS	E	A			A	A	E	D	D	D		D
Approach Vol, veh/h		1671			1215			105			102	
Approach Delay, s/veh		2.4			6.5			53.8			49.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	94.8		18.2	0.0	101.8		18.2				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	3.5	18.8		14.0	0.0	2.0		7.8				
Green Ext Time (p_c), s	0.0	12.6		0.2	0.0	25.5		0.4				

Intersection Summary		
HCM 7th Control Delay, s/veh	7.3	
HCM 7th LOS	A	

Notes

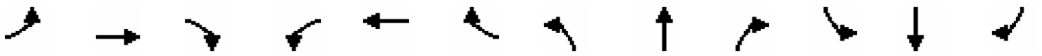
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1598	1144	25	30	50
Future Volume (veh/h)	50	1598	1144	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	53	1700	1217	27	32	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	848	4252	1332	30	84	74
Arrive On Green	0.43	0.87	0.79	0.79	0.05	0.05
Sat Flow, veh/h	1701	5036	3456	75	1714	1525
Grp Volume(v), veh/h	53	1700	608	636	32	53
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1758	1714	1525
Q Serve(g_s), s	0.0	8.2	32.6	32.7	2.2	4.1
Cycle Q Clear(g_c), s	0.0	8.2	32.6	32.7	2.2	4.1
Prop In Lane	1.00			0.04	1.00	1.00
Lane Grp Cap(c), veh/h	848	4252	666	696	84	74
V/C Ratio(X)	0.06	0.40	0.91	0.91	0.38	0.71
Avail Cap(c_a), veh/h	848	4252	975	1018	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	13.5	1.5	11.0	11.0	55.3	56.2
Incr Delay (d2), s/veh	0.0	0.3	17.3	16.8	1.1	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.3	7.3	7.6	1.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	13.5	1.8	28.3	27.8	56.4	60.9
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1753	1244		85	
Approach Delay, s/veh		2.1	28.0		59.2	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	57.2	53.0			110.2	9.8
Change Period (Y+Rc), s	5.5	5.5			5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5			82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	34.7			10.2	6.1
Green Ext Time (p_c), s	0.0	12.8			27.5	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	14.2
HCM 7th LOS	B



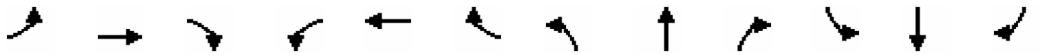
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	596	855	0	0	1134	65	15	0	818	0	0	0
Future Volume (veh/h)	596	855	0	0	1134	65	15	0	818	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	648	929	0	0	1233	0	16	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3078	0	0	1875		23	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	648	929	0	0	1233	0	16	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	15.8	0.0	0.0	30.7	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	15.8	0.0	0.0	30.7	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3078	0	0	1875		23	0				
V/C Ratio(X)	1.25	0.30	0.00	0.00	0.66		0.68	0.00				
Avail Cap(c_a), veh/h	517	3078	0	0	1875		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	18.6	0.0	58.9	0.0	0.0			
Incr Delay (d2), s/veh	115.2	0.0	0.0	0.0	1.8	0.0	29.6	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	32.5	6.4	0.0	0.0	12.0	0.0	0.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	162.9	5.3	0.0	0.0	20.4	0.0	88.5	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1577			1233			16				
Approach Delay, s/veh		70.1			20.4			88.5				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.3		5.7		114.3			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	32.7		3.1		17.8			
Green Ext Time (p_c), s	0.0	6.3		0.0		10.2			

Intersection Summary		
HCM 7th Control Delay, s/veh		48.5
HCM 7th LOS		D

Notes

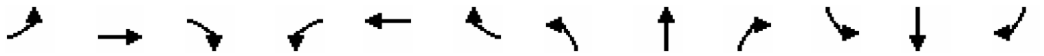
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1401	395	514	660	0	0	0	0	85	1	741
Future Volume (vph)	0	1401	395	514	660	0	0	0	0	85	1	741
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1694	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1694	1515
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1444	407	530	680	0	0	0	0	88	1	764
RTOR Reduction (vph)	0	0	236	0	0	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	1444	171	530	680	0	0	0	0	0	89	723
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.5	50.5	34.5	39.0						20.0	71.5
Effective Green, g (s)		50.5	50.5	34.5	39.0						20.0	71.5
Actuated g/C Ratio		0.42	0.42	0.29	0.33						0.17	0.60
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1424	637	481	1089						282	902
v/s Ratio Prot		c0.43		c0.32	0.20							c0.48
v/s Ratio Perm			0.11								0.05	
v/c Ratio		1.01	0.27	1.10	0.62						0.32	0.80
Uniform Delay, d1		34.8	22.7	42.8	34.3						44.0	18.8
Progression Factor		0.90	1.56	0.58	0.33						1.00	1.00
Incremental Delay, d2		22.5	0.7	49.2	0.2						0.7	5.5
Delay (s)		53.8	36.1	74.0	11.6						44.7	24.2
Level of Service		D	D	E	B						D	C
Approach Delay (s/veh)		49.9			38.9			0.0			26.4	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	41.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	826	270	625	606	175	145	281	816	150	277	81
Future Volume (veh/h)	51	826	270	625	606	175	145	281	816	150	277	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	53	860	0	651	631	0	151	293	850	156	289	84
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	67	1225		713	1830		177	263	961	183	369	105
Arrive On Green	0.04	0.36	0.00	0.36	0.91	0.00	0.10	0.15	0.15	0.11	0.14	0.14
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2591	1701	2596	739
Grp Volume(v), veh/h	53	860	0	651	631	0	151	293	850	156	187	186
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1296	1701	1697	1638
Q Serve(g_s), s	3.7	26.0	0.0	22.7	3.0	0.0	10.5	17.7	17.7	10.8	12.7	13.2
Cycle Q Clear(g_c), s	3.7	26.0	0.0	22.7	3.0	0.0	10.5	17.7	17.7	10.8	12.7	13.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	67	1225		713	1830		177	263	961	183	241	233
V/C Ratio(X)	0.79	0.70		0.91	0.34		0.85	1.11	0.88	0.85	0.77	0.80
Avail Cap(c_a), veh/h	85	1225		805	1830		241	263	961	340	339	328
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.62	0.62	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	32.8	0.0	37.1	2.7	0.0	52.8	51.2	35.9	52.6	49.6	49.8
Incr Delay (d2), s/veh	24.6	3.4	0.0	9.5	0.3	0.0	17.3	89.9	9.7	4.3	4.3	6.0
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	2.1	11.2	0.0	8.9	0.9	0.0	5.3	14.4	12.8	4.8	5.7	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	81.7	36.2	0.0	46.6	3.0	0.0	70.2	141.1	45.6	56.9	53.9	55.8
LnGrp LOS	F	D		D	A		E	F	D	E	D	E
Approach Vol, veh/h		913			1282			1294			529	
Approach Delay, s/veh		38.8			25.1			70.1			55.5	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	70.7	16.9	22.7	31.6	48.8	17.5	22.1
Change Period (Y+Rc), s	5.0	5.5	4.0	5.0	5.5	* 5.5	5.0	* 5
Max Green Setting (Gmax), s	6.0	53.5	24.0	17.0	29.5	* 30	17.0	* 24
Max Q Clear Time (g_c+I1), s	5.7	5.0	12.8	19.7	24.7	28.0	12.5	15.2
Green Ext Time (p_c), s	0.0	5.9	0.1	0.0	1.4	1.2	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	46.7
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

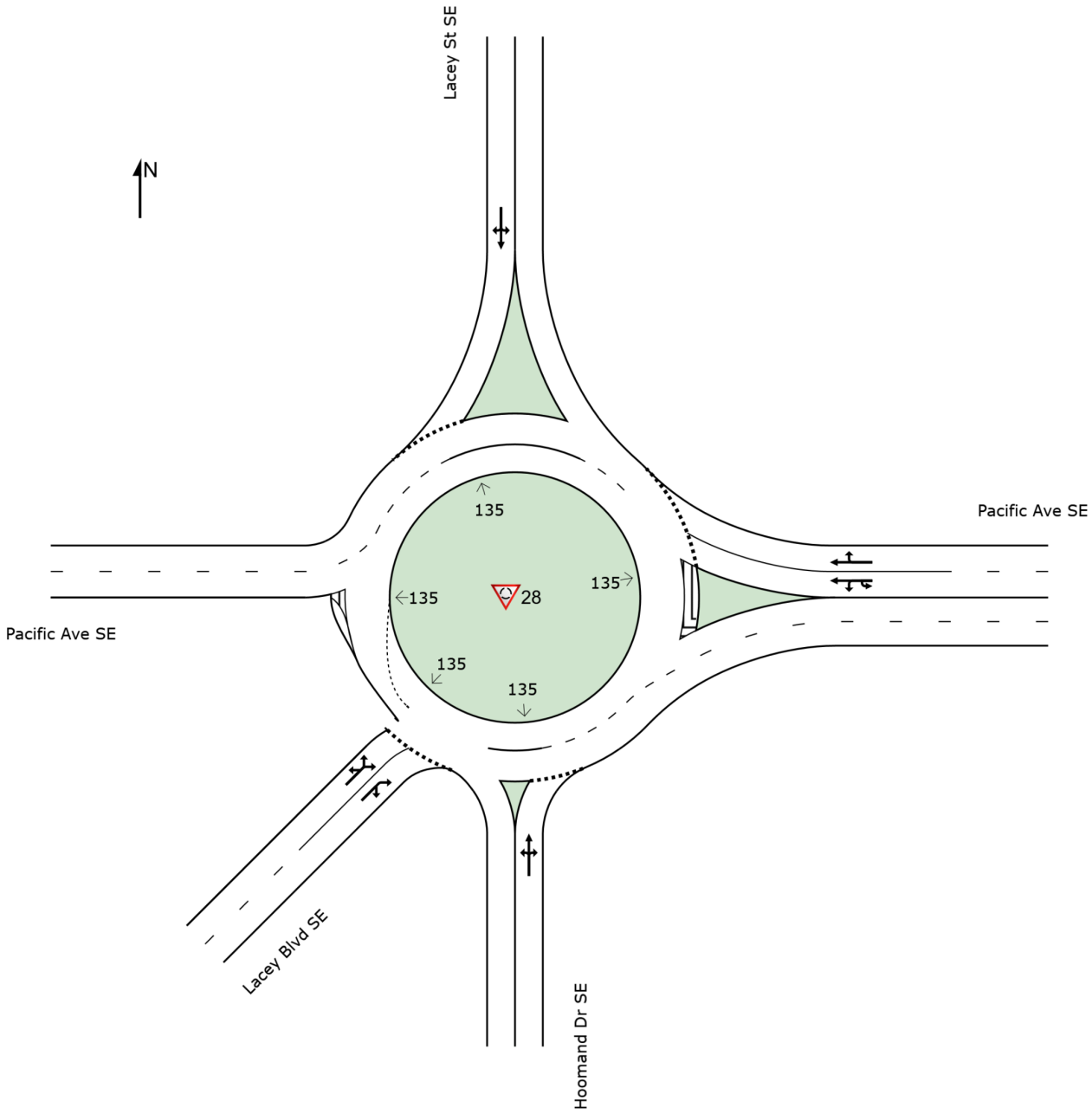
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	73	2.0	73	2.0	0.179	12.7	LOS B	0.7	17.1	0.59	0.77	0.59	33.3
8	T1	All MCs	4	2.0	4	2.0	0.179	5.7	LOS A	0.7	17.1	0.59	0.77	0.59	34.0
18	R2	All MCs	73	2.0	73	2.0	0.179	6.0	LOS A	0.7	17.1	0.59	0.77	0.59	33.7
Approach			150	2.0	150	2.0	0.179	9.2	LOS A	0.7	17.1	0.59	0.77	0.59	33.5
East: Pacific Ave SE															
1u	U	All MCs	3	1.0	3	1.0	0.471	13.9	LOS B	3.4	85.7	0.44	0.46	0.44	34.4
1	L2	All MCs	94	1.0	94	1.0	0.471	11.1	LOS B	3.4	85.7	0.44	0.46	0.44	34.5
6	T1	All MCs	1247	1.0	1247	1.0	0.471	4.1	LOS A	3.5	87.9	0.42	0.42	0.42	35.6
16	R2	All MCs	63	1.0	63	1.0	0.471	4.4	LOS A	3.5	87.9	0.41	0.40	0.41	35.4
Approach			1406	1.0	1406	1.0	0.471	4.6	LOS A	3.5	87.9	0.42	0.42	0.42	35.5
North: Lacey St SE															
7	L2	All MCs	21	2.0	21	2.0	0.094	13.2	LOS B	0.4	9.3	0.63	0.77	0.63	33.6
4	T1	All MCs	5	2.0	5	2.0	0.094	6.3	LOS A	0.4	9.3	0.63	0.77	0.63	34.3
14	R2	All MCs	42	2.0	42	2.0	0.094	6.5	LOS A	0.4	9.3	0.63	0.77	0.63	34.0
Approach			68	2.0	68	2.0	0.094	8.5	LOS A	0.4	9.3	0.63	0.77	0.63	33.9
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	36	1.0	36	1.0	0.443	12.1	LOS B	2.7	67.4	0.33	0.43	0.33	35.1
5ax	L1	All MCs	52	1.0	52	1.0	0.443	9.4	LOS A	2.7	67.4	0.33	0.43	0.33	35.1
12ax	R1	All MCs	1094	1.0	1094	1.0	0.443	3.6	LOS A	2.7	68.5	0.32	0.41	0.32	36.1
12bx	R3	All MCs	62	1.0	62	1.0	0.443	4.2	LOS A	2.7	68.5	0.31	0.39	0.31	35.8
Approach			1245	1.0	1245	1.0	0.443	4.1	LOS A	2.7	68.5	0.32	0.41	0.32	36.0
All Vehicles			2869	1.1	2869	1.1	0.471	4.7	LOS A	3.5	87.9	0.39	0.44	0.39	35.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	226	4	75	240	45	10	30	150	20	20	3
Future Vol, veh/h	5	226	4	75	240	45	10	30	150	20	20	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	6	257	5	85	273	51	11	34	170	23	23	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.6	14.6	10.3	9.8
HCM LOS	B	B	B	A

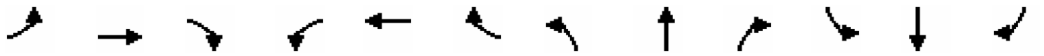
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	2%	21%	47%
Vol Thru, %	75%	0%	96%	67%	47%
Vol Right, %	0%	100%	2%	13%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	150	235	360	43
LT Vol	10	0	5	75	20
Through Vol	30	0	226	240	20
RT Vol	0	150	4	45	3
Lane Flow Rate	45	170	267	409	49
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.081	0.266	0.39	0.572	0.084
Departure Headway (Hd)	6.453	5.614	5.252	5.037	6.221
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	555	639	686	716	575
Service Time	4.193	3.354	3.284	3.066	4.275
HCM Lane V/C Ratio	0.081	0.266	0.389	0.571	0.085
HCM Control Delay, s/veh	9.8	10.4	11.6	14.6	9.8
HCM Lane LOS	A	B	B	B	A
HCM 95th-tile Q	0.3	1.1	1.9	3.7	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	156	61	530	208	51	375
Future Volume (veh/h)	156	61	530	208	51	375
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	161	63	546	214	53	387
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	235	209	887	752	94	1174
Arrive On Green	0.14	0.14	0.49	0.49	0.05	0.65
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	161	63	546	214	53	387
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	3.9	1.6	9.5	3.6	1.3	4.1
Cycle Q Clear(g_c), s	3.9	1.6	9.5	3.6	1.3	4.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	235	209	887	752	94	1174
V/C Ratio(X)	0.69	0.30	0.62	0.28	0.57	0.33
Avail Cap(c_a), veh/h	713	635	887	752	200	1174
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.6	16.6	7.9	6.4	19.8	3.3
Incr Delay (d2), s/veh	3.5	0.8	3.2	0.9	5.3	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.5	3.3	1.0	0.6	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	21.1	17.4	11.1	7.4	25.1	4.1
LnGrp LOS	C	B	B	A	C	A
Approach Vol, veh/h	224		760			440
Approach Delay, s/veh	20.1		10.1			6.6
Approach LOS	C		B			A

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	6.8	25.7				32.5	10.4
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	3.3	11.5				6.1	5.9
Green Ext Time (p_c), s	0.0	2.5				2.4	0.5

Intersection Summary		
HCM 7th Control Delay, s/veh	10.6	
HCM 7th LOS	B	



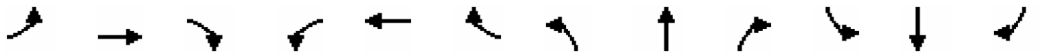
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	622	280	255	521	65	185	431	225	95	275	106
Future Volume (veh/h)	163	622	280	255	521	65	185	431	225	95	275	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	175	669	301	274	560	70	199	463	242	102	296	114
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	168	759	330	305	1026	454	374	785	325	296	429	161
Arrive On Green	0.10	0.22	0.22	0.18	0.31	0.31	0.22	0.22	0.22	0.17	0.17	0.17
Sat Flow, veh/h	1701	3393	1476	1674	3340	1477	1674	3516	1457	1701	2466	926
Grp Volume(v), veh/h	175	669	301	274	560	70	199	463	242	102	212	198
Grp Sat Flow(s),veh/h/ln	1701	1697	1476	1674	1670	1477	1674	1758	1457	1701	1786	1606
Q Serve(g_s), s	10.0	19.4	20.2	16.2	14.2	3.5	10.6	12.0	15.7	5.3	11.3	11.8
Cycle Q Clear(g_c), s	10.0	19.4	20.2	16.2	14.2	3.5	10.6	12.0	15.7	5.3	11.3	11.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	168	759	330	305	1026	454	374	785	325	296	311	280
V/C Ratio(X)	1.04	0.88	0.91	0.90	0.55	0.15	0.53	0.59	0.74	0.34	0.68	0.71
Avail Cap(c_a), veh/h	168	769	334	363	1152	509	594	1247	517	570	598	538
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	38.1	38.4	40.6	29.3	25.6	34.8	35.3	36.7	36.8	39.3	39.5
Incr Delay (d2), s/veh	81.7	11.4	27.6	21.2	0.3	0.1	0.9	0.5	2.5	0.5	2.0	2.4
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	8.0	9.1	9.7	8.4	5.6	1.2	4.4	5.1	5.7	2.3	5.1	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	127.5	49.4	66.0	61.8	29.6	25.7	35.6	35.8	39.2	37.3	41.3	41.9
LnGrp LOS	F	D	E	E	C	C	D	D	D	D	D	D
Approach Vol, veh/h		1145			904			904			512	
Approach Delay, s/veh		65.7			39.1			36.7			40.7	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	36.2		27.7	23.5	27.7		22.7				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	12.0	16.2		17.7	18.2	22.2		13.8				
Green Ext Time (p_c), s	0.0	3.2		3.5	0.2	0.4		2.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			47.5									
HCM 7th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



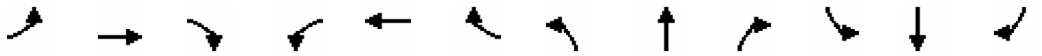
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	730	0	0	1020	296	175	0	490	0	0	0
Future Volume (veh/h)	221	730	0	0	1020	296	175	0	490	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	238	785	0	0	1097	0	188	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	271	2547	0	0	1805		233	0				
Arrive On Green	0.16	0.75	0.00	0.00	0.54	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	238	785	0	0	1097	0	188	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	12.3	6.8	0.0	0.0	20.2	0.0	9.7	0.0	0.0			
Cycle Q Clear(g_c), s	12.3	6.8	0.0	0.0	20.2	0.0	9.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	271	2547	0	0	1805		233	0				
V/C Ratio(X)	0.88	0.31	0.00	0.00	0.61		0.81	0.00				
Avail Cap(c_a), veh/h	283	2547	0	0	1805		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.0	3.6	0.0	0.0	14.4	0.0	37.6	0.0	0.0			
Incr Delay (d2), s/veh	24.5	0.3	0.0	0.0	1.5	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.9	1.8	0.0	0.0	7.5	0.0	4.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.5	4.0	0.0	0.0	15.9	0.0	42.5	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1023			1097			188				
Approach Delay, s/veh		17.3			15.9			42.5				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	19.3	53.2		17.4		72.6						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0						
Max Q Clear Time (g_c+I1), s	14.3	22.2		11.7		8.8						
Green Ext Time (p_c), s	0.0	5.5		0.7		5.3						

Intersection Summary												
HCM 7th Control Delay, s/veh			18.7									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	726	230	0	690	0	0	0	0	225	1	360
Future Volume (veh/h)	0	726	230	0	690	0	0	0	0	225	1	360
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	756	0	0	719	0				234	1	375
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	2084		0	2068	0				462	2	412
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00				0.27	0.27	0.27
Sat Flow, veh/h	0	3572	0	0	3544	0				1681	7	1502
Grp Volume(v), veh/h	0	756	0	0	719	0				235	0	375
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	10.0	0.0	0.0	9.4	0.0				10.6	0.0	21.7
Cycle Q Clear(g_c), s	0.0	10.0	0.0	0.0	9.4	0.0				10.6	0.0	21.7
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2084		0	2068	0				464	0	412
V/C Ratio(X)	0.00	0.36		0.00	0.35	0.00				0.51	0.00	0.91
Avail Cap(c_a), veh/h	0	2084		0	2068	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.6	0.0	0.0	8.5	0.0				27.5	0.0	31.6
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.5	0.0				0.6	0.0	19.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	0.0	0.0	3.2	0.0				4.2	0.0	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	9.1	0.0	0.0	9.0	0.0				28.1	0.0	51.3
LnGrp LOS		A			A					C		D
Approach Vol, veh/h		756			719						610	
Approach Delay, s/veh		9.1			9.0						42.4	
Approach LOS		A			A						D	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	60.3	60.3	29.7
Change Period (Y+Rc), s	5.0	5.0	5.0
Max Green Setting (Gmax), s	52.0	52.0	28.0
Max Q Clear Time (g_c+I1), s	11.4	12.0	23.7
Green Ext Time (p_c), s	4.7	5.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	18.8
HCM 7th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	664	108	0	942	0	49
Future Vol, veh/h	664	108	0	942	0	49
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	699	114	0	992	0	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1252	406
Stage 1	-	-	-	-	756	-
Stage 2	-	-	-	-	496	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	164	594
Stage 1	-	-	0	-	425	-
Stage 2	-	-	0	-	577	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	164	594
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	577	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.64
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	594	-	-	-
HCM Lane V/C Ratio	0.087	-	-	-
HCM Ctrl Dly (s/v)	11.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	570	0	0	721	0	0
Future Vol, veh/h	570	0	0	721	0	0
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, %	4	4	3	3	2	2
Mvmt Flow	606	0	0	767	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	990	303
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	243	693
Stage 1	-	-	0	-	507	-
Stage 2	-	-	0	-	658	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	243	693
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	556	49	0	721	0	69
Future Vol, veh/h	556	49	0	721	0	69
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, %	4	4	3	3	2	2
Mvmt Flow	591	52	0	767	0	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1001	322
Stage 1	-	-	-	-	618	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	239	674
Stage 1	-	-	0	-	500	-
Stage 2	-	-	0	-	658	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	239	674
Mov Cap-2 Maneuver	-	-	-	-	239	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	10.99
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	674	-	-	-
HCM Lane V/C Ratio	0.109	-	-	-
HCM Ctrl Dly (s/v)	11	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	0	1870	2130	10
Future Vol, veh/h	0	20	0	1870	2130	10
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	0	21	0	1948	2219	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1115	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	174	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	174	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	28.51	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	174	-	-
HCM Lane V/C Ratio	-	0.12	-	-
HCM Ctrl Dly (s/v)	-	28.5	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	60	30	512	827	90
Future Vol, veh/h	55	60	30	512	827	90
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	57	63	31	533	861	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1504	908	955	0	-	0
Stage 1	908	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	134	335	728	-	-	-
Stage 1	395	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	129	335	728	-	-	-
Mov Cap-2 Maneuver	261	-	-	-	-	-
Stage 1	378	-	-	-	-	-
Stage 2	552	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	25.33	0.56	0
HCM LOS	D		

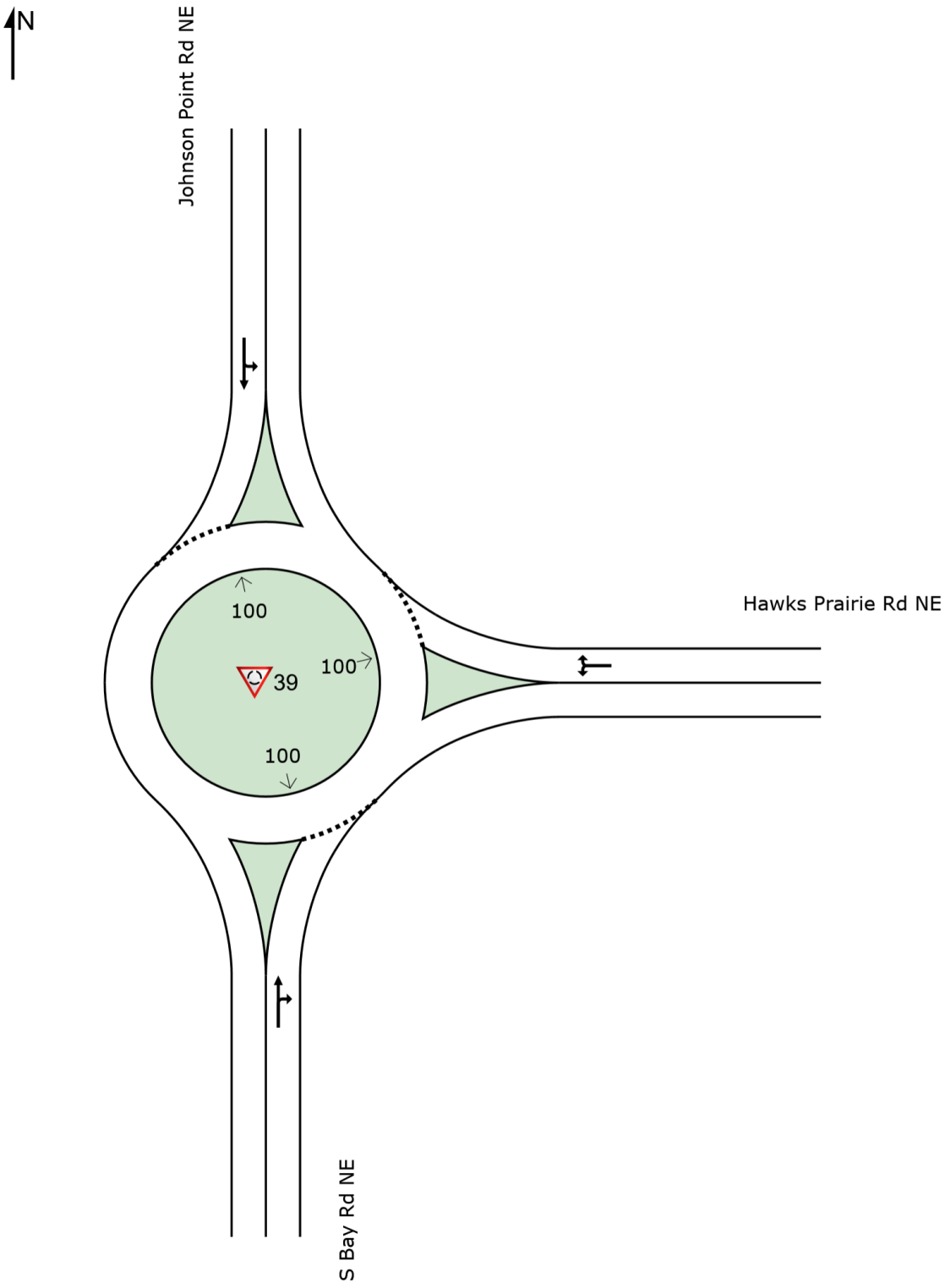
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	728	-	295	-	-
HCM Lane V/C Ratio	0.043	-	0.406	-	-
HCM Ctrl Dly (s/v)	10.2	-	25.3	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.9	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	224	0.0	224	0.0	0.352	4.0	LOS A	2.2	55.7	0.19	0.41	0.19	36.2
18	R2	All MCs	277	0.0	277	0.0	0.352	4.1	LOS A	2.2	55.7	0.19	0.41	0.19	35.9
Approach			501	0.0	501	0.0	0.352	4.0	LOS A	2.2	55.7	0.19	0.41	0.19	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	255	0.0	255	0.0	0.239	10.6	LOS B	1.2	31.0	0.38	0.62	0.38	32.7
16	R2	All MCs	47	0.0	47	0.0	0.239	4.8	LOS A	1.2	31.0	0.38	0.62	0.38	33.1
Approach			302	0.0	302	0.0	0.239	9.7	LOS A	1.2	31.0	0.38	0.62	0.38	32.8
North: Johnson Point Rd NE															
7	L2	All MCs	42	0.0	42	0.0	0.157	10.7	LOS B	0.8	20.1	0.40	0.51	0.40	34.2
4	T1	All MCs	151	0.0	151	0.0	0.157	4.7	LOS A	0.8	20.1	0.40	0.51	0.40	35.0
Approach			193	0.0	193	0.0	0.157	6.0	LOS A	0.8	20.1	0.40	0.51	0.40	34.8
All Vehicles			996	0.0	996	0.0	0.352	6.1	LOS A	2.2	55.7	0.28	0.49	0.28	34.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

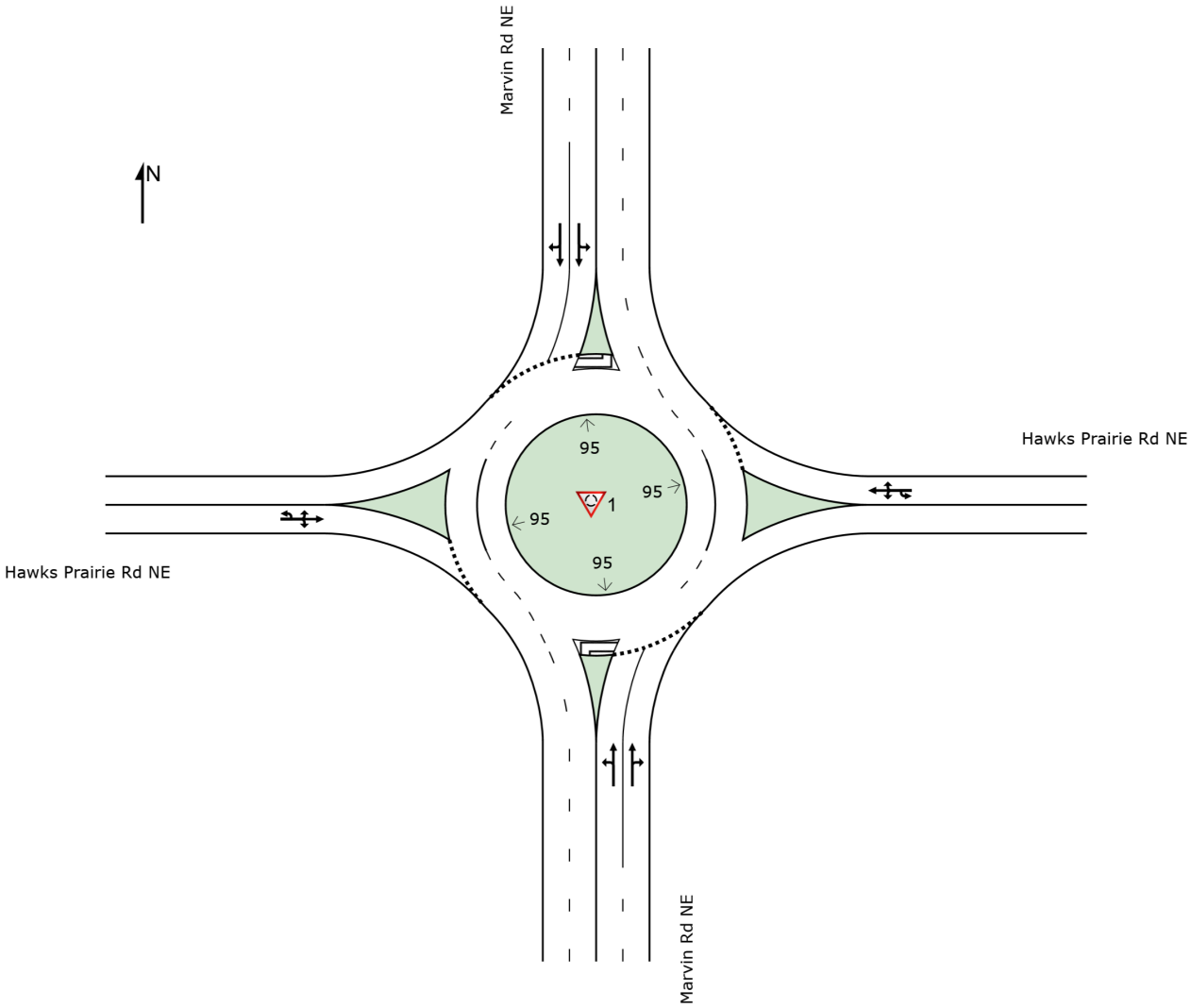
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	285	0.0	285	0.0	0.246	10.0	LOS B	1.4	35.9	0.25	0.58	0.25	33.0
8	T1	All MCs	456	0.0	456	0.0	0.246	4.3	LOS A	1.5	36.5	0.24	0.41	0.24	35.5
18	R2	All MCs	2	0.0	2	0.0	0.246	4.4	LOS A	1.5	36.5	0.23	0.39	0.23	35.4
Approach			743	0.0	743	0.0	0.246	6.5	LOS A	1.5	36.5	0.24	0.48	0.24	34.5
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.276	14.3	LOS B	1.0	25.7	0.51	0.72	0.51	32.9
1	L2	All MCs	140	3.0	140	3.0	0.276	11.9	LOS B	1.0	25.7	0.51	0.72	0.51	32.9
6	T1	All MCs	80	3.0	80	3.0	0.276	6.2	LOS A	1.0	25.7	0.51	0.72	0.51	33.6
16	R2	All MCs	25	3.0	25	3.0	0.276	6.1	LOS A	1.0	25.7	0.51	0.72	0.51	33.3
Approach			247	3.0	247	3.0	0.276	9.5	LOS A	1.0	25.7	0.51	0.72	0.51	33.1
North: Marvin Rd NE															
7	L2	All MCs	15	2.0	15	2.0	0.189	12.3	LOS B	1.1	26.7	0.59	0.59	0.59	33.7
4	T1	All MCs	308	2.0	308	2.0	0.189	6.4	LOS A	1.1	28.7	0.58	0.58	0.58	34.6
14	R2	All MCs	90	2.0	90	2.0	0.189	6.2	LOS A	1.1	28.7	0.57	0.57	0.57	34.4
Approach			413	2.0	413	2.0	0.189	6.5	LOS A	1.1	28.7	0.58	0.58	0.58	34.5
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.156	13.6	LOS B	0.6	15.1	0.43	0.63	0.43	33.8
5	L2	All MCs	45	3.0	45	3.0	0.156	11.2	LOS B	0.6	15.1	0.43	0.63	0.43	33.9
2	T1	All MCs	15	3.0	15	3.0	0.156	5.4	LOS A	0.6	15.1	0.43	0.63	0.43	34.6
12	R2	All MCs	90	3.0	90	3.0	0.156	5.4	LOS A	0.6	15.1	0.43	0.63	0.43	34.3
Approach			152	3.0	152	3.0	0.156	7.2	LOS A	0.6	15.1	0.43	0.63	0.43	34.2
All Vehicles			1555	1.3	1555	1.3	0.276	7.1	LOS A	1.5	36.5	0.39	0.56	0.39	34.2

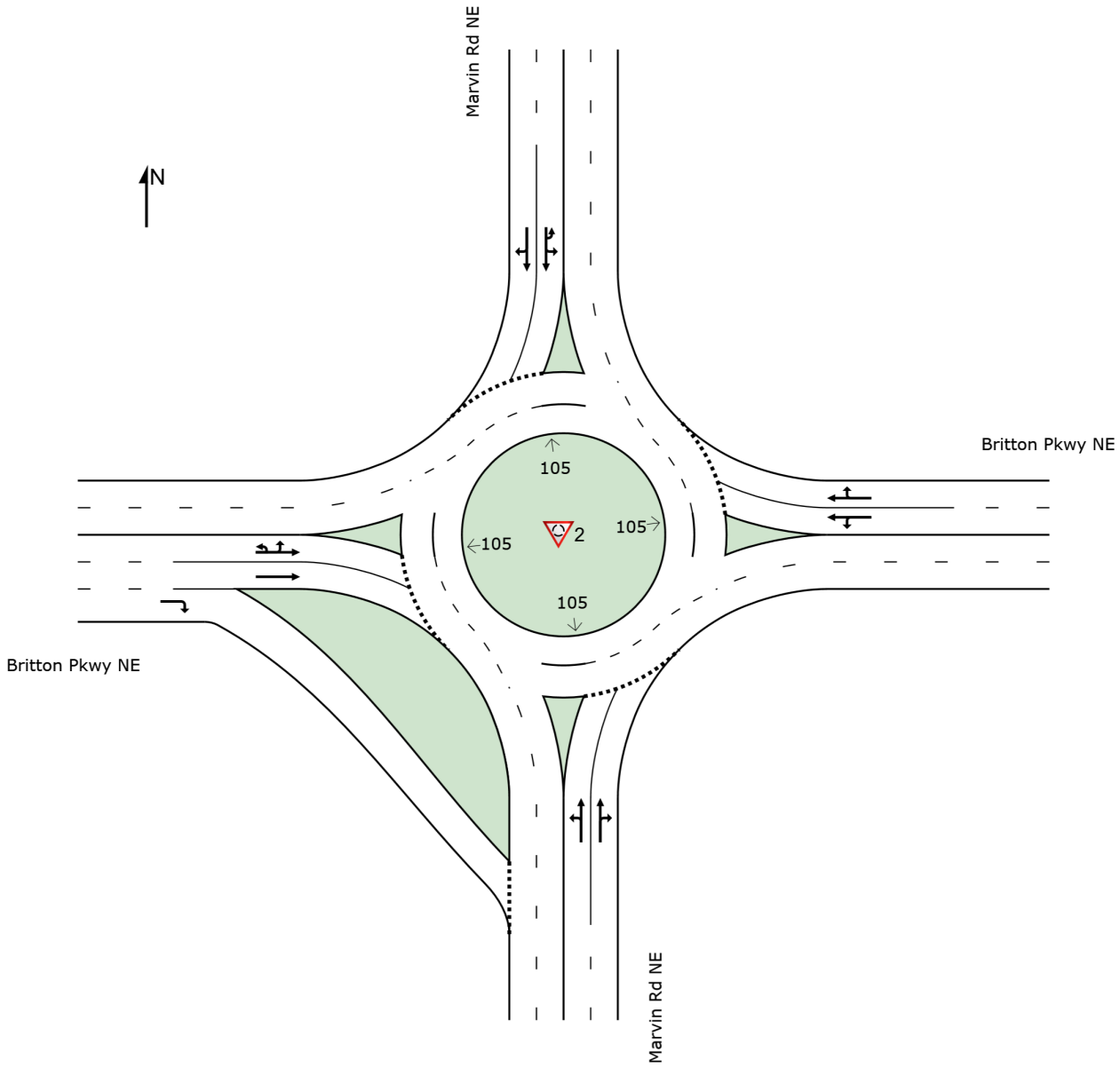
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	379	2.0	379	2.0	0.549	12.0	LOS B	3.5	88.6	0.60	0.70	0.64	32.6
8	T1	All MCs	825	2.0	825	2.0	0.549	5.7	LOS A	3.5	89.5	0.59	0.58	0.62	34.3
18	R2	All MCs	40	2.0	40	2.0	0.549	5.7	LOS A	3.5	89.5	0.58	0.54	0.61	34.3
Approach			1244	2.0	1244	2.0	0.549	7.6	LOS A	3.5	89.5	0.59	0.62	0.63	33.8
East: Britton Pkwy NE															
1	L2	All MCs	460	4.0	460	4.0	0.599	15.3	LOS B	4.0	103.1	0.83	0.97	1.08	30.8
6	T1	All MCs	306	4.0	306	4.0	0.599	11.0	LOS B	4.0	103.1	0.82	0.96	1.09	32.9
16	R2	All MCs	50	4.0	50	4.0	0.599	11.2	LOS B	3.5	91.1	0.82	0.96	1.09	32.6
Approach			816	4.0	816	4.0	0.599	13.4	LOS B	4.0	103.1	0.83	0.97	1.08	31.6
North: Marvin Rd NE															
7u	U	All MCs	10	4.0	10	4.0	0.593	20.6	LOS C	4.0	102.8	0.86	0.95	1.14	31.5
7	L2	All MCs	40	4.0	40	4.0	0.593	18.1	LOS B	4.0	102.8	0.86	0.95	1.14	31.5
4	T1	All MCs	625	4.0	625	4.0	0.593	11.2	LOS B	4.5	116.2	0.87	0.94	1.13	32.7
14	R2	All MCs	111	4.0	111	4.0	0.593	10.5	LOS B	4.5	116.2	0.87	0.92	1.13	32.9
Approach			786	4.0	786	4.0	0.593	11.6	LOS B	4.5	116.2	0.87	0.93	1.13	32.6
West: Britton Pkwy NE															
5u	U	All MCs	20	5.0	20	5.0	0.186	15.6	LOS B	0.9	22.7	0.69	0.81	0.69	31.5
5	L2	All MCs	111	5.0	111	5.0	0.186	13.1	LOS B	0.9	22.7	0.69	0.81	0.69	31.5
2	T1	All MCs	197	5.0	197	5.0	0.186	6.5	LOS A	1.0	27.2	0.72	0.61	0.72	34.0
12	R2	All MCs	381	5.0	381	5.0	0.354	6.6	LOS A	2.1	54.0	0.75	0.73	0.75	34.2
Approach			709	5.0	709	5.0	0.354	7.8	LOS A	2.1	54.0	0.73	0.71	0.73	33.6
All Vehicles			3555	3.5	3555	3.5	0.599	9.9	LOS A	4.5	116.2	0.73	0.79	0.86	33.0

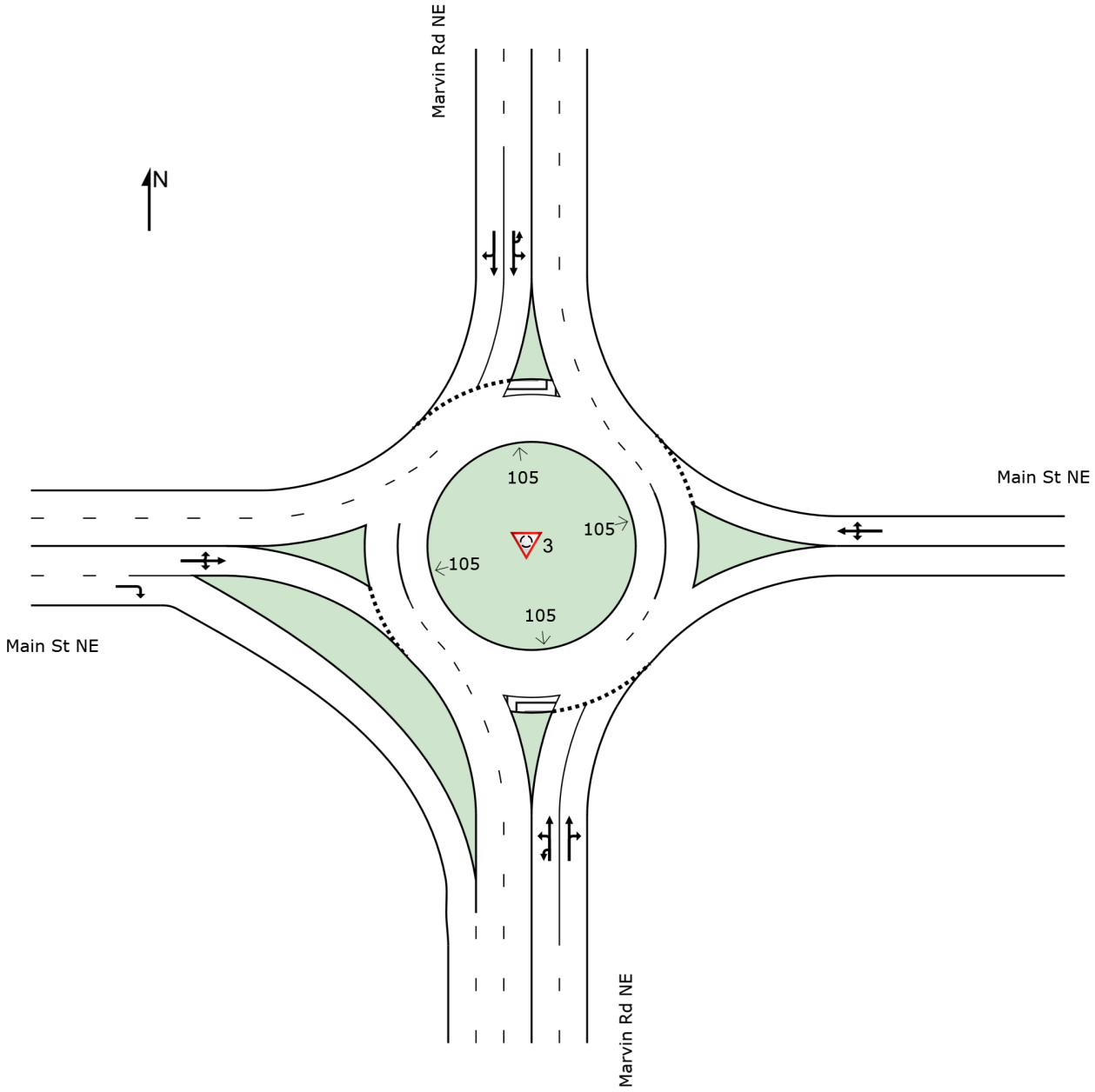
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Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 2 - 2050)]

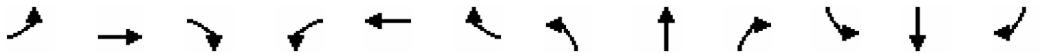
Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	320	3.0	320	3.0	0.518	12.7	LOS B	4.5	114.3	0.27	0.55	0.27	27.2
3	L2	All MCs	115	3.0	115	3.0	0.518	10.2	LOS B	4.5	114.3	0.27	0.55	0.27	30.9
8	T1	All MCs	1105	3.0	1105	3.0	0.518	4.1	LOS A	4.5	115.1	0.25	0.41	0.25	30.9
18	R2	All MCs	35	3.0	35	3.0	0.518	4.3	LOS A	4.5	115.1	0.25	0.36	0.25	33.8
Approach			1575	3.0	1575	3.0	0.518	6.3	LOS A	4.5	115.1	0.26	0.45	0.26	30.2
East: Main St NE															
1	L2	All MCs	45	0.0	45	0.0	0.176	13.4	LOS B	0.7	17.6	0.65	0.81	0.65	30.8
6	T1	All MCs	5	0.0	5	0.0	0.176	7.4	LOS A	0.7	17.6	0.65	0.81	0.65	33.8
16	R2	All MCs	80	0.0	80	0.0	0.176	7.4	LOS A	0.7	17.6	0.65	0.81	0.65	31.9
Approach			130	0.0	130	0.0	0.176	9.5	LOS A	0.7	17.6	0.65	0.81	0.65	31.6
North: Marvin Rd NE															
7u	U	All MCs	4	3.0	4	3.0	0.643	18.1	LOS B	6.4	164.8	0.81	0.77	1.00	28.1
7	L2	All MCs	20	3.0	20	3.0	0.643	15.6	LOS B	6.4	164.8	0.81	0.77	1.00	31.1
4	T1	All MCs	1372	3.0	1372	3.0	0.643	8.8	LOS A	6.7	172.1	0.79	0.74	0.95	28.6
14	R2	All MCs	29	3.0	29	3.0	0.643	8.3	LOS A	6.7	172.1	0.78	0.72	0.92	32.0
Approach			1425	3.0	1425	3.0	0.643	8.9	LOS A	6.7	172.1	0.79	0.74	0.95	28.7
West: Main St NE															
5	L2	All MCs	20	2.0	20	2.0	0.059	13.9	LOS B	0.3	7.9	0.80	0.83	0.80	30.5
2	T1	All MCs	1	2.0	1	2.0	0.059	7.8	LOS A	0.3	7.9	0.80	0.83	0.80	33.1
12	R2	All MCs	113	2.0	113	2.0	0.059	4.2	LOS A	0.3	7.9	0.12	0.49	0.12	34.5
Approach			134	2.0	134	2.0	0.059	5.6	LOS A	0.3	7.9	0.22	0.55	0.22	33.8
All Vehicles			3264	2.8	3264	2.8	0.643	7.5	LOS A	6.7	172.1	0.51	0.60	0.58	29.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	545	0	0	631	0	1309	771	0	1311	394
Future Volume (vph)	0	0	545	0	0	631	0	1309	771	0	1311	394
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.98	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3127	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3127	1335		3257	1457
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	545	0	0	631	0	1309	771	0	1311	394
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	545	0	0	631	0	1455	625	0	1311	394
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			56.5			54.5		54.5	120.0		51.5	120.0
Effective Green, g (s)			56.5			54.5		54.5	120.0		51.5	120.0
Actuated g/C Ratio			0.47			0.45		0.45	1.00		0.43	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1243			1199		1420	1335		1397	1457
v/s Ratio Prot			0.21			0.24		c0.47			c0.40	
v/s Ratio Perm									0.47			0.27
v/c Ratio			0.44			0.53		1.02	0.47		0.94	0.27
Uniform Delay, d1			21.2			23.5		32.8	0.0		32.7	0.0
Progression Factor			1.00			1.00		0.67	1.00		1.00	1.00
Incremental Delay, d2			0.2			0.4		26.1	0.8		13.3	0.5
Delay (s)			21.4			23.9		48.1	0.8		46.0	0.5
Level of Service			C			C		D	A		D	A
Approach Delay (s/veh)		21.4			23.9			33.9			35.5	
Approach LOS		C			C			C			D	

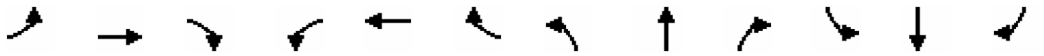
Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	25	0	0	630	0	1445	150	0	1528	328
Future Volume (vph)	0	0	25	0	0	630	0	1445	150	0	1528	328
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	25	0	0	630	0	1445	150	0	1528	328
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	25	0	0	630	0	1445	150	0	1528	328
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			44.5			66.5		42.5	120.0		64.5	120.0
Effective Green, g (s)			44.5			66.5		42.5	120.0		64.5	120.0
Actuated g/C Ratio			0.37			0.55		0.35	1.00		0.54	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			544			1407		1706	1500		1784	1455
v/s Ratio Prot			0.02			0.25		c0.30			c0.46	
v/s Ratio Perm									0.10			0.23
v/c Ratio			0.05			0.45		0.85	0.10		0.86	0.23
Uniform Delay, d1			24.2			15.9		35.8	0.0		23.8	0.0
Progression Factor			1.00			1.00		0.86	1.00		0.56	1.00
Incremental Delay, d2			0.0			0.2		4.2	0.1		3.4	0.2
Delay (s)			24.2			16.1		34.9	0.1		16.6	0.2
Level of Service			C			B		C	A		B	A
Approach Delay (s/veh)		24.2			16.1			31.6			13.7	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	453	255	165	70	65	256	65	856	65	211	972	290
Future Volume (veh/h)	453	255	165	70	65	256	65	856	65	211	972	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	453	255	165	70	65	256	65	856	65	211	972	290
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	533	228	147	71	181	362	253	1288	98	236	1344	583
Arrive On Green	0.16	0.22	0.22	0.04	0.10	0.10	0.15	0.41	0.41	0.14	0.40	0.40
Sat Flow, veh/h	3300	1012	655	1701	1786	1505	1688	3165	240	1701	3393	1473
Grp Volume(v), veh/h	453	0	420	70	65	256	65	455	466	211	972	290
Grp Sat Flow(s),veh/h/ln	1650	0	1666	1701	1786	1505	1688	1683	1722	1701	1697	1473
Q Serve(g_s), s	16.0	0.0	27.0	4.9	4.1	12.1	4.1	26.4	26.4	14.6	29.1	10.2
Cycle Q Clear(g_c), s	16.0	0.0	27.0	4.9	4.1	12.1	4.1	26.4	26.4	14.6	29.1	10.2
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	533	0	375	71	181	362	253	685	701	236	1344	583
V/C Ratio(X)	0.85	0.00	1.12	0.99	0.36	0.71	0.26	0.66	0.66	0.89	0.72	0.50
Avail Cap(c_a), veh/h	619	0	375	71	181	362	253	685	701	241	1654	718
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	1.00	1.00	1.00	1.00	0.66	0.66	0.66	0.42	0.42	0.42
Uniform Delay (d), s/veh	48.9	0.0	46.5	57.5	50.3	41.8	45.1	28.9	28.9	50.8	30.7	9.0
Incr Delay (d2), s/veh	11.7	0.0	83.3	102.8	2.6	7.7	0.8	3.4	3.3	17.1	1.5	1.3
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	7.4	0.0	19.8	4.2	2.0	7.7	1.8	11.2	11.4	7.3	12.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.6	0.0	129.8	160.3	52.9	49.5	45.9	32.3	32.2	67.9	32.1	10.3
LnGrp LOS	E		F	F	D	D	D	C	C	E	C	B
Approach Vol, veh/h		873			391			986			1473	
Approach Delay, s/veh		93.9			69.9			33.2			32.9	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	53.5	24.9	17.6	22.7	54.8	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	6.1	31.1	18.0	14.1	16.6	28.4	6.9	29.0
Green Ext Time (p_c), s	0.0	16.4	1.4	0.0	0.0	10.4	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	51.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	125	160	60	86	165	700	185	110	997	80
Future Volume (veh/h)	140	55	125	160	60	86	165	700	185	110	997	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	140	55	125	160	60	86	165	700	185	110	997	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	193	67	152	156	77	110	191	1043	276	376	1611	129
Arrive On Green	0.11	0.14	0.14	0.09	0.12	0.12	0.11	0.40	0.40	0.07	0.17	0.17
Sat Flow, veh/h	1714	484	1101	1701	657	942	1674	2612	690	1701	3181	255
Grp Volume(v), veh/h	140	0	180	160	0	146	165	447	438	110	532	545
Grp Sat Flow(s),veh/h/ln	1714	0	1585	1701	0	1599	1674	1670	1633	1701	1697	1740
Q Serve(g_s), s	9.5	0.0	13.3	11.0	0.0	10.6	11.6	26.4	26.4	7.4	34.9	34.9
Cycle Q Clear(g_c), s	9.5	0.0	13.3	11.0	0.0	10.6	11.6	26.4	26.4	7.4	34.9	34.9
Prop In Lane	1.00		0.69	1.00		0.59	1.00		0.42	1.00		0.15
Lane Grp Cap(c), veh/h	193	0	219	156	0	187	191	667	652	376	859	881
V/C Ratio(X)	0.73	0.00	0.82	1.03	0.00	0.78	0.87	0.67	0.67	0.29	0.62	0.62
Avail Cap(c_a), veh/h	193	0	317	156	0	320	237	682	667	376	859	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.77	0.77	0.77
Uniform Delay (d), s/veh	51.5	0.0	50.3	54.5	0.0	51.5	52.3	29.6	29.6	46.7	39.2	39.2
Incr Delay (d2), s/veh	12.2	0.0	9.4	79.1	0.0	5.2	21.8	2.6	2.7	0.2	1.1	1.1
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	4.8	0.0	5.9	8.1	0.0	4.5	6.0	10.9	10.7	3.3	16.2	16.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.7	0.0	59.7	133.6	0.0	56.6	74.1	32.2	32.3	47.0	40.3	40.3
LnGrp LOS	E		E	F		E	E	C	C	D	D	D
Approach Vol, veh/h		320			306			1050			1187	
Approach Delay, s/veh		61.4			96.9			38.8			40.9	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	65.8	17.5	18.1	31.5	52.9	15.0	20.6
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.6	36.9	11.5	12.6	9.4	28.4	13.0	15.3
Green Ext Time (p_c), s	0.1	6.5	0.0	0.5	0.1	6.8	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	48.4
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	302	495	365	395	575	301	285	537	245	281	905	311
Future Volume (veh/h)	302	495	365	395	575	301	285	537	245	281	905	311
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	302	495	0	395	575	0	285	537	245	281	905	311
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	360	587		452	684		385	772	351	308	1006	448
Arrive On Green	0.11	0.17	0.00	0.14	0.20	0.00	0.23	0.34	0.34	0.18	0.29	0.29
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2265	1030	1714	3420	1522
Grp Volume(v), veh/h	302	495	0	395	575	0	285	402	380	281	905	311
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1598	1714	1710	1522
Q Serve(g_s), s	10.8	16.9	0.0	14.0	19.4	0.0	18.7	24.6	24.7	19.3	30.5	15.8
Cycle Q Clear(g_c), s	10.8	16.9	0.0	14.0	19.4	0.0	18.7	24.6	24.7	19.3	30.5	15.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.64	1.00		1.00
Lane Grp Cap(c), veh/h	360	587		452	684		385	578	545	308	1006	448
V/C Ratio(X)	0.84	0.84		0.87	0.84		0.74	0.69	0.70	0.91	0.90	0.69
Avail Cap(c_a), veh/h	522	693		554	727		385	578	545	386	1055	469
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	48.0	0.0	50.8	46.2	0.0	43.2	34.2	34.2	48.3	40.7	19.9
Incr Delay (d2), s/veh	5.4	8.4	0.0	10.9	8.6	0.0	6.6	6.8	7.2	20.3	12.6	8.6
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	4.7	7.8	0.0	6.4	9.0	0.0	8.6	11.1	10.6	10.0	14.5	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.8	56.5	0.0	61.7	54.7	0.0	49.8	40.9	41.5	68.7	53.2	28.5
LnGrp LOS	E	E		E	D		D	D	D	E	D	C
Approach Vol, veh/h		797			970			1067			1497	
Approach Delay, s/veh		57.0			57.6			43.5			51.0	
Approach LOS		E			E			D			D	

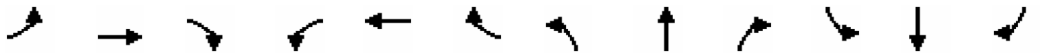
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.1	40.3	18.1	29.5	26.5	45.9	21.3	26.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	18.0	37.0	19.0	25.5	27.0	28.0	20.0	24.5
Max Q Clear Time (g_c+I1), s	20.7	32.5	12.8	21.4	21.3	26.7	16.0	18.9
Green Ext Time (p_c), s	0.0	2.8	0.3	1.5	0.2	0.7	0.3	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	51.7
HCM 7th LOS	D

Notes

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

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	176	40	676	25	290	1059	251
Future Volume (veh/h)	110	205	55	180	265	176	40	676	25	290	1059	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	176	40	676	25	290	1059	251
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	138	316	85	194	268	178	71	849	31	330	1107	261
Arrive On Green	0.08	0.23	0.23	0.11	0.27	0.27	0.04	0.25	0.25	0.19	0.41	0.41
Sat Flow, veh/h	1688	1345	361	1714	1009	670	1701	3336	123	1701	2722	642
Grp Volume(v), veh/h	110	0	260	180	0	441	40	344	357	290	658	652
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	0	1679	1701	1697	1763	1701	1697	1668
Q Serve(g_s), s	5.9	0.0	12.6	9.5	0.0	24.0	2.1	17.4	17.4	15.2	34.5	35.0
Cycle Q Clear(g_c), s	5.9	0.0	12.6	9.5	0.0	24.0	2.1	17.4	17.4	15.2	34.5	35.0
Prop In Lane	1.00		0.21	1.00		0.40	1.00		0.07	1.00		0.38
Lane Grp Cap(c), veh/h	138	0	400	194	0	446	71	432	449	330	690	678
V/C Ratio(X)	0.79	0.00	0.65	0.93	0.00	0.99	0.56	0.80	0.80	0.88	0.95	0.96
Avail Cap(c_a), veh/h	375	0	454	194	0	446	193	667	693	675	690	678
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	31.7	40.3	0.0	33.5	43.1	32.0	32.0	36.0	26.4	26.5
Incr Delay (d2), s/veh	7.4	0.0	2.7	44.0	0.0	39.4	5.1	3.4	3.3	5.8	23.5	25.3
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	2.7	0.0	5.4	6.3	0.0	14.4	1.0	7.4	7.6	6.7	17.7	17.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.8	0.0	34.4	84.3	0.0	72.9	48.2	35.4	35.3	41.7	49.9	51.9
LnGrp LOS	D		C	F		E	D	D	D	D	D	D
Approach Vol, veh/h		370			621			741			1600	
Approach Delay, s/veh		38.7			76.2			36.1			49.2	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	42.2	12.1	29.0	22.4	28.3	15.0	26.1
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.1	37.0	7.9	26.0	17.2	19.4	11.5	14.6
Green Ext Time (p_c), s	0.0	0.0	0.1	0.0	0.6	3.7	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.2
HCM 7th LOS	D

Notes

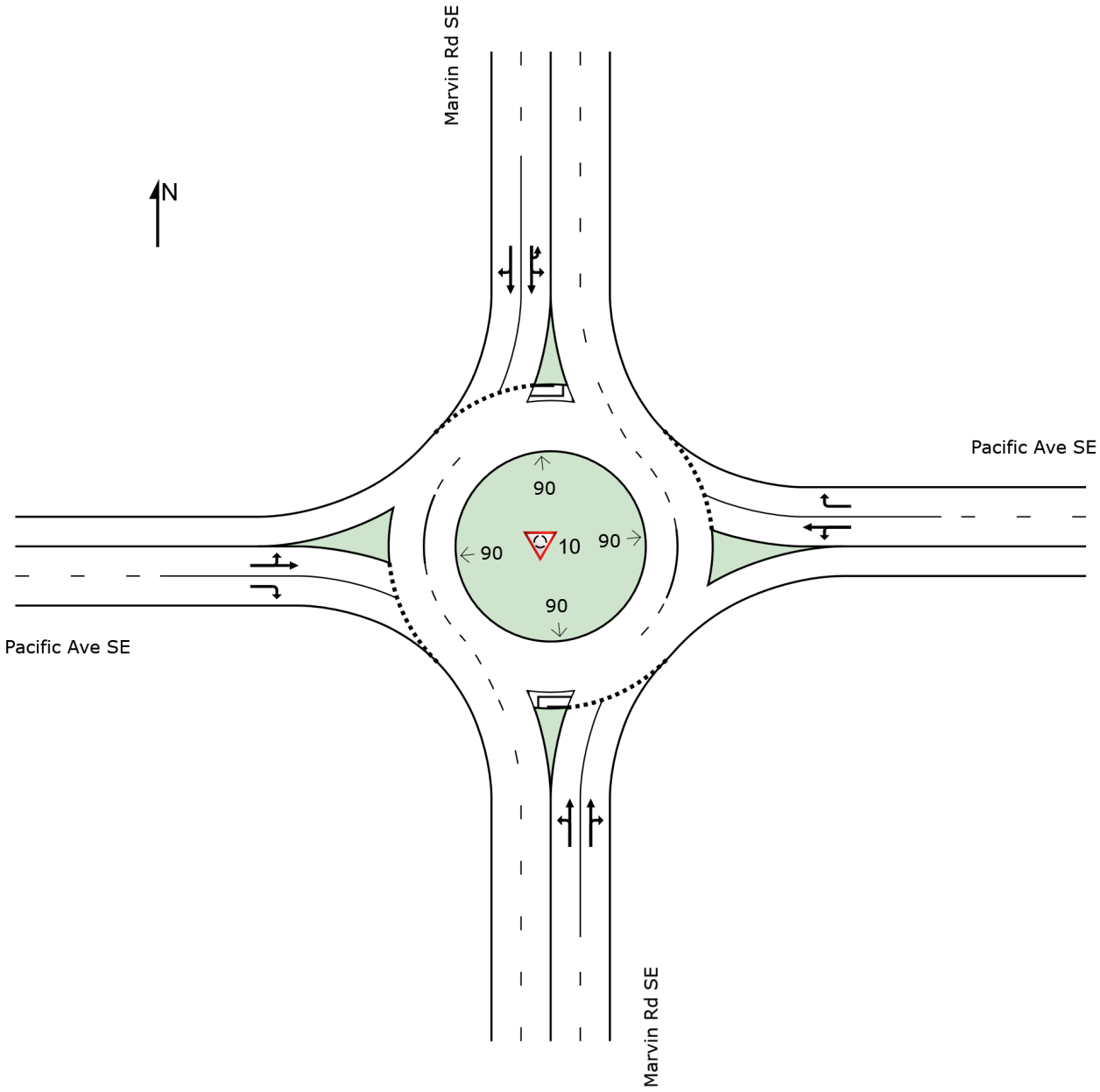
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	125	1.0	125	1.0	0.379	14.8	LOS B	2.6	64.8	0.82	0.75	0.82	32.0
8	T1	All MCs	477	1.0	477	1.0	0.379	8.6	LOS A	2.9	72.7	0.82	0.71	0.82	33.4
18	R2	All MCs	45	1.0	45	1.0	0.379	8.4	LOS A	2.9	72.7	0.82	0.69	0.82	33.4
Approach			647	1.0	647	1.0	0.379	9.8	LOS A	2.9	72.7	0.82	0.71	0.82	33.1
East: Pacific Ave SE															
1	L2	All MCs	35	1.0	35	1.0	0.313	11.2	LOS B	1.5	38.5	0.59	0.57	0.59	33.7
6	T1	All MCs	290	1.0	290	1.0	0.313	5.7	LOS A	1.5	38.5	0.59	0.57	0.59	34.3
16	R2	All MCs	279	1.0	279	1.0	0.316	6.2	LOS A	1.5	37.2	0.60	0.69	0.60	34.5
Approach			604	1.0	604	1.0	0.316	6.2	LOS A	1.5	38.5	0.59	0.63	0.59	34.4
North: Marvin Rd SE															
7u	U	All MCs	3	1.0	3	1.0	0.561	15.9	LOS B	4.8	120.5	0.75	0.74	0.83	31.9
7	L2	All MCs	392	1.0	392	1.0	0.561	13.5	LOS B	4.8	120.5	0.75	0.74	0.83	31.9
4	T1	All MCs	747	1.0	747	1.0	0.561	7.2	LOS A	4.9	123.2	0.74	0.67	0.79	33.7
14	R2	All MCs	110	1.0	110	1.0	0.561	7.0	LOS A	4.9	123.2	0.73	0.65	0.77	33.7
Approach			1252	1.0	1252	1.0	0.561	9.2	LOS A	4.9	123.2	0.74	0.69	0.80	33.1
West: Pacific Ave SE															
5	L2	All MCs	45	1.0	45	1.0	0.456	12.9	LOS B	2.6	66.5	0.77	0.75	0.86	33.0
2	T1	All MCs	325	1.0	325	1.0	0.456	7.3	LOS A	2.6	66.5	0.77	0.75	0.86	33.7
12	R2	All MCs	120	1.0	120	1.0	0.218	7.8	LOS A	0.9	23.4	0.70	0.81	0.70	34.1
Approach			490	1.0	490	1.0	0.456	7.9	LOS A	2.6	66.5	0.76	0.77	0.82	33.7
All Vehicles			2993	1.0	2993	1.0	0.561	8.5	LOS A	4.9	123.2	0.73	0.69	0.77	33.5

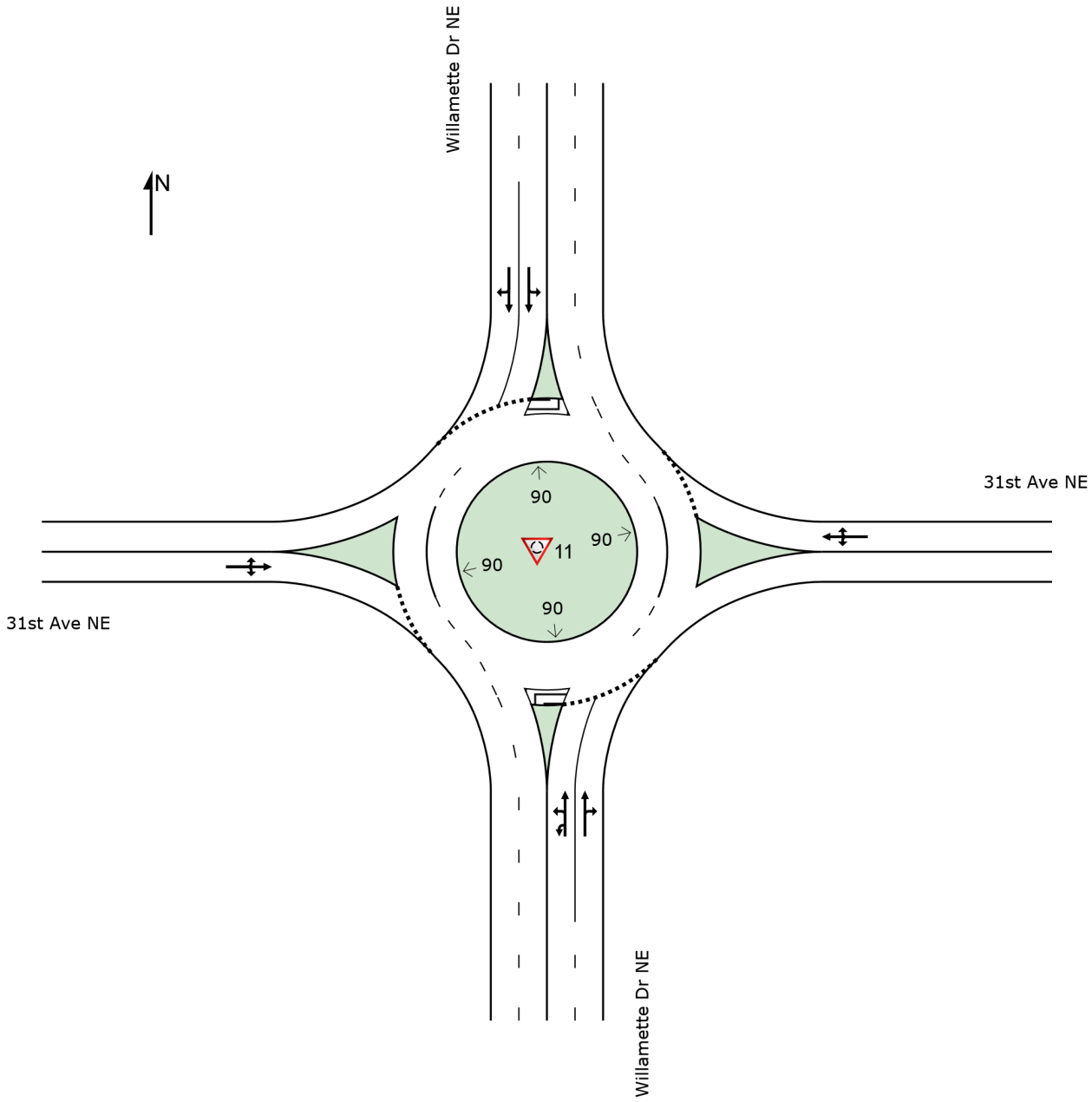
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	35	2.0	35	2.0	0.210	12.1	LOS B	1.2	29.9	0.11	0.50	0.11	34.4
3	L2	All MCs	65	2.0	65	2.0	0.210	9.7	LOS A	1.2	29.9	0.11	0.50	0.11	34.4
8	T1	All MCs	456	2.0	456	2.0	0.210	4.2	LOS A	1.2	30.2	0.11	0.44	0.11	35.7
18	R2	All MCs	90	2.0	90	2.0	0.210	4.3	LOS A	1.2	30.2	0.11	0.40	0.11	35.7
Approach			646	2.0	646	2.0	0.210	5.2	LOS A	1.2	30.2	0.11	0.45	0.11	35.5
East: 31st Ave NE															
1	L2	All MCs	66	3.0	66	3.0	0.089	11.2	LOS B	0.3	7.1	0.40	0.70	0.40	32.8
6	T1	All MCs	5	3.0	5	3.0	0.089	5.6	LOS A	0.3	7.1	0.40	0.70	0.40	33.4
16	R2	All MCs	15	3.0	15	3.0	0.089	5.5	LOS A	0.3	7.1	0.40	0.70	0.40	33.2
Approach			86	3.0	86	3.0	0.089	9.9	LOS A	0.3	7.1	0.40	0.70	0.40	32.9
North: Willamette Dr NE															
7	L2	All MCs	1	1.0	1	1.0	0.094	10.3	LOS B	0.5	11.4	0.31	0.43	0.31	34.7
4	T1	All MCs	256	1.0	256	1.0	0.094	4.7	LOS A	0.5	11.6	0.30	0.43	0.30	35.5
14	R2	All MCs	5	1.0	5	1.0	0.094	4.7	LOS A	0.5	11.6	0.29	0.42	0.29	35.1
Approach			262	1.0	262	1.0	0.094	4.7	LOS A	0.5	11.6	0.30	0.43	0.30	35.5
West: 31st Ave NE															
5	L2	All MCs	10	0.0	10	0.0	0.069	10.6	LOS B	0.2	5.7	0.33	0.56	0.33	34.6
2	T1	All MCs	10	0.0	10	0.0	0.069	5.0	LOS A	0.2	5.7	0.33	0.56	0.33	35.3
12	R2	All MCs	55	0.0	55	0.0	0.069	4.9	LOS A	0.2	5.7	0.33	0.56	0.33	35.0
Approach			75	0.0	75	0.0	0.069	5.7	LOS A	0.2	5.7	0.33	0.56	0.33	35.0
All Vehicles			1069	1.7	1069	1.7	0.210	5.5	LOS A	1.2	30.2	0.20	0.47	0.20	35.2

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Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
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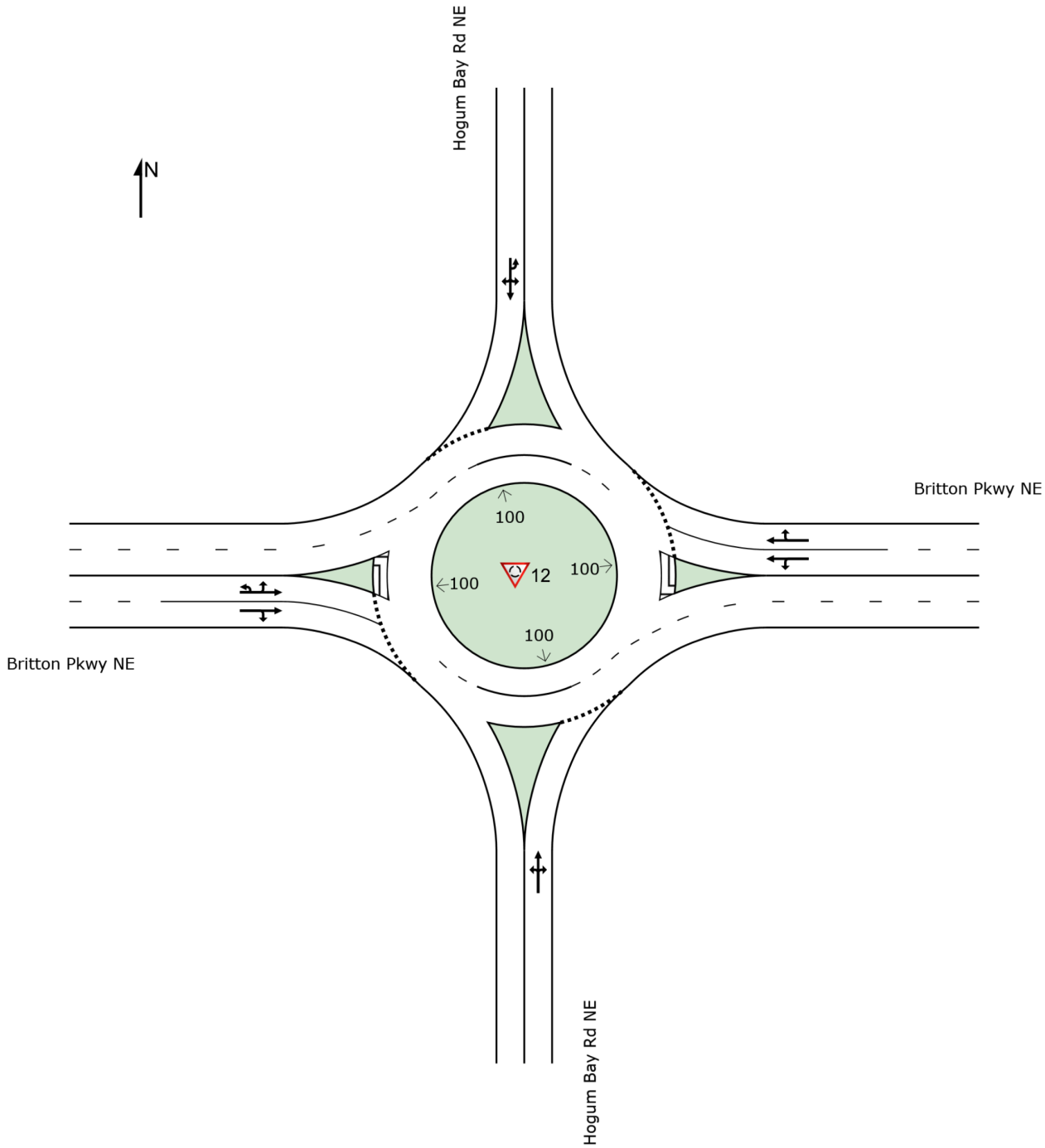
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	25	13.0	25	13.0	0.510	11.7	LOS B	2.6	72.9	0.48	0.57	0.49	34.0
8	T1	All MCs	175	13.0	175	13.0	0.510	5.8	LOS A	2.6	72.9	0.48	0.57	0.49	34.9
18	R2	All MCs	295	13.0	295	13.0	0.510	5.8	LOS A	2.6	72.9	0.48	0.57	0.49	34.6
Approach			495	13.0	495	13.0	0.510	6.1	LOS A	2.6	72.9	0.48	0.57	0.49	34.6
East: Britton Pkwy NE															
1	L2	All MCs	45	4.0	45	4.0	0.238	11.3	LOS B	1.3	34.8	0.49	0.54	0.49	33.8
6	T1	All MCs	524	4.0	524	4.0	0.238	5.3	LOS A	1.4	36.5	0.48	0.51	0.48	34.8
16	R2	All MCs	15	4.0	15	4.0	0.238	5.3	LOS A	1.4	36.5	0.47	0.48	0.47	34.6
Approach			584	4.0	584	4.0	0.238	5.7	LOS A	1.4	36.5	0.48	0.51	0.48	34.7
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.509	15.6	LOS B	2.6	70.4	0.61	0.74	0.71	33.6
7	L2	All MCs	30	10.0	30	10.0	0.509	13.1	LOS B	2.6	70.4	0.61	0.74	0.71	33.6
4	T1	All MCs	110	10.0	110	10.0	0.509	7.2	LOS A	2.6	70.4	0.61	0.74	0.71	34.4
14	R2	All MCs	282	10.0	282	10.0	0.509	7.2	LOS A	2.6	70.4	0.61	0.74	0.71	34.1
Approach			423	10.0	423	10.0	0.509	7.6	LOS A	2.6	70.4	0.61	0.74	0.71	34.1
West: Britton Pkwy NE															
5u	U	All MCs	5	7.0	5	7.0	0.103	13.2	LOS B	0.5	14.0	0.37	0.58	0.37	33.0
5	L2	All MCs	71	7.0	71	7.0	0.103	10.7	LOS B	0.5	14.0	0.37	0.58	0.37	33.0
2	T1	All MCs	156	7.0	156	7.0	0.103	4.7	LOS A	0.5	14.5	0.36	0.48	0.36	34.9
12	R2	All MCs	30	7.0	30	7.0	0.103	4.8	LOS A	0.5	14.5	0.35	0.44	0.35	34.9
Approach			262	7.0	262	7.0	0.103	6.5	LOS A	0.5	14.5	0.36	0.51	0.36	34.3
All Vehicles			1764	8.4	1764	8.4	0.510	6.4	LOS A	2.6	72.9	0.49	0.58	0.52	34.5

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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	40	529	41	5	45	757	3	60	0	50	50	0	20
Future Vol, veh/h	40	529	41	5	45	757	3	60	0	50	50	0	20
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	40	529	41	5	45	757	3	60	0	50	50	0	20

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	761	0	0	570	570	0	0	1109	1491	286	1205	1510	382
Stage 1	-	-	-	-	-	-	-	630	630	-	860	860	-
Stage 2	-	-	-	-	-	-	-	480	861	-	346	650	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	834	-	-	621	992	-	-	164	123	711	142	122	622
Stage 1	-	-	-	-	-	-	-	436	473	-	321	376	-
Stage 2	-	-	-	-	-	-	-	536	371	-	649	468	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	833	-	-	925	925	-	-	143	110	710	119	109	621
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	143	110	-	119	109	-
Stage 1	-	-	-	-	-	-	-	415	451	-	304	355	-
Stage 2	-	-	-	-	-	-	-	490	350	-	574	446	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.63	0.56	35.54	46.45
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	224	833	-	-	925	-	-	154
HCM Lane V/C Ratio	0.49	0.048	-	-	0.054	-	-	0.454
HCM Ctrl Dly (s/v)	35.5	9.5	-	-	9.1	-	-	46.4
HCM Lane LOS	E	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	2.5	0.2	-	-	0.2	-	-	2.1

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	561	30	40	756	0	39	0	30	1	0	15
Future Vol, veh/h	2	561	30	40	756	0	39	0	30	1	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	2	561	30	40	756	0	39	0	30	1	0	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	756	0	0	591	0	0	1038	1416	296	1121	1431	378
Stage 1	-	-	-	-	-	-	580	580	-	836	836	-
Stage 2	-	-	-	-	-	-	458	836	-	285	595	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	837	-	-	974	-	-	185	136	701	164	136	625
Stage 1	-	-	-	-	-	-	467	498	-	332	385	-
Stage 2	-	-	-	-	-	-	552	381	-	704	496	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	837	-	-	974	-	-	173	130	701	150	130	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	130	-	150	130	-
Stage 1	-	-	-	-	-	-	466	497	-	318	369	-
Stage 2	-	-	-	-	-	-	517	365	-	673	494	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.03	0.44	24.07	12.12
HCM LOS			C	B

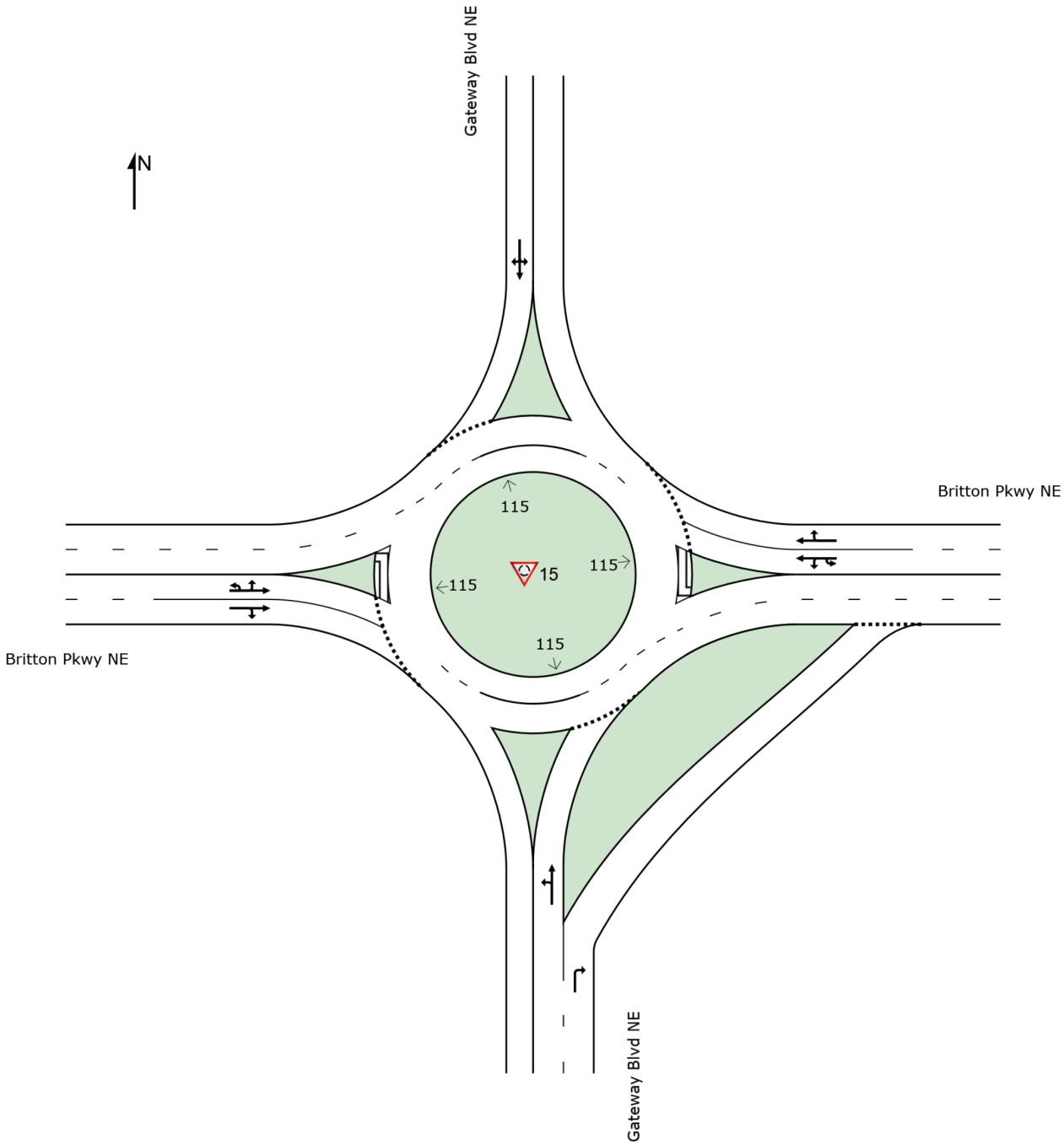
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	257	837	-	-	974	-	-	522
HCM Lane V/C Ratio	0.268	0.002	-	-	0.041	-	-	0.031
HCM Ctrl Dly (s/v)	24.1	9.3	-	-	8.9	-	-	12.1
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.1	0	-	-	0.1	-	-	0.1

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	340	2.0	340	2.0	0.281	10.9	LOS B	1.0	26.5	0.39	0.68	0.39	32.4
8	T1	All MCs	25	2.0	25	2.0	0.281	4.5	LOS A	1.0	26.5	0.39	0.68	0.39	33.0
18	R2	All MCs	120	2.0	120	2.0	0.090	4.3	LOS A	0.3	7.0	0.31	0.51	0.31	35.7
Approach			485	2.0	485	2.0	0.281	8.9	LOS A	1.0	26.5	0.37	0.64	0.37	33.2
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.338	15.1	LOS B	2.1	53.8	0.62	0.63	0.62	33.1
1	L2	All MCs	128	3.0	128	3.0	0.338	12.5	LOS B	2.1	53.8	0.62	0.63	0.62	33.1
6	T1	All MCs	512	3.0	512	3.0	0.338	5.8	LOS A	2.3	58.0	0.61	0.59	0.61	34.4
16	R2	All MCs	135	3.0	135	3.0	0.338	5.8	LOS A	2.3	58.0	0.60	0.55	0.60	34.5
Approach			780	3.0	780	3.0	0.338	7.0	LOS A	2.3	58.0	0.61	0.59	0.61	34.2
North: Gateway Blvd NE															
7	L2	All MCs	16	2.0	16	2.0	0.181	12.7	LOS B	0.8	19.6	0.61	0.68	0.61	33.9
4	T1	All MCs	62	2.0	62	2.0	0.181	6.4	LOS A	0.8	19.6	0.61	0.68	0.61	34.7
14	R2	All MCs	65	2.0	65	2.0	0.181	6.4	LOS A	0.8	19.6	0.61	0.68	0.61	34.4
Approach			143	2.0	143	2.0	0.181	7.1	LOS A	0.8	19.6	0.61	0.68	0.61	34.5
West: Britton Pkwy NE															
5u	U	All MCs	5	5.0	5	5.0	0.254	13.7	LOS B	1.5	38.2	0.42	0.51	0.42	34.0
5	L2	All MCs	75	5.0	75	5.0	0.254	11.1	LOS B	1.5	38.2	0.42	0.51	0.42	34.0
2	T1	All MCs	394	5.0	394	5.0	0.254	4.6	LOS A	1.5	39.7	0.41	0.49	0.41	35.1
12	R2	All MCs	198	5.0	198	5.0	0.254	4.7	LOS A	1.5	39.7	0.40	0.46	0.40	35.2
Approach			672	5.0	672	5.0	0.254	5.4	LOS A	1.5	39.7	0.41	0.48	0.41	35.0
All Vehicles			2080	3.3	2080	3.3	0.338	6.9	LOS A	2.3	58.0	0.49	0.57	0.49	34.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	30.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	558	117	35	878	10	124	0	54	14	10	29
Future Vol, veh/h	106	558	117	35	878	10	124	0	54	14	10	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	106	558	117	35	878	10	124	0	54	14	10	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	888	0	0	675	0	0	1343	1787	338	1444	1840	444
Stage 1	-	-	-	-	-	-	829	829	-	953	953	-
Stage 2	-	-	-	-	-	-	514	958	-	491	887	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	765	-	-	912	-	-	~ 110	81	658	95	76	567
Stage 1	-	-	-	-	-	-	331	384	-	282	340	-
Stage 2	-	-	-	-	-	-	511	334	-	533	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	765	-	-	912	-	-	~ 75	67	658	72	63	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 75	67	-	72	63	-
Stage 1	-	-	-	-	-	-	285	330	-	271	327	-
Stage 2	-	-	-	-	-	-	452	321	-	422	314	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.42	0.35	$ 308.96	44.65
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	75	658	765	-	-	912	-	-	68	567
HCM Lane V/C Ratio	1.652	0.082	0.139	-	-	0.038	-	-	0.353	0.051
HCM Ctrl Dly (s/v)	$ 438.7	11	10.5	-	-	9.1	-	-	84.5	11.7
HCM Lane LOS	F	B	B	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	10.5	0.3	0.5	-	-	0.1	-	-	1.3	0.2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	72	0	0	138	0	0	0	181	0	0	0
Future Vol, veh/h	0	72	0	0	138	0	0	0	181	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	72	0	0	138	0	0	0	181	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	72	0	0	210	210	72	210	210	138
Stage 1	-	-	-	-	-	-	72	72	-	138	138	-
Stage 2	-	-	-	-	-	-	138	138	-	72	72	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1446	-	-	1528	-	-	747	687	990	747	687	910
Stage 1	-	-	-	-	-	-	938	835	-	865	782	-
Stage 2	-	-	-	-	-	-	865	782	-	938	835	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1446	-	-	1528	-	-	747	687	990	611	687	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	747	687	-	611	687	-
Stage 1	-	-	-	-	-	-	938	835	-	865	782	-
Stage 2	-	-	-	-	-	-	865	782	-	766	835	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	9.45	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	990	1446	-	-	1528	-	-	-
HCM Lane V/C Ratio	0.183	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	9.4	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	76	70	380	41	70
Future Vol, veh/h	175	76	70	380	41	70
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	175	76	70	380	41	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	251	0	733	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1326	-	388	827
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1326	-	362	827
Mov Cap-2 Maneuver	-	-	-	-	362	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	557	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.22	13
HCM LOS			B

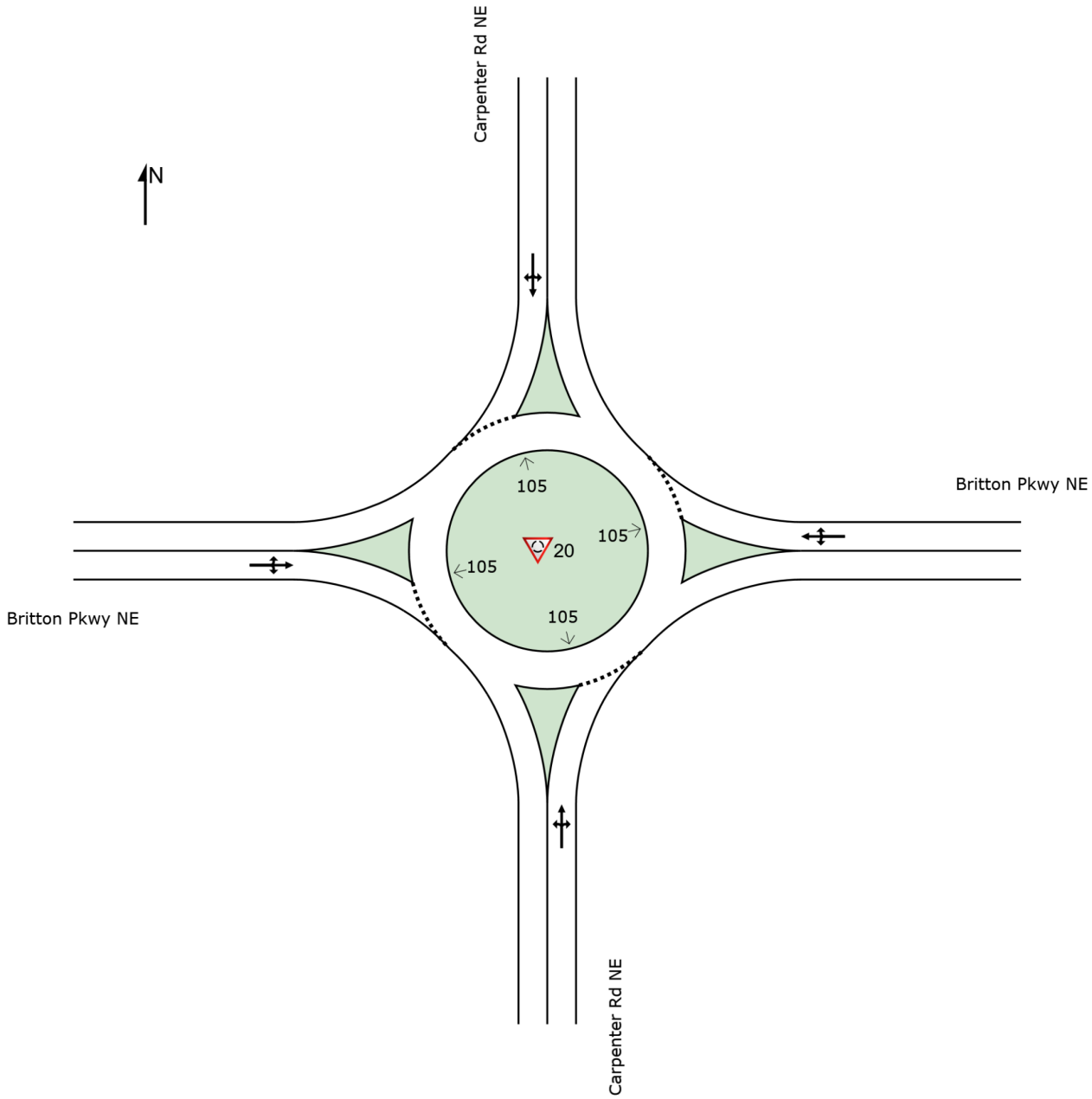
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	561	-	-	280	-
HCM Lane V/C Ratio	0.198	-	-	0.053	-
HCM Ctrl Dly (s/v)	13	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 2 - 2050)]

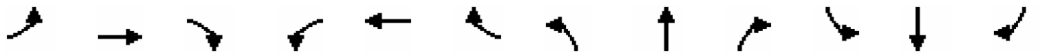
Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	90	4.0	90	4.0	0.517	12.1	LOS B	4.0	102.0	0.69	0.63	0.70	31.6
8	T1	All MCs	2	4.0	2	4.0	0.517	5.9	LOS A	4.0	102.0	0.69	0.63	0.70	29.4
18	R2	All MCs	446	4.0	446	4.0	0.517	6.1	LOS A	4.0	102.0	0.69	0.63	0.70	32.2
Approach			538	4.0	538	4.0	0.517	7.1	LOS A	4.0	102.0	0.69	0.63	0.70	32.1
East: Britton Pkwy NE															
1	L2	All MCs	529	5.0	529	5.0	0.791	11.1	LOS B	11.3	292.6	0.67	0.53	0.67	30.4
6	T1	All MCs	487	5.0	487	5.0	0.791	4.9	LOS A	11.3	292.6	0.67	0.53	0.67	33.6
16	R2	All MCs	1	5.0	1	5.0	0.791	5.1	LOS A	11.3	292.6	0.67	0.53	0.67	31.3
Approach			1017	5.0	1017	5.0	0.791	8.1	LOS A	11.3	292.6	0.67	0.53	0.67	32.1
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.006	18.1	LOS B	0.0	1.2	0.93	0.64	0.93	29.0
4	T1	All MCs	1	0.0	1	0.0	0.006	11.9	LOS B	0.0	1.2	0.93	0.64	0.93	25.4
14	R2	All MCs	1	0.0	1	0.0	0.006	12.1	LOS B	0.0	1.2	0.93	0.64	0.93	29.4
Approach			3	0.0	3	0.0	0.006	14.1	LOS B	0.0	1.2	0.93	0.64	0.93	28.2
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.556	14.5	LOS B	4.8	124.0	0.82	0.74	0.93	31.5
2	T1	All MCs	343	4.0	343	4.0	0.556	8.3	LOS A	4.8	124.0	0.82	0.74	0.93	34.1
12	R2	All MCs	150	4.0	150	4.0	0.556	8.5	LOS A	4.8	124.0	0.82	0.74	0.93	31.5
Approach			494	4.0	494	4.0	0.556	8.4	LOS A	4.8	124.0	0.82	0.74	0.93	33.5
All Vehicles			2052	4.5	2052	4.5	0.791	7.9	LOS A	11.3	292.6	0.71	0.61	0.74	32.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



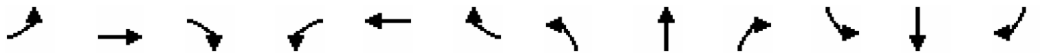
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	228	1025	220	520	1110	121	120	182	305	140	489	149
Future Volume (veh/h)	228	1025	220	520	1110	121	120	182	305	140	489	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	228	1025	220	520	1110	121	120	182	305	140	489	149
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	295	1213	645	543	1070	117	120	256	467	251	562	170
Arrive On Green	0.17	0.36	0.36	0.17	0.35	0.35	0.07	0.14	0.14	0.15	0.22	0.22
Sat Flow, veh/h	1701	3393	1505	3274	3058	333	1701	1786	1507	1674	2524	764
Grp Volume(v), veh/h	228	1025	220	520	610	621	120	182	305	140	323	315
Grp Sat Flow(s),veh/h/ln	1701	1697	1505	1637	1683	1708	1701	1786	1507	1674	1670	1618
Q Serve(g_s), s	15.4	33.4	11.7	18.9	42.0	42.0	8.5	11.7	12.3	9.3	22.3	22.6
Cycle Q Clear(g_c), s	15.4	33.4	11.7	18.9	42.0	42.0	8.5	11.7	12.3	9.3	22.3	22.6
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	295	1213	645	543	589	598	120	256	467	251	372	360
V/C Ratio(X)	0.77	0.85	0.34	0.96	1.04	1.04	1.00	0.71	0.65	0.56	0.87	0.88
Avail Cap(c_a), veh/h	295	1213	645	543	589	598	120	417	603	251	417	404
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)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	35.5	23.0	49.6	39.0	39.0	55.7	49.0	15.1	47.3	44.9	45.1
Incr Delay (d2), s/veh	9.5	6.3	1.2	28.0	46.6	47.1	80.6	4.2	1.9	1.7	16.1	17.6
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	7.3	14.7	4.4	9.8	24.7	25.1	6.3	5.5	4.3	4.0	10.9	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.8	41.8	24.2	77.7	85.6	86.1	136.4	53.3	17.0	48.9	61.1	62.7
LnGrp LOS	E	D	C	E	F	F	F	D	B	D	E	E
Approach Vol, veh/h		1473			1751			607			778	
Approach Delay, s/veh		41.5			83.4			51.5			59.5	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.3	47.5	23.5	22.7	25.4	48.4	14.0	32.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	17.5	42.0	10.5	28.0	19.9	39.6	8.5	30.0
Max Q Clear Time (g_c+I1), s	17.4	44.0	11.3	14.3	20.9	35.4	10.5	24.6
Green Ext Time (p_c), s	0.0	0.0	0.0	2.2	0.0	3.0	0.0	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	61.8
HCM 7th LOS	E

Notes

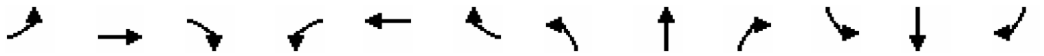
User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	980	165	135	810	30	180	236	100	130	401	542
Future Volume (veh/h)	255	980	165	135	810	30	180	236	100	130	401	542
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	255	980	165	135	810	30	180	236	100	130	401	542
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	277	982	165	158	895	33	202	716	294	155	483	427
Arrive On Green	0.16	0.34	0.34	0.09	0.27	0.27	0.12	0.31	0.31	0.09	0.28	0.28
Sat Flow, veh/h	1701	2903	488	1701	3336	124	1674	2304	945	1701	1697	1501
Grp Volume(v), veh/h	255	572	573	135	412	428	180	169	167	130	401	542
Grp Sat Flow(s),veh/h/ln	1701	1697	1695	1701	1697	1763	1674	1670	1579	1701	1697	1501
Q Serve(g_s), s	20.8	47.3	47.5	11.0	33.0	33.0	14.9	10.9	11.5	10.6	31.1	40.0
Cycle Q Clear(g_c), s	20.8	47.3	47.5	11.0	33.0	33.0	14.9	10.9	11.5	10.6	31.1	40.0
Prop In Lane	1.00		0.29	1.00		0.07	1.00		0.60	1.00		1.00
Lane Grp Cap(c), veh/h	277	574	573	158	455	473	202	519	491	155	483	427
V/C Ratio(X)	0.92	1.00	1.00	0.86	0.90	0.91	0.89	0.33	0.34	0.84	0.83	1.27
Avail Cap(c_a), veh/h	303	574	573	260	489	508	256	519	491	303	483	427
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	46.4	46.5	62.8	49.7	49.7	60.9	37.1	37.3	62.8	47.1	50.3
Incr Delay (d2), s/veh	29.6	36.9	37.3	7.0	19.7	19.2	22.5	0.4	0.4	11.3	11.6	138.3
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	11.2	25.7	25.8	5.1	16.5	17.0	7.6	4.6	4.5	5.1	14.7	31.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.6	83.3	83.8	69.8	69.4	68.8	83.3	37.5	37.7	74.1	58.7	188.6
LnGrp LOS	F	F	F	E	E	E	F	D	D	E	E	F
Approach Vol, veh/h		1400			975			516			1073	
Approach Delay, s/veh		84.3			69.2			53.6			126.2	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.8	43.2	18.8	49.7	18.5	53.5	22.5	46.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	25.0	40.5	25.0	36.0	21.5	44.0	21.5	40.0
Max Q Clear Time (g_c+I1), s	22.8	35.0	12.6	13.5	13.0	49.5	16.9	42.0
Green Ext Time (p_c), s	0.1	2.7	0.2	2.0	0.1	0.0	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	87.9
HCM 7th LOS	F



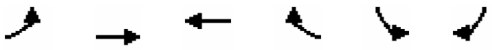
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1358	50	0	1309	55	80	5	35	141	1	70
Future Volume (veh/h)	100	1358	50	0	1309	55	80	5	35	141	1	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	100	1358	0	0	1309	55	80	5	35	141	1	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	148	2538		1	2205	93	163	311	264	295	2	264
Arrive On Green	0.09	1.00	0.00	0.00	0.67	0.67	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	3300	3393	1514	1688	3292	138	1350	1800	1525	1364	10	1525
Grp Volume(v), veh/h	100	1358	0	0	669	695	80	5	35	142	0	70
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1747	1350	1800	1525	1373	0	1525
Q Serve(g_s), s	3.5	0.0	0.0	0.0	26.1	26.2	7.0	0.3	2.3	11.3	0.0	4.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	26.1	26.2	18.5	0.3	2.3	11.6	0.0	4.8
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	148	2538		1	1127	1170	163	311	264	297	0	264
V/C Ratio(X)	0.67	0.53		0.00	0.59	0.59	0.49	0.02	0.13	0.48	0.00	0.27
Avail Cap(c_a), veh/h	275	2538		77	1127	1170	391	615	521	532	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.00	0.00	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	0.0	10.9	10.9	54.4	41.2	42.0	46.0	0.0	43.0
Incr Delay (d2), s/veh	3.7	0.8	0.0	0.0	0.2	0.2	1.7	0.0	0.2	0.9	0.0	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	1.5	0.3	0.0	0.0	9.1	9.5	2.4	0.1	0.9	4.0	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.5	0.8	0.0	0.0	11.1	11.1	56.1	41.2	42.2	46.9	0.0	43.4
LnGrp LOS	E	A			B	B	E	D	D	D		D
Approach Vol, veh/h		1458			1364			120			212	
Approach Delay, s/veh		4.7			11.1			51.4			45.7	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	85.9		24.7	0.0	95.3		24.7				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	5.5	28.2		20.5	0.0	2.0		13.6				
Green Ext Time (p_c), s	0.1	13.2		0.2	0.0	18.6		0.8				

Intersection Summary	
HCM 7th Control Delay, s/veh	12.0
HCM 7th LOS	B

Notes

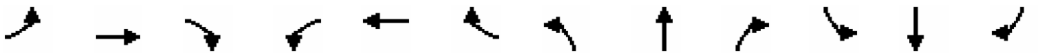
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1513	1374	25	30	50
Future Volume (veh/h)	50	1513	1374	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	50	1513	1374	25	30	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	743	4264	1529	28	79	71
Arrive On Green	0.38	0.87	0.90	0.90	0.05	0.05
Sat Flow, veh/h	1701	5036	3471	62	1714	1525
Grp Volume(v), veh/h	50	1513	683	716	30	50
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1761	1714	1525
Q Serve(g_s), s	0.0	6.8	24.8	25.0	2.0	3.9
Cycle Q Clear(g_c), s	0.0	6.8	24.8	25.0	2.0	3.9
Prop In Lane	1.00			0.03	1.00	1.00
Lane Grp Cap(c), veh/h	743	4264	761	796	79	71
V/C Ratio(X)	0.07	0.35	0.90	0.90	0.38	0.71
Avail Cap(c_a), veh/h	743	4264	975	1020	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.77	0.77	1.00	1.00
Uniform Delay (d), s/veh	18.2	1.4	4.3	4.4	55.5	56.4
Incr Delay (d2), s/veh	0.0	0.2	12.6	12.2	1.1	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.0	4.6	4.8	0.9	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	18.2	1.6	16.9	16.6	56.6	61.2
LnGrp LOS	B	A	B	B	E	E
Approach Vol, veh/h		1563	1399		80	
Approach Delay, s/veh		2.1	16.7		59.5	
Approach LOS		A	B		E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	56.0	54.4			110.4	9.6
Change Period (Y+Rc), s	5.5	5.5			5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5			82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	27.0			8.8	5.9
Green Ext Time (p_c), s	0.0	16.6			22.2	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.4
HCM 7th LOS	B



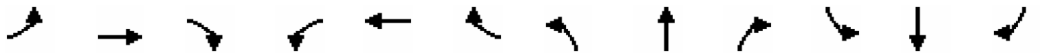
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	656	945	0	0	1364	75	15	0	633	0	0	0
Future Volume (veh/h)	656	945	0	0	1364	75	15	0	633	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	656	945	0	0	1364	0	15	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3080	0	0	1878		22	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	656	945	0	0	1364	0	15	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	16.1	0.0	0.0	36.1	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	16.1	0.0	0.0	36.1	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3080	0	0	1878		22	0				
V/C Ratio(X)	1.27	0.31	0.00	0.00	0.73		0.67	0.00				
Avail Cap(c_a), veh/h	517	3080	0	0	1878		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	19.7	0.0	59.0	0.0	0.0			
Incr Delay (d2), s/veh	122.1	0.0	0.0	0.0	2.5	0.0	29.8	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	33.5	6.5	0.0	0.0	14.2	0.0	0.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	169.8	5.3	0.0	0.0	22.2	0.0	88.7	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1601			1364			15				
Approach Delay, s/veh		72.7			22.2			88.7				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.4		5.6		114.4			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	38.1		3.1		18.1			
Green Ext Time (p_c), s	0.0	3.4		0.0		10.5			

Intersection Summary									
HCM 7th Control Delay, s/veh			49.7						
HCM 7th LOS			D						

Notes

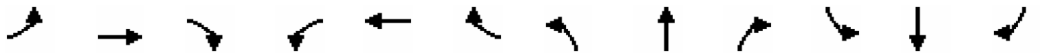
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1446	360	494	900	0	0	0	0	190	1	566
Future Volume (vph)	0	1446	360	494	900	0	0	0	0	190	1	566
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1693	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1693	1515
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1446	360	494	900	0	0	0	0	190	1	566
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	1446	152	494	900	0	0	0	0	0	191	533
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.5	50.5	33.2	44.3						21.3	66.2
Effective Green, g (s)		50.5	50.5	33.2	44.3						21.3	66.2
Actuated g/C Ratio		0.42	0.42	0.28	0.37						0.18	0.55
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1424	637	463	1237						300	835
v/s Ratio Prot		c0.43		c0.29	0.27							c0.35
v/s Ratio Perm			0.10								0.11	
v/c Ratio		1.02	0.24	1.07	0.73						0.64	0.64
Uniform Delay, d1		34.8	22.4	43.4	32.6						45.8	18.6
Progression Factor		0.75	0.34	0.63	0.16						1.00	1.00
Incremental Delay, d2		21.5	0.5	34.9	0.3						4.5	1.8
Delay (s)		47.5	8.1	62.3	5.6						50.3	20.4
Level of Service		D	A	E	A						D	C
Approach Delay (s/veh)		39.6			25.7			0.0			28.0	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	94.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	816	460	425	761	285	110	446	691	300	342	151
Future Volume (veh/h)	76	816	460	425	761	285	110	446	691	300	342	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	76	816	0	425	761	0	110	446	691	300	342	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	218	857		469	887		134	461	1059	312	815	353
Arrive On Green	0.13	0.25	0.00	0.19	0.35	0.00	0.08	0.26	0.26	0.18	0.35	0.35
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2623	1701	2299	996
Grp Volume(v), veh/h	76	816	0	425	761	0	110	446	691	300	251	242
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1311	1701	1697	1599
Q Serve(g_s), s	4.9	28.4	0.0	15.2	25.2	0.0	7.6	29.6	9.3	21.0	13.4	13.8
Cycle Q Clear(g_c), s	4.9	28.4	0.0	15.2	25.2	0.0	7.6	29.6	9.3	21.0	13.4	13.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.62
Lane Grp Cap(c), veh/h	218	857		469	887		134	461	1059	312	601	567
V/C Ratio(X)	0.35	0.95		0.91	0.86		0.82	0.97	0.65	0.96	0.42	0.43
Avail Cap(c_a), veh/h	218	857		469	1080		213	461	1059	312	601	567
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.65	0.65	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.7	44.1	0.0	47.8	36.9	0.0	54.4	44.0	10.8	48.6	29.3	29.5
Incr Delay (d2), s/veh	0.4	21.1	0.0	15.2	7.1	0.0	10.2	33.2	1.3	40.4	0.2	0.2
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	2.1	14.3	0.0	6.9	10.6	0.0	3.7	17.2	3.4	12.4	5.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.1	65.3	0.0	62.9	44.0	0.0	64.7	77.2	12.2	89.0	29.5	29.7
LnGrp LOS	D	E		E	D		E	E	B	F	C	C
Approach Vol, veh/h		892			1186			1247			793	
Approach Delay, s/veh		63.8			50.8			40.1			52.1	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.9	37.1	26.0	36.0	22.7	35.3	14.5	47.5
Change Period (Y+Rc), s	5.5	* 5.5	4.0	5.0	5.5	5.0	5.0	* 5
Max Green Setting (Gmax), s	9.0	* 39	22.0	31.0	17.2	30.3	15.0	* 38
Max Q Clear Time (g_c+I1), s	6.9	27.2	23.0	31.6	17.2	30.4	9.6	15.8
Green Ext Time (p_c), s	0.0	4.4	0.0	0.0	0.0	0.0	0.1	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.6
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

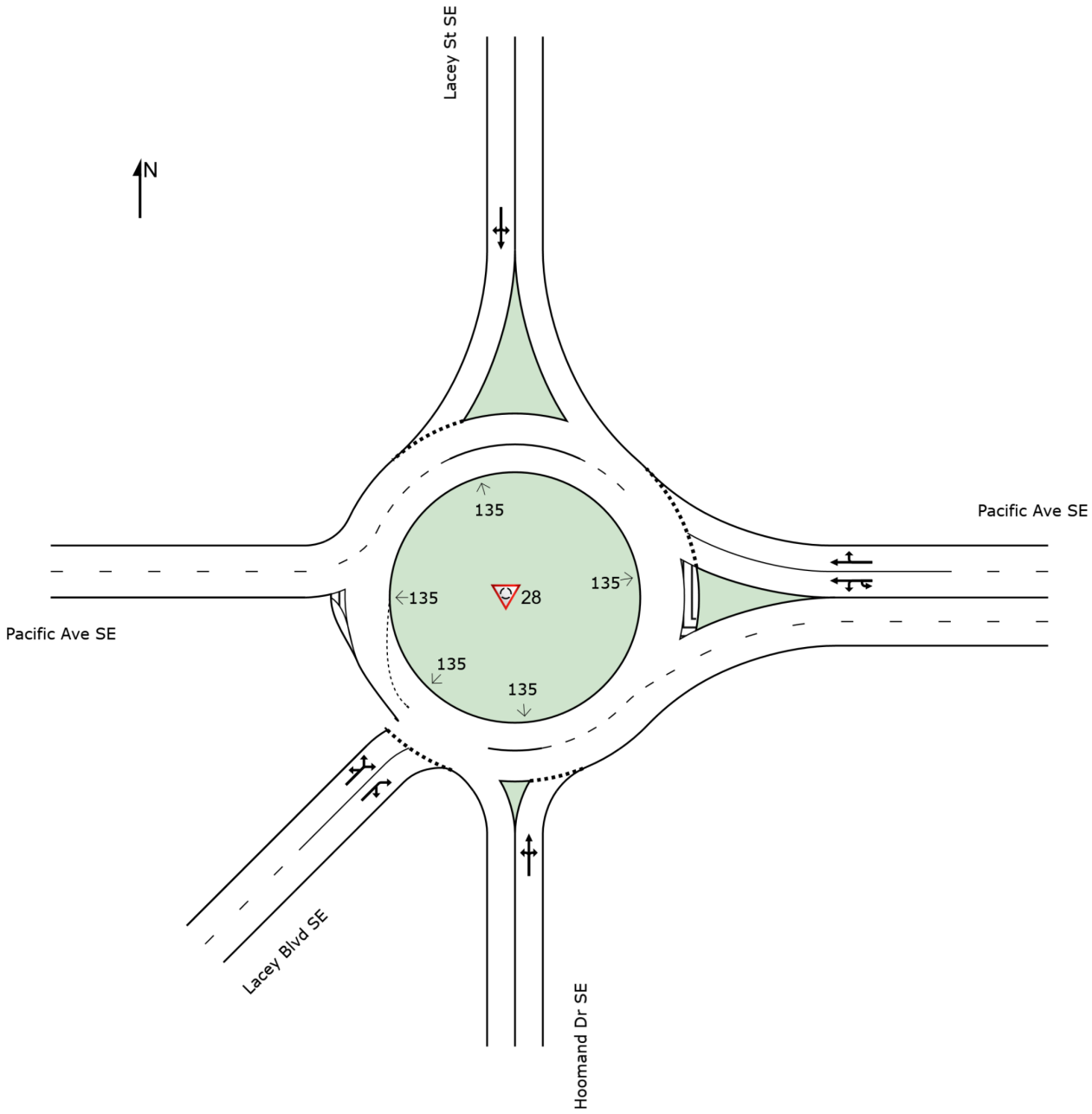
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	75	2.0	75	2.0	0.198	13.2	LOS B	0.8	20.2	0.65	0.81	0.65	33.0
8	T1	All MCs	4	2.0	4	2.0	0.198	6.3	LOS A	0.8	20.2	0.65	0.81	0.65	33.7
18	R2	All MCs	70	2.0	70	2.0	0.198	6.5	LOS A	0.8	20.2	0.65	0.81	0.65	33.5
Approach			149	2.0	149	2.0	0.198	9.9	LOS A	0.8	20.2	0.65	0.81	0.65	33.3
East: Pacific Ave SE															
1u	U	All MCs	20	1.0	20	1.0	0.645	14.4	LOS B	5.9	147.5	0.59	0.49	0.59	34.0
1	L2	All MCs	85	1.0	85	1.0	0.645	11.7	LOS B	5.9	147.5	0.59	0.49	0.59	34.1
6	T1	All MCs	1732	1.0	1732	1.0	0.645	4.5	LOS A	6.0	150.4	0.56	0.46	0.56	35.1
16	R2	All MCs	60	1.0	60	1.0	0.645	4.8	LOS A	6.0	150.4	0.53	0.43	0.53	35.0
Approach			1897	1.0	1897	1.0	0.645	4.9	LOS A	6.0	150.4	0.56	0.46	0.56	35.1
North: Lacey St SE															
7	L2	All MCs	20	2.0	20	2.0	0.120	14.8	LOS B	0.5	13.5	0.76	0.85	0.76	32.9
4	T1	All MCs	5	2.0	5	2.0	0.120	7.9	LOS A	0.5	13.5	0.76	0.85	0.76	33.6
14	R2	All MCs	40	2.0	40	2.0	0.120	8.1	LOS A	0.5	13.5	0.76	0.85	0.76	33.3
Approach			65	2.0	65	2.0	0.120	10.2	LOS B	0.5	13.5	0.76	0.85	0.76	33.2
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	60	1.0	60	1.0	0.526	12.2	LOS B	3.7	93.1	0.39	0.45	0.39	34.8
5ax	L1	All MCs	50	1.0	50	1.0	0.526	9.5	LOS A	3.7	93.1	0.39	0.45	0.39	34.8
12ax	R1	All MCs	1305	1.0	1305	1.0	0.526	3.7	LOS A	3.8	94.8	0.38	0.42	0.38	35.9
12bx	R3	All MCs	50	1.0	50	1.0	0.526	4.3	LOS A	3.8	94.8	0.37	0.40	0.37	35.6
Approach			1465	1.0	1465	1.0	0.526	4.2	LOS A	3.8	94.8	0.38	0.42	0.38	35.8
All Vehicles			3576	1.1	3576	1.1	0.645	4.9	LOS A	6.0	150.4	0.49	0.47	0.49	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	261	5	65	340	70	10	25	155	20	30	4
Future Vol, veh/h	5	261	5	65	340	70	10	25	155	20	30	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	5	261	5	65	340	70	10	25	155	20	30	4
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.8	17.1	10.4	10.1
HCM LOS	B	C	B	B

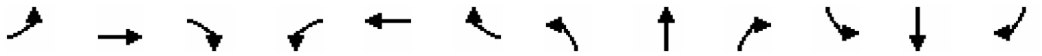
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	2%	14%	37%
Vol Thru, %	71%	0%	96%	72%	56%
Vol Right, %	0%	100%	2%	15%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	155	271	475	54
LT Vol	10	0	5	65	20
Through Vol	25	0	261	340	30
RT Vol	0	155	5	70	4
Lane Flow Rate	35	155	271	475	54
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.065	0.249	0.399	0.657	0.095
Departure Headway (Hd)	6.646	5.788	5.295	4.979	6.336
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	539	620	680	727	564
Service Time	4.391	3.532	3.334	3.012	4.394
HCM Lane V/C Ratio	0.065	0.25	0.399	0.653	0.096
HCM Control Delay, s/veh	9.9	10.5	11.8	17.1	10.1
HCM Lane LOS	A	B	B	C	B
HCM 95th-tile Q	0.2	1	1.9	5	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	121	196	370	173	121	285
Future Volume (veh/h)	121	196	370	173	121	285
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	121	196	370	173	121	285
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	305	272	778	660	152	1118
Arrive On Green	0.18	0.18	0.43	0.43	0.09	0.62
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	121	196	370	173	121	285
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	2.8	5.5	6.6	3.3	3.1	3.2
Cycle Q Clear(g_c), s	2.8	5.5	6.6	3.3	3.1	3.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	305	272	778	660	152	1118
V/C Ratio(X)	0.40	0.72	0.48	0.26	0.80	0.26
Avail Cap(c_a), veh/h	679	604	778	660	190	1118
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.3	17.4	9.1	8.2	20.2	3.9
Incr Delay (d2), s/veh	0.8	3.6	2.1	1.0	16.9	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.9	2.4	1.0	1.8	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	17.2	21.0	11.2	9.2	37.0	4.4
LnGrp LOS	B	C	B	A	D	A
Approach Vol, veh/h	317		543			406
Approach Delay, s/veh	19.6		10.6			14.1
Approach LOS	B		B			B

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.5	24.0				32.5	12.6
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	5.1	8.6				5.2	7.5
Green Ext Time (p_c), s	0.0	2.1				1.6	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	14.0
HCM 7th LOS	B



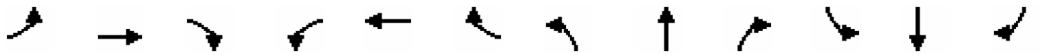
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	847	410	265	846	55	205	411	245	75	220	76
Future Volume (veh/h)	118	847	410	265	846	55	205	411	245	75	220	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	118	847	410	265	846	55	205	411	245	75	220	76
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	145	821	357	299	1118	495	380	798	331	243	364	122
Arrive On Green	0.09	0.24	0.24	0.18	0.33	0.33	0.23	0.23	0.23	0.14	0.14	0.14
Sat Flow, veh/h	1701	3393	1477	1674	3340	1478	1674	3516	1457	1701	2550	853
Grp Volume(v), veh/h	118	847	410	265	846	55	205	411	245	75	152	144
Grp Sat Flow(s),veh/h/ln	1701	1697	1477	1674	1670	1478	1674	1758	1457	1701	1786	1617
Q Serve(g_s), s	6.5	23.0	23.0	14.7	21.5	2.4	10.3	9.7	14.9	3.8	7.6	8.0
Cycle Q Clear(g_c), s	6.5	23.0	23.0	14.7	21.5	2.4	10.3	9.7	14.9	3.8	7.6	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.53
Lane Grp Cap(c), veh/h	145	821	357	299	1118	495	380	798	331	243	255	231
V/C Ratio(X)	0.81	1.03	1.15	0.89	0.76	0.11	0.54	0.52	0.74	0.31	0.60	0.62
Avail Cap(c_a), veh/h	179	821	357	387	1229	544	634	1331	552	608	639	578
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	36.0	36.0	38.1	28.2	21.9	32.4	32.2	34.2	36.6	38.2	38.4
Incr Delay (d2), s/veh	18.7	39.9	94.0	16.8	2.3	0.1	0.9	0.4	2.4	0.5	1.7	2.1
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	3.5	13.8	17.4	7.3	8.7	0.8	4.2	4.1	5.4	1.6	3.4	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.4	76.0	130.0	54.9	30.5	21.9	33.3	32.6	36.6	37.1	39.9	40.4
LnGrp LOS	E	F	F	D	C	C	C	C	D	D	D	D
Approach Vol, veh/h		1375			1166			861			371	
Approach Delay, s/veh		90.8			35.7			33.9			39.5	
Approach LOS		F			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.1	36.8		26.6	22.0	28.0		18.6				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	8.5	23.5		16.9	16.7	25.0		10.0				
Green Ext Time (p_c), s	0.0	4.0		3.3	0.3	0.0		1.6				

Intersection Summary												
HCM 7th Control Delay, s/veh			55.7									
HCM 7th LOS			E									

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



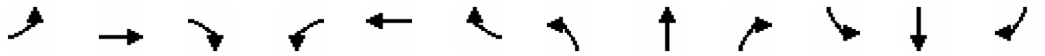
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	226	975	0	0	1330	326	185	0	565	0	0	0
Future Volume (veh/h)	226	975	0	0	1330	326	185	0	565	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	226	975	0	0	1330	0	185	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	259	2554	0	0	1834		230	0				
Arrive On Green	0.15	0.75	0.00	0.00	0.54	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	226	975	0	0	1330	0	185	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	11.7	9.0	0.0	0.0	26.8	0.0	9.6	0.0	0.0			
Cycle Q Clear(g_c), s	11.7	9.0	0.0	0.0	26.8	0.0	9.6	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	259	2554	0	0	1834		230	0				
V/C Ratio(X)	0.87	0.38	0.00	0.00	0.73		0.80	0.00				
Avail Cap(c_a), veh/h	283	2554	0	0	1834		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.3	3.9	0.0	0.0	15.4	0.0	37.7	0.0	0.0			
Incr Delay (d2), s/veh	22.5	0.4	0.0	0.0	2.5	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.4	2.4	0.0	0.0	10.0	0.0	4.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.8	4.3	0.0	0.0	18.0	0.0	42.6	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1201			1330			185				
Approach Delay, s/veh		14.7			18.0			42.6				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	18.7	54.0		17.3		72.7						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0						
Max Q Clear Time (g_c+I1), s	13.7	28.8		11.6		11.0						
Green Ext Time (p_c), s	0.1	4.0		0.7		7.1						

Intersection Summary												
HCM 7th Control Delay, s/veh			18.2									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	636	600	0	875	0	0	0	0	565	0	355
Future Volume (veh/h)	0	636	600	0	875	0	0	0	0	565	0	355
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	636	0	0	875	0				565	0	355
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	1961		0	1945	0				525	0	467
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3572	0	0	3544	0				1688	0	1502
Grp Volume(v), veh/h	0	636	0	0	875	0				565	0	355
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	8.8	0.0	0.0	13.3	0.0				28.0	0.0	19.2
Cycle Q Clear(g_c), s	0.0	8.8	0.0	0.0	13.3	0.0				28.0	0.0	19.2
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1961		0	1945	0				525	0	467
V/C Ratio(X)	0.00	0.32		0.00	0.45	0.00				1.08	0.00	0.76
Avail Cap(c_a), veh/h	0	1961		0	1945	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.9	0.0	0.0	10.8	0.0				31.0	0.0	28.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.8	0.0				61.3	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.1	0.0	0.0	4.7	0.0				19.9	0.0	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	10.3	0.0	0.0	11.6	0.0				92.3	0.0	34.8
LnGrp LOS		B			B					F		C
Approach Vol, veh/h		636			875						920	
Approach Delay, s/veh		10.3			11.6						70.1	
Approach LOS		B			B						E	

Timer - Assigned Phs	2				6		8					
Phs Duration (G+Y+Rc), s	57.0				57.0		33.0					
Change Period (Y+Rc), s	5.0				5.0		5.0					
Max Green Setting (Gmax), s	52.0				52.0		28.0					
Max Q Clear Time (g_c+I1), s	15.3				10.8		30.0					
Green Ext Time (p_c), s	6.0				4.1		0.0					

Intersection Summary	
HCM 7th Control Delay, s/veh	33.4
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	624	108	0	922	0	49
Future Vol, veh/h	624	108	0	922	0	49
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	624	108	0	922	0	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1139	366
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	461	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	195	631
Stage 1	-	-	0	-	466	-
Stage 2	-	-	0	-	601	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	195	631
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	601	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.19
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	631	-	-	-
HCM Lane V/C Ratio	0.078	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	0	0	836	0	0
Future Vol, veh/h	610	0	0	836	0	0
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	610	0	0	836	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1028	305
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	418	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	230	691
Stage 1	-	-	0	-	505	-
Stage 2	-	-	0	-	632	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	230	691
Mov Cap-2 Maneuver	-	-	-	-	230	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	632	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	641	49	0	816	0	69
Future Vol, veh/h	641	49	0	816	0	69
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	641	49	0	816	0	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1074	345
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	408	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	215	651
Stage 1	-	-	0	-	473	-
Stage 2	-	-	0	-	640	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	215	651
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.18
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	651	-	-	-
HCM Lane V/C Ratio	0.106	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	0	1555	1780	10
Future Vol, veh/h	0	20	0	1555	1780	10
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	0	20	0	1555	1780	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	895	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	244	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	244	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	21.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	244	-	-
HCM Lane V/C Ratio	-	0.082	-	-
HCM Ctrl Dly (s/v)	-	21.1	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	120	45	482	677	80
Future Vol, veh/h	80	120	45	482	677	80
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	80	120	45	482	677	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1289	717	757	0	-	0
Stage 1	717	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	182	431	863	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	172	431	863	-	-	-
Mov Cap-2 Maneuver	309	-	-	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	567	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	25.34	0.8	0
HCM LOS	D		

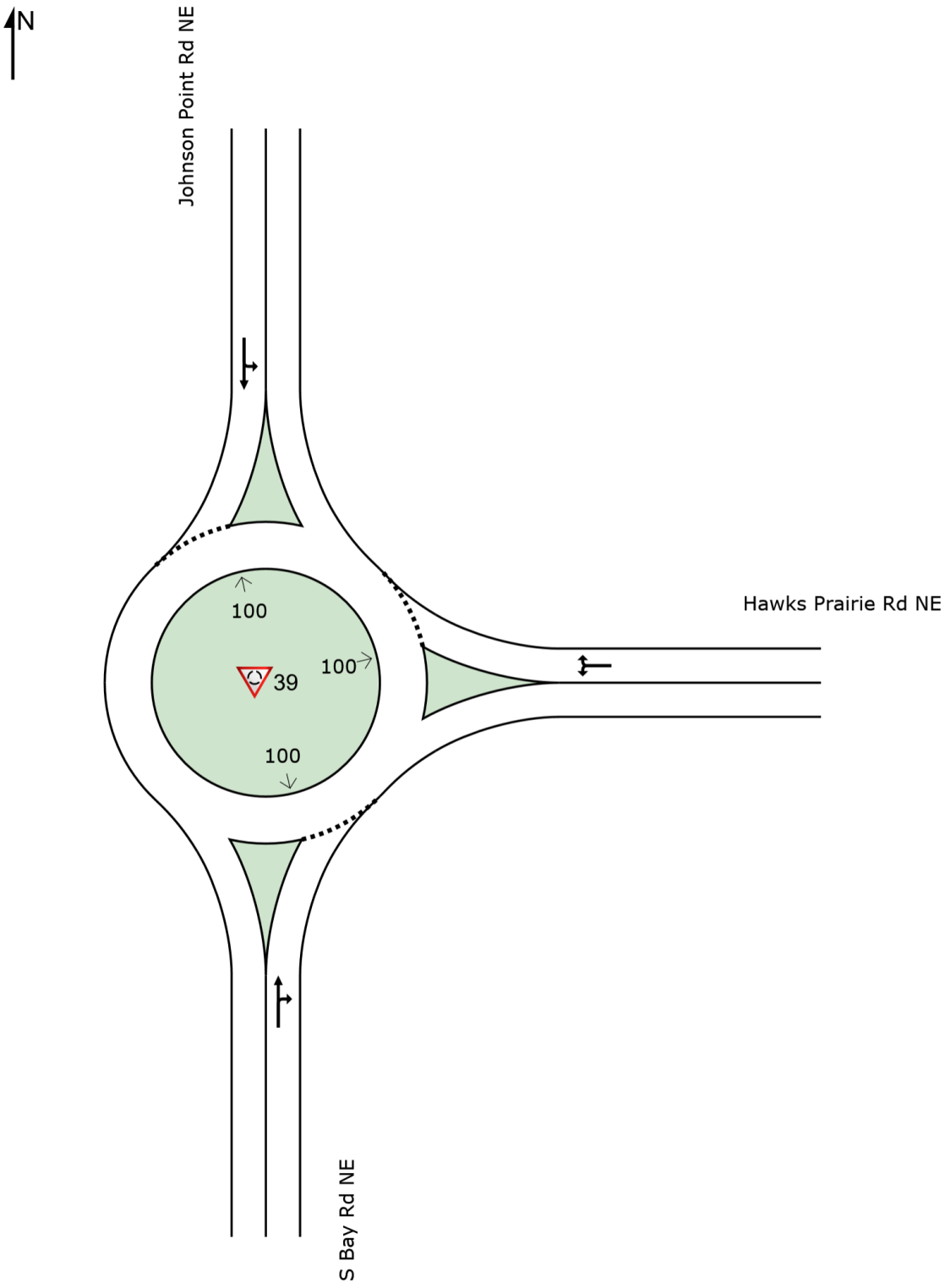
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	863	-	372	-	-
HCM Lane V/C Ratio	0.052	-	0.537	-	-
HCM Ctrl Dly (s/v)	9.4	-	25.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	245	0.0	245	0.0	0.387	4.0	LOS A	2.6	65.8	0.21	0.41	0.21	36.2
18	R2	All MCs	303	0.0	303	0.0	0.387	4.1	LOS A	2.6	65.8	0.21	0.41	0.21	35.8
Approach			548	0.0	548	0.0	0.387	4.0	LOS A	2.6	65.8	0.21	0.41	0.21	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	354	0.0	354	0.0	0.339	10.9	LOS B	1.9	48.6	0.43	0.63	0.43	32.6
16	R2	All MCs	68	0.0	68	0.0	0.339	5.0	LOS A	1.9	48.6	0.43	0.63	0.43	33.0
Approach			422	0.0	422	0.0	0.339	9.9	LOS A	1.9	48.6	0.43	0.63	0.43	32.7
North: Johnson Point Rd NE															
7	L2	All MCs	47	0.0	47	0.0	0.187	11.1	LOS B	1.0	25.4	0.48	0.55	0.48	34.0
4	T1	All MCs	167	0.0	167	0.0	0.187	5.2	LOS A	1.0	25.4	0.48	0.55	0.48	34.7
Approach			214	0.0	214	0.0	0.187	6.5	LOS A	1.0	25.4	0.48	0.55	0.48	34.5
All Vehicles			1183	0.0	1183	0.0	0.387	6.6	LOS A	2.6	65.8	0.34	0.51	0.34	34.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

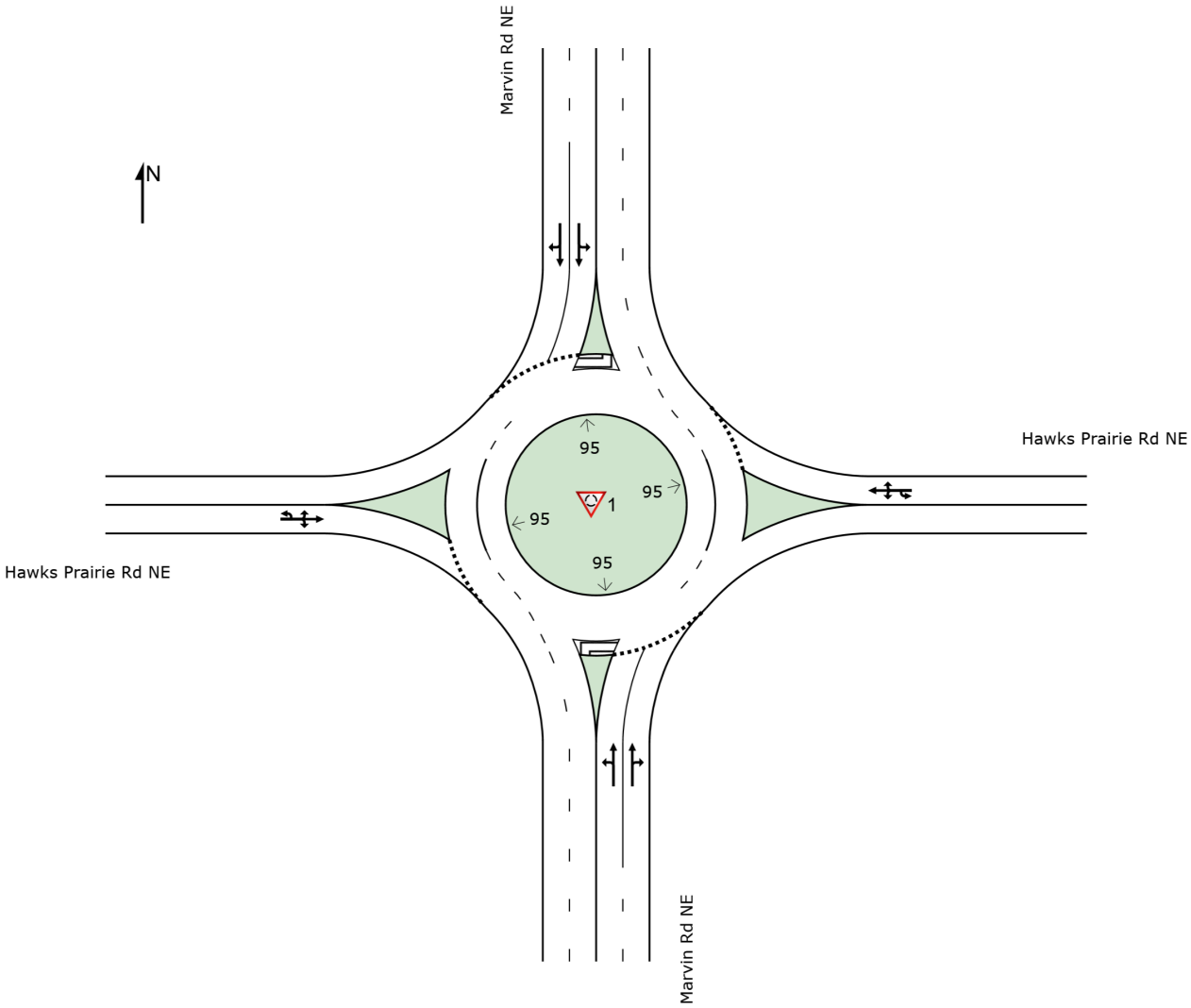
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	434	0.0	434	0.0	0.325	10.4	LOS B	2.1	52.4	0.37	0.61	0.37	32.3
8	T1	All MCs	468	0.0	468	0.0	0.306	4.5	LOS A	2.0	49.6	0.34	0.42	0.34	35.4
18	R2	All MCs	6	0.0	6	0.0	0.306	4.7	LOS A	2.0	49.6	0.34	0.42	0.34	35.0
Approach			908	0.0	908	0.0	0.325	7.3	LOS A	2.1	52.4	0.36	0.51	0.36	33.8
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.334	15.0	LOS B	1.4	34.8	0.61	0.78	0.63	32.6
1	L2	All MCs	156	3.0	156	3.0	0.334	12.6	LOS B	1.4	34.8	0.61	0.78	0.63	32.6
6	T1	All MCs	83	3.0	83	3.0	0.334	6.9	LOS A	1.4	34.8	0.61	0.78	0.63	33.2
16	R2	All MCs	28	3.0	28	3.0	0.334	6.8	LOS A	1.4	34.8	0.61	0.78	0.63	33.0
Approach			269	3.0	269	3.0	0.334	10.3	LOS B	1.4	34.8	0.61	0.78	0.63	32.8
North: Marvin Rd NE															
7	L2	All MCs	11	2.0	11	2.0	0.234	13.7	LOS B	1.4	35.4	0.70	0.66	0.70	33.4
4	T1	All MCs	360	2.0	360	2.0	0.234	7.6	LOS A	1.5	39.1	0.69	0.64	0.69	34.2
14	R2	All MCs	78	2.0	78	2.0	0.234	7.3	LOS A	1.5	39.1	0.69	0.63	0.69	34.0
Approach			449	2.0	449	2.0	0.234	7.7	LOS A	1.5	39.1	0.69	0.64	0.69	34.1
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.264	13.9	LOS B	1.1	28.0	0.50	0.68	0.50	33.4
5	L2	All MCs	106	3.0	106	3.0	0.264	11.5	LOS B	1.1	28.0	0.50	0.68	0.50	33.4
2	T1	All MCs	17	3.0	17	3.0	0.264	5.7	LOS A	1.1	28.0	0.50	0.68	0.50	34.1
12	R2	All MCs	122	3.0	122	3.0	0.264	5.7	LOS A	1.1	28.0	0.50	0.68	0.50	33.8
Approach			247	3.0	247	3.0	0.264	8.2	LOS A	1.1	28.0	0.50	0.68	0.50	33.7
All Vehicles			1872	1.3	1872	1.3	0.334	8.0	LOS A	2.1	52.4	0.49	0.60	0.49	33.7

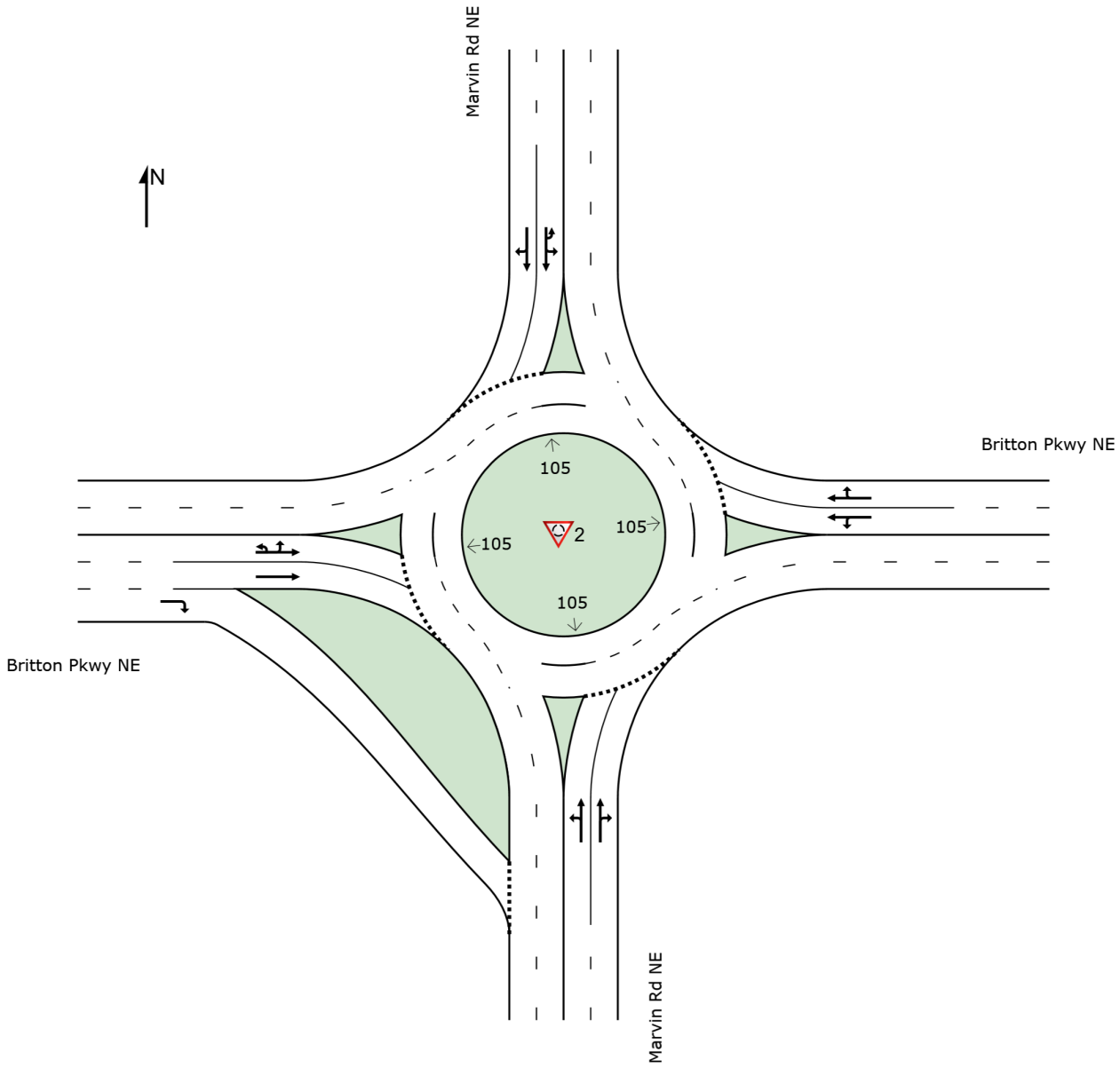
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	432	2.0	432	2.0	0.655	12.9	LOS B	5.2	131.7	0.70	0.77	0.81	32.3
8	T1	All MCs	990	2.0	990	2.0	0.655	6.5	LOS A	5.3	134.3	0.69	0.67	0.78	33.9
18	R2	All MCs	26	2.0	26	2.0	0.655	6.4	LOS A	5.3	134.3	0.68	0.64	0.77	33.9
Approach			1448	2.0	1448	2.0	0.655	8.4	LOS A	5.3	134.3	0.69	0.70	0.78	33.4
East: Britton Pkwy NE															
1	L2	All MCs	573	4.0	573	4.0	0.835	21.7	LOS C	8.0	206.3	0.95	1.19	1.67	28.3
6	T1	All MCs	300	4.0	300	4.0	0.708	14.5	LOS B	4.6	118.6	0.88	1.06	1.31	31.4
16	R2	All MCs	42	4.0	42	4.0	0.708	14.5	LOS B	4.6	118.6	0.88	1.06	1.31	31.1
Approach			915	4.0	915	4.0	0.835	19.0	LOS B	8.0	206.3	0.92	1.14	1.54	29.4
North: Marvin Rd NE															
7u	U	All MCs	11	4.0	11	4.0	1.037	64.1	LOS F	20.4	526.5	1.00	1.83	3.52	19.7
7	L2	All MCs	63	4.0	63	4.0	1.037	61.6	LOS F	20.4	526.5	1.00	1.83	3.52	19.7
4	T1	All MCs	974	4.0	974	4.0	1.037	53.4	LOS F	25.8	665.5	1.00	1.90	3.63	20.4
14	R2	All MCs	123	4.0	123	4.0	1.037	51.8	LOS F	25.8	665.5	1.00	1.95	3.71	20.6
Approach			1170	4.0	1170	4.0	1.037	53.8	LOS D	25.8	665.5	1.00	1.90	3.63	20.4
West: Britton Pkwy NE															
5u	U	All MCs	10	5.0	10	5.0	0.268	17.9	LOS B	1.4	36.2	0.83	0.88	0.83	30.7
5	L2	All MCs	122	5.0	122	5.0	0.268	15.3	LOS B	1.4	36.2	0.83	0.88	0.83	30.7
2	T1	All MCs	197	5.0	197	5.0	0.268	8.8	LOS A	1.8	47.7	0.92	0.80	0.92	33.3
12	R2	All MCs	504	5.0	504	5.0	0.649	12.8	LOS B	6.1	158.5	0.99	1.01	1.37	31.7
Approach			833	5.0	833	5.0	0.649	12.3	LOS B	6.1	158.5	0.95	0.94	1.18	31.9
All Vehicles			4366	3.5	4366	3.5	1.037	23.5	LOS C	25.8	665.5	0.87	1.16	1.78	27.6

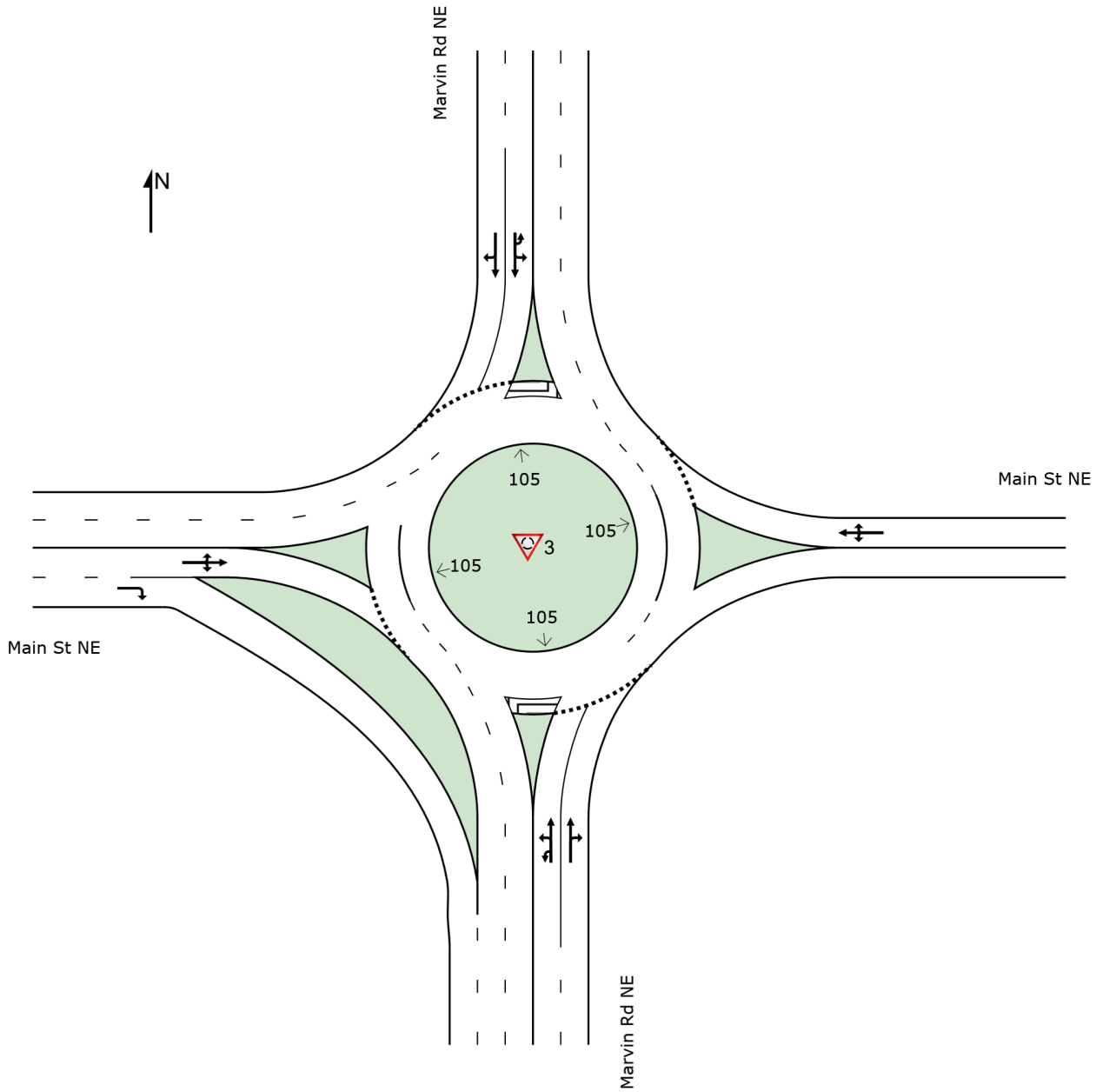
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

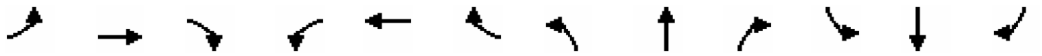
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	280	3.0	280	3.0	0.758	12.9	LOS B	11.2	287.3	0.43	0.52	0.43	26.5
3	L2	All MCs	468	3.0	468	3.0	0.758	10.4	LOS B	11.2	287.3	0.43	0.52	0.43	30.4
8	T1	All MCs	1485	3.0	1485	3.0	0.758	4.3	LOS A	11.5	293.6	0.39	0.41	0.39	30.3
18	R2	All MCs	77	3.0	77	3.0	0.758	4.5	LOS A	11.5	293.6	0.38	0.37	0.38	33.2
Approach			2310	3.0	2310	3.0	0.758	6.6	LOS A	11.5	293.6	0.40	0.44	0.40	30.0
East: Main St NE															
1	L2	All MCs	115	0.0	115	0.0	0.297	17.7	LOS B	1.5	36.9	0.83	0.93	0.87	27.4
6	T1	All MCs	1	0.0	1	0.0	0.297	11.6	LOS B	1.5	36.9	0.83	0.93	0.87	30.8
16	R2	All MCs	27	0.0	27	0.0	0.297	11.6	LOS B	1.5	36.9	0.83	0.93	0.87	28.5
Approach			144	0.0	144	0.0	0.297	16.5	LOS B	1.5	36.9	0.83	0.93	0.87	27.7
North: Marvin Rd NE															
7u	U	All MCs	3	3.0	3	3.0	1.345	185.8	LOS F	83.6	2139.9	1.00	3.53	7.64	5.7
7	L2	All MCs	22	3.0	22	3.0	1.345	183.2	LOS F	83.6	2139.9	1.00	3.53	7.64	7.8
4	T1	All MCs	2000	3.0	2000	3.0	1.345	175.4	LOS F	111.5	2853.3	1.00	3.83	8.05	5.2
14	R2	All MCs	32	3.0	32	3.0	1.345	174.2	LOS F	111.5	2853.3	1.00	4.04	8.34	7.9
Approach			2057	3.0	2057	3.0	1.345	175.4	LOS F	111.5	2853.3	1.00	3.83	8.05	5.3
West: Main St NE															
5	L2	All MCs	21	2.0	21	2.0	0.109	15.0	LOS B	0.6	15.1	0.87	0.86	0.87	30.3
2	T1	All MCs	1	2.0	1	2.0	0.109	9.0	LOS A	0.6	15.1	0.87	0.86	0.87	32.9
12	R2	All MCs	211	2.0	211	2.0	0.109	4.4	LOS A	0.6	15.1	0.13	0.50	0.13	34.4
Approach			233	2.0	233	2.0	0.109	5.4	LOS A	0.6	15.1	0.20	0.53	0.20	34.0
All Vehicles			4744	2.9	4744	2.9	1.345	80.1	LOS F	111.5	2853.3	0.66	1.93	3.72	10.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	525	0	0	684	0	1748	635	0	1542	810
Future Volume (vph)	0	0	525	0	0	684	0	1748	635	0	1542	810
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.99	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3162	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3162	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	547	0	0	712	0	1821	661	0	1606	844
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	547	0	0	713	0	1887	595	0	1606	844
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			57.5			53.5		55.5	120.0		50.5	120.0
Effective Green, g (s)			57.5			53.5		55.5	120.0		50.5	120.0
Actuated g/C Ratio			0.48			0.45		0.46	1.00		0.42	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1265			1177		1462	1335		1370	1457
v/s Ratio Prot			0.21			0.27		c0.60			c0.49	
v/s Ratio Perm									0.45			0.58
v/c Ratio			0.43			0.61		1.29	0.45		1.17	0.58
Uniform Delay, d1			20.5			25.2		32.3	0.0		34.8	0.0
Progression Factor			1.00			1.00		0.85	1.00		1.00	1.00
Incremental Delay, d2			0.2			0.9		133.8	0.6		85.6	1.7
Delay (s)			20.8			26.1		161.1	0.6		120.4	1.7
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		20.8			26.1			122.6			79.5	
Approach LOS		C			C			F			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	85.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	145	0	0	675	0	1708	250	0	1670	402
Future Volume (vph)	0	0	145	0	0	675	0	1708	250	0	1670	402
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	0	146	0	0	682	0	1725	253	0	1687	406
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	146	0	0	682	0	1725	253	0	1687	406
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			46.5			64.5		44.5	120.0		62.5	120.0
Effective Green, g (s)			46.5			64.5		44.5	120.0		62.5	120.0
Actuated g/C Ratio			0.39			0.54		0.37	1.00		0.52	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			569			1365		1786	1500		1729	1455
v/s Ratio Prot			0.10			0.27		c0.36			c0.51	
v/s Ratio Perm									0.17			0.28
v/c Ratio			0.26			0.50		0.97	0.17		0.98	0.28
Uniform Delay, d1			25.0			17.5		37.0	0.0		28.0	0.0
Progression Factor			1.00			1.00		0.76	1.00		0.41	1.00
Incremental Delay, d2			0.2			0.3		9.1	0.1		6.7	0.1
Delay (s)			25.2			17.8		37.4	0.1		18.1	0.1
Level of Service			C			B		D	A		B	A
Approach Delay (s/veh)		25.2			17.8			32.7			14.6	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	449	200	150	65	60	292	60	1187	60	231	1153	311
Future Volume (veh/h)	449	200	150	65	60	292	60	1187	60	231	1153	311
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	468	208	156	68	62	304	62	1236	62	241	1201	324
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	545	213	160	71	174	361	164	1317	66	241	1522	661
Arrive On Green	0.17	0.22	0.22	0.04	0.10	0.10	0.10	0.40	0.40	0.14	0.45	0.45
Sat Flow, veh/h	3300	946	710	1701	1786	1504	1688	3258	163	1701	3393	1475
Grp Volume(v), veh/h	468	0	364	68	62	304	62	638	660	241	1201	324
Grp Sat Flow(s),veh/h/ln	1650	0	1656	1701	1786	1504	1688	1683	1738	1701	1697	1475
Q Serve(g_s), s	16.6	0.0	26.2	4.8	3.9	11.7	4.1	43.6	43.8	17.0	36.3	9.8
Cycle Q Clear(g_c), s	16.6	0.0	26.2	4.8	3.9	11.7	4.1	43.6	43.8	17.0	36.3	9.8
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	545	0	373	71	174	361	164	680	702	241	1522	661
V/C Ratio(X)	0.86	0.00	0.98	0.96	0.36	0.84	0.38	0.94	0.94	1.00	0.79	0.49
Avail Cap(c_a), veh/h	619	0	373	71	174	361	164	680	702	241	1654	719
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	1.00	1.00	1.00	1.00	0.35	0.35	0.35	0.28	0.28	0.28
Uniform Delay (d), s/veh	48.7	0.0	46.2	57.4	50.6	43.5	50.8	34.3	34.3	51.5	28.2	6.5
Incr Delay (d2), s/veh	12.4	0.0	40.6	93.7	2.6	17.7	1.1	10.2	10.2	30.7	1.2	0.7
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	7.7	0.0	14.9	3.9	1.9	10.3	1.8	19.4	20.0	9.3	14.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.1	0.0	86.8	151.1	53.3	61.3	51.8	44.5	44.5	82.2	29.5	7.2
LnGrp LOS	E		F	F	D	E	D	D	D	F	C	A
Approach Vol, veh/h		832			434			1360			1766	
Approach Delay, s/veh		72.4			74.2			44.9			32.6	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.7	59.8	25.3	17.2	23.0	54.5	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	6.1	38.3	18.6	13.7	19.0	45.8	6.8	28.2
Green Ext Time (p_c), s	0.0	15.6	1.3	0.0	0.0	2.4	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	48.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	120	140	55	116	165	996	155	141	1103	85
Future Volume (veh/h)	140	55	120	140	55	116	165	996	155	141	1103	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	143	56	122	143	56	118	168	1016	158	144	1126	87
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	160	68	149	156	68	144	194	1188	185	360	1615	125
Arrive On Green	0.09	0.14	0.14	0.09	0.13	0.13	0.12	0.41	0.41	0.07	0.17	0.17
Sat Flow, veh/h	1714	499	1088	1701	507	1069	1674	2896	450	1701	3192	246
Grp Volume(v), veh/h	143	0	178	143	0	174	168	585	589	144	598	615
Grp Sat Flow(s),veh/h/ln	1714	0	1587	1701	0	1576	1674	1670	1676	1701	1697	1741
Q Serve(g_s), s	9.9	0.0	13.1	10.0	0.0	12.9	11.8	38.2	38.3	9.7	39.9	40.0
Cycle Q Clear(g_c), s	9.9	0.0	13.1	10.0	0.0	12.9	11.8	38.2	38.3	9.7	39.9	40.0
Prop In Lane	1.00		0.69	1.00		0.68	1.00		0.27	1.00		0.14
Lane Grp Cap(c), veh/h	160	0	217	156	0	213	194	685	688	360	858	881
V/C Ratio(X)	0.89	0.00	0.82	0.92	0.00	0.82	0.87	0.85	0.86	0.40	0.70	0.70
Avail Cap(c_a), veh/h	160	0	317	156	0	315	237	685	688	360	858	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.64	0.64	0.64
Uniform Delay (d), s/veh	53.8	0.0	50.4	54.0	0.0	50.5	52.2	32.1	32.2	48.5	41.3	41.3
Incr Delay (d2), s/veh	41.1	0.0	9.0	48.1	0.0	8.6	22.5	10.4	10.5	0.3	1.7	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	6.1	0.0	5.8	6.4	0.0	5.6	6.2	17.1	17.2	4.4	18.6	19.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	94.9	0.0	59.3	102.1	0.0	59.0	74.7	42.6	42.7	48.9	43.0	43.0
LnGrp LOS	F		E	F		E	E	D	D	D	D	D
Approach Vol, veh/h		321			317			1342			1357	
Approach Delay, s/veh		75.2			78.5			46.6			43.6	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	65.7	15.2	20.2	30.4	54.2	15.0	20.4
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.8	42.0	11.9	14.9	11.7	40.3	12.0	15.1
Green Ext Time (p_c), s	0.1	5.1	0.0	0.5	0.1	5.3	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	51.2
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	500	370	345	495	292	230	681	210	282	1034	301
Future Volume (veh/h)	358	500	370	345	495	292	230	681	210	282	1034	301
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	362	505	0	348	500	0	232	688	212	285	1044	304
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	422	615		408	601		310	785	242	373	1175	523
Arrive On Green	0.13	0.18	0.00	0.12	0.18	0.00	0.18	0.31	0.31	0.22	0.34	0.34
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2553	786	1714	3420	1523
Grp Volume(v), veh/h	362	505	0	348	500	0	232	457	443	285	1044	304
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1643	1714	1710	1523
Q Serve(g_s), s	12.9	17.2	0.0	12.3	16.9	0.0	15.5	30.6	30.7	18.7	34.6	13.3
Cycle Q Clear(g_c), s	12.9	17.2	0.0	12.3	16.9	0.0	15.5	30.6	30.7	18.7	34.6	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	422	615		408	601		310	522	505	373	1175	523
V/C Ratio(X)	0.86	0.82		0.85	0.83		0.75	0.88	0.88	0.76	0.89	0.58
Avail Cap(c_a), veh/h	605	749		582	727		310	608	589	373	1254	558
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	47.3	0.0	51.6	47.7	0.0	46.5	39.4	39.4	44.0	37.2	14.9
Incr Delay (d2), s/veh	6.2	6.4	0.0	6.1	7.2	0.0	8.7	18.3	18.9	8.1	10.2	4.7
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	5.6	7.7	0.0	5.4	7.7	0.0	7.3	15.3	14.9	8.8	15.9	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.4	53.7	0.0	57.7	54.9	0.0	55.2	57.7	58.2	52.2	47.4	19.5
LnGrp LOS	E	D		E	D		E	E	E	D	D	B
Approach Vol, veh/h		867			848			1132			1633	
Approach Delay, s/veh		55.2			56.1			57.4			43.0	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.8	46.2	20.3	26.6	31.1	41.9	19.7	27.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	8.0	44.0	22.0	25.5	9.0	43.0	21.0	26.5
Max Q Clear Time (g_c+I1), s	17.5	36.6	14.9	18.9	20.7	32.7	14.3	19.2
Green Ext Time (p_c), s	0.0	4.6	0.4	1.9	0.0	4.2	0.4	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	51.5
HCM 7th LOS	D

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	206	30	674	30	276	1128	212
Future Volume (veh/h)	150	195	20	135	225	206	30	674	30	276	1128	212
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	219	32	717	32	294	1200	226
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	174	246	25	380	237	217	53	967	43	320	1281	240
Arrive On Green	0.10	0.16	0.16	0.22	0.27	0.27	0.03	0.29	0.29	0.19	0.45	0.45
Sat Flow, veh/h	1688	1582	161	1714	864	792	1701	3308	148	1701	2851	533
Grp Volume(v), veh/h	160	0	228	144	0	458	32	368	381	294	711	715
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1656	1701	1697	1759	1701	1697	1688
Q Serve(g_s), s	12.4	0.0	16.7	9.4	0.0	36.0	2.4	25.7	25.8	22.3	52.2	53.3
Cycle Q Clear(g_c), s	12.4	0.0	16.7	9.4	0.0	36.0	2.4	25.7	25.8	22.3	52.2	53.3
Prop In Lane	1.00		0.09	1.00		0.48	1.00		0.08	1.00		0.32
Lane Grp Cap(c), veh/h	174	0	271	380	0	453	53	496	514	320	762	758
V/C Ratio(X)	0.92	0.00	0.84	0.38	0.00	1.01	0.60	0.74	0.74	0.92	0.93	0.94
Avail Cap(c_a), veh/h	174	0	488	380	0	453	78	496	514	432	783	779
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.4	0.0	54.0	43.5	0.0	47.8	62.9	42.0	42.0	52.4	34.3	34.6
Incr Delay (d2), s/veh	44.7	0.0	7.0	0.5	0.0	44.9	7.7	5.8	5.6	19.2	17.5	19.5
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	7.4	0.0	7.9	4.1	0.0	20.4	1.2	11.6	12.0	11.2	24.8	25.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	103.1	0.0	60.9	44.0	0.0	92.6	70.6	47.8	47.6	71.6	51.9	54.1
LnGrp LOS	F		E	D		F	E	D	D	E	D	D
Approach Vol, veh/h		388			602			781			1720	
Approach Delay, s/veh		78.3			81.0			48.6			56.2	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	64.0	18.2	40.6	29.4	43.4	33.8	25.0
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.4	55.3	14.4	38.0	24.3	27.8	11.4	18.7
Green Ext Time (p_c), s	0.0	3.8	0.0	0.0	0.4	2.1	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	61.2
HCM 7th LOS	E

Notes

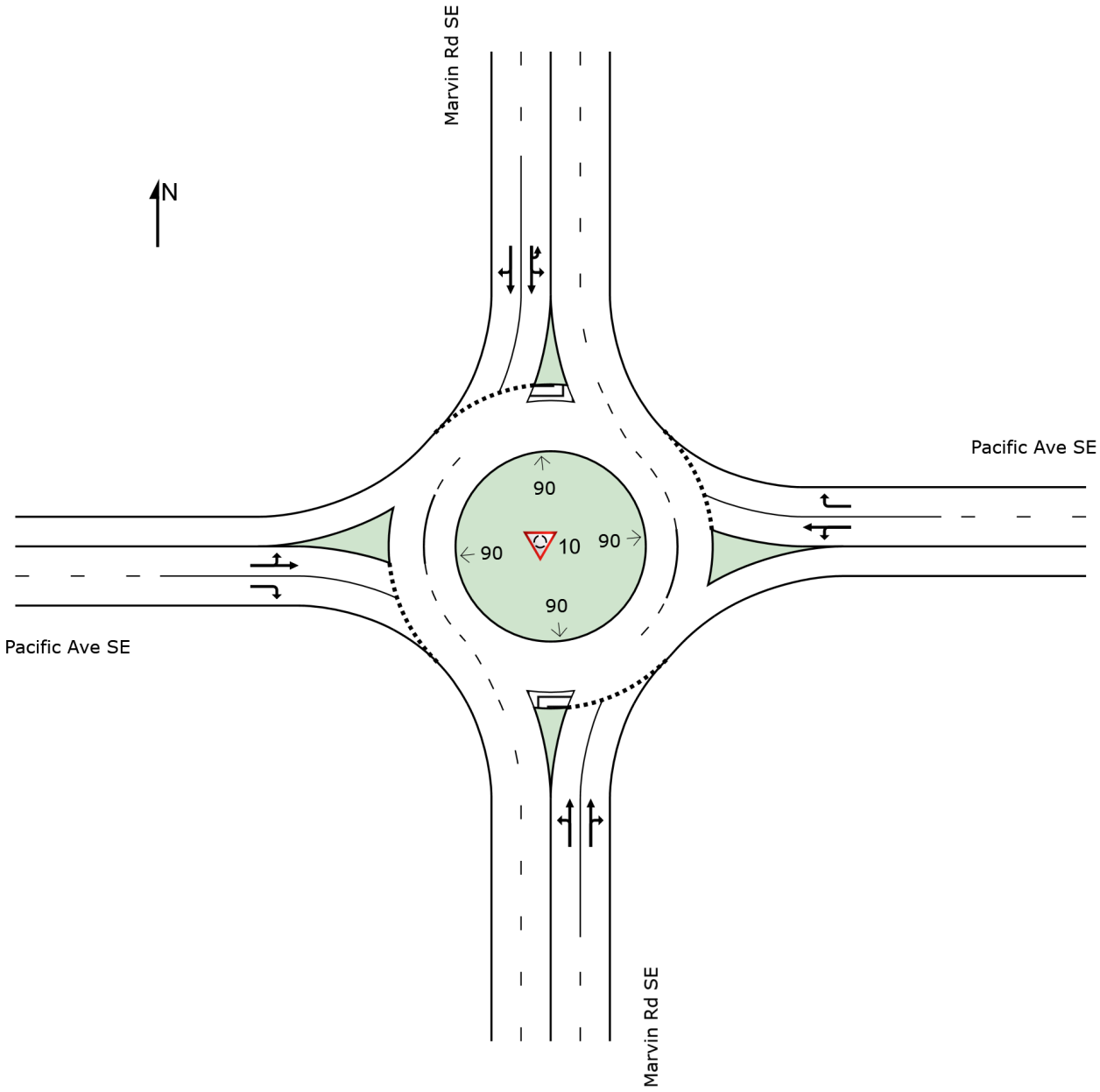
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	139	1.0	139	1.0	0.454	18.4	LOS B	3.6	91.2	0.92	0.85	1.05	30.4
8	T1	All MCs	471	1.0	471	1.0	0.454	11.4	LOS B	4.0	101.1	0.93	0.80	1.02	32.4
18	R2	All MCs	39	1.0	39	1.0	0.454	10.8	LOS B	4.0	101.1	0.94	0.78	1.01	32.7
Approach			649	1.0	649	1.0	0.454	12.9	LOS B	4.0	101.1	0.93	0.81	1.03	31.9
East: Pacific Ave SE															
1	L2	All MCs	33	1.0	33	1.0	0.347	11.7	LOS B	1.7	42.3	0.63	0.62	0.63	33.5
6	T1	All MCs	261	1.0	261	1.0	0.347	6.2	LOS A	1.7	42.3	0.63	0.62	0.63	34.2
16	R2	All MCs	373	1.0	373	1.0	0.369	5.9	LOS A	1.9	48.1	0.63	0.67	0.63	34.4
Approach			668	1.0	668	1.0	0.369	6.3	LOS A	1.9	48.1	0.63	0.65	0.63	34.3
North: Marvin Rd SE															
7u	U	All MCs	2	1.0	2	1.0	0.624	16.5	LOS B	6.1	152.6	0.79	0.77	0.91	31.6
7	L2	All MCs	454	1.0	454	1.0	0.624	14.1	LOS B	6.1	152.6	0.79	0.77	0.91	31.6
4	T1	All MCs	866	1.0	866	1.0	0.624	7.7	LOS A	6.2	156.8	0.77	0.70	0.86	33.6
14	R2	All MCs	89	1.0	89	1.0	0.624	7.6	LOS A	6.2	156.8	0.77	0.68	0.85	33.6
Approach			1411	1.0	1411	1.0	0.624	9.8	LOS A	6.2	156.8	0.78	0.72	0.88	32.9
West: Pacific Ave SE															
5	L2	All MCs	56	1.0	56	1.0	0.632	14.9	LOS B	4.4	111.3	0.87	0.95	1.11	32.7
2	T1	All MCs	406	1.0	406	1.0	0.632	9.3	LOS A	4.4	111.3	0.87	0.95	1.11	33.3
12	R2	All MCs	283	1.0	283	1.0	0.525	9.9	LOS A	2.9	74.0	0.82	0.94	1.00	33.0
Approach			744	1.0	744	1.0	0.632	10.0	LOS A	4.4	111.3	0.85	0.95	1.07	33.1
All Vehicles			3472	1.0	3472	1.0	0.632	9.7	LOS A	6.2	156.8	0.79	0.77	0.90	33.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

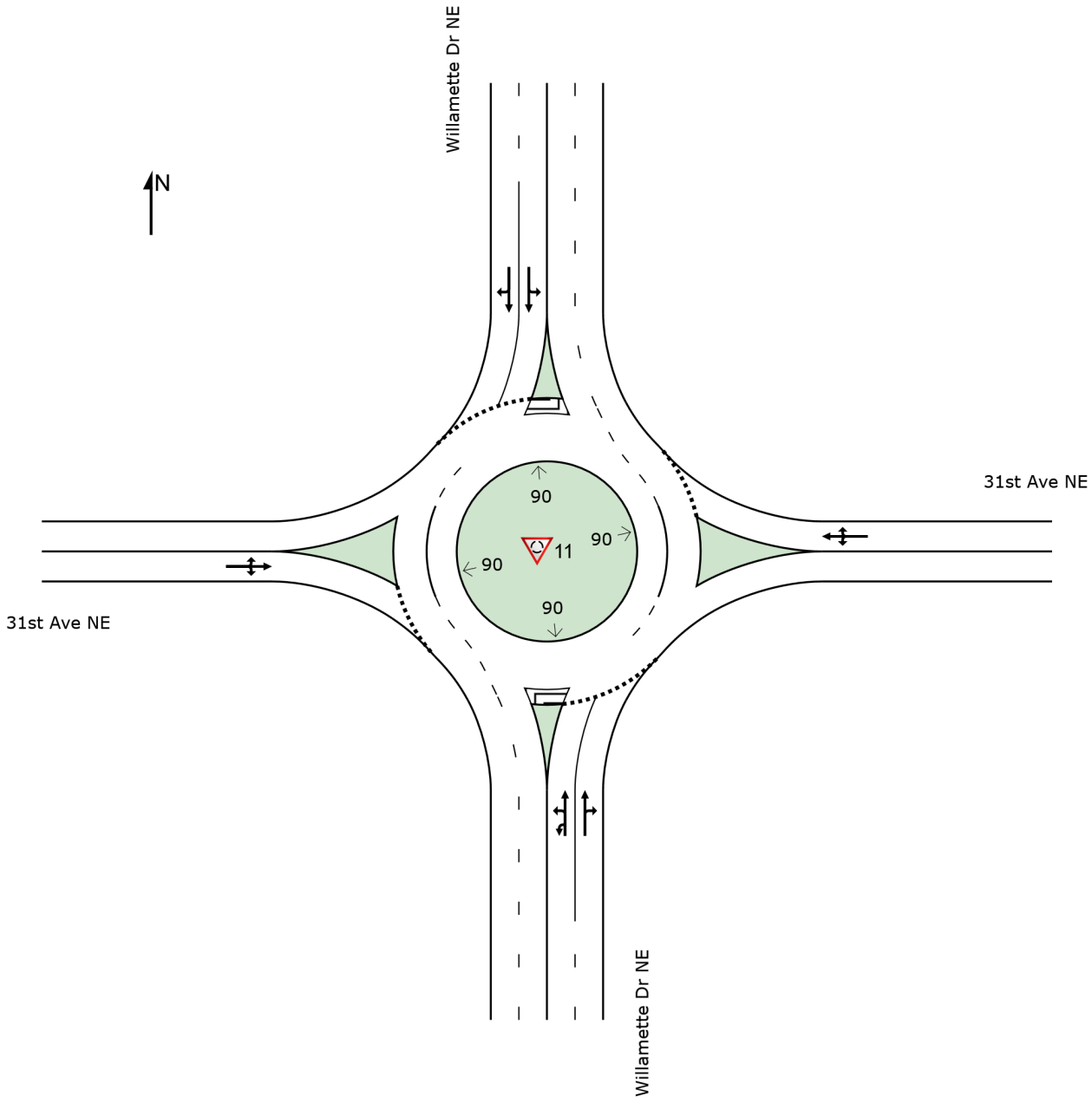
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SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	33	2.0	33	2.0	0.249	12.3	LOS B	1.5	37.4	0.19	0.49	0.19	34.2
3	L2	All MCs	82	2.0	82	2.0	0.249	9.9	LOS A	1.5	37.4	0.19	0.49	0.19	34.2
8	T1	All MCs	512	2.0	512	2.0	0.249	4.3	LOS A	1.5	37.9	0.19	0.44	0.19	35.4
18	R2	All MCs	122	2.0	122	2.0	0.249	4.4	LOS A	1.5	37.9	0.18	0.41	0.18	35.5
Approach			749	2.0	749	2.0	0.249	5.3	LOS A	1.5	37.9	0.19	0.45	0.19	35.2
East: 31st Ave NE															
1	L2	All MCs	105	3.0	105	3.0	0.143	11.4	LOS B	0.5	12.4	0.45	0.72	0.45	32.6
6	T1	All MCs	16	3.0	16	3.0	0.143	5.9	LOS A	0.5	12.4	0.45	0.72	0.45	33.2
16	R2	All MCs	11	3.0	11	3.0	0.143	5.8	LOS A	0.5	12.4	0.45	0.72	0.45	33.0
Approach			133	3.0	133	3.0	0.143	10.3	LOS B	0.5	12.4	0.45	0.72	0.45	32.7
North: Willamette Dr NE															
7	L2	All MCs	4	1.0	4	1.0	0.125	10.6	LOS B	0.6	15.9	0.39	0.47	0.39	34.4
4	T1	All MCs	315	1.0	315	1.0	0.125	5.0	LOS A	0.7	16.4	0.38	0.46	0.38	35.2
14	R2	All MCs	11	1.0	11	1.0	0.125	5.0	LOS A	0.7	16.4	0.37	0.45	0.37	34.9
Approach			331	1.0	331	1.0	0.125	5.1	LOS A	0.7	16.4	0.38	0.46	0.38	35.2
West: 31st Ave NE															
5	L2	All MCs	22	0.0	22	0.0	0.117	10.8	LOS B	0.4	10.2	0.39	0.59	0.39	34.3
2	T1	All MCs	22	0.0	22	0.0	0.117	5.3	LOS A	0.4	10.2	0.39	0.59	0.39	35.0
12	R2	All MCs	77	0.0	77	0.0	0.117	5.2	LOS A	0.4	10.2	0.39	0.59	0.39	34.7
Approach			121	0.0	121	0.0	0.117	6.2	LOS A	0.4	10.2	0.39	0.59	0.39	34.7
All Vehicles			1334	1.7	1334	1.7	0.249	5.8	LOS A	1.5	37.9	0.28	0.49	0.28	34.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

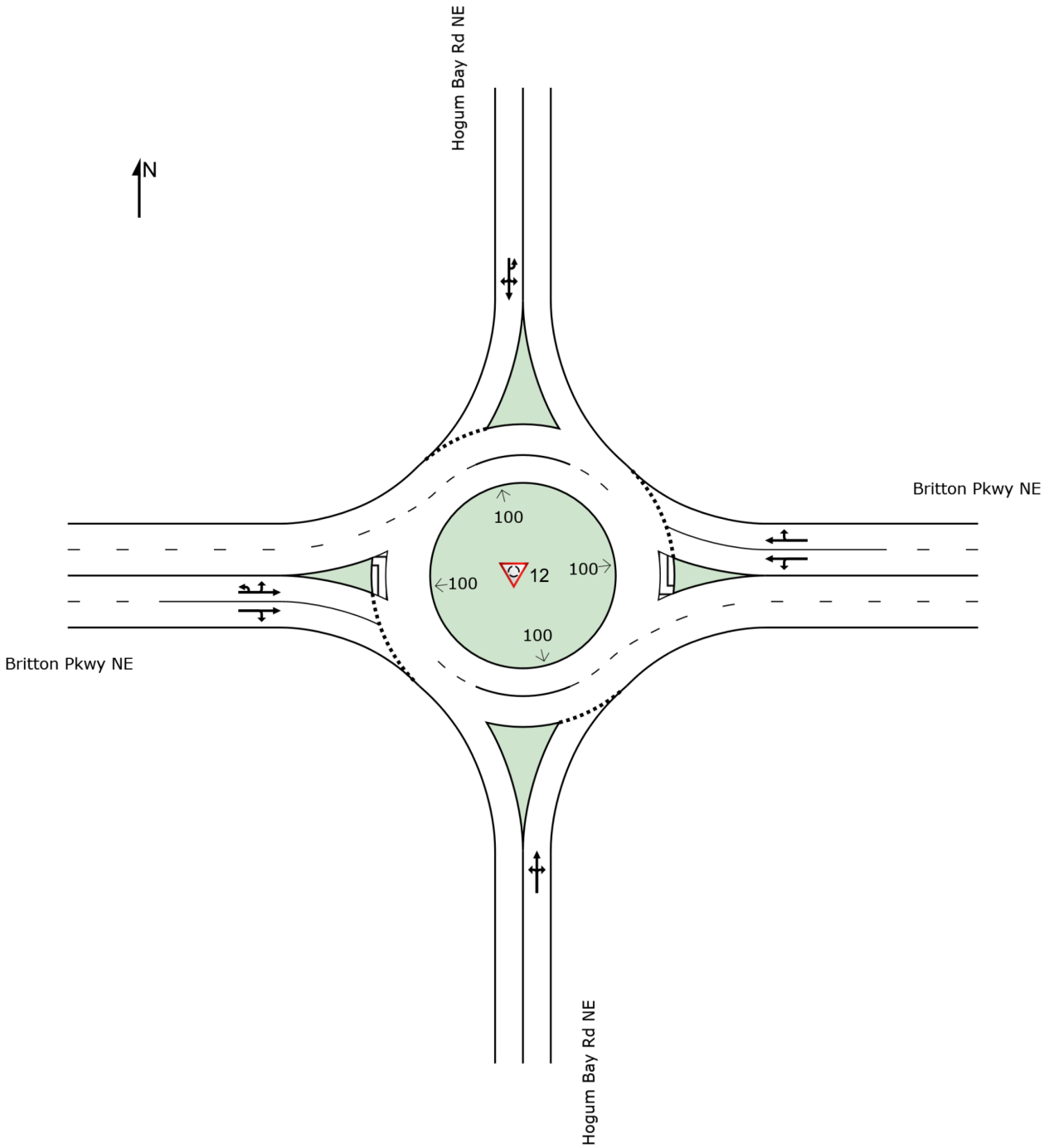
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	32	13.0	32	13.0	0.686	13.4	LOS B	5.3	145.9	0.64	0.69	0.75	33.4
8	T1	All MCs	263	13.0	263	13.0	0.686	7.5	LOS A	5.3	145.9	0.64	0.69	0.75	34.3
18	R2	All MCs	349	13.0	349	13.0	0.686	7.5	LOS A	5.3	145.9	0.64	0.69	0.75	33.9
Approach			645	13.0	645	13.0	0.686	7.8	LOS A	5.3	145.9	0.64	0.69	0.75	34.0
East: Britton Pkwy NE															
1	L2	All MCs	59	4.0	59	4.0	0.291	12.2	LOS B	1.8	46.0	0.61	0.61	0.61	33.3
6	T1	All MCs	570	4.0	570	4.0	0.291	6.0	LOS A	1.9	49.4	0.60	0.57	0.60	34.4
16	R2	All MCs	11	4.0	11	4.0	0.291	5.9	LOS A	1.9	49.4	0.60	0.55	0.60	34.2
Approach			640	4.0	640	4.0	0.291	6.6	LOS A	1.9	49.4	0.60	0.57	0.60	34.3
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.676	17.3	LOS B	4.5	122.4	0.74	0.87	0.97	32.9
7	L2	All MCs	16	10.0	16	10.0	0.676	14.9	LOS B	4.5	122.4	0.74	0.87	0.97	32.9
4	T1	All MCs	151	10.0	151	10.0	0.676	9.0	LOS A	4.5	122.4	0.74	0.87	0.97	33.7
14	R2	All MCs	363	10.0	363	10.0	0.676	9.0	LOS A	4.5	122.4	0.74	0.87	0.97	33.4
Approach			531	10.0	531	10.0	0.676	9.2	LOS A	4.5	122.4	0.74	0.87	0.97	33.5
West: Britton Pkwy NE															
5u	U	All MCs	4	7.0	4	7.0	0.122	13.5	LOS B	0.7	17.2	0.42	0.60	0.42	32.8
5	L2	All MCs	88	7.0	88	7.0	0.122	11.0	LOS B	0.7	17.2	0.42	0.60	0.42	32.8
2	T1	All MCs	190	7.0	190	7.0	0.122	4.9	LOS A	0.7	18.0	0.41	0.49	0.41	34.8
12	R2	All MCs	16	7.0	16	7.0	0.122	5.0	LOS A	0.7	18.0	0.41	0.46	0.41	34.7
Approach			299	7.0	299	7.0	0.122	6.8	LOS A	0.7	18.0	0.41	0.52	0.41	34.1
All Vehicles			2115	8.7	2115	8.7	0.686	7.6	LOS A	5.3	145.9	0.62	0.67	0.71	34.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	15	619	42	10	46	666	35	61	0	51	30	0	25
Future Vol, veh/h	15	619	42	10	46	666	35	61	0	51	30	0	25
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	16	659	45	11	49	709	37	65	0	54	32	0	27

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	747	0	0	703	703	0	0	1187	1579	353	1209	1582	375
Stage 1	-	-	-	-	-	-	-	713	713	-	847	847	-
Stage 2	-	-	-	-	-	-	-	474	866	-	362	735	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	844	-	-	511	884	-	-	144	108	644	141	110	628
Stage 1	-	-	-	-	-	-	-	389	434	-	327	381	-
Stage 2	-	-	-	-	-	-	-	540	369	-	635	428	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	843	-	-	762	762	-	-	124	98	643	116	99	627
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	124	98	-	116	99	-
Stage 1	-	-	-	-	-	-	-	382	425	-	301	351	-
Stage 2	-	-	-	-	-	-	-	476	339	-	569	420	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.21	0.75	48	33.26
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	197	843	-	-	762	-	-	185
HCM Lane V/C Ratio	0.606	0.019	-	-	0.078	-	-	0.317
HCM Ctrl Dly (s/v)	48	9.4	-	-	10.1	-	-	33.3
HCM Lane LOS	E	A	-	-	B	-	-	D
HCM 95th %tile Q(veh)	3.4	0.1	-	-	0.3	-	-	1.3

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	647	30	41	710	1	39	0	30	1	0	25
Future Vol, veh/h	10	647	30	41	710	1	39	0	30	1	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	688	32	44	755	1	41	0	32	1	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	756	0	0	720	0	0	1190	1569	360	1209	1585	378
Stage 1	-	-	-	-	-	-	726	726	-	843	843	-
Stage 2	-	-	-	-	-	-	465	844	-	365	741	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	837	-	-	871	-	-	143	110	636	141	109	625
Stage 1	-	-	-	-	-	-	382	428	-	329	382	-
Stage 2	-	-	-	-	-	-	547	377	-	632	426	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	837	-	-	871	-	-	128	103	636	126	103	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	128	103	-	126	103	-
Stage 1	-	-	-	-	-	-	377	422	-	312	363	-
Stage 2	-	-	-	-	-	-	497	359	-	592	420	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.14	0.51	33.81	11.99
HCM LOS			D	B

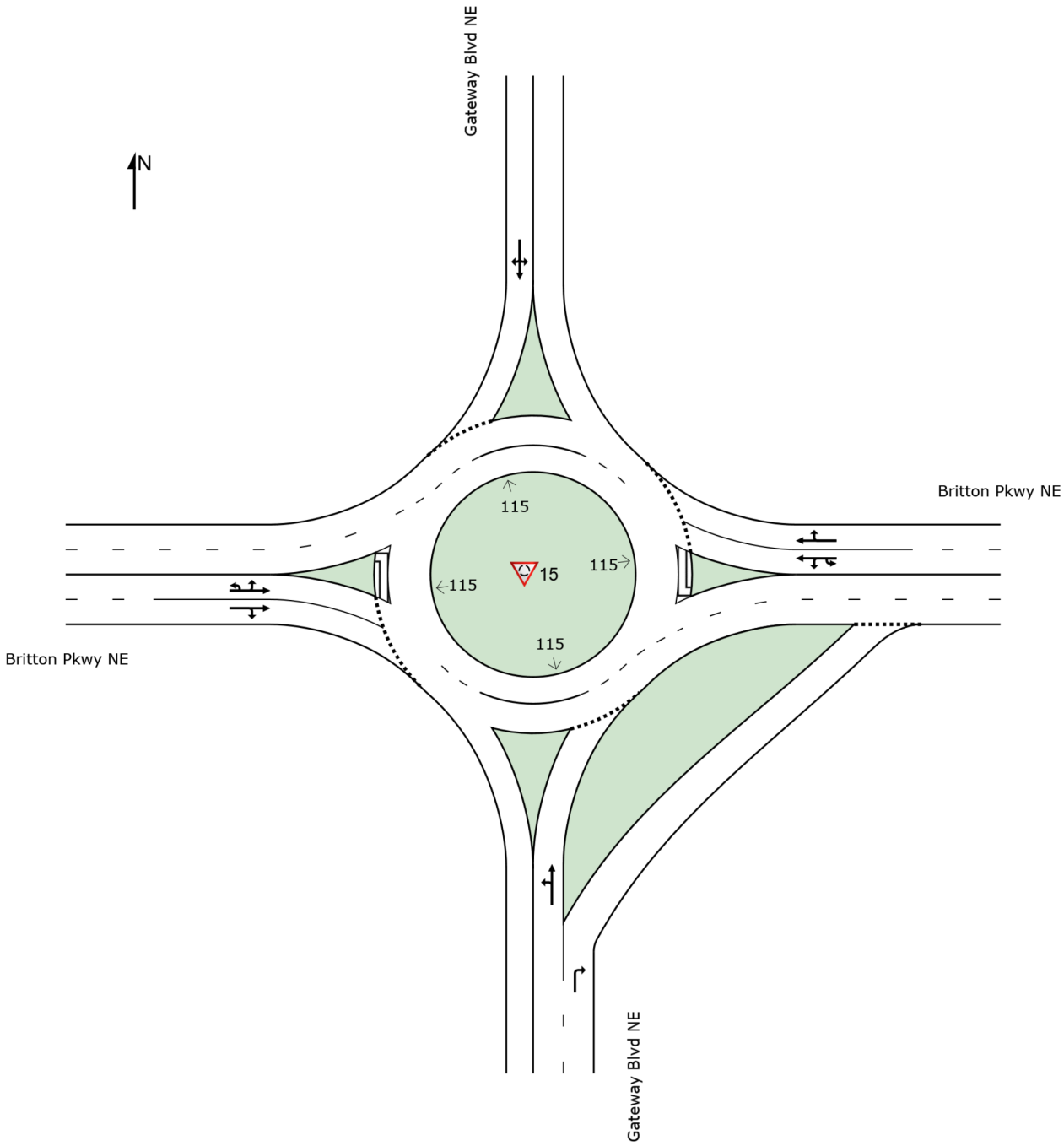
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	197	837	-	-	871	-	-	542
HCM Lane V/C Ratio	0.373	0.013	-	-	0.05	-	-	0.051
HCM Ctrl Dly (s/v)	33.8	9.4	-	-	9.4	-	-	12
HCM Lane LOS	D	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.6	0	-	-	0.2	-	-	0.2

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	386	2.0	386	2.0	0.334	11.3	LOS B	1.4	35.8	0.50	0.73	0.50	32.1
8	T1	All MCs	16	2.0	16	2.0	0.334	5.0	LOS A	1.4	35.8	0.50	0.73	0.50	32.7
18	R2	All MCs	200	2.0	200	2.0	0.157	4.6	LOS A	0.5	13.4	0.38	0.54	0.38	35.5
Approach			601	2.0	601	2.0	0.334	8.9	LOS A	1.4	35.8	0.46	0.66	0.46	33.1
East: Britton Pkwy NE															
1u	U	All MCs	3	3.0	3	3.0	0.398	15.8	LOS B	2.6	67.3	0.71	0.67	0.71	32.9
1	L2	All MCs	118	3.0	118	3.0	0.398	13.3	LOS B	2.6	67.3	0.71	0.67	0.71	32.9
6	T1	All MCs	553	3.0	553	3.0	0.398	6.5	LOS A	2.9	73.9	0.70	0.63	0.70	34.2
16	R2	All MCs	178	3.0	178	3.0	0.398	6.4	LOS A	2.9	73.9	0.69	0.61	0.69	34.2
Approach			852	3.0	852	3.0	0.398	7.4	LOS A	2.9	73.9	0.70	0.63	0.70	34.0
North: Gateway Blvd NE															
7	L2	All MCs	96	2.0	96	2.0	0.290	13.3	LOS B	1.4	34.4	0.68	0.78	0.68	32.9
4	T1	All MCs	41	2.0	41	2.0	0.290	6.9	LOS A	1.4	34.4	0.68	0.78	0.68	33.6
14	R2	All MCs	78	2.0	78	2.0	0.290	7.0	LOS A	1.4	34.4	0.68	0.78	0.68	33.3
Approach			214	2.0	214	2.0	0.290	9.8	LOS A	1.4	34.4	0.68	0.78	0.68	33.2
West: Britton Pkwy NE															
5u	U	All MCs	4	5.0	4	5.0	0.316	14.0	LOS B	1.9	49.7	0.49	0.55	0.49	33.6
5	L2	All MCs	122	5.0	122	5.0	0.316	11.4	LOS B	1.9	49.7	0.49	0.55	0.49	33.6
2	T1	All MCs	456	5.0	456	5.0	0.316	4.9	LOS A	2.0	52.1	0.47	0.52	0.47	34.8
12	R2	All MCs	228	5.0	228	5.0	0.316	5.0	LOS A	2.0	52.1	0.46	0.49	0.46	35.0
Approach			810	5.0	810	5.0	0.316	6.0	LOS A	2.0	52.1	0.47	0.52	0.47	34.7
All Vehicles			2478	3.3	2478	3.3	0.398	7.5	LOS A	2.9	73.9	0.57	0.61	0.57	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	33.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	716	90	35	896	25	130	0	54	10	0	35
Future Vol, veh/h	50	716	90	35	896	25	130	0	54	10	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	754	95	37	943	26	137	0	57	11	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	969	0	0	848	0	0	1452	1949	424	1512	1984	485
Stage 1	-	-	-	-	-	-	906	906	-	1030	1030	-
Stage 2	-	-	-	-	-	-	545	1043	-	482	954	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	713	-	-	785	-	-	~ 92	64	578	84	62	534
Stage 1	-	-	-	-	-	-	297	353	-	254	313	-
Stage 2	-	-	-	-	-	-	490	304	-	540	340	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	713	-	-	785	-	-	~ 75	56	578	67	55	534
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 75	56	-	67	55	-
Stage 1	-	-	-	-	-	-	275	327	-	242	299	-
Stage 2	-	-	-	-	-	-	435	290	-	451	315	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.61	0.36	$ 361.97	24.76
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	75	578	713	-	-	785	-	-	67	534
HCM Lane V/C Ratio	1.819	0.098	0.074	-	-	0.047	-	-	0.157	0.069
HCM Ctrl Dly (s/v)	$ 507.4	11.9	10.5	-	-	9.8	-	-	68.5	12.2
HCM Lane LOS	F	B	B	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	12	0.3	0.2	-	-	0.1	-	-	0.5	0.2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	51	45	255	76	65
Future Vol, veh/h	180	51	45	255	76	65
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	202	57	51	287	85	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	260	0	619	231
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	388	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1317	-	452	808
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1317	-	432	808
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	654	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.18	14.17
HCM LOS			B

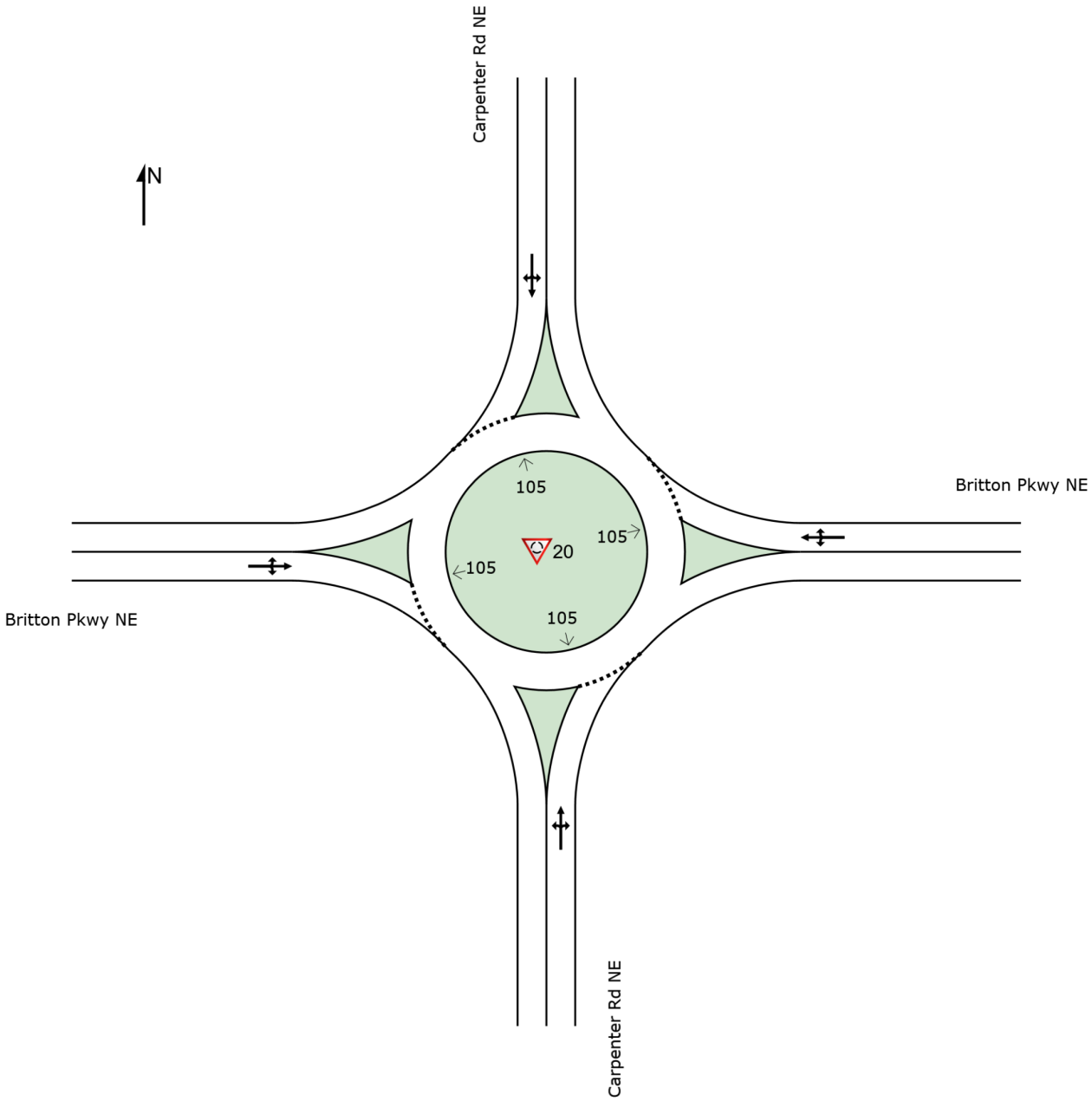
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	550	-	-	270	-
HCM Lane V/C Ratio	0.288	-	-	0.038	-
HCM Ctrl Dly (s/v)	14.2	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	151	4.0	151	4.0	0.772	17.1	LOS B	10.4	268.6	0.97	0.88	1.26	28.9
8	T1	All MCs	1	4.0	1	4.0	0.772	10.9	LOS B	10.4	268.6	0.97	0.88	1.26	26.0
18	R2	All MCs	566	4.0	566	4.0	0.772	11.1	LOS B	10.4	268.6	0.97	0.88	1.26	29.4
Approach			717	4.0	717	4.0	0.772	12.3	LOS B	10.4	268.6	0.97	0.88	1.26	29.3
East: Britton Pkwy NE															
1	L2	All MCs	631	5.0	631	5.0	0.960	19.6	LOS E	30.2	784.3	1.00	0.98	1.26	27.0
6	T1	All MCs	525	5.0	525	5.0	0.960	13.4	LOS E	30.2	784.3	1.00	0.98	1.26	30.6
16	R2	All MCs	1	5.0	1	5.0	0.960	13.6	LOS E	30.2	784.3	1.00	0.98	1.26	28.0
Approach			1157	5.0	1157	5.0	0.960	16.8	LOS B	30.2	784.3	1.00	0.98	1.26	28.8
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.013	26.1	LOS C	0.1	2.5	1.00	0.75	1.00	25.6
4	T1	All MCs	1	0.0	1	0.0	0.013	20.0	LOS B	0.1	2.5	1.00	0.75	1.00	21.3
14	R2	All MCs	1	0.0	1	0.0	0.013	20.1	LOS C	0.1	2.5	1.00	0.75	1.00	25.9
Approach			3	0.0	3	0.0	0.013	22.1	LOS C	0.1	2.5	1.00	0.75	1.00	24.5
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.780	21.1	LOS C	10.4	268.1	1.00	1.03	1.46	28.2
2	T1	All MCs	438	4.0	438	4.0	0.780	14.9	LOS B	10.4	268.1	1.00	1.03	1.46	31.2
12	R2	All MCs	134	4.0	134	4.0	0.780	15.1	LOS B	10.4	268.1	1.00	1.03	1.46	28.0
Approach			573	4.0	573	4.0	0.780	15.0	LOS B	10.4	268.1	1.00	1.03	1.46	30.5
All Vehicles			2451	4.5	2451	4.5	0.960	15.1	LOS B	30.2	784.3	0.99	0.96	1.31	29.4

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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	243	1000	370	365	790	111	180	286	250	131	373	223
Future Volume (veh/h)	243	1000	370	365	790	111	180	286	250	131	373	223
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	248	1020	378	372	806	113	184	292	255	134	381	228
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	342	1229	715	401	839	118	191	347	478	231	443	261
Arrive On Green	0.20	0.36	0.36	0.12	0.28	0.28	0.11	0.19	0.19	0.14	0.22	0.22
Sat Flow, veh/h	1701	3393	1505	3274	2960	415	1701	1786	1509	1674	2019	1191
Grp Volume(v), veh/h	248	1020	378	372	458	461	184	292	255	134	314	295
Grp Sat Flow(s),veh/h/ln	1701	1697	1505	1637	1683	1691	1701	1786	1509	1674	1670	1540
Q Serve(g_s), s	16.4	32.9	21.2	13.5	32.2	32.2	12.9	18.9	10.0	9.0	21.7	22.2
Cycle Q Clear(g_c), s	16.4	32.9	21.2	13.5	32.2	32.2	12.9	18.9	10.0	9.0	21.7	22.2
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.77
Lane Grp Cap(c), veh/h	342	1229	715	401	477	479	191	347	478	231	367	338
V/C Ratio(X)	0.72	0.83	0.53	0.93	0.96	0.96	0.96	0.84	0.53	0.58	0.86	0.87
Avail Cap(c_a), veh/h	342	1229	715	401	477	479	191	441	558	231	417	385
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)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.8	34.9	22.1	52.1	42.3	42.4	53.0	46.6	14.5	48.5	45.0	45.2
Incr Delay (d2), s/veh	5.3	5.4	2.3	27.2	32.6	32.5	53.5	11.8	1.1	2.4	14.7	17.6
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	7.4	14.3	7.8	7.0	17.5	17.6	8.3	9.5	3.4	3.9	10.4	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.1	40.3	24.4	79.3	74.9	74.9	106.5	58.4	15.5	50.9	59.7	62.8
LnGrp LOS	D	D	C	E	E	E	F	E	B	D	E	E
Approach Vol, veh/h		1646			1291			731			743	
Approach Delay, s/veh		38.1			76.2			55.5			59.3	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.7	39.5	22.1	28.8	20.2	49.0	19.0	31.8
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	20.5	34.0	13.9	29.6	14.7	39.8	13.5	30.0
Max Q Clear Time (g_c+I1), s	18.4	34.2	11.0	20.9	15.5	34.9	14.9	24.2
Green Ext Time (p_c), s	0.1	0.0	0.0	2.1	0.0	3.5	0.0	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	55.7
HCM 7th LOS	E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	323	770	120	115	740	30	150	237	80	90	353	484
Future Volume (veh/h)	323	770	120	115	740	30	150	237	80	90	353	484
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	333	794	124	119	763	31	155	244	82	93	364	499
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	312	1009	158	144	812	33	126	760	249	115	510	451
Arrive On Green	0.18	0.34	0.34	0.08	0.24	0.24	0.08	0.31	0.31	0.07	0.30	0.30
Sat Flow, veh/h	1701	2938	459	1701	3322	135	1674	2467	808	1701	1697	1501
Grp Volume(v), veh/h	333	458	460	119	390	404	155	163	163	93	364	499
Grp Sat Flow(s),veh/h/ln	1701	1697	1701	1701	1697	1760	1674	1670	1605	1701	1697	1501
Q Serve(g_s), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	9.0	9.4	6.5	22.9	36.0
Cycle Q Clear(g_c), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	9.0	9.4	6.5	22.9	36.0
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	312	583	584	144	415	430	126	514	494	115	510	451
V/C Ratio(X)	1.07	0.79	0.79	0.83	0.94	0.94	1.23	0.32	0.33	0.81	0.71	1.11
Avail Cap(c_a), veh/h	312	583	584	249	418	434	126	514	494	227	510	451
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	35.4	35.4	54.0	44.4	44.4	55.4	31.8	31.9	55.0	37.3	41.9
Incr Delay (d2), s/veh	69.5	7.1	7.0	4.5	29.2	28.6	155.5	0.4	0.4	4.9	4.7	74.3
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	15.3	13.0	13.1	3.7	14.6	15.1	9.2	3.7	3.7	2.9	10.1	22.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	118.3	42.4	42.4	58.5	73.6	73.0	210.9	32.1	32.3	60.0	42.0	116.2
LnGrp LOS	F	D	D	E	E	E	F	C	C	E	D	F
Approach Vol, veh/h		1251			913			481			956	
Approach Delay, s/veh		62.6			71.3			89.8			82.5	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	34.8	14.1	42.9	15.6	47.1	15.0	42.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	29.5	16.0	29.0	17.5	34.0	9.0	36.0
Max Q Clear Time (g_c+I1), s	24.0	29.0	8.5	11.4	10.2	31.1	11.0	38.0
Green Ext Time (p_c), s	0.0	0.3	0.1	1.8	0.1	1.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	73.7
HCM 7th LOS	E

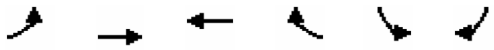
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1552	5	0	1128	30	70	5	25	66	1	30
Future Volume (veh/h)	40	1552	5	0	1128	30	70	5	25	66	1	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	1634	0	0	1187	32	74	5	26	69	1	32
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, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	83	2723		1	2491	67	158	213	181	220	3	181
Arrive On Green	0.05	1.00	0.00	0.00	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	3300	3393	1514	1688	3349	90	1398	1800	1525	1358	23	1525
Grp Volume(v), veh/h	42	1634	0	0	596	623	74	5	26	70	0	32
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1756	1398	1800	1525	1381	0	1525
Q Serve(g_s), s	1.5	0.0	0.0	0.0	16.9	16.9	6.2	0.3	1.8	5.5	0.0	2.3
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.0	16.9	16.9	12.0	0.3	1.8	5.8	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	83	2723		1	1252	1306	158	213	181	223	0	181
V/C Ratio(X)	0.51	0.60		0.00	0.48	0.48	0.47	0.02	0.14	0.31	0.00	0.18
Avail Cap(c_a), veh/h	275	2723		77	1252	1306	470	615	521	537	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.00	0.00	0.34	0.34	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	0.0	6.1	6.1	54.8	46.8	47.4	49.3	0.0	47.6
Incr Delay (d2), s/veh	3.3	0.9	0.0	0.0	0.4	0.4	1.6	0.0	0.3	0.6	0.0	0.3
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	0.7	0.3	0.0	0.0	5.4	5.6	2.3	0.1	0.7	2.0	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	0.9	0.0	0.0	6.5	6.5	56.4	46.8	47.7	49.9	0.0	48.0
LnGrp LOS	E	A			A	A	E	D	D	D		D
Approach Vol, veh/h		1676			1219			105			102	
Approach Delay, s/veh		2.4			6.5			53.8			49.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	94.8		18.2	0.0	101.8		18.2				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	3.5	18.9		14.0	0.0	2.0		7.8				
Green Ext Time (p_c), s	0.0	12.6		0.2	0.0	25.7		0.4				

Intersection Summary	
HCM 7th Control Delay, s/veh	7.3
HCM 7th LOS	A

Notes

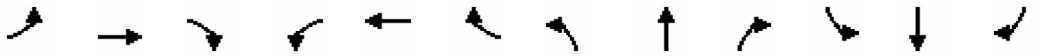
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1602	1148	25	30	50
Future Volume (veh/h)	50	1602	1148	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	53	1704	1221	27	32	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	846	4252	1336	30	84	74
Arrive On Green	0.43	0.87	0.79	0.79	0.05	0.05
Sat Flow, veh/h	1701	5036	3456	74	1714	1525
Grp Volume(v), veh/h	53	1704	610	638	32	53
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1759	1714	1525
Q Serve(g_s), s	0.0	8.2	32.7	32.7	2.2	4.1
Cycle Q Clear(g_c), s	0.0	8.2	32.7	32.7	2.2	4.1
Prop In Lane	1.00			0.04	1.00	1.00
Lane Grp Cap(c), veh/h	846	4252	668	698	84	74
V/C Ratio(X)	0.06	0.40	0.91	0.91	0.38	0.71
Avail Cap(c_a), veh/h	846	4252	975	1018	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	13.6	1.5	10.8	10.9	55.3	56.2
Incr Delay (d2), s/veh	0.0	0.3	17.4	16.8	1.1	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.3	7.3	7.6	1.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	13.6	1.8	28.2	27.7	56.4	60.9
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1757	1248		85	
Approach Delay, s/veh		2.1	27.9		59.2	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	57.0	53.1				110.2	9.8
Change Period (Y+Rc), s	5.5	5.5				5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5				82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	34.7				10.2	6.1
Green Ext Time (p_c), s	0.0	12.9				27.6	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	14.1
HCM 7th LOS	B



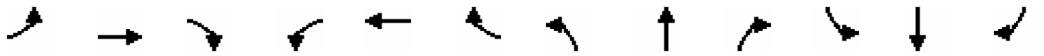
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	597	855	0	0	1138	65	15	0	822	0	0	0
Future Volume (veh/h)	597	855	0	0	1138	65	15	0	822	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	649	929	0	0	1237	0	16	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3078	0	0	1875		23	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	649	929	0	0	1237	0	16	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	15.8	0.0	0.0	30.9	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	15.8	0.0	0.0	30.9	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3078	0	0	1875		23	0				
V/C Ratio(X)	1.25	0.30	0.00	0.00	0.66		0.68	0.00				
Avail Cap(c_a), veh/h	517	3078	0	0	1875		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	18.6	0.0	58.9	0.0	0.0			
Incr Delay (d2), s/veh	116.0	0.0	0.0	0.0	1.8	0.0	29.6	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	32.7	6.4	0.0	0.0	12.1	0.0	0.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	163.8	5.3	0.0	0.0	20.4	0.0	88.5	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1578			1237			16				
Approach Delay, s/veh		70.5			20.4			88.5				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.3		5.7		114.3			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	32.9		3.1		17.8			
Green Ext Time (p_c), s	0.0	6.3		0.0		10.2			

Intersection Summary		
HCM 7th Control Delay, s/veh		48.7
HCM 7th LOS		D

Notes

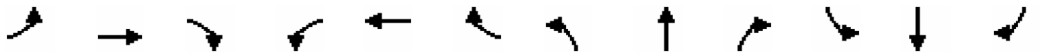
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1402	395	518	660	0	0	0	0	85	1	742
Future Volume (vph)	0	1402	395	518	660	0	0	0	0	85	1	742
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1694	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1694	1515
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1445	407	534	680	0	0	0	0	88	1	765
RTOR Reduction (vph)	0	0	236	0	0	0	0	0	0	0	0	41
Lane Group Flow (vph)	0	1445	171	534	680	0	0	0	0	0	89	724
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.5	50.5	34.4	38.9						20.1	71.6
Effective Green, g (s)		50.5	50.5	34.4	38.9						20.1	71.6
Actuated g/C Ratio		0.42	0.42	0.29	0.32						0.17	0.60
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1424	637	480	1086						283	903
v/s Ratio Prot		c0.43		c0.32	0.20							c0.48
v/s Ratio Perm			0.11								0.05	
v/c Ratio		1.01	0.27	1.11	0.63						0.31	0.80
Uniform Delay, d1		34.8	22.7	42.8	34.4						43.9	18.7
Progression Factor		0.90	1.56	0.58	0.33						1.00	1.00
Incremental Delay, d2		22.7	0.7	53.8	0.2						0.7	5.5
Delay (s)		54.0	36.1	78.6	11.7						44.6	24.2
Level of Service		D	D	E	B						D	C
Approach Delay (s/veh)		50.0			41.1			0.0			26.3	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	42.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	826	270	626	606	175	145	281	816	150	280	81
Future Volume (veh/h)	52	826	270	626	606	175	145	281	816	150	280	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	54	860	0	652	631	0	151	293	850	156	292	84
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	68	1222		713	1825		177	264	964	183	372	105
Arrive On Green	0.04	0.36	0.00	0.36	0.91	0.00	0.10	0.15	0.15	0.11	0.14	0.14
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2592	1701	2602	734
Grp Volume(v), veh/h	54	860	0	652	631	0	151	293	850	156	188	188
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1296	1701	1697	1639
Q Serve(g_s), s	3.8	26.1	0.0	22.8	3.1	0.0	10.5	17.7	17.7	10.8	12.8	13.3
Cycle Q Clear(g_c), s	3.8	26.1	0.0	22.8	3.1	0.0	10.5	17.7	17.7	10.8	12.8	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	68	1222		713	1825		177	264	964	183	242	234
V/C Ratio(X)	0.79	0.70		0.91	0.35		0.85	1.11	0.88	0.85	0.78	0.80
Avail Cap(c_a), veh/h	85	1222		805	1825		241	264	964	340	339	328
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.62	0.62	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	32.9	0.0	37.1	2.8	0.0	52.8	51.1	35.8	52.6	49.6	49.8
Incr Delay (d2), s/veh	25.6	3.4	0.0	9.5	0.3	0.0	17.3	87.9	9.5	4.3	4.5	6.2
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	2.1	11.2	0.0	8.9	0.9	0.0	5.3	14.4	12.7	4.8	5.7	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	82.7	36.3	0.0	46.6	3.1	0.0	70.2	139.0	45.3	56.9	54.1	56.0
LnGrp LOS	F	D		D	A		E	F	D	E	D	E
Approach Vol, veh/h		914			1283			1294			532	
Approach Delay, s/veh		39.1			25.2			69.4			55.6	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	70.5	16.9	22.7	31.7	48.7	17.5	22.1
Change Period (Y+Rc), s	5.0	5.5	4.0	5.0	5.5	* 5.5	5.0	* 5
Max Green Setting (Gmax), s	6.0	53.5	24.0	17.0	29.5	* 30	17.0	* 24
Max Q Clear Time (g_c+I1), s	5.8	5.1	12.8	19.7	24.8	28.1	12.5	15.3
Green Ext Time (p_c), s	0.0	5.9	0.1	0.0	1.4	1.2	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	46.6
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

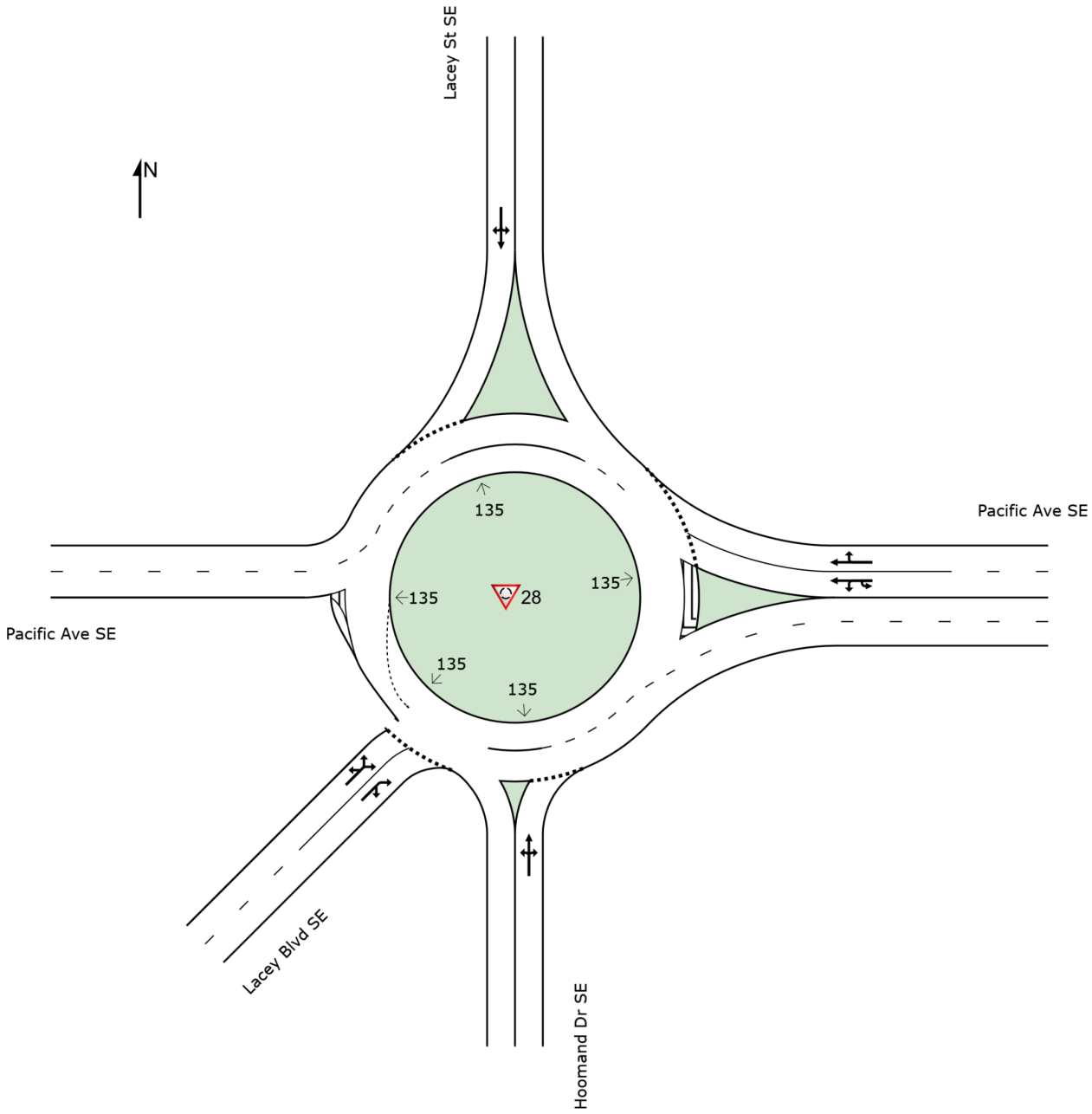
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	73	2.0	73	2.0	0.179	12.7	LOS B	0.7	17.2	0.59	0.77	0.59	33.3
8	T1	All MCs	4	2.0	4	2.0	0.179	5.7	LOS A	0.7	17.2	0.59	0.77	0.59	34.0
18	R2	All MCs	73	2.0	73	2.0	0.179	6.0	LOS A	0.7	17.2	0.59	0.77	0.59	33.7
Approach			150	2.0	150	2.0	0.179	9.2	LOS A	0.7	17.2	0.59	0.77	0.59	33.5
East: Pacific Ave SE															
1u	U	All MCs	3	1.0	3	1.0	0.472	13.9	LOS B	3.4	85.9	0.44	0.46	0.44	34.4
1	L2	All MCs	94	1.0	94	1.0	0.472	11.1	LOS B	3.4	85.9	0.44	0.46	0.44	34.5
6	T1	All MCs	1249	1.0	1249	1.0	0.472	4.1	LOS A	3.5	88.1	0.42	0.42	0.42	35.6
16	R2	All MCs	63	1.0	63	1.0	0.472	4.4	LOS A	3.5	88.1	0.41	0.40	0.41	35.4
Approach			1408	1.0	1408	1.0	0.472	4.6	LOS A	3.5	88.1	0.42	0.42	0.42	35.5
North: Lacey St SE															
7	L2	All MCs	21	2.0	21	2.0	0.094	13.2	LOS B	0.4	9.3	0.63	0.77	0.63	33.6
4	T1	All MCs	5	2.0	5	2.0	0.094	6.3	LOS A	0.4	9.3	0.63	0.77	0.63	34.3
14	R2	All MCs	42	2.0	42	2.0	0.094	6.5	LOS A	0.4	9.3	0.63	0.77	0.63	34.0
Approach			68	2.0	68	2.0	0.094	8.5	LOS A	0.4	9.3	0.63	0.77	0.63	33.9
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	36	1.0	36	1.0	0.444	12.1	LOS B	2.7	67.7	0.33	0.43	0.33	35.1
5ax	L1	All MCs	52	1.0	52	1.0	0.444	9.4	LOS A	2.7	67.7	0.33	0.43	0.33	35.1
12ax	R1	All MCs	1097	1.0	1097	1.0	0.444	3.6	LOS A	2.7	68.8	0.32	0.41	0.32	36.1
12bx	R3	All MCs	62	1.0	62	1.0	0.444	4.2	LOS A	2.7	68.8	0.31	0.39	0.31	35.8
Approach			1248	1.0	1248	1.0	0.444	4.1	LOS A	2.7	68.8	0.32	0.41	0.32	36.0
All Vehicles			2874	1.1	2874	1.1	0.472	4.7	LOS A	3.5	88.1	0.39	0.44	0.39	35.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	12.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	226	4	75	241	45	10	30	150	20	20	3
Future Vol, veh/h	5	226	4	75	241	45	10	30	150	20	20	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	6	257	5	85	274	51	11	34	170	23	23	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.6	14.7	10.3	9.9
HCM LOS	B	B	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	2%	21%	47%
Vol Thru, %	75%	0%	96%	67%	47%
Vol Right, %	0%	100%	2%	12%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	150	235	361	43
LT Vol	10	0	5	75	20
Through Vol	30	0	226	241	20
RT Vol	0	150	4	45	3
Lane Flow Rate	45	170	267	410	49
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.082	0.266	0.39	0.574	0.085
Departure Headway (Hd)	6.458	5.619	5.254	5.038	6.227
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	555	639	684	718	574
Service Time	4.198	3.359	3.29	3.07	4.28
HCM Lane V/C Ratio	0.081	0.266	0.39	0.571	0.085
HCM Control Delay, s/veh	9.8	10.4	11.6	14.7	9.9
HCM Lane LOS	A	B	B	B	A
HCM 95th-tile Q	0.3	1.1	1.9	3.7	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	158	61	530	210	51	375
Future Volume (veh/h)	158	61	530	210	51	375
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	163	63	546	216	53	387
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	237	211	886	751	93	1172
Arrive On Green	0.14	0.14	0.49	0.49	0.05	0.65
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	163	63	546	216	53	387
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	3.9	1.6	9.5	3.6	1.3	4.1
Cycle Q Clear(g_c), s	3.9	1.6	9.5	3.6	1.3	4.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	237	211	886	751	93	1172
V/C Ratio(X)	0.69	0.30	0.62	0.29	0.57	0.33
Avail Cap(c_a), veh/h	712	634	886	751	199	1172
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.6	16.6	8.0	6.5	19.8	3.3
Incr Delay (d2), s/veh	3.5	0.8	3.2	1.0	5.3	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.5	3.3	1.0	0.6	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	21.1	17.4	11.2	7.4	25.1	4.1
LnGrp LOS	C	B	B	A	C	A
Approach Vol, veh/h	226		762			440
Approach Delay, s/veh	20.1		10.1			6.6
Approach LOS	C		B			A

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	6.8	25.7				32.5	10.5
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	3.3	11.5				6.1	5.9
Green Ext Time (p_c), s	0.0	2.5				2.4	0.5

Intersection Summary			
HCM 7th Control Delay, s/veh		10.6	
HCM 7th LOS		B	

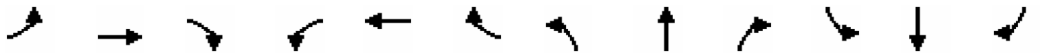
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	623	280	255	523	65	185	431	225	95	275	108
Future Volume (veh/h)	164	623	280	255	523	65	185	431	225	95	275	108
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	176	670	301	274	562	70	199	463	242	102	296	116
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	167	758	330	305	1026	453	374	785	325	297	428	164
Arrive On Green	0.10	0.22	0.22	0.18	0.31	0.31	0.22	0.22	0.22	0.17	0.17	0.17
Sat Flow, veh/h	1701	3393	1476	1674	3340	1477	1674	3516	1457	1701	2452	937
Grp Volume(v), veh/h	176	670	301	274	562	70	199	463	242	102	214	198
Grp Sat Flow(s),veh/h/ln	1701	1697	1476	1674	1670	1477	1674	1758	1457	1701	1786	1604
Q Serve(g_s), s	10.0	19.4	20.2	16.3	14.3	3.5	10.7	12.0	15.7	5.4	11.4	11.8
Cycle Q Clear(g_c), s	10.0	19.4	20.2	16.3	14.3	3.5	10.7	12.0	15.7	5.4	11.4	11.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	167	758	330	305	1026	453	374	785	325	297	312	280
V/C Ratio(X)	1.05	0.88	0.91	0.90	0.55	0.15	0.53	0.59	0.74	0.34	0.68	0.71
Avail Cap(c_a), veh/h	167	768	334	362	1150	508	593	1245	516	569	597	536
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.8	38.2	38.5	40.7	29.3	25.6	34.8	35.3	36.8	36.8	39.3	39.5
Incr Delay (d2), s/veh	84.0	11.6	27.8	21.3	0.3	0.1	0.9	0.5	2.5	0.5	2.0	2.5
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	8.1	9.2	9.7	8.4	5.7	1.2	4.4	5.1	5.8	2.3	5.1	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	129.8	49.8	66.3	62.0	29.7	25.7	35.7	35.9	39.3	37.3	41.3	42.0
LnGrp LOS	F	D	E	E	C	C	D	D	D	D	D	D
Approach Vol, veh/h		1147			906			904			514	
Approach Delay, s/veh		66.4			39.1			36.7			40.8	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	36.2		27.7	23.5	27.7		22.8				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	12.0	16.3		17.7	18.3	22.2		13.8				
Green Ext Time (p_c), s	0.0	3.2		3.5	0.2	0.4		2.2				

Intersection Summary	
HCM 7th Control Delay, s/veh	47.8
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



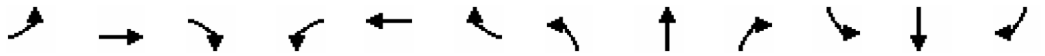
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	730	0	0	1020	297	175	0	490	0	0	0
Future Volume (veh/h)	221	730	0	0	1020	297	175	0	490	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	238	785	0	0	1097	0	188	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	271	2547	0	0	1805		233	0				
Arrive On Green	0.16	0.75	0.00	0.00	0.54	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	238	785	0	0	1097	0	188	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	12.3	6.8	0.0	0.0	20.2	0.0	9.7	0.0	0.0			
Cycle Q Clear(g_c), s	12.3	6.8	0.0	0.0	20.2	0.0	9.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	271	2547	0	0	1805		233	0				
V/C Ratio(X)	0.88	0.31	0.00	0.00	0.61		0.81	0.00				
Avail Cap(c_a), veh/h	283	2547	0	0	1805		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.0	3.6	0.0	0.0	14.4	0.0	37.6	0.0	0.0			
Incr Delay (d2), s/veh	24.5	0.3	0.0	0.0	1.5	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.9	1.8	0.0	0.0	7.5	0.0	4.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.5	4.0	0.0	0.0	15.9	0.0	42.5	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1023			1097			188				
Approach Delay, s/veh		17.3			15.9			42.5				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	19.3	53.2		17.4		72.6						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0						
Max Q Clear Time (g_c+I1), s	14.3	22.2		11.7		8.8						
Green Ext Time (p_c), s	0.0	5.5		0.7		5.3						

Intersection Summary												
HCM 7th Control Delay, s/veh			18.7									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	726	230	0	690	0	0	0	0	225	1	361
Future Volume (veh/h)	0	726	230	0	690	0	0	0	0	225	1	361
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	756	0	0	719	0				234	1	376
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	2082		0	2066	0				463	2	413
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	3572	0	0	3544	0				1681	7	1502
Grp Volume(v), veh/h	0	756	0	0	719	0				235	0	376
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	10.0	0.0	0.0	9.4	0.0				10.6	0.0	21.8
Cycle Q Clear(g_c), s	0.0	10.0	0.0	0.0	9.4	0.0				10.6	0.0	21.8
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2082		0	2066	0				465	0	413
V/C Ratio(X)	0.00	0.36		0.00	0.35	0.00				0.51	0.00	0.91
Avail Cap(c_a), veh/h	0	2082		0	2066	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.6	0.0	0.0	8.5	0.0				27.5	0.0	31.5
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.5	0.0				0.6	0.0	19.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	0.0	0.0	3.2	0.0				4.2	0.0	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	9.1	0.0	0.0	9.0	0.0				28.1	0.0	51.4
LnGrp LOS		A			A					C		D
Approach Vol, veh/h		756			719						611	
Approach Delay, s/veh		9.1			9.0						42.4	
Approach LOS		A			A						D	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		60.2				60.2		29.8				
Change Period (Y+Rc), s		5.0				5.0		5.0				
Max Green Setting (Gmax), s		52.0				52.0		28.0				
Max Q Clear Time (g_c+I1), s		11.4				12.0		23.8				
Green Ext Time (p_c), s		4.7				5.0		1.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			18.8									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	672	108	0	950	0	49
Future Vol, veh/h	672	108	0	950	0	49
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	707	114	0	1000	0	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1264	411
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	500	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	161	590
Stage 1	-	-	0	-	420	-
Stage 2	-	-	0	-	575	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	161	590
Mov Cap-2 Maneuver	-	-	-	-	161	-
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	575	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.68
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	590	-	-	-
HCM Lane V/C Ratio	0.087	-	-	-
HCM Ctrl Dly (s/v)	11.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	662	49	0	751	0	69
Future Vol, veh/h	662	49	0	751	0	69
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, %	4	4	3	3	2	2
Mvmt Flow	704	52	0	799	0	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1130	378
Stage 1	-	-	-	-	730	-
Stage 2	-	-	-	-	399	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	197	620
Stage 1	-	-	0	-	438	-
Stage 2	-	-	0	-	646	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	197	620
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	646	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.59
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	620	-	-	-
HCM Lane V/C Ratio	0.118	-	-	-
HCM Ctrl Dly (s/v)	11.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	0	2207	2312	10
Future Vol, veh/h	0	20	0	2207	2312	10
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	0	21	0	2299	2408	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1209	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	150	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	150	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	32.81	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	150	-	-
HCM Lane V/C Ratio	-	0.139	-	-
HCM Ctrl Dly (s/v)	-	32.8	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	60	30	514	829	90
Future Vol, veh/h	55	60	30	514	829	90
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	57	63	31	535	864	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1508	910	957	0	-	0
Stage 1	910	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	134	334	727	-	-	-
Stage 1	394	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	128	334	727	-	-	-
Mov Cap-2 Maneuver	260	-	-	-	-	-
Stage 1	377	-	-	-	-	-
Stage 2	551	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	25.43	0.56	0
HCM LOS	D		

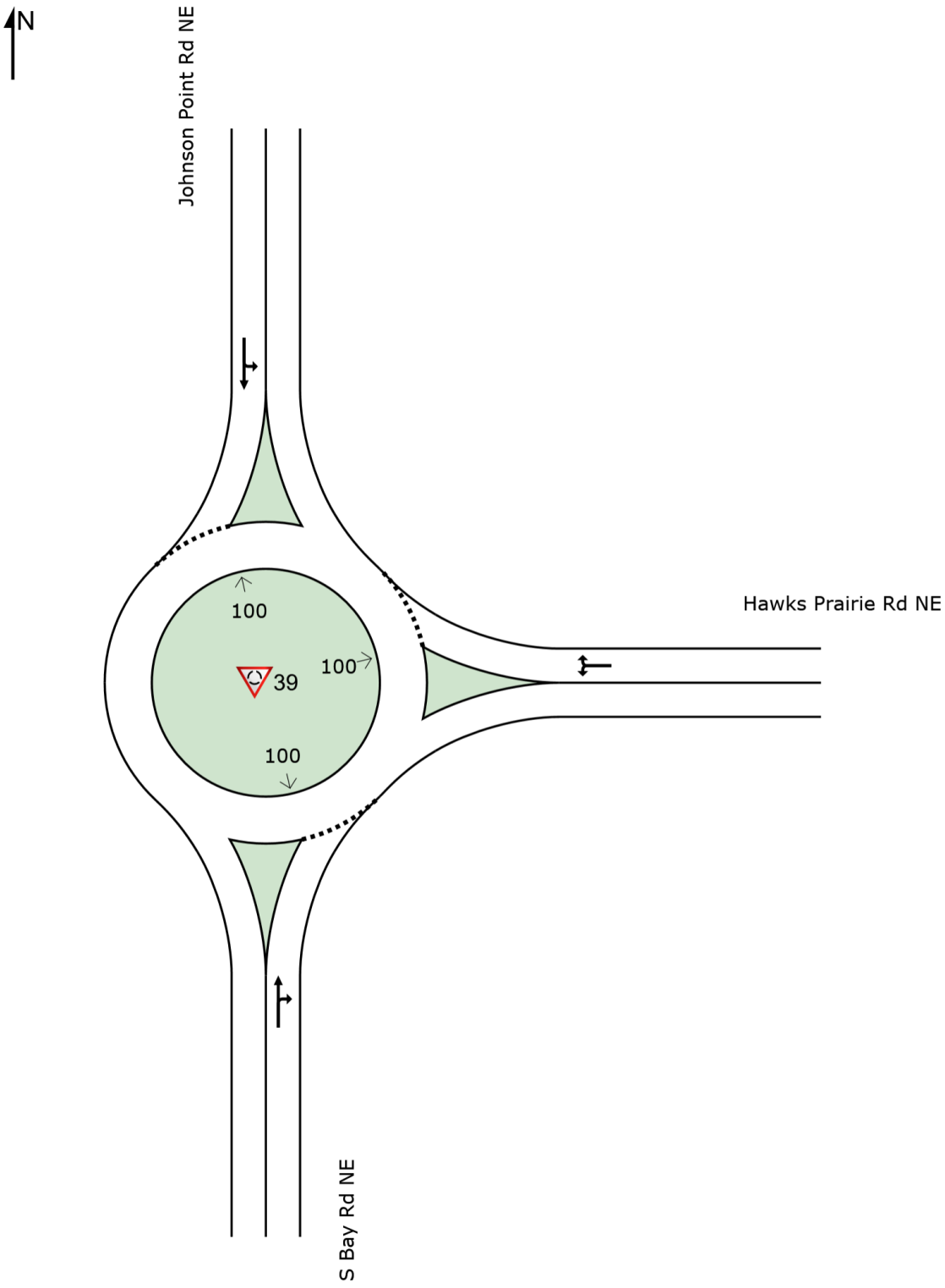
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	727	-	294	-	-
HCM Lane V/C Ratio	0.043	-	0.408	-	-
HCM Ctrl Dly (s/v)	10.2	-	25.4	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.9	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 2 Without CD Rd - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 w/o CD Rd PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	224	0.0	224	0.0	0.352	4.0	LOS A	2.2	55.7	0.19	0.41	0.19	36.2
18	R2	All MCs	277	0.0	277	0.0	0.352	4.1	LOS A	2.2	55.7	0.19	0.41	0.19	35.9
Approach			501	0.0	501	0.0	0.352	4.0	LOS A	2.2	55.7	0.19	0.41	0.19	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	256	0.0	256	0.0	0.239	10.6	LOS B	1.2	31.1	0.38	0.62	0.38	32.7
16	R2	All MCs	47	0.0	47	0.0	0.239	4.8	LOS A	1.2	31.1	0.38	0.62	0.38	33.1
Approach			303	0.0	303	0.0	0.239	9.7	LOS A	1.2	31.1	0.38	0.62	0.38	32.8
North: Johnson Point Rd NE															
7	L2	All MCs	42	0.0	42	0.0	0.157	10.7	LOS B	0.8	20.1	0.40	0.51	0.40	34.2
4	T1	All MCs	151	0.0	151	0.0	0.157	4.7	LOS A	0.8	20.1	0.40	0.51	0.40	35.0
Approach			193	0.0	193	0.0	0.157	6.0	LOS A	0.8	20.1	0.40	0.51	0.40	34.8
All Vehicles			997	0.0	997	0.0	0.352	6.1	LOS A	2.2	55.7	0.29	0.49	0.29	34.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

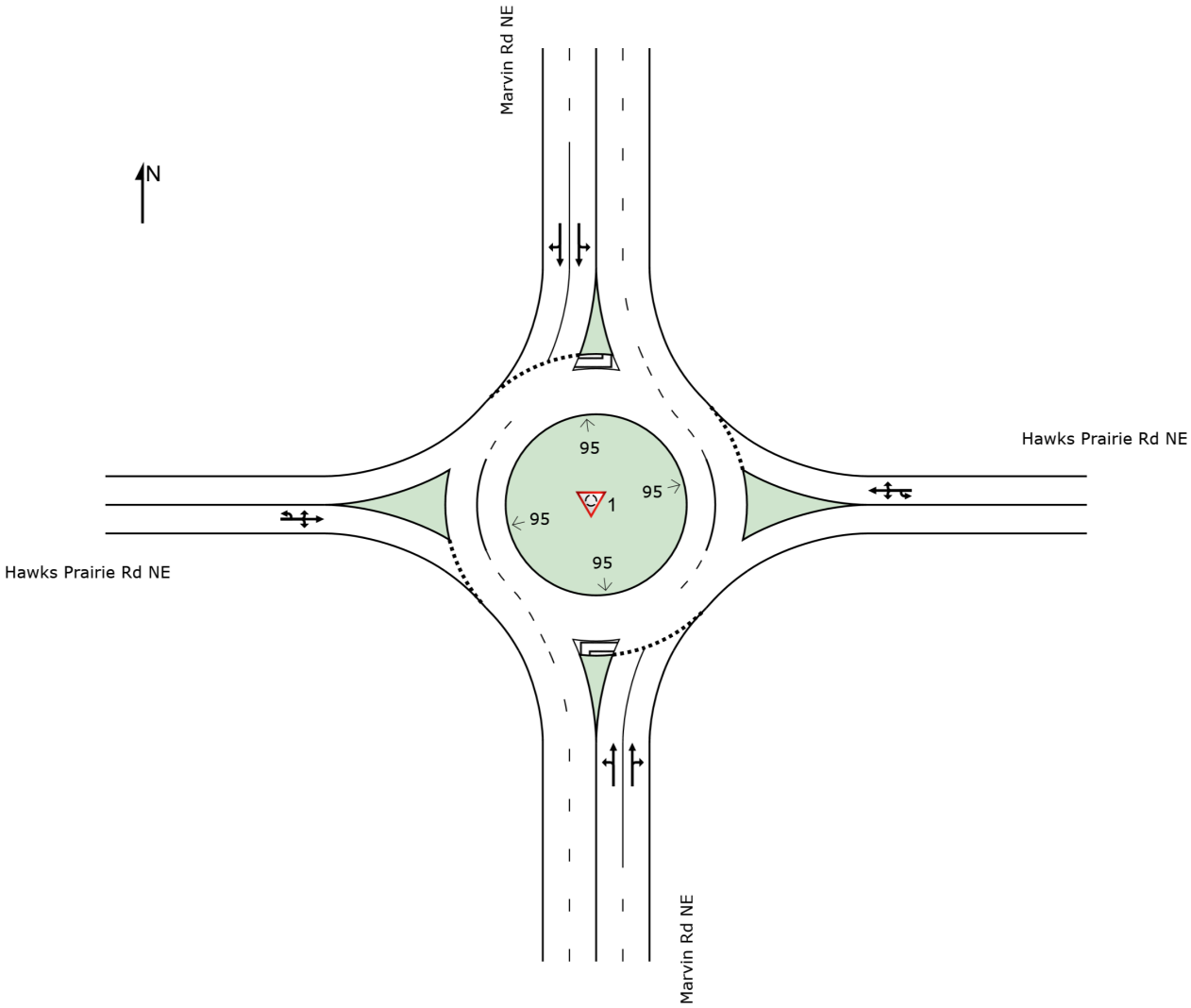
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	438	0.0	438	0.0	0.329	10.4	LOS B	2.1	53.3	0.37	0.61	0.37	32.3
8	T1	All MCs	483	0.0	483	0.0	0.316	4.6	LOS A	2.1	51.9	0.35	0.42	0.35	35.4
18	R2	All MCs	6	0.0	6	0.0	0.316	4.7	LOS A	2.1	51.9	0.35	0.42	0.35	35.0
Approach			927	0.0	927	0.0	0.329	7.3	LOS A	2.1	53.3	0.36	0.51	0.36	33.8
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.336	15.1	LOS B	1.4	35.2	0.61	0.79	0.63	32.5
1	L2	All MCs	156	3.0	156	3.0	0.336	12.7	LOS B	1.4	35.2	0.61	0.79	0.63	32.5
6	T1	All MCs	83	3.0	83	3.0	0.336	6.9	LOS A	1.4	35.2	0.61	0.79	0.63	33.2
16	R2	All MCs	28	3.0	28	3.0	0.336	6.9	LOS A	1.4	35.2	0.61	0.79	0.63	32.9
Approach			269	3.0	269	3.0	0.336	10.3	LOS B	1.4	35.2	0.61	0.79	0.63	32.8
North: Marvin Rd NE															
7	L2	All MCs	11	2.0	11	2.0	0.248	13.8	LOS B	1.5	37.8	0.70	0.66	0.70	33.3
4	T1	All MCs	384	2.0	384	2.0	0.248	7.7	LOS A	1.6	41.7	0.70	0.64	0.70	34.2
14	R2	All MCs	78	2.0	78	2.0	0.248	7.3	LOS A	1.6	41.7	0.70	0.63	0.70	33.9
Approach			473	2.0	473	2.0	0.248	7.8	LOS A	1.6	41.7	0.70	0.64	0.70	34.1
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.268	13.9	LOS B	1.1	28.5	0.51	0.68	0.51	33.4
5	L2	All MCs	106	3.0	106	3.0	0.268	11.5	LOS B	1.1	28.5	0.51	0.68	0.51	33.4
2	T1	All MCs	17	3.0	17	3.0	0.268	5.8	LOS A	1.1	28.5	0.51	0.68	0.51	34.1
12	R2	All MCs	122	3.0	122	3.0	0.268	5.7	LOS A	1.1	28.5	0.51	0.68	0.51	33.8
Approach			247	3.0	247	3.0	0.268	8.3	LOS A	1.1	28.5	0.51	0.68	0.51	33.6
All Vehicles			1916	1.3	1916	1.3	0.336	8.0	LOS A	2.1	53.3	0.50	0.60	0.50	33.7

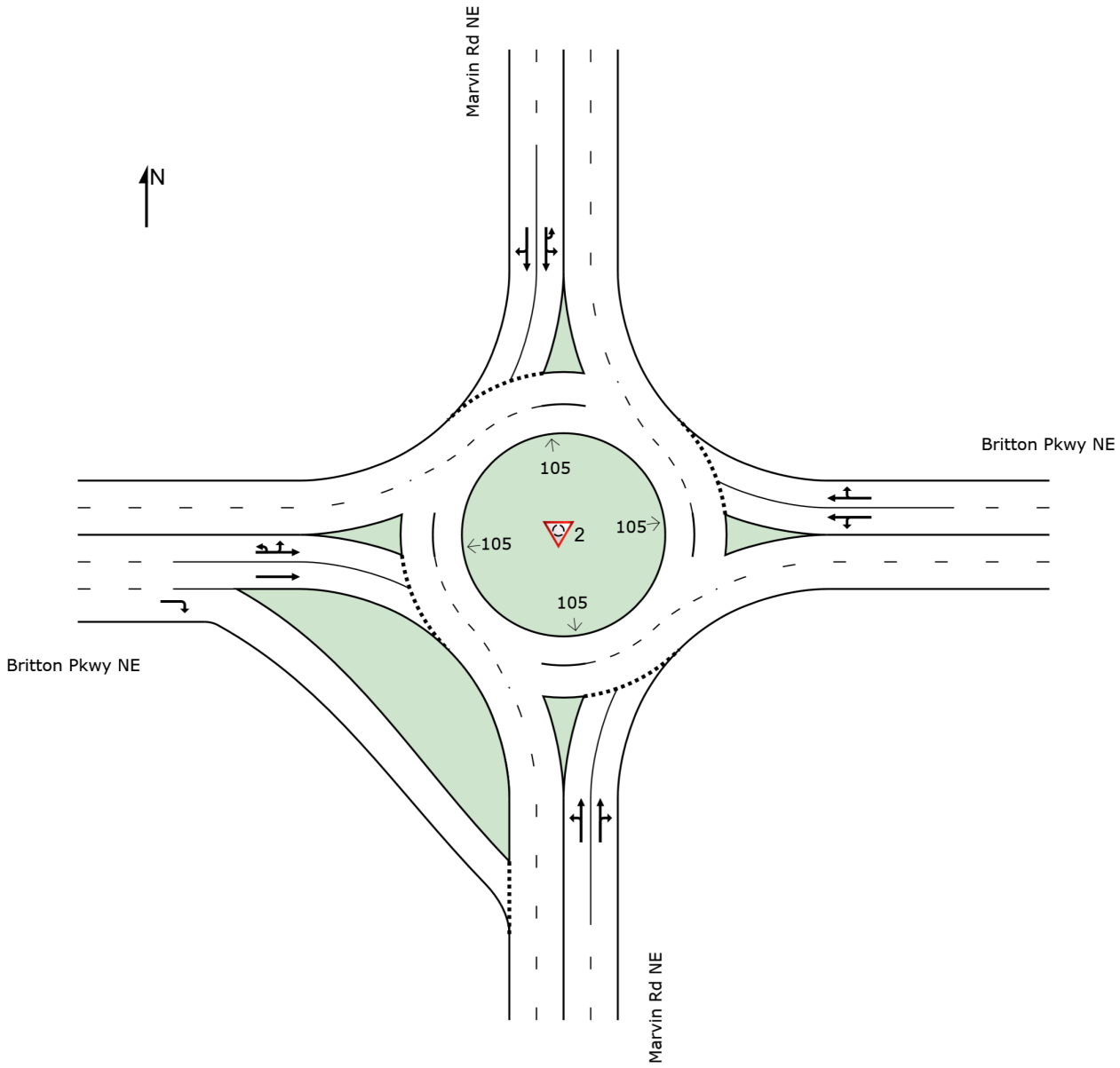
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	405	2.0	405	2.0	0.665	13.2	LOS B	5.2	133.2	0.73	0.80	0.86	32.3
8	T1	All MCs	990	2.0	990	2.0	0.665	6.8	LOS A	5.4	136.8	0.71	0.70	0.83	33.8
18	R2	All MCs	26	2.0	26	2.0	0.665	6.7	LOS A	5.4	136.8	0.71	0.67	0.82	33.9
Approach			1421	2.0	1421	2.0	0.665	8.6	LOS A	5.4	136.8	0.72	0.73	0.83	33.4
East: Britton Pkwy NE															
1	L2	All MCs	578	4.0	578	4.0	0.855	22.7	LOS D	8.6	220.9	0.96	1.22	1.75	28.0
6	T1	All MCs	336	4.0	336	4.0	0.792	17.1	LOS B	5.8	149.9	0.92	1.13	1.52	30.3
16	R2	All MCs	42	4.0	42	4.0	0.792	17.2	LOS B	5.8	149.9	0.92	1.13	1.52	30.1
Approach			956	4.0	956	4.0	0.855	20.5	LOS C	8.6	220.9	0.94	1.19	1.66	28.8
North: Marvin Rd NE															
7u	U	All MCs	11	4.0	11	4.0	1.068	72.5	LOS F	23.0	593.6	1.00	1.95	3.91	18.4
7	L2	All MCs	63	4.0	63	4.0	1.068	70.0	LOS F	23.0	593.6	1.00	1.95	3.91	18.4
4	T1	All MCs	974	4.0	974	4.0	1.068	62.0	LOS F	29.4	758.7	1.00	2.04	4.06	18.9
14	R2	All MCs	140	4.0	140	4.0	1.068	60.4	LOS F	29.4	758.7	1.00	2.11	4.17	19.1
Approach			1187	4.0	1187	4.0	1.068	62.3	LOS E	29.4	758.7	1.00	2.04	4.06	18.9
West: Britton Pkwy NE															
5u	U	All MCs	10	5.0	10	5.0	0.307	18.0	LOS B	1.6	42.0	0.84	0.89	0.85	30.7
5	L2	All MCs	140	5.0	140	5.0	0.307	15.4	LOS B	1.6	42.0	0.84	0.89	0.85	30.7
2	T1	All MCs	231	5.0	231	5.0	0.307	8.8	LOS A	2.1	54.7	0.93	0.80	0.93	33.3
12	R2	All MCs	484	5.0	484	5.0	0.618	12.0	LOS B	5.6	144.5	0.98	0.98	1.31	32.0
Approach			866	5.0	866	5.0	0.618	11.8	LOS B	5.6	144.5	0.94	0.92	1.13	32.1
All Vehicles			4430	3.6	4430	3.6	1.068	26.2	LOS C	29.4	758.7	0.88	1.22	1.93	26.8

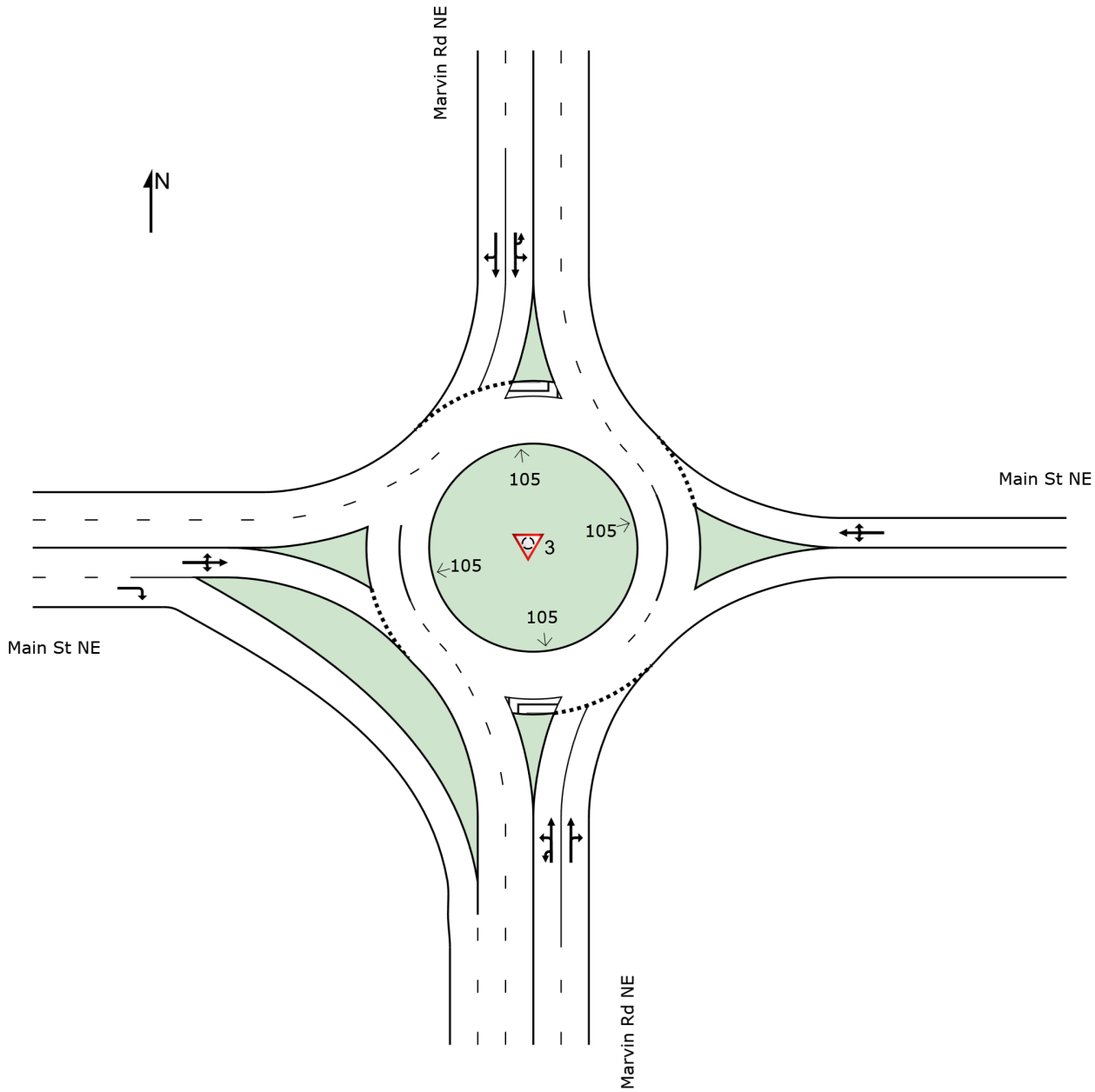
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

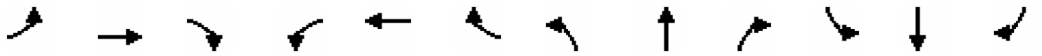
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	280	3.0	280	3.0	0.688	12.9	LOS B	8.4	214.5	0.41	0.52	0.41	27.0
3	L2	All MCs	269	3.0	269	3.0	0.688	10.4	LOS B	8.4	214.5	0.41	0.52	0.41	30.8
8	T1	All MCs	1449	3.0	1449	3.0	0.688	4.3	LOS A	8.4	214.5	0.38	0.42	0.38	30.3
18	R2	All MCs	77	3.0	77	3.0	0.688	4.5	LOS A	8.3	213.7	0.37	0.38	0.37	33.3
Approach			2076	3.0	2076	3.0	0.688	6.3	LOS A	8.4	214.5	0.39	0.45	0.39	30.1
East: Main St NE															
1	L2	All MCs	115	0.0	115	0.0	0.255	15.5	LOS B	1.2	29.4	0.78	0.90	0.78	28.5
6	T1	All MCs	1	0.0	1	0.0	0.255	9.5	LOS A	1.2	29.4	0.78	0.90	0.78	31.6
16	R2	All MCs	27	0.0	27	0.0	0.255	9.5	LOS A	1.2	29.4	0.78	0.90	0.78	29.5
Approach			144	0.0	144	0.0	0.255	14.3	LOS B	1.2	29.4	0.78	0.90	0.78	28.7
North: Marvin Rd NE															
7u	U	All MCs	3	3.0	3	3.0	1.085	75.1	LOS F	43.9	1123.5	1.00	2.29	4.20	12.0
7	L2	All MCs	22	3.0	22	3.0	1.085	72.6	LOS F	43.9	1123.5	1.00	2.29	4.20	15.4
4	T1	All MCs	1975	3.0	1975	3.0	1.085	64.3	LOS F	54.1	1383.8	1.00	2.37	4.26	11.5
14	R2	All MCs	42	3.0	42	3.0	1.085	62.7	LOS F	54.1	1383.8	1.00	2.44	4.31	16.1
Approach			2042	3.0	2042	3.0	1.085	64.4	LOS E	54.1	1383.8	1.00	2.38	4.26	11.6
West: Main St NE															
5	L2	All MCs	27	2.0	27	2.0	0.170	17.8	LOS B	1.0	25.6	0.95	0.89	0.95	28.9
2	T1	All MCs	1	2.0	1	2.0	0.170	11.7	LOS B	1.0	25.6	0.95	0.89	0.95	31.6
12	R2	All MCs	315	2.0	315	2.0	0.170	4.5	LOS A	1.0	25.6	0.11	0.49	0.11	34.4
Approach			344	2.0	344	2.0	0.170	5.6	LOS A	1.0	25.6	0.18	0.52	0.18	33.8
All Vehicles			4605	2.8	4605	2.8	1.085	32.2	LOS C	54.1	1383.8	0.65	1.32	2.10	18.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	525	0	0	805	0	1414	1279	0	1826	639
Future Volume (vph)	0	0	525	0	0	805	0	1414	1279	0	1826	639
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.96	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3053	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3053	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	547	0	0	839	0	1473	1332	0	1902	666
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	547	0	0	839	0	1939	866	0	1902	666
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			57.5			53.5		55.5	120.0		50.5	120.0
Effective Green, g (s)			57.5			53.5		55.5	120.0		50.5	120.0
Actuated g/C Ratio			0.48			0.45		0.46	1.00		0.42	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1265			1177		1412	1335		1370	1457
v/s Ratio Prot			0.21			0.32		c0.64			c0.58	
v/s Ratio Perm									0.65			0.46
v/c Ratio			0.43			0.71		1.37	0.65		1.39	0.46
Uniform Delay, d1			20.5			27.0		32.3	0.0		34.8	0.0
Progression Factor			1.00			1.00		0.88	1.00		1.00	1.00
Incremental Delay, d2			0.2			2.1		170.0	1.1		179.3	1.0
Delay (s)			20.8			29.1		198.3	1.1		214.1	1.0
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		20.8			29.1			137.4			158.8	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	122.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	145	0	0	861	0	1832	250	0	1808	549
Future Volume (vph)	0	0	145	0	0	861	0	1832	250	0	1808	549
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	0	146	0	0	870	0	1851	253	0	1826	555
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	146	0	0	870	0	1851	253	0	1826	555
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			46.5			64.5		44.5	120.0		62.5	120.0
Effective Green, g (s)			46.5			64.5		44.5	120.0		62.5	120.0
Actuated g/C Ratio			0.39			0.54		0.37	1.00		0.52	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			569			1365		1786	1500		1729	1455
v/s Ratio Prot			0.10			0.34		c0.38			c0.55	
v/s Ratio Perm									0.17			0.38
v/c Ratio			0.26			0.64		1.04	0.17		1.06	0.38
Uniform Delay, d1			25.0			19.5		37.8	0.0		28.7	0.0
Progression Factor			1.00			1.00		0.76	1.00		0.34	1.00
Incremental Delay, d2			0.2			1.0		24.4	0.1		26.9	0.1
Delay (s)			25.2			20.5		53.0	0.1		36.7	0.1
Level of Service			C			C		D	A		D	A
Approach Delay (s/veh)		25.2			20.5			46.7			28.2	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	468	200	150	65	60	303	60	1281	60	245	1268	320
Future Volume (veh/h)	468	200	150	65	60	303	60	1281	60	245	1268	320
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	488	208	156	68	62	316	62	1334	62	255	1321	333
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	561	213	160	71	165	354	133	1322	61	241	1584	689
Arrive On Green	0.17	0.22	0.22	0.04	0.09	0.09	0.08	0.40	0.40	0.14	0.47	0.47
Sat Flow, veh/h	3300	946	710	1701	1786	1504	1688	3272	152	1701	3393	1475
Grp Volume(v), veh/h	488	0	364	68	62	316	62	685	711	255	1321	333
Grp Sat Flow(s),veh/h/ln	1650	0	1656	1701	1786	1504	1688	1683	1740	1701	1697	1475
Q Serve(g_s), s	17.3	0.0	26.2	4.8	3.9	11.1	4.2	48.5	48.5	17.0	40.8	9.4
Cycle Q Clear(g_c), s	17.3	0.0	26.2	4.8	3.9	11.1	4.2	48.5	48.5	17.0	40.8	9.4
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	561	0	373	71	165	354	133	680	703	241	1584	689
V/C Ratio(X)	0.87	0.00	0.98	0.96	0.38	0.89	0.46	1.01	1.01	1.06	0.83	0.48
Avail Cap(c_a), veh/h	619	0	373	71	165	354	133	680	703	241	1654	719
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	1.00	1.00	1.00	1.00	0.22	0.22	0.22	0.10	0.10	0.10
Uniform Delay (d), s/veh	48.5	0.0	46.2	57.4	51.2	44.5	52.8	35.7	35.8	51.5	27.9	5.5
Incr Delay (d2), s/veh	13.5	0.0	40.6	93.7	3.0	24.9	1.2	17.9	18.6	36.1	0.6	0.2
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	8.1	0.0	14.9	3.9	1.9	11.5	1.8	22.8	23.7	9.6	16.2	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	62.0	0.0	86.8	151.1	54.2	69.4	54.0	53.7	54.3	87.6	28.5	5.8
LnGrp LOS	E		F	F	D	E	D	F	F	F	C	A
Approach Vol, veh/h		852			446			1458			1909	
Approach Delay, s/veh		72.6			79.8			54.0			32.4	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.5	62.0	25.9	16.6	23.0	54.5	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	6.2	42.8	19.3	13.1	19.0	50.5	6.8	28.2
Green Ext Time (p_c), s	0.0	13.2	1.1	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	51.0
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	120	140	55	122	165	1084	155	147	1211	85
Future Volume (veh/h)	140	55	120	140	55	122	165	1084	155	147	1211	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	143	56	122	143	56	124	168	1106	158	150	1236	87
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	157	68	149	159	68	150	194	1239	177	336	1621	114
Arrive On Green	0.09	0.14	0.14	0.09	0.14	0.14	0.12	0.42	0.42	0.07	0.17	0.17
Sat Flow, veh/h	1714	499	1088	1701	490	1084	1674	2934	418	1701	3216	226
Grp Volume(v), veh/h	143	0	178	143	0	180	168	629	635	150	651	672
Grp Sat Flow(s),veh/h/ln	1714	0	1587	1701	0	1574	1674	1670	1682	1701	1697	1745
Q Serve(g_s), s	9.9	0.0	13.1	10.0	0.0	13.3	11.8	41.8	42.1	10.2	44.0	44.1
Cycle Q Clear(g_c), s	9.9	0.0	13.1	10.0	0.0	13.3	11.8	41.8	42.1	10.2	44.0	44.1
Prop In Lane	1.00		0.69	1.00		0.69	1.00		0.25	1.00		0.13
Lane Grp Cap(c), veh/h	157	0	217	159	0	218	194	705	710	336	855	880
V/C Ratio(X)	0.91	0.00	0.82	0.90	0.00	0.83	0.87	0.89	0.89	0.45	0.76	0.76
Avail Cap(c_a), veh/h	157	0	317	159	0	315	237	705	710	336	855	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.55	0.55	0.55
Uniform Delay (d), s/veh	54.0	0.0	50.4	53.8	0.0	50.3	52.2	32.1	32.2	49.8	43.1	43.2
Incr Delay (d2), s/veh	46.0	0.0	9.0	43.2	0.0	9.8	22.5	13.7	14.0	0.4	2.3	2.3
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	6.3	0.0	5.8	6.2	0.0	5.8	6.2	19.2	19.5	4.7	20.6	21.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	100.0	0.0	59.3	97.0	0.0	60.1	74.7	45.8	46.1	50.2	45.4	45.5
LnGrp LOS	F		E	F		E	E	D	D	D	D	D
Approach Vol, veh/h		321			323			1432			1473	
Approach Delay, s/veh		77.5			76.4			49.3			45.9	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.9	65.5	15.0	20.6	28.7	55.7	15.2	20.4
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.8	46.1	11.9	15.3	12.2	44.1	12.0	15.1
Green Ext Time (p_c), s	0.1	2.9	0.0	0.5	0.1	3.5	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	52.9
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	371	500	370	345	495	301	230	747	210	299	1112	315
Future Volume (veh/h)	371	500	370	345	495	301	230	747	210	299	1112	315
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	375	505	0	348	500	0	232	755	212	302	1123	318
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	435	628		408	601		281	846	237	340	1220	543
Arrive On Green	0.13	0.18	0.00	0.12	0.18	0.00	0.17	0.32	0.32	0.20	0.36	0.36
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2615	734	1714	3420	1523
Grp Volume(v), veh/h	375	505	0	348	500	0	232	490	477	302	1123	318
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1652	1714	1710	1523
Q Serve(g_s), s	13.4	17.1	0.0	12.3	16.9	0.0	15.8	33.0	33.0	20.6	37.7	13.6
Cycle Q Clear(g_c), s	13.4	17.1	0.0	12.3	16.9	0.0	15.8	33.0	33.0	20.6	37.7	13.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	435	628		408	601		281	549	534	340	1220	543
V/C Ratio(X)	0.86	0.80		0.85	0.83		0.83	0.89	0.89	0.89	0.92	0.59
Avail Cap(c_a), veh/h	605	749		582	727		281	608	592	340	1254	558
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.0	46.8	0.0	51.6	47.7	0.0	48.4	38.6	38.6	46.8	37.0	13.9
Incr Delay (d2), s/veh	7.0	5.7	0.0	6.1	7.2	0.0	17.1	19.5	19.9	23.1	12.7	4.6
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	5.9	7.6	0.0	5.4	7.7	0.0	8.0	16.5	16.1	10.9	17.7	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.1	52.5	0.0	57.7	54.9	0.0	65.5	58.1	58.5	69.9	49.6	18.5
LnGrp LOS	E	D		E	D		E	E	E	E	D	B
Approach Vol, veh/h		880			848			1199			1743	
Approach Delay, s/veh		54.9			56.1			59.7			47.5	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.8	47.8	20.8	26.6	28.8	43.8	19.7	27.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	8.0	44.0	22.0	25.5	9.0	43.0	21.0	26.5
Max Q Clear Time (g_c+I1), s	17.8	39.7	15.4	18.9	22.6	35.0	14.3	19.1
Green Ext Time (p_c), s	0.0	3.0	0.4	1.9	0.0	3.9	0.4	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	53.6
HCM 7th LOS	D

Notes

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

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	212	30	729	30	281	1191	214
Future Volume (veh/h)	150	195	20	135	225	212	30	729	30	281	1191	214
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	226	32	776	32	299	1267	228
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	173	245	25	373	230	218	53	982	40	325	1309	233
Arrive On Green	0.10	0.16	0.16	0.22	0.27	0.27	0.03	0.30	0.30	0.19	0.46	0.46
Sat Flow, veh/h	1688	1582	161	1714	850	804	1701	3320	137	1701	2876	513
Grp Volume(v), veh/h	160	0	228	144	0	465	32	396	412	299	743	752
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1654	1701	1697	1760	1701	1697	1692
Q Serve(g_s), s	12.5	0.0	16.9	9.5	0.0	36.0	2.5	28.6	28.6	23.0	56.4	58.0
Cycle Q Clear(g_c), s	12.5	0.0	16.9	9.5	0.0	36.0	2.5	28.6	28.6	23.0	56.4	58.0
Prop In Lane	1.00		0.09	1.00		0.49	1.00		0.08	1.00		0.30
Lane Grp Cap(c), veh/h	173	0	270	373	0	448	53	502	521	325	773	770
V/C Ratio(X)	0.93	0.00	0.84	0.39	0.00	1.04	0.60	0.79	0.79	0.92	0.96	0.98
Avail Cap(c_a), veh/h	173	0	482	373	0	448	77	502	521	427	774	772
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	54.6	44.4	0.0	48.5	63.6	43.1	43.1	52.8	35.1	35.5
Incr Delay (d2), s/veh	47.6	0.0	7.0	0.5	0.0	52.9	7.8	8.2	8.0	20.4	23.3	26.5
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	7.6	0.0	8.0	4.1	0.0	21.4	1.2	13.1	13.6	11.6	27.8	29.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	106.9	0.0	61.7	44.9	0.0	101.5	71.5	51.3	51.0	73.2	58.4	62.1
LnGrp LOS	F		E	D		F	E	D	D	E	E	E
Approach Vol, veh/h		388			609			840			1794	
Approach Delay, s/veh		80.3			88.1			51.9			62.4	
Approach LOS		F			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	65.5	18.2	40.6	30.0	44.2	33.6	25.2
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.5	60.0	14.5	38.0	25.0	30.6	11.5	18.9
Green Ext Time (p_c), s	0.0	0.6	0.0	0.0	0.4	1.3	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	66.2
HCM 7th LOS	E

Notes

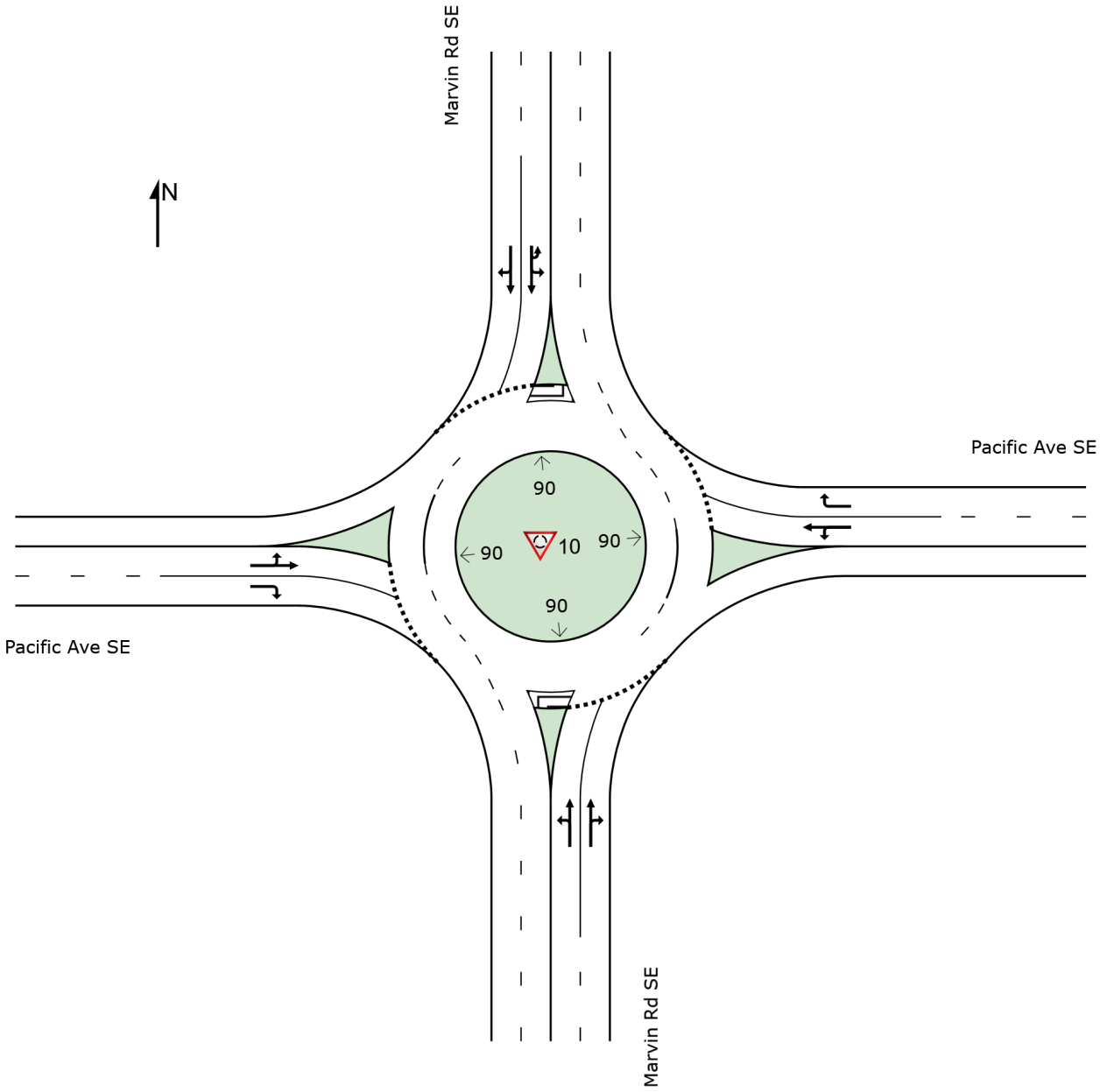
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	139	1.0	139	1.0	0.488	20.0	LOS C	4.1	103.7	0.94	0.88	1.14	29.8
8	T1	All MCs	491	1.0	491	1.0	0.488	12.8	LOS B	4.6	116.9	0.96	0.84	1.12	31.7
18	R2	All MCs	39	1.0	39	1.0	0.488	12.2	LOS B	4.6	116.9	0.97	0.82	1.11	32.0
Approach			669	1.0	669	1.0	0.488	14.3	LOS B	4.6	116.9	0.96	0.85	1.12	31.3
East: Pacific Ave SE															
1	L2	All MCs	33	1.0	33	1.0	0.359	11.9	LOS B	1.8	44.3	0.65	0.63	0.65	33.5
6	T1	All MCs	261	1.0	261	1.0	0.359	6.3	LOS A	1.8	44.3	0.65	0.63	0.65	34.1
16	R2	All MCs	413	1.0	413	1.0	0.415	6.1	LOS A	2.3	57.5	0.66	0.70	0.68	34.4
Approach			708	1.0	708	1.0	0.415	6.4	LOS A	2.3	57.5	0.65	0.67	0.67	34.2
North: Marvin Rd SE															
7u	U	All MCs	2	1.0	2	1.0	0.656	17.0	LOS B	6.8	172.0	0.81	0.79	0.97	31.4
7	L2	All MCs	492	1.0	492	1.0	0.656	14.6	LOS B	6.8	172.0	0.81	0.79	0.97	31.4
4	T1	All MCs	898	1.0	898	1.0	0.656	8.1	LOS A	7.0	177.5	0.79	0.72	0.91	33.5
14	R2	All MCs	89	1.0	89	1.0	0.656	8.0	LOS A	7.0	177.5	0.79	0.71	0.90	33.5
Approach			1481	1.0	1481	1.0	0.656	10.3	LOS B	7.0	177.5	0.80	0.74	0.93	32.8
West: Pacific Ave SE															
5	L2	All MCs	56	1.0	56	1.0	0.665	15.7	LOS B	4.8	121.6	0.89	0.98	1.17	32.4
2	T1	All MCs	406	1.0	406	1.0	0.665	10.1	LOS B	4.8	121.6	0.89	0.98	1.17	33.0
12	R2	All MCs	283	1.0	283	1.0	0.556	10.6	LOS B	3.2	80.7	0.84	0.96	1.04	32.7
Approach			744	1.0	744	1.0	0.665	10.7	LOS B	4.8	121.6	0.87	0.98	1.12	32.9
All Vehicles			3602	1.0	3602	1.0	0.665	10.4	LOS B	7.0	177.5	0.82	0.80	0.95	32.8

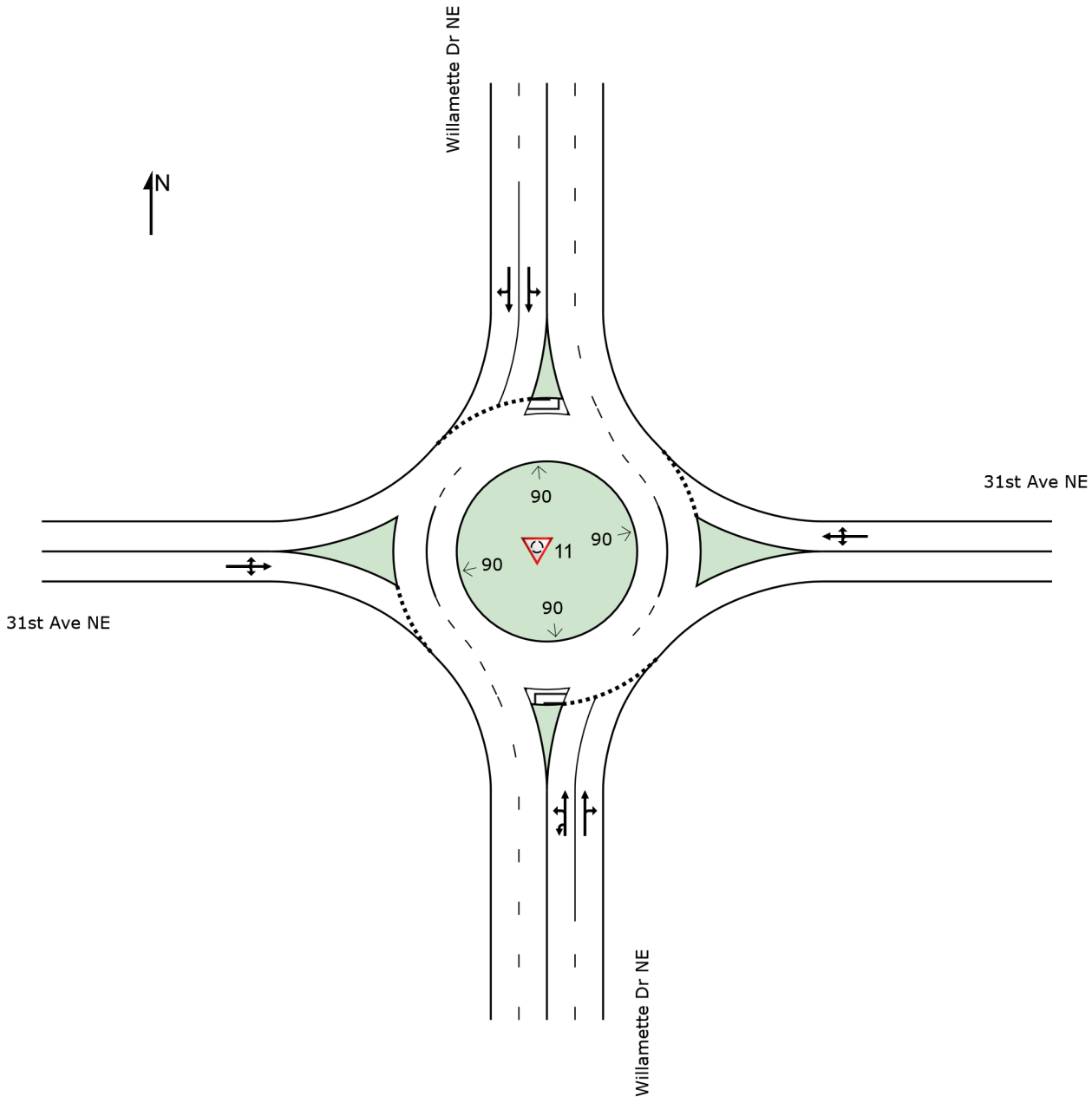
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	33	2.0	33	2.0	0.252	12.3	LOS B	1.5	38.1	0.19	0.49	0.19	34.2
3	L2	All MCs	82	2.0	82	2.0	0.252	9.9	LOS A	1.5	38.1	0.19	0.49	0.19	34.2
8	T1	All MCs	519	2.0	519	2.0	0.252	4.3	LOS A	1.5	38.6	0.19	0.44	0.19	35.4
18	R2	All MCs	125	2.0	125	2.0	0.252	4.4	LOS A	1.5	38.6	0.18	0.41	0.18	35.5
Approach			759	2.0	759	2.0	0.252	5.3	LOS A	1.5	38.6	0.19	0.44	0.19	35.2
East: 31st Ave NE															
1	L2	All MCs	112	3.0	112	3.0	0.150	11.5	LOS B	0.5	13.1	0.45	0.72	0.45	32.6
6	T1	All MCs	16	3.0	16	3.0	0.150	5.9	LOS A	0.5	13.1	0.45	0.72	0.45	33.2
16	R2	All MCs	11	3.0	11	3.0	0.150	5.8	LOS A	0.5	13.1	0.45	0.72	0.45	32.9
Approach			140	3.0	140	3.0	0.150	10.4	LOS B	0.5	13.1	0.45	0.72	0.45	32.7
North: Willamette Dr NE															
7	L2	All MCs	4	1.0	4	1.0	0.129	10.7	LOS B	0.7	16.6	0.39	0.47	0.39	34.4
4	T1	All MCs	325	1.0	325	1.0	0.129	5.0	LOS A	0.7	17.1	0.38	0.46	0.38	35.2
14	R2	All MCs	11	1.0	11	1.0	0.129	5.0	LOS A	0.7	17.1	0.37	0.46	0.37	34.8
Approach			341	1.0	341	1.0	0.129	5.1	LOS A	0.7	17.1	0.38	0.46	0.38	35.2
West: 31st Ave NE															
5	L2	All MCs	22	0.0	22	0.0	0.117	10.9	LOS B	0.4	10.3	0.40	0.60	0.40	34.3
2	T1	All MCs	22	0.0	22	0.0	0.117	5.3	LOS A	0.4	10.3	0.40	0.60	0.40	35.0
12	R2	All MCs	77	0.0	77	0.0	0.117	5.2	LOS A	0.4	10.3	0.40	0.60	0.40	34.7
Approach			121	0.0	121	0.0	0.117	6.3	LOS A	0.4	10.3	0.40	0.60	0.40	34.7
All Vehicles			1360	1.7	1360	1.7	0.252	5.8	LOS A	1.5	38.6	0.28	0.49	0.28	34.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

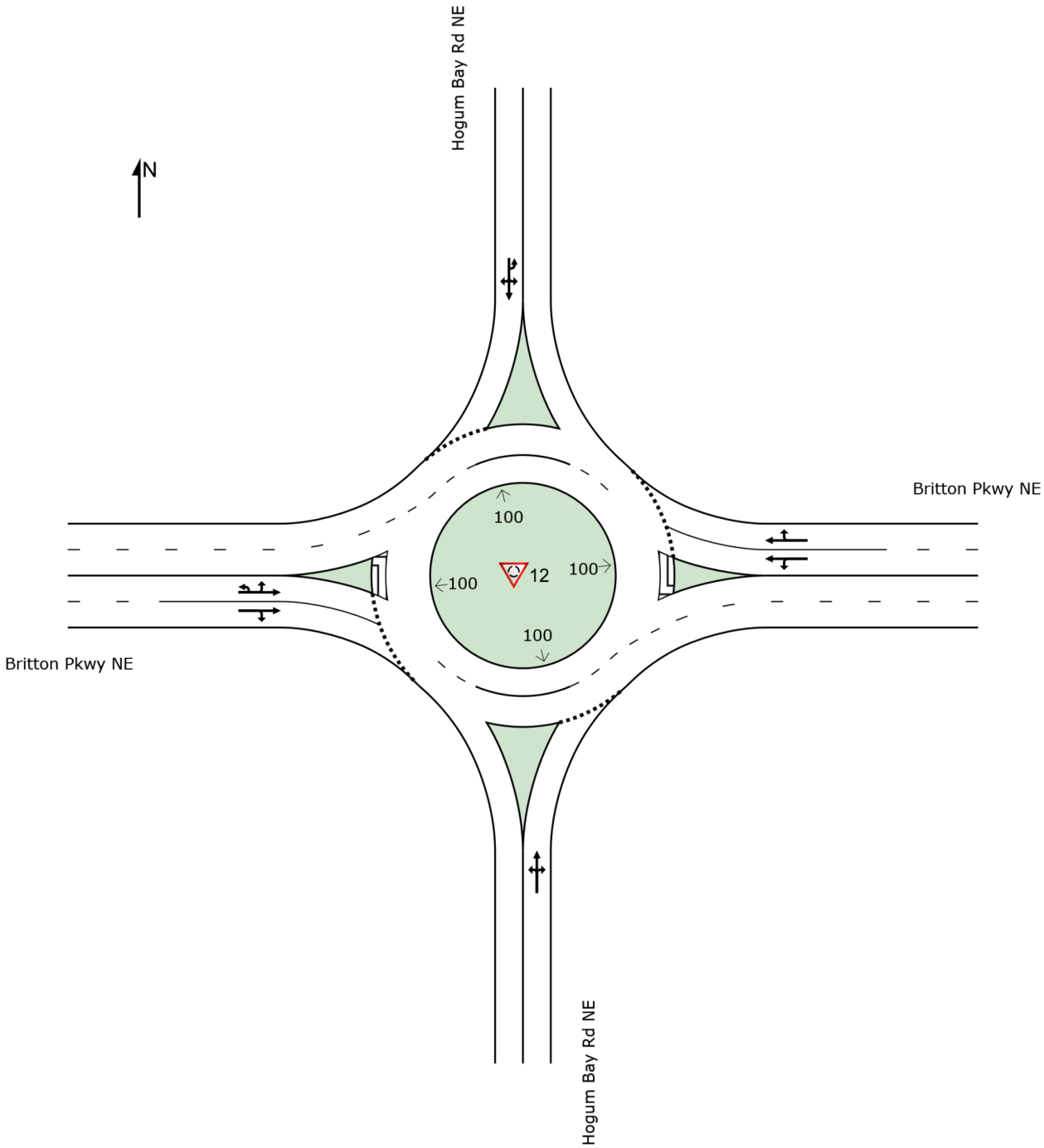
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	32	13.0	32	13.0	0.700	13.9	LOS B	5.5	152.0	0.67	0.73	0.81	33.2
8	T1	All MCs	263	13.0	263	13.0	0.700	7.9	LOS A	5.5	152.0	0.67	0.73	0.81	34.1
18	R2	All MCs	349	13.0	349	13.0	0.700	7.9	LOS A	5.5	152.0	0.67	0.73	0.81	33.8
Approach			645	13.0	645	13.0	0.700	8.2	LOS A	5.5	152.0	0.67	0.73	0.81	33.9
East: Britton Pkwy NE															
1	L2	All MCs	59	4.0	59	4.0	0.308	12.3	LOS B	1.9	49.4	0.63	0.61	0.63	33.3
6	T1	All MCs	599	4.0	599	4.0	0.308	6.1	LOS A	2.1	53.2	0.62	0.58	0.62	34.3
16	R2	All MCs	11	4.0	11	4.0	0.308	6.0	LOS A	2.1	53.2	0.61	0.56	0.61	34.1
Approach			669	4.0	669	4.0	0.308	6.7	LOS A	2.1	53.2	0.62	0.58	0.62	34.2
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.707	17.9	LOS B	5.0	134.2	0.77	0.90	1.04	32.6
7	L2	All MCs	16	10.0	16	10.0	0.707	15.4	LOS B	5.0	134.2	0.77	0.90	1.04	32.7
4	T1	All MCs	151	10.0	151	10.0	0.707	9.5	LOS A	5.0	134.2	0.77	0.90	1.04	33.5
14	R2	All MCs	377	10.0	377	10.0	0.707	9.5	LOS A	5.0	134.2	0.77	0.90	1.04	33.1
Approach			545	10.0	545	10.0	0.707	9.7	LOS A	5.0	134.2	0.77	0.90	1.04	33.2
West: Britton Pkwy NE															
5u	U	All MCs	4	7.0	4	7.0	0.136	13.5	LOS B	0.7	19.4	0.43	0.60	0.43	32.7
5	L2	All MCs	102	7.0	102	7.0	0.136	11.0	LOS B	0.7	19.4	0.43	0.60	0.43	32.7
2	T1	All MCs	209	7.0	209	7.0	0.136	4.9	LOS A	0.8	20.3	0.42	0.49	0.42	34.8
12	R2	All MCs	16	7.0	16	7.0	0.136	5.0	LOS A	0.8	20.3	0.41	0.46	0.41	34.7
Approach			331	7.0	331	7.0	0.136	6.9	LOS A	0.8	20.3	0.42	0.52	0.42	34.1
All Vehicles			2190	8.6	2190	8.6	0.707	7.9	LOS A	5.5	152.0	0.64	0.69	0.75	33.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	15	637	42	10	59	677	35	81	0	56	30	0	25
Future Vol, veh/h	15	637	42	10	59	677	35	81	0	56	30	0	25
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	16	678	45	11	63	720	37	86	0	60	32	0	27

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	758	0	0	722	722	0	0	1240	1637	362	1258	1641	381
Stage 1	-	-	-	-	-	-	-	732	732	-	887	887	-
Stage 2	-	-	-	-	-	-	-	508	905	-	372	754	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	836	-	-	496	869	-	-	132	100	635	130	101	623
Stage 1	-	-	-	-	-	-	-	379	425	-	310	365	-
Stage 2	-	-	-	-	-	-	-	516	353	-	626	420	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	835	-	-	766	766	-	-	112	88	634	104	90	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	112	88	-	104	90	-
Stage 1	-	-	-	-	-	-	-	372	417	-	280	330	-
Stage 2	-	-	-	-	-	-	-	446	319	-	556	412	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.2	0.9	92.55	37.68
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	835	-	-	766	-	-	167
HCM Lane V/C Ratio	0.867	0.019	-	-	0.096	-	-	0.35
HCM Ctrl Dly (s/v)	92.5	9.4	-	-	10.2	-	-	37.7
HCM Lane LOS	F	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	6.1	0.1	-	-	0.3	-	-	1.5

Intersection	
Int Delay, s/veh	23

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	630	112	82	701	1	110	0	61	1	0	25
Future Vol, veh/h	10	630	112	82	701	1	110	0	61	1	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	670	119	87	746	1	117	0	65	1	0	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	747	0	0	789	0	0	1298	1672	395	1277	1731	373
Stage 1	-	-	-	-	-	-	751	751	-	921	921	-
Stage 2	-	-	-	-	-	-	547	921	-	356	811	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	844	-	-	820	-	-	119	95	604	126	89	630
Stage 1	-	-	-	-	-	-	369	416	-	295	352	-
Stage 2	-	-	-	-	-	-	489	347	-	640	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	844	-	-	820	-	-	~ 101	84	604	99	79	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 101	84	-	99	79	-
Stage 1	-	-	-	-	-	-	364	411	-	264	315	-
Stage 2	-	-	-	-	-	-	418	310	-	564	391	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.12	1.04	225.6	12.28
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	143	844	-	-	820	-	-	522
HCM Lane V/C Ratio	1.271	0.013	-	-	0.106	-	-	0.053
HCM Ctrl Dly (s/v)	225.6	9.3	-	-	9.9	-	-	12.3
HCM Lane LOS	F	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	11	0	-	-	0.4	-	-	0.2

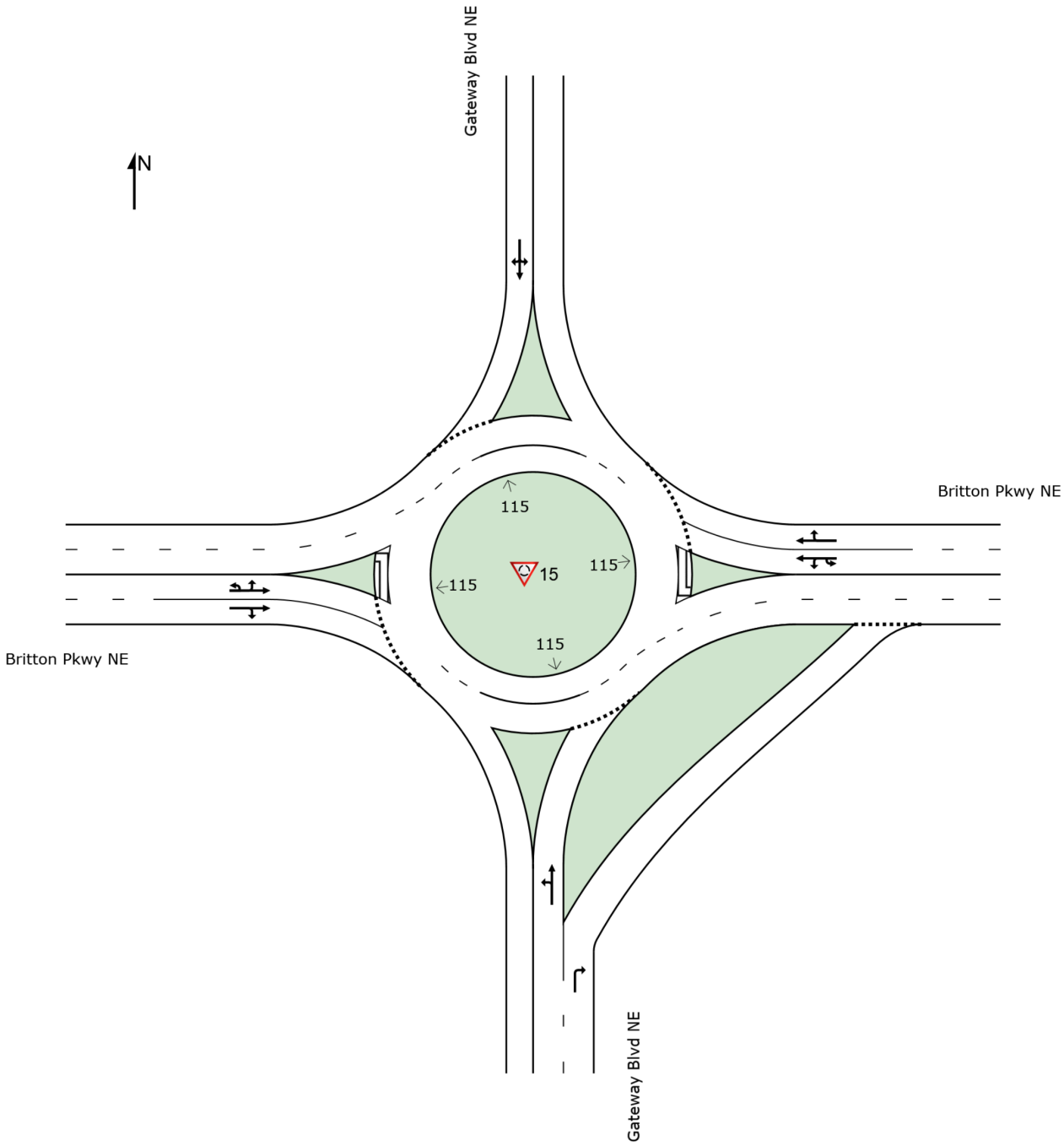
Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	516	2.0	516	2.0	0.480	12.2	LOS B	2.6	66.5	0.63	0.80	0.69	31.8
8	T1	All MCs	21	2.0	21	2.0	0.480	5.9	LOS A	2.6	66.5	0.63	0.80	0.69	32.4
18	R2	All MCs	138	2.0	138	2.0	0.115	4.8	LOS A	0.4	10.4	0.43	0.56	0.43	35.4
Approach			674	2.0	674	2.0	0.480	10.5	LOS B	2.6	66.5	0.59	0.75	0.64	32.5
East: Britton Pkwy NE															
1u	U	All MCs	3	3.0	3	3.0	0.497	18.2	LOS B	4.0	103.4	0.85	0.78	0.95	32.4
1	L2	All MCs	109	3.0	109	3.0	0.497	15.7	LOS B	4.0	103.4	0.85	0.78	0.95	32.4
6	T1	All MCs	631	3.0	631	3.0	0.497	8.4	LOS A	4.4	111.7	0.85	0.74	0.92	33.6
16	R2	All MCs	178	3.0	178	3.0	0.497	8.0	LOS A	4.4	111.7	0.85	0.71	0.90	33.7
Approach			921	3.0	921	3.0	0.497	9.2	LOS A	4.4	111.7	0.85	0.74	0.92	33.5
North: Gateway Blvd NE															
7	L2	All MCs	102	2.0	102	2.0	0.362	14.7	LOS B	1.9	48.5	0.77	0.85	0.83	32.3
4	T1	All MCs	50	2.0	50	2.0	0.362	8.3	LOS A	1.9	48.5	0.77	0.85	0.83	33.0
14	R2	All MCs	78	2.0	78	2.0	0.362	8.4	LOS A	1.9	48.5	0.77	0.85	0.83	32.7
Approach			230	2.0	230	2.0	0.362	11.2	LOS B	1.9	48.5	0.77	0.85	0.83	32.6
West: Britton Pkwy NE															
5u	U	All MCs	4	5.0	4	5.0	0.392	14.2	LOS B	2.6	67.1	0.53	0.55	0.53	33.6
5	L2	All MCs	122	5.0	122	5.0	0.392	11.6	LOS B	2.6	67.1	0.53	0.55	0.53	33.6
2	T1	All MCs	584	5.0	584	5.0	0.392	5.1	LOS A	2.7	70.6	0.52	0.53	0.52	34.8
12	R2	All MCs	281	5.0	281	5.0	0.392	5.1	LOS A	2.7	70.6	0.51	0.50	0.51	34.8
Approach			992	5.0	992	5.0	0.392	5.9	LOS A	2.7	70.6	0.52	0.52	0.52	34.6
All Vehicles			2818	3.4	2818	3.4	0.497	8.5	LOS A	4.4	111.7	0.66	0.67	0.71	33.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	100.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	875	109	38	1079	25	164	0	72	10	0	35
Future Vol, veh/h	50	875	109	38	1079	25	164	0	72	10	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	921	115	40	1136	26	173	0	76	11	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1162	0	0	1036	0	0	1732	2326	518	1795	2370	581
Stage 1	-	-	-	-	-	-	1084	1084	-	1229	1229	-
Stage 2	-	-	-	-	-	-	648	1242	-	566	1141	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	603	-	-	667	-	-	~ 56	37	503	52	35	462
Stage 1	-	-	-	-	-	-	232	291	-	192	252	-
Stage 2	-	-	-	-	-	-	426	245	-	481	278	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	603	-	-	667	-	-	~ 45	32	503	38	30	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 45	32	-	38	30	-
Stage 1	-	-	-	-	-	-	211	266	-	180	237	-
Stage 2	-	-	-	-	-	-	368	230	-	373	254	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.56	0.36	$ 1032.45	40.29
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	45	503	603	-	-	667	-	-	38	462
HCM Lane V/C Ratio	3.873	0.151	0.087	-	-	0.06	-	-	0.279	0.08
HCM Ctrl Dly (s/v)	$ 1479.8	13.4	11.5	-	-	10.7	-	-	134.2	13.5
HCM Lane LOS	F	B	B	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	19.4	0.5	0.3	-	-	0.2	-	-	0.9	0.3

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	94	0	0	190	0	0	0	235	0	0	0
Future Vol, veh/h	0	94	0	0	190	0	0	0	235	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	102	0	0	207	0	0	0	255	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	207	0	0	102	0	0	309	309	102	309	309	207
Stage 1	-	-	-	-	-	-	102	102	-	207	207	-
Stage 2	-	-	-	-	-	-	207	207	-	102	102	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1365	-	-	1490	-	-	644	606	953	644	606	834
Stage 1	-	-	-	-	-	-	904	811	-	795	731	-
Stage 2	-	-	-	-	-	-	795	731	-	904	811	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1365	-	-	1490	-	-	644	606	953	471	606	834
Mov Cap-2 Maneuver	-	-	-	-	-	-	644	606	-	471	606	-
Stage 1	-	-	-	-	-	-	904	811	-	795	731	-
Stage 2	-	-	-	-	-	-	795	731	-	662	811	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	10.16	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	953	1365	-	-	1490	-	-	-
HCM Lane V/C Ratio	0.268	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	10.2	0	-	-	0	-	-	0
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	57	45	255	87	65
Future Vol, veh/h	180	57	45	255	87	65
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	89	89	89	89	89	89
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	202	64	51	287	98	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	266	0	622	234
Stage 1	-	-	-	-	234	-
Stage 2	-	-	-	-	388	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1309	-	450	805
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	686	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1309	-	430	805
Mov Cap-2 Maneuver	-	-	-	-	430	-
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	654	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.18	14.81
HCM LOS			B

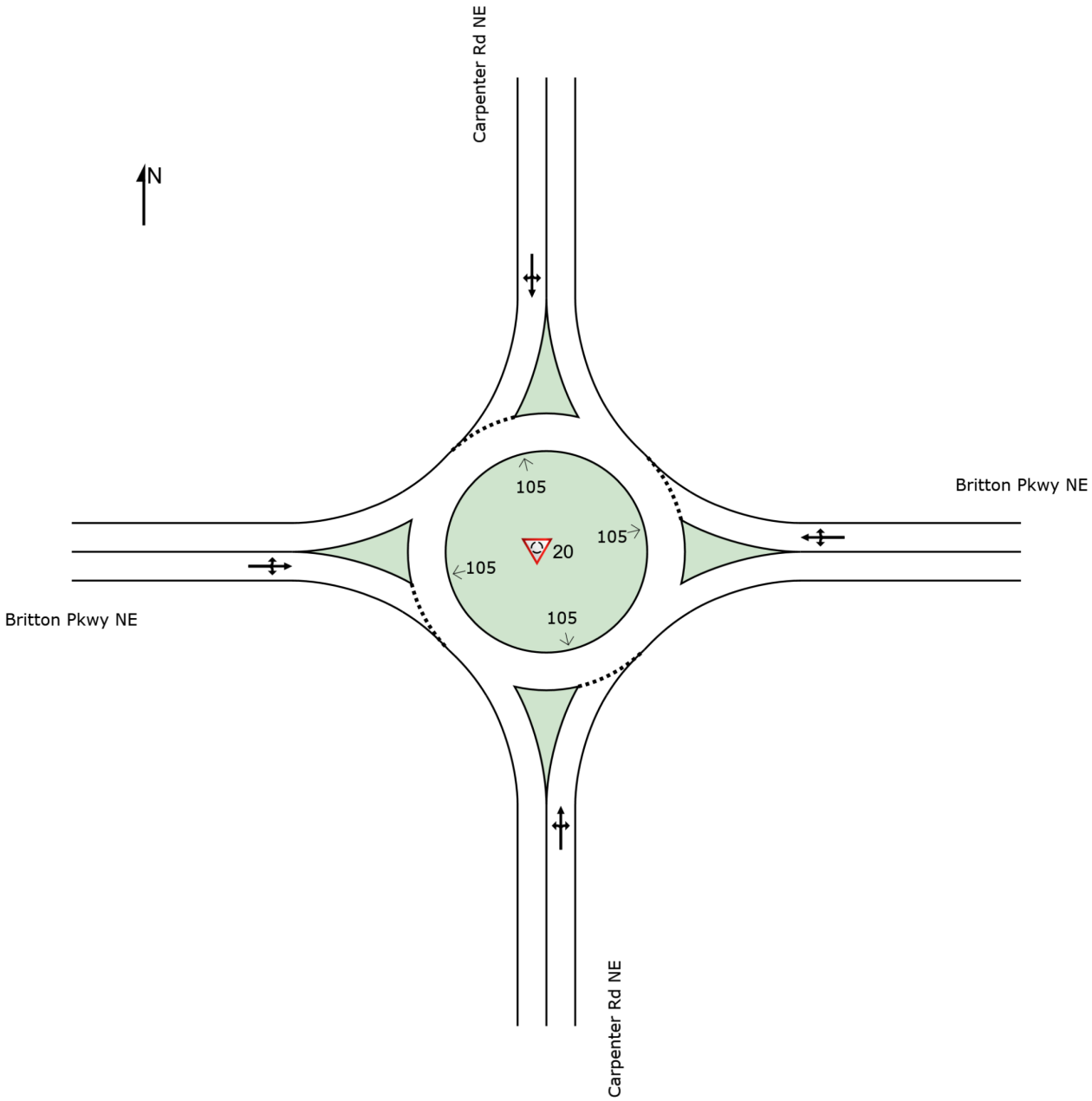
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	537	-	-	270	-
HCM Lane V/C Ratio	0.318	-	-	0.039	-
HCM Ctrl Dly (s/v)	14.8	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	149	4.0	149	4.0	0.959	31.9	LOS E	23.5	605.8	1.00	1.43	2.12	22.7
8	T1	All MCs	1	4.0	1	4.0	0.959	25.7	LOS E	23.5	605.8	1.00	1.43	2.12	18.9
18	R2	All MCs	679	4.0	679	4.0	0.959	25.9	LOS E	23.5	605.8	1.00	1.43	2.12	23.0
Approach			829	4.0	829	4.0	0.959	27.0	LOS C	23.5	605.8	1.00	1.43	2.12	23.0
East: Britton Pkwy NE															
1	L2	All MCs	753	5.0	753	5.0	1.143	80.3	LOS F	84.4	2194.2	1.00	2.07	2.87	13.5
6	T1	All MCs	622	5.0	622	5.0	1.143	74.1	LOS F	84.4	2194.2	1.00	2.07	2.87	17.0
16	R2	All MCs	1	5.0	1	5.0	1.143	74.3	LOS F	84.4	2194.2	1.00	2.07	2.87	14.3
Approach			1377	5.0	1377	5.0	1.143	77.5	LOS E	84.4	2194.2	1.00	2.07	2.87	15.1
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.014	28.9	LOS C	0.1	2.9	1.00	0.77	1.00	24.6
4	T1	All MCs	1	0.0	1	0.0	0.014	22.7	LOS C	0.1	2.9	1.00	0.77	1.00	20.2
14	R2	All MCs	1	0.0	1	0.0	0.014	22.9	LOS C	0.1	2.9	1.00	0.77	1.00	24.9
Approach			3	0.0	3	0.0	0.014	24.8	LOS C	0.1	2.9	1.00	0.77	1.00	23.5
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.907	30.6	LOS D	16.8	433.0	1.00	1.31	1.95	24.4
2	T1	All MCs	504	4.0	504	4.0	0.907	24.4	LOS D	16.8	433.0	1.00	1.31	1.95	27.6
12	R2	All MCs	133	4.0	133	4.0	0.907	24.6	LOS D	16.8	433.0	1.00	1.31	1.95	24.0
Approach			638	4.0	638	4.0	0.907	24.5	LOS C	16.8	433.0	1.00	1.31	1.95	26.9
All Vehicles			2847	4.5	2847	4.5	1.143	50.8	LOS D	84.4	2194.2	1.00	1.71	2.44	18.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	1000	370	365	790	114	180	353	250	137	436	270
Future Volume (veh/h)	283	1000	370	365	790	114	180	353	250	137	436	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	289	1020	378	372	806	116	184	360	255	140	445	276
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	301	1146	678	401	835	120	191	401	524	220	484	298
Arrive On Green	0.18	0.34	0.34	0.12	0.28	0.28	0.11	0.22	0.22	0.13	0.24	0.24
Sat Flow, veh/h	1701	3393	1504	3274	2948	424	1701	1786	1509	1674	1983	1221
Grp Volume(v), veh/h	289	1020	378	372	460	462	184	360	255	140	374	347
Grp Sat Flow(s),veh/h/ln	1701	1697	1504	1637	1683	1689	1701	1786	1509	1674	1670	1535
Q Serve(g_s), s	20.2	34.1	22.1	13.5	32.4	32.4	12.9	23.5	9.4	9.5	26.2	26.5
Cycle Q Clear(g_c), s	20.2	34.1	22.1	13.5	32.4	32.4	12.9	23.5	9.4	9.5	26.2	26.5
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	1.00		0.80
Lane Grp Cap(c), veh/h	301	1146	678	401	477	479	191	401	524	220	407	374
V/C Ratio(X)	0.96	0.89	0.56	0.93	0.96	0.96	0.96	0.90	0.49	0.63	0.92	0.93
Avail Cap(c_a), veh/h	301	1146	678	401	477	479	191	441	558	220	417	384
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)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	37.6	24.2	52.1	42.4	42.4	53.0	45.2	12.9	49.4	44.2	44.3
Incr Delay (d2), s/veh	35.4	8.5	2.6	27.2	33.3	33.3	53.5	19.9	0.8	4.5	24.9	28.0
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	11.5	15.3	8.3	7.0	17.7	17.8	8.3	12.6	3.2	4.3	13.6	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	84.3	46.2	26.8	79.3	75.7	75.7	106.5	65.1	13.7	53.9	69.2	72.3
LnGrp LOS	F	D	C	E	E	E	F	E	B	D	E	E
Approach Vol, veh/h		1687			1294			799			861	
Approach Delay, s/veh		48.4			76.7			58.2			67.9	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.7	39.5	21.3	32.5	20.2	46.0	19.0	34.8
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	20.5	34.0	13.9	29.6	14.7	39.8	13.5	30.0
Max Q Clear Time (g_c+I1), s	22.2	34.4	11.5	25.5	15.5	36.1	14.9	28.5
Green Ext Time (p_c), s	0.0	0.0	0.0	1.4	0.0	2.7	0.0	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	61.6
HCM 7th LOS	E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	770	120	115	740	30	150	248	80	90	373	521
Future Volume (veh/h)	375	770	120	115	740	30	150	248	80	90	373	521
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	387	794	124	119	763	31	155	256	82	93	385	537
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	312	1009	158	144	812	33	126	769	240	115	510	451
Arrive On Green	0.18	0.34	0.34	0.08	0.24	0.24	0.08	0.31	0.31	0.07	0.30	0.30
Sat Flow, veh/h	1701	2938	459	1701	3322	135	1674	2499	781	1701	1697	1501
Grp Volume(v), veh/h	387	458	460	119	390	404	155	169	169	93	385	537
Grp Sat Flow(s),veh/h/ln	1701	1697	1701	1701	1697	1760	1674	1670	1610	1701	1697	1501
Q Serve(g_s), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	9.3	9.7	6.5	24.6	36.0
Cycle Q Clear(g_c), s	22.0	29.1	29.1	8.2	27.0	27.0	9.0	9.3	9.7	6.5	24.6	36.0
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	312	583	584	144	415	430	126	514	496	115	510	451
V/C Ratio(X)	1.24	0.79	0.79	0.83	0.94	0.94	1.23	0.33	0.34	0.81	0.75	1.19
Avail Cap(c_a), veh/h	312	583	584	249	418	434	126	514	496	227	510	451
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	35.4	35.4	54.0	44.4	44.4	55.4	31.9	32.1	55.0	37.9	41.9
Incr Delay (d2), s/veh	131.8	7.1	7.0	4.5	29.2	28.6	155.5	0.4	0.4	4.9	6.3	105.7
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	20.7	13.0	13.1	3.7	14.6	15.1	9.2	3.8	3.9	2.9	11.0	26.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	180.7	42.4	42.4	58.5	73.6	73.0	210.9	32.3	32.5	60.0	44.2	147.6
LnGrp LOS	F	D	D	E	E	E	F	C	C	E	D	F
Approach Vol, veh/h		1305			913			493			1015	
Approach Delay, s/veh		83.4			71.3			88.5			100.4	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	34.8	14.1	42.9	15.6	47.1	15.0	42.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	29.5	16.0	29.0	17.5	34.0	9.0	36.0
Max Q Clear Time (g_c+I1), s	24.0	29.0	8.5	11.7	10.2	31.1	11.0	38.0
Green Ext Time (p_c), s	0.0	0.3	0.1	1.8	0.1	1.6	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	85.7
HCM 7th LOS	F

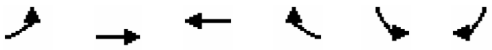
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1586	5	0	1172	33	70	5	25	72	1	30
Future Volume (veh/h)	40	1586	5	0	1172	33	70	5	25	72	1	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	42	1669	0	0	1234	35	74	5	26	76	1	32
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, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	83	2707		1	2472	70	158	221	188	227	3	188
Arrive On Green	0.05	1.00	0.00	0.00	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	3300	3393	1514	1688	3343	95	1398	1800	1525	1360	21	1525
Grp Volume(v), veh/h	42	1669	0	0	621	648	74	5	26	77	0	32
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1755	1398	1800	1525	1381	0	1525
Q Serve(g_s), s	1.5	0.0	0.0	0.0	18.3	18.3	6.2	0.3	1.8	6.1	0.0	2.3
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.0	18.3	18.3	12.6	0.3	1.8	6.4	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	83	2707		1	1245	1297	158	221	188	230	0	188
V/C Ratio(X)	0.51	0.62		0.00	0.50	0.50	0.47	0.02	0.14	0.34	0.00	0.17
Avail Cap(c_a), veh/h	275	2707		77	1245	1297	464	615	521	537	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.00	0.00	0.22	0.22	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	0.0	6.5	6.5	54.8	46.3	46.9	49.0	0.0	47.1
Incr Delay (d2), s/veh	3.2	1.0	0.0	0.0	0.3	0.3	1.6	0.0	0.2	0.6	0.0	0.3
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	0.7	0.4	0.0	0.0	5.8	6.1	2.3	0.1	0.7	2.2	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.5	1.0	0.0	0.0	6.8	6.8	56.4	46.3	47.2	49.7	0.0	47.4
LnGrp LOS	E	A			A	A	E	D	D	D		D
Approach Vol, veh/h		1711			1269			105			109	
Approach Delay, s/veh		2.4			6.8			53.6			49.0	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	94.2		18.8	0.0	101.2		18.8				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	3.5	20.3		14.6	0.0	2.0		8.4				
Green Ext Time (p_c), s	0.0	13.3		0.2	0.0	26.6		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			7.4									
HCM 7th LOS			A									

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1636	1192	25	30	50
Future Volume (veh/h)	50	1636	1192	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	53	1740	1268	27	32	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	826	4252	1376	29	84	74
Arrive On Green	0.42	0.87	0.82	0.82	0.05	0.05
Sat Flow, veh/h	1701	5036	3459	72	1714	1525
Grp Volume(v), veh/h	53	1740	633	662	32	53
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1759	1714	1525
Q Serve(g_s), s	0.0	8.5	33.4	33.5	2.2	4.1
Cycle Q Clear(g_c), s	0.0	8.5	33.4	33.5	2.2	4.1
Prop In Lane	1.00			0.04	1.00	1.00
Lane Grp Cap(c), veh/h	826	4252	687	718	84	74
V/C Ratio(X)	0.06	0.41	0.92	0.92	0.38	0.71
Avail Cap(c_a), veh/h	826	4252	975	1019	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	1.00	1.00
Uniform Delay (d), s/veh	14.0	1.5	9.6	9.6	55.3	56.2
Incr Delay (d2), s/veh	0.0	0.3	17.7	17.2	1.1	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.4	7.1	7.4	1.0	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	14.1	1.8	27.3	26.8	56.4	60.9
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1793	1295		85	
Approach Delay, s/veh		2.2	27.1		59.2	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	55.7	54.5			110.2	9.8
Change Period (Y+Rc), s	5.5	5.5			5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5			82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	35.5			10.5	6.1
Green Ext Time (p_c), s	0.0	13.5			28.7	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	603	855	0	0	1182	65	15	0	856	0	0	0
Future Volume (veh/h)	603	855	0	0	1182	65	15	0	856	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	655	929	0	0	1285	0	16	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3078	0	0	1875		23	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	655	929	0	0	1285	0	16	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	15.8	0.0	0.0	32.8	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	15.8	0.0	0.0	32.8	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3078	0	0	1875		23	0				
V/C Ratio(X)	1.27	0.30	0.00	0.00	0.69		0.68	0.00				
Avail Cap(c_a), veh/h	517	3078	0	0	1875		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	19.0	0.0	58.9	0.0	0.0			
Incr Delay (d2), s/veh	121.2	0.0	0.0	0.0	2.1	0.0	29.6	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	33.4	6.4	0.0	0.0	12.9	0.0	0.7	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	169.0	5.3	0.0	0.0	21.1	0.0	88.5	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1584			1285			16				
Approach Delay, s/veh		73.0			21.1			88.5				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.3		5.7		114.3			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	34.8		3.1		17.8			
Green Ext Time (p_c), s	0.0	5.4		0.0		10.2			

Intersection Summary		
HCM 7th Control Delay, s/veh		50.0
HCM 7th LOS		D

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1408	395	562	660	0	0	0	0	85	1	765
Future Volume (vph)	0	1408	395	562	660	0	0	0	0	85	1	765
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1694	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1694	1515
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1452	407	579	680	0	0	0	0	88	1	789
RTOR Reduction (vph)	0	0	236	0	0	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	1452	171	579	680	0	0	0	0	0	89	750
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.5	50.5	32.5	37.4						22.0	73.1
Effective Green, g (s)		50.5	50.5	32.5	37.4						22.0	73.1
Actuated g/C Ratio		0.42	0.42	0.27	0.31						0.18	0.61
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1424	637	453	1045						310	922
v/s Ratio Prot		c0.43		c0.35	0.20							c0.49
v/s Ratio Perm			0.11								0.05	
v/c Ratio		1.02	0.27	1.28	0.65						0.29	0.81
Uniform Delay, d1		34.8	22.7	43.8	35.7						42.2	18.2
Progression Factor		0.90	1.56	0.60	0.34						1.00	1.00
Incremental Delay, d2		24.0	0.7	126.8	0.3						0.6	5.8
Delay (s)		55.2	36.0	153.0	12.2						42.8	24.0
Level of Service		E	D	F	B						D	C
Approach Delay (s/veh)		51.0			77.0			0.0			25.9	
Approach LOS		D			E			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	53.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	829	270	638	617	175	145	287	819	150	317	92
Future Volume (veh/h)	66	829	270	638	617	175	145	287	819	150	317	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	69	864	0	665	643	0	151	299	853	156	330	96
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	85	1167		724	1748		177	287	1007	183	404	116
Arrive On Green	0.05	0.34	0.00	0.37	0.87	0.00	0.10	0.16	0.16	0.11	0.16	0.16
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2598	1701	2594	742
Grp Volume(v), veh/h	69	864	0	665	643	0	151	299	853	156	214	212
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1299	1701	1697	1639
Q Serve(g_s), s	4.8	26.9	0.0	23.3	4.5	0.0	10.5	19.3	19.3	10.8	14.6	15.1
Cycle Q Clear(g_c), s	4.8	26.9	0.0	23.3	4.5	0.0	10.5	19.3	19.3	10.8	14.6	15.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	85	1167		724	1748		177	287	1007	183	264	255
V/C Ratio(X)	0.81	0.74		0.92	0.37		0.85	1.04	0.85	0.85	0.81	0.83
Avail Cap(c_a), veh/h	85	1167		805	1748		241	287	1007	340	339	328
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.59	0.59	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	34.7	0.0	36.8	4.1	0.0	52.8	50.4	34.0	52.6	48.9	49.1
Incr Delay (d2), s/veh	40.3	4.2	0.0	9.6	0.4	0.0	17.3	64.2	6.7	4.3	8.4	10.7
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	3.0	11.7	0.0	9.1	1.3	0.0	5.3	13.7	12.1	4.8	6.8	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	96.7	38.9	0.0	46.4	4.5	0.0	70.2	114.6	40.7	56.9	57.4	59.8
LnGrp LOS	F	D		D	A		E	F	D	E	E	E
Approach Vol, veh/h		933			1308			1303			582	
Approach Delay, s/veh		43.2			25.8			61.1			58.1	
Approach LOS		D			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	67.8	16.9	24.3	32.1	46.8	17.5	23.7
Change Period (Y+Rc), s	5.0	5.5	4.0	5.0	5.5	* 5.5	5.0	* 5
Max Green Setting (Gmax), s	6.0	53.5	24.0	17.0	29.5	* 30	17.0	* 24
Max Q Clear Time (g_c+I1), s	6.8	6.5	12.8	21.3	25.3	28.9	12.5	17.1
Green Ext Time (p_c), s	0.0	6.1	0.1	0.0	1.3	0.7	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	45.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

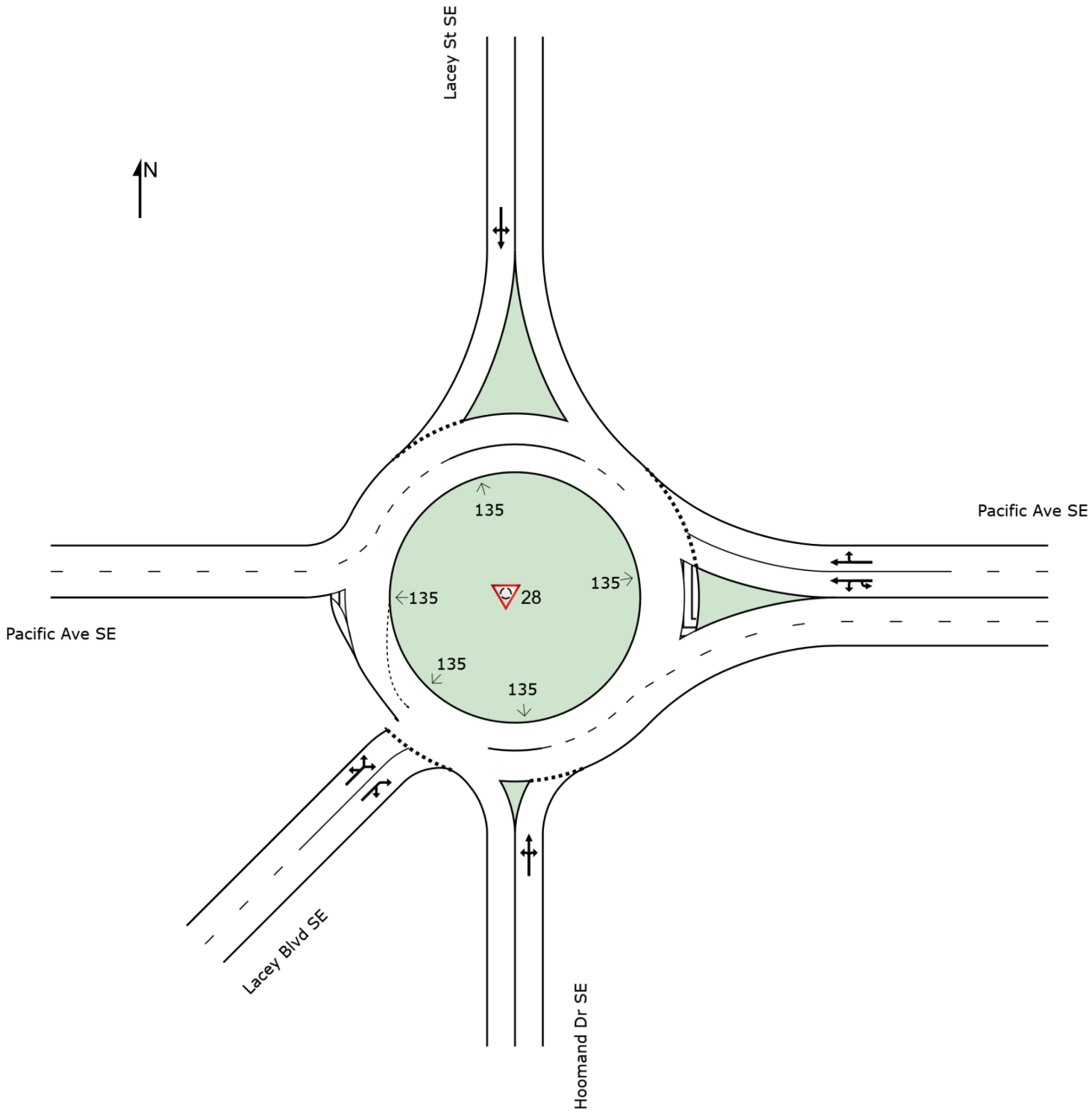
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	73	2.0	73	2.0	0.182	12.8	LOS B	0.7	17.7	0.60	0.78	0.60	33.2
8	T1	All MCs	4	2.0	4	2.0	0.182	5.8	LOS A	0.7	17.7	0.60	0.78	0.60	34.0
18	R2	All MCs	73	2.0	73	2.0	0.182	6.1	LOS A	0.7	17.7	0.60	0.78	0.60	33.7
Approach			150	2.0	150	2.0	0.182	9.3	LOS A	0.7	17.7	0.60	0.78	0.60	33.5
East: Pacific Ave SE															
1u	U	All MCs	3	1.0	3	1.0	0.485	13.9	LOS B	3.6	89.8	0.45	0.46	0.45	34.4
1	L2	All MCs	94	1.0	94	1.0	0.485	11.2	LOS B	3.6	89.8	0.45	0.46	0.45	34.5
6	T1	All MCs	1288	1.0	1288	1.0	0.485	4.1	LOS A	3.7	92.1	0.43	0.42	0.43	35.6
16	R2	All MCs	63	1.0	63	1.0	0.485	4.4	LOS A	3.7	92.1	0.41	0.40	0.41	35.4
Approach			1447	1.0	1447	1.0	0.485	4.6	LOS A	3.7	92.1	0.43	0.43	0.43	35.5
North: Lacey St SE															
7	L2	All MCs	21	2.0	21	2.0	0.096	13.3	LOS B	0.4	9.6	0.64	0.78	0.64	33.6
4	T1	All MCs	5	2.0	5	2.0	0.096	6.3	LOS A	0.4	9.6	0.64	0.78	0.64	34.3
14	R2	All MCs	42	2.0	42	2.0	0.096	6.6	LOS A	0.4	9.6	0.64	0.78	0.64	34.0
Approach			68	2.0	68	2.0	0.096	8.6	LOS A	0.4	9.6	0.64	0.78	0.64	33.9
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	36	1.0	36	1.0	0.463	12.1	LOS B	2.9	72.6	0.34	0.43	0.34	35.1
5ax	L1	All MCs	52	1.0	52	1.0	0.463	9.4	LOS A	2.9	72.6	0.34	0.43	0.34	35.0
12ax	R1	All MCs	1151	1.0	1151	1.0	0.463	3.6	LOS A	2.9	73.8	0.33	0.41	0.33	36.1
12bx	R3	All MCs	62	1.0	62	1.0	0.463	4.2	LOS A	2.9	73.8	0.32	0.39	0.32	35.7
Approach			1302	1.0	1302	1.0	0.463	4.1	LOS A	2.9	73.8	0.33	0.41	0.33	36.0
All Vehicles			2967	1.1	2967	1.1	0.485	4.7	LOS A	3.7	92.1	0.40	0.44	0.40	35.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	232	4	75	246	45	10	30	150	20	20	3
Future Vol, veh/h	5	232	4	75	246	45	10	30	150	20	20	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	6	264	5	85	280	51	11	34	170	23	23	3
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	11.8	15	10.4	9.9
HCM LOS	B	B	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	0%	2%	20%	47%
Vol Thru, %	75%	0%	96%	67%	47%
Vol Right, %	0%	100%	2%	12%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	150	241	366	43
LT Vol	10	0	5	75	20
Through Vol	30	0	232	246	20
RT Vol	0	150	4	45	3
Lane Flow Rate	45	170	274	416	49
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.082	0.268	0.401	0.584	0.085
Departure Headway (Hd)	6.491	5.651	5.267	5.052	6.267
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	552	634	682	715	570
Service Time	4.234	3.394	3.305	3.086	4.323
HCM Lane V/C Ratio	0.082	0.268	0.402	0.582	0.086
HCM Control Delay, s/veh	9.8	10.5	11.8	15	9.9
HCM Lane LOS	A	B	B	B	A
HCM 95th-tile Q	0.3	1.1	1.9	3.8	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	175	72	530	238	57	375
Future Volume (veh/h)	175	72	530	238	57	375
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	180	74	546	245	59	387
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	259	230	864	732	100	1155
Arrive On Green	0.15	0.15	0.48	0.48	0.06	0.64
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	180	74	546	245	59	387
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	4.4	1.9	9.9	4.3	1.5	4.3
Cycle Q Clear(g_c), s	4.4	1.9	9.9	4.3	1.5	4.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	259	230	864	732	100	1155
V/C Ratio(X)	0.70	0.32	0.63	0.33	0.59	0.34
Avail Cap(c_a), veh/h	702	624	864	732	196	1155
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	17.5	16.5	8.5	7.0	20.0	3.6
Incr Delay (d2), s/veh	3.4	0.8	3.5	1.2	5.4	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.6	3.5	1.2	0.7	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	20.9	17.3	12.0	8.3	25.4	4.4
LnGrp LOS	C	B	B	A	C	A
Approach Vol, veh/h	254		791			446
Approach Delay, s/veh	19.9		10.8			7.1
Approach LOS	B		B			A

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.1	25.4				32.5	11.1
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	3.5	11.9				6.3	6.4
Green Ext Time (p_c), s	0.0	2.5				2.3	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	11.3
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	639	280	255	543	65	185	437	225	95	275	125
Future Volume (veh/h)	186	639	280	255	543	65	185	437	225	95	275	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	200	687	301	274	584	70	199	470	242	102	296	134
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	165	752	327	304	1023	452	373	783	324	306	421	186
Arrive On Green	0.10	0.22	0.22	0.18	0.31	0.31	0.22	0.22	0.22	0.18	0.18	0.18
Sat Flow, veh/h	1701	3393	1476	1674	3340	1477	1674	3516	1457	1701	2341	1031
Grp Volume(v), veh/h	200	687	301	274	584	70	199	470	242	102	224	206
Grp Sat Flow(s),veh/h/ln	1701	1697	1476	1674	1670	1477	1674	1758	1457	1701	1786	1586
Q Serve(g_s), s	10.0	20.4	20.5	16.5	15.1	3.6	10.8	12.4	16.0	5.4	12.1	12.6
Cycle Q Clear(g_c), s	10.0	20.4	20.5	16.5	15.1	3.6	10.8	12.4	16.0	5.4	12.1	12.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	165	752	327	304	1023	452	373	783	324	306	322	286
V/C Ratio(X)	1.21	0.91	0.92	0.90	0.57	0.15	0.53	0.60	0.75	0.33	0.70	0.72
Avail Cap(c_a), veh/h	165	757	329	357	1135	502	585	1228	509	561	589	523
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	39.1	39.2	41.3	30.1	26.0	35.3	35.9	37.3	36.8	39.6	39.8
Incr Delay (d2), s/veh	138.2	15.3	29.6	22.0	0.4	0.1	0.9	0.6	2.6	0.5	2.0	2.6
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	10.5	9.9	10.0	8.6	6.1	1.3	4.5	5.3	5.8	2.3	5.5	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	184.7	54.4	68.8	63.2	30.5	26.1	36.2	36.5	39.9	37.3	41.6	42.4
LnGrp LOS	F	D	E	E	C	C	D	D	D	D	D	D
Approach Vol, veh/h		1188			928			911			532	
Approach Delay, s/veh		80.0			39.8			37.3			41.1	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	36.6		27.9	23.7	27.8		23.5				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	12.0	17.1		18.0	18.5	22.5		14.6				
Green Ext Time (p_c), s	0.0	3.3		3.6	0.2	0.3		2.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	52.8
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

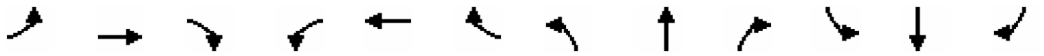
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	733	0	0	1020	308	175	0	490	0	0	0
Future Volume (veh/h)	224	733	0	0	1020	308	175	0	490	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	241	788	0	0	1097	0	188	0	0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	273	2547	0	0	1799		233	0				
Arrive On Green	0.16	0.75	0.00	0.00	0.53	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	241	788	0	0	1097	0	188	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	12.5	6.8	0.0	0.0	20.3	0.0	9.7	0.0	0.0			
Cycle Q Clear(g_c), s	12.5	6.8	0.0	0.0	20.3	0.0	9.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	273	2547	0	0	1799		233	0				
V/C Ratio(X)	0.88	0.31	0.00	0.00	0.61		0.81	0.00				
Avail Cap(c_a), veh/h	283	2547	0	0	1799		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	36.9	3.6	0.0	0.0	14.5	0.0	37.6	0.0	0.0			
Incr Delay (d2), s/veh	25.0	0.3	0.0	0.0	1.5	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.0	1.8	0.0	0.0	7.5	0.0	4.3	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.9	4.0	0.0	0.0	16.0	0.0	42.5	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1029			1097			188				
Approach Delay, s/veh		17.5			16.0			42.5				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	19.5	53.1		17.4		72.6						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0						
Max Q Clear Time (g_c+I1), s	14.5	22.3		11.7		8.8						
Green Ext Time (p_c), s	0.0	5.5		0.7		5.3						

Intersection Summary												
HCM 7th Control Delay, s/veh			18.8									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	729	230	0	690	0	0	0	0	228	1	373
Future Volume (veh/h)	0	729	230	0	690	0	0	0	0	228	1	373
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	759	0	0	719	0				238	1	389
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	2057		0	2041	0				475	2	424
Arrive On Green	0.00	0.61	0.00	0.00	0.61	0.00				0.28	0.28	0.28
Sat Flow, veh/h	0	3572	0	0	3544	0				1681	7	1502
Grp Volume(v), veh/h	0	759	0	0	719	0				239	0	389
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	10.2	0.0	0.0	9.6	0.0				10.7	0.0	22.6
Cycle Q Clear(g_c), s	0.0	10.2	0.0	0.0	9.6	0.0				10.7	0.0	22.6
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2057		0	2041	0				477	0	424
V/C Ratio(X)	0.00	0.37		0.00	0.35	0.00				0.50	0.00	0.92
Avail Cap(c_a), veh/h	0	2057		0	2041	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.0	0.0	0.0	8.9	0.0				27.0	0.0	31.3
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.5	0.0				0.6	0.0	21.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	0.0	0.0	3.3	0.0				4.3	0.0	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	9.5	0.0	0.0	9.3	0.0				27.6	0.0	52.6
LnGrp LOS		A			A					C		D
Approach Vol, veh/h		759			719						628	
Approach Delay, s/veh		9.5			9.3						43.1	
Approach LOS		A			A						D	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	59.6	59.6	30.4
Change Period (Y+Rc), s	5.0	5.0	5.0
Max Green Setting (Gmax), s	52.0	52.0	28.0
Max Q Clear Time (g_c+I1), s	11.6	12.2	24.6
Green Ext Time (p_c), s	4.7	5.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	19.5
HCM 7th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	817	140	0	1137	0	67
Future Vol, veh/h	817	140	0	1137	0	67
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	860	147	0	1197	0	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1532	504
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	598	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	107	513
Stage 1	-	-	0	-	343	-
Stage 2	-	-	0	-	512	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	107	513
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	512	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	13.13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	513	-	-	-
HCM Lane V/C Ratio	0.137	-	-	-
HCM Ctrl Dly (s/v)	13.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	640	51	0	783	0	54
Future Vol, veh/h	640	51	0	783	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	681	54	0	833	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1124	368
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	416	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	199	629
Stage 1	-	-	0	-	449	-
Stage 2	-	-	0	-	634	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	199	629
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	634	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.29
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	629	-	-	-
HCM Lane V/C Ratio	0.091	-	-	-
HCM Ctrl Dly (s/v)	11.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	707	26	0	776	0	54
Future Vol, veh/h	707	26	0	776	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	752	28	0	826	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1179	390
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	413	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	183	609
Stage 1	-	-	0	-	419	-
Stage 2	-	-	0	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	183	609
Mov Cap-2 Maneuver	-	-	-	-	183	-
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	636	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.53
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	609	-	-	-
HCM Lane V/C Ratio	0.094	-	-	-
HCM Ctrl Dly (s/v)	11.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	64	0	1994	2381	13
Future Vol, veh/h	0	64	0	1994	2381	13
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	96	96	96	96	96	96
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	0	67	0	2077	2480	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1247	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	142	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	142	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	51.24	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	142	-	-
HCM Lane V/C Ratio	-	0.471	-	-
HCM Ctrl Dly (s/v)	-	51.2	-	-
HCM Lane LOS	-	F	-	-
HCM 95th %tile Q(veh)	-	2.2	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	60	30	532	858	90
Future Vol, veh/h	55	60	30	532	858	90
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	57	63	31	554	894	94

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1557	941	988	0	-	0
Stage 1	941	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	125	321	708	-	-	-
Stage 1	381	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	119	321	708	-	-	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	364	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	26.79	0.55	0
HCM LOS	D		

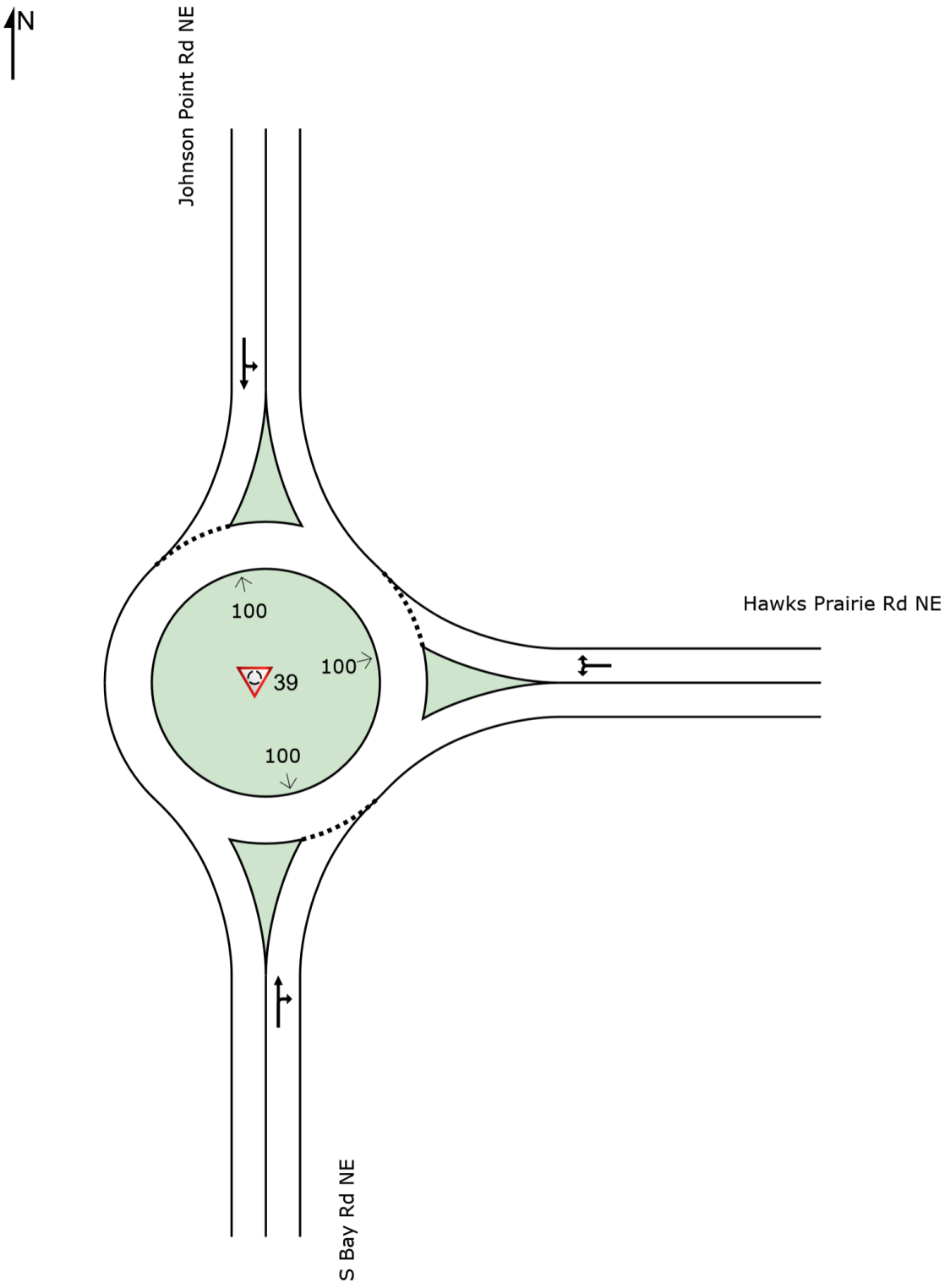
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	708	-	283	-	-
HCM Lane V/C Ratio	0.044	-	0.424	-	-
HCM Ctrl Dly (s/v)	10.3	-	26.8	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2027)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2027)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	224	0.0	224	0.0	0.356	4.0	LOS A	2.3	56.8	0.19	0.41	0.19	36.2
18	R2	All MCs	283	0.0	283	0.0	0.356	4.1	LOS A	2.3	56.8	0.19	0.41	0.19	35.9
Approach			507	0.0	507	0.0	0.356	4.0	LOS A	2.3	56.8	0.19	0.41	0.19	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	261	0.0	261	0.0	0.243	10.6	LOS B	1.3	31.8	0.38	0.62	0.38	32.7
16	R2	All MCs	47	0.0	47	0.0	0.243	4.8	LOS A	1.3	31.8	0.38	0.62	0.38	33.1
Approach			308	0.0	308	0.0	0.243	9.8	LOS A	1.3	31.8	0.38	0.62	0.38	32.8
North: Johnson Point Rd NE															
7	L2	All MCs	42	0.0	42	0.0	0.157	10.7	LOS B	0.8	20.2	0.40	0.52	0.40	34.2
4	T1	All MCs	151	0.0	151	0.0	0.157	4.7	LOS A	0.8	20.2	0.40	0.52	0.40	34.9
Approach			193	0.0	193	0.0	0.157	6.0	LOS A	0.8	20.2	0.40	0.52	0.40	34.8
All Vehicles			1008	0.0	1008	0.0	0.356	6.2	LOS A	2.3	56.8	0.29	0.49	0.29	34.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

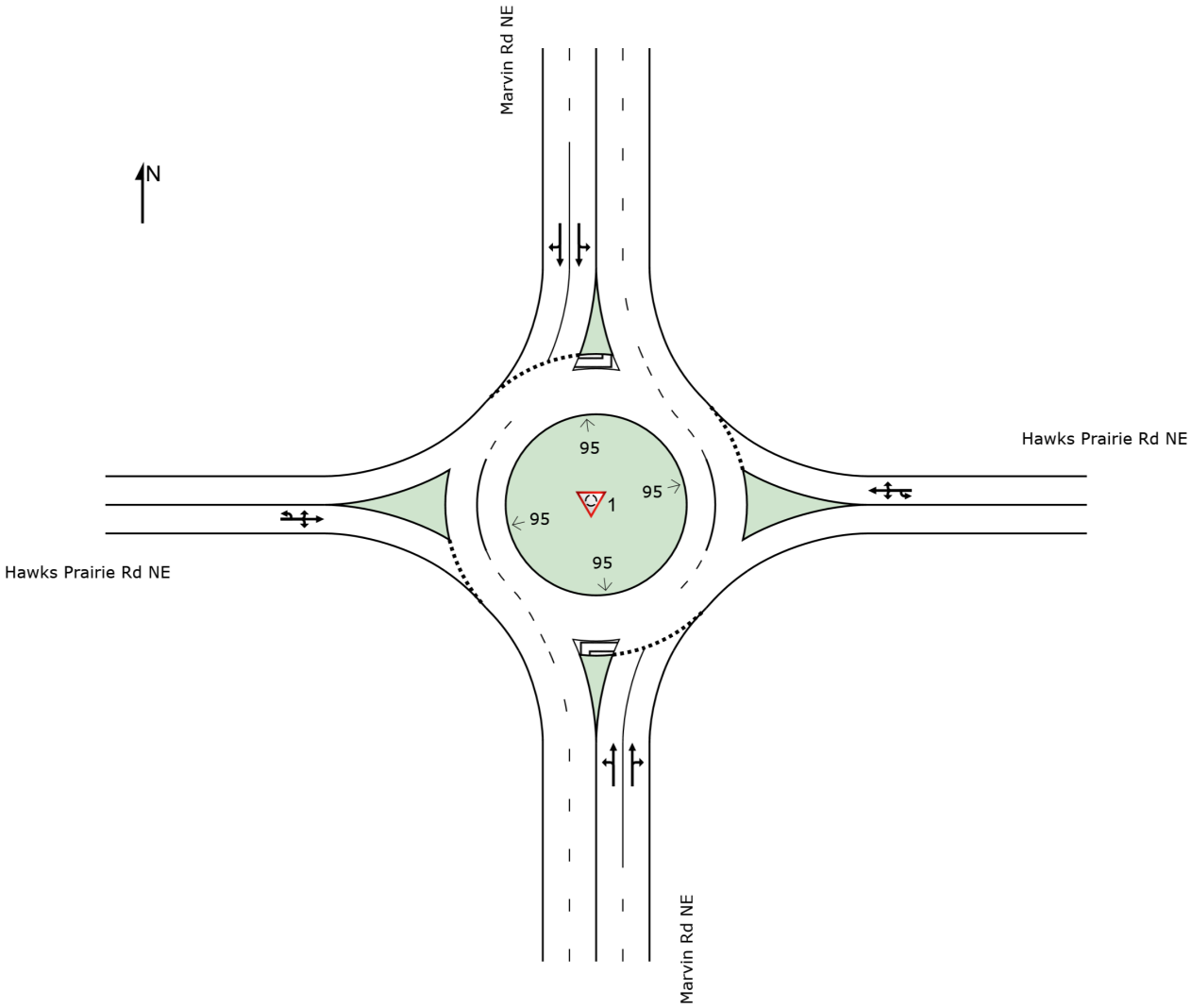
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SITE LAYOUT

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 1 [1. Marvin Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	289	0.0	289	0.0	0.252	10.1	LOS B	1.5	37.1	0.25	0.58	0.25	33.0
8	T1	All MCs	470	0.0	470	0.0	0.252	4.3	LOS A	1.5	37.7	0.24	0.41	0.24	35.5
18	R2	All MCs	2	0.0	2	0.0	0.252	4.4	LOS A	1.5	37.7	0.24	0.39	0.24	35.4
Approach			761	0.0	761	0.0	0.252	6.5	LOS A	1.5	37.7	0.24	0.48	0.24	34.5
East: Hawks Prairie Rd NE															
1u	U	All MCs	2	3.0	2	3.0	0.277	14.3	LOS B	1.0	25.9	0.52	0.73	0.52	32.9
1	L2	All MCs	140	3.0	140	3.0	0.277	11.9	LOS B	1.0	25.9	0.52	0.73	0.52	32.9
6	T1	All MCs	80	3.0	80	3.0	0.277	6.2	LOS A	1.0	25.9	0.52	0.73	0.52	33.5
16	R2	All MCs	25	3.0	25	3.0	0.277	6.1	LOS A	1.0	25.9	0.52	0.73	0.52	33.3
Approach			247	3.0	247	3.0	0.277	9.5	LOS A	1.0	25.9	0.52	0.73	0.52	33.1
North: Marvin Rd NE															
7	L2	All MCs	15	2.0	15	2.0	0.200	12.4	LOS B	1.1	28.5	0.59	0.60	0.59	33.7
4	T1	All MCs	331	2.0	331	2.0	0.200	6.4	LOS A	1.2	30.6	0.59	0.58	0.59	34.5
14	R2	All MCs	90	2.0	90	2.0	0.200	6.2	LOS A	1.2	30.6	0.58	0.57	0.58	34.4
Approach			436	2.0	436	2.0	0.200	6.6	LOS A	1.2	30.6	0.59	0.58	0.59	34.5
West: Hawks Prairie Rd NE															
5u	U	All MCs	2	3.0	2	3.0	0.158	13.6	LOS B	0.6	15.3	0.44	0.64	0.44	33.8
5	L2	All MCs	45	3.0	45	3.0	0.158	11.2	LOS B	0.6	15.3	0.44	0.64	0.44	33.8
2	T1	All MCs	15	3.0	15	3.0	0.158	5.5	LOS A	0.6	15.3	0.44	0.64	0.44	34.5
12	R2	All MCs	90	3.0	90	3.0	0.158	5.4	LOS A	0.6	15.3	0.44	0.64	0.44	34.3
Approach			152	3.0	152	3.0	0.158	7.2	LOS A	0.6	15.3	0.44	0.64	0.44	34.2
All Vehicles			1596	1.3	1596	1.3	0.277	7.1	LOS A	1.5	37.7	0.40	0.56	0.40	34.2

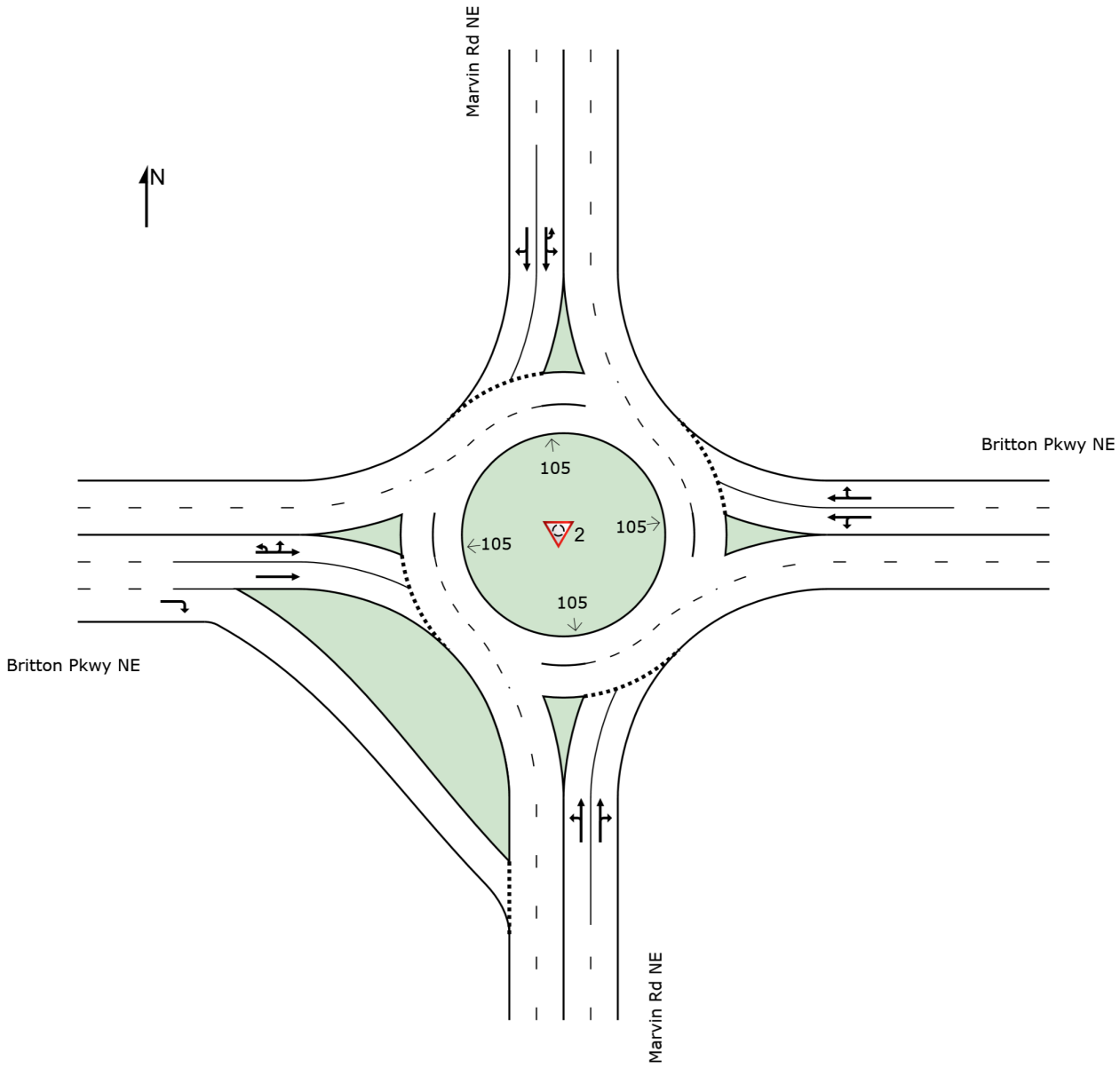
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: FFuture (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 2 [2. Marvin Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: FFuture (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3	L2	All MCs	379	2.0	379	2.0	0.567	12.4	LOS B	3.7	94.4	0.64	0.73	0.71	32.5
8	T1	All MCs	825	2.0	825	2.0	0.567	6.0	LOS A	3.8	96.1	0.62	0.62	0.68	34.2
18	R2	All MCs	40	2.0	40	2.0	0.567	6.0	LOS A	3.8	96.1	0.62	0.58	0.67	34.2
Approach			1244	2.0	1244	2.0	0.567	8.0	LOS A	3.8	96.1	0.63	0.65	0.69	33.6
East: Britton Pkwy NE															
1	L2	All MCs	465	4.0	465	4.0	0.645	16.0	LOS B	4.6	118.3	0.86	1.00	1.15	30.6
6	T1	All MCs	343	4.0	343	4.0	0.645	11.8	LOS B	4.6	118.3	0.84	0.99	1.17	32.4
16	R2	All MCs	50	4.0	50	4.0	0.645	12.0	LOS B	4.0	103.7	0.84	0.99	1.17	32.2
Approach			858	4.0	858	4.0	0.645	14.1	LOS B	4.6	118.3	0.85	1.00	1.16	31.4
North: Marvin Rd NE															
7u	U	All MCs	10	4.0	10	4.0	0.630	21.6	LOS C	4.4	113.7	0.88	0.99	1.21	31.0
7	L2	All MCs	40	4.0	40	4.0	0.630	19.1	LOS B	4.4	113.7	0.88	0.99	1.21	31.0
4	T1	All MCs	625	4.0	625	4.0	0.630	12.2	LOS B	5.0	129.9	0.89	0.97	1.21	32.2
14	R2	All MCs	129	4.0	129	4.0	0.630	11.4	LOS B	5.0	129.9	0.90	0.95	1.21	32.5
Approach			804	4.0	804	4.0	0.630	12.5	LOS B	5.0	129.9	0.89	0.97	1.21	32.2
West: Britton Pkwy NE															
5u	U	All MCs	20	5.0	20	5.0	0.218	15.7	LOS B	1.1	27.3	0.71	0.81	0.71	31.5
5	L2	All MCs	129	5.0	129	5.0	0.218	13.2	LOS B	1.1	27.3	0.71	0.81	0.71	31.5
2	T1	All MCs	232	5.0	232	5.0	0.218	6.6	LOS A	1.3	32.8	0.74	0.62	0.74	33.9
12	R2	All MCs	465	5.0	465	5.0	0.437	7.1	LOS A	2.9	74.3	0.78	0.77	0.84	34.1
Approach			846	5.0	846	5.0	0.437	8.1	LOS A	2.9	74.3	0.76	0.74	0.79	33.6
All Vehicles			3752	3.6	3752	3.6	0.645	10.4	LOS B	5.0	129.9	0.76	0.82	0.93	32.8

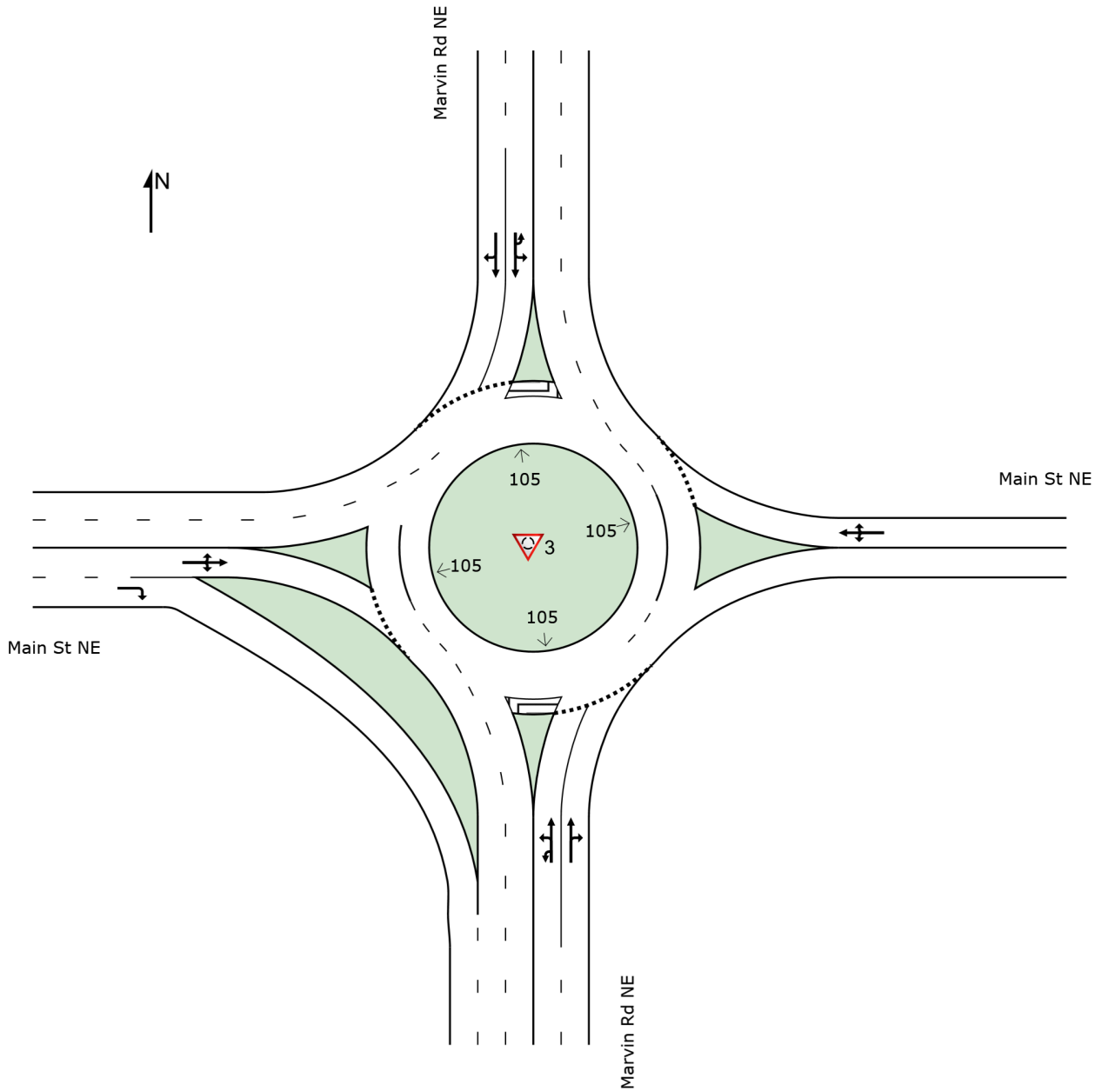
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 3 [3. Marvin Rd NE/Main St NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd NE															
3u	U	All MCs	320	3.0	320	3.0	0.562	12.8	LOS B	5.2	133.5	0.31	0.56	0.31	26.7
3	L2	All MCs	245	3.0	245	3.0	0.562	10.3	LOS B	5.2	133.5	0.31	0.56	0.31	30.5
8	T1	All MCs	1099	3.0	1099	3.0	0.562	4.2	LOS A	5.2	134.2	0.29	0.41	0.29	30.8
18	R2	All MCs	35	3.0	35	3.0	0.562	4.3	LOS A	5.2	134.2	0.28	0.37	0.28	33.7
Approach			1699	3.0	1699	3.0	0.562	6.7	LOS A	5.2	134.2	0.30	0.46	0.30	30.0
East: Main St NE															
1	L2	All MCs	45	0.0	45	0.0	0.189	13.9	LOS B	0.8	19.7	0.69	0.83	0.69	30.5
6	T1	All MCs	5	0.0	5	0.0	0.189	7.9	LOS A	0.8	19.7	0.69	0.83	0.69	33.5
16	R2	All MCs	80	0.0	80	0.0	0.189	7.9	LOS A	0.8	19.7	0.69	0.83	0.69	31.6
Approach			130	0.0	130	0.0	0.189	9.9	LOS A	0.8	19.7	0.69	0.83	0.69	31.3
North: Marvin Rd NE															
7u	U	All MCs	4	3.0	4	3.0	0.763	23.4	LOS C	10.1	259.5	0.95	0.99	1.44	25.0
7	L2	All MCs	20	3.0	20	3.0	0.763	20.9	LOS C	10.1	259.5	0.95	0.99	1.44	28.4
4	T1	All MCs	1452	3.0	1452	3.0	0.763	13.6	LOS B	11.2	287.1	0.95	0.97	1.40	25.5
14	R2	All MCs	38	3.0	38	3.0	0.763	12.8	LOS B	11.2	287.1	0.94	0.95	1.36	30.0
Approach			1514	3.0	1514	3.0	0.763	13.7	LOS B	11.2	287.1	0.95	0.97	1.40	25.7
West: Main St NE															
5	L2	All MCs	26	2.0	26	2.0	0.143	14.5	LOS B	0.8	20.5	0.86	0.85	0.86	30.8
2	T1	All MCs	1	2.0	1	2.0	0.143	8.5	LOS A	0.8	20.5	0.86	0.85	0.86	33.3
12	R2	All MCs	287	2.0	287	2.0	0.143	4.4	LOS A	0.8	20.5	0.16	0.51	0.16	34.4
Approach			314	2.0	314	2.0	0.143	5.3	LOS A	0.8	20.5	0.22	0.54	0.22	34.0
All Vehicles			3657	2.8	3657	2.8	0.763	9.6	LOS A	11.2	287.1	0.57	0.69	0.76	28.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	545	0	0	755	0	1309	1059	0	1606	394
Future Volume (vph)	0	0	545	0	0	755	0	1309	1059	0	1606	394
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.97	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3072	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3072	1335		3257	1457
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	545	0	0	755	0	1309	1059	0	1606	394
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	545	0	0	755	0	1648	720	0	1606	394
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			56.5			54.5		54.5	120.0		51.5	120.0
Effective Green, g (s)			56.5			54.5		54.5	120.0		51.5	120.0
Actuated g/C Ratio			0.47			0.45		0.45	1.00		0.43	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1243			1199		1395	1335		1397	1457
v/s Ratio Prot			0.21			0.29		c0.54			c0.49	
v/s Ratio Perm									0.54			0.27
v/c Ratio			0.44			0.63		1.18	0.54		1.15	0.27
Uniform Delay, d1			21.2			25.0		32.8	0.0		34.3	0.0
Progression Factor			1.00			1.00		0.71	1.00		1.00	1.00
Incremental Delay, d2			0.2			1.0		86.2	0.9		76.1	0.5
Delay (s)			21.4			26.1		109.4	0.9		110.3	0.5
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		21.4			26.1			76.4			88.7	
Approach LOS		C			C			E			F	

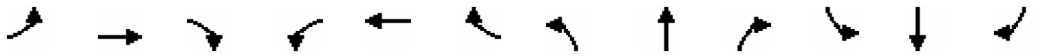
Intersection Summary			
HCM 2000 Control Delay (s/veh)	68.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	25	0	0	786	0	1577	150	0	1673	479
Future Volume (vph)	0	0	25	0	0	786	0	1577	150	0	1673	479
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		6.5	4.0
Lane Util. Factor			1.00			0.88		0.91	1.00		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	0.98
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.87			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1469			2540		4818	1500		3320	1455
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1469			2540		4818	1500		3320	1455
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	25	0	0	786	0	1577	150	0	1673	479
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	25	0	0	786	0	1577	150	0	1673	479
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	2%	2%	2%	3%	3%	3%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			44.5			66.5		42.5	120.0		64.5	120.0
Effective Green, g (s)			44.5			66.5		42.5	120.0		64.5	120.0
Actuated g/C Ratio			0.37			0.55		0.35	1.00		0.54	1.00
Clearance Time (s)			4.5			4.5		6.5			6.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			544			1407		1706	1500		1784	1455
v/s Ratio Prot			0.02			0.31		c0.33			c0.50	
v/s Ratio Perm									0.10			0.33
v/c Ratio			0.05			0.56		0.92	0.10		0.94	0.33
Uniform Delay, d1			24.2			17.3		37.2	0.0		25.9	0.0
Progression Factor			1.00			1.00		0.89	1.00		0.51	1.00
Incremental Delay, d2			0.0			0.5		7.5	0.1		3.8	0.2
Delay (s)			24.2			17.8		40.7	0.1		17.0	0.2
Level of Service			C			B		D	A		B	A
Approach Delay (s/veh)		24.2			17.8			37.2			13.2	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



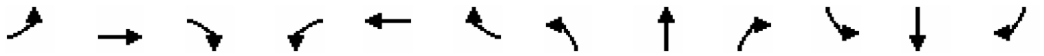
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	473	255	165	70	65	268	65	956	65	225	1093	300
Future Volume (veh/h)	473	255	165	70	65	268	65	956	65	225	1093	300
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.97
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	1786	1786	1786	1786	1786	1786	1772	1772	1772	1786	1786	1786
Adj Flow Rate, veh/h	473	255	165	70	65	268	65	956	65	225	1093	300
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	549	228	147	71	172	359	202	1290	88	241	1446	628
Arrive On Green	0.17	0.22	0.22	0.04	0.10	0.10	0.12	0.40	0.40	0.14	0.43	0.43
Sat Flow, veh/h	3300	1012	655	1701	1786	1504	1688	3193	217	1701	3393	1474
Grp Volume(v), veh/h	473	0	420	70	65	268	65	504	517	225	1093	300
Grp Sat Flow(s),veh/h/ln	1650	0	1666	1701	1786	1504	1688	1683	1726	1701	1697	1474
Q Serve(g_s), s	16.7	0.0	27.0	4.9	4.1	11.5	4.2	30.6	30.6	15.7	32.7	9.6
Cycle Q Clear(g_c), s	16.7	0.0	27.0	4.9	4.1	11.5	4.2	30.6	30.6	15.7	32.7	9.6
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	549	0	375	71	172	359	202	680	698	241	1446	628
V/C Ratio(X)	0.86	0.00	1.12	0.99	0.38	0.75	0.32	0.74	0.74	0.93	0.76	0.48
Avail Cap(c_a), veh/h	619	0	375	71	172	359	202	680	698	241	1654	719
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	1.00	1.00	1.00	1.00	0.58	0.58	0.58	0.26	0.26	0.26
Uniform Delay (d), s/veh	48.7	0.0	46.5	57.5	50.9	42.4	48.4	30.4	30.4	50.9	29.1	7.3
Incr Delay (d2), s/veh	12.7	0.0	83.3	102.8	2.9	9.9	1.1	4.2	4.1	16.4	1.0	0.7
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	7.8	0.0	19.8	4.2	2.0	8.3	1.9	13.0	13.3	7.8	13.3	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.3	0.0	129.8	160.3	53.8	52.3	49.5	34.6	34.5	67.3	30.1	8.0
LnGrp LOS	E		F	F	D	D	D	C	C	E	C	A
Approach Vol, veh/h		893			403			1086			1618	
Approach Delay, s/veh		93.5			71.3			35.5			31.2	
Approach LOS		F			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.4	57.1	25.5	17.0	23.0	54.5	10.0	32.5
Change Period (Y+Rc), s	6.0	6.0	5.5	* 5.5	6.0	6.0	5.0	5.5
Max Green Setting (Gmax), s	7.0	58.5	22.5	* 9.5	17.0	48.5	5.0	27.0
Max Q Clear Time (g_c+I1), s	6.2	34.7	18.7	13.5	17.7	32.6	6.9	29.0
Green Ext Time (p_c), s	0.0	16.4	1.2	0.0	0.0	9.8	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.3
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	55	125	160	60	92	165	794	185	117	1111	80
Future Volume (veh/h)	140	55	125	160	60	92	165	794	185	117	1111	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1800	1800	1800	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	140	55	125	160	60	92	165	794	185	117	1111	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	0	0	1	1	1	3	3	3	1	1	1
Cap, veh/h	186	67	152	156	76	117	191	1130	263	340	1626	117
Arrive On Green	0.11	0.14	0.14	0.09	0.12	0.12	0.11	0.42	0.42	0.07	0.17	0.17
Sat Flow, veh/h	1714	484	1101	1701	630	965	1674	2688	626	1701	3210	231
Grp Volume(v), veh/h	140	0	180	160	0	152	165	493	486	117	587	604
Grp Sat Flow(s),veh/h/ln	1714	0	1585	1701	0	1595	1674	1670	1644	1701	1697	1744
Q Serve(g_s), s	9.5	0.0	13.3	11.0	0.0	11.1	11.6	29.2	29.2	7.9	39.0	39.1
Cycle Q Clear(g_c), s	9.5	0.0	13.3	11.0	0.0	11.1	11.6	29.2	29.2	7.9	39.0	39.1
Prop In Lane	1.00		0.69	1.00		0.61	1.00		0.38	1.00		0.13
Lane Grp Cap(c), veh/h	186	0	219	156	0	193	191	702	691	340	859	883
V/C Ratio(X)	0.75	0.00	0.82	1.03	0.00	0.79	0.87	0.70	0.70	0.34	0.68	0.68
Avail Cap(c_a), veh/h	186	0	317	156	0	319	237	702	691	340	859	883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.70	0.70	0.70
Uniform Delay (d), s/veh	51.9	0.0	50.3	54.5	0.0	51.2	52.3	28.6	28.6	48.5	40.9	40.9
Incr Delay (d2), s/veh	15.0	0.0	9.4	79.1	0.0	5.3	21.8	3.3	3.3	0.3	1.6	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	4.9	0.0	5.9	8.1	0.0	4.7	6.0	12.2	12.0	3.6	18.2	18.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.9	0.0	59.7	133.6	0.0	56.5	74.1	31.9	32.0	48.8	42.6	42.5
LnGrp LOS	E		E	F		E	E	C	C	D	D	D
Approach Vol, veh/h		320			312			1144			1308	
Approach Delay, s/veh		62.8			96.1			38.0			43.1	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	65.8	17.0	18.5	29.0	55.4	15.0	20.6
Change Period (Y+Rc), s	5.0	5.0	4.0	4.0	5.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	17.0	50.0	11.0	24.0	18.0	49.0	11.0	24.0
Max Q Clear Time (g_c+I1), s	13.6	41.1	11.5	13.1	9.9	31.2	13.0	15.3
Green Ext Time (p_c), s	0.1	5.5	0.0	0.5	0.1	7.1	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	48.6
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	316	495	365	395	575	311	285	607	245	299	987	325
Future Volume (veh/h)	316	495	365	395	575	311	285	607	245	299	987	325
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1786	1786	1786	1800	1800	1800	1786	1786	1786	1800	1800	1800
Adj Flow Rate, veh/h	316	495	0	395	575	0	285	607	245	299	987	325
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	0	0	0	1	1	1	0	0	0
Cap, veh/h	374	587		452	669		365	780	314	325	1045	465
Arrive On Green	0.11	0.17	0.00	0.14	0.20	0.00	0.21	0.33	0.33	0.19	0.31	0.31
Sat Flow, veh/h	3300	3393	1514	3326	3420	1525	1701	2358	951	1714	3420	1522
Grp Volume(v), veh/h	316	495	0	395	575	0	285	436	416	299	987	325
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1663	1710	1525	1701	1697	1613	1714	1710	1522
Q Serve(g_s), s	11.3	16.9	0.0	14.0	19.5	0.0	19.0	27.8	27.9	20.5	33.8	16.2
Cycle Q Clear(g_c), s	11.3	16.9	0.0	14.0	19.5	0.0	19.0	27.8	27.9	20.5	33.8	16.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.59	1.00		1.00
Lane Grp Cap(c), veh/h	374	587		452	669		365	561	533	325	1045	465
V/C Ratio(X)	0.85	0.84		0.87	0.86		0.78	0.78	0.78	0.92	0.94	0.70
Avail Cap(c_a), veh/h	522	693		554	727		365	561	533	386	1055	469
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	48.0	0.0	50.8	46.7	0.0	44.5	36.2	36.2	47.7	40.7	18.9
Incr Delay (d2), s/veh	6.6	8.4	0.0	10.9	9.8	0.0	9.6	10.2	10.8	22.8	17.3	8.4
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	5.0	7.8	0.0	6.4	9.1	0.0	8.9	13.0	12.5	10.8	16.6	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.8	56.5	0.0	61.7	56.4	0.0	54.0	46.4	47.0	70.6	57.9	27.3
LnGrp LOS	E	E		E	E		D	D	D	E	E	C
Approach Vol, veh/h		811			970			1137			1611	
Approach Delay, s/veh		57.4			58.6			48.5			54.1	
Approach LOS		E			E			D			D	

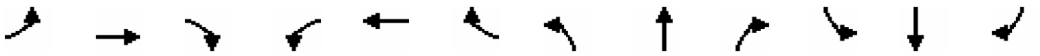
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.7	41.7	18.6	29.0	27.8	44.7	21.3	26.3
Change Period (Y+Rc), s	5.0	5.0	5.0	5.5	5.0	5.0	5.0	5.5
Max Green Setting (Gmax), s	18.0	37.0	19.0	25.5	27.0	28.0	20.0	24.5
Max Q Clear Time (g_c+I1), s	21.0	35.8	13.3	21.5	22.5	29.9	16.0	18.9
Green Ext Time (p_c), s	0.0	0.9	0.3	1.5	0.2	0.0	0.3	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	54.2
HCM 7th LOS	D

Notes

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

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	182	40	734	25	296	1126	254
Future Volume (veh/h)	110	205	55	180	265	182	40	734	25	296	1126	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	182	40	734	25	296	1126	254
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	138	308	83	188	255	175	70	897	31	334	1165	261
Arrive On Green	0.08	0.23	0.23	0.11	0.26	0.26	0.04	0.27	0.27	0.20	0.42	0.42
Sat Flow, veh/h	1688	1345	361	1714	994	682	1701	3347	114	1701	2752	617
Grp Volume(v), veh/h	110	0	260	180	0	447	40	372	387	296	691	689
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	0	1676	1701	1697	1765	1701	1697	1672
Q Serve(g_s), s	6.1	0.0	13.2	9.9	0.0	24.4	2.2	19.5	19.5	16.1	37.7	38.4
Cycle Q Clear(g_c), s	6.1	0.0	13.2	9.9	0.0	24.4	2.2	19.5	19.5	16.1	37.7	38.4
Prop In Lane	1.00		0.21	1.00		0.41	1.00		0.06	1.00		0.37
Lane Grp Cap(c), veh/h	138	0	391	188	0	430	70	455	473	334	718	708
V/C Ratio(X)	0.80	0.00	0.66	0.96	0.00	1.04	0.57	0.82	0.82	0.89	0.96	0.97
Avail Cap(c_a), veh/h	362	0	438	188	0	430	186	645	671	652	718	708
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	0.0	33.3	42.1	0.0	35.3	44.7	32.6	32.6	37.1	26.7	26.9
Incr Delay (d2), s/veh	7.6	0.0	3.2	53.6	0.0	53.7	5.3	5.3	5.2	6.0	24.5	27.1
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	2.8	0.0	5.7	6.9	0.0	16.1	1.0	8.5	8.8	7.1	19.3	19.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.4	0.0	36.5	95.7	0.0	89.0	50.1	37.9	37.8	43.1	51.2	54.0
LnGrp LOS	D		D	F		F	D	D	D	D	D	D
Approach Vol, veh/h		370			627			799			1676	
Approach Delay, s/veh		40.7			90.9			38.5			50.9	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	45.1	12.4	29.0	23.3	30.4	15.0	26.4
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.2	40.4	8.1	26.4	18.1	21.5	11.9	15.2
Green Ext Time (p_c), s	0.0	0.0	0.1	0.0	0.6	3.9	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	54.2
HCM 7th LOS	D

Notes

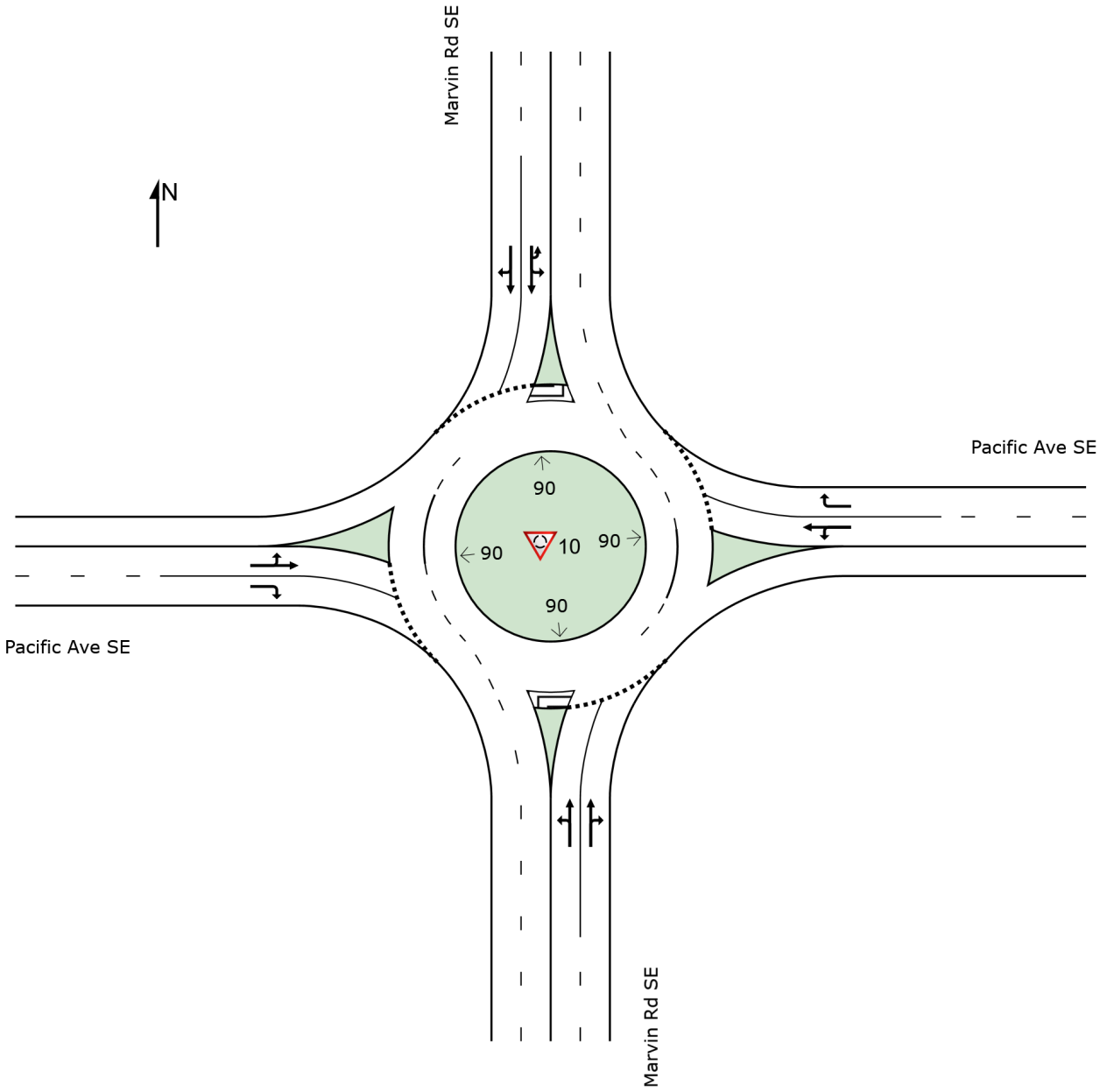
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 10 [10. Marvin Rd SE/Pacific Ave SE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Marvin Rd SE															
3	L2	All MCs	125	1.0	125	1.0	0.409	15.7	LOS B	2.9	74.1	0.85	0.78	0.89	31.7
8	T1	All MCs	497	1.0	497	1.0	0.409	9.2	LOS A	3.2	81.1	0.86	0.73	0.87	33.2
18	R2	All MCs	45	1.0	45	1.0	0.409	8.8	LOS A	3.2	81.1	0.86	0.71	0.86	33.3
Approach			667	1.0	667	1.0	0.409	10.4	LOS B	3.2	81.1	0.86	0.74	0.87	32.9
East: Pacific Ave SE															
1	L2	All MCs	35	1.0	35	1.0	0.318	11.3	LOS B	1.6	39.6	0.60	0.57	0.60	33.6
6	T1	All MCs	290	1.0	290	1.0	0.318	5.7	LOS A	1.6	39.6	0.60	0.57	0.60	34.3
16	R2	All MCs	318	1.0	318	1.0	0.360	6.2	LOS A	1.7	44.1	0.63	0.70	0.63	34.5
Approach			643	1.0	643	1.0	0.360	6.3	LOS A	1.7	44.1	0.61	0.64	0.61	34.3
North: Marvin Rd SE															
7u	U	All MCs	3	1.0	3	1.0	0.592	16.3	LOS B	5.4	135.9	0.78	0.76	0.88	31.7
7	L2	All MCs	429	1.0	429	1.0	0.592	13.9	LOS B	5.4	135.9	0.78	0.76	0.88	31.7
4	T1	All MCs	778	1.0	778	1.0	0.592	7.5	LOS A	5.5	139.7	0.76	0.69	0.83	33.7
14	R2	All MCs	110	1.0	110	1.0	0.592	7.4	LOS A	5.5	139.7	0.76	0.67	0.82	33.7
Approach			1320	1.0	1320	1.0	0.592	9.6	LOS A	5.5	139.7	0.76	0.71	0.85	33.0
West: Pacific Ave SE															
5	L2	All MCs	45	1.0	45	1.0	0.475	13.1	LOS B	2.8	71.1	0.80	0.78	0.90	33.0
2	T1	All MCs	325	1.0	325	1.0	0.475	7.6	LOS A	2.8	71.1	0.80	0.78	0.90	33.6
12	R2	All MCs	120	1.0	120	1.0	0.227	8.0	LOS A	1.0	24.7	0.72	0.83	0.72	34.0
Approach			490	1.0	490	1.0	0.475	8.2	LOS A	2.8	71.1	0.78	0.79	0.86	33.6
All Vehicles			3120	1.0	3120	1.0	0.592	8.9	LOS A	5.5	139.7	0.76	0.71	0.81	33.3

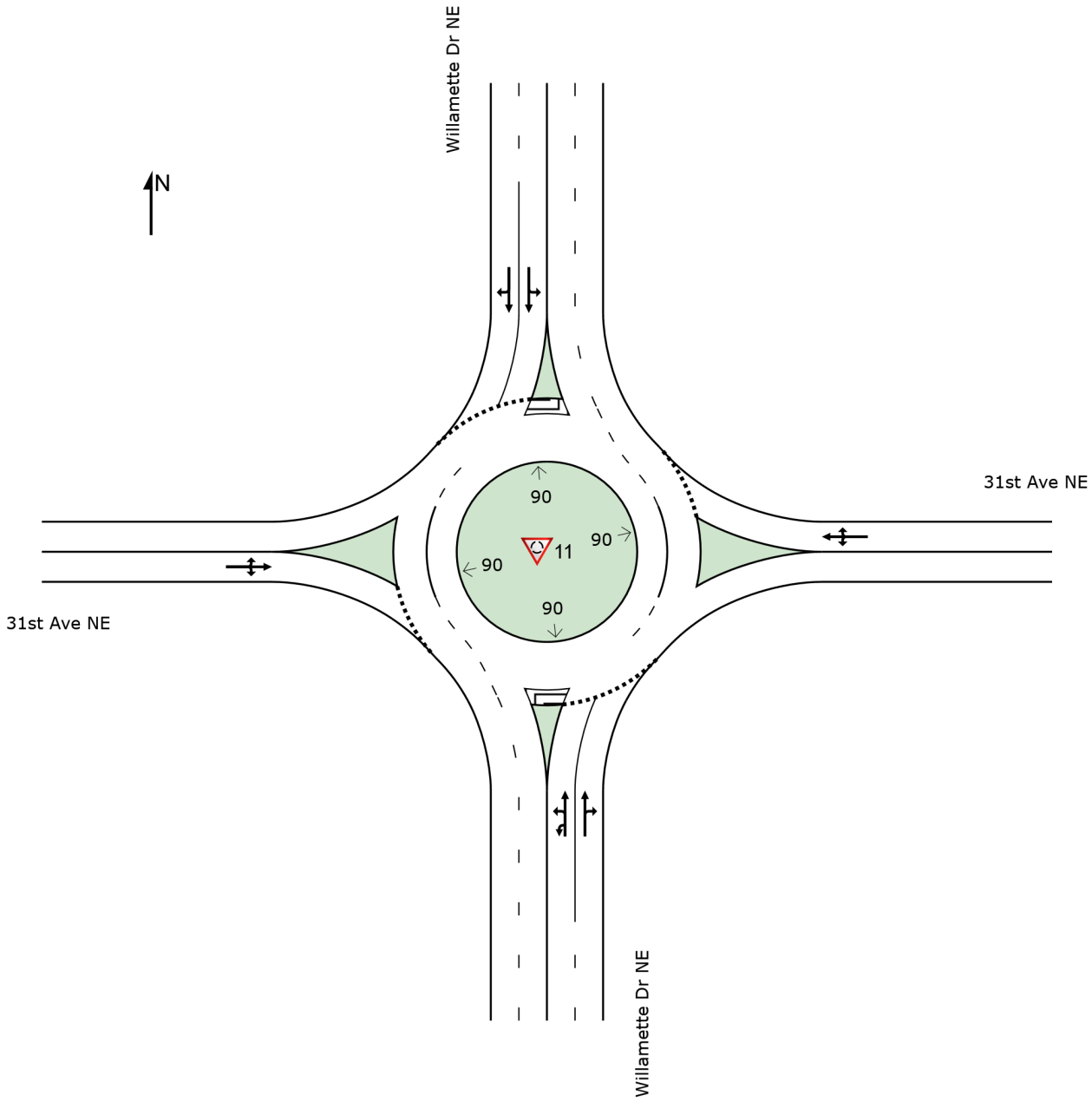
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: M:\21\1.21359.00 - Nisqually Tribe Lacey Project\Traffic Analysis\Traffic Operations\Village - Future Sidra.sip9

MOVEMENT SUMMARY

Site: 11 [11. Willamette Dr NE/31st Ave NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Willamette Dr NE															
3u	U	All MCs	35	2.0	35	2.0	0.213	12.1	LOS B	1.2	30.5	0.11	0.49	0.11	34.4
3	L2	All MCs	65	2.0	65	2.0	0.213	9.7	LOS A	1.2	30.5	0.11	0.49	0.11	34.4
8	T1	All MCs	463	2.0	463	2.0	0.213	4.2	LOS A	1.2	30.9	0.11	0.44	0.11	35.7
18	R2	All MCs	94	2.0	94	2.0	0.213	4.3	LOS A	1.2	30.9	0.11	0.40	0.11	35.7
Approach			657	2.0	657	2.0	0.213	5.2	LOS A	1.2	30.9	0.11	0.45	0.11	35.5
East: 31st Ave NE															
1	L2	All MCs	71	3.0	71	3.0	0.094	11.2	LOS B	0.3	7.6	0.40	0.70	0.40	32.7
6	T1	All MCs	5	3.0	5	3.0	0.094	5.6	LOS A	0.3	7.6	0.40	0.70	0.40	33.4
16	R2	All MCs	15	3.0	15	3.0	0.094	5.5	LOS A	0.3	7.6	0.40	0.70	0.40	33.1
Approach			91	3.0	91	3.0	0.094	9.9	LOS A	0.3	7.6	0.40	0.70	0.40	32.8
North: Willamette Dr NE															
7	L2	All MCs	1	1.0	1	1.0	0.098	10.3	LOS B	0.5	11.9	0.32	0.44	0.32	34.7
4	T1	All MCs	266	1.0	266	1.0	0.098	4.7	LOS A	0.5	12.2	0.31	0.43	0.31	35.4
14	R2	All MCs	5	1.0	5	1.0	0.098	4.7	LOS A	0.5	12.2	0.30	0.43	0.30	35.1
Approach			272	1.0	272	1.0	0.098	4.8	LOS A	0.5	12.2	0.31	0.43	0.31	35.4
West: 31st Ave NE															
5	L2	All MCs	10	0.0	10	0.0	0.069	10.6	LOS B	0.2	5.8	0.34	0.56	0.34	34.6
2	T1	All MCs	10	0.0	10	0.0	0.069	5.0	LOS A	0.2	5.8	0.34	0.56	0.34	35.3
12	R2	All MCs	55	0.0	55	0.0	0.069	4.9	LOS A	0.2	5.8	0.34	0.56	0.34	35.0
Approach			75	0.0	75	0.0	0.069	5.7	LOS A	0.2	5.8	0.34	0.56	0.34	35.0
All Vehicles			1095	1.7	1095	1.7	0.213	5.5	LOS A	1.2	30.9	0.20	0.47	0.20	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

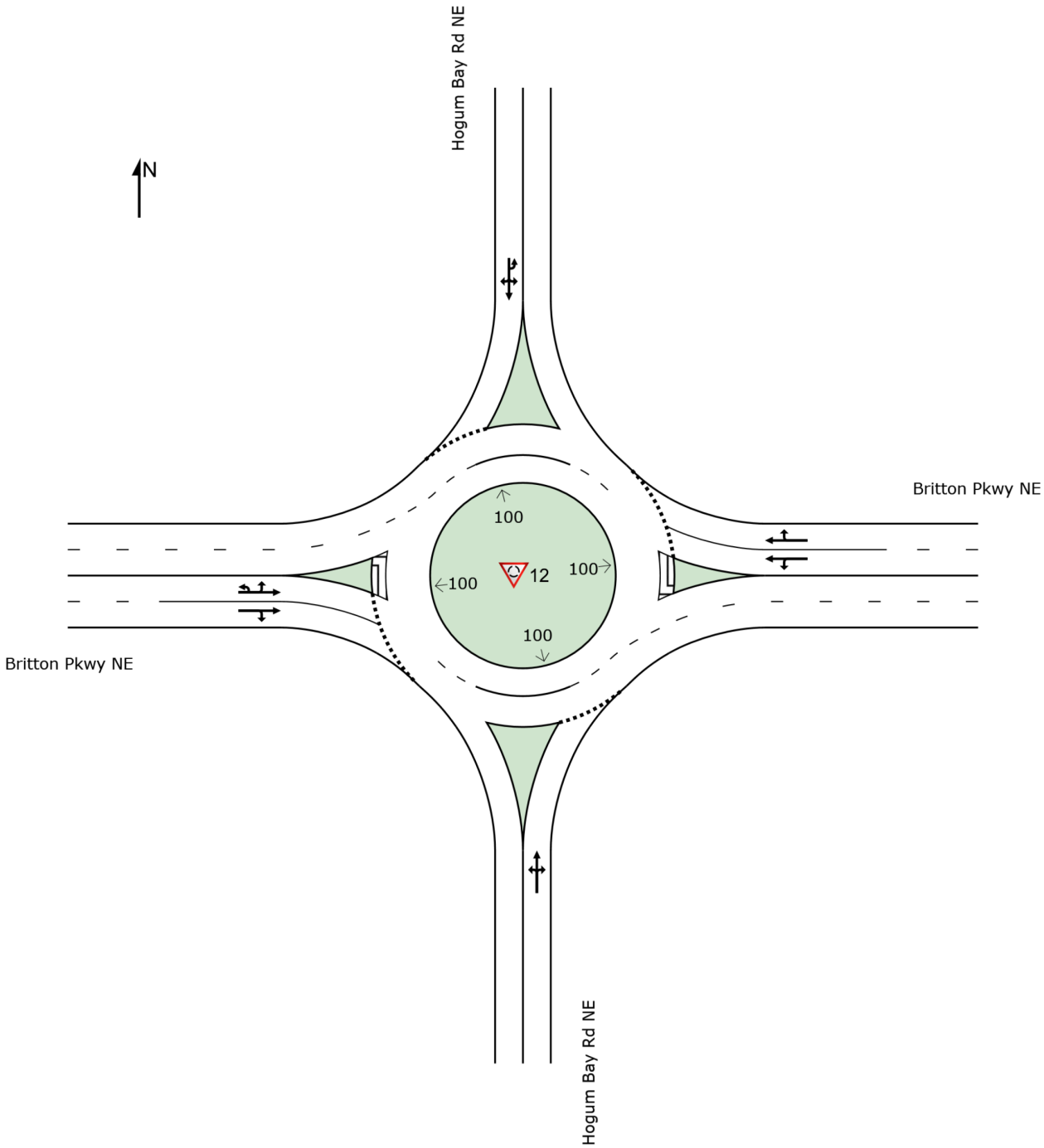
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SITE LAYOUT

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 12 [12. Hogum Bay Rd NE/Willamette Dr NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hogum Bay Rd NE															
3	L2	All MCs	25	13.0	25	13.0	0.522	12.0	LOS B	2.8	77.0	0.51	0.60	0.54	33.9
8	T1	All MCs	175	13.0	175	13.0	0.522	6.1	LOS A	2.8	77.0	0.51	0.60	0.54	34.8
18	R2	All MCs	295	13.0	295	13.0	0.522	6.1	LOS A	2.8	77.0	0.51	0.60	0.54	34.5
Approach			495	13.0	495	13.0	0.522	6.4	LOS A	2.8	77.0	0.51	0.60	0.54	34.6
East: Britton Pkwy NE															
1	L2	All MCs	45	4.0	45	4.0	0.253	11.5	LOS B	1.4	37.4	0.51	0.54	0.51	33.8
6	T1	All MCs	552	4.0	552	4.0	0.253	5.4	LOS A	1.5	39.3	0.49	0.51	0.49	34.8
16	R2	All MCs	15	4.0	15	4.0	0.253	5.4	LOS A	1.5	39.3	0.48	0.49	0.48	34.5
Approach			612	4.0	612	4.0	0.253	5.8	LOS A	1.5	39.3	0.49	0.52	0.49	34.7
North: Hogum Bay Rd NE															
7u	U	All MCs	1	10.0	1	10.0	0.537	15.9	LOS B	2.9	77.1	0.64	0.77	0.76	33.4
7	L2	All MCs	30	10.0	30	10.0	0.537	13.4	LOS B	2.9	77.1	0.64	0.77	0.76	33.4
4	T1	All MCs	110	10.0	110	10.0	0.537	7.5	LOS A	2.9	77.1	0.64	0.77	0.76	34.3
14	R2	All MCs	296	10.0	296	10.0	0.537	7.5	LOS A	2.9	77.1	0.64	0.77	0.76	33.9
Approach			437	10.0	437	10.0	0.537	7.9	LOS A	2.9	77.1	0.64	0.77	0.76	34.0
West: Britton Pkwy NE															
5u	U	All MCs	5	7.0	5	7.0	0.116	13.2	LOS B	0.6	16.0	0.38	0.59	0.38	32.9
5	L2	All MCs	85	7.0	85	7.0	0.116	10.7	LOS B	0.6	16.0	0.38	0.59	0.38	32.9
2	T1	All MCs	174	7.0	174	7.0	0.116	4.7	LOS A	0.6	16.6	0.36	0.48	0.36	34.9
12	R2	All MCs	30	7.0	30	7.0	0.116	4.8	LOS A	0.6	16.6	0.36	0.44	0.36	34.9
Approach			294	7.0	294	7.0	0.116	6.6	LOS A	0.6	16.6	0.37	0.51	0.37	34.3
All Vehicles			1838	8.3	1838	8.3	0.537	6.6	LOS A	2.9	77.1	0.51	0.60	0.55	34.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	10.6

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	40	652	42	5	59	797	3	81	0	56	50	0	20
Future Vol, veh/h	40	652	42	5	59	797	3	81	0	56	50	0	20
Conflicting Peds, #/hr	1	0	0	0	0	0	1	0	0	0	1	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	3	2	2	2	0	0	0
Mvmt Flow	40	652	42	5	59	797	3	81	0	56	50	0	20

Major/Minor	Major1			Major2				Minor1			Minor2		
Conflicting Flow All	801	0	0	694	694	0	0	1281	1682	348	1335	1702	402
Stage 1	-	-	-	-	-	-	-	753	753	-	928	928	-
Stage 2	-	-	-	-	-	-	-	528	929	-	407	774	-
Critical Hdwy	4.18	-	-	6.46	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.53	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	805	-	-	518	891	-	-	123	94	648	114	93	604
Stage 1	-	-	-	-	-	-	-	368	416	-	293	350	-
Stage 2	-	-	-	-	-	-	-	502	344	-	597	411	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	804	-	-	833	833	-	-	104	82	647	91	81	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	104	82	-	91	81	-
Stage 1	-	-	-	-	-	-	-	350	395	-	270	322	-
Stage 2	-	-	-	-	-	-	-	448	318	-	518	391	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.53	0.72	96.34	70.06
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	804	-	-	833	-	-	120
HCM Lane V/C Ratio	0.865	0.05	-	-	0.077	-	-	0.582
HCM Ctrl Dly (s/v)	96.3	9.7	-	-	9.7	-	-	70.1
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	6	0.2	-	-	0.2	-	-	2.9

Intersection	
Int Delay, s/veh	15.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	650	112	82	776	0	110	0	61	1	0	15
Future Vol, veh/h	2	650	112	82	776	0	110	0	61	1	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	2	650	112	82	776	0	110	0	61	1	0	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	776	0	0	762	0	0	1262	1650	381	1269	1706	388
Stage 1	-	-	-	-	-	-	710	710	-	940	940	-
Stage 2	-	-	-	-	-	-	552	940	-	329	766	-
Critical Hdwy	4.18	-	-	4.16	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	823	-	-	840	-	-	127	98	617	127	92	616
Stage 1	-	-	-	-	-	-	391	435	-	287	345	-
Stage 2	-	-	-	-	-	-	486	340	-	664	415	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	823	-	-	840	-	-	111	88	617	103	83	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	111	88	-	103	83	-
Stage 1	-	-	-	-	-	-	390	434	-	259	311	-
Stage 2	-	-	-	-	-	-	427	307	-	596	414	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.02	0.93	155.4	12.93
HCM LOS			F	B

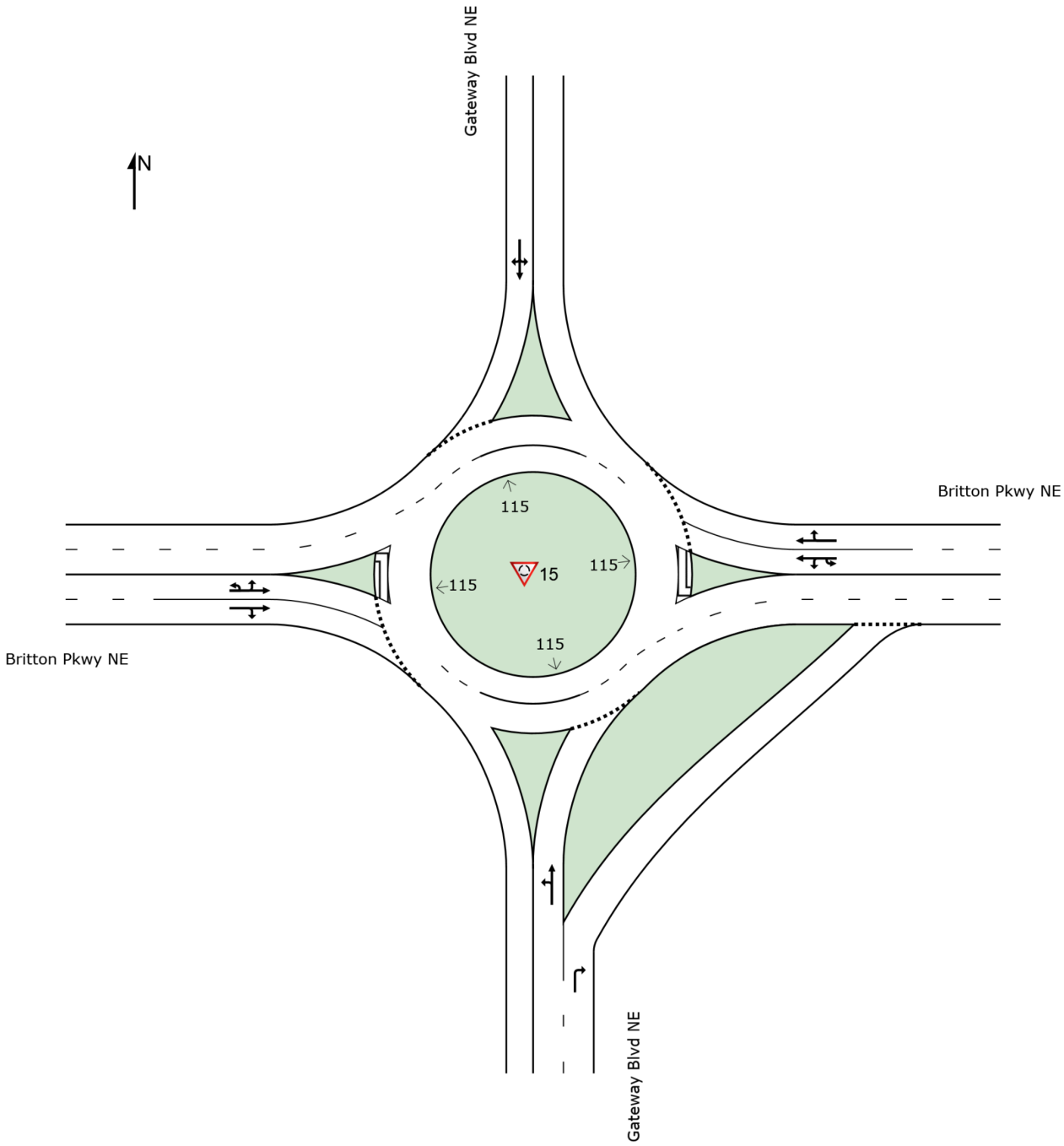
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	157	823	-	-	840	-	-	470
HCM Lane V/C Ratio	1.088	0.002	-	-	0.098	-	-	0.034
HCM Ctrl Dly (s/v)	155.4	9.4	-	-	9.8	-	-	12.9
HCM Lane LOS	F	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	8.9	0	-	-	0.3	-	-	0.1

SITE LAYOUT

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	464	2.0	464	2.0	0.402	11.3	LOS B	1.8	44.8	0.50	0.72	0.50	32.1
8	T1	All MCs	30	2.0	30	2.0	0.402	4.9	LOS A	1.8	44.8	0.50	0.72	0.50	32.8
18	R2	All MCs	169	2.0	169	2.0	0.133	4.5	LOS A	0.4	11.3	0.37	0.53	0.37	35.5
Approach			663	2.0	663	2.0	0.402	9.3	LOS A	1.8	44.8	0.47	0.67	0.47	32.9
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.426	16.3	LOS B	2.9	74.6	0.75	0.70	0.75	32.6
1	L2	All MCs	148	3.0	148	3.0	0.426	13.7	LOS B	2.9	74.6	0.75	0.70	0.75	32.6
6	T1	All MCs	583	3.0	583	3.0	0.426	6.8	LOS A	3.2	82.7	0.75	0.66	0.75	34.0
16	R2	All MCs	135	3.0	135	3.0	0.426	6.7	LOS A	3.2	82.7	0.74	0.63	0.74	34.0
Approach			871	3.0	871	3.0	0.426	8.0	LOS A	3.2	82.7	0.75	0.66	0.75	33.7
North: Gateway Blvd NE															
7	L2	All MCs	22	2.0	22	2.0	0.232	13.6	LOS B	1.1	27.4	0.70	0.75	0.70	33.5
4	T1	All MCs	71	2.0	71	2.0	0.232	7.3	LOS A	1.1	27.4	0.70	0.75	0.70	34.2
14	R2	All MCs	65	2.0	65	2.0	0.232	7.4	LOS A	1.1	27.4	0.70	0.75	0.70	33.9
Approach			158	2.0	158	2.0	0.232	8.2	LOS A	1.1	27.4	0.70	0.75	0.70	34.0
West: Britton Pkwy NE															
5u	U	All MCs	5	5.0	5	5.0	0.329	14.0	LOS B	2.1	53.7	0.49	0.52	0.49	33.9
5	L2	All MCs	75	5.0	75	5.0	0.329	11.4	LOS B	2.1	53.7	0.49	0.52	0.49	33.9
2	T1	All MCs	511	5.0	511	5.0	0.329	4.9	LOS A	2.2	56.3	0.48	0.51	0.48	34.9
12	R2	All MCs	253	5.0	253	5.0	0.329	5.0	LOS A	2.2	56.3	0.47	0.49	0.47	34.9
Approach			844	5.0	844	5.0	0.329	5.5	LOS A	2.2	56.3	0.48	0.50	0.48	34.8
All Vehicles			2536	3.3	2536	3.3	0.426	7.5	LOS A	3.2	82.7	0.58	0.62	0.58	33.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	119

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	725	142	38	1069	10	164	0	72	14	10	29
Future Vol, veh/h	106	725	142	38	1069	10	164	0	72	14	10	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	106	725	142	38	1069	10	164	0	72	14	10	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1079	0	0	867	0	0	1624	2163	434	1725	2229	540
Stage 1	-	-	-	-	-	-	1008	1008	-	1150	1150	-
Stage 2	-	-	-	-	-	-	616	1155	-	575	1079	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	648	-	-	772	-	-	~ 68	47	570	58	43	492
Stage 1	-	-	-	-	-	-	258	316	-	214	275	-
Stage 2	-	-	-	-	-	-	445	269	-	476	297	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	648	-	-	772	-	-	~ 38	37	570	41	35	492
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 38	37	-	41	35	-
Stage 1	-	-	-	-	-	-	216	265	-	204	262	-
Stage 2	-	-	-	-	-	-	383	256	-	348	249	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.27	0.34	$ 1170.46	98.48
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	38	570	648	-	-	772	-	-	38	492
HCM Lane V/C Ratio	4.26	0.126	0.164	-	-	0.049	-	-	0.634	0.059
HCM Ctrl Dly (s/v)	$ 1679	12.2	11.6	-	-	9.9	-	-	202	12.8
HCM Lane LOS	F	B	B	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	18.9	0.4	0.6	-	-	0.2	-	-	2.3	0.2

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	94	0	0	190	0	0	0	235	0	0	0
Future Vol, veh/h	0	94	0	0	190	0	0	0	235	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	94	0	0	190	0	0	0	235	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	94	0	0	284	284	94	284	284	190
Stage 1	-	-	-	-	-	-	94	94	-	190	190	-
Stage 2	-	-	-	-	-	-	190	190	-	94	94	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1384	-	-	1500	-	-	668	625	963	668	625	852
Stage 1	-	-	-	-	-	-	913	817	-	812	743	-
Stage 2	-	-	-	-	-	-	812	743	-	913	817	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1384	-	-	1500	-	-	668	625	963	505	625	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	668	625	-	505	625	-
Stage 1	-	-	-	-	-	-	913	817	-	812	743	-
Stage 2	-	-	-	-	-	-	812	743	-	690	817	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	9.94	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	963	1384	-	-	1500	-	-	-
HCM Lane V/C Ratio	0.244	-	-	-	-	-	-	-
HCM Ctrl Dly (s/v)	9.9	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	175	82	70	380	52	70
Future Vol, veh/h	175	82	70	380	52	70
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	2	2
Mvmt Flow	175	82	70	380	52	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	257	0	736	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	-	-	4.1	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.2	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1320	-	386	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	597	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1320	-	360	824
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	556	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.23	13.77
HCM LOS			B

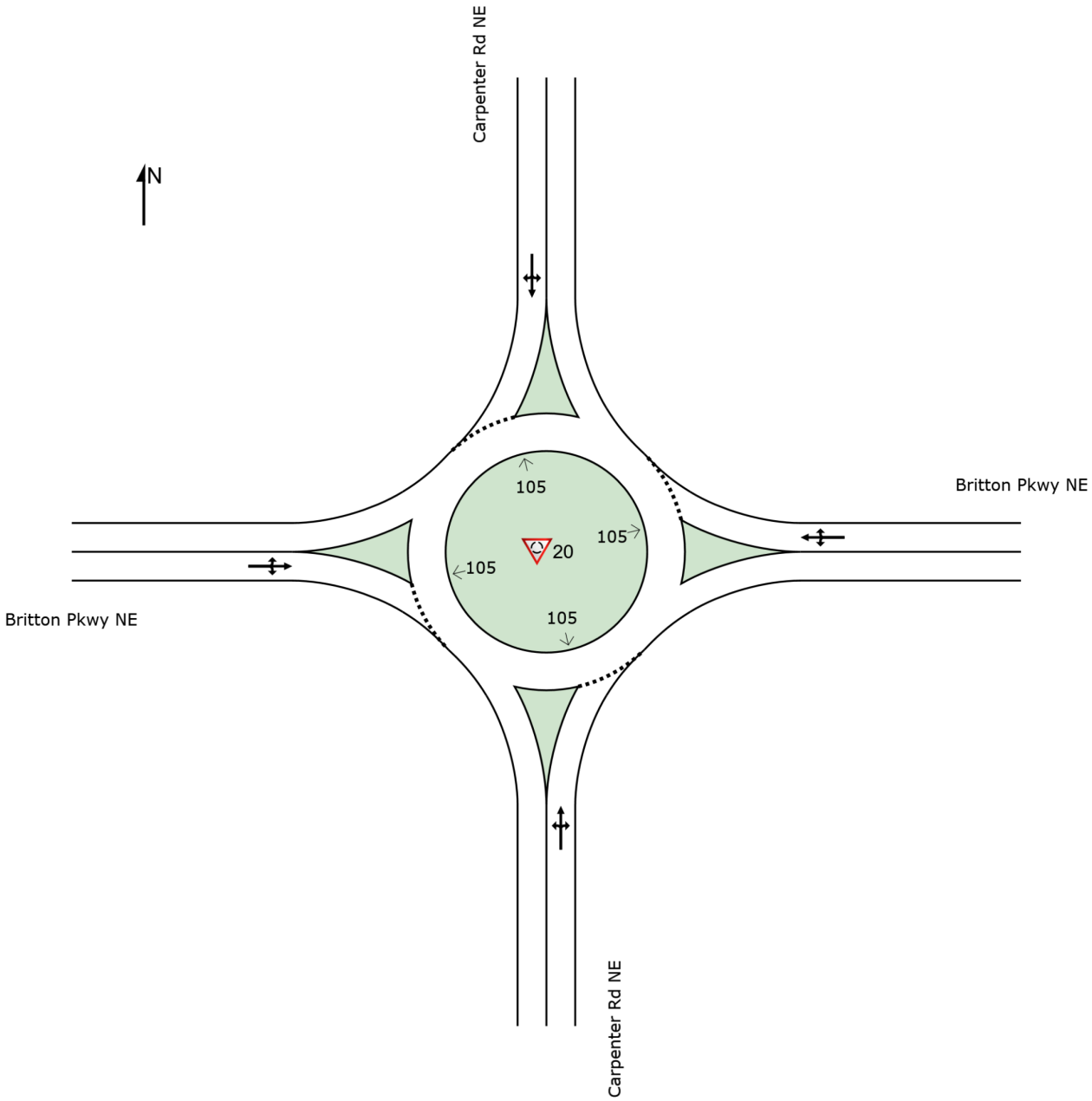
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	532	-	-	280	-
HCM Lane V/C Ratio	0.229	-	-	0.053	-
HCM Ctrl Dly (s/v)	13.8	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.2	-

SITE LAYOUT

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 20 [20. Carpenter Rd NE/Britton Pkwy NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Carpenter Rd NE															
3	L2	All MCs	90	4.0	90	4.0	0.693	15.0	LOS B	7.9	202.8	0.89	0.79	1.06	30.3
8	T1	All MCs	2	4.0	2	4.0	0.693	8.8	LOS A	7.9	202.8	0.89	0.79	1.06	27.7
18	R2	All MCs	568	4.0	568	4.0	0.693	9.0	LOS A	7.9	202.8	0.89	0.79	1.06	30.8
Approach			660	4.0	660	4.0	0.693	9.8	LOS A	7.9	202.8	0.89	0.79	1.06	30.8
East: Britton Pkwy NE															
1	L2	All MCs	658	5.0	658	5.0	0.977	14.3	LOS E	35.2	914.0	1.00	0.85	1.04	29.2
6	T1	All MCs	590	5.0	590	5.0	0.977	8.1	LOS E	35.2	914.0	1.00	0.85	1.04	32.5
16	R2	All MCs	1	5.0	1	5.0	0.977	8.3	LOS E	35.2	914.0	1.00	0.85	1.04	30.2
Approach			1249	5.0	1249	5.0	0.977	11.3	LOS B	35.2	914.0	1.00	0.85	1.04	31.0
North: Carpenter Rd NE															
7	L2	All MCs	1	0.0	1	0.0	0.013	28.9	LOS C	0.1	2.7	1.00	0.77	1.00	24.5
4	T1	All MCs	1	0.0	1	0.0	0.013	22.8	LOS C	0.1	2.7	1.00	0.77	1.00	20.2
14	R2	All MCs	1	0.0	1	0.0	0.013	22.9	LOS C	0.1	2.7	1.00	0.77	1.00	24.8
Approach			3	0.0	3	0.0	0.013	24.9	LOS C	0.1	2.7	1.00	0.77	1.00	23.5
West: Britton Pkwy NE															
5	L2	All MCs	1	4.0	1	4.0	0.798	22.6	LOS C	11.0	283.5	1.00	1.07	1.52	27.6
2	T1	All MCs	414	4.0	414	4.0	0.798	16.4	LOS B	11.0	283.5	1.00	1.07	1.52	30.5
12	R2	All MCs	150	4.0	150	4.0	0.798	16.6	LOS B	11.0	283.5	1.00	1.07	1.52	27.3
Approach			565	4.0	565	4.0	0.798	16.4	LOS B	11.0	283.5	1.00	1.07	1.52	29.8
All Vehicles			2477	4.5	2477	4.5	0.977	12.1	LOS B	35.2	914.0	0.97	0.89	1.16	30.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

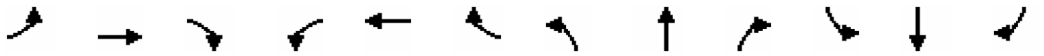
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	1025	220	520	1110	124	120	253	305	147	556	200
Future Volume (veh/h)	273	1025	220	520	1110	124	120	253	305	147	556	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1758	1758	1758
Adj Flow Rate, veh/h	273	1025	220	520	1110	124	120	253	305	147	556	200
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	3	3	3
Cap, veh/h	253	1130	608	543	1067	119	120	313	515	239	595	213
Arrive On Green	0.15	0.33	0.33	0.17	0.35	0.35	0.07	0.18	0.18	0.14	0.25	0.25
Sat Flow, veh/h	1701	3393	1504	3274	3050	340	1701	1786	1508	1674	2407	863
Grp Volume(v), veh/h	273	1025	220	520	612	622	120	253	305	147	385	371
Grp Sat Flow(s),veh/h/ln	1701	1697	1504	1637	1683	1707	1701	1786	1508	1674	1670	1600
Q Serve(g_s), s	17.8	34.6	12.3	18.9	42.0	42.0	8.5	16.3	11.5	9.9	27.1	27.2
Cycle Q Clear(g_c), s	17.8	34.6	12.3	18.9	42.0	42.0	8.5	16.3	11.5	9.9	27.1	27.2
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	253	1130	608	543	589	597	120	313	515	239	413	395
V/C Ratio(X)	1.08	0.91	0.36	0.96	1.04	1.04	1.00	0.81	0.59	0.61	0.93	0.94
Avail Cap(c_a), veh/h	253	1130	608	543	589	597	120	417	603	239	417	400
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)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	38.3	25.0	49.6	39.0	39.0	55.7	47.6	13.5	48.3	44.2	44.3
Incr Delay (d2), s/veh	74.6	10.5	1.4	28.0	47.5	48.0	80.6	9.1	1.3	3.4	27.9	29.5
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	12.8	15.9	4.6	9.8	24.8	25.2	6.3	8.0	3.9	4.4	14.3	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	125.7	48.7	26.4	77.7	86.5	87.0	136.4	56.7	14.8	51.7	72.1	73.8
LnGrp LOS	F	D	C	E	F	F	F	E	B	D	E	E
Approach Vol, veh/h		1518			1754			678			903	
Approach Delay, s/veh		59.3			84.1			51.9			69.5	
Approach LOS		E			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.3	47.5	22.7	26.5	25.4	45.4	14.0	35.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	17.5	42.0	10.5	28.0	19.9	39.6	8.5	30.0
Max Q Clear Time (g_c+I1), s	19.8	44.0	11.9	18.3	20.9	36.6	10.5	29.2
Green Ext Time (p_c), s	0.0	0.0	0.0	2.2	0.0	2.1	0.0	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	69.1
HCM 7th LOS	E

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	980	165	135	810	30	180	248	100	130	423	581
Future Volume (veh/h)	310	980	165	135	810	30	180	248	100	130	423	581
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	310	980	165	135	810	30	180	248	100	130	423	581
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	296	1010	170	157	888	33	202	713	279	155	473	418
Arrive On Green	0.17	0.35	0.35	0.09	0.27	0.27	0.12	0.30	0.30	0.09	0.28	0.28
Sat Flow, veh/h	1701	2903	488	1701	3336	124	1674	2339	916	1701	1697	1500
Grp Volume(v), veh/h	310	572	573	135	412	428	180	175	173	130	423	581
Grp Sat Flow(s),veh/h/ln	1701	1697	1695	1701	1697	1763	1674	1670	1584	1701	1697	1500
Q Serve(g_s), s	25.0	47.6	47.7	11.2	33.8	33.8	15.2	11.7	12.2	10.8	34.4	40.0
Cycle Q Clear(g_c), s	25.0	47.6	47.7	11.2	33.8	33.8	15.2	11.7	12.2	10.8	34.4	40.0
Prop In Lane	1.00		0.29	1.00		0.07	1.00		0.58	1.00		1.00
Lane Grp Cap(c), veh/h	296	590	590	157	451	469	202	509	483	155	473	418
V/C Ratio(X)	1.05	0.97	0.97	0.86	0.91	0.91	0.89	0.34	0.36	0.84	0.89	1.39
Avail Cap(c_a), veh/h	296	590	590	255	479	498	251	509	483	296	473	418
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	46.0	46.1	64.2	51.0	51.0	62.2	38.7	38.9	64.2	49.7	51.7
Incr Delay (d2), s/veh	64.7	29.4	29.8	8.3	21.3	20.8	23.8	0.4	0.4	11.5	19.1	189.1
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	16.1	24.8	24.9	5.2	17.0	17.6	7.8	4.9	4.9	5.2	17.1	37.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	124.0	75.4	75.9	72.4	72.3	71.8	86.0	39.1	39.3	75.7	68.8	240.8
LnGrp LOS	F	E	E	E	E	E	F	D	D	E	E	F
Approach Vol, veh/h		1455			975			528			1134	
Approach Delay, s/veh		85.9			72.1			55.2			157.7	
Approach LOS		F			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.0	43.7	19.0	49.8	18.8	55.9	22.8	46.0
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	25.0	40.5	25.0	36.0	21.5	44.0	21.5	40.0
Max Q Clear Time (g_c+I1), s	27.0	35.8	12.8	14.2	13.2	49.7	17.2	42.0
Green Ext Time (p_c), s	0.0	2.4	0.2	2.0	0.1	0.0	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	98.6
HCM 7th LOS	F

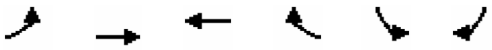
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1396	50	0	1357	58	80	5	35	147	1	70
Future Volume (veh/h)	100	1396	50	0	1357	58	80	5	35	147	1	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1786	1786	1786	1772	1772	1772	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	100	1396	0	0	1357	58	80	5	35	147	1	70
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	0	0	0	0	0	0
Cap, veh/h	148	2525		1	2190	93	163	318	270	301	2	270
Arrive On Green	0.09	1.00	0.00	0.00	0.67	0.67	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	3300	3393	1514	1688	3290	140	1350	1800	1525	1364	9	1525
Grp Volume(v), veh/h	100	1396	0	0	693	722	80	5	35	148	0	70
Grp Sat Flow(s),veh/h/ln	1650	1697	1514	1688	1683	1747	1350	1800	1525	1374	0	1525
Q Serve(g_s), s	3.5	0.0	0.0	0.0	28.1	28.2	7.0	0.3	2.3	11.8	0.0	4.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	28.1	28.2	19.0	0.3	2.3	12.1	0.0	4.8
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	0.99		1.00
Lane Grp Cap(c), veh/h	148	2525		1	1121	1163	163	318	270	303	0	270
V/C Ratio(X)	0.67	0.55		0.00	0.62	0.62	0.49	0.02	0.13	0.49	0.00	0.26
Avail Cap(c_a), veh/h	275	2525		77	1121	1163	386	615	521	532	0	521
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.00	0.00	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	0.0	11.4	11.4	54.4	40.8	41.6	45.8	0.0	42.6
Incr Delay (d2), s/veh	3.7	0.8	0.0	0.0	0.2	0.2	1.7	0.0	0.2	0.9	0.0	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	1.5	0.3	0.0	0.0	9.8	10.2	2.4	0.1	0.9	4.2	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	57.4	0.8	0.0	0.0	11.6	11.6	56.1	40.8	41.8	46.7	0.0	43.0
LnGrp LOS	E	A			B	B	E	D	D	D		D
Approach Vol, veh/h		1496			1415			120			218	
Approach Delay, s/veh		4.6			11.6			51.3			45.5	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	85.4		25.2	0.0	94.8		25.2				
Change Period (Y+Rc), s	4.0	5.5		4.0	5.5	5.5		4.0				
Max Green Setting (Gmax), s	10.0	55.5		41.0	5.5	58.5		41.0				
Max Q Clear Time (g_c+I1), s	5.5	30.2		21.0	0.0	2.0		14.1				
Green Ext Time (p_c), s	0.1	13.3		0.2	0.0	19.5		0.8				

Intersection Summary			
HCM 7th Control Delay, s/veh		12.1	
HCM 7th LOS		B	

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	1551	1422	25	30	50
Future Volume (veh/h)	50	1551	1422	25	30	50
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1786	1786	1772	1772	1800	1800
Adj Flow Rate, veh/h	50	1551	1422	25	30	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	2	2	0	0
Cap, veh/h	800	4264	1444	25	79	71
Arrive On Green	0.40	0.87	0.85	0.85	0.05	0.05
Sat Flow, veh/h	1701	5036	3474	59	1714	1525
Grp Volume(v), veh/h	50	1551	707	740	30	50
Grp Sat Flow(s),veh/h/ln	1701	1625	1683	1761	1714	1525
Q Serve(g_s), s	0.0	7.0	46.2	46.6	2.0	3.9
Cycle Q Clear(g_c), s	0.0	7.0	46.2	46.6	2.0	3.9
Prop In Lane	1.00			0.03	1.00	1.00
Lane Grp Cap(c), veh/h	800	4264	718	751	79	71
V/C Ratio(X)	0.06	0.36	0.98	0.99	0.38	0.71
Avail Cap(c_a), veh/h	800	4264	975	1020	400	356
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.75	0.75	1.00	1.00
Uniform Delay (d), s/veh	13.9	1.4	8.5	8.5	55.5	56.4
Incr Delay (d2), s/veh	0.0	0.2	25.6	25.2	1.1	4.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.1	8.4	8.7	0.9	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	13.9	1.6	34.0	33.7	56.6	61.2
LnGrp LOS	B	A	C	C	E	E
Approach Vol, veh/h		1601	1447		80	
Approach Delay, s/veh		2.0	33.9		59.5	
Approach LOS		A	C		E	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	49.0	61.5			110.4	9.6
Change Period (Y+Rc), s	5.5	5.5			5.5	4.0
Max Green Setting (Gmax), s	7.5	69.5			82.5	28.0
Max Q Clear Time (g_c+I1), s	2.0	48.6			9.0	5.9
Green Ext Time (p_c), s	0.0	12.2			23.3	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	18.2
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	663	945	0	0	1412	75	15	0	671	0	0	0
Future Volume (veh/h)	663	945	0	0	1412	75	15	0	671	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1786	1786	1786			
Adj Flow Rate, veh/h	663	945	0	0	1412	0	15	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	1	1	1			
Cap, veh/h	517	3080	0	0	1878		22	0				
Arrive On Green	0.20	0.61	0.00	0.00	0.56	0.00	0.01	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1701	0	1514			
Grp Volume(v), veh/h	663	945	0	0	1412	0	15	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1701	0	1514			
Q Serve(g_s), s	36.5	16.1	0.0	0.0	38.3	0.0	1.1	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	16.1	0.0	0.0	38.3	0.0	1.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	517	3080	0	0	1878		22	0				
V/C Ratio(X)	1.28	0.31	0.00	0.00	0.75		0.67	0.00				
Avail Cap(c_a), veh/h	517	3080	0	0	1878		369	0				
HCM Platoon Ratio	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.09	0.09	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	47.8	5.3	0.0	0.0	20.2	0.0	59.0	0.0	0.0			
Incr Delay (d2), s/veh	128.1	0.0	0.0	0.0	2.8	0.0	29.8	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	34.4	6.5	0.0	0.0	15.2	0.0	0.6	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	175.9	5.3	0.0	0.0	23.1	0.0	88.7	0.0	0.0			
LnGrp LOS	F	A			C		F					
Approach Vol, veh/h		1608			1412			15				
Approach Delay, s/veh		75.7			23.1			88.7				
Approach LOS		E			C			F				

Timer - Assigned Phs	1	2		4		6			
Phs Duration (G+Y+Rc), s	42.0	72.4		5.6		114.4			
Change Period (Y+Rc), s	5.5	5.5		4.0		5.5			
Max Green Setting (Gmax), s	36.5	42.5		26.0		84.5			
Max Q Clear Time (g_c+I1), s	38.5	40.3		3.1		18.1			
Green Ext Time (p_c), s	0.0	1.8		0.0		10.5			

Intersection Summary		
HCM 7th Control Delay, s/veh		51.2
HCM 7th LOS		D

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1453	360	542	900	0	0	0	0	190	1	590
Future Volume (vph)	0	1453	360	542	900	0	0	0	0	190	1	590
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.5	5.5	5.5	5.5						4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3386	1515	1676	3353						1693	1515
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3386	1515	1676	3353						1693	1515
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1453	360	542	900	0	0	0	0	190	1	590
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	1453	152	542	900	0	0	0	0	0	191	557
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	0%	0%	0%	1%	1%	1%
Turn Type		NA	Perm	Prot	NA					Perm	NA	custom
Protected Phases		6		5	2						8	1 8
Permitted Phases			6							8		
Actuated Green, G (s)		50.5	50.5	33.2	44.3						21.3	66.2
Effective Green, g (s)		50.5	50.5	33.2	44.3						21.3	66.2
Actuated g/C Ratio		0.42	0.42	0.28	0.37						0.18	0.55
Clearance Time (s)		5.5	5.5	5.5	5.5						4.0	
Vehicle Extension (s)		3.4	3.4	3.4	3.4						3.4	
Lane Grp Cap (vph)		1424	637	463	1237						300	835
v/s Ratio Prot		c0.43		c0.32	0.27							c0.37
v/s Ratio Perm			0.10								0.11	
v/c Ratio		1.02	0.24	1.17	0.73						0.64	0.67
Uniform Delay, d1		34.8	22.4	43.4	32.6						45.8	19.1
Progression Factor		0.75	0.34	0.64	0.17						1.00	1.00
Incremental Delay, d2		22.8	0.5	79.1	0.3						4.5	2.2
Delay (s)		48.8	8.0	106.7	5.9						50.3	21.3
Level of Service		D	A	F	A						D	C
Approach Delay (s/veh)		40.7			43.8			0.0			28.4	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	819	460	438	772	285	110	452	694	300	382	162
Future Volume (veh/h)	91	819	460	438	772	285	110	452	694	300	382	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.99
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	1786	1786	1786	1772	1772	1772	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	91	819	0	438	772	0	110	452	694	300	382	162
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	2	1	1	1	1	1	1
Cap, veh/h	208	857		469	908		134	461	1059	312	825	345
Arrive On Green	0.12	0.25	0.00	0.14	0.27	0.00	0.08	0.26	0.26	0.18	0.35	0.35
Sat Flow, veh/h	1701	3393	1514	3274	3367	1502	1701	1786	2623	1701	2327	973
Grp Volume(v), veh/h	91	819	0	438	772	0	110	452	694	300	277	267
Grp Sat Flow(s),veh/h/ln	1701	1697	1514	1637	1683	1502	1701	1786	1311	1701	1697	1603
Q Serve(g_s), s	6.0	28.5	0.0	15.9	26.1	0.0	7.6	30.2	9.4	21.0	15.1	15.5
Cycle Q Clear(g_c), s	6.0	28.5	0.0	15.9	26.1	0.0	7.6	30.2	9.4	21.0	15.1	15.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	208	857		469	908		134	461	1059	312	601	568
V/C Ratio(X)	0.44	0.96		0.93	0.85		0.82	0.98	0.66	0.96	0.46	0.47
Avail Cap(c_a), veh/h	208	857		469	1080		213	461	1059	312	601	568
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	0.00	0.64	0.64	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.9	44.2	0.0	50.8	41.5	0.0	54.4	44.2	10.9	48.6	29.9	30.0
Incr Delay (d2), s/veh	0.5	21.7	0.0	19.0	6.6	0.0	10.2	36.4	1.3	40.4	0.2	0.2
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	2.6	14.5	0.0	7.7	11.6	0.0	3.7	17.9	3.4	12.4	6.2	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.4	65.9	0.0	69.8	48.1	0.0	64.7	80.6	12.2	89.0	30.1	30.2
LnGrp LOS	D	E		E	D		E	F	B	F	C	C
Approach Vol, veh/h		910			1210			1256			844	
Approach Delay, s/veh		64.3			56.0			41.4			51.1	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	37.9	26.0	36.0	22.7	35.3	14.5	47.5
Change Period (Y+Rc), s	5.5	* 5.5	4.0	5.0	5.5	5.0	5.0	* 5
Max Green Setting (Gmax), s	9.0	* 39	22.0	31.0	17.2	30.3	15.0	* 38
Max Q Clear Time (g_c+I1), s	8.0	28.1	23.0	32.2	17.9	30.5	9.6	17.5
Green Ext Time (p_c), s	0.0	4.3	0.0	0.0	0.0	0.0	0.1	2.2

Intersection Summary	
HCM 7th Control Delay, s/veh	52.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

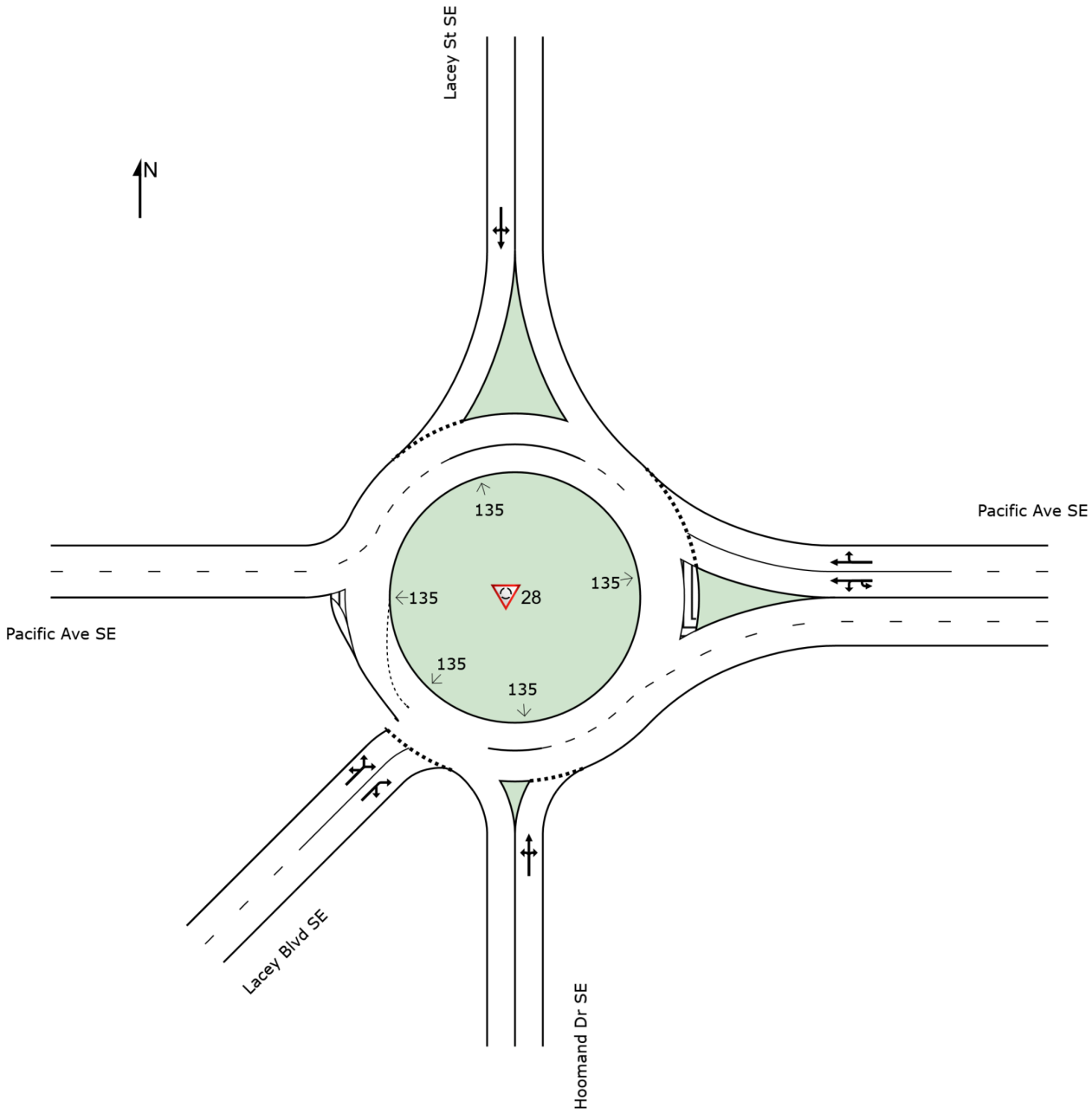
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

SITE LAYOUT

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 28 [28. Pacific Avenue SE/Lacey Boulevard SE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Hoomand Dr SE															
3	L2	All MCs	75	2.0	75	2.0	0.203	13.3	LOS B	0.8	21.0	0.67	0.82	0.67	33.0
8	T1	All MCs	4	2.0	4	2.0	0.203	6.4	LOS A	0.8	21.0	0.67	0.82	0.67	33.7
18	R2	All MCs	70	2.0	70	2.0	0.203	6.7	LOS A	0.8	21.0	0.67	0.82	0.67	33.4
Approach			149	2.0	149	2.0	0.203	10.0	LOS B	0.8	21.0	0.67	0.82	0.67	33.2
East: Pacific Ave SE															
1u	U	All MCs	20	1.0	20	1.0	0.659	14.4	LOS B	6.1	154.0	0.60	0.50	0.60	33.9
1	L2	All MCs	85	1.0	85	1.0	0.659	11.7	LOS B	6.1	154.0	0.60	0.50	0.60	34.0
6	T1	All MCs	1771	1.0	1771	1.0	0.659	4.5	LOS A	6.2	156.8	0.57	0.46	0.57	35.1
16	R2	All MCs	60	1.0	60	1.0	0.659	4.8	LOS A	6.2	156.8	0.55	0.44	0.55	34.9
Approach			1936	1.0	1936	1.0	0.659	5.0	LOS A	6.2	156.8	0.57	0.46	0.57	35.0
North: Lacey St SE															
7	L2	All MCs	20	2.0	20	2.0	0.123	15.0	LOS B	0.6	14.0	0.77	0.86	0.77	32.8
4	T1	All MCs	5	2.0	5	2.0	0.123	8.1	LOS A	0.6	14.0	0.77	0.86	0.77	33.5
14	R2	All MCs	40	2.0	40	2.0	0.123	8.3	LOS A	0.6	14.0	0.77	0.86	0.77	33.2
Approach			65	2.0	65	2.0	0.123	10.4	LOS B	0.6	14.0	0.77	0.86	0.77	33.1
SouthWest: Lacey Blvd SE															
5bx	L3	All MCs	60	1.0	60	1.0	0.546	12.3	LOS B	4.0	99.8	0.41	0.45	0.41	34.8
5ax	L1	All MCs	50	1.0	50	1.0	0.546	9.6	LOS A	4.0	99.8	0.41	0.45	0.41	34.8
12ax	R1	All MCs	1360	1.0	1360	1.0	0.546	3.7	LOS A	4.0	101.7	0.39	0.42	0.39	35.9
12bx	R3	All MCs	50	1.0	50	1.0	0.546	4.3	LOS A	4.0	101.7	0.39	0.40	0.39	35.5
Approach			1520	1.0	1520	1.0	0.546	4.2	LOS A	4.0	101.7	0.40	0.42	0.40	35.8
All Vehicles			3670	1.1	3670	1.1	0.659	5.0	LOS A	6.2	156.8	0.51	0.47	0.51	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	267	5	65	346	70	10	25	155	20	30	4
Future Vol, veh/h	5	267	5	65	346	70	10	25	155	20	30	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	0	0	0
Mvmt Flow	5	267	5	65	346	70	10	25	155	20	30	4
Number of Lanes	0	1	0	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay, s/veh	12	17.5	10.4	10.1
HCM LOS	B	C	B	B

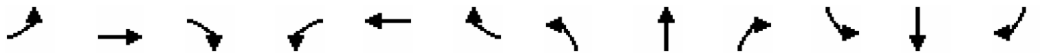
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	0%	2%	14%	37%
Vol Thru, %	71%	0%	96%	72%	56%
Vol Right, %	0%	100%	2%	15%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	155	277	481	54
LT Vol	10	0	5	65	20
Through Vol	25	0	267	346	30
RT Vol	0	155	5	70	4
Lane Flow Rate	35	155	277	481	54
Geometry Grp	5	5	2	2	4a
Degree of Util (X)	0.065	0.251	0.409	0.667	0.096
Departure Headway (Hd)	6.678	5.819	5.311	4.995	6.373
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	536	615	676	721	561
Service Time	4.426	3.567	3.351	3.029	4.435
HCM Lane V/C Ratio	0.065	0.252	0.41	0.667	0.096
HCM Control Delay, s/veh	9.9	10.5	12	17.5	10.1
HCM Lane LOS	A	B	B	C	B
HCM 95th-tile Q	0.2	1	2	5.1	0.3



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	140	207	370	203	127	285
Future Volume (veh/h)	140	207	370	203	127	285
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1786	1786	1800	1800	1800	1800
Adj Flow Rate, veh/h	140	207	370	203	127	285
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	320	285	761	645	160	1106
Arrive On Green	0.19	0.19	0.42	0.42	0.09	0.61
Sat Flow, veh/h	1701	1514	1800	1525	1714	1800
Grp Volume(v), veh/h	140	207	370	203	127	285
Grp Sat Flow(s),veh/h/ln	1701	1514	1800	1525	1714	1800
Q Serve(g_s), s	3.3	5.9	6.8	4.0	3.3	3.3
Cycle Q Clear(g_c), s	3.3	5.9	6.8	4.0	3.3	3.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	320	285	761	645	160	1106
V/C Ratio(X)	0.44	0.73	0.49	0.31	0.80	0.26
Avail Cap(c_a), veh/h	672	598	761	645	188	1106
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	16.4	17.4	9.6	8.8	20.2	4.0
Incr Delay (d2), s/veh	0.9	3.5	2.2	1.3	18.0	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.1	2.5	1.3	2.0	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	17.3	20.9	11.8	10.0	38.3	4.6
LnGrp LOS	B	C	B	B	D	A
Approach Vol, veh/h	347		573			412
Approach Delay, s/veh	19.5		11.2			15.0
Approach LOS	B		B			B

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.7	23.8				32.5	13.1
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	5.0	18.5				28.0	18.0
Max Q Clear Time (g_c+I1), s	5.3	8.8				5.3	7.9
Green Ext Time (p_c), s	0.0	2.1				1.6	0.8

Intersection Summary		
HCM 7th Control Delay, s/veh	14.5	
HCM 7th LOS	B	



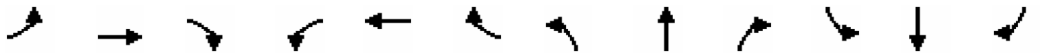
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	864	410	265	868	55	205	417	245	75	220	95
Future Volume (veh/h)	141	864	410	265	868	55	205	417	245	75	220	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.98	1.00		0.99
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	1786	1786	1786	1758	1758	1758	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	141	864	410	265	868	55	205	417	245	75	220	95
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	1	1	1
Cap, veh/h	170	811	353	298	1059	468	379	796	330	253	355	148
Arrive On Green	0.10	0.24	0.24	0.18	0.32	0.32	0.23	0.23	0.23	0.15	0.15	0.15
Sat Flow, veh/h	1701	3393	1477	1674	3340	1477	1674	3516	1457	1701	2385	991
Grp Volume(v), veh/h	141	864	410	265	868	55	205	417	245	75	163	152
Grp Sat Flow(s),veh/h/ln	1701	1697	1477	1674	1670	1477	1674	1758	1457	1701	1786	1591
Q Serve(g_s), s	7.8	23.0	23.0	14.9	23.1	2.5	10.4	10.0	15.1	3.8	8.2	8.7
Cycle Q Clear(g_c), s	7.8	23.0	23.0	14.9	23.1	2.5	10.4	10.0	15.1	3.8	8.2	8.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.62
Lane Grp Cap(c), veh/h	170	811	353	298	1059	468	379	796	330	253	266	237
V/C Ratio(X)	0.83	1.07	1.16	0.89	0.82	0.12	0.54	0.52	0.74	0.30	0.61	0.64
Avail Cap(c_a), veh/h	177	811	353	383	1215	537	626	1315	545	601	631	562
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	36.6	36.6	38.6	30.3	23.3	32.8	32.7	34.6	36.5	38.4	38.6
Incr Delay (d2), s/veh	25.6	50.5	99.5	17.4	3.8	0.1	0.9	0.4	2.5	0.5	1.7	2.2
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	4.5	15.0	17.9	7.5	9.6	0.9	4.3	4.3	5.5	1.6	3.7	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.2	87.2	136.1	56.0	34.1	23.4	33.7	33.1	37.1	37.0	40.1	40.7
LnGrp LOS	E	F	F	E	C	C	C	C	D	D	D	D
Approach Vol, veh/h		1415			1188			867			390	
Approach Delay, s/veh		99.4			38.5			34.4			39.7	
Approach LOS		F			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.6	35.5		26.8	22.1	28.0		19.3				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	35.0		36.0	22.0	23.0		34.0				
Max Q Clear Time (g_c+I1), s	9.8	25.1		17.1	16.9	25.0		10.7				
Green Ext Time (p_c), s	0.0	3.8		3.3	0.3	0.0		1.7				

Intersection Summary			
HCM 7th Control Delay, s/veh		60.0	
HCM 7th LOS		E	

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	229	978	0	0	1330	338	185	0	565	0	0	0
Future Volume (veh/h)	229	978	0	0	1330	338	185	0	565	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	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			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1786	1786	0	0	1772	1772	1772	1772	1772			
Adj Flow Rate, veh/h	229	978	0	0	1330	0	185	0	0			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	1	1	0	0	2	2	2	2	2			
Cap, veh/h	262	2554	0	0	1828		230	0				
Arrive On Green	0.15	0.75	0.00	0.00	0.54	0.00	0.14	0.00	0.00			
Sat Flow, veh/h	1701	3483	0	0	3455	1502	1688	0	1502			
Grp Volume(v), veh/h	229	978	0	0	1330	0	185	0	0			
Grp Sat Flow(s),veh/h/ln	1701	1697	0	0	1683	1502	1688	0	1502			
Q Serve(g_s), s	11.8	9.0	0.0	0.0	26.9	0.0	9.6	0.0	0.0			
Cycle Q Clear(g_c), s	11.8	9.0	0.0	0.0	26.9	0.0	9.6	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	262	2554	0	0	1828		230	0				
V/C Ratio(X)	0.87	0.38	0.00	0.00	0.73		0.80	0.00				
Avail Cap(c_a), veh/h	283	2554	0	0	1828		469	0				
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	37.2	3.9	0.0	0.0	15.5	0.0	37.7	0.0	0.0			
Incr Delay (d2), s/veh	23.0	0.4	0.0	0.0	2.6	0.0	4.9	0.0	0.0			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.5	2.4	0.0	0.0	10.1	0.0	4.2	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.2	4.3	0.0	0.0	18.1	0.0	42.6	0.0	0.0			
LnGrp LOS	E	A			B		D					
Approach Vol, veh/h		1207			1330			185				
Approach Delay, s/veh		14.9			18.1			42.6				
Approach LOS		B			B			D				

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	18.9	53.9		17.3		72.7						
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0						
Max Green Setting (Gmax), s	15.0	35.0		25.0		55.0						
Max Q Clear Time (g_c+I1), s	13.8	28.9		11.6		11.0						
Green Ext Time (p_c), s	0.1	3.9		0.7		7.1						

Intersection Summary												
HCM 7th Control Delay, s/veh			18.4									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	639	600	0	875	0	0	0	0	568	0	368
Future Volume (veh/h)	0	639	600	0	875	0	0	0	0	568	0	368
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1786	1786	0	1772	0				1772	1772	1772
Adj Flow Rate, veh/h	0	639	0	0	875	0				568	0	368
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	1	1	0	2	0				2	2	2
Cap, veh/h	0	1961		0	1945	0				525	0	467
Arrive On Green	0.00	0.58	0.00	0.00	0.58	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3572	0	0	3544	0				1688	0	1502
Grp Volume(v), veh/h	0	639	0	0	875	0				568	0	368
Grp Sat Flow(s),veh/h/ln	0	1697	0	0	1683	0				1688	0	1502
Q Serve(g_s), s	0.0	8.8	0.0	0.0	13.3	0.0				28.0	0.0	20.1
Cycle Q Clear(g_c), s	0.0	8.8	0.0	0.0	13.3	0.0				28.0	0.0	20.1
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1961		0	1945	0				525	0	467
V/C Ratio(X)	0.00	0.33		0.00	0.45	0.00				1.08	0.00	0.79
Avail Cap(c_a), veh/h	0	1961		0	1945	0				525	0	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.9	0.0	0.0	10.8	0.0				31.0	0.0	28.3
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.8	0.0				63.2	0.0	8.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.1	0.0	0.0	4.7	0.0				20.1	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	10.3	0.0	0.0	11.6	0.0				94.2	0.0	36.7
LnGrp LOS		B			B					F		D
Approach Vol, veh/h		639			875						936	
Approach Delay, s/veh		10.3			11.6						71.6	
Approach LOS		B			B						E	

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	57.0	57.0	33.0
Change Period (Y+Rc), s	5.0	5.0	5.0
Max Green Setting (Gmax), s	52.0	52.0	28.0
Max Q Clear Time (g_c+I1), s	15.3	10.8	30.0
Green Ext Time (p_c), s	6.0	4.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	34.2
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	777	140	0	1117	0	67
Future Vol, veh/h	777	140	0	1117	0	67
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	777	140	0	1117	0	67

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1406	459
Stage 1	-	-	-	-	847	-
Stage 2	-	-	-	-	559	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	130	549
Stage 1	-	-	0	-	381	-
Stage 2	-	-	0	-	536	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	130	549
Mov Cap-2 Maneuver	-	-	-	-	130	-
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	536	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	12.46
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	549	-	-	-
HCM Lane V/C Ratio	0.122	-	-	-
HCM Ctrl Dly (s/v)	12.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	680	51	0	898	0	54
Future Vol, veh/h	680	51	0	898	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	680	51	0	898	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1155	366
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	449	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	190	631
Stage 1	-	-	0	-	451	-
Stage 2	-	-	0	-	610	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	190	631
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	610	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.23
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	631	-	-	-
HCM Lane V/C Ratio	0.086	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	792	26	0	871	0	54
Future Vol, veh/h	792	26	0	871	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	792	26	0	871	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1241	409
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	167	592
Stage 1	-	-	0	-	400	-
Stage 2	-	-	0	-	620	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	167	592
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.69
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	592	-	-	-
HCM Lane V/C Ratio	0.091	-	-	-
HCM Ctrl Dly (s/v)	11.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	64	0	1679	2031	13
Future Vol, veh/h	0	64	0	1679	2031	13
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	3	5	5
Mvmt Flow	0	64	0	1679	2031	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1022	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	201	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	201	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	31.15	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	201	-	-
HCM Lane V/C Ratio	-	0.319	-	-
HCM Ctrl Dly (s/v)	-	31.1	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	1.3	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	120	45	502	708	80
Future Vol, veh/h	80	120	45	502	708	80
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	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	1	0	0	0	0
Mvmt Flow	80	120	45	502	708	80

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1340	748	788	0	-	0
Stage 1	748	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	169	414	840	-	-	-
Stage 1	470	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	160	414	840	-	-	-
Mov Cap-2 Maneuver	297	-	-	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	27.11	0.78	0
HCM LOS	D		

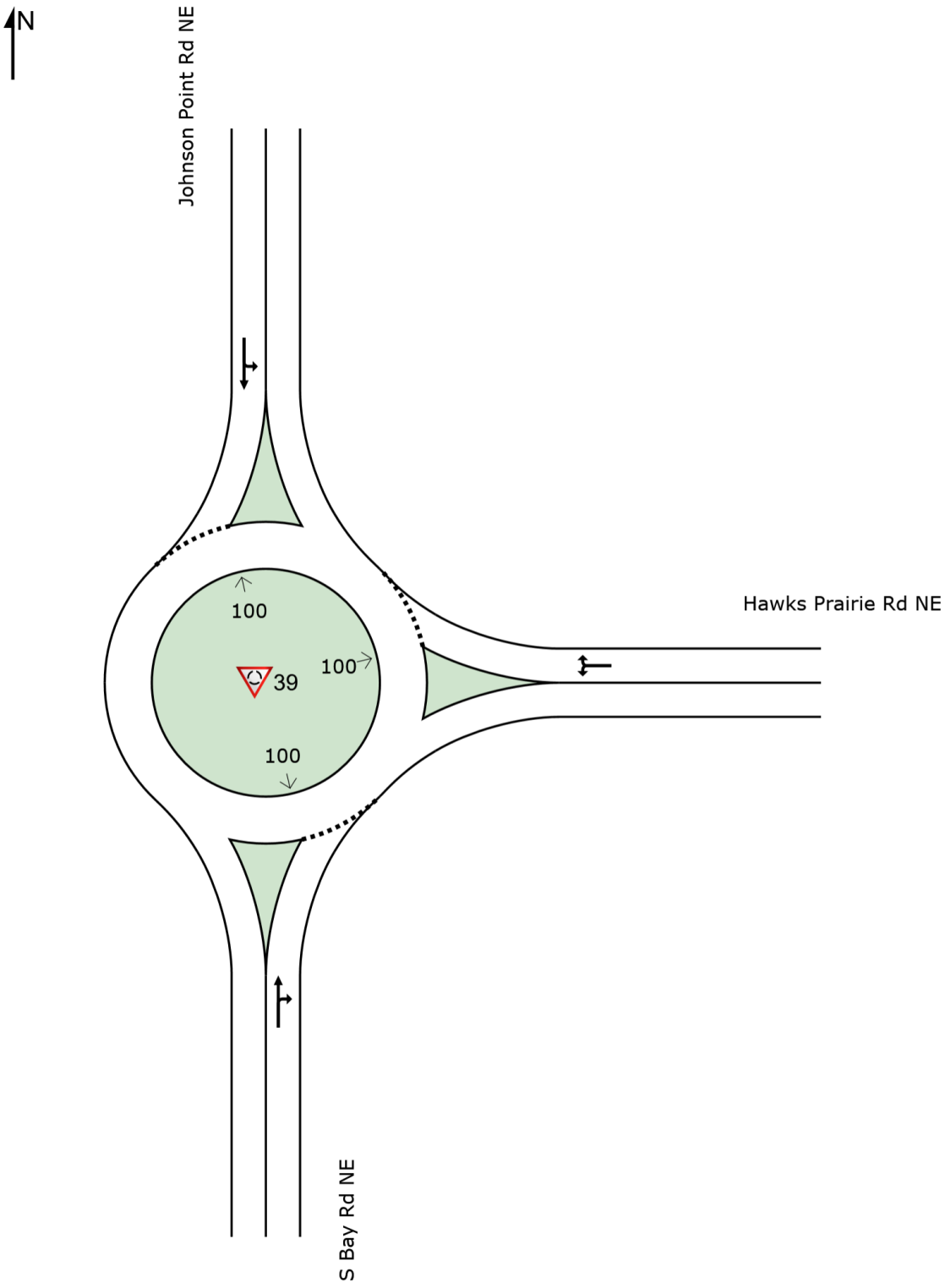
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	840	-	358	-	-
HCM Lane V/C Ratio	0.054	-	0.559	-	-
HCM Ctrl Dly (s/v)	9.5	-	27.1	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	3.3	-	-

SITE LAYOUT

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2050)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 39 [39. Johnson Point Rd NE/S Bay Rd NE/Hawks Prairie Rd NE (Site Folder: Alt 1 Combined - 2050)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: S Bay Rd NE															
8	T1	All MCs	245	0.0	245	0.0	0.391	4.0	LOS A	2.7	67.1	0.22	0.41	0.22	36.1
18	R2	All MCs	309	0.0	309	0.0	0.391	4.1	LOS A	2.7	67.1	0.22	0.41	0.22	35.8
Approach			554	0.0	554	0.0	0.391	4.0	LOS A	2.7	67.1	0.22	0.41	0.22	36.0
East: Hawks Prairie Rd NE															
1	L2	All MCs	360	0.0	360	0.0	0.344	10.9	LOS B	2.0	49.6	0.44	0.63	0.44	32.6
16	R2	All MCs	68	0.0	68	0.0	0.344	5.0	LOS A	2.0	49.6	0.44	0.63	0.44	33.0
Approach			428	0.0	428	0.0	0.344	9.9	LOS A	2.0	49.6	0.44	0.63	0.44	32.7
North: Johnson Point Rd NE															
7	L2	All MCs	47	0.0	47	0.0	0.188	11.2	LOS B	1.0	25.6	0.49	0.56	0.49	33.9
4	T1	All MCs	167	0.0	167	0.0	0.188	5.2	LOS A	1.0	25.6	0.49	0.56	0.49	34.7
Approach			214	0.0	214	0.0	0.188	6.5	LOS A	1.0	25.6	0.49	0.56	0.49	34.5
All Vehicles			1196	0.0	1196	0.0	0.391	6.6	LOS A	2.7	67.1	0.34	0.51	0.34	34.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

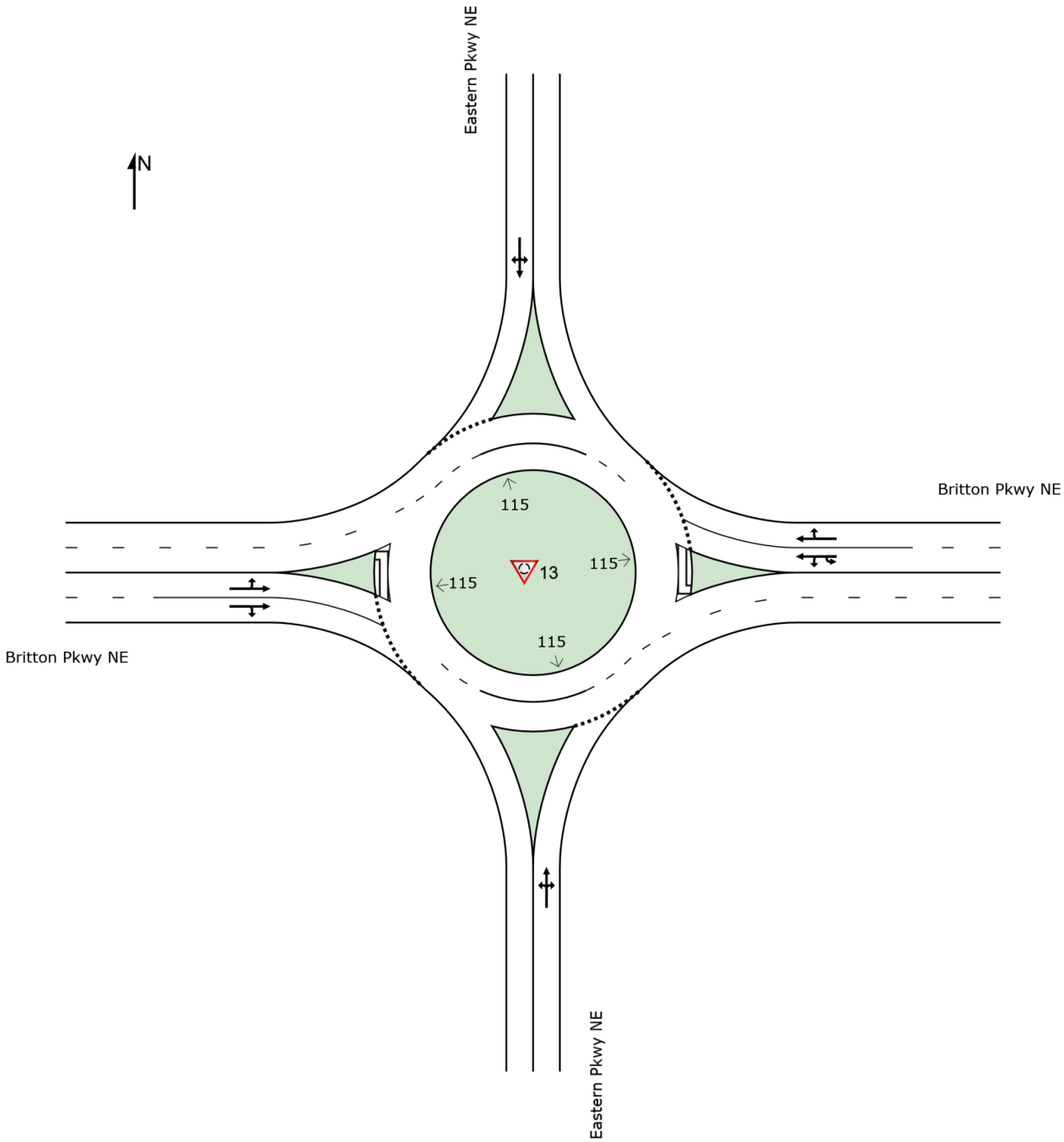
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SITE LAYOUT

Site: 13 [Alt 1 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	88	2.0	88	2.0	0.182	12.1	LOS B	0.6	16.1	0.49	0.73	0.49	33.1
8	T1	All MCs	1	2.0	1	2.0	0.182	5.8	LOS A	0.6	16.1	0.49	0.73	0.49	33.8
18	R2	All MCs	61	2.0	61	2.0	0.182	5.9	LOS A	0.6	16.1	0.49	0.73	0.49	33.5
Approach			150	2.0	150	2.0	0.182	9.6	LOS A	0.6	16.1	0.49	0.73	0.49	33.3
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.295	13.1	LOS B	1.8	46.5	0.32	0.45	0.32	34.5
1	L2	All MCs	64	3.0	64	3.0	0.295	10.5	LOS B	1.8	46.5	0.32	0.45	0.32	34.5
6	T1	All MCs	689	3.0	689	3.0	0.295	4.2	LOS A	1.8	47.2	0.31	0.41	0.31	35.6
16	R2	All MCs	37	3.0	37	3.0	0.295	4.4	LOS A	1.8	47.2	0.30	0.39	0.30	35.4
Approach			801	3.0	801	3.0	0.295	4.8	LOS A	1.8	47.2	0.31	0.41	0.31	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.073	12.1	LOS B	0.2	6.2	0.50	0.73	0.50	33.3
4	T1	All MCs	1	0.0	1	0.0	0.073	5.7	LOS A	0.2	6.2	0.50	0.73	0.50	34.0
14	R2	All MCs	27	0.0	27	0.0	0.073	5.8	LOS A	0.2	6.2	0.50	0.73	0.50	33.7
Approach			60	0.0	60	0.0	0.073	9.2	LOS A	0.2	6.2	0.50	0.73	0.50	33.5
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.267	10.6	LOS B	1.5	39.0	0.30	0.40	0.30	34.9
2	T1	All MCs	660	4.0	660	4.0	0.267	4.2	LOS A	1.5	39.4	0.29	0.39	0.29	35.8
12	R2	All MCs	45	4.0	45	4.0	0.267	4.4	LOS A	1.5	39.4	0.28	0.39	0.28	35.5
Approach			720	4.0	720	4.0	0.267	4.3	LOS A	1.5	39.4	0.29	0.39	0.29	35.8
All Vehicles			1731	3.2	1731	3.2	0.295	5.2	LOS A	1.8	47.2	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	635	39	54	702	1	0	0	41	0	0	26
Future Vol, veh/h	10	635	39	54	702	1	0	0	41	0	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	676	41	57	747	1	0	0	44	0	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	748	0	0	717	0	0	-	-	359	1221	1601	374
Stage 1	-	-	-	-	-	-	-	-	-	862	862	-
Stage 2	-	-	-	-	-	-	-	-	-	359	738	-
Critical Hdwy	4.18	-	-	4.16	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	843	-	-	873	-	-	0	0	638	138	107	629
Stage 1	-	-	-	-	-	-	0	0	-	320	375	-
Stage 2	-	-	-	-	-	-	0	0	-	637	427	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	843	-	-	873	-	-	-	-	638	119	99	629
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	119	99	-
Stage 1	-	-	-	-	-	-	-	-	-	299	350	-
Stage 2	-	-	-	-	-	-	-	-	-	586	422	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.14	0.67	11.06	10.98
HCM LOS			B	B

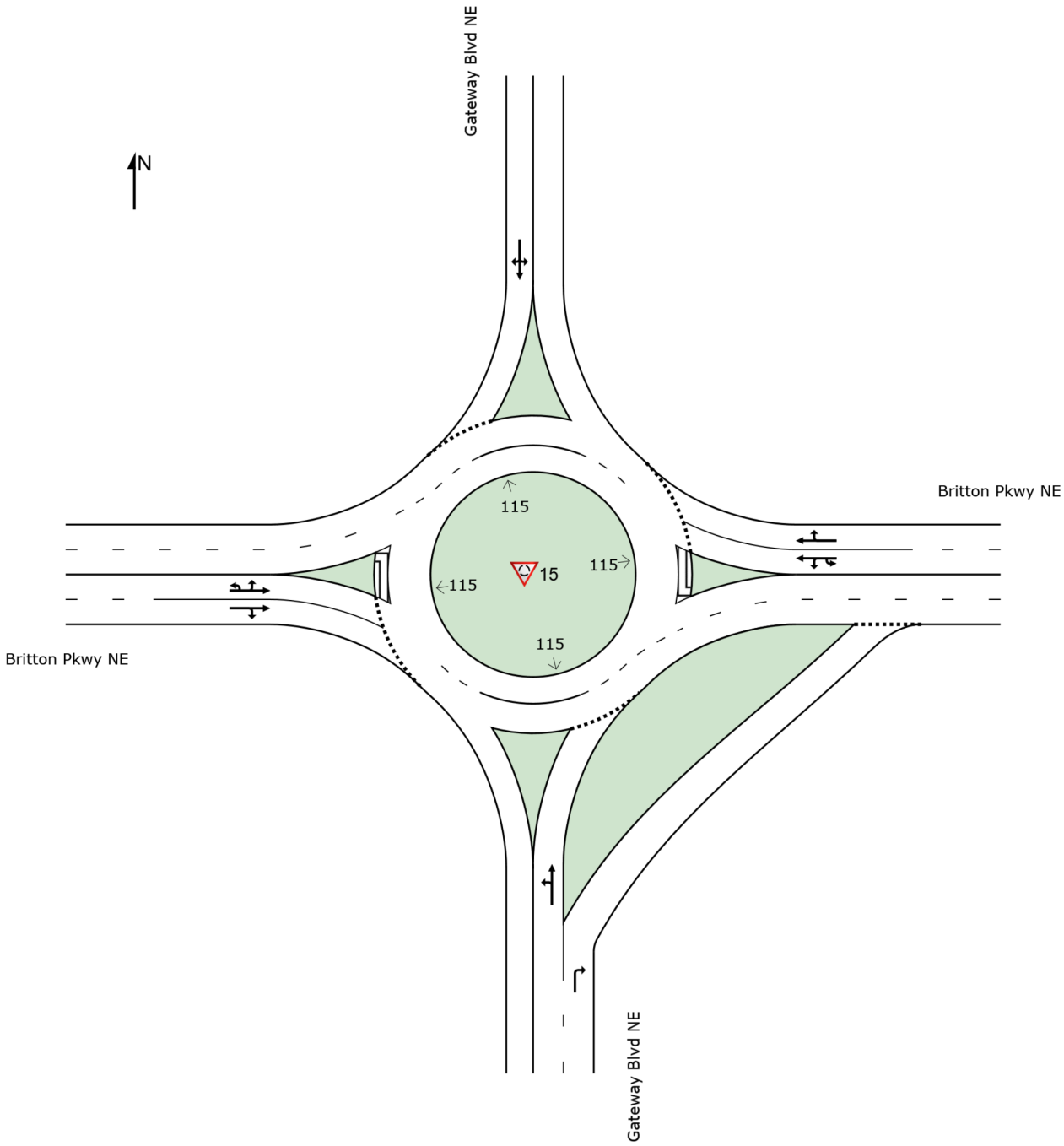
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	638	843	-	-	873	-	-	629
HCM Lane V/C Ratio	0.068	0.013	-	-	0.066	-	-	0.044
HCM Ctrl Dly (s/v)	11.1	9.3	-	-	9.4	-	-	11
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.2	-	-	0.1

SITE LAYOUT

Site: 15 [Alt 1 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	658	2.0	658	2.0	0.618	13.2	LOS B	4.2	106.7	0.71	0.87	0.87	31.6
8	T1	All MCs	21	2.0	21	2.0	0.618	6.8	LOS A	4.2	106.7	0.71	0.87	0.87	32.2
18	R2	All MCs	141	2.0	141	2.0	0.113	4.6	LOS A	0.4	9.6	0.39	0.54	0.39	35.5
Approach			820	2.0	820	2.0	0.618	11.5	LOS B	4.2	106.7	0.66	0.81	0.78	32.2
East: Britton Pkwy NE															
1u	U	All MCs	4	3.0	4	3.0	0.574	24.5	LOS C	5.5	140.3	0.98	0.93	1.29	29.6
1	L2	All MCs	112	3.0	112	3.0	0.574	22.0	LOS C	5.5	140.3	0.98	0.93	1.29	29.6
6	T1	All MCs	509	3.0	509	3.0	0.574	14.1	LOS B	6.4	164.0	0.99	0.91	1.27	31.2
16	R2	All MCs	178	3.0	178	3.0	0.574	13.2	LOS B	6.4	164.0	1.00	0.89	1.25	31.7
Approach			803	3.0	803	3.0	0.574	15.0	LOS B	6.4	164.0	0.99	0.91	1.27	31.1
North: Gateway Blvd NE															
7	L2	All MCs	110	2.0	110	2.0	0.423	17.4	LOS B	2.5	64.6	0.84	0.91	0.98	31.2
4	T1	All MCs	51	2.0	51	2.0	0.423	11.0	LOS B	2.5	64.6	0.84	0.91	0.98	31.8
14	R2	All MCs	78	2.0	78	2.0	0.423	11.1	LOS B	2.5	64.6	0.84	0.91	0.98	31.5
Approach			239	2.0	239	2.0	0.423	14.0	LOS B	2.5	64.6	0.84	0.91	0.98	31.4
West: Britton Pkwy NE															
5u	U	All MCs	113	5.0	113	5.0	0.407	14.3	LOS B	2.7	71.3	0.56	0.61	0.56	32.8
5	L2	All MCs	122	5.0	122	5.0	0.407	11.7	LOS B	2.7	71.3	0.56	0.61	0.56	32.8
2	T1	All MCs	497	5.0	497	5.0	0.407	5.1	LOS A	2.9	75.3	0.54	0.55	0.54	34.4
12	R2	All MCs	287	5.0	287	5.0	0.407	5.2	LOS A	2.9	75.3	0.53	0.51	0.53	34.7
Approach			1019	5.0	1019	5.0	0.407	7.0	LOS A	2.9	75.3	0.54	0.55	0.54	34.1
All Vehicles			2881	3.3	2881	3.3	0.618	11.1	LOS B	6.4	164.0	0.72	0.76	0.85	32.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	811	111	38	1195	25	0	0	171	0	0	35
Future Vol, veh/h	50	811	111	38	1195	25	0	0	171	0	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	854	117	40	1258	26	0	0	180	0	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1284	0	0	971	0	0	-	-	485	1883	2427	642
Stage 1	-	-	-	-	-	-	-	-	-	1351	1351	-
Stage 2	-	-	-	-	-	-	-	-	-	532	1076	-
Critical Hdwy	4.12	-	-	4.14	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	542	-	-	706	-	-	0	0	528	44	33	422
Stage 1	-	-	-	-	-	-	0	0	-	161	221	-
Stage 2	-	-	-	-	-	-	0	0	-	504	298	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	542	-	-	706	-	-	-	-	528	25	28	422
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	25	28	-
Stage 1	-	-	-	-	-	-	-	-	-	152	208	-
Stage 2	-	-	-	-	-	-	-	-	-	300	269	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.64	0.31	15.31	14.36
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	528	542	-	-	706	-	-	-	422
HCM Lane V/C Ratio	0.341	0.097	-	-	0.057	-	-	-	0.087
HCM Ctrl Dly (s/v)	15.3	12.4	-	-	10.4	-	-	0	14.4
HCM Lane LOS	C	B	-	-	B	-	-	A	B
HCM 95th %tile Q(veh)	1.5	0.3	-	-	0.2	-	-	-	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	348	770	120	115	740	30	150	243	80	90	368	507
Future Volume (veh/h)	348	770	120	115	740	30	150	243	80	90	368	507
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	359	794	124	119	763	31	155	251	82	93	379	523
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	368	1171	183	141	883	36	178	678	216	119	429	687
Arrive On Green	0.22	0.40	0.40	0.08	0.27	0.27	0.11	0.27	0.27	0.07	0.24	0.24
Sat Flow, veh/h	1701	2937	459	1701	3322	135	1674	2485	792	1701	1786	1498
Grp Volume(v), veh/h	359	459	459	119	390	404	155	167	166	93	379	523
Grp Sat Flow(s),veh/h/ln	1701	1697	1699	1701	1697	1761	1674	1670	1607	1701	1786	1498
Q Serve(g_s), s	28.1	29.9	29.9	9.2	29.3	29.4	12.2	10.8	11.3	7.2	27.4	10.6
Cycle Q Clear(g_c), s	28.1	29.9	29.9	9.2	29.3	29.4	12.2	10.8	11.3	7.2	27.4	10.6
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	368	677	678	141	451	468	178	456	438	119	429	687
V/C Ratio(X)	0.98	0.68	0.68	0.84	0.86	0.86	0.87	0.37	0.38	0.78	0.88	0.76
Avail Cap(c_a), veh/h	368	731	732	174	538	558	231	456	438	317	493	741
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	33.2	33.2	60.6	46.9	46.9	59.0	39.4	39.6	61.3	49.1	11.9
Incr Delay (d2), s/veh	40.2	2.3	2.3	21.8	12.4	12.1	20.0	0.5	0.5	10.5	15.6	4.3
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	16.1	12.7	12.7	4.9	13.9	14.4	6.2	4.5	4.6	3.5	14.1	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	92.5	35.5	35.5	82.4	59.3	59.0	79.0	39.9	40.1	71.9	64.8	16.2
LnGrp LOS	F	D	D	F	E	E	E	D	D	E	E	B
Approach Vol, veh/h		1277			913			488			995	
Approach Delay, s/veh		51.5			62.2			52.4			39.9	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.0	41.1	15.4	42.6	16.6	59.5	19.8	38.2
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	29.0	42.5	25.0	30.0	13.7	57.8	18.5	37.0
Max Q Clear Time (g_c+I1), s	30.1	31.4	9.2	13.3	11.2	31.9	14.2	29.4
Green Ext Time (p_c), s	0.0	4.3	0.2	1.8	0.0	6.6	0.1	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	51.1
HCM 7th LOS	D

Notes

User approved changes to right turn type.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	840	142	0	1253	0	68
Future Vol, veh/h	840	142	0	1253	0	68
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	884	149	0	1319	0	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1618	517
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	659	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	94	503
Stage 1	-	-	0	-	333	-
Stage 2	-	-	0	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	94	503
Mov Cap-2 Maneuver	-	-	-	-	94	-
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	13.33
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	503	-	-	-
HCM Lane V/C Ratio	0.142	-	-	-
HCM Ctrl Dly (s/v)	13.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	623	52	0	756	0	54
Future Vol, veh/h	623	52	0	756	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	663	55	0	804	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1093	359
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	402	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	209	638
Stage 1	-	-	0	-	459	-
Stage 2	-	-	0	-	644	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	209	638
Mov Cap-2 Maneuver	-	-	-	-	209	-
Stage 1	-	-	-	-	459	-
Stage 2	-	-	-	-	644	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.21
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	638	-	-	-
HCM Lane V/C Ratio	0.09	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	691	26	0	748	0	54
Future Vol, veh/h	691	26	0	748	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	735	28	0	796	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1147	381
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	193	617
Stage 1	-	-	0	-	428	-
Stage 2	-	-	0	-	647	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	193	617
Mov Cap-2 Maneuver	-	-	-	-	193	-
Stage 1	-	-	-	-	428	-
Stage 2	-	-	-	-	647	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.44
HCM LOS			B

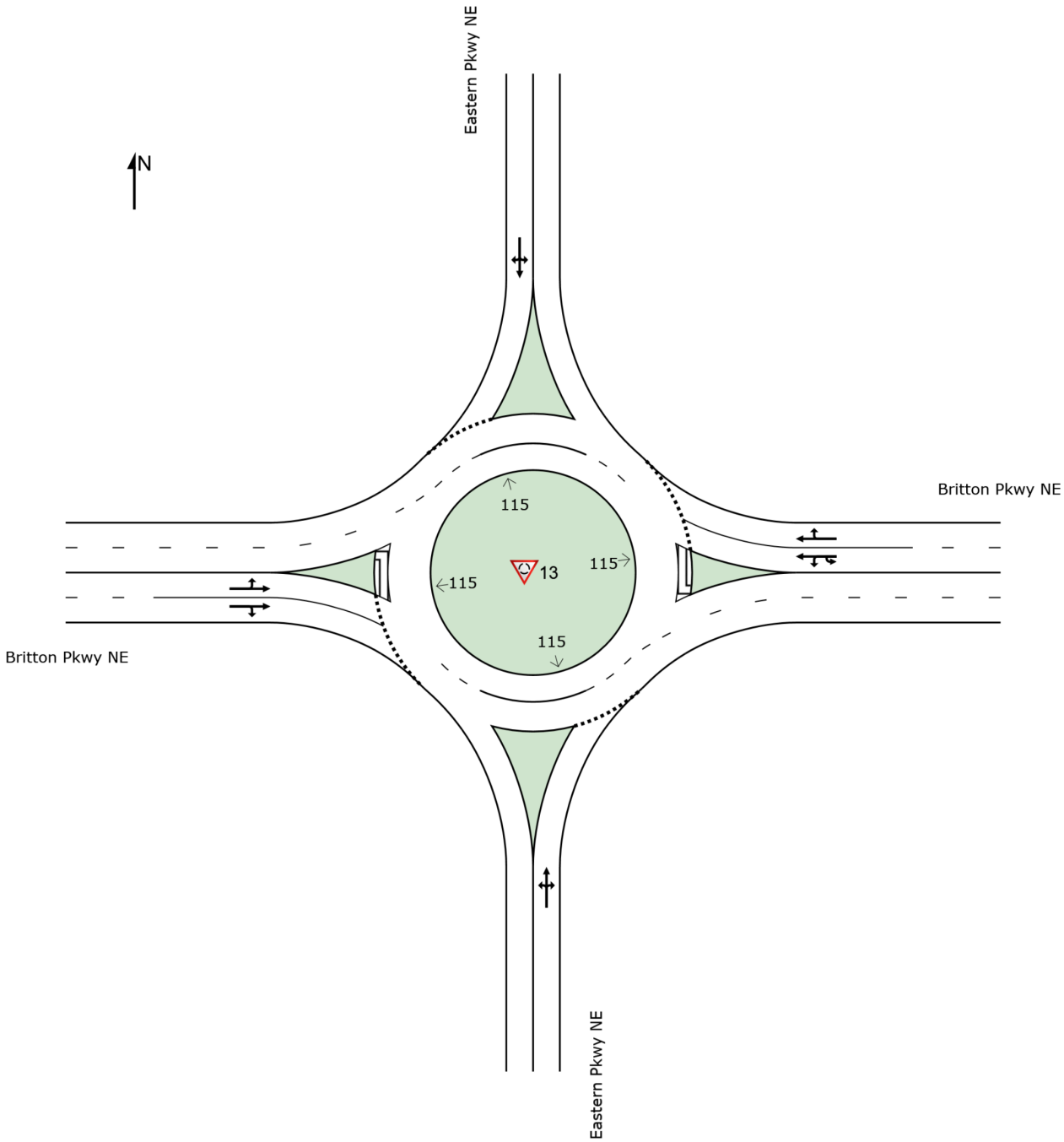
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	617	-	-	-
HCM Lane V/C Ratio	0.093	-	-	-
HCM Ctrl Dly (s/v)	11.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

SITE LAYOUT

Site: 13 [Alt 1 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	83	2.0	83	2.0	0.149	11.7	LOS B	0.5	13.1	0.47	0.71	0.47	33.2
8	T1	All MCs	1	2.0	1	2.0	0.149	5.4	LOS A	0.5	13.1	0.47	0.71	0.47	33.9
18	R2	All MCs	57	2.0	57	2.0	0.149	5.4	LOS A	0.5	13.1	0.47	0.71	0.47	33.6
Approach			141	2.0	141	2.0	0.149	9.1	LOS A	0.5	13.1	0.47	0.71	0.47	33.4
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.288	13.2	LOS B	1.7	44.0	0.33	0.44	0.33	34.5
1	L2	All MCs	60	3.0	60	3.0	0.288	10.6	LOS B	1.7	44.0	0.33	0.44	0.33	34.5
6	T1	All MCs	769	3.0	769	3.0	0.288	4.2	LOS A	1.8	45.1	0.31	0.41	0.31	35.6
16	R2	All MCs	3	3.0	3	3.0	0.288	4.4	LOS A	1.8	45.1	0.31	0.38	0.31	35.4
Approach			837	3.0	837	3.0	0.288	4.7	LOS A	1.8	45.1	0.32	0.41	0.32	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.077	11.8	LOS B	0.3	6.7	0.50	0.74	0.50	32.9
4	T1	All MCs	1	0.0	1	0.0	0.077	5.4	LOS A	0.3	6.7	0.50	0.74	0.50	33.5
14	R2	All MCs	20	0.0	20	0.0	0.077	5.5	LOS A	0.3	6.7	0.50	0.74	0.50	33.3
Approach			71	0.0	71	0.0	0.077	9.9	LOS A	0.3	6.7	0.50	0.74	0.50	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.247	10.5	LOS B	1.4	35.4	0.30	0.42	0.30	34.7
2	T1	All MCs	635	4.0	635	4.0	0.247	4.1	LOS A	1.4	36.1	0.28	0.40	0.28	35.8
12	R2	All MCs	42	4.0	42	4.0	0.247	4.3	LOS A	1.4	36.1	0.27	0.38	0.27	35.5
Approach			717	4.0	717	4.0	0.247	4.5	LOS A	1.4	36.1	0.28	0.40	0.28	35.7
All Vehicles			1766	3.2	1766	3.2	0.288	5.2	LOS A	1.8	45.1	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	656	39	54	777	0	0	0	41	0	0	16
Future Vol, veh/h	2	656	39	54	777	0	0	0	41	0	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	2	656	39	54	777	0	0	0	41	0	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	777	0	0	695	0	0	-	-	348	1217	1584	389
Stage 1	-	-	-	-	-	-	-	-	-	885	885	-
Stage 2	-	-	-	-	-	-	-	-	-	332	699	-
Critical Hdwy	4.18	-	-	4.16	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	822	-	-	890	-	-	0	0	649	139	110	616
Stage 1	-	-	-	-	-	-	0	0	-	310	366	-
Stage 2	-	-	-	-	-	-	0	0	-	661	445	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	822	-	-	890	-	-	-	-	649	122	103	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	122	103	-
Stage 1	-	-	-	-	-	-	-	-	-	291	344	-
Stage 2	-	-	-	-	-	-	-	-	-	618	444	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.03	0.6	10.92	11
HCM LOS			B	B

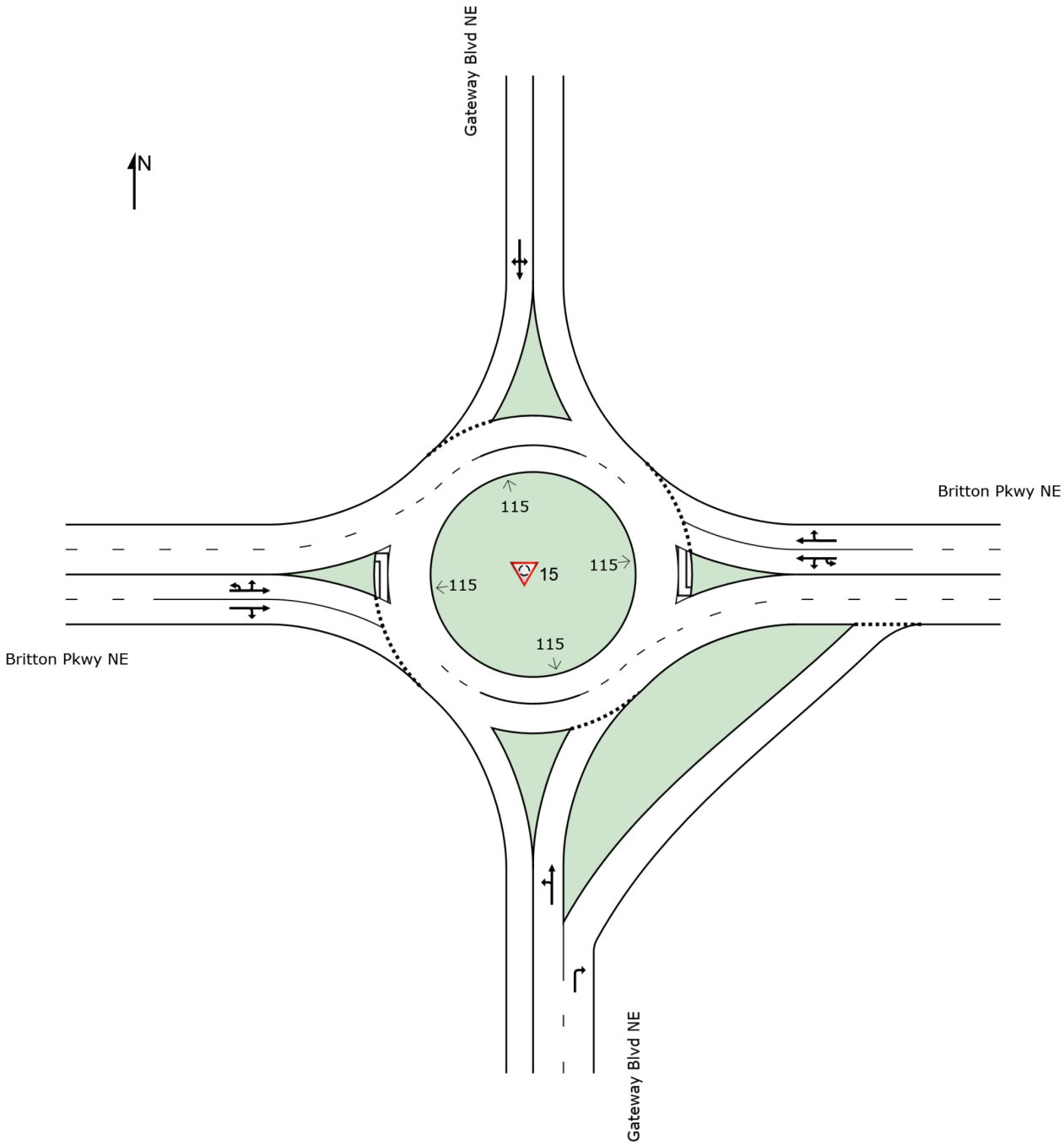
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	649	822	-	-	890	-	-	616
HCM Lane V/C Ratio	0.063	0.002	-	-	0.061	-	-	0.026
HCM Ctrl Dly (s/v)	10.9	9.4	-	-	9.3	-	-	11
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.2	-	-	0.1

SITE LAYOUT

Site: 15 [Alt 1 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	592	2.0	592	2.0	0.515	11.8	LOS B	2.8	70.4	0.57	0.77	0.63	32.0
8	T1	All MCs	30	2.0	30	2.0	0.515	5.4	LOS A	2.8	70.4	0.57	0.77	0.63	32.6
18	R2	All MCs	172	2.0	172	2.0	0.132	4.4	LOS A	0.4	10.8	0.34	0.52	0.34	35.6
Approach			794	2.0	794	2.0	0.515	9.9	LOS A	2.8	70.4	0.52	0.71	0.56	32.7
East: Britton Pkwy NE															
1u	U	All MCs	6	3.0	6	3.0	0.465	19.7	LOS B	3.7	94.4	0.88	0.82	1.00	31.2
1	L2	All MCs	151	3.0	151	3.0	0.465	17.1	LOS B	3.7	94.4	0.88	0.82	1.00	31.2
6	T1	All MCs	473	3.0	473	3.0	0.465	9.5	LOS A	4.1	104.0	0.89	0.77	0.97	33.1
16	R2	All MCs	135	3.0	135	3.0	0.465	9.1	LOS A	4.1	104.0	0.90	0.74	0.95	33.4
Approach			765	3.0	765	3.0	0.465	11.0	LOS B	4.1	104.0	0.89	0.77	0.97	32.7
North: Gateway Blvd NE															
7	L2	All MCs	33	2.0	33	2.0	0.294	15.0	LOS B	1.5	37.9	0.77	0.81	0.77	32.9
4	T1	All MCs	82	2.0	82	2.0	0.294	8.6	LOS A	1.5	37.9	0.77	0.81	0.77	33.6
14	R2	All MCs	65	2.0	65	2.0	0.294	8.7	LOS A	1.5	37.9	0.77	0.81	0.77	33.4
Approach			180	2.0	180	2.0	0.294	9.8	LOS A	1.5	37.9	0.77	0.81	0.77	33.4
West: Britton Pkwy NE															
5u	U	All MCs	103	5.0	103	5.0	0.345	14.1	LOS B	2.2	57.3	0.53	0.59	0.53	33.0
5	L2	All MCs	75	5.0	75	5.0	0.345	11.5	LOS B	2.2	57.3	0.53	0.59	0.53	33.0
2	T1	All MCs	428	5.0	428	5.0	0.345	5.0	LOS A	2.3	60.5	0.51	0.54	0.51	34.5
12	R2	All MCs	258	5.0	258	5.0	0.345	5.1	LOS A	2.3	60.5	0.50	0.50	0.50	34.8
Approach			864	5.0	864	5.0	0.345	6.7	LOS A	2.3	60.5	0.51	0.54	0.51	34.3
All Vehicles			2603	3.3	2603	3.3	0.515	9.2	LOS A	4.1	104.0	0.64	0.68	0.68	33.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	661	144	38	1185	10	0	0	171	0	0	29
Future Vol, veh/h	106	661	144	38	1185	10	0	0	171	0	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	106	661	144	38	1185	10	0	0	171	0	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1195	0	0	805	0	0	-	-	403	1809	2283	598
Stage 1	-	-	-	-	-	-	-	-	-	1266	1266	-
Stage 2	-	-	-	-	-	-	-	-	-	543	1017	-
Critical Hdwy	4.12	-	-	4.14	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	586	-	-	815	-	-	0	0	597	50	40	451
Stage 1	-	-	-	-	-	-	0	0	-	182	242	-
Stage 2	-	-	-	-	-	-	0	0	-	497	318	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	586	-	-	815	-	-	-	-	597	28	31	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	28	31	-
Stage 1	-	-	-	-	-	-	-	-	-	173	231	-
Stage 2	-	-	-	-	-	-	-	-	-	291	260	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.45	0.3	13.42	13.53
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	597	586	-	-	815	-	-	-	451
HCM Lane V/C Ratio	0.286	0.181	-	-	0.047	-	-	-	0.064
HCM Ctrl Dly (s/v)	13.4	12.5	-	-	9.6	-	-	0	13.5
HCM Lane LOS	B	B	-	-	A	-	-	A	B
HCM 95th %tile Q(veh)	1.2	0.7	-	-	0.1	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	980	165	135	810	30	180	243	100	130	418	567
Future Volume (veh/h)	283	980	165	135	810	30	180	243	100	130	418	567
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	283	980	165	135	810	30	180	243	100	130	418	567
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	328	1082	182	157	907	34	201	646	258	155	450	670
Arrive On Green	0.19	0.37	0.37	0.09	0.27	0.27	0.12	0.28	0.28	0.09	0.25	0.25
Sat Flow, veh/h	1701	2902	488	1701	3336	124	1674	2324	927	1701	1786	1499
Grp Volume(v), veh/h	283	573	572	135	412	428	180	172	171	130	418	567
Grp Sat Flow(s),veh/h/ln	1701	1697	1693	1701	1697	1763	1674	1670	1581	1701	1786	1499
Q Serve(g_s), s	22.8	45.2	45.3	11.1	33.0	33.0	15.0	11.8	12.3	10.6	32.3	13.7
Cycle Q Clear(g_c), s	22.8	45.2	45.3	11.1	33.0	33.0	15.0	11.8	12.3	10.6	32.3	13.7
Prop In Lane	1.00		0.29	1.00		0.07	1.00		0.59	1.00		1.00
Lane Grp Cap(c), veh/h	328	633	632	157	461	479	201	464	439	155	450	670
V/C Ratio(X)	0.86	0.90	0.91	0.86	0.89	0.89	0.89	0.37	0.39	0.84	0.93	0.85
Avail Cap(c_a), veh/h	349	693	692	165	510	529	219	464	439	301	467	684
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.3	42.0	42.0	63.4	49.5	49.5	61.4	41.1	41.4	63.3	51.7	13.8
Incr Delay (d2), s/veh	17.4	14.7	14.9	31.8	17.1	16.6	30.8	0.5	0.6	11.3	24.5	9.5
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	11.4	21.4	21.4	6.2	16.2	16.8	8.1	5.0	4.9	5.1	17.5	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.7	56.6	56.9	95.2	66.6	66.2	92.2	41.6	41.9	74.6	76.2	23.3
LnGrp LOS	E	E	E	F	E	E	F	D	D	E	E	C
Approach Vol, veh/h		1428			975			523			1115	
Approach Delay, s/veh		59.9			70.4			59.1			49.1	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.3	44.0	18.9	45.3	18.5	58.8	22.5	41.7
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	29.0	42.5	25.0	30.0	13.7	57.8	18.5	37.0
Max Q Clear Time (g_c+I1), s	24.8	35.0	12.6	14.3	13.1	47.3	17.0	34.3
Green Ext Time (p_c), s	0.2	3.4	0.2	1.8	0.0	5.5	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	59.4
HCM 7th LOS	E

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	796	143	0	1233	0	68
Future Vol, veh/h	796	143	0	1233	0	68
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	796	143	0	1233	0	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1484	470
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	617	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	116	540
Stage 1	-	-	0	-	371	-
Stage 2	-	-	0	-	501	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	116	540
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	501	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	12.62
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	540	-	-	-
HCM Lane V/C Ratio	0.126	-	-	-
HCM Ctrl Dly (s/v)	12.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	663	52	0	871	0	54
Future Vol, veh/h	663	52	0	871	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	663	52	0	871	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1125	358
Stage 1	-	-	-	-	689	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	199	639
Stage 1	-	-	0	-	460	-
Stage 2	-	-	0	-	620	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	199	639
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.15
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	639	-	-	-
HCM Lane V/C Ratio	0.085	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

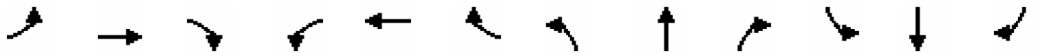
Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	776	26	0	844	0	54
Future Vol, veh/h	776	26	0	844	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	776	26	0	844	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1211	401
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	422	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	175	599
Stage 1	-	-	0	-	408	-
Stage 2	-	-	0	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	175	599
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	629	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.61
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	599	-	-	-
HCM Lane V/C Ratio	0.09	-	-	-
HCM Ctrl Dly (s/v)	11.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	209	30	702	30	279	1170	215
Future Volume (veh/h)	150	195	20	135	225	209	30	702	30	279	1170	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	222	32	747	32	297	1245	229
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	184	248	25	411	247	230	55	870	37	325	1430	636
Arrive On Green	0.11	0.16	0.16	0.24	0.29	0.29	0.03	0.26	0.26	0.19	0.42	0.42
Sat Flow, veh/h	1688	1582	161	1714	858	797	1701	3314	142	1701	3393	1508
Grp Volume(v), veh/h	160	0	228	144	0	461	32	382	397	297	1245	229
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1656	1701	1697	1759	1701	1697	1508
Q Serve(g_s), s	11.7	0.0	15.9	8.7	0.0	34.3	2.3	26.8	26.8	21.4	41.9	12.9
Cycle Q Clear(g_c), s	11.7	0.0	15.9	8.7	0.0	34.3	2.3	26.8	26.8	21.4	41.9	12.9
Prop In Lane	1.00		0.09	1.00		0.48	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	184	0	273	411	0	477	55	446	462	325	1430	636
V/C Ratio(X)	0.87	0.00	0.83	0.35	0.00	0.97	0.58	0.86	0.86	0.91	0.87	0.36
Avail Cap(c_a), veh/h	184	0	513	411	0	477	82	452	469	454	1648	732
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	0.0	51.1	39.4	0.0	43.9	59.7	43.9	43.9	49.6	33.0	24.7
Incr Delay (d2), s/veh	33.1	0.0	6.6	0.4	0.0	32.7	7.1	14.9	14.5	17.1	4.8	0.3
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	6.7	0.0	7.4	3.7	0.0	18.3	1.1	13.0	13.5	10.6	17.9	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	88.0	0.0	57.7	39.8	0.0	76.6	66.8	58.7	58.4	66.7	37.8	25.0
LnGrp LOS	F		E	D		E	E	E	E	E	D	C
Approach Vol, veh/h		388			605			811			1771	
Approach Delay, s/veh		70.2			67.8			58.9			41.0	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	57.6	18.2	40.6	28.5	37.7	34.6	24.2
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.3	43.9	13.7	36.3	23.4	28.8	10.7	17.9
Green Ext Time (p_c), s	0.0	8.8	0.0	0.0	0.5	1.9	0.1	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	52.8
HCM 7th LOS	D

Notes

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

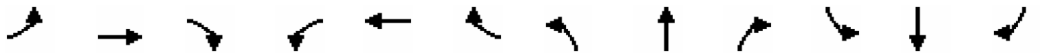
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	209	30	702	30	279	1170	215
Future Volume (veh/h)	150	195	20	135	225	209	30	702	30	279	1170	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	222	32	747	32	297	1245	229
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	188	256	26	224	326	276	59	1121	48	330	1427	260
Arrive On Green	0.11	0.16	0.16	0.13	0.18	0.18	0.03	0.34	0.34	0.19	0.50	0.50
Sat Flow, veh/h	1688	1582	161	1714	1800	1523	1701	3314	142	1701	2864	522
Grp Volume(v), veh/h	160	0	228	144	239	222	32	382	397	297	733	741
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	1800	1523	1701	1697	1760	1701	1697	1690
Q Serve(g_s), s	9.9	0.0	13.5	8.5	13.4	14.9	2.0	20.5	20.5	18.2	40.7	41.8
Cycle Q Clear(g_c), s	9.9	0.0	13.5	8.5	13.4	14.9	2.0	20.5	20.5	18.2	40.7	41.8
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.08	1.00		0.31
Lane Grp Cap(c), veh/h	188	0	282	224	326	276	59	574	595	330	845	842
V/C Ratio(X)	0.85	0.00	0.81	0.64	0.73	0.81	0.55	0.67	0.67	0.90	0.87	0.88
Avail Cap(c_a), veh/h	215	0	601	224	607	514	96	574	595	533	965	962
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	0.0	43.1	44.0	41.3	41.9	50.7	30.2	30.2	42.0	23.7	23.9
Incr Delay (d2), s/veh	23.2	0.0	5.5	5.6	2.9	5.0	5.8	2.8	2.8	10.2	7.6	8.6
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	5.4	0.0	6.2	3.9	6.2	5.9	0.9	8.7	9.0	8.5	17.3	17.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.8	0.0	48.6	49.7	44.2	46.9	56.4	33.0	32.9	52.1	31.3	32.5
LnGrp LOS	E		D	D	D	D	E	C	C	D	C	C
Approach Vol, veh/h		388			605			811			1771	
Approach Delay, s/veh		57.3			46.5			33.9			35.3	
Approach LOS		E			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	58.0	16.5	23.9	25.3	41.0	18.5	21.9
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.0	43.8	11.9	16.9	20.2	22.5	10.5	15.5
Green Ext Time (p_c), s	0.0	9.3	0.1	1.9	0.5	3.4	0.1	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	39.3
HCM 7th LOS	D

Notes

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



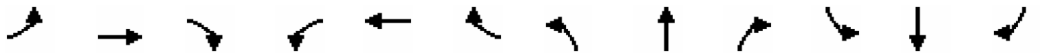
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	179	40	707	25	294	1105	255
Future Volume (veh/h)	110	205	55	180	265	179	40	707	25	294	1105	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	179	40	707	25	294	1105	255
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	138	312	84	191	261	176	71	875	31	333	1412	627
Arrive On Green	0.08	0.23	0.23	0.11	0.26	0.26	0.04	0.26	0.26	0.20	0.42	0.42
Sat Flow, veh/h	1688	1345	361	1714	1001	676	1701	3342	118	1701	3393	1508
Grp Volume(v), veh/h	110	0	260	180	0	444	40	359	373	294	1105	255
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	0	1677	1701	1697	1764	1701	1697	1508
Q Serve(g_s), s	6.0	0.0	12.9	9.8	0.0	24.4	2.2	18.5	18.5	15.7	26.4	11.1
Cycle Q Clear(g_c), s	6.0	0.0	12.9	9.8	0.0	24.4	2.2	18.5	18.5	15.7	26.4	11.1
Prop In Lane	1.00		0.21	1.00		0.40	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	395	191	0	437	71	444	462	333	1412	627
V/C Ratio(X)	0.80	0.00	0.66	0.94	0.00	1.02	0.57	0.81	0.81	0.88	0.78	0.41
Avail Cap(c_a), veh/h	368	0	445	191	0	437	189	655	681	662	1412	627
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	0.0	32.6	41.3	0.0	34.6	44.0	32.3	32.3	36.6	23.7	19.2
Incr Delay (d2), s/veh	7.5	0.0	3.0	49.2	0.0	46.9	5.2	4.4	4.3	5.9	2.9	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	2.8	0.0	5.6	6.7	0.0	15.4	1.0	8.0	8.3	6.9	10.6	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.7	0.0	35.6	90.5	0.0	81.5	49.2	36.8	36.6	42.5	26.6	19.6
LnGrp LOS	D		D	F		F	D	D	D	D	C	B
Approach Vol, veh/h		370			624			772			1654	
Approach Delay, s/veh		39.8			84.1			37.3			28.3	
Approach LOS		D			F			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	43.8	12.3	29.0	22.9	29.4	15.0	26.3
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.2	28.4	8.0	26.4	17.7	20.5	11.8	14.9
Green Ext Time (p_c), s	0.0	4.7	0.1	0.0	0.6	3.8	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	41.8
HCM 7th LOS	D

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	179	40	707	25	294	1105	255
Future Volume (veh/h)	110	205	55	180	265	179	40	707	25	294	1105	255
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	179	40	707	25	294	1105	255
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	139	249	67	212	407	344	74	906	32	337	1167	268
Arrive On Green	0.08	0.19	0.19	0.12	0.23	0.23	0.04	0.27	0.27	0.20	0.43	0.43
Sat Flow, veh/h	1688	1345	361	1714	1800	1523	1701	3342	118	1701	2739	628
Grp Volume(v), veh/h	110	0	260	180	265	179	40	359	373	294	682	678
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	1800	1523	1701	1697	1764	1701	1697	1670
Q Serve(g_s), s	5.4	0.0	12.3	8.7	11.2	8.7	1.9	16.5	16.5	14.1	32.5	33.0
Cycle Q Clear(g_c), s	5.4	0.0	12.3	8.7	11.2	8.7	1.9	16.5	16.5	14.1	32.5	33.0
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.07	1.00		0.38
Lane Grp Cap(c), veh/h	139	0	316	212	407	344	74	460	478	337	723	711
V/C Ratio(X)	0.79	0.00	0.82	0.85	0.65	0.52	0.54	0.78	0.78	0.87	0.94	0.95
Avail Cap(c_a), veh/h	409	0	495	212	522	442	210	728	757	736	728	716
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.9	0.0	33.0	36.1	29.6	28.6	39.4	28.4	28.4	32.7	23.2	23.3
Incr Delay (d2), s/veh	7.2	0.0	6.3	26.0	1.7	1.1	4.6	2.7	2.6	5.3	20.6	22.7
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	2.5	0.0	5.5	5.1	4.9	3.2	0.9	6.8	7.0	6.1	16.2	16.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.1	0.0	39.3	62.1	31.3	29.7	44.0	31.0	30.9	38.0	43.8	46.0
LnGrp LOS	D		D	E	C	C	D	C	C	D	D	D
Approach Vol, veh/h		370			624			772			1654	
Approach Delay, s/veh		41.0			39.7			31.6			43.7	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	40.8	11.6	23.6	21.3	27.7	15.0	20.2
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	3.9	35.0	7.4	13.2	16.1	18.5	10.7	14.3
Green Ext Time (p_c), s	0.0	0.8	0.1	1.5	0.6	4.0	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	40.0
HCM 7th LOS	D

Notes

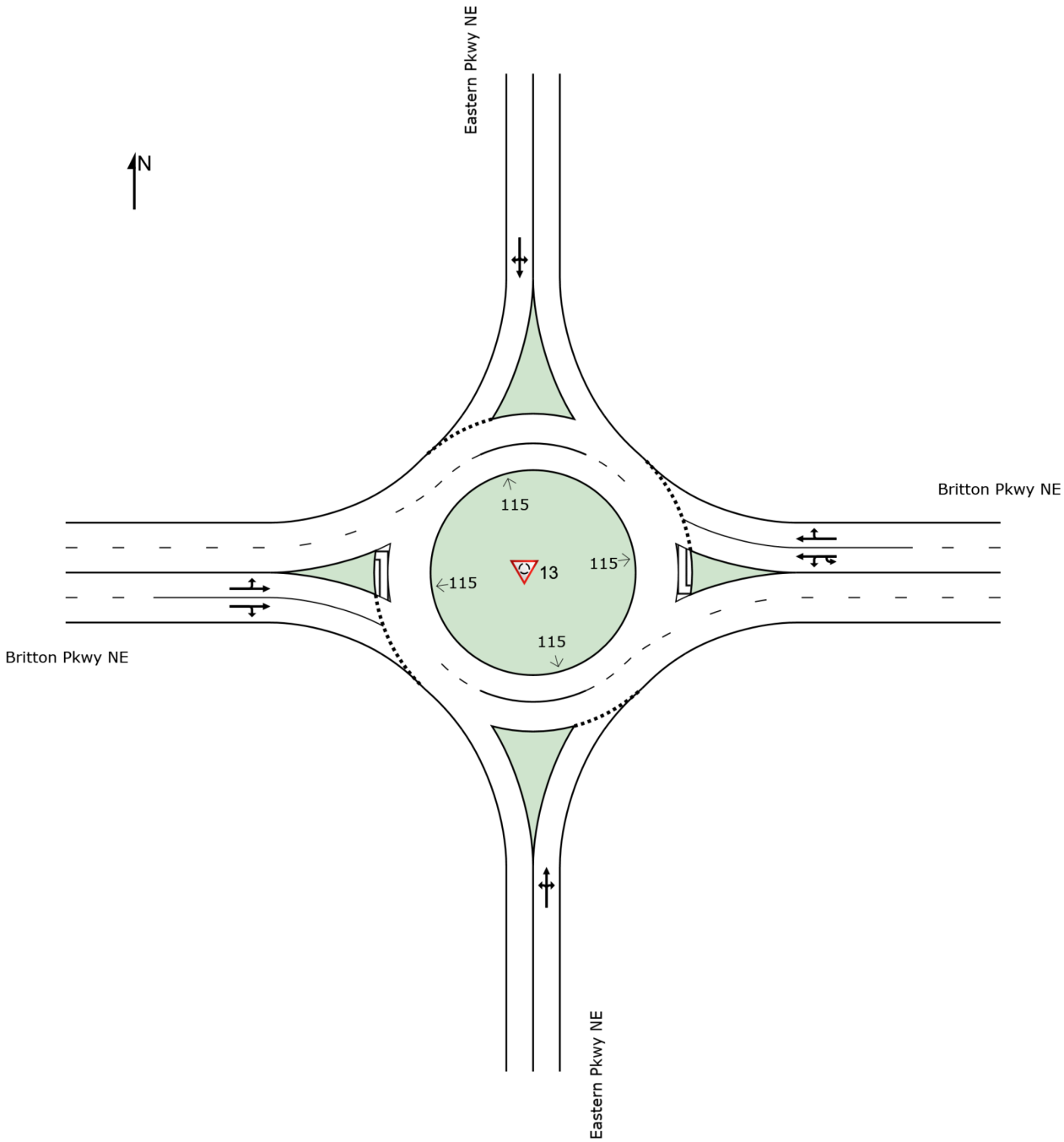
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 13 [Alt 1 Combo 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 Combo 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	86	2.0	86	2.0	0.179	12.2	LOS B	0.6	15.8	0.50	0.73	0.50	33.1
8	T1	All MCs	1	2.0	1	2.0	0.179	5.8	LOS A	0.6	15.8	0.50	0.73	0.50	33.8
18	R2	All MCs	60	2.0	60	2.0	0.179	5.9	LOS A	0.6	15.8	0.50	0.73	0.50	33.5
Approach			147	2.0	147	2.0	0.179	9.6	LOS A	0.6	15.8	0.50	0.73	0.50	33.3
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.305	13.1	LOS B	1.9	48.7	0.32	0.44	0.32	34.5
1	L2	All MCs	63	3.0	63	3.0	0.305	10.5	LOS B	1.9	48.7	0.32	0.44	0.32	34.5
6	T1	All MCs	720	3.0	720	3.0	0.305	4.2	LOS A	1.9	49.5	0.31	0.41	0.31	35.6
16	R2	All MCs	37	3.0	37	3.0	0.305	4.4	LOS A	1.9	49.5	0.30	0.38	0.30	35.4
Approach			831	3.0	831	3.0	0.305	4.8	LOS A	1.9	49.5	0.31	0.41	0.31	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.074	12.1	LOS B	0.3	6.3	0.50	0.74	0.50	33.3
4	T1	All MCs	1	0.0	1	0.0	0.074	5.8	LOS A	0.3	6.3	0.50	0.74	0.50	34.0
14	R2	All MCs	27	0.0	27	0.0	0.074	5.9	LOS A	0.3	6.3	0.50	0.74	0.50	33.7
Approach			60	0.0	60	0.0	0.074	9.2	LOS A	0.3	6.3	0.50	0.74	0.50	33.5
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.273	10.6	LOS B	1.6	40.1	0.30	0.40	0.30	34.9
2	T1	All MCs	677	4.0	677	4.0	0.273	4.2	LOS A	1.6	40.6	0.29	0.39	0.29	35.8
12	R2	All MCs	45	4.0	45	4.0	0.273	4.4	LOS A	1.6	40.6	0.28	0.39	0.28	35.5
Approach			737	4.0	737	4.0	0.273	4.3	LOS A	1.6	40.6	0.29	0.39	0.29	35.8
All Vehicles			1774	3.2	1774	3.2	0.305	5.1	LOS A	1.9	49.5	0.32	0.44	0.32	35.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	630	112	82	701	1	0	0	61	0	0	26
Future Vol, veh/h	10	630	112	82	701	1	0	0	61	0	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	670	119	87	746	1	0	0	65	0	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	747	0	0	789	0	0	-	-	395	1277	1731	373
Stage 1	-	-	-	-	-	-	-	-	-	921	921	-
Stage 2	-	-	-	-	-	-	-	-	-	356	811	-
Critical Hdwy	4.18	-	-	4.16	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	844	-	-	820	-	-	0	0	604	126	89	630
Stage 1	-	-	-	-	-	-	0	0	-	295	352	-
Stage 2	-	-	-	-	-	-	0	0	-	640	396	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	844	-	-	820	-	-	-	-	604	99	79	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	99	79	-
Stage 1	-	-	-	-	-	-	-	-	-	264	315	-
Stage 2	-	-	-	-	-	-	-	-	-	564	391	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.12	1.04	11.67	10.98
HCM LOS			B	B

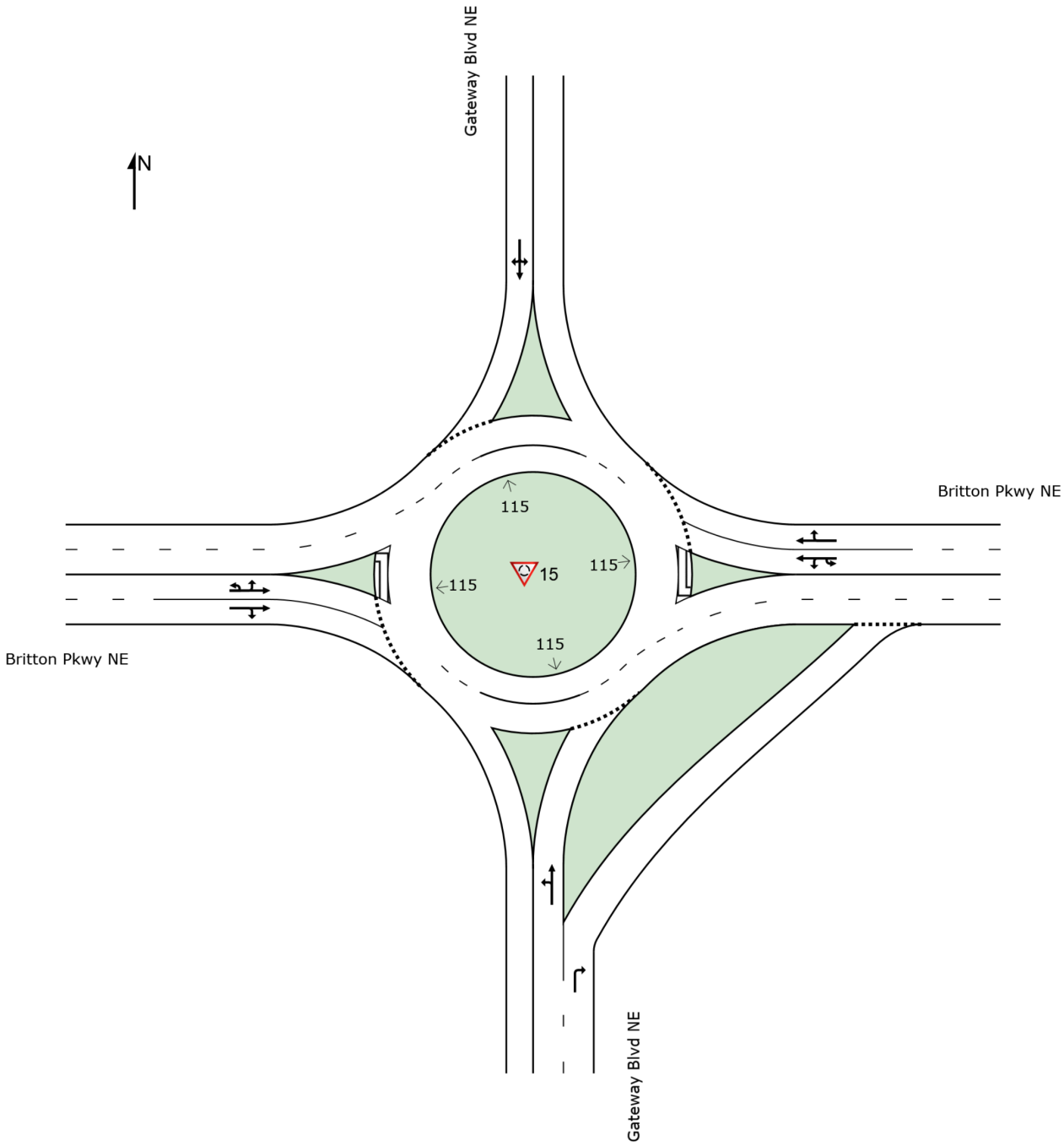
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	604	844	-	-	820	-	-	630
HCM Lane V/C Ratio	0.107	0.013	-	-	0.106	-	-	0.044
HCM Ctrl Dly (s/v)	11.7	9.3	-	-	9.9	-	-	11
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0.4	-	-	0.1

SITE LAYOUT

Site: 15 [Alt 1 Combo 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 Combo 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	712	2.0	712	2.0	0.694	14.1	LOS B	5.4	136.5	0.78	0.94	1.02	31.3
8	T1	All MCs	20	2.0	20	2.0	0.694	7.8	LOS A	5.4	136.5	0.78	0.94	1.02	31.9
18	R2	All MCs	138	2.0	138	2.0	0.114	4.7	LOS A	0.4	10.1	0.43	0.55	0.43	35.4
Approach			870	2.0	870	2.0	0.694	12.5	LOS B	5.4	136.5	0.72	0.88	0.93	31.9
East: Britton Pkwy NE															
1u	U	All MCs	4	3.0	4	3.0	0.630	28.0	LOS C	6.5	166.9	1.00	1.01	1.42	28.4
1	L2	All MCs	109	3.0	109	3.0	0.630	25.4	LOS C	6.5	166.9	1.00	1.01	1.42	28.4
6	T1	All MCs	509	3.0	509	3.0	0.630	17.3	LOS B	7.8	200.3	1.00	0.99	1.39	29.9
16	R2	All MCs	178	3.0	178	3.0	0.630	16.2	LOS B	7.8	200.3	1.00	0.99	1.38	30.4
Approach			800	3.0	800	3.0	0.630	18.2	LOS B	7.8	200.3	1.00	0.99	1.39	29.8
North: Gateway Blvd NE															
7	L2	All MCs	113	2.0	113	2.0	0.447	18.5	LOS B	2.8	70.5	0.86	0.93	1.04	30.7
4	T1	All MCs	50	2.0	50	2.0	0.447	12.1	LOS B	2.8	70.5	0.86	0.93	1.04	31.3
14	R2	All MCs	78	2.0	78	2.0	0.447	12.2	LOS B	2.8	70.5	0.86	0.93	1.04	31.1
Approach			241	2.0	241	2.0	0.447	15.1	LOS B	2.8	70.5	0.86	0.93	1.04	30.9
West: Britton Pkwy NE															
5u	U	All MCs	112	5.0	112	5.0	0.436	14.3	LOS B	3.0	78.7	0.57	0.61	0.57	32.9
5	L2	All MCs	122	5.0	122	5.0	0.436	11.8	LOS B	3.0	78.7	0.57	0.61	0.57	32.9
2	T1	All MCs	573	5.0	573	5.0	0.436	5.2	LOS A	3.2	83.1	0.56	0.55	0.56	34.4
12	R2	All MCs	281	5.0	281	5.0	0.436	5.2	LOS A	3.2	83.1	0.55	0.51	0.55	34.7
Approach			1089	5.0	1089	5.0	0.436	6.9	LOS A	3.2	83.1	0.56	0.55	0.56	34.1
All Vehicles			3000	3.4	3000	3.4	0.694	12.2	LOS B	7.8	200.3	0.75	0.79	0.93	32.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	874	109	38	1243	25	0	0	169	0	0	35
Future Vol, veh/h	50	874	109	38	1243	25	0	0	169	0	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	920	115	40	1308	26	0	0	178	0	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1335	0	0	1035	0	0	-	-	517	1967	2542	667
Stage 1	-	-	-	-	-	-	-	-	-	1402	1402	-
Stage 2	-	-	-	-	-	-	-	-	-	565	1140	-
Critical Hdwy	4.12	-	-	4.14	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	518	-	-	667	-	-	0	0	503	38	27	406
Stage 1	-	-	-	-	-	-	0	0	-	150	209	-
Stage 2	-	-	-	-	-	-	0	0	-	482	278	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	518	-	-	667	-	-	-	-	503	21	23	406
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	21	23	-
Stage 1	-	-	-	-	-	-	-	-	-	141	196	-
Stage 2	-	-	-	-	-	-	-	-	-	280	250	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.62	0.31	16.02	14.75
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	503	518	-	-	667	-	-	-	406
HCM Lane V/C Ratio	0.354	0.102	-	-	0.06	-	-	-	0.091
HCM Ctrl Dly (s/v)	16	12.7	-	-	10.7	-	-	0	14.8
HCM Lane LOS	C	B	-	-	B	-	-	A	B
HCM 95th %tile Q(veh)	1.6	0.3	-	-	0.2	-	-	-	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	375	770	120	115	740	30	150	248	80	90	373	521
Future Volume (veh/h)	375	770	120	115	740	30	150	248	80	90	373	521
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	387	794	124	119	763	31	155	256	82	93	385	537
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	366	1167	182	141	881	36	178	688	215	119	434	689
Arrive On Green	0.22	0.40	0.40	0.08	0.27	0.27	0.11	0.28	0.28	0.07	0.24	0.24
Sat Flow, veh/h	1701	2937	459	1701	3322	135	1674	2498	781	1701	1786	1499
Grp Volume(v), veh/h	387	459	459	119	390	404	155	169	169	93	385	537
Grp Sat Flow(s),veh/h/ln	1701	1697	1699	1701	1697	1761	1674	1670	1609	1701	1786	1499
Q Serve(g_s), s	29.0	30.1	30.1	9.3	29.5	29.5	12.3	11.0	11.5	7.3	28.1	11.1
Cycle Q Clear(g_c), s	29.0	30.1	30.1	9.3	29.5	29.5	12.3	11.0	11.5	7.3	28.1	11.1
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.49	1.00		1.00
Lane Grp Cap(c), veh/h	366	674	675	141	450	467	178	460	443	119	434	689
V/C Ratio(X)	1.06	0.68	0.68	0.84	0.87	0.87	0.87	0.37	0.38	0.78	0.89	0.78
Avail Cap(c_a), veh/h	366	727	729	173	535	555	230	460	443	315	490	737
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.9	33.6	33.6	60.9	47.2	47.2	59.3	39.4	39.5	61.7	49.3	12.1
Incr Delay (d2), s/veh	63.1	2.4	2.4	22.1	12.6	12.3	20.3	0.5	0.5	10.6	16.5	5.0
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	18.8	12.8	12.8	4.9	14.0	14.5	6.2	4.6	4.6	3.5	14.5	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	116.0	35.9	35.9	83.1	59.9	59.5	79.7	39.9	40.1	72.3	65.7	17.1
LnGrp LOS	F	D	D	F	E	E	E	D	D	E	E	B
Approach Vol, veh/h		1305			913			493			1015	
Approach Delay, s/veh		59.7			62.8			52.5			40.6	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.0	41.3	15.4	43.1	16.7	59.6	19.8	38.7
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	29.0	42.5	25.0	30.0	13.7	57.8	18.5	37.0
Max Q Clear Time (g_c+I1), s	31.0	31.5	9.3	13.5	11.3	32.1	14.3	30.1
Green Ext Time (p_c), s	0.0	4.2	0.2	1.8	0.0	6.6	0.1	2.7

Intersection Summary	
HCM 7th Control Delay, s/veh	54.3
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	903	140	0	1301	0	67
Future Vol, veh/h	903	140	0	1301	0	67
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	951	147	0	1369	0	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1709	549
Stage 1	-	-	-	-	1024	-
Stage 2	-	-	-	-	685	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	82	480
Stage 1	-	-	0	-	307	-
Stage 2	-	-	0	-	462	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	82	480
Mov Cap-2 Maneuver	-	-	-	-	82	-
Stage 1	-	-	-	-	307	-
Stage 2	-	-	-	-	462	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	480	-	-	-
HCM Lane V/C Ratio	0.147	-	-	-
HCM Ctrl Dly (s/v)	13.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	639	51	0	783	0	54
Future Vol, veh/h	639	51	0	783	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	680	54	0	833	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1123	367
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	416	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	199	630
Stage 1	-	-	0	-	450	-
Stage 2	-	-	0	-	634	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	199	630
Mov Cap-2 Maneuver	-	-	-	-	199	-
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	634	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.29
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	630	-	-	-
HCM Lane V/C Ratio	0.091	-	-	-
HCM Ctrl Dly (s/v)	11.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	706	26	0	776	0	54
Future Vol, veh/h	706	26	0	776	0	54
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, %	4	4	3	3	2	2
Mvmt Flow	751	28	0	826	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1178	389
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	413	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	184	609
Stage 1	-	-	0	-	420	-
Stage 2	-	-	0	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	184	609
Mov Cap-2 Maneuver	-	-	-	-	184	-
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	636	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.52
HCM LOS			B

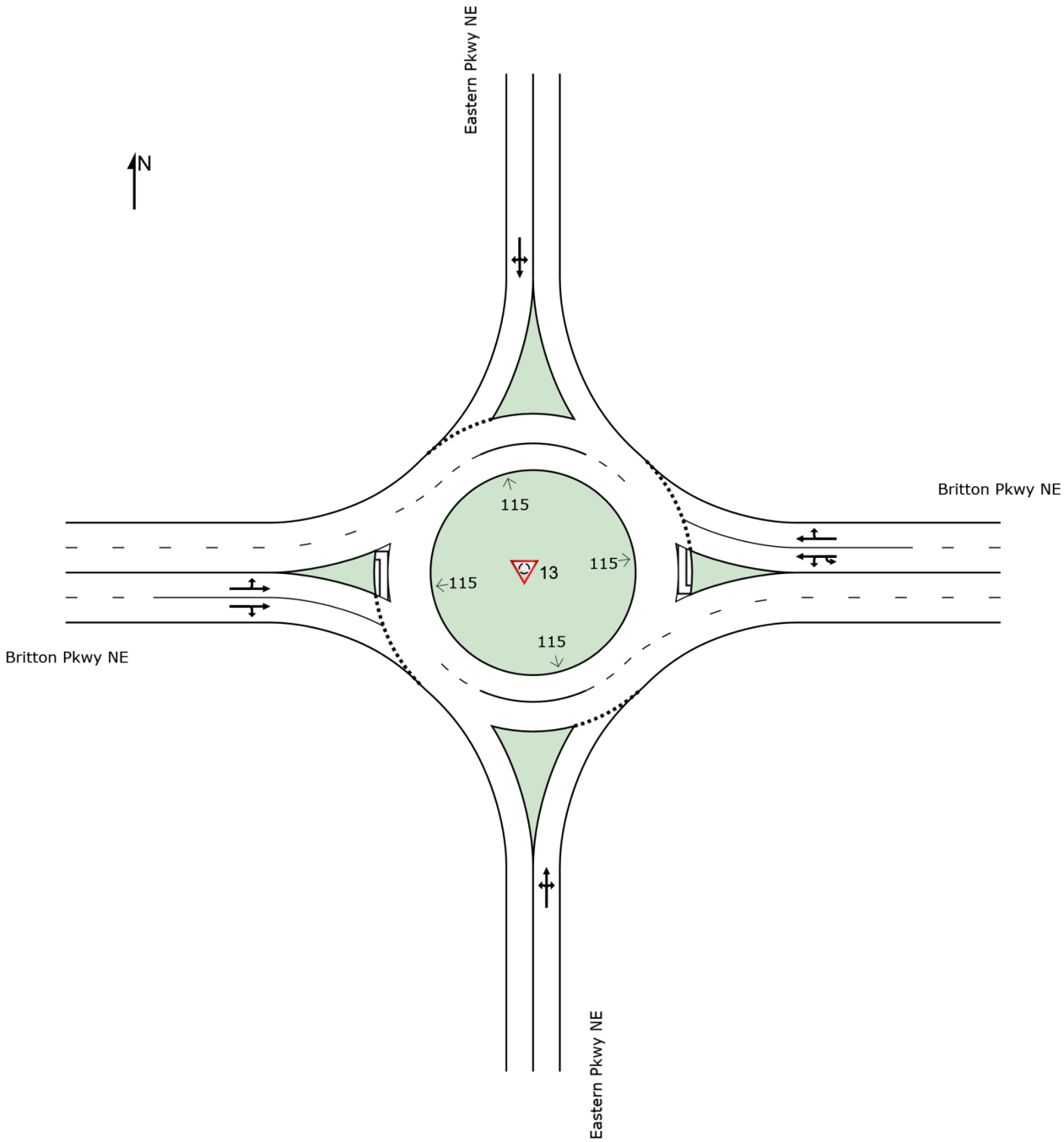
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	609	-	-	-
HCM Lane V/C Ratio	0.094	-	-	-
HCM Ctrl Dly (s/v)	11.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

SITE LAYOUT

Site: 13 [Alt 1 Combo 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 Combo 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	81	2.0	81	2.0	0.147	11.7	LOS B	0.5	12.9	0.48	0.71	0.48	33.2
8	T1	All MCs	1	2.0	1	2.0	0.147	5.4	LOS A	0.5	12.9	0.48	0.71	0.48	33.9
18	R2	All MCs	56	2.0	56	2.0	0.147	5.5	LOS A	0.5	12.9	0.48	0.71	0.48	33.6
Approach			138	2.0	138	2.0	0.147	9.2	LOS A	0.5	12.9	0.48	0.71	0.48	33.4
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.297	13.2	LOS B	1.8	45.8	0.33	0.44	0.33	34.5
1	L2	All MCs	59	3.0	59	3.0	0.297	10.6	LOS B	1.8	45.8	0.33	0.44	0.33	34.5
6	T1	All MCs	797	3.0	797	3.0	0.297	4.2	LOS A	1.8	46.9	0.31	0.41	0.31	35.6
16	R2	All MCs	3	3.0	3	3.0	0.297	4.4	LOS A	1.8	46.9	0.31	0.38	0.31	35.4
Approach			864	3.0	864	3.0	0.297	4.7	LOS A	1.8	46.9	0.32	0.41	0.32	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.078	11.8	LOS B	0.3	6.7	0.50	0.75	0.50	32.9
4	T1	All MCs	1	0.0	1	0.0	0.078	5.5	LOS A	0.3	6.7	0.50	0.75	0.50	33.5
14	R2	All MCs	20	0.0	20	0.0	0.078	5.5	LOS A	0.3	6.7	0.50	0.75	0.50	33.3
Approach			71	0.0	71	0.0	0.078	10.0	LOS A	0.3	6.7	0.50	0.75	0.50	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.252	10.5	LOS B	1.4	36.4	0.30	0.42	0.30	34.7
2	T1	All MCs	651	4.0	651	4.0	0.252	4.1	LOS A	1.4	37.1	0.28	0.40	0.28	35.8
12	R2	All MCs	42	4.0	42	4.0	0.252	4.3	LOS A	1.4	37.1	0.28	0.38	0.28	35.5
Approach			733	4.0	733	4.0	0.252	4.5	LOS A	1.4	37.1	0.28	0.40	0.28	35.7
All Vehicles			1806	3.2	1806	3.2	0.297	5.1	LOS A	1.8	46.9	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	650	112	82	776	0	0	0	61	0	0	16
Future Vol, veh/h	2	650	112	82	776	0	0	0	61	0	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	2	650	112	82	776	0	0	0	61	0	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	776	0	0	762	0	0	-	-	381	1269	1706	388
Stage 1	-	-	-	-	-	-	-	-	-	940	940	-
Stage 2	-	-	-	-	-	-	-	-	-	329	766	-
Critical Hdwy	4.18	-	-	4.16	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	823	-	-	840	-	-	0	0	617	127	92	616
Stage 1	-	-	-	-	-	-	0	0	-	287	345	-
Stage 2	-	-	-	-	-	-	0	0	-	664	415	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	823	-	-	840	-	-	-	-	617	103	83	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	103	83	-
Stage 1	-	-	-	-	-	-	-	-	-	259	311	-
Stage 2	-	-	-	-	-	-	-	-	-	596	414	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.02	0.93	11.47	11
HCM LOS			B	B

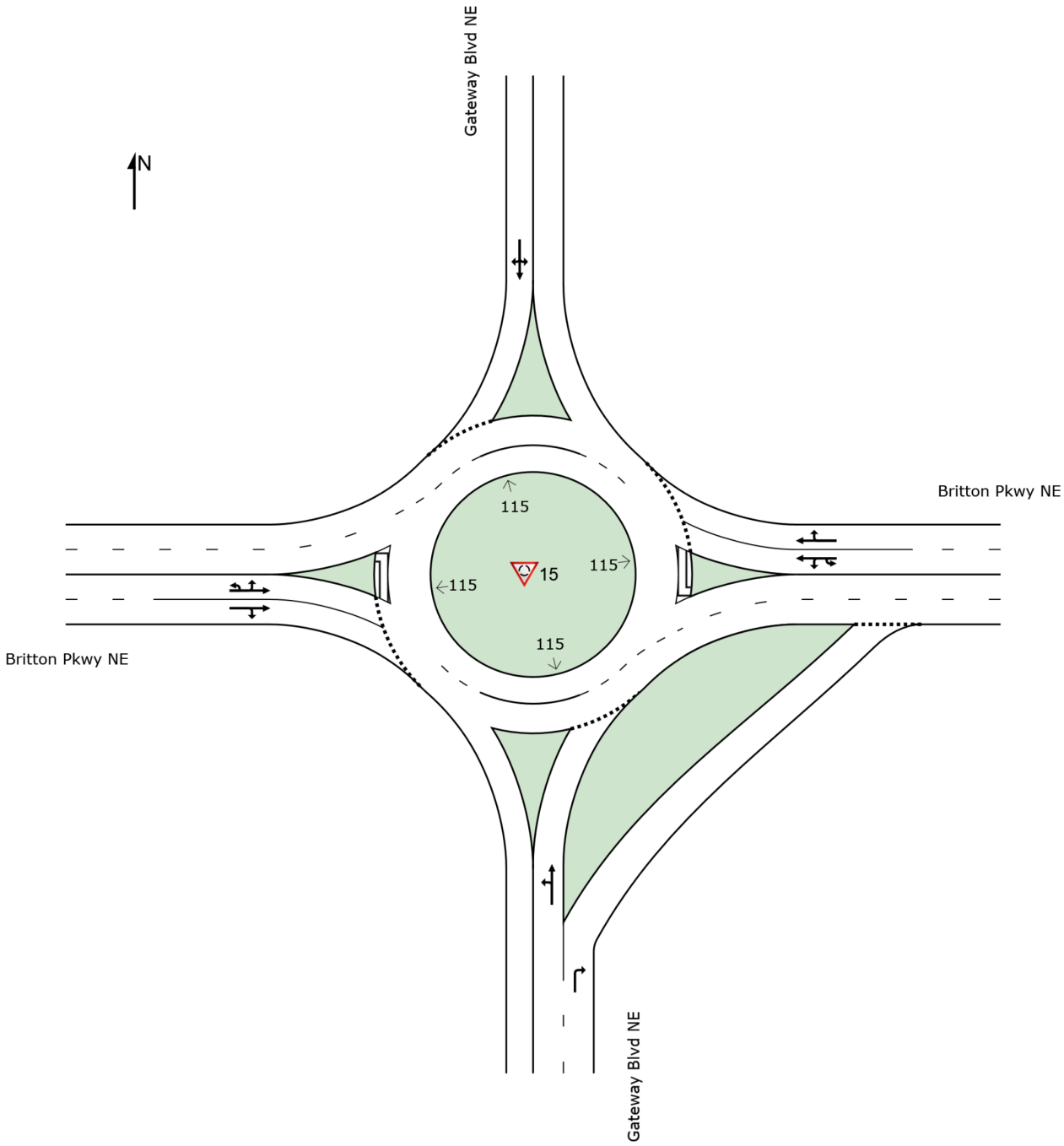
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	617	823	-	-	840	-	-	616
HCM Lane V/C Ratio	0.099	0.002	-	-	0.098	-	-	0.026
HCM Ctrl Dly (s/v)	11.5	9.4	-	-	9.8	-	-	11
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.3	-	-	0.1

SITE LAYOUT

Site: 15 [Alt 1 Combo 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 Combo 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	641	2.0	641	2.0	0.571	12.3	LOS B	3.4	87.0	0.63	0.81	0.72	31.8
8	T1	All MCs	29	2.0	29	2.0	0.571	5.9	LOS A	3.4	87.0	0.63	0.81	0.72	32.4
18	R2	All MCs	169	2.0	169	2.0	0.132	4.5	LOS A	0.4	11.0	0.37	0.53	0.37	35.5
Approach			839	2.0	839	2.0	0.571	10.5	LOS B	3.4	87.0	0.58	0.75	0.65	32.5
East: Britton Pkwy NE															
1u	U	All MCs	6	3.0	6	3.0	0.496	21.1	LOS C	4.2	107.3	0.92	0.86	1.09	30.7
1	L2	All MCs	148	3.0	148	3.0	0.496	18.5	LOS B	4.2	107.3	0.92	0.86	1.09	30.6
6	T1	All MCs	473	3.0	473	3.0	0.496	10.7	LOS B	4.7	120.9	0.94	0.81	1.07	32.7
16	R2	All MCs	135	3.0	135	3.0	0.496	10.2	LOS B	4.7	120.9	0.95	0.79	1.05	33.1
Approach			762	3.0	762	3.0	0.496	12.2	LOS B	4.7	120.9	0.94	0.82	1.07	32.3
North: Gateway Blvd NE															
7	L2	All MCs	36	2.0	36	2.0	0.309	15.5	LOS B	1.6	40.7	0.79	0.82	0.79	32.7
4	T1	All MCs	81	2.0	81	2.0	0.309	9.1	LOS A	1.6	40.7	0.79	0.82	0.79	33.4
14	R2	All MCs	65	2.0	65	2.0	0.309	9.2	LOS A	1.6	40.7	0.79	0.82	0.79	33.1
Approach			182	2.0	182	2.0	0.309	10.4	LOS B	1.6	40.7	0.79	0.82	0.79	33.1
West: Britton Pkwy NE															
5u	U	All MCs	102	5.0	102	5.0	0.370	14.2	LOS B	2.4	63.1	0.54	0.59	0.54	33.1
5	L2	All MCs	75	5.0	75	5.0	0.370	11.6	LOS B	2.4	63.1	0.54	0.59	0.54	33.1
2	T1	All MCs	497	5.0	497	5.0	0.370	5.0	LOS A	2.6	66.6	0.53	0.54	0.53	34.5
12	R2	All MCs	253	5.0	253	5.0	0.370	5.1	LOS A	2.6	66.6	0.51	0.50	0.51	34.8
Approach			927	5.0	927	5.0	0.370	6.6	LOS A	2.6	66.6	0.53	0.54	0.53	34.3
All Vehicles			2710	3.3	2710	3.3	0.571	9.6	LOS A	4.7	120.9	0.67	0.70	0.74	33.1

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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	724	142	38	1233	10	0	0	169	0	0	29
Future Vol, veh/h	106	724	142	38	1233	10	0	0	169	0	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	106	724	142	38	1233	10	0	0	169	0	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1243	0	0	866	0	0	-	-	433	1888	2392	622
Stage 1	-	-	-	-	-	-	-	-	-	1314	1314	-
Stage 2	-	-	-	-	-	-	-	-	-	574	1078	-
Critical Hdwy	4.12	-	-	4.14	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	561	-	-	773	-	-	0	0	571	44	34	435
Stage 1	-	-	-	-	-	-	0	0	-	170	230	-
Stage 2	-	-	-	-	-	-	0	0	-	476	297	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	561	-	-	773	-	-	-	-	571	24	26	435
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	24	26	-
Stage 1	-	-	-	-	-	-	-	-	-	162	219	-
Stage 2	-	-	-	-	-	-	-	-	-	272	241	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.41	0.29	13.94	13.87
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	571	561	-	-	773	-	-	-	435
HCM Lane V/C Ratio	0.296	0.189	-	-	0.049	-	-	-	0.067
HCM Ctrl Dly (s/v)	13.9	12.9	-	-	9.9	-	-	0	13.9
HCM Lane LOS	B	B	-	-	A	-	-	A	B
HCM 95th %tile Q(veh)	1.2	0.7	-	-	0.2	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	980	165	135	810	30	180	248	100	130	423	581
Future Volume (veh/h)	310	980	165	135	810	30	180	248	100	130	423	581
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	310	980	165	135	810	30	180	248	100	130	423	581
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	330	1084	182	156	905	34	201	652	255	155	452	673
Arrive On Green	0.19	0.37	0.37	0.09	0.27	0.27	0.12	0.28	0.28	0.09	0.25	0.25
Sat Flow, veh/h	1701	2902	488	1701	3336	124	1674	2338	915	1701	1786	1499
Grp Volume(v), veh/h	310	573	572	135	412	428	180	175	173	130	423	581
Grp Sat Flow(s),veh/h/ln	1701	1697	1693	1701	1697	1763	1674	1670	1584	1701	1786	1499
Q Serve(g_s), s	25.6	45.5	45.6	11.2	33.3	33.3	15.1	12.0	12.6	10.7	33.0	14.3
Cycle Q Clear(g_c), s	25.6	45.5	45.6	11.2	33.3	33.3	15.1	12.0	12.6	10.7	33.0	14.3
Prop In Lane	1.00		0.29	1.00		0.07	1.00		0.58	1.00		1.00
Lane Grp Cap(c), veh/h	330	634	632	156	460	478	201	466	442	155	452	673
V/C Ratio(X)	0.94	0.90	0.91	0.86	0.90	0.90	0.89	0.38	0.39	0.84	0.94	0.86
Avail Cap(c_a), veh/h	346	688	687	163	506	525	217	466	442	298	463	683
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	42.2	42.3	63.8	50.0	50.0	61.8	41.4	41.6	63.8	52.1	14.0
Incr Delay (d2), s/veh	31.5	14.7	14.9	32.4	17.6	17.1	31.3	0.5	0.6	11.4	26.2	10.9
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	13.9	21.5	21.6	6.3	16.4	17.0	8.2	5.1	5.1	5.2	18.1	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	88.1	56.9	57.2	96.2	67.6	67.1	93.1	41.9	42.2	75.2	78.4	25.0
LnGrp LOS	F	E	E	F	E	E	F	D	D	E	E	C
Approach Vol, veh/h		1455			975			528			1134	
Approach Delay, s/veh		63.6			71.3			59.5			50.6	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.7	44.2	19.0	45.8	18.6	59.2	22.6	42.1
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	29.0	42.5	25.0	30.0	13.7	57.8	18.5	37.0
Max Q Clear Time (g_c+I1), s	27.6	35.3	12.7	14.6	13.2	47.6	17.1	35.0
Green Ext Time (p_c), s	0.1	3.3	0.2	1.8	0.0	5.4	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	61.3
HCM 7th LOS	E

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	859	140	0	1281	0	67
Future Vol, veh/h	859	140	0	1281	0	67
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	859	140	0	1281	0	67

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1570	500
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	641	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	101	517
Stage 1	-	-	0	-	345	-
Stage 2	-	-	0	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	101	517
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	487	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	517	-	-	-
HCM Lane V/C Ratio	0.13	-	-	-
HCM Ctrl Dly (s/v)	13	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	679	51	0	898	0	54
Future Vol, veh/h	679	51	0	898	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	679	51	0	898	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1154	365
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	449	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	191	632
Stage 1	-	-	0	-	451	-
Stage 2	-	-	0	-	610	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	191	632
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	451	-
Stage 2	-	-	-	-	610	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.23
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	632	-	-	-
HCM Lane V/C Ratio	0.085	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	791	26	0	871	0	54
Future Vol, veh/h	791	26	0	871	0	54
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	791	26	0	871	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1240	409
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	167	592
Stage 1	-	-	0	-	401	-
Stage 2	-	-	0	-	620	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	167	592
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.69
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	592	-	-	-
HCM Lane V/C Ratio	0.091	-	-	-
HCM Ctrl Dly (s/v)	11.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	212	30	729	30	281	1191	214
Future Volume (veh/h)	150	195	20	135	225	212	30	729	30	281	1191	214
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	226	32	776	32	299	1267	228
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	182	248	25	406	243	230	55	883	36	327	1445	642
Arrive On Green	0.11	0.16	0.16	0.24	0.29	0.29	0.03	0.27	0.27	0.19	0.43	0.43
Sat Flow, veh/h	1688	1582	161	1714	850	804	1701	3320	137	1701	3393	1508
Grp Volume(v), veh/h	160	0	228	144	0	465	32	396	412	299	1267	228
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1654	1701	1697	1760	1701	1697	1508
Q Serve(g_s), s	11.8	0.0	16.0	8.8	0.0	35.2	2.3	28.2	28.2	21.7	43.1	12.9
Cycle Q Clear(g_c), s	11.8	0.0	16.0	8.8	0.0	35.2	2.3	28.2	28.2	21.7	43.1	12.9
Prop In Lane	1.00		0.09	1.00		0.49	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	182	0	273	406	0	473	55	451	468	327	1445	642
V/C Ratio(X)	0.88	0.00	0.84	0.35	0.00	0.98	0.59	0.88	0.88	0.92	0.88	0.36
Avail Cap(c_a), veh/h	182	0	509	406	0	473	81	451	468	451	1635	727
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	0.0	51.5	40.0	0.0	44.7	60.1	44.3	44.3	49.9	33.1	24.5
Incr Delay (d2), s/veh	34.7	0.0	6.6	0.4	0.0	37.0	7.2	17.6	17.2	17.7	5.2	0.3
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	6.8	0.0	7.5	3.8	0.0	19.2	1.1	14.0	14.5	10.8	18.4	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	90.1	0.0	58.2	40.4	0.0	81.7	67.4	61.9	61.5	67.6	38.3	24.8
LnGrp LOS	F		E	D		F	E	E	E	E	D	C
Approach Vol, veh/h		388			609			840			1794	
Approach Delay, s/veh		71.3			71.9			61.9			41.5	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	58.5	18.2	40.6	28.8	38.4	34.5	24.3
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.3	45.1	13.8	37.2	23.7	30.2	10.8	18.0
Green Ext Time (p_c), s	0.0	8.5	0.0	0.0	0.5	1.4	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	54.5
HCM 7th LOS	D

Notes

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

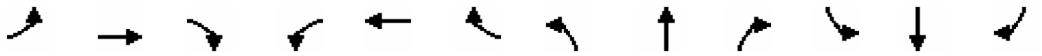
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	212	30	729	30	281	1191	214
Future Volume (veh/h)	150	195	20	135	225	212	30	729	30	281	1191	214
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	226	32	776	32	299	1267	228
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	187	255	26	227	329	278	58	1126	46	332	1438	256
Arrive On Green	0.11	0.16	0.16	0.13	0.18	0.18	0.03	0.34	0.34	0.20	0.50	0.50
Sat Flow, veh/h	1688	1582	161	1714	1800	1523	1701	3320	137	1701	2876	513
Grp Volume(v), veh/h	160	0	228	144	239	226	32	396	412	299	743	752
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	1800	1523	1701	1697	1761	1701	1697	1692
Q Serve(g_s), s	10.1	0.0	13.7	8.6	13.6	15.5	2.0	21.9	21.9	18.7	42.3	43.5
Cycle Q Clear(g_c), s	10.1	0.0	13.7	8.6	13.6	15.5	2.0	21.9	21.9	18.7	42.3	43.5
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.08	1.00		0.30
Lane Grp Cap(c), veh/h	187	0	281	227	329	278	58	576	597	332	848	846
V/C Ratio(X)	0.85	0.00	0.81	0.63	0.73	0.81	0.55	0.69	0.69	0.90	0.88	0.89
Avail Cap(c_a), veh/h	211	0	590	227	596	504	94	576	597	523	947	945
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	44.0	44.6	41.9	42.6	51.7	31.0	31.0	42.7	24.2	24.5
Incr Delay (d2), s/veh	24.3	0.0	5.6	5.1	2.8	5.2	5.9	3.4	3.3	11.2	8.5	9.6
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	5.5	0.0	6.3	4.0	6.3	6.2	1.0	9.4	9.7	8.8	18.1	18.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.8	0.0	49.6	49.7	44.7	47.8	57.6	34.3	34.2	53.9	32.6	34.1
LnGrp LOS	E		D	D	D	D	E	C	C	D	C	C
Approach Vol, veh/h		388			609			840			1794	
Approach Delay, s/veh		58.8			47.0			35.2			36.8	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	59.3	16.7	24.5	25.8	41.8	19.0	22.1
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.0	45.5	12.1	17.5	20.7	23.9	10.6	15.7
Green Ext Time (p_c), s	0.0	8.9	0.0	1.9	0.5	3.3	0.1	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	40.5
HCM 7th LOS	D

Notes

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



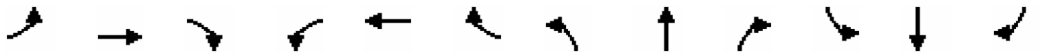
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	182	40	734	25	296	1126	254
Future Volume (veh/h)	110	205	55	180	265	182	40	734	25	296	1126	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	182	40	734	25	296	1126	254
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	138	308	83	188	255	175	70	897	31	334	1437	638
Arrive On Green	0.08	0.23	0.23	0.11	0.26	0.26	0.04	0.27	0.27	0.20	0.42	0.42
Sat Flow, veh/h	1688	1345	361	1714	994	682	1701	3347	114	1701	3393	1508
Grp Volume(v), veh/h	110	0	260	180	0	447	40	372	387	296	1126	254
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	0	1676	1701	1697	1765	1701	1697	1508
Q Serve(g_s), s	6.1	0.0	13.2	9.9	0.0	24.4	2.2	19.5	19.5	16.1	27.2	11.1
Cycle Q Clear(g_c), s	6.1	0.0	13.2	9.9	0.0	24.4	2.2	19.5	19.5	16.1	27.2	11.1
Prop In Lane	1.00		0.21	1.00		0.41	1.00		0.06	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	391	188	0	430	70	455	473	334	1437	638
V/C Ratio(X)	0.80	0.00	0.66	0.96	0.00	1.04	0.57	0.82	0.82	0.89	0.78	0.40
Avail Cap(c_a), veh/h	362	0	438	188	0	430	186	645	671	652	1437	638
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	0.0	33.3	42.1	0.0	35.3	44.7	32.6	32.6	37.1	23.6	19.0
Incr Delay (d2), s/veh	7.6	0.0	3.2	53.6	0.0	53.7	5.3	5.3	5.2	6.0	2.9	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	2.8	0.0	5.7	6.9	0.0	16.1	1.0	8.5	8.8	7.1	11.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.4	0.0	36.5	95.7	0.0	89.0	50.1	37.9	37.8	43.1	26.5	19.4
LnGrp LOS	D		D	F		F	D	D	D	D	C	B
Approach Vol, veh/h		370			627			799			1676	
Approach Delay, s/veh		40.7			90.9			38.5			28.4	
Approach LOS		D			F			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	45.1	12.4	29.0	23.3	30.4	15.0	26.4
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.2	29.2	8.1	26.4	18.1	21.5	11.9	15.2
Green Ext Time (p_c), s	0.0	4.3	0.1	0.0	0.6	3.9	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	43.3
HCM 7th LOS	D

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	182	40	734	25	296	1126	254
Future Volume (veh/h)	110	205	55	180	265	182	40	734	25	296	1126	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	182	40	734	25	296	1126	254
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	139	248	67	208	402	340	73	926	32	339	1191	267
Arrive On Green	0.08	0.18	0.18	0.12	0.22	0.22	0.04	0.28	0.28	0.20	0.43	0.43
Sat Flow, veh/h	1688	1345	361	1714	1800	1523	1701	3347	114	1701	2752	617
Grp Volume(v), veh/h	110	0	260	180	265	182	40	372	387	296	691	689
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	1800	1523	1701	1697	1765	1701	1697	1672
Q Serve(g_s), s	5.5	0.0	12.6	8.8	11.5	9.0	2.0	17.4	17.4	14.4	33.4	34.0
Cycle Q Clear(g_c), s	5.5	0.0	12.6	8.8	11.5	9.0	2.0	17.4	17.4	14.4	33.4	34.0
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.06	1.00		0.37
Lane Grp Cap(c), veh/h	139	0	315	208	402	340	73	469	488	339	734	724
V/C Ratio(X)	0.79	0.00	0.83	0.86	0.66	0.54	0.55	0.79	0.79	0.87	0.94	0.95
Avail Cap(c_a), veh/h	402	0	486	208	513	434	207	716	744	723	734	724
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	33.6	36.9	30.3	29.3	40.1	28.7	28.7	33.2	23.2	23.4
Incr Delay (d2), s/veh	7.2	0.0	6.8	28.9	1.9	1.2	4.7	3.2	3.1	5.4	20.2	22.4
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	2.5	0.0	5.7	5.3	5.0	3.3	0.9	7.2	7.5	6.3	16.5	16.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.8	0.0	40.4	65.8	32.2	30.5	44.8	31.9	31.8	38.7	43.4	45.8
LnGrp LOS	D		D	E	C	C	D	C	C	D	D	D
Approach Vol, veh/h		370			627			799			1676	
Approach Delay, s/veh		42.0			41.3			32.5			43.6	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	41.9	11.7	23.7	21.6	28.6	15.0	20.4
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.0	36.0	7.5	13.5	16.4	19.4	10.8	14.6
Green Ext Time (p_c), s	0.0	0.1	0.1	1.5	0.6	4.1	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	40.4
HCM 7th LOS	D

Notes

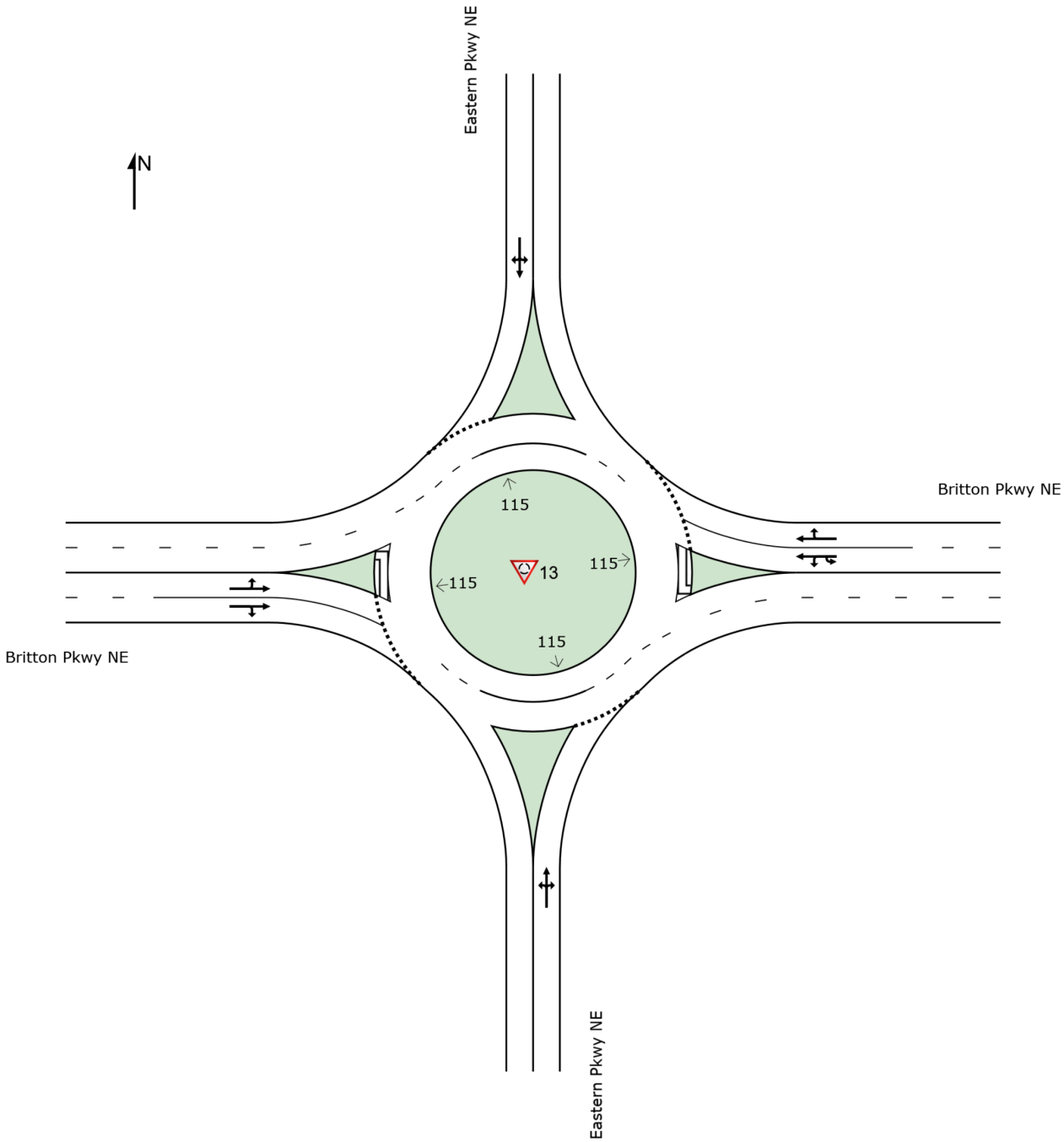
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 13 [Alt 2 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 2 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	64	2.0	64	2.0	0.136	11.8	LOS B	0.5	11.6	0.45	0.70	0.45	33.4
8	T1	All MCs	1	2.0	1	2.0	0.136	5.4	LOS A	0.5	11.6	0.45	0.70	0.45	34.1
18	R2	All MCs	53	2.0	53	2.0	0.136	5.5	LOS A	0.5	11.6	0.45	0.70	0.45	33.8
Approach			118	2.0	118	2.0	0.136	8.9	LOS A	0.5	11.6	0.45	0.70	0.45	33.6
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.279	13.0	LOS B	1.7	42.9	0.27	0.42	0.27	34.7
1	L2	All MCs	48	3.0	48	3.0	0.279	10.4	LOS B	1.7	42.9	0.27	0.42	0.27	34.7
6	T1	All MCs	679	3.0	679	3.0	0.279	4.0	LOS A	1.7	43.4	0.26	0.40	0.26	35.8
16	R2	All MCs	37	3.0	37	3.0	0.279	4.3	LOS A	1.7	43.4	0.26	0.37	0.26	35.6
Approach			774	3.0	774	3.0	0.279	4.6	LOS A	1.7	43.4	0.26	0.40	0.26	35.7
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.071	12.0	LOS B	0.2	5.9	0.48	0.72	0.48	33.4
4	T1	All MCs	1	0.0	1	0.0	0.071	5.6	LOS A	0.2	5.9	0.48	0.72	0.48	34.0
14	R2	All MCs	27	0.0	27	0.0	0.071	5.7	LOS A	0.2	5.9	0.48	0.72	0.48	33.8
Approach			60	0.0	60	0.0	0.071	9.0	LOS A	0.2	5.9	0.48	0.72	0.48	33.6
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.222	10.4	LOS B	1.2	30.7	0.26	0.39	0.26	35.0
2	T1	All MCs	549	4.0	549	4.0	0.222	4.1	LOS A	1.2	30.9	0.25	0.38	0.25	36.0
12	R2	All MCs	44	4.0	44	4.0	0.222	4.3	LOS A	1.2	30.9	0.24	0.38	0.24	35.6
Approach			609	4.0	609	4.0	0.222	4.2	LOS A	1.2	30.9	0.25	0.38	0.25	35.9
All Vehicles			1561	3.2	1561	3.2	0.279	4.9	LOS A	1.7	43.4	0.28	0.43	0.28	35.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	543	30	41	681	1	0	0	31	0	0	26
Future Vol, veh/h	10	543	30	41	681	1	0	0	31	0	0	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	11	578	32	44	724	1	0	0	33	0	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	726	0	0	610	0	0	-	-	305	1122	1443	363
Stage 1	-	-	-	-	-	-	-	-	-	812	812	-
Stage 2	-	-	-	-	-	-	-	-	-	310	631	-
Critical Hdwy	4.18	-	-	4.16	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	860	-	-	958	-	-	0	0	691	163	133	640
Stage 1	-	-	-	-	-	-	0	0	-	343	395	-
Stage 2	-	-	-	-	-	-	0	0	-	681	478	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	860	-	-	958	-	-	-	-	691	146	126	640
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	146	126	-
Stage 1	-	-	-	-	-	-	-	-	-	328	377	-
Stage 2	-	-	-	-	-	-	-	-	-	640	472	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.16	0.51	10.47	10.88
HCM LOS			B	B

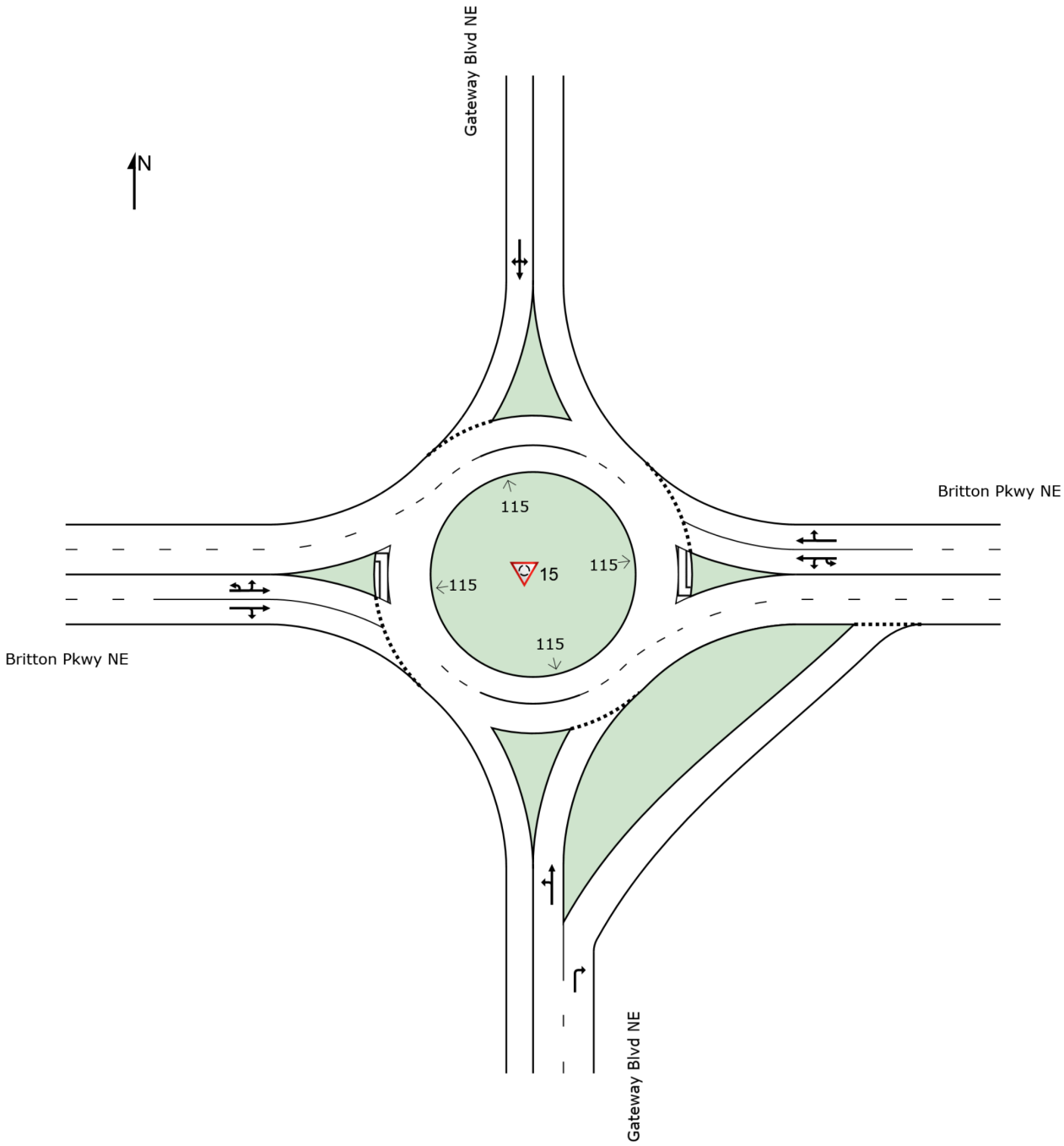
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	691	860	-	-	958	-	-	640
HCM Lane V/C Ratio	0.048	0.012	-	-	0.046	-	-	0.043
HCM Ctrl Dly (s/v)	10.5	9.2	-	-	8.9	-	-	10.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.1

SITE LAYOUT

Site: 15 [Alt 2 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 2 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	476	2.0	476	2.0	0.422	11.7	LOS B	2.0	51.4	0.57	0.76	0.59	31.9
8	T1	All MCs	16	2.0	16	2.0	0.422	5.4	LOS A	2.0	51.4	0.57	0.76	0.59	32.5
18	R2	All MCs	83	2.0	83	2.0	0.065	4.5	LOS A	0.2	5.0	0.34	0.52	0.34	35.6
Approach			574	2.0	574	2.0	0.422	10.5	LOS B	2.0	51.4	0.54	0.73	0.56	32.4
East: Britton Pkwy NE															
1u	U	All MCs	4	3.0	4	3.0	0.424	17.7	LOS B	3.0	77.2	0.81	0.74	0.85	32.6
1	L2	All MCs	87	3.0	87	3.0	0.424	15.1	LOS B	3.0	77.2	0.81	0.74	0.85	32.6
6	T1	All MCs	509	3.0	509	3.0	0.424	8.1	LOS A	3.3	84.6	0.81	0.71	0.83	33.8
16	R2	All MCs	178	3.0	178	3.0	0.424	7.7	LOS A	3.3	84.6	0.82	0.67	0.82	33.9
Approach			778	3.0	778	3.0	0.424	8.8	LOS A	3.3	84.6	0.81	0.70	0.83	33.7
North: Gateway Blvd NE															
7	L2	All MCs	107	2.0	107	2.0	0.329	14.2	LOS B	1.7	42.0	0.74	0.82	0.75	32.5
4	T1	All MCs	40	2.0	40	2.0	0.329	7.8	LOS A	1.7	42.0	0.74	0.82	0.75	33.1
14	R2	All MCs	78	2.0	78	2.0	0.329	7.9	LOS A	1.7	42.0	0.74	0.82	0.75	32.9
Approach			224	2.0	224	2.0	0.329	10.9	LOS B	1.7	42.0	0.74	0.82	0.75	32.7
West: Britton Pkwy NE															
5u	U	All MCs	87	5.0	87	5.0	0.338	13.9	LOS B	2.1	55.4	0.49	0.59	0.49	33.0
5	L2	All MCs	122	5.0	122	5.0	0.338	11.3	LOS B	2.1	55.4	0.49	0.59	0.49	33.0
2	T1	All MCs	444	5.0	444	5.0	0.338	4.8	LOS A	2.2	58.0	0.47	0.52	0.47	34.7
12	R2	All MCs	220	5.0	220	5.0	0.338	4.9	LOS A	2.2	58.0	0.46	0.48	0.46	34.9
Approach			873	5.0	873	5.0	0.338	6.6	LOS A	2.2	58.0	0.47	0.53	0.47	34.3
All Vehicles			2450	3.4	2450	3.4	0.424	8.6	LOS A	3.3	84.6	0.62	0.66	0.63	33.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	708	84	35	1010	25	0	0	128	0	0	35
Future Vol, veh/h	50	708	84	35	1010	25	0	0	128	0	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	53	745	88	37	1063	26	0	0	135	0	0	37

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1089	0	0	834	0	0	-	-	417	1628	2089	545
Stage 1	-	-	-	-	-	-	-	-	-	1150	1150	-
Stage 2	-	-	-	-	-	-	-	-	-	478	939	-
Critical Hdwy	4.12	-	-	4.14	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	642	-	-	795	-	-	0	0	585	69	53	488
Stage 1	-	-	-	-	-	-	0	0	-	214	275	-
Stage 2	-	-	-	-	-	-	0	0	-	543	345	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	642	-	-	795	-	-	-	-	585	46	47	488
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	46	47	-
Stage 1	-	-	-	-	-	-	-	-	-	204	262	-
Stage 2	-	-	-	-	-	-	-	-	-	383	317	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.66	0.32	12.99	12.98
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	585	642	-	-	795	-	-	-	488
HCM Lane V/C Ratio	0.23	0.082	-	-	0.046	-	-	-	0.076
HCM Ctrl Dly (s/v)	13	11.1	-	-	9.7	-	-	0	13
HCM Lane LOS	B	B	-	-	A	-	-	A	B
HCM 95th %tile Q(veh)	0.9	0.3	-	-	0.1	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	770	120	115	740	30	150	236	80	90	351	482
Future Volume (veh/h)	320	770	120	115	740	30	150	236	80	90	351	482
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	330	794	124	119	763	31	155	243	82	93	362	497
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	353	1157	181	142	896	36	179	658	216	120	420	666
Arrive On Green	0.21	0.39	0.39	0.08	0.27	0.27	0.11	0.27	0.27	0.07	0.23	0.23
Sat Flow, veh/h	1701	2937	459	1701	3322	135	1674	2464	810	1701	1786	1498
Grp Volume(v), veh/h	330	459	459	119	390	404	155	163	162	93	362	497
Grp Sat Flow(s),veh/h/ln	1701	1697	1699	1701	1697	1761	1674	1670	1604	1701	1786	1498
Q Serve(g_s), s	24.3	28.6	28.6	8.8	27.7	27.7	11.6	10.1	10.5	6.8	24.8	9.5
Cycle Q Clear(g_c), s	24.3	28.6	28.6	8.8	27.7	27.7	11.6	10.1	10.5	6.8	24.8	9.5
Prop In Lane	1.00		0.27	1.00		0.08	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	353	668	669	142	458	475	179	446	428	120	420	666
V/C Ratio(X)	0.93	0.69	0.69	0.84	0.85	0.85	0.86	0.36	0.38	0.77	0.86	0.75
Avail Cap(c_a), veh/h	387	770	771	183	566	587	243	446	428	334	519	750
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	32.1	32.1	57.5	44.1	44.1	56.0	37.9	38.1	58.2	46.8	11.4
Incr Delay (d2), s/veh	27.3	2.1	2.1	18.4	10.4	10.1	16.8	0.5	0.6	10.0	11.9	3.6
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	13.0	12.1	12.1	4.5	12.9	13.4	5.7	4.2	4.2	3.3	12.4	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.0	34.2	34.2	75.9	54.5	54.2	72.8	38.4	38.6	68.1	58.7	15.1
LnGrp LOS	E	C	C	E	D	D	E	D	D	E	E	B
Approach Vol, veh/h		1248			913			480			952	
Approach Delay, s/veh		45.5			57.1			49.6			36.8	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.5	39.9	15.0	40.0	16.2	56.2	19.1	35.9
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	29.0	42.5	25.0	30.0	13.7	57.8	18.5	37.0
Max Q Clear Time (g_c+I1), s	26.3	29.7	8.8	12.5	10.8	30.6	13.6	26.8
Green Ext Time (p_c), s	0.2	4.6	0.2	1.7	0.0	6.7	0.1	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	46.7
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	729	107	0	1065	0	49
Future Vol, veh/h	729	107	0	1065	0	49
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	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	767	113	0	1121	0	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1384	440
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	561	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	135	565
Stage 1	-	-	0	-	391	-
Stage 2	-	-	0	-	535	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	135	565
Mov Cap-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	535	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	12.01
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	565	-	-	-
HCM Lane V/C Ratio	0.091	-	-	-
HCM Ctrl Dly (s/v)	12	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	572	0	0	722	0	0
Future Vol, veh/h	572	0	0	722	0	0
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, %	4	4	3	3	2	2
Mvmt Flow	609	0	0	768	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	993	304
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	242	692
Stage 1	-	-	0	-	506	-
Stage 2	-	-	0	-	658	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	242	692
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	49	0	722	0	69
Future Vol, veh/h	558	49	0	722	0	69
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, %	4	4	3	3	2	2
Mvmt Flow	594	52	0	768	0	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1004	323
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	238	673
Stage 1	-	-	0	-	499	-
Stage 2	-	-	0	-	658	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	238	673
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11
HCM LOS			B

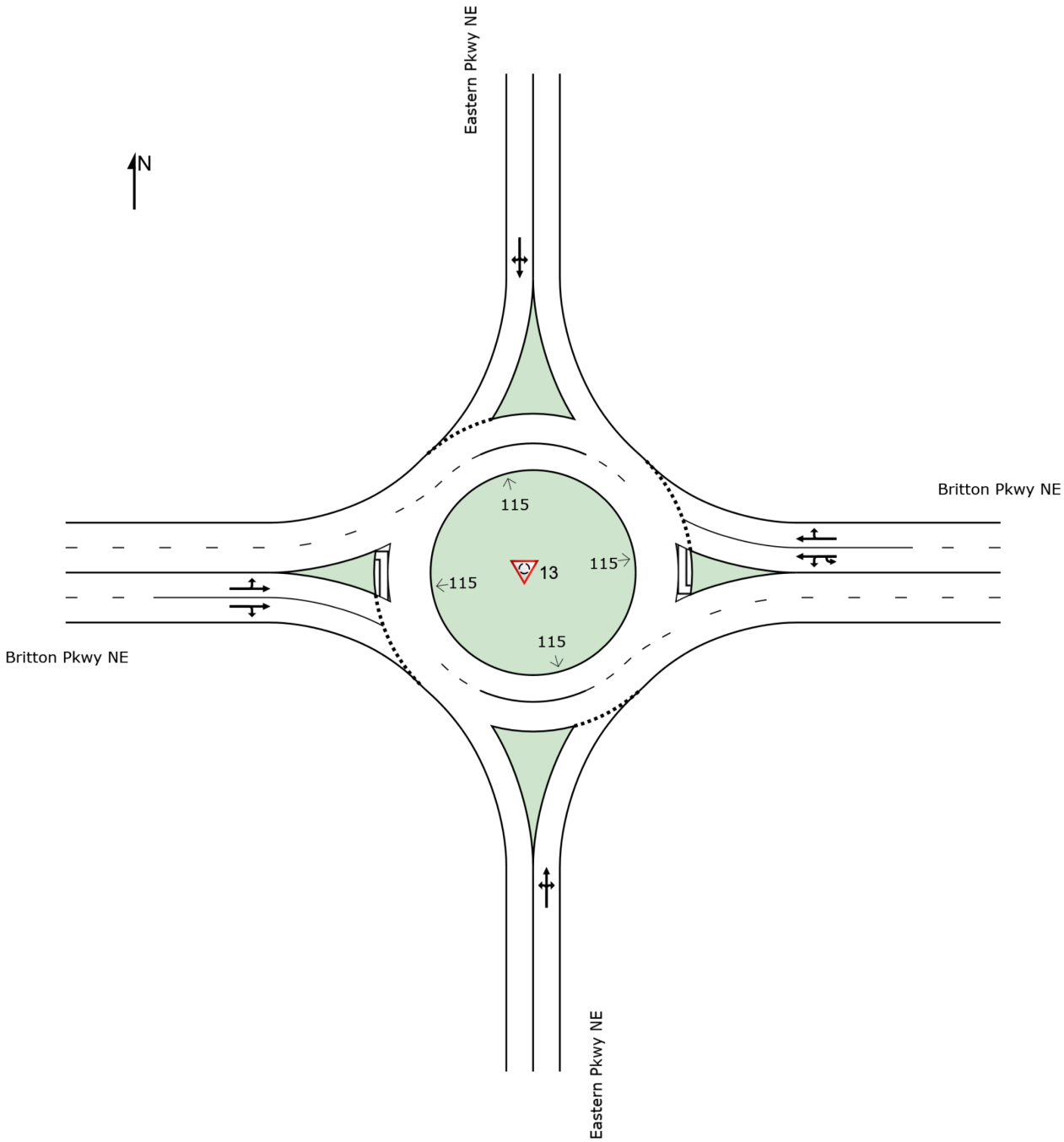
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	673	-	-	-
HCM Lane V/C Ratio	0.109	-	-	-
HCM Ctrl Dly (s/v)	11	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

SITE LAYOUT

Site: 13 [Alt 2 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 2 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	60	2.0	60	2.0	0.112	11.5	LOS B	0.4	9.6	0.43	0.68	0.43	33.4
8	T1	All MCs	1	2.0	1	2.0	0.112	5.1	LOS A	0.4	9.6	0.43	0.68	0.43	34.1
18	R2	All MCs	50	2.0	50	2.0	0.112	5.2	LOS A	0.4	9.6	0.43	0.68	0.43	33.9
Approach			111	2.0	111	2.0	0.112	8.6	LOS A	0.4	9.6	0.43	0.68	0.43	33.6
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.273	13.1	LOS B	1.6	40.6	0.29	0.42	0.29	34.7
1	L2	All MCs	45	3.0	45	3.0	0.273	10.5	LOS B	1.6	40.6	0.29	0.42	0.29	34.7
6	T1	All MCs	757	3.0	757	3.0	0.273	4.1	LOS A	1.6	41.4	0.27	0.39	0.27	35.8
16	R2	All MCs	3	3.0	3	3.0	0.273	4.3	LOS A	1.6	41.4	0.27	0.37	0.27	35.6
Approach			810	3.0	810	3.0	0.273	4.5	LOS A	1.6	41.4	0.27	0.39	0.27	35.7
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.075	11.7	LOS B	0.3	6.3	0.48	0.73	0.48	32.9
4	T1	All MCs	1	0.0	1	0.0	0.075	5.3	LOS A	0.3	6.3	0.48	0.73	0.48	33.6
14	R2	All MCs	20	0.0	20	0.0	0.075	5.4	LOS A	0.3	6.3	0.48	0.73	0.48	33.3
Approach			71	0.0	71	0.0	0.075	9.8	LOS A	0.3	6.3	0.48	0.73	0.48	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.208	10.4	LOS B	1.1	28.9	0.27	0.42	0.27	34.8
2	T1	All MCs	529	4.0	529	4.0	0.208	4.0	LOS A	1.1	29.5	0.26	0.40	0.26	35.8
12	R2	All MCs	41	4.0	41	4.0	0.208	4.3	LOS A	1.1	29.5	0.25	0.38	0.25	35.6
Approach			610	4.0	610	4.0	0.208	4.5	LOS A	1.1	29.5	0.26	0.40	0.26	35.8
All Vehicles			1602	3.2	1602	3.2	0.273	5.0	LOS A	1.6	41.4	0.29	0.43	0.29	35.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	563	30	40	756	0	0	0	30	0	0	16
Future Vol, veh/h	2	563	30	40	756	0	0	0	30	0	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	-	200	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	4	4	4	3	3	3	2	2	2	0	0	0
Mvmt Flow	2	563	30	40	756	0	0	0	30	0	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	756	0	0	593	0	0	-	-	297	1122	1433	378
Stage 1	-	-	-	-	-	-	-	-	-	836	836	-
Stage 2	-	-	-	-	-	-	-	-	-	286	597	-
Critical Hdwy	4.18	-	-	4.16	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.24	-	-	2.23	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	837	-	-	972	-	-	0	0	700	163	135	625
Stage 1	-	-	-	-	-	-	0	0	-	332	385	-
Stage 2	-	-	-	-	-	-	0	0	-	703	495	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	837	-	-	972	-	-	-	-	700	150	129	625
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	150	129	-
Stage 1	-	-	-	-	-	-	-	-	-	318	369	-
Stage 2	-	-	-	-	-	-	-	-	-	672	493	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.03	0.45	10.37	10.91
HCM LOS			B	B

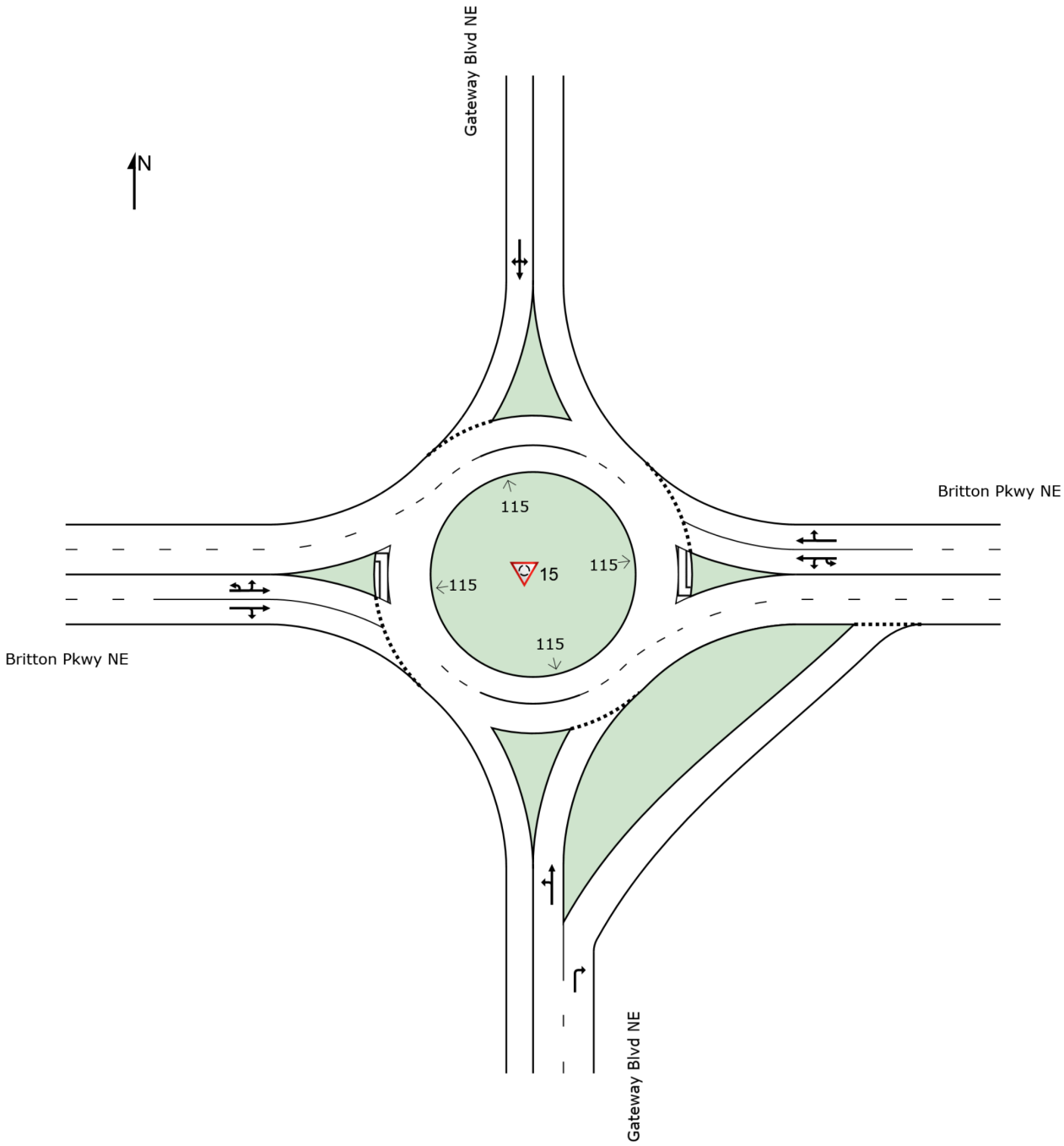
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	700	837	-	-	972	-	-	625
HCM Lane V/C Ratio	0.043	0.002	-	-	0.041	-	-	0.026
HCM Ctrl Dly (s/v)	10.4	9.3	-	-	8.9	-	-	10.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.1

SITE LAYOUT

Site: 15 [Alt 2 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 2 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	428	2.0	428	2.0	0.360	11.1	LOS B	1.5	37.1	0.46	0.71	0.46	32.2
8	T1	All MCs	25	2.0	25	2.0	0.360	4.7	LOS A	1.5	37.1	0.46	0.71	0.46	32.9
18	R2	All MCs	120	2.0	120	2.0	0.090	4.3	LOS A	0.3	6.9	0.30	0.50	0.30	35.7
Approach			573	2.0	573	2.0	0.360	9.4	LOS A	1.5	37.1	0.42	0.66	0.42	32.9
East: Britton Pkwy NE															
1u	U	All MCs	6	3.0	6	3.0	0.367	16.4	LOS B	2.4	61.0	0.73	0.70	0.73	32.6
1	L2	All MCs	128	3.0	128	3.0	0.367	13.8	LOS B	2.4	61.0	0.73	0.70	0.73	32.6
6	T1	All MCs	473	3.0	473	3.0	0.367	6.9	LOS A	2.6	67.8	0.73	0.65	0.73	34.0
16	R2	All MCs	135	3.0	135	3.0	0.367	6.8	LOS A	2.6	67.8	0.72	0.62	0.72	34.1
Approach			742	3.0	742	3.0	0.367	8.2	LOS A	2.6	67.8	0.73	0.66	0.73	33.8
North: Gateway Blvd NE															
7	L2	All MCs	30	2.0	30	2.0	0.232	13.5	LOS B	1.1	27.2	0.68	0.74	0.68	33.5
4	T1	All MCs	72	2.0	72	2.0	0.232	7.1	LOS A	1.1	27.2	0.68	0.74	0.68	34.2
14	R2	All MCs	65	2.0	65	2.0	0.232	7.2	LOS A	1.1	27.2	0.68	0.74	0.68	33.9
Approach			167	2.0	167	2.0	0.232	8.3	LOS A	1.1	27.2	0.68	0.74	0.68	33.9
West: Britton Pkwy NE															
5u	U	All MCs	79	5.0	79	5.0	0.283	13.8	LOS B	1.7	43.7	0.46	0.58	0.46	33.2
5	L2	All MCs	75	5.0	75	5.0	0.283	11.2	LOS B	1.7	43.7	0.46	0.58	0.46	33.2
2	T1	All MCs	381	5.0	381	5.0	0.283	4.7	LOS A	1.8	45.7	0.45	0.52	0.45	34.7
12	R2	All MCs	198	5.0	198	5.0	0.283	4.9	LOS A	1.8	45.7	0.43	0.47	0.43	35.0
Approach			733	5.0	733	5.0	0.283	6.4	LOS A	1.8	45.7	0.45	0.52	0.45	34.5
All Vehicles			2215	3.3	2215	3.3	0.367	7.9	LOS A	2.6	67.8	0.55	0.62	0.55	33.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

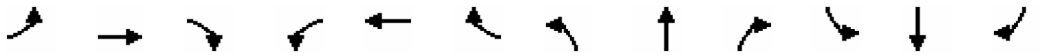
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	106	558	117	35	1000	10	0	0	128	0	0	29
Future Vol, veh/h	106	558	117	35	1000	10	0	0	128	0	0	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	200	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	106	558	117	35	1000	10	0	0	128	0	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1010	0	0	675	0	0	-	-	338	1566	1962	505
Stage 1	-	-	-	-	-	-	-	-	-	1075	1075	-
Stage 2	-	-	-	-	-	-	-	-	-	491	887	-
Critical Hdwy	4.12	-	-	4.14	-	-	-	-	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.22	-	-	-	-	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	688	-	-	912	-	-	0	0	658	77	64	518
Stage 1	-	-	-	-	-	-	0	0	-	238	298	-
Stage 2	-	-	-	-	-	-	0	0	-	533	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	688	-	-	912	-	-	-	-	658	50	52	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	50	52	-
Stage 1	-	-	-	-	-	-	-	-	-	229	287	-
Stage 2	-	-	-	-	-	-	-	-	-	363	309	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.52	0.3	11.78	12.37
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	658	688	-	-	912	-	-	-	518
HCM Lane V/C Ratio	0.194	0.154	-	-	0.038	-	-	-	0.056
HCM Ctrl Dly (s/v)	11.8	11.2	-	-	9.1	-	-	0	12.4
HCM Lane LOS	B	B	-	-	A	-	-	A	B
HCM 95th %tile Q(veh)	0.7	0.5	-	-	0.1	-	-	-	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	980	165	135	810	30	180	236	100	130	401	542
Future Volume (veh/h)	255	980	165	135	810	30	180	236	100	130	401	542
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1786	1786	1786	1786	1786	1786	1758	1758	1758	1786	1786	1786
Adj Flow Rate, veh/h	255	980	165	135	810	30	180	236	100	130	401	542
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	3	3	3	1	1	1
Cap, veh/h	330	1088	183	157	912	34	202	628	258	155	441	664
Arrive On Green	0.19	0.38	0.38	0.09	0.27	0.27	0.12	0.27	0.27	0.09	0.25	0.25
Sat Flow, veh/h	1701	2902	488	1701	3336	124	1674	2303	945	1701	1786	1499
Grp Volume(v), veh/h	255	573	572	135	412	428	180	169	167	130	401	542
Grp Sat Flow(s),veh/h/ln	1701	1697	1693	1701	1697	1763	1674	1670	1578	1701	1786	1499
Q Serve(g_s), s	19.8	44.3	44.4	10.9	32.4	32.4	14.8	11.4	12.0	10.5	30.4	12.6
Cycle Q Clear(g_c), s	19.8	44.3	44.4	10.9	32.4	32.4	14.8	11.4	12.0	10.5	30.4	12.6
Prop In Lane	1.00		0.29	1.00		0.07	1.00		0.60	1.00		1.00
Lane Grp Cap(c), veh/h	330	636	635	157	464	482	202	455	430	155	441	664
V/C Ratio(X)	0.77	0.90	0.90	0.86	0.89	0.89	0.89	0.37	0.39	0.84	0.91	0.82
Avail Cap(c_a), veh/h	354	704	703	167	518	538	222	455	430	305	475	692
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	41.0	41.1	62.3	48.5	48.5	60.3	41.0	41.2	62.2	50.9	13.4
Incr Delay (d2), s/veh	8.4	13.8	14.0	30.7	16.1	15.7	29.7	0.5	0.6	11.2	20.5	7.3
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	9.3	20.8	20.9	6.1	15.8	16.4	7.9	4.8	4.8	5.0	16.1	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.6	54.8	55.0	93.0	64.7	64.2	90.0	41.5	41.8	73.4	71.4	20.8
LnGrp LOS	E	D	E	F	E	E	F	D	D	E	E	C
Approach Vol, veh/h		1400			975			516			1073	
Approach Delay, s/veh		56.1			68.4			58.5			46.1	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	43.6	18.7	44.0	18.3	58.2	22.3	40.4
Change Period (Y+Rc), s	6.0	5.5	6.0	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	29.0	42.5	25.0	30.0	13.7	57.8	18.5	37.0
Max Q Clear Time (g_c+I1), s	21.8	34.4	12.5	14.0	12.9	46.4	16.8	32.4
Green Ext Time (p_c), s	0.2	3.6	0.2	1.8	0.0	5.8	0.0	2.0

Intersection Summary	
HCM 7th Control Delay, s/veh	56.7
HCM 7th LOS	E

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	685	108	0	1045	0	49
Future Vol, veh/h	685	108	0	1045	0	49
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	100	100	100	100	100	100
Heavy Vehicles, %	1	1	2	2	2	2
Mvmt Flow	685	108	0	1045	0	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1262	397
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	523	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	162	603
Stage 1	-	-	0	-	433	-
Stage 2	-	-	0	-	560	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	162	603
Mov Cap-2 Maneuver	-	-	-	-	162	-
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	560	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	603	-	-	-
HCM Lane V/C Ratio	0.081	-	-	-
HCM Ctrl Dly (s/v)	11.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	0	0	836	0	0
Future Vol, veh/h	610	0	0	836	0	0
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	610	0	0	836	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1028	305
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	418	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	230	691
Stage 1	-	-	0	-	505	-
Stage 2	-	-	0	-	632	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	230	691
Mov Cap-2 Maneuver	-	-	-	-	230	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	632	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-

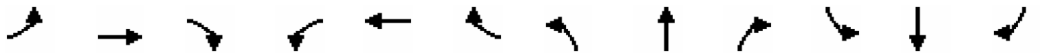
Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	641	49	0	816	0	69
Future Vol, veh/h	641	49	0	816	0	69
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	100	100	100	100	100	100
Heavy Vehicles, %	4	4	3	3	2	2
Mvmt Flow	641	49	0	816	0	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1074	345
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	408	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	215	651
Stage 1	-	-	0	-	473	-
Stage 2	-	-	0	-	640	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	215	651
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	11.18
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	651	-	-	-
HCM Lane V/C Ratio	0.106	-	-	-
HCM Ctrl Dly (s/v)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	206	30	671	30	275	1124	211
Future Volume (veh/h)	150	195	20	135	225	206	30	671	30	275	1124	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	219	32	714	32	293	1196	224
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	185	250	25	415	251	230	56	847	38	322	1400	622
Arrive On Green	0.11	0.16	0.16	0.24	0.29	0.29	0.03	0.26	0.26	0.19	0.41	0.41
Sat Flow, veh/h	1688	1582	161	1714	864	792	1701	3307	148	1701	3393	1508
Grp Volume(v), veh/h	160	0	228	144	0	458	32	366	380	293	1196	224
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	0	1656	1701	1697	1758	1701	1697	1508
Q Serve(g_s), s	11.3	0.0	15.3	8.4	0.0	32.8	2.2	24.8	24.8	20.4	38.7	12.4
Cycle Q Clear(g_c), s	11.3	0.0	15.3	8.4	0.0	32.8	2.2	24.8	24.8	20.4	38.7	12.4
Prop In Lane	1.00		0.09	1.00		0.48	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	185	0	275	415	0	482	56	434	450	322	1400	622
V/C Ratio(X)	0.87	0.00	0.83	0.35	0.00	0.95	0.58	0.84	0.84	0.91	0.85	0.36
Avail Cap(c_a), veh/h	190	0	530	415	0	493	84	467	484	469	1702	756
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	0.0	49.4	37.9	0.0	42.1	57.7	42.7	42.7	48.0	32.2	24.5
Incr Delay (d2), s/veh	30.9	0.0	6.3	0.4	0.0	28.2	6.8	12.4	12.0	15.2	3.7	0.3
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	6.4	0.0	7.2	3.6	0.0	17.0	1.1	11.8	12.2	10.0	16.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	83.9	0.0	55.7	38.3	0.0	70.3	64.5	55.1	54.8	63.2	35.9	24.8
LnGrp LOS	F		E	D		E	E	E	D	E	D	C
Approach Vol, veh/h		388			602			778			1713	
Approach Delay, s/veh		67.3			62.6			55.3			39.2	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	54.8	17.8	39.8	27.5	35.9	33.9	23.7
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	4.2	40.7	13.3	34.8	22.4	26.8	10.4	17.3
Green Ext Time (p_c), s	0.0	9.3	0.0	0.4	0.5	2.4	0.1	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	50.0
HCM 7th LOS	D

Notes

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

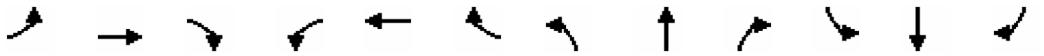
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	195	20	135	225	206	30	671	30	275	1124	211
Future Volume (veh/h)	150	195	20	135	225	206	30	671	30	275	1124	211
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	160	207	21	144	239	219	32	714	32	293	1196	224
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	189	258	26	222	325	275	60	1098	49	328	1398	260
Arrive On Green	0.11	0.16	0.16	0.13	0.18	0.18	0.04	0.33	0.33	0.19	0.49	0.49
Sat Flow, veh/h	1688	1582	161	1714	1800	1523	1701	3307	148	1701	2854	531
Grp Volume(v), veh/h	160	0	228	144	239	219	32	366	380	293	708	712
Grp Sat Flow(s),veh/h/ln	1688	0	1743	1714	1800	1523	1701	1697	1758	1701	1697	1688
Q Serve(g_s), s	9.5	0.0	12.9	8.2	12.8	14.1	1.9	18.8	18.8	17.2	37.4	38.1
Cycle Q Clear(g_c), s	9.5	0.0	12.9	8.2	12.8	14.1	1.9	18.8	18.8	17.2	37.4	38.1
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.08	1.00		0.31
Lane Grp Cap(c), veh/h	189	0	284	222	325	275	60	563	584	328	831	827
V/C Ratio(X)	0.85	0.00	0.80	0.65	0.74	0.80	0.54	0.65	0.65	0.89	0.85	0.86
Avail Cap(c_a), veh/h	224	0	627	222	633	536	100	563	584	555	1006	1001
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	0.0	41.2	42.3	39.6	40.1	48.6	29.1	29.1	40.3	22.9	23.1
Incr Delay (d2), s/veh	21.0	0.0	5.2	5.9	2.9	4.8	5.5	2.6	2.5	8.1	6.0	6.6
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	5.1	0.0	5.9	3.8	5.9	5.6	0.9	7.9	8.2	7.8	15.5	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	65.5	0.0	46.5	48.3	42.6	44.9	54.0	31.7	31.6	48.4	28.8	29.6
LnGrp LOS	E		D	D	D	D	D	C	C	D	C	C
Approach Vol, veh/h		388			602			778			1713	
Approach Delay, s/veh		54.3			44.8			32.6			32.5	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	55.0	16.1	23.1	24.3	38.9	17.9	21.3
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	6.0	60.7	13.6	36.0	33.4	33.3	12.8	36.8
Max Q Clear Time (g_c+I1), s	3.9	40.1	11.5	16.1	19.2	20.8	10.2	14.9
Green Ext Time (p_c), s	0.0	10.0	0.1	1.9	0.5	3.5	0.1	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	37.1
HCM 7th LOS	D

Notes

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



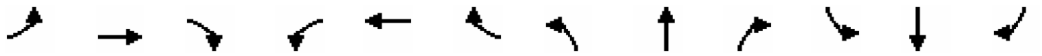
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	176	40	676	25	290	1059	251
Future Volume (veh/h)	110	205	55	180	265	176	40	676	25	290	1059	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	176	40	676	25	290	1059	251
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	138	316	85	194	268	178	71	849	31	330	1379	613
Arrive On Green	0.08	0.23	0.23	0.11	0.27	0.27	0.04	0.25	0.25	0.19	0.41	0.41
Sat Flow, veh/h	1688	1345	361	1714	1009	670	1701	3336	123	1701	3393	1508
Grp Volume(v), veh/h	110	0	260	180	0	441	40	344	357	290	1059	251
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	0	1679	1701	1697	1763	1701	1697	1508
Q Serve(g_s), s	5.9	0.0	12.6	9.5	0.0	24.0	2.1	17.4	17.4	15.2	24.7	10.9
Cycle Q Clear(g_c), s	5.9	0.0	12.6	9.5	0.0	24.0	2.1	17.4	17.4	15.2	24.7	10.9
Prop In Lane	1.00		0.21	1.00		0.40	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	138	0	400	194	0	446	71	432	449	330	1379	613
V/C Ratio(X)	0.79	0.00	0.65	0.93	0.00	0.99	0.56	0.80	0.80	0.88	0.77	0.41
Avail Cap(c_a), veh/h	375	0	454	194	0	446	193	667	693	675	1379	613
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	31.7	40.3	0.0	33.5	43.1	32.0	32.0	36.0	23.5	19.4
Incr Delay (d2), s/veh	7.4	0.0	2.7	44.0	0.0	39.4	5.1	3.4	3.3	5.8	2.6	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	2.7	0.0	5.4	6.3	0.0	14.4	1.0	7.4	7.6	6.7	9.9	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.8	0.0	34.4	84.3	0.0	72.9	48.2	35.4	35.3	41.7	26.1	19.8
LnGrp LOS	D		C	F		E	D	D	D	D	C	B
Approach Vol, veh/h		370			621			741			1600	
Approach Delay, s/veh		38.7			76.2			36.1			28.0	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	42.2	12.1	29.0	22.4	28.3	15.0	26.1
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	4.1	26.7	7.9	26.0	17.2	19.4	11.5	14.6
Green Ext Time (p_c), s	0.0	5.2	0.1	0.0	0.6	3.7	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	40.0
HCM 7th LOS	D

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	205	55	180	265	176	40	676	25	290	1059	251
Future Volume (veh/h)	110	205	55	180	265	176	40	676	25	290	1059	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	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	1772	1772	1772	1800	1800	1800	1786	1786	1786	1786	1786	1786
Adj Flow Rate, veh/h	110	205	55	180	265	176	40	676	25	290	1059	251
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	0	0	0	1	1	1	1	1	1
Cap, veh/h	140	249	67	214	409	347	74	898	33	334	1149	271
Arrive On Green	0.08	0.19	0.19	0.12	0.23	0.23	0.04	0.27	0.27	0.20	0.42	0.42
Sat Flow, veh/h	1688	1345	361	1714	1800	1523	1701	3336	123	1701	2722	642
Grp Volume(v), veh/h	110	0	260	180	265	176	40	344	357	290	658	652
Grp Sat Flow(s),veh/h/ln	1688	0	1706	1714	1800	1523	1701	1697	1763	1701	1697	1668
Q Serve(g_s), s	5.3	0.0	12.2	8.6	11.1	8.4	1.9	15.5	15.5	13.8	30.5	30.9
Cycle Q Clear(g_c), s	5.3	0.0	12.2	8.6	11.1	8.4	1.9	15.5	15.5	13.8	30.5	30.9
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.07	1.00		0.38
Lane Grp Cap(c), veh/h	140	0	316	214	409	347	74	457	475	334	716	704
V/C Ratio(X)	0.79	0.00	0.82	0.84	0.65	0.51	0.54	0.75	0.75	0.87	0.92	0.93
Avail Cap(c_a), veh/h	413	0	500	214	527	446	212	735	764	743	735	723
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	0.0	32.6	35.7	29.2	28.1	39.0	27.9	27.9	32.5	22.7	22.9
Incr Delay (d2), s/veh	7.2	0.0	6.0	24.5	1.6	1.0	4.5	2.3	2.2	5.3	16.4	17.7
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	2.4	0.0	5.4	4.9	4.8	3.1	0.9	6.3	6.6	6.0	14.5	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.7	0.0	38.7	60.1	30.8	29.2	43.5	30.2	30.1	37.7	39.1	40.6
LnGrp LOS	D		D	E	C	C	D	C	C	D	D	D
Approach Vol, veh/h		370			621			741			1600	
Approach Delay, s/veh		40.4			38.8			30.9			39.5	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	40.1	11.5	23.6	20.9	27.3	15.0	20.1
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.6	4.9	4.6	4.6
Max Green Setting (Gmax), s	10.4	36.1	20.4	24.4	36.4	36.1	10.4	24.4
Max Q Clear Time (g_c+I1), s	3.9	32.9	7.3	13.1	15.8	17.5	10.6	14.2
Green Ext Time (p_c), s	0.0	2.2	0.1	1.5	0.6	3.9	0.0	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	37.5
HCM 7th LOS	D

Notes

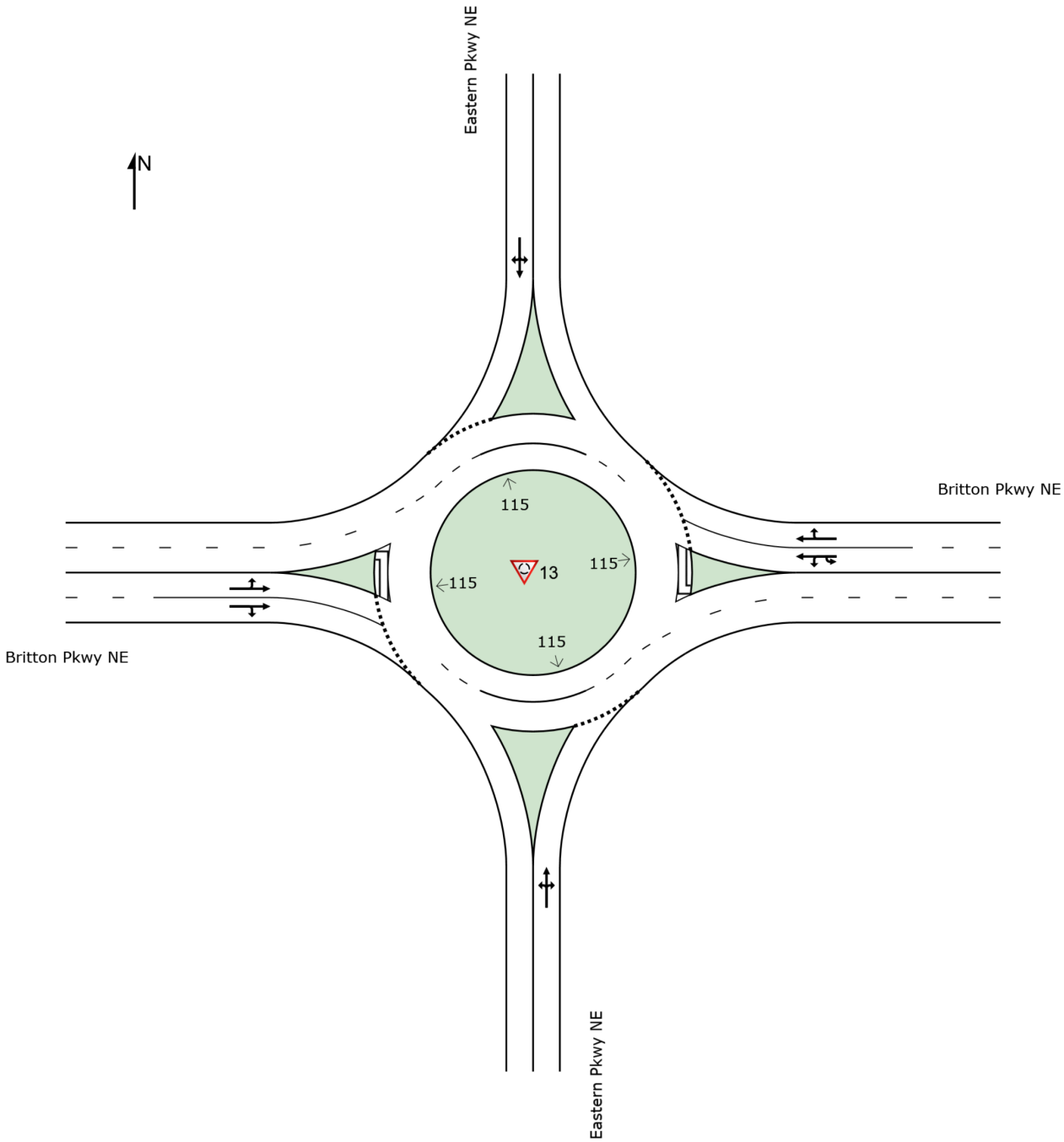
User approved pedestrian interval to be less than phase max green.

SITE LAYOUT

Site: 13 [Alt 1 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	88	2.0	88	2.0	0.182	12.1	LOS B	0.6	16.1	0.49	0.73	0.49	33.1
8	T1	All MCs	1	2.0	1	2.0	0.182	5.8	LOS A	0.6	16.1	0.49	0.73	0.49	33.8
18	R2	All MCs	61	2.0	61	2.0	0.182	5.9	LOS A	0.6	16.1	0.49	0.73	0.49	33.5
Approach			150	2.0	150	2.0	0.182	9.6	LOS A	0.6	16.1	0.49	0.73	0.49	33.3
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.295	13.1	LOS B	1.8	46.6	0.32	0.45	0.32	34.5
1	L2	All MCs	64	3.0	64	3.0	0.295	10.5	LOS B	1.8	46.6	0.32	0.45	0.32	34.5
6	T1	All MCs	690	3.0	690	3.0	0.295	4.2	LOS A	1.8	47.3	0.31	0.41	0.31	35.6
16	R2	All MCs	37	3.0	37	3.0	0.295	4.4	LOS A	1.8	47.3	0.30	0.39	0.30	35.4
Approach			802	3.0	802	3.0	0.295	4.8	LOS A	1.8	47.3	0.31	0.41	0.31	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.073	12.1	LOS B	0.2	6.2	0.50	0.73	0.50	33.3
4	T1	All MCs	1	0.0	1	0.0	0.073	5.7	LOS A	0.2	6.2	0.50	0.73	0.50	34.0
14	R2	All MCs	27	0.0	27	0.0	0.073	5.8	LOS A	0.2	6.2	0.50	0.73	0.50	33.7
Approach			60	0.0	60	0.0	0.073	9.2	LOS A	0.2	6.2	0.50	0.73	0.50	33.5
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.267	10.6	LOS B	1.5	39.0	0.30	0.40	0.30	34.9
2	T1	All MCs	660	4.0	660	4.0	0.267	4.2	LOS A	1.5	39.4	0.29	0.39	0.29	35.8
12	R2	All MCs	45	4.0	45	4.0	0.267	4.4	LOS A	1.5	39.4	0.28	0.39	0.28	35.5
Approach			720	4.0	720	4.0	0.267	4.3	LOS A	1.5	39.4	0.29	0.39	0.29	35.8
All Vehicles			1732	3.2	1732	3.2	0.295	5.2	LOS A	1.8	47.3	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 13 [Alt 2 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	64	2.0	64	2.0	0.136	11.8	LOS B	0.5	11.6	0.45	0.69	0.45	33.4
8	T1	All MCs	1	2.0	1	2.0	0.136	5.4	LOS A	0.5	11.6	0.45	0.69	0.45	34.1
18	R2	All MCs	53	2.0	53	2.0	0.136	5.5	LOS A	0.5	11.6	0.45	0.69	0.45	33.8
Approach			118	2.0	118	2.0	0.136	8.9	LOS A	0.5	11.6	0.45	0.69	0.45	33.6
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.278	13.0	LOS B	1.7	42.8	0.27	0.42	0.27	34.7
1	L2	All MCs	48	3.0	48	3.0	0.278	10.4	LOS B	1.7	42.8	0.27	0.42	0.27	34.7
6	T1	All MCs	678	3.0	678	3.0	0.278	4.0	LOS A	1.7	43.3	0.26	0.40	0.26	35.8
16	R2	All MCs	37	3.0	37	3.0	0.278	4.3	LOS A	1.7	43.3	0.26	0.37	0.26	35.6
Approach			773	3.0	773	3.0	0.278	4.6	LOS A	1.7	43.3	0.26	0.40	0.26	35.7
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.071	12.0	LOS B	0.2	5.9	0.48	0.72	0.48	33.4
4	T1	All MCs	1	0.0	1	0.0	0.071	5.6	LOS A	0.2	5.9	0.48	0.72	0.48	34.0
14	R2	All MCs	27	0.0	27	0.0	0.071	5.7	LOS A	0.2	5.9	0.48	0.72	0.48	33.8
Approach			60	0.0	60	0.0	0.071	9.0	LOS A	0.2	5.9	0.48	0.72	0.48	33.6
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.221	10.4	LOS B	1.2	30.6	0.26	0.39	0.26	35.0
2	T1	All MCs	547	4.0	547	4.0	0.221	4.1	LOS A	1.2	30.8	0.25	0.38	0.25	36.0
12	R2	All MCs	44	4.0	44	4.0	0.221	4.3	LOS A	1.2	30.8	0.24	0.38	0.24	35.6
Approach			606	4.0	606	4.0	0.221	4.2	LOS A	1.2	30.8	0.25	0.38	0.25	35.9
All Vehicles			1557	3.2	1557	3.2	0.278	4.9	LOS A	1.7	43.3	0.28	0.43	0.28	35.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 13 [Alt 1 Combo 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	86	2.0	86	2.0	0.179	12.2	LOS B	0.6	15.8	0.50	0.73	0.50	33.1
8	T1	All MCs	1	2.0	1	2.0	0.179	5.8	LOS A	0.6	15.8	0.50	0.73	0.50	33.8
18	R2	All MCs	60	2.0	60	2.0	0.179	5.9	LOS A	0.6	15.8	0.50	0.73	0.50	33.5
Approach			147	2.0	147	2.0	0.179	9.6	LOS A	0.6	15.8	0.50	0.73	0.50	33.3
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.305	13.1	LOS B	1.9	48.8	0.32	0.44	0.32	34.5
1	L2	All MCs	63	3.0	63	3.0	0.305	10.5	LOS B	1.9	48.8	0.32	0.44	0.32	34.5
6	T1	All MCs	720	3.0	720	3.0	0.305	4.2	LOS A	1.9	49.5	0.31	0.41	0.31	35.6
16	R2	All MCs	37	3.0	37	3.0	0.305	4.4	LOS A	1.9	49.5	0.30	0.38	0.30	35.4
Approach			831	3.0	831	3.0	0.305	4.8	LOS A	1.9	49.5	0.31	0.41	0.31	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.074	12.1	LOS B	0.3	6.3	0.50	0.74	0.50	33.3
4	T1	All MCs	1	0.0	1	0.0	0.074	5.8	LOS A	0.3	6.3	0.50	0.74	0.50	34.0
14	R2	All MCs	27	0.0	27	0.0	0.074	5.9	LOS A	0.3	6.3	0.50	0.74	0.50	33.7
Approach			60	0.0	60	0.0	0.074	9.2	LOS A	0.3	6.3	0.50	0.74	0.50	33.5
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.273	10.6	LOS B	1.6	40.2	0.30	0.40	0.30	34.9
2	T1	All MCs	678	4.0	678	4.0	0.273	4.2	LOS A	1.6	40.6	0.29	0.39	0.29	35.8
12	R2	All MCs	45	4.0	45	4.0	0.273	4.4	LOS A	1.6	40.6	0.28	0.39	0.28	35.5
Approach			738	4.0	738	4.0	0.273	4.3	LOS A	1.6	40.6	0.29	0.39	0.29	35.8
All Vehicles			1776	3.2	1776	3.2	0.305	5.1	LOS A	1.9	49.5	0.32	0.44	0.32	35.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 13 [Alt 1 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	83	2.0	83	2.0	0.149	11.7	LOS B	0.5	13.1	0.47	0.71	0.47	33.2
8	T1	All MCs	1	2.0	1	2.0	0.149	5.4	LOS A	0.5	13.1	0.47	0.71	0.47	33.9
18	R2	All MCs	57	2.0	57	2.0	0.149	5.4	LOS A	0.5	13.1	0.47	0.71	0.47	33.6
Approach			141	2.0	141	2.0	0.149	9.1	LOS A	0.5	13.1	0.47	0.71	0.47	33.4
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.288	13.2	LOS B	1.7	44.0	0.33	0.44	0.33	34.5
1	L2	All MCs	60	3.0	60	3.0	0.288	10.6	LOS B	1.7	44.0	0.33	0.44	0.33	34.5
6	T1	All MCs	769	3.0	769	3.0	0.288	4.2	LOS A	1.8	45.1	0.31	0.41	0.31	35.6
16	R2	All MCs	3	3.0	3	3.0	0.288	4.4	LOS A	1.8	45.1	0.31	0.38	0.31	35.4
Approach			837	3.0	837	3.0	0.288	4.7	LOS A	1.8	45.1	0.32	0.41	0.32	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.077	11.8	LOS B	0.3	6.7	0.50	0.74	0.50	32.9
4	T1	All MCs	1	0.0	1	0.0	0.077	5.4	LOS A	0.3	6.7	0.50	0.74	0.50	33.5
14	R2	All MCs	20	0.0	20	0.0	0.077	5.5	LOS A	0.3	6.7	0.50	0.74	0.50	33.3
Approach			71	0.0	71	0.0	0.077	9.9	LOS A	0.3	6.7	0.50	0.74	0.50	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.247	10.5	LOS B	1.4	35.4	0.30	0.42	0.30	34.7
2	T1	All MCs	635	4.0	635	4.0	0.247	4.1	LOS A	1.4	36.1	0.28	0.40	0.28	35.8
12	R2	All MCs	42	4.0	42	4.0	0.247	4.3	LOS A	1.4	36.1	0.27	0.38	0.27	35.5
Approach			717	4.0	717	4.0	0.247	4.5	LOS A	1.4	36.1	0.28	0.40	0.28	35.7
All Vehicles			1766	3.2	1766	3.2	0.288	5.2	LOS A	1.8	45.1	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 13 [Alt 2 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	60	2.0	60	2.0	0.112	11.5	LOS B	0.4	9.6	0.43	0.68	0.43	33.4
8	T1	All MCs	1	2.0	1	2.0	0.112	5.1	LOS A	0.4	9.6	0.43	0.68	0.43	34.1
18	R2	All MCs	50	2.0	50	2.0	0.112	5.2	LOS A	0.4	9.6	0.43	0.68	0.43	33.9
Approach			111	2.0	111	2.0	0.112	8.6	LOS A	0.4	9.6	0.43	0.68	0.43	33.6
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.273	13.1	LOS B	1.6	40.6	0.29	0.42	0.29	34.7
1	L2	All MCs	45	3.0	45	3.0	0.273	10.5	LOS B	1.6	40.6	0.29	0.42	0.29	34.7
6	T1	All MCs	757	3.0	757	3.0	0.273	4.1	LOS A	1.6	41.4	0.27	0.39	0.27	35.8
16	R2	All MCs	3	3.0	3	3.0	0.273	4.3	LOS A	1.6	41.4	0.27	0.37	0.27	35.6
Approach			810	3.0	810	3.0	0.273	4.5	LOS A	1.6	41.4	0.27	0.39	0.27	35.7
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.075	11.7	LOS B	0.3	6.3	0.48	0.73	0.48	32.9
4	T1	All MCs	1	0.0	1	0.0	0.075	5.3	LOS A	0.3	6.3	0.48	0.73	0.48	33.6
14	R2	All MCs	20	0.0	20	0.0	0.075	5.4	LOS A	0.3	6.3	0.48	0.73	0.48	33.3
Approach			71	0.0	71	0.0	0.075	9.8	LOS A	0.3	6.3	0.48	0.73	0.48	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.208	10.4	LOS B	1.1	28.9	0.27	0.42	0.27	34.8
2	T1	All MCs	529	4.0	529	4.0	0.208	4.0	LOS A	1.1	29.5	0.26	0.40	0.26	35.8
12	R2	All MCs	41	4.0	41	4.0	0.208	4.3	LOS A	1.1	29.5	0.25	0.38	0.25	35.6
Approach			610	4.0	610	4.0	0.208	4.5	LOS A	1.1	29.5	0.26	0.40	0.26	35.8
All Vehicles			1602	3.2	1602	3.2	0.273	5.0	LOS A	1.6	41.4	0.29	0.43	0.29	35.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 13 [Alt 1 Combo 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	81	2.0	81	2.0	0.147	11.7	LOS B	0.5	12.9	0.48	0.71	0.48	33.2
8	T1	All MCs	1	2.0	1	2.0	0.147	5.4	LOS A	0.5	12.9	0.48	0.71	0.48	33.9
18	R2	All MCs	56	2.0	56	2.0	0.147	5.5	LOS A	0.5	12.9	0.48	0.71	0.48	33.6
Approach			138	2.0	138	2.0	0.147	9.2	LOS A	0.5	12.9	0.48	0.71	0.48	33.4
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.297	13.2	LOS B	1.8	45.8	0.33	0.44	0.33	34.5
1	L2	All MCs	59	3.0	59	3.0	0.297	10.6	LOS B	1.8	45.8	0.33	0.44	0.33	34.5
6	T1	All MCs	797	3.0	797	3.0	0.297	4.2	LOS A	1.8	46.9	0.31	0.41	0.31	35.6
16	R2	All MCs	3	3.0	3	3.0	0.297	4.4	LOS A	1.8	46.9	0.31	0.38	0.31	35.4
Approach			864	3.0	864	3.0	0.297	4.7	LOS A	1.8	46.9	0.32	0.41	0.32	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.078	11.8	LOS B	0.3	6.7	0.50	0.75	0.50	32.9
4	T1	All MCs	1	0.0	1	0.0	0.078	5.5	LOS A	0.3	6.7	0.50	0.75	0.50	33.5
14	R2	All MCs	20	0.0	20	0.0	0.078	5.5	LOS A	0.3	6.7	0.50	0.75	0.50	33.3
Approach			71	0.0	71	0.0	0.078	10.0	LOS A	0.3	6.7	0.50	0.75	0.50	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.253	10.5	LOS B	1.4	36.5	0.30	0.42	0.30	34.7
2	T1	All MCs	652	4.0	652	4.0	0.253	4.1	LOS A	1.4	37.2	0.28	0.40	0.28	35.8
12	R2	All MCs	42	4.0	42	4.0	0.253	4.3	LOS A	1.4	37.2	0.28	0.38	0.28	35.5
Approach			734	4.0	734	4.0	0.253	4.5	LOS A	1.4	37.2	0.28	0.40	0.28	35.7
All Vehicles			1807	3.2	1807	3.2	0.297	5.1	LOS A	1.8	46.9	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

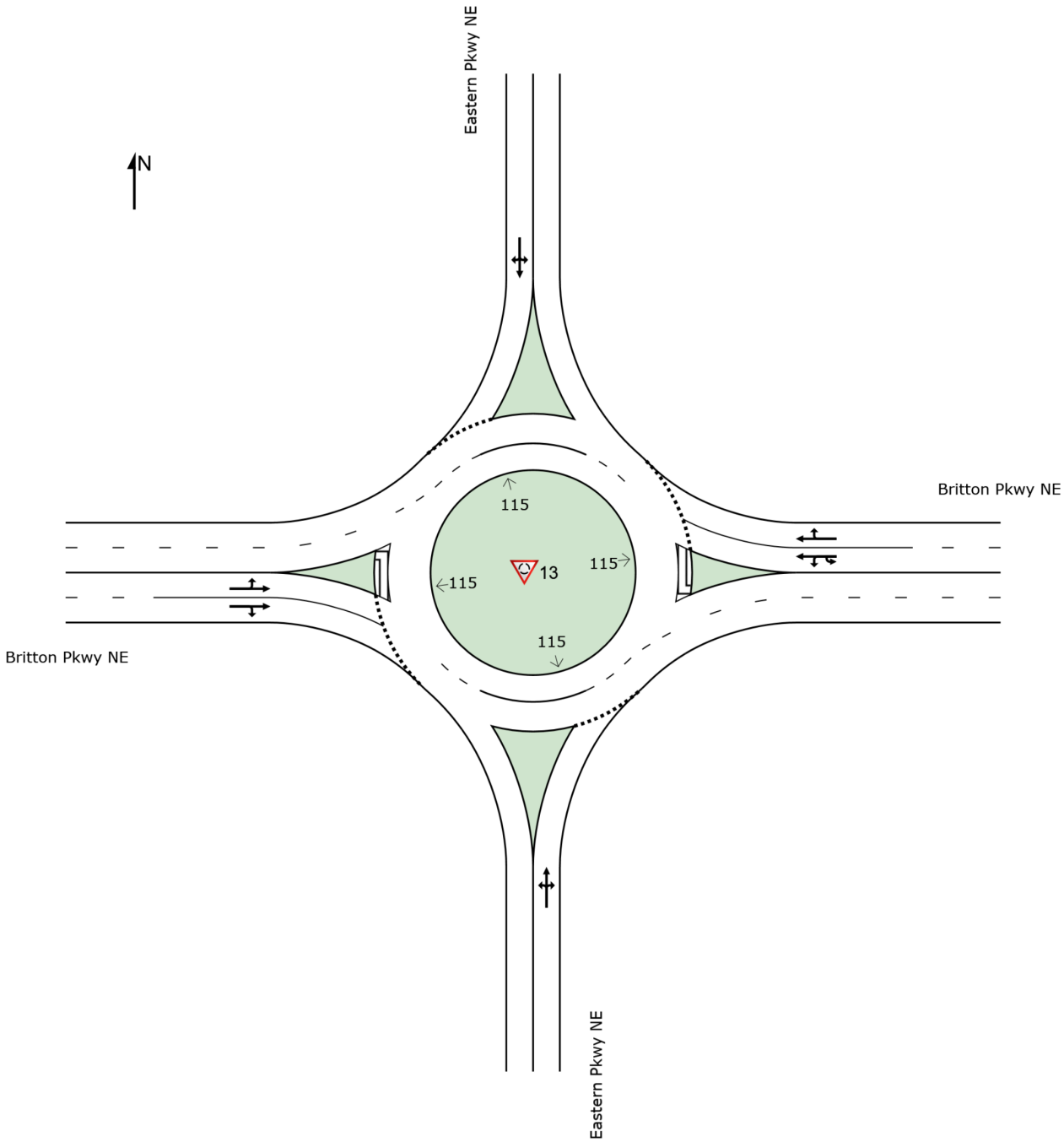
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SITE LAYOUT

Site: 13 [Alt 1 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	88	2.0	88	2.0	0.182	12.1	LOS B	0.6	16.1	0.49	0.73	0.49	33.1
8	T1	All MCs	1	2.0	1	2.0	0.182	5.8	LOS A	0.6	16.1	0.49	0.73	0.49	33.8
18	R2	All MCs	61	2.0	61	2.0	0.182	5.9	LOS A	0.6	16.1	0.49	0.73	0.49	33.5
Approach			150	2.0	150	2.0	0.182	9.6	LOS A	0.6	16.1	0.49	0.73	0.49	33.3
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.295	13.1	LOS B	1.8	46.5	0.32	0.45	0.32	34.5
1	L2	All MCs	64	3.0	64	3.0	0.295	10.5	LOS B	1.8	46.5	0.32	0.45	0.32	34.5
6	T1	All MCs	689	3.0	689	3.0	0.295	4.2	LOS A	1.8	47.2	0.31	0.41	0.31	35.6
16	R2	All MCs	37	3.0	37	3.0	0.295	4.4	LOS A	1.8	47.2	0.30	0.39	0.30	35.4
Approach			801	3.0	801	3.0	0.295	4.8	LOS A	1.8	47.2	0.31	0.41	0.31	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.073	12.1	LOS B	0.2	6.2	0.50	0.73	0.50	33.3
4	T1	All MCs	1	0.0	1	0.0	0.073	5.7	LOS A	0.2	6.2	0.50	0.73	0.50	34.0
14	R2	All MCs	27	0.0	27	0.0	0.073	5.8	LOS A	0.2	6.2	0.50	0.73	0.50	33.7
Approach			60	0.0	60	0.0	0.073	9.2	LOS A	0.2	6.2	0.50	0.73	0.50	33.5
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.267	10.6	LOS B	1.5	39.0	0.30	0.40	0.30	34.9
2	T1	All MCs	660	4.0	660	4.0	0.267	4.2	LOS A	1.5	39.4	0.29	0.39	0.29	35.8
12	R2	All MCs	45	4.0	45	4.0	0.267	4.4	LOS A	1.5	39.4	0.28	0.39	0.28	35.5
Approach			720	4.0	720	4.0	0.267	4.3	LOS A	1.5	39.4	0.29	0.39	0.29	35.8
All Vehicles			1731	3.2	1731	3.2	0.295	5.2	LOS A	1.8	47.2	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

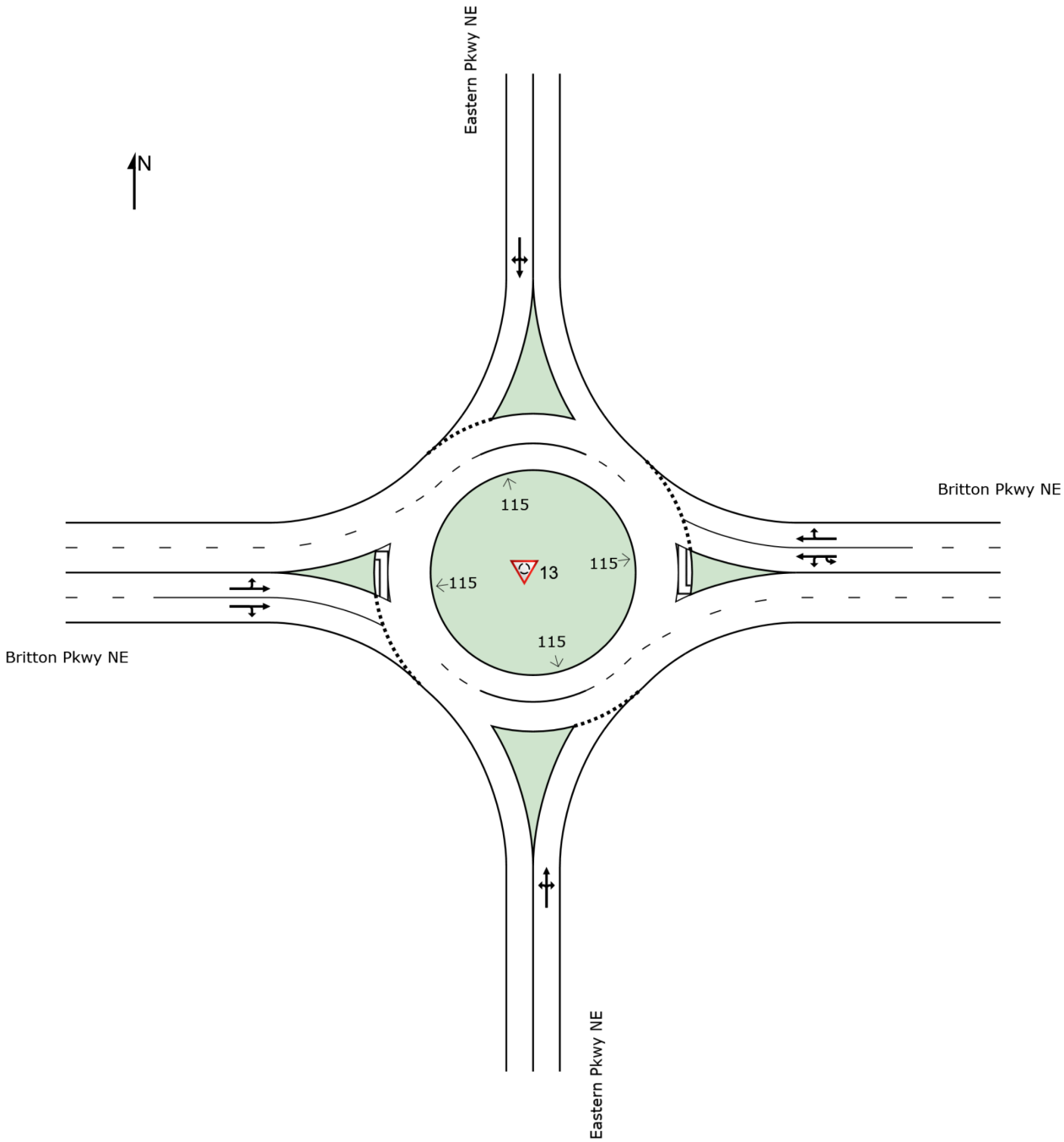
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SITE LAYOUT

Site: 13 [Alt 2 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 2 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	64	2.0	64	2.0	0.136	11.8	LOS B	0.5	11.6	0.45	0.70	0.45	33.4
8	T1	All MCs	1	2.0	1	2.0	0.136	5.4	LOS A	0.5	11.6	0.45	0.70	0.45	34.1
18	R2	All MCs	53	2.0	53	2.0	0.136	5.5	LOS A	0.5	11.6	0.45	0.70	0.45	33.8
Approach			118	2.0	118	2.0	0.136	8.9	LOS A	0.5	11.6	0.45	0.70	0.45	33.6
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.279	13.0	LOS B	1.7	42.9	0.27	0.42	0.27	34.7
1	L2	All MCs	48	3.0	48	3.0	0.279	10.4	LOS B	1.7	42.9	0.27	0.42	0.27	34.7
6	T1	All MCs	679	3.0	679	3.0	0.279	4.0	LOS A	1.7	43.4	0.26	0.40	0.26	35.8
16	R2	All MCs	37	3.0	37	3.0	0.279	4.3	LOS A	1.7	43.4	0.26	0.37	0.26	35.6
Approach			774	3.0	774	3.0	0.279	4.6	LOS A	1.7	43.4	0.26	0.40	0.26	35.7
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.071	12.0	LOS B	0.2	5.9	0.48	0.72	0.48	33.4
4	T1	All MCs	1	0.0	1	0.0	0.071	5.6	LOS A	0.2	5.9	0.48	0.72	0.48	34.0
14	R2	All MCs	27	0.0	27	0.0	0.071	5.7	LOS A	0.2	5.9	0.48	0.72	0.48	33.8
Approach			60	0.0	60	0.0	0.071	9.0	LOS A	0.2	5.9	0.48	0.72	0.48	33.6
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.222	10.4	LOS B	1.2	30.7	0.26	0.39	0.26	35.0
2	T1	All MCs	549	4.0	549	4.0	0.222	4.1	LOS A	1.2	30.9	0.25	0.38	0.25	36.0
12	R2	All MCs	44	4.0	44	4.0	0.222	4.3	LOS A	1.2	30.9	0.24	0.38	0.24	35.6
Approach			609	4.0	609	4.0	0.222	4.2	LOS A	1.2	30.9	0.25	0.38	0.25	35.9
All Vehicles			1561	3.2	1561	3.2	0.279	4.9	LOS A	1.7	43.4	0.28	0.43	0.28	35.5

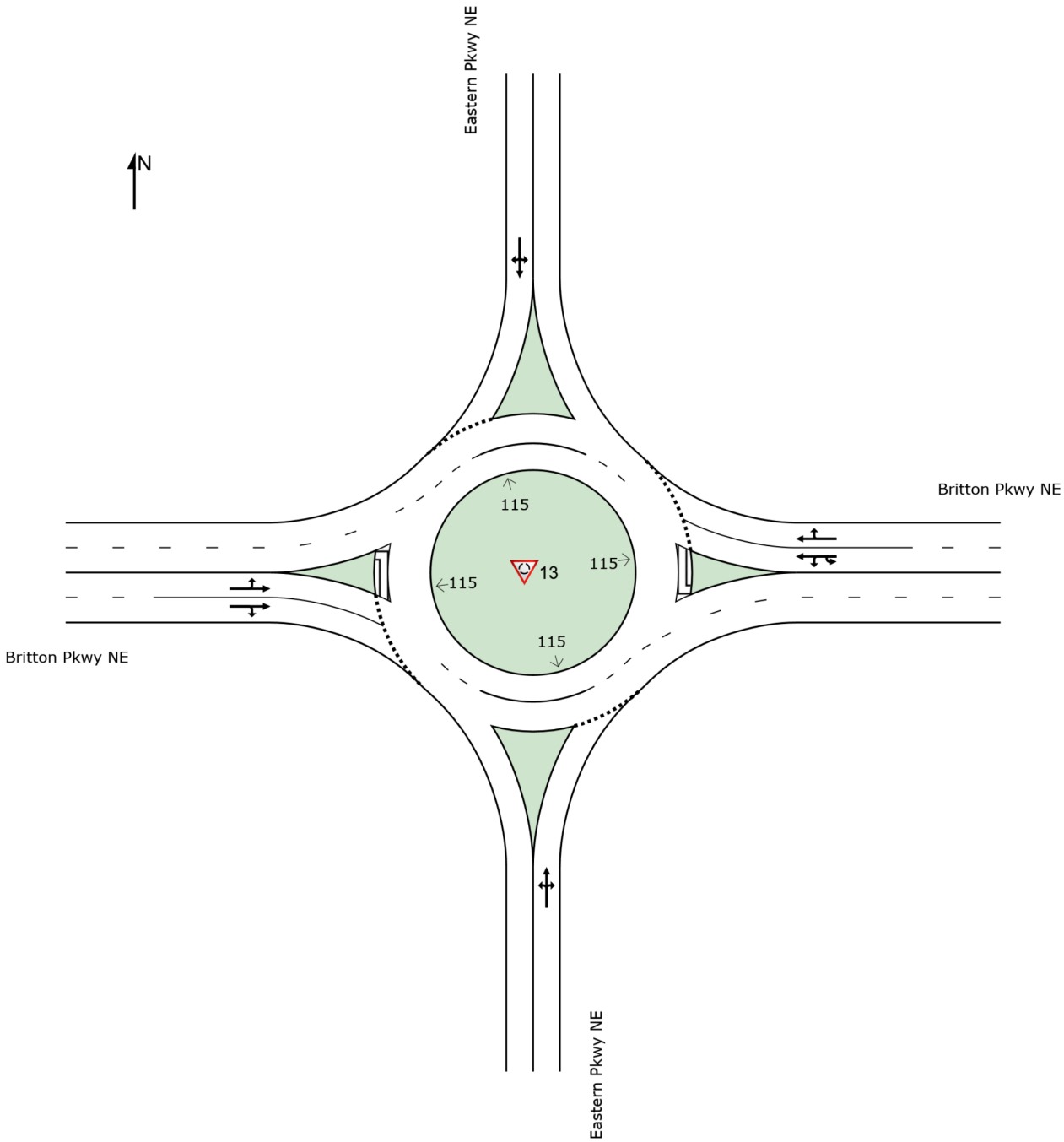
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 13 [Alt 1 Combo 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 Combo 2027 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	86	2.0	86	2.0	0.179	12.2	LOS B	0.6	15.8	0.50	0.73	0.50	33.1
8	T1	All MCs	1	2.0	1	2.0	0.179	5.8	LOS A	0.6	15.8	0.50	0.73	0.50	33.8
18	R2	All MCs	60	2.0	60	2.0	0.179	5.9	LOS A	0.6	15.8	0.50	0.73	0.50	33.5
Approach			147	2.0	147	2.0	0.179	9.6	LOS A	0.6	15.8	0.50	0.73	0.50	33.3
East: Britton Pkwy NE															
1u	U	All MCs	11	3.0	11	3.0	0.305	13.1	LOS B	1.9	48.7	0.32	0.44	0.32	34.5
1	L2	All MCs	63	3.0	63	3.0	0.305	10.5	LOS B	1.9	48.7	0.32	0.44	0.32	34.5
6	T1	All MCs	720	3.0	720	3.0	0.305	4.2	LOS A	1.9	49.5	0.31	0.41	0.31	35.6
16	R2	All MCs	37	3.0	37	3.0	0.305	4.4	LOS A	1.9	49.5	0.30	0.38	0.30	35.4
Approach			831	3.0	831	3.0	0.305	4.8	LOS A	1.9	49.5	0.31	0.41	0.31	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	32	0.0	32	0.0	0.074	12.1	LOS B	0.3	6.3	0.50	0.74	0.50	33.3
4	T1	All MCs	1	0.0	1	0.0	0.074	5.8	LOS A	0.3	6.3	0.50	0.74	0.50	34.0
14	R2	All MCs	27	0.0	27	0.0	0.074	5.9	LOS A	0.3	6.3	0.50	0.74	0.50	33.7
Approach			60	0.0	60	0.0	0.074	9.2	LOS A	0.3	6.3	0.50	0.74	0.50	33.5
West: Britton Pkwy NE															
5	L2	All MCs	16	4.0	16	4.0	0.273	10.6	LOS B	1.6	40.1	0.30	0.40	0.30	34.9
2	T1	All MCs	677	4.0	677	4.0	0.273	4.2	LOS A	1.6	40.6	0.29	0.39	0.29	35.8
12	R2	All MCs	45	4.0	45	4.0	0.273	4.4	LOS A	1.6	40.6	0.28	0.39	0.28	35.5
Approach			737	4.0	737	4.0	0.273	4.3	LOS A	1.6	40.6	0.29	0.39	0.29	35.8
All Vehicles			1774	3.2	1774	3.2	0.305	5.1	LOS A	1.9	49.5	0.32	0.44	0.32	35.4

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

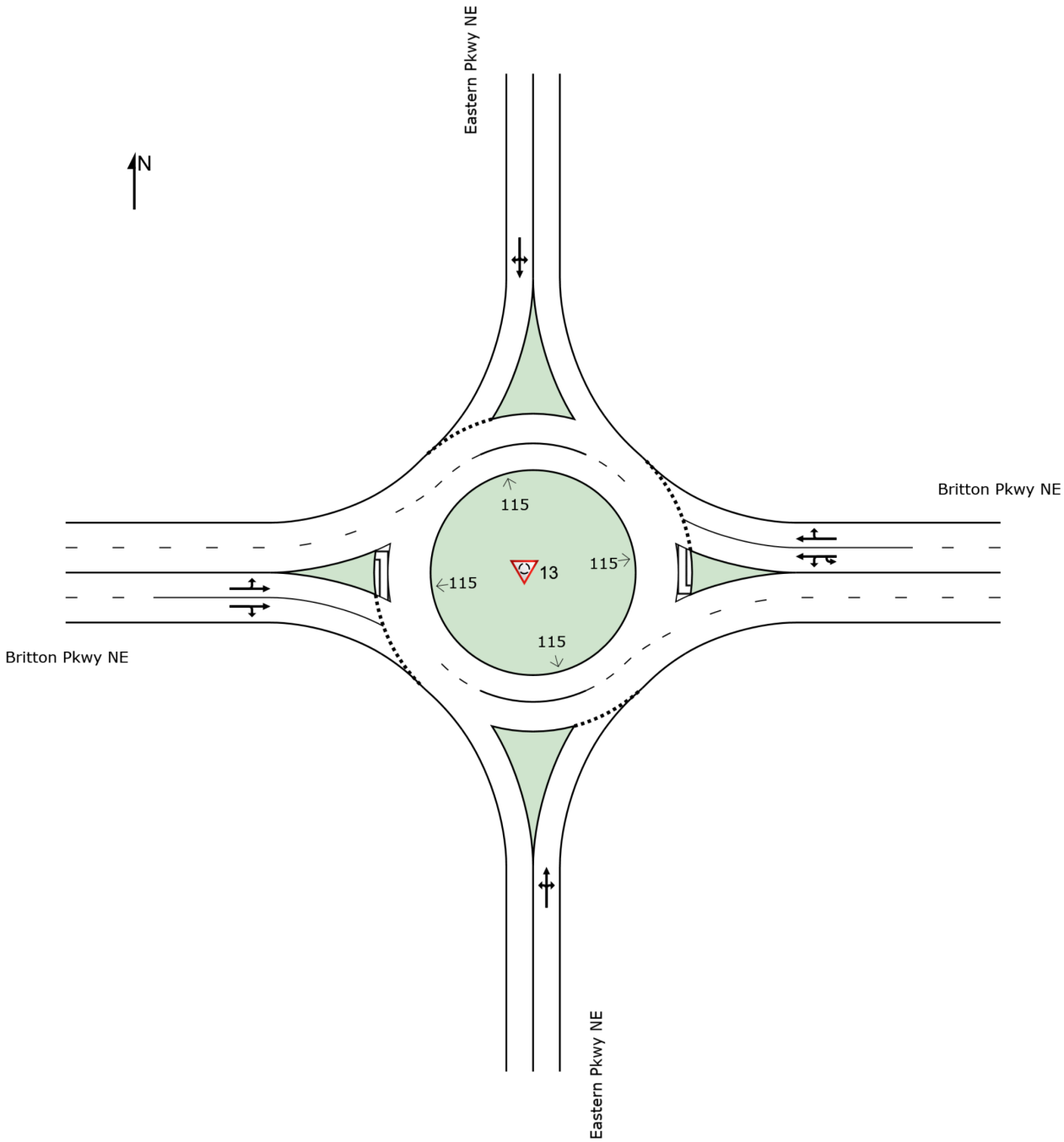
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SITE LAYOUT

Site: 13 [Alt 1 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	83	2.0	83	2.0	0.149	11.7	LOS B	0.5	13.1	0.47	0.71	0.47	33.2
8	T1	All MCs	1	2.0	1	2.0	0.149	5.4	LOS A	0.5	13.1	0.47	0.71	0.47	33.9
18	R2	All MCs	57	2.0	57	2.0	0.149	5.4	LOS A	0.5	13.1	0.47	0.71	0.47	33.6
Approach			141	2.0	141	2.0	0.149	9.1	LOS A	0.5	13.1	0.47	0.71	0.47	33.4
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.288	13.2	LOS B	1.7	44.0	0.33	0.44	0.33	34.5
1	L2	All MCs	60	3.0	60	3.0	0.288	10.6	LOS B	1.7	44.0	0.33	0.44	0.33	34.5
6	T1	All MCs	769	3.0	769	3.0	0.288	4.2	LOS A	1.8	45.1	0.31	0.41	0.31	35.6
16	R2	All MCs	3	3.0	3	3.0	0.288	4.4	LOS A	1.8	45.1	0.31	0.38	0.31	35.4
Approach			837	3.0	837	3.0	0.288	4.7	LOS A	1.8	45.1	0.32	0.41	0.32	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.077	11.8	LOS B	0.3	6.7	0.50	0.74	0.50	32.9
4	T1	All MCs	1	0.0	1	0.0	0.077	5.4	LOS A	0.3	6.7	0.50	0.74	0.50	33.5
14	R2	All MCs	20	0.0	20	0.0	0.077	5.5	LOS A	0.3	6.7	0.50	0.74	0.50	33.3
Approach			71	0.0	71	0.0	0.077	9.9	LOS A	0.3	6.7	0.50	0.74	0.50	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.247	10.5	LOS B	1.4	35.4	0.30	0.42	0.30	34.7
2	T1	All MCs	635	4.0	635	4.0	0.247	4.1	LOS A	1.4	36.1	0.28	0.40	0.28	35.8
12	R2	All MCs	42	4.0	42	4.0	0.247	4.3	LOS A	1.4	36.1	0.27	0.38	0.27	35.5
Approach			717	4.0	717	4.0	0.247	4.5	LOS A	1.4	36.1	0.28	0.40	0.28	35.7
All Vehicles			1766	3.2	1766	3.2	0.288	5.2	LOS A	1.8	45.1	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

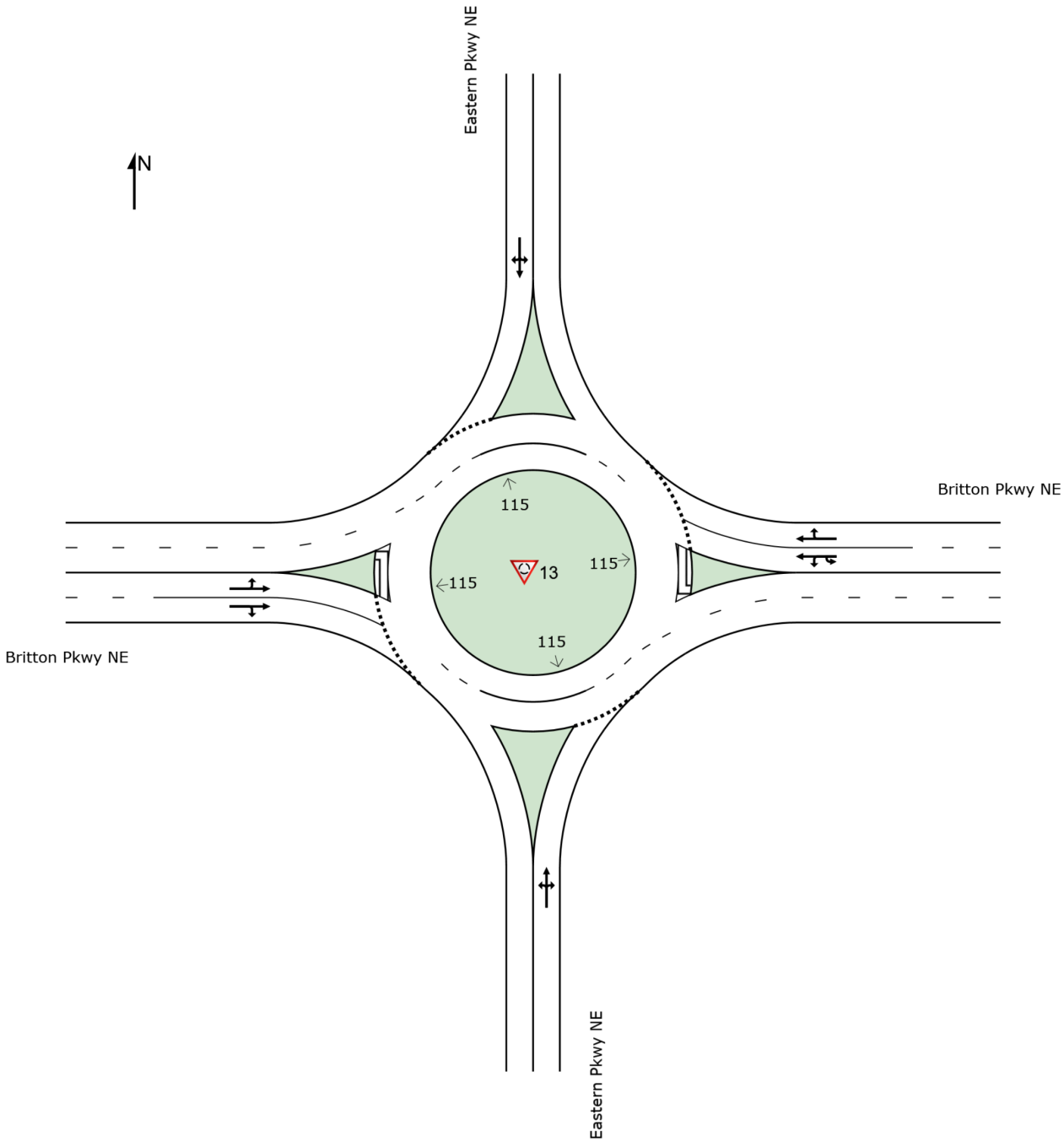
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SITE LAYOUT

Site: 13 [Alt 2 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 2 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	60	2.0	60	2.0	0.112	11.5	LOS B	0.4	9.6	0.43	0.68	0.43	33.4
8	T1	All MCs	1	2.0	1	2.0	0.112	5.1	LOS A	0.4	9.6	0.43	0.68	0.43	34.1
18	R2	All MCs	50	2.0	50	2.0	0.112	5.2	LOS A	0.4	9.6	0.43	0.68	0.43	33.9
Approach			111	2.0	111	2.0	0.112	8.6	LOS A	0.4	9.6	0.43	0.68	0.43	33.6
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.273	13.1	LOS B	1.6	40.6	0.29	0.42	0.29	34.7
1	L2	All MCs	45	3.0	45	3.0	0.273	10.5	LOS B	1.6	40.6	0.29	0.42	0.29	34.7
6	T1	All MCs	757	3.0	757	3.0	0.273	4.1	LOS A	1.6	41.4	0.27	0.39	0.27	35.8
16	R2	All MCs	3	3.0	3	3.0	0.273	4.3	LOS A	1.6	41.4	0.27	0.37	0.27	35.6
Approach			810	3.0	810	3.0	0.273	4.5	LOS A	1.6	41.4	0.27	0.39	0.27	35.7
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.075	11.7	LOS B	0.3	6.3	0.48	0.73	0.48	32.9
4	T1	All MCs	1	0.0	1	0.0	0.075	5.3	LOS A	0.3	6.3	0.48	0.73	0.48	33.6
14	R2	All MCs	20	0.0	20	0.0	0.075	5.4	LOS A	0.3	6.3	0.48	0.73	0.48	33.3
Approach			71	0.0	71	0.0	0.075	9.8	LOS A	0.3	6.3	0.48	0.73	0.48	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.208	10.4	LOS B	1.1	28.9	0.27	0.42	0.27	34.8
2	T1	All MCs	529	4.0	529	4.0	0.208	4.0	LOS A	1.1	29.5	0.26	0.40	0.26	35.8
12	R2	All MCs	41	4.0	41	4.0	0.208	4.3	LOS A	1.1	29.5	0.25	0.38	0.25	35.6
Approach			610	4.0	610	4.0	0.208	4.5	LOS A	1.1	29.5	0.26	0.40	0.26	35.8
All Vehicles			1602	3.2	1602	3.2	0.273	5.0	LOS A	1.6	41.4	0.29	0.43	0.29	35.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

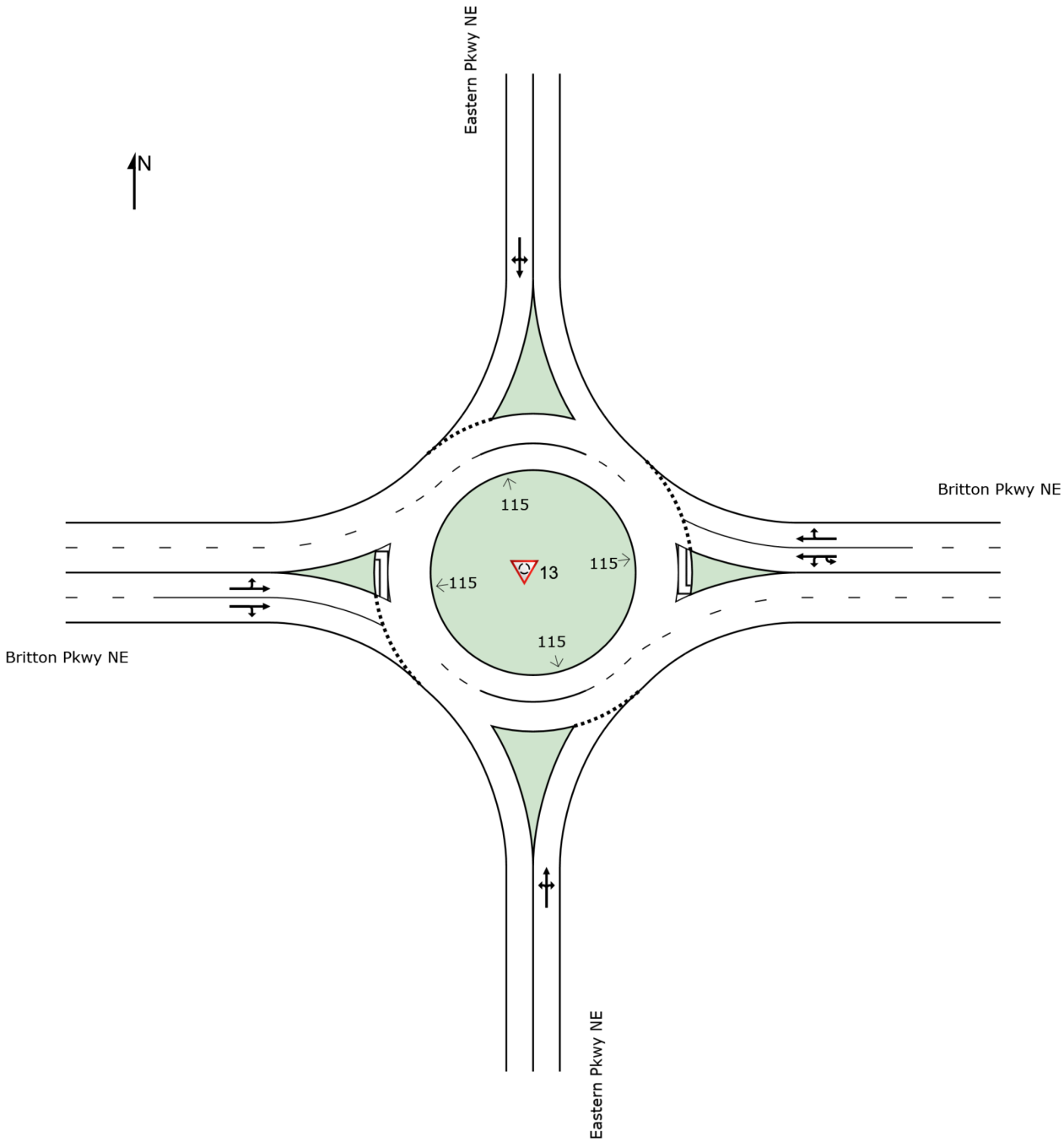
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SITE LAYOUT

Site: 13 [Alt 1 Combo 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 13 [Alt 1 Combo 2050 - 13. Eastern Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Eastern Pkwy NE															
3	L2	All MCs	81	2.0	81	2.0	0.147	11.7	LOS B	0.5	12.9	0.48	0.71	0.48	33.2
8	T1	All MCs	1	2.0	1	2.0	0.147	5.4	LOS A	0.5	12.9	0.48	0.71	0.48	33.9
18	R2	All MCs	56	2.0	56	2.0	0.147	5.5	LOS A	0.5	12.9	0.48	0.71	0.48	33.6
Approach			138	2.0	138	2.0	0.147	9.2	LOS A	0.5	12.9	0.48	0.71	0.48	33.4
East: Britton Pkwy NE															
1u	U	All MCs	5	3.0	5	3.0	0.297	13.2	LOS B	1.8	45.8	0.33	0.44	0.33	34.5
1	L2	All MCs	59	3.0	59	3.0	0.297	10.6	LOS B	1.8	45.8	0.33	0.44	0.33	34.5
6	T1	All MCs	797	3.0	797	3.0	0.297	4.2	LOS A	1.8	46.9	0.31	0.41	0.31	35.6
16	R2	All MCs	3	3.0	3	3.0	0.297	4.4	LOS A	1.8	46.9	0.31	0.38	0.31	35.4
Approach			864	3.0	864	3.0	0.297	4.7	LOS A	1.8	46.9	0.32	0.41	0.32	35.5
North: Eastern Pkwy NE															
7	L2	All MCs	50	0.0	50	0.0	0.078	11.8	LOS B	0.3	6.7	0.50	0.75	0.50	32.9
4	T1	All MCs	1	0.0	1	0.0	0.078	5.5	LOS A	0.3	6.7	0.50	0.75	0.50	33.5
14	R2	All MCs	20	0.0	20	0.0	0.078	5.5	LOS A	0.3	6.7	0.50	0.75	0.50	33.3
Approach			71	0.0	71	0.0	0.078	10.0	LOS A	0.3	6.7	0.50	0.75	0.50	33.0
West: Britton Pkwy NE															
5	L2	All MCs	40	4.0	40	4.0	0.252	10.5	LOS B	1.4	36.4	0.30	0.42	0.30	34.7
2	T1	All MCs	651	4.0	651	4.0	0.252	4.1	LOS A	1.4	37.1	0.28	0.40	0.28	35.8
12	R2	All MCs	42	4.0	42	4.0	0.252	4.3	LOS A	1.4	37.1	0.28	0.38	0.28	35.5
Approach			733	4.0	733	4.0	0.252	4.5	LOS A	1.4	37.1	0.28	0.40	0.28	35.7
All Vehicles			1806	3.2	1806	3.2	0.297	5.1	LOS A	1.8	46.9	0.32	0.44	0.32	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

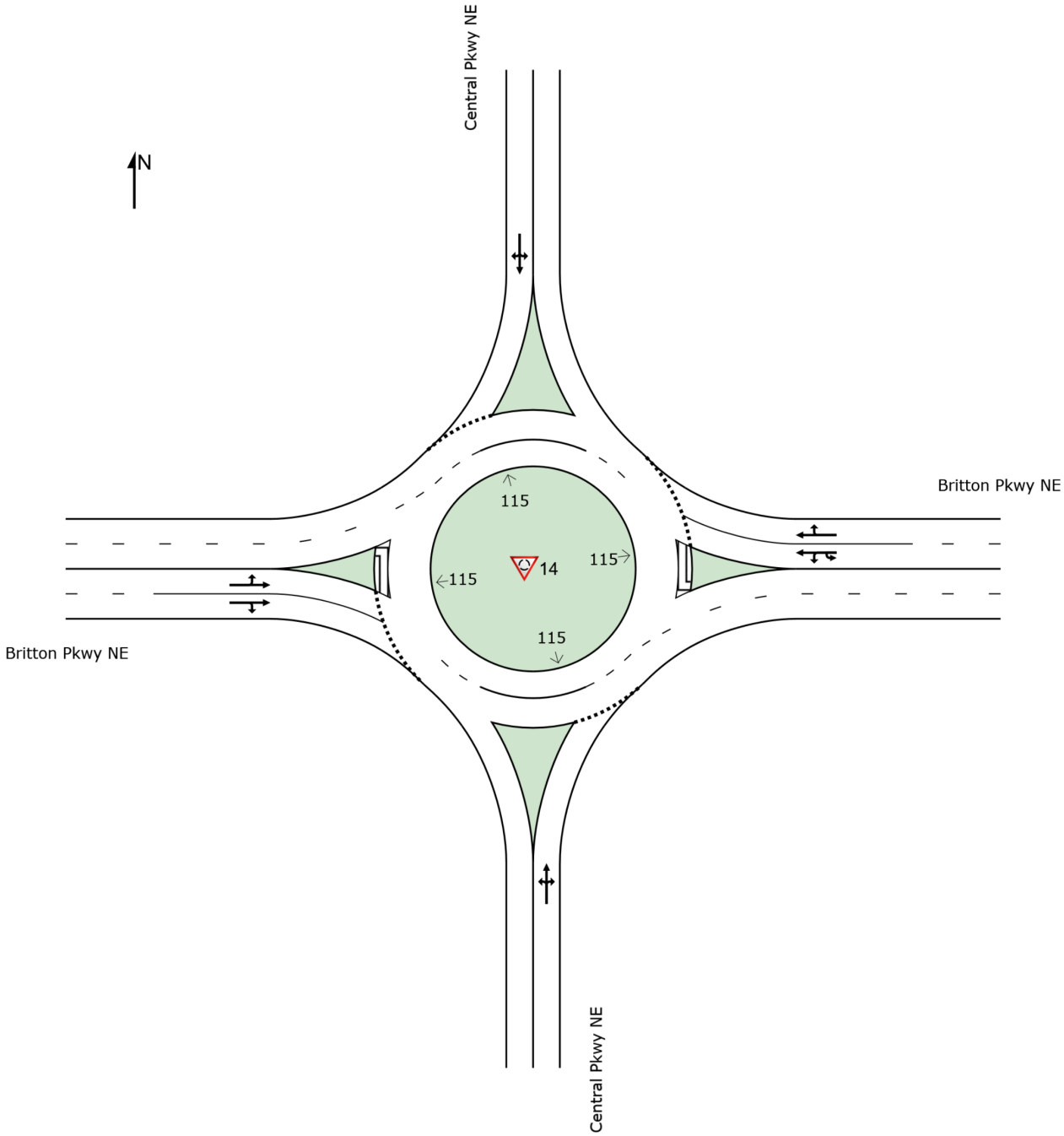
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SITE LAYOUT

Site: 14 [Alt 1 2027 - 14. Central Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 14 [Alt 1 2027 - 14. Central Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Central Pkwy NE															
3	L2	All MCs	57	2.0	57	2.0	0.121	11.9	LOS B	0.4	10.0	0.46	0.71	0.46	33.3
8	T1	All MCs	1	2.0	1	2.0	0.121	5.6	LOS A	0.4	10.0	0.46	0.71	0.46	34.0
18	R2	All MCs	44	2.0	44	2.0	0.121	5.7	LOS A	0.4	10.0	0.46	0.71	0.46	33.7
Approach			102	2.0	102	2.0	0.121	9.2	LOS A	0.4	10.0	0.46	0.71	0.46	33.5
East: Britton Pkwy NE															
1u	U	All MCs	1	3.0	1	3.0	0.288	12.9	LOS B	1.8	45.2	0.25	0.41	0.25	34.8
1	L2	All MCs	57	3.0	57	3.0	0.288	10.3	LOS B	1.8	45.2	0.25	0.41	0.25	34.8
6	T1	All MCs	748	3.0	748	3.0	0.288	4.0	LOS A	1.8	45.8	0.24	0.38	0.24	35.9
16	R2	All MCs	1	3.0	1	3.0	0.288	4.2	LOS A	1.8	45.8	0.24	0.36	0.24	35.7
Approach			807	3.0	807	3.0	0.288	4.4	LOS A	1.8	45.8	0.25	0.38	0.25	35.8
North: Central Pkwy NE															
7	L2	All MCs	1	0.0	1	0.0	0.035	12.0	LOS B	0.1	2.8	0.48	0.64	0.48	34.7
4	T1	All MCs	1	0.0	1	0.0	0.035	5.6	LOS A	0.1	2.8	0.48	0.64	0.48	35.5
14	R2	All MCs	27	0.0	27	0.0	0.035	5.7	LOS A	0.1	2.8	0.48	0.64	0.48	35.2
Approach			29	0.0	29	0.0	0.035	5.9	LOS A	0.1	2.8	0.48	0.64	0.48	35.2
West: Britton Pkwy NE															
5	L2	All MCs	11	4.0	11	4.0	0.259	10.3	LOS B	1.5	38.2	0.22	0.37	0.22	35.2
2	T1	All MCs	674	4.0	674	4.0	0.259	3.9	LOS A	1.5	38.5	0.21	0.36	0.21	36.1
12	R2	All MCs	41	4.0	41	4.0	0.259	4.2	LOS A	1.5	38.5	0.21	0.36	0.21	35.8
Approach			727	4.0	727	4.0	0.259	4.0	LOS A	1.5	38.5	0.21	0.36	0.21	36.1
All Vehicles			1665	3.3	1665	3.3	0.288	4.6	LOS A	1.8	45.8	0.25	0.40	0.25	35.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 14 [Alt 2 2027 - 14. Central Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Central Pkwy NE															
3	L2	All MCs	41	2.0	41	2.0	0.084	11.7	LOS B	0.3	6.7	0.42	0.69	0.42	33.4
8	T1	All MCs	1	2.0	1	2.0	0.084	5.3	LOS A	0.3	6.7	0.42	0.69	0.42	34.1
18	R2	All MCs	32	2.0	32	2.0	0.084	5.4	LOS A	0.3	6.7	0.42	0.69	0.42	33.8
Approach			74	2.0	74	2.0	0.084	8.9	LOS A	0.3	6.7	0.42	0.69	0.42	33.6
East: Britton Pkwy NE															
1u	U	All MCs	1	3.0	1	3.0	0.270	12.8	LOS B	1.6	41.2	0.21	0.40	0.21	35.0
1	L2	All MCs	43	3.0	43	3.0	0.270	10.2	LOS B	1.6	41.2	0.21	0.40	0.21	35.0
6	T1	All MCs	724	3.0	724	3.0	0.270	3.9	LOS A	1.6	41.6	0.21	0.37	0.21	36.1
16	R2	All MCs	1	3.0	1	3.0	0.270	4.1	LOS A	1.6	41.6	0.20	0.35	0.20	35.8
Approach			769	3.0	769	3.0	0.270	4.3	LOS A	1.6	41.6	0.21	0.37	0.21	36.0
North: Central Pkwy NE															
7	L2	All MCs	1	0.0	1	0.0	0.034	11.8	LOS B	0.1	2.7	0.46	0.62	0.46	34.8
4	T1	All MCs	1	0.0	1	0.0	0.034	5.5	LOS A	0.1	2.7	0.46	0.62	0.46	35.5
14	R2	All MCs	27	0.0	27	0.0	0.034	5.6	LOS A	0.1	2.7	0.46	0.62	0.46	35.3
Approach			29	0.0	29	0.0	0.034	5.8	LOS A	0.1	2.7	0.46	0.62	0.46	35.2
West: Britton Pkwy NE															
5	L2	All MCs	11	4.0	11	4.0	0.217	10.2	LOS B	1.2	30.3	0.18	0.36	0.18	35.4
2	T1	All MCs	576	4.0	576	4.0	0.217	3.9	LOS A	1.2	30.5	0.17	0.36	0.17	36.3
12	R2	All MCs	32	4.0	32	4.0	0.217	4.1	LOS A	1.2	30.5	0.17	0.36	0.17	35.9
Approach			618	4.0	618	4.0	0.217	4.0	LOS A	1.2	30.5	0.17	0.36	0.17	36.2
All Vehicles			1490	3.3	1490	3.3	0.270	4.4	LOS A	1.6	41.6	0.21	0.39	0.21	36.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 14 [Alt 1 Combo 2027 - 14. Central Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Central Pkwy NE															
3	L2	All MCs	117	2.0	117	2.0	0.220	12.2	LOS B	0.8	20.1	0.50	0.73	0.50	33.0
8	T1	All MCs	1	2.0	1	2.0	0.220	5.8	LOS A	0.8	20.1	0.50	0.73	0.50	33.7
18	R2	All MCs	65	2.0	65	2.0	0.220	5.9	LOS A	0.8	20.1	0.50	0.73	0.50	33.4
Approach			183	2.0	183	2.0	0.220	9.9	LOS A	0.8	20.1	0.50	0.73	0.50	33.1
East: Britton Pkwy NE															
1u	U	All MCs	1	3.0	1	3.0	0.314	13.3	LOS B	2.0	50.7	0.36	0.47	0.36	34.3
1	L2	All MCs	87	3.0	87	3.0	0.314	10.7	LOS B	2.0	50.7	0.36	0.47	0.36	34.3
6	T1	All MCs	746	3.0	746	3.0	0.314	4.3	LOS A	2.0	51.6	0.35	0.42	0.35	35.4
16	R2	All MCs	1	3.0	1	3.0	0.314	4.5	LOS A	2.0	51.6	0.35	0.39	0.35	35.3
Approach			835	3.0	835	3.0	0.314	5.0	LOS A	2.0	51.6	0.35	0.43	0.35	35.3
North: Central Pkwy NE															
7	L2	All MCs	1	0.0	1	0.0	0.037	12.2	LOS B	0.1	3.1	0.52	0.66	0.52	34.6
4	T1	All MCs	1	0.0	1	0.0	0.037	5.8	LOS A	0.1	3.1	0.52	0.66	0.52	35.4
14	R2	All MCs	27	0.0	27	0.0	0.037	5.9	LOS A	0.1	3.1	0.52	0.66	0.52	35.1
Approach			29	0.0	29	0.0	0.037	6.1	LOS A	0.1	3.1	0.52	0.66	0.52	35.1
West: Britton Pkwy NE															
5	L2	All MCs	11	4.0	11	4.0	0.294	10.5	LOS B	1.8	45.9	0.29	0.38	0.29	35.0
2	T1	All MCs	670	4.0	670	4.0	0.294	4.1	LOS A	1.8	46.5	0.28	0.39	0.28	35.9
12	R2	All MCs	119	4.0	119	4.0	0.294	4.3	LOS A	1.8	46.5	0.28	0.39	0.28	35.5
Approach			800	4.0	800	4.0	0.294	4.2	LOS A	1.8	46.5	0.28	0.39	0.28	35.8
All Vehicles			1847	3.3	1847	3.3	0.314	5.2	LOS A	2.0	51.6	0.34	0.44	0.34	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 14 [Alt 1 2050 - 14. Central Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Central Pkwy NE															
3	L2	All MCs	54	2.0	54	2.0	0.097	11.5	LOS B	0.3	8.0	0.43	0.69	0.43	33.4
8	T1	All MCs	1	2.0	1	2.0	0.097	5.1	LOS A	0.3	8.0	0.43	0.69	0.43	34.1
18	R2	All MCs	41	2.0	41	2.0	0.097	5.2	LOS A	0.3	8.0	0.43	0.69	0.43	33.8
Approach			96	2.0	96	2.0	0.097	8.8	LOS A	0.3	8.0	0.43	0.69	0.43	33.6
East: Britton Pkwy NE															
1u	U	All MCs	1	3.0	1	3.0	0.273	12.8	LOS B	1.7	42.9	0.22	0.40	0.22	34.9
1	L2	All MCs	54	3.0	54	3.0	0.273	10.2	LOS B	1.7	42.9	0.22	0.40	0.22	34.9
6	T1	All MCs	778	3.0	778	3.0	0.273	3.9	LOS A	1.7	43.8	0.21	0.37	0.21	36.0
16	R2	All MCs	1	3.0	1	3.0	0.273	4.1	LOS A	1.7	43.8	0.20	0.35	0.20	35.8
Approach			834	3.0	834	3.0	0.273	4.3	LOS A	1.7	43.8	0.21	0.37	0.21	36.0
North: Central Pkwy NE															
7	L2	All MCs	1	0.0	1	0.0	0.018	11.6	LOS B	0.1	1.4	0.46	0.60	0.46	34.7
4	T1	All MCs	1	0.0	1	0.0	0.018	5.2	LOS A	0.1	1.4	0.46	0.60	0.46	35.5
14	R2	All MCs	15	0.0	15	0.0	0.018	5.3	LOS A	0.1	1.4	0.46	0.60	0.46	35.2
Approach			17	0.0	17	0.0	0.018	5.7	LOS A	0.1	1.4	0.46	0.60	0.46	35.2
West: Britton Pkwy NE															
5	L2	All MCs	2	4.0	2	4.0	0.229	10.2	LOS B	1.3	32.6	0.20	0.35	0.20	35.4
2	T1	All MCs	655	4.0	655	4.0	0.229	3.9	LOS A	1.3	33.0	0.19	0.36	0.19	36.3
12	R2	All MCs	39	4.0	39	4.0	0.229	4.1	LOS A	1.3	33.0	0.18	0.36	0.18	35.9
Approach			696	4.0	696	4.0	0.229	3.9	LOS A	1.3	33.0	0.19	0.36	0.19	36.2
All Vehicles			1643	3.3	1643	3.3	0.273	4.4	LOS A	1.7	43.8	0.22	0.39	0.22	35.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 14 [Alt 2 2050 - 14. Central Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Central Pkwy NE															
3	L2	All MCs	39	2.0	39	2.0	0.069	11.3	LOS B	0.2	5.5	0.39	0.67	0.39	33.5
8	T1	All MCs	1	2.0	1	2.0	0.069	4.9	LOS A	0.2	5.5	0.39	0.67	0.39	34.2
18	R2	All MCs	30	2.0	30	2.0	0.069	5.0	LOS A	0.2	5.5	0.39	0.67	0.39	33.9
Approach			70	2.0	70	2.0	0.069	8.5	LOS A	0.2	5.5	0.39	0.67	0.39	33.7
East: Britton Pkwy NE															
1u	U	All MCs	1	3.0	1	3.0	0.258	12.8	LOS B	1.5	39.6	0.18	0.39	0.18	35.2
1	L2	All MCs	40	3.0	40	3.0	0.258	10.2	LOS B	1.5	39.6	0.18	0.39	0.18	35.2
6	T1	All MCs	756	3.0	756	3.0	0.258	3.8	LOS A	1.6	40.3	0.17	0.36	0.17	36.2
16	R2	All MCs	1	3.0	1	3.0	0.258	4.0	LOS A	1.6	40.3	0.17	0.34	0.17	35.9
Approach			798	3.0	798	3.0	0.258	4.1	LOS A	1.6	40.3	0.17	0.36	0.17	36.1
North: Central Pkwy NE															
7	L2	All MCs	1	0.0	1	0.0	0.017	11.5	LOS B	0.1	1.4	0.44	0.59	0.44	34.8
4	T1	All MCs	1	0.0	1	0.0	0.017	5.2	LOS A	0.1	1.4	0.44	0.59	0.44	35.5
14	R2	All MCs	15	0.0	15	0.0	0.017	5.3	LOS A	0.1	1.4	0.44	0.59	0.44	35.2
Approach			17	0.0	17	0.0	0.017	5.6	LOS A	0.1	1.4	0.44	0.59	0.44	35.2
West: Britton Pkwy NE															
5	L2	All MCs	2	4.0	2	4.0	0.193	10.2	LOS B	1.0	26.1	0.16	0.35	0.16	35.5
2	T1	All MCs	561	4.0	561	4.0	0.193	3.8	LOS A	1.0	26.4	0.16	0.35	0.16	36.4
12	R2	All MCs	30	4.0	30	4.0	0.193	4.1	LOS A	1.0	26.4	0.15	0.35	0.15	36.0
Approach			593	4.0	593	4.0	0.193	3.8	LOS A	1.0	26.4	0.15	0.35	0.15	36.4
All Vehicles			1478	3.3	1478	3.3	0.258	4.2	LOS A	1.6	40.3	0.18	0.38	0.18	36.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 14 [Alt 1 Combo 2050 - 14. Central Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Central Pkwy NE															
3	L2	All MCs	110	2.0	110	2.0	0.177	11.6	LOS B	0.6	15.8	0.46	0.71	0.46	33.1
8	T1	All MCs	1	2.0	1	2.0	0.177	5.3	LOS A	0.6	15.8	0.46	0.71	0.46	33.8
18	R2	All MCs	61	2.0	61	2.0	0.177	5.4	LOS A	0.6	15.8	0.46	0.71	0.46	33.5
Approach			172	2.0	172	2.0	0.177	9.4	LOS A	0.6	15.8	0.46	0.71	0.46	33.2
East: Britton Pkwy NE															
1u	U	All MCs	1	3.0	1	3.0	0.295	13.1	LOS B	1.8	47.1	0.32	0.45	0.32	34.4
1	L2	All MCs	82	3.0	82	3.0	0.295	10.5	LOS B	1.8	47.1	0.32	0.45	0.32	34.4
6	T1	All MCs	776	3.0	776	3.0	0.295	4.1	LOS A	1.9	48.4	0.31	0.41	0.31	35.6
16	R2	All MCs	1	3.0	1	3.0	0.295	4.3	LOS A	1.9	48.4	0.30	0.38	0.30	35.4
Approach			860	3.0	860	3.0	0.295	4.7	LOS A	1.9	48.4	0.31	0.41	0.31	35.5
North: Central Pkwy NE															
7	L2	All MCs	1	0.0	1	0.0	0.019	11.8	LOS B	0.1	1.6	0.50	0.61	0.50	34.6
4	T1	All MCs	1	0.0	1	0.0	0.019	5.4	LOS A	0.1	1.6	0.50	0.61	0.50	35.4
14	R2	All MCs	15	0.0	15	0.0	0.019	5.5	LOS A	0.1	1.6	0.50	0.61	0.50	35.1
Approach			17	0.0	17	0.0	0.019	5.8	LOS A	0.1	1.6	0.50	0.61	0.50	35.1
West: Britton Pkwy NE															
5	L2	All MCs	2	4.0	2	4.0	0.258	10.4	LOS B	1.5	38.8	0.26	0.37	0.26	35.1
2	T1	All MCs	650	4.0	650	4.0	0.258	4.0	LOS A	1.5	39.5	0.25	0.38	0.25	36.0
12	R2	All MCs	112	4.0	112	4.0	0.258	4.2	LOS A	1.5	39.5	0.24	0.38	0.24	35.6
Approach			764	4.0	764	4.0	0.258	4.1	LOS A	1.5	39.5	0.25	0.38	0.25	36.0
All Vehicles			1813	3.3	1813	3.3	0.295	4.9	LOS A	1.9	48.4	0.30	0.43	0.30	35.4

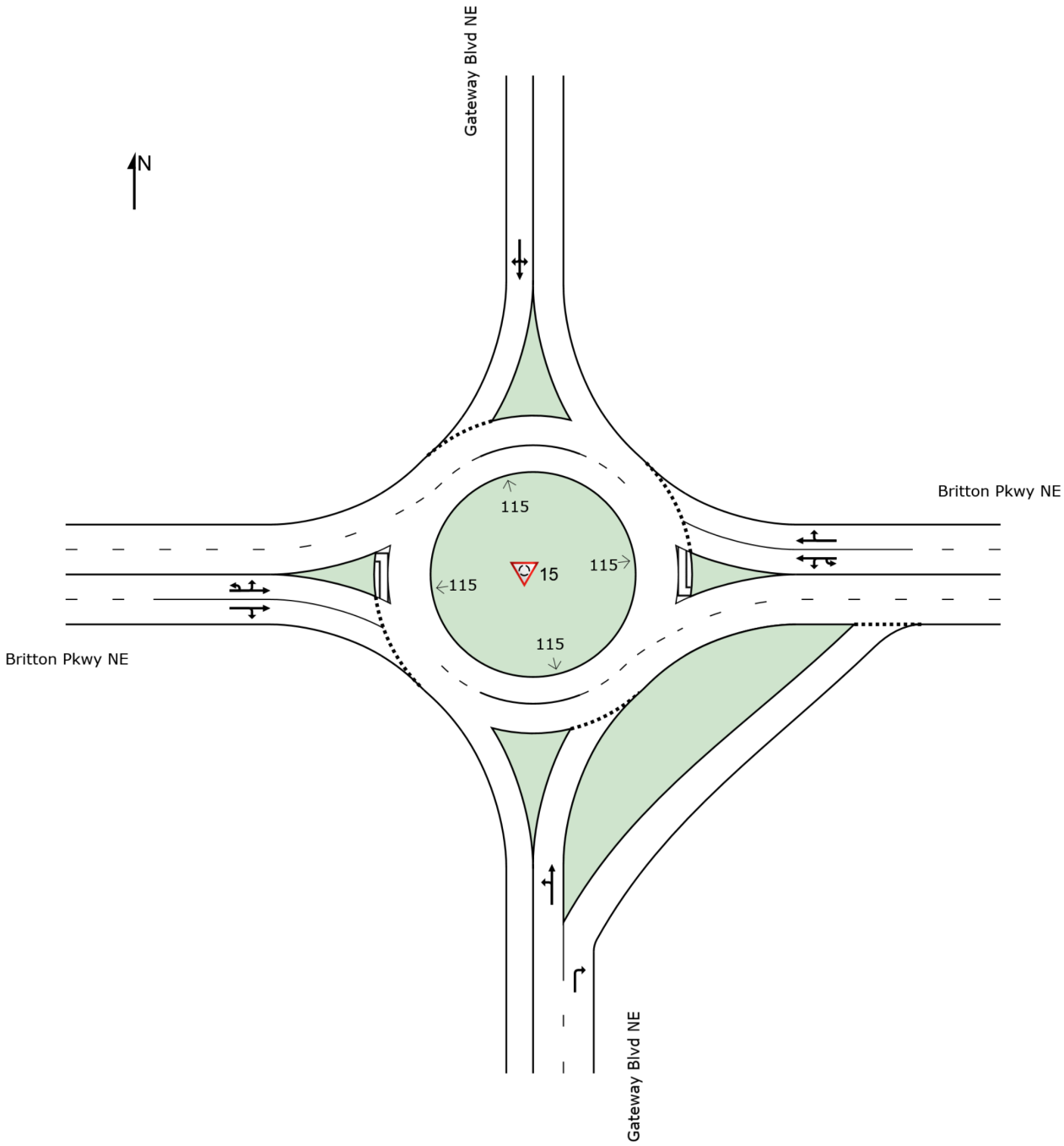
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 15 [Alt 1 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	658	2.0	658	2.0	0.618	13.2	LOS B	4.2	106.7	0.71	0.87	0.87	31.6
8	T1	All MCs	21	2.0	21	2.0	0.618	6.8	LOS A	4.2	106.7	0.71	0.87	0.87	32.2
18	R2	All MCs	141	2.0	141	2.0	0.113	4.6	LOS A	0.4	9.6	0.39	0.54	0.39	35.5
Approach			820	2.0	820	2.0	0.618	11.5	LOS B	4.2	106.7	0.66	0.81	0.78	32.2
East: Britton Pkwy NE															
1u	U	All MCs	4	3.0	4	3.0	0.574	24.5	LOS C	5.5	140.3	0.98	0.93	1.29	29.6
1	L2	All MCs	112	3.0	112	3.0	0.574	22.0	LOS C	5.5	140.3	0.98	0.93	1.29	29.6
6	T1	All MCs	509	3.0	509	3.0	0.574	14.1	LOS B	6.4	164.0	0.99	0.91	1.27	31.2
16	R2	All MCs	178	3.0	178	3.0	0.574	13.2	LOS B	6.4	164.0	1.00	0.89	1.25	31.7
Approach			803	3.0	803	3.0	0.574	15.0	LOS B	6.4	164.0	0.99	0.91	1.27	31.1
North: Gateway Blvd NE															
7	L2	All MCs	110	2.0	110	2.0	0.423	17.4	LOS B	2.5	64.6	0.84	0.91	0.98	31.2
4	T1	All MCs	51	2.0	51	2.0	0.423	11.0	LOS B	2.5	64.6	0.84	0.91	0.98	31.8
14	R2	All MCs	78	2.0	78	2.0	0.423	11.1	LOS B	2.5	64.6	0.84	0.91	0.98	31.5
Approach			239	2.0	239	2.0	0.423	14.0	LOS B	2.5	64.6	0.84	0.91	0.98	31.4
West: Britton Pkwy NE															
5u	U	All MCs	113	5.0	113	5.0	0.407	14.3	LOS B	2.7	71.3	0.56	0.61	0.56	32.8
5	L2	All MCs	122	5.0	122	5.0	0.407	11.7	LOS B	2.7	71.3	0.56	0.61	0.56	32.8
2	T1	All MCs	497	5.0	497	5.0	0.407	5.1	LOS A	2.9	75.3	0.54	0.55	0.54	34.4
12	R2	All MCs	287	5.0	287	5.0	0.407	5.2	LOS A	2.9	75.3	0.53	0.51	0.53	34.7
Approach			1019	5.0	1019	5.0	0.407	7.0	LOS A	2.9	75.3	0.54	0.55	0.54	34.1
All Vehicles			2881	3.3	2881	3.3	0.618	11.1	LOS B	6.4	164.0	0.72	0.76	0.85	32.5

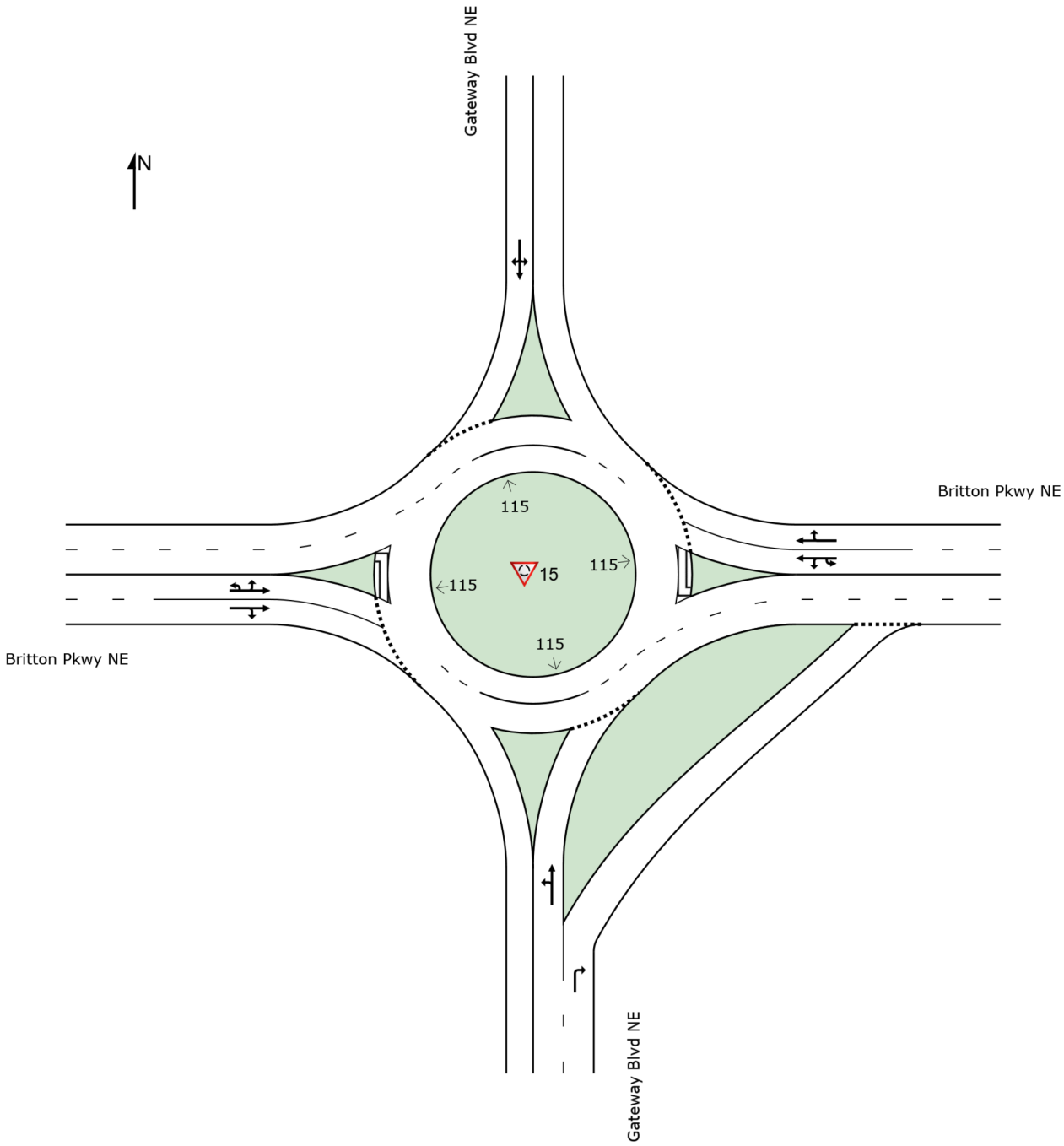
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 15 [Alt 2 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

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MOVEMENT SUMMARY

Site: 15 [Alt 2 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	476	2.0	476	2.0	0.422	11.7	LOS B	2.0	51.4	0.57	0.76	0.59	31.9
8	T1	All MCs	16	2.0	16	2.0	0.422	5.4	LOS A	2.0	51.4	0.57	0.76	0.59	32.5
18	R2	All MCs	83	2.0	83	2.0	0.065	4.5	LOS A	0.2	5.0	0.34	0.52	0.34	35.6
Approach			574	2.0	574	2.0	0.422	10.5	LOS B	2.0	51.4	0.54	0.73	0.56	32.4
East: Britton Pkwy NE															
1u	U	All MCs	4	3.0	4	3.0	0.424	17.7	LOS B	3.0	77.2	0.81	0.74	0.85	32.6
1	L2	All MCs	87	3.0	87	3.0	0.424	15.1	LOS B	3.0	77.2	0.81	0.74	0.85	32.6
6	T1	All MCs	509	3.0	509	3.0	0.424	8.1	LOS A	3.3	84.6	0.81	0.71	0.83	33.8
16	R2	All MCs	178	3.0	178	3.0	0.424	7.7	LOS A	3.3	84.6	0.82	0.67	0.82	33.9
Approach			778	3.0	778	3.0	0.424	8.8	LOS A	3.3	84.6	0.81	0.70	0.83	33.7
North: Gateway Blvd NE															
7	L2	All MCs	107	2.0	107	2.0	0.329	14.2	LOS B	1.7	42.0	0.74	0.82	0.75	32.5
4	T1	All MCs	40	2.0	40	2.0	0.329	7.8	LOS A	1.7	42.0	0.74	0.82	0.75	33.1
14	R2	All MCs	78	2.0	78	2.0	0.329	7.9	LOS A	1.7	42.0	0.74	0.82	0.75	32.9
Approach			224	2.0	224	2.0	0.329	10.9	LOS B	1.7	42.0	0.74	0.82	0.75	32.7
West: Britton Pkwy NE															
5u	U	All MCs	87	5.0	87	5.0	0.338	13.9	LOS B	2.1	55.4	0.49	0.59	0.49	33.0
5	L2	All MCs	122	5.0	122	5.0	0.338	11.3	LOS B	2.1	55.4	0.49	0.59	0.49	33.0
2	T1	All MCs	444	5.0	444	5.0	0.338	4.8	LOS A	2.2	58.0	0.47	0.52	0.47	34.7
12	R2	All MCs	220	5.0	220	5.0	0.338	4.9	LOS A	2.2	58.0	0.46	0.48	0.46	34.9
Approach			873	5.0	873	5.0	0.338	6.6	LOS A	2.2	58.0	0.47	0.53	0.47	34.3
All Vehicles			2450	3.4	2450	3.4	0.424	8.6	LOS A	3.3	84.6	0.62	0.66	0.63	33.5

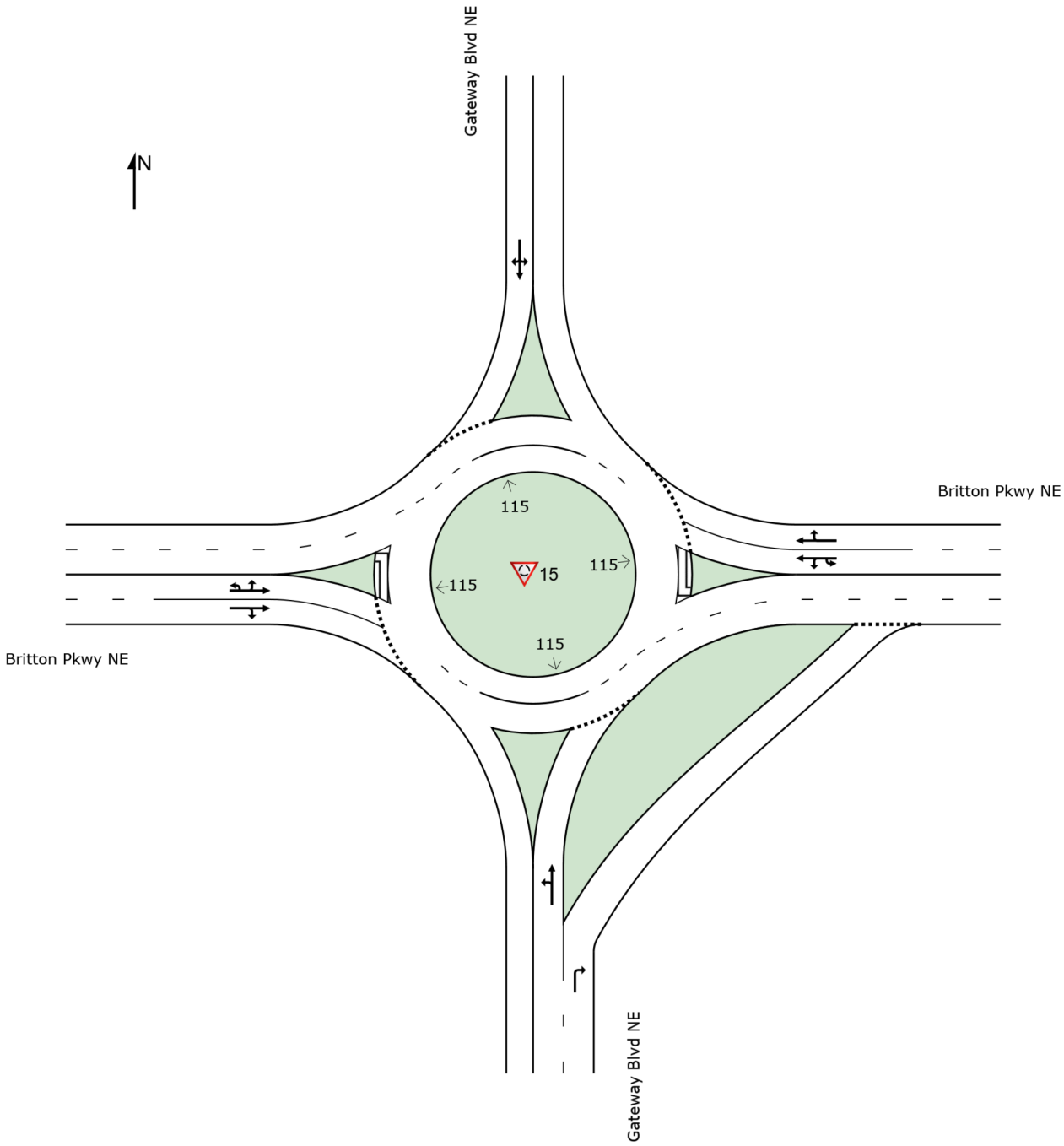
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Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 15 [Alt 1 Combo 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 Combo 2027 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	712	2.0	712	2.0	0.694	14.1	LOS B	5.4	136.5	0.78	0.94	1.02	31.3
8	T1	All MCs	20	2.0	20	2.0	0.694	7.8	LOS A	5.4	136.5	0.78	0.94	1.02	31.9
18	R2	All MCs	138	2.0	138	2.0	0.114	4.7	LOS A	0.4	10.1	0.43	0.55	0.43	35.4
Approach			870	2.0	870	2.0	0.694	12.5	LOS B	5.4	136.5	0.72	0.88	0.93	31.9
East: Britton Pkwy NE															
1u	U	All MCs	4	3.0	4	3.0	0.630	28.0	LOS C	6.5	166.9	1.00	1.01	1.42	28.4
1	L2	All MCs	109	3.0	109	3.0	0.630	25.4	LOS C	6.5	166.9	1.00	1.01	1.42	28.4
6	T1	All MCs	509	3.0	509	3.0	0.630	17.3	LOS B	7.8	200.3	1.00	0.99	1.39	29.9
16	R2	All MCs	178	3.0	178	3.0	0.630	16.2	LOS B	7.8	200.3	1.00	0.99	1.38	30.4
Approach			800	3.0	800	3.0	0.630	18.2	LOS B	7.8	200.3	1.00	0.99	1.39	29.8
North: Gateway Blvd NE															
7	L2	All MCs	113	2.0	113	2.0	0.447	18.5	LOS B	2.8	70.5	0.86	0.93	1.04	30.7
4	T1	All MCs	50	2.0	50	2.0	0.447	12.1	LOS B	2.8	70.5	0.86	0.93	1.04	31.3
14	R2	All MCs	78	2.0	78	2.0	0.447	12.2	LOS B	2.8	70.5	0.86	0.93	1.04	31.1
Approach			241	2.0	241	2.0	0.447	15.1	LOS B	2.8	70.5	0.86	0.93	1.04	30.9
West: Britton Pkwy NE															
5u	U	All MCs	112	5.0	112	5.0	0.436	14.3	LOS B	3.0	78.7	0.57	0.61	0.57	32.9
5	L2	All MCs	122	5.0	122	5.0	0.436	11.8	LOS B	3.0	78.7	0.57	0.61	0.57	32.9
2	T1	All MCs	573	5.0	573	5.0	0.436	5.2	LOS A	3.2	83.1	0.56	0.55	0.56	34.4
12	R2	All MCs	281	5.0	281	5.0	0.436	5.2	LOS A	3.2	83.1	0.55	0.51	0.55	34.7
Approach			1089	5.0	1089	5.0	0.436	6.9	LOS A	3.2	83.1	0.56	0.55	0.56	34.1
All Vehicles			3000	3.4	3000	3.4	0.694	12.2	LOS B	7.8	200.3	0.75	0.79	0.93	32.0

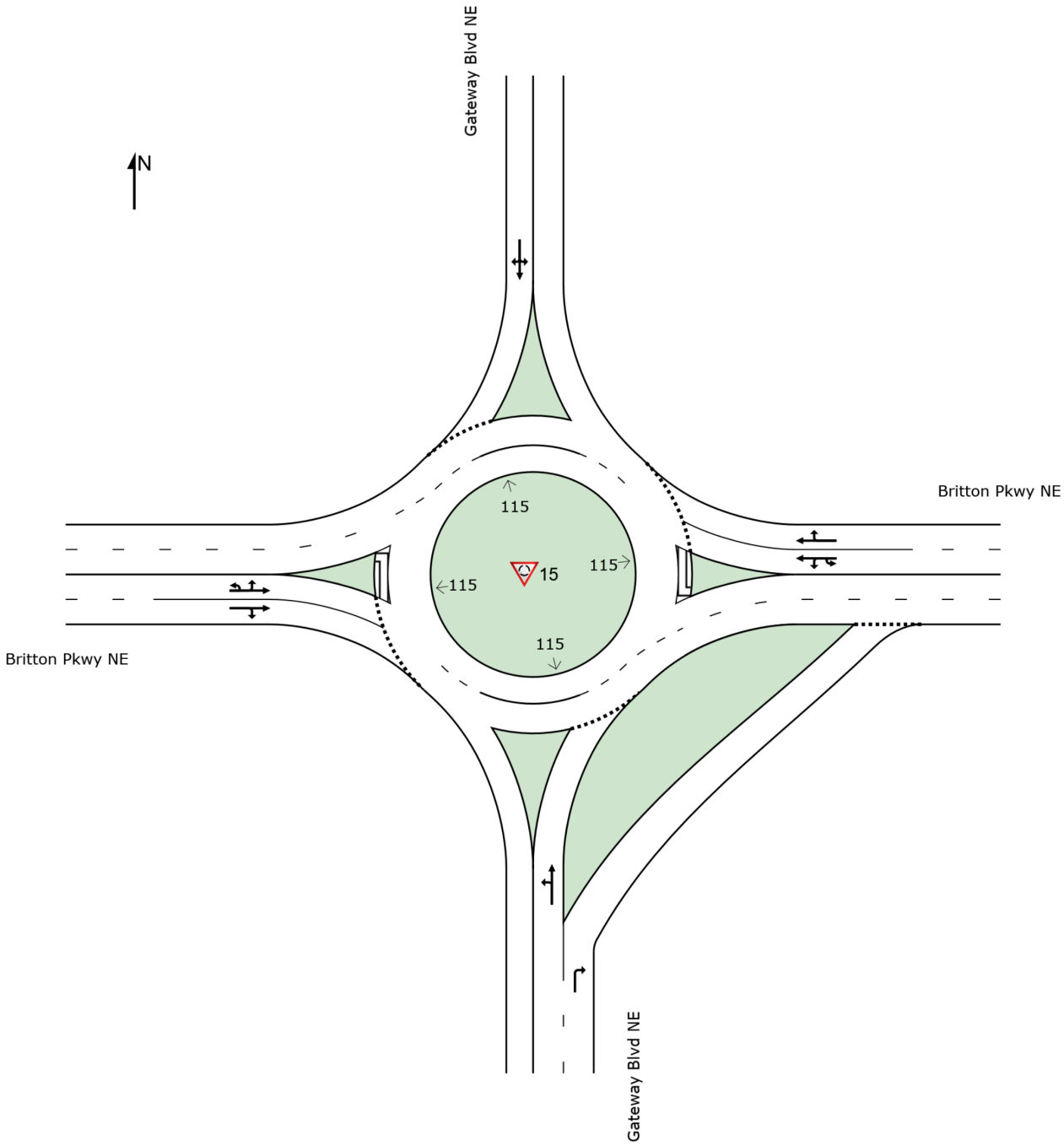
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 15 [Alt 1 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	592	2.0	592	2.0	0.515	11.8	LOS B	2.8	70.4	0.57	0.77	0.63	32.0
8	T1	All MCs	30	2.0	30	2.0	0.515	5.4	LOS A	2.8	70.4	0.57	0.77	0.63	32.6
18	R2	All MCs	172	2.0	172	2.0	0.132	4.4	LOS A	0.4	10.8	0.34	0.52	0.34	35.6
Approach			794	2.0	794	2.0	0.515	9.9	LOS A	2.8	70.4	0.52	0.71	0.56	32.7
East: Britton Pkwy NE															
1u	U	All MCs	6	3.0	6	3.0	0.465	19.7	LOS B	3.7	94.4	0.88	0.82	1.00	31.2
1	L2	All MCs	151	3.0	151	3.0	0.465	17.1	LOS B	3.7	94.4	0.88	0.82	1.00	31.2
6	T1	All MCs	473	3.0	473	3.0	0.465	9.5	LOS A	4.1	104.0	0.89	0.77	0.97	33.1
16	R2	All MCs	135	3.0	135	3.0	0.465	9.1	LOS A	4.1	104.0	0.90	0.74	0.95	33.4
Approach			765	3.0	765	3.0	0.465	11.0	LOS B	4.1	104.0	0.89	0.77	0.97	32.7
North: Gateway Blvd NE															
7	L2	All MCs	33	2.0	33	2.0	0.294	15.0	LOS B	1.5	37.9	0.77	0.81	0.77	32.9
4	T1	All MCs	82	2.0	82	2.0	0.294	8.6	LOS A	1.5	37.9	0.77	0.81	0.77	33.6
14	R2	All MCs	65	2.0	65	2.0	0.294	8.7	LOS A	1.5	37.9	0.77	0.81	0.77	33.4
Approach			180	2.0	180	2.0	0.294	9.8	LOS A	1.5	37.9	0.77	0.81	0.77	33.4
West: Britton Pkwy NE															
5u	U	All MCs	103	5.0	103	5.0	0.345	14.1	LOS B	2.2	57.3	0.53	0.59	0.53	33.0
5	L2	All MCs	75	5.0	75	5.0	0.345	11.5	LOS B	2.2	57.3	0.53	0.59	0.53	33.0
2	T1	All MCs	428	5.0	428	5.0	0.345	5.0	LOS A	2.3	60.5	0.51	0.54	0.51	34.5
12	R2	All MCs	258	5.0	258	5.0	0.345	5.1	LOS A	2.3	60.5	0.50	0.50	0.50	34.8
Approach			864	5.0	864	5.0	0.345	6.7	LOS A	2.3	60.5	0.51	0.54	0.51	34.3
All Vehicles			2603	3.3	2603	3.3	0.515	9.2	LOS A	4.1	104.0	0.64	0.68	0.68	33.2

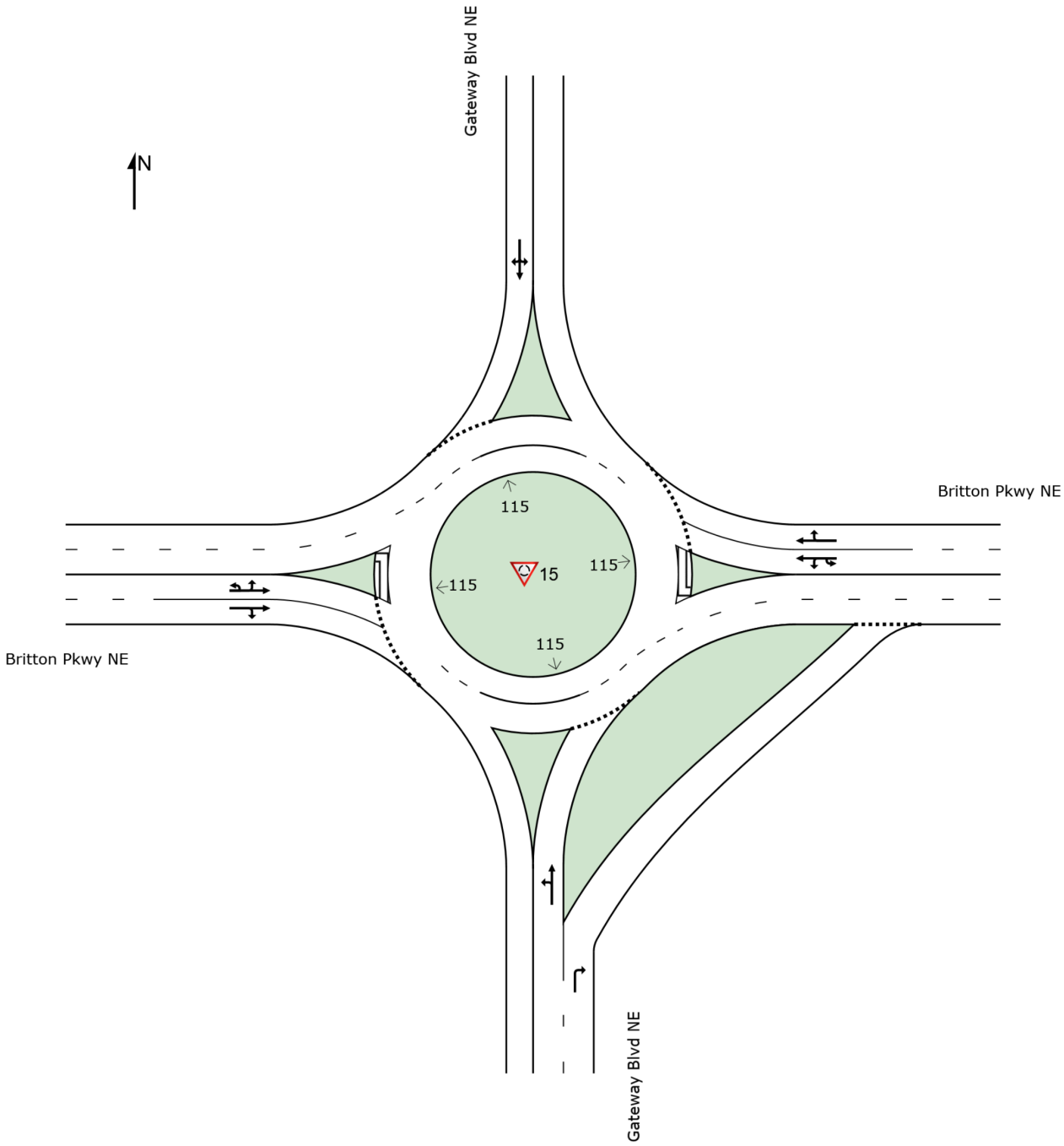
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 15 [Alt 2 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 2 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	428	2.0	428	2.0	0.360	11.1	LOS B	1.5	37.1	0.46	0.71	0.46	32.2
8	T1	All MCs	25	2.0	25	2.0	0.360	4.7	LOS A	1.5	37.1	0.46	0.71	0.46	32.9
18	R2	All MCs	120	2.0	120	2.0	0.090	4.3	LOS A	0.3	6.9	0.30	0.50	0.30	35.7
Approach			573	2.0	573	2.0	0.360	9.4	LOS A	1.5	37.1	0.42	0.66	0.42	32.9
East: Britton Pkwy NE															
1u	U	All MCs	6	3.0	6	3.0	0.367	16.4	LOS B	2.4	61.0	0.73	0.70	0.73	32.6
1	L2	All MCs	128	3.0	128	3.0	0.367	13.8	LOS B	2.4	61.0	0.73	0.70	0.73	32.6
6	T1	All MCs	473	3.0	473	3.0	0.367	6.9	LOS A	2.6	67.8	0.73	0.65	0.73	34.0
16	R2	All MCs	135	3.0	135	3.0	0.367	6.8	LOS A	2.6	67.8	0.72	0.62	0.72	34.1
Approach			742	3.0	742	3.0	0.367	8.2	LOS A	2.6	67.8	0.73	0.66	0.73	33.8
North: Gateway Blvd NE															
7	L2	All MCs	30	2.0	30	2.0	0.232	13.5	LOS B	1.1	27.2	0.68	0.74	0.68	33.5
4	T1	All MCs	72	2.0	72	2.0	0.232	7.1	LOS A	1.1	27.2	0.68	0.74	0.68	34.2
14	R2	All MCs	65	2.0	65	2.0	0.232	7.2	LOS A	1.1	27.2	0.68	0.74	0.68	33.9
Approach			167	2.0	167	2.0	0.232	8.3	LOS A	1.1	27.2	0.68	0.74	0.68	33.9
West: Britton Pkwy NE															
5u	U	All MCs	79	5.0	79	5.0	0.283	13.8	LOS B	1.7	43.7	0.46	0.58	0.46	33.2
5	L2	All MCs	75	5.0	75	5.0	0.283	11.2	LOS B	1.7	43.7	0.46	0.58	0.46	33.2
2	T1	All MCs	381	5.0	381	5.0	0.283	4.7	LOS A	1.8	45.7	0.45	0.52	0.45	34.7
12	R2	All MCs	198	5.0	198	5.0	0.283	4.9	LOS A	1.8	45.7	0.43	0.47	0.43	35.0
Approach			733	5.0	733	5.0	0.283	6.4	LOS A	1.8	45.7	0.45	0.52	0.45	34.5
All Vehicles			2215	3.3	2215	3.3	0.367	7.9	LOS A	2.6	67.8	0.55	0.62	0.55	33.8

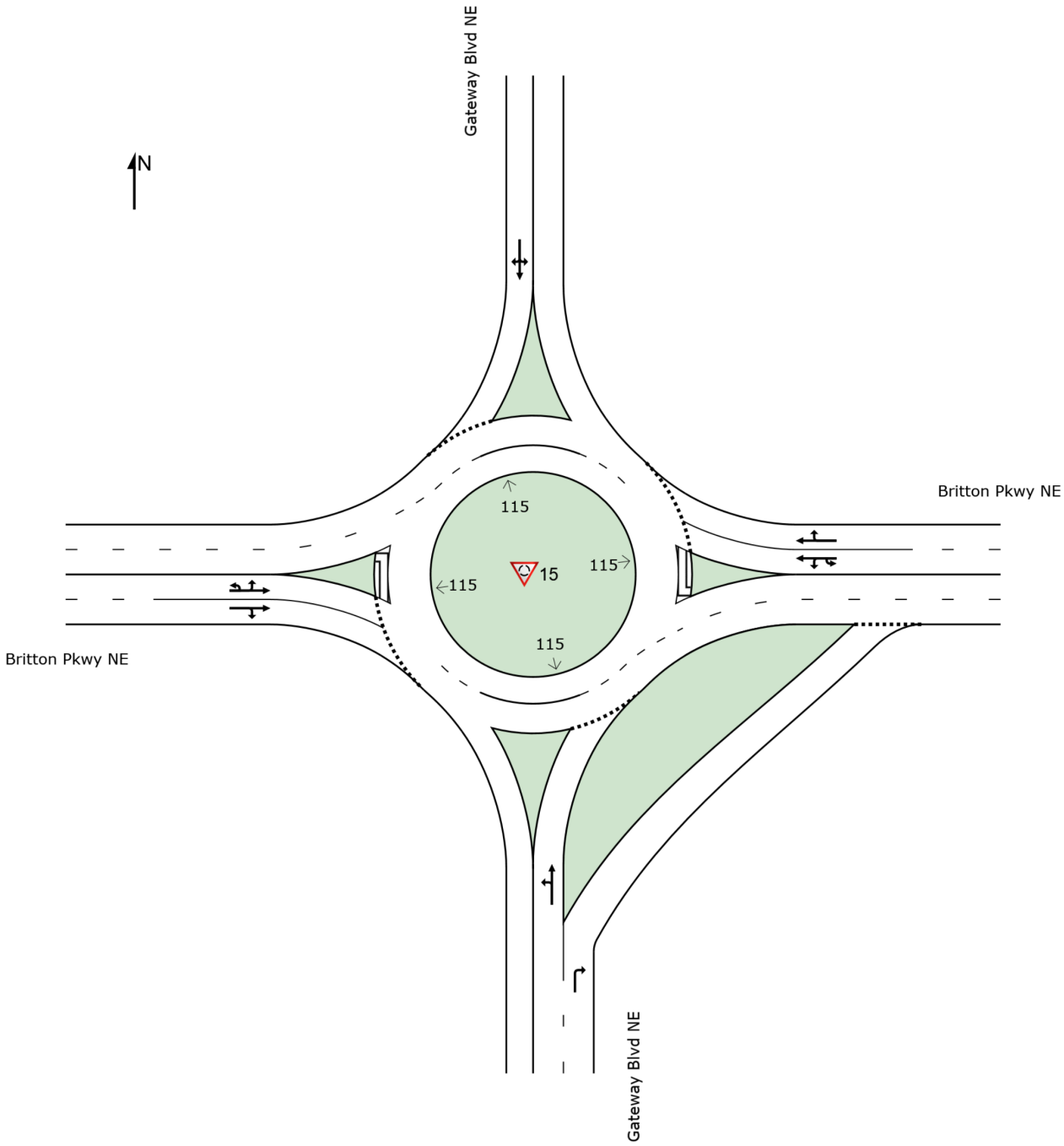
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 15 [Alt 1 Combo 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 15 [Alt 1 Combo 2050 - 15. Gateway Blvd NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Gateway Blvd NE															
3	L2	All MCs	641	2.0	641	2.0	0.571	12.3	LOS B	3.4	87.0	0.63	0.81	0.72	31.8
8	T1	All MCs	29	2.0	29	2.0	0.571	5.9	LOS A	3.4	87.0	0.63	0.81	0.72	32.4
18	R2	All MCs	169	2.0	169	2.0	0.132	4.5	LOS A	0.4	11.0	0.37	0.53	0.37	35.5
Approach			839	2.0	839	2.0	0.571	10.5	LOS B	3.4	87.0	0.58	0.75	0.65	32.5
East: Britton Pkwy NE															
1u	U	All MCs	6	3.0	6	3.0	0.496	21.1	LOS C	4.2	107.3	0.92	0.86	1.09	30.7
1	L2	All MCs	148	3.0	148	3.0	0.496	18.5	LOS B	4.2	107.3	0.92	0.86	1.09	30.6
6	T1	All MCs	473	3.0	473	3.0	0.496	10.7	LOS B	4.7	120.9	0.94	0.81	1.07	32.7
16	R2	All MCs	135	3.0	135	3.0	0.496	10.2	LOS B	4.7	120.9	0.95	0.79	1.05	33.1
Approach			762	3.0	762	3.0	0.496	12.2	LOS B	4.7	120.9	0.94	0.82	1.07	32.3
North: Gateway Blvd NE															
7	L2	All MCs	36	2.0	36	2.0	0.309	15.5	LOS B	1.6	40.7	0.79	0.82	0.79	32.7
4	T1	All MCs	81	2.0	81	2.0	0.309	9.1	LOS A	1.6	40.7	0.79	0.82	0.79	33.4
14	R2	All MCs	65	2.0	65	2.0	0.309	9.2	LOS A	1.6	40.7	0.79	0.82	0.79	33.1
Approach			182	2.0	182	2.0	0.309	10.4	LOS B	1.6	40.7	0.79	0.82	0.79	33.1
West: Britton Pkwy NE															
5u	U	All MCs	102	5.0	102	5.0	0.370	14.2	LOS B	2.4	63.1	0.54	0.59	0.54	33.1
5	L2	All MCs	75	5.0	75	5.0	0.370	11.6	LOS B	2.4	63.1	0.54	0.59	0.54	33.1
2	T1	All MCs	497	5.0	497	5.0	0.370	5.0	LOS A	2.6	66.6	0.53	0.54	0.53	34.5
12	R2	All MCs	253	5.0	253	5.0	0.370	5.1	LOS A	2.6	66.6	0.51	0.50	0.51	34.8
Approach			927	5.0	927	5.0	0.370	6.6	LOS A	2.6	66.6	0.53	0.54	0.53	34.3
All Vehicles			2710	3.3	2710	3.3	0.571	9.6	LOS A	4.7	120.9	0.67	0.70	0.74	33.1

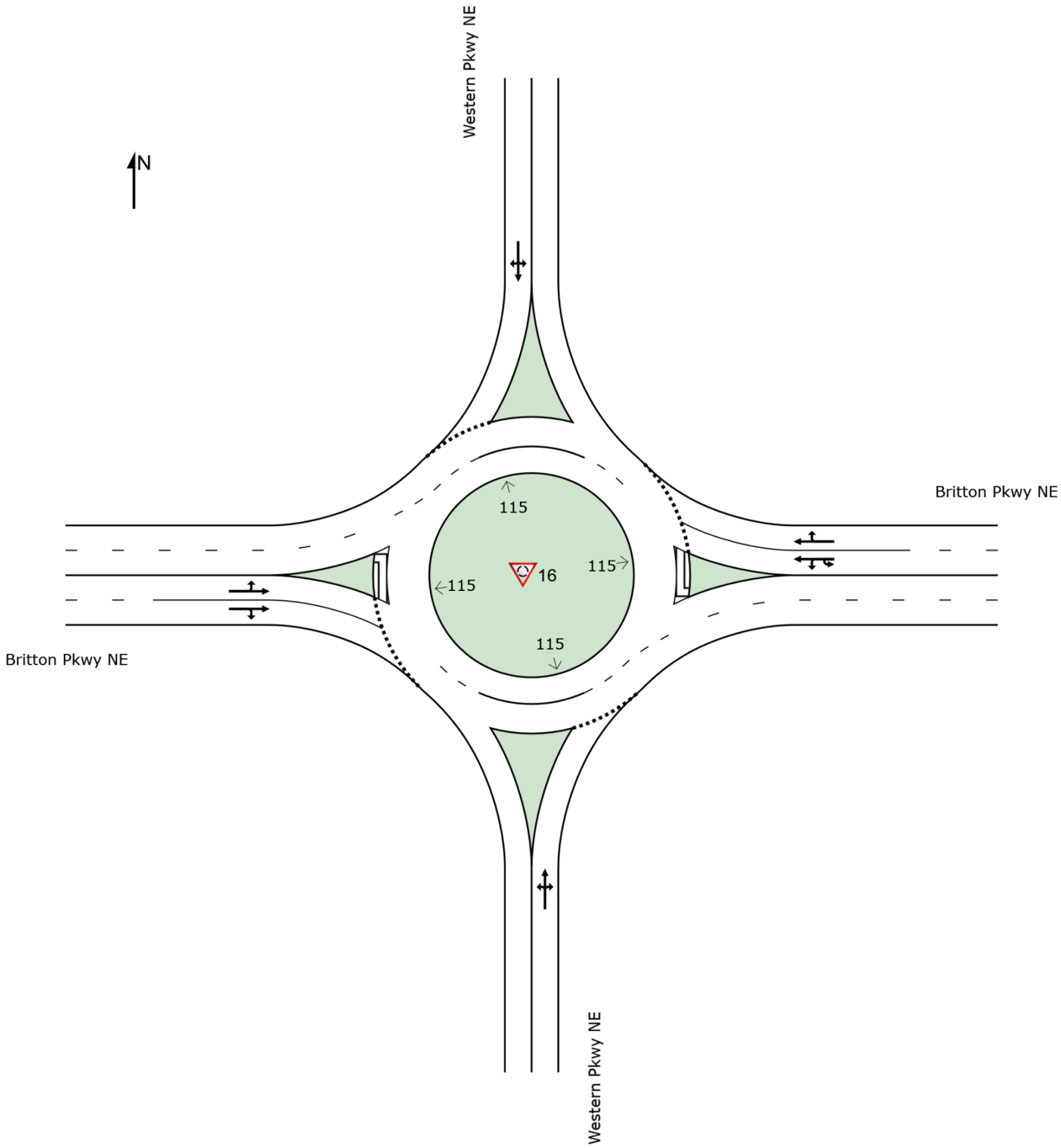
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 16 [Alt 1 2027 - 16. Western Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 16 [Alt 1 2027 - 16. Western Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Western Pkwy NE															
3	L2	All MCs	175	2.0	175	2.0	0.326	13.0	LOS B	1.2	31.7	0.57	0.80	0.59	32.5
8	T1	All MCs	1	2.0	1	2.0	0.326	6.6	LOS A	1.2	31.7	0.57	0.80	0.59	33.2
18	R2	All MCs	77	2.0	77	2.0	0.326	6.7	LOS A	1.2	31.7	0.57	0.80	0.59	32.9
Approach			253	2.0	253	2.0	0.326	11.0	LOS B	1.2	31.7	0.57	0.80	0.59	32.6
East: Britton Pkwy NE															
1u	U	All MCs	1	2.0	1	2.0	0.463	14.1	LOS B	3.3	84.3	0.54	0.51	0.54	34.1
1	L2	All MCs	40	2.0	40	2.0	0.463	11.5	LOS B	3.3	84.3	0.54	0.51	0.54	34.1
6	T1	All MCs	1083	2.0	1083	2.0	0.463	5.0	LOS A	3.4	86.8	0.53	0.49	0.53	35.0
16	R2	All MCs	26	2.0	26	2.0	0.463	5.1	LOS A	3.4	86.8	0.52	0.48	0.52	34.7
Approach			1151	2.0	1151	2.0	0.463	5.2	LOS A	3.4	86.8	0.53	0.49	0.53	34.9
North: Western Pkwy NE															
7	L2	All MCs	11	0.0	11	0.0	0.077	13.2	LOS B	0.3	7.4	0.63	0.78	0.63	33.7
4	T1	All MCs	1	0.0	1	0.0	0.077	6.8	LOS A	0.3	7.4	0.63	0.78	0.63	34.4
14	R2	All MCs	37	0.0	37	0.0	0.077	6.9	LOS A	0.3	7.4	0.63	0.78	0.63	34.2
Approach			48	0.0	48	0.0	0.077	8.2	LOS A	0.3	7.4	0.63	0.78	0.63	34.1
West: Britton Pkwy NE															
5	L2	All MCs	53	1.0	53	1.0	0.352	10.2	LOS B	2.4	60.0	0.23	0.39	0.23	35.1
2	T1	All MCs	854	1.0	854	1.0	0.352	3.9	LOS A	2.4	60.7	0.23	0.38	0.23	36.0
12	R2	All MCs	117	1.0	117	1.0	0.352	4.1	LOS A	2.4	60.7	0.22	0.37	0.22	35.8
Approach			1023	1.0	1023	1.0	0.352	4.2	LOS A	2.4	60.7	0.23	0.38	0.23	35.9
All Vehicles			2475	1.5	2475	1.5	0.463	5.5	LOS A	3.4	86.8	0.41	0.48	0.41	35.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 16 [Alt 2 2027 - 16. Western Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Western Pkwy NE															
3	L2	All MCs	131	2.0	131	2.0	0.232	12.4	LOS B	0.8	20.7	0.52	0.76	0.52	32.7
8	T1	All MCs	1	2.0	1	2.0	0.232	6.1	LOS A	0.8	20.7	0.52	0.76	0.52	33.4
18	R2	All MCs	57	2.0	57	2.0	0.232	6.1	LOS A	0.8	20.7	0.52	0.76	0.52	33.2
Approach			188	2.0	188	2.0	0.232	10.5	LOS B	0.8	20.7	0.52	0.76	0.52	32.9
East: Britton Pkwy NE															
1u	U	All MCs	1	2.0	1	2.0	0.387	13.7	LOS B	2.5	64.6	0.45	0.47	0.45	34.4
1	L2	All MCs	37	2.0	37	2.0	0.387	11.1	LOS B	2.5	64.6	0.45	0.47	0.45	34.4
6	T1	All MCs	935	2.0	935	2.0	0.387	4.6	LOS A	2.6	66.1	0.44	0.45	0.44	35.3
16	R2	All MCs	26	2.0	26	2.0	0.387	4.8	LOS A	2.6	66.1	0.43	0.44	0.43	35.0
Approach			999	2.0	999	2.0	0.387	4.9	LOS A	2.6	66.1	0.44	0.45	0.44	35.3
North: Western Pkwy NE															
7	L2	All MCs	11	0.0	11	0.0	0.068	12.6	LOS B	0.2	6.2	0.57	0.74	0.57	34.0
4	T1	All MCs	1	0.0	1	0.0	0.068	6.2	LOS A	0.2	6.2	0.57	0.74	0.57	34.7
14	R2	All MCs	37	0.0	37	0.0	0.068	6.3	LOS A	0.2	6.2	0.57	0.74	0.57	34.4
Approach			48	0.0	48	0.0	0.068	7.7	LOS A	0.2	6.2	0.57	0.74	0.57	34.3
West: Britton Pkwy NE															
5	L2	All MCs	53	1.0	53	1.0	0.304	10.2	LOS B	1.9	47.8	0.21	0.40	0.21	35.1
2	T1	All MCs	745	1.0	745	1.0	0.304	3.9	LOS A	1.9	48.2	0.20	0.38	0.20	36.1
12	R2	All MCs	88	1.0	88	1.0	0.304	4.1	LOS A	1.9	48.2	0.20	0.36	0.20	35.9
Approach			886	1.0	886	1.0	0.304	4.3	LOS A	1.9	48.2	0.20	0.38	0.20	36.0
All Vehicles			2122	1.5	2122	1.5	0.387	5.2	LOS A	2.6	66.1	0.35	0.45	0.35	35.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 16 [Alt 1 Combo 2027 - 16. Western Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2027) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Western Pkwy NE															
3	L2	All MCs	173	2.0	173	2.0	0.331	13.2	LOS B	1.3	32.5	0.59	0.81	0.62	32.4
8	T1	All MCs	1	2.0	1	2.0	0.331	6.8	LOS A	1.3	32.5	0.59	0.81	0.62	33.1
18	R2	All MCs	76	2.0	76	2.0	0.331	6.9	LOS A	1.3	32.5	0.59	0.81	0.62	32.8
Approach			249	2.0	249	2.0	0.331	11.2	LOS B	1.3	32.5	0.59	0.81	0.62	32.5
East: Britton Pkwy NE															
1u	U	All MCs	1	2.0	1	2.0	0.484	14.1	LOS B	3.6	90.4	0.55	0.51	0.55	34.1
1	L2	All MCs	40	2.0	40	2.0	0.484	11.5	LOS B	3.6	90.4	0.55	0.51	0.55	34.1
6	T1	All MCs	1136	2.0	1136	2.0	0.484	5.0	LOS A	3.7	93.0	0.54	0.49	0.54	34.9
16	R2	All MCs	26	2.0	26	2.0	0.484	5.2	LOS A	3.7	93.0	0.53	0.48	0.53	34.7
Approach			1203	2.0	1203	2.0	0.484	5.3	LOS A	3.7	93.0	0.54	0.49	0.54	34.9
North: Western Pkwy NE															
7	L2	All MCs	11	0.0	11	0.0	0.079	13.3	LOS B	0.3	7.7	0.64	0.79	0.64	33.7
4	T1	All MCs	1	0.0	1	0.0	0.079	6.9	LOS A	0.3	7.7	0.64	0.79	0.64	34.3
14	R2	All MCs	37	0.0	37	0.0	0.079	7.0	LOS A	0.3	7.7	0.64	0.79	0.64	34.1
Approach			48	0.0	48	0.0	0.079	8.4	LOS A	0.3	7.7	0.64	0.79	0.64	34.0
West: Britton Pkwy NE															
5	L2	All MCs	53	1.0	53	1.0	0.375	10.3	LOS B	2.6	65.8	0.24	0.39	0.24	35.1
2	T1	All MCs	921	1.0	921	1.0	0.375	3.9	LOS A	2.6	66.6	0.23	0.38	0.23	36.0
12	R2	All MCs	115	1.0	115	1.0	0.375	4.1	LOS A	2.6	66.6	0.23	0.37	0.23	35.8
Approach			1088	1.0	1088	1.0	0.375	4.2	LOS A	2.6	66.6	0.23	0.38	0.23	35.9
All Vehicles			2589	1.5	2589	1.5	0.484	5.5	LOS A	3.7	93.0	0.42	0.48	0.42	35.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 16 [Alt 1 2050 - 16. Western Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Western Pkwy NE															
3	L2	All MCs	166	2.0	166	2.0	0.255	12.0	LOS B	0.9	24.0	0.51	0.74	0.51	32.8
8	T1	All MCs	1	2.0	1	2.0	0.255	5.6	LOS A	0.9	24.0	0.51	0.74	0.51	33.5
18	R2	All MCs	73	2.0	73	2.0	0.255	5.7	LOS A	0.9	24.0	0.51	0.74	0.51	33.3
Approach			240	2.0	240	2.0	0.255	10.1	LOS B	0.9	24.0	0.51	0.74	0.51	33.0
East: Britton Pkwy NE															
1u	U	All MCs	1	2.0	1	2.0	0.403	14.1	LOS B	2.6	67.3	0.53	0.51	0.53	34.1
1	L2	All MCs	38	2.0	38	2.0	0.403	11.5	LOS B	2.6	67.3	0.53	0.51	0.53	34.1
6	T1	All MCs	1019	2.0	1019	2.0	0.403	5.0	LOS A	2.8	70.4	0.51	0.49	0.51	35.0
16	R2	All MCs	10	2.0	10	2.0	0.403	5.1	LOS A	2.8	70.4	0.50	0.47	0.50	34.8
Approach			1068	2.0	1068	2.0	0.403	5.2	LOS A	2.8	70.4	0.51	0.49	0.51	35.0
North: Western Pkwy NE															
7	L2	All MCs	14	0.0	14	0.0	0.068	12.4	LOS B	0.3	6.6	0.60	0.73	0.60	33.7
4	T1	All MCs	10	0.0	10	0.0	0.068	6.0	LOS A	0.3	6.6	0.60	0.73	0.60	34.4
14	R2	All MCs	29	0.0	29	0.0	0.068	6.1	LOS A	0.3	6.6	0.60	0.73	0.60	34.2
Approach			53	0.0	53	0.0	0.068	7.7	LOS A	0.3	6.6	0.60	0.73	0.60	34.1
West: Britton Pkwy NE															
5	L2	All MCs	106	1.0	106	1.0	0.293	10.2	LOS B	1.8	45.2	0.23	0.44	0.23	34.7
2	T1	All MCs	661	1.0	661	1.0	0.293	3.9	LOS A	1.8	46.0	0.22	0.41	0.22	35.9
12	R2	All MCs	144	1.0	144	1.0	0.293	4.1	LOS A	1.8	46.0	0.21	0.38	0.21	35.8
Approach			911	1.0	911	1.0	0.293	4.7	LOS A	1.8	46.0	0.22	0.41	0.22	35.7
All Vehicles			2272	1.6	2272	1.6	0.403	5.6	LOS A	2.8	70.4	0.40	0.49	0.40	35.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 16 [Alt 2 2050 - 16. Western Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 2 PM Peak Hour
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Western Pkwy NE															
3	L2	All MCs	124	2.0	124	2.0	0.183	11.7	LOS B	0.6	16.2	0.46	0.71	0.46	32.9
8	T1	All MCs	1	2.0	1	2.0	0.183	5.3	LOS A	0.6	16.2	0.46	0.71	0.46	33.6
18	R2	All MCs	54	2.0	54	2.0	0.183	5.4	LOS A	0.6	16.2	0.46	0.71	0.46	33.4
Approach			179	2.0	179	2.0	0.183	9.7	LOS A	0.6	16.2	0.46	0.71	0.46	33.1
East: Britton Pkwy NE															
1u	U	All MCs	1	2.0	1	2.0	0.337	13.8	LOS B	2.1	52.3	0.45	0.48	0.45	34.4
1	L2	All MCs	35	2.0	35	2.0	0.337	11.2	LOS B	2.1	52.3	0.45	0.48	0.45	34.4
6	T1	All MCs	878	2.0	878	2.0	0.337	4.7	LOS A	2.1	54.2	0.44	0.46	0.44	35.3
16	R2	All MCs	10	2.0	10	2.0	0.337	4.8	LOS A	2.1	54.2	0.43	0.44	0.43	35.0
Approach			924	2.0	924	2.0	0.337	4.9	LOS A	2.1	54.2	0.44	0.46	0.44	35.3
North: Western Pkwy NE															
7	L2	All MCs	14	0.0	14	0.0	0.062	12.0	LOS B	0.2	5.7	0.54	0.69	0.54	33.9
4	T1	All MCs	10	0.0	10	0.0	0.062	5.6	LOS A	0.2	5.7	0.54	0.69	0.54	34.6
14	R2	All MCs	29	0.0	29	0.0	0.062	5.7	LOS A	0.2	5.7	0.54	0.69	0.54	34.3
Approach			53	0.0	53	0.0	0.062	7.3	LOS A	0.2	5.7	0.54	0.69	0.54	34.3
West: Britton Pkwy NE															
5	L2	All MCs	106	1.0	106	1.0	0.250	10.2	LOS B	1.4	36.3	0.21	0.45	0.21	34.6
2	T1	All MCs	558	1.0	558	1.0	0.250	3.9	LOS A	1.5	36.8	0.20	0.41	0.20	35.9
12	R2	All MCs	117	1.0	117	1.0	0.250	4.1	LOS A	1.5	36.8	0.19	0.37	0.19	35.9
Approach			781	1.0	781	1.0	0.250	4.8	LOS A	1.5	36.8	0.20	0.41	0.20	35.7
All Vehicles			1937	1.5	1937	1.5	0.337	5.4	LOS A	2.1	54.2	0.35	0.47	0.35	35.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 16 [Alt 1 Combo 2050 - 16. Western Pkwy NE/Britton Pkwy NE (Site Folder: Mitigated)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Nisqually Quiemuth Village Mixed Use Project
Site Category: Future (2050) Village Alternatve 1 Combined PM Peak Hour
Roundabout

Vehicle Movement Performance

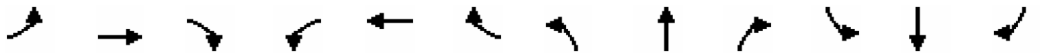
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Western Pkwy NE															
3	L2	All MCs	164	2.0	164	2.0	0.257	12.1	LOS B	1.0	24.3	0.52	0.75	0.52	32.8
8	T1	All MCs	1	2.0	1	2.0	0.257	5.8	LOS A	1.0	24.3	0.52	0.75	0.52	33.5
18	R2	All MCs	72	2.0	72	2.0	0.257	5.9	LOS A	1.0	24.3	0.52	0.75	0.52	33.2
Approach			237	2.0	237	2.0	0.257	10.2	LOS B	1.0	24.3	0.52	0.75	0.52	32.9
East: Britton Pkwy NE															
1u	U	All MCs	1	2.0	1	2.0	0.422	14.1	LOS B	2.8	71.8	0.53	0.51	0.53	34.1
1	L2	All MCs	38	2.0	38	2.0	0.422	11.5	LOS B	2.8	71.8	0.53	0.51	0.53	34.1
6	T1	All MCs	1069	2.0	1069	2.0	0.422	5.0	LOS A	3.0	75.1	0.52	0.49	0.52	35.0
16	R2	All MCs	10	2.0	10	2.0	0.422	5.1	LOS A	3.0	75.1	0.51	0.47	0.51	34.7
Approach			1118	2.0	1118	2.0	0.422	5.2	LOS A	3.0	75.1	0.52	0.49	0.52	35.0
North: Western Pkwy NE															
7	L2	All MCs	14	0.0	14	0.0	0.069	12.4	LOS B	0.3	6.9	0.61	0.74	0.61	33.7
4	T1	All MCs	10	0.0	10	0.0	0.069	6.1	LOS A	0.3	6.9	0.61	0.74	0.61	34.4
14	R2	All MCs	29	0.0	29	0.0	0.069	6.2	LOS A	0.3	6.9	0.61	0.74	0.61	34.1
Approach			53	0.0	53	0.0	0.069	7.8	LOS A	0.3	6.9	0.61	0.74	0.61	34.1
West: Britton Pkwy NE															
5	L2	All MCs	106	1.0	106	1.0	0.313	10.3	LOS B	2.0	49.5	0.23	0.44	0.23	34.7
2	T1	All MCs	725	1.0	725	1.0	0.313	3.9	LOS A	2.0	50.3	0.22	0.40	0.22	35.9
12	R2	All MCs	142	1.0	142	1.0	0.313	4.1	LOS A	2.0	50.3	0.22	0.38	0.22	35.8
Approach			973	1.0	973	1.0	0.313	4.6	LOS A	2.0	50.3	0.22	0.40	0.22	35.7
All Vehicles			2381	1.5	2381	1.5	0.422	5.5	LOS A	3.0	75.1	0.40	0.49	0.40	35.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	525	0	0	703	0	1414	1069	0	1760	639
Future Volume (vph)	0	0	525	0	0	703	0	1414	1069	0	1760	639
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.97	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3085	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3085	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	547	0	0	732	0	1473	1114	0	1833	666
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	547	0	0	732	0	1796	791	0	1833	666
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			57.5			53.5		55.5	120.0		50.5	120.0
Effective Green, g (s)			57.5			53.5		55.5	120.0		50.5	120.0
Actuated g/C Ratio			0.48			0.45		0.46	1.00		0.42	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1265			1177		1426	1335		1370	1457
v/s Ratio Prot			0.21			0.28		c0.58			c0.56	
v/s Ratio Perm									0.59			0.46
v/c Ratio			0.43			0.62		1.26	0.59		1.34	0.46
Uniform Delay, d1			20.5			25.5		32.3	0.0		34.8	0.0
Progression Factor			1.00			1.00		0.86	1.00		1.00	1.00
Incremental Delay, d2			0.2			1.0		119.5	0.9		157.1	1.0
Delay (s)			20.8			26.5		147.2	0.9		191.9	1.0
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		20.8			26.5			102.5			141.0	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	101.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	525	0	0	707	0	1414	1083	0	1659	639
Future Volume (vph)	0	0	525	0	0	707	0	1414	1083	0	1659	639
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)			4.5			4.5		6.5	4.0		7.5	4.0
Lane Util. Factor			0.88			0.88		0.91	0.91		0.95	1.00
Frpb, ped/bikes			1.00			1.00		1.00	0.99		1.00	1.00
Flpb, ped/bikes			1.00			1.00		1.00	1.00		1.00	1.00
Frt			0.85			0.85		0.97	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			2640			2640		3082	1335		3257	1457
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			2640			2640		3082	1335		3257	1457
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	547	0	0	736	0	1473	1128	0	1728	666
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	547	0	0	736	0	1811	790	0	1728	666
Confl. Peds. (#/hr)									2	2		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Turn Type			Prot			Prot		NA	Free		NA	Free
Protected Phases			8			6		4			2	
Permitted Phases									Free			Free
Actuated Green, G (s)			57.5			53.5		55.5	120.0		50.5	120.0
Effective Green, g (s)			57.5			53.5		55.5	120.0		50.5	120.0
Actuated g/C Ratio			0.48			0.45		0.46	1.00		0.42	1.00
Clearance Time (s)			4.5			4.5		6.5			7.5	
Vehicle Extension (s)			3.0			3.0		3.0			3.0	
Lane Grp Cap (vph)			1265			1177		1425	1335		1370	1457
v/s Ratio Prot			0.21			0.28		c0.59			c0.53	
v/s Ratio Perm									0.59			0.46
v/c Ratio			0.43			0.63		1.27	0.59		1.26	0.46
Uniform Delay, d1			20.5			25.5		32.3	0.0		34.8	0.0
Progression Factor			1.00			1.00		0.86	1.00		1.00	1.00
Incremental Delay, d2			0.2			1.0		124.5	0.9		123.6	1.0
Delay (s)			20.8			26.6		152.3	0.9		158.4	1.0
Level of Service			C			C		F	A		F	A
Approach Delay (s/veh)		20.8			26.6			106.3			114.6	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	92.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix F: Related Pages from Topgolf El Segundo Report

400 SOUTH SEPULVEDA BOULEVARD
PROPOSED TOPGOLF PROJECT
TRAFFIC IMPACT ANALYSIS
City of El Segundo, California

Prepared for:

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Prepared by:

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Jethro Narciso, EIT
Alex Vu, EIT



October 31, 2016

AT:dt/RK11914.doc
JN:0003-2016-02

Table 4
Forecast Weekday Daily & Peak Hour
Trip Generation Summary of Proposed Project

Land Use	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips			Weekday Daily Trips
	In	Out	Total	In	Out	Total	
Proposed Topgolf Project	45	6	51	129	118	247	2,241

Source: *400 South Sepulveda Proposed Topgolf Project Trip Generation Analysis (RK Engineering Group, June 6, 2016)*.

As shown in Table 4, the proposed project is forecast to conservatively generate approximately 2,241 weekday daily trips which include approximately 51 weekday AM peak hour trips and approximately 247 weekday PM peak hour trips.

Based on the *400 South Sepulveda Proposed Topgolf Project Trip Generation Analysis (RK Engineering Group, June 6, 2016),* Table 5 summarizes the conservative forecast weekend daily and peak hour trip generation for the proposed project.

Table 5
Forecast Weekend Daily & Peak Hour
Trip Generation Summary of Proposed Topgolf Project

Land Use	Weekend Mid-Day Peak Hour Trips			Weekend Daily Trips
	In	Out	Total	
Proposed Topgolf Project	90	90	180	3,766

Source: *400 South Sepulveda Proposed Topgolf Project Trip Generation Analysis (RK Engineering Group, June 6, 2016)*.

As shown in Table 5, the proposed project is forecast to conservatively generate approximately 3,766 weekend daily trips which include approximately 180 weekend mid-day peak hour trips.

Since the proposed project is forecast to generate less than 50 trips at any study intersection during the weekday AM peak hour, City of El Segundo and Caltrans staff determined a weekday AM peak hour analysis is not required for the proposed project. Accordingly, this analysis evaluates weekday PM peak hour and weekend-day mid-day peak hour conditions for potential traffic impacts associated with the proposed project at the twenty-two study intersections identified by City of El Segundo and Caltrans staff.

Appendix G: Trip Generation Calculations

1.21359.00 - Nisqually Quiemuth Village Mixed Use Project
Alternative 1 – Proposed Mixed Use Development

Proposed Use

							Gross Trips				Internal Trips				External trips			Pass-By				Total Net New		
Land Use	**Setting**	**Size**	**Units**	**Model[1]**	**Rate**	**Inbound %**	**Inbound**	**Outbound**	**Subtotal**	**Land Use Type**	**In**	**Out**	**Total**	**%**	**In**	**Out**	**Total**	**%**	**In**	**Out**	**Total**	**Inbound**	**Outbound**	**Total**
Shopping Center [>150k sf] (LU #820)		**833,500**	sf							Retail														
Daily	General Urban/Suburban			Rate	37.01	50%	15,424	15,424	30,848		428	428	856	3%	14996	14996	29992	19%	2849	2849	5698	12,147	12,147	24,294
AM Peak Hour	General Urban/Suburban			Rate	0.84	62%	434	266	700		7	2	9	1%	427	264	691	19%	66	66	132	361	198	559
PM Peak Hour	General Urban/Suburban			Rate	3.40	48%	1,360	1,474	2,834		52	69	121	4%	1308	1405	2713	19%	258	258	516	1,050	1,147	2,197
Hotel (LU #310)		**200**	rooms							Hotel														
Daily	General Urban/Suburban			Rate	7.99	50%	799	799	1,598		101	101	202	13%	698	698	1396		-	-	-	698	698	1,396
AM Peak Hour	General Urban/Suburban			Rate	0.46	56%	52	40	92		0	7	7	8%	52	33	85		-	-	-	52	33	85
PM Peak Hour	General Urban/Suburban			Rate	0.59	51%	60	58	118		12	9	21	18%	48	49	97		-	-	-	48	49	97
Multifamily Housing (Mid-Rise) (LU #221)		**320**	du							Residential														
Daily	General Urban/Suburban			Rate	4.54	50%	726	726	1,452		192	192	384	26%	534	534	1068		-	-	-	534	534	1,068
AM Peak Hour	General Urban/Suburban			Rate	0.37	23%	27	91	118		1	2	3	3%	26	89	115		-	-	-	26	89	115
PM Peak Hour	General Urban/Suburban			Rate	0.39	61%	76	49	125		39	24	63	50%	37	25	62		-	-	-	37	25	62
General Office (LU #710)		**30,000**	sf							Office														
Daily	General Urban/Suburban			Rate	9.74	50%	146	146	292		31	31	62	21%	115	115	230		-	-	-	115	115	230
AM Peak Hour	General Urban/Suburban			Rate	1.16	86%	30	5	35		3	1	4	11%	27	4	31		-	-	-	27	4	31
PM Peak Hour	General Urban/Suburban			Rate	1.15	16%	6	29	35		4	7	11	31%	2	22	24		-	-	-	2	22	24
Truck Stop (LU #950)		**26**	VFP					*Truck Trips*		All Other Land Uses									*Diverted Trips*					
Daily	General Urban/Suburban			Rate	224.00	50%	2,912	2,912	5,824		0	0	0	0%	2912	2912	5824	75%	2184	2184	4368	728	728	1,456
AM Peak Hour	General Urban/Suburban			Rate	13.97	49%	178	185	363		0	0	0	0%	178	185	363	76%	138	138	276	40	47	87
PM Peak Hour	General Urban/Suburban			Rate	15.42	53%	213	188	401		0	0	0	0%	213	188	401	75%	150	150	300	63	38	101
Car Dealership (LU #840)		**30,000**	sf							Retail														
Daily	General Urban/Suburban			Rate	27.84	50%	418	418	836		12	12	24	3%	406	406	812		-	-	-	406	406	812
AM Peak Hour	General Urban/Suburban			Rate	1.86	73%	41	15	56		1	0	1	2%	40	15	55		-	-	-	40	15	55
PM Peak Hour	General Urban/Suburban			Rate	2.42	40%	29	44	73		1	2	3	4%	28	42	70		-	-	-	28	42	70
TopGolf (Rates from Transpo Group TIA)[3]		**93**	bays							Cinema/Entertainment														
Daily[4]	General Urban/Suburban			Rate	16.60	50%	772	772	1,544		102	102	204	13%	670	670	1340		-	-	-	670	670	1,340
AM Peak Hour[4]	General Urban/Suburban			Rate	0.38	88%	32	4	36		0	0	0	0%	32	4	36		-	-	-	32	4	36
PM Peak Hour	General Urban/Suburban			Rate	1.83	54%	91	79	170		24	21	45	26%	67	58	125		-	-	-	67	58	125
Subtotal																								
Daily							21,197	21,197	42,394		866	866	1,732	4%	20,331	20,331	40,662		5,033	5,033	10,066	15,298	15,298	30,596
AM Peak Hour							794	606	1,400		12	12	24	2%	782	594	1,376		204	204	408	578	390	968
PM Peak Hour							1,835	1,921	3,756		132	132	264	7%	1,703	1,789	3,492		408	408	816	1,295	1,381	2,676

Notes:

sf = square feet, VFP = vehicle fueling position

1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation* 11th Edition equation and average trip rate as shown above.
2. Pass-by rate for truck stop (LU #950) based on rate established in ITE Trip Gen manual for LU 945 convenience store/gas station
3. Topgolf Renton Transportation Impact Analysis (Transpo Group, July 2019). Only the PM peak hour trip rate is available in this study.
4. A 2016 study for a Topgolf facility in El Segundo, CA was used to find the relationship between the number of AM peak hour and daily trips and the number of PM peak hour trips as well as the in/out split for the AM peak. The daily trips and AM peak hour trips were respectively 9.07 times and 0.21 times the number of PM peak hour trips, and the AM peak hour inbound split was 88%.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	30	5
Retail				756	475	281
Restaurant				0	0	0
Cinema/Entertainment				36	32	4
Residential				118	27	91
Hotel				92	52	40
All Other Land Uses[2]				0	0	0
Total				1037	616	421

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	0	0		0
Hotel	1	6	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,037	616	421
Internal Capture Percentage	2%	2%	3%
External Vehicle-Trips[3]	1,013	604	409
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	10%	20%
Retail	2%	1%
Restaurant	N/A	N/A
Cinema/Entertainment	0%	0%
Residential	4%	2%
Hotel	0%	18%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	30	30	1.00	5	5
Retail	1.00	475	475	1.00	281	281
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	32	32	1.00	4	4
Residential	1.00	27	27	1.00	91	91
Hotel	1.00	52	52	1.00	40	40

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	3	0	0	0
Retail	81		37	0	39	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	18	0		0
Hotel	30	6	4	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		152	0	0	0	0
Retail	1		0	0	1	0
Restaurant	4	38		0	1	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	81	0	0		0
Hotel	1	19	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	27	30	27	0	0
Retail	8	467	475	467	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	32	32	32	0	0
Residential	1	26	27	26	0	0
Hotel	0	52	52	52	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	4	5	4	0	0
Retail	2	279	281	279	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	4	4	4	0	0
Residential	2	89	91	89	0	0
Hotel	7	33	40	33	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	6	29
Retail				2907	1389	1518
Restaurant				0	0	0
Cinema/Entertainment				170	91	79
Residential				125	76	49
Hotel				118	60	58
All Other Land Uses[2]				0	0	0
Total				3355	1622	1733

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	0	0	1	0
Retail	2		0	24	35	10
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	17	0		3	1
Residential	2	21	0	0		1
Hotel	0	9	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,355	1,622	1,733
Internal Capture Percentage	8%	8%	8%
External Vehicle-Trips[3]	3,091	1,490	1,601
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	67%	24%
Retail	4%	5%
Restaurant	N/A	N/A
Cinema/Entertainment	26%	27%
Residential	51%	49%
Hotel	20%	16%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	6	6	1.00	29	29
Retail	1.00	1389	1389	1.00	1518	1518
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	91	91	1.00	79	79
Residential	1.00	76	76	1.00	49	49
Hotel	1.00	60	60	1.00	58	58

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	1	0	1	0
Retail	30		440	61	395	76
Restaurant	0	0		0	0	0
Cinema/Entertainment	2	17	24		6	2
Residential	2	21	10	0		1
Hotel	0	9	39	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		111	0	1	3	0
Retail	2		0	24	35	10
Restaurant	2	695		29	12	43
Cinema/Entertainment	0	56	0		3	1
Residential	3	139	0	0		7
Hotel	0	28	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	4	2	6	2	0	0
Retail	53	1336	1389	1336	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	24	67	91	67	0	0
Residential	39	37	76	37	0	0
Hotel	12	48	60	48	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	7	22	29	22	0	0
Retail	71	1447	1518	1447	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	21	58	79	58	0	0
Residential	24	25	49	25	0	0
Hotel	9	49	58	49	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

1.21359.00 - Nisqually Quiemuth Village Mixed Use Project
Alternative 2 – Reduced Intensity Mixed Use Development

Proposed Use

							Gross Trips				Internal Trips				External trips			Pass-By				Total Net New		
Land Use	**Setting**	**Size**	**Units**	**Model[1]**	**Rate**	**Inbound %**	**Inbound**	**Outbound**	**Subtotal**	**Land Use Type**	**In**	**Out**	**Total**	**%**	**In**	**Out**	**Total**	**%**	**In**	**Out**	**Total**	**Inbound**	**Outbound**	**Total**
Shopping Center [>150k sf] (LU #820)		**338,500**	sf							Retail														
Daily	General Urban/Suburban			Rate	37.01	50%	6,264	6,264	12,528		363	363	726	6%	5901	5901	11802	19%	1121	1121	2242	4,780	4,780	9,560
AM Peak Hour	General Urban/Suburban			Rate	0.84	62%	176	108	284		4	1	5	2%	172	107	279	19%	27	27	54	145	80	225
PM Peak Hour	General Urban/Suburban			Rate	3.40	48%	552	599	1,151		51	62	113	10%	501	537	1038	19%	99	99	198	402	438	840
Hotel (LU #310)		**200**	rooms							Hotel														
Daily	General Urban/Suburban			Rate	7.99	50%	799	799	1,598		101	101	202	13%	698	698	1396		-	-	-	698	698	1,396
AM Peak Hour	General Urban/Suburban			Rate	0.46	56%	52	40	92		0	7	7	8%	52	33	85		-	-	-	52	33	85
PM Peak Hour	General Urban/Suburban			Rate	0.59	51%	60	58	118		12	9	21	18%	48	49	97		-	-	-	48	49	97
Multifamily Housing (Mid-Rise) (LU #221)		**320**	du							Residential														
Daily	General Urban/Suburban			Rate	4.54	50%	726	726	1,452		192	192	384	26%	534	534	1068		-	-	-	534	534	1,068
AM Peak Hour	General Urban/Suburban			Rate	0.37	23%	27	91	118		1	2	3	3%	26	89	115		-	-	-	26	89	115
PM Peak Hour	General Urban/Suburban			Rate	0.39	61%	76	49	125		39	24	63	50%	37	25	62		-	-	-	37	25	62
General Office (LU #710)		**30,000**	sf							Office														
Daily	General Urban/Suburban			Rate	9.74	50%	146	146	292		31	31	62	21%	115	115	230		-	-	-	115	115	230
AM Peak Hour	General Urban/Suburban			Rate	1.16	86%	30	5	35		3	1	4	11%	27	4	31		-	-	-	27	4	31
PM Peak Hour	General Urban/Suburban			Rate	1.15	16%	6	29	35		4	7	11	31%	2	22	24		-	-	-	2	22	24
Recreational Community Center (LU #495)		**200,000**	sf							Cinema/Entertainment														
Daily	General Urban/Suburban			Rate	28.82	50%	2,882	2,882	5,764		104	104	208	4%	2778	2778	5556		-	-	-	2,778	2,778	5,556
AM Peak Hour	General Urban/Suburban			Rate	1.91	66%	252	130	382		0	0	0	0%	252	130	382		-	-	-	252	130	382
PM Peak Hour	General Urban/Suburban			Rate	2.50	47%	235	265	500		15	21	36	7%	220	244	464		-	-	-	220	244	464
Car Dealership (LU #840)		**10,000**	sf							Retail														
Daily	General Urban/Suburban			Rate	27.84	50%	139	139	278		6	6	12	4%	133	133	266		-	-	-	133	133	266
AM Peak Hour	General Urban/Suburban			Rate	1.86	73%	14	5	19		0	0	0	0%	14	5	19		-	-	-	14	5	19
PM Peak Hour	General Urban/Suburban			Rate	2.42	40%	10	14	24		1	1	2	8%	9	13	22		-	-	-	9	13	22
TopGolf (Rates from Transpo Group TIA)[3]		**93**	bays							Cinema/Entertainment														
Daily[4]	General Urban/Suburban			Rate	16.60	50%	772	772	1,544		27	27	54	4%	745	745	1490		-	-	-	745	745	1,490
AM Peak Hour[4]	General Urban/Suburban			Rate	0.38	88%	32	4	36		0	0	0	0%	32	4	36		-	-	-	32	4	36
PM Peak Hour	General Urban/Suburban			Rate	1.83	54%	91	79	170		6	6	12	7%	85	73	158		-	-	-	85	73	158
Private School (K-8) (LU #530)		**200**	students							All Other Land Uses														
Daily	General Urban/Suburban			Rate	4.11	50%	411	411	822		0	0	0	0%	411	411	822		-	-	-	411	411	822
AM Peak Hour	General Urban/Suburban			Rate	1.01	56%	113	89	202		0	0	0	0%	113	89	202		-	-	-	113	89	202
PM Peak Hour	General Urban/Suburban			Rate	0.26	46%	24	28	52		0	0	0	0%	24	28	52		-	-	-	24	28	52
Convenience Store / Gas Station - GFA (5.5-10k) (LU #945)		**10**	VFP							Retail														
Daily	General Urban/Suburban			Rate	345.75	50%	1,729	1,729	3,458		97	97	194	6%	1632	1632	3264	75%	1224	1224	2448	408	408	816
AM Peak Hour	General Urban/Suburban			Rate	31.60	50%	158	158	316		4	1	5	2%	154	157	311	76%	118	118	236	36	39	75
PM Peak Hour	General Urban/Suburban			Rate	26.90	50%	135	134	269		12	14	26	10%	123	120	243	75%	91	91	182	32	29	61
Athletic Complex (LU #488)[5]		**12**	fields							Cinema/Entertainment														
Daily	General Urban/Suburban			Rate	71.33	50%	428	428	856		15	15	30	4%	413	413	826		-	-	-	413	413	826
AM Peak Hour	General Urban/Suburban			Rate	0.99	61%	7	5	12		0	0	0	0%	7	5	12		-	-	-	7	5	12
PM Peak Hour	General Urban/Suburban			Rate	16.43	66%	130	67	197		9	5	14	7%	121	62	183		-	-	-	121	62	183
Subtotal																								
Daily							14,296	14,296	28,592		936	936	1,872	7%	13,360	13,360	26,720		2,345	2,345	4,690	11,015	11,015	22,030
AM Peak Hour							861	635	1,496		12	12	24	2%	849	623	1,472		145	145	290	704	478	1,182
PM Peak Hour							1,319	1,322	2,641		149	149	298	11%	1,170	1,173	2,343		190	190	380	980	983	1,963

Notes:
sf = square feet, VFP = vehicle fueling position
1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation* 11th Edition equation and average trip rate as shown above.
2. Pass-by rate for convenience store (LU #945) based on rate established in ITE Trip Gen manual for LU 945 convenience store/gas station
3. Topgolf Renton Transportation Impact Analysis (Transpo Group, July 2019). Only the PM peak hour trip rate is available in this study.
4. A 2016 study for a Topgolf facility in El Segundo, CA was used to find the relationship between the number of AM peak hour and daily trips and the number of PM peak hour trips as well as the in/out split for the AM peak. The daily trips and AM peak hour trips were respectively 9.07 times and 0.21 times the number of PM peak hour trips, and the AM peak hour inbound split was 88%.
5. LU #488 is Soccer Complex in the ITE Trip Generation Manual. The independent variable is fields. The same rate was applied to the baseball fields and soccer fields.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	30	5
Retail				619	348	271
Restaurant				0	0	0
Cinema/Entertainment				430	291	139
Residential				118	27	91
Hotel				92	52	40
All Other Land Uses[2]				0	0	0
Total				1294	748	546

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	0	0		0
Hotel	1	6	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,294	748	546
Internal Capture Percentage	2%	2%	2%
External Vehicle-Trips[3]	1,270	736	534
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	10%	20%
Retail	2%	1%
Restaurant	N/A	N/A
Cinema/Entertainment	0%	0%
Residential	4%	2%
Hotel	0%	18%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	30	30	1.00	5	5
Retail	1.00	348	348	1.00	271	271
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	291	291	1.00	139	139
Residential	1.00	27	27	1.00	91	91
Hotel	1.00	52	52	1.00	40	40

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	3	0	0	0
Retail	79		35	0	38	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	18	0		0
Hotel	30	6	4	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		111	0	0	0	0
Retail	1		0	0	1	0
Restaurant	4	28		0	1	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	59	0	0		0
Hotel	1	14	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	27	30	27	0	0
Retail	8	340	348	340	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	291	291	291	0	0
Residential	1	26	27	26	0	0
Hotel	0	52	52	52	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	4	5	4	0	0
Retail	2	269	271	269	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	139	139	139	0	0
Residential	2	89	91	89	0	0
Hotel	7	33	40	33	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	6	29
Retail				1444	697	747
Restaurant				0	0	0
Cinema/Entertainment				867	456	411
Residential				125	76	49
Hotel				118	60	58
All Other Land Uses[2]				0	0	0
Total				2589	1295	1294

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	0	0	1	0
Retail	2		0	30	35	10
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	28	0		3	1
Residential	2	21	0	0		1
Hotel	0	9	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	2,589	1,295	1,294
Internal Capture Percentage	12%	12%	12%
External Vehicle-Trips[3]	2,291	1,146	1,145
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	67%	24%
Retail	9%	10%
Restaurant	N/A	N/A
Cinema/Entertainment	7%	8%
Residential	51%	49%
Hotel	20%	16%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	6	6	1.00	29	29
Retail	1.00	697	697	1.00	747	747
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	456	456	1.00	411	411
Residential	1.00	76	76	1.00	49	49
Hotel	1.00	60	60	1.00	58	58

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	1	0	1	0
Retail	15		217	30	194	37
Restaurant	0	0		0	0	0
Cinema/Entertainment	8	86	127		33	8
Residential	2	21	10	0		1
Hotel	0	9	39	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		56	0	5	3	0
Retail	2		0	119	35	10
Restaurant	2	349		146	12	43
Cinema/Entertainment	0	28	0		3	1
Residential	3	70	0	0		7
Hotel	0	14	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	4	2	6	2	0	0
Retail	64	633	697	633	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	30	426	456	426	0	0
Residential	39	37	76	37	0	0
Hotel	12	48	60	48	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	7	22	29	22	0	0
Retail	77	670	747	670	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	32	379	411	379	0	0
Residential	24	25	49	25	0	0
Hotel	9	49	58	49	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

1.21359.00 - Nisqually Quiemuth Village Mixed Use Project

Combined Development (Village Alternative 1 and Casino Alternative A)

Proposed Use

Land Use	Setting	Size	Units	Model[1]	Rate	Inbound %	Gross Trips Inbound	Gross Trips Outbound	Gross Trips Subtotal	Land Use Type	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External trips In	External trips Out	External trips Total	Pass-By %	Pass-By In	Pass-By Out	Pass-By Total	Total Net New Inbound	Total Net New Outbound	Total Net New Total
Casino Alternative A																								
Casino & Hotel (Rates from Siletz EA TIA)[2]		**2,360**	gaming positions							Cinema/Entertainment														
Daily	General Urban/Suburban			Rate	3.36	50%	3,965	3,965	7,930		316	316	632	8%	3649	3649	7298		-	-	-	3,649	3,649	7,298
AM Peak Hour	General Urban/Suburban			Rate	0.14	59%	195	135	330		0	0	0	0%	195	135	330		-	-	-	195	135	330
PM Peak Hour	General Urban/Suburban			Rate	0.25	48%	283	307	590		46	48	94	16%	237	259	496		-	-	-	237	259	496
Cultural Center/Musuem (LU #580)[3]		**20,000**	sf							All Other Land Uses														
Daily	General Urban/Suburban			Rate	1.80	50%	18	18	36		0	0	0	0%	18	18	36		-	-	-	18	18	36
AM Peak Hour	General Urban/Suburban			Rate	0.28	86%	5	1	6		0	0	0	0%	5	1	6		-	-	-	5	1	6
PM Peak Hour	General Urban/Suburban			Rate	0.18	16%	1	3	4		0	0	0	0%	1	3	4		-	-	-	1	3	4
Village Alternative 1																								
Shopping Center [>150k sf] (LU #820)		**833,500**	sf							Retail														
Daily	General Urban/Suburban			Rate	37.01	50%	15,424	15,424	30,848		630	630	1260	4%	14794	14794	29588	19%	2811	2811	5622	11,983	11,983	23,966
AM Peak Hour	General Urban/Suburban			Rate	0.84	62%	434	266	700		7	2	9	1%	427	264	691	19%	66	66	132	361	198	559
PM Peak Hour	General Urban/Suburban			Rate	3.40	48%	1,360	1,474	2,834		90	105	195	7%	1270	1369	2639	19%	251	251	502	1,019	1,118	2,137
Hotel (LU #310)		**200**	rooms							Hotel														
Daily	General Urban/Suburban			Rate	7.99	50%	799	799	1,598		101	101	202	13%	698	698	1396		-	-	-	698	698	1,396
AM Peak Hour	General Urban/Suburban			Rate	0.46	56%	52	40	92		0	7	7	8%	52	33	85		-	-	-	52	33	85
PM Peak Hour	General Urban/Suburban			Rate	0.59	51%	60	58	118		12	9	21	18%	48	49	97		-	-	-	48	49	97
Multifamily Housing (Mid-Rise) (LU #221)		**320**	du							Residential														
Daily	General Urban/Suburban			Rate	4.54	50%	726	726	1,452		192	192	384	26%	534	534	1068		-	-	-	534	534	1,068
AM Peak Hour	General Urban/Suburban			Rate	0.37	23%	27	91	118		1	2	3	3%	26	89	115		-	-	-	26	89	115
PM Peak Hour	General Urban/Suburban			Rate	0.39	61%	76	49	125		39	24	63	50%	37	25	62		-	-	-	37	25	62
General Office (LU #710)		**30,000**	sf							Office														
Daily	General Urban/Suburban			Rate	9.74	50%	146	146	292		31	31	62	21%	115	115	230		-	-	-	115	115	230
AM Peak Hour	General Urban/Suburban			Rate	1.16	86%	30	5	35		3	1	4	11%	27	4	31		-	-	-	27	4	31
PM Peak Hour	General Urban/Suburban			Rate	1.15	16%	6	29	35		4	7	11	31%	2	22	24		-	-	-	2	22	24
Truck Stop (LU #950)[4]		**26**	VFP				*Truck Trips*			All Other Land Uses									*Diverted Trips*					
Daily	General Urban/Suburban			Rate	224.00	50%	2,912	2,912	5,824		0	0	0	0%	2912	2912	5824	75%	2184	2184	4368	728	728	1,456
AM Peak Hour	General Urban/Suburban			Rate	13.97	49%	178	185	363		0	0	0	0%	178	185	363	76%	138	138	276	40	47	87
PM Peak Hour	General Urban/Suburban			Rate	15.42	53%	213	188	401		0	0	0	0%	213	188	401	75%	150	150	300	63	38	101
Car Dealership (LU #840)		**30,000**	sf							Retail														
Daily	General Urban/Suburban			Rate	27.84	50%	418	418	836		18	18	36	4%	400	400	800		-	-	-	400	400	800
AM Peak Hour	General Urban/Suburban			Rate	1.86	73%	41	15	56		1	0	1	2%	40	15	55		-	-	-	40	15	55
PM Peak Hour	General Urban/Suburban			Rate	2.42	40%	29	44	73		2	3	5	7%	27	41	68		-	-	-	27	41	68
TopGolf (Rates from Transpo Group TIA)[5]		**93**	bays							Cinema/Entertainment														
Daily[6]	General Urban/Suburban			Rate	16.60	50%	772	772	1,544		61	61	122	8%	711	711	1422		-	-	-	711	711	1,422
AM Peak Hour[6]	General Urban/Suburban			Rate	0.38	88%	32	4	36		0	0	0	0%	32	4	36		-	-	-	32	4	36
PM Peak Hour	General Urban/Suburban			Rate	1.83	54%	91	79	170		15	12	27	16%	76	67	143		-	-	-	76	67	143
Subtotal																								
Daily							25,180	25,180	50,360		1,349	1,349	2,698	5%	23,831	23,831	47,662		4,995	4,995	9,990	18,836	18,836	37,672
AM Peak Hour							994	742	1,736		12	12	24	1%	982	730	1,712		204	204	408	778	526	1,304
PM Peak Hour							2,119	2,231	4,350		208	208	416	10%	1,911	2,023	3,934		401	401	802	1,510	1,622	3,132

Notes:

sf = square feet, VFP = vehicle fueling position

1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation* 11th Edition equation and average trip rate as shown above.
2. Casino-Hotel trip rates based on the Siletz Casino Enivornmental Assessment (EA) TIA, near Salem, OR.
3. Daily rates were not available for the Musuem land use. 10 times the PM peak hour rate was assumed for the daily rate.
4. Pass-by rate for truck stop (LU #950) based on rate established in ITE Trip Gen manual for LU 945 convenience store/gas station
5. Topgolf Renton Transportation Impact Analysis (Transpo Group, July 2019). Only the PM peak hour trip rate is available in this study.
6. A 2016 study for a Topgolf facility in El Segundo, CA was used to find the relationship between the number of AM peak hour and daily trips and the number of PM peak hour trips as well as the in/out split for the AM peak. The daily trips and AM peak hour trips were respectively 9.07 times and 0.21 times the number of PM peak hour trips, and the AM peak hour inbound split was 88%.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	30	5
Retail				756	475	281
Restaurant				0	0	0
Cinema/Entertainment				366	227	139
Residential				118	27	91
Hotel				92	52	40
All Other Land Uses[2]				0	0	0
Total				1367	811	556

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	0	0		0
Hotel	1	6	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,367	811	556
Internal Capture Percentage	2%	1%	2%
External Vehicle-Trips[3]	1,343	799	544
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	10%	20%
Retail	2%	1%
Restaurant	N/A	N/A
Cinema/Entertainment	0%	0%
Residential	4%	2%
Hotel	0%	18%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	30	30	1.00	5	5
Retail	1.00	475	475	1.00	281	281
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	227	227	1.00	139	139
Residential	1.00	27	27	1.00	91	91
Hotel	1.00	52	52	1.00	40	40

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	3	0	0	0
Retail	81		37	0	39	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	18	0		0
Hotel	30	6	4	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		152	0	0	0	0
Retail	1		0	0	1	0
Restaurant	4	38		0	1	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	81	0	0		0
Hotel	1	19	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	27	30	27	0	0
Retail	8	467	475	467	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	227	227	227	0	0
Residential	1	26	27	26	0	0
Hotel	0	52	52	52	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	4	5	4	0	0
Retail	2	279	281	279	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	139	139	139	0	0
Residential	2	89	91	89	0	0
Hotel	7	33	40	33	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	6	29
Retail				2907	1389	1518
Restaurant				0	0	0
Cinema/Entertainment				760	374	386
Residential				125	76	49
Hotel				118	60	58
All Other Land Uses[2]				0	0	0
Total				3945	1905	2040

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	0	0	1	0
Retail	2		0	61	35	10
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	56	0		3	1
Residential	2	21	0	0		1
Hotel	0	9	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,945	1,905	2,040
Internal Capture Percentage	11%	11%	10%
External Vehicle-Trips[3]	3,529	1,697	1,832
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	67%	24%
Retail	7%	7%
Restaurant	N/A	N/A
Cinema/Entertainment	16%	16%
Residential	51%	49%
Hotel	20%	16%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	6	6	1.00	29	29
Retail	1.00	1389	1389	1.00	1518	1518
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	374	374	1.00	386	386
Residential	1.00	76	76	1.00	49	49
Hotel	1.00	60	60	1.00	58	58

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	1	0	1	0
Retail	30		440	61	395	76
Restaurant	0	0		0	0	0
Cinema/Entertainment	8	81	120		31	8
Residential	2	21	10	0		1
Hotel	0	9	39	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		111	0	4	3	0
Retail	2		0	97	35	10
Restaurant	2	695		120	12	43
Cinema/Entertainment	0	56	0		3	1
Residential	3	139	0	0		7
Hotel	0	28	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	4	2	6	2	0	0
Retail	92	1297	1389	1297	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	61	313	374	313	0	0
Residential	39	37	76	37	0	0
Hotel	12	48	60	48	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	7	22	29	22	0	0
Retail	108	1410	1518	1410	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	60	326	386	326	0	0
Residential	24	25	49	25	0	0
Hotel	9	49	58	49	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Appendix H: TRPC Distribution Model Plot

Tribal Village Study Traffic Volumes

2050 Village Zones 590&593 InBound
Combined % Distribution

Feb 10 2025

Disclaimer: This map is for general planning purposes only.
Thurston Regional Planning Council makes no representation
as to accuracy or fitness of the information for a particular purpose.
Feb 10, 2025

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Tribal Village Study Traffic Volumes

2050 Village Zones 590&593 OutBound
Combined % Distribution

Feb 10 2025

Disclaimer: This map is for general planning purposes only.
Thurston Regional Planning Council makes no representation
as to accuracy or fitness of the information for a particular purpose.
, Feb 10, 2025

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Tribal Village Study Traffic Volumes

2050 Village (590&593) InBound Vehicles

Feb 07 2025

Disclaimer: This map is for general planning purposes only. Thurston Regional Planning Council makes no representation as to accuracy or fitness of the information for a particular purpose. Feb 07, 2025

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Tribal Village Study Traffic Volumes

2050 Village (590&593) OutBound Vehicles

Feb 07 2025

Disclaimer: This map is for general planning purposes only. Thurston Regional Planning Council makes no representation as to accuracy or fitness of the information for a particular purpose. Feb 07, 2025

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Tribal Village Study Traffic Volumes

2050 Village Zone 592 InBound
% Distribution

Feb 10 2025

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as to accuracy or fitness of the information for a particular purpose.
Feb 10, 2025

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Tribal Village Study Traffic Volumes

2050 Village Zone 592 OutBound
% Distribution

Feb 10 2025

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Feb 10, 2025

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Tribal Village Study Traffic Volumes

2050 Zone 592 In&Out Bound Vehicles

Feb 07 2025

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Appendix I: HCS LOS Worksheets

HCS Freeway Weaving Report

Project Information

Analyst	Transpo Group	Date	3/12/2025
Agency		Analysis Year	2027
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	Nisqually Quiemuth Village Mixed Use Project - Alternative 1	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Freeway
Segment Length (L_S), ft	450	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	-
Interchange Density (ID), int/mi	3.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	0.939

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	555	239	0	298
Peak Hour Factor (PHF)	0.96	0.96	0.96	0.96
Total Trucks, %	2.00	2.00	2.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980
Flow Rate (v_i), pc/h	590	254	0	317
Weaving Flow Rate (v_w), pc/h	571	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2360
Non-Weaving Flow Rate (v_{NW}), pc/h	590	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3534
Total Flow Rate (v), pc/h	1161	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		4780
Volume Ratio (VR)	0.492	Weaving Area Capacity (c_W), veh/h		3534
Minimum Lane Change Rate (LC_{MIN}), lc/h	571	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3318
Maximum Weaving Length (L_{MAX}), ft	7733	Demand-to-Capacity Ratio (v/c)		0.34

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	80	Average Weaving Speed (S_W), mi/h	51.9
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	0	Average Non-Weaving Speed (S_{NW}), mi/h	55.8
Weaving Lane Change Rate (LC_W), lc/h	629	Average Speed (S), mi/h	53.8
Total Lane Change Rate (LC_{All}), lc/h	629	Density (D), pc/mi/ln	10.8
Weaving Intensity Factor (W)	0.294000	Level of Service (LOS)	B

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HCS Freeway Weaving Report

Project Information

Analyst	Transpo Group	Date	3/12/2025
Agency		Analysis Year	2050
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	Nisqually Quiemuth Village Mixed Use Project - Alternative 1	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Freeway
Segment Length (L_S), ft	450	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	-
Interchange Density (ID), int/mi	3.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	0.939

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	555	239	0	298
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00
Total Trucks, %	2.00	2.00	2.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980
Flow Rate (v_i), pc/h	566	244	0	304
Weaving Flow Rate (v_w), pc/h	548	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2360
Non-Weaving Flow Rate (v_{NW}), pc/h	566	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3534
Total Flow Rate (v), pc/h	1114	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		4780
Volume Ratio (VR)	0.492	Weaving Area Capacity (c_W), veh/h		3534
Minimum Lane Change Rate (LC_{MIN}), lc/h	548	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3318
Maximum Weaving Length (L_{MAX}), ft	7733	Demand-to-Capacity Ratio (v/c)		0.33

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	76	Average Weaving Speed (S_W), mi/h	52.1
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	0	Average Non-Weaving Speed (S_{NW}), mi/h	56.1
Weaving Lane Change Rate (LC_W), lc/h	606	Average Speed (S), mi/h	54.1
Total Lane Change Rate (LC_{All}), lc/h	606	Density (D), pc/mi/ln	10.3
Weaving Intensity Factor (W)	0.286000	Level of Service (LOS)	B

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HCS Freeway Weaving Report

Project Information

Analyst	Transpo Group	Date	3/12/2025
Agency		Analysis Year	2027
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	Nisqually Quiemuth Village Mixed Use Project - Alternative 2	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Freeway
Segment Length (L_S), ft	450	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	-
Interchange Density (ID), int/mi	3.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	0.939

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	380	181	0	175
Peak Hour Factor (PHF)	0.96	0.96	0.96	0.96
Total Trucks, %	2.00	2.00	2.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980
Flow Rate (v_i), pc/h	404	192	0	186
Weaving Flow Rate (v_w), pc/h	378	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2360
Non-Weaving Flow Rate (v_{NW}), pc/h	404	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3550
Total Flow Rate (v), pc/h	782	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		4870
Volume Ratio (VR)	0.483	Weaving Area Capacity (c_W), veh/h		3550
Minimum Lane Change Rate (LC_{MIN}), lc/h	378	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3333
Maximum Weaving Length (L_{MAX}), ft	7628	Demand-to-Capacity Ratio (v/c)		0.23

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	55	Average Weaving Speed (S_W), mi/h	54.1
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	0	Average Non-Weaving Speed (S_{NW}), mi/h	58.1
Weaving Lane Change Rate (LC_W), lc/h	436	Average Speed (S), mi/h	56.1
Total Lane Change Rate (LC_{All}), lc/h	436	Density (D), pc/mi/ln	7.0
Weaving Intensity Factor (W)	0.220000	Level of Service (LOS)	A

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HCS Freeway Weaving Report

Project Information

Analyst	Transpo Group	Date	3/12/2025
Agency		Analysis Year	2050
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	Nisqually Quiemuth Village Mixed Use Project - Alternative 2	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Freeway
Segment Length (L_S), ft	450	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	-
Interchange Density (ID), int/mi	3.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	0.939

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	380	181	0	175
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00
Total Trucks, %	2.00	2.00	2.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980
Flow Rate (v_i), pc/h	388	185	0	179
Weaving Flow Rate (v_w), pc/h	364	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2360
Non-Weaving Flow Rate (v_{NW}), pc/h	388	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3548
Total Flow Rate (v), pc/h	752	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		4860
Volume Ratio (VR)	0.484	Weaving Area Capacity (c_W), veh/h		3548
Minimum Lane Change Rate (LC_{MIN}), lc/h	364	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3332
Maximum Weaving Length (L_{MAX}), ft	7640	Demand-to-Capacity Ratio (v/c)		0.22

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	52	Average Weaving Speed (S_W), mi/h	54.3
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	0	Average Non-Weaving Speed (S_{NW}), mi/h	58.3
Weaving Lane Change Rate (LC_W), lc/h	422	Average Speed (S), mi/h	56.3
Total Lane Change Rate (LC_{All}), lc/h	422	Density (D), pc/mi/ln	6.7
Weaving Intensity Factor (W)	0.215000	Level of Service (LOS)	A

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HCS Freeway Weaving Report

Project Information

Analyst	Transpo Group	Date	3/12/2025
Agency		Analysis Year	2027
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	Nisqually Quiemuth Village Mixed Use Project - Alternative 1 Combined Development	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Freeway
Segment Length (L_S), ft	450	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	-
Interchange Density (ID), int/mi	3.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	0.939

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	638	235	0	409
Peak Hour Factor (PHF)	0.96	0.96	0.96	0.96
Total Trucks, %	2.00	2.00	2.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980
Flow Rate (v_i), pc/h	678	250	0	435
Weaving Flow Rate (v_W), pc/h	685	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2360
Non-Weaving Flow Rate (v_{NW}), pc/h	678	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3514
Total Flow Rate (v), pc/h	1363	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		4676
Volume Ratio (VR)	0.503	Weaving Area Capacity (c_W), veh/h		3514
Minimum Lane Change Rate (LC_{MIN}), lc/h	685	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3300
Maximum Weaving Length (L_{MAX}), ft	7862	Demand-to-Capacity Ratio (v/c)		0.40

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	92	Average Weaving Speed (S_W), mi/h	50.7
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	0	Average Non-Weaving Speed (S_{NW}), mi/h	54.5
Weaving Lane Change Rate (LC_W), lc/h	743	Average Speed (S), mi/h	52.5
Total Lane Change Rate (LC_{All}), lc/h	743	Density (D), pc/mi/ln	13.0
Weaving Intensity Factor (W)	0.336000	Level of Service (LOS)	B

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HCS Freeway Weaving Report

Project Information

Analyst	Transpo Group	Date	3/12/2025
Agency		Analysis Year	2050
Jurisdiction		Time Analyzed	PM Peak Hour
Project Description	Nisqually Quiemuth Village Mixed Use Project - Alternative 1 Combined Development	Units	U.S. Customary

Geometric Data

Number of Lanes (N), ln	2	Segment Type	Freeway
Segment Length (L_S), ft	450	Number of Maneuver Lanes (N_{WL}), ln	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane Changes (LC_{RF}), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane Changes (LC_{FR}), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane Changes (LC_{RR}), lc	-
Interchange Density (ID), int/mi	3.00	Cross Weaving Managed Lane	No

Adjustment Factors

Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adj. Factor for CAVs (CAF_{CAV})	1.000
Proportion of CAVs in Traffic Stream	0	Final Capacity Adjustment Factor (CAF)	0.939

Demand and Capacity

	FF	RF	RR	FR
Demand Volume (V_i), veh/h	638	235	0	409
Peak Hour Factor (PHF)	1.00	1.00	1.00	1.00
Total Trucks, %	2.00	2.00	2.00	2.00
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980
Flow Rate (v_i), pc/h	651	240	0	417
Weaving Flow Rate (v_W), pc/h	657	Ideal Conditions Capacity (c_{IFL}), pc/h/ln		2360
Non-Weaving Flow Rate (v_{NW}), pc/h	651	Density-Based Capacity ($c_{IWL} \times N \times f_{HV}$), veh/h		3516
Total Flow Rate (v), pc/h	1308	Demand Flow-Based Capacity ($c_{IW} \times f_{HV}$), veh/h		4685
Volume Ratio (VR)	0.502	Weaving Area Capacity (c_W), veh/h		3516
Minimum Lane Change Rate (LC_{MIN}), lc/h	657	Adjusted Weaving Area Capacity (c_{WA}), veh/h		3302
Maximum Weaving Length (L_{MAX}), ft	7850	Demand-to-Capacity Ratio (v/c)		0.39

Speed and Density

Non-Weaving Vehicle Index (I_{NW})	88	Average Weaving Speed (S_W), mi/h	51.0
Non-Weaving Lane Change Rate (LC_{NW}), lc/h	0	Average Non-Weaving Speed (S_{NW}), mi/h	54.8
Weaving Lane Change Rate (LC_W), lc/h	715	Average Speed (S), mi/h	52.8
Total Lane Change Rate (LC_{All}), lc/h	715	Density (D), pc/mi/ln	12.4
Weaving Intensity Factor (W)	0.326000	Level of Service (LOS)	B

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Appendix J: Reduced Alternative 1 Development Option Trip Generation

1.21359.00 - Nisqually Quiemuth Village Mixed Use Project

Combined Development (Reduced Village Alternative 1 Option and Casino Alternative A)

Proposed Use

Land Use	Setting	Size	Units	Model[1]	Rate	Inbound %	Gross Trips Inbound	Gross Trips Outbound	Gross Trips Subtotal	Internal Trips In	Internal Trips Out	Internal Trips Total	Internal Trips %	External trips In	External trips Out	External trips Total	Pass-By %	Pass-By In	Pass-By Out	Pass-By Total	Total Net New Inbound	Total Net New Outbound	Total Net New Total
Casino Alternative A																							
Casino & Hotel (Rates from Siletz EA TIA)[2]		**2,360**	gaming positions																				
Daily	General Urban/Suburban			Rate	3.36	50%	3,965	3,965	7,930	343	343	686	9%	3622	3622	7244		-	-	-	3,622	3,622	7,244
AM Peak Hour	General Urban/Suburban			Rate	0.14	59%	195	135	330	0	0	0	0%	195	135	330		-	-	-	195	135	330
PM Peak Hour	General Urban/Suburban			Rate	0.25	48%	283	307	590	50	52	102	17%	233	255	488		-	-	-	233	255	488
Cultural Center/Musuem (LU #580)[3]		**20,000**	sf																				
Daily	General Urban/Suburban			Rate	1.80	50%	18	18	36	0	0	0	0%	18	18	36		-	-	-	18	18	36
AM Peak Hour	General Urban/Suburban			Rate	0.28	86%	5	1	6	0	0	0	0%	5	1	6		-	-	-	5	1	6
PM Peak Hour	General Urban/Suburban			Rate	0.18	16%	1	3	4	0	0	0	0%	1	3	4		-	-	-	1	3	4
Village Alternative 1																							
Shopping Center [>150k sf] (LU #820)		**833,500**	sf																				
Daily	General Urban/Suburban			Rate	37.01	50%	15,424	15,424	30,848	578	578	1156	4%	14846	14846	29692	19%	2821	2821	5642	12,025	12,025	24,050
AM Peak Hour	General Urban/Suburban			Rate	0.84	62%	434	266	700	5	1	6	1%	429	265	694	19%	66	66	132	363	199	562
PM Peak Hour	General Urban/Suburban			Rate	3.40	48%	1,360	1,474	2,834	87	101	188	7%	1273	1373	2646	19%	251	251	502	1,022	1,122	2,144
Hotel (LU #310)		**200**	rooms																				
Daily	General Urban/Suburban			Rate	7.99	50%	799	799	1,598	101	101	202	13%	698	698	1396		-	-	-	698	698	1,396
AM Peak Hour	General Urban/Suburban			Rate	0.46	56%	52	40	92	0	7	7	8%	52	33	85		-	-	-	52	33	85
PM Peak Hour	General Urban/Suburban			Rate	0.59	51%	60	58	118	12	9	21	18%	48	49	97		-	-	-	48	49	97
Multifamily Housing (Mid-Rise) (LU #221)		**320**	du																				
Daily	General Urban/Suburban			Rate	4.54	50%	726	726	1,452	192	192	384	26%	534	534	1068		-	-	-	534	534	1,068
AM Peak Hour	General Urban/Suburban			Rate	0.37	23%	27	91	118	1	2	3	3%	26	89	115		-	-	-	26	89	115
PM Peak Hour	General Urban/Suburban			Rate	0.39	61%	76	49	125	39	24	63	50%	37	25	62		-	-	-	37	25	62
General Office (LU #710)		**30,000**	sf																				
Daily	General Urban/Suburban			Rate	9.74	50%	146	146	292	31	31	62	21%	115	115	230		-	-	-	115	115	230
AM Peak Hour	General Urban/Suburban			Rate	1.16	86%	30	5	35	3	1	4	11%	27	4	31		-	-	-	27	4	31
PM Peak Hour	General Urban/Suburban			Rate	1.15	16%	6	29	35	4	7	11	31%	2	22	24		-	-	-	2	22	24
Convenience Store / Gas Station - GFA (5.5-10k) (LU		**10**	VFP																				
Daily	General Urban/Suburban			Rate	345.75	50%	1,729	1,729	3,458	66	66	132	4%	1663	1663	3326	75%	1247	1247	2494	416	416	832
AM Peak Hour	General Urban/Suburban			Rate	31.60	50%	158	158	316	2	1	3	1%	156	157	313	76%	119	119	238	37	38	75
PM Peak Hour	General Urban/Suburban			Rate	26.90	50%	135	134	269	9	9	18	7%	126	125	251	75%	94	94	188	32	31	63
Car Dealership (LU #840)		**30,000**	sf																				
Daily	General Urban/Suburban			Rate	27.84	50%	418	418	836	18	18	36	4%	400	400	800		-	-	-	400	400	800
AM Peak Hour	General Urban/Suburban			Rate	1.86	73%	41	15	56	1	0	1	2%	40	15	55		-	-	-	40	15	55
PM Peak Hour	General Urban/Suburban			Rate	2.42	40%	29	44	73	2	3	5	7%	27	41	68		-	-	-	27	41	68
TopGolf (Rates from Transpo Group TIA)[5]		**93**	bays																				
Daily[6]	General Urban/Suburban			Rate	16.60	50%	772	772	1,544	66	66	132	9%	706	706	1412		-	-	-	706	706	1,412
AM Peak Hour[6]	General Urban/Suburban			Rate	0.38	88%	32	4	36	0	0	0	0%	32	4	36		-	-	-	32	4	36
PM Peak Hour	General Urban/Suburban			Rate	1.83	54%	91	79	170	16	13	29	17%	75	66	141		-	-	-	75	66	141
Subtotal																							
Daily							23,997	23,997	47,994	1,395	1,395	2,790	6%	22,602	22,602	45,204		4,068	4,068	8,136	18,534	18,534	37,068
AM Peak Hour							974	715	1,689	12	12	24	1%	962	703	1,665		185	185	370	777	518	1,295
PM Peak Hour							2,041	2,177	4,218	219	218	437	10%	1,822	1,959	3,781		345	345	690	1,477	1,614	3,091

Notes:

sf = square feet, VFP = vehicle fueling position

1. Trip rates based on Institute of Transportation Engineers' (ITE) *Trip Generation* 11th Edition equation and average trip rate as shown above.
2. Casino-Hotel trip rates based on the Siletz Casino Enivornmental Assessment (EA) TIA, near Salem, OR.
3. Daily rates were not available for the Musuem land use. 10 times the PM peak hour rate was assumed for the daily rate.
4. Pass-by rate for truck stop (LU #950) based on rate established in ITE Trip Gen manual for LU 945 convenience store/gas station
5. Topgolf Renton Transportation Impact Analysis (Transpo Group, July 2019). Only the PM peak hour trip rate is available in this study.
6. A 2016 study for a Topgolf facility in El Segundo, CA was used to find the relationship between the number of AM peak hour and daily trips and the number of PM peak hour trips as well as the in/out split for the AM peak. The daily trips and AM peak hour trips were respectively 9.07 times and 0.21 times the number of PM peak hour trips, and the AM peak hour inbound split was 88%.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	30	5
Retail				1072	633	439
Restaurant				0	0	0
Cinema/Entertainment				366	227	139
Residential				118	27	91
Hotel				92	52	40
All Other Land Uses[2]				0	0	0
Total				1683	969	714

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	1	0	0		0
Hotel	1	6	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,683	969	714
Internal Capture Percentage	1%	1%	2%
External Vehicle-Trips[3]	1,659	957	702
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	10%	20%
Retail	1%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	0%	0%
Residential	4%	2%
Hotel	0%	18%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	30	30	1.00	5	5
Retail	1.00	633	633	1.00	439	439
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	227	227	1.00	139	139
Residential	1.00	27	27	1.00	91	91
Hotel	1.00	52	52	1.00	40	40

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	3	0	0	0
Retail	127		57	0	61	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	18	0		0
Hotel	30	6	4	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		203	0	0	0	0
Retail	1		0	0	1	0
Restaurant	4	51		0	1	2
Cinema/Entertainment	0	0	0		0	0
Residential	1	108	0	0		0
Hotel	1	25	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	3	27	30	27	0	0
Retail	8	625	633	625	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	227	227	227	0	0
Residential	1	26	27	26	0	0
Hotel	0	52	52	52	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	1	4	5	4	0	0
Retail	2	437	439	437	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	139	139	139	0	0
Residential	2	89	91	89	0	0
Hotel	7	33	40	33	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				35	6	29
Retail				3176	1524	1652
Restaurant				0	0	0
Cinema/Entertainment				760	374	386
Residential				125	76	49
Hotel				118	60	58
All Other Land Uses[2]				0	0	0
Total				4214	2040	2174

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	0	0	1	0
Retail	2		0	66	35	10
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	61	0		3	1
Residential	2	21	0	0		1
Hotel	0	9	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	4,214	2,040	2,174
Internal Capture Percentage	10%	11%	10%
External Vehicle-Trips[3]	3,778	1,822	1,956
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	67%	24%
Retail	6%	7%
Restaurant	N/A	N/A
Cinema/Entertainment	18%	17%
Residential	51%	49%
Hotel	20%	16%

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	0
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	6	6	1.00	29	29
Retail	1.00	1524	1524	1.00	1652	1652
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	374	374	1.00	386	386
Residential	1.00	76	76	1.00	49	49
Hotel	1.00	60	60	1.00	58	58

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		6	1	0	1	0
Retail	33		479	66	430	83
Restaurant	0	0		0	0	0
Cinema/Entertainment	8	81	120		31	8
Residential	2	21	10	0		1
Hotel	0	9	39	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		122	0	4	3	0
Retail	2		0	97	35	10
Restaurant	2	762		120	12	43
Cinema/Entertainment	0	61	0		3	1
Residential	3	152	0	0		7
Hotel	0	30	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	4	2	6	2	0	0
Retail	97	1427	1524	1427	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	66	308	374	308	0	0
Residential	39	37	76	37	0	0
Hotel	12	48	60	48	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	7	22	29	22	0	0
Retail	113	1539	1652	1539	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	65	321	386	321	0	0
Residential	24	25	49	25	0	0
Hotel	9	49	58	49	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.