EXHIBIT 9: Traffic

EXHIBIT 9.a: Traffic Impact Analysis (Revised 10/26)



HEATH & ASSOCIATES

Transportation Planning & Engineering

TRAFFIC IMPACT ANALYSIS

The Pinnacle at Liberty Bay

Poulsbo, Washington

Version #5 / October 2026

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THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

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10/5/2026

Date: October 5, 2026

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From: Andrew L. Bratlien, P.E., PTOE
Heath & Associates

Subject: The Pinnacle at Liberty Bay – Version 5
TIA Comment Response

This memorandum provides responses to the unresolved comments provided by the City of Poulsbo and Parametrix in the September 2, 2026 memorandum "Traffic Impact Analysis and Transportation Review." The enclosed TIA has been updated based on the comments and responses provided below.

COMMENT #1

Comment #1A

Study Area Consistency: The report does not clearly and consistently identify all study intersections or reconcile which intersections are included in figures versus LOS tables.

Heath Response (7/17/26): Descriptions of existing peak hour volumes (Section 4.4) have been expanded for clarity and consistency. Tables and figures have been updated to identify all seven study intersections.

Parametrix Finding (9/2/26): Comment addressed. The revised TIA includes figures that consistently present the study intersections for existing conditions, project trip generation and distribution, pipeline project trips, and future conditions without and with the proposed project.

Heath Response (10/5/26): Comment addressed.

Comment #1B

Intersection Screening: The TIA does not demonstrate that all intersections with ≥10 new trips were evaluated per City requirements. Consider intersections to the south of Johnson Road and to the north of Hostmark Street, based on AM and PM trip distribution figures.

Heath Response (7/17/26): The TIA study area was approved by City staff via email on June 10, 2025. Minor scoping revisions provided by City staff at that time were incorporated to the TIA and are reflected in the report.

Parametrix Finding (9/2/26): Because the applicant has identified 8 additional study intersections that would be affected by more than 10 AM or PM peak hour project-generated trips, these locations should be addressed in the TIA.

Heath Response (10/5/26): The TIA study area has been updated to include eight additional intersections which are expected to be impacted by at least 10 new project-generated peak hour trips, per City of Poulsbo TIA requirements. The eight additional study intersections and their corresponding TIA identification number are listed below.

- SR 305 & NE Lincoln Road (TIA #8)
- SR 305 & NE Liberty Road (TIA #9)
- SR 305 & Forest Rock Lane (TIA #10)
- SR 305 & Bond Road/SR 307 (TIA #11)
- NE Hostmark St & 6th Avenue NE (TIA #12)
- NE Hostmark St & Lincoln Road (TIA #13)
- NE Hostmark St & 4th Avenue NE (TIA #14)
- Front Street & NE Sunset Street (TIA #15)

Comment #1C

Peak Hour Methodology: School-related peak demand and local peak hour variability are not fully documented.

Heath Response (7/17/26): Traffic counts and the associated operational analysis applied Peak Hour Factor (PHF), which reflects the impacts of observed 15-minute volume peaking during each peak hour. The use of PHF allows the operational analysis to capture the impacts of short-duration school-related peaking, particularly during the AM peak hour. Existing PHFs are documented in the traffic count sheets. Peak hour variability at each study intersection is documented in Table 3.

Parametrix Finding (9/2/26): Comment not addressed. The revised TIA (version 4) remains unchanged and does not include discussion of the afternoon school peak analysis. Per email communication with the City of Poulsbo on June 12, 2025, the City directs the applicant to address school traffic, recognizing that the school peak differs from the AM and PM peaks typically analyzed.

The PM peak hour analyzed in the TIA is based on traffic counts collected between 4:00 and 6:00 p.m. on a weekday. This window does not include the typical afternoon

peak of school-related traffic, which based on the North Kitsap School District schedule, indicates the middle and high school schedules conclude at 2:30 p.m. A discussion of school-related peak traffic demand should be included in the TIA.

Heath Response (10/5/26): An expanded discussion of school peaking has been incorporated to the TIA report. The analysis periods used in the TIA were established in the May 2025 *Pinnacle at Liberty Bay Scoping Memo* as the 7:00–9:00 AM and 4:00–6:00 PM weekday peak periods. These are the standard commuter periods typically evaluated for traffic studies in Poulsbo and are consistent with other recent City traffic studies, including:

- Noll Pointe TIA – April 2026
- Cedarview at Glenwood – October 2025
- Sandstone Ridge – December 2024
- Northway Estates – October 2023

School-related traffic is captured during the AM analysis period, when school arrival overlaps the broader morning commute. School dismissal occurs before the broader afternoon commute and can create a concentrated, short-duration increase in traffic near the schools; however, it does not necessarily represent the controlling peak condition at the study intersections or for the proposed residential development.

The proposed development is expected to generate its highest afternoon demand during the commuter PM peak period. The project also provides a continuous pedestrian connection to nearby schools and access to SR 305 via Johnson Road NE, providing alternatives to vehicle travel along NE Hostmark Street during school dismissal.

Accordingly, Heath believes the 7:00–9:00 AM and 4:00–6:00 PM analysis periods remain appropriate and consistent with the City's adopted transportation planning methodology and the scope established for this TIA.

COMMENT #2

Comment #2A

The intersection of Hostmark/Caldart operates at LOS F (61.9–63.2 sec delay) under 2037 AM conditions, below the City LOS standard (E). Although the LOS F is consistent between 2037 No Build and Build conditions, the vehicle delay increases under the Build scenario.

Heath Response (7/17/26): Long-range (2037) traffic forecasts have been updated. Previous versions included an error in compound growth calculations which resulted in an overestimation of anticipated growth. Based on the corrected traffic volume forecasts, the Hostmark/Caldart intersection is expected to operate at LOS E during the 2037 AM peak hour before and after the addition of project trips. The minimum LOS E standard is satisfied.

Parametrix Finding (9/2/26): Comment not addressed. The revised TIA (version 4) does not provide justification for the corrected 2037 LOS/delay results at Hostmark/Caldart nor describes the growth rate calculation error. The intersection results presented in Table 9 do not reflect the Synchro output report in the Appendix.

The 2037 'without project' volumes presented in the revised TIA were calculated using a growth rate of approximately 3.5% for intersection entering volumes, which is the same growth rate used in the previous TIA (version 3), and results in the same LOS/delay (LOS F/61.9 sec).

Justification for the growth rate error should be described in the applicant's response, and the Hostmark/Caldart LOS/delay results shown in the Appendix should be reflected in Table 9 of the TIA.

Heath Response (10/5/26): Background traffic volume forecasts applied a 0.5 percent straightline annual growth rate to through-trips on WSDOT routes, consistent with travel demand forecasts identified in the Transportation Element of the Poulsbo Comprehensive Plan, and a 2.0 percent straightline annual growth rate on City of Poulsbo streets, consistent with City guidance.

Prior TIA submittals (version 3 and earlier) included a growth forecasting error in the 2037 analysis horizon by which near-term (2025-2032) background growth was double-counted, thereby overestimating background growth. This error was identified and corrected in the July 2026 (Version 4) TIA submittal.

The updated TIA (Version 5 / October 2026) correctly applies the approved background traffic growth rates to all study intersections. Intersection capacity (Synchro) reports have been updated as necessary. The Hostmark/Caldart

intersection is expected to operate at LOS E or better through 2037 before and after the addition of project trips, satisfying the City of Poulsbo minimum LOS E standard.

Traffic volume forecasting calculations and all model files are provided with the TIA Version 5 submittal.

Comment #2B

The school route to North Kitsap High School requires a mid-block crossing of Caldart Avenue without stop control. This crossing is aligned with and supported by Comprehensive Plan Policies TR-5.1, TR-5.2, and TR 5.3.

Heath Response (7/17/26): Caldart Avenue currently provides marked pedestrian crossings at the Meredith Heights/Frank Raab Municipal Park driveway, at NE Odin Street, and at Hostmark Street. All of the existing marked crossings could serve pedestrian demand associated with North Kitsap High School. Please clarify the location of the midblock crossing referenced above.

Parametrix Finding (9/2/26): Further discussion is needed. The applicant's response identifies marked pedestrian crossings on the walking route between the project site and the middle/high schools to be sufficient.

Heath Response (10/5/26): Comment is noted.

Comment #2C

The transportation analysis should evaluate improvements to the existing school crossing, including installation of a Rectangular Rapid Flashing Beacon (RRFB), to address pedestrian safety and support the City's transportation findings under PMC 14.04, PMC 17.60.040(A)(e), PMC 17.80.060, and Comprehensive Plan Policies TR-1.1 and TR-1.4.

Heath Response (7/17/26): The Hostmark Street & Caldart Avenue intersection provides curb ramps and marked crosswalks on all legs. Hostmark Street also includes signalized pedestrian crossings at two locations to the east of Caldart Avenue. Please clarify the location of the school crossing referenced above.

Parametrix Finding (9/2/26): Further discussion is needed. PMC 14.04.100(B)(3) states "intersections with adopted LOS F in the transportation element of the Poulsbo comprehensive plan may require mitigation measures which address impacts associated with adoption of the LOS F standard, but do not necessarily add capacity."

Hostmark/Caldart does not have an adopted LOS F standard documented in the Poulsbo Transportation Plan Update and is not expected to operate at LOS F per the

revised TIA (version 4). Therefore, the non-capacity mitigation suggested by the City – a Rectangular Rapid Flashing Beacon (RRFB) installed by the Pinnacle at Liberty Bay project at the marked crosswalk near the entrance to Raab Park – may not be applicable.

PMC 17.60.040(A)(e) states "A proposed preliminary subdivision may be approved only if the following findings are made by the review authority: The proposed preliminary subdivision makes adequate provisions for sidewalks and other planning features that provide safe walking conditions for students who walk to and from school." PMC 17.80.060(B)(5) states "Pedestrian and bicycle connection to adjacent subdivisions or property shall be provided as feasible and as consistent with the intent of the city's comprehensive plan's identified sidewalk and path connections."

The applicant's response identifies marked pedestrian crossings on the walking route between the project site and the middle/high schools to be sufficient.

Heath Response (10/5/26): Comment is noted.

COMMENT #3

The information provided in support of the applicant's feasibility determination does not adequately support the conclusion that the Baywatch connection is infeasible due to vertical geometry and stream crossing constraints because the feasibility evaluation does not fully address applicable City codes, policies, and reasonable design alternatives necessary for the City Engineer to determine infeasibility.

Heath Response (7/17/26): Response to be provided by ESM.

Parametrix Finding (9/2/26): Comment not addressed. The two access points identified by the applicant do not meet the intent and purpose of codes PMC 17.80.060 (to provide redundant and efficient routes and connections and to provide superior emergency vehicle response time by providing multiple access to streets) and PMC 17.60.040 (to ensure the street system provides for the safe, orderly and efficient circulation of traffic, makes adequate provisions for fire and emergency access and protection, and makes appropriate provisions for the public health, safety, and welfare).

Heath Response (10/5/26): Responses to be provided by ESM. Heath & Associates also prepared a supplemental "Emergency Access Analysis" memorandum, dated October 5, 2026, which provides additional analysis comparing the emergency vehicle response routes with and without the Baywatch connection.

COMMENT #4

Comment #4A/4B

Comment #4A: Both Road C and Crystallia Court rely exclusively on Sunrise Ridge Ave NE, resulting in one functional access route and a single route condition, not two independent routes as required by City code and implied in the TIA. This is consistency with City code PMC 17.80.050(C).

Comment #4B: The TIA does not demonstrate that the proposed street network satisfies the redundancy objectives as required under City code PMC 17.80.060.

Heath Response (7/17/26): The project proposes access to NE Crystallia Court and to Sunrise Ridge Avenue, providing two distinct public street connections to the site and satisfying access criteria defined in PMC 17.080.050(C). An internal street network will provide a contiguous connection between the two accesses, preserving full site access in the event of a blockage at either connection. The project also proposes completion of Sunrise Ridge Avenue to the south of the project, facilitating access to the site to/from the north via Caldart Avenue and to/from the south via Johnson Road.

Sunrise Ridge Avenue provides an approximately 390-foot centerline separation between NE Crystallia Court and the proposed Road C intersection. The magnitude of Sunrise Ridge Avenue blockage required for simultaneous closure of both NE Crystallia Court and Road C is significant and unlikely.

Parametrix Finding (9/2/26): Comment not addressed. The two access points identified by the applicant do not meet the intent and purpose of codes PMC 17.80.060 (to provide redundant and efficient routes and connections and to provide superior emergency vehicle response time by providing multiple access to streets) and PMC 17.80.050(C) (to provide for at least two different standard routes for ingress and egress).

Heath Response (10/5/26): See Comment Response #3.

Comment #4C

The information provided does not demonstrate that the proposed subdivision provides the required street connections to adjacent properties and does not demonstrate feasibility or request exemption as required under PMC 17.80.060(B).

Heath Response (7/17/26): Response to be provided by ESM.

Parametrix Finding (9/2/26): Comment not addressed. The applicant has not provided sufficient information to show the project site and/or surrounding area's topography make connectivity technically and physically unfeasible.

Heath Response (10/5/26): See Comment Response #3.

Comment #4D

If, after further analysis, the Baywatch connection is determined by the City Engineer to be infeasible, the information provided does not demonstrate that the proposed Sunrise Ridge access configuration satisfies the applicable City and Fire Code requirements for access, connectivity and emergency response. Specific examples where the site plan of the TIA deviates from City or Fire Code include:

- Any blockage of Sunrise Ridge would significantly reduce site access, which is inconsistent with the intent of PMC 17.80.050(C) to provide access via two different streets and PMC 17.80.060 to provide redundant and efficient connections and emergency access provisions of IFC 503.1.2. This risk is amplified by steep grades (~12%) and significant elevation change.

Heath Response (7/17/26): The project proposes access via two distinct public streets and a new connection on Sunrise Ridge Avenue to the south, satisfying access criteria defined in PMC 17.80.050(C). See Response #4A.

IFC D107.2 requires a minimum straight-line separation not less than one-half of the length of the maximum overall diagonal dimension of the property. The maximum overall diagonal dimension of the subject site is 1,918 feet, resulting in a minimum straightline separation of 909 feet.

The proposed accesses on NE Crystallia Court and the eastern edge of the subject site on Sunrise Ridge Avenue provide 940 feet of separation, satisfying IFC D107.2 access separation requirements for two separate access roads.

Parametrix Finding (9/2/26): Comment not addressed. The two access points identified by the applicant do not meet the intent and purpose of IFC D107.2. The diagonal distance of the property should be measured from the Road C/Sunrise Ridge Avenue intersection, as that is the access point to the area beings served.

Heath Response (10/5/26): See Comment Response #3. The diagonal dimension provided in the Heath 7/17 comment response (1,918 ft) was a typographical error and should have read 1,818 feet, consistent with ESM documentation.

Comment #4E

No alternative mitigation (e.g. emergency access, sprinklering, roadway improvements) has been proposed in the TIA as required under PMC 17.80.050(C) and supporting provisions.

Heath Response (7/17/26): The project proposes access via two distinct public streets and a new connection on Sunrise Ridge Avenue to the south, satisfying access criteria defined in PMC 17.80.050(C). See Response #4A.

Parametrix Finding (9/2/26): Comment not addressed. The two access points identified by the applicant do not meet the intent and purpose of codes PMC 17.80.060 (to provide redundant and efficient routes and connections and to provide superior emergency vehicle response time by providing multiple access to streets) and PMC 17.80.050(C) (to provide for at least two different standard routes for ingress and egress). The applicant does not discuss sprinklering in their response to comments.

Heath Response (10/5/26): See Comment Response #3.

Comment #4F

Based on the site conditions, including terrain, steep grades (~12%), and access limitations, the transportation information provided does not adequately demonstrate that the proposed access configuration satisfies the applicable emergency access provisions of IFC 503.1.2 and IFC D107.2.

Heath Response (7/17/26): The NE Crystallia Court and Road C accesses satisfy IFC separation requirements for emergency access separation. See Response #4D.

Parametrix Finding (9/2/26): Comment not addressed. The two access points identified by the applicant do not meet the intent and purpose of IFC D107.2. The diagonal distance of the property should be measured from the Road C/Sunrise Ridge Avenue intersection, as that is the access point into the subdivision. The site access points do not meet IFC 503.1.2 because they both rely on a single road,

Sunrise Ridge Road, to reach the regional roadway network, which conflicts with the codes requirement to provide "more than one fire apparatus road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access."

Heath Response (10/5/26): See Comment Response #3.

Comment #4G/4H

Comment #4G: Road D exceeds allowable dead-end length and the initial project phase (>30 lots) is served by a single route, which is inconsistent with subdivision access and phasing requirements per City code PMC 17.80.050(C) and Fire code IFC D107.1.

Comment #4H: Each division must meet access and safety requirements independently per PMC 17.60.040(C), which is not demonstrated.

Heath Response (7/17/26): Response to be provided by ESM.

Parametrix Finding (9/2/26): Comment not addressed. The two access points identified by the applicant do not meet the intent and purpose of IFC D107.2. The diagonal distance of the property should be measured from the Road C/Sunrise Ridge Avenue intersection, as that is the access point into the subdivision. The site access points do not meet IFC 503.1.2 because they both rely on a single road, Sunrise Ridge Road, to reach the regional roadway network, which conflicts with the codes requirement to provide "more than one fire apparatus road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access."

Heath Response (10/5/26): See Comment Response #3.

THE PINNACLE AT LIBERTY BAY
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THE PINNACLE AT LIBERTY BAY
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1. INTRODUCTION

This Traffic Impact Analysis (TIA) describes the transportation impacts associated with The Pinnacle at Liberty Bay, a proposed residential development within Poulsbo city limits. The report includes a description of existing transportation conditions, project-generated travel demand, and future transportation conditions before and after project buildout. The scope of this analysis has been coordinated with the City of Poulsbo. This TIA has been updated based on comments received from the City of Poulsbo and Parametrix in September 2026.

2. PROJECT DESCRIPTION

- **Proposal**
  - The Pinnacle at Liberty Bay is a proposed residential development consisting of 138 single-family homes located within Poulsbo.

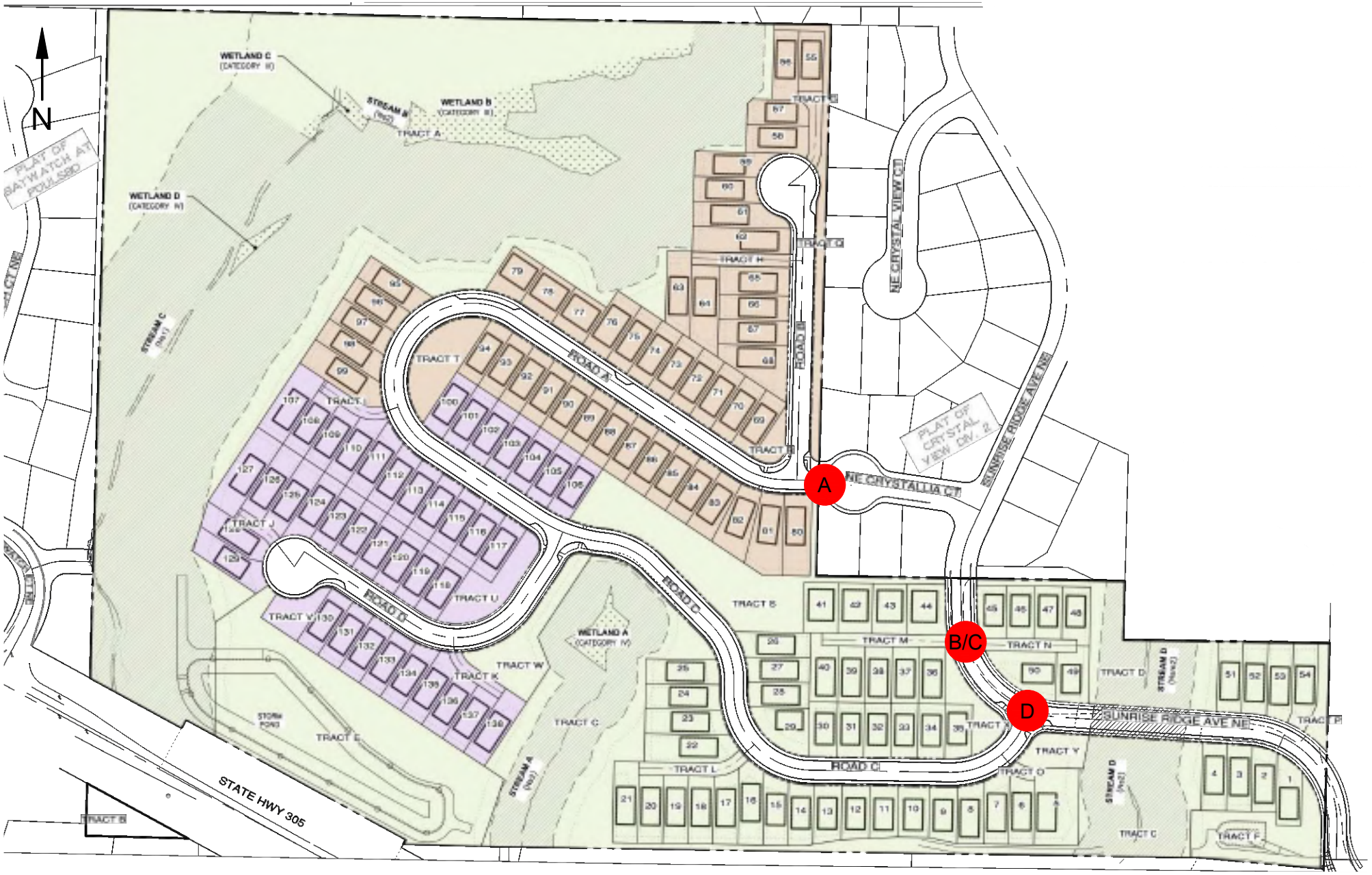
- **Location**
  - The subject site is bordered to the east by Sunset Ridge Avenue NE and single-family residential development, to the west by single-family residential development, and to the south by SR 305 and undeveloped property.
  - The site comprises 40.98 acres on four undeveloped tax parcels, 232601-4-001-2009, -3-003-2008, -3-018-2001, and -3-005-2006.

- **Site Access**
  - Access to the site will be provided at the following locations:
    1. Sunrise Ridge Avenue via extension of Crystallia Court
    2. Both sides of Sunrise Ridge Avenue 220 feet south of Crystallia Court
    3. Sunrise Ridge Avenue 385 feet south of Crystallia Court
  - Direct property access will be provided via a network of internal circulating roadways.

A vicinity map is provided in **Figure 1** with the subject site highlighted in blue. A conceptual site plan including access locations is presented in **Figure 2**.

Figure 1: Vicinity Map





HEATH&ASSOCIATES
Transportation Planning & Engineering

PINNACLE AT LIBERTY BAY

SITE PLAN
FIGURE 2

3. STUDY AREA

Study intersections were identified based on City of Poulsbo TIA requirements and included intersections which are expected to be impacted by 10 or more peak hour project trips. The study area was scoped and refined through coordination with City of Poulsbo and City consultant staff. A total of 15 study intersections were identified:

1. SR 305 & NE Hostmark Street
2. SR 305 & Baywatch Court NE
3. SR 305 & Johnson Road NE
4. Johnson Road NE & Sunrise Ridge Avenue NE
5. Sunrise Ridge Avenue NE & Crystallia Court
6. NE Hostmark Street & Caldart Avenue NE
7. Caldart Avenue NE & Sunrise Ridge Avenue NE
8. SR 305 & NE Lincoln Rd
9. SR 305 & NE Liberty Rd
10. SR 305 & Forest Rock Lane
11. SR 305 & Bond Rd/SR 307
12. NE Hostmark St & 6th Ave NE
13. NE Hostmark St & Lincoln Rd
14. NE Hostmark St & 4th Ave NE
15. Front St & NE Sunset St

At the time of this analysis, Sunrise Ridge Avenue NE was gated to the northwest of Johnson Road NE. The Sunrise Ridge Avenue NE connection to Johnson Road NE will be completed as part of The Pinnacle at Liberty Bay Phase 1.

4. EXISTING TRANSPORTATION CONDITIONS

4.1 Existing Street System

Characteristics of key roadways serving the subject site are provided in **Table 1**.

Table 1: Existing Roadway Network

Functional Classification	Roadway	Speed Limit (mph)	Lanes	Sidewalk	Bike Facilities
Principal Arterial	SR 305	50	2-5	No*	No*
Minor Arterial	Johnson Rd NE	25	2	Yes	No
Neighborhood Collector	NE Hostmark St	15-25	2-3	Yes	Yes
	Caldart Ave NE	20-25	2	Yes	No
Local	Sunrise Ridge Ave NE	25	2	Yes	No
	Baywatch Ct NE	25	2	Yes	No

*SR 305 includes sidewalk and bike facilities only at the roundabout at SR 305 & Johnson Rd NE

4.2 Existing Transit Service

A review of the Kitsap County Transit website indicates that transit is provided within one mile walking distance to/from the site. Route 344 – Poulsbo Central is provided at the intersection of Hostmark Street & Caldart Avenue approximately 3,500 feet north of the site. Route 333 – Silverdale/Bainbridge and Route 390 – Poulsbo/Bainbridge include stops at the intersection of SR 305 & Johnson Road, approximately 3,500 feet south of the project site. Each nearby route is identified in **Table 2** below. For more detailed information, refer to the Kitsap Transit website.

Table 2: Existing Transit Routes

Route	Description	Weekday Service	Saturday	Sunday	Nearest Stop
333	Silverdale TC to Bainbridge Ferry	4:22 AM – 8:55 PM[1]	--	--	SR 305 & Johnson
344	North Viking TC to 10th & Forest Rock	8:30 AM – 7:20 PM	10:30 AM – 6:20 PM	--	Caldart & Hostmark
390	North Viking TC to Bainbridge Ferry	4:00 AM – 9:24 PM	8:08 AM – 7:37 PM	8:10 AM – 5:00 PM	SR 305 & Johnson

[1] Route does not run midday from 7:35 AM to 3:45 PM.

4.3 Roadway Improvements

The City of Poulsbo's (2026-2031) Transportation Improvement Program (TIP) and Washington State Department of Transportation (WSDOT) 2025-2028 Statewide Transportation Improvement Program (STIP) were reviewed to identify planned transportation improvement projects in the site vicinity. The Poulsbo TIP identifies one such improvement, described below.

Noll Road Corridor Improvements (Priority #2): The phased corridor improvement project will connect SR 305 to NE Lincoln Rd via Noll Rd, Langaunet Ln & Maranatha Ln, providing roadway, illumination, sidewalk, and shared use path improvements. The project's initial phase, including realignment of Noll Road, a new roundabout at the Noll Road/Johnson Road & Sunrise Ridge Avenue intersection, and a new roundabout with nonmotorized facilities at the Johnson Road NE/SR 305 intersection, has been completed. Future phases will provide a roundabout at Noll Road & Mesford Road, an extension of Langaunet Lane, and complete street improvements along the corridor from Noll Road/Storhoff Road to Lincoln Road.

At the time of this analysis, Sunrise Ridge Avenue NE was gated between Noll Road/Johnson Road NE and NE Crystallia Court. The future conditions analyses described in this report assumed that Sunrise Ridge Avenue NE will be opened to traffic by 2032, creating a new north-south local street connection between Noll Road/Johnson Road NE and Caldart Avenue to the north. The traffic volume impacts of the Sunrise Ridge Avenue connection are described later in this report.

4.4 Existing Traffic Volumes

Field data was collected from 7-9 AM and from 4-6 PM on non-holiday school weekdays in May 2025 at the following five intersections:

- SR 305 & NE Hostmark Street (ID #1)
- SR 305 & Baywatch Court NE (ID #2)
- SR 305 & Johnson Road NE (ID #3)
- Johnson Road NE & Sunrise Ridge Avenue NE (ID #4)
- NE Hostmark Street & Caldart Avenue NE (ID #6)

Traffic counts at each study intersection were reviewed to identify the one-hour peak period during each count, which was then applied to the intersection capacity analysis. The AM and PM peak hours of traffic volumes at each intersection are shown in **Table 3**.

Table 3: 2025 Peak Hour Intervals and Traffic Volumes

ID	Study Intersection	AM Peak Hour		PM Peak Hour	
		Interval	Volume (vph)	Interval	Volume (vph)
1	SR 305 & NE Hostmark St	7:00 – 8:00 AM	2,010	4:00 – 5:00 PM	**2,450**
2	SR 305 & Baywatch Ct NE	8:00 – 9:00 AM	1,429	4:30 – 5:30 PM	**1,639**
3	SR 305 & Johnson Rd NE	7:00 – 8:00 AM	1,513	4:15 – 5:15 PM	**1,679**
4	Johnson Rd & Sunrise Ridge Ave	7:15 – 8:15 AM	**114**	4:00 – 5:00 PM	67
6	NE Hostmark St & Caldart Ave NE	7:15 – 8:15 AM	**830**	4:45 – 5:45 PM	773

Peak hour traffic volumes at intersections along the SR 305 corridor were higher during the PM peak hour, with total entering volumes between 11 percent and 22 percent higher during the PM peak hour than the AM peak hour.

Peak hour traffic volumes at NE Hostmark Street & Caldart Avenue NE were higher during the AM peak hour, with total entering volume 7.4 percent higher during the AM peak hour than the PM peak hour. Morning volume peaking is likely influenced by the proximity of North Kitsap High School, Poulsbo Middle School, and Poulsbo Elementary School.

The intersection of Johnson Road & Sunrise Ridge Avenue currently serves relatively low traffic volume, with fewer than 150 total entering vehicles during the AM and PM peak hours.

Traffic volumes at the following two intersections were estimated based on nearby traffic counts, street connectivity, and existing development patterns, as described:

- **Caldart Avenue NE & Sunrise Ridge Avenue NE (ID #7)**: Estimated based on traffic counts collected at NE Hostmark Street & Caldart Avenue NE, existing development patterns, and street connectivity.
- **Sunrise Ridge Avenue NE & Crystallia Court (ID #5)**: Traffic volumes estimated based on seven existing single-family homes accessed by Crystallia Court. Sunrise Ridge Avenue NE is currently gated just south of Crystallia Court; therefore, the intersection serves no cut-through trips.

Afternoon (PM) peak hour traffic volumes at the following intersections were provided by City of Poulsbo staff and represent the technical basis for the existing conditions analysis described in the Transportation Element of the 2024 Poulsbo Comprehensive Plan:

- SR 305 & NE Lincoln Rd (ID #8)
- SR 305 & NE Liberty Rd (ID #9)
- SR 305 & Forest Rock Lane (ID #10)
- SR 305 & Bond Rd/SR 307 (ID #11)
- NE Hostmark St & 6th Ave NE (ID #12)
- NE Hostmark St & Lincoln Rd (ID #13)
- NE Hostmark St & 4th Ave NE (ID #14)
- Front St & NE Sunset St (ID #15)

Comprehensive Plan counts were collected in March 2023 and were adjusted to reflect the 2025 baseline of this analysis using a growth rate of 0.5 percent per year for through trips on WSDOT routes, consistent with Comprehensive Plan traffic volume forecasts, and a growth rate of 2.0 percent per year for traffic volumes on City of Poulsbo streets.

A comparison of AM peak hour and PM peak hour traffic volumes collected in May 2025, shown in Table 3, indicates traffic volumes in the study area are generally higher during the PM peak hour than the AM peak hour. A supplemental peak hour volume comparison was developed using AM and PM peak hour traffic counts collected from 6-8 AM and from 4-6 PM on Tuesday, October 8, 2019, as documented in the November 2020 *Oslo Bay Apartments Traffic Impact Analysis Final Report*, prepared by Transportation Solutions.

Table 4: Peak Hour Traffic Volume Comparison

ID	Study Intersection	AM Peak Hour Volume (vph)	PM Peak Hour Volume (vph)	Highest Peak (% Difference)
1	SR 305 & NE Hostmark St	2,004	2,714	PM (35%)
8	SR 305 & NE Lincoln Rd	2,245	3,095	PM (38%)
9	SR 305 & NE Liberty Rd	1,926	2,531	PM (31%)
10	SR 305 & Forest Rock Ln	2,344	3,324	PM (42%)
11	SR 305 & Bond Rd/SR 307	3,553	4,706	PM (32%)
15	Front St & NE Sunset St	681	1,314	PM (93%)

Traffic volume at each observed intersection featured PM peak hour volumes at least 30 percent higher than AM peak hour volumes. This comparison included all five signalized SR 305 study intersections in addition to the intersection of Front Street & NE Sunset Street, both City of Poulsbo streets. Notably, PM peak hour volumes at Front Street & NE Sunset Street were approximately 93 percent higher during the PM peak hour than the AM peak hour.

Based on historical traffic counts, traffic volumes in the study area, including the SR 305 corridor, can be broadly characterized as peaking during the PM peak hour. The intersection of NE Hostmark Street & Caldart Avenue NE, likely due to its proximity to several schools, is the only observed study intersection with greater than 150 peak hour entering trips which serves higher traffic volume during the AM peak hour. As a result, the intersection operations evaluation documented in this analysis includes the following study periods:

- **AM and PM Peak Hour**
  1. SR 305 & NE Hostmark Street
  2. SR 305 & Baywatch Court NE
  3. SR 305 & Johnson Road NE
  4. Johnson Road NE & Sunrise Ridge Avenue NE
  5. Sunrise Ridge Avenue NE & Crystallia Court
  6. NE Hostmark Street & Caldart Avenue NE
  7. Caldart Avenue NE & Sunrise Ridge Avenue NE
- **PM Peak Hour**
  8. SR 305 & NE Lincoln Rd
  9. SR 305 & NE Liberty Rd
  10. SR 305 & Forest Rock Lane
  11. SR 305 & Bond Rd/SR 307
  12. NE Hostmark St & 6th Ave NE
  13. NE Hostmark St & Lincoln Rd
  14. NE Hostmark St & 4th Ave NE
  15. Front St & NE Sunset St

A summary of 2025 traffic count sources is provided in **Table 5**. Existing AM and PM peak hour turning movement volumes are shown in **Figures 3** and **4**. Traffic count sheets are provided in the appendix for reference.

Table 5: 2025 Traffic Volume Sources

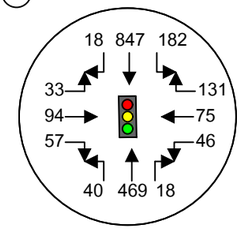
ID	Study Intersection	AM Peak Hour		PM Peak Hour	
		Count Date	Source	Count Date	Source
1	SR 305 & NE Hostmark St	May 2025	Heath	May 2025	Heath
2	SR 305 & Baywatch Ct NE	May 2025	Heath	May 2025	Heath
3	SR 305 & Johnson Rd NE	May 2025	Heath	May 2025	Heath
4	Johnson Rd & Sunrise Ridge Ave	May 2025	Heath	May 2025	Heath
5	Sunrise Ridge Ave & Crystallia Ct	Estimated (low volume)		Estimated (low volume)	
6	NE Hostmark St & Caldart Ave NE	May 2025	Heath	May 2025	Heath
7	Caldart Ave NE & Sunrise Ridge Ave	Estimated (low volume)		Estimated (low volume)	
8	SR 305 & NE Lincoln Rd	--*		Mar 2023 (adjusted)	City of Poulsbo
9	SR 305 & NE Liberty Rd	--*		Mar 2023 (adjusted)	City of Poulsbo
10	SR 305 & Forest Rock Ln	--*		Mar 2023 (adjusted)	City of Poulsbo
11	SR 305 & Bond Rd/SR 307	--*		Mar 2023 (adjusted)	City of Poulsbo
12	NE Hostmark St & 6th Ave NE	--*		Mar 2023 (adjusted)	City of Poulsbo
13	NE Hostmark St & Lincoln Rd	--*		Mar 2023 (adjusted)	City of Poulsbo
14	NE Hostmark St & 4th Ave NE	--*		Mar 2023 (adjusted)	City of Poulsbo
15	Front St & Sunset St	--*		Mar 2023 (adjusted)	City of Poulsbo

*Historical traffic counts indicate traffic volumes peak during the PM peak hour. As a result, the PM peak hour can be characterized as the worst period of traffic congestion and is the focus of the intersection operations analysis.

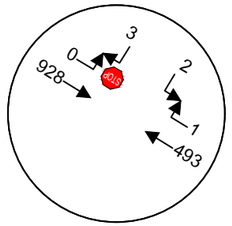


OUTLYING STUDY INTERSECTIONS

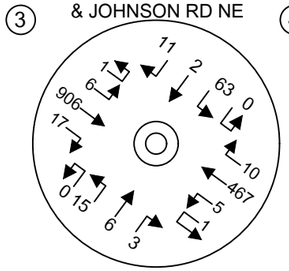
1 SR 305 & NE HOSTMARK ST



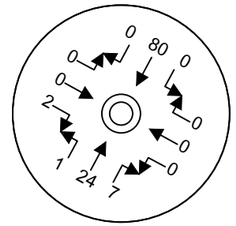
2 SR 305 & BAYWATCH CT NE



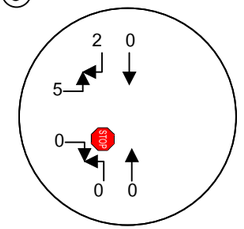
3 SR 305 & JOHNSON RD NE



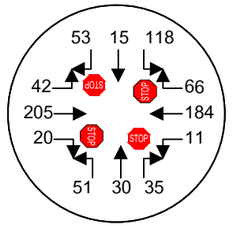
4 JOHNSON RD NE & SUNRISE RIDGE AVE NE



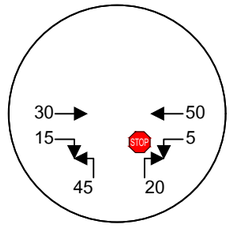
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT

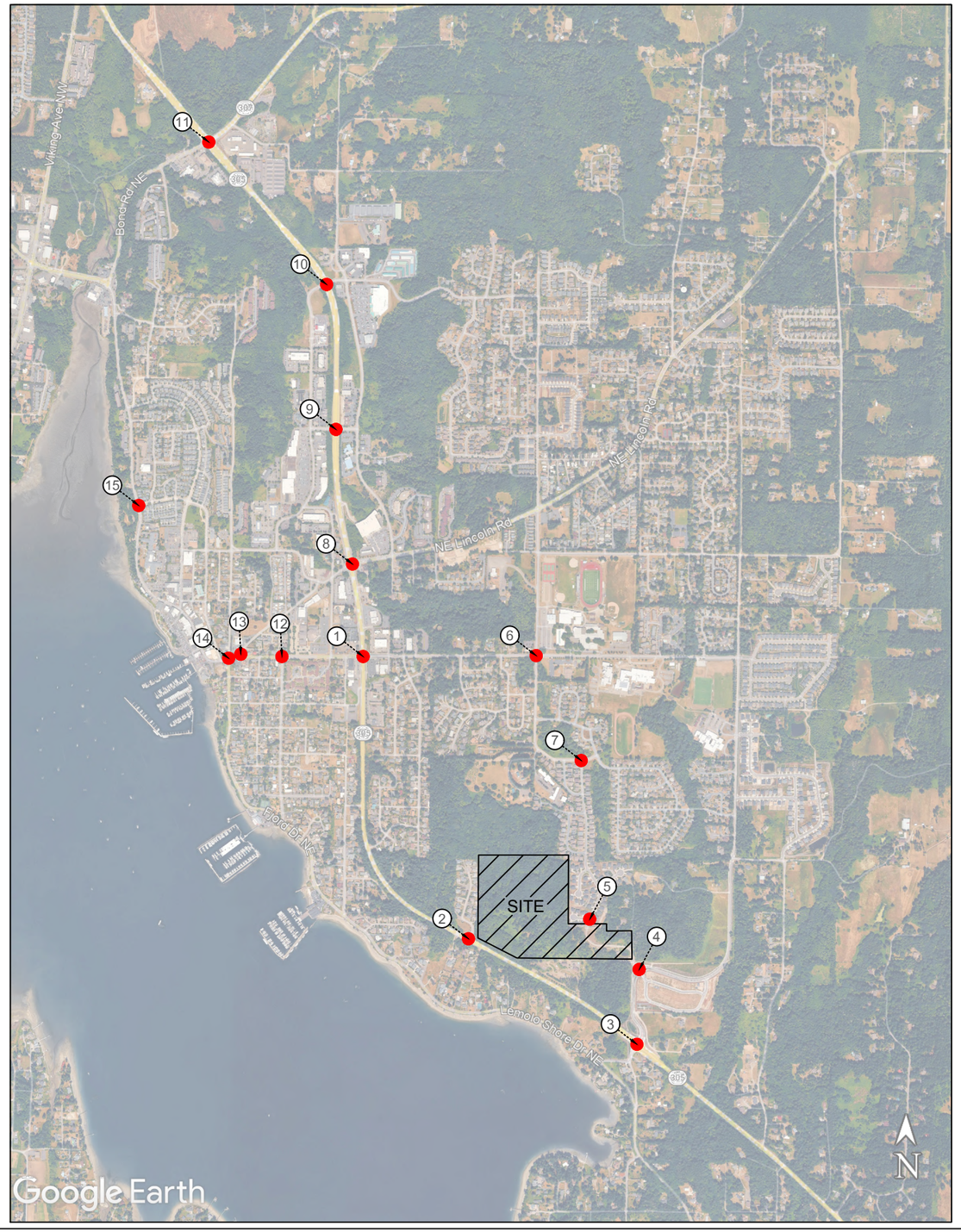


6 NE HOSTMARK ST & CALDART AVE NE

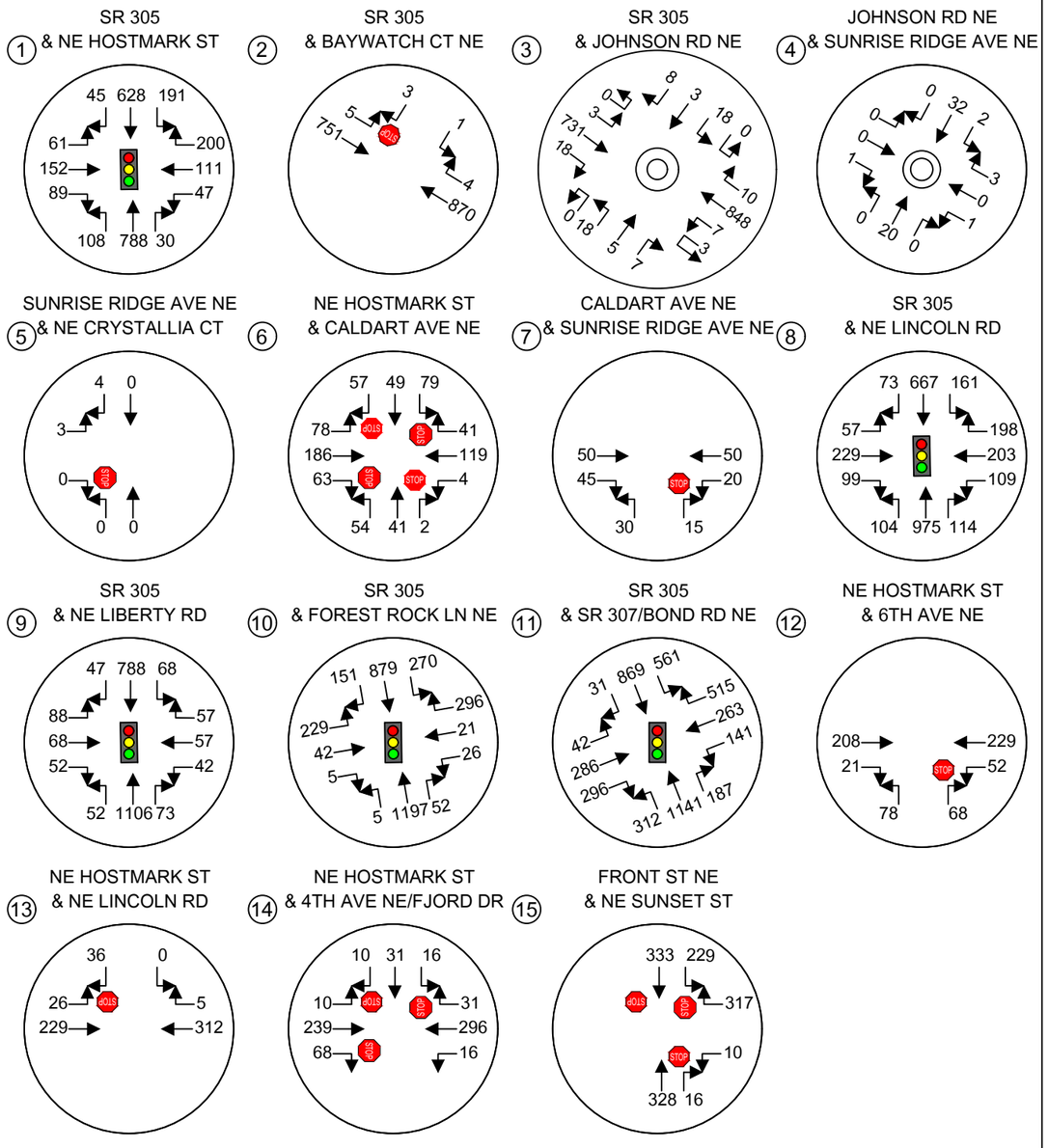


7 CALDART AVE NE & SUNRISE RIDGE AVE NE





OUTLYING STUDY INTERSECTIONS



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PINNACLE AT LIBERTY BAY
EXISTING PM PEAK HOUR VOLUMES
FIGURE 4

4.5 School-Related Traffic Volume

The intersection of NE Hostmark Street & Caldart Avenue NE is located near three public schools, including North Kitsap High School (adjacent), Poulsbo Middle School (approximately 1,200 feet), and Poulsbo Elementary School (approximately 0.68 miles). Each school provides a full-day schedule on Monday, Tuesday, Thursday, and Friday, with an early release on Wednesday. Bell schedules at each nearby school are summarized below:

- **North Kitsap High School**: 7:55 AM – 2:30 PM (MTRF); 7:55 AM – 1:40 PM (W)
- **Poulsbo Middle School**: 7:55 AM – 2:30 PM (MTRF), 7:55 AM – 1:40 PM (W)
- **Poulsbo Elementary School**: 9:15 AM – 3:50 PM (MTRF), 9:15 AM – 3:00 PM (W)

May 2025 traffic data collection included the 7-9 AM and 4-6 PM period, designed to capture the peak of systemwide traffic volume which typically corresponds with the peak of morning and afternoon commute traffic as well as after-work shopping and recreational demand. The morning data collection period also captures the morning arrival peak at North Kitsap High School and Poulsbo Middle School (7:55 AM first bell). Morning school peaking, which is often characterized by short-duration periods of high traffic volumes, was therefore reflected in the AM peak hour intersection operation analysis. The effects of short-duration school-related traffic demand were modeled using observed 15-minute volume peaking, reflected in the intersection operations analysis as Peak Hour Factor (PHF). The intersection of NE Hostmark Street & Caldart Avenue NE was observed to operate with a PHF of 0.75 during the May 2025 AM peak hour.

The May 2025 4-6 PM data collection period did not explicitly capture the school dismissal period at North Kitsap High School, Poulsbo Middle School, and Poulsbo Elementary School which occur between 1:40 PM and 3:50 PM. However, the afternoon school peak period is generally brief and is offset from the peak period of overall traffic demand, which occurs later and is characterized by a longer sustained peak period of commuters returning home from work as well as shopping and recreational trips. The later systemwide peak hour reflects the basis for the technical analysis described in the Transportation Element of the Poulsbo Comprehensive Plan, and is consistent with traffic count data, models, and forecasts provided by City of Poulsbo staff.

Trip generation data published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual 12th Edition* for Land Use Code (LUC) 210 – Single-Family Detached Housing indicates that the peak of trip generation for the proposed residential development will occur during the weekday 4-6 PM period.[2]

[2] "Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use," ITE *Trip Generation Manual 12th Edition*.

While school-related afternoon dismissal traffic demand will influence streets and intersections in close proximity to North Kitsap High School, Poulsbo Middle School, and Poulsbo Elementary School, including the intersection of NE Hostmark Street & Caldart Avenue NE, the PM peak hour analysis described in this report focused on the overall systemwide peak which is the basis for City of Poulsbo planning efforts and coincides with the peak period of project trip generation impacts.

4.6 Existing Nonmotorized Conditions

Nonmotorized traffic was included in the AM and PM peak hour counts. Refer to **Figures 5 and 6** for AM and PM peak hour nonmotorized peak hour activity at each study intersection.

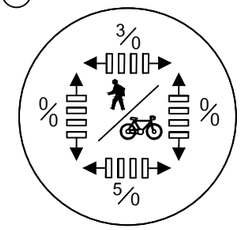
Nonmotorized infrastructure in the project vicinity includes sidewalks along both sides of Sunrise Ridge Avenue NE, Caldart Avenue NE, NE Hostmark Street, and Johnson Road NE. Sidewalks along Johnson Road NE to the south of the project provide a nonmotorized connection to transit stops on SR 305. The planned Noll Road corridor improvements will provide sidewalk and shared-use path facilities to the northeast of the project.

School-aged residents of the project would likely attend Poulsbo Elementary School, Poulsbo Middle School, or North Kitsap High School, each located less than 1.5 miles walking distance from the site. Continuous sidewalk segments, marked crosswalks, and reduced school speed zone signs are provided between the site and schools facilitating student transport. Refer to **Figure 7** for the pedestrian routes to and from each school.

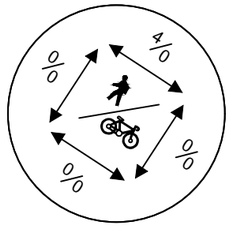


OUTLYING STUDY INTERSECTIONS

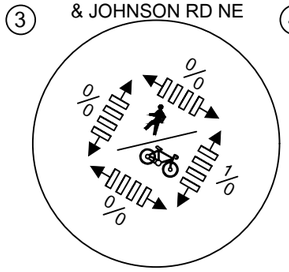
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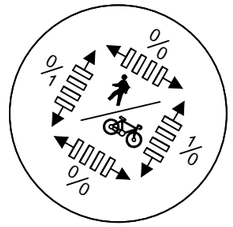
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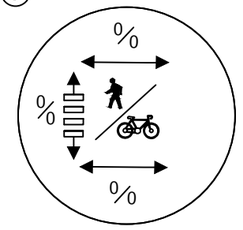
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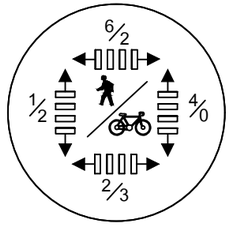
4 JOHNSON RD NE & SUNRISE RIDGE AVE NE



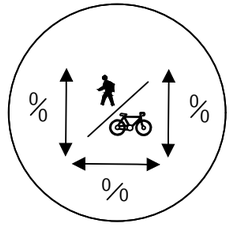
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT



6 NE HOSTMARK ST & CALDART AVE NE



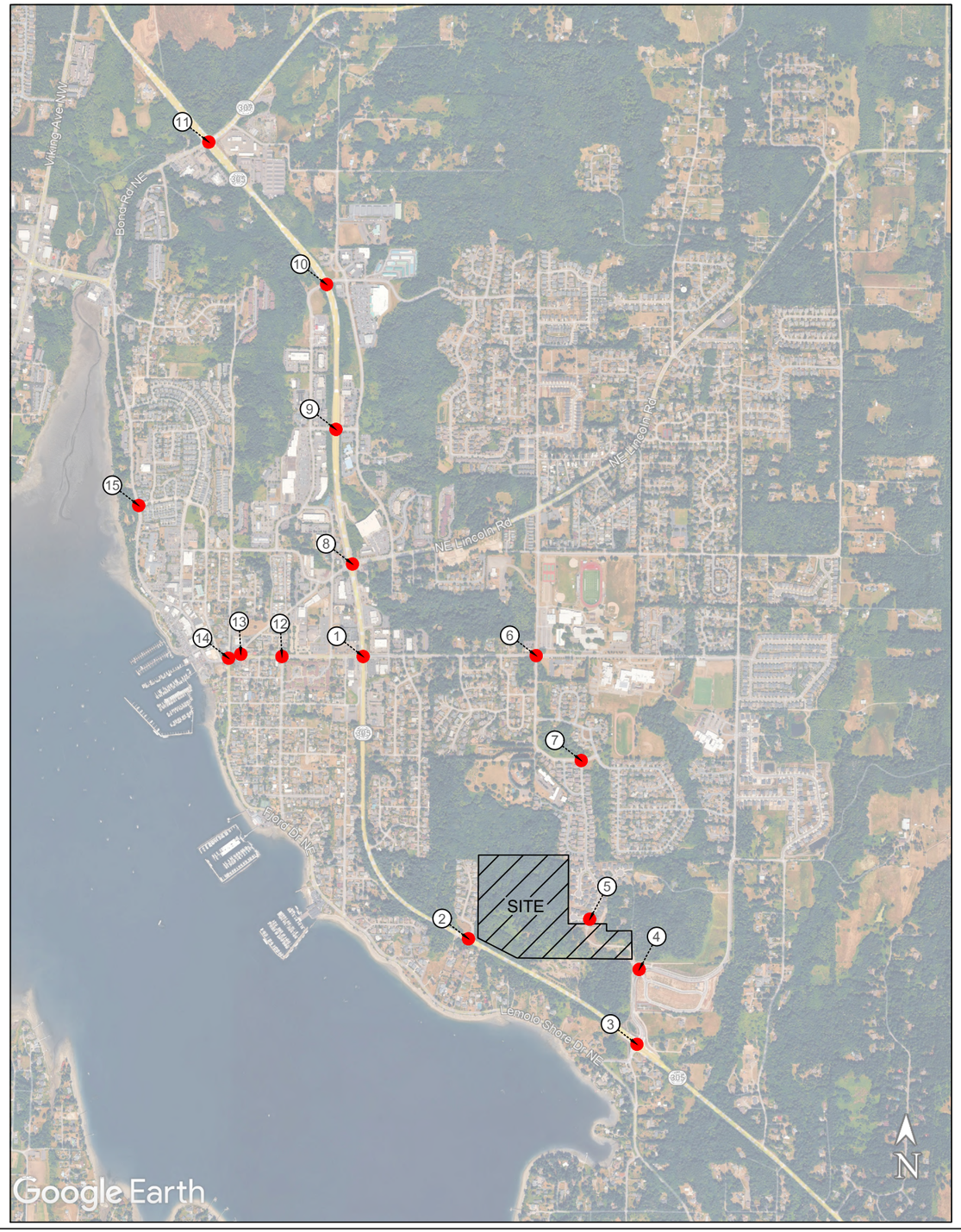
7 CALDART AVE NE & SUNRISE RIDGE AVE NE



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Transportation Planning & Engineering

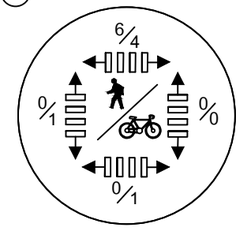
PINNACLE AT LIBERTY BAY

EXISTING AM PEAK HOUR NON-MOTORIST VOLUMES
FIGURE 5

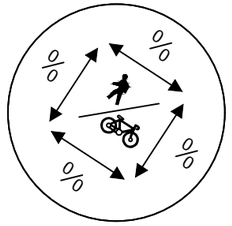


OUTLYING STUDY INTERSECTIONS

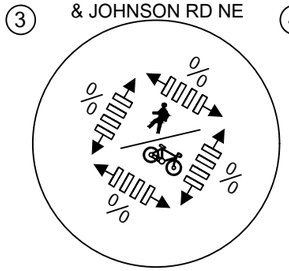
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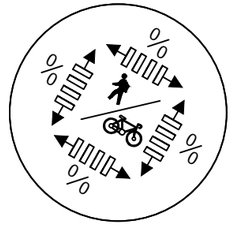
2 SR 305 & BAYWATCH CT NE



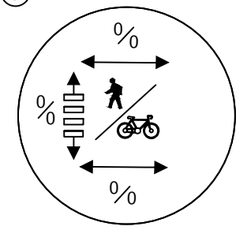
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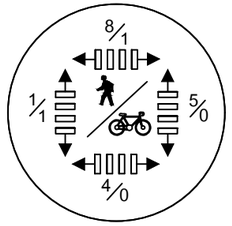
4 JOHNSON RD NE & SUNRISE RIDGE AVE NE



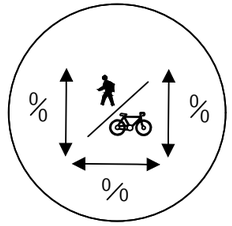
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT



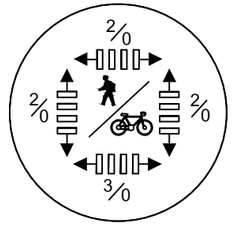
6 NE HOSTMARK ST & CALDART AVE NE



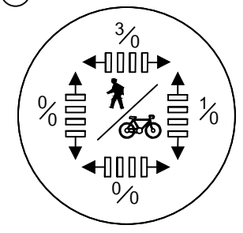
7 CALDART AVE NE & SUNRISE RIDGE AVE NE



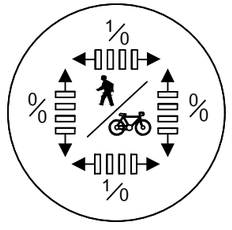
8 SR 305 & NE LINCOLN RD



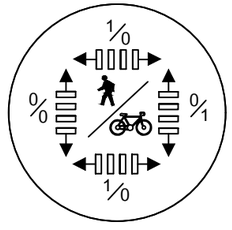
9 SR 305 & NE LIBERTY RD



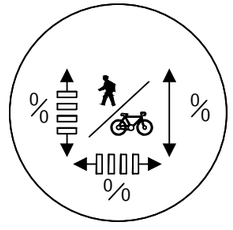
10 SR 305 & FOREST ROCK LN NE



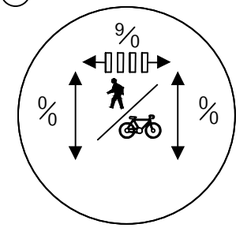
11 SR 305 & SR 307/BOND RD NE



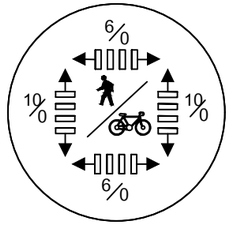
12 NE HOSTMARK ST & 6TH AVE NE



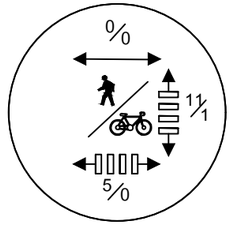
13 NE HOSTMARK ST & NE LINCOLN RD



14 NE HOSTMARK ST & 4TH AVE NE/FJORD DR



15 FRONT ST NE & NE SUNSET ST



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PINNACLE AT LIBERTY BAY

EXISTING PM PEAK HOUR NON-MOTORIST VOLUMES
FIGURE 6



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PINNACLE AT LIBERTY BAY

SAFE ROUTES TO SCHOOL MAP
FIGURE 7

4.7 Existing Level of Service

Level of Service (LOS) is a measure of congestion for transportation facilities which uses a range[3] from LOS A to LOS F, where LOS A indicates free-flow conditions with low delay and LOS F indicates congested conditions with high delay. For minor-approach stop-controlled intersections, LOS is determined by the highest-delay approach. For all other intersections, LOS is defined by the overall intersection delay.

Signalized and stop-controlled intersection operations were analyzed in Synchro 12 software using *Highway Capacity Manual 7th Edition* methodologies. Roundabout operations were analyzed in Sidra Intersection 11 software using WSDOT Sidra analysis guidance.

The City of Poulsbo has adopted a **minimum LOS E** standard for City intersections. Minimum LOS standards for State-owned facilities are established by the Washington State Department of Transportation (WSDOT), which has adopted a **minimum LOS D** standard for SR 305 and SR 307 (Bond Rd) in the study area.

Results of the existing LOS analysis are summarized in **Table 6**.

Three study intersections on SR 305 currently operate below the WSDOT minimum LOS D standard during the PM peak hour:

- SR 305 & NE Liberty Road (LOS F)
- SR 305 & Forest Rock Lane (LOS F)
- SR 305 & SR 307/Bond Road (LOS E)

Each of the three intersections with existing LOS deficiencies are documented in the Transportation Element of the 2024 Poulsbo Comprehensive Plan as LOS-deficient.

All other study intersections operate at LOS D or better, satisfying their respective minimum City and WSDOT minimum LOS standards.

---

[3] *Signalized Intersections - Level of Service*

Level of Service	Control Delay (sec/veh)
A	<10
B	≥10 and <20
C	≥20 and <35
D	≥35 and <55
E	≥55 and <80
F	≥80

Stop Controlled Intersections – Level of Service

Level of Service	Control Delay (sec/veh)
A	<10
B	≥10 and <15
C	≥15 and <25
D	≥25 and <35
E	≥35 and <50
F	≥50

Source: *Highway Capacity Manual, 7th Edition*

Table 6: Existing Peak Hour Level of Service

Delays given in seconds per vehicle

ID	Intersection	Control	Peak Hour	Critical Approach	LOS*	Delay
1	SR 305 & Hostmark St	Signal	AM PM	Overall	D D	35.9 43.9
2	SR 305 & Baywatch Ct	One-Way Stop	AM PM	SB	C C	20.5 23.8
3	SR 305 & Johnson Rd	RAB	AM PM	Overall	A A	7.1 6.4
4	Johnson Rd & Sunrise Ridge Ave	RAB	AM PM	Overall	A A	5.1 5.1
5	Sunrise Ridge Ave & Crystallia Ct	One-Way Stop	AM PM	EB	A A	8.5 8.5
6	Hostmark St & Caldart Ave	AWSC	AM PM	Overall	C B	15.3 12.0
7	Caldart Ave & Sunrise Ridge Ave	TWSC	AM PM	NB	A A	9.4 9.7
8	SR 305 & NE Lincoln Rd	Signal	PM	Overall	D	49.0
9	SR 305 & NE Liberty Rd	Signal	PM	Overall	**F**	**88.4**
10	SR 305 & Forest Rock Ln	Signal	PM	Overall	**F**	**105.5**
11	SR 305 & SR 307/Bond Rd	Signal	PM	Overall	**E**	**61.2**
12	NE Hostmark St & 6th Ave NE	One-Way Stop	PM	NB	B	12.6
13	NE Hostmark St & Lincoln Rd	One-Way Stop	PM	SB	B	10.5
14	NE Hostmark St & 4th Ave NE	AWSC	PM	Overall	B	10.6
15	Front St & NE Sunset St	AWSC	PM	Overall	C	20.8

*Signalized intersection LOS is based on overall intersection delay;
Roundabout and AWSC LOS is based on overall intersection delay and stop-controlled delay thresholds;
Minor-approach stop control LOS is based on worst-approach delay and stop-controlled delay thresholds

4.8 Crash History

Crash history data was obtained from WSDOT for the five-year period from 2021 through 2025 at all study intersections and key street segments in the site vicinity. Crash history by year is summarized in **Table 7**. A crash history map is provided in **Figure 8**.

Intersection crashes in the study area are concentrated along SR 305, with 92 percent of reported intersection crashes occurring at SR 305 intersections. Three study intersections, each along SR 305, operate with an average of five crashes per year or more. These include:

- SR 305 & Bond Road/SR 307 (ID #11): 14.6 crashes per year
- SR 305 & Forest Rock Lane (ID #10): 5.4 crashes per year
- SR 305 & NE Lincoln Road (ID #8): 5.0 crashes per year

All other intersections operate with fewer than five crashes per year, and all City of Poulsbo intersections operate with fewer than 1.5 crashes per year.

The Poulsbo Comprehensive Plan identifies the SR 305 corridor as a priority for safety, active transportation, and LOS improvements through coordination with WSDOT. Project trips are expected to represent less than one percent of total PM peak hour volume at each of the three SR 305 intersections with the highest crash frequency.

Crash history by collision type and worst reported injury severity are summarized in **Table 8**. Rear-end crashes represent the predominant collision type in the study area, constituting 46 percent of all reported crashes. Entering at angle collisions represent the second most frequent crash type, at 15 percent of all reported crashes. A total of four pedestrian-involved crashes were reported in the study area.

Approximately 26 percent of all reported crashes resulted in a possible or confirmed injury, including one fatal and five serious injury crashes.

Fatal and serious injury crashes as well as pedestrian-involved crashes are described in detail on the following pages.

Table 7: Crash History by Year

ID	Location	2021	2022	2023	2024	2025	Total	Avg/Yr
Study Intersections								
I1	SR 305 & Hostmark St	4	4	1	4	5	18	**3.6**
I2	SR 305 & Baywatch Ct	0	1	0	1	0	2	**0.4**
I3	SR 305 & Johnson Rd	1	3	4	4	5	17	**3.4**
I4	Johnson Rd & Sunrise Ridge	0	0	0	0	0	0	**0.0**
I5	Sunrise Ridge & Crystallia Ct	0	0	0	0	0	0	**0.0**
I6	Hostmark St & Caldart Ave	1	2	2	0	2	7	**1.4**
I7	Caldart Ave & Sunrise Ridge	0	0	0	0	0	0	**0.0**
I8	SR 305 & NE Lincoln Rd	4	2	5	5	9	25	**5.0**
I9	SR 305 & NE Liberty Rd	3	4	4	5	3	19	**3.8**
I10	SR 305 & Forest Rock Ln	2	4	8	7	6	27	**5.4**
I11	SR 305 & SR 307/Bond Rd	14	10	14	12	23	73	**14.6**
I12	Hostmark St & 6th Ave NE	1	0	1	0	0	2	**0.4**
I13	Hostmark St & Lincoln Rd	0	0	0	0	0	0	**0.0**
I14	Hostmark St & 4th Ave NE	1	1	0	1	0	3	**0.6**
I15	Front St & NE Sunset St	1	1	1	0	1	4	**0.8**
Study Street Segments								
S1	SR 305 (Hostmark to Baywatch)	10	8	4	7	9	38	**7.6**
S2	SR 305 (Baywatch to Johnson)	6	1	2	0	0	9	**1.8**
S3	SR 305 (Johnson to Noll Rd)	2	1	2	0	2	7	**1.4**
S4	Hostmark St (SR 305 to Caldart)	0	0	3	1	1	5	**1.0**
S5	Hostmark St (Caldart to Noll Rd)	0	0	0	0	1	1	**0.2**
S6	Caldart Ave (Hostmark to Sunrise Ridge)	0	0	0	0	0	0	**0.0**
S7	Caldart Ave (Hostmark to Mesford)	0	0	1	1	0	2	**0.4**

Table 8: Crash History by Type and Injury Severity

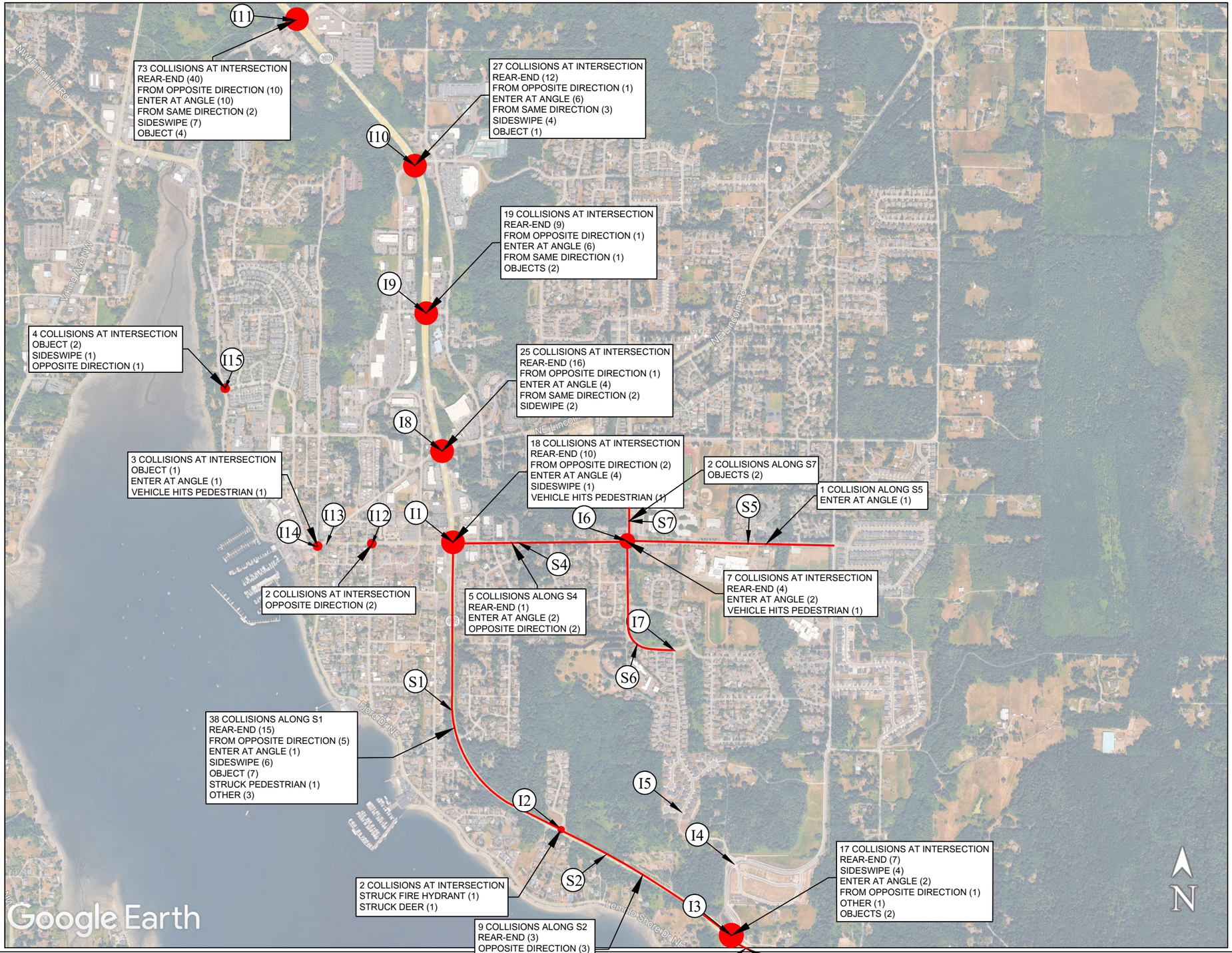
ID	Location	Rear-End	Enter at Angle	Opposite Dir.	Sideswipe	Fixed Object	Same Dir.	Pedestrian	Other	Total	Fatal (K)	Serious Inj (A)	Minor Inj. (B)	Possible Inj (C)	PDO/Unknown
I1	SR 305 & Hostmark St	10	4	2	1	0	0	1	0	**18**	0	0	2	4	12
I2	SR 305 & Baywatch Ct	0	0	0	0	1	0	0	1	**2**	0	0	0	0	2
I3	SR 305 & Johnson Rd	7	2	1	4	2	0	0	1	**17**	0	0	3	1	13
I4	Johnson Rd & Sunrise Ridge	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0
I5	Sunrise Rdg & Crystallia Ct	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0
I6	Hostmark St & Caldart Ave	4	2	0	0	0	0	1	0	**7**	0	0	1	1	5
I7	Caldart Ave & Sunrise Ridge	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0
I8	SR 305 & NE Lincoln Rd	16	4	1	2	0	2	0	0	**25**	0	0	3	2	20
I9	SR 305 & NE Liberty Rd	9	6	1	0	2	1	0	0	**19**	0	1	2	0	16
I10	SR 305 & Forest Rock Ln	12	6	1	4	1	3	0	0	**27**	0	0	2	7	18
I11	SR 305 & SR 307/Bond Rd	40	10	10	7	4	2	0	0	**73**	0	1	8	7	57
I12	Hostmark St & 6th Ave NE	0	0	2	0	0	0	0	0	**2**	0	0	0	0	2
I13	Hostmark St & Lincoln Rd	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0
I14	Hostmark St & 4th Ave NE	0	1	0	0	1	0	1	0	**3**	0	0	0	1	2
I15	Front St & NE Sunset St	0	0	1	1	2	0	0	0	**4**	0	1	0	0	3
S1	SR 305 (Hostmark to Baywatch)	15	1	5	6	7	0	1	3	**38**	0	1	6	4	27
S2	SR 305 (Baywatch to Johnson)	3	0	3	1	1	0	0	1	**9**	1	1	0	3	4
S3	SR 305 (Johnson to Noll Rd)	3	0	0	1	2	1	0	0	**7**	0	0	2	1	4
S4	Hostmark St (SR 305 to Caldart)	1	2	2	0	0	0	0	0	**5**	0	0	1	1	3
S5	Hostmark St (Caldart to Noll Rd)	0	1	0	0	0	0	0	0	**1**	0	0	0	0	1
S6	Caldart Ave (Hostmark to Sunrise Ridge)	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0
S7	Caldart Ave (Hostmark to Mesford)	0	0	0	0	2	0	0	0	**2**	0	0	0	0	2

Fatal injury, serious injury, and pedestrian- or bicycle-involved crashes are described below.

- **Fatal Injury**: At 6:36 PM on December 31, 2021, a vehicle traveling southbound on SR 305 between Baywatch Court and Johnson Road struck an oncoming vehicle head-on, resulting in a fatal injury. The crash occurred in darkness with wet road conditions, and drug use was cited as a contributing factor.
- **Serious Injury**:
    - At 8:17 AM on May 19, 2021, a vehicle traveling northbound on SR 305 between Baywatch Court and Hostmark Street struck a pedestrian walking along the east roadway shoulder, resulting in a serious injury. The crash occurred during daylight with wet road conditions and driver distraction was cited as a contributing factor.
    - At 11:22 PM on December 3, 2021, a vehicle traveling southbound on SR 305 between Baywatch Court and Johnson Road struck an oncoming vehicle head-on, resulting in a serious injury. The crash occurred under street illumination with dry road conditions. Alcohol was cited as a contributing factor.
    - At 10:45 PM on July 26, 2022, a vehicle traveling northbound on SR 305 struck a vehicle entering SR 305 from SR 307/Bond Road, resulting in a serious injury. The crash occurred under street illumination with dry road conditions. Excessive speed and failure to observe the traffic signal were identified as contributing factors.
    - At 11:31 AM on July 8, 2024, a vehicle traveling northbound on SR 305 struck a vehicle entering SR 305 from NE Liberty Road, resulting in at least one serious injury. The crash occurred during daylight with dry road conditions. Driver failure to observe traffic signal was cited as a contributing factor.
    - At 7:19 PM on September 13, 2025, two motorcycles making a southbound left-turn from Front Street to NE Sunset Street met in a sideswipe collision, resulting in at least one serious injury. The crash occurred during dusk with dry road conditions. Driver failure to observe traffic signage was cited as a contributing factor.
- **Pedestrian-Involved:**
    - At 8:17 AM on May 19, 2021, a vehicle-pedestrian collision on SR 305 between Baywatch Court and Hostmark Street resulted in a serious injury, as described above.
    - At 6:48 AM on December 19, 2022, a vehicle making a left-turn at Hostmark Street & 4th Avenue NE struck a pedestrian in the intersection, resulting in a possible injury. The crash occurred under street

illumination with wet road conditions. No contributing factors were identified in the crash report.

- At 2:38 PM on August 31, 2023, a vehicle traveling eastbound on NE Hostmark Street struck a pedestrian crossing the street approximately 75 feet east of the marked crosswalk at the Caldart Avenue intersection, resulting in a minor injury. The crash occurred in daylight with dry road conditions. The crash occurred midblock with no marked crosswalk, and the crash report cited pedestrian failure to grant right-of-way as a contributing factor.
- At 5:13 PM on October 11, 2024, a vehicle traveling southbound on SR 305 struck a pedestrian at a marked crosswalk in the NE Hostmark Street intersection, resulting in a minor injury. The crash occurred during daylight with dry road conditions. Driver failure to grant right-of-way to a pedestrian was cited as a contributing factor.



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PINNACLE AT LIBERTY BAY

COLLISION HISTORY EXHIBIT
FIGURE 8

5. FUTURE TRANSPORTATION CONDITIONS

5.1 Project Trip Generation

Trip generation is used to assess the impact a project will have on the surrounding street system by estimating the number of new trips that will enter and exit the site during specific time periods, such as peak hours (AM or PM) or over the course of a day. The expected vehicle trip generation for the proposed project was calculated using data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 12th Edition*. For this analysis, Land Use Code (LUC) 210 – Single-Family Detached Housing was selected, with dwelling units used as the input variable and ITE average rates applied to determine the number of trip ends.

A summary of the average weekday daily trips (AWDT), AM peak hour trips, and PM peak hour trips are shown below in **Table 9**.

Table 9: Project Trip Generation

Land Use	Units	AWDT	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
LUC 210 - Single-Family Housing	138	1,254	26	71	97	80	48	128

The project is expected to generate 1,254 daily weekday trips, 97 AM peak hour trips (26 inbound / 71 outbound), and 128 PM peak hour trips (80 inbound / 48 outbound).

5.2 Project Distribution & Assignment

Trip distribution is the process by which project-generated trips are paired with origins and destinations in the vicinity of the project site. The project trip distribution forecast was calculated based on recent traffic counts, existing and anticipated development in the project vicinity, and with consideration for other recent residential projects in the vicinity.

Project trip distribution and assignment forecasts, shown in **Figures 9** and **10**, assumed completion of the Sunrise Ridge Avenue NE corridor which will provide a connection between Noll Road/Johnson Road and Caldart Avenue.

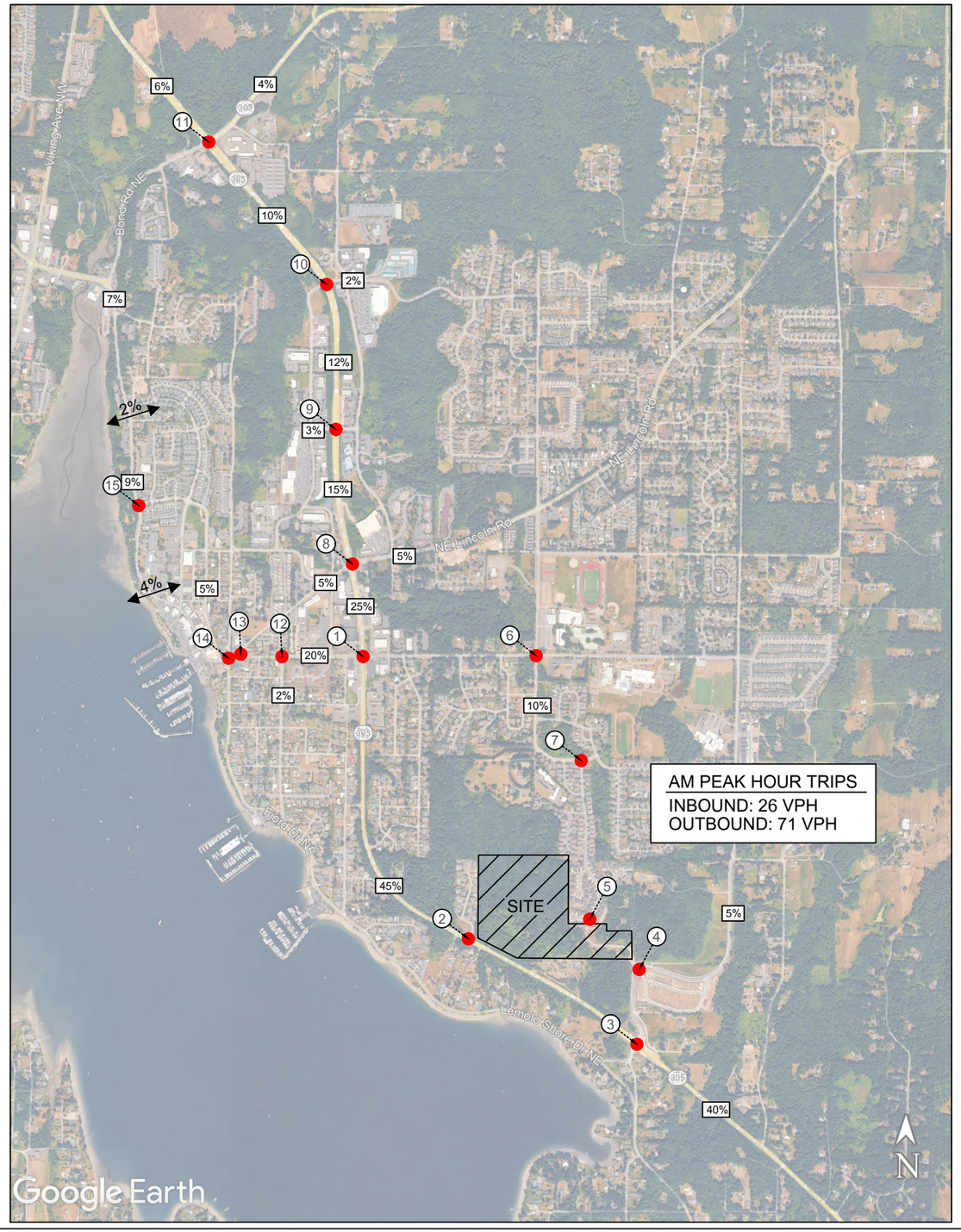
5.3 Future Peak Hour Volumes

Future traffic volumes were forecast for seven-year (2032) and 12-year (2037) analysis periods. Background (non-Project) traffic volumes were forecast as the sum of two components:

1. **Pipeline growth** reflects the impacts of specific projects which have been permitted in the project vicinity. Pipeline projects were identified by City of Poulsbo staff and included:
    a. Aktiv Mixed-Use, a 44-unit multifamily residential development located at the corner of NE Harrison Street and 9th Avenue NE.
    b. Audrey Estates, a 60-unit single-family residential development located to the east of the project site. Audrey Estates is bordered by Noll Road to the east and south, with access on Sunrise Ridge Avenue.
    c. Sandstone Ridge Plat, an 87-unit single-family residential development located at the corner of Noll Road NE & Langaunet Lane NE.
2. **Background growth** reflects the impacts of other local and regional growth which is anticipated to impact the study area. Background growth was calculated by applying growth rates:
    a. A 0.5 percent growth rate was applied to WSDOT routes. This is consistent with forecasts identified in the travel demand model, which constitutes the basis of the Transportation Element of the Poulsbo Comprehensive Plan.
    b. For City of Poulsbo streets, a growth rate of 2.0 percent per year was applied. This represents a more aggressive growth forecast than the 1.2 percent per year growth rate identified in the Poulsbo travel demand model. However, this growth rate was selected to allow the analysis to reflect a "worst case" forecast given recent growth in the project vicinity and was approved by City of Poulsbo staff through a scoping process.

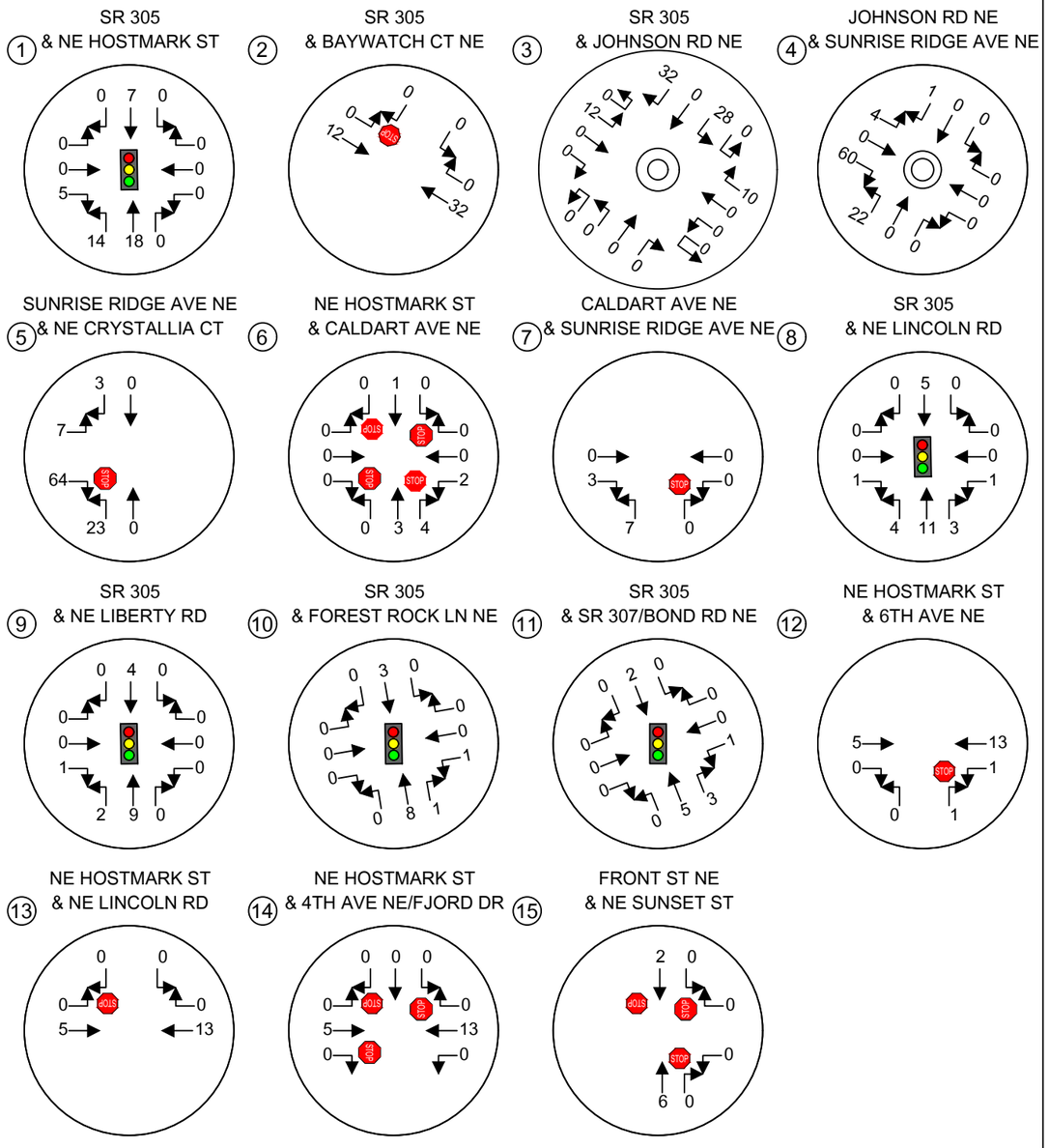
Future with-project analyses assumed Sunrise Ridge Avenue NE will be opened to traffic, creating a new north-south local street connection between Noll Road/Johnson Road NE and Caldart Avenue to the north. The new connection will provide a low-speed, circuitous alternative to the more direct Noll Road corridor, and will be designed to discourage cut-through demand. However, some redistribution and cut-through demand may occur. This analysis assumed that the new connection will capture 20 percent of existing AM and PM peak hour demand on the Noll Road corridor to the east. This results in a Sunrise Ridge Avenue traffic volume forecast which is generally consistent with the City of Poulsbo travel demand model forecast.

AM and PM peak hour pipeline volumes are shown in **Figures 11 and 12**. Future 2032 and 2037 AM and PM peak hour traffic volumes forecasts are shown graphically in **Figures 13 through 20**.



N

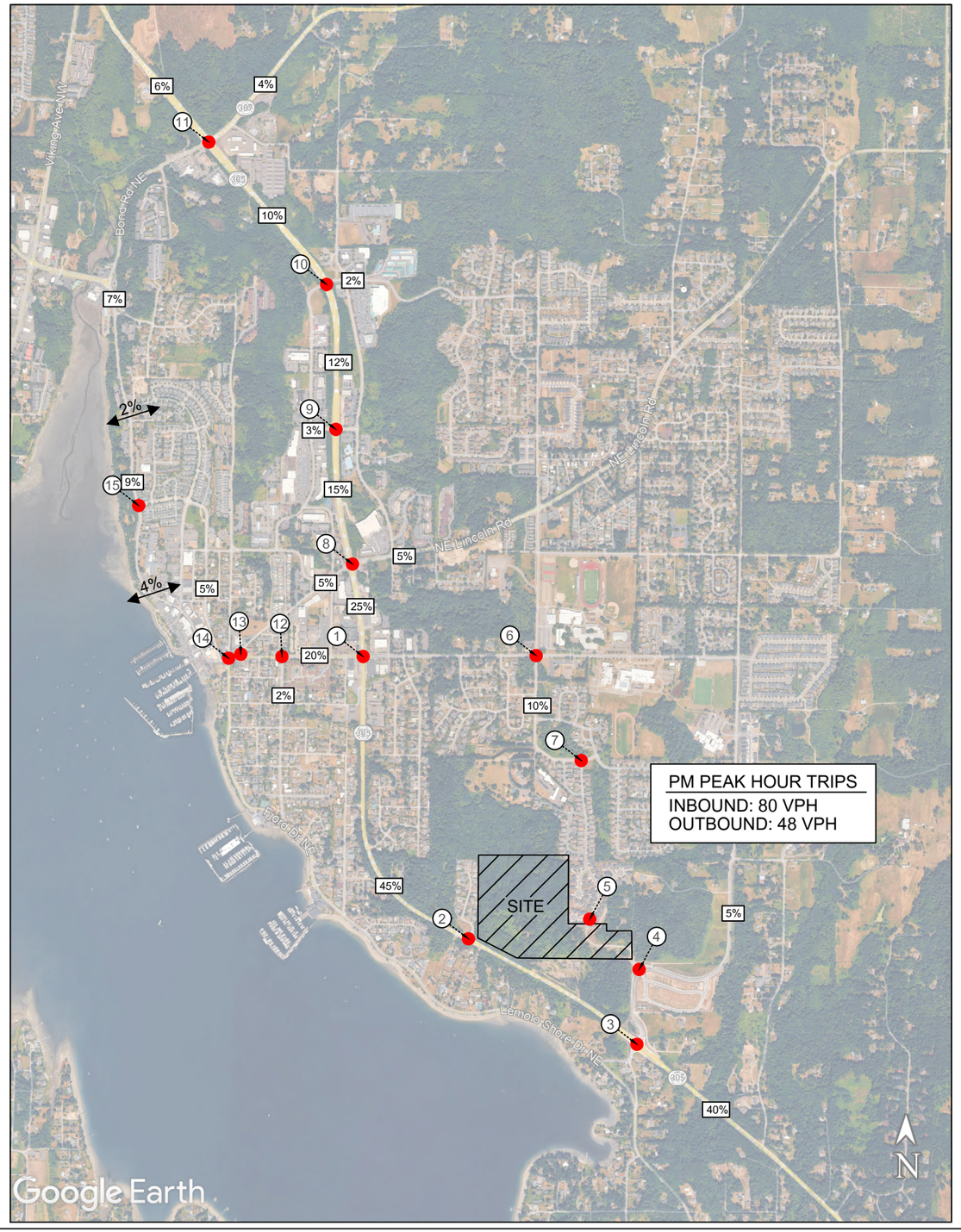
OUTLYING STUDY INTERSECTIONS



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PINNACLE AT LIBERTY BAY

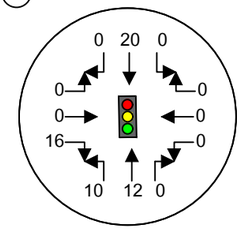
AM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 9



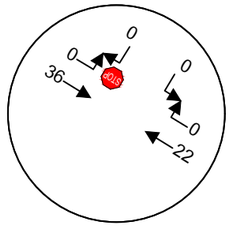
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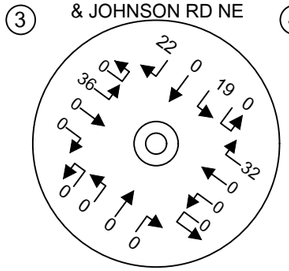
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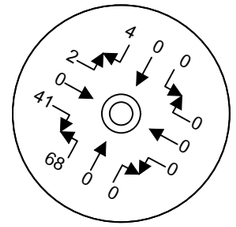
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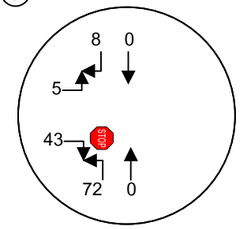
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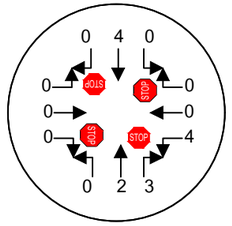
4 JOHNSON RD NE & SUNRISE RIDGE AVE NE



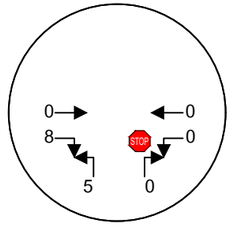
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT



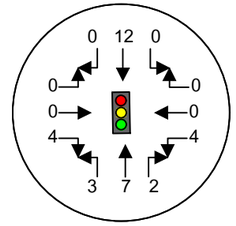
6 NE HOSTMARK ST & CALDART AVE NE



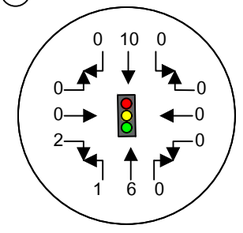
7 CALDART AVE NE & SUNRISE RIDGE AVE NE



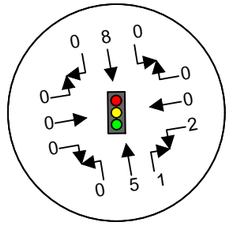
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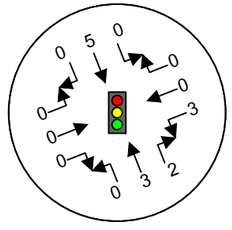
9 SR 305 & NE LIBERTY RD



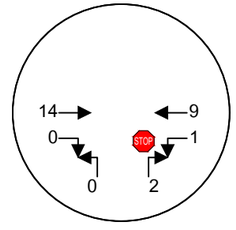
10 SR 305 & FOREST ROCK LN NE



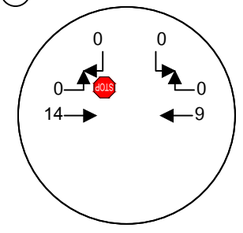
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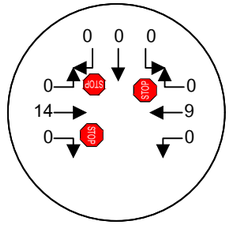
12 NE HOSTMARK ST & 6TH AVE NE



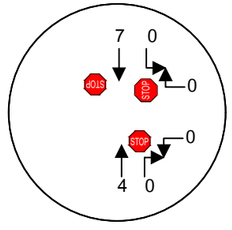
13 NE HOSTMARK ST & NE LINCOLN RD



14 NE HOSTMARK ST & 4TH AVE NE/FJORD DR



15 FRONT ST NE & NE SUNSET ST



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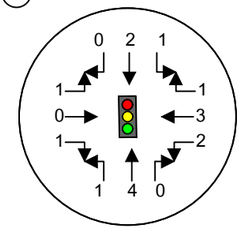
PINNACLE AT LIBERTY BAY
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 10



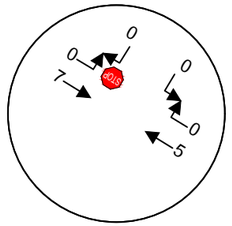
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OUTLYING STUDY INTERSECTIONS

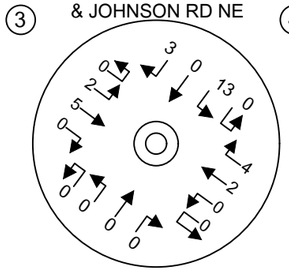
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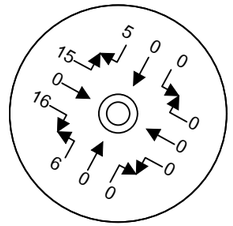
2 SR 305 & BAYWATCH CT NE



3 SR 305 & JOHNSON RD NE



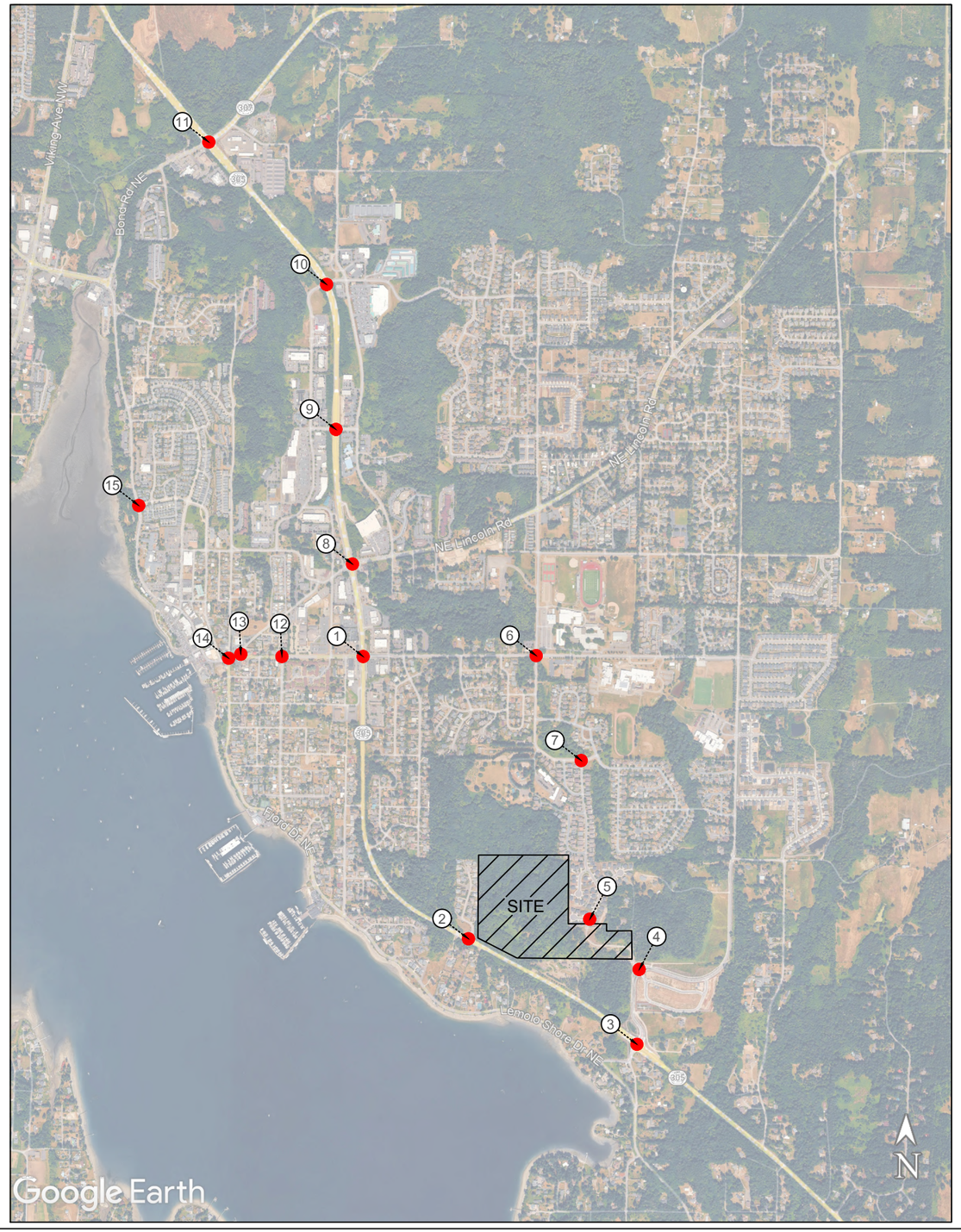
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5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT

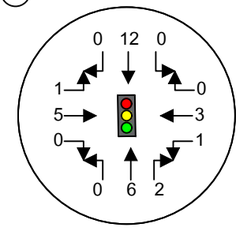
6 NE HOSTMARK ST & CALDART AVE NE

7 CALDART AVE NE & SUNRISE RIDGE AVE NE

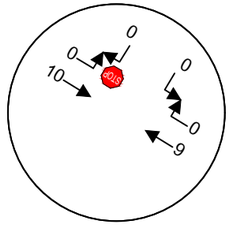


OUTLYING STUDY INTERSECTIONS

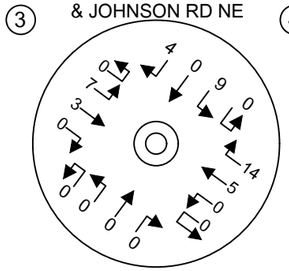
1 SR 305 & NE HOSTMARK ST



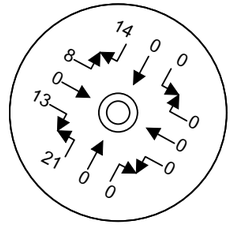
2 SR 305 & BAYWATCH CT NE



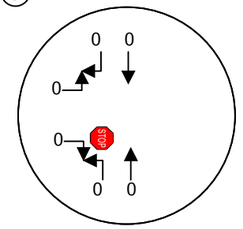
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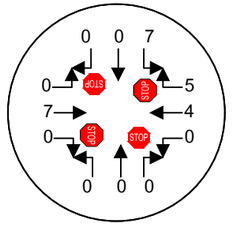
4 JOHNSON RD NE & SUNRISE RIDGE AVE NE



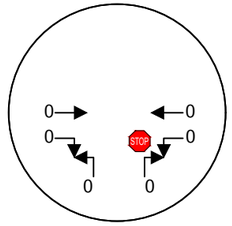
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT



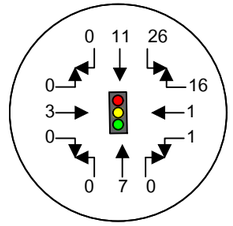
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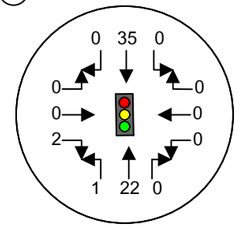
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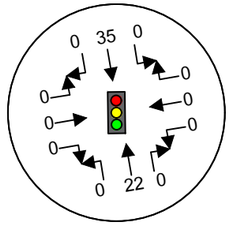
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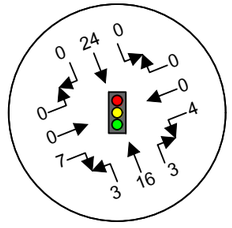
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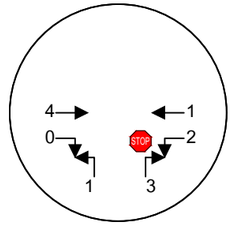
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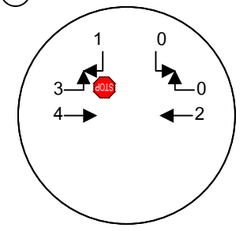
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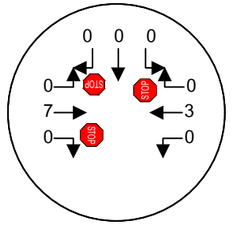
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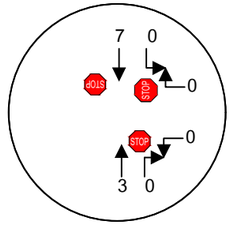
13 NE HOSTMARK ST & NE LINCOLN RD



14 NE HOSTMARK ST & 4TH AVE NE/FJORD DR



15 FRONT ST NE & NE SUNSET ST

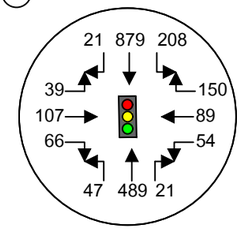




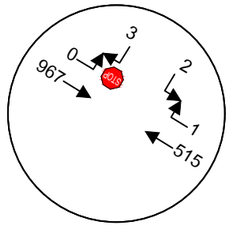
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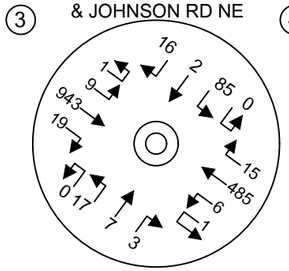
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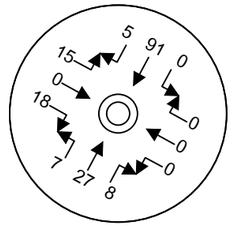
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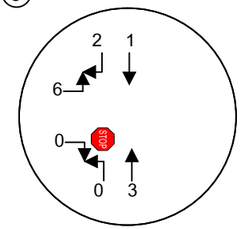
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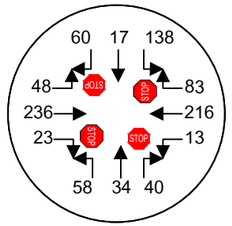
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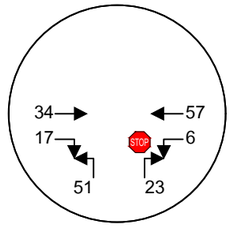
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT

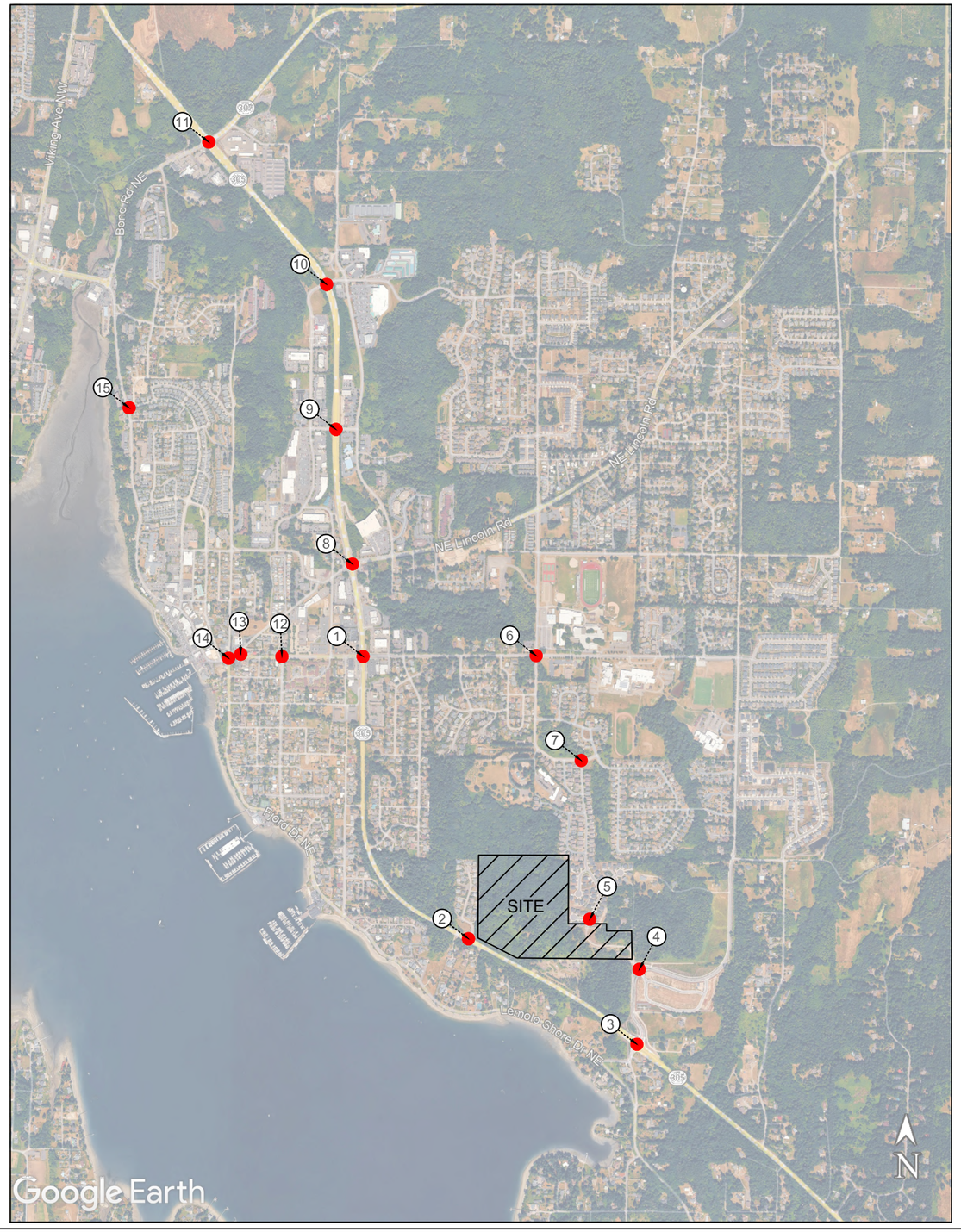


6 NE HOSTMARK ST & CALDART AVE NE



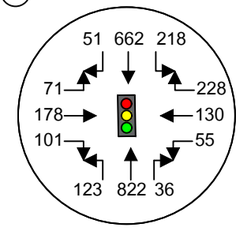
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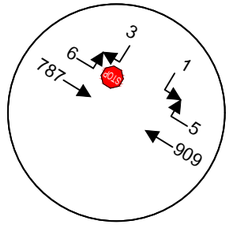


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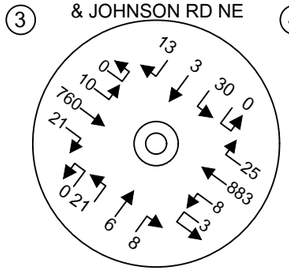
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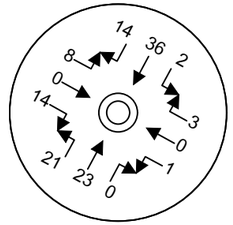
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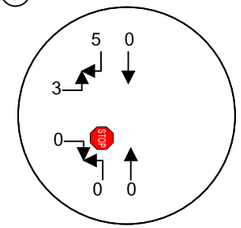
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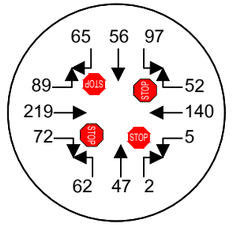
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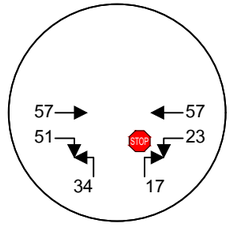
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT



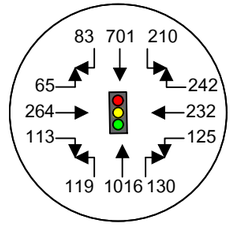
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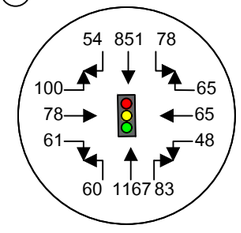
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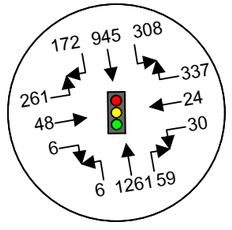
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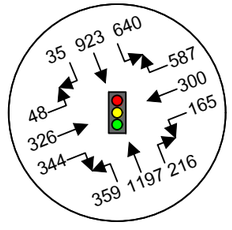
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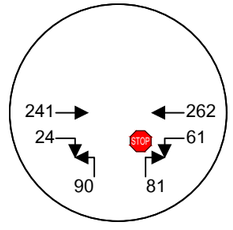
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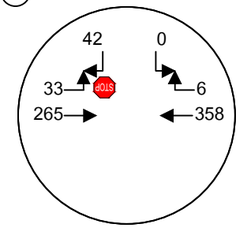
11 SR 305 & SR 307/BOND RD NE



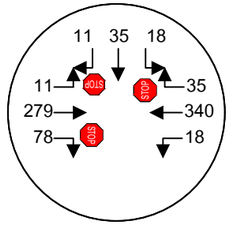
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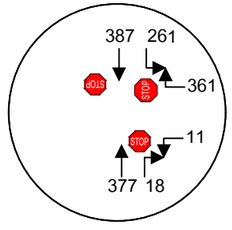
13 NE HOSTMARK ST & NE LINCOLN RD



14 NE HOSTMARK ST & 4TH AVE NE/FJORD DR



15 FRONT ST NE & NE SUNSET ST



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Transportation Planning & Engineering

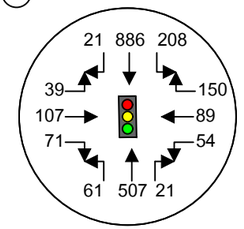
PINNACLE AT LIBERTY BAY
FORECAST 2032 PM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 14



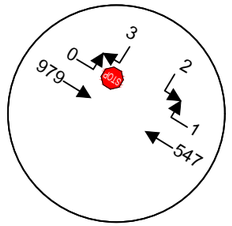
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OUTLYING STUDY INTERSECTIONS

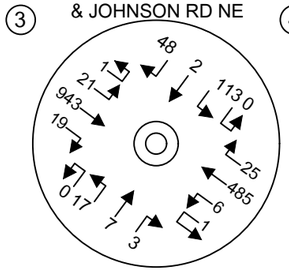
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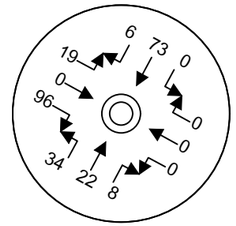
2 SR 305 & BAYWATCH CT NE



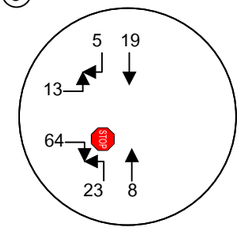
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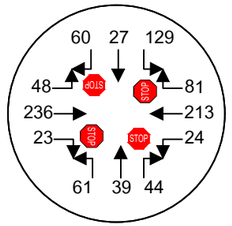
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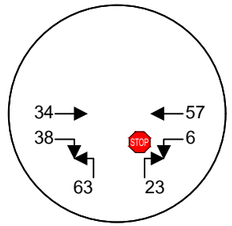
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT

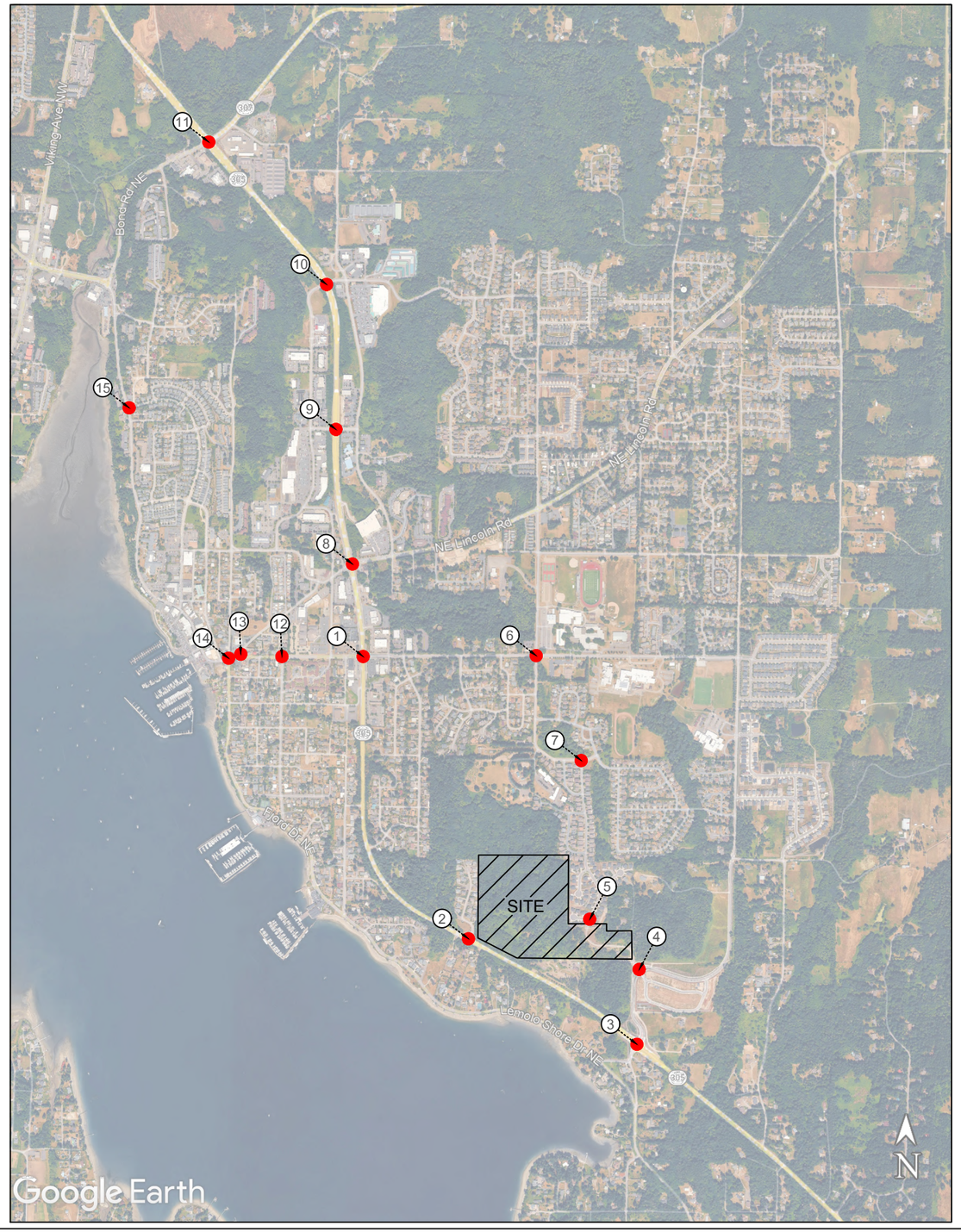


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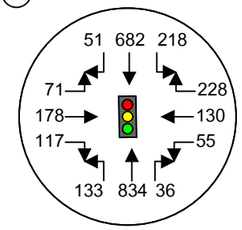
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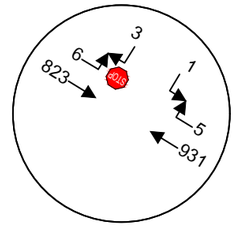


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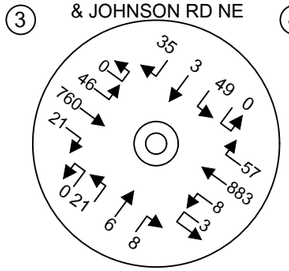
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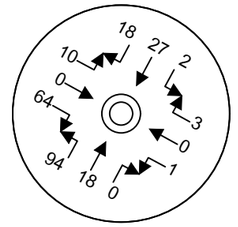
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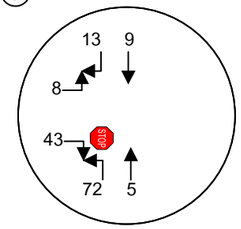
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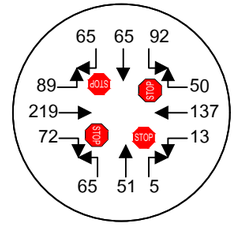
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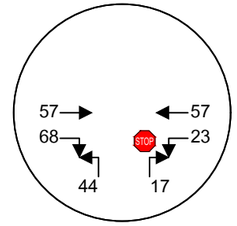
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT



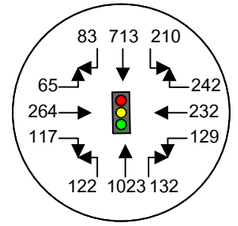
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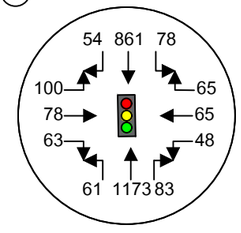
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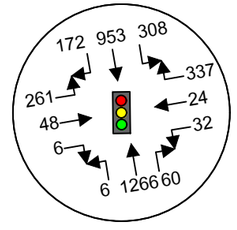
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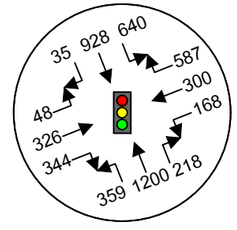
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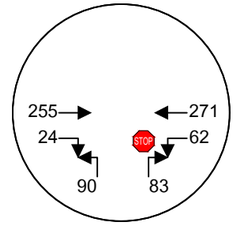
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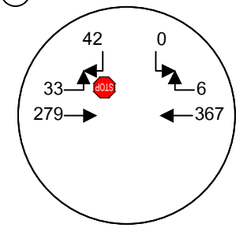
11 SR 305 & SR 307/BOND RD NE



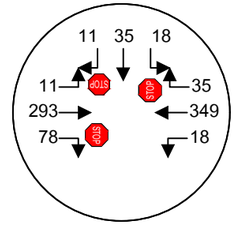
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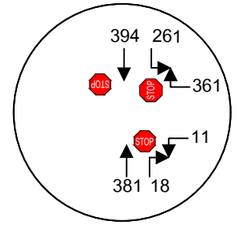
13 NE HOSTMARK ST & NE LINCOLN RD



14 NE HOSTMARK ST & 4TH AVE NE/FJORD DR



15 FRONT ST NE & NE SUNSET ST



HEATH&ASSOCIATES
Transportation Planning & Engineering

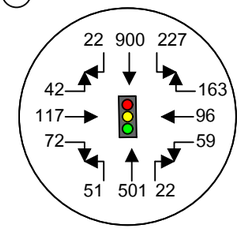
PINNACLE AT LIBERTY BAY
FORECAST 2032 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 16



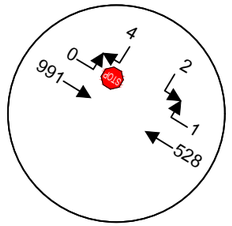
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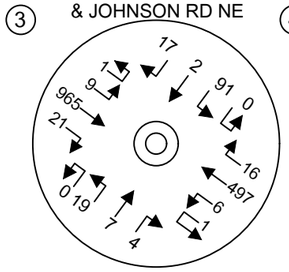
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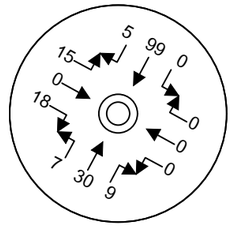
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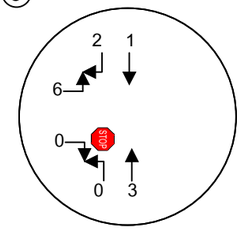
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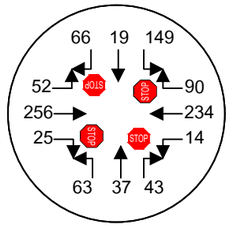
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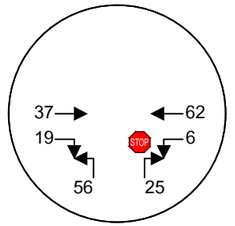
5 SUNRISE RIDGE AVE NE & NE CRYSTALLIA CT

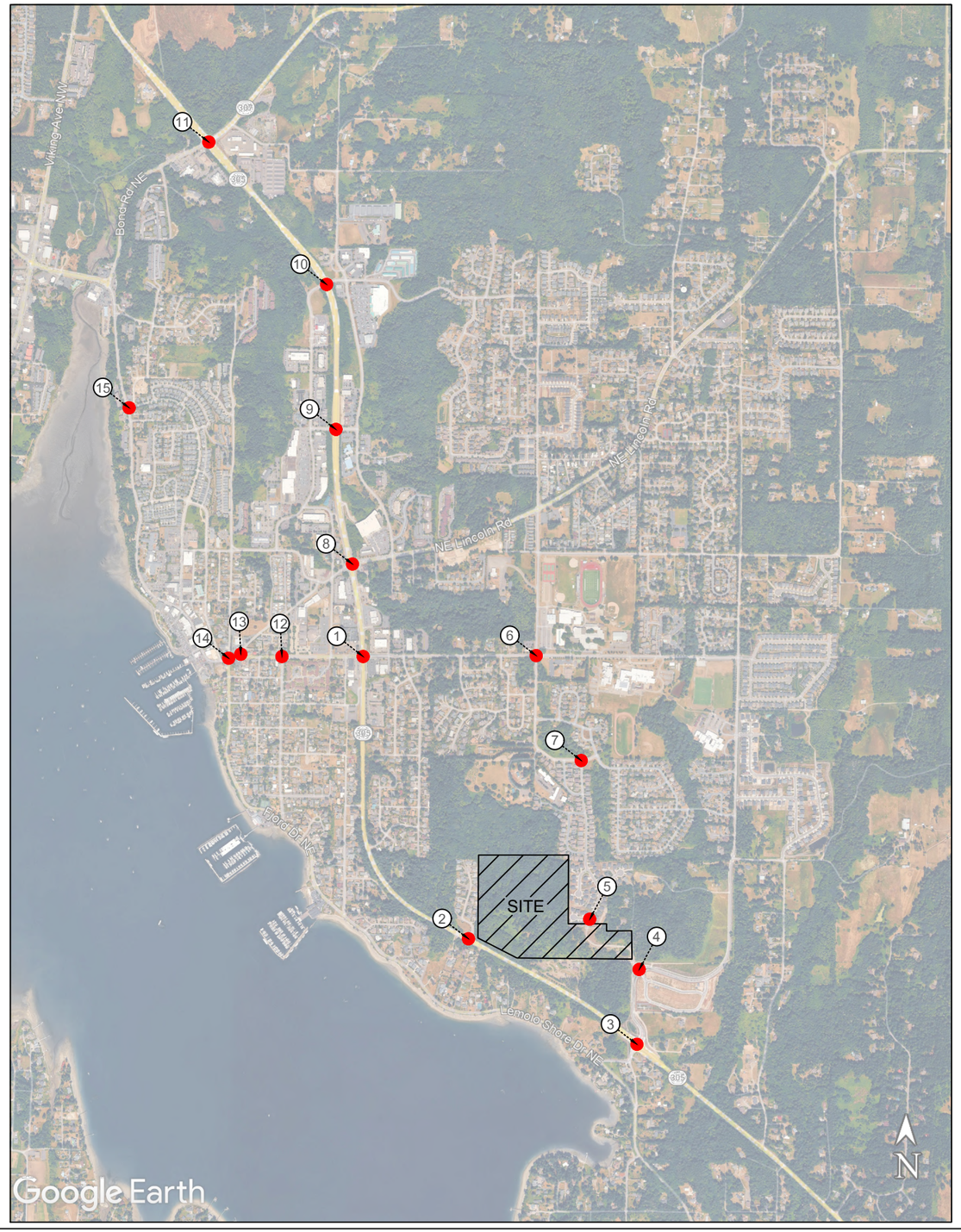


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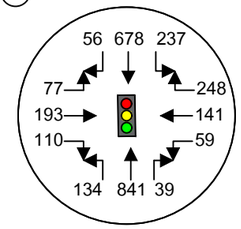
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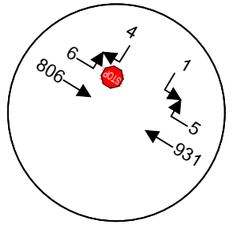


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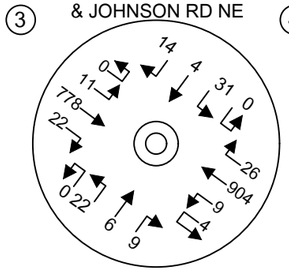
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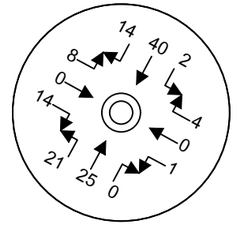
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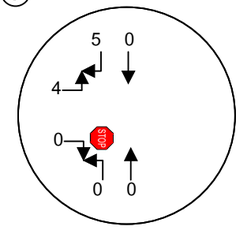
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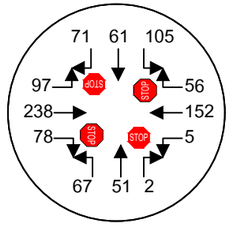
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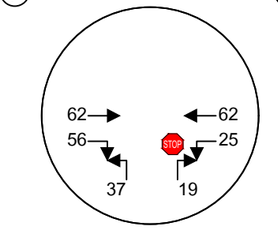
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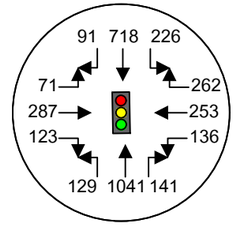
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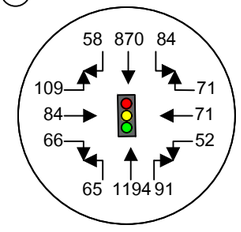
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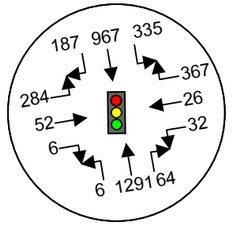
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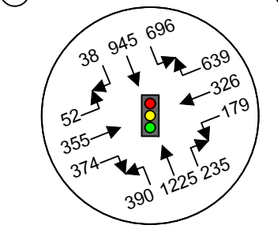
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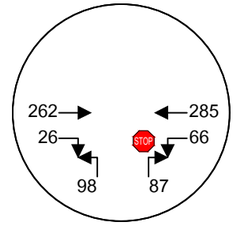
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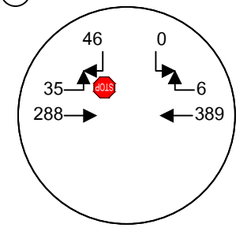
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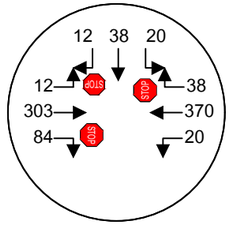
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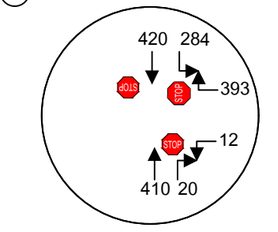
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14 NE HOSTMARK ST & 4TH AVE NE/FJORD DR



15 FRONT ST NE & NE SUNSET ST

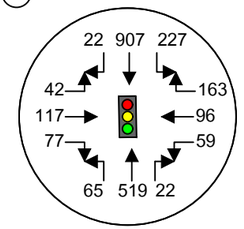




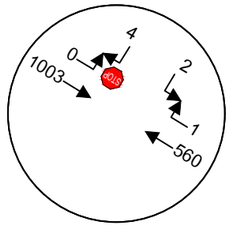
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OUTLYING STUDY INTERSECTIONS

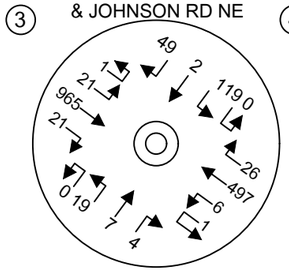
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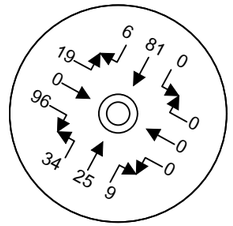
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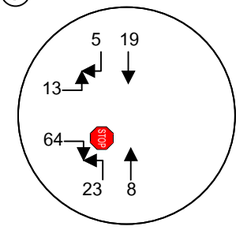
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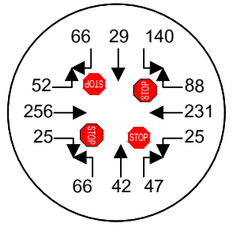
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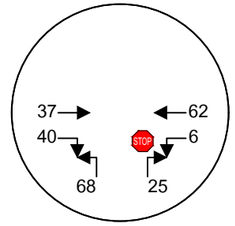
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6 NE HOSTMARK ST & CALDART AVE NE



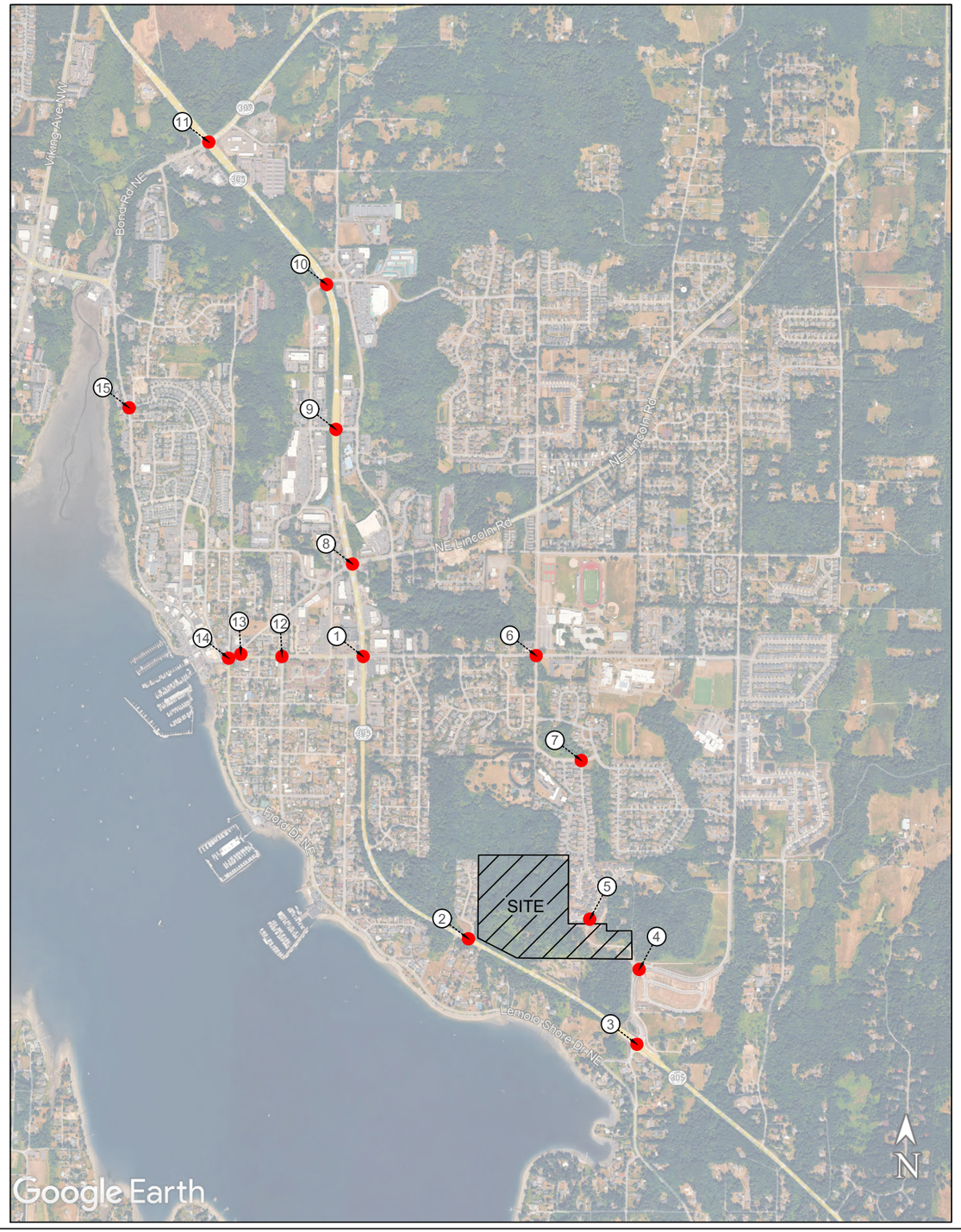
7 CALDART AVE NE & SUNRISE RIDGE AVE NE



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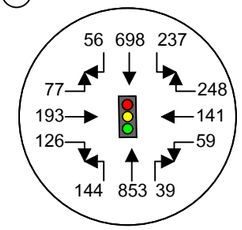
PINNACLE AT LIBERTY BAY

FORECAST 2037 AM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 19

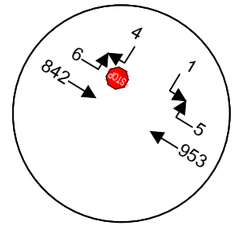


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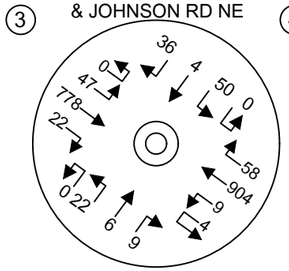
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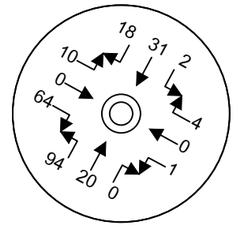
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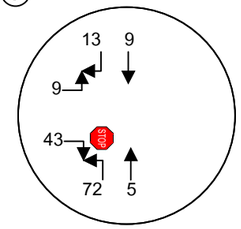
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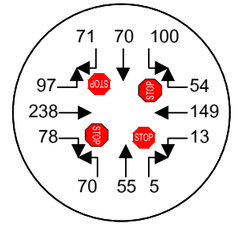
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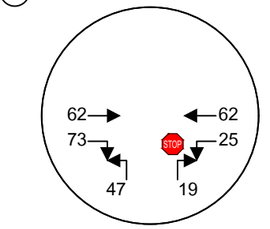
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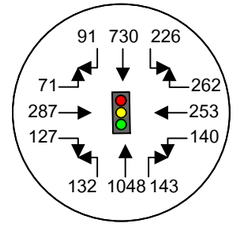
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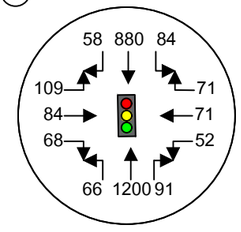
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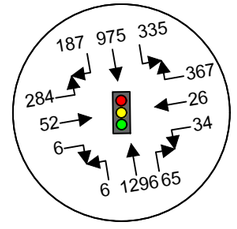
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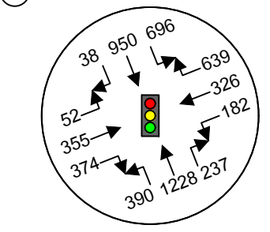
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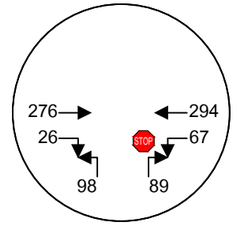
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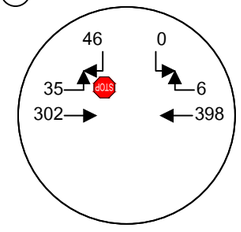
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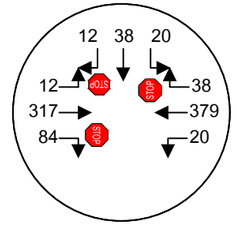
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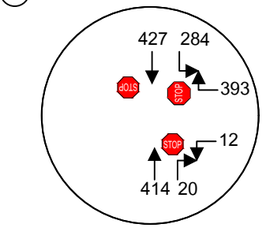
(13) NE HOSTMARK ST & NE LINCOLN RD



(14) NE HOSTMARK ST & 4TH AVE NE/FJORD DR



(15) FRONT ST NE & NE SUNSET ST



5.4 Site Access Locations and Assumptions

Site access will be provided at four locations, as shown in the conceptual site plan:

1. Sunrise Ridge Avenue via extension of Crystallia Court.
2. Both sides of Sunrise Ridge Avenue 220 feet south of Crystallia Ct.
3. Sunrise Ridge Avenue 385 feet south of Crystallia Court.

To provide a worst-case operations analysis, this study assumed project-generated trips will be consolidated at the Crystallia Court access. Sunrise Ridge Avenue NE & Crystallia Court, which was assumed to serve all project-generated trips, is expected to operate at LOS A through 2037, satisfying the City of Poulsbo minimum LOS E standard.

The location and design of site accesses as well as on-site circulating roadways and frontage improvements will be subject to City of Poulsbo review and approval.

5.5 Future Levels of Service

Intersection LOS was analyzed for the 2032 and 2037 forecasting horizons both without and with project-generated trips. Intersection delay and LOS results are summarized in **Table 10** for the 2032 analysis and in **Table 11** for the 2037 analysis.

The 2032 analysis assumed that existing Peak Hour Factor (PHF) would remain unchanged. The 2037 analysis applied a PHF of 1.0 on SR 305 intersections, consistent with WSDOT Synchro protocol for long-range analyses, while maintaining existing PHF at local intersections.

Three intersections along SR 305 which currently operate with LOS deficiencies are expected to continue to operate at LOS E/F through the 2032 and 2037 analysis years. LOS-deficient intersections on SR 305 are summarized below.

SR 305 & NE Liberty Road: The intersection will continue to operate at LOS F through 2037. Project-generated trips are expected to increase average PM peak hour delay by 2.2 seconds per vehicle in 2032 and by 1.7 seconds in 2037. It may be noted that 2037 intersection delay forecasts are slightly lower than 2032 forecasts due to PHF smoothing, per WSDOT Synchro policy for long-range analyses.

SR 305 & Forest Rock Lane: The intersection will continue to operate at LOS F through 2037. Project trips are expected to increase average PM peak hour delay by 1.0 seconds per vehicle in 2032 and by 0.8 seconds per vehicle in 2037.

SR 305 & SR 307/Bond Road: The intersection will continue to operate at LOS E in 2032 before and after the addition of project trips. By 2037, the intersection is expected to reach LOS F with or without project trips. Project trips are expected to

increase overall intersection delay by less than 0.5 seconds per vehicle and are not expected to degrade intersection LOS.

Table 10: Forecast 2032 Peak Hour Level of Service

Delays Given in Seconds per Vehicle

ID	Intersection	Control	Peak Hour	Crt. Apprch	Without Project		With Project	
					LOS	Delay	LOS	Delay
1	SR 305 & Hostmark St	Signal	AM	Overall	D	36.5	D	37.1
			PM		D	44.5	D	44.7
2	SR 305 & Baywatch Ct	One-Way Stop	AM	SB	C	21.8	C	22.8
			PM		D	25.6	D	27.1
3	SR 305 & Johnson Rd	RAB	AM	Overall	A	7.4	A	7.7
			PM		A	6.6	A	7.0
4	Johnson Rd & Sunrise Ridge	RAB	AM	Overall	A	5.5	A	5.9
			PM		A	5.9	A	6.7
5	Sunrise Ridge & Crystallia Ct	One-Way Stop	AM	EB	A	8.6	A	8.8
			PM		A	8.5	A	8.8
6	Hostmark St & Caldart Ave	AWSC	AM	Overall	C	22.2	C	24.6
			PM		B	14.7	C	15.1
7	Caldart Ave & Sunrise Ridge	TWSC	AM	NB	A	9.5	A	9.7
			PM		A	9.9	B	10.1
8	SR 305 & NE Lincoln Rd	Signal	PM	Overall	D	52.3	D	52.8
9	SR 305 & NE Liberty Rd	Signal	PM	Overall	**F**	**104.7**	**F**	**106.9**
10	SR 305 & Forest Rock Ln	Signal	PM	Overall	**F**	**125.0**	**F**	**126.0**
11	SR 305 & SR 307/Bond Rd	Signal	PM	Overall	**E**	**77.9**	**E**	**78.2**
12	NE Hostmark St & 6th Ave NE	One-Way Stop	PM	NB	B	14.0	B	14.4
13	NE Hostmark St & Lincoln Rd	One-Way Stop	PM	SB	B	11.0	B	11.1
14	NE Hostmark St & 4th Ave NE	AWSC	PM	Overall	B	11.9	B	12.2
15	Front St & NE Sunset St	AWSC	PM	Overall	D	33.9	E	35.2

*Signalized intersection LOS is based on overall intersection delay;
Roundabout (RAB) and AWSC LOS is based on overall intersection delay and stop-controlled delay thresholds;
Minor-approach stop control LOS is based on worst-approach delay and stop-controlled delay thresholds

Table 11: Forecast 2037 Peak Hour Level of Service

Delays Given in Seconds per Vehicle

ID	Intersection	Control	Peak Hour	Crt. Apprch	Without Project		With Project	
					LOS	Delay	LOS	Delay
1	SR 305 & Hostmark St	Signal	AM PM	Overall	D D	36.5 44.9	D D	37.1 45.1
2	SR 305 & Baywatch Ct	One-Way Stop	AM PM	SB	C C	18.9 22.2	C C	19.7 23.2
3	SR 305 & Johnson Rd	RAB	AM PM	Overall	A A	7.3 6.6	A A	7.5 6.9
4	Johnson Rd & Sunrise Ridge	RAB	AM PM	Overall	A A	5.5 5.9	A A	5.9 6.7
5	Sunrise Ridge & Crystallia Ct	One-Way Stop	AM PM	EB	A A	8.6 8.5	A A	8.8 8.8
6	Hostmark St & Caldart Ave	AWSC	AM PM	Overall	D C	33.0 18.0	E C	38.4 18.5
7	Caldart Ave & Sunrise Ridge	TWSC	AM PM	EB	A B	9.6 10.0	A B	9.8 10.2
8	SR 305 & NE Lincoln Rd	Signal	PM	Overall	D	52.7	D	53.1
9	SR 305 & NE Liberty Rd	Signal	PM	Overall	**F**	**93.2**	**F**	**94.9**
10	SR 305 & Forest Rock Ln	Signal	PM	Overall	**F**	**123.6**	**F**	**124.4**
11	SR 305 & SR 307/Bond Rd	Signal	PM	Overall	**F**	**81.8**	**F**	**82.2**
12	NE Hostmark St & 6th Ave NE	One-Way Stop	PM	NB	C	15.2	C	15.6
13	NE Hostmark St & Lincoln Rd	One-Way Stop	PM	SB	B	11.3	B	11.4
14	NE Hostmark St & 4th Ave NE	AWSC	PM	Overall	B	13.0	B	13.4
15	Front St & NE Sunset St	AWSC	PM	Overall	**F**	**51.1**	**F**	**53.0**

*Signalized intersection LOS is based on overall intersection delay;
Roundabout (RAB) and AWSC LOS is based on overall intersection delay and stop-controlled delay thresholds;
Minor-approach stop control LOS is based on worst-approach delay and stop-controlled delay thresholds

Front Street & NE Sunset Street will operate at LOS E during the 2032 PM peak hour. In the 2037 PM peak hour, the intersection will fall below the minimum LOS E standard, operating at LOS F (51.1 seconds of delay per vehicle) before project trips and LOS F (53.0 seconds of delay per vehicle) with project trips.

Project-related increases in PM peak hour intersection entering volume and average delay at intersections with existing or future LOS deficiencies are summarized in **Table 12**. Project trips are expected to increase total entering volume by less than one percent and overall delay by 2.2 seconds per vehicle or less. Each LOS-deficient intersection is expected to be impacted by fewer than 20 PM peak hour project trips.

The City of Poulsbo website[4] indicates that the Oslo Bay Apartments development will provide signal controller, detection, and interconnection upgrades at eight intersections along the SR 305 corridor, including all five signalized SR 305 study intersections. The identified hardware improvements are likely to improve operational efficiency at the study intersections while maintaining existing channelization and geometry.

Table 12: PM Peak Hour Project Impacts at LOS-Deficient Intersections

ID	Intersection	PM Pk Hr Project Trips	2032 Project Impacts		2037 Project Impacts	
			Volume Increase (%)	Delay Increase (sec/veh)	Volume Increase (%)	Delay Increase (sec/veh)
9	SR 305 & NE Liberty Rd	19	+0.70%	+2.2	+0.67%	+1.7
10	SR 305 & Forest Rock Ln	16	+0.46%	+1.0	+0.44%	+0.8
11	SR 305 & SR 307/Bond Rd	13	+0.25%	+0.3	+0.24%	+0.4
15	Front St & NE Sunset St	11	+0.78%	+1.3	+0.71%	+1.9

Hostmark Street & Caldart Avenue will operate at LOS E or better through the 2037 AM and PM peak hours, satisfying the City of Poulsbo minimum LOS E standard. The 2037 analysis assumes existing school-related volume peaking will increase proportional to ongoing commercial and residential growth in the intersection vicinity.

[4] "Oslo Bay Apartments: Traffic and Mitigation," https://poulsbo.gov/oslobayapartments/. Retrieved October 3, 2026.

Anticipated 95th percentile AM and PM peak hour queuing at NE Hostmark Street & Caldart Avenue is summarized in **Table 13**.

Table 13: NE Hostmark Street & Caldart Avenue 95th Percentile Queue

Approach	Study Period	2025 Queue (ft)	2032 Queue (ft)		2037 Queue (ft)	
			Without Project	With Project	Without Project	With Project
Eastbound	AM	95	160	173	235	260
	PM	80	125	128	173	180
Westbound	AM	88	160	180	235	270
	PM	28	40	43	50	53
Northbound	AM	30	43	50	53	65
	PM	18	23	25	28	30
Southbound	AM	43	63	65	80	85
	PM	28	38	38	45	48

Peak hour 95th percentile queues are expected to extend up to 260 feet (approximately 10 car lengths) on the eastbound approach and 270 feet (11 car lengths) on the westbound approach in the 2037 AM peak hour with project trips. Project-generated trips are expected to increase 95th percentile queues on NE Hostmark Street by approximately 25-35 feet in the 2037 AM peak hour.

5.6 SR 305 Connectivity

A previous draft TIA report included a site access on Baywatch Court NE, a local access street to the southwest of the subject site which intersects SR 305 at a minor-approach stop-controlled intersection on a horizontal curve. The elimination of the Baywatch Court NE connection in the currently proposed site plan will result in project trips accessing SR 305 to the south via the roundabout intersection at Johnson Road or to the northwest via the signalized intersection at NE Hostmark Street, avoiding significant increases in entering and exiting traffic volumes at the stop-controlled Baywatch Court NE intersection.

A planning-level travel time analysis was developed to refine the project trip assignment forecast between the SR 305 & Hostmark Street intersection and the site. The analysis, which incorporated posted speed limits on each route, indicated that the SR 305/Johnson Road NE provides a shorter travel time route (168 seconds) than Hostmark Street/Caldart Avenue (181 seconds). Project trips to/from the north and west are therefore likely to utilize SR 305 and Johnson Road NE rather than the lower-speed Hostmark Street/Caldart Avenue corridors.

The operational analysis described in the previous section indicates that SR 305 intersections on Hostmark Street and Johnson Road provide adequate capacity to support project trips through the 2037 analysis horizon.

5.7 Future Nonmotorized Conditions

The internal circulating street network will include sidewalks and marked pedestrian crosswalks internal to the project site. On-site nonmotorized facilities will provide connections to the existing nonmotorized transportation network.

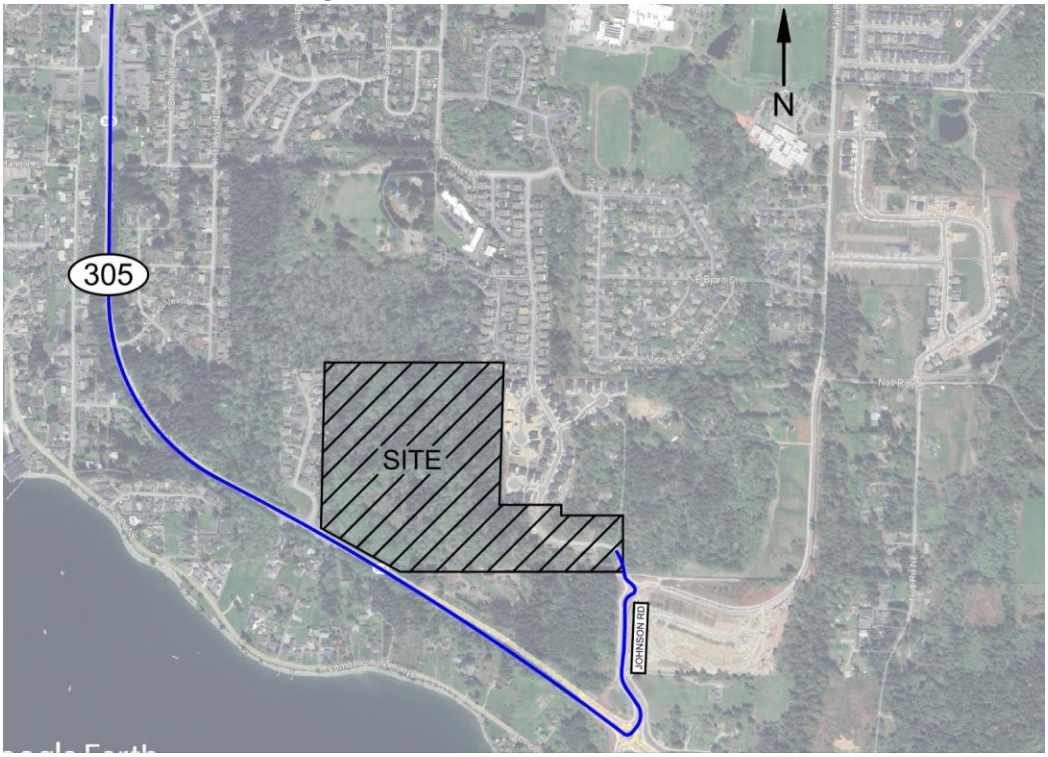
Sunrise Ridge Avenue NE, Caldart Avenue NE, and NE Hostmark Street provide a contiguous nonmotorized connection to nearby schools. Project improvements will also provide a nonmotorized connection to SR 305 via Sunrise Ridge Avenue and Johnson Parkway, facilitating alternatives to vehicle travel. Pedestrian routes to schools in the project vicinity are described in **Section 4.6**.

5.8 Construction Traffic

Truck activity will vary throughout project construction, with an estimated maximum of 60-80 trucks per day during a 3-4-week mass grading and import phase. Construction activity will involve a maximum of 20 on-site construction employees.

Construction traffic is anticipated to primarily utilize Johnson Road, a City arterial, to access SR 305, a state route. The anticipated construction route is illustrated in **Figure 21**. Route restrictions or preferences may be coordinated with the City.

Figure 21: Construction Route



6. CONCLUSIONS & MITIGATION

The Pinnacle at Liberty Bay is a proposed residential development consisting of 138 single-family homes located in Poulsbo. The subject site comprises 40.98 acres on four undeveloped tax parcels. Site ingress/egress is proposed via NE Crystallia Court and Sunrise Ridge Avenue NE.

Existing traffic operations were analyzed at 15 intersections in the site vicinity. Three intersections on SR 305 to the north of the subject site currently operate at LOS E or F during the PM peak hour, below the WSDOT LOS D standard. All City of Poulsbo intersections operate at LOS D or better during the AM and PM peak hours, satisfying the City of Poulsbo minimum LOS E standard.

An analysis of five-year crash history in the site vicinity indicated the majority of crashes, including 92 percent of reported intersection crashes, occurred along SR 305. All City of Poulsbo intersections reported fewer than 1.5 crashes per year. Six reported crashes involved at least one fatal or serious injury, including five crashes along the SR 305 corridor and one serious injury crash at Front Street & NE Sunset Street. The SR 305 corridor is identified in the Poulsbo Comprehensive Plan as a priority for safety, active transportation, and LOS improvements through coordination with WSDOT. Project trips are expected to represent less than one percent of total PM peak hour volume at each of the three SR 305 intersections with the highest crash frequency.

The project is expected to generate 1,254 daily weekday trips, 97 AM peak hour trips (26 inbound / 71 outbound), and 128 PM peak hour trips (80 inbound / 48 outbound). Future pipeline growth in the study area will include three nearby residential developments. Additional background traffic growth was forecast using travel demand forecasts and scoping direction provided by City of Poulsbo staff.

Future traffic conditions were analyzed for 2032 and 2037 horizon years. Traffic forecasts assumed completion of the Sunrise Ridge Avenue NE connection between Noll Road and Caldart Avenue, including redistribution of travel demand.

Three existing SR 305 intersection LOS deficiencies are expected to persist through the 2032 and 2037 horizon years. The intersection of Front Street & NE Sunset Street is expected to degrade to LOS F in the 2037 PM peak hour both without and with project trips. Project trips are expected to increase peak hour traffic volume by less than one percent at all LOS-deficient intersections.

Construction activity will vary over the anticipated 12-month construction period. Trucks are encouraged to utilize state routes and should coordinate preferred truck routes with the City of Poulsbo.

The following mitigation recommendations are provided for consideration:

1. Design of **on-site streets, intersections, and frontage improvements** will be subject to City of Poulsbo review and approval.

2. The project will be subject to **Traffic Impact Fees (TIF)** as imposed by the City of Poulsbo (PMC 3.86). Fees are based on project-generated trips, at a rate of $564.00 per net new daily trip as of October 2026. The estimated project traffic impact fee calculation is:

   1,254 daily trips x $564.00 per daily trip = **$707,256.00**

   Traffic impact fees will be calculated and determined by the City of Poulsbo at the time of building permit issuance.

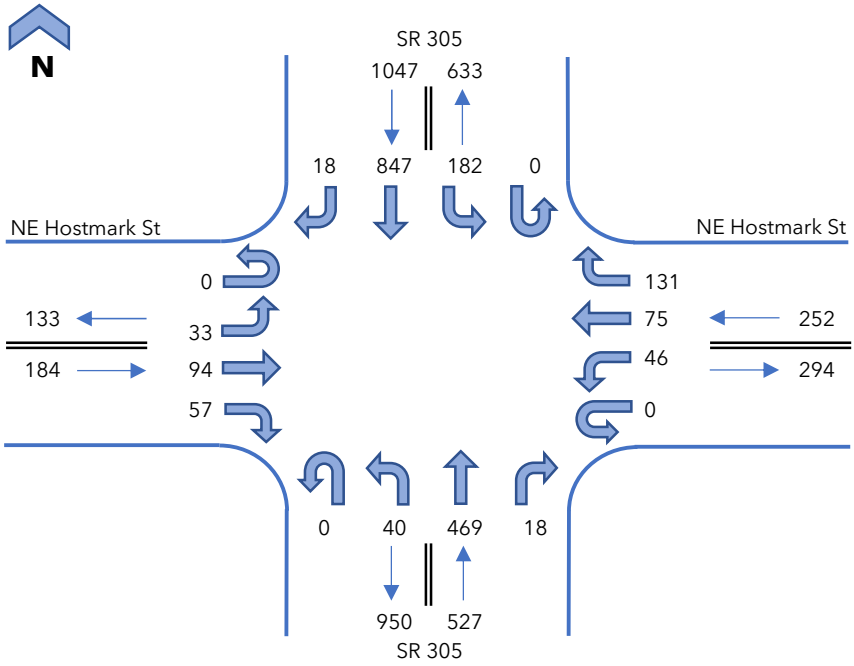
THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

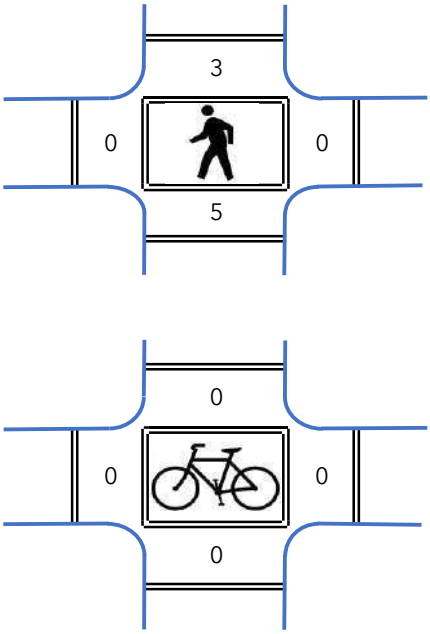
APPENDIX
Traffic Counts

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/21/2025
Day of the Week: Wednesday
Time Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM

NE Hostmark Street & SR 305





Interval Start Time	NE Hostmark St Eastbound				NE Hostmark St Westbound				SR 305 Northbound				SR 305 Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
7:00 AM	0	2	12	9	0	5	12	26	0	5	110	1	0	28	200	5	415	
7:15 AM	0	11	29	18	0	19	16	29	0	6	111	4	0	50	226	4	523	
7:30 AM	0	12	30	14	0	10	19	41	0	12	111	7	0	64	200	5	525	
7:45 AM	0	8	23	16	0	12	28	35	0	17	137	6	0	40	221	4	547	2010
8:00 AM	0	12	7	11	0	5	17	24	0	9	118	6	0	17	180	6	412	2007
8:15 AM	0	11	11	9	0	7	14	24	0	9	128	5	0	12	180	3	413	1897
8:30 AM	0	8	14	10	0	7	13	19	0	21	122	7	0	30	168	7	426	1798
8:45 AM	0	9	15	14	0	12	13	33	0	8	150	7	0	23	163	6	453	1704
Count Total	0	73	141	101	0	77	132	231	0	87	987	43	0	264	1538	40	3714	--
Peak Hour Total	0	33	94	57	0	46	75	131	0	40	469	18	0	182	847	18	2010	--
PHF	0.79				0.84				0.82				0.93				0.92	--
Heavy Vehicles	0	2	5	2	0	2	3	8	0	2	27	1	0	9	53	2	116	--
HV %	0.0%	6.1%	5.3%	3.5%	0.0%	4.3%	4.0%	6.1%	0.0%	5.0%	5.8%	5.6%	0.0%	4.9%	6.3%	11.1%	5.8%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
7:00 AM	2	1	7	10	20
7:15 AM	4	3	10	15	32
7:30 AM	2	7	2	22	33
7:45 AM	1	2	11	17	31
8:00 AM	4	3	5	20	32
8:15 AM	3	3	9	16	31
8:30 AM	1	2	11	22	36
8:45 AM	3	3	10	13	29
Count Total	20	24	65	135	244
Peak Hour Total	9	13	30	64	116
Peak Hour HV%	4.9%	5.2%	5.7%	6.1%	5.8%

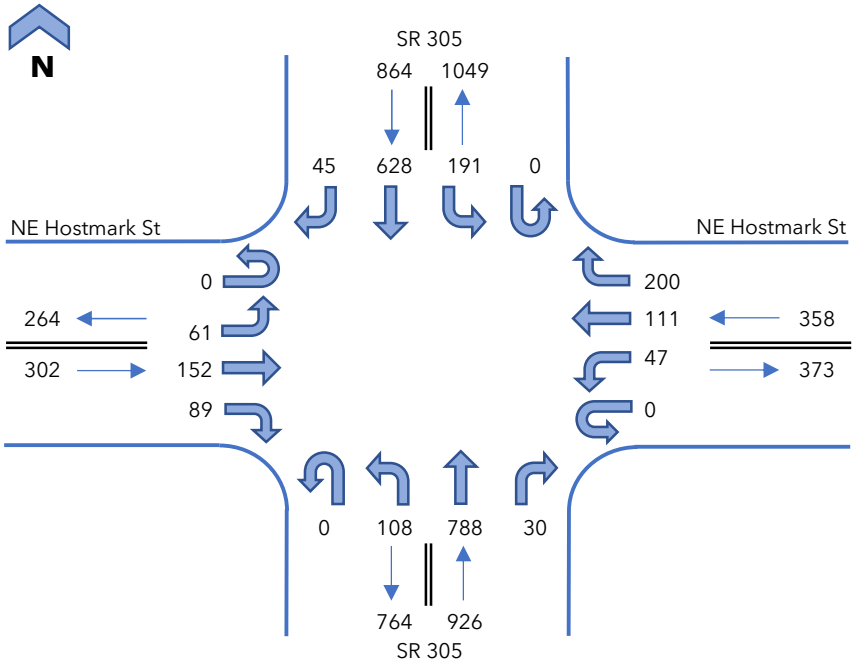
Pedestrians (Leg)				
E	W	N	S	Total
0	0	1	3	4
0	0	1	0	1
0	0	0	1	1
0	0	1	1	2
0	1	0	1	2
0	0	2	1	3
2	2	3	2	9
0	0	2	2	4
2	3	10	11	26
0	0	3	5	8

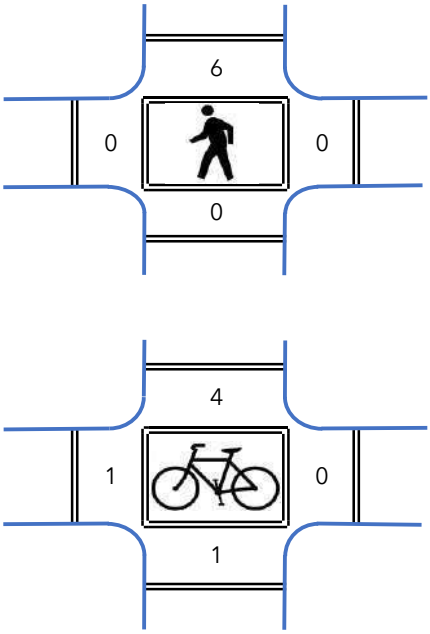
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/20/2025
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

NE Hostmark Street & SR 305





Interval Start Time	NE Hostmark St Eastbound				NE Hostmark St Westbound				SR 305 Northbound				SR 305 Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	19	39	16	0	12	25	48	0	21	205	5	0	49	164	12	615	
4:15 PM	0	13	34	27	0	15	23	47	0	31	191	12	0	52	146	12	603	
4:30 PM	0	13	43	24	0	9	41	62	0	28	182	5	0	43	150	15	615	
4:45 PM	0	16	36	22	0	11	22	43	0	28	210	8	0	47	168	6	617	2450
5:00 PM	0	12	40	30	0	4	26	31	0	20	169	4	0	54	173	9	572	2407
5:15 PM	0	11	23	21	0	2	24	31	1	28	175	7	0	51	160	7	541	2345
5:30 PM	0	20	38	14	0	7	13	27	0	17	216	6	0	38	149	14	559	2289
5:45 PM	0	16	22	15	0	6	17	16	0	23	191	7	0	48	137	12	510	2182
Count Total	0	120	275	169	0	66	191	305	1	196	1539	54	0	382	1247	87	4632	--
Peak Hour Total	0	61	152	89	0	47	111	200	0	108	788	30	0	191	628	45	2450	--
PHF	0.94				0.80				0.94				0.96				0.99	--
Heavy Vehicles	0	4	4	1	0	0	1	2	0	2	30	0	0	2	11	2	59	--
HV %	0.0%	6.6%	2.6%	1.1%	0.0%	0.0%	0.9%	1.0%	0.0%	1.9%	3.8%	0.0%	0.0%	1.0%	1.8%	4.4%	2.4%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	1	1	4	2	8
4:15 PM	0	1	9	1	11
4:30 PM	3	0	15	6	24
4:45 PM	5	1	4	6	16
5:00 PM	0	4	3	5	12
5:15 PM	0	0	8	4	12
5:30 PM	0	0	9	2	11
5:45 PM	2	0	9	1	12
Count Total	11	7	61	27	106
Peak Hour Total	9	3	32	15	59
Peak Hour HV%	3.0%	0.8%	3.5%	1.7%	2.4%

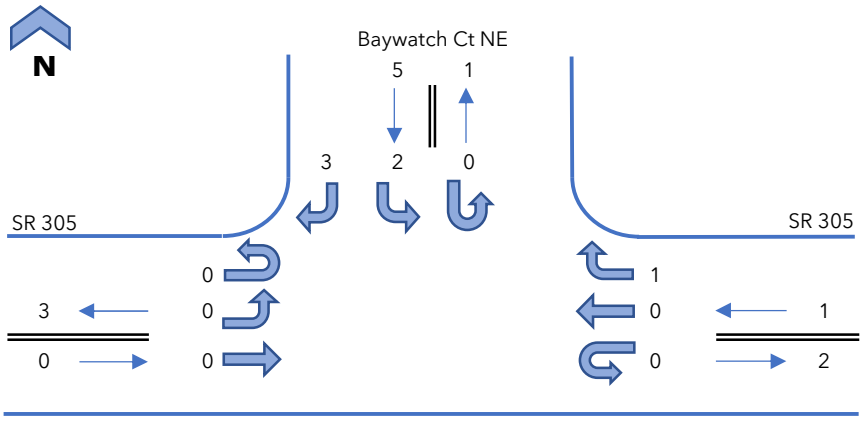
Pedestrians (Leg)				
E	W	N	S	Total
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0	0	1	0	1
0	0	0	0	0
0	0	1	0	1
0	1	0	3	4
1	1	1	1	4
0	0	3	2	5
1	0	5	1	7
2	2	15	7	26
0	0	6	0	6

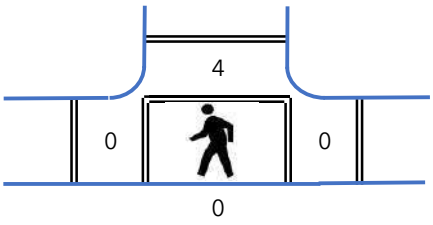
Bicycles (Leg)				
E	W	N	S	Total
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0	0	3	0	3
0	0	0	0	0
0	1	1	1	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	4	1	6
0	1	4	1	6

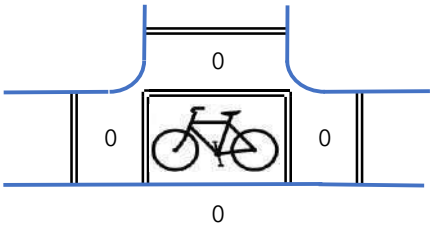
HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/21/2025
Day of the Week: Wednesday
Time Period: 7:00 AM to 9:00 AM
Peak Hour: 8:00 AM to 9:00 AM

SR 305 & Baywatch Court NE







Interval Start Time	SR 305 Eastbound				SR 305 Westbound								Baywatch Ct NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT					UT	LT	T	RT		
7:00 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	1	1	
7:15 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	0	0	
7:30 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	1	--	1	2	
7:45 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	0	0	3
8:00 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	0	0	2
8:15 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	1	--	1	2	4
8:30 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	1	--	0	1	3
8:45 AM	0	0	0	--	0	--	0	1	--	--	--	--	0	0	--	2	3	6
Count Total	0	0	0	--	0	--	0	1	--	--	--	--	0	3	--	5	9	--
Peak Hour Total	0	0	0	--	0	--	0	1	--	--	--	--	0	2	--	3	6	--
PHF	#DIV/0!				0.25				--				0.63				0.50	--
Heavy Vehicles	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	0	0	--
HV %	0.0%	0.0%	0.0%	--	0.0%	--	0.0%	0.0%	--	--	--	--	0.0%	0.0%	--	0.0%	0.0%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
7:00 AM	0	0	--	0	0
7:15 AM	0	0	--	0	0
7:30 AM	0	0	--	0	0
7:45 AM	0	0	--	0	0
8:00 AM	0	0	--	0	0
8:15 AM	0	0	--	0	0
8:30 AM	0	0	--	0	0
8:45 AM	0	0	--	0	0
Count Total	0	0	--	0	0
Peak Hour Total	0	0	--	0	0
Peak Hour HV%	0.0%	0.0%	--	0.0%	0.0%

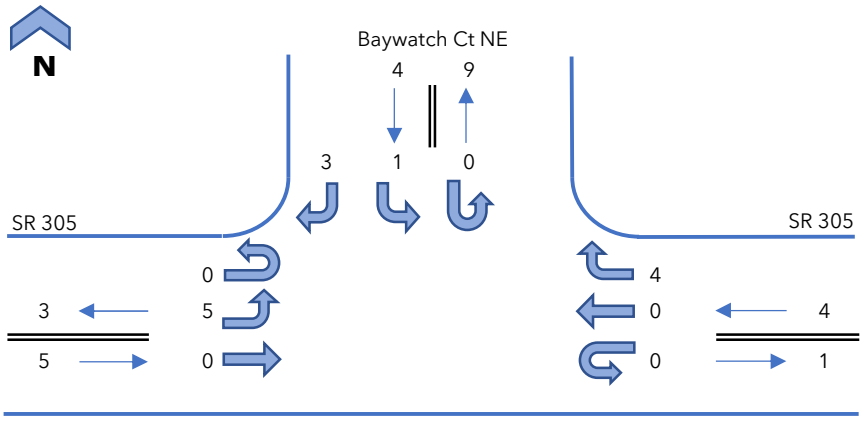
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	4	0	4
0	0	0	0	0
0	0	0	0	0
0	0	4	0	4
0	0	4	0	4

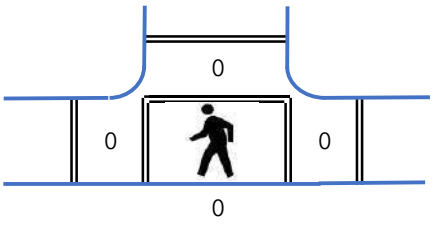
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

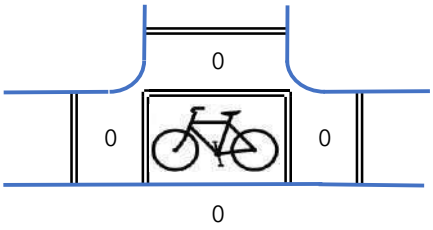
HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/20/2025
Day of the Week: Tuesday
Time Period: 4:00 AM to 6:00 AM
Peak Hour: 4:30 AM to 5:30 AM

SR 305 & Baywatch Court NE







Interval Start Time	SR 305 Eastbound				SR 305 Westbound								Baywatch Ct NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT					UT	LT	T	RT		
4:00 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	0	0	
4:15 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	0	0	
4:30 AM	0	0	0	--	0	--	0	0	--	--	--	--	0	0	--	1	1	
4:45 AM	0	1	0	--	0	--	0	2	--	--	--	--	0	0	--	0	3	4
5:00 AM	0	3	0	--	0	--	0	0	--	--	--	--	0	0	--	1	4	8
5:15 AM	0	1	0	--	0	--	0	2	--	--	--	--	0	1	--	1	5	13
5:30 AM	0	0	0	--	0	--	0	1	--	--	--	--	0	0	--	0	1	13
5:45 AM	0	0	0	--	0	--	0	1	--	--	--	--	0	0	--	0	1	11
Count Total	0	5	0	--	0	--	0	6	--	--	--	--	0	1	--	3	15	--
Peak Hour Total	0	5	0	--	0	--	0	4	--	--	--	--	0	1	--	3	13	--
PHF	0.42				0.50				--				0.50				0.65	--
Heavy Vehicles	0	1	0	--	0	--	0	0	--	--	--	--	0	1	--	0	2	--
HV %	0.0%	20.0%	0.0%	--	0.0%	--	0.0%	0.0%	--	--	--	--	0.0%	100.0%	--	0.0%	15.4%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 AM	0	0	--	0	0
4:15 AM	0	0	--	0	0
4:30 AM	0	0	--	0	0
4:45 AM	0	0	--	0	0
5:00 AM	1	0	--	0	1
5:15 AM	0	0	--	1	1
5:30 AM	0	0	--	0	0
5:45 AM	0	0	--	0	0
Count Total	1	0	--	1	2
Peak Hour Total	1	0	--	1	2
Peak Hour HV%	20.0%	0.0%	--	25.0%	15.4%

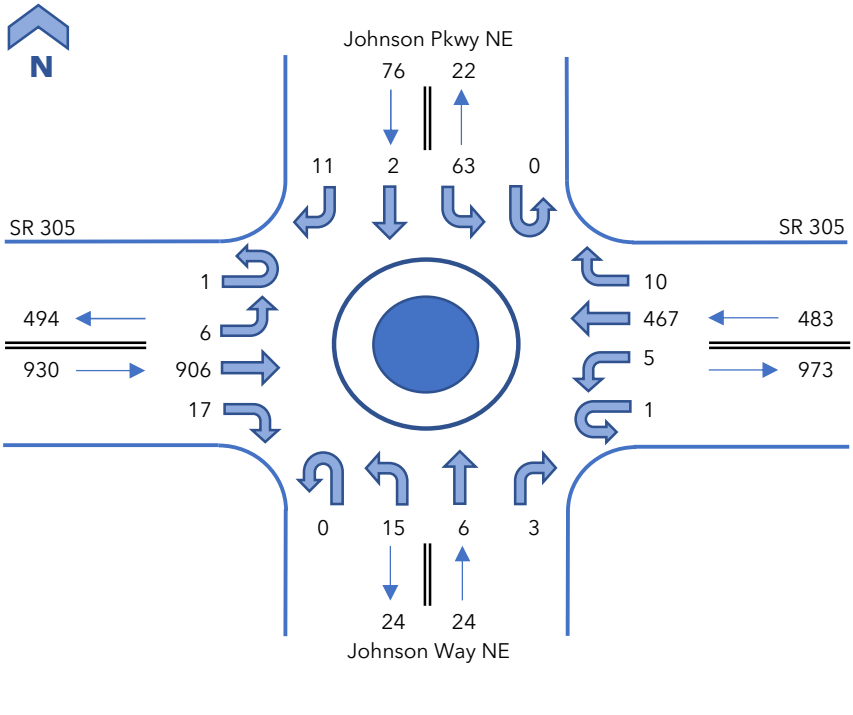
Pedestrians (Leg)				
E	W	N	S	Total
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0

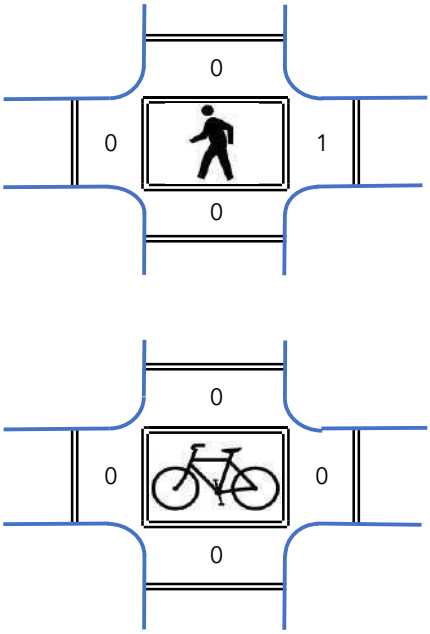
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/21/2025
Day of the Week: Wednesday
Time Period: 7:00 AM to 9:00 AM
Peak Hour: 7:00 AM to 8:00 AM

SR 305 & Johnson Parkway NE





Interval Start Time	SR 305 Eastbound				SR 305 Westbound				Johnson Way NE Northbound				Johnson Pkwy NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
7:00 AM	0	0	207	0	0	0	120	1	0	8	1	0	0	10	0	2	349	
7:15 AM	0	5	271	4	0	1	100	4	0	2	0	2	0	16	0	1	406	
7:30 AM	1	1	199	6	1	4	127	3	0	1	4	1	1	15	1	4	369	
7:45 AM	0	0	229	7	0	0	120	2	0	4	1	0	0	22	1	4	390	1514
8:00 AM	0	2	184	5	1	2	131	2	0	4	2	1	0	10	3	2	349	1514
8:15 AM	1	1	187	6	1	1	136	1	0	4	2	1	0	2	1	2	346	1454
8:30 AM	2	4	168	4	1	0	119	3	0	5	1	0	0	7	0	3	317	1402
8:45 AM	0	2	158	5	0	3	165	4	0	4	2	0	0	2	0	5	350	1362
Count Total	4	15	1603	37	4	11	1018	20	0	32	13	5	1	84	6	23	2876	--
Peak Hour Total	1	6	906	17	1	5	467	10	0	15	6	3	1	63	2	11	1514	--
PHF	0.83				0.89				0.67				0.71				0.93	--
Heavy Vehicles	0	1	70	2	0	0	27	0	0	0	0	0	1	2	0	0	103	--
HV %	0.0%	16.7%	7.7%	11.8%	0.0%	0.0%	5.8%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	3.2%	0.0%	0.0%	6.8%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
7:00 AM	7	6	0	0	13
7:15 AM	11	8	0	0	19
7:30 AM	18	6	0	2	26
7:45 AM	25	7	0	1	33
8:00 AM	19	5	0	0	24
8:15 AM	15	6	2	1	24
8:30 AM	20	8	0	2	30
8:45 AM	15	11	0	0	26
Count Total	130	57	2	6	195
Peak Hour Total	73	27	0	3	103
Peak Hour HV%	7.8%	5.6%	0.0%	3.9%	6.8%

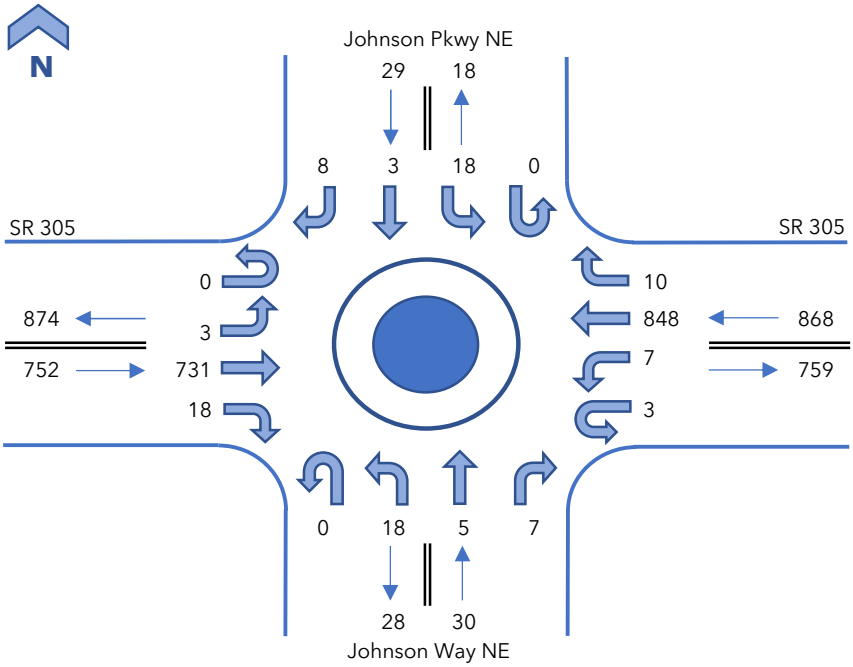
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
1	0	0	0	1

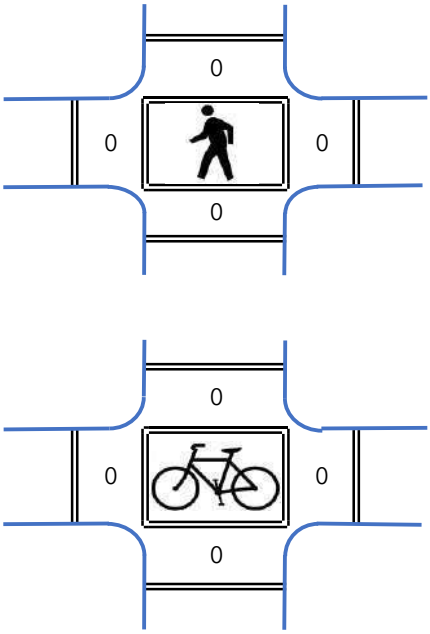
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/20/2025
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM

SR 305 & Johnson Parkway NE





Interval Start Time	SR 305 Eastbound				SR 305 Westbound				Johnson Way NE Northbound				Johnson Pkwy NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	1	166	7	0	2	212	6	0	4	0	2	0	4	2	4	410	
4:15 PM	0	2	186	3	0	1	244	0	0	5	1	1	0	3	2	2	450	
4:30 PM	0	0	178	4	2	2	180	2	0	6	1	2	0	3	1	2	383	
4:45 PM	0	0	179	7	0	0	219	5	0	2	1	3	0	8	0	3	427	1670
5:00 PM	0	1	188	4	1	4	205	3	0	5	2	1	0	4	0	1	419	1679
5:15 PM	1	3	171	3	0	0	211	1	0	7	1	0	0	6	1	3	408	1637
5:30 PM	0	0	165	3	0	3	209	5	0	2	1	3	0	5	1	2	399	1653
5:45 PM	0	1	136	4	0	1	224	2	0	11	2	3	0	1	0	3	388	1614
Count Total	1	8	1369	35	3	13	1704	24	0	42	9	15	0	34	7	20	3284	--
Peak Hour Total	0	3	731	18	3	7	848	10	0	18	5	7	0	18	3	8	1679	--
PHF	0.97				0.89				0.83				0.66				0.93	--
Heavy Vehicles	0	0	11	0	0	0	26	1	0	1	0	0	0	1	0	1	41	--
HV %	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	3.1%	10.0%	0.0%	5.6%	0.0%	0.0%	0.0%	5.6%	0.0%	12.5%	2.4%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	1	4	0	0	5
4:15 PM	1	5	0	1	7
4:30 PM	5	15	1	1	22
4:45 PM	2	4	0	0	6
5:00 PM	3	3	0	0	6
5:15 PM	6	9	1	0	16
5:30 PM	1	8	0	1	10
5:45 PM	1	9	0	0	10
Count Total	20	57	2	3	82
Peak Hour Total	11	27	1	2	41
Peak Hour HV%	1.5%	3.1%	3.3%	6.9%	2.4%

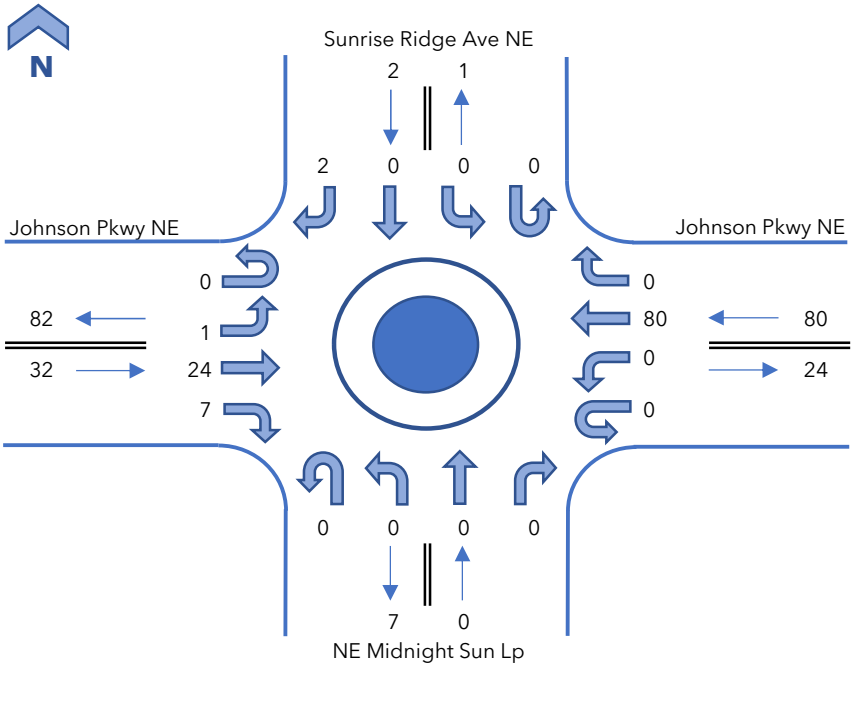
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

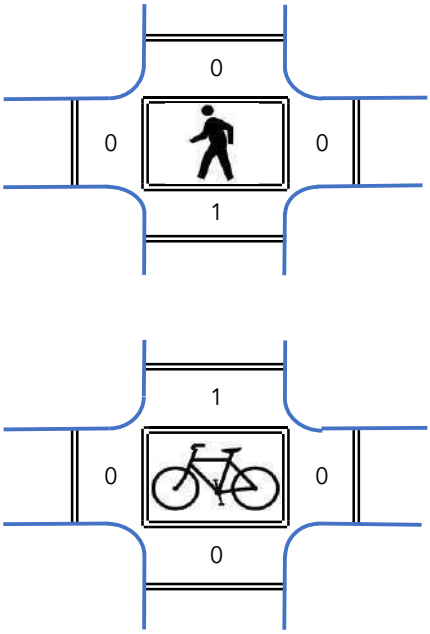
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/21/2025
Day of the Week: Wednesday
Time Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

Johnson Parkway NE & Sunrise Ridge NE





Interval Start Time	Johnson Pkwy NE Eastbound				Johnson Pkwy NE Westbound				NE Midnight Sun Lp Northbound				Sunrise Ridge Ave NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
7:00 AM	0	0	2	0	0	0	12	0	0	1	0	0	0	0	0	0	15	
7:15 AM	0	0	7	4	0	0	19	0	0	0	0	0	0	0	0	0	30	
7:30 AM	0	1	9	1	0	0	22	0	0	0	0	0	0	0	0	1	34	
7:45 AM	0	0	3	1	0	0	27	0	0	0	0	0	0	0	0	0	31	110
8:00 AM	0	0	5	1	0	0	12	0	0	0	0	0	0	0	0	1	19	114
8:15 AM	0	0	3	1	0	0	3	0	0	2	0	0	0	0	0	0	9	93
8:30 AM	0	1	2	3	0	0	12	0	0	0	0	0	0	0	0	0	18	77
8:45 AM	0	0	7	3	0	0	6	0	0	0	0	1	0	0	0	1	18	64
Count Total	0	2	38	14	0	0	113	0	0	3	0	1	0	0	0	3	174	--
Peak Hour Total	0	1	24	7	0	0	80	0	0	0	0	0	0	0	0	2	114	--
PHF	0.73				0.74				#DIV/0!				0.50				0.84	--
Heavy Vehicles	0	0	1	1	0	0	4	0	0	0	0	0	0	0	0	0	6	--
HV %	0.0%	0.0%	4.2%	14.3%	0.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	1	2	0	0	3
7:45 AM	0	2	0	0	2
8:00 AM	1	0	0	0	1
8:15 AM	0	0	1	0	1
8:30 AM	1	2	0	0	3
8:45 AM	2	0	0	0	2
Count Total	5	6	1	0	12
Peak Hour Total	2	4	0	0	6
Peak Hour HV%	6.3%	5.0%	#DIV/0!	0.0%	5.3%

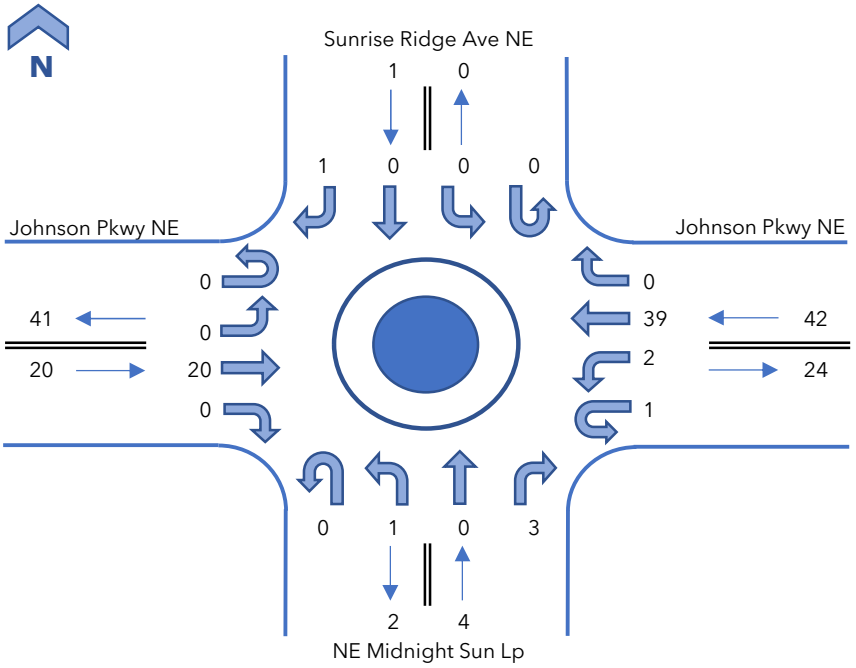
Pedestrians (Leg)				
E	W	N	S	Total
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	1	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	1	2
0	0	0	1	1

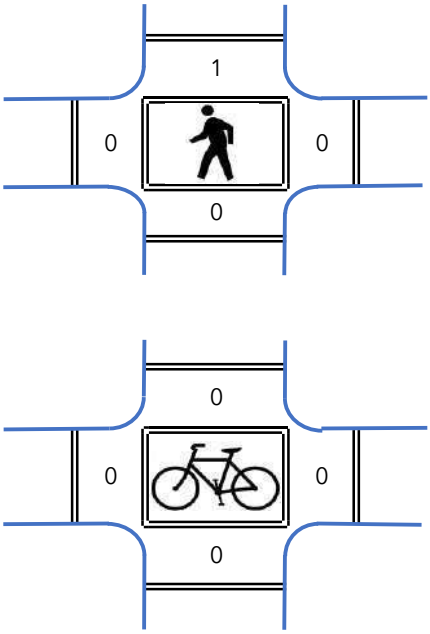
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	1	0	1

HEATH&ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/20/2025
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Johnson Parkway NE & Sunrise Ridge NE





Interval Start Time	Johnson Pkwy NE Eastbound				Johnson Pkwy NE Westbound				NE Midnight Sun Lp Northbound				Sunrise Ridge Ave NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	0	6	0	0	1	9	0	0	0	0	0	0	0	0	0	16	
4:15 PM	0	0	5	0	0	0	9	0	0	1	0	1	0	0	0	0	16	
4:30 PM	0	0	3	0	1	1	9	0	0	0	0	1	0	0	0	1	16	
4:45 PM	0	0	6	0	0	0	12	0	0	0	0	1	0	0	0	0	19	67
5:00 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	9	60
5:15 PM	0	0	3	1	0	0	10	0	0	1	0	0	0	0	0	1	16	60
5:30 PM	0	0	6	0	0	0	7	0	0	3	0	0	0	0	0	0	16	60
5:45 PM	0	0	2	3	0	0	3	1	0	2	0	0	0	0	0	0	11	52
Count Total	0	0	35	4	1	2	64	1	0	7	0	3	0	0	0	2	119	--
Peak Hour Total	0	0	20	0	1	2	39	0	0	1	0	3	0	0	0	1	67	--
PHF	0.83				0.88				0.50				0.25				0.88	--
Heavy Vehicles	0	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	6	--
HV %	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%	10.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.0%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	0	1	0	0	1
4:15 PM	1	2	0	0	3
4:30 PM	1	1	0	0	2
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	2	0	1	0	3
5:30 PM	0	0	1	0	1
5:45 PM	0	0	0	0	0
Count Total	4	4	2	0	10
Peak Hour Total	2	4	0	0	6
Peak Hour HV%	10.0%	9.5%	0.0%	0.0%	9.0%

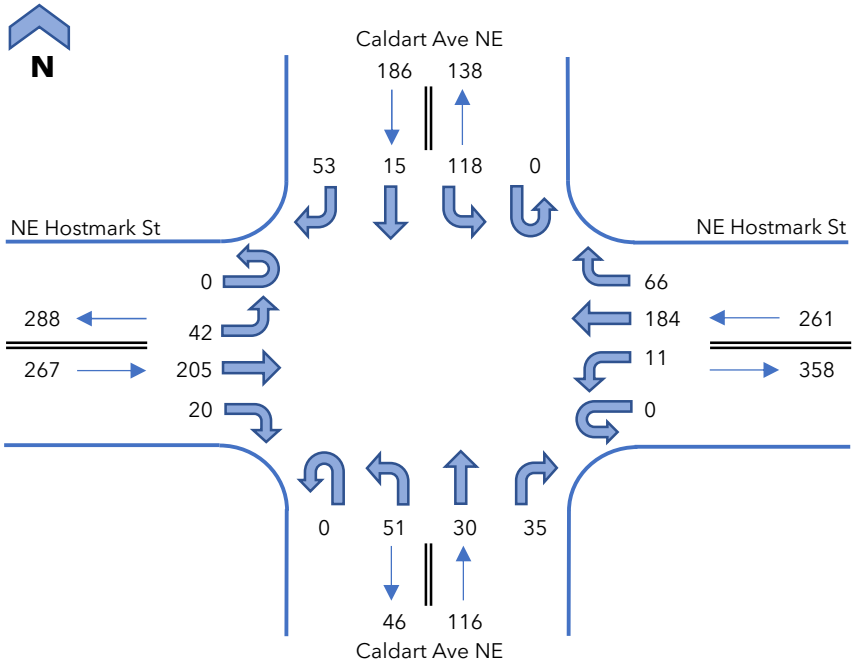
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	2	0	2
0	0	0	0	0
0	0	3	0	3
0	0	1	0	1

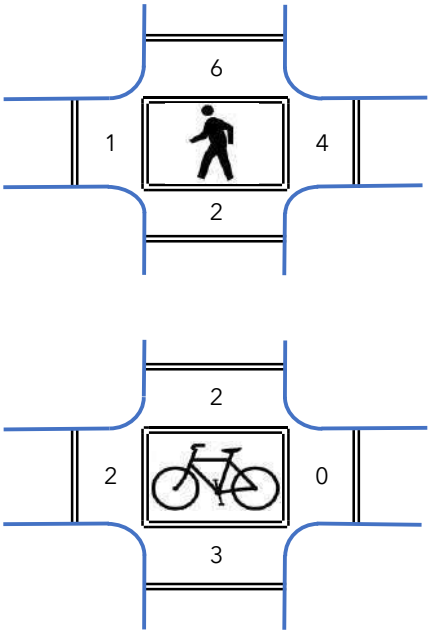
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/29/2025
Day of the Week: Thursday
Time Period: 7:00 AM to 9:00 AM
Peak Hour: 7:15 AM to 8:15 AM

NE Hostmark Street & Caldart Avenue NE





Interval Start Time	NE Hostmark St Eastbound				NE Hostmark St Westbound				Caldart Ave NE Northbound				Caldart Ave NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
7:00 AM	0	5	22	5	0	0	26	5	0	13	4	0	0	3	1	8	92	
7:15 AM	0	8	57	10	0	1	37	5	0	16	3	1	0	26	1	18	183	
7:30 AM	0	13	70	2	0	6	46	17	0	12	2	21	0	56	5	6	256	
7:45 AM	0	14	53	4	0	3	67	37	0	15	20	13	0	32	2	18	278	809
8:00 AM	0	7	25	4	0	1	34	7	0	8	5	0	0	4	7	11	113	830
8:15 AM	0	5	15	4	0	0	23	1	0	23	5	2	0	8	2	11	99	746
8:30 AM	0	4	29	6	0	0	11	4	0	8	4	0	0	9	7	9	91	581
8:45 AM	0	6	14	6	0	1	23	6	0	13	5	3	0	14	9	13	113	416
Count Total	0	62	285	41	0	12	267	82	0	108	48	40	0	152	34	94	1225	--
Peak Hour Total	0	42	205	20	0	11	184	66	0	51	30	35	0	118	15	53	830	--
PHF	0.79				0.61				0.60				0.69				0.75	--
Heavy Vehicles	0	0	12	1	0	0	13	0	0	0	1	2	0	9	0	2	40	--
HV %	0.0%	0.0%	5.9%	5.0%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	3.3%	5.7%	0.0%	7.6%	0.0%	3.8%	4.8%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
7:00 AM	2	1	0	0	3
7:15 AM	8	4	1	4	17
7:30 AM	4	4	1	6	15
7:45 AM	0	2	1	1	4
8:00 AM	1	3	0	0	4
8:15 AM	1	2	1	0	4
8:30 AM	2	1	0	1	4
8:45 AM	3	0	0	1	4
Count Total	21	17	4	13	55
Peak Hour Total	13	13	3	11	40
Peak Hour HV%	4.9%	5.0%	2.6%	5.9%	4.8%

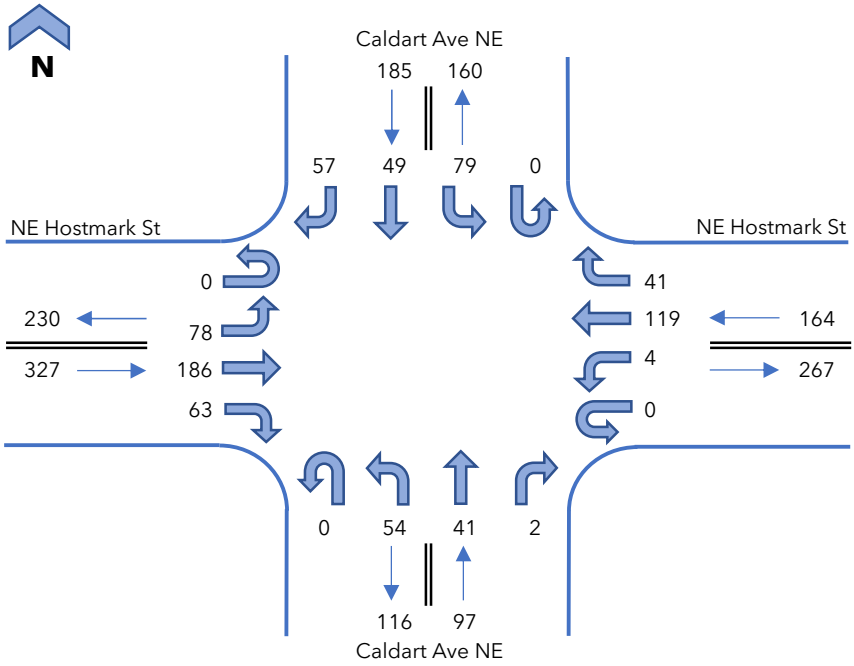
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	1	1
1	0	1	0	2
2	0	1	1	4
1	1	3	1	6
0	0	1	0	1
0	0	0	0	0
2	1	0	3	6
0	0	0	0	0
6	2	6	6	20
4	1	6	2	13

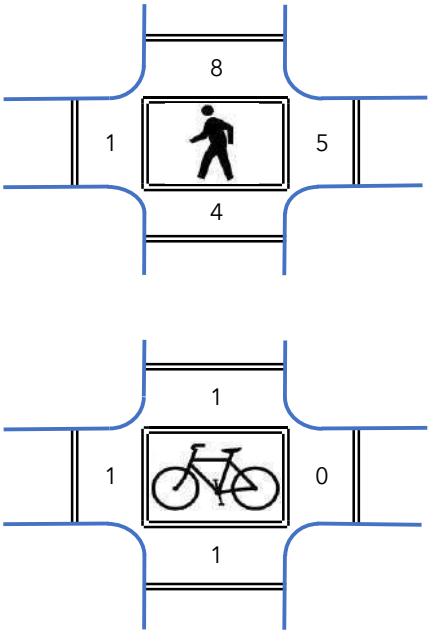
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	2	1	2	5
0	0	0	1	1
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	2	2	3	7
0	2	2	3	7

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 5/29/2025
Day of the Week: Thursday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

NE Hostmark Street & Caldart Avenue NE





Interval Start Time	NE Hostmark St Eastbound				NE Hostmark St Westbound				Caldart Ave NE Northbound				Caldart Ave NE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	8	37	21	0	2	48	12	0	21	12	2	0	19	9	14	205	
4:15 PM	0	10	35	16	0	0	37	17	0	17	16	1	0	8	7	15	179	
4:30 PM	0	8	54	12	0	0	22	13	0	11	7	0	0	15	8	10	160	
4:45 PM	0	17	64	14	0	1	24	8	0	11	8	1	0	41	19	14	222	766
5:00 PM	0	16	37	22	0	3	40	14	0	15	12	0	0	21	11	14	205	766
5:15 PM	0	21	40	17	0	0	26	10	0	13	13	0	0	6	10	14	170	757
5:30 PM	0	24	45	10	0	0	29	9	0	15	8	1	0	11	9	15	176	773
5:45 PM	0	22	27	7	0	1	18	4	0	7	9	2	0	7	7	13	124	675
Count Total	0	126	339	119	0	7	244	87	0	110	85	7	0	128	80	109	1441	--
Peak Hour Total	0	78	186	63	0	4	119	41	0	54	41	2	0	79	49	57	773	--
PHF	0.86				0.72				0.90				0.63				0.87	--
Heavy Vehicles	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	2	6	--
HV %	0.0%	2.6%	0.5%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	0.8%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	0	1	0	1	2
4:15 PM	0	0	1	1	2
4:30 PM	0	0	0	0	0
4:45 PM	2	1	0	0	3
5:00 PM	0	0	0	1	1
5:15 PM	0	0	0	0	0
5:30 PM	1	0	0	1	2
5:45 PM	2	0	0	0	2
Count Total	5	2	1	4	12
Peak Hour Total	3	1	0	2	6
Peak Hour HV%	0.9%	0.6%	0.0%	1.1%	0.8%

Pedestrians (Leg)				
E	W	N	S	Total
1	0	2	1	4
0	0	5	0	5
3	0	2	0	5
2	1	2	0	5
0	0	2	2	4
1	0	1	2	4
2	0	3	0	5
0	0	0	0	0
9	1	17	5	32
5	1	8	4	18

Bicycles (Leg)				
E	W	N	S	Total
0	0	0	2	2
0	1	0	0	1
1	2	1	1	5
0	0	0	1	1
0	0	0	0	0
0	1	0	0	1
0	0	1	0	1
0	0	0	0	0
1	4	2	4	11
0	1	1	1	3

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

APPENDIX
ITE Sheets

Single-Family Detached Housing
(210)

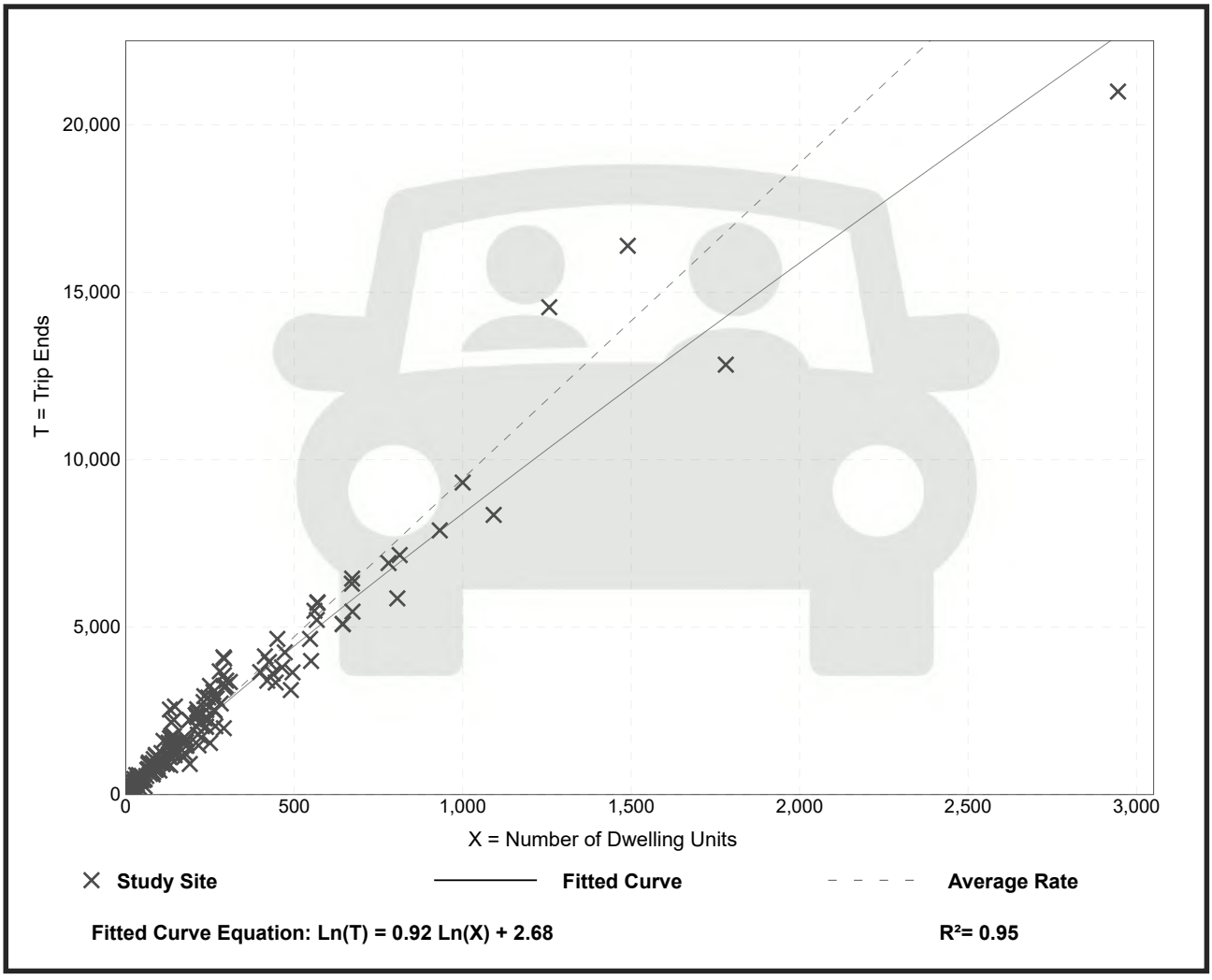
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

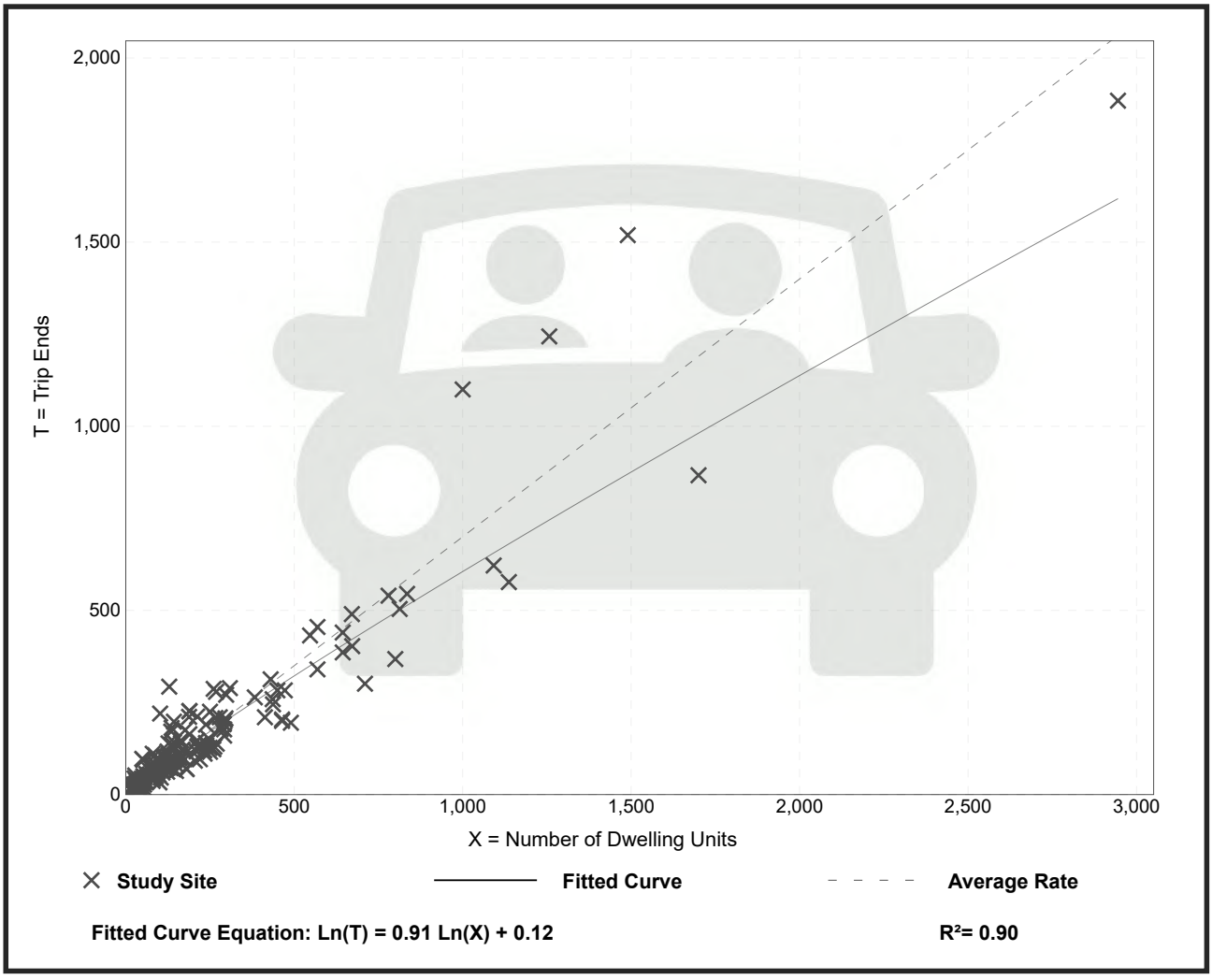
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

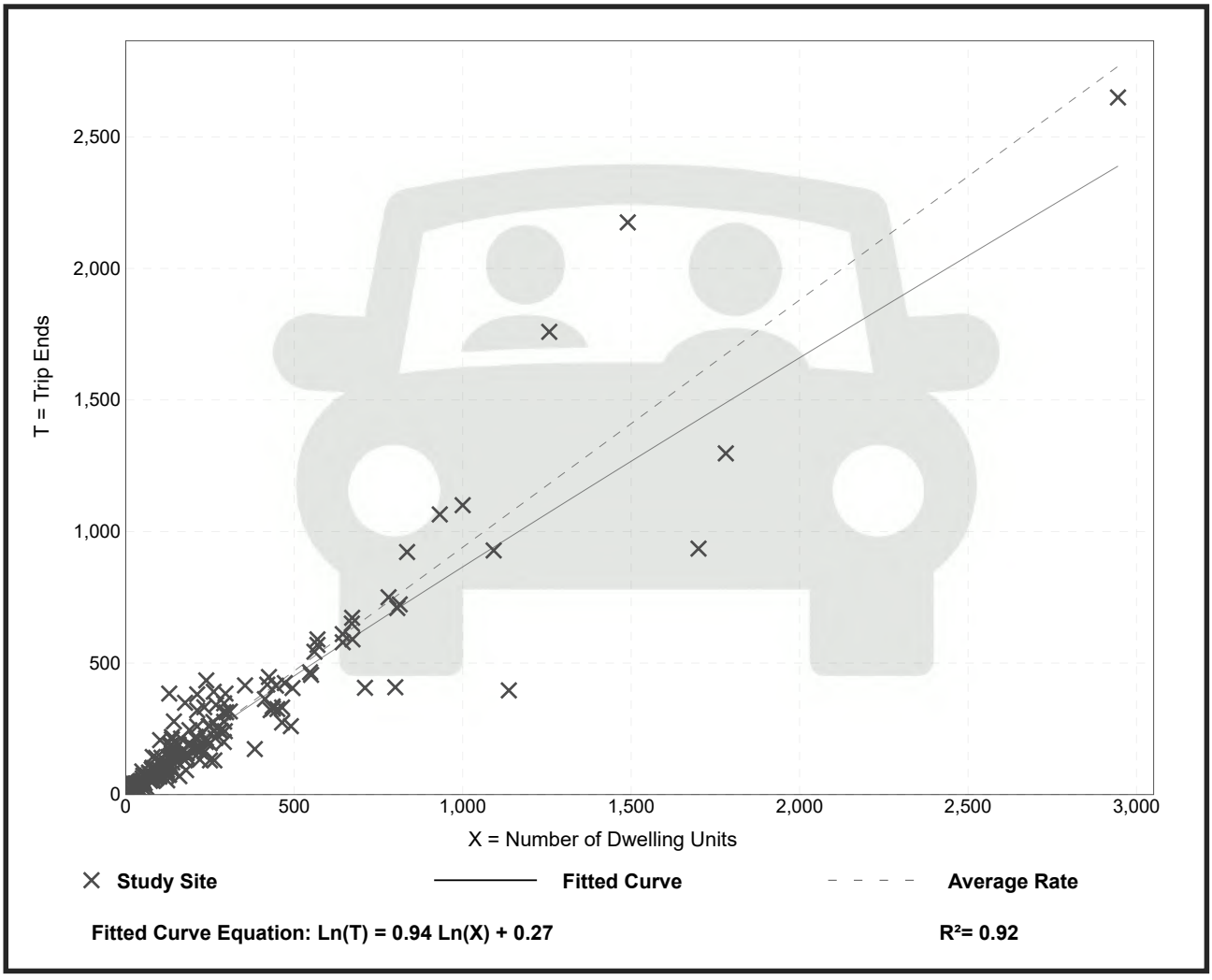
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

THE PINNACLE AT LIBERTY BAY TRAFFIC IMPACT ANALYSIS

APPENDIX
PM Pipeline Volumes

Heath & Associates, Inc.
Pipeline Volumes - Pinnacle at Liberty Bay

1. SR 305 & Hostmark

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use		5						2				1
2. Sandstone Ridge					2	1	2				3	
3. Audrey Estates		7			1			4			2	
Totals	0	12	0	0	3	1	2	6	0	0	5	1

2. 305 & Baywatch

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use					3						2	
2. Sandstone Ridge					2						1	
3. Audrey Estates					4						7	
Totals	0	0	0	0	9	0	0	0	0	0	10	0

3. SR 305 & Johnson

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use					3						2	
2. Sandstone Ridge					2						1	
3. Audrey Estates	4		9	14								7
Totals	4	0	9	14	5	0	0	0	0	0	3	7

4. Johnson & Sunrise

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use												
2. Sandstone Ridge												
3. Audrey Estates	14								21	13		8
Totals	14	0	0	0	0	0	0	0	21	13	0	8

5. Sunrise & Crystallia

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use												
2. Sandstone Ridge												
3. Audrey Estates												
Totals	0	0	0	0	0	0	0	0	0	0	0	0

6. Hostmark & Caldart

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use												
2. Sandstone Ridge					3						5	
3. Audrey Estates			7	5	1						2	
Totals	0	0	7	5	4	0	0	0	0	0	7	0

7. Caldart & Sunrise

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use												
2. Sandstone Ridge												
3. Audrey Estates												
Totals	0	0	0	0	0	0	0	0	0	0	0	0

8. 305 & Lincoln

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use		4				1		3				
2. Sandstone Ridge			23	14	1						3	
3. Audrey Estates		7	3	2				4				
Totals	0	11	26	16	1	1	0	7	0	0	3	0

9. 305 & Liberty

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use		4						3				
2. Sandstone Ridge		22						13	1	1		
3. Audrey Estates		9						6		1		
Totals	0	35	0	0	0	0	0	22	1	2	0	0

10. 305 & Forest

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use		4						3				
2. Sandstone Ridge		22						13				
3. Audrey Estates		9						6				
Totals	0	35	0	0	0	0	0	22	0	0	0	0

11. 305 & Bond

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use		3				1		3				
2. Sandstone Ridge		15				2	2	9	2	5		
3. Audrey Estates		6				1	1	4	1	2		
Totals	0	24	0	0	0	4	3	16	3	7	0	0

12. Hostmak & 6th

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use									1		2	
2. Sandstone Ridge						2	3					
3. Audrey Estates					1						2	
Totals	0	0	0	0	1	2	3	0	1	0	4	0

13. Hostmark & Lincoln

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use					1						2	
2. Sandstone Ridge	1											3
3. Audrey Estates					1						2	
Totals	1	0	0	0	2	0	0	0	0	0	4	3

14. Hostmark & 4th

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use					1						2	
2. Sandstone Ridge					1						3	
3. Audrey Estates					1						2	
Totals	0	0	0	0	3	0	0	0	0	0	7	0

15. Front & Sunset

PM Peak Hour
Pipeline Volume Summations

1. Aktiv Mixed Use		2						1				
2. Sandstone Ridge		3						1				
3. Audrey Estates		2						1				
Totals	0	7	0	0	0	0	0	3	0	0	0	0

THE PINNACLE AT LIBERTY BAY TRAFFIC IMPACT ANALYSIS

APPENDIX
2032 Forecast Excel

Heath & Associates, Inc
Pinnacle Bay TIA 10-2-26

AM Peak Hour Forecast Intersection Volumes

** 0.5% GR along SR 305 (NB-T/SB-T) / 2.0 all other roadways*

Annual Growth Rate: 2 % 0.5 % 2032
# of Years to Horizon: 7

1. SR 305 & Hostmark

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	18	847	182	131	75	46	18	469	40	57	94	33
Project Trips	0	7	0	0	0	0	0	18	14	5	0	0
Pipeline	0	2	1	1	3	2	0	4	1	1	0	1
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	21	879	208	150	89	54	21	489	47	66	107	39
With	21	886	208	150	89	54	21	507	61	71	107	39

2. SR 305 & Baywatch

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	3	0	2	1	493	0	0	0	0	0	928	0
Project Trips	0	0	0	0	32	0	0	0	0	0	12	0
Pipeline	0	0	0	0	5	0	0	0	0	0	7	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	3	0	2	1	515	0	0	0	0	0	967	0
With	3	0	2	1	547	0	0	0	0	0	979	0

3. SR 305 & Johnson

	SBR	SBT	SBL	SBU	WBR	WBT	WBL	WBU	NBR	NBT	NBL	NBU	EBR	EBT	EBL	EBU
Existing	11	2	63	0	10	467	5	1	3	6	15	0	17	906	6	1
Project Trips	32	0	28	0	10	0	0	0	0	0	0	0	0	0	12	0
Pipeline	3	0	13	0	4	2	0	0	0	0	0	0	0	5	2	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Without	16	2	85	0	15	485	6	1	3	7	17	0	19	943	9	1
With	48	2	113	0	25	485	6	1	3	7	17	0	19	943	21	1

4. Johnson & Sunrise Ridge

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	80	0	0	0	0	7	24	1	2	0	0
Project Trips	1	0	0	0	0	0	0	0	22	60	0	4
Pipeline	5	0	0	0	0	0	0	0	6	16	0	15
Traffic Redist.	0	-18	0	0	0	0	0	-5	5	18	0	0
Without	5	91	0	0	0	0	8	27	7	18	0	15
With	6	73	0	0	0	0	8	22	34	96	0	19

5. Sunrise Ridge & Crystallia

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	2	0	0	0	0	0	0	0	0	0	0	5
Project Trips	3	0	0	0	0	0	0	0	23	64	0	7
Pipeline	0	1	0	0	0	0	0	3	0	0	0	0
Traffic Redist.	0	18	0	0	0	0	0	5	0	0	0	0
Without	2	1	0	0	0	0	0	3	0	0	0	6
With	5	19	0	0	0	0	0	8	23	64	0	13

6. Hostmark & Caldart

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	53	15	118	66	184	11	35	30	51	20	205	42
Project Trips	0	1	0	0	0	2	4	3	0	0	0	0
Pipeline	0	0	3	8	6	0	0	0	0	0	2	0
Traffic Redist.	0	9	-9	-2	-3	9	0	2	3	0	0	0
Without	60	17	138	83	216	13	40	34	58	23	236	48
With	60	27	129	81	213	24	44	39	61	23	236	48

7. Caldart & Sunrise

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	50	5	20	0	45	15	30	0
Project Trips	0	0	0	0	0	0	0	0	7	3	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	5	18	0	0
Without	0	0	0	0	57	6	23	0	51	17	34	0
With	0	0	0	0	57	6	23	0	63	38	34	0

Heath & Associates, Inc
Pinnacle Bay TIA 10-2-26

PM Peak Hour Forecast Intersection Volumes

** 0.5% GR along SR 305 (NB-T/SB-T) / 2.0 all other roadways*

Annual Growth Rate: 2 % 0.5 % 2032
# of Years to Horizon: 7

1. SR 305 & Hostmark

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	45	628	191	200	111	47	30	788	108	89	152	61
Project Trips	0	20	0	0	0	0	0	12	10	16	0	0
Pipeline	0	12	0	0	3	1	2	6	0	0	5	1
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	51	662	218	228	130	55	36	822	123	101	178	71
With	51	682	218	228	130	55	36	834	133	117	178	71

2. SR 305 & Baywatch

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	3	0	1	4	870	0	0	0	0	0	751	5
Project Trips	0	0	0	0	22	0	0	0	0	0	36	0
Pipeline	0	0	0	0	9	0	0	0	0	0	10	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	3	0	1	5	909	0	0	0	0	0	787	6
With	3	0	1	5	931	0	0	0	0	0	823	6

3. SR 305 & Johnson

	SBR	SBT	SBL	SBU	WBR	WBT	WBL	WBU	NBR	NBT	NBL	NBU	EBR	EBT	EBL	EBU
Existing	8	3	18	0	10	848	7	3	7	5	18	0	18	731	3	0
Project Trips	22	0	19	0	32	0	0	0	0	0	0	0	0	0	36	0
Pipeline	4	0	9	0	14	5	0	0	0	0	0	0	0	3	7	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Without	13	3	30	0	25	883	8	3	8	6	21	0	21	760	10	0
With	35	3	49	0	57	883	8	3	8	6	21	0	21	760	46	0

4. Johnson & Sunrise Ridge

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	32	2	3	0	1	0	20	0	1	0	0
Project Trips	4	0	0	0	0	0	0	0	68	41	0	2
Pipeline	14	0	0	0	0	0	0	0	21	13	0	8
Traffic Redist.	0	-9	0	0	0	0	0	-5	5	9	0	0
Without	14	36	2	3	0	1	0	23	21	14	0	8
With	18	27	2	3	0	1	0	18	94	64	0	10

5. Sunrise Ridge & Crystallia

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	4	0	0	0	0	0	0	0	0	0	0	3
Project Trips	8	0	0	0	0	0	0	0	72	43	0	5
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Redist.	0	9	0	0	0	0	0	5	0	0	0	0
Without	5	0	0	0	0	0	0	0	0	0	0	3
With	13	9	0	0	0	0	0	5	72	43	0	8

6. Hostmark & Caldart

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	57	49	79	41	119	4	2	41	54	63	186	78
Project Trips	0	4	0	0	0	4	3	2	0	0	0	0
Pipeline	0	0	7	5	4	0	0	0	0	0	7	0
Traffic Redist.	0	5	-5	-2	-3	4	0	2	3	0	0	0
Without	65	56	97	52	140	5	2	47	62	72	219	89
With	65	65	92	50	137	13	5	51	65	72	219	89

7. Caldart & Sunrise

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	50	20	15	0	30	45	50	0
Project Trips	0	0	0	0	0	0	0	0	5	8	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	5	9	0	0
Without	0	0	0	0	57	23	17	0	34	51	57	0
With	0	0	0	0	57	23	17	0	44	68	57	0

8. SR 305 & Lincoln

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	73	667	161	198	203	109	114	975	104	99	229	57
Project Trips	0	12	0	0	0	4	2	7	3	4	0	0
Pipeline	0	11	26	16	1	1	0	7	0	0	3	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	83	701	210	242	232	125	130	1,016	119	113	264	65
With	83	713	210	242	232	129	132	1,023	122	117	264	65

9. SR 305 & Liberty

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	47	788	68	57	57	42	73	1106	52	52	68	88
Project Trips	0	10	0	0	0	0	0	6	1	2	0	0
Pipeline	0	35	0	0	0	0	0	22	1	2	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	54	851	78	65	65	48	83	1,167	60	61	78	100
With	54	861	78	65	65	48	83	1,173	61	63	78	100

10. SR 305 & Forest Rock

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	151	879	270	296	21	26	52	1197	5	5	42	229
Project Trips	0	8	0	0	0	2	1	5	0	0	0	0
Pipeline	0	35	0	0	0	0	0	22	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	172	945	308	337	24	30	59	1,261	6	6	48	261
With	172	953	308	337	24	32	60	1,266	6	6	48	261

11. SR 305 & Bond

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	31	869	561	515	263	141	187	1141	312	296	286	42
Project Trips	0	5	0	0	0	3	2	3	0	0	0	0
Pipeline	0	24	0	0	0	4	3	16	3	7	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	35	923	640	587	300	165	216	1,197	359	344	326	48
With	35	928	640	587	300	168	218	1,200	359	344	326	48

12. Hostmark & 6th Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	229	52	68	0	78	21	208	0
Project Trips	0	0	0	0	9	1	2	0	0	0	14	0
Pipeline	0	0	0	0	1	2	3	0	1	0	4	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	0	0	0	0	262	61	81	0	90	24	241	0
With	0	0	0	0	271	62	83	0	90	24	255	0

13. Hostmark & Lincoln

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	36	0	0	5	312	0	0	0	0	0	229	26
Project Trips	0	0	0	0	9	0	0	0	0	0	14	0
Pipeline	1	0	0	0	2	0	0	0	0	0	4	3
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	42	0	0	6	358	0	0	0	0	0	265	33
With	42	0	0	6	367	0	0	0	0	0	279	33

14. Hostmark & 4th

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	10	31	16	31	296	16	0	0	0	0	68	239	10
Project Trips	0	0	0	0	9	0	0	0	0	0	14	0
Pipeline	0	0	0	0	3	0	0	0	0	0	7	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	11	35	18	35	340	18	0	0	0	78	279	11
With	11	35	18	35	349	18	0	0	0	78	293	11

15. Front & Sunset

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	333	229	317	0	10	16	328	0	0	0	0
Project Trips	0	7	0	0	0	0	0	4	0	0	0	0
Pipeline	0	7	0	0	0	0	0	3	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	0	387	261	361	0	11	18	377	0	0	0	0
With	0	394	261	361	0	11	18	381	0	0	0	0

THE PINNACLE AT LIBERTY BAY TRAFFIC IMPACT ANALYSIS

APPENDIX
2037 Forecast Excel

Heath & Associates, Inc
Pinnacle Bay TIA 10-2-26

AM Peak Hour Forecast Intersection Volumes

** 0.5% GR along SR 305 (NB-T/SB-T) / 2.0 all other roadways*

Annual Growth Rate: 2 % 0.5 % 2032
# of Years to Horizon: 12

1. SR 305 & Hostmark

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	18	847	182	131	75	46	18	469	40	57	94	33
Project Trips	0	7	0	0	0	0	0	18	14	5	0	0
Pipeline	0	2	1	1	3	2	0	4	1	1	0	1
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	22	900	227	163	96	59	22	501	51	72	117	42
With	22	907	227	163	96	59	22	519	65	77	117	42

2. SR 305 & Baywatch

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	3	0	2	1	493	0	0	0	0	0	928	0
Project Trips	0	0	0	0	32	0	0	0	0	0	12	0
Pipeline	0	0	0	0	5	0	0	0	0	0	7	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	4	0	2	1	528	0	0	0	0	0	991	0
With	4	0	2	1	560	0	0	0	0	0	1,003	0

3. SR 305 & Johnson

	SBR	SBT	SBL	SBU	WBR	WBT	WBL	WBU	NBR	NBT	NBL	NBU	EBR	EBT	EBL	EBU
Existing	11	2	63	0	10	467	5	1	3	6	15	0	17	906	6	1
Project Trips	32	0	28	0	10	0	0	0	0	0	0	0	0	0	12	0
Pipeline	3	0	13	0	4	2	0	0	0	0	0	0	0	5	2	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Without	17	2	91	0	16	497	6	1	4	7	19	0	21	965	9	1
With	49	2	119	0	26	497	6	1	4	7	19	0	21	965	21	1

4. Johnson & Sunrise Ridge

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	80	0	0	0	0	7	24	1	2	0	0
Project Trips	1	0	0	0	0	0	0	0	22	60	0	4
Pipeline	5	0	0	0	0	0	0	0	6	16	0	15
Traffic Redist.	0	-18	0	0	0	0	0	-5	5	18	0	0
Without	5	99	0	0	0	0	9	30	7	18	0	15
With	6	81	0	0	0	0	9	25	34	96	0	19

5. Sunrise Ridge & Crystallia

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	2	0	0	0	0	0	0	0	0	0	0	5
Project Trips	3	0	0	0	0	0	0	0	23	64	0	7
Pipeline	0	1	0	0	0	0	0	3	0	0	0	0
Traffic Redist.	0	18	0	0	0	0	0	5	0	0	0	0
Without	2	1	0	0	0	0	0	3	0	0	0	6
With	5	19	0	0	0	0	0	8	23	64	0	13

6. Hostmark & Caldart

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	53	15	118	66	184	11	35	30	51	20	205	42
Project Trips	0	1	0	0	0	2	4	3	0	0	0	0
Pipeline	0	0	3	8	6	0	0	0	0	0	2	0
Traffic Redist.	0	9	-9	-2	-3	9	0	2	3	0	0	0
Without	66	19	149	90	234	14	43	37	63	25	256	52
With	66	29	140	88	231	25	47	42	66	25	256	52

7. Caldart & Sunrise

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	50	5	20	0	45	15	30	0
Project Trips	0	0	0	0	0	0	0	0	7	3	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	5	18	0	0
Without	0	0	0	0	62	6	25	0	56	19	37	0
With	0	0	0	0	62	6	25	0	68	40	37	0

Heath & Associates, Inc
Pinnacle Bay TIA 10-2-26

PM Peak Hour Forecast Intersection Volumes

** 0.5% GR along SR 305 (NB-T/SB-T) / 2.0 all other roadways*

Annual Growth Rate: 2 % 0.5 % 2032
# of Years to Horizon: 12

1. SR 305 & Hostmark

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	45	628	191	200	111	47	30	788	108	89	152	61
Project Trips	0	20	0	0	0	0	0	12	10	16	0	0
Pipeline	0	12	0	0	3	1	2	6	0	0	5	1
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	56	678	237	248	141	59	39	841	134	110	193	77
With	56	698	237	248	141	59	39	853	144	126	193	77

2. SR 305 & Baywatch

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	3	0	1	4	870	0	0	0	0	0	751	5
Project Trips	0	0	0	0	22	0	0	0	0	0	36	0
Pipeline	0	0	0	0	9	0	0	0	0	0	10	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	4	0	1	5	931	0	0	0	0	0	806	6
With	4	0	1	5	953	0	0	0	0	0	842	6

3. SR 305 & Johnson

	SBR	SBT	SBL	SBU	WBR	WBT	WBL	WBU	NBR	NBT	NBL	NBU	EBR	EBT	EBL	EBU
Existing	8	3	18	0	10	848	7	3	7	5	18	0	18	731	3	0
Project Trips	22	0	19	0	32	0	0	0	0	0	0	0	0	0	36	0
Pipeline	4	0	9	0	14	5	0	0	0	0	0	0	0	3	7	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Without	14	4	31	0	26	904	9	4	9	6	22	0	22	778	11	0
With	36	4	50	0	58	904	9	4	9	6	22	0	22	778	47	0

4. Johnson & Sunrise Ridge

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	32	2	3	0	1	0	20	0	1	0	0
Project Trips	4	0	0	0	0	0	0	0	68	41	0	2
Pipeline	14	0	0	0	0	0	0	0	21	13	0	8
Traffic Redist.	0	-9	0	0	0	0	0	-5	5	9	0	0
Without	14	40	2	4	0	1	0	25	21	14	0	8
With	18	31	2	4	0	1	0	20	94	64	0	10

5. Sunrise Ridge & Crystallia

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	4	0	0	0	0	0	0	0	0	0	0	3
Project Trips	8	0	0	0	0	0	0	0	72	43	0	5
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Redist.	0	9	0	0	0	0	0	5	0	0	0	0
Without	5	0	0	0	0	0	0	0	0	0	0	4
With	13	9	0	0	0	0	0	5	72	43	0	9

6. Hostmark & Caldart

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	57	49	79	41	119	4	2	41	54	63	186	78
Project Trips	0	4	0	0	0	4	3	2	0	0	0	0
Pipeline	0	0	7	5	4	0	0	0	0	0	7	0
Traffic Redist.	0	5	-5	-2	-3	4	0	2	3	0	0	0
Without	71	61	105	56	152	5	2	51	67	78	238	97
With	71	70	100	54	149	13	5	55	70	78	238	97

7. Caldart & Sunrise

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	50	20	15	0	30	45	50	0
Project Trips	0	0	0	0	0	0	0	0	5	8	0	0
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	5	9	0	0
Without	0	0	0	0	62	25	19	0	37	56	62	0
With	0	0	0	0	62	25	19	0	47	73	62	0

8. SR 305 & Lincoln

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	73	667	161	198	203	109	114	975	104	99	229	57
Project Trips	0	12	0	0	0	4	2	7	3	4	0	0
Pipeline	0	11	26	16	1	1	0	7	0	0	3	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	91	718	226	262	253	136	141	1,041	129	123	287	71
With	91	730	226	262	253	140	143	1,048	132	127	287	71

9. SR 305 & Liberty

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	47	788	68	57	57	42	73	1106	52	52	68	88
Project Trips	0	10	0	0	0	0	0	6	1	2	0	0
Pipeline	0	35	0	0	0	0	0	22	1	2	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	58	870	84	71	71	52	91	1,194	65	66	84	109
With	58	880	84	71	71	52	91	1,200	66	68	84	109

10. SR 305 & Forest Rock

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	151	879	270	296	21	26	52	1197	5	5	42	229
Project Trips	0	8	0	0	0	2	1	5	0	0	0	0
Pipeline	0	35	0	0	0	0	0	22	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	187	967	335	367	26	32	64	1,291	6	6	52	284
With	187	975	335	367	26	34	65	1,296	6	6	52	284

11. SR 305 & Bond

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	31	869	561	515	263	141	187	1141	312	296	286	42
Project Trips	0	5	0	0	0	3	2	3	0	0	0	0
Pipeline	0	24	0	0	0	4	3	16	3	7	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	38	945	696	639	326	179	235	1,225	390	374	355	52
With	38	950	696	639	326	182	237	1,228	390	374	355	52

12. Hostmark & 6th Ave

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	229	52	68	0	78	21	208	0
Project Trips	0	0	0	0	9	1	2	0	0	0	14	0
Pipeline	0	0	0	0	1	2	3	0	1	0	4	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	0	0	0	0	285	66	87	0	98	26	262	0
With	0	0	0	0	294	67	89	0	98	26	276	0

13. Hostmark & Lincoln

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	36	0	0	5	312	0	0	0	0	0	229	26
Project Trips	0	0	0	0	9	0	0	0	0	0	14	0
Pipeline	1	0	0	0	2	0	0	0	0	0	4	3
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	46	0	0	6	389	0	0	0	0	0	288	35
With	46	0	0	6	398	0	0	0	0	0	302	35

14. Hostmark & 4th

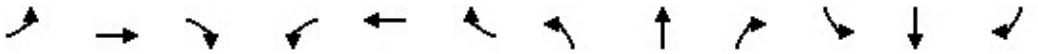
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	10	31	16	31	296	16	0	0	0	68	239	10
Project Trips	0	0	0	0	9	0	0	0	0	0	14	0
Pipeline	0	0	0	0	3	0	0	0	0	0	7	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	12	38	20	38	370	20	0	0	0	84	303	12
With	12	38	20	38	379	20	0	0	0	84	317	12

15. Front & Sunset

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	333	229	317	0	10	16	328	0	0	0	0
Project Trips	0	7	0	0	0	0	0	4	0	0	0	0
Pipeline	0	7	0	0	0	0	0	3	0	0	0	0
Traffic Redist.	0	0	0	0	0	0	0	0	0	0	0	0
Without	0	420	284	393	0	12	20	410	0	0	0	0
With	0	427	284	393	0	12	20	414	0	0	0	0

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

APPENDIX
Existing Level of Service



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	94	57	46	75	131	40	469	18	182	847	18
Future Volume (veh/h)	33	94	57	46	75	131	40	469	18	182	847	18
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)	0.98		0.97	0.99		0.98	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	1716	1730	1744	1744	1744	1716	1730	1716	1716	1730	1716	1646
Adj Flow Rate, veh/h	36	102	62	50	82	77	43	510	20	198	921	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	5	4	4	4	6	5	6	6	5	6	11
Cap, veh/h	166	164	136	158	183	149	48	576	23	826	1939	42
Arrive On Green	0.02	0.09	0.09	0.03	0.10	0.10	0.03	0.21	0.21	0.50	0.68	0.68
Sat Flow, veh/h	1634	1730	1440	1661	1744	1421	1647	2802	110	1647	2860	62
Grp Volume(v), veh/h	36	102	62	50	82	77	43	221	309	198	392	549
Grp Sat Flow(s),veh/h/ln	1634	1730	1440	1661	1744	1421	1647	1218	1693	1647	1218	1704
Q Serve(g_s), s	2.4	6.8	4.9	3.3	5.3	2.2	3.1	21.2	21.2	8.2	18.3	18.3
Cycle Q Clear(g_c), s	2.4	6.8	4.9	3.3	5.3	2.2	3.1	21.2	21.2	8.2	18.3	18.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	166	164	136	158	183	149	48	250	348	826	826	1156
V/C Ratio(X)	0.22	0.62	0.46	0.32	0.45	0.52	0.90	0.88	0.89	0.24	0.47	0.47
Avail Cap(c_a), veh/h	343	332	276	321	334	272	316	437	607	826	826	1156
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	48.0	52.3	51.4	47.4	50.5	6.5	58.1	46.3	46.3	17.0	9.2	9.2
Incr Delay (d2), s/veh	0.6	3.9	2.4	1.1	1.7	2.8	40.1	33.4	26.5	0.1	2.0	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(95%),veh/ln	1.8	5.6	3.3	2.5	4.3	4.0	3.3	13.4	16.8	5.4	8.3	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	48.6	56.1	53.8	48.6	52.2	9.2	98.2	79.6	72.8	17.1	11.1	10.6
LnGrp LOS	D	E	D	D	D	A	F	E	E	B	B	B
Approach Vol, veh/h		200			209			573			1139	
Approach Delay, s/veh		54.0			35.5			77.4			11.9	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	65.2	29.7	8.8	16.3	8.5	86.4	7.6	17.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	10.2	23.2	5.3	8.8	5.1	20.3	4.4	7.3
Green Ext Time (p_c), s	0.4	1.9	0.1	0.5	0.1	3.8	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	35.9
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	928	493	1	2	3
Future Vol, veh/h	0	928	493	1	2	3
Conflicting Peds, #/hr	4	0	0	4	4	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	8	6	1	1	1
Mvmt Flow	0	998	530	1	2	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	535	0	-	0	1536	538
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	1002	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1038	-	-	-	128	545
Stage 1	-	-	-	-	590	-
Stage 2	-	-	-	-	357	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1034	-	-	-	128	541
Mov Cap-2 Maneuver	-	-	-	-	128	-
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	355	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	20.49
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1034	-	-	-	128	541
HCM Lane V/C Ratio	-	-	-	-	0.017	0.006
HCM Ctrl Dly (s/v)	0	-	-	-	33.7	11.7
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	0	0	0	0	2
Future Vol, veh/h	5	0	0	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	0	0	0	0	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1	1	2	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1022	1083	1620	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1022	1083	1620	-	-	-
Mov Cap-2 Maneuver	1022	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.54	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1620	-	1022	-	-
HCM Lane V/C Ratio	-	-	0.005	-	-
HCM Ctrl Dly (s/v)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	205	20	11	184	66	51	30	35	118	15	53
Future Vol, veh/h	42	205	20	11	184	66	51	30	35	118	15	53
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	1	6	5	1	7	1	1	3	6	7	1	4
Mvmt Flow	56	273	27	15	245	88	68	40	47	157	20	71
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	17.1	16.2	12.4	13.2
HCM LOS	C	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	44%	16%	4%	89%	0%
Vol Thru, %	26%	77%	70%	11%	0%
Vol Right, %	30%	7%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	267	261	133	53
LT Vol	51	42	11	118	0
Through Vol	30	205	184	15	0
RT Vol	35	20	66	0	53
Lane Flow Rate	155	356	348	177	71
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.286	0.588	0.565	0.368	0.122
Departure Headway (Hd)	6.648	5.948	5.845	7.478	6.204
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	540	609	619	481	577
Service Time	4.706	3.963	3.86	5.23	3.955
HCM Lane V/C Ratio	0.287	0.585	0.562	0.368	0.123
HCM Control Delay, s/veh	12.4	17.1	16.2	14.5	9.8
HCM Lane LOS	B	C	C	B	A
HCM 95th-tile Q	1.2	3.8	3.5	1.7	0.4

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	15	5	50	45	20
Future Vol, veh/h	30	15	5	50	45	20
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	16	5	54	49	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	126	61
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1545	-	869	1004
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1532	-	851	988
Mov Cap-2 Maneuver	-	-	-	-	851	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	940	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.67	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	889	-	-	164	-
HCM Lane V/C Ratio	0.079	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.4	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	152	89	47	111	200	108	788	30	191	628	45
Future Volume (veh/h)	61	152	89	47	111	200	108	788	30	191	628	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)	0.99		0.96	0.99		0.96	1.00		0.96	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	1702	1758	1786	1786	1786	1786	1772	1744	1786	1786	1772	1744
Adj Flow Rate, veh/h	62	154	90	47	112	56	109	796	30	193	634	45
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, %	7	3	1	1	1	1	2	4	1	1	2	4
Cap, veh/h	175	201	166	143	183	149	129	863	33	659	1712	121
Arrive On Green	0.04	0.11	0.11	0.03	0.10	0.10	0.08	0.30	0.30	0.39	0.61	0.61
Sat Flow, veh/h	1621	1758	1455	1701	1786	1450	1688	2850	107	1701	2790	198
Grp Volume(v), veh/h	62	154	90	47	112	56	109	346	480	193	286	393
Grp Sat Flow(s),veh/h/ln	1621	1758	1455	1701	1786	1450	1688	1238	1720	1701	1258	1729
Q Serve(g_s), s	4.1	10.2	7.0	3.0	7.2	2.1	7.7	32.4	32.4	9.4	13.6	13.6
Cycle Q Clear(g_c), s	4.1	10.2	7.0	3.0	7.2	2.1	7.7	32.4	32.4	9.4	13.6	13.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.11
Lane Grp Cap(c), veh/h	175	201	166	143	183	149	129	375	521	659	772	1062
V/C Ratio(X)	0.35	0.77	0.54	0.33	0.61	0.38	0.85	0.92	0.92	0.29	0.37	0.37
Avail Cap(c_a), veh/h	320	337	279	314	342	278	323	444	616	659	772	1062
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	0.82	0.82	0.82
Uniform Delay (d), s/veh	46.0	51.6	50.2	46.9	51.6	11.8	54.7	40.5	40.5	25.4	11.6	11.6
Incr Delay (d2), s/veh	1.2	6.0	2.7	1.3	3.3	1.6	14.0	30.4	24.3	0.2	1.1	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(95%),veh/ln	3.1	8.4	4.8	2.4	6.1	2.9	6.7	18.6	23.5	6.6	6.6	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.2	57.6	52.9	48.2	54.9	13.4	68.7	70.9	64.7	25.6	12.7	12.4
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		306			215			935			872	
Approach Delay, s/veh		54.1			42.6			67.5			15.4	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	51.5	41.3	8.5	18.7	14.1	78.7	9.9	17.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	11.4	34.4	5.0	12.2	9.7	15.6	6.1	9.2
Green Ext Time (p_c), s	0.4	2.4	0.1	0.7	0.3	2.7	0.1	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	43.9
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	751	870	4	1	3
Future Vol, veh/h	5	751	870	4	1	3
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	10	2	3	1	10	1
Mvmt Flow	5	808	935	4	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	941	0	-	0	1756	937
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	819	-
Critical Hdwy	4.2	-	-	-	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.29	-	-	-	3.59	3.309
Pot Cap-1 Maneuver	697	-	-	-	89	322
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	420	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	696	-	-	-	88	322
Mov Cap-2 Maneuver	-	-	-	-	88	-
Stage 1	-	-	-	-	366	-
Stage 2	-	-	-	-	419	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.07	0	23.79
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	696	-	-	-	88	322
HCM Lane V/C Ratio	0.008	-	-	-	0.012	0.01
HCM Ctrl Dly (s/v)	10.2	-	-	-	46.2	16.3
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	0	0	0	4
Future Vol, veh/h	3	0	0	0	0	4
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	0	0	0	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2	2	4	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1020	1082	1617	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1020	1082	1617	-	-	-
Mov Cap-2 Maneuver	1020	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.54	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1617	-	1020	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Ctrl Dly (s/v)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	186	63	4	119	41	54	41	2	79	49	57
Future Vol, veh/h	78	186	63	4	119	41	54	41	2	79	49	57
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	1	1	1	1	2	1	1	1	1	1	4
Mvmt Flow	90	214	72	5	137	47	62	47	2	91	56	66
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	14	10.4	10.5	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	56%	24%	2%	62%	0%
Vol Thru, %	42%	57%	73%	38%	0%
Vol Right, %	2%	19%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	97	327	164	128	57
LT Vol	54	78	4	79	0
Through Vol	41	186	119	49	0
RT Vol	2	63	41	0	57
Lane Flow Rate	111	376	189	147	66
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.187	0.537	0.278	0.266	0.1
Departure Headway (Hd)	6.027	5.139	5.312	6.508	5.484
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	594	703	675	552	653
Service Time	4.076	3.176	3.356	4.251	3.226
HCM Lane V/C Ratio	0.187	0.535	0.28	0.266	0.101
HCM Control Delay, s/veh	10.5	14	10.4	11.6	8.8
HCM Lane LOS	B	B	B	B	A
HCM 95th-tile Q	0.7	3.2	1.1	1.1	0.3

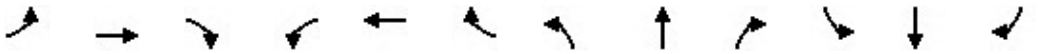
Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	45	20	50	30	15
Future Vol, veh/h	50	45	20	50	30	15
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	49	22	54	33	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	113	0	197	99
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	108	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1476	-	792	957
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	917	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1464	-	767	941
Mov Cap-2 Maneuver	-	-	-	-	767	-
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.14	9.68
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	817	-	-	514	-
HCM Lane V/C Ratio	0.06	-	-	0.015	-
HCM Ctrl Dly (s/v)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-



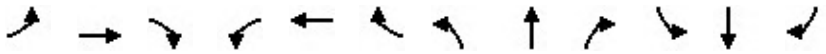
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	229	99	109	203	198	104	975	114	161	667	73
Future Volume (veh/h)	57	229	99	109	203	198	104	975	114	161	667	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	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		0.97	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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	59	239	103	114	211	206	108	1016	119	168	695	76
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	3	3	3	2	2	2
Cap, veh/h	75	294	247	136	356	300	129	1094	128	403	1521	166
Arrive On Green	0.04	0.16	0.16	0.08	0.20	0.20	0.08	0.38	0.38	0.24	0.55	0.55
Sat Flow, veh/h	1701	1786	1500	1688	1772	1490	1674	2862	335	1688	2785	304
Grp Volume(v), veh/h	59	239	103	114	211	206	108	536	599	168	345	426
Grp Sat Flow(s),veh/h/ln	1701	1786	1500	1688	1772	1490	1674	1512	1686	1688	1382	1708
Q Serve(g_s), s	4.9	18.3	8.7	9.5	15.3	11.2	9.0	48.2	48.3	11.9	21.4	21.4
Cycle Q Clear(g_c), s	4.9	18.3	8.7	9.5	15.3	11.2	9.0	48.2	48.3	11.9	21.4	21.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.18
Lane Grp Cap(c), veh/h	75	294	247	136	356	300	129	578	644	403	755	933
V/C Ratio(X)	0.79	0.81	0.42	0.84	0.59	0.69	0.84	0.93	0.93	0.42	0.46	0.46
Avail Cap(c_a), veh/h	137	395	332	183	442	372	208	597	666	403	755	933
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	0.75	0.75	0.75	0.81	0.81	0.81
Uniform Delay (d), s/veh	67.2	57.2	53.2	64.4	51.4	20.0	64.6	42.0	42.0	45.7	19.5	19.5
Incr Delay (d2), s/veh	12.8	9.2	1.1	21.9	1.6	3.9	9.2	19.0	17.7	0.6	1.6	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(95%),veh/ln	4.3	14.1	6.2	8.6	11.4	7.7	7.0	27.0	29.5	8.4	10.9	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.1	66.4	54.3	86.2	53.0	23.9	73.8	61.0	59.7	46.2	21.1	20.8
LnGrp LOS	F	E	D	F	D	C	E	E	E	D	C	C
Approach Vol, veh/h		401			531			1243			939	
Approach Delay, s/veh		65.3			48.9			61.5			25.5	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	82.5	10.8	33.1	38.9	59.2	16.0	28.0
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.9	* 4.9	4.6	4.6
Max Green Setting (Gmax), s	17.6	58.9	11.4	35.4	20.4	* 56	15.4	31.4
Max Q Clear Time (g_c+I1), s	11.0	23.4	6.9	17.3	13.9	50.3	11.5	20.3
Green Ext Time (p_c), s	0.1	7.6	0.0	1.9	0.2	3.9	0.1	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	49.0
HCM 7th LOS	D

Notes

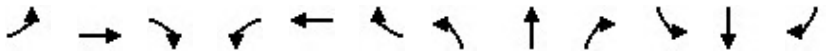
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	68	52	42	57	57	52	1106	73	68	788	47
Future Volume (veh/h)	88	68	52	42	57	57	52	1106	73	68	788	47
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	1772	1772	1772	1786	1786	1786	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	94	72	55	45	61	61	55	1177	78	72	838	50
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	161	140	113	111	142	155	676	1048	69	692	864	522
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.40	0.34	0.34	0.41	0.35	0.35
Sat Flow, veh/h	739	889	720	462	906	990	1674	3065	203	1688	2481	1500
Grp Volume(v), veh/h	108	0	113	78	0	89	55	594	661	72	838	50
Grp Sat Flow(s),veh/h/ln	871	0	1478	918	0	1440	1674	1547	1721	1688	1240	1500
Q Serve(g_s), s	11.5	0.0	10.3	5.8	0.0	8.2	3.0	50.6	50.6	3.9	49.2	3.3
Cycle Q Clear(g_c), s	19.7	0.0	10.3	16.1	0.0	8.2	3.0	50.6	50.6	3.9	49.2	3.3
Prop In Lane	0.87		0.49	0.58		0.69	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	182	0	232	182	0	226	676	529	588	692	864	522
V/C Ratio(X)	0.59	0.00	0.49	0.43	0.00	0.39	0.08	1.12	1.12	0.10	0.97	0.10
Avail Cap(c_a), veh/h	233	0	290	366	0	409	676	529	588	692	867	524
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	0.60	0.60	0.60	0.82	0.82	0.82
Uniform Delay (d), s/veh	64.5	0.0	57.0	61.5	0.0	56.1	27.2	48.7	48.7	26.9	47.5	32.5
Incr Delay (d2), s/veh	3.1	0.0	1.6	1.6	0.0	1.1	0.0	69.8	69.3	0.1	21.4	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(95%),veh/ln	7.5	0.0	7.2	5.3	0.0	5.6	2.2	39.2	43.2	2.9	23.6	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.6	0.0	58.5	63.1	0.0	57.2	27.2	118.5	118.0	27.0	68.9	32.8
LnGrp LOS	E		E	E		E	C	F	F	C	E	C
Approach Vol, veh/h		221			167			1310			960	
Approach Delay, s/veh		63.0			59.9			114.4			63.8	
Approach LOS		E			E			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	64.2	56.0		27.7	65.2	55.1		27.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	6.8	51.7		29.0	7.9	50.6		42.0
Max Q Clear Time (g_c+I1), s	5.0	51.2		21.7	5.9	52.6		18.1
Green Ext Time (p_c), s	0.0	0.3		0.7	0.0	0.0		1.0

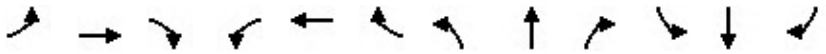
Intersection Summary	
HCM 7th Control Delay, s/veh	88.4
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	229	42	5	26	21	296	5	1197	52	270	879	151
Future Volume (veh/h)	229	42	5	26	21	296	5	1197	52	270	879	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		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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	241	44	5	27	22	312	5	1260	55	284	925	159
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, %	2	2	2	2	2	2	3	3	3	2	2	2
Cap, veh/h	271	251	29	194	158	306	13	980	43	336	1335	744
Arrive On Green	0.16	0.16	0.16	0.20	0.20	0.20	0.01	0.31	0.31	0.20	0.50	0.50
Sat Flow, veh/h	1688	1562	178	950	774	1499	1674	3176	139	1688	2693	1500
Grp Volume(v), veh/h	241	0	49	49	0	312	5	627	688	284	925	159
Grp Sat Flow(s),veh/h/ln	1688	0	1740	1724	0	1499	1674	1582	1733	1688	1347	1500
Q Serve(g_s), s	19.9	0.0	3.5	3.3	0.0	29.0	0.4	43.8	43.8	23.0	37.4	8.5
Cycle Q Clear(g_c), s	19.9	0.0	3.5	3.3	0.0	29.0	0.4	43.8	43.8	23.0	37.4	8.5
Prop In Lane	1.00		0.10	0.55		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	271	0	280	352	0	306	13	488	534	336	1335	744
V/C Ratio(X)	0.89	0.00	0.18	0.14	0.00	1.02	0.39	1.28	1.29	0.84	0.69	0.21
Avail Cap(c_a), veh/h	392	0	404	352	0	306	71	488	534	336	1335	744
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	0.68	0.68	0.68	0.33	0.33	0.33
Uniform Delay (d), s/veh	58.3	0.0	51.5	46.3	0.0	56.5	70.1	49.1	49.1	54.7	27.5	20.2
Incr Delay (d2), s/veh	15.9	0.0	0.3	0.2	0.0	56.3	13.0	138.7	138.8	6.7	1.0	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(95%),veh/ln	14.9	0.0	2.8	2.6	0.0	22.6	0.4	50.9	55.4	13.3	15.1	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.3	0.0	51.8	46.5	0.0	112.8	83.1	187.8	187.9	61.4	28.5	20.4
LnGrp LOS	E		D	D		F	F	F	F	E	C	C
Approach Vol, veh/h		290			361			1320			1368	
Approach Delay, s/veh		70.5			103.8			187.5			34.4	
Approach LOS		E			F			F			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	75.3		27.4	33.2	47.8		33.6
Change Period (Y+Rc), s	4.6	4.9		4.6	4.9	4.0		4.6
Max Green Setting (Gmax), s	6.3	55.3		33.0	18.1	43.8		29.0
Max Q Clear Time (g_c+I1), s	2.4	39.4		21.9	25.0	45.8		31.0
Green Ext Time (p_c), s	0.0	6.1		0.8	0.0	0.0		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	105.5
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	286	296	141	263	515	312	1141	187	561	869	31
Future Volume (veh/h)	42	286	296	141	263	515	312	1141	187	561	869	31
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	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	44	301	312	148	277	542	328	1201	197	591	915	33
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	3	3	3	2	2	2
Cap, veh/h	58	383	604	156	483	667	309	1300	579	573	1129	41
Arrive On Green	0.03	0.21	0.21	0.09	0.27	0.27	0.18	0.39	0.39	0.18	0.38	0.38
Sat Flow, veh/h	1701	1786	1514	1688	1772	1482	1674	3340	1489	3274	2974	107
Grp Volume(v), veh/h	44	301	312	148	277	542	328	1201	197	591	409	539
Grp Sat Flow(s),veh/h/ln	1701	1786	1514	1688	1772	1482	1674	1670	1489	1637	1329	1752
Q Serve(g_s), s	3.7	23.1	22.6	12.7	19.5	39.5	26.8	49.7	13.5	25.4	40.0	40.0
Cycle Q Clear(g_c), s	3.7	23.1	22.6	12.7	19.5	39.5	26.8	49.7	13.5	25.4	40.0	40.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	58	383	604	156	483	667	309	1300	579	573	504	665
V/C Ratio(X)	0.75	0.79	0.52	0.95	0.57	0.81	1.06	0.92	0.34	1.03	0.81	0.81
Avail Cap(c_a), veh/h	116	443	656	156	483	667	309	1300	579	573	504	665
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	0.43	0.43	0.43	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.4	53.8	33.0	65.5	45.5	34.9	59.1	42.2	31.2	59.8	40.3	40.3
Incr Delay (d2), s/veh	17.5	7.9	0.7	56.8	1.7	7.6	50.6	6.1	0.7	45.6	13.2	10.3
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(95%),veh/ln	3.4	16.7	13.2	12.5	13.7	24.7	20.5	26.0	7.4	20.5	20.9	25.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	86.9	61.8	33.7	122.3	47.1	42.5	109.7	48.4	31.9	105.4	53.6	50.7
LnGrp LOS	F	E	C	F	D	D	F	D	C	F	D	D
Approach Vol, veh/h		657			967			1726			1539	
Approach Delay, s/veh		50.1			56.0			58.2			72.5	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.4	59.9	9.6	44.1	30.0	61.3	18.0	35.7
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	26.8	50.1	9.9	39.5	25.4	51.5	13.4	36.0
Max Q Clear Time (g_c+I1), s	28.8	42.0	5.7	41.5	27.4	51.7	14.7	25.1
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	0.0	0.0	2.2

Intersection Summary	
HCM 7th Control Delay, s/veh	61.2
HCM 7th LOS	E

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	208	21	52	229	78	68
Future Vol, veh/h	208	21	52	229	78	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	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	226	23	57	249	85	74

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	249	0	599	238
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	362	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1323	-	466	804
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	707	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1323	-	446	804
Mov Cap-2 Maneuver	-	-	-	-	446	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	707	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.45	12.62
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	446	804	-	-	1323	-
HCM Lane V/C Ratio	0.19	0.092	-	-	0.043	-
HCM Ctrl Dly (s/v)	15	9.9	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	229	312	5	0	36
Future Vol, veh/h	26	229	312	5	0	36
Conflicting Peds, #/hr	9	0	0	9	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	28	249	339	5	0	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	354	0	-	0	656	351
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1205	-	-	-	433	697
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1196	-	-	-	418	692
Mov Cap-2 Maneuver	-	-	-	-	418	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	752	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.82	0	10.51
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	184	-	-	-	692
HCM Lane V/C Ratio	0.024	-	-	-	0.057
HCM Ctrl Dly (s/v)	8.1	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	239	68	16	296	31	0	0	0	16	31	10
Future Vol, veh/h	10	239	68	16	296	31	0	0	0	16	31	10
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
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	11	257	73	17	318	33	0	0	0	17	33	11
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	10.4	11	8.9
HCM LOS	B	B	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	5%	28%
Vol Thru, %	75%	86%	54%
Vol Right, %	21%	9%	18%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	317	343	57
LT Vol	10	16	16
Through Vol	239	296	31
RT Vol	68	31	10
Lane Flow Rate	341	369	61
Geometry Grp	1	1	1
Degree of Util (X)	0.411	0.451	0.091
Departure Headway (Hd)	4.34	4.401	5.357
Convergence, Y/N	Yes	Yes	Yes
Cap	828	819	667
Service Time	2.366	2.427	3.407
HCM Lane V/C Ratio	0.412	0.451	0.091
HCM Control Delay, s/veh	10.4	11	8.9
HCM Lane LOS	B	B	A
HCM 95th-tile Q	2	2.4	0.3

Intersection	
Intersection Delay, s/veh	20.8
Intersection LOS	C

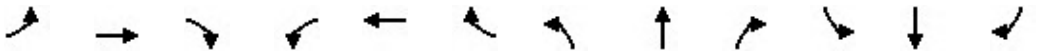
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	317	328	16	229	333
Future Vol, veh/h	10	317	328	16	229	333
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	11	360	373	18	260	378
Number of Lanes	1	1	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay, s/veh	10.1	23.3	19.7
HCM LOS	C	C	C

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	100%	0%
Vol Thru, %	95%	0%	0%	0%	100%
Vol Right, %	5%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	344	10	317	229	333
LT Vol	0	10	0	229	0
Through Vol	328	0	0	0	333
RT Vol	16	0	317	0	0
Lane Flow Rate	391	11	360	260	378
Geometry Grp	3b	5	5	5	5
Degree of Util (X)	0.7	0.024	0.647	0.503	0.677
Departure Headway (Hd)	6.448	7.687	6.461	6.955	6.445
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	559	464	555	515	556
Service Time	4.527	5.469	4.242	4.741	4.23
HCM Lane V/C Ratio	0.699	0.024	0.649	0.505	0.68
HCM Control Delay, s/veh	23.3	10.7	20.4	16.7	21.8
HCM Lane LOS	C	B	C	C	C
HCM 95th-tile Q	5.5	0.1	4.6	2.8	5.1

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast 2032 Level of Service



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	107	66	54	89	150	47	489	21	208	879	21
Future Volume (veh/h)	39	107	66	54	89	150	47	489	21	208	879	21
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)	0.99		0.98	0.99		0.98	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	1716	1730	1744	1744	1744	1716	1730	1716	1716	1730	1716	1646
Adj Flow Rate, veh/h	42	116	72	59	97	98	51	532	23	226	955	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	5	4	4	4	6	5	6	6	5	6	11
Cap, veh/h	172	175	146	166	197	161	58	599	26	790	1879	45
Arrive On Green	0.03	0.10	0.10	0.04	0.11	0.11	0.04	0.21	0.21	0.48	0.66	0.66
Sat Flow, veh/h	1634	1730	1443	1661	1744	1423	1647	2789	120	1647	2852	69
Grp Volume(v), veh/h	42	116	72	59	97	98	51	232	323	226	408	570
Grp Sat Flow(s),veh/h/ln	1634	1730	1443	1661	1744	1423	1647	1218	1691	1647	1218	1703
Q Serve(g_s), s	2.8	7.8	5.7	3.8	6.3	3.0	3.7	22.2	22.2	9.9	20.6	20.6
Cycle Q Clear(g_c), s	2.8	7.8	5.7	3.8	6.3	3.0	3.7	22.2	22.2	9.9	20.6	20.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.04
Lane Grp Cap(c), veh/h	172	175	146	166	197	161	58	262	363	790	803	1122
V/C Ratio(X)	0.24	0.66	0.49	0.36	0.49	0.61	0.88	0.89	0.89	0.29	0.51	0.51
Avail Cap(c_a), veh/h	341	332	277	318	334	273	316	437	606	790	803	1122
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	47.0	52.0	51.0	46.4	50.0	7.1	57.6	45.7	45.7	18.8	10.5	10.5
Incr Delay (d2), s/veh	0.7	4.3	2.6	1.3	1.9	3.7	30.5	32.9	26.2	0.2	2.3	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(95%),veh/ln	2.1	6.4	3.9	2.9	5.1	5.1	3.6	13.8	17.4	6.7	9.3	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.8	56.2	53.6	47.7	51.9	10.8	88.1	78.6	71.9	19.0	12.8	12.1
LnGrp LOS	D	E	D	D	D	B	F	E	E	B	B	B
Approach Vol, veh/h		230			254			606			1204	
Approach Delay, s/veh		53.9			35.1			75.8			13.7	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	62.5	30.8	9.6	17.1	9.2	84.1	8.1	18.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	11.9	24.2	5.8	9.8	5.7	22.6	4.8	8.3
Green Ext Time (p_c), s	0.4	2.0	0.1	0.6	0.1	3.8	0.1	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	36.5
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	967	515	1	2	3
Future Vol, veh/h	0	967	515	1	2	3
Conflicting Peds, #/hr	4	0	0	4	4	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	8	6	1	1	1
Mvmt Flow	0	1040	554	1	2	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	559	0	-	0	1602	562
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	1044	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1017	-	-	-	117	529
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	341	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1014	-	-	-	116	525
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	339	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	21.76
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1014	-	-	-	116	525
HCM Lane V/C Ratio	-	-	-	-	0.018	0.006
HCM Ctrl Dly (s/v)	0	-	-	-	36.5	11.9
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	0	0	3	1	2
Future Vol, veh/h	6	0	0	3	1	2
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	0	0	3	1	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	5	2	3	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	3	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1016	1082	1619	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1020	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1016	1082	1619	-	-	-
Mov Cap-2 Maneuver	1016	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.57	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1619	-	1016	-	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Ctrl Dly (s/v)	0	-	8.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	22.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	236	23	13	216	83	58	34	40	138	17	60
Future Vol, veh/h	48	236	23	13	216	83	58	34	40	138	17	60
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	1	6	5	1	7	1	1	3	6	7	1	4
Mvmt Flow	64	315	31	17	288	111	77	45	53	184	23	80
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	26.2	25.5	15	16.2
HCM LOS	D	D	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	44%	16%	4%	89%	0%
Vol Thru, %	26%	77%	69%	11%	0%
Vol Right, %	30%	7%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	132	307	312	155	60
LT Vol	58	48	13	138	0
Through Vol	34	236	216	17	0
RT Vol	40	23	83	0	60
Lane Flow Rate	176	409	416	207	80
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.37	0.741	0.737	0.474	0.155
Departure Headway (Hd)	7.563	6.629	6.494	8.25	6.965
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	479	549	562	440	518
Service Time	5.575	4.629	4.494	5.95	4.665
HCM Lane V/C Ratio	0.367	0.745	0.74	0.47	0.154
HCM Control Delay, s/veh	15	26.2	25.5	18.2	10.9
HCM Lane LOS	B	D	D	C	B
HCM 95th-tile Q	1.7	6.3	6.3	2.5	0.5

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	17	6	57	51	23
Future Vol, veh/h	34	17	6	57	51	23
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	18	7	62	55	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	65	0	141	66
Stage 1	-	-	-	-	56	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1537	-	852	998
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1524	-	834	981
Mov Cap-2 Maneuver	-	-	-	-	834	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.7	9.53
HCM LOS			A

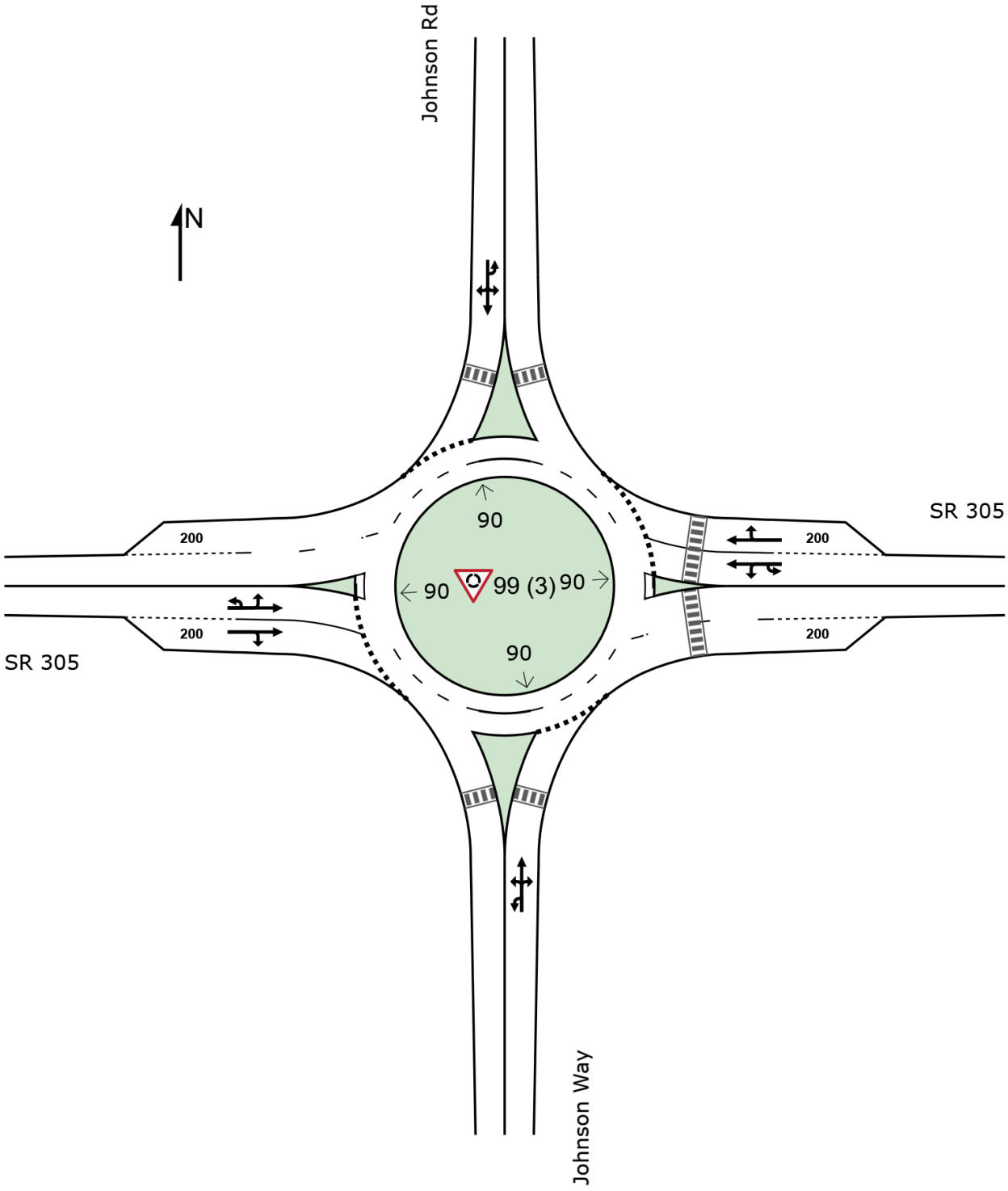
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	875	-	-	171	-
HCM Lane V/C Ratio	0.092	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

SITE LAYOUT

Site: [99 (3)] SR 305 & Johnson Rd - Forecast 2032 AM
Without (AM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [99 (3)] SR 305 & Johnson Rd - Forecast 2032 AM

Without (AM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.050	16.3	LOS B	0.2	5.5	0.67	0.79	0.67	30.6
3	L2	All MCs	18	1.0	18	1.0	0.050	12.8	LOS B	0.2	5.5	0.67	0.79	0.67	32.3
8	T1	All MCs	8	1.0	8	1.0	0.050	7.2	LOS A	0.2	5.5	0.67	0.79	0.67	29.8
18	R2	All MCs	3	1.0	3	1.0	0.050	12.8	LOS B	0.2	5.5	0.67	0.79	0.67	32.7
Approach			30	1.0	30	1.0	0.050	11.5	LOS B	0.2	5.5	0.67	0.79	0.67	31.6
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.266	12.0	LOS B	1.7	43.4	0.18	0.46	0.18	37.7
1	L2	All MCs	6	1.0	6	1.0	0.266	11.4	LOS B	1.7	43.4	0.18	0.46	0.18	35.8
6	T1	All MCs	522	6.0	522	6.0	0.266	6.1	LOS A	1.7	43.4	0.17	0.46	0.17	40.7
16	R2	All MCs	16	1.0	16	1.0	0.121	5.8	LOS A	0.6	16.6	0.17	0.46	0.17	36.2
Approach			545	5.8	545	5.8	0.266	6.1	LOS A	1.7	43.4	0.17	0.46	0.17	40.5
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.130	13.9	LOS B	0.5	12.5	0.48	0.70	0.48	31.0
7	L2	All MCs	91	3.0	91	3.0	0.130	10.6	LOS B	0.5	12.5	0.48	0.70	0.48	32.6
4	T1	All MCs	2	1.0	2	1.0	0.130	4.8	LOS A	0.5	12.5	0.48	0.70	0.48	30.3
14	R2	All MCs	17	1.0	17	1.0	0.130	6.2	LOS A	0.5	12.5	0.48	0.70	0.48	33.3
Approach			112	2.6	112	2.6	0.130	9.9	LOS A	0.5	12.5	0.48	0.70	0.48	32.6
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.551	12.5	LOS B	4.8	127.0	0.42	0.48	0.42	36.9
5	L2	All MCs	10	17.0	10	17.0	0.551	12.5	LOS B	4.8	127.0	0.42	0.48	0.42	34.5
2	T1	All MCs	1014	8.0	1014	8.0	0.551	7.7	LOS A	4.8	127.0	0.39	0.48	0.39	39.5
12	R2	All MCs	20	12.0	20	12.0	0.251	6.5	LOS A	1.5	39.1	0.33	0.49	0.33	35.5
Approach			1045	8.2	1045	8.2	0.551	7.7	LOS A	4.8	127.0	0.39	0.48	0.39	39.4
All Vehicles			1732	6.9	1732	6.9	0.551	7.4	LOS A	4.8	127.0	0.33	0.50	0.33	39.0

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: [1 (3)] Johnson & Sunrise Ridge - 2032 AM Without

(Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.004	7.2	LOS A	0.0	0.4	0.16	0.45	0.16	23.5
3	L2	All MCs	1	3.0	1	3.0	0.004	5.8	LOS A	0.0	0.4	0.16	0.45	0.16	23.5
8	T1	All MCs	1	3.0	1	3.0	0.004	2.0	LOS A	0.0	0.4	0.16	0.45	0.16	23.7
18	R2	All MCs	1	3.0	1	3.0	0.004	2.3	LOS A	0.0	0.4	0.16	0.45	0.16	23.6
Approach			5	3.0	5	3.0	0.004	4.3	LOS A	0.0	0.4	0.16	0.45	0.16	23.6
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.087	10.8	LOS B	0.4	9.4	0.07	0.46	0.07	34.7
1	L2	All MCs	1	3.0	1	3.0	0.087	8.9	LOS A	0.4	9.4	0.07	0.46	0.07	34.7
6	T1	All MCs	108	3.0	108	3.0	0.087	4.9	LOS A	0.4	9.4	0.07	0.46	0.07	35.4
16	R2	All MCs	6	3.0	6	3.0	0.087	4.6	LOS A	0.4	9.4	0.07	0.46	0.07	35.1
Approach			117	3.0	117	3.0	0.087	5.0	LOS A	0.4	9.4	0.07	0.46	0.07	35.4
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.036	11.3	LOS B	0.1	3.8	0.24	0.58	0.24	33.6
7	L2	All MCs	18	3.0	18	3.0	0.036	9.4	LOS A	0.1	3.8	0.24	0.58	0.24	33.6
4	T1	All MCs	1	3.0	1	3.0	0.036	5.3	LOS A	0.1	3.8	0.24	0.58	0.24	34.2
14	R2	All MCs	21	3.0	21	3.0	0.036	5.1	LOS A	0.1	3.8	0.24	0.58	0.24	33.9
Approach			42	3.0	42	3.0	0.036	7.1	LOS A	0.1	3.8	0.24	0.58	0.24	33.8
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.040	10.9	LOS B	0.2	4.4	0.10	0.51	0.10	34.4
5	L2	All MCs	8	3.0	8	3.0	0.040	9.0	LOS A	0.2	4.4	0.10	0.51	0.10	34.4
2	T1	All MCs	32	3.0	32	3.0	0.040	4.9	LOS A	0.2	4.4	0.10	0.51	0.10	35.0
12	R2	All MCs	10	3.0	10	3.0	0.040	4.7	LOS A	0.2	4.4	0.10	0.51	0.10	34.7
Approach			51	3.0	51	3.0	0.040	5.7	LOS A	0.2	4.4	0.10	0.51	0.10	34.8
All Vehicles			214	3.0	214	3.0	0.087	5.5	LOS A	0.4	9.4	0.11	0.50	0.11	34.5

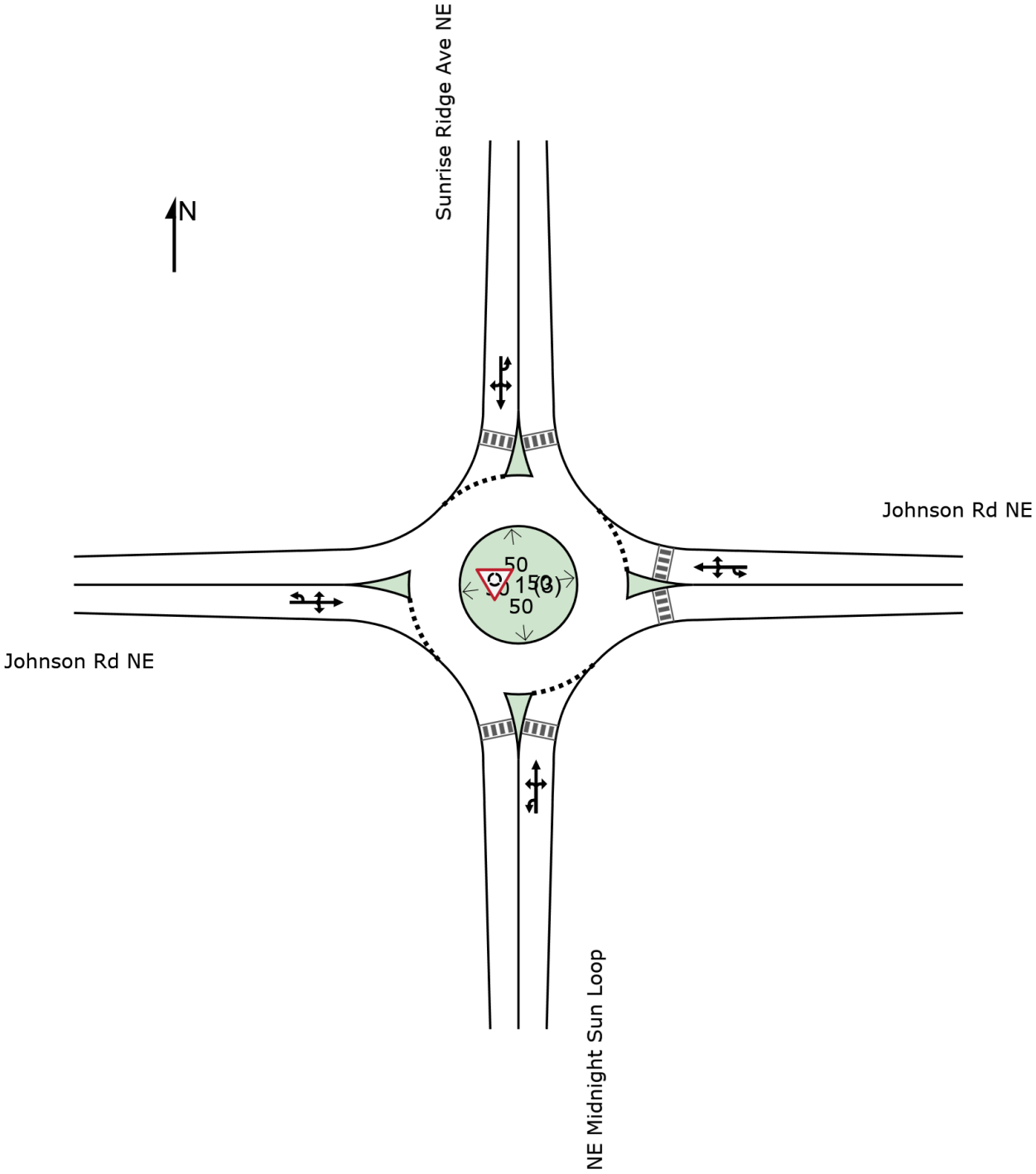
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
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Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

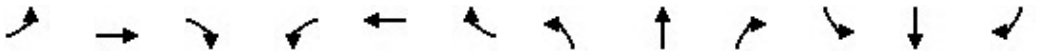
Site: [1 (3)] Johnson & Sunrise Ridge - 2032 AM Without
(Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	178	101	55	130	228	123	822	36	218	662	51
Future Volume (veh/h)	71	178	101	55	130	228	123	822	36	218	662	51
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)	0.99		0.96	0.99		0.96	1.00		0.96	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	1702	1758	1786	1786	1786	1786	1772	1744	1786	1786	1772	1744
Adj Flow Rate, veh/h	72	180	102	56	131	84	124	830	36	220	669	52
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, %	7	3	1	1	1	1	2	4	1	1	2	4
Cap, veh/h	186	223	185	149	204	166	145	893	39	606	1622	126
Arrive On Green	0.05	0.13	0.13	0.04	0.11	0.11	0.09	0.32	0.32	0.36	0.59	0.59
Sat Flow, veh/h	1621	1758	1459	1701	1786	1455	1688	2832	123	1701	2769	215
Grp Volume(v), veh/h	72	180	102	56	131	84	124	363	503	220	304	417
Grp Sat Flow(s),veh/h/ln	1621	1758	1459	1701	1786	1455	1688	1238	1716	1701	1258	1726
Q Serve(g_s), s	4.7	12.0	7.9	3.5	8.4	3.3	8.7	34.1	34.1	11.5	15.8	15.9
Cycle Q Clear(g_c), s	4.7	12.0	7.9	3.5	8.4	3.3	8.7	34.1	34.1	11.5	15.8	15.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.12
Lane Grp Cap(c), veh/h	186	223	185	149	204	166	145	390	541	606	737	1011
V/C Ratio(X)	0.39	0.81	0.55	0.38	0.64	0.50	0.86	0.93	0.93	0.36	0.41	0.41
Avail Cap(c_a), veh/h	320	337	280	311	342	279	323	444	615	606	737	1011
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	0.76	0.76	0.76
Uniform Delay (d), s/veh	44.4	51.0	49.2	45.4	50.8	13.1	54.1	39.8	39.8	28.5	13.6	13.6
Incr Delay (d2), s/veh	1.3	8.4	2.6	1.6	3.3	2.4	13.2	30.8	24.7	0.3	1.3	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(95%),veh/ln	3.5	9.7	5.4	2.8	7.1	4.3	7.5	19.3	24.5	7.7	7.5	9.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.8	59.4	51.8	46.9	54.1	15.5	67.3	70.6	64.5	28.8	14.9	14.5
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		354			271			990			941	
Approach Delay, s/veh		54.4			40.7			67.1			18.0	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.8	42.8	9.2	20.2	15.3	75.3	10.7	18.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	13.5	36.1	5.5	14.0	10.7	17.9	6.7	10.4
Green Ext Time (p_c), s	0.4	2.3	0.1	0.8	0.3	2.8	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	44.5
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	787	909	5	1	3
Future Vol, veh/h	6	787	909	5	1	3
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	10	2	3	1	10	1
Mvmt Flow	6	846	977	5	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	984	0	-	0	1839	979
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	860	-
Critical Hdwy	4.2	-	-	-	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.29	-	-	-	3.59	3.309
Pot Cap-1 Maneuver	671	-	-	-	79	305
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	401	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	671	-	-	-	78	304
Mov Cap-2 Maneuver	-	-	-	-	78	-
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	401	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.08	0	25.63
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	671	-	-	-	78	304
HCM Lane V/C Ratio	0.01	-	-	-	0.014	0.011
HCM Ctrl Dly (s/v)	10.4	-	-	-	51.6	17
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	0	0	0	5
Future Vol, veh/h	3	0	0	0	0	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	0	0	0	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3	3	5	0	-	0
Stage 1	3	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1020	1081	1616	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1020	1081	1616	-	-	-
Mov Cap-2 Maneuver	1020	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.54	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1020	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Ctrl Dly (s/v)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	89	219	72	5	140	52	62	47	2	97	56	65
Future Vol, veh/h	89	219	72	5	140	52	62	47	2	97	56	65
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	1	1	1	1	2	1	1	1	1	1	4
Mvmt Flow	102	252	83	6	161	60	71	54	2	111	64	75
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	18.6	11.9	11.6	12.1
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	56%	23%	3%	63%	0%
Vol Thru, %	42%	58%	71%	37%	0%
Vol Right, %	2%	19%	26%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	380	197	153	65
LT Vol	62	89	5	97	0
Through Vol	47	219	140	56	0
RT Vol	2	72	52	0	65
Lane Flow Rate	128	437	226	176	75
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.231	0.661	0.358	0.338	0.122
Departure Headway (Hd)	6.508	5.451	5.685	6.914	5.877
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	547	660	627	517	606
Service Time	4.6	3.516	3.763	4.691	3.654
HCM Lane V/C Ratio	0.234	0.662	0.36	0.34	0.124
HCM Control Delay, s/veh	11.6	18.6	11.9	13.2	9.5
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	0.9	5	1.6	1.5	0.4

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	51	23	57	34	17
Future Vol, veh/h	57	51	23	57	34	17
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	55	25	62	37	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	127	0	222	110
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1459	-	767	944
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	903	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1447	-	740	928
Mov Cap-2 Maneuver	-	-	-	-	740	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.17	9.87
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	794	-	-	517	-
HCM Lane V/C Ratio	0.07	-	-	0.017	-
HCM Ctrl Dly (s/v)	9.9	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

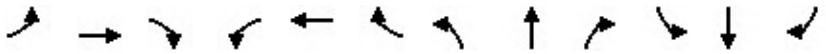
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	264	113	125	232	242	119	1016	130	210	701	83
Future Volume (veh/h)	65	264	113	125	232	242	119	1016	130	210	701	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	68	275	118	130	242	252	124	1058	135	219	730	86
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	3	3	3	2	2	2
Cap, veh/h	85	323	271	152	391	329	146	1109	141	345	1412	166
Arrive On Green	0.05	0.18	0.18	0.09	0.22	0.22	0.09	0.39	0.39	0.20	0.51	0.51
Sat Flow, veh/h	1701	1786	1501	1688	1772	1491	1674	2839	362	1688	2767	326
Grp Volume(v), veh/h	68	275	118	130	242	252	124	563	630	219	364	452
Grp Sat Flow(s),veh/h/ln	1701	1786	1501	1688	1772	1491	1674	1512	1689	1688	1382	1711
Q Serve(g_s), s	5.6	21.2	9.9	10.8	17.5	14.7	10.4	51.3	51.5	16.8	24.9	24.9
Cycle Q Clear(g_c), s	5.6	21.2	9.9	10.8	17.5	14.7	10.4	51.3	51.5	16.8	24.9	24.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.19
Lane Grp Cap(c), veh/h	85	323	271	152	391	329	146	591	660	345	705	873
V/C Ratio(X)	0.80	0.85	0.43	0.86	0.62	0.77	0.85	0.95	0.95	0.63	0.52	0.52
Avail Cap(c_a), veh/h	137	395	332	183	442	372	208	597	667	345	705	873
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	0.70	0.70	0.70	0.75	0.75	0.75
Uniform Delay (d), s/veh	66.7	56.3	51.7	63.7	49.9	22.0	63.9	42.0	42.0	51.6	23.1	23.1
Incr Delay (d2), s/veh	11.8	13.9	1.1	27.1	2.1	8.2	13.3	21.5	20.2	2.8	2.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	16.3	7.0	9.8	12.8	10.0	8.0	28.5	31.3	11.2	12.4	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.5	70.2	52.8	90.8	52.1	30.2	77.2	63.5	62.3	54.4	25.1	24.8
LnGrp LOS	E	E	D	F	D	C	E	E	E	D	C	C
Approach Vol, veh/h		461			624			1317			1035	
Approach Delay, s/veh		67.0			51.3			64.2			31.2	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	77.4	11.7	35.9	34.0	60.4	17.4	30.3
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.9	* 4.9	4.6	4.6
Max Green Setting (Gmax), s	17.6	58.9	11.4	35.4	20.4	* 56	15.4	31.4
Max Q Clear Time (g_c+I1), s	12.4	26.9	7.6	19.5	18.8	53.5	12.8	23.2
Green Ext Time (p_c), s	0.1	8.0	0.0	2.2	0.1	2.0	0.1	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	52.3
HCM 7th LOS	D

Notes

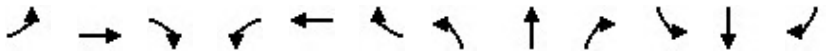
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	78	61	48	65	65	60	1167	83	78	851	54
Future Volume (veh/h)	100	78	61	48	65	65	60	1167	83	78	851	54
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	1772	1772	1772	1786	1786	1786	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	106	83	65	51	69	69	64	1241	88	83	905	57
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	171	151	128	117	154	171	644	1043	74	662	867	524
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.38	0.34	0.34	0.39	0.35	0.35
Sat Flow, veh/h	721	863	732	447	881	982	1674	3050	216	1688	2481	1500
Grp Volume(v), veh/h	123	0	131	88	0	101	64	629	700	83	905	57
Grp Sat Flow(s),veh/h/ln	839	0	1476	868	0	1442	1674	1547	1719	1688	1240	1500
Q Serve(g_s), s	13.6	0.0	11.9	6.9	0.0	9.2	3.6	50.6	50.6	4.7	51.7	3.8
Cycle Q Clear(g_c), s	22.9	0.0	11.9	18.8	0.0	9.2	3.6	50.6	50.6	4.7	51.7	3.8
Prop In Lane	0.86		0.50	0.58		0.68	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	192	0	258	190	0	252	644	529	588	662	867	524
V/C Ratio(X)	0.64	0.00	0.51	0.46	0.00	0.40	0.10	1.19	1.19	0.13	1.04	0.11
Avail Cap(c_a), veh/h	219	0	289	346	0	409	644	529	588	662	867	524
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	0.46	0.46	0.46	0.74	0.74	0.74
Uniform Delay (d), s/veh	64.3	0.0	55.3	60.9	0.0	54.2	29.1	48.7	48.7	28.7	48.2	32.6
Incr Delay (d2), s/veh	5.0	0.0	1.6	1.7	0.0	1.0	0.0	93.7	94.4	0.1	38.6	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(95%),veh/ln	8.5	0.0	8.1	5.9	0.0	6.3	2.6	44.1	48.8	3.4	27.4	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.3	0.0	56.9	62.7	0.0	55.3	29.1	142.4	143.1	28.8	86.8	32.9
LnGrp LOS	E		E	E		E	C	F	F	C	F	C
Approach Vol, veh/h		254			189			1393			1045	
Approach Delay, s/veh		62.9			58.7			137.6			79.3	
Approach LOS		E			E			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	61.5	56.2		30.3	62.6	55.1		30.3
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	6.8	51.7		29.0	7.9	50.6		42.0
Max Q Clear Time (g_c+I1), s	15.6	53.7		24.9	6.7	52.6		20.8
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	0.0		1.1

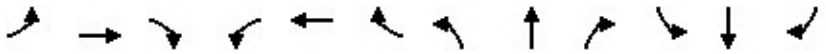
Intersection Summary	
HCM 7th Control Delay, s/veh	104.7
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	48	6	30	24	337	6	1261	59	308	945	172
Future Volume (veh/h)	261	48	6	30	24	337	6	1261	59	308	945	172
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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	275	51	6	32	25	355	6	1327	62	324	995	181
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, %	2	2	2	2	2	2	3	3	3	2	2	2
Cap, veh/h	304	280	33	198	154	306	15	976	46	303	1279	713
Arrive On Green	0.18	0.18	0.18	0.20	0.20	0.20	0.01	0.31	0.31	0.18	0.48	0.48
Sat Flow, veh/h	1688	1556	183	968	756	1499	1674	3165	148	1688	2693	1500
Grp Volume(v), veh/h	275	0	57	57	0	355	6	662	727	324	995	181
Grp Sat Flow(s),veh/h/ln	1688	0	1739	1724	0	1499	1674	1582	1731	1688	1347	1500
Q Serve(g_s), s	22.7	0.0	3.9	3.9	0.0	29.0	0.5	43.8	43.8	25.5	43.7	10.2
Cycle Q Clear(g_c), s	22.7	0.0	3.9	3.9	0.0	29.0	0.5	43.8	43.8	25.5	43.7	10.2
Prop In Lane	1.00		0.11	0.56		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	313	352	0	306	15	488	534	303	1279	713
V/C Ratio(X)	0.90	0.00	0.18	0.16	0.00	1.16	0.40	1.36	1.36	1.07	0.78	0.25
Avail Cap(c_a), veh/h	392	0	404	352	0	306	71	488	534	303	1279	713
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	0.59	0.59	0.59	0.17	0.17	0.17
Uniform Delay (d), s/veh	57.0	0.0	49.3	46.5	0.0	56.5	70.0	49.1	49.1	58.2	31.0	22.3
Incr Delay (d2), s/veh	20.3	0.0	0.3	0.2	0.0	101.8	10.0	168.6	169.6	42.2	0.8	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(95%),veh/ln	7.0	0.0	3.2	3.1	0.0	29.1	0.5	57.0	62.2	17.5	16.4	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.3	0.0	49.6	46.7	0.0	158.3	80.0	217.7	218.7	100.5	31.9	22.4
LnGrp LOS	E		D	D		F	E	F	F	F	C	C
Approach Vol, veh/h		332			412			1395			1500	
Approach Delay, s/veh		72.5			142.9			217.7			45.5	
Approach LOS		E			F			F			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.9	72.4		30.2	30.4	47.8		33.6
Change Period (Y+Rc), s	4.6	4.9		4.6	4.9	4.0		4.6
Max Green Setting (Gmax), s	6.3	55.3		33.0	18.1	43.8		29.0
Max Q Clear Time (g_c+I1), s	12.5	45.7		24.7	27.5	45.8		31.0
Green Ext Time (p_c), s	0.0	4.9		0.8	0.0	0.0		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	125.0
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	326	344	165	300	587	359	1197	216	640	923	35
Future Volume (veh/h)	48	326	344	165	300	587	359	1197	216	640	923	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		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	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	51	343	362	174	316	618	378	1260	227	674	972	37
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	3	3	3	2	2	2
Cap, veh/h	65	389	610	156	483	672	309	1287	574	573	1115	42
Arrive On Green	0.04	0.22	0.22	0.09	0.27	0.27	0.18	0.39	0.39	0.18	0.38	0.38
Sat Flow, veh/h	1701	1786	1514	1688	1772	1502	1674	3340	1489	3274	2967	113
Grp Volume(v), veh/h	51	343	362	174	316	618	378	1260	227	674	435	574
Grp Sat Flow(s),veh/h/ln	1701	1786	1514	1688	1772	1502	1674	1670	1489	1637	1329	1751
Q Serve(g_s), s	4.3	27.0	27.2	13.4	22.9	39.5	26.8	54.0	16.0	25.4	44.1	44.1
Cycle Q Clear(g_c), s	4.3	27.0	27.2	13.4	22.9	39.5	26.8	54.0	16.0	25.4	44.1	44.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	65	389	610	156	483	672	309	1287	574	573	499	658
V/C Ratio(X)	0.79	0.88	0.59	1.12	0.65	0.92	1.22	0.98	0.40	1.18	0.87	0.87
Avail Cap(c_a), veh/h	116	443	656	156	483	672	309	1287	574	573	499	658
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	0.23	0.23	0.23	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	54.9	34.0	65.8	46.7	37.6	59.1	44.0	32.3	59.8	42.0	42.0
Incr Delay (d2), s/veh	18.6	16.8	1.3	106.5	3.2	17.9	106.6	8.1	0.5	96.1	18.6	14.8
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(95%),veh/ln	4.0	20.0	15.4	16.3	15.8	31.4	26.7	26.9	7.8	27.0	23.4	28.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.8	71.6	35.2	172.3	49.9	55.5	165.7	52.0	32.8	155.9	60.6	56.8
LnGrp LOS	F	E	D	F	D	E	F	D	C	F	E	E
Approach Vol, veh/h		756			1108			1865			1683	
Approach Delay, s/veh		55.3			72.2			72.7			97.5	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.4	59.4	10.1	44.1	30.0	60.8	18.0	36.2
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	26.8	50.1	9.9	39.5	25.4	51.5	13.4	36.0
Max Q Clear Time (g_c+I1), s	28.8	46.1	6.3	41.5	27.4	56.0	15.4	29.2
Green Ext Time (p_c), s	0.0	2.2	0.0	0.0	0.0	0.0	0.0	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	77.9
HCM 7th LOS	E

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	241	24	61	262	90	81
Future Vol, veh/h	241	24	61	262	90	81
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	262	26	66	285	98	88

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	288	0	692	275
Stage 1	-	-	-	-	275	-
Stage 2	-	-	-	-	417	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1280	-	411	766
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	667	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1280	-	390	766
Mov Cap-2 Maneuver	-	-	-	-	390	-
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	667	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.5	13.99
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	390	766	-	-	1280	-
HCM Lane V/C Ratio	0.251	0.115	-	-	0.052	-
HCM Ctrl Dly (s/v)	17.3	10.3	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	265	358	6	0	42
Future Vol, veh/h	33	265	358	6	0	42
Conflicting Peds, #/hr	9	0	0	9	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	36	288	389	7	0	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	405	0	-	0	761	401
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	360	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1154	-	-	-	376	653
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	711	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1145	-	-	-	359	648
Mov Cap-2 Maneuver	-	-	-	-	359	-
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.91	0	10.97
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	199	-	-	-	648
HCM Lane V/C Ratio	0.031	-	-	-	0.07
HCM Ctrl Dly (s/v)	8.2	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

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	11	279	78	18	340	35	0	0	0	18	35	11
Future Vol, veh/h	11	279	78	18	340	35	0	0	0	18	35	11
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
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	12	300	84	19	366	38	0	0	0	19	38	12
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	11.6	12.5	9.3
HCM LOS	B	B	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	5%	28%
Vol Thru, %	76%	87%	55%
Vol Right, %	21%	9%	17%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	368	393	64
LT Vol	11	18	18
Through Vol	279	340	35
RT Vol	78	35	11
Lane Flow Rate	396	423	69
Geometry Grp	1	1	1
Degree of Util (X)	0.487	0.527	0.107
Departure Headway (Hd)	4.433	4.492	5.59
Convergence, Y/N	Yes	Yes	Yes
Cap	811	803	637
Service Time	2.469	2.528	3.657
HCM Lane V/C Ratio	0.488	0.527	0.108
HCM Control Delay, s/veh	11.6	12.5	9.3
HCM Lane LOS	B	B	A
HCM 95th-tile Q	2.7	3.1	0.4

Intersection	
Intersection Delay, s/veh	33.9
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	361	377	18	261	387
Future Vol, veh/h	11	361	377	18	261	387
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	410	428	20	297	440
Number of Lanes	1	1	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay, s/veh	30.4	40.1	32.2
HCM LOS	D	E	D

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	100%	0%
Vol Thru, %	95%	0%	0%	0%	100%
Vol Right, %	5%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	395	11	361	261	387
LT Vol	0	11	0	261	0
Through Vol	377	0	0	0	387
RT Vol	18	0	361	0	0
Lane Flow Rate	449	13	410	297	440
Geometry Grp	3b	5	5	5	5
Degree of Util (X)	0.866	0.028	0.791	0.621	0.858
Departure Headway (Hd)	6.944	8.145	6.941	7.533	7.02
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	521	441	525	480	515
Service Time	4.989	5.875	4.641	5.286	4.773
HCM Lane V/C Ratio	0.862	0.029	0.781	0.619	0.854
HCM Control Delay, s/veh	40.1	11.1	31	21.9	39.1
HCM Lane LOS	E	B	D	C	E
HCM 95th-tile Q	9.3	0.1	7.4	4.1	9.1

MOVEMENT SUMMARY

Site: [99 (5)] SR 305 & Johnson Rd - Forecast 2032 PM

Without (PM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.054	14.8	LOS B	0.2	5.2	0.55	0.74	0.55	31.1
3	L2	All MCs	23	6.0	23	6.0	0.054	11.8	LOS B	0.2	5.2	0.55	0.74	0.55	32.3
8	T1	All MCs	6	1.0	6	1.0	0.054	5.7	LOS A	0.2	5.2	0.55	0.74	0.55	30.3
18	R2	All MCs	9	1.0	9	1.0	0.054	7.9	LOS A	0.2	5.2	0.55	0.74	0.55	33.4
Approach			39	3.9	39	3.9	0.054	10.0	LOS A	0.2	5.2	0.55	0.74	0.55	32.2
East: SR 305															
1u	U	All MCs	3	1.0	3	1.0	0.471	12.1	LOS B	3.7	95.8	0.23	0.45	0.23	37.5
1	L2	All MCs	9	1.0	9	1.0	0.471	11.5	LOS B	3.7	95.8	0.23	0.45	0.23	35.6
6	T1	All MCs	949	3.0	949	3.0	0.471	6.5	LOS A	3.7	95.8	0.22	0.46	0.22	41.1
16	R2	All MCs	27	10.0	27	10.0	0.214	6.0	LOS A	1.2	31.4	0.19	0.46	0.19	35.9
Approach			988	3.2	988	3.2	0.471	6.5	LOS A	3.7	95.8	0.22	0.46	0.22	40.8
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.076	15.4	LOS B	0.3	7.6	0.60	0.77	0.60	30.7
7	L2	All MCs	32	6.0	32	6.0	0.076	12.5	LOS B	0.3	7.6	0.60	0.77	0.60	31.9
4	T1	All MCs	3	1.0	3	1.0	0.076	6.3	LOS A	0.3	7.6	0.60	0.77	0.60	30.0
14	R2	All MCs	14	1.0	14	1.0	0.076	9.3	LOS A	0.3	7.6	0.60	0.77	0.60	32.9
Approach			51	4.2	51	4.2	0.076	11.3	LOS B	0.3	7.6	0.60	0.77	0.60	32.0
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.403	12.1	LOS B	3.0	75.3	0.23	0.46	0.23	37.5
5	L2	All MCs	11	1.0	11	1.0	0.403	11.5	LOS B	3.0	75.3	0.23	0.46	0.23	35.6
2	T1	All MCs	817	2.0	817	2.0	0.403	6.3	LOS A	3.0	75.3	0.22	0.46	0.22	41.2
12	R2	All MCs	23	1.0	23	1.0	0.183	5.9	LOS A	1.0	26.0	0.20	0.46	0.20	36.1
Approach			852	2.0	852	2.0	0.403	6.3	LOS A	3.0	75.3	0.22	0.46	0.22	41.0
All Vehicles			1929	2.7	1929	2.7	0.471	6.6	LOS A	3.7	95.8	0.24	0.47	0.24	40.4

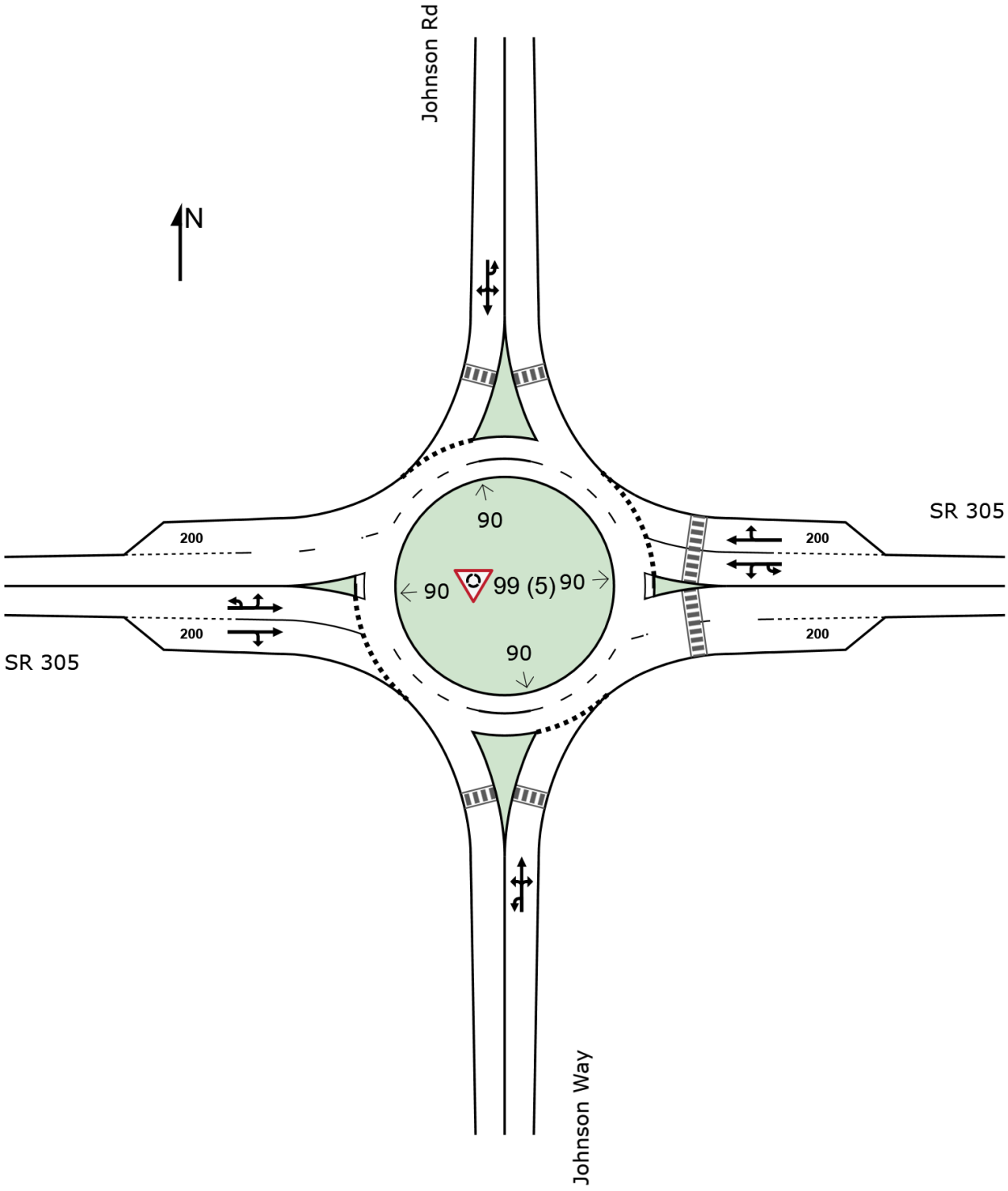
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Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c 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: [99 (5)] SR 305 & Johnson Rd - Forecast 2032 PM
Without (PM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (5)] Johnson & Sunrise Ridge - 2032 PM Without

(Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.005	7.2	LOS A	0.0	0.5	0.16	0.42	0.16	23.6
3	L2	All MCs	1	3.0	1	3.0	0.005	5.8	LOS A	0.0	0.5	0.16	0.42	0.16	23.6
8	T1	All MCs	1	3.0	1	3.0	0.005	2.0	LOS A	0.0	0.5	0.16	0.42	0.16	23.8
18	R2	All MCs	3	3.0	3	3.0	0.005	2.3	LOS A	0.0	0.5	0.16	0.42	0.16	23.8
Approach			7	3.0	7	3.0	0.005	3.7	LOS A	0.0	0.5	0.16	0.42	0.16	23.7
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.046	10.9	LOS B	0.2	4.7	0.11	0.48	0.11	34.6
1	L2	All MCs	2	3.0	2	3.0	0.046	9.0	LOS A	0.2	4.7	0.11	0.48	0.11	34.6
6	T1	All MCs	41	3.0	41	3.0	0.046	4.9	LOS A	0.2	4.7	0.11	0.48	0.11	35.2
16	R2	All MCs	16	3.0	16	3.0	0.046	4.7	LOS A	0.2	4.7	0.11	0.48	0.11	34.9
Approach			60	3.0	60	3.0	0.046	5.1	LOS A	0.2	4.7	0.11	0.48	0.11	35.1
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.022	11.0	LOS B	0.1	2.3	0.14	0.57	0.14	33.9
7	L2	All MCs	9	3.0	9	3.0	0.022	9.1	LOS A	0.1	2.3	0.14	0.57	0.14	33.9
4	T1	All MCs	1	3.0	1	3.0	0.022	5.0	LOS A	0.1	2.3	0.14	0.57	0.14	34.6
14	R2	All MCs	16	3.0	16	3.0	0.022	4.8	LOS A	0.1	2.3	0.14	0.57	0.14	34.2
Approach			27	3.0	27	3.0	0.022	6.5	LOS A	0.1	2.3	0.14	0.57	0.14	34.1
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.041	10.9	LOS B	0.2	4.3	0.08	0.57	0.08	33.8
5	L2	All MCs	24	3.0	24	3.0	0.041	8.9	LOS A	0.2	4.3	0.08	0.57	0.08	33.8
2	T1	All MCs	26	3.0	26	3.0	0.041	4.9	LOS A	0.2	4.3	0.08	0.57	0.08	34.4
12	R2	All MCs	1	3.0	1	3.0	0.041	4.6	LOS A	0.2	4.3	0.08	0.57	0.08	34.1
Approach			52	3.0	52	3.0	0.041	6.8	LOS A	0.2	4.3	0.08	0.57	0.08	34.1
All Vehicles			147	3.0	147	3.0	0.046	5.9	LOS A	0.2	4.7	0.11	0.53	0.11	33.8

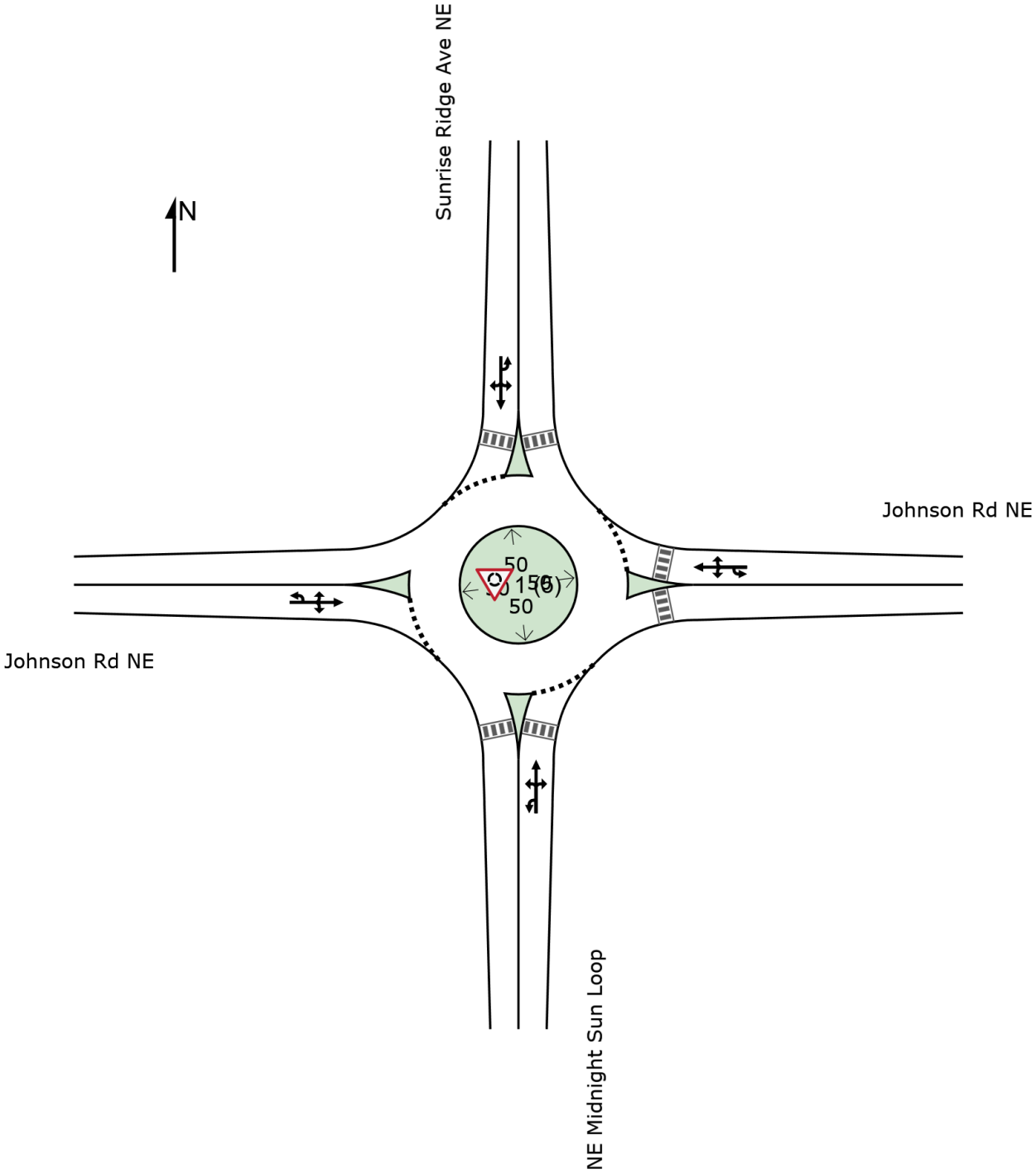
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA 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

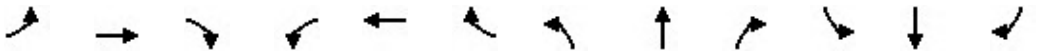
Site: [1 (5)] Johnson & Sunrise Ridge - 2032 PM Without
(Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	107	71	54	89	150	61	507	21	208	886	21
Future Volume (veh/h)	39	107	71	54	89	150	61	507	21	208	886	21
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)	0.99		0.98	0.99		0.98	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	1716	1730	1744	1744	1744	1716	1730	1716	1716	1730	1716	1646
Adj Flow Rate, veh/h	42	116	77	59	97	98	66	551	23	226	963	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	5	4	4	4	6	5	6	6	5	6	11
Cap, veh/h	172	175	146	166	197	161	78	618	26	779	1846	44
Arrive On Green	0.03	0.10	0.10	0.04	0.11	0.11	0.05	0.22	0.22	0.47	0.65	0.65
Sat Flow, veh/h	1634	1730	1443	1661	1744	1423	1647	2794	117	1647	2853	68
Grp Volume(v), veh/h	42	116	77	59	97	98	66	240	334	226	411	575
Grp Sat Flow(s),veh/h/ln	1634	1730	1443	1661	1744	1423	1647	1218	1692	1647	1218	1703
Q Serve(g_s), s	2.8	7.8	6.1	3.8	6.3	3.0	4.8	22.9	23.0	10.1	21.6	21.6
Cycle Q Clear(g_c), s	2.8	7.8	6.1	3.8	6.3	3.0	4.8	22.9	23.0	10.1	21.6	21.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.04
Lane Grp Cap(c), veh/h	172	175	146	166	197	161	78	270	375	779	788	1102
V/C Ratio(X)	0.24	0.66	0.53	0.36	0.49	0.61	0.85	0.89	0.89	0.29	0.52	0.52
Avail Cap(c_a), veh/h	341	332	277	318	334	273	316	437	606	779	788	1102
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	47.0	52.0	51.2	46.4	50.0	7.4	56.8	45.3	45.3	19.3	11.3	11.3
Incr Delay (d2), s/veh	0.7	4.3	2.9	1.3	1.9	3.7	21.7	32.5	25.9	0.2	2.5	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(95%),veh/ln	2.1	6.4	4.2	2.9	5.1	5.1	4.4	14.2	17.8	6.8	9.7	12.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.7	56.2	54.1	47.7	51.9	11.1	78.4	77.8	71.2	19.5	13.7	13.1
LnGrp LOS	D	E	D	D	D	B	E	E	E	B	B	B
Approach Vol, veh/h		235			254			640			1212	
Approach Delay, s/veh		54.0			35.2			74.4			14.5	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	61.7	31.6	9.6	17.1	10.6	82.6	8.1	18.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	12.1	25.0	5.8	9.8	6.8	23.6	4.8	8.3
Green Ext Time (p_c), s	0.4	2.1	0.1	0.6	0.1	3.8	0.1	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	37.1
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	979	547	1	2	3
Future Vol, veh/h	0	979	547	1	2	3
Conflicting Peds, #/hr	4	0	0	4	4	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	8	6	1	1	1
Mvmt Flow	0	1053	588	1	2	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	593	0	-	0	1649	596
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	1057	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	988	-	-	-	109	505
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	336	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	984	-	-	-	109	502
Mov Cap-2 Maneuver	-	-	-	-	109	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	22.84
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	984	-	-	-	109	502
HCM Lane V/C Ratio	-	-	-	-	0.02	0.006
HCM Ctrl Dly (s/v)	0	-	-	-	38.8	12.2
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	64	23	8	19	5
Future Vol, veh/h	13	64	23	8	19	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	70	25	9	21	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	82	23	26	0	-	0
Stage 1	23	-	-	-	-	-
Stage 2	59	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	920	1053	1588	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	905	1053	1588	-	-	-
Mov Cap-2 Maneuver	905	-	-	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	964	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.82	5.42	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1335	-	1025	-	-
HCM Lane V/C Ratio	0.016	-	0.082	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	24.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	236	23	24	213	81	61	39	44	129	27	60
Future Vol, veh/h	48	236	23	24	213	81	61	39	44	129	27	60
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	1	6	5	1	7	1	1	3	6	7	1	4
Mvmt Flow	64	315	31	32	284	108	81	52	59	172	36	80
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	29.1	29.5	16	16.6
HCM LOS	D	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	42%	16%	8%	83%	0%
Vol Thru, %	27%	77%	67%	17%	0%
Vol Right, %	31%	7%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	144	307	318	156	60
LT Vol	61	48	24	129	0
Through Vol	39	236	213	27	0
RT Vol	44	23	81	0	60
Lane Flow Rate	192	409	424	208	80
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.409	0.771	0.782	0.483	0.158
Departure Headway (Hd)	7.67	6.785	6.642	8.355	7.102
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	468	536	547	431	503
Service Time	5.747	4.807	4.663	6.12	4.866
HCM Lane V/C Ratio	0.41	0.763	0.775	0.483	0.159
HCM Control Delay, s/veh	16	29.1	29.5	18.7	11.2
HCM Lane LOS	C	D	D	C	B
HCM 95th-tile Q	2	6.9	7.2	2.6	0.6

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	38	6	57	63	23
Future Vol, veh/h	34	38	6	57	63	23
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	41	7	62	68	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	88	0	153	78
Stage 1	-	-	-	-	68	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1507	-	839	983
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1495	-	821	967
Mov Cap-2 Maneuver	-	-	-	-	821	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	930	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.71	9.72
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	856	-	-	171	-
HCM Lane V/C Ratio	0.109	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

MOVEMENT SUMMARY

Site: [99 (4)] SR 305 & Johnson Rd - Forecast 2032 AM With (AM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.053	16.6	LOS B	0.2	5.9	0.69	0.81	0.69	30.4
3	L2	All MCs	18	1.0	18	1.0	0.053	13.1	LOS B	0.2	5.9	0.69	0.81	0.69	32.1
8	T1	All MCs	8	1.0	8	1.0	0.053	7.5	LOS A	0.2	5.9	0.69	0.81	0.69	29.7
18	R2	All MCs	3	1.0	3	1.0	0.053	13.6	LOS B	0.2	5.9	0.69	0.81	0.69	32.5
Approach			30	1.0	30	1.0	0.053	11.9	LOS B	0.2	5.9	0.69	0.81	0.69	31.5
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.274	12.1	LOS B	1.7	43.3	0.20	0.46	0.20	37.6
1	L2	All MCs	6	1.0	6	1.0	0.274	11.5	LOS B	1.7	43.3	0.20	0.46	0.20	35.7
6	T1	All MCs	522	6.0	522	6.0	0.274	6.1	LOS A	1.7	43.3	0.20	0.46	0.20	40.6
16	R2	All MCs	27	1.0	27	1.0	0.125	5.9	LOS A	0.6	16.6	0.20	0.47	0.20	36.1
Approach			556	5.7	556	5.7	0.274	6.2	LOS A	1.7	43.3	0.20	0.46	0.20	40.3
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.206	14.1	LOS B	0.8	21.0	0.50	0.70	0.50	31.2
7	L2	All MCs	122	3.0	122	3.0	0.206	10.8	LOS B	0.8	21.0	0.50	0.70	0.50	32.8
4	T1	All MCs	2	1.0	2	1.0	0.206	5.0	LOS A	0.8	21.0	0.50	0.70	0.50	30.5
14	R2	All MCs	52	1.0	52	1.0	0.206	6.4	LOS A	0.8	21.0	0.50	0.70	0.50	33.5
Approach			176	2.4	176	2.4	0.206	9.5	LOS A	0.8	21.0	0.50	0.70	0.50	33.0
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.574	12.7	LOS B	5.1	134.9	0.49	0.51	0.49	36.6
5	L2	All MCs	23	17.0	23	17.0	0.574	12.7	LOS B	5.1	134.9	0.49	0.51	0.49	34.2
2	T1	All MCs	1014	8.0	1014	8.0	0.574	8.0	LOS A	5.1	134.9	0.46	0.50	0.46	39.2
12	R2	All MCs	20	12.0	20	12.0	0.261	6.7	LOS A	1.5	41.0	0.38	0.50	0.38	35.3
Approach			1058	8.3	1058	8.3	0.574	8.1	LOS A	5.1	134.9	0.46	0.50	0.46	39.0
All Vehicles			1820	6.8	1820	6.8	0.574	7.7	LOS A	5.1	134.9	0.39	0.52	0.39	38.6

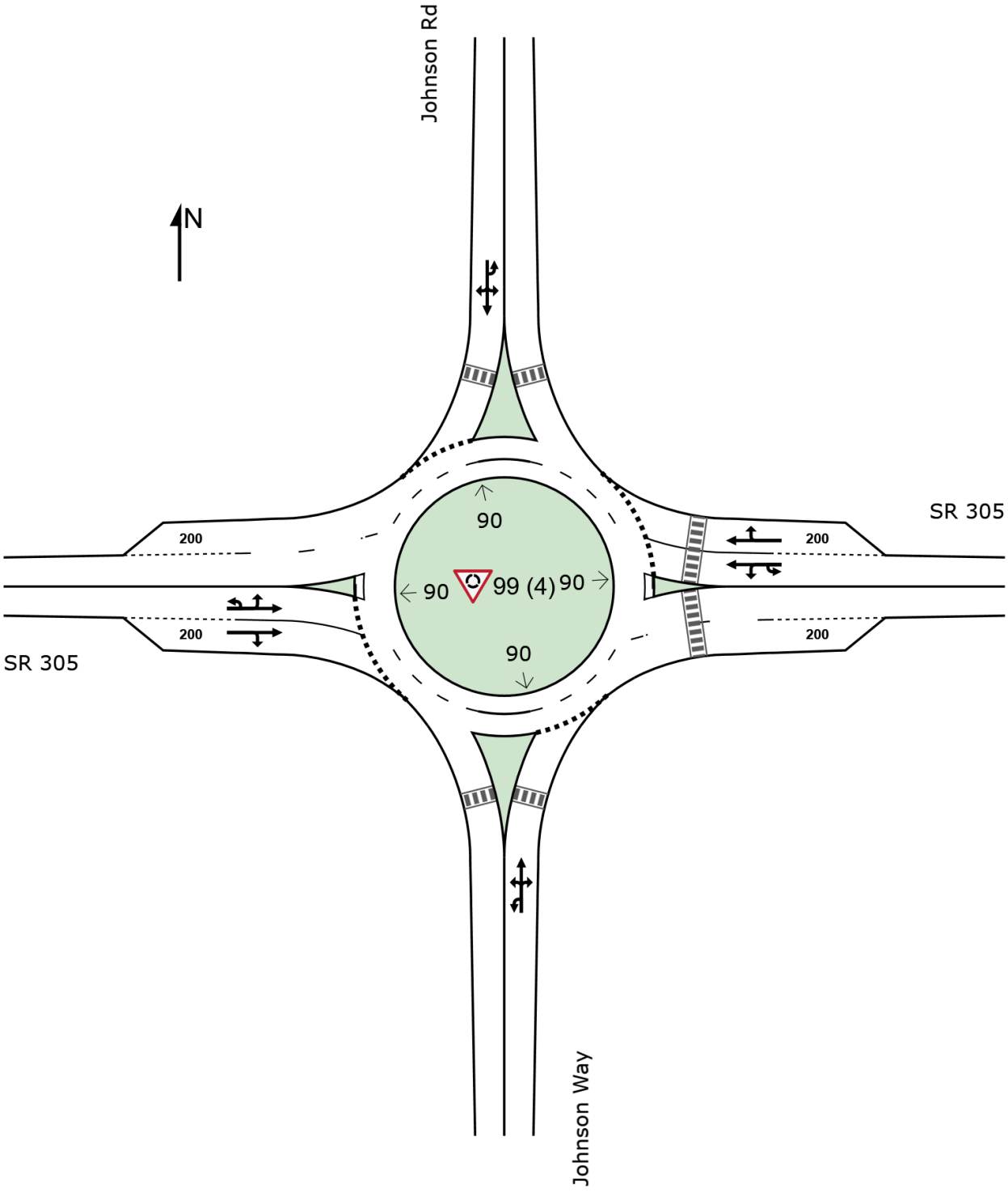
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per 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: [99 (4)] SR 305 & Johnson Rd - Forecast 2032 AM With
(AM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (4)] Johnson & Sunrise Ridge - 2032 AM With (Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.004	7.3	LOS A	0.0	0.4	0.20	0.45	0.20	23.5
3	L2	All MCs	1	3.0	1	3.0	0.004	5.9	LOS A	0.0	0.4	0.20	0.45	0.20	23.5
8	T1	All MCs	1	3.0	1	3.0	0.004	2.1	LOS A	0.0	0.4	0.20	0.45	0.20	23.7
18	R2	All MCs	1	3.0	1	3.0	0.004	2.5	LOS A	0.0	0.4	0.20	0.45	0.20	23.6
Approach			5	3.0	5	3.0	0.004	4.4	LOS A	0.0	0.4	0.20	0.45	0.20	23.5
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.074	11.0	LOS B	0.3	8.0	0.14	0.46	0.14	34.5
1	L2	All MCs	1	3.0	1	3.0	0.074	9.1	LOS A	0.3	8.0	0.14	0.46	0.14	34.5
6	T1	All MCs	87	3.0	87	3.0	0.074	5.0	LOS A	0.3	8.0	0.14	0.46	0.14	35.2
16	R2	All MCs	7	3.0	7	3.0	0.074	4.8	LOS A	0.3	8.0	0.14	0.46	0.14	34.9
Approach			96	3.0	96	3.0	0.074	5.1	LOS A	0.3	8.0	0.14	0.46	0.14	35.1
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.119	11.2	LOS B	0.5	13.5	0.23	0.55	0.23	34.2
7	L2	All MCs	23	3.0	23	3.0	0.119	9.3	LOS A	0.5	13.5	0.23	0.55	0.23	34.2
4	T1	All MCs	1	3.0	1	3.0	0.119	5.3	LOS A	0.5	13.5	0.23	0.55	0.23	34.9
14	R2	All MCs	114	3.0	114	3.0	0.119	5.0	LOS A	0.5	13.5	0.23	0.55	0.23	34.5
Approach			139	3.0	139	3.0	0.119	5.8	LOS A	0.5	13.5	0.23	0.55	0.23	34.5
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.061	10.9	LOS B	0.3	6.8	0.11	0.58	0.11	33.6
5	L2	All MCs	40	3.0	40	3.0	0.061	9.0	LOS A	0.3	6.8	0.11	0.58	0.11	33.6
2	T1	All MCs	26	3.0	26	3.0	0.061	4.9	LOS A	0.3	6.8	0.11	0.58	0.11	34.3
12	R2	All MCs	10	3.0	10	3.0	0.061	4.7	LOS A	0.3	6.8	0.11	0.58	0.11	34.0
Approach			77	3.0	77	3.0	0.061	7.1	LOS A	0.3	6.8	0.11	0.58	0.11	33.9
All Vehicles			318	3.0	318	3.0	0.119	5.9	LOS A	0.5	13.5	0.18	0.53	0.18	34.3

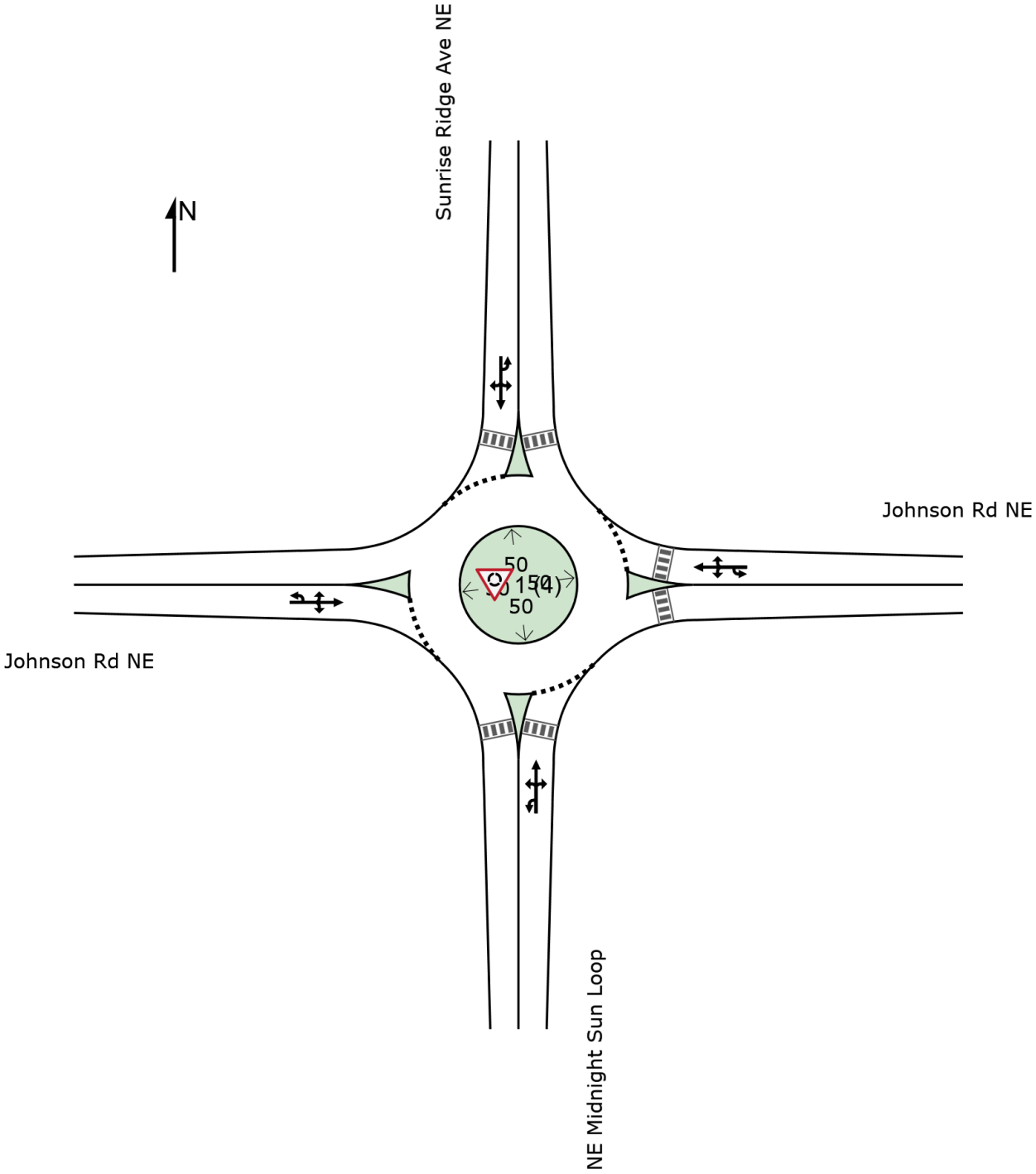
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods 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

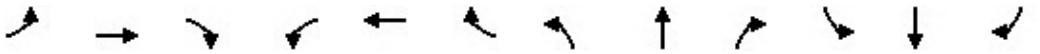
Site: [1 (4)] Johnson & Sunrise Ridge - 2032 AM With
(Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	178	117	55	130	228	133	834	36	218	682	51
Future Volume (veh/h)	71	178	117	55	130	228	133	834	36	218	682	51
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)	0.99		0.96	0.99		0.96	1.00		0.96	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	1702	1758	1786	1786	1786	1786	1772	1744	1786	1786	1772	1744
Adj Flow Rate, veh/h	72	180	118	56	131	84	134	842	36	220	689	52
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, %	7	3	1	1	1	1	2	4	1	1	2	4
Cap, veh/h	186	223	185	149	205	167	156	904	39	600	1607	121
Arrive On Green	0.05	0.13	0.13	0.03	0.11	0.11	0.09	0.32	0.32	0.35	0.58	0.58
Sat Flow, veh/h	1621	1758	1459	1701	1786	1455	1688	2834	121	1701	2776	209
Grp Volume(v), veh/h	72	180	118	56	131	84	134	368	510	220	312	429
Grp Sat Flow(s),veh/h/ln	1621	1758	1459	1701	1786	1455	1688	1238	1717	1701	1258	1727
Q Serve(g_s), s	4.7	12.0	9.2	3.5	8.4	3.4	9.4	34.6	34.6	11.5	16.7	16.7
Cycle Q Clear(g_c), s	4.7	12.0	9.2	3.5	8.4	3.4	9.4	34.6	34.6	11.5	16.7	16.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.12
Lane Grp Cap(c), veh/h	186	223	185	149	205	167	156	395	547	600	729	1000
V/C Ratio(X)	0.39	0.81	0.64	0.38	0.64	0.50	0.86	0.93	0.93	0.37	0.43	0.43
Avail Cap(c_a), veh/h	320	337	280	311	342	279	323	444	615	600	729	1000
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	0.74	0.74	0.74
Uniform Delay (d), s/veh	44.4	50.9	49.8	45.3	50.7	13.3	53.7	39.6	39.6	28.9	14.1	14.1
Incr Delay (d2), s/veh	1.3	8.3	3.6	1.6	3.3	2.3	12.8	31.0	24.9	0.3	1.4	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(95%),veh/ln	3.5	9.7	6.4	2.8	7.1	4.3	7.9	19.6	24.8	7.7	7.8	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.7	59.2	53.4	46.9	54.0	15.7	66.5	70.6	64.5	29.2	15.5	15.1
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		370			271			1012			961	
Approach Delay, s/veh		54.7			40.7			67.0			18.5	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.3	43.3	9.2	20.2	16.1	74.5	10.7	18.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	13.5	36.6	5.5	14.0	11.4	18.7	6.7	10.4
Green Ext Time (p_c), s	0.4	2.2	0.1	0.8	0.3	2.9	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	44.7
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	823	931	5	1	3
Future Vol, veh/h	6	823	931	5	1	3
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	10	2	3	1	10	1
Mvmt Flow	6	885	1001	5	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1007	0	-	0	1901	1003
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	899	-
Critical Hdwy	4.2	-	-	-	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.29	-	-	-	3.59	3.309
Pot Cap-1 Maneuver	657	-	-	-	72	295
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	657	-	-	-	71	295
Mov Cap-2 Maneuver	-	-	-	-	71	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	384	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.08	0	27.05
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	657	-	-	-	71	295
HCM Lane V/C Ratio	0.01	-	-	-	0.015	0.011
HCM Ctrl Dly (s/v)	10.5	-	-	-	56.1	17.4
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	43	72	5	9	13
Future Vol, veh/h	8	43	72	5	9	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	47	78	5	10	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	179	17	24	0	-	0
Stage 1	17	-	-	-	-	-
Stage 2	162	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	811	1062	1591	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	771	1062	1591	-	-	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	867	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.8	6.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1586	-	1003	-	-
HCM Lane V/C Ratio	0.049	-	0.055	-	-
HCM Ctrl Dly (s/v)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	89	219	72	13	137	50	65	51	5	92	65	65
Future Vol, veh/h	89	219	72	13	137	50	65	51	5	92	65	65
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	1	1	1	1	2	1	1	1	1	1	4
Mvmt Flow	102	252	83	15	157	57	75	59	6	106	75	75
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	19.2	12.3	11.9	12.3
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	54%	23%	7%	59%	0%
Vol Thru, %	42%	58%	69%	41%	0%
Vol Right, %	4%	19%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	380	200	157	65
LT Vol	65	89	13	92	0
Through Vol	51	219	137	65	0
RT Vol	5	72	50	0	65
Lane Flow Rate	139	437	230	180	75
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.256	0.67	0.369	0.348	0.123
Departure Headway (Hd)	6.636	5.52	5.773	6.947	5.933
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	545	651	616	514	599
Service Time	4.636	3.598	3.867	4.737	3.723
HCM Lane V/C Ratio	0.255	0.671	0.373	0.35	0.125
HCM Control Delay, s/veh	11.9	19.2	12.3	13.4	9.6
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	1	5.1	1.7	1.5	0.4

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	68	23	57	44	17
Future Vol, veh/h	57	68	23	57	44	17
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	74	25	62	48	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	231	119
Stage 1	-	-	-	-	109	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1436	-	757	933
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	903	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1424	-	731	917
Mov Cap-2 Maneuver	-	-	-	-	731	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.18	10.08
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	775	-	-	517	-
HCM Lane V/C Ratio	0.086	-	-	0.018	-
HCM Ctrl Dly (s/v)	10.1	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

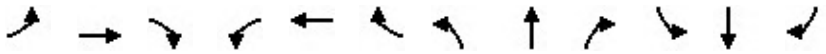
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	264	117	129	232	242	122	1023	132	210	713	83
Future Volume (veh/h)	65	264	117	129	232	242	122	1023	132	210	713	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	68	275	122	134	242	252	127	1066	138	219	743	86
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	3	3	3	2	2	2
Cap, veh/h	85	323	272	156	395	333	149	1111	144	339	1404	162
Arrive On Green	0.05	0.18	0.18	0.09	0.22	0.22	0.09	0.39	0.39	0.20	0.51	0.51
Sat Flow, veh/h	1701	1786	1501	1688	1772	1492	1674	2834	366	1688	2773	321
Grp Volume(v), veh/h	68	275	122	134	242	252	127	568	636	219	370	459
Grp Sat Flow(s),veh/h/ln	1701	1786	1501	1688	1772	1492	1674	1512	1689	1688	1382	1712
Q Serve(g_s), s	5.6	21.2	10.3	11.1	17.4	14.7	10.6	52.0	52.2	16.9	25.7	25.7
Cycle Q Clear(g_c), s	5.6	21.2	10.3	11.1	17.4	14.7	10.6	52.0	52.2	16.9	25.7	25.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		0.19
Lane Grp Cap(c), veh/h	85	323	272	156	395	333	149	593	662	339	700	866
V/C Ratio(X)	0.80	0.85	0.45	0.86	0.61	0.76	0.85	0.96	0.96	0.65	0.53	0.53
Avail Cap(c_a), veh/h	137	395	332	183	442	372	208	597	667	339	700	866
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	0.69	0.69	0.69	0.74	0.74	0.74
Uniform Delay (d), s/veh	66.7	56.3	51.9	63.5	49.6	22.1	63.8	42.0	42.1	52.1	23.7	23.7
Incr Delay (d2), s/veh	11.8	13.8	1.2	28.3	2.1	7.8	14.0	22.2	21.0	3.1	2.1	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(95%),veh/ln	4.9	16.3	7.2	10.1	12.7	10.0	8.1	28.9	31.7	11.2	12.7	15.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.5	70.1	53.0	91.8	51.7	29.9	77.7	64.2	63.1	55.2	25.8	25.4
LnGrp LOS	E	E	D	F	D	C	E	E	E	E	C	C
Approach Vol, veh/h		465			628			1331			1048	
Approach Delay, s/veh		66.9			51.5			65.0			31.8	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	76.8	11.7	36.3	33.4	60.6	17.7	30.3
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.9	* 4.9	4.6	4.6
Max Green Setting (Gmax), s	17.6	58.9	11.4	35.4	20.4	* 56	15.4	31.4
Max Q Clear Time (g_c+I1), s	12.6	27.7	7.6	19.4	18.9	54.2	13.1	23.2
Green Ext Time (p_c), s	0.1	8.1	0.0	2.2	0.1	1.5	0.1	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	52.8
HCM 7th LOS	D

Notes

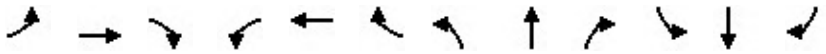
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	78	63	48	65	65	61	1173	83	78	861	54
Future Volume (veh/h)	100	78	63	48	65	65	61	1173	83	78	861	54
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	1772	1772	1772	1786	1786	1786	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	106	83	67	51	69	69	65	1248	88	83	916	57
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	171	149	131	116	154	172	643	1043	73	661	867	524
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.38	0.34	0.34	0.39	0.35	0.35
Sat Flow, veh/h	717	851	747	445	879	981	1674	3051	215	1688	2481	1500
Grp Volume(v), veh/h	124	0	132	87	0	102	65	632	704	83	916	57
Grp Sat Flow(s),veh/h/ln	842	0	1473	862	0	1443	1674	1547	1719	1688	1240	1500
Q Serve(g_s), s	13.7	0.0	12.0	6.9	0.0	9.2	3.7	50.6	50.6	4.7	51.7	3.8
Cycle Q Clear(g_c), s	23.0	0.0	12.0	18.9	0.0	9.2	3.7	50.6	50.6	4.7	51.7	3.8
Prop In Lane	0.86		0.51	0.58		0.68	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	193	0	258	189	0	253	643	529	588	661	867	524
V/C Ratio(X)	0.64	0.00	0.51	0.46	0.00	0.40	0.10	1.19	1.20	0.13	1.06	0.11
Avail Cap(c_a), veh/h	220	0	289	344	0	409	643	529	588	661	867	524
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	0.44	0.44	0.44	0.73	0.73	0.73
Uniform Delay (d), s/veh	64.3	0.0	55.3	61.0	0.0	54.2	29.2	48.7	48.7	28.8	48.2	32.6
Incr Delay (d2), s/veh	5.2	0.0	1.6	1.7	0.0	1.0	0.0	95.9	96.7	0.1	42.6	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(95%),veh/ln	8.5	0.0	8.2	5.9	0.0	6.3	2.7	44.5	49.3	3.4	28.1	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.4	0.0	56.9	62.7	0.0	55.2	29.2	144.6	145.4	28.9	90.8	32.9
LnGrp LOS	E		E	E		E	C	F	F	C	F	C
Approach Vol, veh/h		256			189			1401			1056	
Approach Delay, s/veh		63.0			58.7			139.7			82.8	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	61.4	56.2		30.4	62.5	55.1		30.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	56.8	51.7		29.0	7.9	50.6		42.0
Max Q Clear Time (g_c+I1), s	15.7	53.7		25.0	6.7	52.6		20.9
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	0.0		1.1

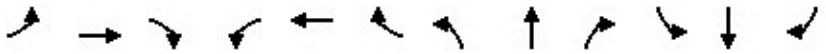
Intersection Summary	
HCM 7th Control Delay, s/veh	106.9
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	48	6	32	24	337	6	1266	60	308	953	172
Future Volume (veh/h)	261	48	6	32	24	337	6	1266	60	308	953	172
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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	275	51	6	34	25	355	6	1333	63	324	1003	181
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, %	2	2	2	2	2	2	3	3	3	2	2	2
Cap, veh/h	304	280	33	203	149	306	15	976	46	303	1279	713
Arrive On Green	0.18	0.18	0.18	0.20	0.20	0.20	0.01	0.31	0.31	0.18	0.48	0.48
Sat Flow, veh/h	1688	1556	183	993	730	1499	1674	3164	149	1688	2693	1500
Grp Volume(v), veh/h	275	0	57	59	0	355	6	666	730	324	1003	181
Grp Sat Flow(s),veh/h/ln	1688	0	1739	1722	0	1499	1674	1582	1731	1688	1347	1500
Q Serve(g_s), s	22.7	0.0	3.9	4.0	0.0	29.0	0.5	43.8	43.8	25.5	44.2	10.2
Cycle Q Clear(g_c), s	22.7	0.0	3.9	4.0	0.0	29.0	0.5	43.8	43.8	25.5	44.2	10.2
Prop In Lane	1.00		0.11	0.58		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	304	0	313	352	0	306	15	488	534	303	1279	713
V/C Ratio(X)	0.90	0.00	0.18	0.17	0.00	1.16	0.40	1.36	1.37	1.07	0.78	0.25
Avail Cap(c_a), veh/h	392	0	404	352	0	306	71	488	534	303	1279	713
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	0.58	0.58	0.58	0.15	0.15	0.15
Uniform Delay (d), s/veh	57.0	0.0	49.3	46.6	0.0	56.5	70.0	49.1	49.1	58.2	31.2	22.3
Incr Delay (d2), s/veh	20.3	0.0	0.3	0.2	0.0	101.8	9.8	171.5	172.6	41.1	0.8	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(95%),veh/ln	7.0	0.0	3.2	3.2	0.0	29.1	0.5	57.6	62.9	17.3	16.4	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	77.3	0.0	49.6	46.8	0.0	158.3	79.8	220.6	221.7	99.4	31.9	22.4
LnGrp LOS	E		D	D		F	E	F	F	F	C	C
Approach Vol, veh/h		332			414			1402			1508	
Approach Delay, s/veh		72.5			142.4			220.6			45.3	
Approach LOS		E			F			F			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.9	72.4		30.2	30.4	47.8		33.6
Change Period (Y+Rc), s	4.6	4.9		4.6	4.9	4.0		4.6
Max Green Setting (Gmax), s	6.3	55.3		33.0	18.1	43.8		29.0
Max Q Clear Time (g_c+I1), s	12.5	46.2		24.7	27.5	45.8		31.0
Green Ext Time (p_c), s	0.0	4.7		0.8	0.0	0.0		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	126.0
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	326	344	168	300	587	359	1200	218	640	928	35
Future Volume (veh/h)	48	326	344	168	300	587	359	1200	218	640	928	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		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	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	51	343	362	177	316	618	378	1263	229	674	977	37
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	3	3	3	2	2	2
Cap, veh/h	65	389	610	156	483	672	309	1287	574	573	1115	42
Arrive On Green	0.04	0.22	0.22	0.09	0.27	0.27	0.18	0.39	0.39	0.18	0.38	0.38
Sat Flow, veh/h	1701	1786	1514	1688	1772	1502	1674	3340	1489	3274	2968	112
Grp Volume(v), veh/h	51	343	362	177	316	618	378	1263	229	674	437	577
Grp Sat Flow(s),veh/h/ln	1701	1786	1514	1688	1772	1502	1674	1670	1489	1637	1329	1752
Q Serve(g_s), s	4.3	27.0	27.2	13.4	22.9	39.5	26.8	54.2	16.2	25.4	44.4	44.4
Cycle Q Clear(g_c), s	4.3	27.0	27.2	13.4	22.9	39.5	26.8	54.2	16.2	25.4	44.4	44.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	65	389	610	156	483	672	309	1287	574	573	499	658
V/C Ratio(X)	0.79	0.88	0.59	1.13	0.65	0.92	1.22	0.98	0.40	1.18	0.88	0.88
Avail Cap(c_a), veh/h	116	443	656	156	483	672	309	1287	574	573	499	658
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	0.22	0.22	0.22	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.2	54.9	34.0	65.8	46.7	37.6	59.1	44.0	32.4	59.8	42.1	42.1
Incr Delay (d2), s/veh	18.6	16.8	1.3	112.9	3.2	17.9	106.3	8.2	0.5	96.1	19.0	15.2
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(95%),veh/ln	4.0	20.0	15.4	16.8	15.8	31.4	26.6	26.9	7.8	27.0	23.6	29.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.8	71.6	35.2	178.7	49.9	55.5	165.4	52.2	32.8	155.9	61.1	57.3
LnGrp LOS	F	E	D	F	D	E	F	D	C	F	E	E
Approach Vol, veh/h		756			1111			1870			1688	
Approach Delay, s/veh		55.3			73.5			72.7			97.7	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.4	59.4	10.1	44.1	30.0	60.8	18.0	36.2
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	26.8	50.1	9.9	39.5	25.4	51.5	13.4	36.0
Max Q Clear Time (g_c+I1), s	28.8	46.4	6.3	41.5	27.4	56.2	15.4	29.2
Green Ext Time (p_c), s	0.0	2.0	0.0	0.0	0.0	0.0	0.0	1.9

Intersection Summary	
HCM 7th Control Delay, s/veh	78.2
HCM 7th LOS	E

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	24	62	271	90	83
Future Vol, veh/h	255	24	62	271	90	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	277	26	67	295	98	90

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	303	0	720	290
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	429	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1263	-	396	751
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	659	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1263	-	375	751
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	659	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.49	14.35
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	375	751	-	-	1263	-
HCM Lane V/C Ratio	0.261	0.12	-	-	0.053	-
HCM Ctrl Dly (s/v)	17.9	10.4	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	279	367	6	0	42
Future Vol, veh/h	33	279	367	6	0	42
Conflicting Peds, #/hr	9	0	0	9	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	36	303	399	7	0	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	414	0	-	0	786	411
Stage 1	-	-	-	-	411	-
Stage 2	-	-	-	-	375	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1145	-	-	-	364	645
Stage 1	-	-	-	-	673	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1136	-	-	-	347	640
Mov Cap-2 Maneuver	-	-	-	-	347	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	699	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.87	0	11.06
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	190	-	-	-	640
HCM Lane V/C Ratio	0.032	-	-	-	0.071
HCM Ctrl Dly (s/v)	8.3	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

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	11	293	78	18	349	35	0	0	0	18	35	11
Future Vol, veh/h	11	293	78	18	349	35	0	0	0	18	35	11
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
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	12	315	84	19	375	38	0	0	0	19	38	12
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	12	12.8	9.4
HCM LOS	B	B	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	4%	28%
Vol Thru, %	77%	87%	55%
Vol Right, %	20%	9%	17%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	382	402	64
LT Vol	11	18	18
Through Vol	293	349	35
RT Vol	78	35	11
Lane Flow Rate	411	432	69
Geometry Grp	1	1	1
Degree of Util (X)	0.508	0.542	0.108
Departure Headway (Hd)	4.451	4.512	5.641
Convergence, Y/N	Yes	Yes	Yes
Cap	809	800	631
Service Time	2.489	2.55	3.715
HCM Lane V/C Ratio	0.508	0.54	0.109
HCM Control Delay, s/veh	12	12.8	9.4
HCM Lane LOS	B	B	A
HCM 95th-tile Q	2.9	3.3	0.4

Intersection	
Intersection Delay, s/veh	35.2
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	361	381	18	261	394
Future Vol, veh/h	11	361	381	18	261	394
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	13	410	433	20	297	448
Number of Lanes	1	1	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay, s/veh	30.8	41.7	33.7
HCM LOS	D	E	D

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	100%	0%
Vol Thru, %	95%	0%	0%	0%	100%
Vol Right, %	5%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	399	11	361	261	394
LT Vol	0	11	0	261	0
Through Vol	381	0	0	0	394
RT Vol	18	0	361	0	0
Lane Flow Rate	453	13	410	297	448
Geometry Grp	3b	5	5	5	5
Degree of Util (X)	0.877	0.028	0.794	0.622	0.875
Departure Headway (Hd)	6.96	8.198	6.964	7.552	7.039
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	521	439	525	478	515
Service Time	5.004	5.898	4.664	5.306	4.793
HCM Lane V/C Ratio	0.869	0.03	0.781	0.621	0.87
HCM Control Delay, s/veh	41.7	11.1	31.4	22	41.5
HCM Lane LOS	E	B	D	C	E
HCM 95th-tile Q	9.6	0.1	7.4	4.2	9.5

MOVEMENT SUMMARY

Site: [99 (6)] SR 305 & Johnson Rd - Forecast 2032 PM With (PM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.057	15.0	LOS B	0.2	5.7	0.58	0.75	0.58	31.0
3	L2	All MCs	23	6.0	23	6.0	0.057	12.0	LOS B	0.2	5.7	0.58	0.75	0.58	32.2
8	T1	All MCs	6	1.0	6	1.0	0.057	6.0	LOS A	0.2	5.7	0.58	0.75	0.58	30.2
18	R2	All MCs	9	1.0	9	1.0	0.057	8.2	LOS A	0.2	5.7	0.58	0.75	0.58	33.2
Approach			39	3.9	39	3.9	0.057	10.3	LOS B	0.2	5.7	0.58	0.75	0.58	32.0
East: SR 305															
1u	U	All MCs	3	1.0	3	1.0	0.502	12.3	LOS B	3.9	98.8	0.32	0.47	0.32	37.2
1	L2	All MCs	9	1.0	9	1.0	0.502	11.7	LOS B	3.9	98.8	0.32	0.47	0.32	35.3
6	T1	All MCs	949	3.0	949	3.0	0.502	6.6	LOS A	3.9	98.8	0.30	0.47	0.30	40.7
16	R2	All MCs	61	10.0	61	10.0	0.228	6.3	LOS A	1.2	32.4	0.26	0.49	0.26	35.6
Approach			1023	3.4	1023	3.4	0.502	6.7	LOS A	3.9	98.8	0.30	0.47	0.30	40.3
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.146	15.7	LOS B	0.6	15.7	0.63	0.77	0.63	30.7
7	L2	All MCs	53	6.0	53	6.0	0.146	12.8	LOS B	0.6	15.7	0.63	0.77	0.63	32.0
4	T1	All MCs	3	1.0	3	1.0	0.146	6.6	LOS A	0.6	15.7	0.63	0.77	0.63	30.0
14	R2	All MCs	38	1.0	38	1.0	0.146	9.8	LOS A	0.6	15.7	0.63	0.77	0.63	33.0
Approach			95	3.8	95	3.8	0.146	11.4	LOS B	0.6	15.7	0.63	0.77	0.63	32.3
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.430	12.2	LOS B	3.3	84.0	0.29	0.48	0.29	37.1
5	L2	All MCs	49	1.0	49	1.0	0.430	11.6	LOS B	3.3	84.0	0.29	0.48	0.29	35.2
2	T1	All MCs	817	2.0	817	2.0	0.430	6.4	LOS A	3.3	84.0	0.28	0.47	0.28	40.8
12	R2	All MCs	23	1.0	23	1.0	0.195	6.0	LOS A	1.1	28.3	0.25	0.47	0.25	35.9
Approach			890	1.9	890	1.9	0.430	6.7	LOS A	3.3	84.0	0.28	0.47	0.28	40.3
All Vehicles			2046	2.8	2046	2.8	0.502	7.0	LOS A	3.9	98.8	0.31	0.49	0.31	39.7

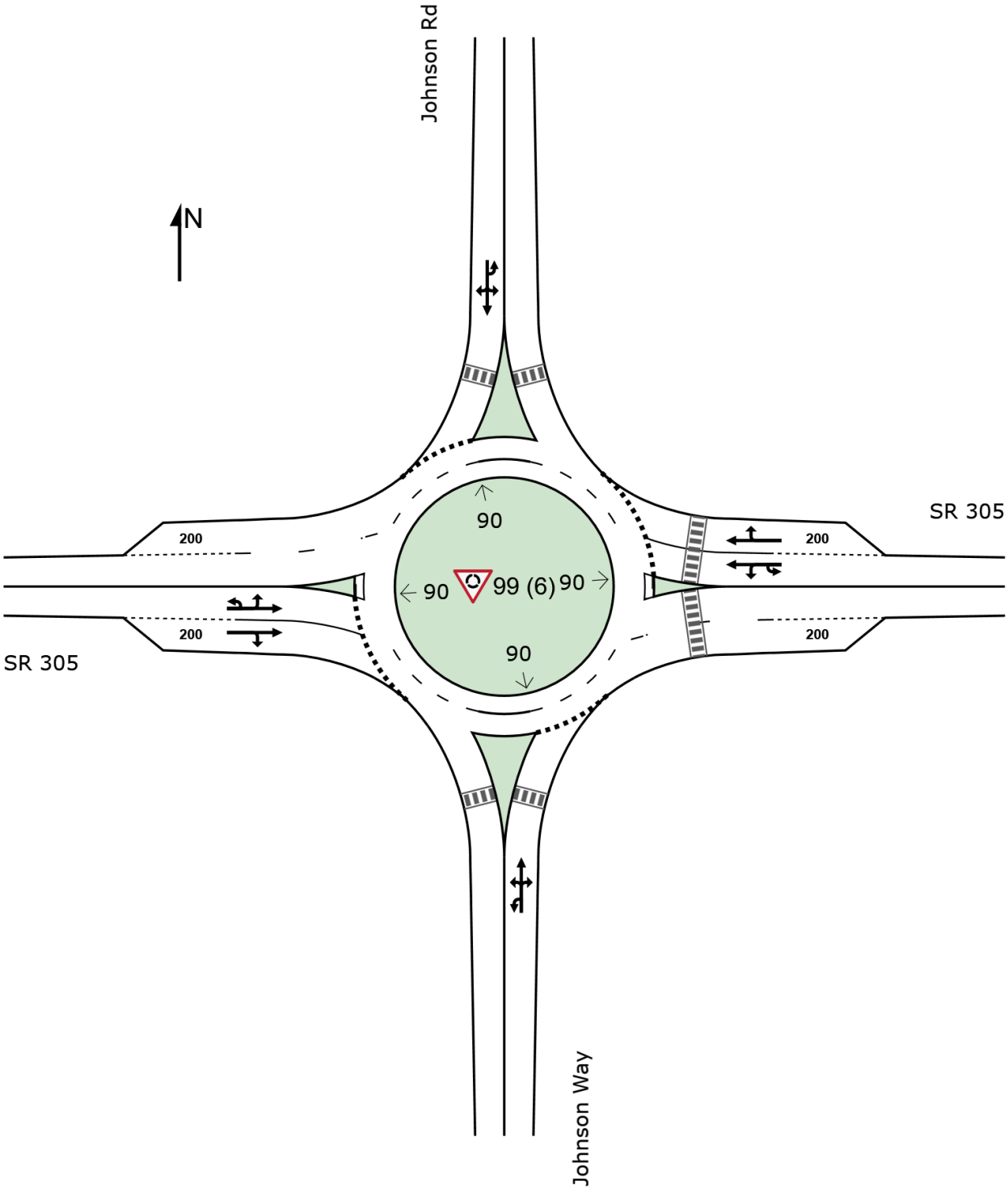
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Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c 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: [99 (6)] SR 305 & Johnson Rd - Forecast 2032 PM With
(PM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (6)] Johnson & Sunrise Ridge - 2032 PM With (Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.006	7.5	LOS A	0.0	0.6	0.25	0.43	0.25	23.6
3	L2	All MCs	1	3.0	1	3.0	0.006	6.1	LOS A	0.0	0.6	0.25	0.43	0.25	23.6
8	T1	All MCs	1	3.0	1	3.0	0.006	2.3	LOS A	0.0	0.6	0.25	0.43	0.25	23.8
18	R2	All MCs	3	3.0	3	3.0	0.006	2.7	LOS A	0.0	0.6	0.25	0.43	0.25	23.7
Approach			7	3.0	7	3.0	0.006	4.0	LOS A	0.0	0.6	0.25	0.43	0.25	23.6
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.044	11.2	LOS B	0.2	4.7	0.23	0.50	0.23	34.3
1	L2	All MCs	2	3.0	2	3.0	0.044	9.3	LOS A	0.2	4.7	0.23	0.50	0.23	34.3
6	T1	All MCs	31	3.0	31	3.0	0.044	5.3	LOS A	0.2	4.7	0.23	0.50	0.23	34.9
16	R2	All MCs	20	3.0	20	3.0	0.044	5.0	LOS A	0.2	4.7	0.23	0.50	0.23	34.6
Approach			55	3.0	55	3.0	0.044	5.5	LOS A	0.2	4.7	0.23	0.50	0.23	34.8
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.070	11.0	LOS B	0.3	7.8	0.14	0.54	0.14	34.5
7	L2	All MCs	11	3.0	11	3.0	0.070	9.0	LOS A	0.3	7.8	0.14	0.54	0.14	34.5
4	T1	All MCs	1	3.0	1	3.0	0.070	5.0	LOS A	0.3	7.8	0.14	0.54	0.14	35.1
14	R2	All MCs	73	3.0	73	3.0	0.070	4.7	LOS A	0.3	7.8	0.14	0.54	0.14	34.8
Approach			86	3.0	86	3.0	0.070	5.4	LOS A	0.3	7.8	0.14	0.54	0.14	34.7
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.101	10.9	LOS B	0.4	11.3	0.09	0.63	0.09	33.1
5	L2	All MCs	107	3.0	107	3.0	0.101	8.9	LOS A	0.4	11.3	0.09	0.63	0.09	33.1
2	T1	All MCs	20	3.0	20	3.0	0.101	4.9	LOS A	0.4	11.3	0.09	0.63	0.09	33.7
12	R2	All MCs	1	3.0	1	3.0	0.101	4.7	LOS A	0.4	11.3	0.09	0.63	0.09	33.4
Approach			130	3.0	130	3.0	0.101	8.3	LOS A	0.4	11.3	0.09	0.63	0.09	33.2
All Vehicles			277	3.0	277	3.0	0.101	6.7	LOS A	0.4	11.3	0.13	0.57	0.13	33.6

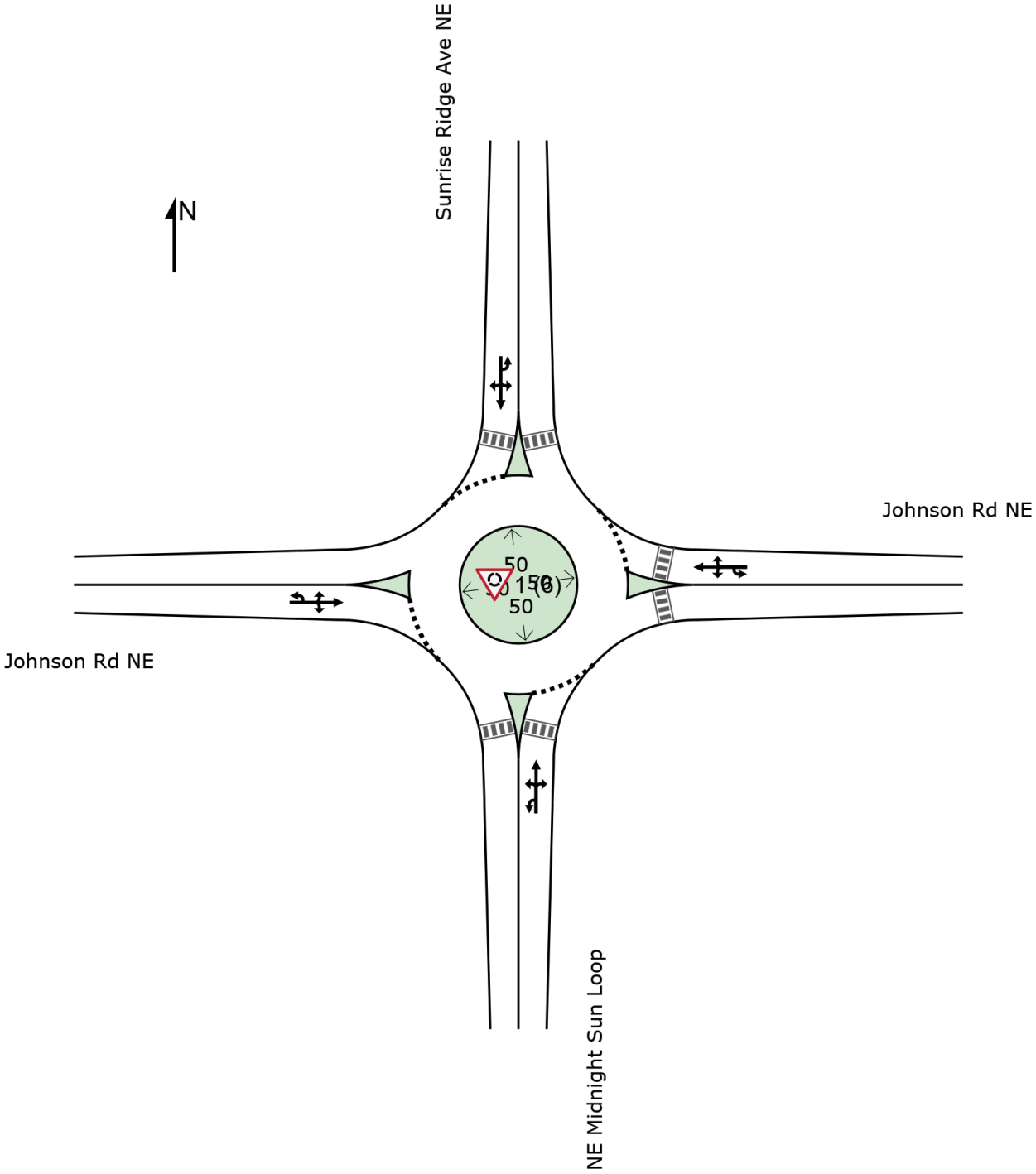
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Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
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Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated 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: [1 (6)] Johnson & Sunrise Ridge - 2032 PM With
(Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

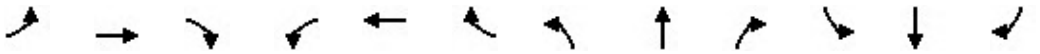
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Project: C:\Users\LucasMaulin\Heath and Associates\Office Access - Documents\Project Files\Pinnacle at Liberty Bay - 5576\5-Analysis\Sidra\Johnson & Sunrise Ridge.sipx

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

APPENDIX
Forecast 2037 Level of Service



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	117	72	59	96	163	51	501	22	227	900	22
Future Volume (veh/h)	42	117	72	59	96	163	51	501	22	227	900	22
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)	0.99		0.98	0.99		0.98	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	1716	1730	1744	1744	1744	1716	1730	1716	1716	1730	1716	1646
Adj Flow Rate, veh/h	42	117	72	59	96	103	51	501	22	227	900	22
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, %	6	5	4	4	4	6	5	6	6	5	6	11
Cap, veh/h	172	176	146	165	198	161	58	567	25	808	1877	46
Arrive On Green	0.03	0.10	0.10	0.04	0.11	0.11	0.04	0.20	0.20	0.49	0.66	0.66
Sat Flow, veh/h	1634	1730	1443	1661	1744	1423	1647	2787	122	1647	2851	70
Grp Volume(v), veh/h	42	117	72	59	96	103	51	219	304	227	385	537
Grp Sat Flow(s),veh/h/ln	1634	1730	1443	1661	1744	1423	1647	1218	1691	1647	1218	1703
Q Serve(g_s), s	2.8	7.8	5.7	3.8	6.2	3.0	3.7	20.9	21.0	9.8	18.9	18.9
Cycle Q Clear(g_c), s	2.8	7.8	5.7	3.8	6.2	3.0	3.7	20.9	21.0	9.8	18.9	18.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.04
Lane Grp Cap(c), veh/h	172	176	146	165	198	161	58	248	344	808	802	1121
V/C Ratio(X)	0.24	0.67	0.49	0.36	0.49	0.64	0.88	0.88	0.89	0.28	0.48	0.48
Avail Cap(c_a), veh/h	342	332	277	318	334	273	316	437	606	808	802	1121
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	47.0	52.0	51.0	46.3	49.9	6.7	57.6	46.4	46.4	18.1	10.2	10.2
Incr Delay (d2), s/veh	0.7	4.3	2.5	1.3	1.8	4.1	30.5	33.5	26.7	0.2	2.0	1.5
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(95%),veh/ln	2.1	6.5	3.9	2.9	5.1	5.4	3.6	13.3	16.7	6.5	8.6	11.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.7	56.3	53.5	47.6	51.7	10.8	88.1	79.9	73.1	18.3	12.3	11.7
LnGrp LOS	D	E	D	D	D	B	F	E	E	B	B	B
Approach Vol, veh/h		231			258			574			1149	
Approach Delay, s/veh		53.9			34.5			77.0			13.2	
Approach LOS		D			C			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	63.9	29.4	9.6	17.2	9.2	84.0	8.1	18.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	11.8	23.0	5.8	9.8	5.7	20.9	4.8	8.2
Green Ext Time (p_c), s	0.5	1.9	0.1	0.6	0.1	3.7	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	36.5
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	991	528	1	2	4
Future Vol, veh/h	0	991	528	1	2	4
Conflicting Peds, #/hr	4	0	0	4	4	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	8	6	1	1	1
Mvmt Flow	0	991	528	1	2	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	533	0	-	0	1527	536
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	995	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1040	-	-	-	130	547
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	359	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1036	-	-	-	129	543
Mov Cap-2 Maneuver	-	-	-	-	129	-
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	358	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	18.89
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1036	-	-	-	129	543
HCM Lane V/C Ratio	-	-	-	-	0.015	0.007
HCM Ctrl Dly (s/v)	0	-	-	-	33.3	11.7
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	0	0	3	1	2
Future Vol, veh/h	6	0	0	3	1	2
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	0	0	3	1	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	5	2	3	0	-	0
Stage 1	2	-	-	-	-	-
Stage 2	3	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1016	1082	1619	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1020	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1016	1082	1619	-	-	-
Mov Cap-2 Maneuver	1016	-	-	-	-	-
Stage 1	1021	-	-	-	-	-
Stage 2	1020	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.57	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1619	-	1016	-	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Ctrl Dly (s/v)	0	-	8.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	33
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	256	25	14	234	90	63	37	43	149	19	66
Future Vol, veh/h	52	256	25	14	234	90	63	37	43	149	19	66
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	1	6	5	1	7	1	1	3	6	7	1	4
Mvmt Flow	69	341	33	19	312	120	84	49	57	199	25	88
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	41.8	40.6	17.5	18.9
HCM LOS	E	E	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	44%	16%	4%	89%	0%
Vol Thru, %	26%	77%	69%	11%	0%
Vol Right, %	30%	8%	27%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	143	333	338	168	66
LT Vol	63	52	14	149	0
Through Vol	37	256	234	19	0
RT Vol	43	25	90	0	66
Lane Flow Rate	191	444	451	224	88
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.434	0.873	0.869	0.545	0.183
Departure Headway (Hd)	8.203	7.08	6.944	8.756	7.467
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	437	511	518	410	479
Service Time	6.298	5.15	5.015	6.533	5.243
HCM Lane V/C Ratio	0.437	0.869	0.871	0.546	0.184
HCM Control Delay, s/veh	17.5	41.8	40.6	21.6	11.9
HCM Lane LOS	C	E	E	C	B
HCM 95th-tile Q	2.1	9.4	9.4	3.2	0.7

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	37	19	6	62	56	25
Future Vol, veh/h	37	19	6	62	56	25
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	21	7	67	61	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	151	71
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1530	-	841	992
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1517	-	823	976
Mov Cap-2 Maneuver	-	-	-	-	823	-
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.65	9.63
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	865	-	-	159	-
HCM Lane V/C Ratio	0.102	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.6	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

MOVEMENT SUMMARY

Site: [99 (7)] SR 305 & Johnson Rd - Forecast 2037 AM

Without (AM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.049	16.0	LOS B	0.2	5.3	0.65	0.78	0.65	30.7
3	L2	All MCs	19	1.0	19	1.0	0.049	12.5	LOS B	0.2	5.3	0.65	0.78	0.65	32.4
8	T1	All MCs	7	1.0	7	1.0	0.049	6.9	LOS A	0.2	5.3	0.65	0.78	0.65	29.9
18	R2	All MCs	4	1.0	4	1.0	0.049	11.8	LOS B	0.2	5.3	0.65	0.78	0.65	32.8
Approach			31	1.0	31	1.0	0.049	11.3	LOS B	0.2	5.3	0.65	0.78	0.65	31.8
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.253	12.0	LOS B	1.6	40.7	0.17	0.46	0.17	37.7
1	L2	All MCs	6	1.0	6	1.0	0.253	11.4	LOS B	1.6	40.7	0.17	0.46	0.17	35.8
6	T1	All MCs	497	6.0	497	6.0	0.253	6.0	LOS A	1.6	40.7	0.17	0.46	0.17	40.8
16	R2	All MCs	16	1.0	16	1.0	0.115	5.8	LOS A	0.6	15.7	0.17	0.47	0.17	36.2
Approach			520	5.8	520	5.8	0.253	6.1	LOS A	1.6	40.7	0.17	0.46	0.17	40.5
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.128	13.8	LOS B	0.5	12.2	0.47	0.70	0.47	31.0
7	L2	All MCs	91	3.0	91	3.0	0.128	10.5	LOS B	0.5	12.2	0.47	0.70	0.47	32.6
4	T1	All MCs	2	1.0	2	1.0	0.128	4.7	LOS A	0.5	12.2	0.47	0.70	0.47	30.3
14	R2	All MCs	17	1.0	17	1.0	0.128	6.1	LOS A	0.5	12.2	0.47	0.70	0.47	33.3
Approach			111	2.6	111	2.6	0.128	9.8	LOS A	0.5	12.2	0.47	0.70	0.47	32.7
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.524	12.5	LOS B	4.3	115.8	0.40	0.48	0.40	36.9
5	L2	All MCs	9	17.0	9	17.0	0.524	12.4	LOS B	4.3	115.8	0.40	0.48	0.40	34.5
2	T1	All MCs	965	8.0	965	8.0	0.524	7.4	LOS A	4.3	115.8	0.38	0.48	0.38	39.6
12	R2	All MCs	21	12.0	21	12.0	0.239	6.5	LOS A	1.4	36.8	0.32	0.49	0.32	35.5
Approach			996	8.2	996	8.2	0.524	7.5	LOS A	4.3	115.8	0.38	0.48	0.38	39.4
All Vehicles			1658	6.9	1658	6.9	0.524	7.3	LOS A	4.3	115.8	0.32	0.49	0.32	39.0

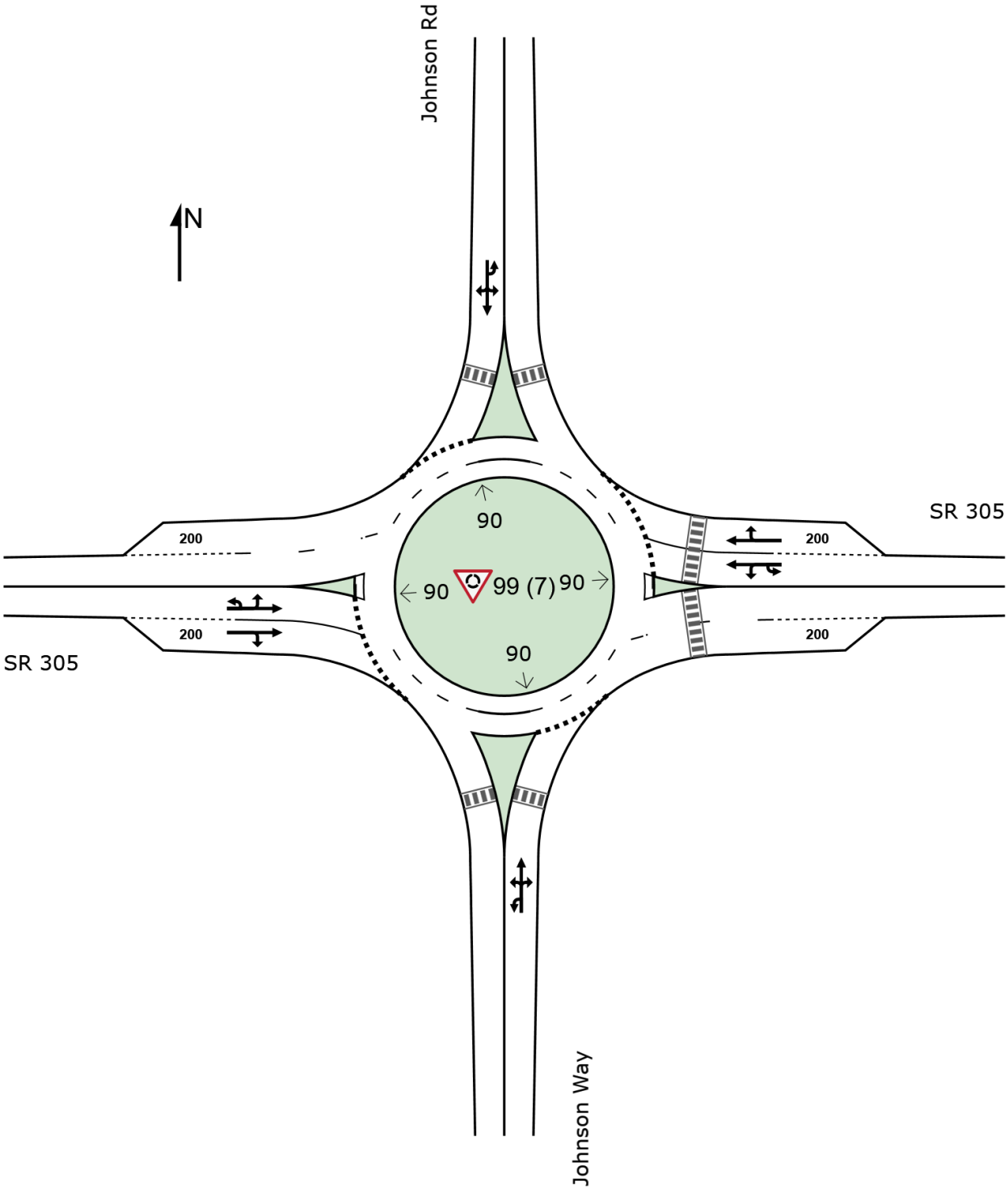
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Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay 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: [99 (7)] SR 305 & Johnson Rd - Forecast 2037 AM
Without (AM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (7)] Johnson & Sunrise Ridge - 2037 AM Without

(Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.004	7.2	LOS A	0.0	0.4	0.17	0.45	0.17	23.5
3	L2	All MCs	1	3.0	1	3.0	0.004	5.8	LOS A	0.0	0.4	0.17	0.45	0.17	23.5
8	T1	All MCs	1	3.0	1	3.0	0.004	2.0	LOS A	0.0	0.4	0.17	0.45	0.17	23.7
18	R2	All MCs	1	3.0	1	3.0	0.004	2.4	LOS A	0.0	0.4	0.17	0.45	0.17	23.6
Approach			5	3.0	5	3.0	0.004	4.3	LOS A	0.0	0.4	0.17	0.45	0.17	23.6
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.094	10.8	LOS B	0.4	10.3	0.07	0.46	0.07	34.7
1	L2	All MCs	1	3.0	1	3.0	0.094	8.9	LOS A	0.4	10.3	0.07	0.46	0.07	34.7
6	T1	All MCs	118	3.0	118	3.0	0.094	4.9	LOS A	0.4	10.3	0.07	0.46	0.07	35.4
16	R2	All MCs	6	3.0	6	3.0	0.094	4.6	LOS A	0.4	10.3	0.07	0.46	0.07	35.1
Approach			126	3.0	126	3.0	0.094	4.9	LOS A	0.4	10.3	0.07	0.46	0.07	35.4
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.036	11.3	LOS B	0.1	3.8	0.25	0.58	0.25	33.6
7	L2	All MCs	18	3.0	18	3.0	0.036	9.4	LOS A	0.1	3.8	0.25	0.58	0.25	33.6
4	T1	All MCs	1	3.0	1	3.0	0.036	5.4	LOS A	0.1	3.8	0.25	0.58	0.25	34.2
14	R2	All MCs	21	3.0	21	3.0	0.036	5.1	LOS A	0.1	3.8	0.25	0.58	0.25	33.9
Approach			42	3.0	42	3.0	0.036	7.1	LOS A	0.1	3.8	0.25	0.58	0.25	33.8
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.044	10.9	LOS B	0.2	4.8	0.10	0.51	0.10	34.4
5	L2	All MCs	8	3.0	8	3.0	0.044	9.0	LOS A	0.2	4.8	0.10	0.51	0.10	34.4
2	T1	All MCs	36	3.0	36	3.0	0.044	4.9	LOS A	0.2	4.8	0.10	0.51	0.10	35.0
12	R2	All MCs	11	3.0	11	3.0	0.044	4.7	LOS A	0.2	4.8	0.10	0.51	0.10	34.7
Approach			56	3.0	56	3.0	0.044	5.6	LOS A	0.2	4.8	0.10	0.51	0.10	34.8
All Vehicles			229	3.0	229	3.0	0.094	5.5	LOS A	0.4	10.3	0.11	0.49	0.11	34.6

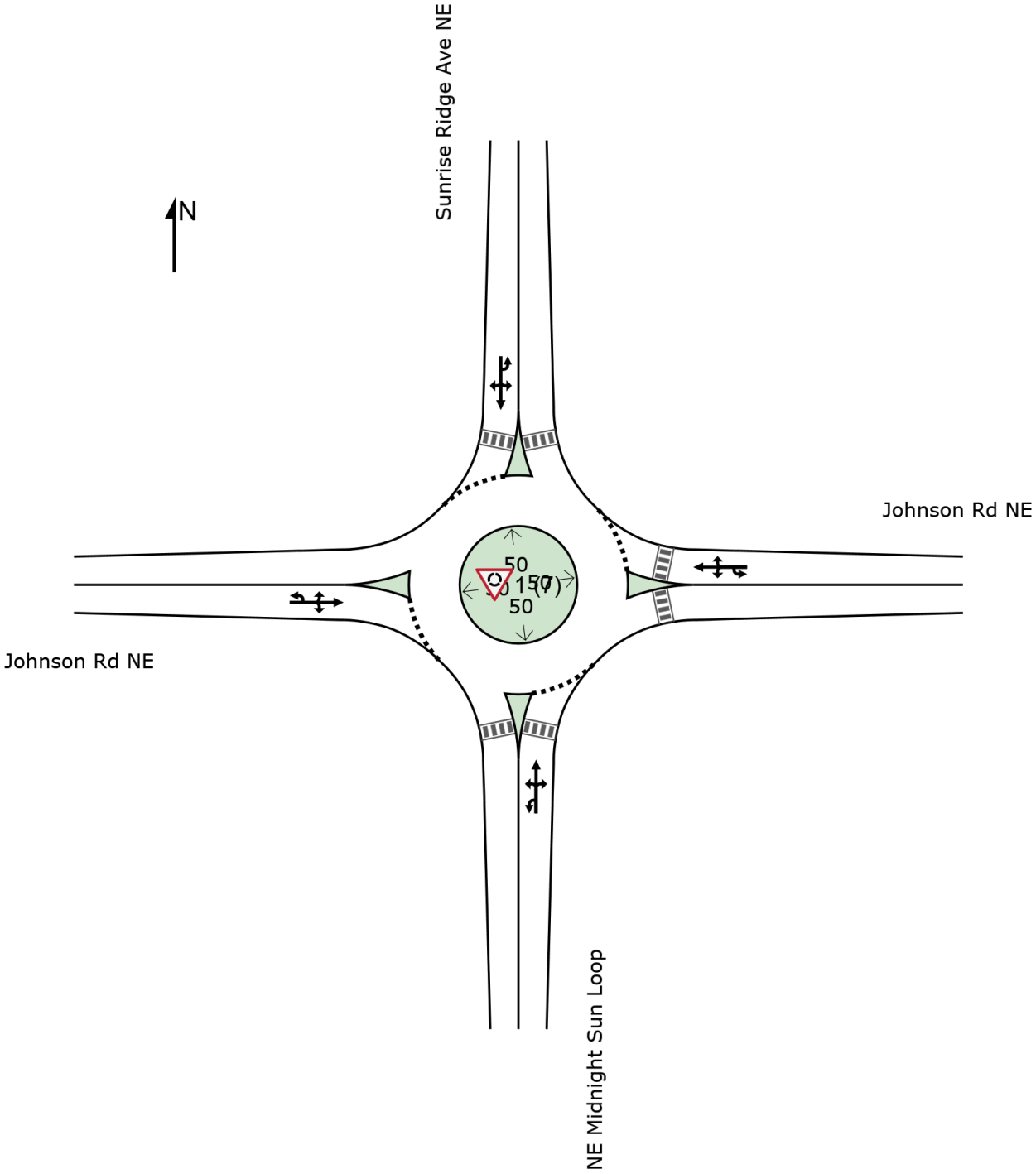
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Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values 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: [1 (7)] Johnson & Sunrise Ridge - 2037 AM Without
(Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	193	110	59	141	248	134	841	39	237	678	56
Future Volume (veh/h)	77	193	110	59	141	248	134	841	39	237	678	56
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)	0.99		0.96	0.99		0.96	1.00		0.96	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	1702	1758	1786	1786	1786	1786	1772	1744	1786	1786	1772	1744
Adj Flow Rate, veh/h	77	193	110	59	141	103	134	841	39	237	678	56
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, %	7	3	1	1	1	1	2	4	1	1	2	4
Cap, veh/h	189	233	194	151	213	174	156	902	42	585	1573	130
Arrive On Green	0.05	0.13	0.13	0.04	0.12	0.12	0.09	0.32	0.32	0.34	0.57	0.57
Sat Flow, veh/h	1621	1758	1460	1701	1786	1456	1688	2822	131	1701	2754	227
Grp Volume(v), veh/h	77	193	110	59	141	103	134	369	511	237	309	425
Grp Sat Flow(s),veh/h/ln	1621	1758	1460	1701	1786	1456	1688	1238	1715	1701	1258	1723
Q Serve(g_s), s	5.0	12.8	8.5	3.6	9.1	4.2	9.4	34.7	34.7	12.7	16.8	16.8
Cycle Q Clear(g_c), s	5.0	12.8	8.5	3.6	9.1	4.2	9.4	34.7	34.7	12.7	16.8	16.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	189	233	194	151	213	174	156	396	548	585	719	984
V/C Ratio(X)	0.41	0.83	0.57	0.39	0.66	0.59	0.86	0.93	0.93	0.41	0.43	0.43
Avail Cap(c_a), veh/h	318	337	280	309	342	279	323	444	614	585	719	984
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	0.75	0.75	0.75
Uniform Delay (d), s/veh	43.8	50.7	48.8	44.8	50.5	13.8	53.7	39.6	39.6	30.0	14.6	14.6
Incr Delay (d2), s/veh	1.4	10.7	2.6	1.7	3.5	3.2	12.8	31.0	24.9	0.3	1.4	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(95%),veh/ln	3.7	10.5	5.8	2.9	7.6	5.4	7.9	19.6	24.8	8.4	7.9	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.2	61.4	51.4	46.5	54.0	17.0	66.5	70.6	64.5	30.3	16.0	15.7
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		380			303			1014			971	
Approach Delay, s/veh		55.2			40.0			67.0			19.4	
Approach LOS		E			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	46.3	43.4	9.4	20.9	16.1	73.6	11.0	19.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	14.7	36.7	5.6	14.8	11.4	18.8	7.0	11.1
Green Ext Time (p_c), s	0.3	2.2	0.1	0.8	0.3	2.8	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	44.9
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	806	931	5	1	4
Future Vol, veh/h	6	806	931	5	1	4
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	2	3	1	10	1
Mvmt Flow	6	806	931	5	1	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	937	0	-	0	1751	933
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	819	-
Critical Hdwy	4.2	-	-	-	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.29	-	-	-	3.59	3.309
Pot Cap-1 Maneuver	699	-	-	-	90	324
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	420	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	699	-	-	-	89	324
Mov Cap-2 Maneuver	-	-	-	-	89	-
Stage 1	-	-	-	-	367	-
Stage 2	-	-	-	-	420	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.08	0	22.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	699	-	-	-	89	324
HCM Lane V/C Ratio	0.009	-	-	-	0.011	0.012
HCM Ctrl Dly (s/v)	10.2	-	-	-	45.9	16.3
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	0	0	0	0	5
Future Vol, veh/h	4	0	0	0	0	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	0	0	0	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3	3	5	0	-	0
Stage 1	3	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1020	1081	1616	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1020	1081	1616	-	-	-
Mov Cap-2 Maneuver	1020	-	-	-	-	-
Stage 1	1020	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.55	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1616	-	1020	-	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Ctrl Dly (s/v)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	18
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	238	78	5	152	56	67	51	2	105	61	71
Future Vol, veh/h	97	238	78	5	152	56	67	51	2	105	61	71
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	1	1	1	1	2	1	1	1	1	1	4
Mvmt Flow	111	274	90	6	175	64	77	59	2	121	70	82
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	24.7	13.3	12.5	13.2
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	56%	23%	2%	63%	0%
Vol Thru, %	42%	58%	71%	37%	0%
Vol Right, %	2%	19%	26%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	413	213	166	71
LT Vol	67	97	5	105	0
Through Vol	51	238	152	61	0
RT Vol	2	78	56	0	71
Lane Flow Rate	138	475	245	191	82
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.266	0.76	0.411	0.385	0.141
Departure Headway (Hd)	6.936	5.76	6.042	7.267	6.228
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	517	631	595	494	575
Service Time	4.995	3.76	4.086	5.018	3.978
HCM Lane V/C Ratio	0.267	0.753	0.412	0.387	0.143
HCM Control Delay, s/veh	12.5	24.7	13.3	14.5	10
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	1.1	6.9	2	1.8	0.5

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	56	25	62	37	19
Future Vol, veh/h	62	56	25	62	37	19
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	61	27	67	40	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	138	0	240	118
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	132	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1445	-	749	934
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1433	-	722	919
Mov Cap-2 Maneuver	-	-	-	-	722	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	887	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.17	10.02
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	778	-	-	517	-
HCM Lane V/C Ratio	0.078	-	-	0.019	-
HCM Ctrl Dly (s/v)	10	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

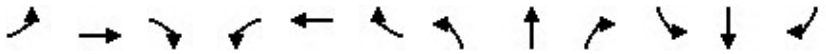
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	287	123	136	253	262	129	1041	141	226	718	91
Future Volume (veh/h)	71	287	123	136	253	262	129	1041	141	226	718	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	71	287	123	136	253	262	129	1041	141	226	718	91
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	3	3	3	2	2	2
Cap, veh/h	89	332	279	158	403	339	151	1097	148	333	1367	173
Arrive On Green	0.05	0.19	0.19	0.09	0.23	0.23	0.09	0.39	0.39	0.20	0.50	0.50
Sat Flow, veh/h	1701	1786	1501	1688	1772	1492	1674	2816	381	1688	2742	347
Grp Volume(v), veh/h	71	287	123	136	253	262	129	558	624	226	362	447
Grp Sat Flow(s),veh/h/ln	1701	1786	1501	1688	1772	1492	1674	1512	1686	1688	1382	1707
Q Serve(g_s), s	5.9	22.1	10.3	11.3	18.3	15.4	10.8	50.8	50.9	17.6	25.2	25.3
Cycle Q Clear(g_c), s	5.9	22.1	10.3	11.3	18.3	15.4	10.8	50.8	50.9	17.6	25.2	25.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		0.20
Lane Grp Cap(c), veh/h	89	332	279	158	403	339	151	589	656	333	689	851
V/C Ratio(X)	0.80	0.86	0.44	0.86	0.63	0.77	0.86	0.95	0.95	0.68	0.53	0.53
Avail Cap(c_a), veh/h	137	395	332	183	442	372	208	597	666	333	689	851
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	0.67	0.67	0.67	0.76	0.76	0.76
Uniform Delay (d), s/veh	66.6	56.0	51.2	63.4	49.4	22.3	63.7	42.0	42.0	52.8	24.2	24.2
Incr Delay (d2), s/veh	13.6	15.6	1.1	28.9	2.4	8.9	14.1	20.1	19.0	4.2	2.2	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(95%),veh/ln	5.2	17.1	7.2	10.2	13.3	10.5	8.2	27.9	30.6	11.8	12.6	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.2	71.6	52.3	92.4	51.9	31.1	77.8	62.1	61.0	57.1	26.4	26.0
LnGrp LOS	F	E	D	F	D	C	E	E	E	E	C	C
Approach Vol, veh/h		481			651			1311			1035	
Approach Delay, s/veh		68.0			52.0			63.1			32.9	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	75.7	12.0	36.9	32.9	60.2	17.9	31.0
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.9	* 4.9	4.6	4.6
Max Green Setting (Gmax), s	17.6	58.9	11.4	35.4	20.4	* 56	15.4	31.4
Max Q Clear Time (g_c+I1), s	12.8	27.3	7.9	20.3	19.6	52.9	13.3	24.1
Green Ext Time (p_c), s	0.1	7.9	0.0	2.2	0.1	2.4	0.1	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	52.7
HCM 7th LOS	D

Notes

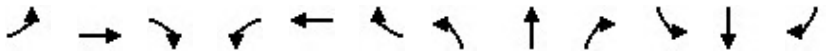
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	84	66	52	71	71	65	1194	91	84	870	58
Future Volume (veh/h)	109	84	66	52	71	71	65	1194	91	84	870	58
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	1772	1772	1772	1786	1786	1786	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	109	84	66	52	71	71	65	1194	91	84	870	58
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	174	152	130	118	157	175	639	1037	79	656	867	524
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.38	0.34	0.34	0.39	0.35	0.35
Sat Flow, veh/h	722	856	728	444	881	985	1674	3032	231	1688	2481	1500
Grp Volume(v), veh/h	125	0	134	90	0	104	65	608	677	84	870	58
Grp Sat Flow(s),veh/h/ln	828	0	1477	868	0	1442	1674	1547	1716	1688	1240	1500
Q Serve(g_s), s	14.0	0.0	12.1	7.1	0.0	9.5	3.7	50.6	50.6	4.7	51.7	3.9
Cycle Q Clear(g_c), s	23.5	0.0	12.1	19.2	0.0	9.5	3.7	50.6	50.6	4.7	51.7	3.9
Prop In Lane	0.87		0.49	0.58		0.68	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	193	0	263	193	0	257	639	529	587	656	867	524
V/C Ratio(X)	0.65	0.00	0.51	0.47	0.00	0.41	0.10	1.15	1.15	0.13	1.00	0.11
Avail Cap(c_a), veh/h	216	0	289	344	0	409	639	529	587	656	867	524
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	0.45	0.45	0.45	0.74	0.74	0.74
Uniform Delay (d), s/veh	64.3	0.0	55.0	60.7	0.0	53.9	29.5	48.7	48.7	29.1	48.2	32.6
Incr Delay (d2), s/veh	5.6	0.0	1.5	1.7	0.0	1.0	0.0	77.8	78.1	0.1	27.3	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(95%),veh/ln	3.6	0.0	8.3	6.0	0.0	6.4	2.7	40.3	44.5	3.5	25.1	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	69.9	0.0	56.5	62.5	0.0	54.9	29.5	126.5	126.8	29.1	75.4	32.9
LnGrp LOS	E		E	E		D	C	F	F	C	E	C
Approach Vol, veh/h		259			194			1350			1012	
Approach Delay, s/veh		63.0			58.4			122.0			69.1	
Approach LOS		E			E			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	61.0	56.2		30.8	62.1	55.1		30.8
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	56.5	51.7		29.0	7.9	50.6		42.0
Max Q Clear Time (g_c+I1), s	15.7	53.7		25.5	6.7	52.6		21.2
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	0.0		1.1

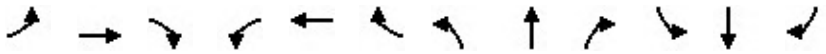
Intersection Summary	
HCM 7th Control Delay, s/veh	93.2
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	284	52	6	32	26	367	6	1291	64	335	967	187
Future Volume (veh/h)	284	52	6	32	26	367	6	1291	64	335	967	187
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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	284	52	6	32	26	367	6	1291	64	335	967	187
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	2	2	2	3	3	3	2	2	2
Cap, veh/h	313	289	33	194	158	306	15	973	48	295	1266	705
Arrive On Green	0.19	0.19	0.19	0.20	0.20	0.20	0.01	0.31	0.31	0.17	0.47	0.47
Sat Flow, veh/h	1688	1559	180	951	773	1499	1674	3155	156	1688	2693	1500
Grp Volume(v), veh/h	284	0	58	58	0	367	6	647	708	335	967	187
Grp Sat Flow(s),veh/h/ln	1688	0	1739	1724	0	1499	1674	1582	1729	1688	1347	1500
Q Serve(g_s), s	23.4	0.0	4.0	3.9	0.0	29.0	0.5	43.8	43.8	24.8	42.2	10.7
Cycle Q Clear(g_c), s	23.4	0.0	4.0	3.9	0.0	29.0	0.5	43.8	43.8	24.8	42.2	10.7
Prop In Lane	1.00		0.10	0.55		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	322	352	0	306	15	488	533	295	1266	705
V/C Ratio(X)	0.91	0.00	0.18	0.16	0.00	1.20	0.40	1.32	1.33	1.14	0.76	0.27
Avail Cap(c_a), veh/h	392	0	404	352	0	306	71	488	533	295	1266	705
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	0.62	0.62	0.62	0.20	0.20	0.20
Uniform Delay (d), s/veh	56.7	0.0	48.8	46.5	0.0	56.5	70.0	49.1	49.1	58.6	31.1	22.8
Incr Delay (d2), s/veh	21.4	0.0	0.3	0.2	0.0	116.5	10.5	155.0	155.7	70.3	0.9	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(95%),veh/ln	17.6	0.0	3.2	3.1	0.0	31.2	0.5	54.1	59.0	20.6	16.1	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.1	0.0	49.0	46.7	0.0	173.0	80.5	204.1	204.8	128.9	32.0	23.0
LnGrp LOS	E		D	D		F	F	F	F	F	C	C
Approach Vol, veh/h		342			425			1361			1489	
Approach Delay, s/veh		73.2			155.8			203.9			52.7	
Approach LOS		E			F			F			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.9	71.6		30.9	29.7	47.8		33.6
Change Period (Y+Rc), s	4.6	4.9		4.6	4.9	4.0		4.6
Max Green Setting (Gmax), s	6.3	55.3		33.0	18.1	43.8		29.0
Max Q Clear Time (g_c+I1), s	12.5	44.2		25.4	26.8	45.8		31.0
Green Ext Time (p_c), s	0.0	5.3		0.7	0.0	0.0		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	123.6
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	355	374	179	326	639	390	1225	235	696	945	38
Future Volume (veh/h)	52	355	374	179	326	639	390	1225	235	696	945	38
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	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	52	355	374	179	326	639	390	1225	235	696	945	38
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	3	3	3	2	2	2
Cap, veh/h	66	395	614	156	487	676	309	1277	569	573	1103	44
Arrive On Green	0.04	0.22	0.22	0.09	0.27	0.27	0.18	0.38	0.38	0.18	0.37	0.37
Sat Flow, veh/h	1701	1786	1514	1688	1772	1502	1674	3340	1489	3274	2960	119
Grp Volume(v), veh/h	52	355	374	179	326	639	390	1225	235	696	424	559
Grp Sat Flow(s),veh/h/ln	1701	1786	1514	1688	1772	1502	1674	1670	1489	1637	1329	1750
Q Serve(g_s), s	4.4	28.0	28.3	13.4	23.7	39.8	26.8	51.9	16.8	25.4	42.7	42.7
Cycle Q Clear(g_c), s	4.4	28.0	28.3	13.4	23.7	39.8	26.8	51.9	16.8	25.4	42.7	42.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	66	395	614	156	487	676	309	1277	569	573	495	652
V/C Ratio(X)	0.79	0.90	0.61	1.15	0.67	0.95	1.26	0.96	0.41	1.21	0.86	0.86
Avail Cap(c_a), veh/h	116	443	656	156	487	676	309	1277	569	573	495	652
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	0.21	0.21	0.21	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.1	54.9	34.0	65.8	46.7	38.2	59.1	43.7	32.9	59.8	41.9	41.9
Incr Delay (d2), s/veh	18.4	19.5	1.5	117.3	3.5	22.2	122.8	5.4	0.5	111.5	17.2	13.6
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(95%),veh/ln	4.0	20.9	15.9	17.1	16.3	33.6	28.7	25.3	8.0	29.0	22.6	27.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.4	74.4	35.5	183.1	50.3	60.4	181.9	49.1	33.3	171.3	59.1	55.5
LnGrp LOS	F	E	D	F	D	E	F	D	C	F	E	E
Approach Vol, veh/h		781			1144			1850			1679	
Approach Delay, s/veh		56.6			76.7			75.1			104.4	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.4	58.9	10.2	44.4	30.0	60.3	18.0	36.7
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	26.8	50.1	9.9	39.5	25.4	51.5	13.4	36.0
Max Q Clear Time (g_c+I1), s	28.3	44.7	6.4	41.8	27.4	53.9	15.4	30.3
Green Ext Time (p_c), s	0.0	2.7	0.0	0.0	0.0	0.0	0.0	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	81.8
HCM 7th LOS	F

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	262	26	66	285	98	87
Future Vol, veh/h	262	26	66	285	98	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	285	28	72	310	107	95

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	313	0	752	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	453	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1253	-	379	743
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1253	-	358	743
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.51	15.18
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	358	743	-	-	1253	-
HCM Lane V/C Ratio	0.298	0.127	-	-	0.057	-
HCM Ctrl Dly (s/v)	19.3	10.6	-	-	8	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.2	0.4	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	288	389	6	0	46
Future Vol, veh/h	35	288	389	6	0	46
Conflicting Peds, #/hr	9	0	0	9	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	38	313	423	7	0	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	438	0	-	0	824	435
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	389	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1121	-	-	-	345	625
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1113	-	-	-	329	621
Mov Cap-2 Maneuver	-	-	-	-	329	-
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	689	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.9	0	11.31
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	195	-	-	-	621
HCM Lane V/C Ratio	0.034	-	-	-	0.081
HCM Ctrl Dly (s/v)	8.3	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	303	84	20	370	38	0	0	0	20	38	12
Future Vol, veh/h	12	303	84	20	370	38	0	0	0	20	38	12
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
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	13	326	90	22	398	41	0	0	0	22	41	13
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	12.7	13.8	9.6
HCM LOS	B	B	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	5%	29%
Vol Thru, %	76%	86%	54%
Vol Right, %	21%	9%	17%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	399	428	70
LT Vol	12	20	20
Through Vol	303	370	38
RT Vol	84	38	12
Lane Flow Rate	429	460	75
Geometry Grp	1	1	1
Degree of Util (X)	0.537	0.583	0.12
Departure Headway (Hd)	4.504	4.558	5.742
Convergence, Y/N	Yes	Yes	Yes
Cap	798	792	619
Service Time	2.548	2.601	3.827
HCM Lane V/C Ratio	0.538	0.581	0.121
HCM Control Delay, s/veh	12.7	13.8	9.6
HCM Lane LOS	B	B	A
HCM 95th-tile Q	3.2	3.8	0.4

Intersection	
Intersection Delay, s/veh	51.1
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	393	410	20	284	420
Future Vol, veh/h	12	393	410	20	284	420
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	14	447	466	23	323	477
Number of Lanes	1	1	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay, s/veh	12.2	62.8	49
HCM LOS	E	F	E

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	100%	0%
Vol Thru, %	95%	0%	0%	0%	100%
Vol Right, %	5%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	430	12	393	284	420
LT Vol	0	12	0	284	0
Through Vol	410	0	0	0	420
RT Vol	20	0	393	0	0
Lane Flow Rate	489	14	447	323	477
Geometry Grp	3b	5	5	5	5
Degree of Util (X)	0.981	0.032	0.884	0.709	0.981
Departure Headway (Hd)	7.227	8.362	7.125	7.911	7.396
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	503	429	509	458	492
Service Time	5.267	6.092	4.855	5.665	5.15
HCM Lane V/C Ratio	0.972	0.033	0.878	0.705	0.97
HCM Control Delay, s/veh	62.8	11.4	43.1	27.8	63.4
HCM Lane LOS	F	B	E	D	F
HCM 95th-tile Q	12.9	0.1	9.8	5.5	12.8

MOVEMENT SUMMARY

Site: [99 (9)] SR 305 & Johnson Rd - Forecast 2037 Without (PM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.052	14.6	LOS B	0.2	5.0	0.54	0.73	0.54	31.2
3	L2	All MCs	22	6.0	22	6.0	0.052	11.6	LOS B	0.2	5.0	0.54	0.73	0.54	32.4
8	T1	All MCs	6	1.0	6	1.0	0.052	5.5	LOS A	0.2	5.0	0.54	0.73	0.54	30.4
18	R2	All MCs	9	1.0	9	1.0	0.052	7.6	LOS A	0.2	5.0	0.54	0.73	0.54	33.4
Approach			38	3.9	38	3.9	0.052	9.8	LOS A	0.2	5.0	0.54	0.73	0.54	32.3
East: SR 305															
1u	U	All MCs	3	1.0	3	1.0	0.448	12.1	LOS B	3.4	88.0	0.22	0.45	0.22	37.5
1	L2	All MCs	9	1.0	9	1.0	0.448	11.5	LOS B	3.4	88.0	0.22	0.45	0.22	35.6
6	T1	All MCs	904	3.0	904	3.0	0.448	6.4	LOS A	3.4	88.0	0.21	0.46	0.21	41.1
16	R2	All MCs	26	10.0	26	10.0	0.204	6.0	LOS A	1.1	29.5	0.19	0.46	0.19	35.9
Approach			942	3.2	942	3.2	0.448	6.4	LOS A	3.4	88.0	0.21	0.46	0.21	40.9
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.073	15.2	LOS B	0.3	7.2	0.58	0.76	0.58	30.8
7	L2	All MCs	31	6.0	31	6.0	0.073	12.2	LOS B	0.3	7.2	0.58	0.76	0.58	32.0
4	T1	All MCs	4	1.0	4	1.0	0.073	6.1	LOS A	0.3	7.2	0.58	0.76	0.58	30.1
14	R2	All MCs	14	1.0	14	1.0	0.073	8.8	LOS A	0.3	7.2	0.58	0.76	0.58	33.1
Approach			50	4.1	50	4.1	0.073	10.8	LOS B	0.3	7.2	0.58	0.76	0.58	32.1
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.384	12.1	LOS B	2.7	69.8	0.22	0.46	0.22	37.5
5	L2	All MCs	11	1.0	11	1.0	0.384	11.5	LOS B	2.7	69.8	0.22	0.46	0.22	35.6
2	T1	All MCs	778	2.0	778	2.0	0.384	6.2	LOS A	2.7	69.8	0.22	0.46	0.22	41.2
12	R2	All MCs	22	1.0	22	1.0	0.175	5.9	LOS A	1.0	24.4	0.20	0.47	0.20	36.1
Approach			812	2.0	812	2.0	0.384	6.3	LOS A	2.7	69.8	0.22	0.46	0.22	41.0
All Vehicles			1842	2.7	1842	2.7	0.448	6.6	LOS A	3.4	88.0	0.23	0.47	0.23	40.4

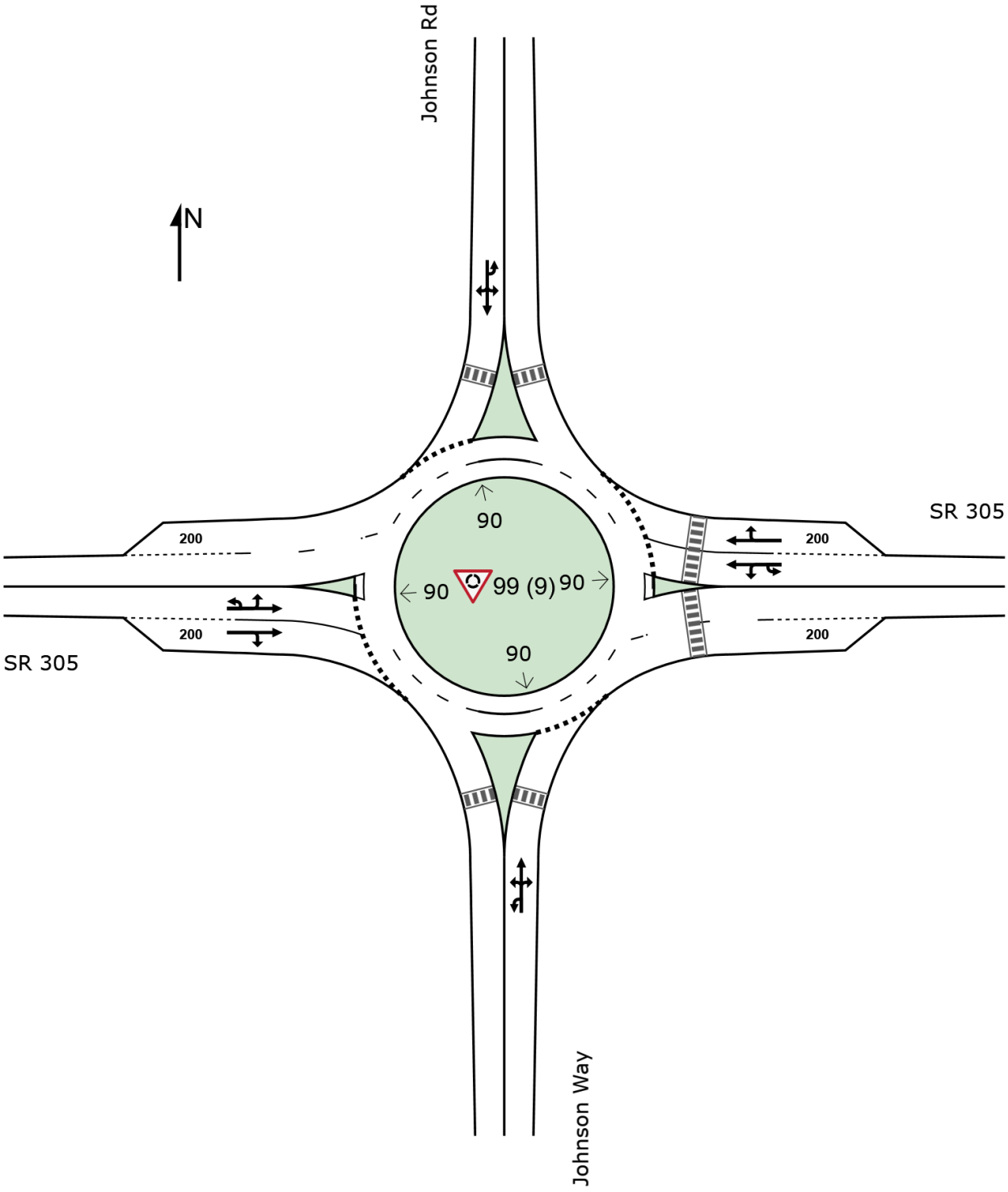
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Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c 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: [99 (9)] SR 305 & Johnson Rd - Forecast 2037 Without
(PM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (9)] Johnson & Sunrise Ridge - 2037 PM Without

(Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.006	7.2	LOS A	0.0	0.6	0.16	0.41	0.16	23.7
3	L2	All MCs	1	3.0	1	3.0	0.006	5.8	LOS A	0.0	0.6	0.16	0.41	0.16	23.7
8	T1	All MCs	1	3.0	1	3.0	0.006	2.0	LOS A	0.0	0.6	0.16	0.41	0.16	23.9
18	R2	All MCs	5	3.0	5	3.0	0.006	2.4	LOS A	0.0	0.6	0.16	0.41	0.16	23.8
Approach			8	3.0	8	3.0	0.006	3.5	LOS A	0.0	0.6	0.16	0.41	0.16	23.8
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.049	10.9	LOS B	0.2	5.1	0.11	0.48	0.11	34.6
1	L2	All MCs	2	3.0	2	3.0	0.049	9.0	LOS A	0.2	5.1	0.11	0.48	0.11	34.6
6	T1	All MCs	45	3.0	45	3.0	0.049	4.9	LOS A	0.2	5.1	0.11	0.48	0.11	35.3
16	R2	All MCs	16	3.0	16	3.0	0.049	4.7	LOS A	0.2	5.1	0.11	0.48	0.11	34.9
Approach			65	3.0	65	3.0	0.049	5.1	LOS A	0.2	5.1	0.11	0.48	0.11	35.1
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.022	11.0	LOS B	0.1	2.3	0.15	0.57	0.15	33.9
7	L2	All MCs	9	3.0	9	3.0	0.022	9.1	LOS A	0.1	2.3	0.15	0.57	0.15	33.9
4	T1	All MCs	1	3.0	1	3.0	0.022	5.0	LOS A	0.1	2.3	0.15	0.57	0.15	34.5
14	R2	All MCs	16	3.0	16	3.0	0.022	4.8	LOS A	0.1	2.3	0.15	0.57	0.15	34.2
Approach			27	3.0	27	3.0	0.022	6.5	LOS A	0.1	2.3	0.15	0.57	0.15	34.1
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.043	10.9	LOS B	0.2	4.5	0.08	0.57	0.08	33.9
5	L2	All MCs	24	3.0	24	3.0	0.043	8.9	LOS A	0.2	4.5	0.08	0.57	0.08	33.9
2	T1	All MCs	28	3.0	28	3.0	0.043	4.9	LOS A	0.2	4.5	0.08	0.57	0.08	34.5
12	R2	All MCs	1	3.0	1	3.0	0.043	4.6	LOS A	0.2	4.5	0.08	0.57	0.08	34.2
Approach			55	3.0	55	3.0	0.043	6.8	LOS A	0.2	4.5	0.08	0.57	0.08	34.2
All Vehicles			155	3.0	155	3.0	0.049	5.9	LOS A	0.2	5.1	0.11	0.52	0.11	33.8

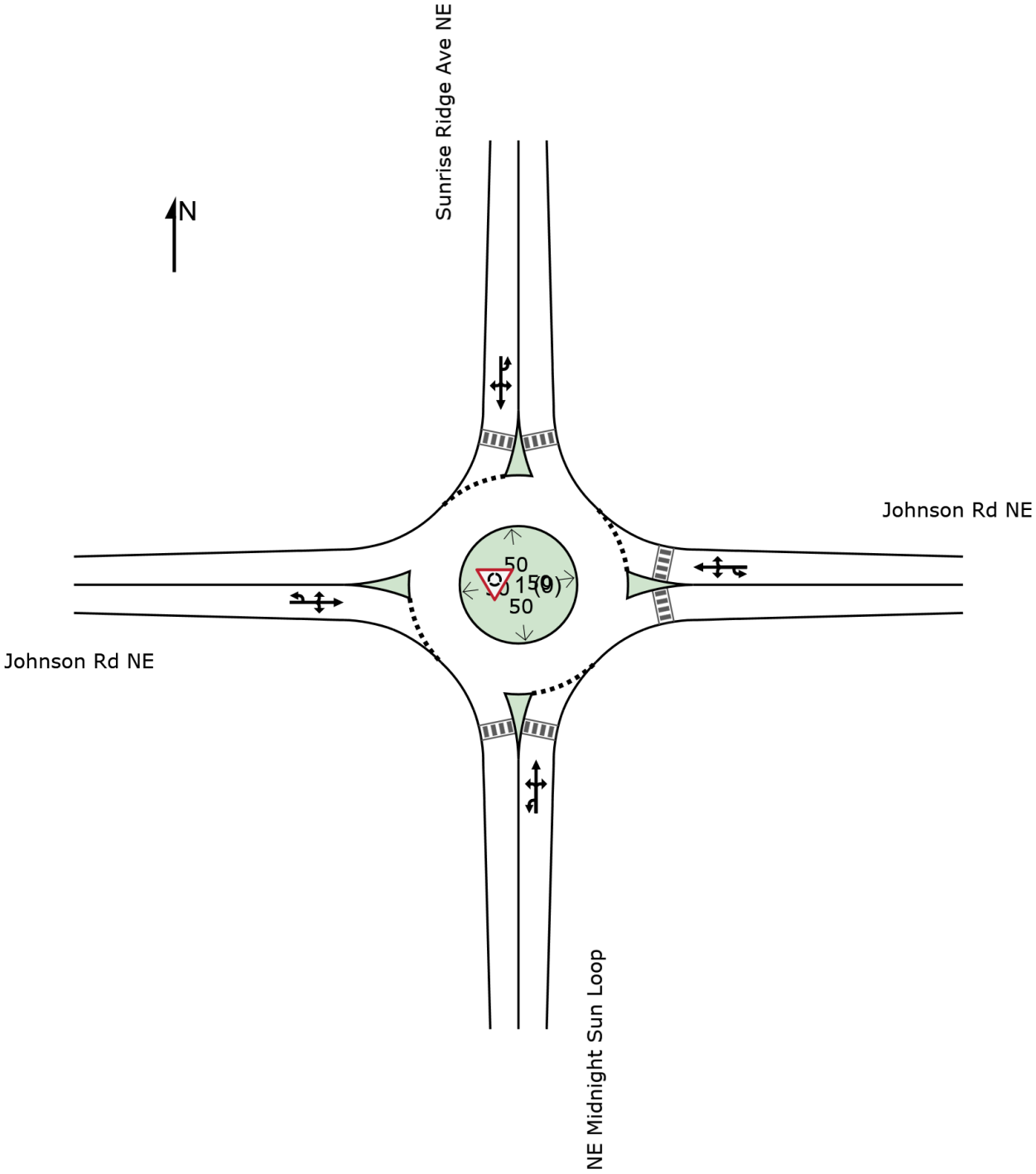
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Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods 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: [1 (9)] Johnson & Sunrise Ridge - 2037 PM Without
(Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	117	77	59	96	163	65	519	22	227	907	22
Future Volume (veh/h)	42	117	77	59	96	163	65	519	22	227	907	22
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)	0.99		0.98	0.99		0.98	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	1716	1730	1744	1744	1744	1716	1730	1716	1716	1730	1716	1646
Adj Flow Rate, veh/h	42	117	77	59	96	103	65	519	22	227	907	22
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, %	6	5	4	4	4	6	5	6	6	5	6	11
Cap, veh/h	173	176	147	165	198	162	76	585	25	797	1846	45
Arrive On Green	0.03	0.10	0.10	0.04	0.11	0.11	0.05	0.21	0.21	0.48	0.65	0.65
Sat Flow, veh/h	1634	1730	1443	1661	1744	1423	1647	2792	118	1647	2852	69
Grp Volume(v), veh/h	42	117	77	59	96	103	65	226	315	227	387	542
Grp Sat Flow(s),veh/h/ln	1634	1730	1443	1661	1744	1423	1647	1218	1692	1647	1218	1703
Q Serve(g_s), s	2.8	7.8	6.1	3.8	6.2	3.1	4.7	21.6	21.7	9.9	19.7	19.7
Cycle Q Clear(g_c), s	2.8	7.8	6.1	3.8	6.2	3.1	4.7	21.6	21.7	9.9	19.7	19.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		0.04
Lane Grp Cap(c), veh/h	173	176	147	165	198	162	76	255	355	797	789	1102
V/C Ratio(X)	0.24	0.67	0.53	0.36	0.48	0.64	0.85	0.89	0.89	0.28	0.49	0.49
Avail Cap(c_a), veh/h	342	332	277	318	334	273	316	437	606	797	789	1102
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	47.0	51.9	51.2	46.3	49.9	6.9	56.8	46.0	46.0	18.5	10.9	10.9
Incr Delay (d2), s/veh	0.7	4.3	2.9	1.3	1.8	4.1	22.1	33.1	26.4	0.2	2.2	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(95%),veh/ln	2.1	6.5	4.2	2.9	5.1	5.4	4.3	13.6	17.1	6.6	9.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.7	56.2	54.1	47.6	51.7	11.1	78.9	79.1	72.4	18.7	13.1	12.5
LnGrp LOS	D	E	D	D	D	B	E	E	E	B	B	B
Approach Vol, veh/h		236			258			606			1156	
Approach Delay, s/veh		54.0			34.5			75.6			13.9	
Approach LOS		D			C			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	63.1	30.2	9.6	17.2	10.6	82.7	8.1	18.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	11.9	23.7	5.8	9.8	6.7	21.7	4.8	8.2
Green Ext Time (p_c), s	0.4	2.0	0.1	0.6	0.1	3.6	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	37.1
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1003	560	1	2	4
Future Vol, veh/h	0	1003	560	1	2	4
Conflicting Peds, #/hr	4	0	0	4	4	4
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	1	8	6	1	1	1
Mvmt Flow	0	1003	560	1	2	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	565	0	-	0	1571	568
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	1007	-
Critical Hdwy	4.11	-	-	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.209	-	-	-	3.509	3.309
Pot Cap-1 Maneuver	1012	-	-	-	122	524
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	355	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1008	-	-	-	121	521
Mov Cap-2 Maneuver	-	-	-	-	121	-
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	353	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	19.69
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1008	-	-	-	121	521
HCM Lane V/C Ratio	-	-	-	-	0.016	0.008
HCM Ctrl Dly (s/v)	0	-	-	-	35.1	12
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	64	23	8	19	5
Future Vol, veh/h	13	64	23	8	19	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	70	25	9	21	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	82	23	26	0	-	0
Stage 1	23	-	-	-	-	-
Stage 2	59	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	920	1053	1588	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	905	1053	1588	-	-	-
Mov Cap-2 Maneuver	905	-	-	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	964	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.82	5.42	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1335	-	1025	-	-
HCM Lane V/C Ratio	0.016	-	0.082	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	38.4
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	256	25	25	231	88	66	42	47	140	29	66
Future Vol, veh/h	52	256	25	25	231	88	66	42	47	140	29	66
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	1	6	5	1	7	1	1	3	6	7	1	4
Mvmt Flow	69	341	33	33	308	117	88	56	63	187	39	88
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	48.5	49.9	19.3	19.9
HCM LOS	E	E	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	43%	16%	7%	83%	0%
Vol Thru, %	27%	77%	67%	17%	0%
Vol Right, %	30%	8%	26%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	155	333	344	169	66
LT Vol	66	52	25	140	0
Through Vol	42	256	231	29	0
RT Vol	47	25	88	0	66
Lane Flow Rate	207	444	459	225	88
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.485	0.908	0.92	0.564	0.189
Departure Headway (Hd)	8.454	7.365	7.218	9.011	7.75
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	426	493	505	401	463
Service Time	6.524	5.402	5.253	6.755	5.494
HCM Lane V/C Ratio	0.486	0.901	0.909	0.561	0.19
HCM Control Delay, s/veh	19.3	48.5	49.9	22.8	12.3
HCM Lane LOS	C	E	E	C	B
HCM 95th-tile Q	2.6	10.4	10.8	3.4	0.7

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	37	40	6	62	68	25
Future Vol, veh/h	37	40	6	62	68	25
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	43	7	67	74	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	94	0	162	82
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1501	-	828	978
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1488	-	811	962
Mov Cap-2 Maneuver	-	-	-	-	811	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	925	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.66	9.83
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	847	-	-	159	-
HCM Lane V/C Ratio	0.119	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

MOVEMENT SUMMARY

Site: [99 (8)] SR 305 & Johnson Rd - Forecast 2037 AM With

(AM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.052	16.3	LOS B	0.2	5.7	0.67	0.80	0.67	30.5
3	L2	All MCs	19	1.0	19	1.0	0.052	12.8	LOS B	0.2	5.7	0.67	0.80	0.67	32.3
8	T1	All MCs	7	1.0	7	1.0	0.052	7.2	LOS A	0.2	5.7	0.67	0.80	0.67	29.8
18	R2	All MCs	4	1.0	4	1.0	0.052	12.5	LOS B	0.2	5.7	0.67	0.80	0.67	32.7
Approach			31	1.0	31	1.0	0.052	11.6	LOS B	0.2	5.7	0.67	0.80	0.67	31.7
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.261	12.1	LOS B	1.6	40.7	0.20	0.46	0.20	37.6
1	L2	All MCs	6	1.0	6	1.0	0.261	11.5	LOS B	1.6	40.7	0.20	0.46	0.20	35.7
6	T1	All MCs	497	6.0	497	6.0	0.261	6.1	LOS A	1.6	40.7	0.20	0.46	0.20	40.7
16	R2	All MCs	26	1.0	26	1.0	0.119	5.9	LOS A	0.6	15.7	0.19	0.47	0.19	36.1
Approach			530	5.7	530	5.7	0.261	6.1	LOS A	1.6	40.7	0.20	0.46	0.20	40.3
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.197	13.9	LOS B	0.8	19.9	0.49	0.69	0.49	31.2
7	L2	All MCs	119	3.0	119	3.0	0.197	10.7	LOS B	0.8	19.9	0.49	0.69	0.49	32.9
4	T1	All MCs	2	1.0	2	1.0	0.197	4.9	LOS A	0.8	19.9	0.49	0.69	0.49	30.5
14	R2	All MCs	49	1.0	49	1.0	0.197	6.2	LOS A	0.8	19.9	0.49	0.69	0.49	33.5
Approach			171	2.4	171	2.4	0.197	9.3	LOS A	0.8	19.9	0.49	0.69	0.49	33.0
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.545	12.6	LOS B	4.6	122.8	0.46	0.50	0.46	36.7
5	L2	All MCs	21	17.0	21	17.0	0.545	12.7	LOS B	4.6	122.8	0.46	0.50	0.46	34.3
2	T1	All MCs	965	8.0	965	8.0	0.545	7.8	LOS A	4.6	122.8	0.44	0.50	0.44	39.3
12	R2	All MCs	21	12.0	21	12.0	0.248	6.7	LOS A	1.4	38.4	0.37	0.50	0.37	35.4
Approach			1008	8.3	1008	8.3	0.545	7.8	LOS A	4.6	122.8	0.44	0.50	0.44	39.1
All Vehicles			1740	6.8	1740	6.8	0.545	7.5	LOS A	4.6	122.8	0.37	0.51	0.37	38.6

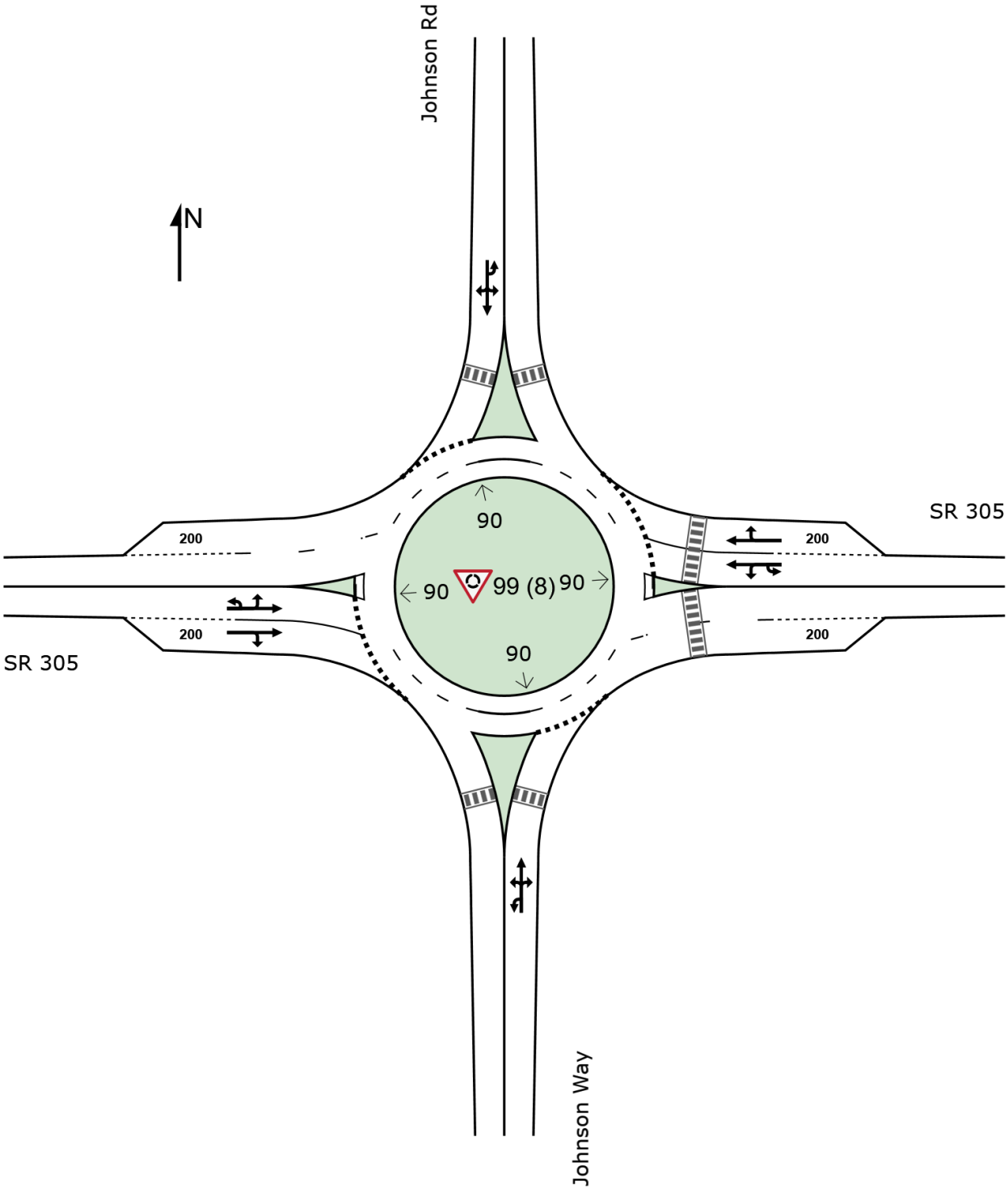
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per 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: [99 (8)] SR 305 & Johnson Rd - Forecast 2037 AM With
(AM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (8)] Johnson & Sunrise Ridge - 2037 AM With (Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.004	7.3	LOS A	0.0	0.4	0.21	0.45	0.21	23.4
3	L2	All MCs	1	3.0	1	3.0	0.004	5.9	LOS A	0.0	0.4	0.21	0.45	0.21	23.4
8	T1	All MCs	1	3.0	1	3.0	0.004	2.1	LOS A	0.0	0.4	0.21	0.45	0.21	23.6
18	R2	All MCs	1	3.0	1	3.0	0.004	2.5	LOS A	0.0	0.4	0.21	0.45	0.21	23.6
Approach			5	3.0	5	3.0	0.004	4.4	LOS A	0.0	0.4	0.21	0.45	0.21	23.5
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.081	11.0	LOS B	0.3	8.9	0.14	0.46	0.14	34.5
1	L2	All MCs	1	3.0	1	3.0	0.081	9.1	LOS A	0.3	8.9	0.14	0.46	0.14	34.5
6	T1	All MCs	96	3.0	96	3.0	0.081	5.0	LOS A	0.3	8.9	0.14	0.46	0.14	35.2
16	R2	All MCs	7	3.0	7	3.0	0.081	4.8	LOS A	0.3	8.9	0.14	0.46	0.14	34.9
Approach			106	3.0	106	3.0	0.081	5.1	LOS A	0.3	8.9	0.14	0.46	0.14	35.1
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.120	11.3	LOS B	0.5	13.7	0.24	0.55	0.24	34.2
7	L2	All MCs	23	3.0	23	3.0	0.120	9.4	LOS A	0.5	13.7	0.24	0.55	0.24	34.2
4	T1	All MCs	1	3.0	1	3.0	0.120	5.3	LOS A	0.5	13.7	0.24	0.55	0.24	34.8
14	R2	All MCs	114	3.0	114	3.0	0.120	5.1	LOS A	0.5	13.7	0.24	0.55	0.24	34.5
Approach			139	3.0	139	3.0	0.120	5.8	LOS A	0.5	13.7	0.24	0.55	0.24	34.5
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.065	10.9	LOS B	0.3	7.2	0.11	0.57	0.11	33.7
5	L2	All MCs	40	3.0	40	3.0	0.065	9.0	LOS A	0.3	7.2	0.11	0.57	0.11	33.7
2	T1	All MCs	30	3.0	30	3.0	0.065	4.9	LOS A	0.3	7.2	0.11	0.57	0.11	34.3
12	R2	All MCs	11	3.0	11	3.0	0.065	4.7	LOS A	0.3	7.2	0.11	0.57	0.11	34.0
Approach			82	3.0	82	3.0	0.065	7.0	LOS A	0.3	7.2	0.11	0.57	0.11	34.0
All Vehicles			332	3.0	332	3.0	0.120	5.9	LOS A	0.5	13.7	0.18	0.53	0.18	34.3

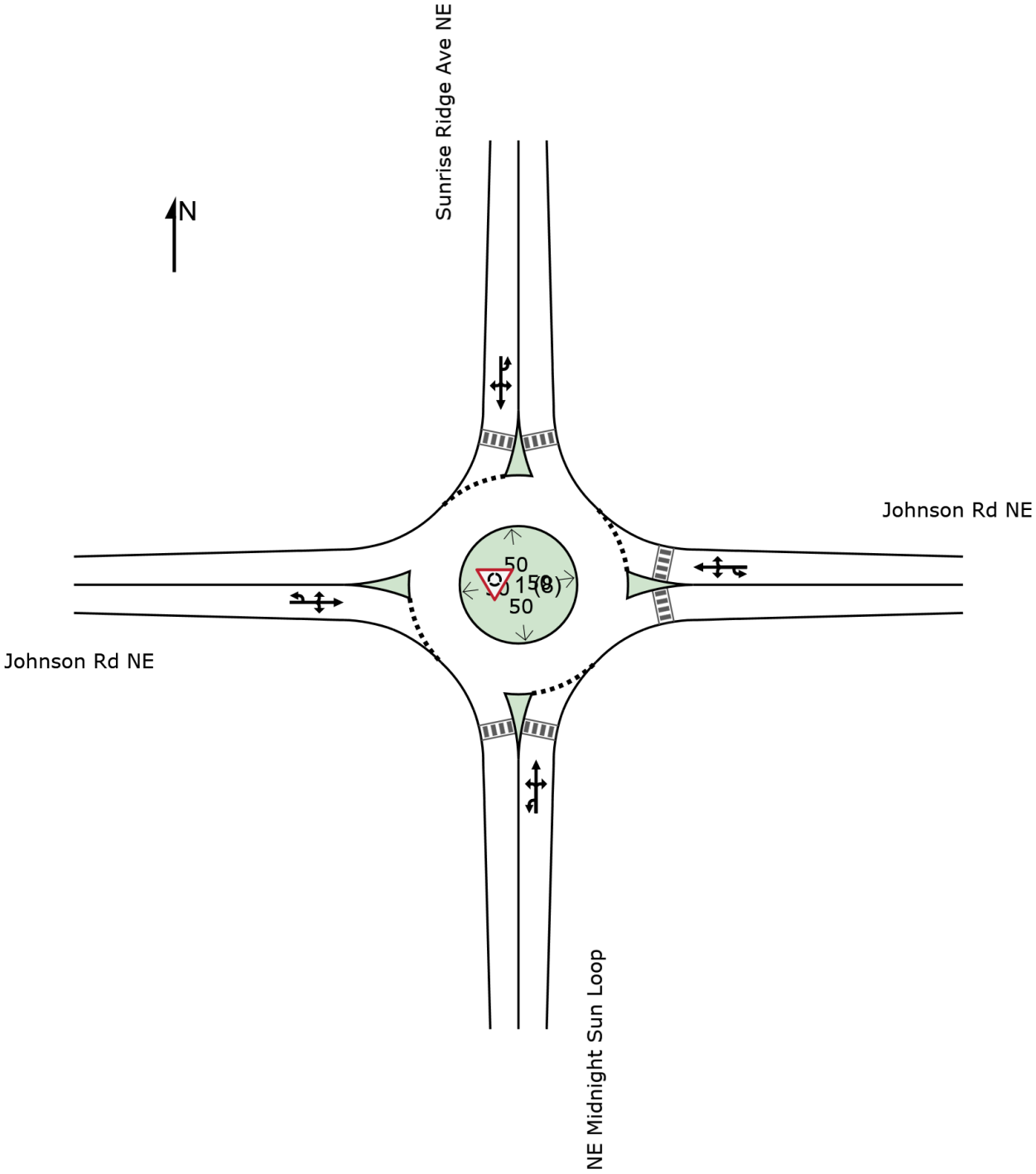
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Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay 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: [1 (8)] Johnson & Sunrise Ridge - 2037 AM With
(Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	193	126	59	141	248	144	853	39	237	698	56
Future Volume (veh/h)	77	193	126	59	141	248	144	853	39	237	698	56
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)	0.99		0.96	0.99		0.96	1.00		0.96	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	1702	1758	1786	1786	1786	1786	1772	1744	1786	1786	1772	1744
Adj Flow Rate, veh/h	77	193	126	59	141	103	144	853	39	237	698	56
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, %	7	3	1	1	1	1	2	4	1	1	2	4
Cap, veh/h	190	234	194	151	214	174	166	912	42	579	1559	125
Arrive On Green	0.05	0.13	0.13	0.04	0.12	0.12	0.10	0.32	0.32	0.34	0.56	0.56
Sat Flow, veh/h	1621	1758	1460	1701	1786	1457	1688	2824	129	1701	2761	221
Grp Volume(v), veh/h	77	193	126	59	141	103	144	374	518	237	318	436
Grp Sat Flow(s),veh/h/ln	1621	1758	1460	1701	1786	1457	1688	1238	1715	1701	1258	1724
Q Serve(g_s), s	5.0	12.8	9.8	3.6	9.1	4.2	10.1	35.2	35.2	12.8	17.7	17.7
Cycle Q Clear(g_c), s	5.0	12.8	9.8	3.6	9.1	4.2	10.1	35.2	35.2	12.8	17.7	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	190	234	194	151	214	174	166	400	554	579	711	974
V/C Ratio(X)	0.41	0.82	0.65	0.39	0.66	0.59	0.87	0.93	0.93	0.41	0.45	0.45
Avail Cap(c_a), veh/h	319	337	280	309	342	279	323	444	615	579	711	974
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	0.74	0.74	0.74
Uniform Delay (d), s/veh	43.8	50.6	49.3	44.8	50.5	14.0	53.3	39.4	39.4	30.4	15.2	15.2
Incr Delay (d2), s/veh	1.4	10.5	3.6	1.7	3.5	3.2	12.5	31.2	25.1	0.3	1.5	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(95%),veh/ln	3.7	10.4	6.8	2.9	7.6	5.4	8.4	19.9	25.1	8.4	8.2	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.2	61.2	52.9	46.4	53.9	17.1	65.9	70.6	64.5	30.7	16.7	16.3
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		396			303			1036			991	
Approach Delay, s/veh		55.4			40.0			66.9			19.9	
Approach LOS		E			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	45.8	43.8	9.4	21.0	16.8	72.8	11.0	19.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	43.5	16.1	23.5	23.5	38.9	16.1	23.5
Max Q Clear Time (g_c+I1), s	14.8	37.2	5.6	14.8	12.1	19.7	7.0	11.1
Green Ext Time (p_c), s	0.3	2.1	0.1	0.9	0.3	2.9	0.1	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	45.1
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	842	953	5	1	4
Future Vol, veh/h	6	842	953	5	1	4
Conflicting Peds, #/hr	1	0	0	1	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	105	-	-	55	60	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	2	3	1	10	1
Mvmt Flow	6	842	953	5	1	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	959	0	-	0	1809	955
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	855	-
Critical Hdwy	4.2	-	-	-	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.29	-	-	-	3.59	3.309
Pot Cap-1 Maneuver	686	-	-	-	83	315
Stage 1	-	-	-	-	362	-
Stage 2	-	-	-	-	404	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	685	-	-	-	82	314
Mov Cap-2 Maneuver	-	-	-	-	82	-
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	403	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.07	0	23.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	685	-	-	-	82	314
HCM Lane V/C Ratio	0.009	-	-	-	0.012	0.013
HCM Ctrl Dly (s/v)	10.3	-	-	-	49.6	16.6
HCM Lane LOS	B	-	-	-	E	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	43	72	5	9	13
Future Vol, veh/h	9	43	72	5	9	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	47	78	5	10	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	179	17	24	0	-	0
Stage 1	17	-	-	-	-	-
Stage 2	162	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	811	1062	1591	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	771	1062	1591	-	-	-
Mov Cap-2 Maneuver	771	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	867	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.83	6.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1586	-	997	-	-
HCM Lane V/C Ratio	0.049	-	0.057	-	-
HCM Ctrl Dly (s/v)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	18.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	238	78	13	149	54	70	55	5	100	70	71
Future Vol, veh/h	97	238	78	13	149	54	70	55	5	100	70	71
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	3	1	1	1	1	2	1	1	1	1	1	4
Mvmt Flow	111	274	90	15	171	62	80	63	6	115	80	82
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay, s/veh	25.8	13.7	12.9	13.4
HCM LOS	D	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	54%	23%	6%	59%	0%
Vol Thru, %	42%	58%	69%	41%	0%
Vol Right, %	4%	19%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	413	216	170	71
LT Vol	70	97	13	100	0
Through Vol	55	238	149	70	0
RT Vol	5	78	54	0	71
Lane Flow Rate	149	475	248	195	82
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.29	0.771	0.424	0.397	0.143
Departure Headway (Hd)	6.98	5.849	6.145	7.317	6.299
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	513	622	583	490	568
Service Time	5.045	3.849	4.198	5.074	4.056
HCM Lane V/C Ratio	0.29	0.764	0.425	0.398	0.144
HCM Control Delay, s/veh	12.9	25.8	13.7	14.8	10.1
HCM Lane LOS	B	D	B	B	B
HCM 95th-tile Q	1.2	7.2	2.1	1.9	0.5

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	73	25	62	47	19
Future Vol, veh/h	62	73	25	62	47	19
Conflicting Peds, #/hr	0	10	10	0	10	10
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	79	27	67	51	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	157	0	249	127
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	132	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1423	-	740	923
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1411	-	713	908
Mov Cap-2 Maneuver	-	-	-	-	713	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	887	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.18	10.23
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	760	-	-	517	-
HCM Lane V/C Ratio	0.094	-	-	0.019	-
HCM Ctrl Dly (s/v)	10.2	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

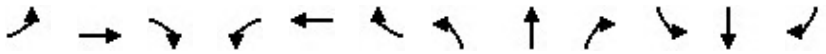
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	287	127	140	253	262	132	1048	143	226	730	91
Future Volume (veh/h)	71	287	127	140	253	262	132	1048	143	226	730	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	71	287	127	140	253	262	132	1048	143	226	730	91
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	3	3	3	2	2	2
Cap, veh/h	89	333	280	162	407	343	154	1099	150	327	1358	169
Arrive On Green	0.05	0.19	0.19	0.10	0.23	0.23	0.09	0.39	0.39	0.19	0.49	0.49
Sat Flow, veh/h	1701	1786	1501	1688	1772	1492	1674	2814	383	1688	2748	342
Grp Volume(v), veh/h	71	287	127	140	253	262	132	563	628	226	367	454
Grp Sat Flow(s),veh/h/ln	1701	1786	1501	1688	1772	1492	1674	1512	1685	1688	1382	1708
Q Serve(g_s), s	5.9	22.1	10.7	11.6	18.2	15.4	11.0	51.3	51.5	17.7	26.0	26.0
Cycle Q Clear(g_c), s	5.9	22.1	10.7	11.6	18.2	15.4	11.0	51.3	51.5	17.7	26.0	26.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		0.20
Lane Grp Cap(c), veh/h	89	333	280	162	407	343	154	590	658	327	683	844
V/C Ratio(X)	0.80	0.86	0.45	0.87	0.62	0.76	0.86	0.95	0.95	0.69	0.54	0.54
Avail Cap(c_a), veh/h	137	395	332	183	442	372	208	597	666	327	683	844
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	0.66	0.66	0.66	0.76	0.76	0.76
Uniform Delay (d), s/veh	66.6	56.0	51.4	63.3	49.1	22.4	63.6	42.0	42.0	53.3	24.7	24.7
Incr Delay (d2), s/veh	13.6	15.6	1.2	30.1	2.4	8.4	14.7	20.6	19.5	4.7	2.3	1.9
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(95%),veh/ln	5.2	17.1	7.5	10.5	13.2	10.5	8.3	28.2	30.9	11.9	13.0	15.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	80.2	71.6	52.5	93.4	51.5	30.8	78.3	62.6	61.5	58.0	27.0	26.6
LnGrp LOS	F	E	D	F	D	C	E	E	E	E	C	C
Approach Vol, veh/h		485			655			1323			1047	
Approach Delay, s/veh		67.9			52.2			63.6			33.5	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.7	75.1	12.0	37.2	32.4	60.4	18.2	31.0
Change Period (Y+Rc), s	4.6	4.9	4.6	4.6	4.9	* 4.9	4.6	4.6
Max Green Setting (Gmax), s	17.6	58.9	11.4	35.4	20.4	* 56	15.4	31.4
Max Q Clear Time (g_c+I1), s	13.0	28.0	7.9	20.2	19.7	53.5	13.6	24.1
Green Ext Time (p_c), s	0.1	8.0	0.0	2.2	0.0	2.0	0.1	1.3

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

Notes

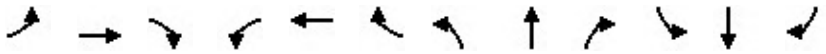
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	84	68	52	71	71	66	1200	91	84	880	58
Future Volume (veh/h)	109	84	68	52	71	71	66	1200	91	84	880	58
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	1772	1772	1772	1786	1786	1786	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	109	84	68	52	71	71	66	1200	91	84	880	58
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	174	151	133	117	157	176	638	1037	79	655	867	524
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.38	0.34	0.34	0.39	0.35	0.35
Sat Flow, veh/h	719	844	743	442	879	983	1674	3033	230	1688	2481	1500
Grp Volume(v), veh/h	126	0	135	90	0	104	66	611	680	84	880	58
Grp Sat Flow(s),veh/h/ln	831	0	1474	862	0	1442	1674	1547	1716	1688	1240	1500
Q Serve(g_s), s	14.1	0.0	12.3	7.1	0.0	9.5	3.8	50.6	50.6	4.7	51.7	3.9
Cycle Q Clear(g_c), s	23.6	0.0	12.3	19.3	0.0	9.5	3.8	50.6	50.6	4.7	51.7	3.9
Prop In Lane	0.87		0.50	0.58		0.68	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	194	0	263	192	0	258	638	529	587	655	867	524
V/C Ratio(X)	0.65	0.00	0.51	0.47	0.00	0.40	0.10	1.16	1.16	0.13	1.02	0.11
Avail Cap(c_a), veh/h	216	0	289	342	0	409	638	529	587	655	867	524
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	0.43	0.43	0.43	0.74	0.74	0.74
Uniform Delay (d), s/veh	64.3	0.0	55.0	60.8	0.0	53.8	29.5	48.7	48.7	29.1	48.2	32.6
Incr Delay (d2), s/veh	5.8	0.0	1.5	1.8	0.0	1.0	0.0	79.6	79.9	0.1	30.2	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(95%),veh/ln	8.7	0.0	8.3	6.0	0.0	6.4	2.7	40.6	44.9	3.5	25.7	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.0	0.0	56.5	62.5	0.0	54.8	29.6	128.3	128.6	29.2	78.4	32.9
LnGrp LOS	E		E	E		D	C	F	F	C	F	C
Approach Vol, veh/h		261			194			1357			1022	
Approach Delay, s/veh		63.0			58.4			123.7			71.7	
Approach LOS		E			E			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	60.9	56.2		30.9	62.0	55.1		30.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	6.8	51.7		29.0	7.9	50.6		42.0
Max Q Clear Time (g_c+I1), s	5.8	53.7		25.6	6.7	52.6		21.3
Green Ext Time (p_c), s	0.0	0.0		0.5	0.0	0.0		1.1

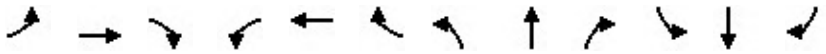
Intersection Summary		
HCM 7th Control Delay, s/veh		94.9
HCM 7th LOS		F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	284	52	6	34	26	367	6	1296	65	335	975	187
Future Volume (veh/h)	284	52	6	34	26	367	6	1296	65	335	975	187
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	1772	1772	1772	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	284	52	6	34	26	367	6	1296	65	335	975	187
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	2	2	2	3	3	3	2	2	2
Cap, veh/h	313	289	33	199	152	306	15	973	49	295	1266	705
Arrive On Green	0.19	0.19	0.19	0.20	0.20	0.20	0.01	0.31	0.31	0.17	0.47	0.47
Sat Flow, veh/h	1688	1559	180	976	747	1499	1674	3153	158	1688	2693	1500
Grp Volume(v), veh/h	284	0	58	60	0	367	6	649	712	335	975	187
Grp Sat Flow(s),veh/h/ln	1688	0	1739	1723	0	1499	1674	1582	1729	1688	1347	1500
Q Serve(g_s), s	23.4	0.0	4.0	4.1	0.0	29.0	0.5	43.8	43.8	24.8	42.7	10.7
Cycle Q Clear(g_c), s	23.4	0.0	4.0	4.1	0.0	29.0	0.5	43.8	43.8	24.8	42.7	10.7
Prop In Lane	1.00		0.10	0.57		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	313	0	322	352	0	306	15	488	533	295	1266	705
V/C Ratio(X)	0.91	0.00	0.18	0.17	0.00	1.20	0.40	1.33	1.33	1.14	0.77	0.27
Avail Cap(c_a), veh/h	392	0	404	352	0	306	71	488	533	295	1266	705
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	0.61	0.61	0.61	0.19	0.19	0.19
Uniform Delay (d), s/veh	56.7	0.0	48.8	46.6	0.0	56.5	70.0	49.1	49.1	58.6	31.3	22.8
Incr Delay (d2), s/veh	21.4	0.0	0.3	0.2	0.0	116.5	10.3	157.4	158.2	69.9	0.9	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(95%),veh/ln	7.6	0.0	3.2	3.3	0.0	31.2	0.5	54.6	59.5	20.5	16.2	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.1	0.0	49.0	46.8	0.0	173.0	80.3	206.5	207.3	128.5	32.2	23.0
LnGrp LOS	E		D	D		F	F	F	F	F	C	C
Approach Vol, veh/h		342			427			1367			1497	
Approach Delay, s/veh		73.2			155.3			206.4			52.6	
Approach LOS		E			F			F			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	71.6		30.9	29.7	47.8		33.6
Change Period (Y+Rc), s	4.6	4.9		4.6	4.9	4.0		4.6
Max Green Setting (Gmax), s	6.3	55.3		33.0	18.1	43.8		29.0
Max Q Clear Time (g_c+I1), s	2.5	44.7		25.4	26.8	45.8		31.0
Green Ext Time (p_c), s	0.0	5.1		0.7	0.0	0.0		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	124.4
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	355	374	182	326	639	390	1228	237	696	950	38
Future Volume (veh/h)	52	355	374	182	326	639	390	1228	237	696	950	38
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	1758	1758	1758	1772	1772	1772
Adj Flow Rate, veh/h	52	355	374	182	326	639	390	1228	237	696	950	38
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	3	3	3	2	2	2
Cap, veh/h	66	395	614	156	487	676	309	1277	569	573	1103	44
Arrive On Green	0.04	0.22	0.22	0.09	0.27	0.27	0.18	0.38	0.38	0.18	0.37	0.37
Sat Flow, veh/h	1701	1786	1514	1688	1772	1502	1674	3340	1489	3274	2961	118
Grp Volume(v), veh/h	52	355	374	182	326	639	390	1228	237	696	426	562
Grp Sat Flow(s),veh/h/ln	1701	1786	1514	1688	1772	1502	1674	1670	1489	1637	1329	1750
Q Serve(g_s), s	4.4	28.0	28.3	13.4	23.7	39.8	26.8	52.1	17.0	25.4	43.0	43.0
Cycle Q Clear(g_c), s	4.4	28.0	28.3	13.4	23.7	39.8	26.8	52.1	17.0	25.4	43.0	43.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	66	395	614	156	487	676	309	1277	569	573	495	652
V/C Ratio(X)	0.79	0.90	0.61	1.17	0.67	0.95	1.26	0.96	0.42	1.21	0.86	0.86
Avail Cap(c_a), veh/h	116	443	656	156	487	676	309	1277	569	573	495	652
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	0.21	0.21	0.21	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.1	54.9	34.0	65.8	46.7	38.2	59.1	43.7	32.9	59.8	42.0	42.0
Incr Delay (d2), s/veh	18.4	19.5	1.5	124.0	3.5	22.2	122.8	5.6	0.5	111.5	17.6	14.0
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(95%),veh/ln	4.0	20.9	15.9	17.6	16.3	33.6	28.7	25.4	8.1	29.0	22.8	28.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	87.4	74.4	35.5	189.8	50.3	60.4	181.9	49.4	33.4	171.3	59.6	56.0
LnGrp LOS	F	E	D	F	D	E	F	D	C	F	E	E
Approach Vol, veh/h		781			1147			1855			1684	
Approach Delay, s/veh		56.6			78.1			75.2			104.6	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.4	58.9	10.2	44.4	30.0	60.3	18.0	36.7
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	26.8	50.1	9.9	39.5	25.4	51.5	13.4	36.0
Max Q Clear Time (g_c+I1), s	28.3	45.0	6.4	41.8	27.4	54.1	15.4	30.3
Green Ext Time (p_c), s	0.0	2.6	0.0	0.0	0.0	0.0	0.0	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	82.2
HCM 7th LOS	F

Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	26	67	294	98	89
Future Vol, veh/h	276	26	67	294	98	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	1	1	1	1
Mvmt Flow	300	28	73	320	107	97

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	328	0	779	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	465	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1237	-	366	729
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	634	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1237	-	344	729
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	634	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.5	15.62
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	344	729	-	-	1237	-
HCM Lane V/C Ratio	0.31	0.133	-	-	0.059	-
HCM Ctrl Dly (s/v)	20.1	10.7	-	-	8.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.3	0.5	-	-	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	35	302	398	6	0	46
Future Vol, veh/h	35	302	398	6	0	46
Conflicting Peds, #/hr	9	0	0	9	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	38	328	433	7	0	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	448	0	-	0	849	445
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	404	-
Critical Hdwy	4.12	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.218	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1112	-	-	-	334	617
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	678	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1104	-	-	-	317	613
Mov Cap-2 Maneuver	-	-	-	-	317	-
Stage 1	-	-	-	-	618	-
Stage 2	-	-	-	-	678	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.87	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	187	-	-	-	613
HCM Lane V/C Ratio	0.034	-	-	-	0.082
HCM Ctrl Dly (s/v)	8.4	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	317	84	20	379	38	0	0	0	20	38	12
Future Vol, veh/h	12	317	84	20	379	38	0	0	0	20	38	12
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
Heavy Vehicles, %	1	1	1	2	2	2	2	2	2	0	0	0
Mvmt Flow	13	341	90	22	408	41	0	0	0	22	41	13
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay, s/veh	13.2	14.2	9.7
HCM LOS	B	B	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	5%	29%
Vol Thru, %	77%	87%	54%
Vol Right, %	20%	9%	17%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	413	437	70
LT Vol	12	20	20
Through Vol	317	379	38
RT Vol	84	38	12
Lane Flow Rate	444	470	75
Geometry Grp	1	1	1
Degree of Util (X)	0.558	0.597	0.121
Departure Headway (Hd)	4.52	4.575	5.792
Convergence, Y/N	Yes	Yes	Yes
Cap	795	785	613
Service Time	2.566	2.623	3.882
HCM Lane V/C Ratio	0.558	0.599	0.122
HCM Control Delay, s/veh	13.2	14.2	9.7
HCM Lane LOS	B	B	A
HCM 95th-tile Q	3.5	4	0.4

Intersection	
Intersection Delay, s/veh	53
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	393	414	20	284	427
Future Vol, veh/h	12	393	414	20	284	427
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	14	447	470	23	323	485
Number of Lanes	1	1	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay, s/veh	12.1	64.8	52.1
HCM LOS	E	F	F

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	100%	0%
Vol Thru, %	95%	0%	0%	0%	100%
Vol Right, %	5%	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	434	12	393	284	427
LT Vol	0	12	0	284	0
Through Vol	414	0	0	0	427
RT Vol	20	0	393	0	0
Lane Flow Rate	493	14	447	323	485
Geometry Grp	3b	5	5	5	5
Degree of Util (X)	0.992	0.031	0.886	0.711	1
Departure Headway (Hd)	7.242	8.256	7.146	7.932	7.417
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	513	436	518	455	490
Service Time	5.143	5.956	4.756	5.683	5.168
HCM Lane V/C Ratio	0.961	0.032	0.863	0.71	0.99
HCM Control Delay, s/veh	64.8	11.2	43	28	68.1
HCM Lane LOS	F	B	E	D	F
HCM 95th-tile Q	13.4	0.1	9.9	5.5	13.4

MOVEMENT SUMMARY

Site: [99 (10)] SR 305 & Johnson Rd - Forecast 2037 With (PM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: Johnson Way															
3u	U	All MCs	1	1.0	1	1.0	0.054	14.8	LOS B	0.2	5.3	0.56	0.74	0.56	31.1
3	L2	All MCs	22	6.0	22	6.0	0.054	11.8	LOS B	0.2	5.3	0.56	0.74	0.56	32.3
8	T1	All MCs	6	1.0	6	1.0	0.054	5.8	LOS A	0.2	5.3	0.56	0.74	0.56	30.3
18	R2	All MCs	9	1.0	9	1.0	0.054	7.9	LOS A	0.2	5.3	0.56	0.74	0.56	33.3
Approach			38	3.9	38	3.9	0.054	10.0	LOS B	0.2	5.3	0.56	0.74	0.56	32.2
East: SR 305															
1u	U	All MCs	3	1.0	3	1.0	0.477	12.3	LOS B	3.5	90.5	0.30	0.47	0.30	37.3
1	L2	All MCs	9	1.0	9	1.0	0.477	11.7	LOS B	3.5	90.5	0.30	0.47	0.30	35.4
6	T1	All MCs	904	3.0	904	3.0	0.477	6.5	LOS A	3.5	90.5	0.29	0.47	0.29	40.8
16	R2	All MCs	58	10.0	58	10.0	0.217	6.2	LOS A	1.2	30.4	0.26	0.48	0.26	35.7
Approach			974	3.4	974	3.4	0.477	6.6	LOS A	3.5	90.5	0.29	0.47	0.29	40.4
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.136	15.4	LOS B	0.6	14.3	0.61	0.76	0.61	30.8
7	L2	All MCs	50	6.0	50	6.0	0.136	12.6	LOS B	0.6	14.3	0.61	0.76	0.61	32.1
4	T1	All MCs	4	1.0	4	1.0	0.136	6.4	LOS A	0.6	14.3	0.61	0.76	0.61	30.1
14	R2	All MCs	36	1.0	36	1.0	0.136	9.2	LOS A	0.6	14.3	0.61	0.76	0.61	33.1
Approach			91	3.7	91	3.7	0.136	11.0	LOS B	0.6	14.3	0.61	0.76	0.61	32.4
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.408	12.2	LOS B	3.0	77.3	0.28	0.48	0.28	37.2
5	L2	All MCs	47	1.0	47	1.0	0.408	11.6	LOS B	3.0	77.3	0.28	0.48	0.28	35.3
2	T1	All MCs	778	2.0	778	2.0	0.408	6.4	LOS A	3.0	77.3	0.27	0.47	0.27	40.9
12	R2	All MCs	22	1.0	22	1.0	0.186	6.0	LOS A	1.0	26.6	0.25	0.47	0.25	35.9
Approach			848	1.9	848	1.9	0.408	6.7	LOS A	3.0	77.3	0.27	0.47	0.27	40.4
All Vehicles			1951	2.8	1951	2.8	0.477	6.9	LOS A	3.5	90.5	0.30	0.49	0.30	39.7

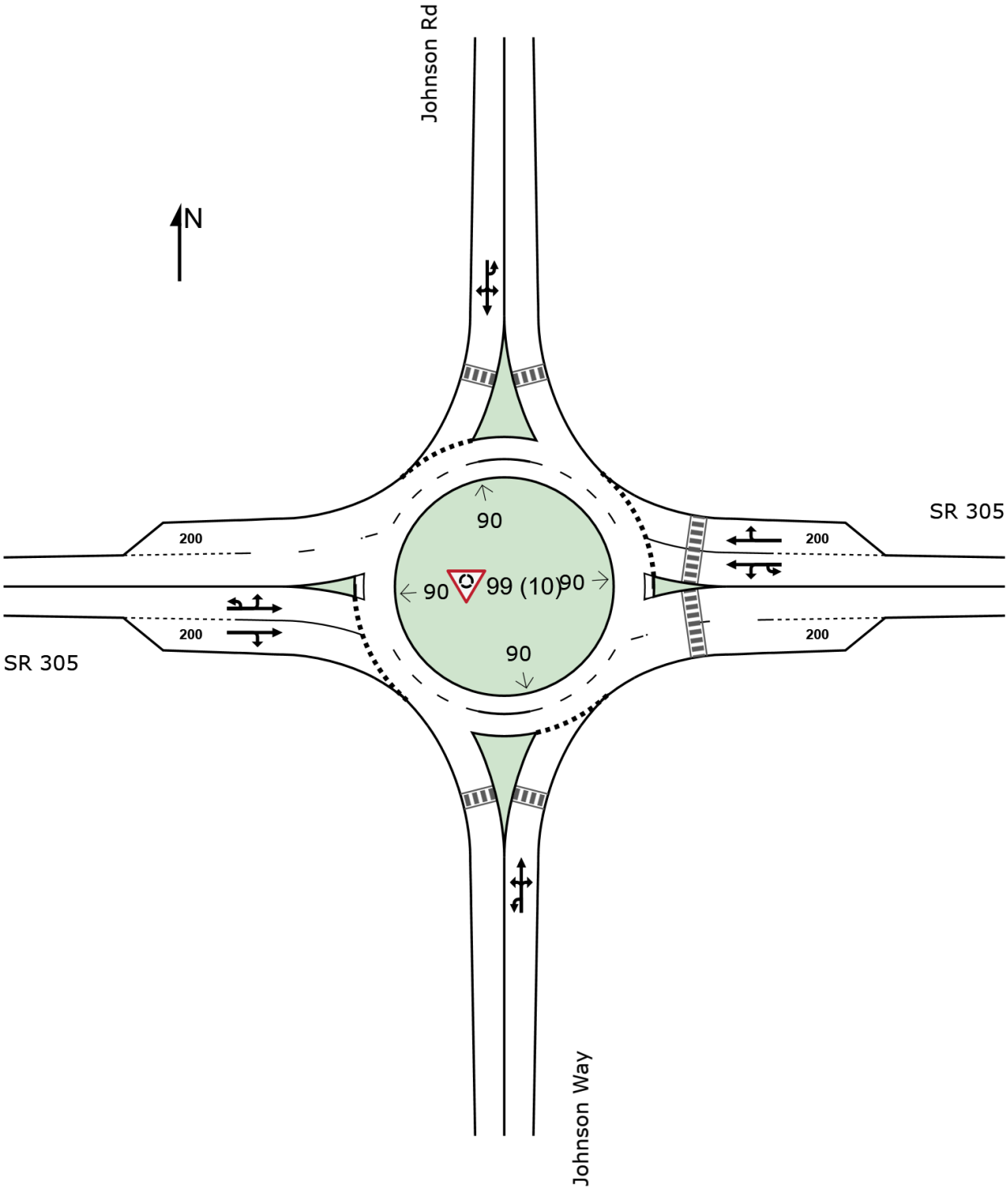
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per 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: [99 (10)] SR 305 & Johnson Rd - Forecast 2037 With
(PM Peak Hour)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (10)] Johnson & Sunrise Ridge - 2037 PM With (Folder1)

Output produced by SIDRA INTERSECTION Version: 11.0.2

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed mph
South: NE Midnight Sun Loop															
3u	U	All MCs	1	3.0	1	3.0	0.007	7.5	LOS A	0.0	0.7	0.26	0.42	0.26	23.6
3	L2	All MCs	1	3.0	1	3.0	0.007	6.1	LOS A	0.0	0.7	0.26	0.42	0.26	23.6
8	T1	All MCs	1	3.0	1	3.0	0.007	2.3	LOS A	0.0	0.7	0.26	0.42	0.26	23.8
18	R2	All MCs	5	3.0	5	3.0	0.007	2.7	LOS A	0.0	0.7	0.26	0.42	0.26	23.7
Approach			8	3.0	8	3.0	0.007	3.8	LOS A	0.0	0.7	0.26	0.42	0.26	23.7
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.048	11.2	LOS B	0.2	5.1	0.23	0.50	0.23	34.3
1	L2	All MCs	2	3.0	2	3.0	0.048	9.3	LOS A	0.2	5.1	0.23	0.50	0.23	34.3
6	T1	All MCs	35	3.0	35	3.0	0.048	5.3	LOS A	0.2	5.1	0.23	0.50	0.23	34.9
16	R2	All MCs	20	3.0	20	3.0	0.048	5.0	LOS A	0.2	5.1	0.23	0.50	0.23	34.6
Approach			59	3.0	59	3.0	0.048	5.5	LOS A	0.2	5.1	0.23	0.50	0.23	34.8
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.070	11.0	LOS B	0.3	7.9	0.14	0.54	0.14	34.4
7	L2	All MCs	11	3.0	11	3.0	0.070	9.1	LOS A	0.3	7.9	0.14	0.54	0.14	34.4
4	T1	All MCs	1	3.0	1	3.0	0.070	5.0	LOS A	0.3	7.9	0.14	0.54	0.14	35.1
14	R2	All MCs	73	3.0	73	3.0	0.070	4.8	LOS A	0.3	7.9	0.14	0.54	0.14	34.8
Approach			86	3.0	86	3.0	0.070	5.4	LOS A	0.3	7.9	0.14	0.54	0.14	34.7
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.103	10.9	LOS B	0.4	11.5	0.09	0.62	0.09	33.2
5	L2	All MCs	107	3.0	107	3.0	0.103	8.9	LOS A	0.4	11.5	0.09	0.62	0.09	33.2
2	T1	All MCs	23	3.0	23	3.0	0.103	4.9	LOS A	0.4	11.5	0.09	0.62	0.09	33.7
12	R2	All MCs	1	3.0	1	3.0	0.103	4.7	LOS A	0.4	11.5	0.09	0.62	0.09	33.5
Approach			132	3.0	132	3.0	0.103	8.2	LOS A	0.4	11.5	0.09	0.62	0.09	33.3
All Vehicles			285	3.0	285	3.0	0.103	6.7	LOS A	0.4	11.5	0.14	0.57	0.14	33.6

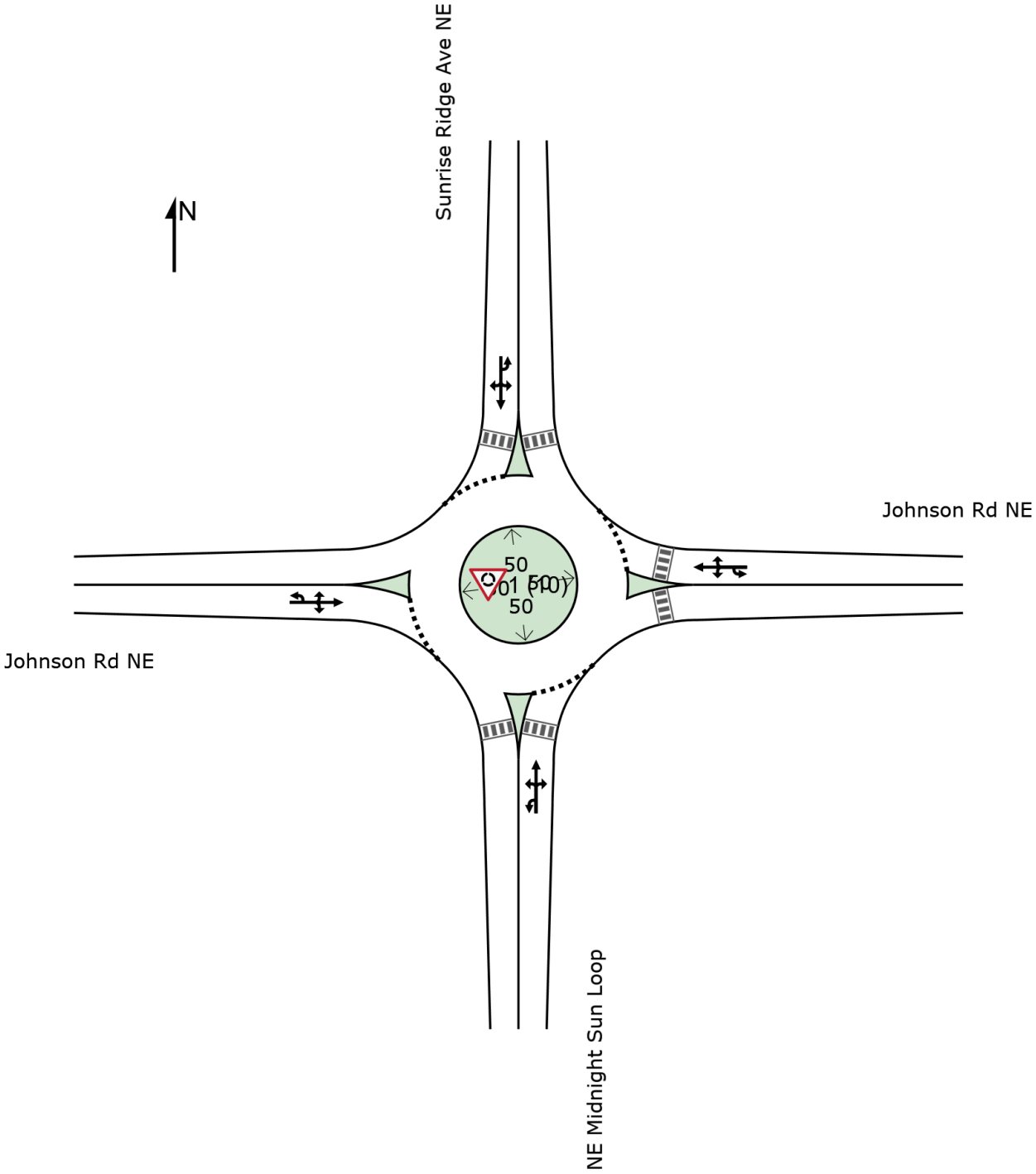
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per 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: [1 (10)] Johnson & Sunrise Ridge - 2037 PM With (Folder1)

New Site
Roundabout
Site Scenario: 1 | Local Volumes

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



SIDRA INTERSECTION 11 | Copyright © 2000-2026 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: HEATH & ASSOCIATES | Licence: PLUS / 1PC | Created: Saturday, October 3, 2026 3:32:29 PM
Project: C:\Users\LucasMaulin\Heath and Associates\Office Access - Documents\Project Files\Pinnacle at Liberty Bay - 5576\5-Analysis\Sidra\Johnson & Sunrise Ridge.sipx

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

APPENDIX
Site Plan

A PORTION OF THE SE 1/4 OF SECTION 23, TWP. 26 N., RGE. 1 E.,WM

TRACT AREA TABLE			
TRACT	USE	OWNERSHIP	AREA (SF)
A	CRITICAL AREA	HOA	589,600
B	CRITICAL AREA	HOA	6,842
C	CRITICAL AREA	HOA	135,518
D	CRITICAL AREA	HOA	28,901
E	STORMWATER	CITY	89,997
F	STORMWATER/OPEN SPACE	HOA	17,635
G	ACCESS/UTILITY	HOA	2,761
H	ACCESS/UTILITY	HOA	3,453
I	ACCESS/UTILITY	HOA	2,278
J	ACCESS/UTILITY	HOA	1,535
K	ACCESS/UTILITY	HOA	2,055
L	ACCESS/UTILITY	HOA	3,681
M	ACCESS/UTILITY	HOA	4,062

TRACT AREA TABLE			
TRACT	USE	OWNERSHIP	AREA (SF)
N	ACCESS/UTILITY	HOA	3,026
O	ACCESS/UTILITY	HOA	820
P	ACCESS/UTILITY	HOA	3,528
Q	OPEN SPACE	HOA	10,287
R	OPEN SPACE	HOA	2,535
S	OPEN SPACE	HOA	35,393
T	RECREATION	HOA	10,568
U	RECREATION	HOA	9,258
V	RECREATION	HOA	4,592
W	RECREATION	HOA	13,055
X	RECREATION	HOA	5,871
Y	RECREATION	HOA	5,288

LOT AREA TABLE																					
LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)	LOT #	AREA (SF)
1	4,108	13	4,085	26	4,476	38	3,870	50	6,316	62	6,277	74	4,100	86	4,100	98	4,530	110	4,567	122	4,100	134	4,326
2	4,023	14	3,917	27	4,015	39	3,870	51	4,521	63	5,079	75	4,100	87	4,100	99	6,141	111	4,584	123	4,100	135	4,504
3	4,237	15	4,330	28	3,916	40	4,420	52	4,614	64	5,926	76	4,613	88	4,100	100	4,058	112	4,158	124	4,426	136	4,110
4	4,313	16	5,088	29	5,408	41	4,429	53	4,871	65	5,037	77	4,200	89	4,100	101	4,100	113	4,100	125	4,949	137	4,100
5	8,715	17	4,518	30	3,937	42	4,427	54	5,209	66	4,477	78	4,200	90	4,100	102	4,100	114	4,100	126	4,900	138	4,900
6	4,265	19	4,345	31	3,762	43	4,425	55	3,832	67	4,477	79	4,374	91	4,100	103	4,100	115	4,100	127	6,996		
7	4,408	20	4,345	32	3,763	44	5,015	56	4,433	68	6,270	80	5,825	92	4,100	104	4,100	116	4,100	128	4,605		
8	4,049	21	5,185	33	3,763	45	3,903	57	3,898	69	4,098	81	6,303	93	4,100	105	4,100	117	4,100	129	5,206		
9	3,850	22	6,353	34	3,762	46	3,757	58	4,581	70	4,100	82	5,274	94	4,058	106	4,020	118	4,072	130	4,099		
10	4,050	23	5,122	35	3,788	47	3,756	59	4,551	71	4,100	83	4,439	95	4,440	107	6,014	119	4,100	131	4,100		
11	3,709	24	4,786	36	3,870	48	3,996	60	4,086	72	4,100	84	4,100	96	4,010	108	4,100	120	4,100	132	4,100		
12	3,838	25	4,680	37	3,870	49	4,461	61	5,404	73	4,100	85	4,100	97	4,037	109	4,109	121	4,100	133	4,107		



BUILDING SETBACKS

REAR:	10'
FRONT:	20'
SIDE:	5'
STREET SIDE:	10'
STREAM:	25'
WETLAND:	15'

SCALE: 1" = 80'

80 40 0 80 160

KEY MAP

LEGEND

- BUILDING SETBACK LINE
- LOT LINE/TRACT LINE
- RIGHT OF WAY LINE
- PROPOSED EASEMENT
- MONUMENT
- CRITICAL AREA BUFFER
- WETLAND
- PHASE 1
- PHASE 2
- PHASE 3
- PRELIMINARY HOUSE FOOTPRINTS

REVISIONS		
NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL LOUCKS
STATE OF WASHINGTON
50085
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PROFESSIONAL ENGINEER

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MONTEBANC MANAGEMENT, LLC

PINNACLE AT LIBERTY BAY SUBDIVISION

CITY OF POULSBO OVERALL SITE PLAN & LOT/TRACT PHASING PLAN WASHINGTON

JOB NO.:	2090-004-022
DWG. NAME:	PP-07
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
DATE:	11/26/2025
DATE OF PRINT:	

PP-07

7 OF 33 SHEETS

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THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

APPENDIX

Previous Review Comment Letters

Date: March 26, 2026

To: Michael Bateman, City of Poulsbo

From: Andrew L. Bratlien, P.E., PTOE
Heath & Associates

Subject: The Pinnacle at Liberty Bay TIA Comment Response

This memorandum provides responses to the comments provided by the City of Pouslbo and Parametrix as identified in the September 8, 2025 memorandum "Review for The Pinnacle at Liberty Bay Traffic Impact Analysis (TIA)." The enclosed TIA has been updated based on the March 2026 site plan, including a revised layout consisting of 138 dwelling units

1. COMMENT RESPONSES

Parametrix numbered comments and associated responses are provided below.

Comment #1: Page 8: SR 305 speed is 40 mph north of ~Baywatch Court and 50 mph south of that location.

Response #1: TIA Table 1 has been updated.

Comment #2: Page 10: AM and PM peaks are noted as generally occurring between 7-8 AM and 5-6 PM. Do any of the study intersections have local peaks that are substantially (>30 minutes) outside of the system peaks?

Response #2: TIA language has been refined and a table has been added to identify AM and PM peak hour for each intersection.

Comment #3: Page 10: Verify how the AM school traffic was accounted for. Was there a decrease in PHF to account for the 15-minute spike or some other method?

Response #3: AM peak hour traffic counts captured school peaking effects via PHF which was applied to the existing and future conditions intersection operations analysis. Existing PHFs are documented in the traffic count sheets.

Comment #4: ~Pages 10-16: Clarify which study intersections are reporting performance metrics. There appears to be variability in what is reported for study intersections, for example:

- Section 3.4 lists out 5 intersections where counts were collected and mentions 2 other intersections where counts were estimated.
- Figures 3-4 show 6 of the 7 intersections mentioned, Figures 5-6 show 5 of the 7 intersections and Table 3 (Existing LOS) reports 6 of the 7 study intersections.

Consider adding a section near the front of the report (e.g. Section 2 or 3) that lists all study intersections that will have metrics reported throughout the entire report. Adding them to Figure 1 for example may help with clarifying where all of the key study intersections are located.

Response #4: A new section, "Study Area," has been added to the TIA report to clarify study intersections and performance measures.

Comment #5: Page 17: For Table 4 (Collisions), Separate out and identifying each location as an intersection or a corridor. Consider using the same numbering for the intersections as what was used for the operational analysis and creating new numbering for the corridor locations. Consider adding totals for each column and row to add more clarity to the data.

Response #5: Crash summary tables have been reconfigured.

Comment #6: Page 18: Consider updating Tables 5 and 6 also with Ref # and intersection/corridor names for clarity and adding total columns/rows.

Response #6: Crash summary tables have been reconfigured.

Comment #7: Page 18: Consider expanding further on the text "Out of the 45 total collisions, one resulted in six non-incapacitating injuries, and six possible injuries". Should it say something like 6 of the 45 collisions resulted in non-incapacitating and 6 of the 45 resulted in possible injury?

Response #7: Text has been revised for clarity.

Comment #8: Page 20: For figure 8, consider adding numbering to intersections/corridors to tie back to tables easier.

Response #8: Intersection and street corridor numbering has been added to Figure 8.

Comment #9: Pages 16 & 35: Provide more details in the notes of Tables 3 and 9 related to delay and LOS for clarification – Signals, use signalized thresholds for overall intersection, AWSC/Roundabout – use stop control thresholds for overall intersection, TWSC use stop control thresholds for worst approach.

Response #9: Notes have been added to LOS tables.

Comment #10: [General comment]: Provide additional discussion on the Sunrise Ridge extension and what project or development will trigger the opening. Will the extension be completed as part of the Pinnacle at Liberty Bay development?

Response #10: The Sunrisde Ridge Avenue NE extension will be completed as part of the project's first phase. An explanatory statement has been added to the "Study Area" section of the report.

Comment #11: [General comment:] Adding the access points to the study area map or site plan would be helpful in understanding the traffic to and from the site. Consider adding labels for access points A, B, C/D, and E to the maps/figures.

Response #11: Site plan (Figure 2) has been updated to identify access locations.

Comment #12: [General comment:] The city guidelines state that intersections should be analyzed for intersections with over approximately 10 new trips added. Were additional intersections to the north or west of Hostmark Street/SR 305 considered for analysis (where >10 trips along those roadways are being generated per Figures 9 and 10).

Response #12: The TIA study area was approved by City staff via email on June 10, 2025. Minor scoping revisions provided by City staff at that time were incorporated to the TIA and are reflected in the report.

Olympic Region

PLANS, SPECIFICATIONS AND ESTIMATE
Review Comment Disposition Form

Project Title:	Pinnacle at Liberty Bay	Job Charge #:	
Reviewer (name & office) Casey Chilton– Traffic Design Date of Review Comments: 7/29/25		Responses By: Andrew L. Bratlien, PE, PTOE Date of Disposition: 3/26/2026	

Comment No.	Sht or Pg.	Review Comment	Status Code	Designer's Response
1.	PDF p8	SR 305 speed limit at this location is 50 MPH. The roundabout at Johnson Rd NE and SR 305 includes pedestrian and bike facilities, but they do not continue along SR 305. Can you please mark "no" for these categories? An asterisk with a note about the RAB having facilities would be a great way to document this.		Table 1 has been updated to incorporate these comments.
2.	PDF p9	Future analysis assumes Sunrise Ridge Ave NE will be opened to through traffic, can you please add details on why this assumption was made? Did the city confirm if/when this will happen?		The Sunrise Ridge Ave NE extension will be completed as part of the project's first phase. An explanatory statement has been added to the "Study Area" section of the report.
3.	GEN	Can you please speak to why the addition of the project traffic volumes will result in a decrease in delay at the following locations? If optimize was used, please reproduce without. **Table 8: Forecast 2032 & 2037 Weekday Peak Hour Level of Service** Delays Given in Seconds per Vehicle *Without Project* / *With Project* Intersection | Control | Peak-Hour | Crt. Apprch | LOS | Delay | LOS | Delay **Forecast 2032 Peak Hour Analysis** SR 305 & Hostmark | Signal | AM | Overall | D | 36.5 | D | 37.2 PM | D | 44.5 | D | 44.7 SR 305 & Baywatch | One-Way Stop | AM | SB | C | 21.8 | C | 16.4 PM | D | 25.8 | C | 24.7 SR 305 & Johnson | RAB | AM | Overall | A | 7.4 | A | 7.7 PM | A | 6.6 | A | 6.8 Sunrise Ridge & Johnson | RAB | AM | Overall | A | 5.6 | A | 5.7 PM | A | 6.0 | A | 6.5 Sunrise Ridge & Crystallia | One-Way Stop | AM | EB | -- | -- | A | 8.8 PM | -- | -- | A | 8.8 Hostmark & Caldart | AWSC | AM | Overall | C | 22.6 | C | 24.2 PM | B | 14.9 | C | 15.2 Sunrise Ridge & Caldart | TWSC | AM | NB | A | 9.7 | A | 9.8 PM | B | 10.0 | B | 10.1 **Forecast 2037 Peak Hour Analysis** SR 305 & Hostmark | Signal | AM | Overall | D | 37.0 | D | 37.6 PM | D | 45.9 | D | 46.3 SR 305 & Baywatch | One-Way Stop | AM | SB | C | 19.7 | C | 16.0 PM | C | 23.5 | C | 23.7 SR 305 & Johnson | RAB | AM | Overall | A | 7.5 | A | 7.7 PM | A | 6.7 | A | 6.8 Sunrise Ridge & Johnson | RAB | AM | Overall | A | 5.5 | A | 6.1 PM | A | 5.9 | A | 6.4 Sunrise Ridge & Crystallia | One-Way Stop | AM | EB | -- | -- | A | 8.9 PM | -- | -- | A | 8.8 Hostmark & Caldart | AWSC | AM | Overall | F | 61.9 | F | 63.3 PM | D | 26.1 | D | 27.0 Sunrise Ridge & Caldart | TWSC | AM | NB | A | 9.9 | B | 10.0 PM | B | 10.4 | B | 10.5 RAB: Roundabout **SR 305 & Baywatch Court NE** will operate acceptably at LOS D or better through 2037, with average delay of 26 seconds or less on the stop-controlled southbound		Intersection operations forecasts have been updated to reflect revised trip generation, distribution and assignment forecasts. The intersections in question no longer indicate delay reductions with the addition of project trips.
4.				

Status Code Legend: A = Incorporated B = Open/Under Review C = Evaluated/Not Incorporated D = Beyond Scope/Not Evaluated
All "B" and "C" responses require explanatory comments.

Date: November 12, 2025

To: Michael Bateman, City of Poulsbo

From: Andrew L. Bratlien, P.E., PTOE
Heath & Associates

Subject: The Pinnacle at Liberty Bay TIA Comment Response

This memorandum provides responses to the comments provided by the City of Pouslbo and Parametrix as identified in the September 8, 2025 memorandum "Review for The Pinnacle at Liberty Bay Traffic Impact Analysis (TIA)."

1. COMMENT RESPONSES

Parametrix numbered comments and associated responses are provided below.

Comment #1: Page 8: SR 305 speed is 40 mph north of ~Baywatch Court and 50 mph south of that location.

Response #1: TIA Table 1 has been updated.

Comment #2: Page 10: AM and PM peaks are noted as generally occurring between 7-8 AM and 5-6 PM. Do any of the study intersections have local peaks that are substantially (>30 minutes) outside of the system peaks?

Response #2: TIA language has been refined and a table has been added to identify AM and PM peak hour for each intersection.

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Response #4: A new section, "Study Area," has been added to the TIA report to clarify study intersections and performance measures.

Comment #5: Page 17: For Table 4 (Collisions), Separate out and identifying each location as an intersection or a corridor. Consider using the same numbering for the intersections as what was used for the operational analysis and creating new numbering for the corridor locations. Consider adding totals for each column and row to add more clarity to the data.

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> **Response #11**: Site plan (Figure 2) has been updated to identify access locations.

Comment #12: [General comment:] The city guidelines state that intersections should be analyzed for intersections with over approximately 10 new trips added. Were additional intersections to the north or west of Hostmark Street/SR 305 considered for analysis (where >10 trips along those roadways are being generated per Figures 9 and 10).

> **Response #12**: The TIA study area was approved by City staff via email on June 10, 2025. Minor scoping revisions provided by City staff at that time were incorporated to the TIA and are reflected in the report.

Date: July 20, 2026

To: Michael Bateman, City of Poulsbo

From: Andrew L. Bratlien, P.E., PTOE
Heath & Associates

Subject: The Pinnacle at Liberty Bay – TIA Comment Response

This memorandum provides responses to the comments provided by the City of Pouslbo and Parametrix in the July 1, 2026 memorandum "Traffic Impact Analysis and Transportation Review." The enclosed TIA has been updated based on the comments and responses provided below.

1. COMMENT RESPONSES

Comment #1A: Study Area Consistency: The report does not clearly and consistently identify all study intersections or reconcile which intersections are included in figures versus LOS tables.

Response #1A: Descriptions of existing peak hour volumes (Section 4.4) have been expanded for clarity and consistency. Tables and figures have been updated to identify all seven study intersections.

Comment #1B: Intersection Screening: The TIA does not demonstrate that all intersections with ≥10 new trips were evaluated per City requirements. Consider intersections to the south of Johnson Road and to the north of Hostmark Street, based on AM and PM trip distribution figures.

Response #1B: The TIA study area was approved by City staff via email on June 10, 2025. Minor scoping revisions provided by City staff at that time were incorporated to the TIA and are reflected in the report.

Expanded trip distribution forecasts have been developed and attached to this memorandum, documenting eight functionally classified (collector/arterial) intersections within Poulsbo city limits which are expected to be impacted by 10 or more peak hour project trips. The additional intersections, their corresponding 2023 and 2044 Levels of Service, per the January 2025 *City of Poulsbo Transportation Plan Update*, and project-generated PM peak hour trips as a share of 2023 PM peak hour volume, are summarized in the table on the following page.

Intersection	Control[1]	Transportation Plan PM LOS[2]		PM Peak Hour Project Trips	
		2023	2044	Trips	As % of 2023[4]
SR 305 & NE Lincoln Rd	Signal	D	D	31	+1.1%
SR 305 & NE Liberty Rd	Signal	**F**	**E**	19	+0.8%
SR 305 & 7th Ave/Forest Rock	Signal	**F**	**F**	15	+0.5%
SR 305 & Bond Rd/SR 307	Signal	**E**	**F**	13	+0.3%
NE Hostmark St & 6th Ave NE	MASC	B	C	26	+4.1%
NE Hostmark St & Lincoln Rd	MASC	B	A	23	+3.9%
NE Hostmark St & 4th Ave NE	AWSC	B[3]	B[3]	23	+3.3%
Front St & NE Sunset St	AWSC	F[3]	F[3]	11	+0.9%

[1]Signal = signalized; AWSC = all-way stop control; MASC = minor-approach stop control
[2]PM Peak hour intersection Level of Service per January 2025 Poulsbo Transportation Plan Update
[3]Denotes intersection with adopted LOS F standard
[4]Peak hour project trips as share of total 2044 PM peak hour intersection entering volume
RED denotes intersection operating below adopted LOS standard

The intersections of SR 305 & NE Liberty Road, SR 305 & 7th Avenue/Forest Rock Lane, and SR 305 & Bond Road/SR 307 currently operate below the WSDOT LOS D standard for SR 305 and are anticipated to continue to operate with LOS deficiencies through the 2044 Comprehensive Plan horizon. Project trips are expected to constitute less than one percent of peak hour demand at each LOS-deficient intersection. Further, all LOS-deficient SR 305 intersections have been identified as locations of developer-driven improvements including traffic signal controller, detection, and interconnection upgrades.

The other five collector and arterial intersections expected to serve 10 or more PM peak hour project trips are anticipated to operate at or above their respective minimum LOS standards through 2044. Project trips, which are implicitly included in the Poulsbo Comprehensive Plan long-range travel demand forecasts, are anticipated to constitute less than five percent of total PM peak hour demand at each intersection

Given the limited number of project trips, the planned SR 305 traffic signal control improvements, and the documented long-term adequacy of vehicle capacity at several surrounding intersections according to the Poulsbo Comprehensive Plan, an expanded TIA study area is not recommended.

Comment #1C: Peak Hour Methodology: School-related peak demand and local peak hour variability are not fully documented.

Response #1C: Traffic counts and the associated operational analysis applied Peak Hour Factor (PHF), which reflects the impacts of observed 15-minute volume peaking during each peak hour. The use of PHF allows the operational analysis to capture the impacts of short-duration school-related peaking, particularly during the AM peak hour. Existing PHFs are documented in the traffic count sheets. Peak hour variability at each study intersection is documented in Table 3.

Comment #2A: The intersection of Hostmark/Caldart operates at LOS F (61.9–63.2 sec delay) under 2037 AM conditions, below the City LOS standard (E). Although the LOS F is consistent between 2037 No Build and Build conditions, the vehicle delay increases under the Build scenario.

Response #2A: Long-range (2037) traffic forecasts have been updated. Previous versions included an error in compound growth calculations which resulted in an overestimation of anticipated growth. Based on the corrected traffic volume forecasts, the Hostmark/Caldart intersection is expected to operate at LOS E during the 2037 AM peak hour before and after the addition of project trips. The minimum LOS E standard is satisfied.

Comment #2B: The school route to North Kitsap High School requires a mid-block crossing of Caldart Avenue without stop control. This crossing is aligned with and supported by Comprehensive Plan Policies TR-5.1, TR-5.2, and TR 5.3.

Response #2B: Caldart Avenue currently provides marked pedestrian crossings at the Meredith Heights/Frank Raab Municipal Park driveway, at NE Odin Street, and at Hostmark Street. All of the existing marked crossings could serve pedestrian demand associated with North Kitsap High School. Please clarify the location of the midblock crossing referenced above.

Comment #2C: The transportation analysis should evaluate improvements to the existing school crossing, including installation of a Rectangular Rapid Flashing Beacon (RRFB), to address pedestrian safety and support the City's transportation findings under PMC 14.04, PMC 17.60.040(A)(e), PMC 17.80.060, and Comprehensive Plan Policies TR-1.1 and TR-1.4.

Response #2C: The Hostmark Street & Caldart Avenue intersection provides curb ramps and marked crosswalks on all legs. Hostmark Street also includes signalized pedestrian crossings at two locations to the east of Caldart Avenue. Please clarify the location of the school crossing referenced above.

Comment #3: The information provided in support of the applicant's feasibility determination does not adequately support the conclusion that the Baywatch connection is infeasible due to vertical geometry and stream crossing constraints because the feasibility evaluation does not fully address applicable City codes, policies, and reasonable design alternatives necessary for the City Engineer to determine infeasibility.

Response #3: Response to be provided by ESM.

Comment #4A: Both Road C and Crystallia Court rely exclusively on Sunrise Ridge Ave NE, resulting in one functional access route and a single route condition, not two independent routes as required by City code and implied in the TIA. This is consistency with City code PMC 17.80.050(C).

Response #4A: The project proposes access to NE Crystallia Court and to Sunrise Ridge Avenue, providing two distinct public street connections to the site and satisfying access criteria defined in PMC 17.080.050(C). An internal street network will provide a contiguous connection between the two accesses, preserving full site access in the event of a blockage at either connection. The project also proposes completion of Sunrise Ridge Avenue to the south of the project, facilitating access to the site to/from the north via Caldart Avenue and to/from the south via Johnson Road.

Sunrise Ridge Avenue provides an approximately 390-foot centerline separation between NE Crystallia Court and the proposed Road C intersection. The magnitude of Sunrise Ridge Avenue blockage required for simultaneous closure of both NE Crystallia Court and Road C is significant and unlikely.

Comment #4B: The TIA does not demonstrate that the proposed street network satisfies the redundancy objectives as required under City code PMC 17.80.060.

Response #4B: The project proposes two distinct access routes to the site, satisfying access criteria defined in PMC 17.080.050(C). See Response #4A.

Comment #4D: If, after further analysis, the Baywatch connection is determined by the City Engineer to be infeasible, the information provided does not demonstrate that the proposed Sunrise Ridge access configuration satisfies the applicable City and Fire Code requirements for access, connectivity and emergency response. Specific examples where the site plan of the TIA deviates from City or Fire Code include:

- Any blockage of Sunrise Ridge would significantly reduce site access, which is inconsistent with the intent of PMC 17.80.050(C) to provide access via two different streets and PMC 17.80.060 to provide redundant and efficient connections and emergency access provisions

of IFC 503.1.2. This risk is amplified by steep grades (~12%) and significant elevation change.

Response #4D: The project proposes access via two distinct public streets and a new connection on Sunrise Ridge Avenue to the south, satisfying access criteria defined in PMC 17.80.050(C). See Response #4A.

IFC D107.2 requires a minimum straight-line separation not less than one-half of the length of the maximum overall diagonal dimension of the property. The maximum overall diagonal dimension of the subject site is 1,918 feet, resulting in a minimum straightline separation of 909 feet.

The proposed accesses on NE Crystallia Court and the eastern edge of the subject site on Sunrise Ridge Avenue provide 940 feet of separation, satisfying IFC D107.2 access separation requirements for two separate access roads.

Comment #4E: No alternative mitigation (e.g. emergency access, sprinklering, roadway improvements) has been proposed in the TIA as required under PMC 17.80.050(C) and supporting provisions.

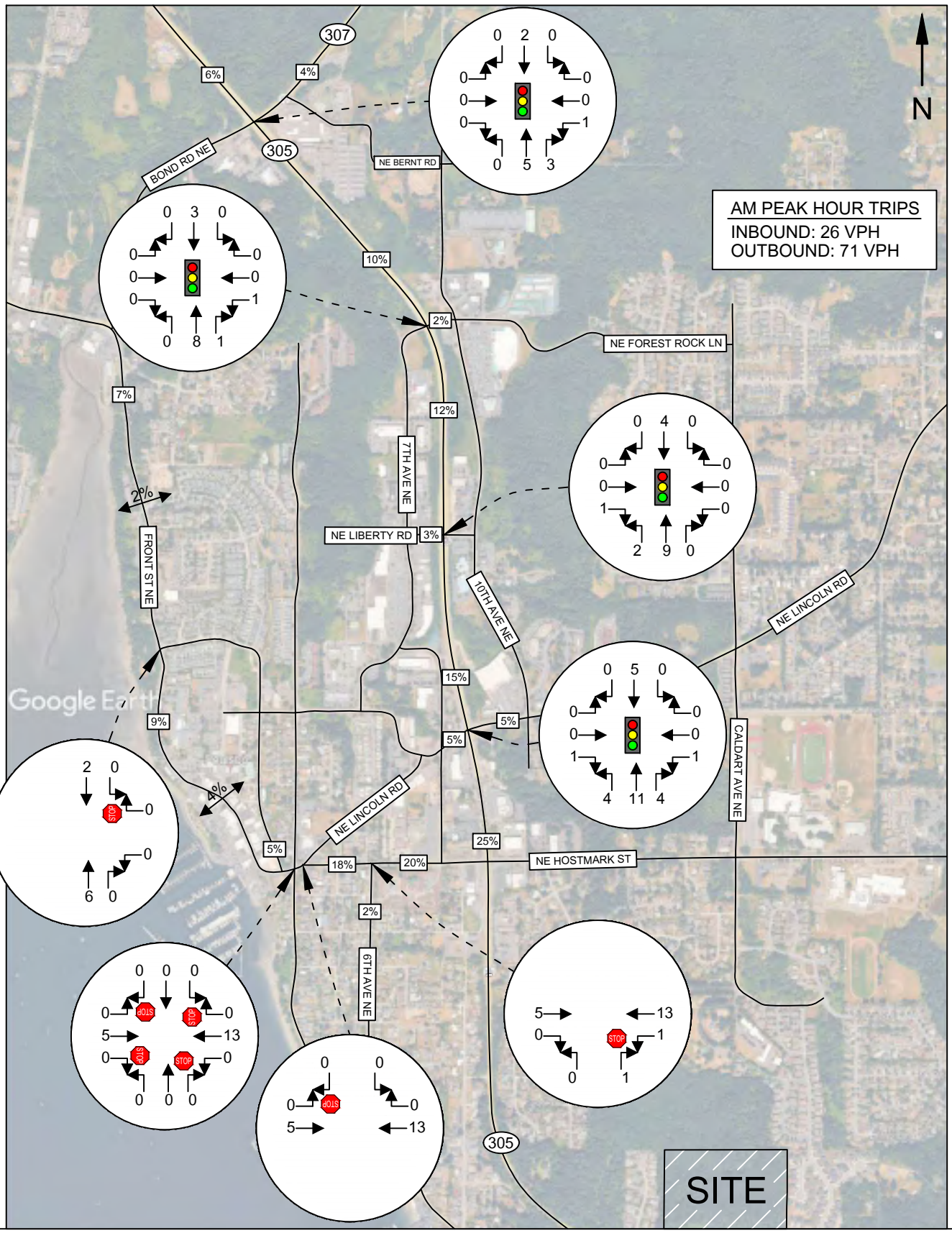
Response #4E: The project proposes access via two distinct public streets and a new connection on Sunrise Ridge Avenue to the south, satisfying access criteria defined in PMC 17.80.050(C). See Response #4A.

Comment #4F: Based on the site conditions, including terrain, steep grades (~12%), and access limitations, the transportation information provided does not adequately demonstrate that the proposed access configuration satisfies the applicable emergency access provisions of IFC 503.1.2 and IFC D107.2.

Response #4F: The NE Crystallia Court and Road C accesses satisfy IFC separation requirements for emergency access separation. See Response #4D.

Responses to Comments 3, 4C, 4G, and 4H will be provided by ESM.

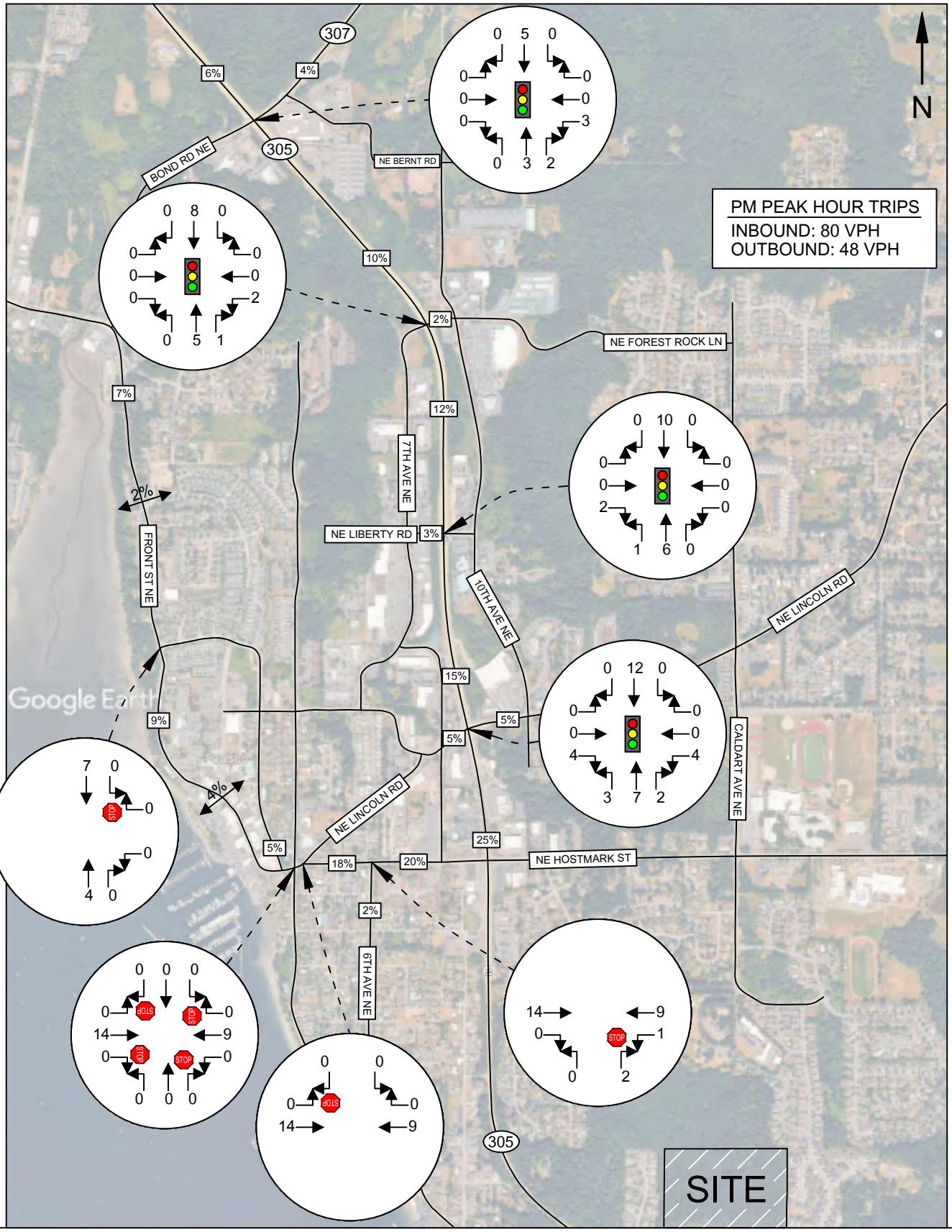
Attachment A. Expanded AM Peak Hour Project Trip Distribution
Attachment B. Expanded PM Peak Hour Project Trip Distribution



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PINNACLE AT LIBERTY BAY

EXPANDED AM PEAK HOUR TRIP DISTRIBUTION AND ASSIGNMENT
FIGURE A



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PINNACLE AT LIBERTY BAY

EXPANDED PM PEAK HOUR TRIP DISTRIBUTION AND ASSIGNMENT
FIGURE B

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

APPENDIX

Emergency Access Memo

Date: October 5, 2026

To: City of Poulsbo

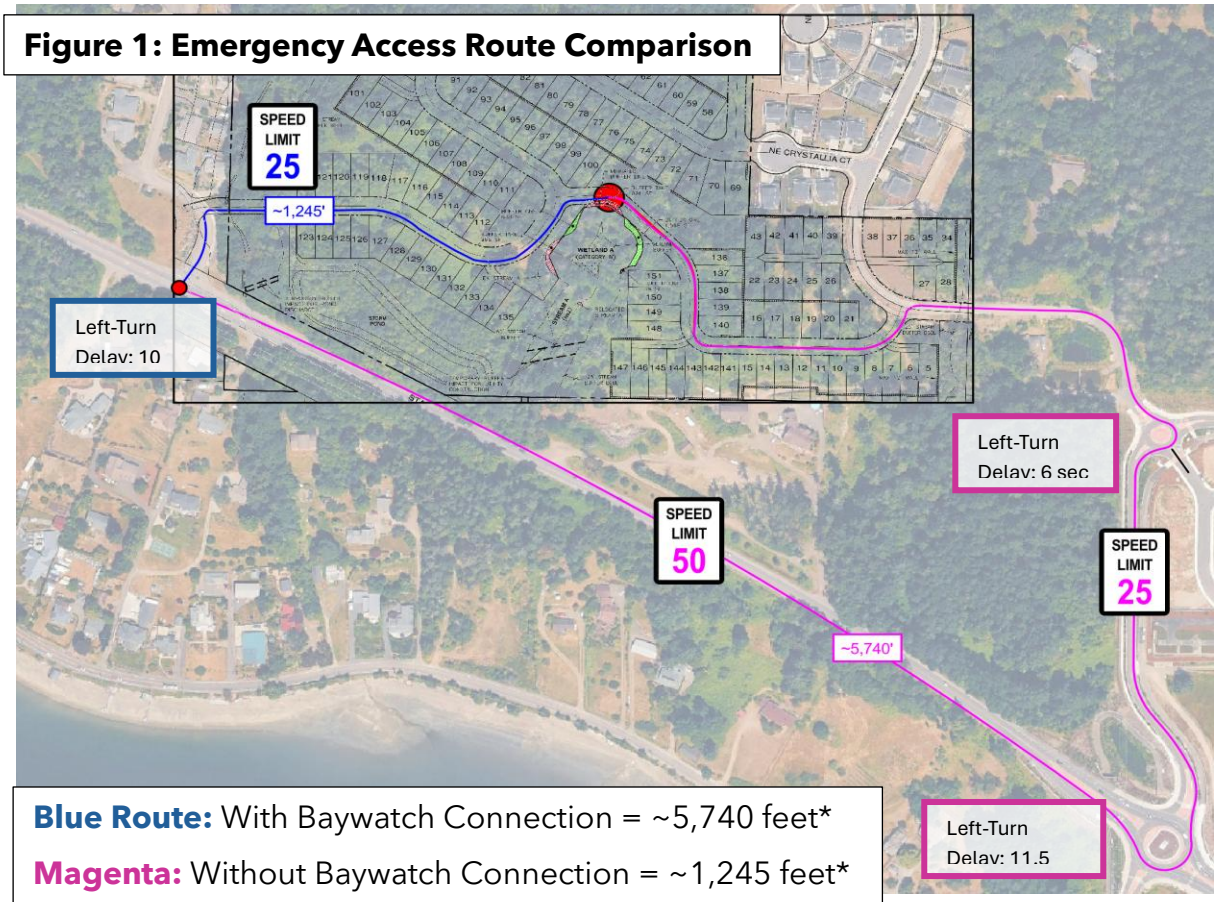
From: Aaron Van Aken, P.E., PTOE
Heath & Associates

Subject: The Pinnacle at Liberty Bay – Supplemental Emergency Access Analysis

This memorandum provides supplemental transportation analysis regarding emergency access for the proposed Pinnacle at Liberty Bay development. Route lengths and characteristics are compared for scenarios with and without the Baywatch connection.

Figure 1 illustrates the relative emergency access route lengths from the SR 305 & Baywatch Ct NE intersection to midpoint of the project site. An alternative access route to the north via Hostmark Street is acknowledged but excluded from the comparison to isolate the difference between the Baywatch and Johnson Parkway routes.

Figure 1: Emergency Access Route Comparison



Blue Route: With Baywatch Connection = ~5,740 feet*

Magenta: Without Baywatch Connection = ~1,245 feet*

*Measured approximately to the midpoint of the proposed plat.

Emergency Access Route Comparison

Table 1: Route Characteristics

Variable	Route 1 – Baywatch	Route 2 – Johnson
Route Length	1,245 ft	5,740 ft
Approx. Distance	0.24 mi	1.09 mi
Speed Assumption	25 mph	2,500 ft @ 50 mph; 3,240 ft @ 25 mph
Max Grade	≥12% via Baywatch	12% via Johnson Parkway
Estimated Running Time	~34 sec	~122 sec
Intersection Delay	10 sec	17.5 sec
Estimated Total Travel Time*	~44 sec	~140 sec
Difference		**~96 sec longer**

* Travel times were estimated based on roadway lengths and posted speed limits and are intended solely for relative route comparison. They do not represent actual emergency vehicle response times.

Table 1 compares the Baywatch and Johnson Parkway access routes. Measured to the approximate midpoint of the project, the Baywatch route is shorter, with an estimated travel time difference of approximately 96 seconds.

Although the Johnson Parkway route is longer, roadway grades are generally comparable. ESM estimates the Baywatch connection would require a minimum grade of 12 percent, and likely steeper, while Johnson Parkway includes existing grades of approximately 12 percent. Therefore, while Baywatch would provide a shorter route, it would not eliminate the steep-grade conditions identified as an emergency access concern.

Access Redundancy and Potential Blockage

Although both project access points are located on Sunrise Ridge Avenue NE, they are approximately 385 feet apart and function as two physically distinct intersections. Sunrise Ridge can be accessed from the north via Hostmark Street and from the south via Johnson Parkway. Accordingly, a localized collision or obstruction at one project access would not inherently block the second access, and emergency vehicles could approach the site from the opposite direction.

Traffic volumes on Sunrise Ridge are also relatively low with a forecast 2037 northbound PM peak hour volume of approximately 37 vehicles per hour, equating to around one vehicle arriving every 97 seconds. Assuming a complete blockage at the northern access intersection of NE Crystallia Ct (illustrated to the right) and 25 feet per vehicle, approximately 15 vehicles would need to be stopped to extend the 385 feet to the southern "Road C" access. At an arrival rate of one vehicle every 97 seconds, this would take approximately 24 minutes of continuous blockage, assuming no vehicles could pass and no traffic control or incident response occurred.



Based on the travel times (estimated from the posted speeds, not actual response times), the Johnson connection route is approximately 96 seconds longer to reach the midpoint of the project relative to the Baywatch connection route. During the 96 seconds of additional travel time, only about one additional northbound vehicle would be expected to arrive on Sunrise Ridge, occupying only a small portion of the 385 feet separating the two access points.

Therefore, if an incident blocked the northern project access, the additional travel time associated with approaching the site from the south via Johnson Parkway would not be expected to result in a queue extending to and blocking the southern project access.