April 10, 2026 Job No. 2090-004-022

Ms. Nikole Coleman, AICP
Planning Manager
City of Poulsbo
200 NE Moe St
Poulsbo, WA 98370

RE: Pinnacle at Liberty Bay Technical Revision #2
P-06-20-25-03 - Response Letter #2

Dear Ms. Coleman:

ESM Consulting Engineers, LLC, is submitting the following responses to the Comment Letter for Submittal #2, that was received from you December 31, 2025, revised January 9, 2026. In an effort to provide concise and direct responses, we have copied the review comments below in *italics* and our responses are in **bold**.

As an initial overview comment, the updated site plan provided here accepts the City's peer review determination that Barrantes Creek (Stream C) should be type F with a 150' buffer, and Stream D should be Type NS1 with a 75' buffer. See Grette Associates Technical Memorandum, Pinnacle at Liberty Bay, Table 2 (08/29/2025). Accordingly, this resubmittal increases the Barrantes Creek (Stream C) buffer from 75 feet to 150 feet, and the Stream D buffer from 50 feet to 75 feet, which has driven the following revisions in the updated Pinnacle site plan:

- Lot count has been reduced from 148 to 138, to accommodate the expanded buffers. The revised lot configuration is shown on sheets PP-01 for the lot count and PP-06 for buffers;

- The storm pond has been reconfigured to stay out of the expanded stream buffer for Barrantes Creek. The reconfigured storm pond is shown on sheet PP-06;

- The project road section crossing Barrantes Creek has been eliminated. The revised access and circulation plan are shown on sheet PP-01. Site access from Baywatch Court NE was included in the original project site design based upon WDNR stream typing and the City's 2024 Best Available Science analysis, which showed Barrantes Creek as non-fish-bearing. This same mapping was in place when the City adopted its 2025 Transportation Comprehensive Plan, which included conceptual connectivity across Barrantes Creek in Figure TR-3 -2044 (New Roadway Segments) to implement Policy TR-6.2. The applicant has undertaken in-depth engineering analysis to determine if a road crossing of

Barrantes Creek could be designed that would (a) comply with state and local standards for road crossings of fish-bearing streams, and (b) meet City road standards. The engineering analysis of applicable design standards concludes that the street connection to Baywatch Court NE meeting City standards is no longer feasible with a fish-bearing classification for Barrantes Creek. See Transportation Technical letter, ESM Consulting Engineers, April 6, 2026, attached. The project traffic engineer, Heath and Associates, has reviewed the updated access and circulation plan and determined that it meets transportation concurrency and also provides functionally equivalent or safer circulation than the original connection to Baywatch Court NE. The project TIA has also been updated to address the revised access and circulation plan. See updated TIA, dated March 26, 2026, attached.

The elimination of the Baywatch Court NE connection is both necessary to ensure compliance with City street standards and consistent with the City's adopted Comprehensive Plan. Policy TR-6.2 provides that "actual alignments and construction of new roadways may vary based upon topography, natural and built environment, [and] technical final engineering design" and that "reasonable alternative alignments may be considered by the City Engineer consistent with the intent of the conceptual alignment. …". Here, the change is being driven by newly discovered, site specific analysis identifying Barrantes Creek as a Type F fish bearing stream, and the alternative alignment both meets City standards and provides functionally equivalent or safer circulation than the original connection. Further, Policy TR-6.6 provides that transportation improvements should "minimize[e] impacts to fish and wildlife habitat areas." With the alternative alignment, no crossing of Barrantes Creek is required.

Open Space and Amenities

1. *Based on the applicant's materials, approximately 31% of the site contains critical areas or associated buffers. Per PMC 18.260.090(G)(2), no more than 50% of the required open space may consist of critical areas and their buffers. However, according to the applicant's open space calculations on Sheet PP-32, approximately 54% of the total open space currently lies within critical areas. Please revise the open space plan to meet the code limitation or provide corrected and updated calculations demonstrating compliance with PMC 18.260.090(G)(2).*

   RESPONSE: Please see updated Sheet PP-31 for revised open space calculations and confirmation of compliance with PMC 18.260.090(G)(2). The open space plan and calculations have been updated for the revised site plan, and demonstrate that no more than 50% of the required open space area consists of critical areas or associated buffers

Habitat Management Plan – Stream Typing

2. *The applicant has provided a response prepared by Sewall Wetland Consulting (SWC) to the third-party peer review conducted by Farallon Consulting/Grette Associates regarding stream classification and associated buffer requirements. Staff has reviewed the applicant's response and does not concur with the assertions made in the Peer Review Addendum related to stream typing and reliance on mapped data alone.*

   Poulsbo Municipal Code is explicit that mapped critical area information is approximate and does not supersede site-specific field determinations:

   - *PMC 16.20.115(F) states that the location and extent of mapped critical areas are to be used only as a general guide, and that the type, extent, and boundaries of critical areas shall be determined in the field by a qualified specialist according to the requirements of Chapter 16.20.*

   - *PMC 16.20.115(F)(4) further authorizes the PED Director to issue revised critical area maps when new or revised information becomes available regarding the presence, absence, or classification of critical areas.*

   In addition, PMC 16.20.750 requires that for all regulated activity proposed on a site containing or located within 300 feet of a fish and wildlife habitat conservation area, a habitat assessment must identify, at a minimum, the type of stream and its prescribed buffer.

   The peer review conducted by Farallon Consulting/Grette Associates included site observations and analysis of physical stream characteristics and fish passage data and concluded that Stream C meets the criteria for a higher stream classification than identified in the applicant's report. Staff find this site specific analysis to be consistent with the requirements of Chapter 16.20 and applicable Best Available Science.

   One optional path forward to resolution of the disagreement among the technical experts is to coordinate an on-site discussion involving the applicant's qualified specialist, the City's peer review consultant, the Washington Department of Fish and Wildlife, and the Suquamish Tribe. This type of collaborative, field based coordination has been successfully used in the past to resolve similar technical disagreements regarding stream classification and habitat functions. Staff is willing to assist with coordinating such a discussion should the applicant wish to pursue this option, recognizing that any resulting determinations must remain consistent with the requirements of the Poulsbo Municipal Code and applicable Best Available Science. Upon resubmittal of revised documents, staff will continue reviewing the application in a timely manner. However, absent resolution of the typing of Stream C, staff anticipates a recommendation of denial of those specific lots impacted by the typing of Stream C. This is due to uncertainty regarding feasible development without reliance on a Reasonable Use Exception.

To remove the uncertainty of a need for an RUE, please provide a depiction of buildable areas outside of critical areas and buffers for those lots adjacent to stream C to better evaluate lot feasibility, particularly as it relates to the final stream typing determination for Stream C and its associated buffers.

As noted in the overview comment above, the applicant has accepted the City's peer reviewer determination that Stream C is type F with a 150 foot stream buffer. The updated site plan reconfigured lots accordingly, and it depicts buildable areas outside of critical areas and buffers for those lots adjacent to Stream C.

3. *The City updated its Critical Areas Ordinance (CAO) in November 2025 (Ordinance 2025-19). Staff have reviewed the issue of CAO vesting with the City Attorney and have determined that the applicant's submittal of plan sheets PP-07 through PP-09 depicting the area of future homesite placement (in the July 2025 submittal package) provides sufficient information to establish vesting of the proposed lots (and subsequent building permits) under the regulations in effect at the time the preliminary subdivision application was deemed complete.*

   Pursuant to RCW 58.17.033, the City's determination that the preliminary subdivision application was complete established vesting to the subdivision regulations and critical areas regulations in effect on the date of complete application for purposes of preliminary subdivision review, including lot configuration, road alignments, utility layout, and subdivision design, as depicted on sheets PP-07 through PP-09.

   Please also see Comment #2 above regarding lots that may be impacted by the stream typing determination of Stream C.

   RESPONSE: Acknowledged.

4. *The following will be a condition of approval for this preliminary subdivision:*
   "Prior to issuance of any building permit for Lots 52-56, the applicant shall demonstrate compliance with Kitsap Public Health District (KPHD) Drinking Water Supply Regulations (Ordinance 2018-01) for development within the 100-foot sanitary control radius of an existing Group B public water system well.
   Compliance shall include:

   1. *Recorded Plat Restriction: The final plat shall clearly state that Lots 52-56 are ineligible for building permit issuance unless and until the water system is no longer classified by KPHD as a public water system, or the well is formally decommissioned, as confirmed in writing by KPHD.*

   2. *KPHD Approval: Any restrictive plat language, covenant, or notice addressing the sanitary control area shall be reviewed and approved in writing by KPHD and recorded prior to, or concurrently with, final plat approval.*

No vertical construction shall occur on Lots 52-56 until the above requirements are satisfied."

RESPONSE: Acknowledged.

Peer Review

5. *The SWC Peer Review Addendum was peer reviewed; their comments are attached and must be addressed in the project resubmittal.*

   The City's peer review comments for wetlands (appended to the City's January 9 revised letter) have been accepted and the site plan has been revised accordingly, as acknowledged in the SWC 2nd Addendum, dated April 6, 2026 (attached).

6. *The response to Sound Urban Forestry was peer reviewed; their comments are attached and must be addressed in the project resubmittal.*

   RESPONSE: Sound Urban Forestry has confirmed in a memo dated 12/19/25 to the City of Poulsbo that all prior comments have been satisfactorily addressed or are being addressed from their peer review dated 8/29/25 and that they have no further comments at this time.

7. *The Suquamish Tribe provided comment on December 19, 2025; their comments are attached and must be addressed in the project resubmittal.*

   The Tribe's comments were generally directed towards the applicant's original stream classifications, in particular for Barrantes Creek, and the associated crossing. The applicant has since accepted the City's peer review comments regarding critical area classifications and associated buffers, and the site plan has been revised accordingly. As revised, the project is avoiding impacts to streams and wetlands and providing regulatory buffers in the manner prescribed by the City's adopted critical areas ordinance to which the project is vested.

Transportation

8. *Updated site plan and TIA has been forwarded to WSDOT for their comment. Comments will be forwarded to the applicant upon completion.*

   RESPONSE: Acknowledged

Stormwater

9. *On sheet PP-18, it appears that the storm pond will require work in HWY 305 Right of Way. Any alterations to State-owned right of way will likely require permission from the State for the construction work and possibly a franchise agreement depending on the work being performed. A ROW permit from WSDOT for the work being proposed will be due prior to grading permit approval.*

RESPONSE: Acknowledged

10. *As discussed in previous memo, the applicant will be required to provide confirmation from WSDOE stating if a reservoir permit or dam permit is required for the proposed storm pond. This is due prior to grading permit approval.*

RESPONSE: The proposed pond volume in total (below natural ground level + above natural ground level) is less than 10 ac-ft.

The threshold for a Dam Safety permit is 10 ac-ft of volume stored above natural ground level, or which could be released by failure of the dam. This threshold is documented on the DOE's website. As a part of the resubmittal package, an email from ecology stating this has also been included.

As for Reservoir permits, this is a permit/right to store water for beneficial use. In other words, it's a water right. This is typically paired with a Secondary Permit for the beneficial use of that water, such as irrigation, drinking water, stocking fish, etc. Its trigger is an impoundment depth of 10 feet or a storage volume of 10-acre feet.

However, stormwater detention is not considered a "beneficial use" because the pond is not keeping the water. The pond is managing the water for safety/drainage. This confirms that a water right/reservoir permit under RCW 90.03.370 is not applicable.

Further, in Section 6.1 of the Guidance to Applicant for a Surface Reservoir Permit (Publication ECY 040-1-60A), it lists stormwater retention as an example of a project that does not require a water right permit because there is no beneficial use.

> *"A reservoir permit and/or water right permit is not required if the water is not put to beneficial use. Examples of projects where water is stored but not beneficially used include silt retention, single-purpose flood control and stormwater retention. These would not require a water right permit, but may require a dam permit..."*

ESM Consulting Engineers has also spoken to the reservoir permit office and they have additionally confirmed that stormwater ponds are exempt from reservoir permits. This includes retention ponds, detention ponds, etc.

11. *Please submit a preliminary TESC plan for review prior to land use approval. As discussed in previous comment letter. TESC plan must include BMPs to manage summer and winter construction. Typical issues are dust control and turbid runoff. The current configuration of the site includes improvements up to the stream buffer, this should be considered when putting together the preliminary TESC plan.*

RESPONSE: Acknowledged. A Preliminary TESC Plan is provided on Sheet PP-11. Please note that at this preliminary stage, the plan is schematic in nature and intended to demonstrate the overall strategy rather than provide final engineering details. The narrative included on the sheet provides a high-level overview of our approach to managing summer and winter conditions—specifically addressing dust control, turbidity (via soil amendment and dewatering), and the protection of stream buffers adjacent to improvements. Full technical details will be provided with the final construction documents.

Water

12. *The applicant shall indicate preliminary PRV locations per peer review recommendations on site plan prior to land use approval to demonstrate feasibility.*

RESPONSE: Preliminary PRV Locations have been added to the plat infrastructure sheets. NOTE: It is anticipated that the water model will need to be rerun by Gray and Osborne which may affect connection locations and number of PRV valves necessary. This is due to eliminating the road/water connection at Baywatch Court. In-lieu of the connection at Baywatch Court, an additional placeholder connection was added to the end of the water main in Sunrise Ridge Ave NE where previously it had been removed.

13. *Water connections consistent with peer review recommendations shall be indicated on site plan prior to land use approval, and demonstrate how phasing plan is possible with recommended water layout.*

RESPONSE: Preliminary PRV locations have been added to the water system plan per the peer review. Additional the water connection locations have been updated per the peer review. These changes can most clearly be seen on sheet PP-15. The following pages PP-16 to PP-18 show infrastructure phasing. Because of the new connection schedule (2 connects vs the previous 4) all water will need to be installed in phase 1. This is reflected on the Phase 1 sheet, PP-16.

See NOTE above under comment 12 about the potential for revision due to plat layout revisions

Sewer

14. *Sheet PP-25: The following manholes are greater than 10ft deep and shall be upsized to 54" manholes (Construction Standards Section 3(e)(7)).*
    a. SSMH #7
    b. SSMH #8
    c. SSMH#9
    d. SSMH #10

RESPONSE: This is an engineering comment, however, all manholes over 10 feet deep currently profiled in the preliminary plat plan have been updated to 54".

Additionally, all proposed manholes for this project that will be greater than 10 feet deep will be at least 54".

15. *Please provide profile views of all sewer mains and manholes in revised plan set.*

RESPONSE. The preliminary plan set has profiled key sewer mains to provide additional information confirmation that the site can be serviced by gravity sewer. This sewer profiles provided also indicate the instances where the sewer main may require extra depth. Beyond these key areas, the rest of the site will include typical sewer main construction (standard depths). A full set of plan and profile sheets will be provided with the construction/engineering drawings.

16. *Sheet PP-25 - Site plan indicates 285 LF 8" PVC for sewer between SSMH #9 and SSMH #10. Please correct to HDPE to match profile view.*

RESPONSE: Plan view updated to HDPE

17. *Sheet PP-25 - Sewer pipe runs with >15ft of coverage shall be ductile iron per construction standards.*

RESPONSE: Pipe material updated for sewer mains over 15 feet.

Site Plan

18. *Updated site plan does not appear to contain any road centerline curves or slopes for updated road design. Please include road geometry and profiles in revisions.*

RESPONSE: Horizontal centerline data added to sheets 8, 9, and 10.

19. *Sheet PP-06 - 8' wall on east side of Road B likely cannot be constructed without trespass onto adjacent lots.*

    a. *Expect additional requirements for this wall and others in the development based on IBC regulations.*

RESPONSE: Noted, thank you. Wall will be strategically designed and constructed to avoid trespass onto adjacent lots.

20. *Sheet PP-11 - Proposed road layout appears to show a road grade of 15.9%. The maximum grade of all streets shall not exceed 12% (Construction Standards Section 2 - C).*

RESPONSE: Slope label was in the incorrect location. Label has been adjusted to indicate the road centerline slope of no more than 12%.

21. As discussed previously, the deviation request for a 45ft ROW will require council approval. These comments are based on the current layout utilizing 45ft ROW and are subject to change if the deviation request is not approved.

RESPONSE: Acknowledged

22. Sheet PP-09 – Rock wall for Lot 71 appears to be within the 10ft Utility Easement. No rockeries/retaining walls may be constructed within the ten-foot (10') wide utility easement fronting all lots or within any other utility easement (Construction Standards Section 1 – H).

RESPONSE: Wall location has been updated.

If there are any questions or a need for further clarification, please feel free to contact me at (253) 838-6113 and we would be happy to discuss them with you.

Sincerely,

ESM CONSULTING ENGINEERS, LLC

ROBBY OVERFIELD
Project Manager

Attachment 1: Technical Justification Letter: Roadway Geometry Failures Stream C Crossing
Attachment 2: Landscape and Open Space Plan
Attachment 3: Revised TIA dated March 26, 2026
Attachment 4: Critical Area Report Addendum #2 dated 4/6/26
Attachment 5: Dam Safety Permit, DOE Email dated 10/9/25

April 6, 2026 Job No. 2090-004-022

Mr. Joshua M. Ranes
City of Poulsbo Engineering Department
200 NE Moe St
Poulsbo, WA 98370

RE: Technical Justification for Vertical Roadway Geometry Failures at Stream C Crossing (Pinnacle at Liberty Bay Preliminary Plat and Planned Residential Development) P-06-20-25-03

Purpose

The purpose of this letter is to provide the city staff a technical evaluation of the geometric constraints for a new roadway crossing of Stream C from Baywatch Court NE. This letter demonstrates why standard vertical roadway geometry (maximum grade and sag K-values) cannot be achieved along with State required stream crossing clearances at this location.

Explanation of Design Factors

The following criteria were used to evaluate the feasibility of a potential stream crossing road profile:

- Crossing Standard: Per the City's finding that Stream C is fish-bearing, the crossing must comply with WAC 220-110-070 and WDFW 2013 Guidelines. This requires a bottomless structure with a minimum 3.0-foot vertical freeboard above the ordinary highwater mark/top of bank to allow for debris and sediment transport.

- Maximum Grade (12%): Per City of Poulsbo Construction Standards, the maximum allowable grade for a road within the City is 12%.

- Minimum Sag Curve (K=6.0): The K-value defines the curvature of the roadway. A design target of K=6.0 was established for this crossing based on three primary safety factors:
    1. Emergency Apparatus Clearance: A K-value of 6.0 is the recognized minimum required to prevent standard fire department pumpers and ladder trucks from hitting the front or rear bumpers on the pavement. This value provides a gradual enough transition to maintain the 8-degree approach/departure angle required for emergency vehicles.
    2. Design Speed (15 mph): Given that a sag curve would be very close to the T-intersection at Baywatch Court NE, a reduced design speed of 15 mph is assumed vs a full design speed of 25 mph. At this speed, a K-value of 6.0 satisfies AASHTO passenger comfort criteria.

3. Illumination: To additionally help with reducing the K-value, it is assumed the sag curve will be fully illuminated. This removes Headlight Sight Distance as the controlling factor, allowing for shorter curve.

The Hydraulic "Floor"

The stream classification and crossing guidance provides a minimum elevation of the crossing road. Accounting for the 3.0-foot freeboard, the slab of the box culvert, the 12-inch road base estimated for HL-93 loading, and 4 inches of asphalt, the finished road surface must be at elevation 119.08' (113.75+3+1+1+.33).

Analysis of Geometric Impossibility

The horizontal distance between the existing T-intersection and the Stream C center point is approximately 95 feet. This short distance minimizes the available space to achieve necessary road geometry. The attached exhibits demonstrate the two main areas of failure.

Scenario 1: Fixed Grade and Curvature (Figure 1). In this scenario, a profile attempting to hold the City's 12.00% maximum grade and a standard K-value of 6.0 is shown.

Result: The road profile is physically unable to reach the required elevation to clear the stream. As shown in Figure 1, the road passes through the required box culvert and therefore not in compliance with WDFW freeboard requirements.

Scenario 2: Fixed Grade and Hydraulic Clearance (Figure 2). In this scenario, the road was forced to reach the required 113.75' elevation while attempting to stay near the 12% grade limit.

Result: To gain the necessary height in such a short distance, the vertical curve is reduced to 25 feet. This results in a K-value of 0.93. This curve is many times sharper than the minimum needed for emergency vehicle clearance. A standard fire pumper would hit its front bumper due to the rate of vertical rise of the road.

Note: The attached exhibits assume several non-standard geometric optimizations to attempt a viable crossing. These include eliminating the 20-foot intersection landing and superelevating the existing Baywatch Court NE to +2% to raise the curve's starting elevation. Despite these adjustments, the geometry remains out of compliance with City standards. A standard design incorporating a 20-foot landing and maintaining existing intersection cross slopes would result in even more geometric failure.

Conclusion and Mitigation

As demonstrated by the attached exhibits, there is no mathematical solution that satisfies the mandatory WDFW 3.0-foot freeboard while also meeting City standards for road grade and emergency vehicle access. It has been determined that a roadway crossing at this location is technically infeasible and will not be proposed as part of the Pinnacle at Liberty Bay development.

Respectfully,

ESM CONSULTING ENGINEERS, LLC

BRANDON LOUCKS, P.E.
Project Manager

Encl. Figure 1, Figure 2

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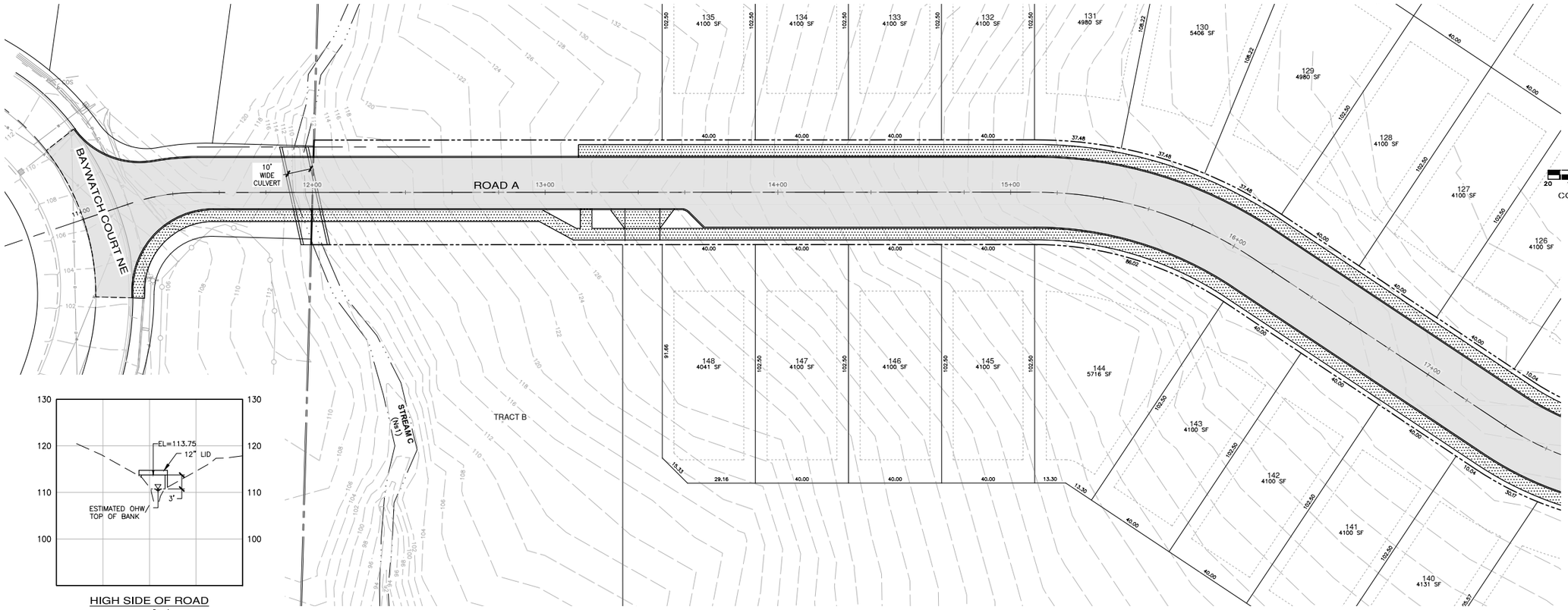
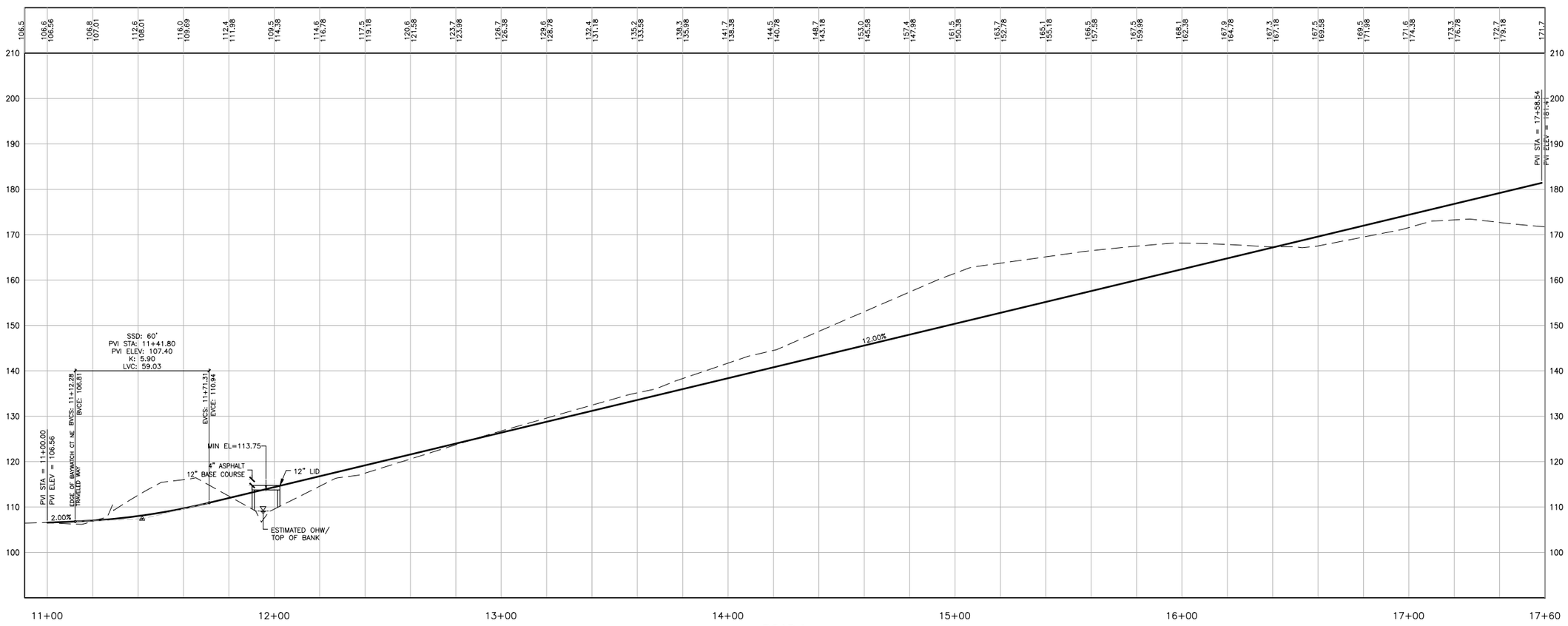
A PORTION OF THE SE 1/4 OF SEC 23, TWP 26 N, RGE 1 E, W.M.



HIGH SIDE OF ROAD
SCALE: 1"=20' HORIZ. 1"=10' VERT.



ROAD A
SCALE: 1"=20' HORIZ. 1"=10' VERT.

FIGURE 1 - 12% & K=6

REVISIONS		
NO.	DESCRIPTION/DATE	BY

ESM CONSULTING ENGINEERS, LLC
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Project Management

MONTEBANC MANAGEMENT, LLC

PINNACLE AT LIBERTY BAY SUBDIVISION

STREAM C & ROAD A CROSSING

CITY OF POULSBO WASHINGTON

JOB NO.	2090-004-022
DWG. NAME	EN-35
DESIGNED BY:	
DRAWN BY:	DCL
CHECKED BY:	
DATE:	02/25/2026

EN-35

1 OF 1 SHEETS

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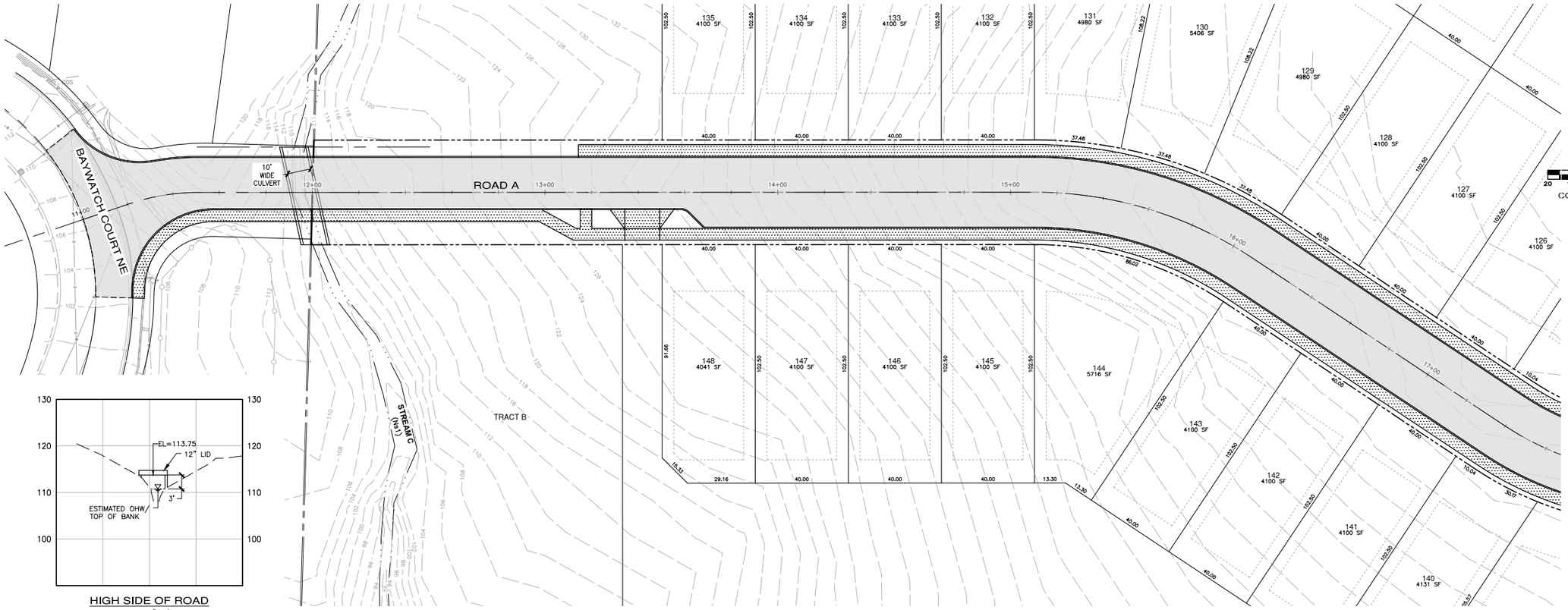
A PORTION OF THE SE 1/4 OF SEC 23, TWP 26 N, RGE 1 E, W.M.



HIGH SIDE OF ROAD
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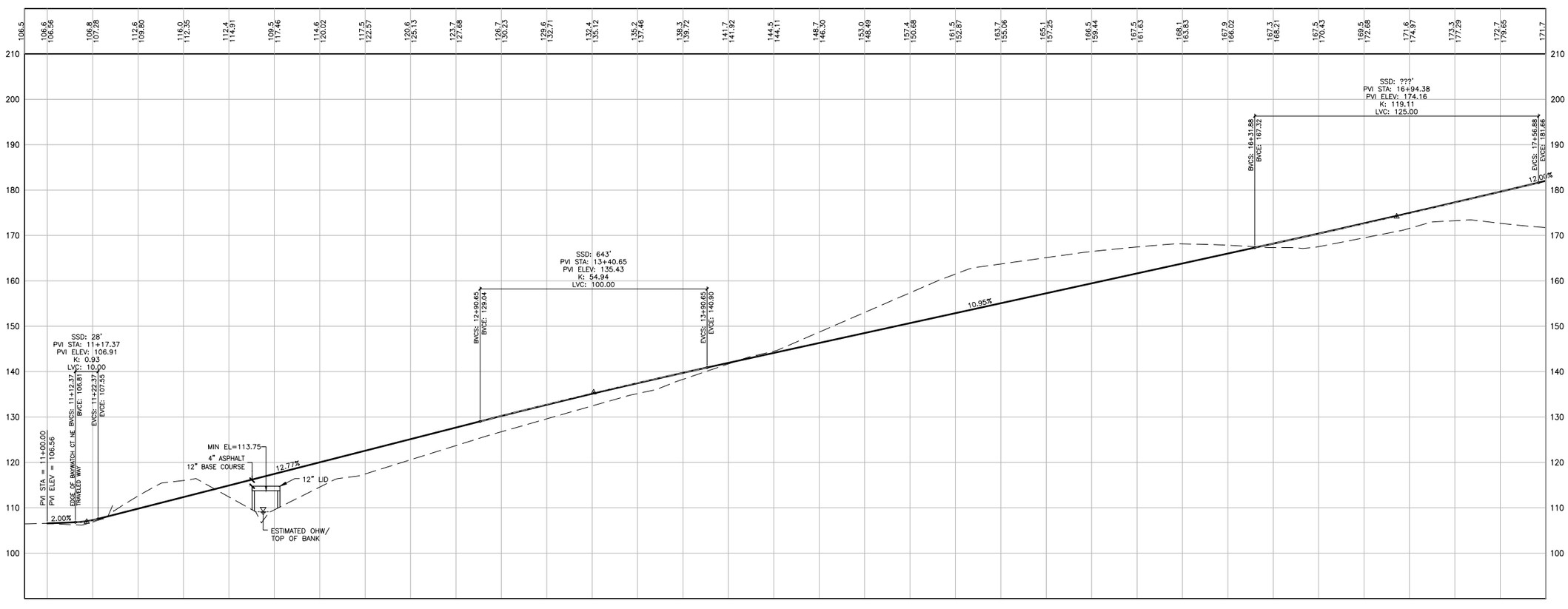
1"=10' VERT.



ROAD A
SCALE: 1"=20' HORIZ.
1"=10' VERT.

FIGURE 2 - 12% & BRIDGE CLEARANCE

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PINNACLE AT LIBERTY BAY SUBDIVISION

STREAM C & ROAD A CROSSING

CITY OF POULSBO WASHINGTON

JOB NO.	2090-004-022
DWG. NAME	EN-35
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EN-35
1 OF 1 SHEETS

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

PRELIMINARY STREET TREE LEGEND

(NOTES: ALL STREET TREE SELECTIONS FROM THE CITY OF POULSBO MASTER STREET TREE LIST - APPENDIX K. ALL STREET TREES ARE LOCATED WITHIN CITY R.O.W. AND MIN. 2' FROM BACK OF SIDEWALK

SYMBOL	BOTANICAL / COMMON NAME	QUANTITY	SIZE	COMMENTS
	Malus 'Tschonoskii' / FLOWERING CRABAPPLE	18	1-1/2" CAL.	B&B, MATCHED, UNIFORM BRANCHING
	Amelanchier x grandiflora 'Princess Diana' / SERVICEBERRY	34		
	Magnolia 'Galaxy' / GALAXY MAGNOLIA	24		
	Stewartia pseudocamellia/ JAPANESE STEWARTIA	24		
	Carpinus betulus 'Fastigiata' / COLUMNAR HORNBEAM	31		
	Cercis canadensis 'Forest Pansy'/ EASTERN REDBUD	18		
	Acer tataricum / TATARIAN MAPLE	21		
	Nyssa sylvatica 'Wildfire' / WILDFIRE BLACK TUPELO	1	2" CAL.	B&B, SPECIMEN QUALITY

PRELIMINARY COMPLIMENTARY LANDSCAPE LEGEND

SYMBOL	BOTANICAL / COMMON NAME	QUANTITY	SIZE	COMMENTS
+	Pinus mugo 'Tannenbaum' / MUGO PINE	18	6' MIN. HT.	B&B, FULL, VIGOROUS
	Thuja occidentalis 'Emerald Green' / AMERICAN ARBORVITAE	40	6' MIN. HT.	
	Chamaecyparis obtusa 'Gracilis' / SLENDER HINOKI CYPRESS	24	6' MIN. HT.	
	Acer palmatum 'Sangokaku' / JAPANESE CORALBARK MAPLE	21	1-1/2" CAL.	
	Rhaphiolepis indica 'Snow Maiden' / YEDDO HAWTHORN	23	5 GAL.	
	Hydrangea serrula / MOUNTAIN HYDRANGEA	22	5 GAL.	

NOTE:
STREET TREE LOCATIONS AND QUANTITIES ARE APPROXIMATE AND SHALL BE ADJUSTED PER FINAL DRIVEWAY AND UTILITY LOCATIONS.

PHASE LEGEND

- PHASE 1
- PHASE 2
- PHASE 3

SCALE: 1" = 40'
40 20 0 40 80

n

WETLAND C (CATEGORY III)
STREAM B (Ns2)
TRACT A WETLAND B (CATEGORY III)
STREAM C (Ns1)
WETLAND D (CATEGORY IV)
150' WETLAND BUFFER
ORIGINAL BUFFER LINE– TYP. SYM.
MITIGATED BUFFER LINE– TYP. SYM.
OPEN SPACE TRACT 'T'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL
NATIVE, DROUGHT TOLERANT LANDSCAPING– TYP. SYM. SEE PRELIMINARY PLANT PALETTE AND CONCEPTUAL LANDSCAPE DESIGN NARRATIVE ON PP–30
PROPOSED AMENITY TYPES 'A,B,C,D,E,F,G'–TYP. REFER TO SHEET PP–30 FOR TABLE
150' STREAM BUFFER
25' STREAM BUFFER BSBL
5' WIDTH SOFT SURFACE TRAIL
LAWN
ROAD A
ROAD B
NE CRYSTAL VIEW CT
NE CRYSTALLIA CT
OPEN SPACE TRACT 'Q'
PROPOSED RETAINING WALL– TYP.
9' WIDTH COMPLIMENTARY LANDSCAPING– TYP.
6' HT. SOLID WOOD SIGHT OBSCURING FENCE– TYP.
FIRE HYDRANT– TYP.
PROPOSED RETAINING WALL– TYP. SYM.
OPEN SPACE TRACT 'R'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL
OPEN SPACE TRACT 'S'
MATCHLINE- ROAD A SEE SHEET PP-29 STA 51+60
FOR CONTINUATION- SEE SHEET PP-29

Lots: 55 3,832 SF; 56 4,433 SF; 57 3,898 SF; 58 4,581 SF; 59 4,551 SF; 60 4,086 SF; 61 5,404 SF; 62 6,277 SF; 63 5,079 SF; 64 5,926 SF; 65 5,037 SF; 66 4,477 SF; 67 4,477 SF; 68 6,270 SF; 69 4,098 SF; 70 4,100 SF; 71 4,100 SF; 72 4,100 SF; 73 4,100 SF; 74 4,100 SF; 75 4,100 SF; 76 4,613 SF; 77 4,200 SF; 78 4,200 SF; 79 4,374 SF; 80 5,825 SF; 81; 82 5,274 SF; 83 4,439 SF; 84 4,100 SF; 85 4,100 SF; 86 4,100 SF; 87 4,100 SF; 88 4,100 SF; 89 4,100 SF; 90 4,100 SF; 91 4,100 SF; 92 4,100 SF; 93 4,100 SF; 94 4,058 SF; 95 4,440 SF; 96 4,010 SF; 97 4,037 SF; 98 4,530 SF; 99 6,141 SF; 100 4,058 SF; 101 4,100 SF; 102 4,100 SF; 103 4,100 SF; 104 4,100 SF; 105 4,100 SF; 106 4,020 SF; 107 6,014 SF; 108 4,100 SF; 109 4,109 SF; 110 4,567 SF; 111 4,584 SF; 112 4,158 SF; 113 4,100 SF; 114 4,100 SF; 115 4,100 SF; 116 4,100 SF; 122 4,100 SF; 123 4,100 SF; 124 4,426 SF; 125 4,869 SF; 126 4,700 SF; 127 6,751 SF; 128 5,080 SF

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Attachment 2

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

SCALE: 1" = 40'

40 20 0 40 80

NOTE:
STREET TREE LOCATIONS AND QUANTITIES ARE APPROXIMATE AND SHALL BE ADJUSTED PER FINAL DRIVEWAY AND UTILITY LOCATIONS.

PHASE LEGEND

- PHASE 1
- PHASE 2
- PHASE 3

FOR CONTINUATION - SEE SHEET PP-28

FOR CONTINUATION - SEE SHEET PP-30

MATCHLINE- SEE SHEET PP-30

PROPERTY BOUNDARY– TYP.

150' STREAM BUFFER

STREAM C (Ns1)

OPEN SPACE TRACT 'A'

BAYWATCH CT NE

25' STREAM BUFFER BSBL

OPEN SPACE TRACT 'V'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL

F PROPOSED 5' WIDTH SOFT SURFACE TRAIL– TYP. SYM.

NATIVE, DROUGHT TOLERANT LANDSCAPING– TYP. SYM. SEE PRELIMINARY PLANT PALETTE AND CONCEPTUAL LANDSCAPE DESIGN NARRATIVE ON SHEET PP–30

OPEN SPACE TRACT 'U'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL

MATCHLINE: ROAD A SEE SHEET PP-28 STA 51+80

MATCHLINE: ROAD C SEE BELOW STA 53+80

PROPOSED RETAINING WALL– TYP. SYM.

ROAD C

ROAD D

15' WETLAND BSBL

WETLAND A (CATEGORY IV)

50' WETLAND BUFFER

OPEN SPACE TRACT 'W'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL

PROPOSED AMENITY TYPES 'A,B,C,D,E,F,G'– TYP. REFER TO SHEET PP–30 FOR TABLE

NATIVE, DROUGHT TOLERANT LANDSCAPING– TYP. SYM.

50' STREAM BUFFER

25' STREAM BUFFER BSBL

STREAM A (Ns2)

MATCHLINE: ROAD C SEE ABOVE STA 53+80

10' WIDTH COMPLIMENTARY LANDSCAPING– TYP.

PROPOSED 6' HT. SOLID WOOD SIGHT OBSCURING FENCE– TYP. SYM.

WETLAND A (CATEGORY IV)

WETLAND BUFFER LINE– TYP. SYM.

OPEN SPACE TRACT 'S'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL

OPEN SPACE TRACT 'X'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL

TIMBER CRIB STAIRS–TYP. (TO UPPER PART OF TRACT 'T')

F PROPOSED 5' WIDTH SOFT SURFACE TRAIL

ROSE GARDEN

PROPOSED AMENITY TYPES 'A,B,C,D,E,F,G'–TYP. REFER TO SHEET PP–30 FOR TABLE

FIRE HYDRANT– TYP.

3' MIN. SEPARATION FOR UTILITY LINES– TYP.

OPEN SPACE TRACT 'D'

75' STREAM BUFFER

STREAM D (Ns2)

25' STREAM BUFFER BSBL

NATIVE, DROUGHT TOLERANT LANDSCAPING– TYP. SYM. SEE PRELIMINARY PLANT PALETTE AND CONCEPTUAL LANDSCAPE DESIGN NARRATIVE ON SHEET PP–30

SUNRISE RIDGE AVE NE

B, E

F PROPOSED 5' WIDTH SOFT SURFACE TRAIL

OPEN SPACE TRACT 'Y'- SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL

NATIVE, DROUGHT TOLERANT LANDSCAPING– TYP. SYM. SEE PRELIMINARY PLANT PALETTE AND CONCEPTUAL LANDSCAPE DESIGN NARRATIVE ON SHEET PP–30

OPEN SPACE TRACT 'F' SEE SHEET PP-30 FOR PRELIMINARY DESCRIPTION- TYPICAL

PROPOSED AMENITY TYPES 'A,B,C,D,E,F,G'–TYP. REFER TO SHEET PP–30 FOR TABLE

MONUMENT LOCATION AND ENTRY LANDSCAPING

F PROPOSED 5' WIDTH SOFT SURFACE TRAIL

OPEN SPACE TRACT 'C'

DETENTION POND

PROPERTY BOUNDARY– TYP.

LAWN

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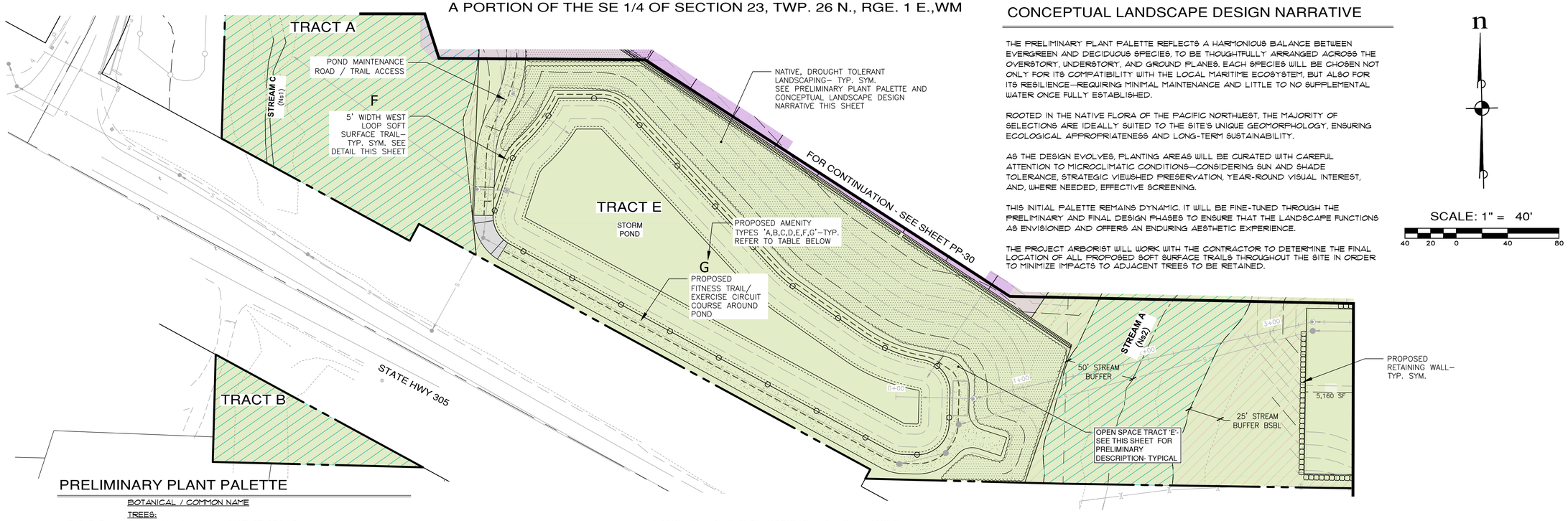
A PORTION OF THE SE 1/4 OF SECTION 23, TWP. 26 N., RGE. 1 E.,WM



CONCEPTUAL LANDSCAPE DESIGN NARRATIVE

THE PRELIMINARY PLANT PALETTE REFLECTS A HARMONIOUS BALANCE BETWEEN EVERGREEN AND DECIDUOUS SPECIES, TO BE THOUGHTFULLY ARRANGED ACROSS THE OVERSTORY, UNDERSTORY, AND GROUND PLANES. EACH SPECIES WILL BE CHOSEN NOT ONLY FOR ITS COMPATIBILITY WITH THE LOCAL MARITIME ECOSYSTEM, BUT ALSO FOR ITS RESILIENCE—REQUIRING MINIMAL MAINTENANCE AND LITTLE TO NO SUPPLEMENTAL WATER ONCE FULLY ESTABLISHED.

ROOTED IN THE NATIVE FLORA OF THE PACIFIC NORTHWEST, THE MAJORITY OF SELECTIONS ARE IDEALLY SUITED TO THE SITE'S UNIQUE GEOMORPHOLOGY, ENSURING ECOLOGICAL APPROPRIATENESS AND LONG-TERM SUSTAINABILITY.

AS THE DESIGN EVOLVES, PLANTING AREAS WILL BE CURATED WITH CAREFUL ATTENTION TO MICROCLIMATIC CONDITIONS—CONSIDERING SUN AND SHADE TOLERANCE, STRATEGIC VIEWSHED PRESERVATION, YEAR-ROUND VISUAL INTEREST, AND, WHERE NEEDED, EFFECTIVE SCREENING.

THIS INITIAL PALETTE REMAINS DYNAMIC. IT WILL BE FINE-TUNED THROUGH THE PRELIMINARY AND FINAL DESIGN PHASES TO ENSURE THAT THE LANDSCAPE FUNCTIONS AS ENVISIONED AND OFFERS AN ENDURING AESTHETIC EXPERIENCE.

THE PROJECT ARBORIST WILL WORK WITH THE CONTRACTOR TO DETERMINE THE FINAL LOCATION OF ALL PROPOSED SOFT SURFACE TRAILS THROUGHOUT THE SITE IN ORDER TO MINIMIZE IMPACTS TO ADJACENT TREES TO BE RETAINED.

n

SCALE: 1" = 40'

40 20 0 40 80

PRELIMINARY PLANT PALETTE

BOTANICAL / COMMON NAME

TREES:

Calocedrus decurrens / INCENSE CEDAR +

Pinus contorta 'Contorta' / SHORE PINE +

Arctostaphylos columbiana 'St. Helens' / PACIFIC MANZANITA

Tsuga mertensiana / MOUNTAIN HEMLOCK

Acer japonicum / JAPANESE MAPLE

Acer circinatum 'Sunny Sister' / VINE MAPLE

Cornus nuttalli 'Goldspot' / PACIFIC DOGWOOD

Amelanchier canadensis 'Sprizam' / SPRING GLORY SERVICEBERRY

SHRUBS:

Rosa gymnocarpa / BALDHIP ROSE

Philadelphus lewisii / MOCK ORANGE

Symphoricarpos albus / COMMON SNOWBERRY

Ribes sanguineum 'King Edward VII' / FLOWERING CURRANT

Mahonia nervosa / LOW OREGON GRAPE

Viburnum plicatum tomentosum 'Shasta' / SHASTA VIBURNUM

Vaccinium ovatum 'Cascade Sunburst' / EVERGREEN HUCKLEBERRY

Ceanothus sanguineus / REDSTEM CEANOTHUS

Morella californica / PACIFIC WAX MYRTLE

Spiraea betulifolia 'Tor Gold' / GOLD BIRCHLEAF SPIRAEA

Rhododendron 'Northern Lights' Series / NORTHERN LIGHTS AZALEA

Pinus mugo 'Pumilio' / DWARF MUGO PINE

Lewisia cotyledon / CLIFF MAID

GROUNDCOVERS, PERENNIALS, FERNS AND GRASSES:

Festuca idahoensis / IDAHO FESCUE

Athyrium filix-femina / LADY FERN

Sildacea asprella ssp. elegans 'Josephine' / CHECKER MALLOW

Pennstemon davidsonii / DAVIDSON'S BEARDTONGUE

Polymonium carneum / JACOB'S LADDER

Maianthemum dilitatum / MAY LILY

Asarum caudatum / WILD GINGER

Geranium oreganum / WESTERN GERANIUM

Claytonia lanceolata / WESTERN SPRING BEAUTY

Fine turf quality hydroseeded lawn

AMENITY DESCRIPTIONS

THIS PROJECT IS REQUIRED TO PROVIDE: (3) ACTIVE GROUP 1 AMENITIES AND (2) ACTIVE GROUP 2 AMENITIES

LETTER	AMENITY TYPE	AMENITY DESCRIPTION
A	PASSIVE GROUP 1 ACTIVITIES	PASSIVE SEATING AREAS CONNECTED BY A WALKING PATH AND/ OR OPEN LAWN
B	PASSIVE GROUP 1 ACTIVITIES	PICNIC AREA WITH IMPROVED SEATING AREA AND MIN. 2 PICNIC TABLES AND OPEN PLAY AREA LAWN
C	ACTIVE GROUP 1 AMENITIES	PLAYGROUND WITH LARGE PLAY STRUCTURE AND CURB CONTAINMENT
D	ACTIVE GROUP 1 AMENITIES	MULTI-PURPOSE SPORT COURT OR OTHER TYPE OF SPORT COURT (PICKLEBALL, SHUFFLEBOARD, ETC.)
E	PASSIVE GROUP 2 AMENITIES	NATURE INTERPRETIVE AREAS/ VIEWING AREAS/ GARDENS WITH TRAIL AND EDUCTIONAL SIGNAGE
F	PASSIVE GROUP 1 AMENITIES	5' WIDTH SOFT SURFACE TRAIL/ WALKING PATH
G	ACTIVE GROUP 2 AMENITIES	OUTDOOR EXERCISE CIRCUIT WITH TRAIL AND STRETCHING STATIONS

CUMULATIVE AMENITY CALCULATIONS BY PHASE:

PHASE 1:

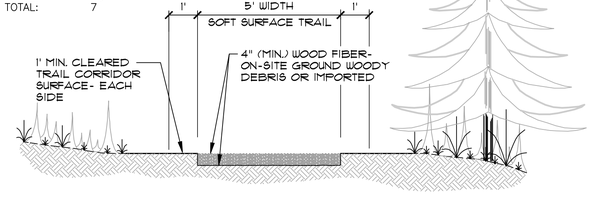
GROUP 1 TOTAL: 15
GROUP 2 TOTAL: 4

PHASE 1+2:

GROUP 1 TOTAL: 21
GROUP 2 TOTAL: 5

PHASE 1+2+3:

GROUP 1 TOTAL: 26
GROUP 2 TOTAL: 7



SOFT SURFACE TRAIL

NOT TO SCALE

OPEN SPACE TRACT DESCRIPTIONS

PHASE	TRACT NAME	AMENITY TYPE(S) PROPOSED	CITY OF POULSBO AMENITY GROUP	CONCEPTUAL OVERVIEW
1	E	F, G	(1) Group 1 (1) Group 2	LOOP TRAIL AROUND DETENTION POND WITH EXERCISE STATIONS AND EDUCATIONAL SIGNAGE
1	F	A, B, C, D, F	(5) Group 1	NEIGHBORHOOD PARK WITH PICNIC TABLES, PASSIVE SEATING, OPEN PLAY LAWN, MULTI-USE SPORT COURT, PLAYGROUND, WALKING PATH, AND INTERPRETIVE SIGNAGE ABOUT LIBERTY BAY
2	Q	N/A	N/A	COMPLIMENTARY LANDSCAPING
2	R	A, B, E	(2) Group 1 (1) Group 2	POCKET PARK WITH PASSIVE SEATING, PICNIC TABLES, AND SPECIMEN TREE WITH INTERPRETIVE SIGNAGE
1	S	N/A	N/A	VEGETATED STEEP SLOPE, COMPLIMENTARY LANDSCAPING
2	T	A, B, C, F	(4) Group 1	NEIGHBORHOOD PARK WITH MULTI-AGE PLAYGROUND, PASSIVE SEATING, AND PICNIC TABLES
3	U	A, B, C, E	(3) Group 1 (1) Group 2	NEIGHBORHOOD PARK WITH PICNIC TABLES, PLAY LAWN, TINY TOT PLAYGROUND AND NATURE/ INTERPRETIVE VIEW AREA
3	V	B, E, F	(2) Group 1 (1) Group 2	POCKET PARK WITH PASSIVE SEATING AREA, OPEN LAWN, VIEW OF BAY, AND NATURE/ INTERPRETIVE/ EDUCATIONAL SIGNAGE ABOUT LIBERTY BAY
1	W	A, B, E, F	(3) Group 1 (1) Group 2	POCKET PARK WITH WETLAND 'A' INTERPRETIVE VIEW AREA WITH LOOPED SOFT SURFACE TRAIL, PASSIVE SEATING, INTERPRETIVE/ EDUCATIONAL SIGNAGE, AND PICNIC TABLES
1	X	A, B, C, E, F	(4) Group 1 (1) Group 2	NEIGHBORHOOD PARK ROSE / POLLINATOR GARDEN WITH WALKING PATH, EDUCATIONAL SIGNAGE, AND SOFT SURFACE TRAIL CLIMB WITH TIMBER CRIB STAIRS TO UPPER PLAYGROUND, AND OVERLOOK WITH PASSIVE SEATING AREA
1	Y	B, E, F	(2) Group 1 (1) Group 2	POCKET PARK WITH BAY VIEW GAZEBO, NATIVE GARDEN, EDUCATIONAL SIGNAGE, PICNIC AREA, CONNECTING SOFT SURFACE TRAIL AND OPEN PLAY LAWN

NOTE: DETAILS AND SPECIFICATIONS FOR ALL PROPOSED AMENITIES WILL BE PROVIDED DURING CONSTRUCTION PLAN REVIEW AND APPROVAL FOLLOWING PRD APPROVAL BY THE CITY OF POULSBO

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

CUMULATIVE ACTIVE & PASSIVE OPEN SPACE CALCULATIONS

CRITICAL AREAS & BUFFERS WITHIN TOTAL SITE AREA= 485,486 SF

PHASE (LOTS & PASSIVE O.S. / CRITICAL AREAS)	NO. OF LOTS	O.S. TRACTS W/IN PHASE	TOTAL PHASE AREA (SF)	CUMULATIVE PHASE AREA (SF)	REQUIRED O.S. (SF) AREA (20% OF CUMULATIVE PHASE AREA)	CUMULATIVE PROPOSED TOTAL O.S. TRACT AREA WITHIN PHASE (% OF REQ'D O.S.)	TOTAL PROPOSED CRITICAL AREA O.S. (SF) (% OF REQ'D O.S.)	COMPLIES WITH CITY OF POULSBO OPEN SPACE REQ. 18.260.090(G)(2)
1 / 1	54	E,F,S,W,X,Y	1,182,394	1,182,394	X 0.20= 236,479	124,169 SF (53%)	112,310 SF (47%)	✓
2	45	Q,R,T	+ 234,092	1,416,486	X 0.20= 283,297	147,559 SF (52%)	135,738 SF (48%)	✓
3	39	U,V	+ 190,820	1,607,306	X 0.20= 321,461	162,607 SF (51%)	158,854 SF (49%)	✓

REQUIRED OPEN SPACE (PMC 18.260.090)

OPEN SPACE OUTSIDE OF CRITICAL AREAS & BUFFERS.....208,418 SF (58%)

OPEN SPACE WITHIN CRITICAL AREAS & BUFFERS.....152,351 SF (42%)

REQUIRED OPEN SPACE (20% OF GROSS AREA OF PROJECT SITE AT 1,803,847 SF).....360,769 SF

* THIS DATA TABLE IS INTENDED TO DISTINGUISH REQUIRED OPEN SPACE OBLIGATIONS FROM THE TOTAL ON-SITE OPEN SPACE AREA AND ASSOCIATED CALCULATIONS. FOR CLARITY, THE TABULATION REFLECTS ONLY THE MINIMUM CODE-MANDATED OPEN SPACE REQUIREMENT AND DEMONSTRATES THAT LESS THAN 50 PERCENT OF THAT REQUIRED OPEN SPACE IS BEING SATISFIED WITHIN DESIGNATED CRITICAL AREAS AND THEIR ASSOCIATED BUFFERS, AS OPPOSED TO REPRESENTING THE FULL EXTENT OF ALL OPEN SPACE PROVIDED ON THE SITE.

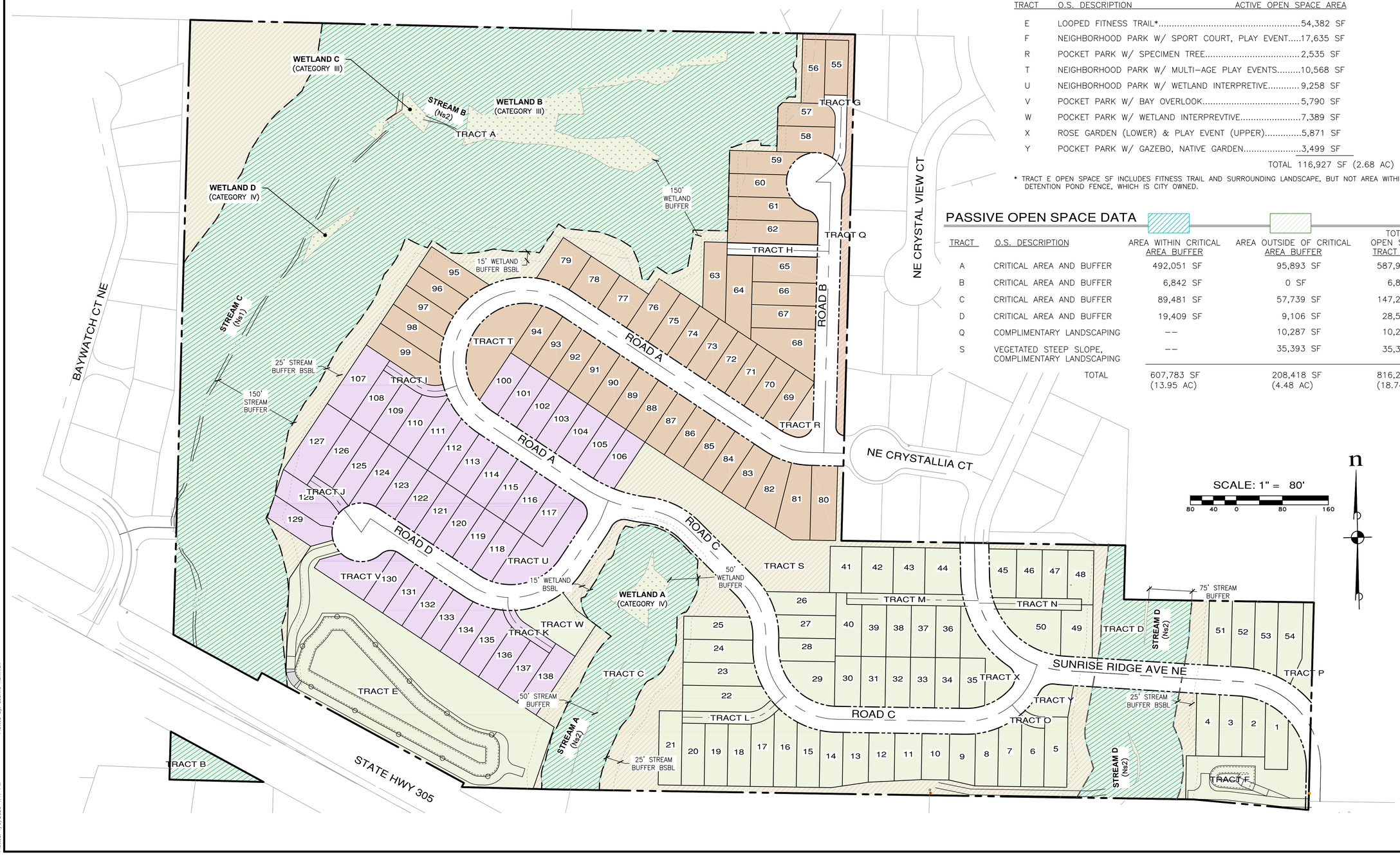
ACTIVE OPEN SPACE DATA

TRACT	O.S. DESCRIPTION	ACTIVE OPEN SPACE AREA
E	LOOPED FITNESS TRAIL*	54,382 SF
F	NEIGHBORHOOD PARK W/ SPORT COURT, PLAY EVENT	17,635 SF
R	POCKET PARK W/ SPECIMEN TREE	2,535 SF
T	NEIGHBORHOOD PARK W/ MULTI-AGE PLAY EVENTS	10,568 SF
U	NEIGHBORHOOD PARK W/ WETLAND INTERPRETIVE	9,258 SF
V	POCKET PARK W/ BAY OVERLOOK	5,790 SF
W	POCKET PARK W/ WETLAND INTERPREVTIVE	7,389 SF
X	ROSE GARDEN (LOWER) & PLAY EVENT (UPPER)	5,871 SF
Y	POCKET PARK W/ GAZEBO, NATIVE GARDEN	3,499 SF
	TOTAL	116,927 SF (2.68 AC)

* TRACT E OPEN SPACE SF INCLUDES FITNESS TRAIL AND SURROUNDING LANDSCAPE, BUT NOT AREA WITHIN DETENTION POND FENCE, WHICH IS CITY OWNED.

PASSIVE OPEN SPACE DATA

TRACT	O.S. DESCRIPTION	AREA WITHIN CRITICAL AREA BUFFER	AREA OUTSIDE OF CRITICAL AREA BUFFER	TOTAL OPEN SPACE TRACT AREA
A	CRITICAL AREA AND BUFFER	492,051 SF	95,893 SF	587,944 SF
B	CRITICAL AREA AND BUFFER	6,842 SF	0 SF	6,842 SF
C	CRITICAL AREA AND BUFFER	89,481 SF	57,739 SF	147,220 SF
D	CRITICAL AREA AND BUFFER	19,409 SF	9,106 SF	28,515 SF
Q	COMPLIMENTARY LANDSCAPING	--	10,287 SF	10,287 SF
S	VEGETATED STEEP SLOPE, COMPLIMENTARY LANDSCAPING	--	35,393 SF	35,393 SF
	TOTAL	607,783 SF (13.95 AC)	208,418 SF (4.48 AC)	816,201 SF (18.74 AC)



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31 OF 31 SHEETS

HEATH & ASSOCIATES

Transportation Planning & Engineering

TRAFFIC IMPACT ANALYSIS

The Pinnacle at Liberty Bay

Poulsbo, Washington

April 2026

1011 E Main Ave Suite 453 | Puyallup, WA | 98372
(253) 770-1401| heathtraffic.com

Attachment 3

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

Prepared for:

Montebanc Management, LLC
c/o Paul Devenzio, Chip McBroom

Prepared by:

Heath & Associates
PO Box 397
Puyallup, WA 98371
(253) 770 1401
Heathtraffic.com

License:

4/9/2026

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.

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

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FIGURES

THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

1. INTRODUCTION

Heath & Associates has been engaged to prepare a Traffic Impact Analysis (TIA) to assess the impacts of a proposed residential development within Poulsbo city limits. The tasks include reviewing existing traffic conditions in the site vicinity and comparing them to future buildout conditions, both with and without the proposed development. As a final step, conclusions, and if necessary, mitigation measures, will be identified. The TIA requirements were established during the scoping process with City staff. This TIA has been updated based on the March 2026 site plan, including a revised layout consisting of 138 dwelling units.

2. PROJECT DESCRIPTION

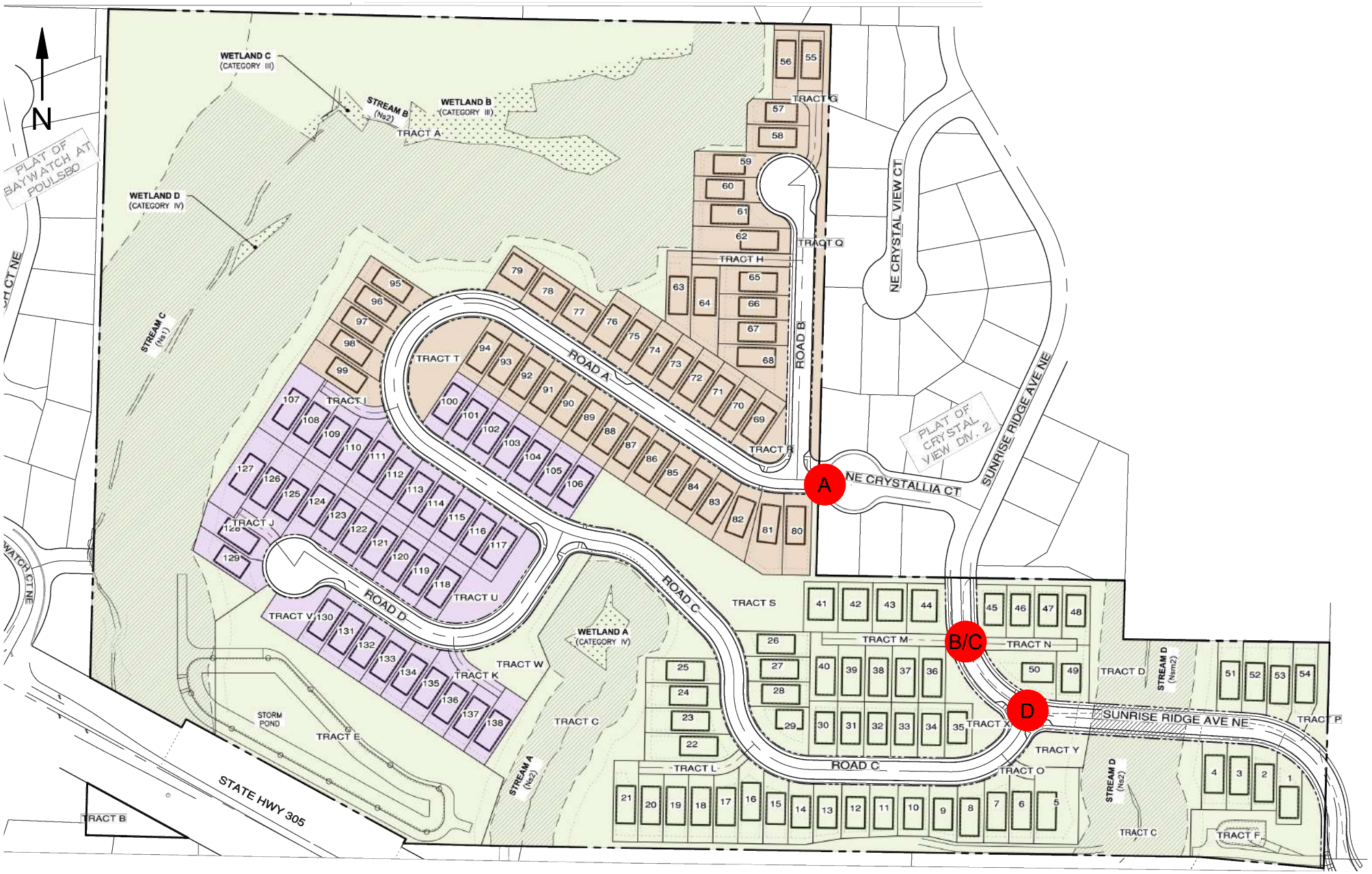
- **Proposal**
  - The Pinnacle at Liberty Bay is a proposed residential development consisting of 138 single-family homes located within Poulsbo.

- **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 four locations:
    1. Access A: Sunrise Ridge Avenue via extension of Crystallia Court
    2. Access B/C: Both sides of Sunrise Ridge Avenue 220 feet south of Crystallia Court
    3. Access D: Sunrise Ridge Avenue 380 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



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PINNACLE AT LIBERTY BAY

SITE PLAN
FIGURE 2

3. STUDY AREA

Study intersections were identified through scoping process and approved by City of Poulsbo staff. A total of seven study intersections were included in this analysis:

1. SR 305 & NE Hostmark Street
2. SR 305 & Baywatch Court NE
3. SR 305 & Johnson Road NE
4. NE Hostmark Street & Caldart Avenue NE
5. Johnson Road NE & Sunrise Ridge Avenue NE
6. Caldart Avenue NE & Sunrise Ridge Avenue NE
7. Sunrise Ridge Avenue NE & Crystallia Court

At the time of this analysis, Sunrise Ridge Avenue NE was gated to the northwest of Johnson Road NE. Therefore, the intersection of Sunrise Ridge Avenue NE & Crystallia Court (#7) currently operates with very low traffic volumes and was not included in this study's existing conditions analysis.

The Sunrisde Ridge Avenue NE connection to Johnson Road NE will be completed as part of The Pinnacle at Liberty Bay Phase 1; therefore the future conditions analysis considered all seven study intersections.

4. EXISTING CONDITIONS

4.1 Existing Street System

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

Table 1: 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 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: Bus 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

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.

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

At the time of this analysis, Sunrise Ridge Avenue NE is closed 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 Peak Hour Volumes and Travel Patterns

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

1. SR 305 & NE Hostmark Street
2. SR 305 & Baywatch Court NE
3. SR 305 & Johnson Road NE
4. NE Hostmark Street & Caldart Avenue NE
5. Johnson Road NE & Sunrise Ridge Avenue NE

Traffic volumes at the intersections of Sunrise Ridge Avenue NE & Caldart Avenue and Sunrise Ridge Avenue NE & Crystallia Court were estimated based on traffic counts at nearby intersections and existing development patterns. Trips generated by existing development in the vicinity of the intersections were estimated using methodology and data published in the Institute of Transportation Engineers *Trip Generation Manual 11th Edition*.

Traffic counts at each 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**. **Figures 3 and 4** illustrate existing AM and PM peak hour volumes at counted intersections. Full turning movement count sheets are available in the appendix.

Table 3: 2025 Peak Hours

Study Intersection	AM Peak Hour	PM Peak Hour
SR 305 & Hostmark	7:00 – 8:00 AM	4:00 – 5:00 PM
SR 305 & Baywatch	8:00 – 9:00 AM	4:30 – 5:30 PM
SR 305 & Johnson	7:00 – 8:00 AM	4:15 – 5:15 PM
Hostmark & Caldart	7:15 – 8:15 AM	4:45 – 5:45 PM
Johnson Rd & Sunrise Ridge	7:15 – 8:15 AM	4:00 – 5:00 PM

Traffic volume data indicated that the morning peak hour generally coincides with the school drop-off period and the morning commuter "rush hour." These concurrent phenomena are reflected in the AM peak hour analyses described in this report. The afternoon school peak period is generally brief and is offset from the overall afternoon peak hour of travel demand, which occurs later and is characterized by commuters returning home from work as well as recreational and shopping trips. The PM peak hour analysis described in this report focused on the overall systemwide peak to provide a worst-case analysis.

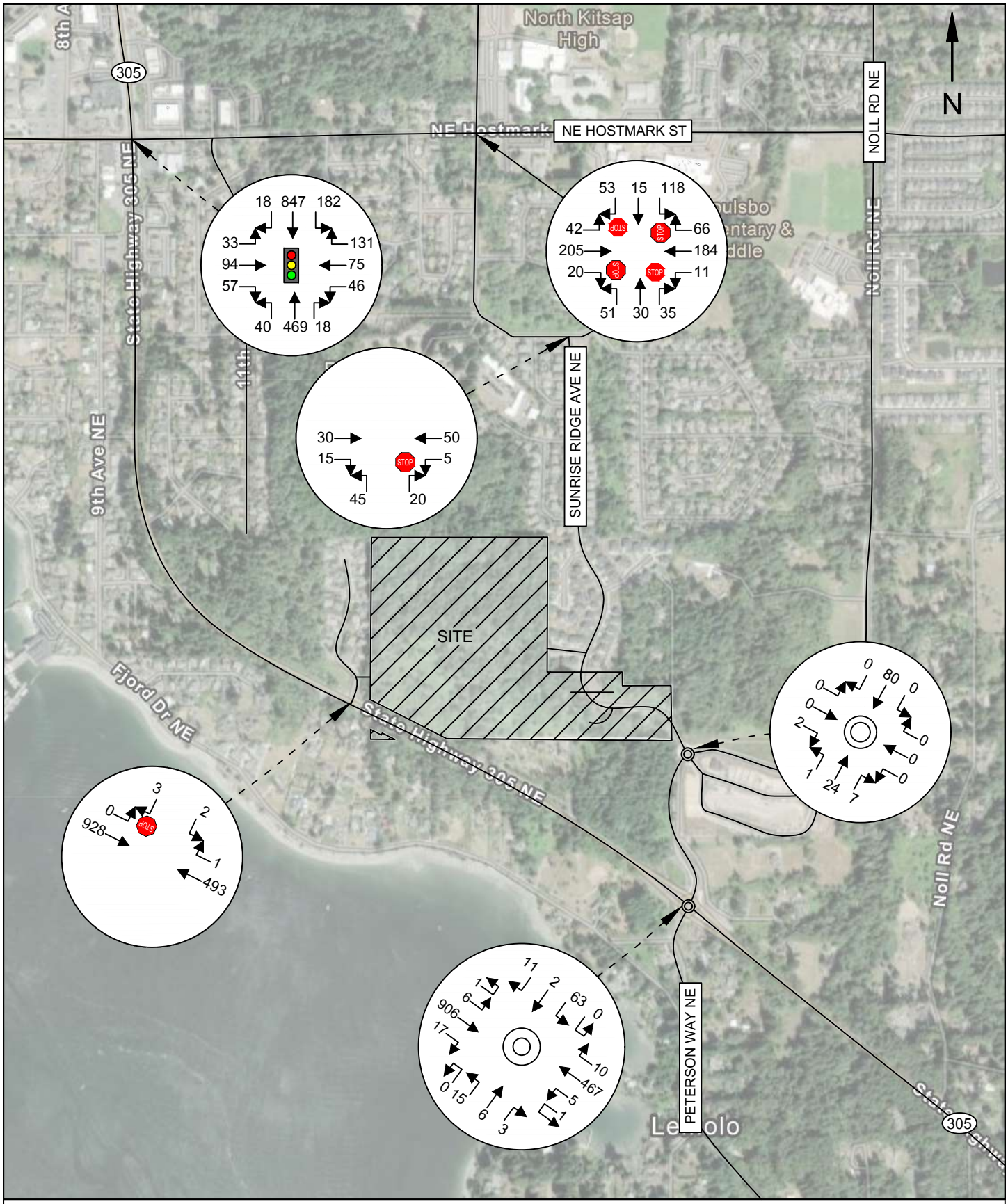
4.5 Nonmotorized Conditions

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.

The internal circulating street network will include sidewalks and marked pedestrian crosswalks in the project site.

School-aged residents of the project would likely attend Poulsbo Elementary School and Poulsbo Middle School, both located approximately 1.0-miles walking distance to the north of 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.



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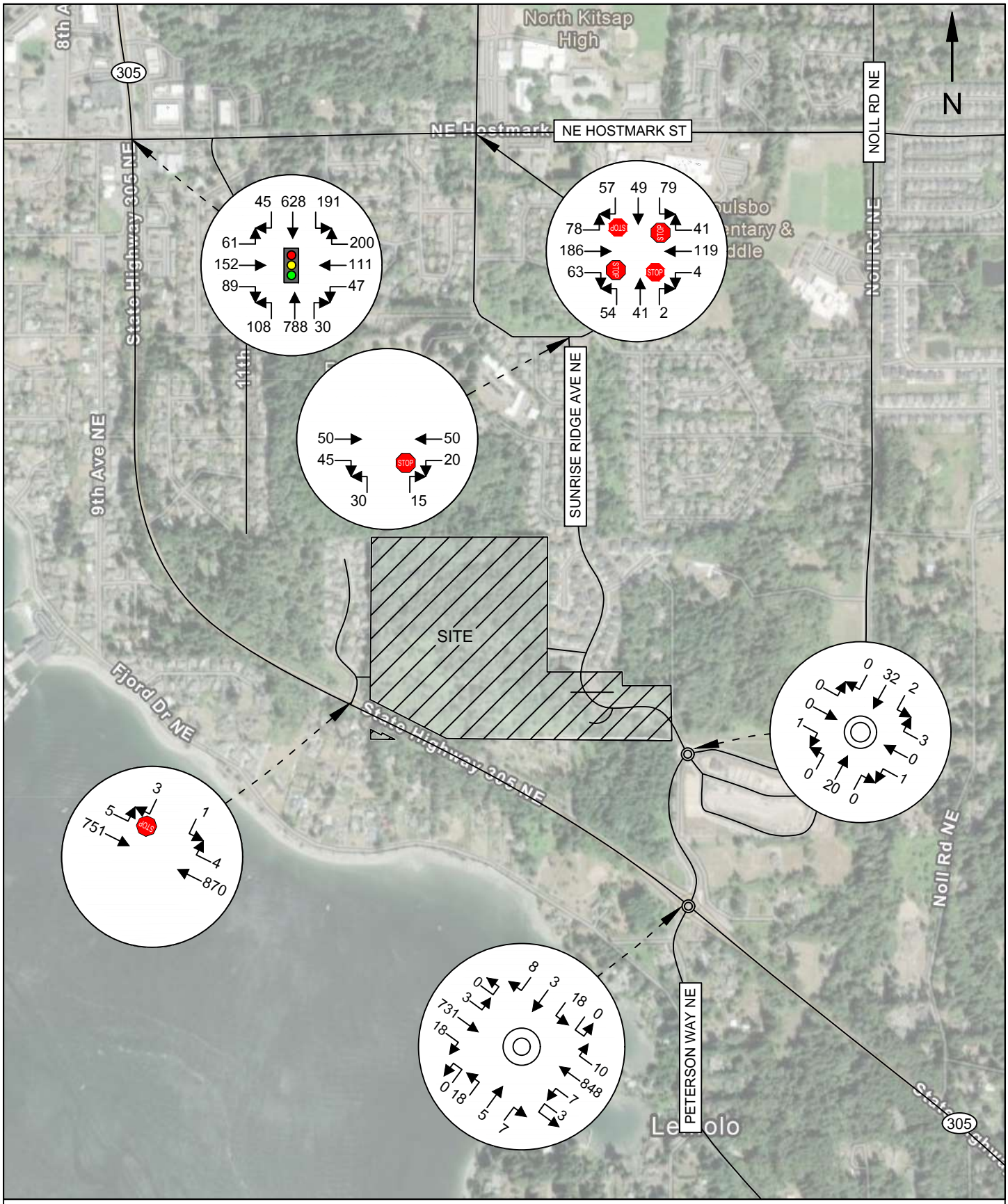
PINNACLE AT LIBERTY BAY

EXISTING AM PEAK HOUR VOLUMES
FIGURE 3



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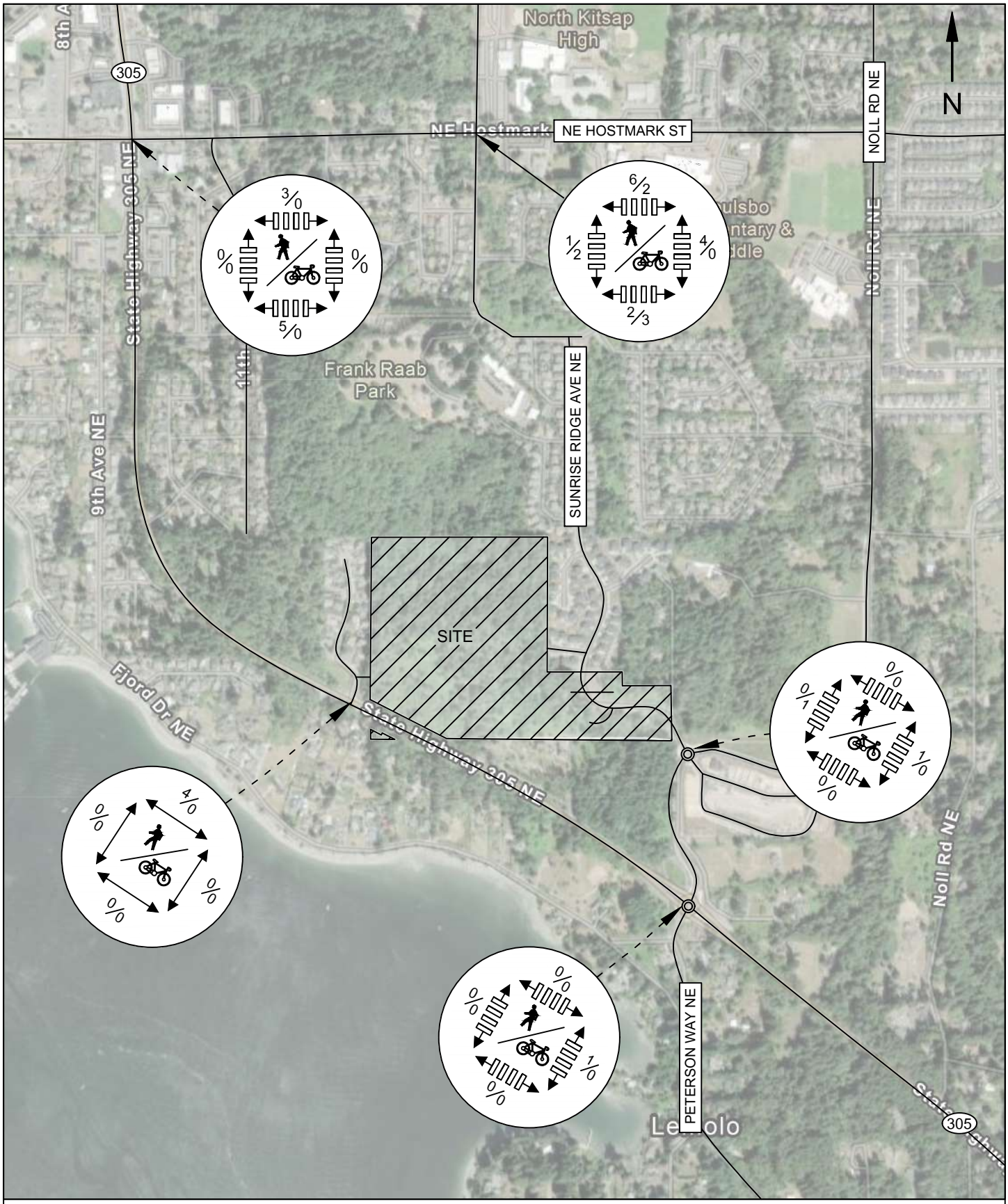
PINNACLE AT LIBERTY BAY

EXISTING PM PEAK HOUR VOLUMES
FIGURE 4



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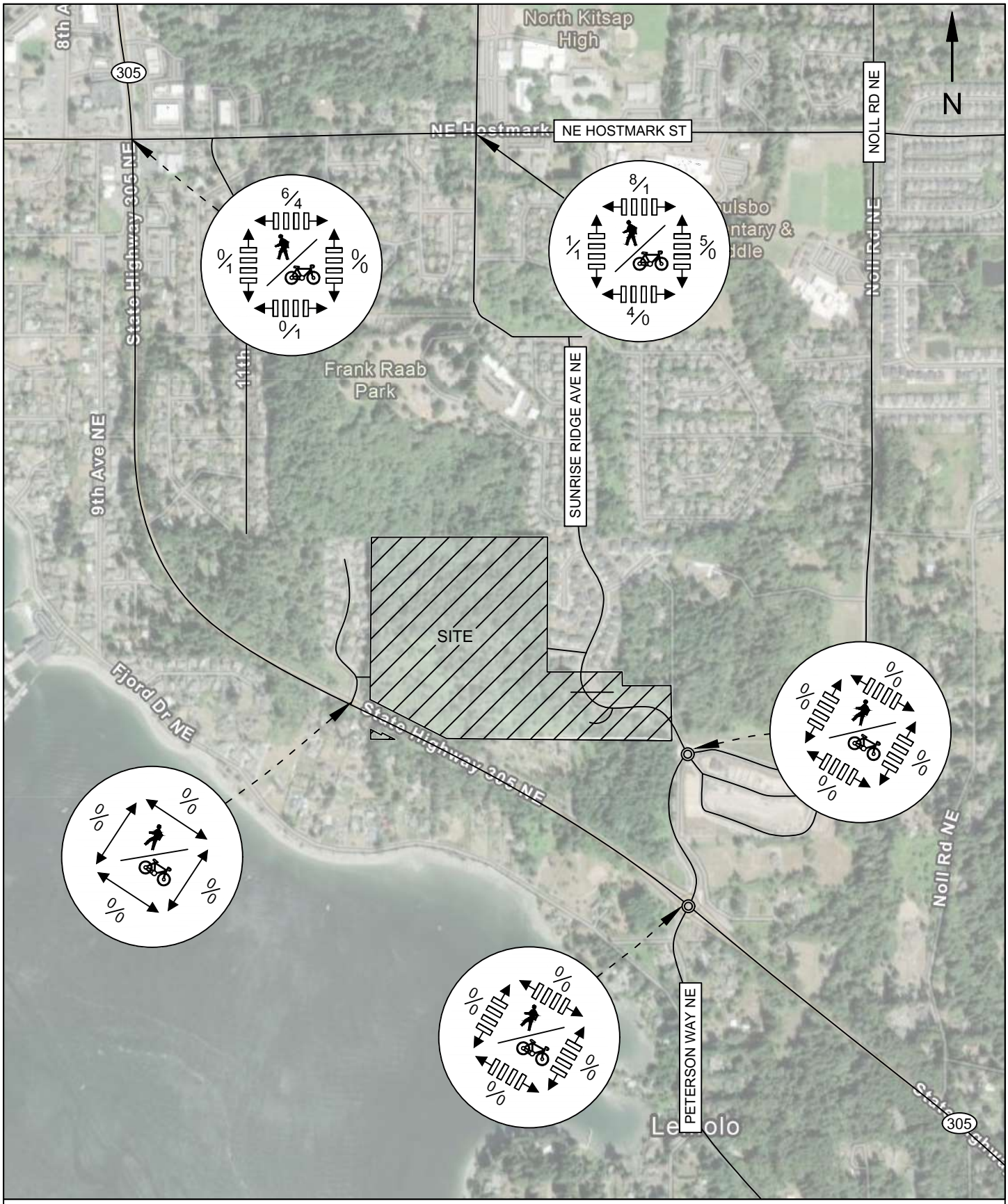
EXISTING AM PEAK HOUR NON-MOTORIST VOLUMES
FIGURE 5



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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

4.6 Existing Level of Service

Level of Service (LOS) is a measure of congestion for transportation facilities which uses a range[2] 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 10 software using WSDOT Sidra analysis guidance. Results of the existing LOS analysis are summarized in **Table 4**.

The City of Poulsbo has adopted a minimum LOS E standard for City intersections. Minimum LOS standards for State-owned facilities are set by WSDOT. The WSDOT minimum LOS standard for SR 305 is LOS D.

Table 4: Existing Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	Peak Hour	Critical Approach	LOS*	Delay
SR 305 & Hostmark St	Signal	AM	Overall	D	35.9
		PM		D	44.0
SR 305 & Baywatch Ct	One-Way Stop	AM	SB	C	20.5
		PM		C	23.8
SR 305 & Johnson Rd	RAB	AM	Overall	A	7.1
		PM		A	6.4
Hostmark & Caldart	AWSC	AM	Overall	C	15.1
		PM		B	12.0
Johnson Rd & Sunrise Ridge	RAB	AM	Overall	A	5.1
		PM		A	5.1
Caldart Ave & Sunrise Ridge	TWSC	AM	NB	A	9.4
		PM		A	9.7

*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

[2] *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*

All intersections currently operate at LOS D or better, satisfying their respective minimum LOS standards during the AM and PM peak hours.

4.7 Collision History

Crash history data in the project vicinity for the five-year period from 2020 through 2024 was obtained from WSDOT and is summarized below. **Table 5** describes crash history by year.

Table 5: Crash History by Year

(Ref #) Intersection/Segment	**2020**	**2021**	**2022**	**2023**	**2024**	**Total**	**Avg/Yr**
Study Intersections							
(I1) SR 305 & Hostmark St	2	3	2	1	4	12	2.4
(I2) SR 305 & Baywatch Ct	0	0	1	0	1	2	0.4
(I3) SR 305 & Johnson Rd	3	0	3	3	4	13	2.6
(I4) Hostmark St & Caldart Ave	2	1	0	2	0	5	1.0
(I5) Johnson Rd & Sunrise Ridge	0	0	0	0	0	0	0.0
(I6) Caldart Ave & Sunrise Ridge	0	0	0	0	0	0	0.0
(I7) Sunrise Ridge & Crystallia Ct	0	0	0	0	0	0	0.0
Study Street Segments							
(S1) SR 305 s/o Hostmark St	0	2	3	0	2	7	1.4
(S2) SR 305 s/o Baywatch Ct	0	2	0	0	0	2	0.4
(S3) SR 305 s/o Johnson Rd	1	0	0	1	0	2	0.4
(S4) Caldart Ave n/o Hostmark	0	0	0	1	1	2	0.4
Total (All Intersections & Segments)	**8**	**8**	**9**	**8**	**12**	**45**	**9.0**

A total of 45 crashes were recorded in the study area during the five-year study period, including 12 resulting in injury. No serious injury or fatal crashes were reported. Crashes are summarized by type in **Table 6** and by severity in **Table 7**.

Table 6: Crash History by Type

Crash Type	Number of Crashes (2020-2024)										
	Intersections							Street Segments			
	I1	I2	I3	I4	I5	I6	I7	S1	S2	S3	S4
Rear-end	5	0	8	3	0	0	0	3	0	1	0
Enter at angle	2	0	1	1	0	0	0	1	0	0	0
Opposite direction	3	0	1	0	0	0	0	2	0	0	0
Same direction	1	0	0	0	0	0	0	0	0	0	0
Pedestrian-Involved	1	0	0	1	0	0	0	0	0	0	0
Sideswipe	0	0	2	0	0	0	0	1	0	1	0
Struck fixed object	0	2	0	0	0	0	0	0	2	0	2
Vehicle overturned	0	0	1	0	0	0	0	0	0	0	0

Table7: Crash History by Severity

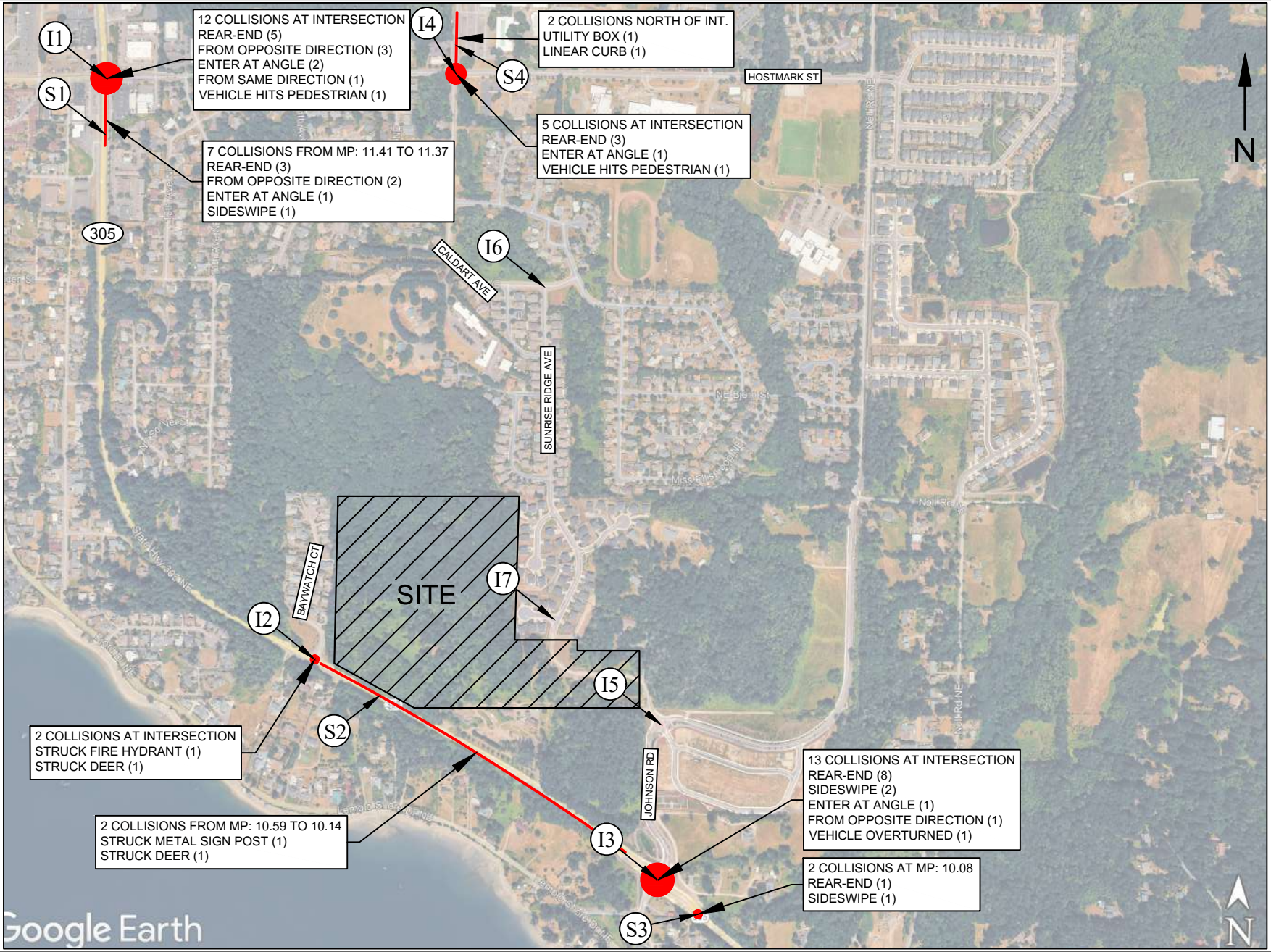
(Ref #) Intersection/Segment	Fatal (K)	Serious Injury (A)	Minor Inj. (B)	Possible Inj. (C)	PDO
(I1) SR 305 & Hostmark St	0	0	1	1	10
(I2) SR 305 & Baywatch Ct	0	0	0	0	2
(I3) SR 305 & Johnson Rd	0	0	2	2	9
(I4) Hostmark St & Caldart Ave	0	0	1	2	2
(I5) Johnson Rd & Sunrise Ridge	0	0	0	0	0
(I6) Caldart Ave & Sunrise Ridge	0	0	0	0	0
(I7) Sunrise Ridge & Crystallia Ct	0	0	0	0	0
(S1) SR 305 s/o Hostmark St	0	0	1	1	5
(S2) SR 305 s/o Baywatch Ct	0	0	0	0	2
(S3) SR 305 s/o Johnson Rd	0	0	1	0	1
(S4) Caldart Ave n/o Hostmark	0	0	0	0	2

Six of the 45 total crashes resulted in minor injuries, and six crashes resulted in possible injuries. Two pedestrian-involved crashes were reported and are summarized below. A crash history map is provided in **Figure 8**.

Vehicle Going Straight Hits Pedestrian (August 2023):
This crash occurred in August 2023 at 2:30 PM when a vehicle traveling eastbound on Hostmark Street struck a pedestrian between Caldart Avenue and Noll Road. The crash occurred in daylight with dry roadway conditions. Pedestrian failure to grant

right-of-way to vehicle was cited as a contributing factor. The collision resulted in a suspected minor injury.

Vehicle Going Straight Hits Pedestrian (October 2024):
This crash occurred at the intersection of SR 305 & Hostmark Street in October 2024 at 5:10 PM vehicle traveling southbound on SR 305 struck a pedestrian. The crash occurred during daylight with a dry roadway surface. Pedestrian failure to grant right-of-way to vehicle was cited as a contributing factor. The crash resulted in a suspected minor injury.



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PINNACLE AT LIBERTY BAY

COLLISION HISTORY MAP
FIGURE 8

5. FORECAST TRAFFIC DEMAND & ANALYSIS

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 8**.

Table 8: 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

Based on ITE data, the project is estimated 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.

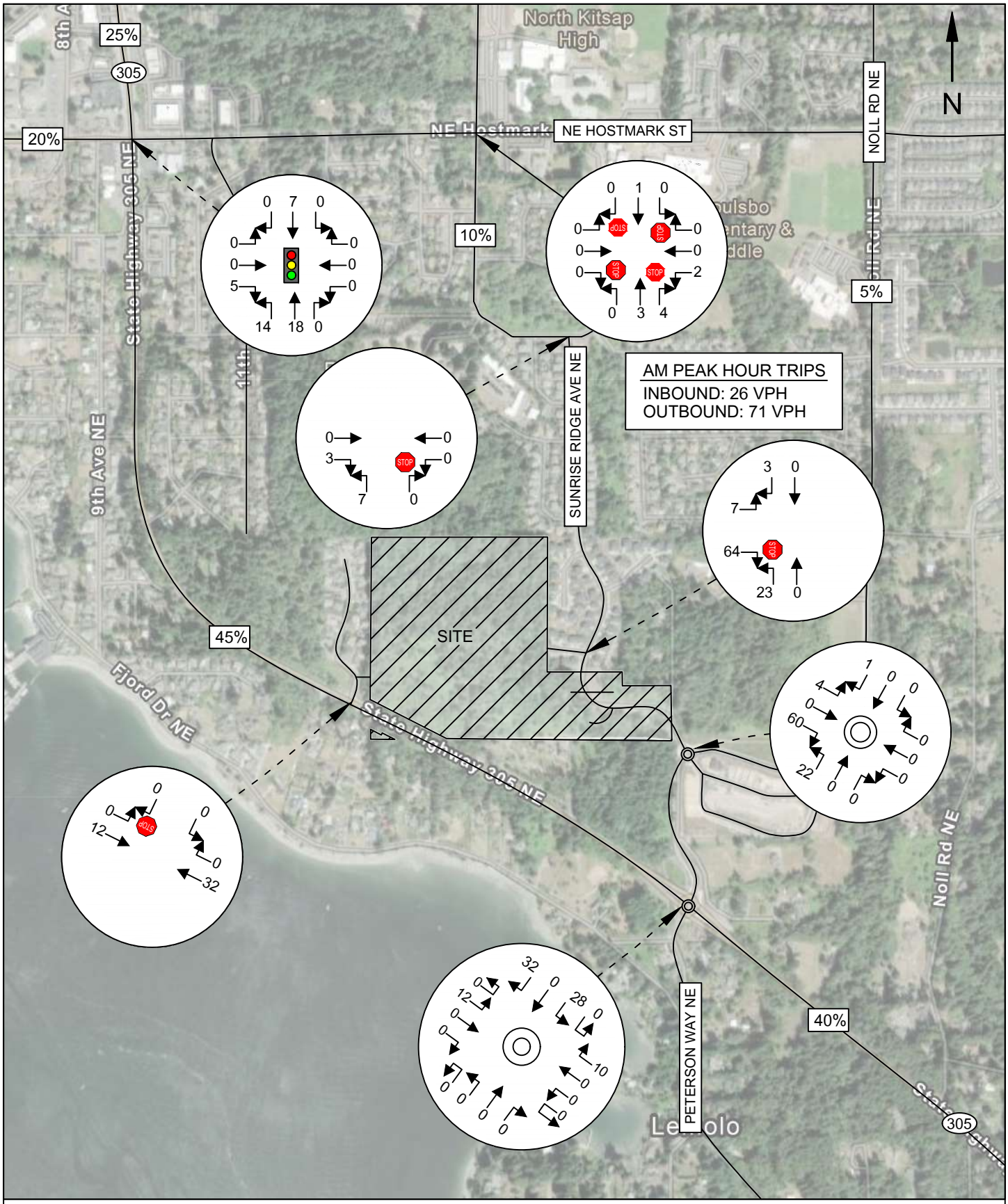
5.3 Future Peak Hour Volumes

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. For SR 305, a growth rate of 0.5 percent per year was applied. This is consistent with SR 305 forecasts identified in the travel demand model, which constitutes the basis of the Transportation Element of the Poulsbo Comprehensive Plan
    b. For all other 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.

All future year analyses assumed 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 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**.



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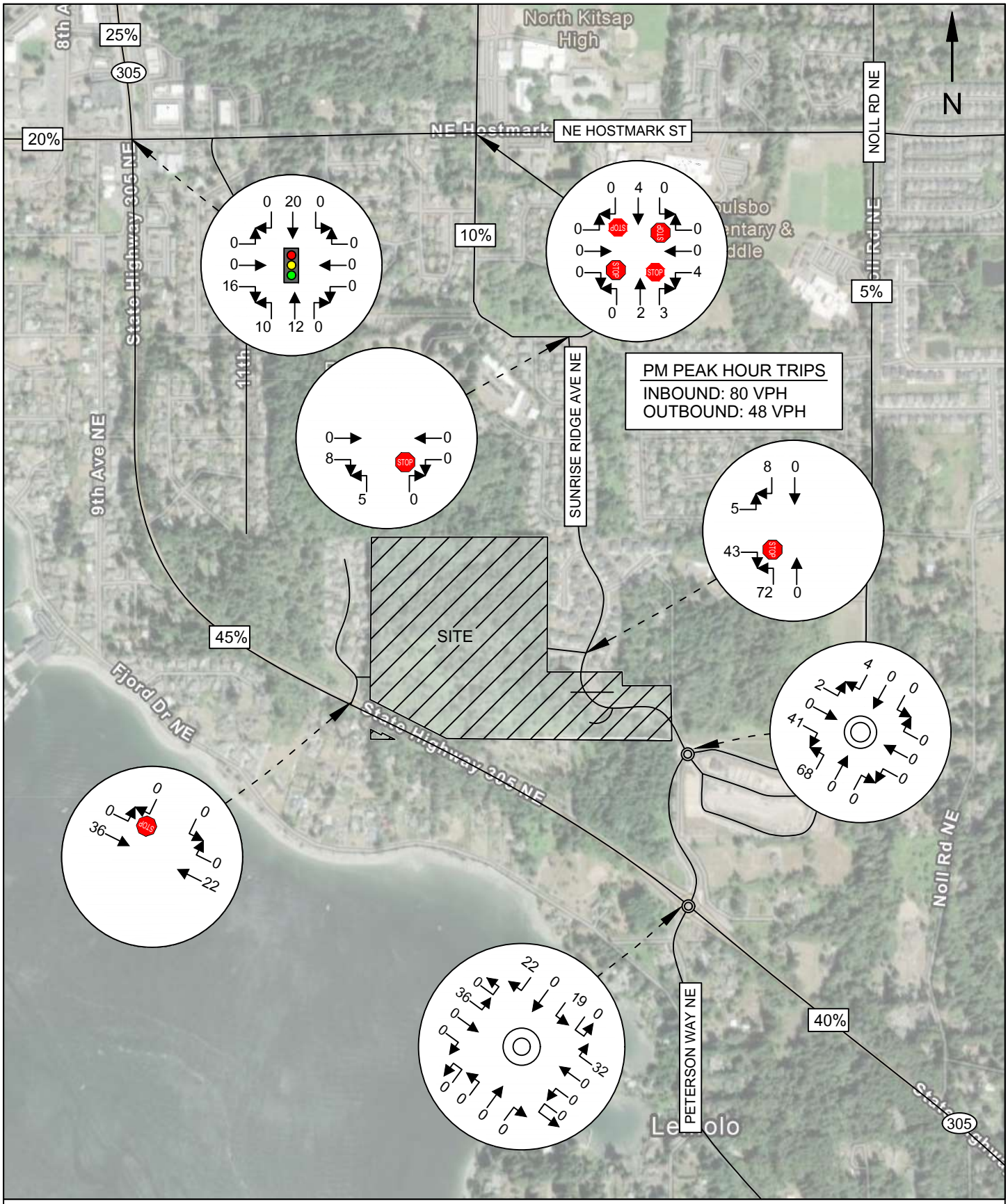
PINNACLE AT LIBERTY BAY

AM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 9



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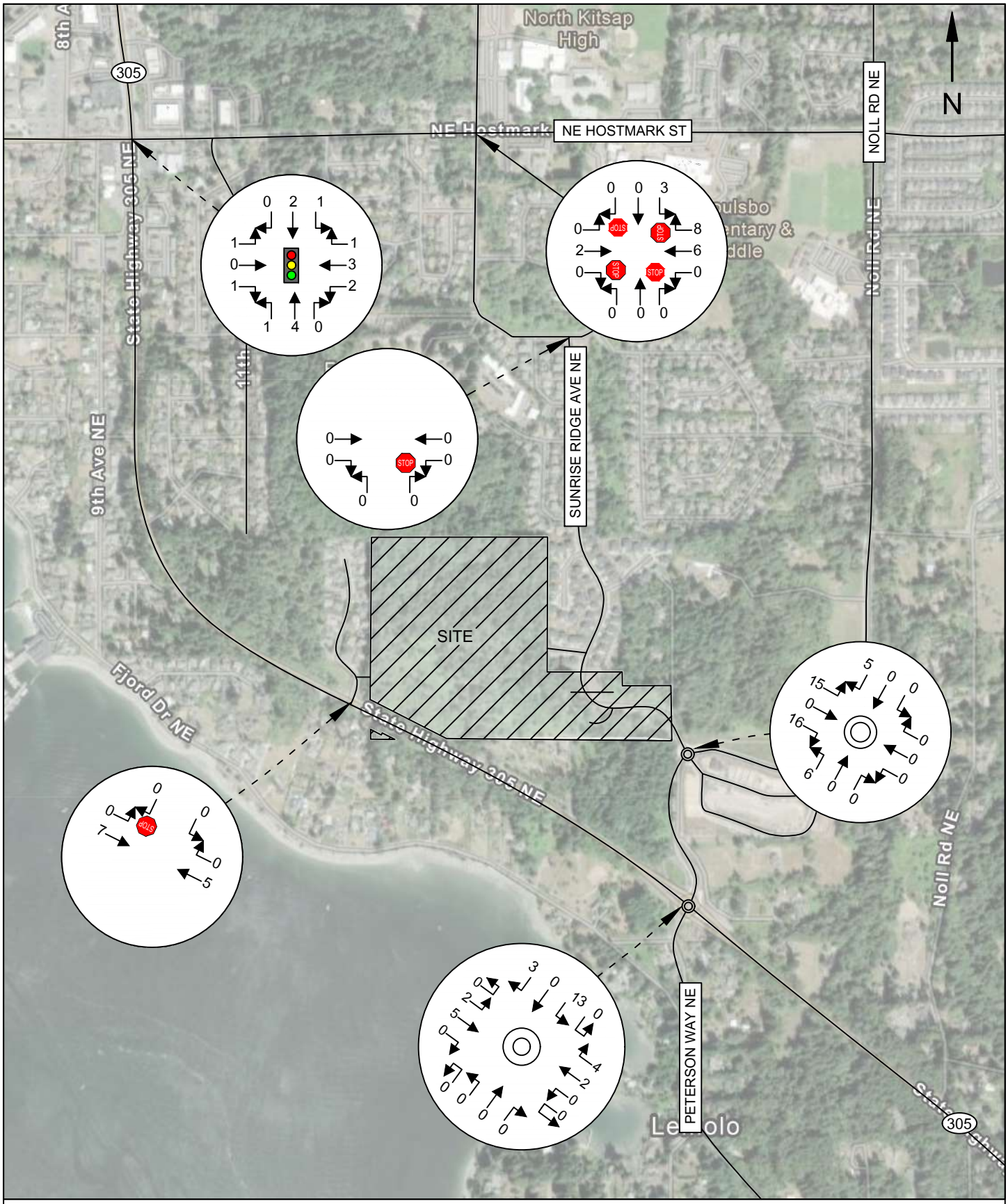
PINNACLE AT LIBERTY BAY

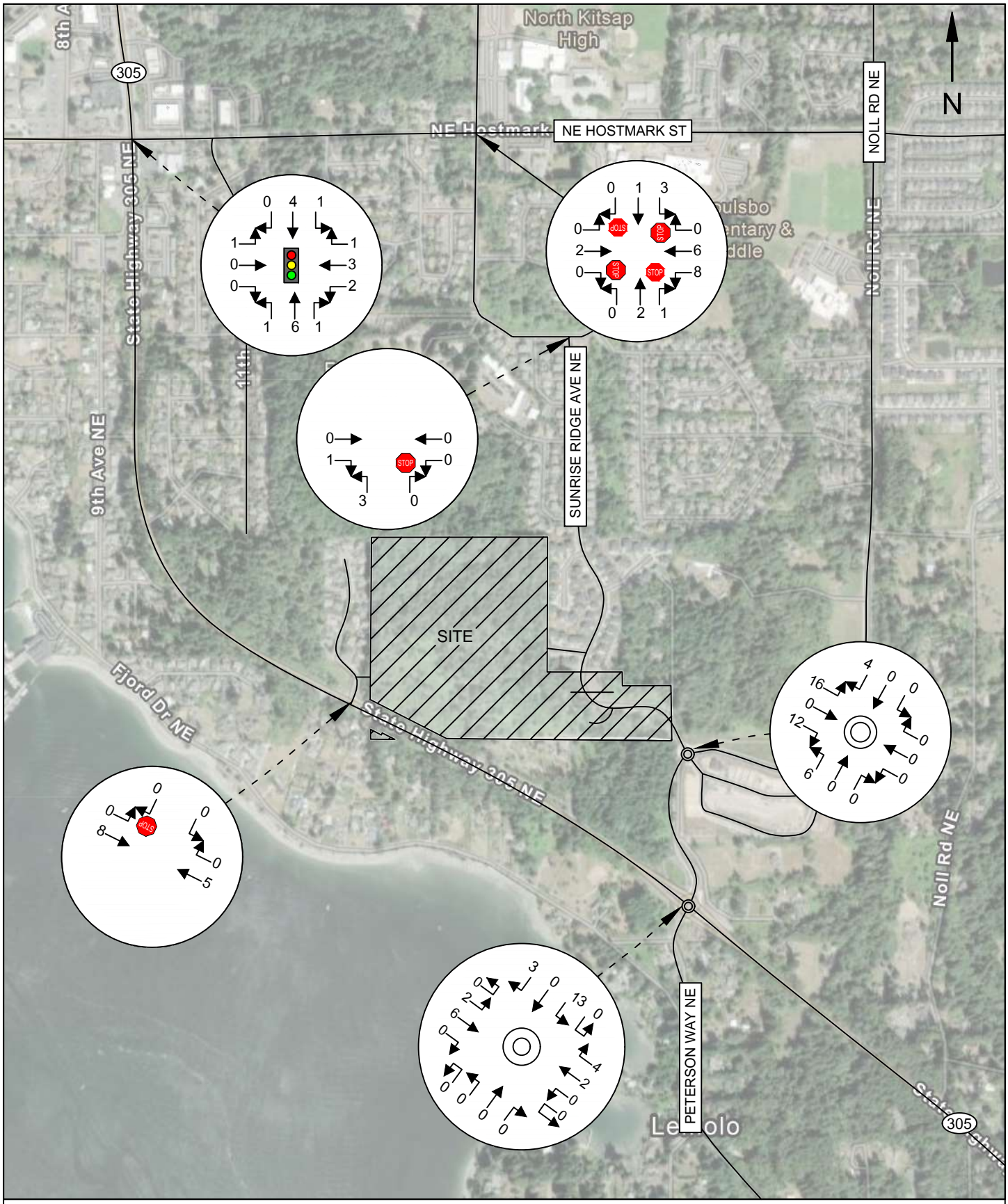
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 10



HEATH&ASSOCIATES
Transportation Planning & Engineering

PINNACLE AT LIBERTY BAY

AM PEAK HOUR PIPELINE VOLUMES
FIGURE 11



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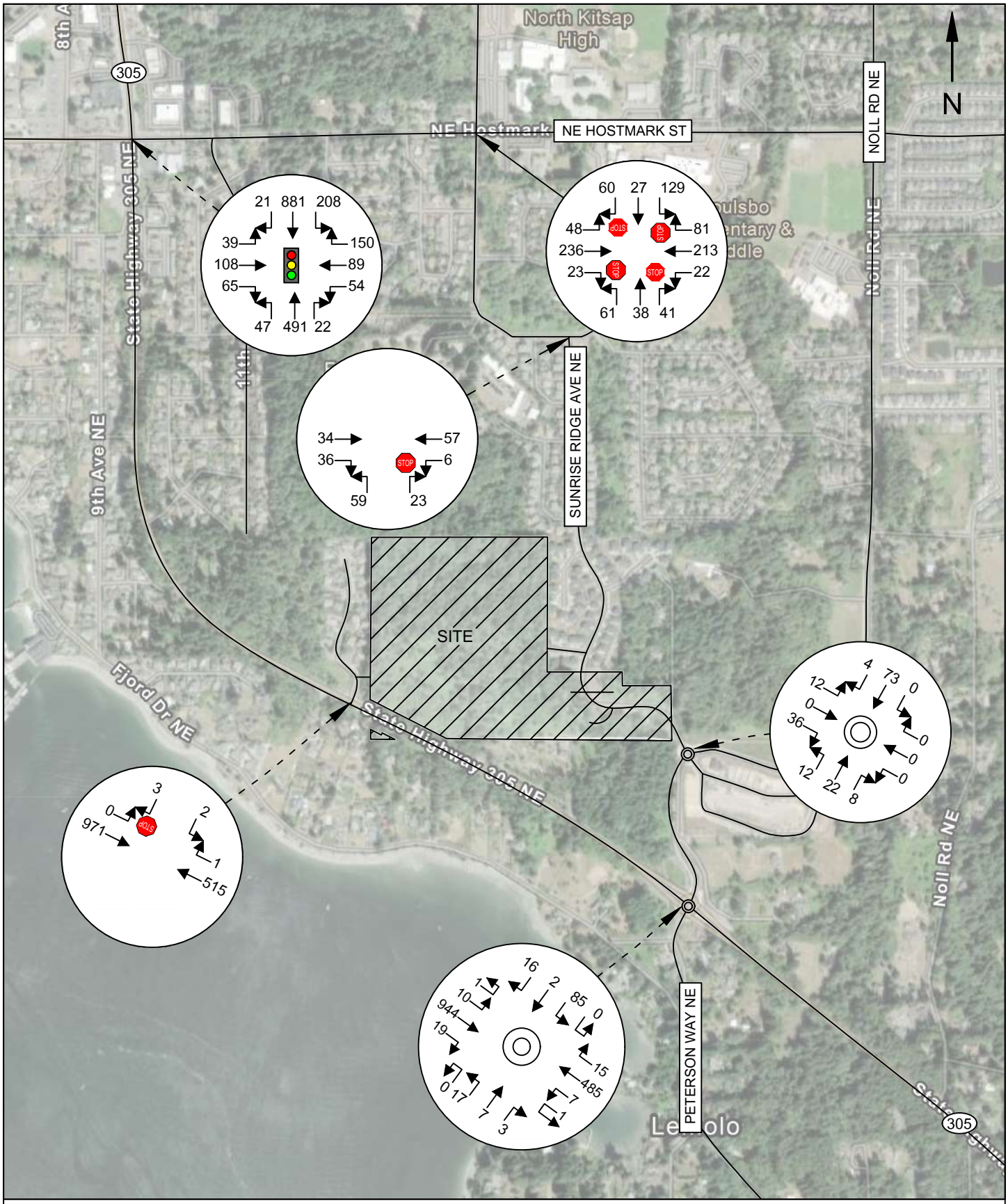
PINNACLE AT LIBERTY BAY

PM PEAK HOUR PIPELINE VOLUMES
FIGURE 12



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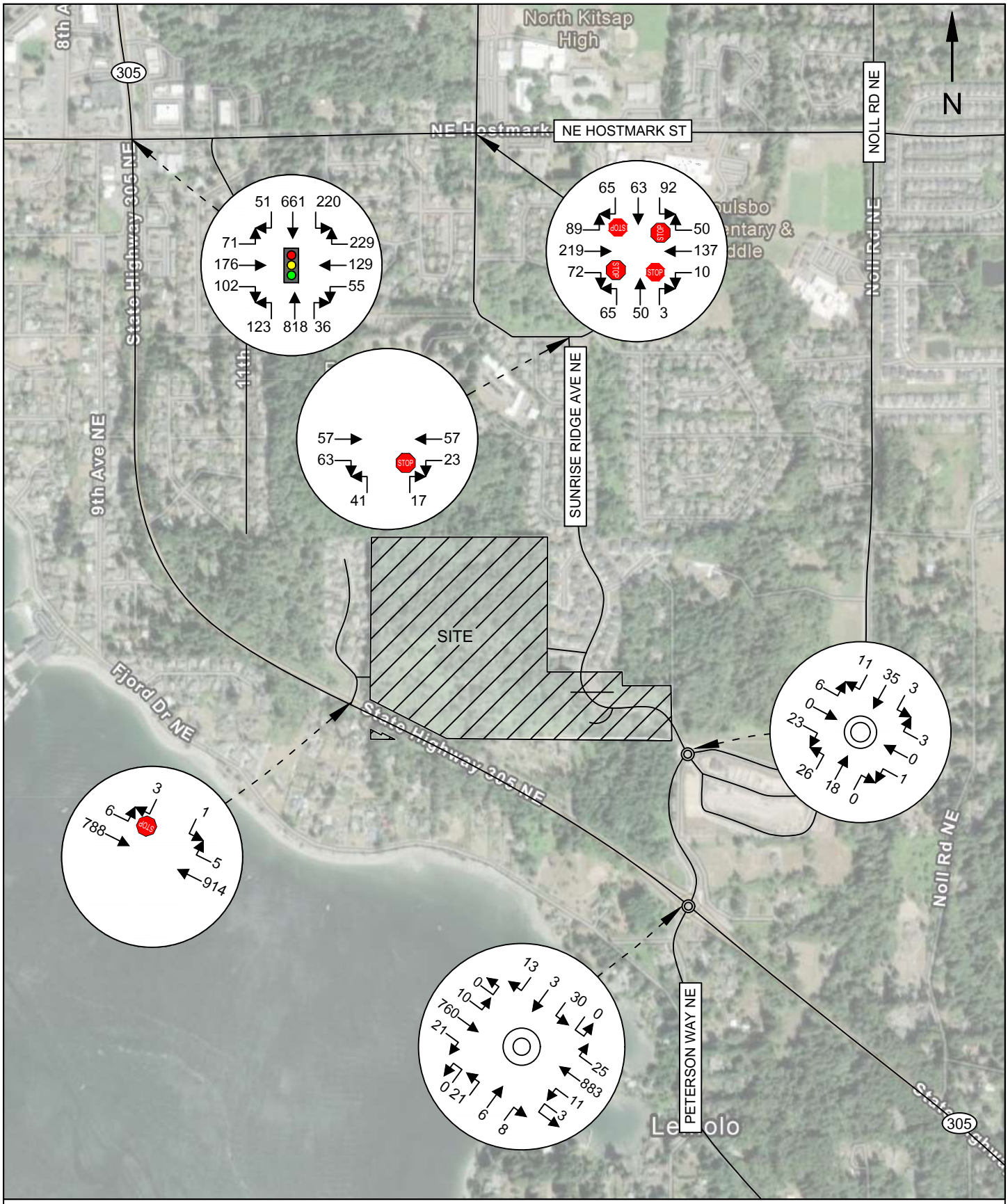
PINNACLE AT LIBERTY BAY

FORECAST 2032 AM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 13



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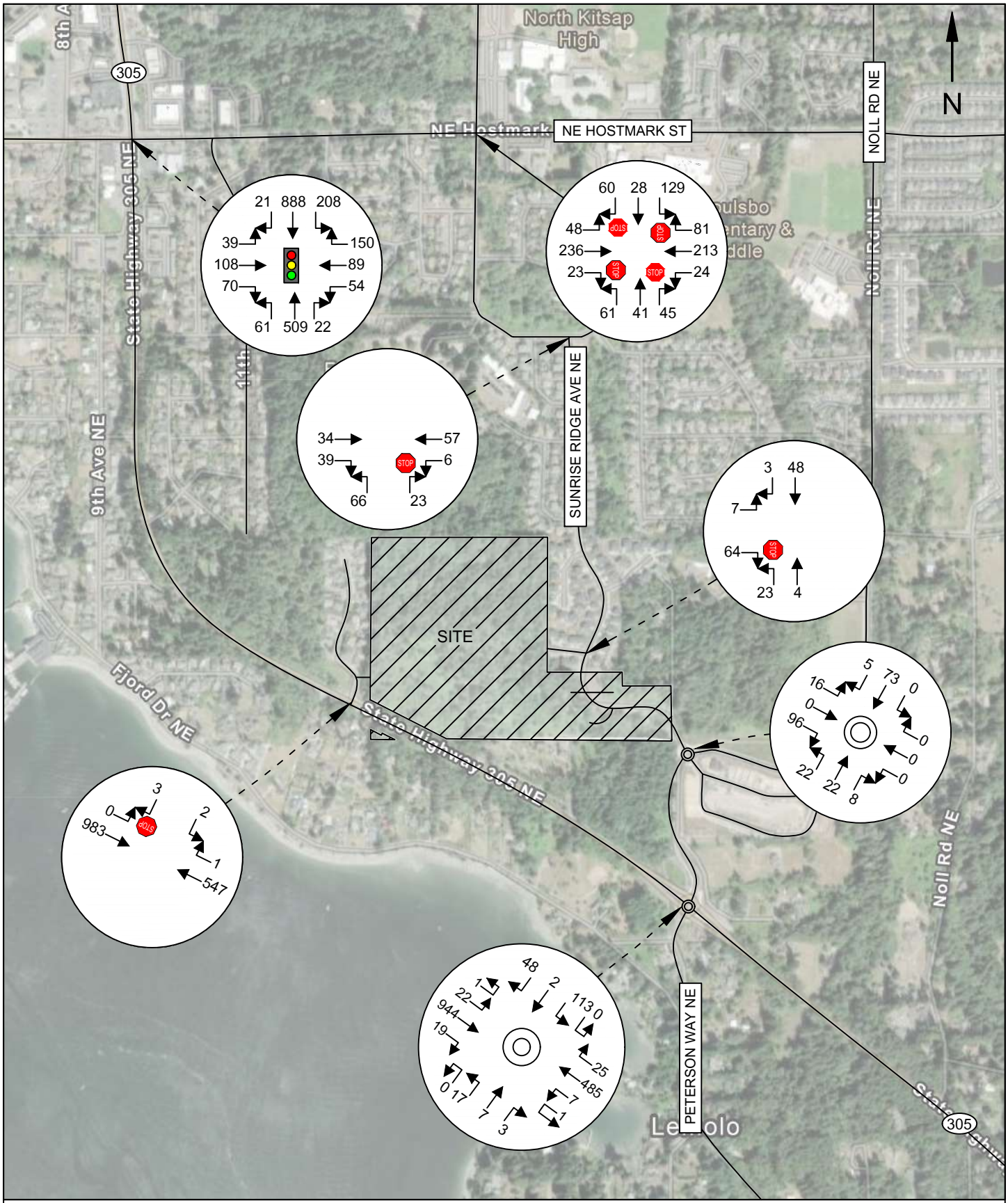
PINNACLE AT LIBERTY BAY

FORECAST 2032 PM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 14



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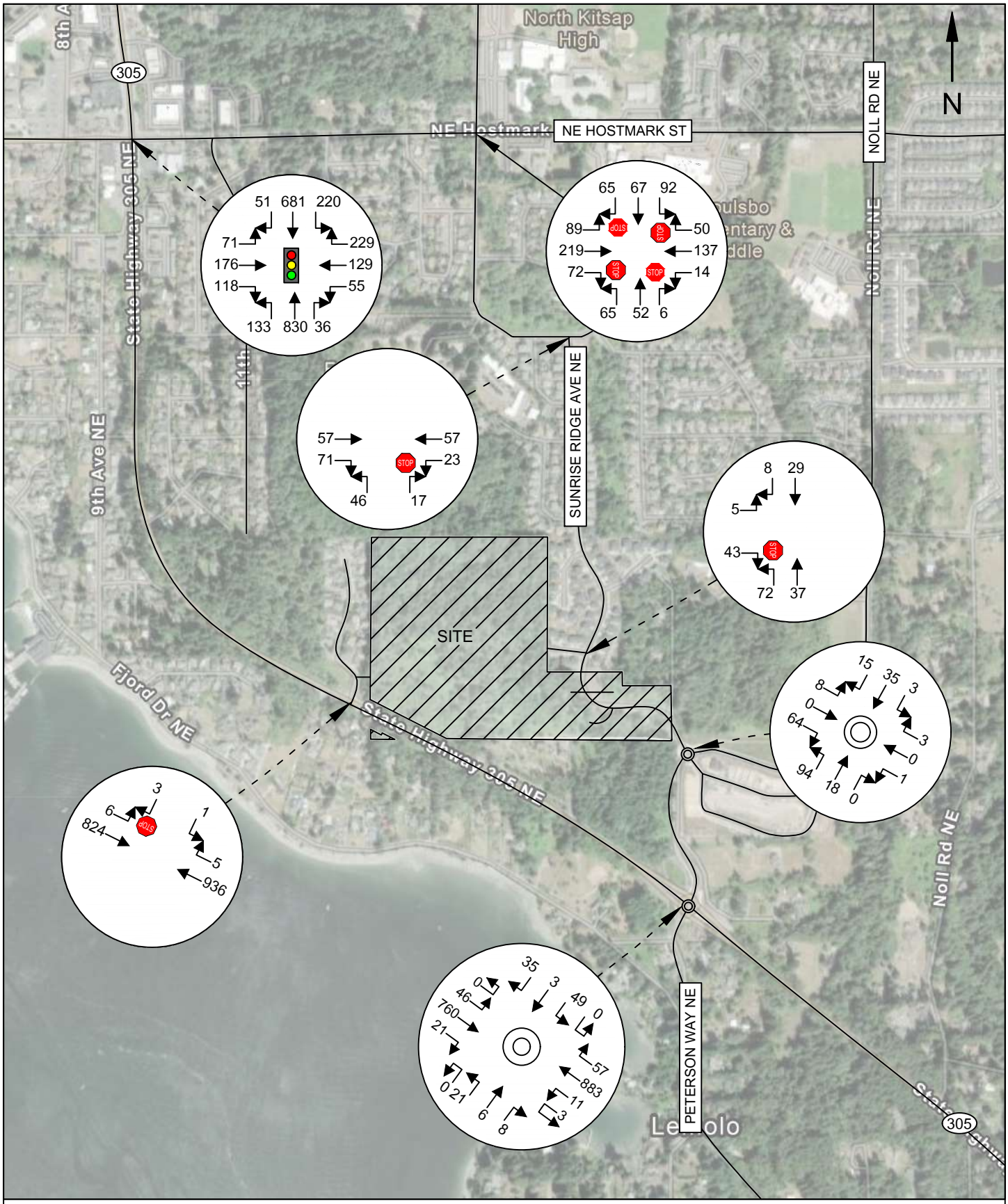
PINNACLE AT LIBERTY BAY

FORECAST 2032 AM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 15



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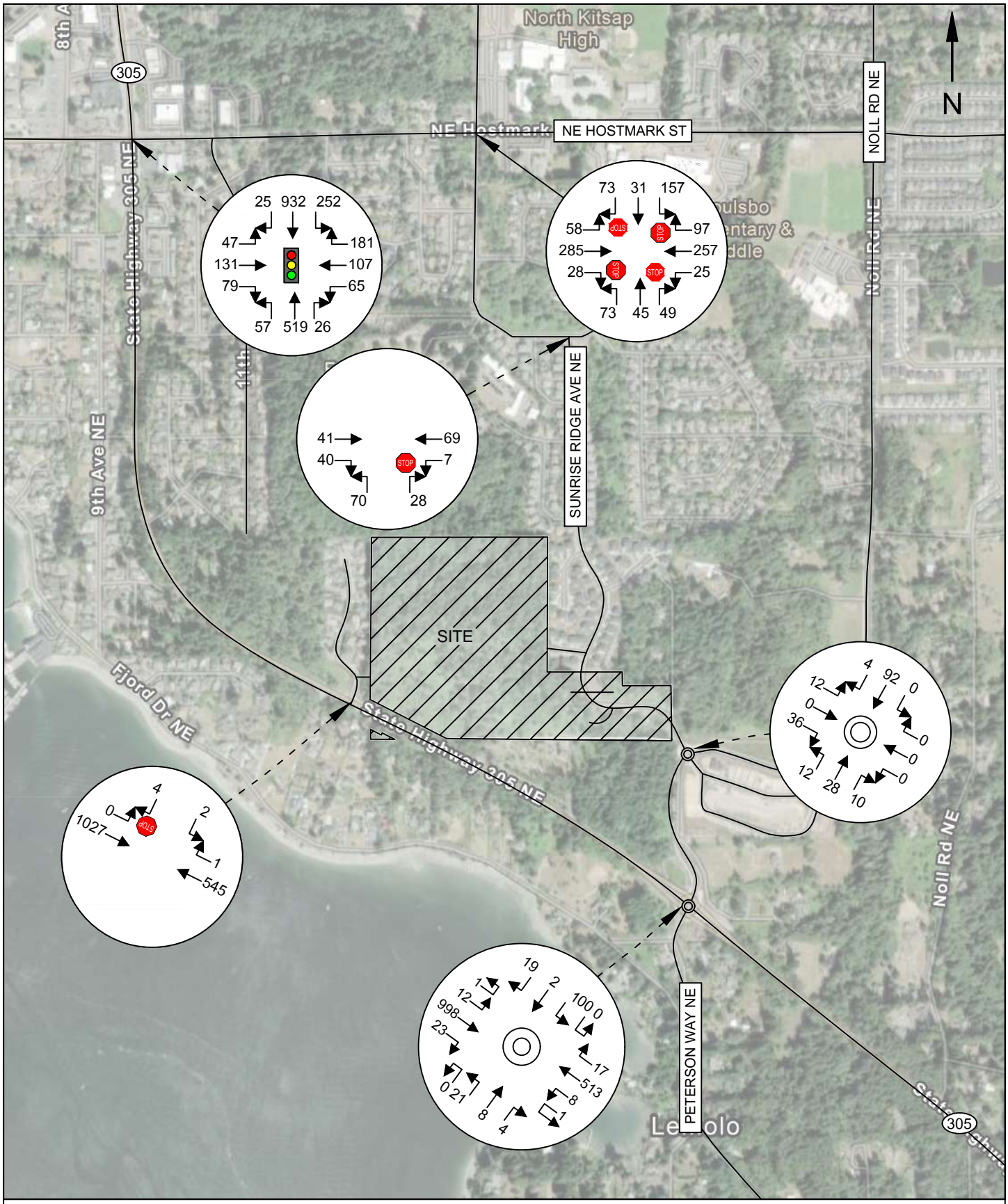
PINNACLE AT LIBERTY BAY

FORECAST 2032 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 16



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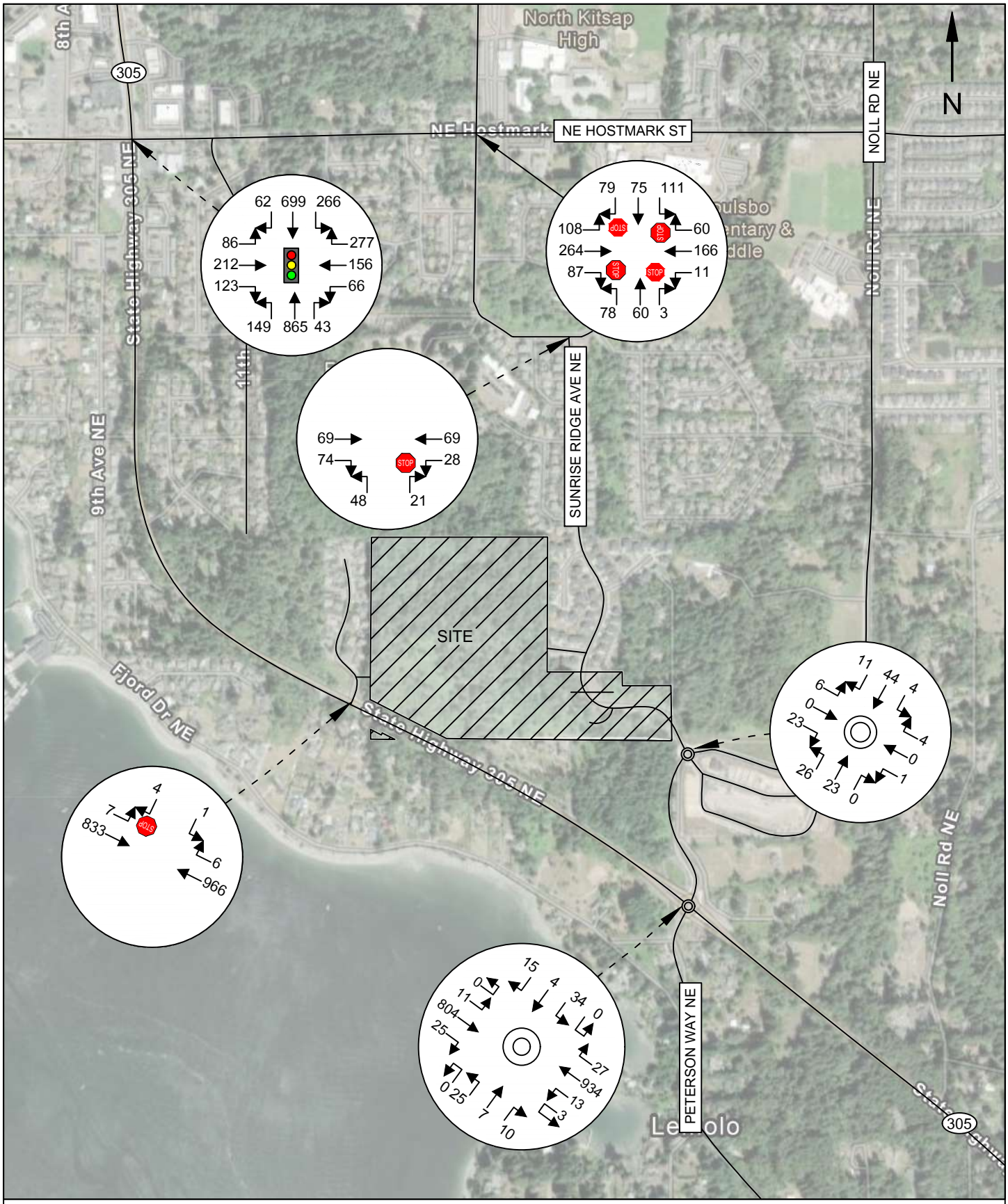
PINNACLE AT LIBERTY BAY

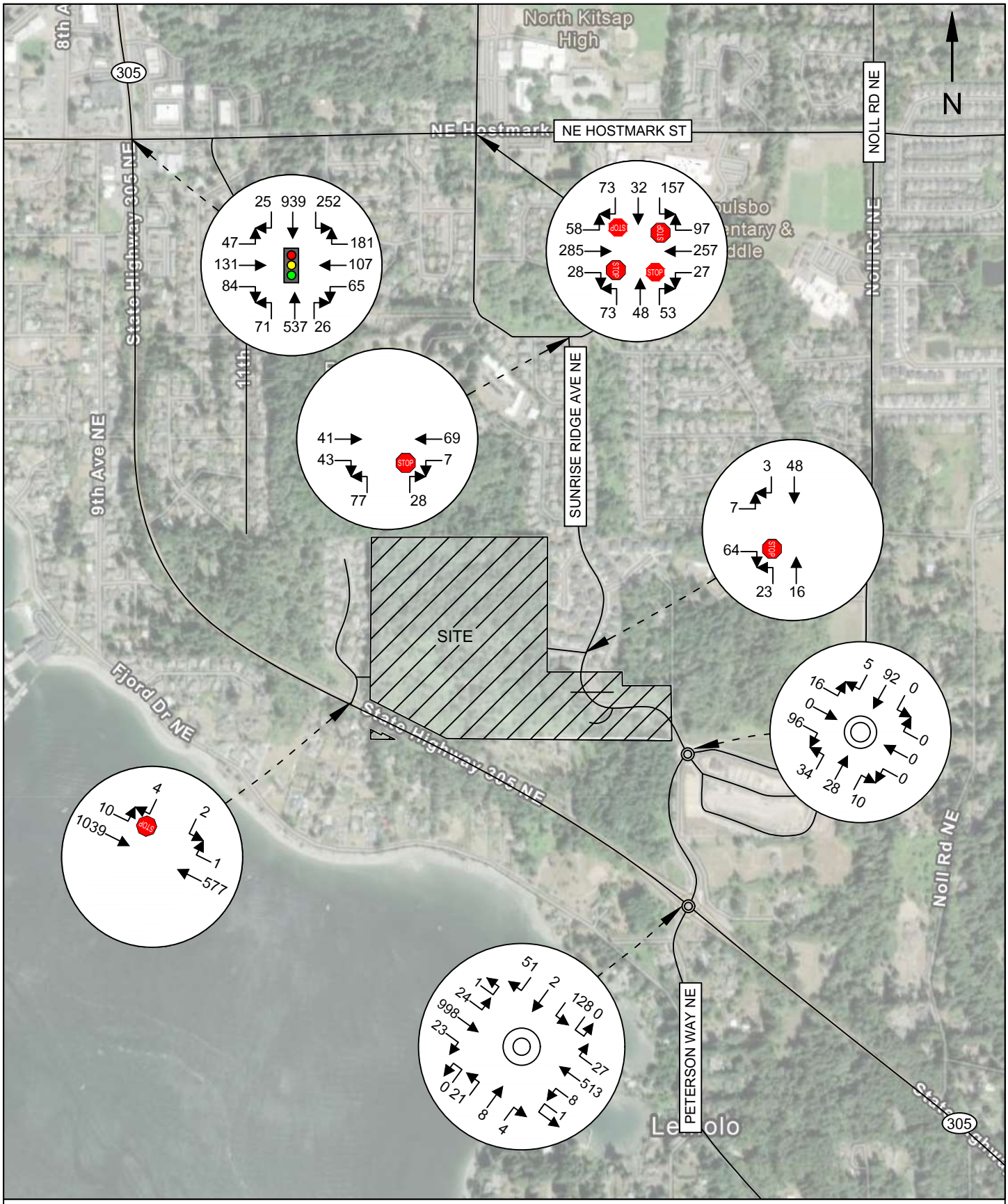
FORECAST 2037 AM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 17



HEATH&ASSOCIATES
Transportation Planning & Engineering

PINNACLE AT LIBERTY BAY

FORECAST 2037 PM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 18



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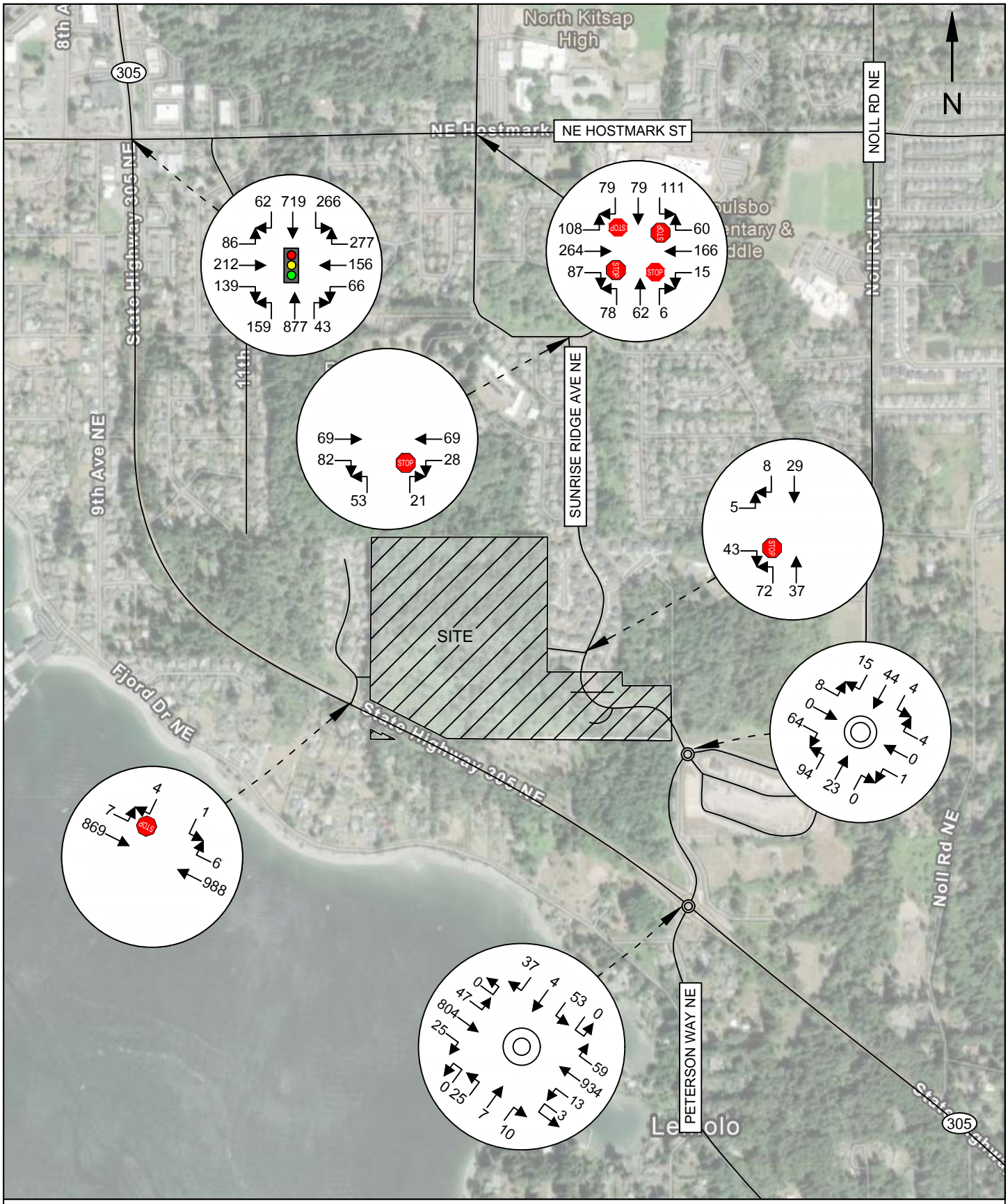
Transportation Planning & Engineering

PINNACLE AT LIBERTY BAY

FORECAST 2037 AM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 19



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PINNACLE AT LIBERTY BAY

FORECAST 2037 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 20

5.5 Project Access

Site access will be provided at four locations, as identified in Figure 2:

1. Access A: Sunrise Ridge Avenue via extension of Crystallia Court
2. Access B/C: Both sides of Sunrise Ridge Avenue 220 feet south of Crystallia Court
3. Access D: Sunrise Ridge Avenue 380 feet south of Crystallia Court

To provide a worst-case operations analysis, this study assumed project-generated trips will be consolidated at the primary access, Access A. The analysis indicates that the associated study intersection Sunrise Ridge Avenue NE & Crystallia Court will operate at LOS A through 2037, maintaining applicable WSDOT and City of Poulsbo minimum LOS standards.

Design of on-site streets, intersections, and frontage improvements should be coordinated with the City of Poulsbo.

5.6 Future Level 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 9**. 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 the counted 2025 PHFs on local intersections.

Hostmark Street & Caldart Avenue will degrade to LOS F in the 2037 AM Without Project scenario, below the City of Poulsbo minimum LOS E standard. The LOS deficiency is the result of school-related demand surge which was observed to occur for approximately 30 minutes during the weekday AM peak hour. The addition of project-generated trips will not significantly increase delay. The additional 1.3 seconds of delay per vehicle during the AM peak hour represents an increase of 2 percent relative to the without-project condition. 95th percentile queues are anticipated to extend 14-15 vehicles on the eastbound and westbound approaches in the 2037 AM peak hour and will not increase with the addition of project-generated trips. The project is not anticipated to generate a significant adverse impact, and no mitigation is recommended.

Table 9: 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 PM	Overall	D D	36.5 44.5	D A	37.1 44.7
SR 305 & Baywatch	One-Way Stop	AM PM	SB	C D	21.8 25.8	C D	22.9 27.2
SR 305 & Johnson	RAB	AM PM	Overall	A A	7.4 6.6	A A	7.7 7.0
Hostmark & Caldart	AWSC	AM PM	Overall	C B	22.6 14.9	C C	24.2 15.1
Johnson Rd & Sunrise Ridge	RAB	AM PM	Overall	A A	5.6 6.0	A A	5.8 6.7
Caldart Ave & Sunrise Ridge	TWSC	AM PM	NB	A B	9.7 10.0	A B	9.8 10.1
Sunrise Ridge & Crystallia	One-Way Stop	AM PM	EB	--	--	A A	8.7 8.7
Forecast 2037 Peak Hour Analysis							
SR 305 & Hostmark	Signal	AM PM	Overall	D D	37.0 45.9	D D	37.6 46.2
SR 305 & Baywatch	One-Way Stop	AM PM	SB	C C	19.7 23.5	C C	20.6 24.6
SR 305 & Johnson	RAB	AM PM	Overall	A A	7.5 6.7	A A	7.8 7.0
Hostmark & Caldart	AWSC	AM PM	Overall	**F** D	**61.9** 26.1	**F** D	**63.2** 27.1
Johnson Rd & Sunrise Ridge	RAB	AM PM	Overall	A A	5.5 5.9	A A	5.8 6.6
Caldart & Sunrise Ridge	TWSC	AM PM	NB	A B	9.9 10.4	B B	10.0 10.5
Sunrise Ridge & Crystallia	One-Way Stop	AM PM	EB	--	--	A A	8.7 8.7

*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

SR 305 & Baywatch Court NE will operate acceptably at LOS D or better through 2037, with average delay of 27 seconds or less on southbound approach. The southbound left-turn movement will operate at LOS F in all future PM peak hour scenarios; however, project-generated trips are not anticipated to utilize Baywatch Court NE. 95th percentile queues are anticipated to extend no more than one car-length through 2037 before and after project trips. SR 305 & Baywatch Court NE delay forecasts are slightly lower in 2037 than 2032 due to the application of a 1.0 PHF on SR 305 intersections in the long-range forecasting horizon, consistent with WSDOT Synchro protocol.

All other intersections will operate at LOS D or better, satisfying their respective minimum City and WSDOT LOS standards through 2037.

5.7 SR 305 Connectivity

Project trips will access SR 305 to the south of the site via the SR 305 & Johnson Road roundabout intersection or to the northwest of the site via the SR 305 & NE Hostmark Road signalized intersection. A previous draft TIA report included an additional connection via 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.

This analysis indicates that the existing street network, including the intersections of SR 305 at Johnson Road and at Hostmark Street, provide adequate capacity to support project trips through the 2037 analysis horizon.

The revised site plan eliminates project trips on Baywatch Court NE, reducing traffic volume on the local access street and potentially improving safety at the stop-controlled SR 305 intersection by reducing vehicle conflicts.

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**. Any route restrictions or preferences can be coordinated with the City.

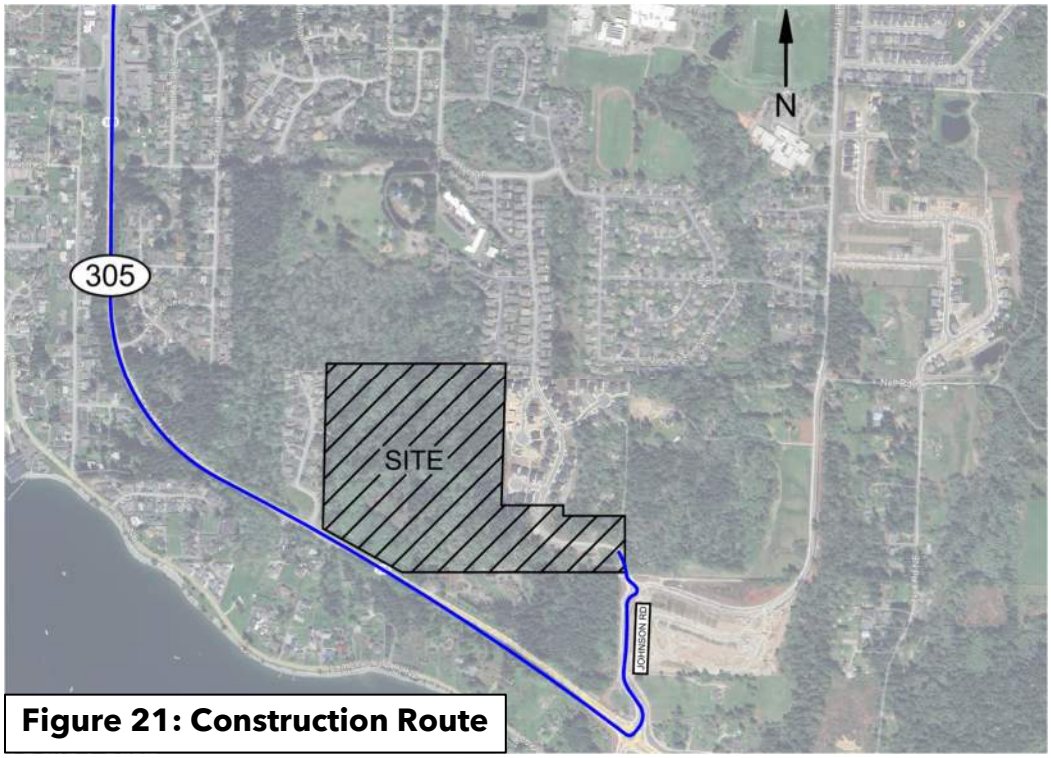


Figure 21: Construction Route

6. CONCLUSIONS & MITIGATION

The Pinnacle at Liberty Bay is a proposed residential development consisting of 138 single-family homes located within 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 six intersections in the project vicinity. All study intersections currently operate at LOS D or better, satisfying WSDOT and City of Poulsbo minimum LOS standards. A crash history analysis indicated no serious injury or fatal crashes in the study area and no safety deficiencies were identified.

The project is anticipated to generate 1,254 average weekday daily trips, 97 AM peak hour trips, and 128 PM peak hour trips. Future pipeline growth in the study area will include three nearby residential developments. Additional background traffic growth was forecast using travel demand forecasts provided by the City of Poulsbo.

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.

The traffic operations forecasts indicated that the intersection of Hostmark Street & Caldart Avenue will operate at LOS F in the 2037 AM Without Project scenario, below the City of Poulsbo minimum LOS E standard. The LOS deficiency is the result of a school-related demand surge which was observed to occur for approximately 30 minutes during the AM peak hour. The addition of project-generated trips will not significantly increase delay and no mitigation is recommended.

All other intersections will operate at LOS D or better, satisfying their respective minimum City and WSDOT LOS standards through 2037.

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 should be coordinated with the City of Poulsbo.

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, assessed at $564.00 per net new daily trip. The estimated 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 at the time of building permit issuance.

No other mitigation is recommended.

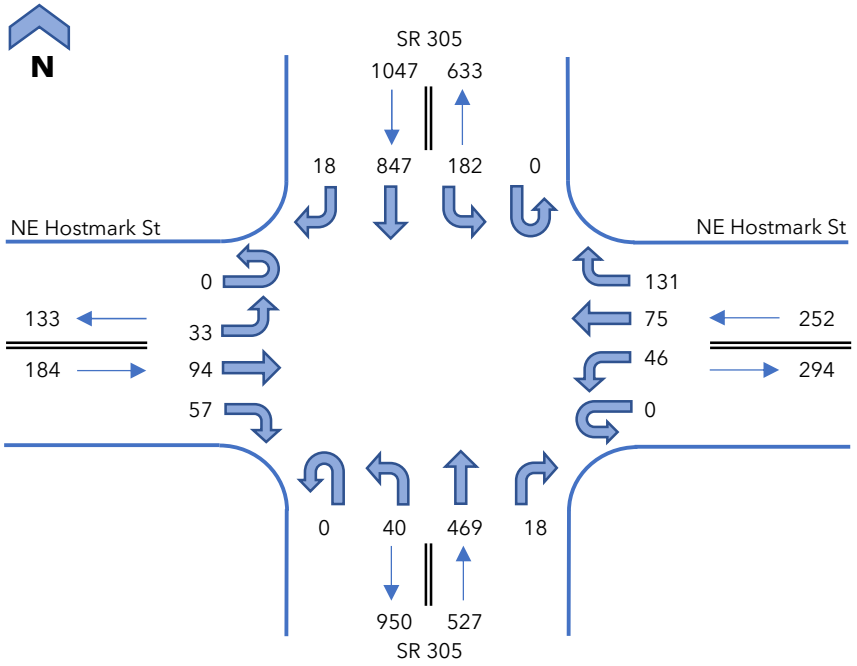
THE PINNACLE AT LIBERTY BAY
TRAFFIC IMPACT ANALYSIS

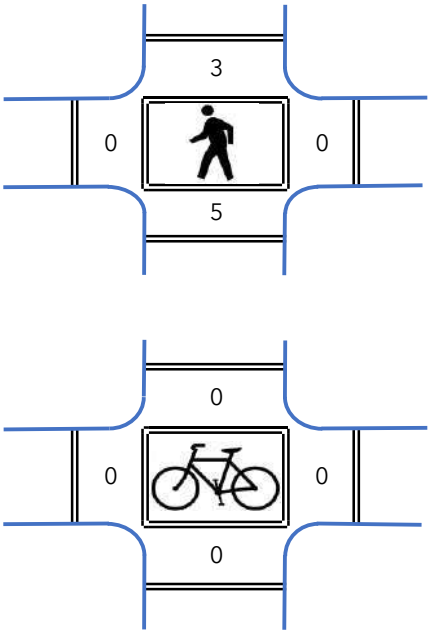
APPENDIX
Traffic Counts

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%

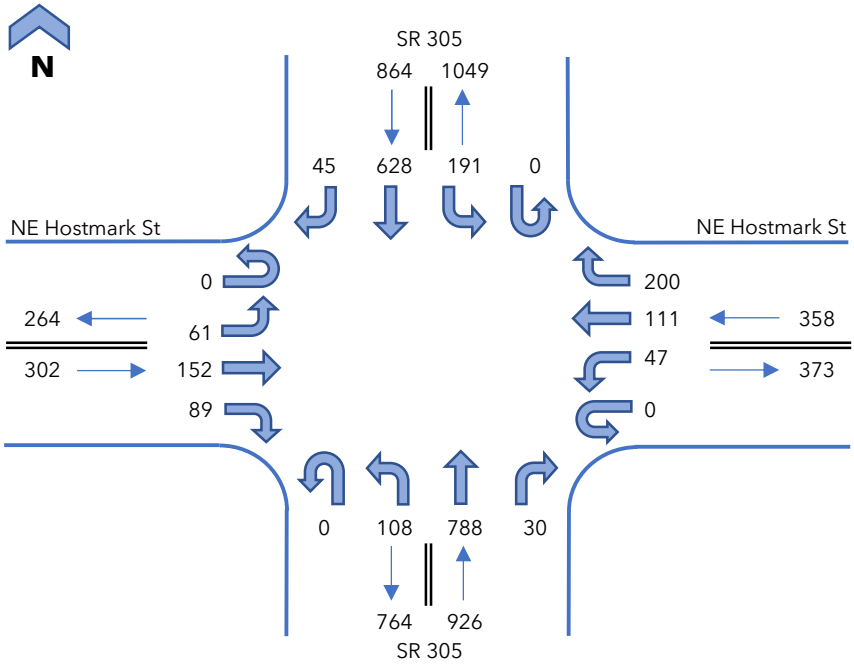
Pedestrians (Leg)				
E	W	N	S	Total
0	0	1	3	4
0	0	1	0	1
0	0	0	1	1
0	0	1	1	2
0	1	0	1	2
0	0	2	1	3
2	2	3	2	9
0	0	2	2	4
2	3	10	11	26
0	0	3	5	8

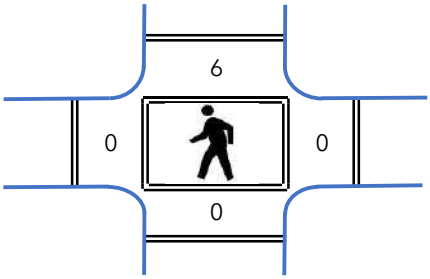
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

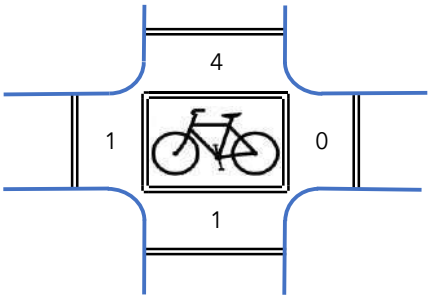
HEATH & ASSOCIATES
Transportation Planning & Engineering

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%

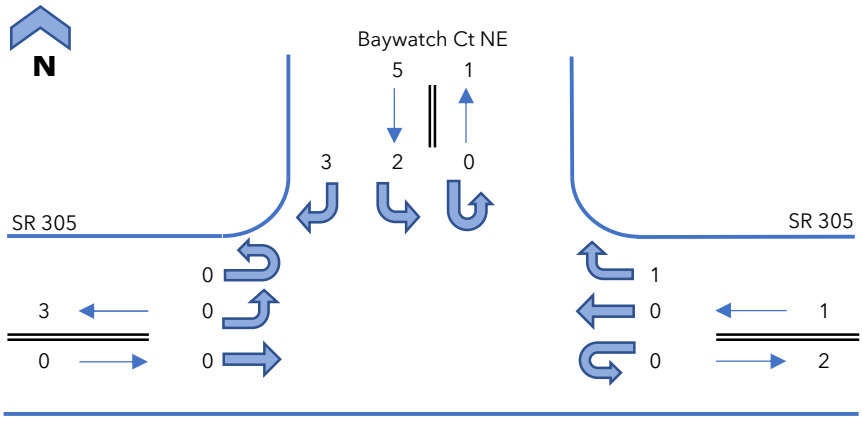
Pedestrians (Leg)				
E	W	N	S	Total
0	0	4	0	4
0	0	1	0	1
0	0	0	0	0
0	0	1	0	1
0	1	0	3	4
1	1	1	1	4
0	0	3	2	5
1	0	5	1	7
2	2	15	7	26
0	0	6	0	6

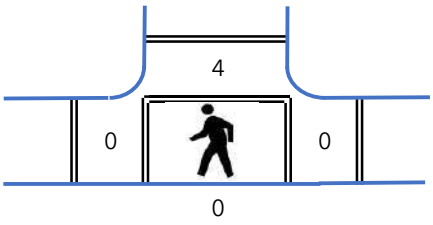
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	3	0	3
0	0	0	0	0
0	1	1	1	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	4	1	6
0	1	4	1	6

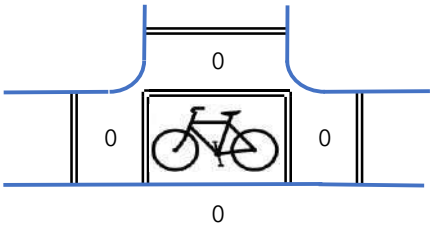
HEATH & ASSOCIATES
Transportation Planning & Engineering

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%

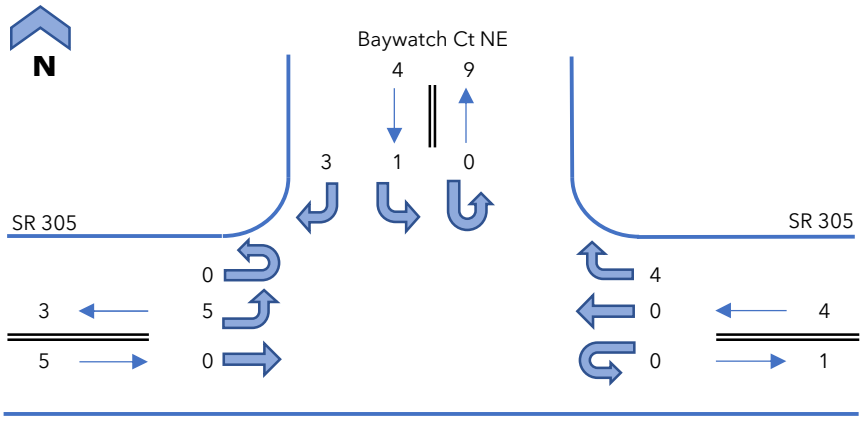
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	4	0	4
0	0	0	0	0
0	0	0	0	0
0	0	4	0	4
0	0	4	0	4

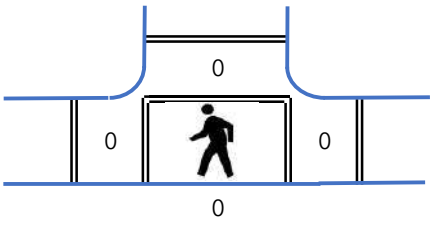
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

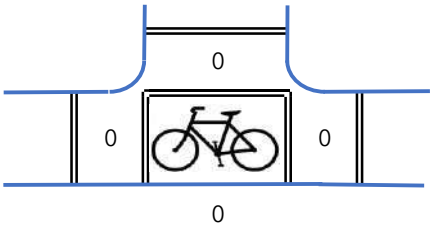
HEATH & ASSOCIATES
Transportation Planning & Engineering

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%

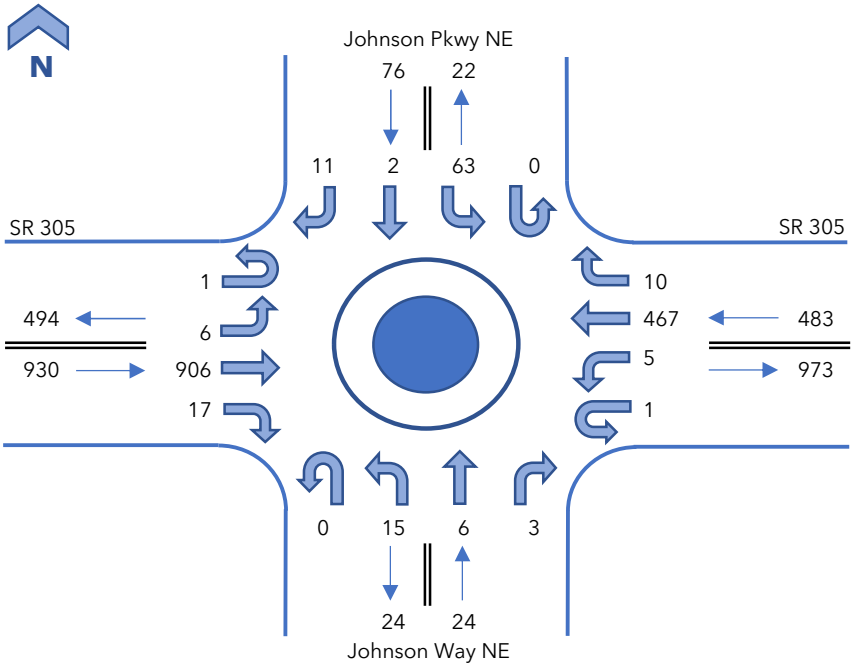
Pedestrians (Leg)				
E	W	N	S	Total
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0

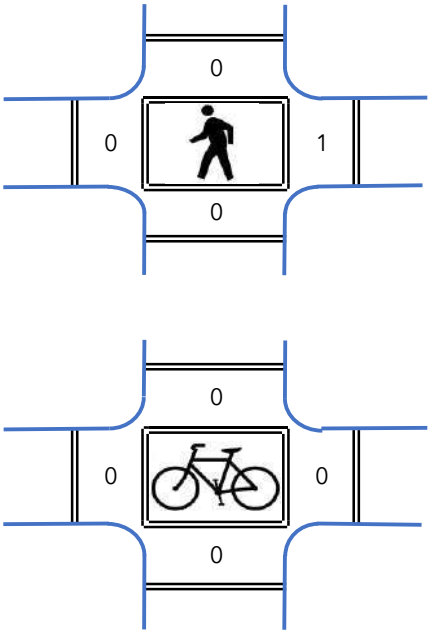
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

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%

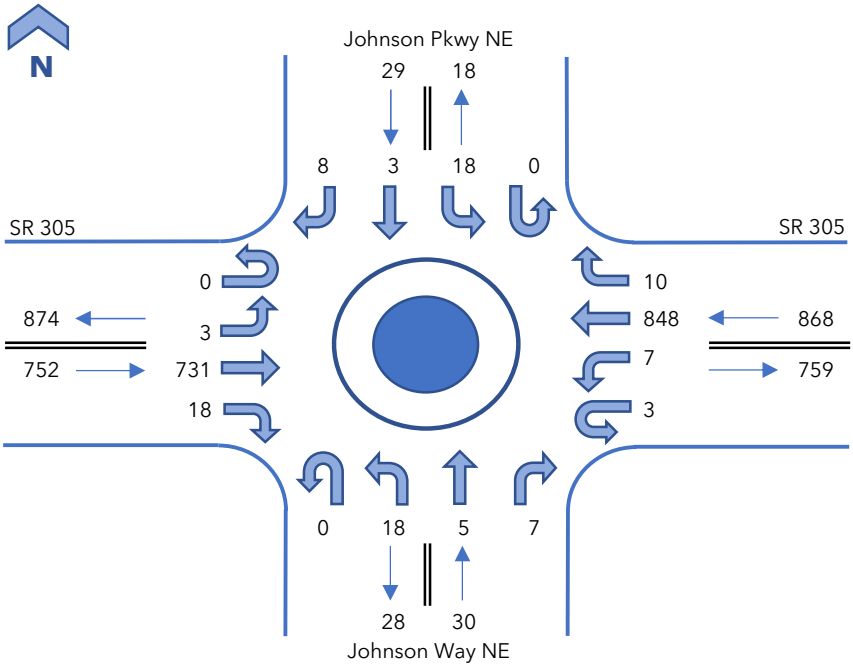
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
1	0	0	0	1

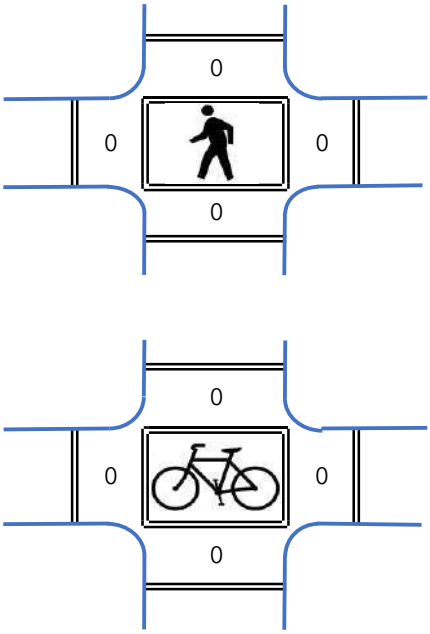
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

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%

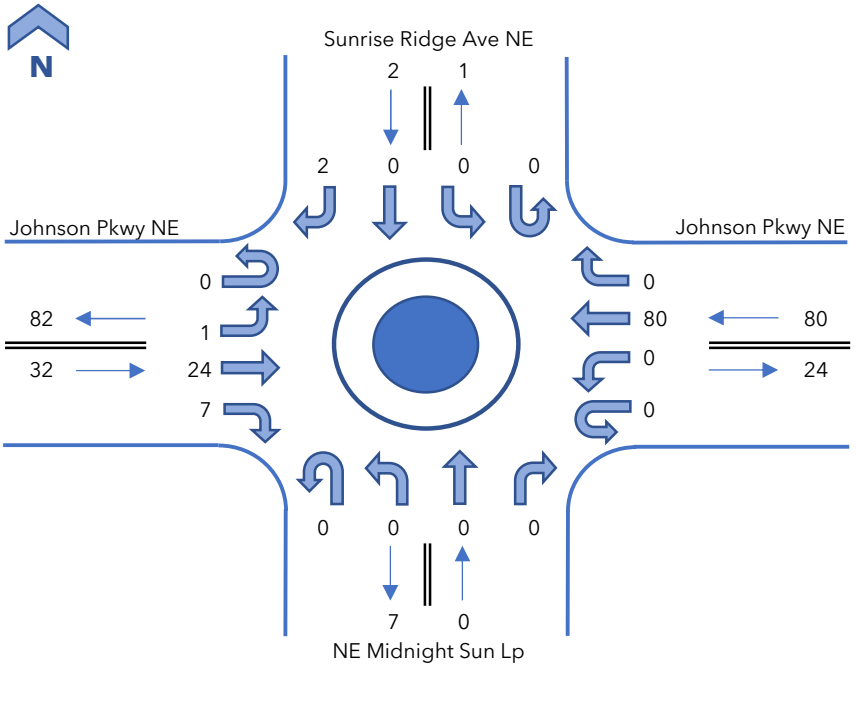
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

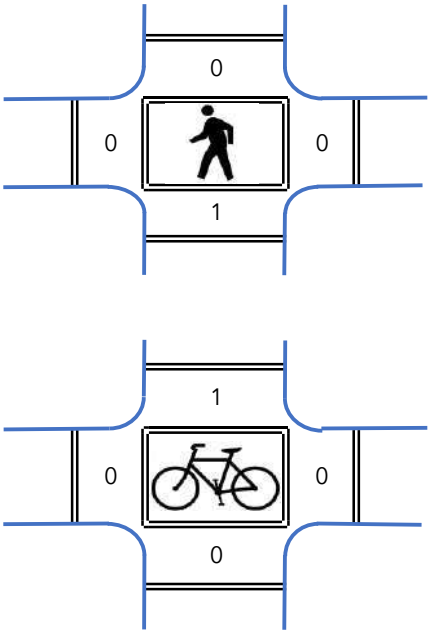
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0

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%

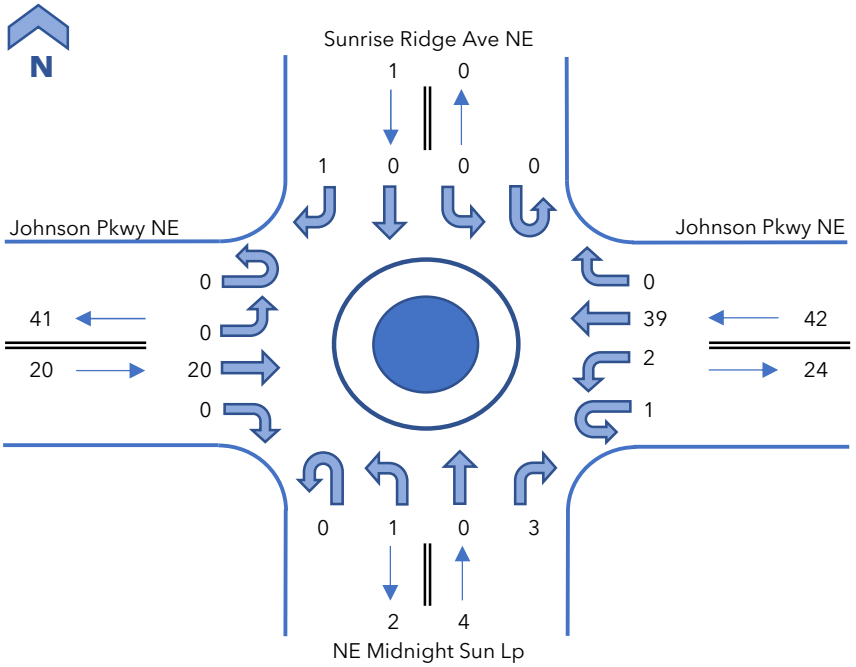
Pedestrians (Leg)				
E	W	N	S	Total
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	1	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	1	2
0	0	0	1	1

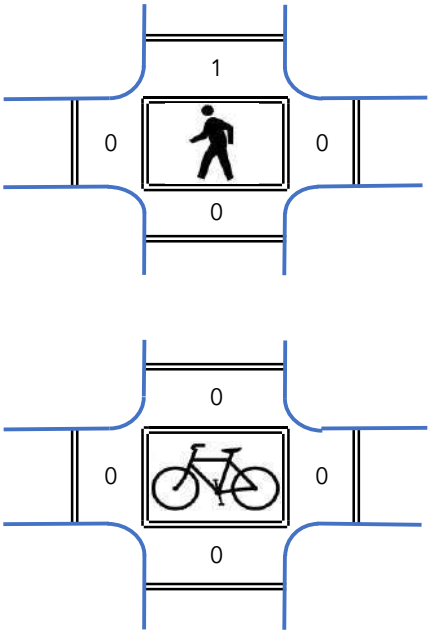
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	1	0	1

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%

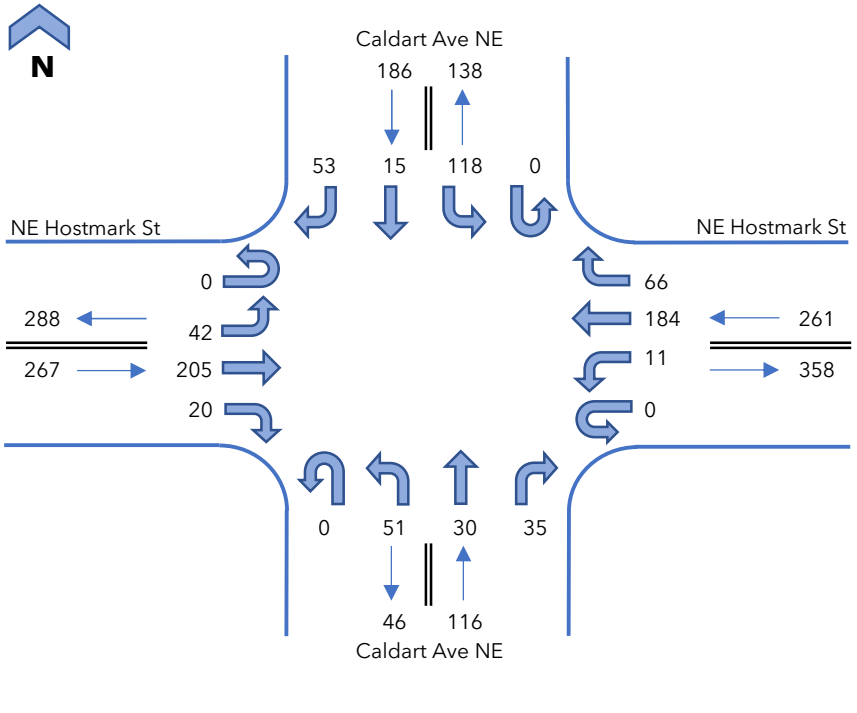
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	2	0	2
0	0	0	0	0
0	0	3	0	3
0	0	1	0	1

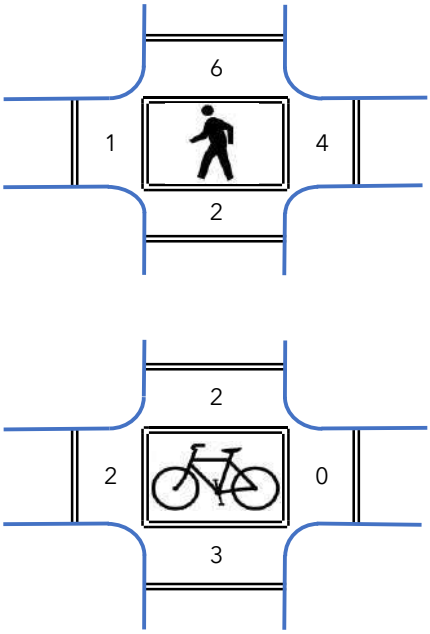
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

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%

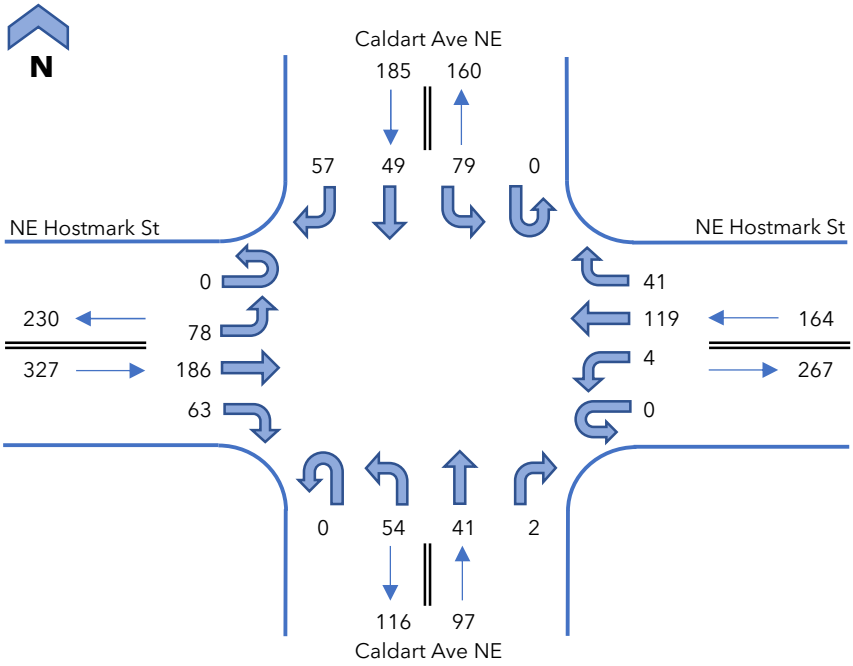
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	1	1
1	0	1	0	2
2	0	1	1	4
1	1	3	1	6
0	0	1	0	1
0	0	0	0	0
2	1	0	3	6
0	0	0	0	0
6	2	6	6	20
4	1	6	2	13

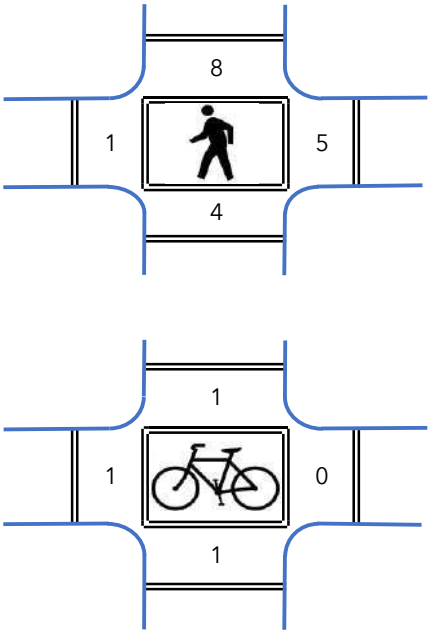
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	2	1	2	5
0	0	0	1	1
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	2	2	3	7
0	2	2	3	7

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)

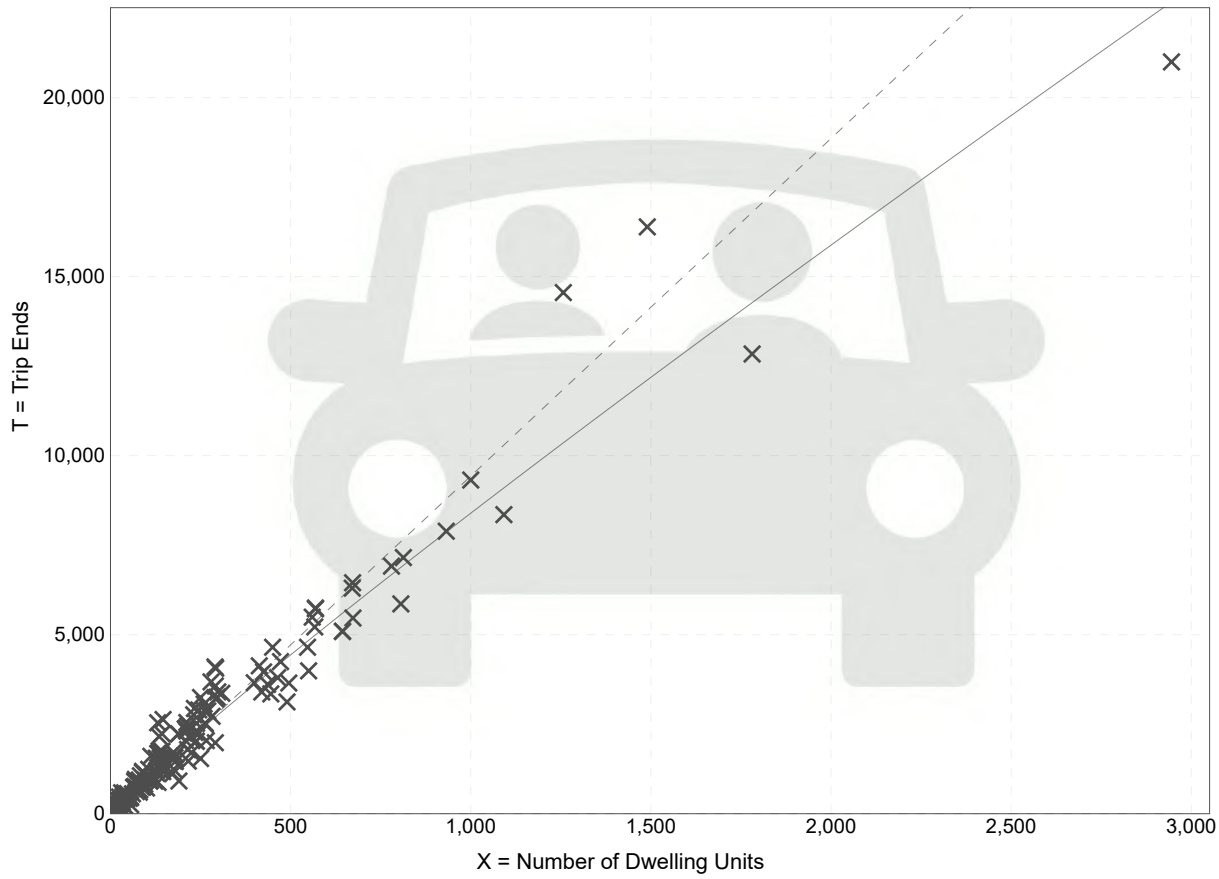
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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



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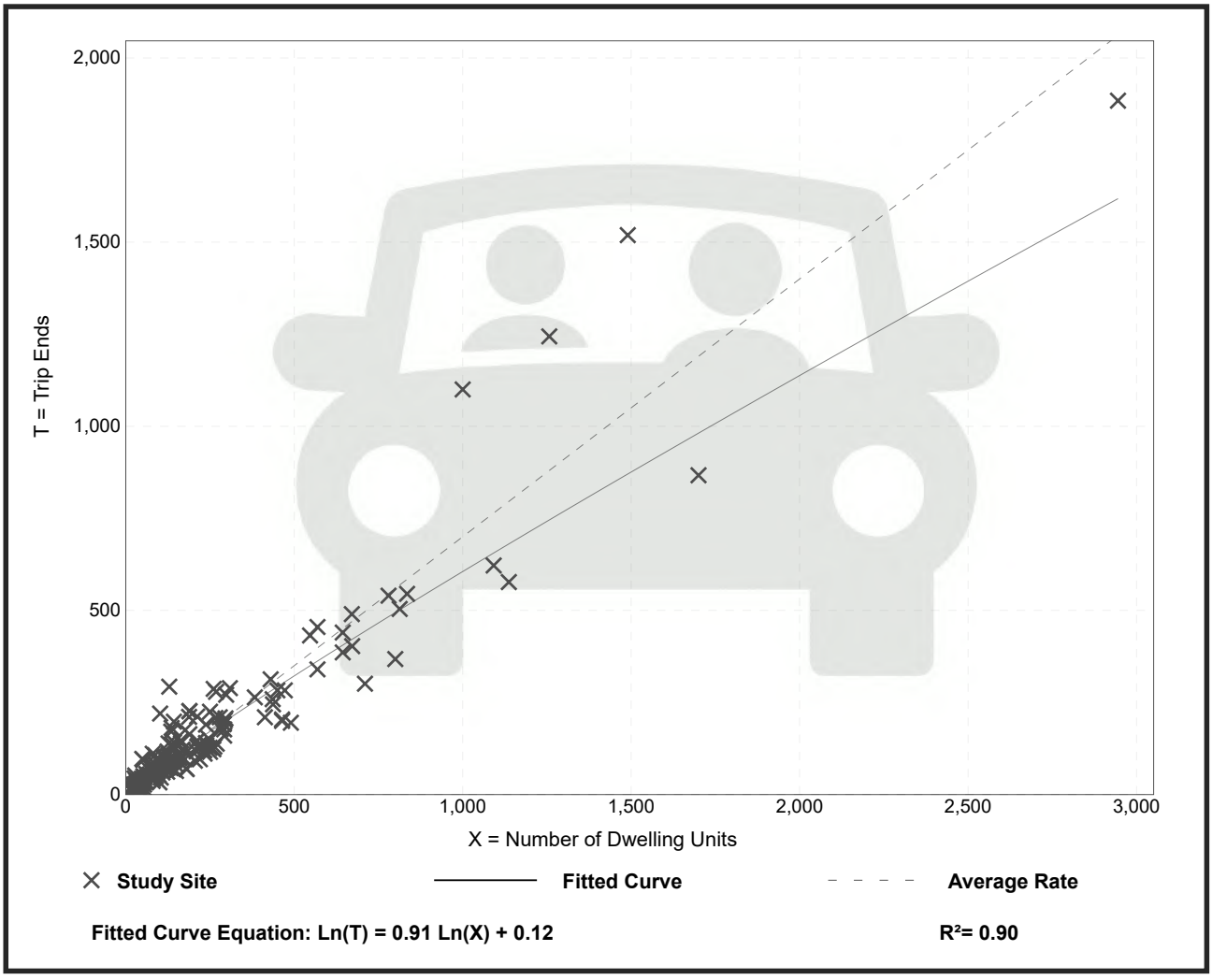
Single-Family Detached Housing
(210)

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



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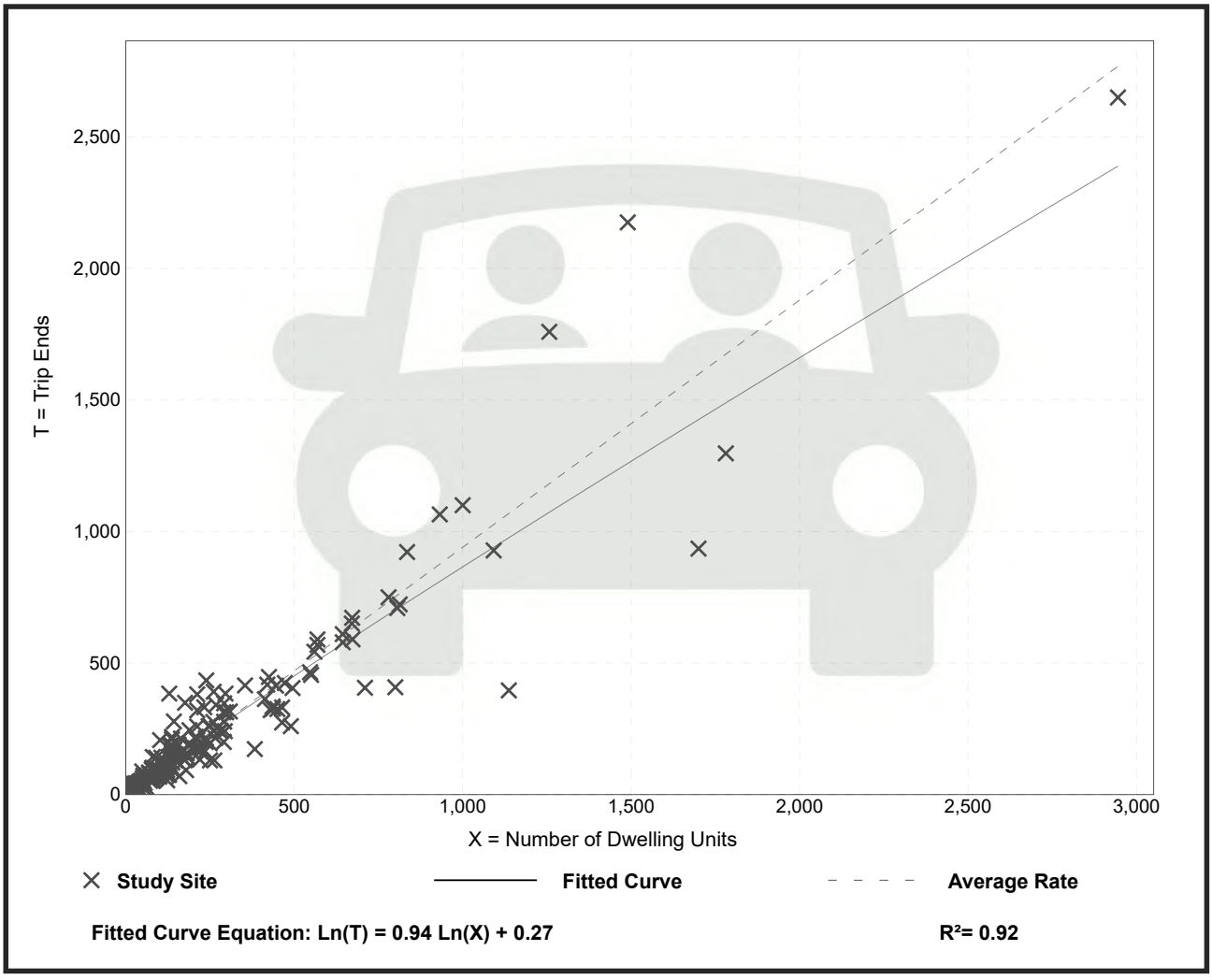
Single-Family Detached Housing
(210)

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



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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

MOVEMENT SUMMARY

Site: [99] SR 305 & Johnson Rd (Existing AM Peak Hour)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	0.042	15.8	LOS B	0.2	4.4	0.63	0.77	0.63	30.8
3	L2	All MCs	16	1.0	16	1.0	0.042	12.4	LOS B	0.2	4.4	0.63	0.77	0.63	32.5
8	T1	All MCs	6	1.0	6	1.0	0.042	6.7	LOS A	0.2	4.4	0.63	0.77	0.63	30.0
18	R2	All MCs	3	1.0	3	1.0	0.042	11.4	LOS B	0.2	4.4	0.63	0.77	0.63	32.9
Approach			27	1.0	27	1.0	0.042	11.0	LOS B	0.2	4.4	0.63	0.77	0.63	31.8
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.251	12.0	LOS B	1.5	40.6	0.16	0.46	0.16	37.8
1	L2	All MCs	5	1.0	5	1.0	0.251	11.4	LOS B	1.5	40.6	0.16	0.46	0.16	35.8
6	T1	All MCs	502	6.0	502	6.0	0.251	6.0	LOS A	1.5	40.6	0.16	0.46	0.16	40.8
16	R2	All MCs	11	1.0	11	1.0	0.114	5.8	LOS A	0.6	15.7	0.15	0.46	0.15	36.2
Approach			519	5.8	519	5.8	0.251	6.1	LOS A	1.5	40.6	0.16	0.46	0.16	40.7
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.095	13.7	LOS B	0.3	8.8	0.45	0.70	0.45	31.0
7	L2	All MCs	68	3.0	68	3.0	0.095	10.4	LOS B	0.3	8.8	0.45	0.70	0.45	32.7
4	T1	All MCs	2	1.0	2	1.0	0.095	4.7	LOS A	0.3	8.8	0.45	0.70	0.45	30.3
14	R2	All MCs	12	1.0	12	1.0	0.095	6.0	LOS A	0.3	8.8	0.45	0.70	0.45	33.3
Approach			83	2.6	83	2.6	0.095	9.7	LOS A	0.3	8.8	0.45	0.70	0.45	32.7
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.515	12.3	LOS B	4.3	113.5	0.34	0.47	0.34	37.1
5	L2	All MCs	6	17.0	6	17.0	0.515	12.2	LOS B	4.3	113.5	0.34	0.47	0.34	34.7
2	T1	All MCs	974	8.0	974	8.0	0.515	7.2	LOS A	4.3	113.5	0.33	0.47	0.33	39.8
12	R2	All MCs	18	12.0	18	12.0	0.234	6.3	LOS A	1.4	36.2	0.28	0.47	0.28	35.7
Approach			1000	8.1	1000	8.1	0.515	7.3	LOS A	4.3	113.5	0.33	0.47	0.33	39.7
All Vehicles			1629	7.0	1629	7.0	0.515	7.1	LOS A	4.3	113.5	0.28	0.48	0.28	39.4

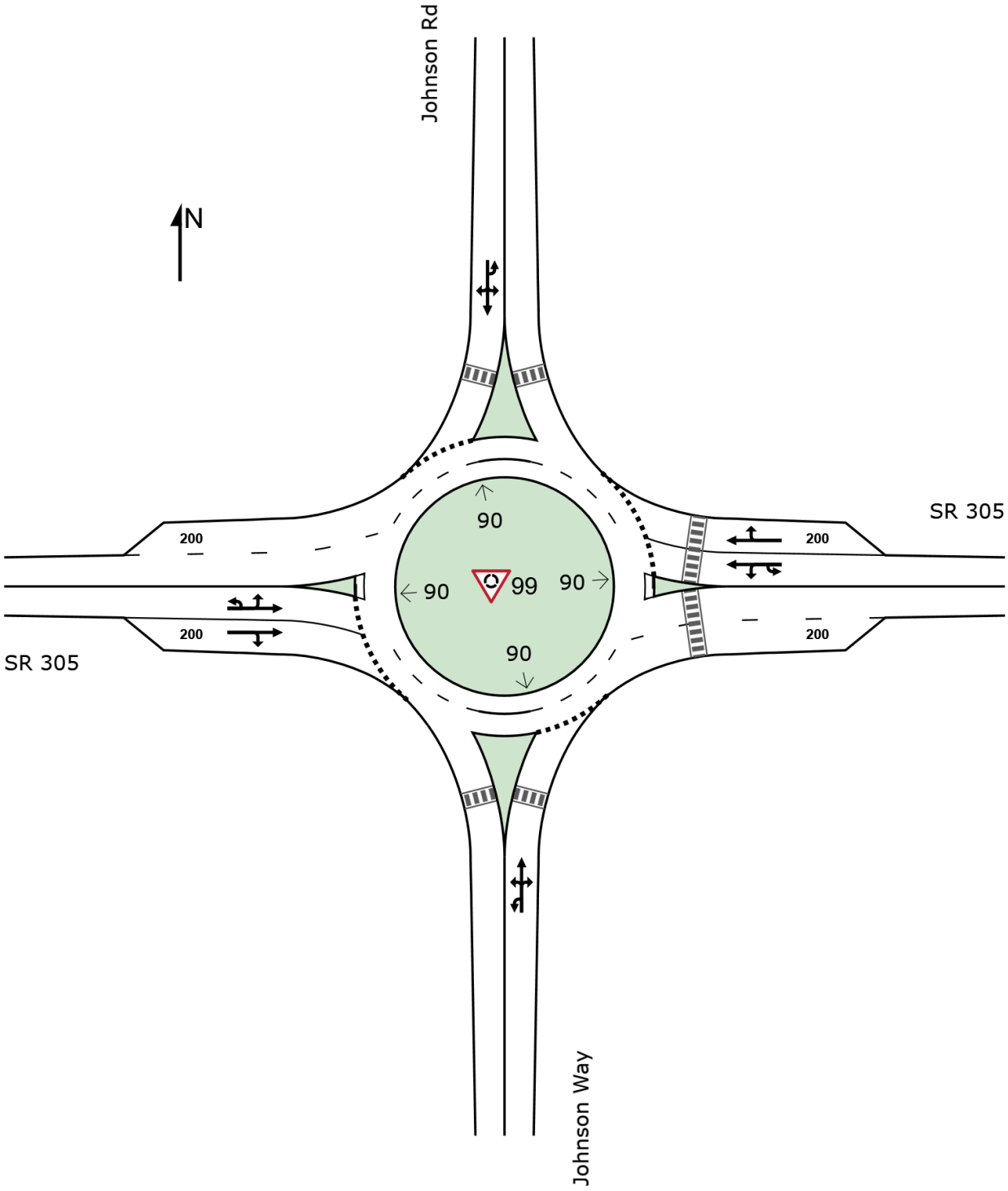
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [99] SR 305 & Johnson Rd (Existing AM Peak Hour)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1] Johnson & Sunrise Ridge - Existing AM (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	7.1	LOS A	0.0	0.4	0.11	0.45	0.11	23.5
3	L2	All MCs	1	3.0	1	3.0	0.004	5.7	LOS A	0.0	0.4	0.11	0.45	0.11	23.5
8	T1	All MCs	1	3.0	1	3.0	0.004	1.9	LOS A	0.0	0.4	0.11	0.45	0.11	23.7
18	R2	All MCs	1	3.0	1	3.0	0.004	2.2	LOS A	0.0	0.4	0.11	0.45	0.11	23.6
Approach			5	3.0	5	3.0	0.004	4.2	LOS A	0.0	0.4	0.11	0.45	0.11	23.6
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.073	10.8	LOS B	0.3	7.8	0.05	0.46	0.05	34.8
1	L2	All MCs	1	3.0	1	3.0	0.073	8.9	LOS A	0.3	7.8	0.05	0.46	0.05	34.8
6	T1	All MCs	95	3.0	95	3.0	0.073	4.8	LOS A	0.3	7.8	0.05	0.46	0.05	35.5
16	R2	All MCs	1	3.0	1	3.0	0.073	4.6	LOS A	0.3	7.8	0.05	0.46	0.05	35.1
Approach			99	3.0	99	3.0	0.073	5.0	LOS A	0.3	7.8	0.05	0.46	0.05	35.4
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.005	11.2	LOS B	0.0	0.5	0.21	0.56	0.21	33.6
7	L2	All MCs	1	3.0	1	3.0	0.005	9.3	LOS A	0.0	0.5	0.21	0.56	0.21	33.6
4	T1	All MCs	1	3.0	1	3.0	0.005	5.2	LOS A	0.0	0.5	0.21	0.56	0.21	34.2
14	R2	All MCs	2	3.0	2	3.0	0.005	5.0	LOS A	0.0	0.5	0.21	0.56	0.21	33.9
Approach			6	3.0	6	3.0	0.005	7.1	LOS A	0.0	0.5	0.21	0.56	0.21	33.8
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.030	10.8	LOS B	0.1	3.2	0.05	0.49	0.05	34.7
5	L2	All MCs	1	3.0	1	3.0	0.030	8.9	LOS A	0.1	3.2	0.05	0.49	0.05	34.7
2	T1	All MCs	29	3.0	29	3.0	0.030	4.8	LOS A	0.1	3.2	0.05	0.49	0.05	35.4
12	R2	All MCs	8	3.0	8	3.0	0.030	4.6	LOS A	0.1	3.2	0.05	0.49	0.05	35.1
Approach			39	3.0	39	3.0	0.030	5.1	LOS A	0.1	3.2	0.05	0.49	0.05	35.3
All Vehicles			149	3.0	149	3.0	0.073	5.1	LOS A	0.3	7.8	0.06	0.47	0.06	34.8

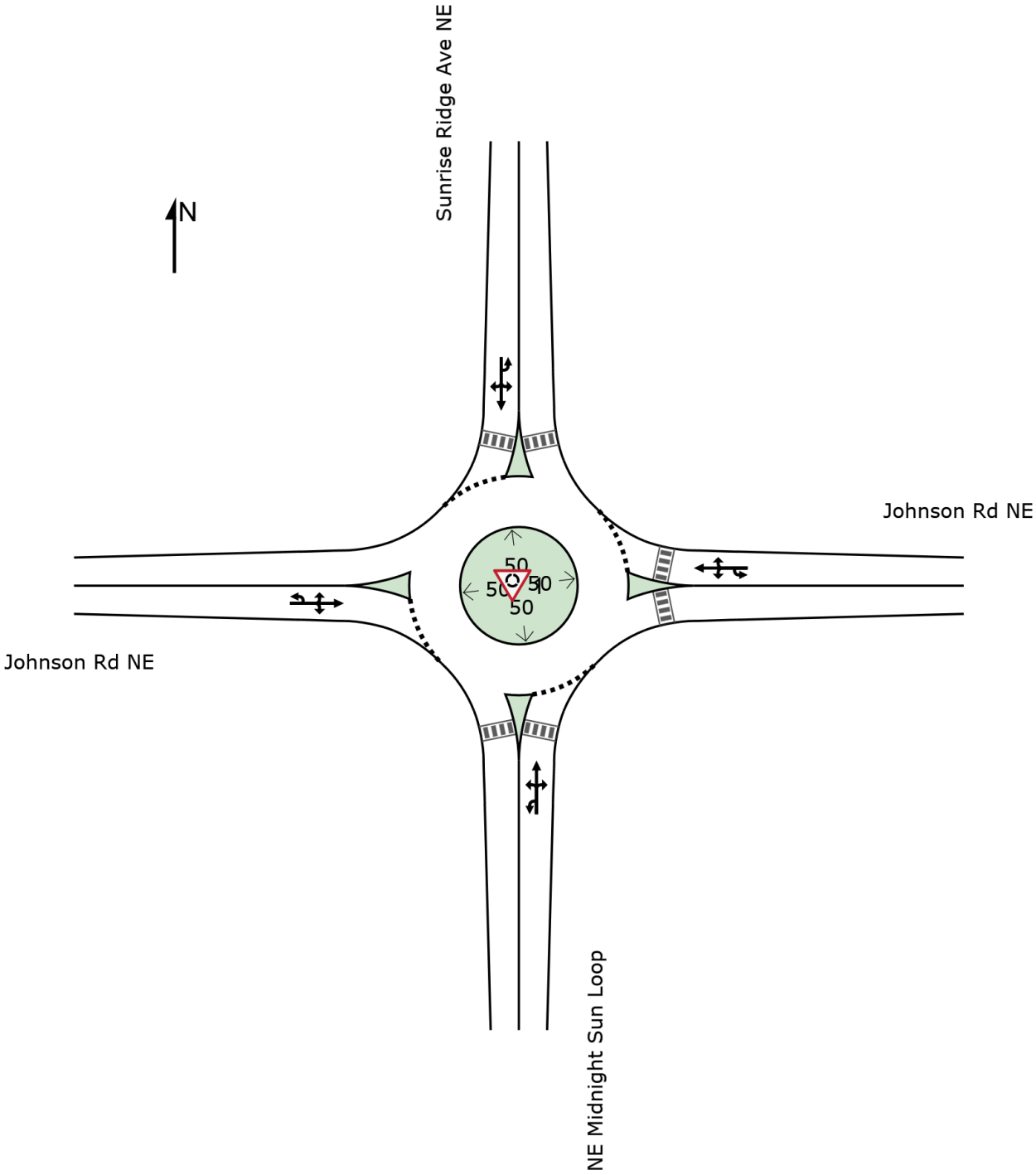
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [1] Johnson & Sunrise Ridge - Existing AM (Folder1)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



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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	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	0.87	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	59	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	16.8	15.9	12.1	13.1
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	145	356	348	177	71
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.267	0.583	0.56	0.366	0.121
Departure Headway (Hd)	6.628	5.897	5.794	7.439	6.165
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	540	616	626	484	581
Service Time	4.681	3.911	3.808	5.184	3.91
HCM Lane V/C Ratio	0.269	0.578	0.556	0.366	0.122
HCM Control Delay, s/veh	12.1	16.8	15.9	14.4	9.8
HCM Lane LOS	B	C	C	B	A
HCM 95th-tile Q	1.1	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	-	-	-	-	964	-
Stage 2	-	-	-	-	936	-

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	1.00	1.00	1.00
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	1.4	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	3.1	8.4	4.8	2.4	6.1	2.9	6.7	18.6	23.5	6.8	6.9	8.9
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	25.7	12.9	12.6
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			15.6	
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	44.0
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

MOVEMENT SUMMARY

Site: [99 (2)] SR 305 & Johnson Rd (Existing PM Peak Hour)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	0.045	14.5	LOS B	0.2	4.2	0.53	0.72	0.53	31.2
3	L2	All MCs	19	6.0	19	6.0	0.045	11.5	LOS B	0.2	4.2	0.53	0.72	0.53	32.4
8	T1	All MCs	5	1.0	5	1.0	0.045	5.4	LOS A	0.2	4.2	0.53	0.72	0.53	30.4
18	R2	All MCs	8	1.0	8	1.0	0.045	7.5	LOS A	0.2	4.2	0.53	0.72	0.53	33.5
Approach			33	3.9	33	3.9	0.045	9.7	LOS A	0.2	4.2	0.53	0.72	0.53	32.3
East: SR 305															
1u	U	All MCs	3	1.0	3	1.0	0.438	12.0	LOS B	3.4	87.2	0.19	0.45	0.19	37.7
1	L2	All MCs	8	1.0	8	1.0	0.438	11.4	LOS B	3.4	87.2	0.19	0.45	0.19	35.7
6	T1	All MCs	912	3.0	912	3.0	0.438	6.3	LOS A	3.4	87.2	0.18	0.45	0.18	41.2
16	R2	All MCs	11	10.0	11	10.0	0.199	5.9	LOS A	1.1	29.4	0.16	0.46	0.16	36.0
Approach			933	3.1	933	3.1	0.438	6.4	LOS A	3.4	87.2	0.18	0.45	0.18	41.1
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.047	15.0	LOS B	0.2	4.5	0.57	0.75	0.57	30.9
7	L2	All MCs	19	6.0	19	6.0	0.047	12.1	LOS B	0.2	4.5	0.57	0.75	0.57	32.1
4	T1	All MCs	3	1.0	3	1.0	0.047	6.0	LOS A	0.2	4.5	0.57	0.75	0.57	30.2
14	R2	All MCs	9	1.0	9	1.0	0.047	8.6	LOS A	0.2	4.5	0.57	0.75	0.57	33.2
Approach			32	4.0	32	4.0	0.047	10.7	LOS B	0.2	4.5	0.57	0.75	0.57	32.2
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.377	12.0	LOS B	2.6	67.1	0.18	0.45	0.18	37.7
5	L2	All MCs	3	1.0	3	1.0	0.377	11.4	LOS B	2.6	67.1	0.18	0.45	0.18	35.8
2	T1	All MCs	786	2.0	786	2.0	0.377	6.1	LOS A	2.6	67.1	0.18	0.45	0.18	41.5
12	R2	All MCs	19	1.0	19	1.0	0.171	5.8	LOS A	0.9	23.9	0.16	0.46	0.16	36.2
Approach			810	2.0	810	2.0	0.377	6.2	LOS A	2.6	67.1	0.18	0.46	0.18	41.3
All Vehicles			1809	2.6	1809	2.6	0.438	6.4	LOS A	3.4	87.2	0.19	0.46	0.19	40.8

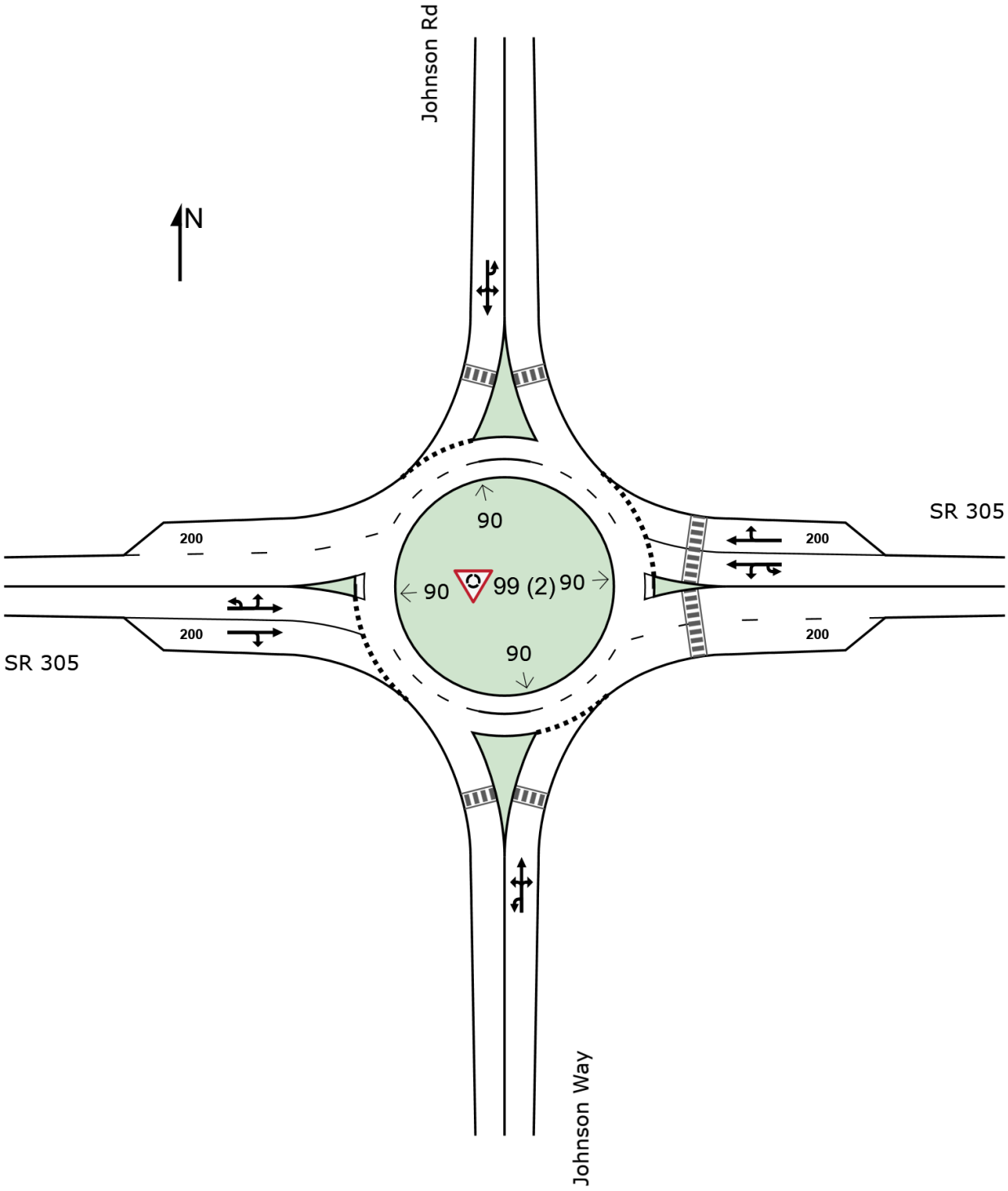
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [99 (2)] SR 305 & Johnson Rd (Existing PM Peak Hour)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

Site: [1 (2)] Johnson & Sunrise Ridge - Existing AP (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	7.1	LOS A	0.0	0.5	0.10	0.42	0.10	23.7
3	L2	All MCs	1	3.0	1	3.0	0.005	5.7	LOS A	0.0	0.5	0.10	0.42	0.10	23.7
8	T1	All MCs	1	3.0	1	3.0	0.005	1.8	LOS A	0.0	0.5	0.10	0.42	0.10	23.9
18	R2	All MCs	3	3.0	3	3.0	0.005	2.2	LOS A	0.0	0.5	0.10	0.42	0.10	23.8
Approach			7	3.0	7	3.0	0.005	3.5	LOS A	0.0	0.5	0.10	0.42	0.10	23.8
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.035	10.8	LOS B	0.1	3.6	0.04	0.47	0.04	34.8
1	L2	All MCs	1	3.0	1	3.0	0.035	8.9	LOS A	0.1	3.6	0.04	0.47	0.04	34.8
6	T1	All MCs	44	3.0	44	3.0	0.035	4.8	LOS A	0.1	3.6	0.04	0.47	0.04	35.4
16	R2	All MCs	1	3.0	1	3.0	0.035	4.6	LOS A	0.1	3.6	0.04	0.47	0.04	35.1
Approach			48	3.0	48	3.0	0.035	5.1	LOS A	0.1	3.6	0.04	0.47	0.04	35.4
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.004	11.0	LOS B	0.0	0.4	0.14	0.58	0.14	33.5
7	L2	All MCs	1	3.0	1	3.0	0.004	9.1	LOS A	0.0	0.4	0.14	0.58	0.14	33.5
4	T1	All MCs	1	3.0	1	3.0	0.004	5.0	LOS A	0.0	0.4	0.14	0.58	0.14	34.1
14	R2	All MCs	1	3.0	1	3.0	0.004	4.8	LOS A	0.0	0.4	0.14	0.58	0.14	33.8
Approach			5	3.0	5	3.0	0.004	7.5	LOS A	0.0	0.4	0.14	0.58	0.14	33.7
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.020	10.8	LOS B	0.1	2.1	0.04	0.49	0.04	34.7
5	L2	All MCs	1	3.0	1	3.0	0.020	8.9	LOS A	0.1	2.1	0.04	0.49	0.04	34.7
2	T1	All MCs	23	3.0	23	3.0	0.020	4.8	LOS A	0.1	2.1	0.04	0.49	0.04	35.3
12	R2	All MCs	1	3.0	1	3.0	0.020	4.6	LOS A	0.1	2.1	0.04	0.49	0.04	35.0
Approach			26	3.0	26	3.0	0.020	5.3	LOS A	0.1	2.1	0.04	0.49	0.04	35.2
All Vehicles			85	3.0	85	3.0	0.035	5.1	LOS A	0.1	3.6	0.05	0.48	0.05	33.9

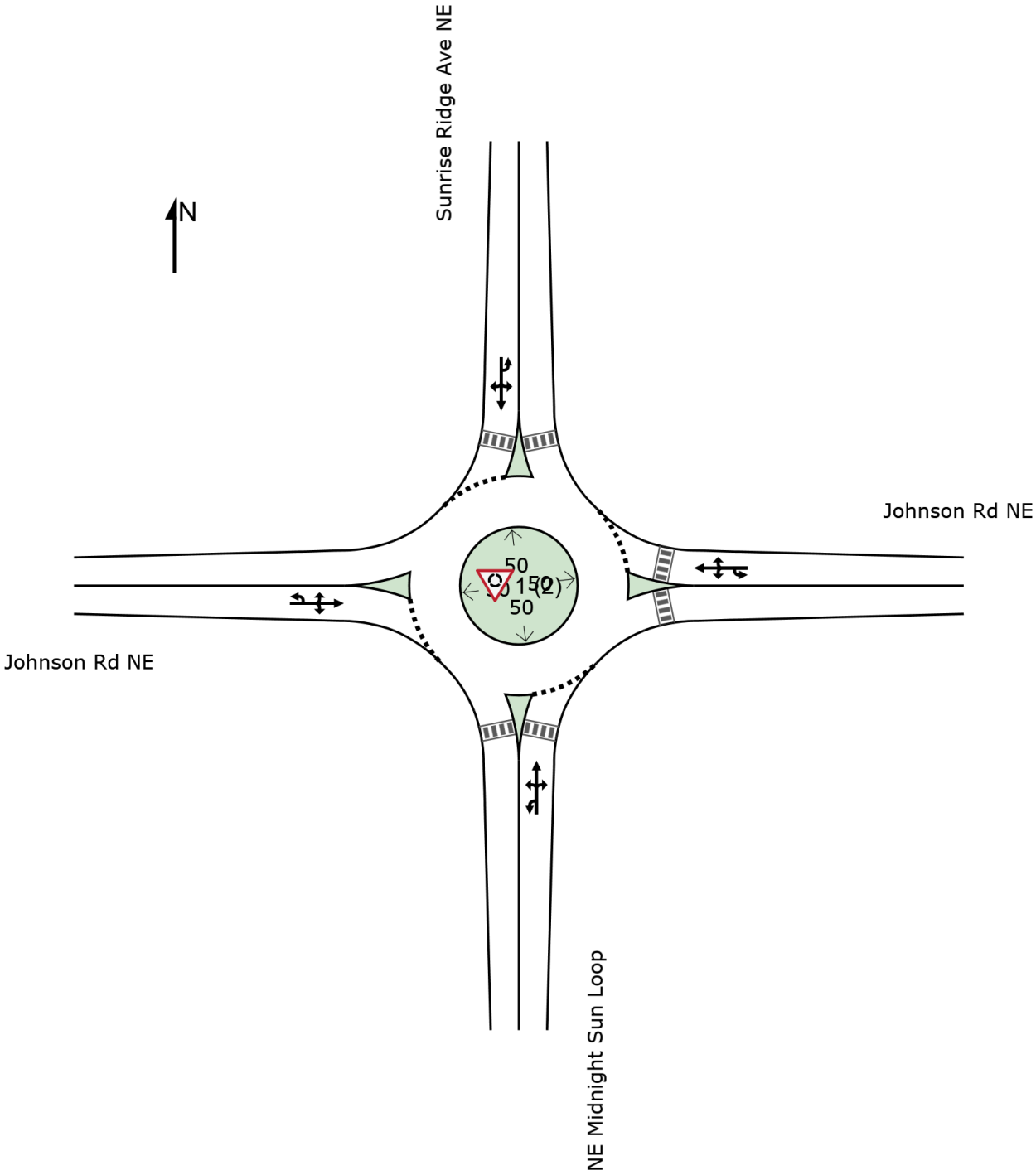
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [1 (2)] Johnson & Sunrise Ridge - Existing AP (Folder1)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Organisation: HEATH & ASSOCIATES | Licence: PLUS / 1PC | Created: Monday, July 7, 2025 2:12:24 PM
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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	-	-	-	-	927	-
Stage 2	-	-	-	-	895	-

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	-

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	108	65	54	89	150	47	491	22	208	881	21
Future Volume (veh/h)	39	108	65	54	89	150	47	491	22	208	881	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	117	71	59	97	98	51	534	24	226	958	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	165	198	161	58	601	27	787	1878	45
Arrive On Green	0.03	0.10	0.10	0.04	0.11	0.11	0.04	0.22	0.22	0.48	0.66	0.66
Sat Flow, veh/h	1634	1730	1443	1661	1744	1423	1647	2784	125	1647	2853	68
Grp Volume(v), veh/h	42	117	71	59	97	98	51	233	325	226	409	572
Grp Sat Flow(s),veh/h/ln	1634	1730	1443	1661	1744	1423	1647	1218	1690	1647	1218	1703
Q Serve(g_s), s	2.8	7.8	5.6	3.8	6.3	3.0	3.7	22.3	22.4	10.0	20.7	20.7
Cycle Q Clear(g_c), s	2.8	7.8	5.6	3.8	6.3	3.0	3.7	22.3	22.4	10.0	20.7	20.7
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	172	175	146	165	198	161	58	263	365	787	802	1121
V/C Ratio(X)	0.24	0.67	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	342	332	277	318	334	273	316	437	606	787	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	7.2	57.6	45.6	45.7	18.9	10.5	10.5
Incr Delay (d2), s/veh	0.7	4.3	2.5	1.3	1.9	3.6	30.5	32.8	26.1	0.2	2.3	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	2.1	6.5	3.8	2.9	5.1	5.1	3.6	13.9	17.5	6.7	9.3	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.7	56.3	53.4	47.6	51.8	10.8	88.1	78.4	71.8	19.1	12.8	12.2
LnGrp LOS	D	E	D	D	D	B	F	E	E	B	B	B
Approach Vol, veh/h		230			254			609			1207	
Approach Delay, s/veh		53.8			35.0			75.7			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	62.4	30.9	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	12.0	24.4	5.8	9.8	5.7	22.7	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	971	515	1	2	3
Future Vol, veh/h	0	971	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	1044	554	1	2	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	559	0	-	0	1606	562
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	1048	-
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	-	-	-	116	529
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	339	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1014	-	-	-	116	525
Mov Cap-2 Maneuver	-	-	-	-	116	-
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	21.83
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1014	-	-	-	116	525
HCM Lane V/C Ratio	-	-	-	-	0.019	0.006
HCM Ctrl Dly (s/v)	0	-	-	-	36.7	11.9
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

MOVEMENT SUMMARY

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

Without (Existing AM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	43.3	0.18	0.46	0.18	37.7
1	L2	All MCs	8	1.0	8	1.0	0.266	11.4	LOS B	1.7	43.3	0.18	0.46	0.18	35.7
6	T1	All MCs	522	6.0	522	6.0	0.266	6.1	LOS A	1.7	43.3	0.18	0.46	0.18	40.7
16	R2	All MCs	16	1.0	16	1.0	0.121	5.8	LOS A	0.6	16.6	0.17	0.47	0.17	36.2
Approach			546	5.8	546	5.8	0.266	6.1	LOS A	1.7	43.3	0.18	0.46	0.18	40.5
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.131	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	0.131	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	0.131	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	0.131	6.2	LOS A	0.5	12.5	0.48	0.70	0.48	33.3
Approach			112	2.6	112	2.6	0.131	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	0.553	12.5	LOS B	4.8	127.3	0.42	0.48	0.42	36.8
5	L2	All MCs	11	17.0	11	17.0	0.553	12.5	LOS B	4.8	127.3	0.42	0.48	0.42	34.5
2	T1	All MCs	1015	8.0	1015	8.0	0.553	7.7	LOS A	4.8	127.3	0.40	0.48	0.40	39.5
12	R2	All MCs	20	12.0	20	12.0	0.251	6.5	LOS A	1.5	39.3	0.33	0.49	0.33	35.5
Approach			1047	8.2	1047	8.2	0.553	7.7	LOS A	4.8	127.3	0.39	0.48	0.39	39.4
All Vehicles			1735	6.9	1735	6.9	0.553	7.4	LOS A	4.8	127.3	0.34	0.50	0.34	39.0

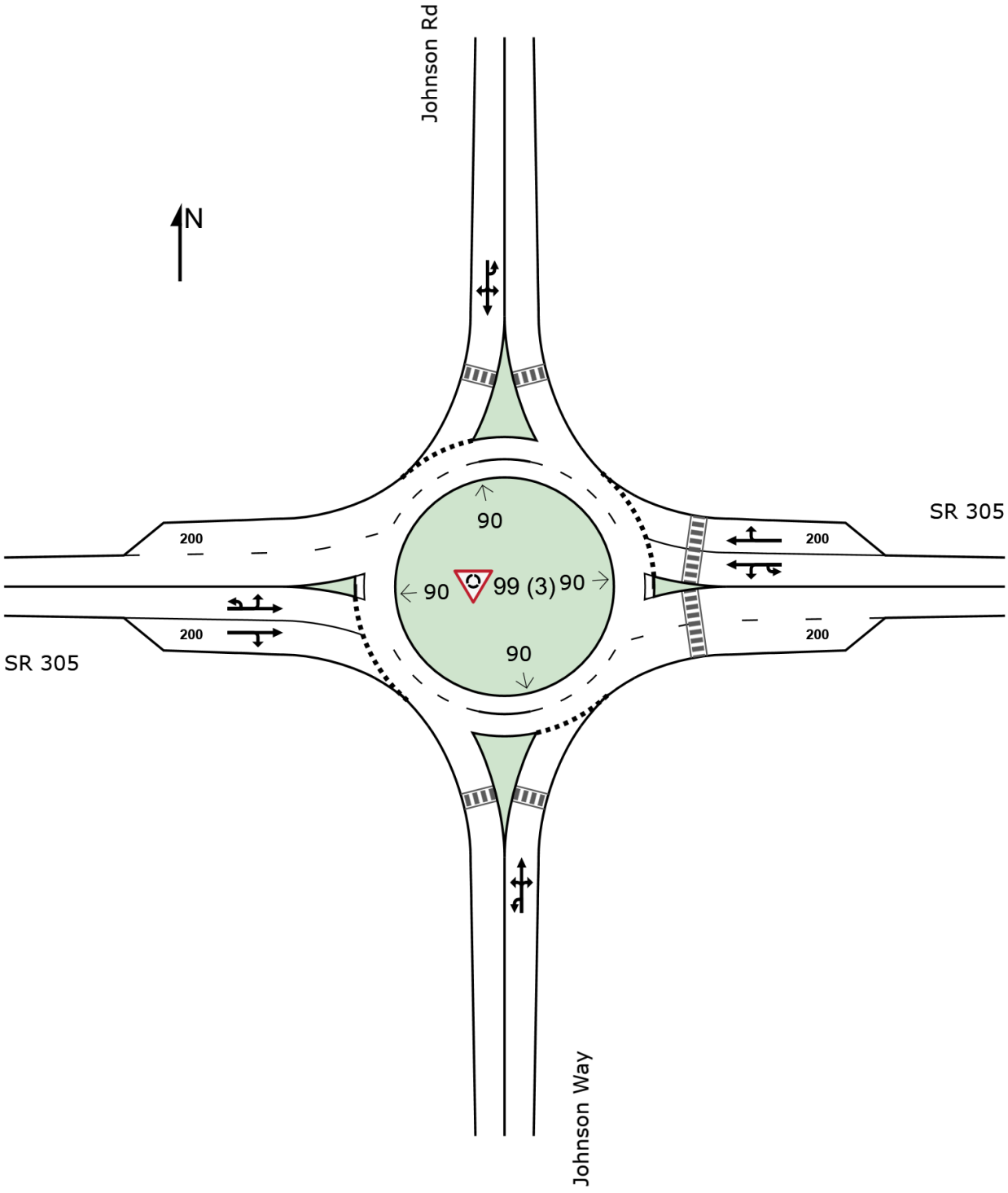
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per 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.

SITE LAYOUT

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

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

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

(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	0.15	0.45	0.15	23.5
3	L2	All MCs	1	3.0	1	3.0	0.004	5.8	LOS A	0.0	0.4	0.15	0.45	0.15	23.5
8	T1	All MCs	1	3.0	1	3.0	0.004	2.0	LOS A	0.0	0.4	0.15	0.45	0.15	23.7
18	R2	All MCs	1	3.0	1	3.0	0.004	2.3	LOS A	0.0	0.4	0.15	0.45	0.15	23.6
Approach			5	3.0	5	3.0	0.004	4.3	LOS A	0.0	0.4	0.15	0.45	0.15	23.6
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.071	10.9	LOS B	0.3	7.5	0.09	0.46	0.09	34.7
1	L2	All MCs	1	3.0	1	3.0	0.071	8.9	LOS A	0.3	7.5	0.09	0.46	0.09	34.7
6	T1	All MCs	87	3.0	87	3.0	0.071	4.9	LOS A	0.3	7.5	0.09	0.46	0.09	35.3
16	R2	All MCs	5	3.0	5	3.0	0.071	4.7	LOS A	0.3	7.5	0.09	0.46	0.09	35.0
Approach			94	3.0	94	3.0	0.071	5.0	LOS A	0.3	7.5	0.09	0.46	0.09	35.3
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.051	11.2	LOS B	0.2	5.4	0.21	0.56	0.21	34.1
7	L2	All MCs	14	3.0	14	3.0	0.051	9.3	LOS A	0.2	5.4	0.21	0.56	0.21	34.1
4	T1	All MCs	1	3.0	1	3.0	0.051	5.2	LOS A	0.2	5.4	0.21	0.56	0.21	34.7
14	R2	All MCs	43	3.0	43	3.0	0.051	5.0	LOS A	0.2	5.4	0.21	0.56	0.21	34.4
Approach			60	3.0	60	3.0	0.051	6.1	LOS A	0.2	5.4	0.21	0.56	0.21	34.3
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.040	10.9	LOS B	0.2	4.3	0.09	0.54	0.09	34.1
5	L2	All MCs	14	3.0	14	3.0	0.040	9.0	LOS A	0.2	4.3	0.09	0.54	0.09	34.1
2	T1	All MCs	26	3.0	26	3.0	0.040	4.9	LOS A	0.2	4.3	0.09	0.54	0.09	34.8
12	R2	All MCs	10	3.0	10	3.0	0.040	4.7	LOS A	0.2	4.3	0.09	0.54	0.09	34.5
Approach			51	3.0	51	3.0	0.040	6.1	LOS A	0.2	4.3	0.09	0.54	0.09	34.5
All Vehicles			210	3.0	210	3.0	0.071	5.6	LOS A	0.3	7.5	0.13	0.51	0.13	34.4

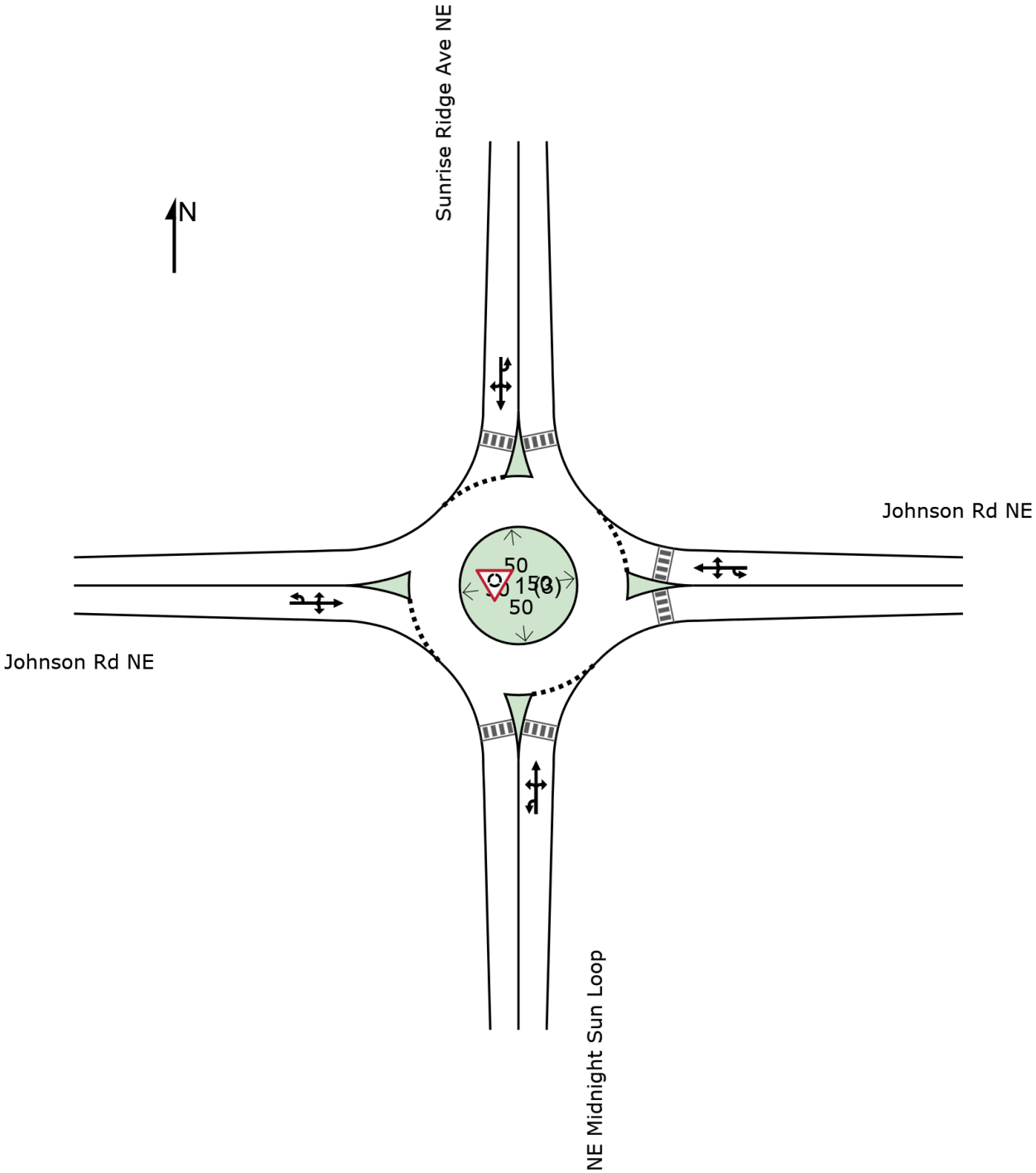
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Intersection Delay, s/veh	22.6
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	22	213	81	61	38	41	129	27	60
Future Vol, veh/h	48	236	23	22	213	81	61	38	41	129	27	60
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.87	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	29	284	108	70	51	55	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	26.5	26.4	15	16.2
HCM LOS	D	D	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	44%	16%	7%	83%	0%
Vol Thru, %	27%	77%	67%	17%	0%
Vol Right, %	29%	7%	26%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	307	316	156	60
LT Vol	61	48	22	129	0
Through Vol	38	236	213	27	0
RT Vol	41	23	81	0	60
Lane Flow Rate	175	409	421	208	80
Geometry Grp	4a	2	2	5	5
Degree of til (v)	0.371	0.744	0.749	0.476	0.155
Departure Headway (Hd)	7.603	6.653	6.516	8.246	6.993
Convergence, /N	es	es	es	es	es
Cap	475	549	560	439	516
Service Time	5.616	4.653	4.516	5.946	4.693
HCM Lane V/C Ratio	0.368	0.745	0.752	0.474	0.155
HCM Control Delay, s/veh	15	26.5	26.4	18.2	11
HCM Lane LOS	B	D	D	C	B
HCM 95th-tile Q	1.7	6.4	6.5	2.5	0.5

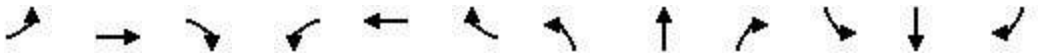
Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	36	6	57	59	23
Future Vol, veh/h	34	36	6	57	59	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	39	7	62	64	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	86	0	152	77
Stage 1	-	-	-	-	67	-
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	-	-	1510	-	840	985
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1498	-	823	968
Mov Cap-2 Maneuver	-	-	-	-	823	-
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	926	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.71	9.68
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	859	-	-	171	-
HCM Lane V/C Ratio	0.104	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.7	-	-	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)	71	176	102	55	129	229	123	818	36	220	661	51
Future Volume (veh/h)	71	176	102	55	129	229	123	818	36	220	661	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	178	103	56	130	85	124	826	36	222	668	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	185	221	183	150	203	165	145	889	39	610	1624	126
Arrive On Green	0.05	0.13	0.13	0.04	0.11	0.11	0.09	0.31	0.31	0.36	0.59	0.59
Sat Flow, veh/h	1621	1758	1458	1701	1786	1455	1688	2831	123	1701	2768	215
Grp Volume(v), veh/h	72	178	103	56	130	85	124	361	501	222	303	417
Grp Sat Flow(s),veh/h/ln	1621	1758	1458	1701	1786	1455	1688	1238	1716	1701	1258	1726
Q Serve(g_s), s	4.7	11.8	8.0	3.5	8.4	3.4	8.7	33.9	33.9	11.6	15.8	15.8
Cycle Q Clear(g_c), s	4.7	11.8	8.0	3.5	8.4	3.4	8.7	33.9	33.9	11.6	15.8	15.8
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	185	221	183	150	203	165	145	389	539	610	738	1012
V/C Ratio(X)	0.39	0.81	0.56	0.37	0.64	0.52	0.86	0.93	0.93	0.36	0.41	0.41
Avail Cap(c_a), veh/h	319	337	280	311	342	279	323	444	615	610	738	1012
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	44.5	51.0	49.3	45.5	50.9	13.1	54.1	39.9	39.9	28.4	13.5	13.5
Incr Delay (d2), s/veh	1.3	8.0	2.7	1.5	3.4	2.5	13.2	30.8	24.6	0.4	1.7	1.2
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	3.5	9.6	5.5	2.8	7.1	4.4	7.5	19.3	24.4	8.2	8.0	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.9	59.1	52.0	47.0	54.2	15.6	67.3	70.6	64.5	28.8	15.2	14.8
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		353			271			986			942	
Approach Delay, s/veh		54.3			40.6			67.1			18.2	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	48.0	42.7	9.2	20.1	15.3	75.4	10.7	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	13.6	35.9	5.5	13.8	10.7	17.8	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	788	914	5	1	3
Future Vol, veh/h	6	788	914	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	847	983	5	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	989	0	-	0	1845	985
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	861	-
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	668	-	-	-	78	302
Stage 1	-	-	-	-	350	-
Stage 2	-	-	-	-	401	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	667	-	-	-	78	302
Mov Cap-2 Maneuver	-	-	-	-	78	-
Stage 1	-	-	-	-	346	-
Stage 2	-	-	-	-	401	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.08	0	25.81
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	667	-	-	-	78	302
HCM Lane V/C Ratio	0.01	-	-	-	0.014	0.011
HCM Ctrl Dly (s/v)	10.4	-	-	-	52.1	17.1
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

MOVEMENT SUMMARY

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

Without (PM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	11.7	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	95.6	0.23	0.45	0.23	37.5
1	L2	All MCs	12	1.0	12	1.0	0.471	11.5	LOS B	3.7	95.6	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	95.6	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	31.6	0.19	0.46	0.19	35.9
Approach			991	3.2	991	3.2	0.471	6.5	LOS A	3.7	95.6	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	0.59	0.77	0.59	30.7
7	L2	All MCs	32	6.0	32	6.0	0.076	12.5	LOS B	0.3	7.6	0.59	0.77	0.59	31.9
4	T1	All MCs	3	1.0	3	1.0	0.076	6.3	LOS A	0.3	7.6	0.59	0.77	0.59	30.0
14	R2	All MCs	14	1.0	14	1.0	0.076	9.3	LOS A	0.3	7.6	0.59	0.77	0.59	32.9
Approach			51	4.2	51	4.2	0.076	11.3	LOS B	0.3	7.6	0.59	0.77	0.59	32.0
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.403	12.1	LOS B	2.9	74.3	0.23	0.46	0.23	37.5
5	L2	All MCs	11	1.0	11	1.0	0.403	11.5	LOS B	2.9	74.3	0.23	0.46	0.23	35.6
2	T1	All MCs	817	2.0	817	2.0	0.403	6.3	LOS A	2.9	74.3	0.23	0.46	0.23	41.2
12	R2	All MCs	23	1.0	23	1.0	0.183	5.9	LOS A	1.0	25.9	0.21	0.47	0.21	36.1
Approach			852	2.0	852	2.0	0.403	6.3	LOS A	2.9	74.3	0.23	0.46	0.23	41.0
All Vehicles			1932	2.7	1932	2.7	0.471	6.6	LOS A	3.7	95.6	0.24	0.47	0.24	40.4

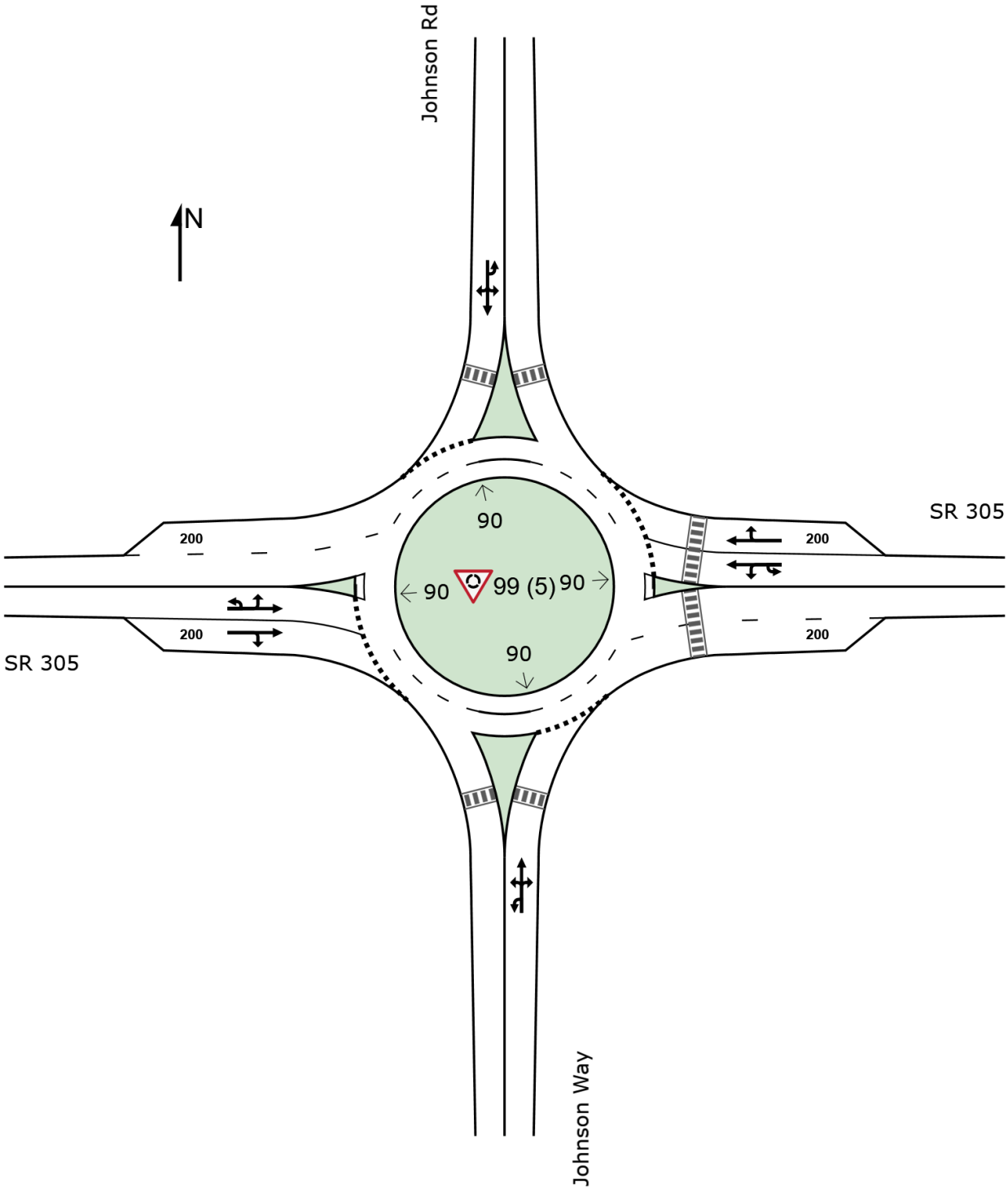
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [99 (5)] SR 305 & Johnson Rd - Forecast 2032 PM
Without (PM Peak Hour)

New Site
Site Category: (None)
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: 10.0.5.217

New Site
Site Category: (None)
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	23.9
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	0.043	10.9	LOS B	0.2	4.5	0.12	0.49	0.12	34.5
1	L2	All MCs	3	3.0	3	3.0	0.043	9.0	LOS A	0.2	4.5	0.12	0.49	0.12	34.5
6	T1	All MCs	40	3.0	40	3.0	0.043	5.0	LOS A	0.2	4.5	0.12	0.49	0.12	35.2
16	R2	All MCs	12	3.0	12	3.0	0.043	4.7	LOS A	0.2	4.5	0.12	0.49	0.12	34.8
Approach			57	3.0	57	3.0	0.043	5.3	LOS A	0.2	4.5	0.12	0.49	0.12	35.0
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.029	11.0	LOS B	0.1	3.0	0.15	0.55	0.15	34.3
7	L2	All MCs	7	3.0	7	3.0	0.029	9.1	LOS A	0.1	3.0	0.15	0.55	0.15	34.3
4	T1	All MCs	1	3.0	1	3.0	0.029	5.0	LOS A	0.1	3.0	0.15	0.55	0.15	34.9
14	R2	All MCs	26	3.0	26	3.0	0.029	4.8	LOS A	0.1	3.0	0.15	0.55	0.15	34.6
Approach			35	3.0	35	3.0	0.029	5.8	LOS A	0.1	3.0	0.15	0.55	0.15	34.5
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.041	10.8	LOS B	0.2	4.3	0.07	0.59	0.07	33.6
5	L2	All MCs	30	3.0	30	3.0	0.041	8.9	LOS A	0.2	4.3	0.07	0.59	0.07	33.6
2	T1	All MCs	20	3.0	20	3.0	0.041	4.9	LOS A	0.2	4.3	0.07	0.59	0.07	34.2
12	R2	All MCs	1	3.0	1	3.0	0.041	4.6	LOS A	0.2	4.3	0.07	0.59	0.07	33.9
Approach			52	3.0	52	3.0	0.041	7.3	LOS A	0.2	4.3	0.07	0.59	0.07	33.9
All Vehicles			151	3.0	151	3.0	0.043	6.0	LOS A	0.2	4.5	0.11	0.53	0.11	33.8

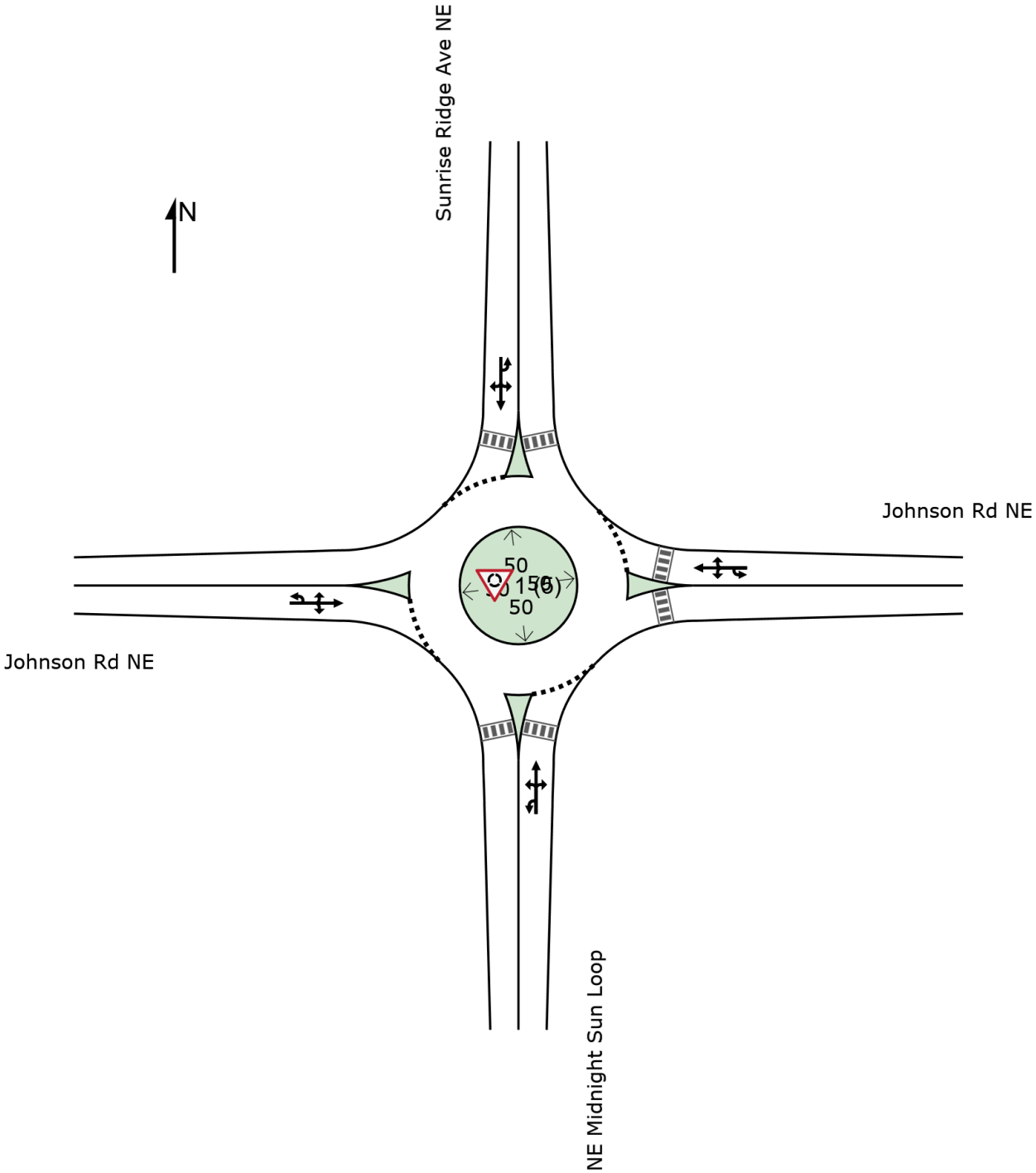
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Intersection Delay, s/veh	14.9
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	10	137	50	65	50	3	92	63	65
Future Vol, veh/h	89	219	72	10	137	50	65	50	3	92	63	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	11	157	57	75	57	3	106	72	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	18.9	12.1	11.8	12.2
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	55%	23%	5%	59%	0%
Vol Thru, %	42%	58%	70%	41%	0%
Vol Right, %	3%	19%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	380	197	155	65
LT Vol	65	89	10	92	0
Through Vol	50	219	137	63	0
RT Vol	3	72	50	0	65
Lane Flow Rate	136	437	226	178	75
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.246	0.666	0.361	0.343	0.123
Departure Headway (Hd)	6.521	5.489	5.74	6.925	5.908
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	547	655	620	517	602
Service Time	4.617	3.559	3.825	4.706	3.688
HCM Lane V/C Ratio	0.249	0.667	0.365	0.344	0.125
HCM Control Delay, s/veh	11.8	18.9	12.1	13.3	9.5
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	1	5	1.6	1.5	0.4

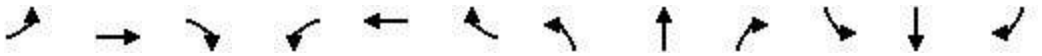
Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	63	23	57	41	17
Future Vol, veh/h	57	63	23	57	41	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	68	25	62	45	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	140	0	228	116
Stage 1	-	-	-	-	106	-
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	-	-	1443	-	760	936
Stage 1	-	-	-	-	918	-
Stage 2	-	-	-	-	903	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1431	-	734	920
Mov Cap-2 Maneuver	-	-	-	-	734	-
Stage 1	-	-	-	-	910	-
Stage 2	-	-	-	-	880	-

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)	780	-	-	517	-
HCM Lane V/C Ratio	0.081	-	-	0.017	-
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)	39	108	70	54	89	150	61	509	22	208	888	21
Future Volume (veh/h)	39	108	70	54	89	150	61	509	22	208	888	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	117	76	59	97	98	66	553	24	226	965	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	176	147	165	198	162	78	620	27	776	1845	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	2789	121	1647	2853	68
Grp Volume(v), veh/h	42	117	76	59	97	98	66	241	336	226	412	576
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	6.0	3.8	6.3	3.0	4.8	23.0	23.1	10.1	21.7	21.7
Cycle Q Clear(g_c), s	2.8	7.8	6.0	3.8	6.3	3.0	4.8	23.0	23.1	10.1	21.7	21.7
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	172	176	147	165	198	162	78	271	376	776	788	1101
V/C Ratio(X)	0.24	0.67	0.52	0.36	0.49	0.61	0.85	0.89	0.89	0.29	0.52	0.52
Avail Cap(c_a), veh/h	342	332	277	318	334	273	316	437	606	776	788	1101
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	51.1	46.3	49.9	7.5	56.8	45.2	45.3	19.4	11.3	11.3
Incr Delay (d2), s/veh	0.7	4.3	2.8	1.3	1.9	3.6	21.7	32.5	25.8	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	6.5	4.1	2.9	5.1	5.1	4.4	14.2	17.9	6.8	9.8	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.7	56.2	53.9	47.6	51.8	11.1	78.4	77.7	71.1	19.6	13.8	13.1
LnGrp LOS	D	E	D	D	D	B	E	E	E	B	B	B
Approach Vol, veh/h		235			254			643			1214	
Approach Delay, s/veh		54.0			35.1			74.3			14.6	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	61.5	31.7	9.6	17.2	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	25.1	5.8	9.8	6.8	23.7	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	983	547	1	2	3
Future Vol, veh/h	0	983	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	1057	588	1	2	3

Major/Minor	Major1			Major2		
Conflicting Flow All	593	0	-	0	1653	596
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	1061	-
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	-	-	-	-	334	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	984	-	-	-	108	502
Mov Cap-2 Maneuver	-	-	-	-	108	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	333	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	22.92
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	984	-	-	-	108	502
HCM Lane V/C Ratio	-	-	-	-	0.02	0.006
HCM Ctrl Dly (s/v)	0	-	-	-	39	12.2
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

MOVEMENT SUMMARY

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

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
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	6.0	0.69	0.81	0.69	30.4
3	L2	All MCs	18	1.0	18	1.0	0.053	13.2	LOS B	0.2	6.0	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	6.0	0.69	0.81	0.69	29.7
18	R2	All MCs	3	1.0	3	1.0	0.053	13.7	LOS B	0.2	6.0	0.69	0.81	0.69	32.5
Approach			30	1.0	30	1.0	0.053	11.9	LOS B	0.2	6.0	0.69	0.81	0.69	31.5
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.275	12.1	LOS B	1.7	43.4	0.21	0.46	0.21	37.6
1	L2	All MCs	8	1.0	8	1.0	0.275	11.5	LOS B	1.7	43.4	0.21	0.46	0.21	35.7
6	T1	All MCs	522	6.0	522	6.0	0.275	6.1	LOS A	1.7	43.4	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			557	5.7	557	5.7	0.275	6.2	LOS A	1.7	43.4	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	0.576	12.7	LOS B	5.1	135.4	0.49	0.51	0.49	36.6
5	L2	All MCs	24	17.0	24	17.0	0.576	12.7	LOS B	5.1	135.4	0.49	0.51	0.49	34.2
2	T1	All MCs	1015	8.0	1015	8.0	0.576	8.0	LOS A	5.1	135.4	0.46	0.51	0.46	39.2
12	R2	All MCs	20	12.0	20	12.0	0.262	6.7	LOS A	1.5	41.2	0.38	0.50	0.38	35.3
Approach			1060	8.3	1060	8.3	0.576	8.1	LOS A	5.1	135.4	0.46	0.51	0.46	39.0
All Vehicles			1824	6.8	1824	6.8	0.576	7.7	LOS A	5.1	135.4	0.39	0.52	0.39	38.5

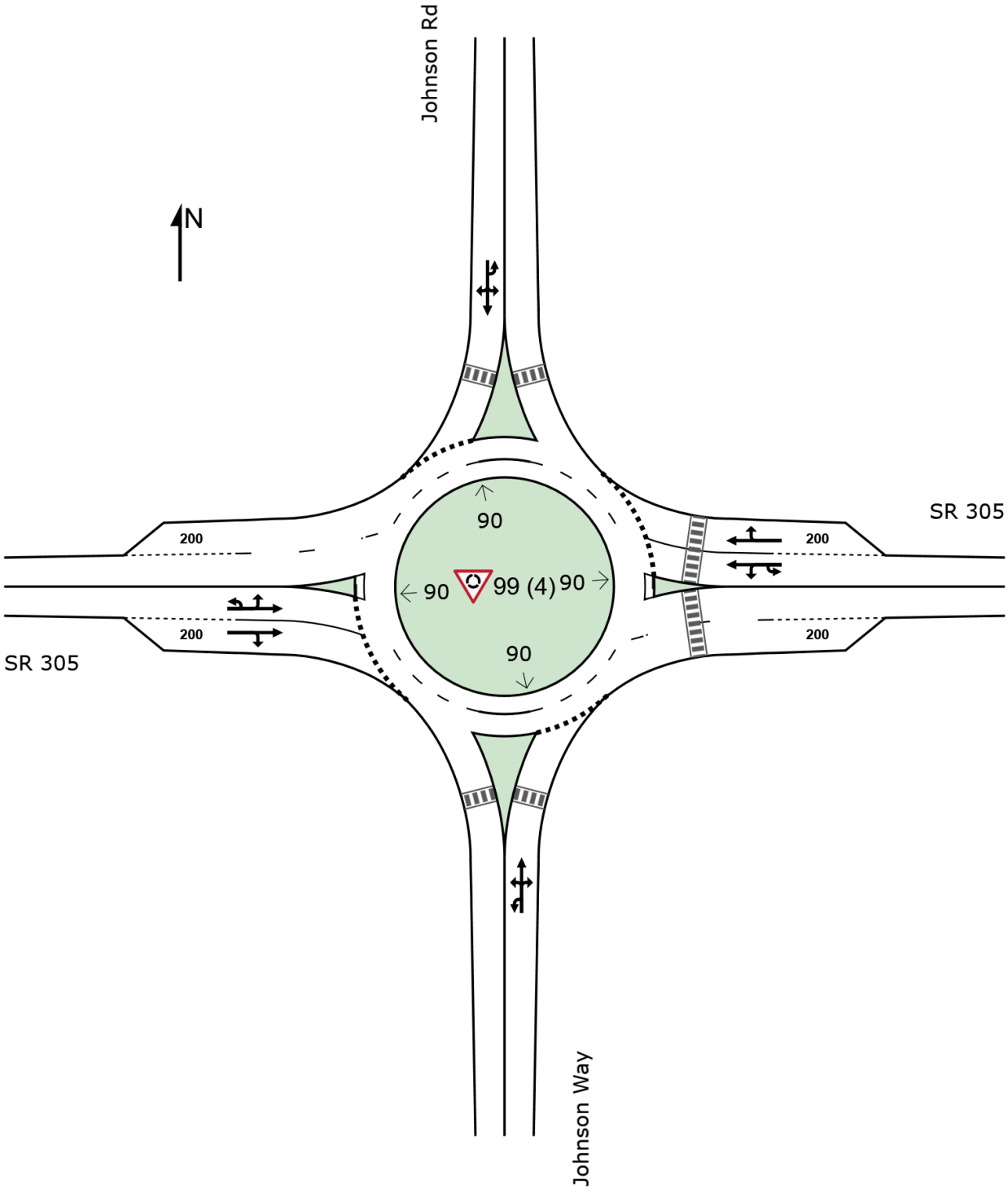
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
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: 10.0.9.250

New Site
Site Category: (None)
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	2.4	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	0.073	11.0	LOS B	0.3	7.9	0.14	0.46	0.14	34.5
1	L2	All MCs	1	3.0	1	3.0	0.073	9.1	LOS A	0.3	7.9	0.14	0.46	0.14	34.5
6	T1	All MCs	87	3.0	87	3.0	0.073	5.0	LOS A	0.3	7.9	0.14	0.46	0.14	35.2
16	R2	All MCs	6	3.0	6	3.0	0.073	4.8	LOS A	0.3	7.9	0.14	0.46	0.14	34.9
Approach			95	3.0	95	3.0	0.073	5.1	LOS A	0.3	7.9	0.14	0.46	0.14	35.1
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.116	11.2	LOS B	0.5	13.2	0.23	0.54	0.23	34.3
7	L2	All MCs	19	3.0	19	3.0	0.116	9.3	LOS A	0.5	13.2	0.23	0.54	0.23	34.3
4	T1	All MCs	1	3.0	1	3.0	0.116	5.3	LOS A	0.5	13.2	0.23	0.54	0.23	34.9
14	R2	All MCs	114	3.0	114	3.0	0.116	5.0	LOS A	0.5	13.2	0.23	0.54	0.23	34.6
Approach			136	3.0	136	3.0	0.116	5.7	LOS A	0.5	13.2	0.23	0.54	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	6.7	0.11	0.58	0.11	33.7
5	L2	All MCs	40	3.0	40	3.0	0.061	9.0	LOS A	0.3	6.7	0.11	0.58	0.11	33.7
2	T1	All MCs	26	3.0	26	3.0	0.061	4.9	LOS A	0.3	6.7	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	6.7	0.11	0.58	0.11	34.0
Approach			77	3.0	77	3.0	0.061	7.1	LOS A	0.3	6.7	0.11	0.58	0.11	33.9
All Vehicles			313	3.0	313	3.0	0.116	5.8	LOS A	0.5	13.2	0.17	0.53	0.17	34.3

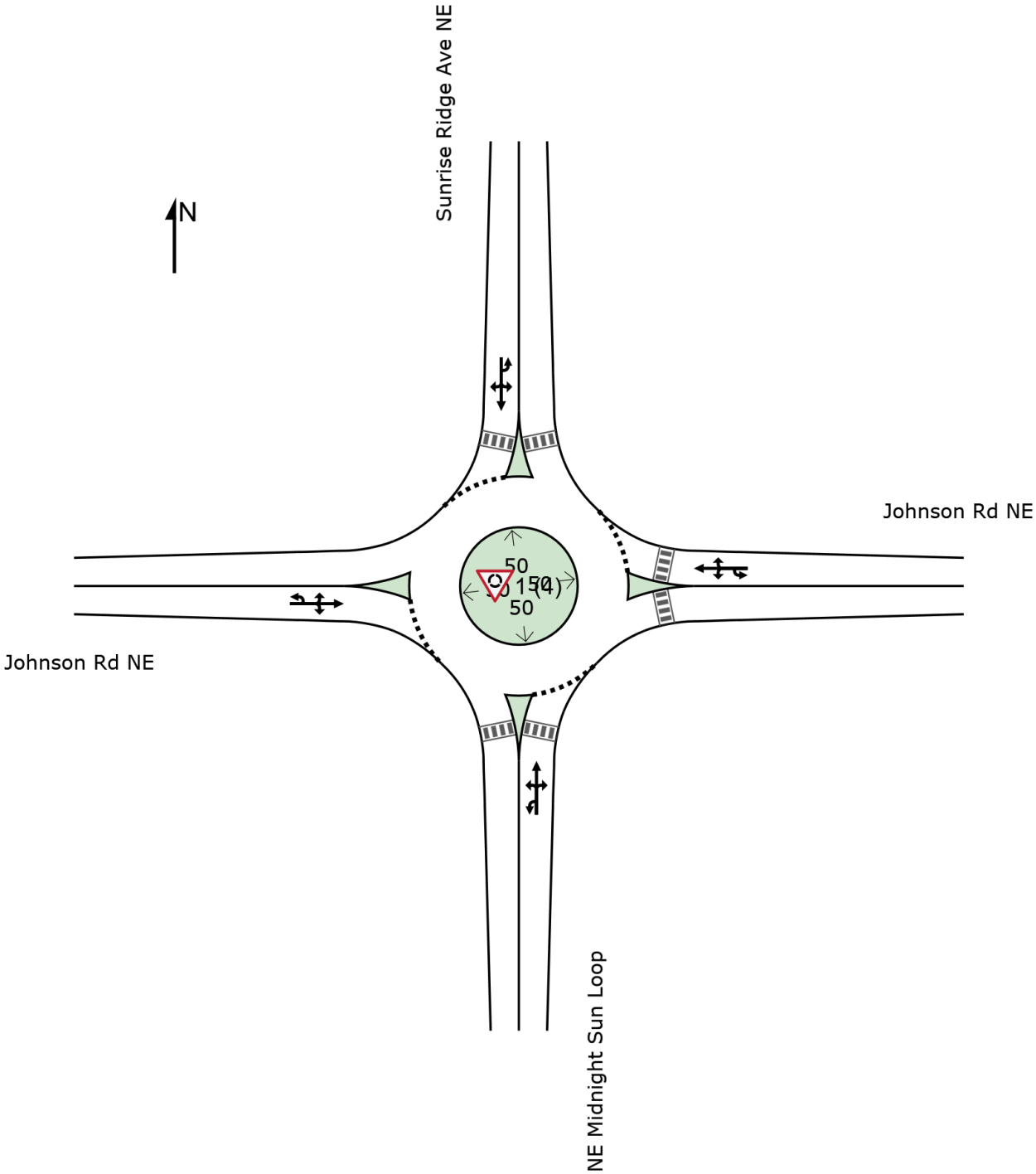
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	64	23	8	19	3
Future Vol, veh/h	7	64	23	8	19	3
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	8	70	25	9	21	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	81	22	24	0	-	0
Stage 1	22	-	-	-	-	-
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	921	1055	1591	-	-	-
Stage 1	1000	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	907	1055	1591	-	-	-
Mov Cap-2 Maneuver	907	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	964	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.75	5.42	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1335	-	1038	-	-
HCM Lane V/C Ratio	0.016	-	0.074	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	24.2
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	24	213	81	61	41	45	129	28	60
Future Vol, veh/h	48	236	23	24	213	81	61	41	45	129	28	60
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.87	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	70	55	60	172	37	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	28.5	28.9	15.6	16.5
HCM LOS	D	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	41%	16%	8%	82%	0%
Vol Thru, %	28%	77%	67%	18%	0%
Vol Right, %	31%	7%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	147	307	318	157	60
LT Vol	61	48	24	129	0
Through Vol	41	236	213	28	0
RT Vol	45	23	81	0	60
Lane Flow Rate	185	409	424	209	80
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.393	0.766	0.777	0.483	0.157
Departure Headway (Hd)	7.649	6.739	6.597	8.307	7.056
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	469	540	551	433	507
Service Time	5.722	4.761	4.617	6.071	4.82
HCM Lane V/C Ratio	0.394	0.757	0.77	0.483	0.158
HCM Control Delay, s/veh	15.6	28.5	28.9	18.6	11.1
HCM Lane LOS	C	D	D	C	B
HCM 95th-tile Q	1.8	6.8	7.1	2.6	0.6

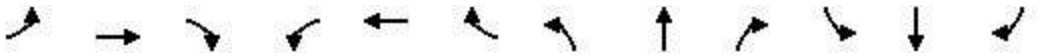
Intersection	
Int Delay, s/veh	4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	39	6	57	66	23
Future Vol, veh/h	34	39	6	57	66	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	42	7	62	72	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	89	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	-	-	1506	-	838	982
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	821	966
Mov Cap-2 Maneuver	-	-	-	-	821	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	926	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.71	9.75
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	854	-	-	171	-
HCM Lane V/C Ratio	0.113	-	-	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	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	176	118	55	129	229	133	830	36	220	681	51
Future Volume (veh/h)	71	176	118	55	129	229	133	830	36	220	681	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	178	119	56	130	85	134	838	36	222	688	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	222	184	150	203	166	156	900	39	603	1609	122
Arrive On Green	0.05	0.13	0.13	0.04	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	2833	122	1701	2775	210
Grp Volume(v), veh/h	72	178	119	56	130	85	134	366	508	222	312	428
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	11.8	9.3	3.5	8.3	3.4	9.4	34.4	34.4	11.6	16.6	16.6
Cycle Q Clear(g_c), s	4.7	11.8	9.3	3.5	8.3	3.4	9.4	34.4	34.4	11.6	16.6	16.6
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	222	184	150	203	166	156	393	545	603	730	1001
V/C Ratio(X)	0.39	0.80	0.65	0.37	0.64	0.51	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	603	730	1001
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	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	44.5	51.0	49.9	45.4	50.8	13.3	53.7	39.7	39.7	28.8	14.1	14.1
Incr Delay (d2), s/veh	1.3	7.9	3.8	1.5	3.3	2.5	12.8	30.9	24.8	0.4	1.8	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	3.5	9.6	6.5	2.8	7.1	4.4	7.9	19.5	24.6	8.3	8.4	10.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.8	58.9	53.7	47.0	54.1	15.7	66.5	70.6	64.5	29.1	15.9	15.4
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		369			271			1008			962	
Approach Delay, s/veh		54.7			40.6			67.0			18.7	
Approach LOS		D			D			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.5	43.1	9.2	20.1	16.1	74.6	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	13.6	36.4	5.5	13.8	11.4	18.6	6.7	10.3
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	824	936	5	1	3
Future Vol, veh/h	6	824	936	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	886	1006	5	1	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1013	0	-	0	1907	1008
Stage 1	-	-	-	-	1007	-
Stage 2	-	-	-	-	900	-
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	654	-	-	-	72	293
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	384	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	654	-	-	-	71	293
Mov Cap-2 Maneuver	-	-	-	-	71	-
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	384	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.08	0	27.24
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	654	-	-	-	71	293
HCM Lane V/C Ratio	0.01	-	-	-	0.015	0.011
HCM Ctrl Dly (s/v)	10.6	-	-	-	56.6	17.4
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

MOVEMENT SUMMARY

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

(PM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
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	0.504	12.3	LOS B	3.9	99.3	0.32	0.47	0.32	37.2
1	L2	All MCs	12	1.0	12	1.0	0.504	11.7	LOS B	3.9	99.3	0.32	0.47	0.32	35.3
6	T1	All MCs	949	3.0	949	3.0	0.504	6.7	LOS A	3.9	99.3	0.31	0.47	0.31	40.7
16	R2	All MCs	61	10.0	61	10.0	0.229	6.3	LOS A	1.3	32.5	0.27	0.49	0.27	35.6
Approach			1026	3.4	1026	3.4	0.504	6.7	LOS A	3.9	99.3	0.30	0.47	0.30	40.3
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.147	15.7	LOS B	0.6	15.7	0.63	0.78	0.63	30.7
7	L2	All MCs	53	6.0	53	6.0	0.147	12.8	LOS B	0.6	15.7	0.63	0.78	0.63	31.9
4	T1	All MCs	3	1.0	3	1.0	0.147	6.6	LOS A	0.6	15.7	0.63	0.78	0.63	30.0
14	R2	All MCs	38	1.0	38	1.0	0.147	9.8	LOS A	0.6	15.7	0.63	0.78	0.63	33.0
Approach			95	3.8	95	3.8	0.147	11.5	LOS B	0.6	15.7	0.63	0.78	0.63	32.3
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.431	12.2	LOS B	3.3	83.6	0.30	0.48	0.30	37.1
5	L2	All MCs	49	1.0	49	1.0	0.431	11.6	LOS B	3.3	83.6	0.30	0.48	0.30	35.2
2	T1	All MCs	817	2.0	817	2.0	0.431	6.4	LOS A	3.3	83.6	0.29	0.48	0.29	40.8
12	R2	All MCs	23	1.0	23	1.0	0.196	6.0	LOS A	1.1	28.2	0.26	0.47	0.26	35.9
Approach			890	1.9	890	1.9	0.431	6.7	LOS A	3.3	83.6	0.29	0.48	0.29	40.3
All Vehicles			2049	2.8	2049	2.8	0.504	7.0	LOS A	3.9	99.3	0.32	0.49	0.32	39.6

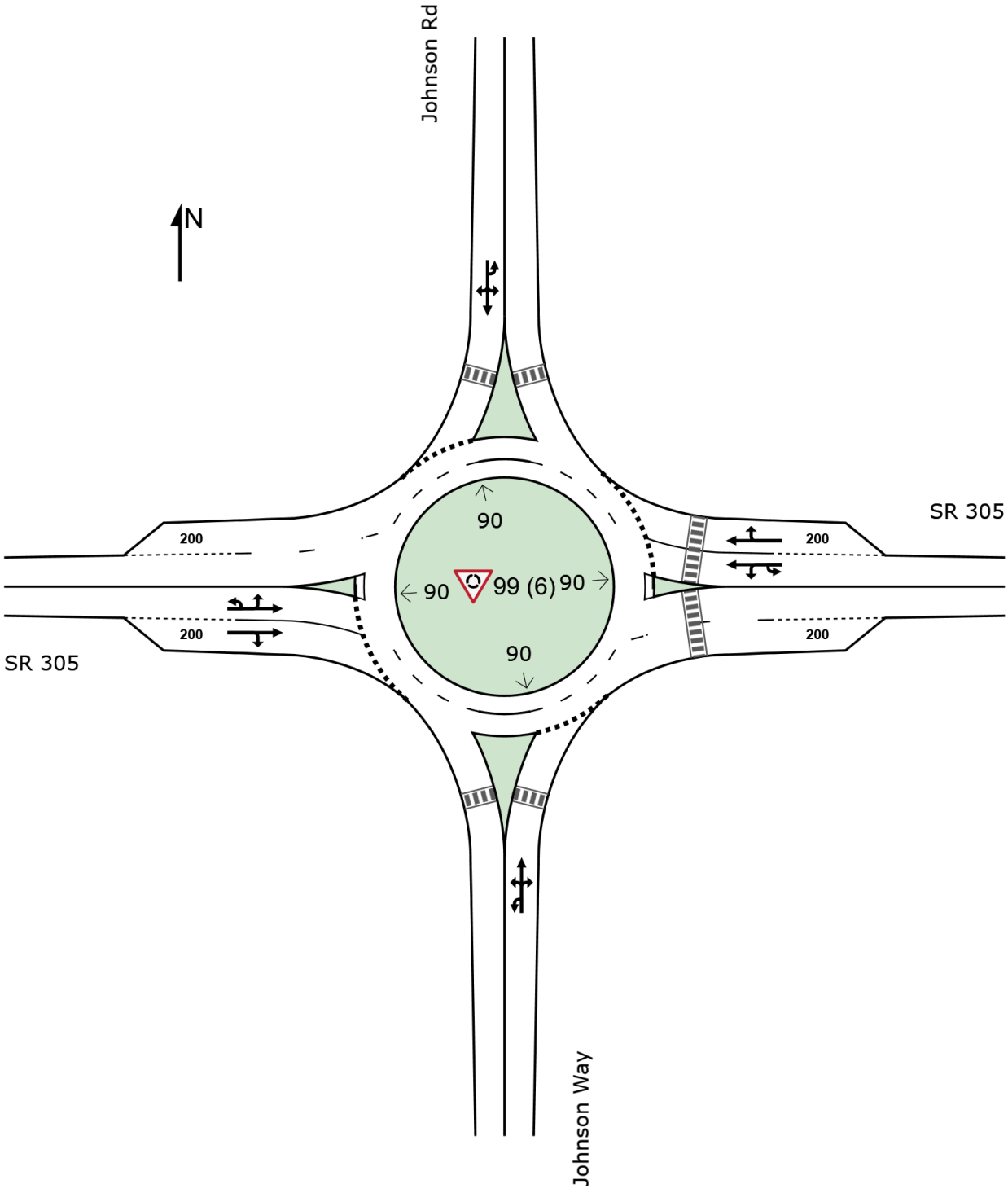
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per 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 (6)] SR 305 & Johnson Rd - Forecast 2032 PM With
(PM Peak Hour)

New Site
Site Category: (None)
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: 10.0.9.250

New Site
Site Category: (None)
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	2.6	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	0.050	11.2	LOS B	0.2	5.3	0.23	0.50	0.23	34.3
1	L2	All MCs	3	3.0	3	3.0	0.050	9.3	LOS A	0.2	5.3	0.23	0.50	0.23	34.3
6	T1	All MCs	40	3.0	40	3.0	0.050	5.3	LOS A	0.2	5.3	0.23	0.50	0.23	34.9
16	R2	All MCs	17	3.0	17	3.0	0.050	5.0	LOS A	0.2	5.3	0.23	0.50	0.23	34.6
Approach			61	3.0	61	3.0	0.050	5.5	LOS A	0.2	5.3	0.23	0.50	0.23	34.8
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.069	11.0	LOS B	0.3	7.7	0.16	0.53	0.16	34.5
7	L2	All MCs	9	3.0	9	3.0	0.069	9.1	LOS A	0.3	7.7	0.16	0.53	0.16	34.5
4	T1	All MCs	1	3.0	1	3.0	0.069	5.0	LOS A	0.3	7.7	0.16	0.53	0.16	35.1
14	R2	All MCs	73	3.0	73	3.0	0.069	4.8	LOS A	0.3	7.7	0.16	0.53	0.16	34.8
Approach			84	3.0	84	3.0	0.069	5.3	LOS A	0.3	7.7	0.16	0.53	0.16	34.8
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.101	10.9	LOS B	0.4	11.2	0.08	0.63	0.08	33.1
5	L2	All MCs	107	3.0	107	3.0	0.101	8.9	LOS A	0.4	11.2	0.08	0.63	0.08	33.1
2	T1	All MCs	20	3.0	20	3.0	0.101	4.9	LOS A	0.4	11.2	0.08	0.63	0.08	33.7
12	R2	All MCs	1	3.0	1	3.0	0.101	4.6	LOS A	0.4	11.2	0.08	0.63	0.08	33.4
Approach			130	3.0	130	3.0	0.101	8.3	LOS A	0.4	11.2	0.08	0.63	0.08	33.2
All Vehicles			282	3.0	282	3.0	0.101	6.7	LOS A	0.4	11.2	0.14	0.57	0.14	33.7

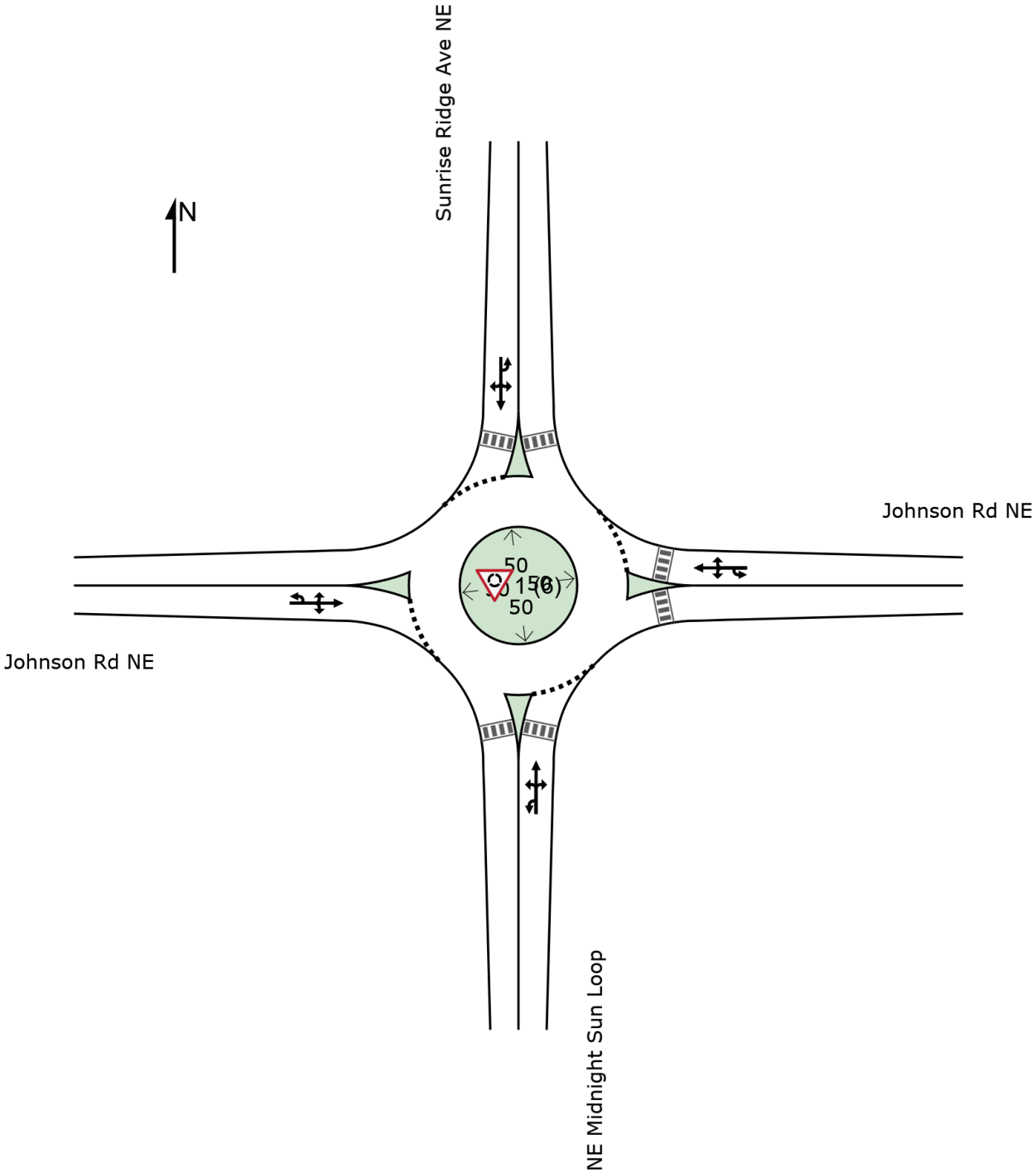
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	43	72	7	12	8
Future Vol, veh/h	5	43	72	7	12	8
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	47	78	8	13	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	182	17	22	0	-	0
Stage 1	17	-	-	-	-	-
Stage 2	164	-	-	-	-	-
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	808	1061	1594	-	-	-
Stage 1	1005	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	768	1061	1594	-	-	-
Mov Cap-2 Maneuver	768	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.72	6.72	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1587	-	1021	-	-
HCM Lane V/C Ratio	0.049	-	0.051	-	-
HCM Ctrl Dly (s/v)	7.4	0	8.7	-	-
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	14	137	50	65	52	6	92	67	65
Future Vol, veh/h	89	219	72	14	137	50	65	52	6	92	67	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	16	157	57	75	60	7	106	77	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	19.3	12.3	11.9	12.4
HCM LOS	C	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	53%	23%	7%	58%	0%
Vol Thru, %	42%	58%	68%	42%	0%
Vol Right, %	5%	19%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	380	201	159	65
LT Vol	65	89	14	92	0
Through Vol	52	219	137	67	0
RT Vol	6	72	50	0	65
Lane Flow Rate	141	437	231	183	75
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.257	0.672	0.372	0.353	0.123
Departure Headway (Hd)	6.547	5.541	5.796	6.957	5.948
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	544	646	615	514	598
Service Time	4.646	3.613	3.884	4.743	3.733
HCM Lane V/C Ratio	0.259	0.676	0.376	0.356	0.125
HCM Control Delay, s/veh	11.9	19.3	12.3	13.5	9.6
HCM Lane LOS	B	C	B	B	A
HCM 95th-tile Q	1	5.1	1.7	1.6	0.4

Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	57	71	23	57	46	17
Future Vol, veh/h	57	71	23	57	46	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	77	25	62	50	18

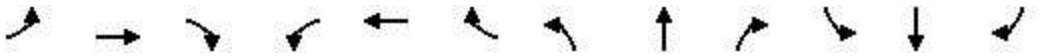
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	149	0	233	121
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1432	-	756	931
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	903	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1420	-	730	915
Mov Cap-2 Maneuver	-	-	-	-	730	-
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	880	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.18	10.12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	772	-	-	517	-
HCM Lane V/C Ratio	0.089	-	-	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	-

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)	47	131	79	65	107	181	57	519	26	252	932	25
Future Volume (veh/h)	47	131	79	65	107	181	57	519	26	252	932	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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	47	131	79	65	107	121	57	519	26	252	932	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	6	5	4	4	4	6	5	6	6	5	6	11
Cap, veh/h	178	187	156	169	210	171	66	585	29	778	1829	49
Arrive On Green	0.03	0.11	0.11	0.04	0.12	0.12	0.04	0.21	0.21	0.47	0.64	0.64
Sat Flow, veh/h	1634	1730	1445	1661	1744	1425	1647	2767	138	1647	2843	76
Grp Volume(v), veh/h	47	131	79	65	107	121	57	228	317	252	399	558
Grp Sat Flow(s),veh/h/ln	1634	1730	1445	1661	1744	1425	1647	1218	1688	1647	1218	1701
Q Serve(g_s), s	3.1	8.8	6.2	4.2	6.9	3.7	4.1	21.8	21.9	11.4	20.9	20.9
Cycle Q Clear(g_c), s	3.1	8.8	6.2	4.2	6.9	3.7	4.1	21.8	21.9	11.4	20.9	20.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	178	187	156	169	210	171	66	258	357	778	784	1095
V/C Ratio(X)	0.26	0.70	0.51	0.38	0.51	0.71	0.86	0.89	0.89	0.32	0.51	0.51
Avail Cap(c_a), veh/h	341	332	277	316	334	273	316	437	605	778	784	1095
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	51.7	50.5	45.5	49.5	7.3	57.3	45.9	45.9	19.7	11.4	11.4
Incr Delay (d2), s/veh	0.8	4.7	2.5	1.4	1.9	5.3	26.1	33.0	26.3	0.2	2.4	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	2.3	7.3	4.2	3.2	5.6	6.4	3.9	13.7	17.2	7.7	9.5	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.9	56.4	53.1	46.9	51.4	12.5	83.3	78.9	72.3	20.0	13.7	13.0
LnGrp LOS	D	E	D	D	D	B	F	E	E	B	B	B
Approach Vol, veh/h		257			293			602			1209	
Approach Delay, s/veh		53.6			34.3			75.8			14.7	
Approach LOS		D			C			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	61.6	30.4	10.0	17.9	9.8	82.2	8.6	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	13.4	23.9	6.2	10.8	6.1	22.9	5.1	8.9
Green Ext Time (p_c), s	0.4	2.0	0.1	0.6	0.1	3.7	0.1	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	37.0
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	1027	545	1	2	4
Future Vol, veh/h	0	1027	545	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	1027	545	1	2	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	550	0	-	0	1580	553
Stage 1	-	-	-	-	549	-
Stage 2	-	-	-	-	1031	-
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	1025	-	-	-	121	535
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1021	-	-	-	120	531
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	579	-
Stage 2	-	-	-	-	344	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	19.73
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1021	-	-	-	120	531
HCM Lane V/C Ratio	-	-	-	-	0.017	0.008
HCM Ctrl Dly (s/v)	0	-	-	-	35.5	11.8
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

MOVEMENT SUMMARY

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

Without (AM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	16.3	LOS B	0.2	6.2	0.67	0.80	0.67	30.5
3	L2	All MCs	21	1.0	21	1.0	0.057	12.8	LOS B	0.2	6.2	0.67	0.80	0.67	32.3
8	T1	All MCs	8	1.0	8	1.0	0.057	7.2	LOS A	0.2	6.2	0.67	0.80	0.67	29.8
18	R2	All MCs	4	1.0	4	1.0	0.057	12.7	LOS B	0.2	6.2	0.67	0.80	0.67	32.7
Approach			34	1.0	34	1.0	0.057	11.6	LOS B	0.2	6.2	0.67	0.80	0.67	31.6
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.264	12.0	LOS B	1.6	42.8	0.19	0.46	0.19	37.6
1	L2	All MCs	8	1.0	8	1.0	0.264	11.5	LOS B	1.6	42.8	0.19	0.46	0.19	35.7
6	T1	All MCs	513	6.0	513	6.0	0.264	6.1	LOS A	1.6	42.8	0.19	0.46	0.19	40.7
16	R2	All MCs	17	1.0	17	1.0	0.120	5.8	LOS A	0.6	16.4	0.18	0.47	0.18	36.1
Approach			539	5.8	539	5.8	0.264	6.2	LOS A	1.6	42.8	0.19	0.46	0.19	40.4
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.142	13.9	LOS B	0.5	13.8	0.48	0.70	0.48	31.0
7	L2	All MCs	100	3.0	100	3.0	0.142	10.6	LOS B	0.5	13.8	0.48	0.70	0.48	32.6
4	T1	All MCs	2	1.0	2	1.0	0.142	4.8	LOS A	0.5	13.8	0.48	0.70	0.48	30.3
14	R2	All MCs	19	1.0	19	1.0	0.142	6.2	LOS A	0.5	13.8	0.48	0.70	0.48	33.2
Approach			122	2.6	122	2.6	0.142	9.9	LOS A	0.5	13.8	0.48	0.70	0.48	32.6
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.550	12.5	LOS B	4.7	125.4	0.43	0.49	0.43	36.8
5	L2	All MCs	12	17.0	12	17.0	0.550	12.5	LOS B	4.7	125.4	0.43	0.49	0.43	34.4
2	T1	All MCs	998	8.0	998	8.0	0.550	7.7	LOS A	4.7	125.4	0.41	0.49	0.41	39.5
12	R2	All MCs	23	12.0	23	12.0	0.250	6.6	LOS A	1.5	39.0	0.34	0.49	0.34	35.5
Approach			1034	8.2	1034	8.2	0.550	7.7	LOS A	4.7	125.4	0.41	0.49	0.41	39.3
All Vehicles			1729	6.9	1729	6.9	0.550	7.5	LOS A	4.7	125.4	0.35	0.50	0.35	38.9

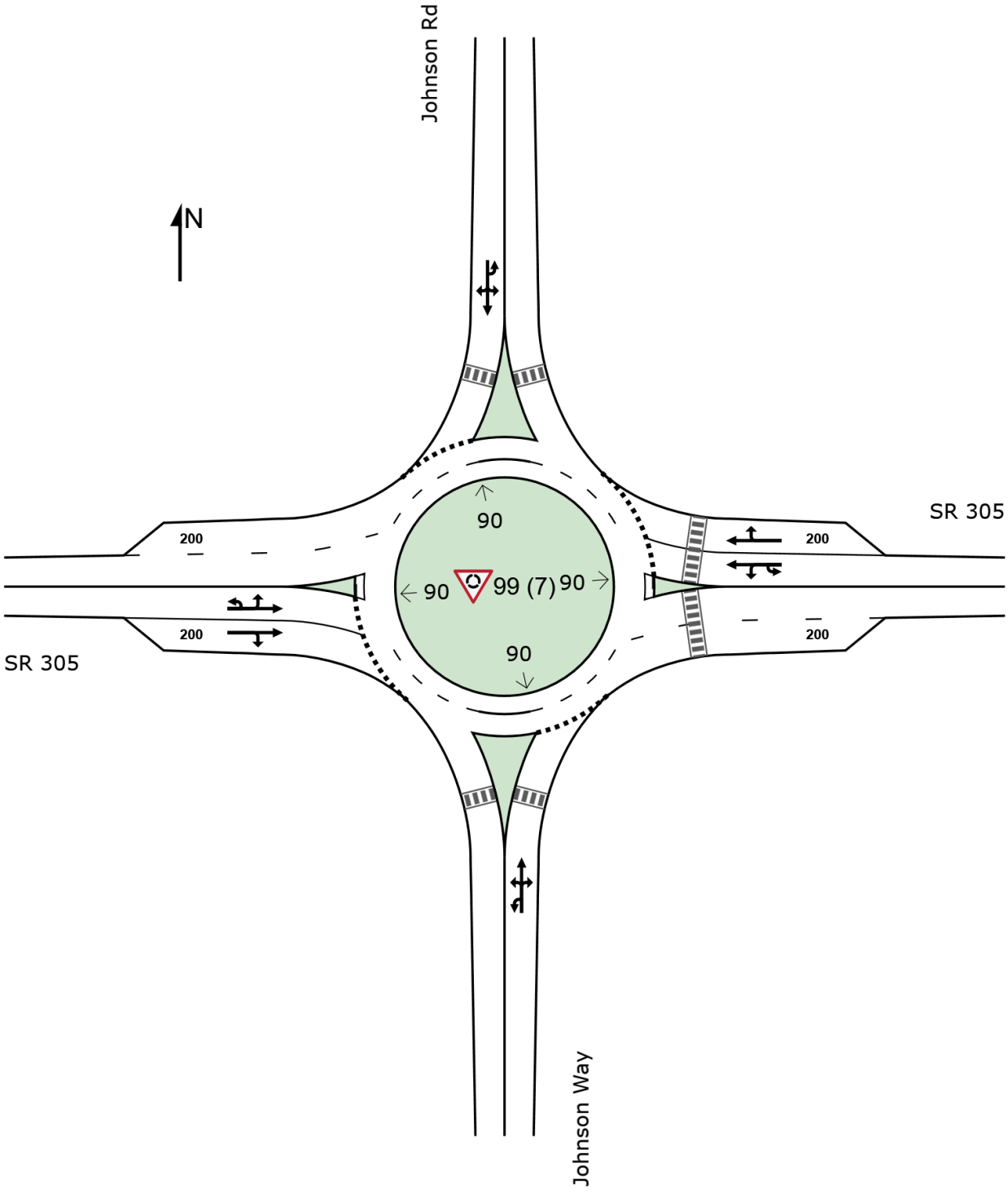
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [99 (7)] SR 305 & Johnson Rd - Forecast 2037 AM
Without (AM Peak Hour)

New Site
Site Category: (None)
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: 10.0.5.217

New Site
Site Category: (None)
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	0.088	10.9	LOS B	0.4	9.5	0.09	0.46	0.09	34.7
1	L2	All MCs	1	3.0	1	3.0	0.088	8.9	LOS A	0.4	9.5	0.09	0.46	0.09	34.7
6	T1	All MCs	110	3.0	110	3.0	0.088	4.9	LOS A	0.4	9.5	0.09	0.46	0.09	35.3
16	R2	All MCs	5	3.0	5	3.0	0.088	4.7	LOS A	0.4	9.5	0.09	0.46	0.09	35.0
Approach			117	3.0	117	3.0	0.088	5.0	LOS A	0.4	9.5	0.09	0.46	0.09	35.3
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.052	11.3	LOS B	0.2	5.5	0.24	0.56	0.24	34.0
7	L2	All MCs	14	3.0	14	3.0	0.052	9.4	LOS A	0.2	5.5	0.24	0.56	0.24	34.0
4	T1	All MCs	1	3.0	1	3.0	0.052	5.3	LOS A	0.2	5.5	0.24	0.56	0.24	34.6
14	R2	All MCs	43	3.0	43	3.0	0.052	5.1	LOS A	0.2	5.5	0.24	0.56	0.24	34.3
Approach			60	3.0	60	3.0	0.052	6.2	LOS A	0.2	5.5	0.24	0.56	0.24	34.2
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.048	10.9	LOS B	0.2	5.2	0.09	0.53	0.09	34.2
5	L2	All MCs	14	3.0	14	3.0	0.048	9.0	LOS A	0.2	5.2	0.09	0.53	0.09	34.2
2	T1	All MCs	33	3.0	33	3.0	0.048	4.9	LOS A	0.2	5.2	0.09	0.53	0.09	34.9
12	R2	All MCs	12	3.0	12	3.0	0.048	4.7	LOS A	0.2	5.2	0.09	0.53	0.09	34.6
Approach			61	3.0	61	3.0	0.048	5.9	LOS A	0.2	5.2	0.09	0.53	0.09	34.6
All Vehicles			242	3.0	242	3.0	0.088	5.5	LOS A	0.4	9.5	0.13	0.50	0.13	34.5

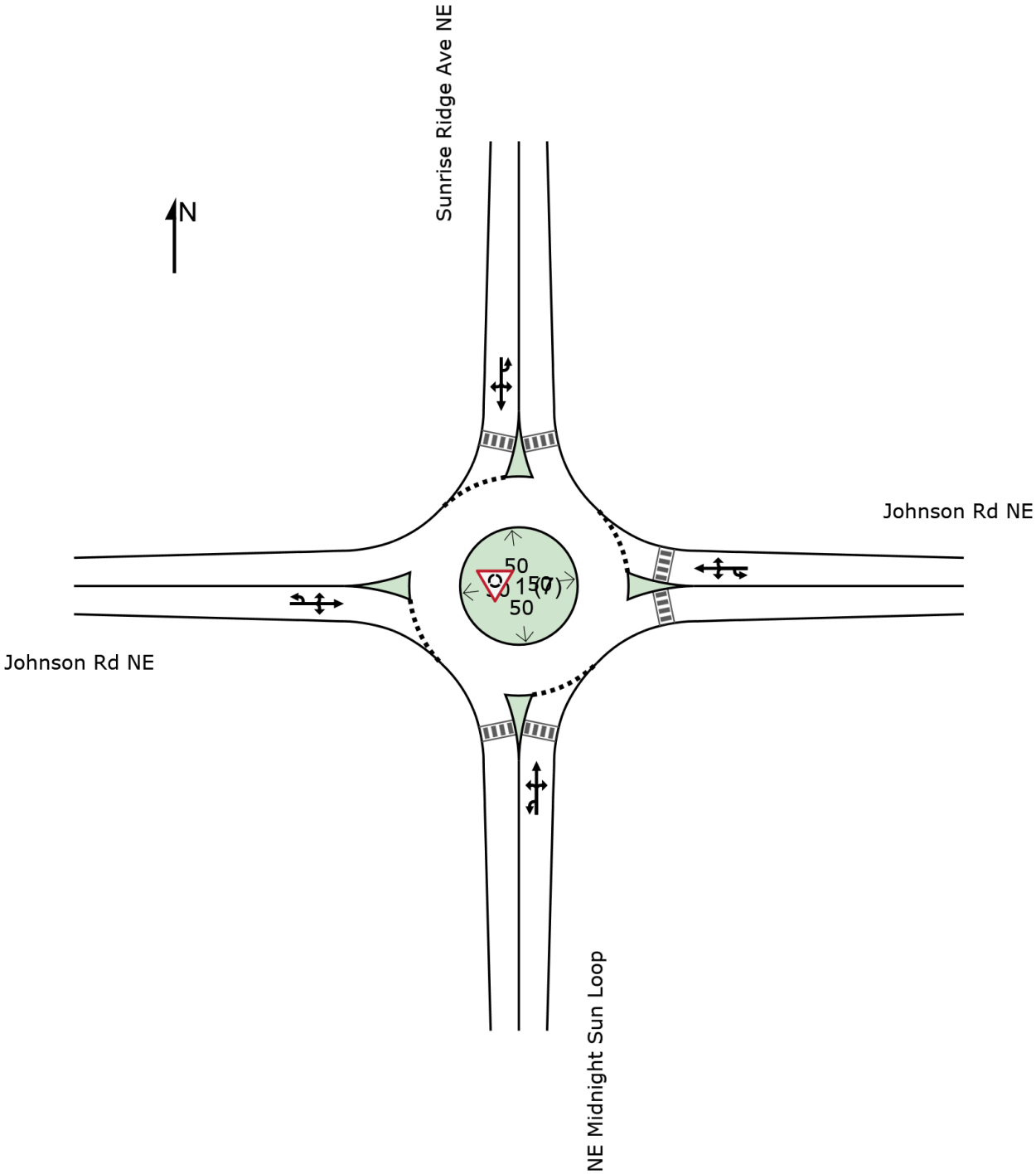
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [1 (7)] Johnson & Sunrise Ridge - 2037 AM Without
(Folder1)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Intersection Delay, s/veh	61.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	285	28	25	257	97	73	45	49	157	31	73
Future Vol, veh/h	58	285	28	25	257	97	73	45	49	157	31	73
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.87	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	77	380	37	33	343	129	84	60	65	209	41	97
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	80.8	86.4	21.8	23.7
HCM LOS	F	F	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	44%	16%	7%	84%	0%
Vol Thru, %	27%	77%	68%	16%	0%
Vol Right, %	29%	8%	26%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	167	371	379	188	73
LT Vol	73	58	25	157	0
Through Vol	45	285	257	31	0
RT Vol	49	28	97	0	73
Lane Flow Rate	209	495	505	251	97
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.514	1.038	1.06	0.639	0.215
Departure Headway (Hd)	9.321	7.891	7.722	9.592	8.321
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	389	465	475	379	434
Service Time	7.321	5.891	5.722	7.292	6.021
HCM Lane V/C Ratio	0.537	1.065	1.063	0.662	0.224
HCM Control Delay, s/veh	21.8	80.8	86.4	27.8	13.3
HCM Lane LOS	C	F	F	D	B
HCM 95th-tile Q	2.8	14.5	15.5	4.2	0.8

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	40	7	69	70	28
Future Vol, veh/h	41	40	7	69	70	28
Conflicting Peds, /hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channeli ed	-	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	45	43	8	75	76	30

Ma or/Minor	Ma or1		Ma or2		Minor1	
Conflicting Flow All	0	0	98	0	177	86
Stage 1	-	-	-	-	76	-
Stage 2	-	-	-	-	100	-
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	-	-	1495	-	813	972
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1483	-	795	956
Mov Cap-2 Maneuver	-	-	-	-	795	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	911	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.69	9.94
HCM LOS			A

Minor Lane/Ma or Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	166	-
HCM Lane V/C Ratio	0.127	-	-	0.005	-
HCM Ctrl Dly (s/v)	9.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	212	123	66	156	277	149	865	43	266	699	62
Future Volume (veh/h)	86	212	123	66	156	277	149	865	43	266	699	62
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		0.97	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	86	212	123	66	156	132	149	865	43	266	699	62
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	196	249	207	155	227	185	171	922	46	548	1501	133
Arrive On Green	0.06	0.14	0.14	0.04	0.13	0.13	0.10	0.33	0.33	0.32	0.55	0.55
Sat Flow, veh/h	1621	1758	1463	1701	1786	1459	1688	2811	140	1701	2735	242
Grp Volume(v), veh/h	86	212	123	66	156	132	149	381	527	266	321	440
Grp Sat Flow(s),veh/h/ln	1621	1758	1463	1701	1786	1459	1688	1238	1713	1701	1258	1720
Q Serve(g_s), s	5.5	14.1	9.5	4.0	10.0	5.7	10.4	35.8	35.9	15.1	18.6	18.6
Cycle Q Clear(g_c), s	5.5	14.1	9.5	4.0	10.0	5.7	10.4	35.8	35.9	15.1	18.6	18.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.14
Lane Grp Cap(c), veh/h	196	249	207	155	227	185	171	406	562	548	690	944
V/C Ratio(X)	0.44	0.85	0.59	0.42	0.69	0.71	0.87	0.94	0.94	0.48	0.47	0.47
Avail Cap(c_a), veh/h	316	337	280	306	342	280	323	444	614	548	690	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.8	50.3	48.3	43.8	50.1	14.9	53.1	39.1	39.2	32.7	16.4	16.4
Incr Delay (d2), s/veh	1.5	14.3	2.7	1.8	3.7	5.0	12.4	31.6	25.5	0.7	2.2	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	4.1	11.6	6.5	3.2	8.3	7.0	8.6	20.2	25.5	10.3	9.3	11.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.3	64.5	51.0	45.7	53.8	19.9	65.6	70.7	64.6	33.3	18.7	18.1
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		421			354			1057			1027	
Approach Delay, s/veh		56.4			39.6			67.0			22.2	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.7	44.3	10.0	22.0	17.2	70.9	11.7	20.3
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	17.1	37.9	6.0	16.1	12.4	20.6	7.5	12.0
Green Ext Time (p_c), s	0.2	2.0	0.1	0.8	0.3	2.9	0.1	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	45.9
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	833	966	6	1	4
Future Vol, veh/h	7	833	966	6	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	7	833	966	6	1	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	973	0	-	0	1815	968
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	848	-
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	678	-	-	-	82	309
Stage 1	-	-	-	-	357	-
Stage 2	-	-	-	-	407	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	677	-	-	-	81	309
Mov Cap-2 Maneuver	-	-	-	-	81	-
Stage 1	-	-	-	-	353	-
Stage 2	-	-	-	-	406	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.09	0	23.46
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	677	-	-	-	81	309
HCM Lane V/C Ratio	0.01	-	-	-	0.012	0.013
HCM Ctrl Dly (s/v)	10.4	-	-	-	50	16.8
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

MOVEMENT SUMMARY

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

(PM Peak Hour)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
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	0.060	14.7	LOS B	0.2	5.8	0.55	0.73	0.55	31.2
3	L2	All MCs	25	6.0	25	6.0	0.060	11.7	LOS B	0.2	5.8	0.55	0.73	0.55	32.3
8	T1	All MCs	7	1.0	7	1.0	0.060	5.7	LOS A	0.2	5.8	0.55	0.73	0.55	30.4
18	R2	All MCs	10	1.0	10	1.0	0.060	7.8	LOS A	0.2	5.8	0.55	0.73	0.55	33.4
Approach			43	3.9	43	3.9	0.060	9.9	LOS A	0.2	5.8	0.55	0.73	0.55	32.2
East: SR 305															
1u	U	All MCs	3	1.0	3	1.0	0.465	12.1	LOS B	3.7	93.8	0.24	0.46	0.24	37.5
1	L2	All MCs	13	1.0	13	1.0	0.465	11.5	LOS B	3.7	93.8	0.24	0.46	0.24	35.6
6	T1	All MCs	934	3.0	934	3.0	0.465	6.5	LOS A	3.7	93.8	0.23	0.46	0.23	41.0
16	R2	All MCs	27	10.0	27	10.0	0.211	6.0	LOS A	1.2	31.2	0.20	0.46	0.20	35.9
Approach			977	3.2	977	3.2	0.465	6.5	LOS A	3.7	93.8	0.23	0.46	0.23	40.8
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.081	15.3	LOS B	0.3	8.1	0.59	0.77	0.59	30.7
7	L2	All MCs	34	6.0	34	6.0	0.081	12.4	LOS B	0.3	8.1	0.59	0.77	0.59	31.9
4	T1	All MCs	4	1.0	4	1.0	0.081	6.3	LOS A	0.3	8.1	0.59	0.77	0.59	30.0
14	R2	All MCs	15	1.0	15	1.0	0.081	9.1	LOS A	0.3	8.1	0.59	0.77	0.59	33.0
Approach			54	4.1	54	4.1	0.081	11.1	LOS B	0.3	8.1	0.59	0.77	0.59	32.0
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.399	12.1	LOS B	2.9	73.1	0.24	0.46	0.24	37.5
5	L2	All MCs	11	1.0	11	1.0	0.399	11.5	LOS B	2.9	73.1	0.24	0.46	0.24	35.5
2	T1	All MCs	804	2.0	804	2.0	0.399	6.3	LOS A	2.9	73.1	0.24	0.46	0.24	41.2
12	R2	All MCs	25	1.0	25	1.0	0.181	5.9	LOS A	1.0	25.6	0.22	0.47	0.22	36.0
Approach			841	2.0	841	2.0	0.399	6.4	LOS A	2.9	73.1	0.23	0.46	0.23	40.9
All Vehicles			1915	2.7	1915	2.7	0.465	6.7	LOS A	3.7	93.8	0.25	0.47	0.25	40.3

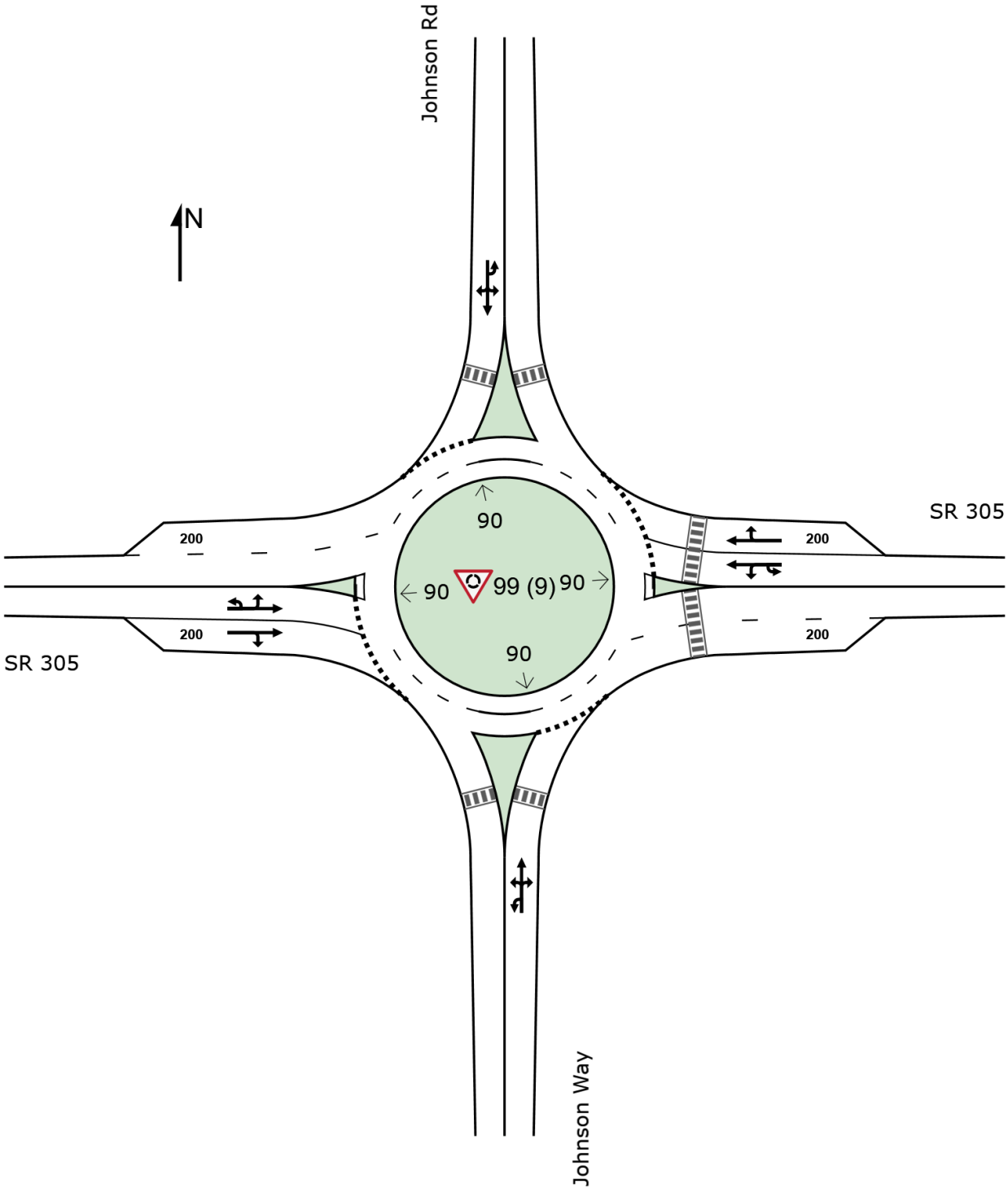
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
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: 10.0.5.217

New Site
Site Category: (None)
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	0.17	0.41	0.17	23.7
3	L2	All MCs	1	3.0	1	3.0	0.006	5.8	LOS A	0.0	0.6	0.17	0.41	0.17	23.7
8	T1	All MCs	1	3.0	1	3.0	0.006	2.0	LOS A	0.0	0.6	0.17	0.41	0.17	23.9
18	R2	All MCs	5	3.0	5	3.0	0.006	2.4	LOS A	0.0	0.6	0.17	0.41	0.17	23.8
Approach			8	3.0	8	3.0	0.006	3.5	LOS A	0.0	0.6	0.17	0.41	0.17	23.8
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.052	10.9	LOS B	0.2	5.4	0.12	0.48	0.12	34.5
1	L2	All MCs	5	3.0	5	3.0	0.052	9.0	LOS A	0.2	5.4	0.12	0.48	0.12	34.5
6	T1	All MCs	50	3.0	50	3.0	0.052	5.0	LOS A	0.2	5.4	0.12	0.48	0.12	35.1
16	R2	All MCs	12	3.0	12	3.0	0.052	4.7	LOS A	0.2	5.4	0.12	0.48	0.12	34.8
Approach			68	3.0	68	3.0	0.052	5.3	LOS A	0.2	5.4	0.12	0.48	0.12	35.0
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.029	11.0	LOS B	0.1	3.0	0.16	0.55	0.16	34.2
7	L2	All MCs	7	3.0	7	3.0	0.029	9.1	LOS A	0.1	3.0	0.16	0.55	0.16	34.2
4	T1	All MCs	1	3.0	1	3.0	0.029	5.1	LOS A	0.1	3.0	0.16	0.55	0.16	34.8
14	R2	All MCs	26	3.0	26	3.0	0.029	4.8	LOS A	0.1	3.0	0.16	0.55	0.16	34.5
Approach			35	3.0	35	3.0	0.029	5.9	LOS A	0.1	3.0	0.16	0.55	0.16	34.5
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.045	10.9	LOS B	0.2	4.8	0.08	0.58	0.08	33.7
5	L2	All MCs	30	3.0	30	3.0	0.045	8.9	LOS A	0.2	4.8	0.08	0.58	0.08	33.7
2	T1	All MCs	26	3.0	26	3.0	0.045	4.9	LOS A	0.2	4.8	0.08	0.58	0.08	34.3
12	R2	All MCs	1	3.0	1	3.0	0.045	4.6	LOS A	0.2	4.8	0.08	0.58	0.08	34.0
Approach			58	3.0	58	3.0	0.045	7.1	LOS A	0.2	4.8	0.08	0.58	0.08	34.0
All Vehicles			169	3.0	169	3.0	0.052	5.9	LOS A	0.2	5.4	0.12	0.53	0.12	33.8

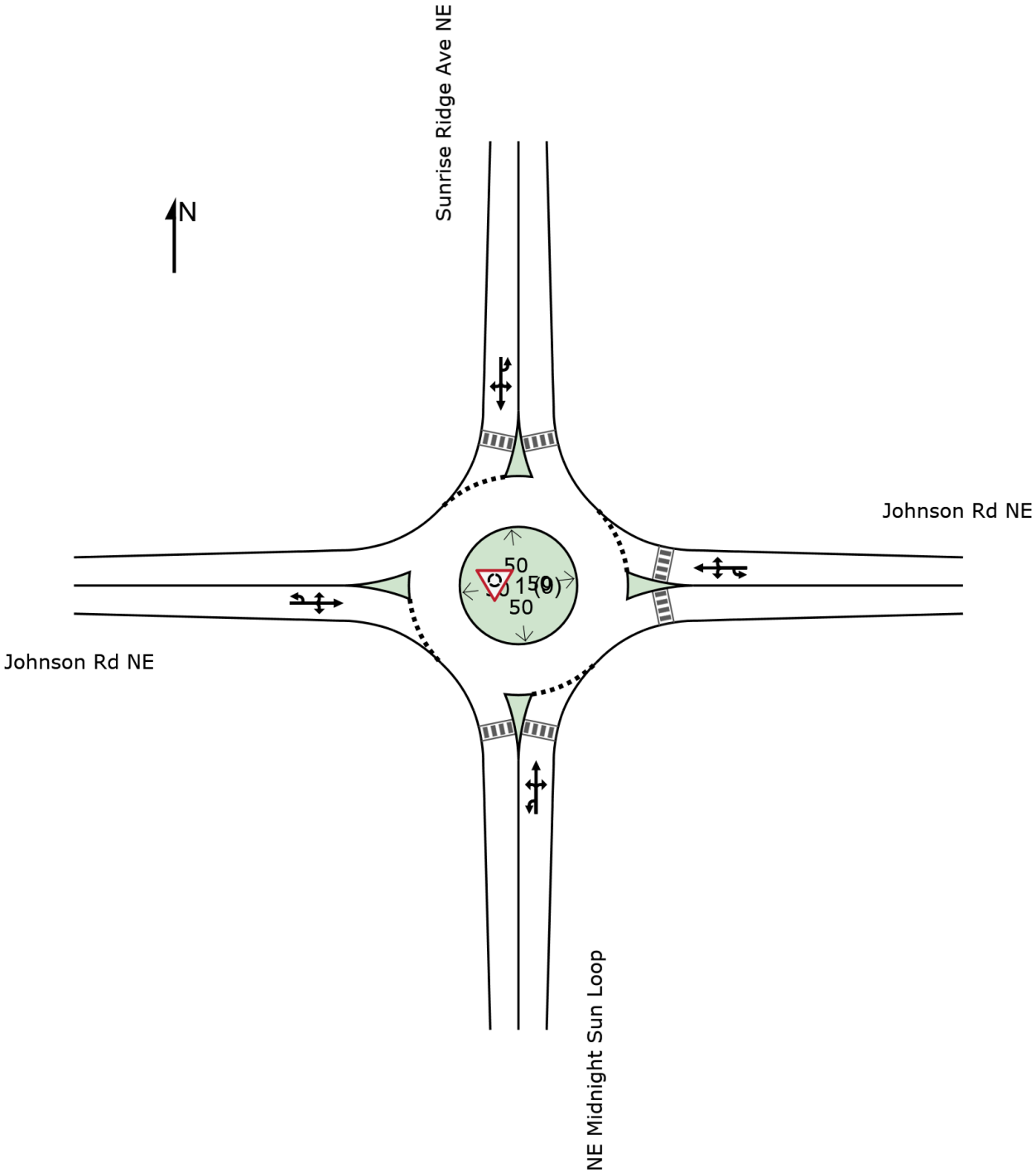
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

Site: [1 (9)] Johnson & Sunrise Ridge - 2037 PM Without
(Folder1)

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Intersection Delay, s/veh	26.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	264	87	11	166	60	78	60	3	111	75	79
Future Vol, veh/h	108	264	87	11	166	60	78	60	3	111	75	79
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	124	303	100	13	191	69	90	69	3	128	86	91
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	41.3	16	14.4	15.2
HCM LOS	E	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	55%	24%	5%	60%	0%
Vol Thru, %	43%	58%	70%	40%	0%
Vol Right, %	2%	19%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	459	237	186	79
LT Vol	78	108	11	111	0
Through Vol	60	264	166	75	0
RT Vol	3	87	60	0	79
Lane Flow Rate	162	528	272	214	91
Geometry Grp	4a	2	2	5	5
Degree of til (v)	0.338	0.898	0.497	0.46	0.169
Departure Headway (Hd)	7.505	6.127	6.565	7.74	6.714
Convergence, /N	es	es	es	es	es
Cap	476	591	545	464	531
Service Time	5.598	4.187	4.641	5.518	4.491
HCM Lane V/C Ratio	0.34	0.893	0.499	0.461	0.171
HCM Control Delay, s/veh	14.4	41.3	16	17	10.9
HCM Lane LOS	B	E	C	C	B
HCM 95th-tile Q	1.5	10.8	2.7	2.4	0.6

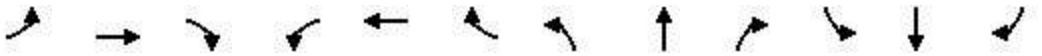
Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	69	74	28	69	48	21
Future Vol, veh/h	69	74	28	69	48	21
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	75	80	30	75	52	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	165	0	271	135
Stage 1	-	-	-	-	125	-
Stage 2	-	-	-	-	146	-
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	-	-	1413	-	718	914
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	881	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1401	-	690	898
Mov Cap-2 Maneuver	-	-	-	-	690	-
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.2	10.39
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	743	-	-	520	-
HCM Lane V/C Ratio	0.101	-	-	0.022	-
HCM Ctrl Dly (s/v)	10.4	-	-	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)	47	131	84	65	107	181	71	537	26	252	939	25
Future Volume (veh/h)	47	131	84	65	107	181	71	537	26	252	939	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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	47	131	84	65	107	121	71	537	26	252	939	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	6	5	4	4	4	6	5	6	6	5	6	11
Cap, veh/h	178	187	156	169	210	171	84	604	29	767	1799	48
Arrive On Green	0.03	0.11	0.11	0.04	0.12	0.12	0.05	0.22	0.22	0.47	0.63	0.63
Sat Flow, veh/h	1634	1730	1445	1661	1744	1425	1647	2773	134	1647	2844	76
Grp Volume(v), veh/h	47	131	84	65	107	121	71	236	327	252	402	562
Grp Sat Flow(s),veh/h/ln	1634	1730	1445	1661	1744	1425	1647	1218	1689	1647	1218	1702
Q Serve(g_s), s	3.1	8.8	6.6	4.2	6.9	3.8	5.1	22.5	22.6	11.6	21.7	21.7
Cycle Q Clear(g_c), s	3.1	8.8	6.6	4.2	6.9	3.8	5.1	22.5	22.6	11.6	21.7	21.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	178	187	156	169	210	171	84	265	368	767	771	1076
V/C Ratio(X)	0.26	0.70	0.54	0.38	0.51	0.71	0.85	0.89	0.89	0.33	0.52	0.52
Avail Cap(c_a), veh/h	342	332	277	316	334	273	316	437	605	767	771	1076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	51.7	50.7	45.5	49.5	7.5	56.5	45.5	45.5	20.2	12.1	12.1
Incr Delay (d2), s/veh	0.8	4.7	2.9	1.4	1.9	5.2	20.0	32.7	26.1	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	2.3	7.3	4.5	3.2	5.6	6.4	4.6	14.0	17.6	7.8	9.9	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.9	56.4	53.6	46.9	51.4	12.8	76.5	78.2	71.6	20.5	14.6	13.9
LnGrp LOS	D	E	D	D	D	B	E	E	E	C	B	B
Approach Vol, veh/h		262			293			634			1216	
Approach Delay, s/veh		53.8			34.4			74.6			15.5	
Approach LOS		D			C			E			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	60.9	31.1	10.0	18.0	11.1	80.9	8.6	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	13.6	24.6	6.2	10.8	7.1	23.7	5.1	8.9
Green Ext Time (p_c), s	0.4	2.0	0.1	0.6	0.2	3.7	0.1	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	37.6
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	1039	577	1	2	4
Future Vol, veh/h	0	1039	577	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	1039	577	1	2	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	582	0	-	0	1624	585
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	1043	-
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	997	-	-	-	113	513
Stage 1	-	-	-	-	561	-
Stage 2	-	-	-	-	341	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	994	-	-	-	113	509
Mov Cap-2 Maneuver	-	-	-	-	113	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	340	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	20.59
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	994	-	-	-	113	509
HCM Lane V/C Ratio	-	-	-	-	0.018	0.008
HCM Ctrl Dly (s/v)	0	-	-	-	37.5	12.1
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0

MOVEMENT SUMMARY

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

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
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	0.060	16.6	LOS B	0.3	6.7	0.69	0.81	0.69	30.4
3	L2	All MCs	21	1.0	21	1.0	0.060	13.1	LOS B	0.3	6.7	0.69	0.81	0.69	32.1
8	T1	All MCs	8	1.0	8	1.0	0.060	7.5	LOS A	0.3	6.7	0.69	0.81	0.69	29.6
18	R2	All MCs	4	1.0	4	1.0	0.060	13.5	LOS B	0.3	6.7	0.69	0.81	0.69	32.5
Approach			34	1.0	34	1.0	0.060	12.0	LOS B	0.3	6.7	0.69	0.81	0.69	31.5
East: SR 305															
1u	U	All MCs	1	1.0	1	1.0	0.272	12.1	LOS B	1.6	42.9	0.21	0.46	0.21	37.5
1	L2	All MCs	8	1.0	8	1.0	0.272	11.5	LOS B	1.6	42.9	0.21	0.46	0.21	35.6
6	T1	All MCs	513	6.0	513	6.0	0.272	6.1	LOS A	1.6	42.9	0.21	0.47	0.21	40.6
16	R2	All MCs	27	1.0	27	1.0	0.124	5.9	LOS A	0.6	16.4	0.21	0.47	0.21	36.0
Approach			549	5.7	549	5.7	0.272	6.2	LOS A	1.6	42.9	0.21	0.47	0.21	40.2
North: Johnson Rd															
7u	U	All MCs	1	1.0	1	1.0	0.212	14.1	LOS B	0.9	21.8	0.50	0.70	0.50	31.2
7	L2	All MCs	128	3.0	128	3.0	0.212	10.8	LOS B	0.9	21.8	0.50	0.70	0.50	32.8
4	T1	All MCs	2	1.0	2	1.0	0.212	5.0	LOS A	0.9	21.8	0.50	0.70	0.50	30.4
14	R2	All MCs	51	1.0	51	1.0	0.212	6.4	LOS A	0.9	21.8	0.50	0.70	0.50	33.5
Approach			182	2.4	182	2.4	0.212	9.5	LOS A	0.9	21.8	0.50	0.70	0.50	33.0
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.572	12.7	LOS B	5.0	132.9	0.49	0.51	0.49	36.5
5	L2	All MCs	24	17.0	24	17.0	0.572	12.8	LOS B	5.0	132.9	0.49	0.51	0.49	34.2
2	T1	All MCs	998	8.0	998	8.0	0.572	8.0	LOS A	5.0	132.9	0.47	0.51	0.47	39.2
12	R2	All MCs	23	12.0	23	12.0	0.260	6.8	LOS A	1.5	40.7	0.38	0.51	0.38	35.3
Approach			1046	8.3	1046	8.3	0.572	8.1	LOS A	5.0	132.9	0.47	0.51	0.47	39.0
All Vehicles			1811	6.8	1811	6.8	0.572	7.8	LOS A	5.0	132.9	0.40	0.52	0.40	38.5

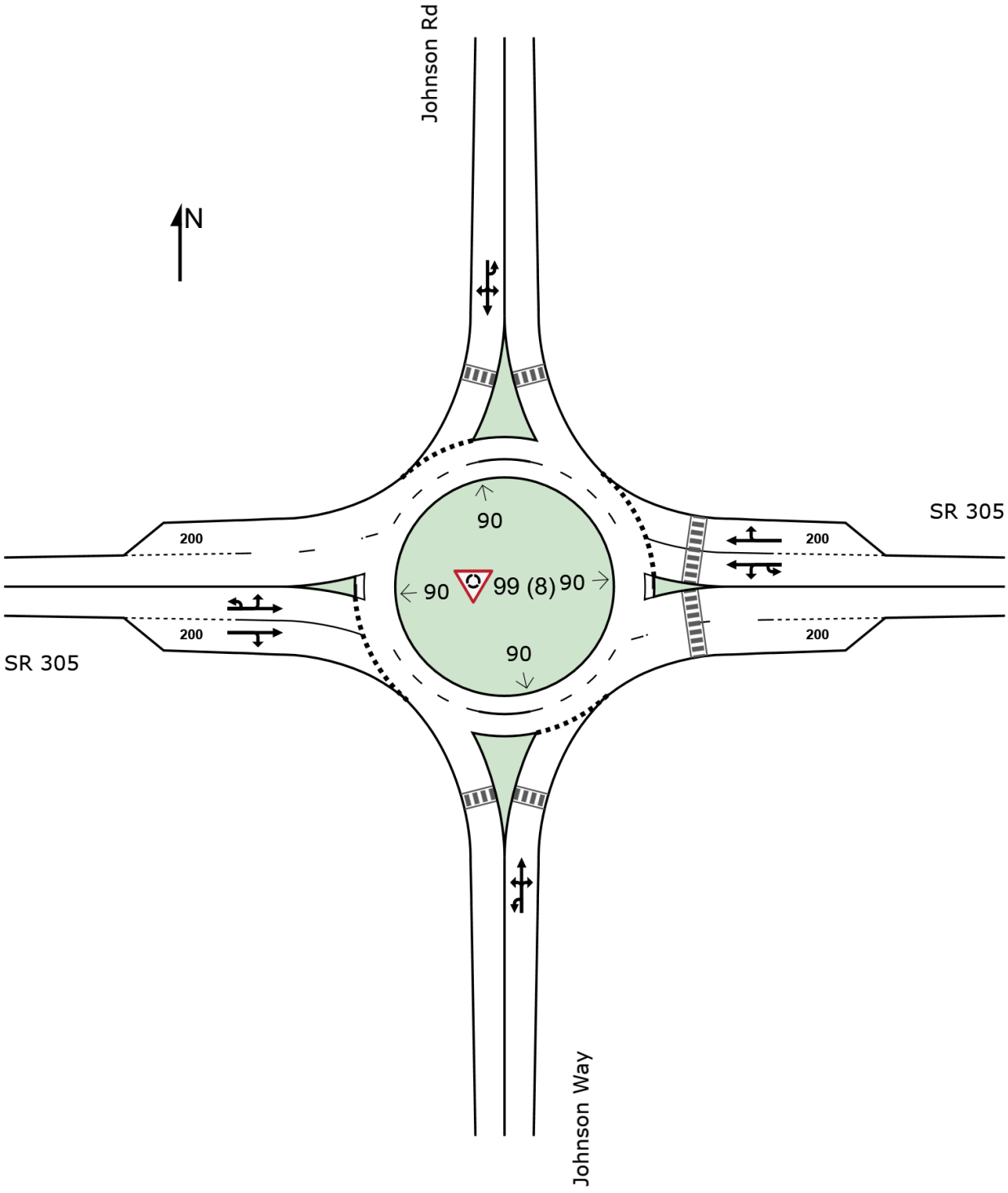
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
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: 10.0.9.250

New Site
Site Category: (None)
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	0.091	11.0	LOS B	0.4	9.9	0.15	0.46	0.15	34.5
1	L2	All MCs	1	3.0	1	3.0	0.091	9.1	LOS A	0.4	9.9	0.15	0.46	0.15	34.5
6	T1	All MCs	110	3.0	110	3.0	0.091	5.0	LOS A	0.4	9.9	0.15	0.46	0.15	35.2
16	R2	All MCs	6	3.0	6	3.0	0.091	4.8	LOS A	0.4	9.9	0.15	0.46	0.15	34.9
Approach			118	3.0	118	3.0	0.091	5.1	LOS A	0.4	9.9	0.15	0.46	0.15	35.1
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.118	11.4	LOS B	0.5	13.5	0.26	0.55	0.26	34.2
7	L2	All MCs	19	3.0	19	3.0	0.118	9.4	LOS A	0.5	13.5	0.26	0.55	0.26	34.2
4	T1	All MCs	1	3.0	1	3.0	0.118	5.4	LOS A	0.5	13.5	0.26	0.55	0.26	34.9
14	R2	All MCs	114	3.0	114	3.0	0.118	5.1	LOS A	0.5	13.5	0.26	0.55	0.26	34.5
Approach			136	3.0	136	3.0	0.118	5.8	LOS A	0.5	13.5	0.26	0.55	0.26	34.5
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.069	10.9	LOS B	0.3	7.7	0.11	0.57	0.11	33.8
5	L2	All MCs	40	3.0	40	3.0	0.069	9.0	LOS A	0.3	7.7	0.11	0.57	0.11	33.8
2	T1	All MCs	33	3.0	33	3.0	0.069	4.9	LOS A	0.3	7.7	0.11	0.57	0.11	34.4
12	R2	All MCs	12	3.0	12	3.0	0.069	4.7	LOS A	0.3	7.7	0.11	0.57	0.11	34.1
Approach			87	3.0	87	3.0	0.069	6.9	LOS A	0.3	7.7	0.11	0.57	0.11	34.1
All Vehicles			345	3.0	345	3.0	0.118	5.8	LOS A	0.5	13.5	0.18	0.52	0.18	34.4

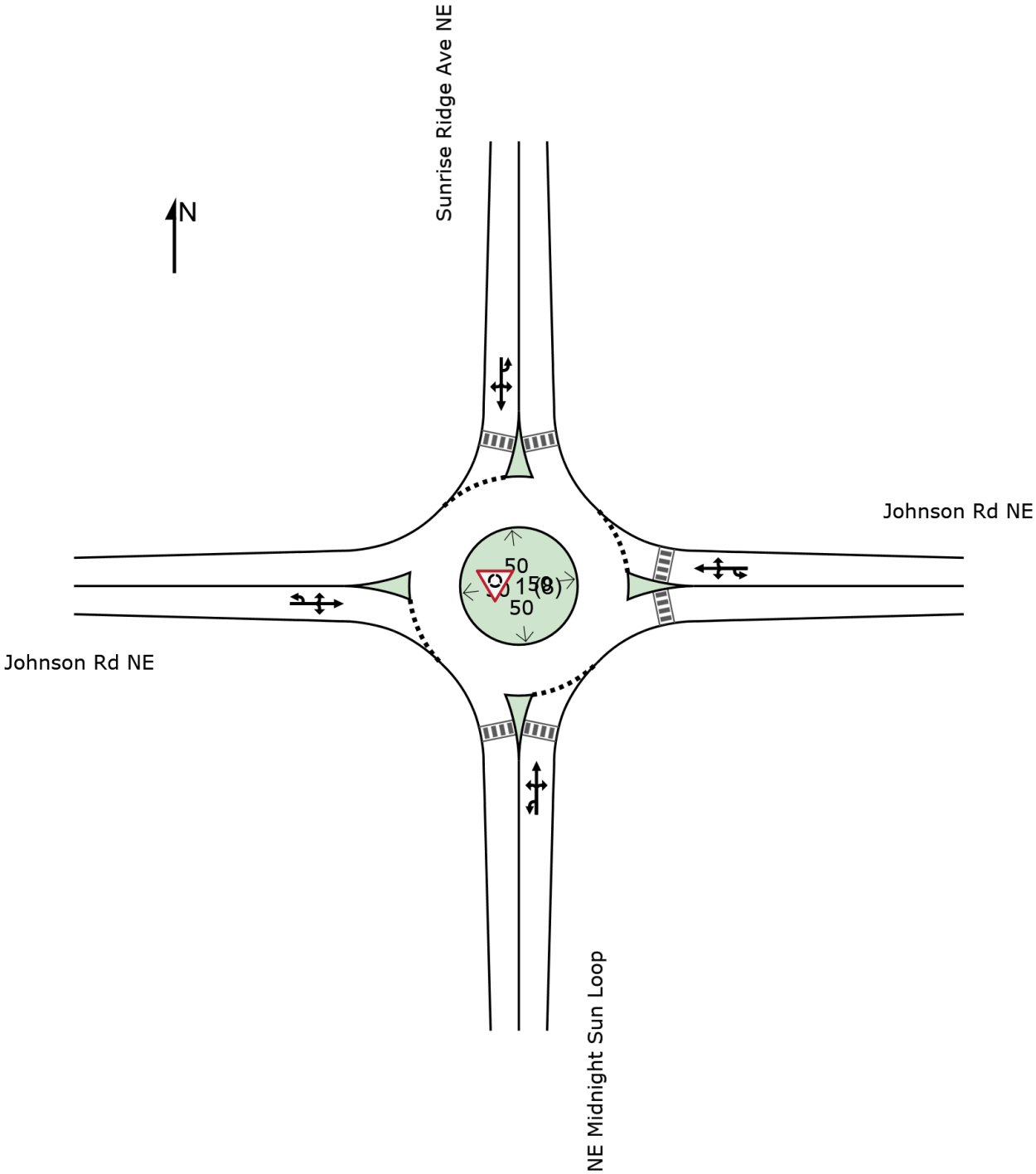
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	64	23	8	19	3
Future Vol, veh/h	7	64	23	8	19	3
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	8	70	25	9	21	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	81	22	24	0	-	0
Stage 1	22	-	-	-	-	-
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	921	1055	1591	-	-	-
Stage 1	1000	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	907	1055	1591	-	-	-
Mov Cap-2 Maneuver	907	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	964	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.75	5.42	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1335	-	1038	-	-
HCM Lane V/C Ratio	0.016	-	0.074	-	-
HCM Ctrl Dly (s/v)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	63.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	285	28	27	257	97	73	48	53	157	32	73
Future Vol, veh/h	58	285	28	27	257	97	73	48	53	157	32	73
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.87	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	77	380	37	36	343	129	84	64	71	209	43	97
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	84.3	86.9	22.7	24.1
HCM LOS	F	F	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	42%	16%	7%	83%	0%
Vol Thru, %	28%	77%	67%	17%	0%
Vol Right, %	30%	8%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	174	371	381	189	73
LT Vol	73	58	27	157	0
Through Vol	48	285	257	32	0
RT Vol	53	28	97	0	73
Lane Flow Rate	219	495	508	252	97
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.537	1.049	1.06	0.645	0.216
Departure Headway (Hd)	9.35	7.965	7.817	9.661	8.392
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	389	460	467	375	430
Service Time	7.35	5.965	5.817	7.361	6.092
HCM Lane V/C Ratio	0.563	1.076	1.088	0.672	0.226
HCM Control Delay, s/veh	22.7	84.3	86.9	28.3	13.4
HCM Lane LOS	C	F	F	D	B
HCM 95th-tile Q	3.1	14.8	15.4	4.3	0.8

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	43	7	69	77	28
Future Vol, veh/h	41	43	7	69	77	28
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	45	47	8	75	84	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	101	0	178	88
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	100	-
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	-	-	1491	-	811	970
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	924	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1479	-	794	954
Mov Cap-2 Maneuver	-	-	-	-	794	-
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	911	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.69	10.02
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	831	-	-	166	-
HCM Lane V/C Ratio	0.137	-	-	0.005	-
HCM Ctrl Dly (s/v)	10	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	212	139	66	156	277	159	877	43	266	719	62
Future Volume (veh/h)	86	212	139	66	156	277	159	877	43	266	719	62
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		0.97	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	86	212	139	66	156	132	159	877	43	266	719	62
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	196	250	208	155	228	186	182	932	46	542	1487	128
Arrive On Green	0.06	0.14	0.14	0.04	0.13	0.13	0.11	0.33	0.33	0.32	0.54	0.54
Sat Flow, veh/h	1621	1758	1463	1701	1786	1459	1688	2813	138	1701	2743	236
Grp Volume(v), veh/h	86	212	139	66	156	132	159	386	534	266	330	451
Grp Sat Flow(s),veh/h/ln	1621	1758	1463	1701	1786	1459	1688	1238	1713	1701	1258	1721
Q Serve(g_s), s	5.5	14.1	10.8	4.0	10.0	5.7	11.1	36.3	36.4	15.2	19.5	19.5
Cycle Q Clear(g_c), s	5.5	14.1	10.8	4.0	10.0	5.7	11.1	36.3	36.4	15.2	19.5	19.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.08	1.00		0.14
Lane Grp Cap(c), veh/h	196	250	208	155	228	186	182	410	567	542	682	933
V/C Ratio(X)	0.44	0.85	0.67	0.42	0.69	0.71	0.87	0.94	0.94	0.49	0.48	0.48
Avail Cap(c_a), veh/h	316	337	280	306	342	280	323	444	614	542	682	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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	50.2	48.8	43.8	50.0	15.1	52.7	39.0	39.0	33.0	17.0	17.0
Incr Delay (d2), s/veh	1.5	14.1	3.7	1.8	3.6	4.9	12.3	31.9	25.7	0.7	2.4	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	4.1	11.6	7.5	3.2	8.3	7.0	9.0	20.4	25.9	10.3	9.7	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.3	64.3	52.5	45.7	53.7	20.0	65.0	70.8	64.7	33.7	19.5	18.8
LnGrp LOS	D	E	D	D	D	C	E	E	E	C	B	B
Approach Vol, veh/h		437			354			1079			1047	
Approach Delay, s/veh		56.6			39.6			67.0			22.8	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.3	44.7	10.0	22.0	17.9	70.1	11.7	20.3
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	17.2	38.4	6.0	16.1	13.1	21.5	7.5	12.0
Green Ext Time (p_c), s	0.2	1.9	0.1	0.9	0.4	3.0	0.1	0.9

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

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	869	988	6	1	4
Future Vol, veh/h	7	869	988	6	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	7	869	988	6	1	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	995	0	-	0	1873	990
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	884	-
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	665	-	-	-	75	300
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	391	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	664	-	-	-	74	300
Mov Cap-2 Maneuver	-	-	-	-	74	-
Stage 1	-	-	-	-	344	-
Stage 2	-	-	-	-	391	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.08	0	24.55
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	664	-	-	-	74	300
HCM Lane V/C Ratio	0.011	-	-	-	0.013	0.013
HCM Ctrl Dly (s/v)	10.5	-	-	-	54.1	17.2
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	-	0	0

MOVEMENT SUMMARY

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

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
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	0.063	15.0	LOS B	0.2	6.3	0.58	0.75	0.58	31.1
3	L2	All MCs	25	6.0	25	6.0	0.063	12.0	LOS B	0.2	6.3	0.58	0.75	0.58	32.2
8	T1	All MCs	7	1.0	7	1.0	0.063	5.9	LOS A	0.2	6.3	0.58	0.75	0.58	30.3
18	R2	All MCs	10	1.0	10	1.0	0.063	8.2	LOS A	0.2	6.3	0.58	0.75	0.58	33.3
Approach			43	3.9	43	3.9	0.063	10.2	LOS B	0.2	6.3	0.58	0.75	0.58	32.1
East: SR 305															
1u	U	All MCs	3	1.0	3	1.0	0.496	12.3	LOS B	3.8	97.2	0.32	0.47	0.32	37.2
1	L2	All MCs	13	1.0	13	1.0	0.496	11.7	LOS B	3.8	97.2	0.32	0.47	0.32	35.3
6	T1	All MCs	934	3.0	934	3.0	0.496	6.6	LOS A	3.8	97.2	0.30	0.47	0.30	40.7
16	R2	All MCs	59	10.0	59	10.0	0.225	6.3	LOS A	1.2	32.0	0.27	0.49	0.27	35.6
Approach			1009	3.4	1009	3.4	0.496	6.7	LOS A	3.8	97.2	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	15.6	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	15.6	0.63	0.77	0.63	32.0
4	T1	All MCs	4	1.0	4	1.0	0.146	6.6	LOS A	0.6	15.6	0.63	0.77	0.63	30.0
14	R2	All MCs	37	1.0	37	1.0	0.146	9.6	LOS A	0.6	15.6	0.63	0.77	0.63	33.0
Approach			95	3.8	95	3.8	0.146	11.3	LOS B	0.6	15.6	0.63	0.77	0.63	32.3
West: SR 305															
5u	U	All MCs	1	1.0	1	1.0	0.425	12.2	LOS B	3.2	81.6	0.30	0.48	0.30	37.1
5	L2	All MCs	47	1.0	47	1.0	0.425	11.7	LOS B	3.2	81.6	0.30	0.48	0.30	35.2
2	T1	All MCs	804	2.0	804	2.0	0.425	6.4	LOS A	3.2	81.6	0.29	0.48	0.29	40.8
12	R2	All MCs	25	1.0	25	1.0	0.193	6.0	LOS A	1.1	27.7	0.26	0.47	0.26	35.9
Approach			877	1.9	877	1.9	0.425	6.7	LOS A	3.2	81.6	0.29	0.48	0.29	40.3
All Vehicles			2024	2.8	2024	2.8	0.496	7.0	LOS A	3.8	97.2	0.32	0.49	0.32	39.6

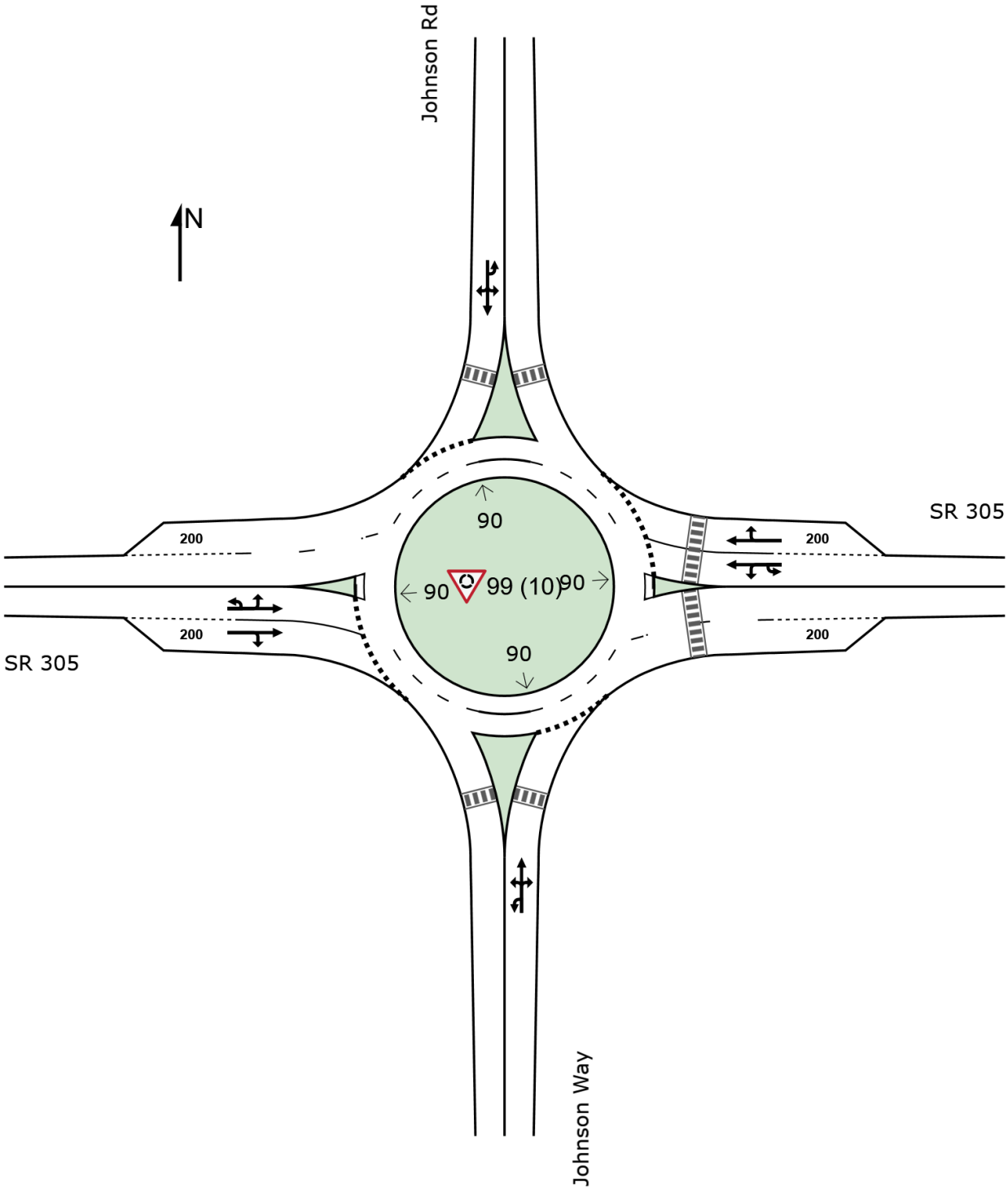
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

New Site
Site Category: (None)
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: 10.0.9.250

New Site
Site Category: (None)
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	0.43	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	0.43	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	0.43	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	0.43	0.26	23.7
Approach			8	3.0	8	3.0	0.007	3.8	LOS A	0.0	0.7	0.26	0.43	0.26	23.7
East: Johnson Rd NE															
1u	U	All MCs	1	3.0	1	3.0	0.059	11.2	LOS B	0.2	6.3	0.23	0.50	0.23	34.2
1	L2	All MCs	5	3.0	5	3.0	0.059	9.3	LOS A	0.2	6.3	0.23	0.50	0.23	34.2
6	T1	All MCs	50	3.0	50	3.0	0.059	5.3	LOS A	0.2	6.3	0.23	0.50	0.23	34.9
16	R2	All MCs	17	3.0	17	3.0	0.059	5.0	LOS A	0.2	6.3	0.23	0.50	0.23	34.6
Approach			73	3.0	73	3.0	0.059	5.6	LOS A	0.2	6.3	0.23	0.50	0.23	34.7
North: Sunrise Ridge Ave NE															
7u	U	All MCs	1	3.0	1	3.0	0.070	11.1	LOS B	0.3	7.8	0.18	0.53	0.18	34.4
7	L2	All MCs	9	3.0	9	3.0	0.070	9.1	LOS A	0.3	7.8	0.18	0.53	0.18	34.4
4	T1	All MCs	1	3.0	1	3.0	0.070	5.1	LOS A	0.3	7.8	0.18	0.53	0.18	35.1
14	R2	All MCs	73	3.0	73	3.0	0.070	4.8	LOS A	0.3	7.8	0.18	0.53	0.18	34.8
Approach			84	3.0	84	3.0	0.070	5.4	LOS A	0.3	7.8	0.18	0.53	0.18	34.7
West: Johnson Rd NE															
5u	U	All MCs	1	3.0	1	3.0	0.106	10.9	LOS B	0.5	11.8	0.09	0.62	0.09	33.2
5	L2	All MCs	107	3.0	107	3.0	0.106	8.9	LOS A	0.5	11.8	0.09	0.62	0.09	33.2
2	T1	All MCs	26	3.0	26	3.0	0.106	4.9	LOS A	0.5	11.8	0.09	0.62	0.09	33.8
12	R2	All MCs	1	3.0	1	3.0	0.106	4.7	LOS A	0.5	11.8	0.09	0.62	0.09	33.5
Approach			135	3.0	135	3.0	0.106	8.1	LOS A	0.5	11.8	0.09	0.62	0.09	33.3
All Vehicles			300	3.0	300	3.0	0.106	6.6	LOS A	0.5	11.8	0.15	0.56	0.15	33.7

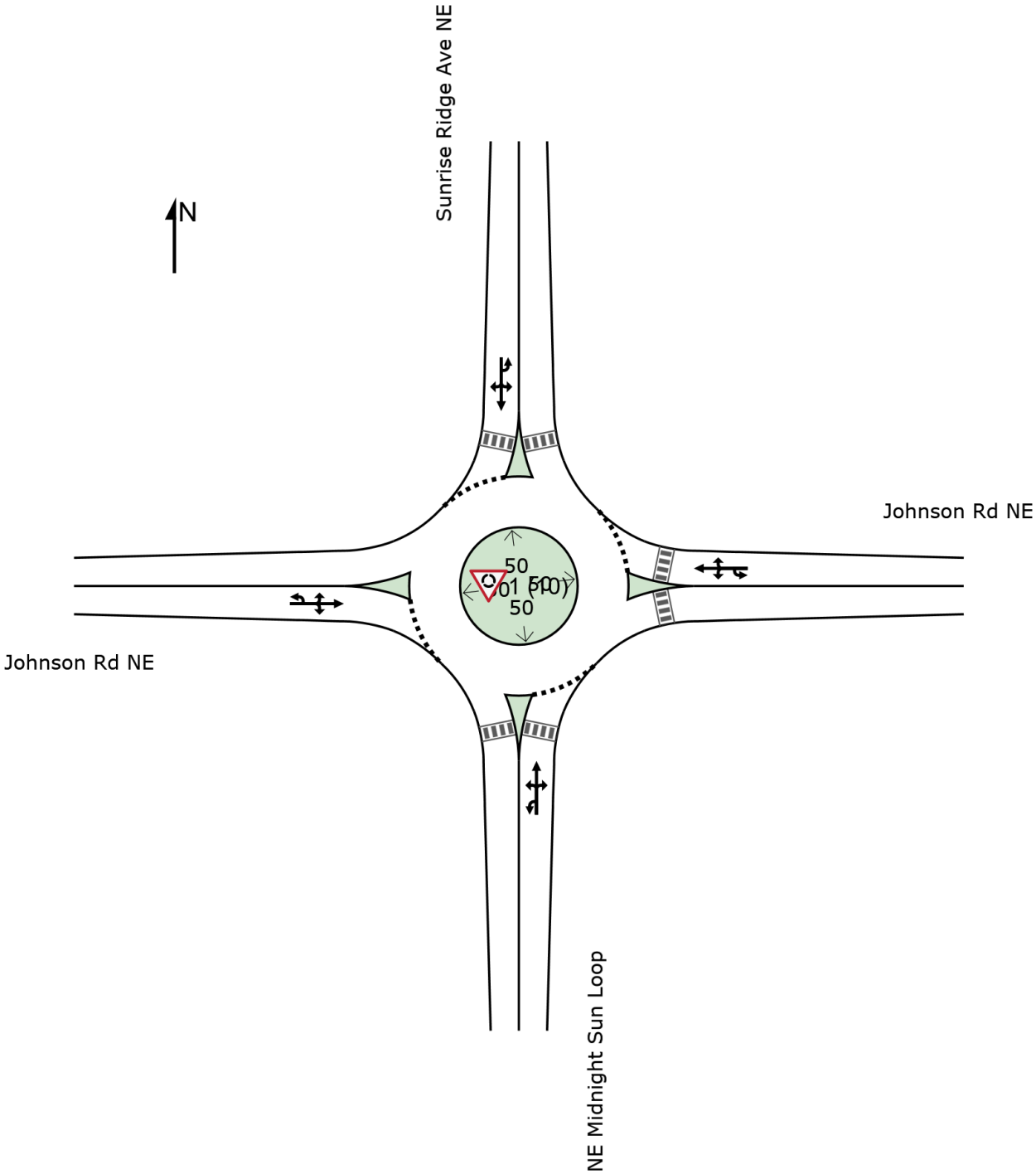
Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per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

SITE LAYOUT

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

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

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



Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	43	72	7	12	8
Future Vol, veh/h	5	43	72	7	12	8
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	47	78	8	13	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	182	17	22	0	-	0
Stage 1	17	-	-	-	-	-
Stage 2	164	-	-	-	-	-
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	808	1061	1594	-	-	-
Stage 1	1005	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	768	1061	1594	-	-	-
Mov Cap-2 Maneuver	768	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	865	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.72	6.72	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1587	-	1021	-	-
HCM Lane V/C Ratio	0.049	-	0.051	-	-
HCM Ctrl Dly (s/v)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	27.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	108	264	87	15	166	60	78	62	6	111	79	79
Future Vol, veh/h	108	264	87	15	166	60	78	62	6	111	79	79
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	124	303	100	17	191	69	90	71	7	128	91	91
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	43.3	16.6	14.8	15.6
HCM LOS	E	C	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	53%	24%	6%	58%	0%
Vol Thru, %	42%	58%	69%	42%	0%
Vol Right, %	4%	19%	25%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	146	459	241	190	79
LT Vol	78	108	15	111	0
Through Vol	62	264	166	79	0
RT Vol	6	87	60	0	79
Lane Flow Rate	168	528	277	218	91
Geometry Grp	4a	2	2	5	5
Degree of Util (X)	0.357	0.908	0.511	0.473	0.171
Departure Headway (Hd)	7.655	6.194	6.64	7.793	6.773
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	473	580	537	461	526
Service Time	5.655	4.272	4.737	5.585	4.564
HCM Lane V/C Ratio	0.355	0.91	0.516	0.473	0.173
HCM Control Delay, s/veh	14.8	43.3	16.6	17.5	11
HCM Lane LOS	B	E	C	C	B
HCM 95th-tile Q	1.6	11.1	2.9	2.5	0.6

Intersection	
Int Delay, s/veh	3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	69	82	28	69	53	21
Future Vol, veh/h	69	82	28	69	53	21
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	75	89	30	75	58	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	174	0	275	140
Stage 1	-	-	-	-	130	-
Stage 2	-	-	-	-	146	-
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	-	-	1402	-	714	909
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	881	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1391	-	686	893
Mov Cap-2 Maneuver	-	-	-	-	686	-
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.21	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	735	-	-	520	-
HCM Lane V/C Ratio	0.109	-	-	0.022	-
HCM Ctrl Dly (s/v)	10.5	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

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 TABLE		LOT AREA TABLE		LOT AREA TABLE		LOT AREA TABLE		LOT AREA TABLE		LOT AREA TABLE		LOT AREA TABLE		LOT AREA TABLE		LOT AREA TABLE		LOT AREA TABLE		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)	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
REGISTERED
PROFESSIONAL ENGINEER

CONSULTING ENGINEERS LLC
33400 8th Ave S, Suite 205
Federal Way, WA 98003
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ESM
Civil Engineering
Public Works
Land Planning
Landscape Architecture
Land Surveying
Project Management

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

File: \\Esm8\engr\ESM-JOBS\2090\004\022\base\0040222ST.dwg
Plotted: 3/25/2026 3:56 PM Plotted By: Dan Lapp

Sewall Wetland Consulting, Inc.
PO Box 880
Fall City, WA 98024
Phone: 253-859-0515

April 6, 2026

Nicole Coleman
City of Poulsbo Planning and Economic Development
200 NE Moe Street
Poulsbo, Washington 98370

RE: Critical Area Report Addendum #2– Pinnacle at Liberty Bay
Poulsbo Subdivision #P-06-20-25-03
SWC Job #24-158

Dear Nicole,

This report describes our response to your December 31, 2025 "*Request for Revisions*" regarding the proposed Pinnacle at Liberty Bay development. This revision specifically addresses the comments in the peer review letter dated January 8, 2026 from Farallon Consulting/Grette Associates as follows;

- *Per PMC 16.20.230, Category III wetlands with a moderate habitat score (6-7 points)[3] with a proposed high impact land use are subject to a 150-foot buffer. Based on the revised habitat score, the appropriate buffer width for Wetland C is 150 feet. The Plan should be revised accordingly.*

The site plan provided in the addendum includes a 150-foot buffer for Wetland C; however, the site plan also contains a callout for a "148 feet of buffer take" adjacent to Lot 99. No further information regarding this additional buffer averaging was provided. The buffer averaging outlined in the Plan needs to be revised to address this additional buffer reduction area shown on the updated site plan.

Response: The site plan has been revised (see attached) and there is no longer any proposed impact in this area.

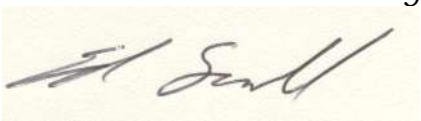
- *Per PMC 16.20.230, buffer averaging may be allowed if it will improve the protection of the wetland or if it is the only way to allow for reasonable use of the property. The Plan does not provide sufficient detail to support why a reduction to Wetland A's buffer is necessary and prevents reasonable use of the project site to support the proposed alignment of the road and residential park. The Plan should be revised to include additional information to demonstrate there is no feasible alternative to reposition the access road and that reducing the park area would not provide feasible recreational use. Please note that based on one of the figures provided in the plan (Attachment 1), it appears that the standard buffer is being applied to all of Wetland A, which appears to show averaging is not necessary.*

The addendum provides a sufficient explanation describing that existing topography provides constraints with respect to road design requirements and the buffer modifications proposed within the northern portion of Wetland A's buffer. However, Grette does not concur with the rationale associated with the proposed buffer modifications that would occur to the western portion of the wetland buffer. The addendum states the intent of the proposed western buffer reduction is to make the park area flat. No other information is provided to show that this is necessary. As noted previously, the Plan included a site plan showing the project adhering to the standard wetland buffer in this location which appears to show averaging is not necessary to create a suitable park area. As such, there appears to be a reasonable alternative to the site design that could be accomplished without buffer averaging and standard buffer can be applied.

Response: The site plan has been revised and now the proposed averaging in this area is all related to getting the proper grades for the roads and not the park itself.

If you have any questions in regards to this report or need additional information, please feel free to contact me at (253) 859-0515 or at esewall@sewallwc.com .

Sincerely,
Sewall Wetland Consulting, Inc.



Ed Sewall
Senior Wetlands Ecologist PWS #212

Attached: Current Site/Buffer Averaging Plan

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

n

SCALE: 1" = 80'

80 40 0 80 160

BUFFER GIVE/TAKE ANALYSIS

	WETLAND A	WETLAND B
TOTAL GIVE	1,581 SF	12,930 SF
TOTAL TAKE	1,309 SF	11,702 SF
NET GIVE	272 SF	1,228 SF

REVISIONS

NO.	DESCRIPTION/DATE	BY

BRANDON MICHAEL LOUDON
STATE OF WASHINGTON
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PINNACLE AT LIBERTY BAY SUBDIVISION

CITY OF POULSBO

WASHINGTON

BUFFER MITIGATION PLAN

JOB NO.:	2090-004-022
DWG. NAME:	PP-06
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
DATE:	04/03/2026
DATE OF PRINT:	

PP-06

6 OF 33 SHEETS

File: \\esm8\ENGR\ESM-JOBS\2090\004\022\P-plat\Plots\PP-06.dwg
Plotted: 4/1/2026 4:32 PM
Plotted By: Connie Garrett

Brandon Loucks

From: Marsh, Madeline (ECY) <mmsh461@ECY.WA.GOV>
Sent: Thursday, October 9, 2025 1:24 PM
To: Brandon Loucks
Cc: Long, Samantha (ECY); Lee, Harrison (ECY)
Subject: RE: Reservoir and Dam permit s

Hi Brandon,

Thanks for your patience as I dug into your question. Here's how to judge if a berm may fall under our jurisdiction:

- We judge if a dam falls under our jurisdiction only by the volume of the water retained by the dam, not dam height. 10 acre-feet is the rule.
    - See RCW 90.03.350
- The volume we consider is only that which can be stored above natural ground level or which could be released by a failure of the dam.
    - See WAC 173-175-20
- Dams 6 ft or less in height that meet or exceed the volume threshold can be exempted from our jurisdiction at the discretion of Ecology. This is examined on a case-by-case basis.
    - See WAC 173-175-20(2)

Let me know if you have any additional questions on the matter.

Take care,

Madeline Marsh
Dam Safety Engineer, Water Resources
WA State Department of Ecology
564-250-3494