HEATH & ASSOCIATES

Transportation Planning & Engineering

TRAFFIC IMPACT ANALYSIS

Henderson Boulevard Apartments

Tumwater, Washington

February 6, 2025

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HENDEROSN BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

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HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

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HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

1. INTRODUCTION

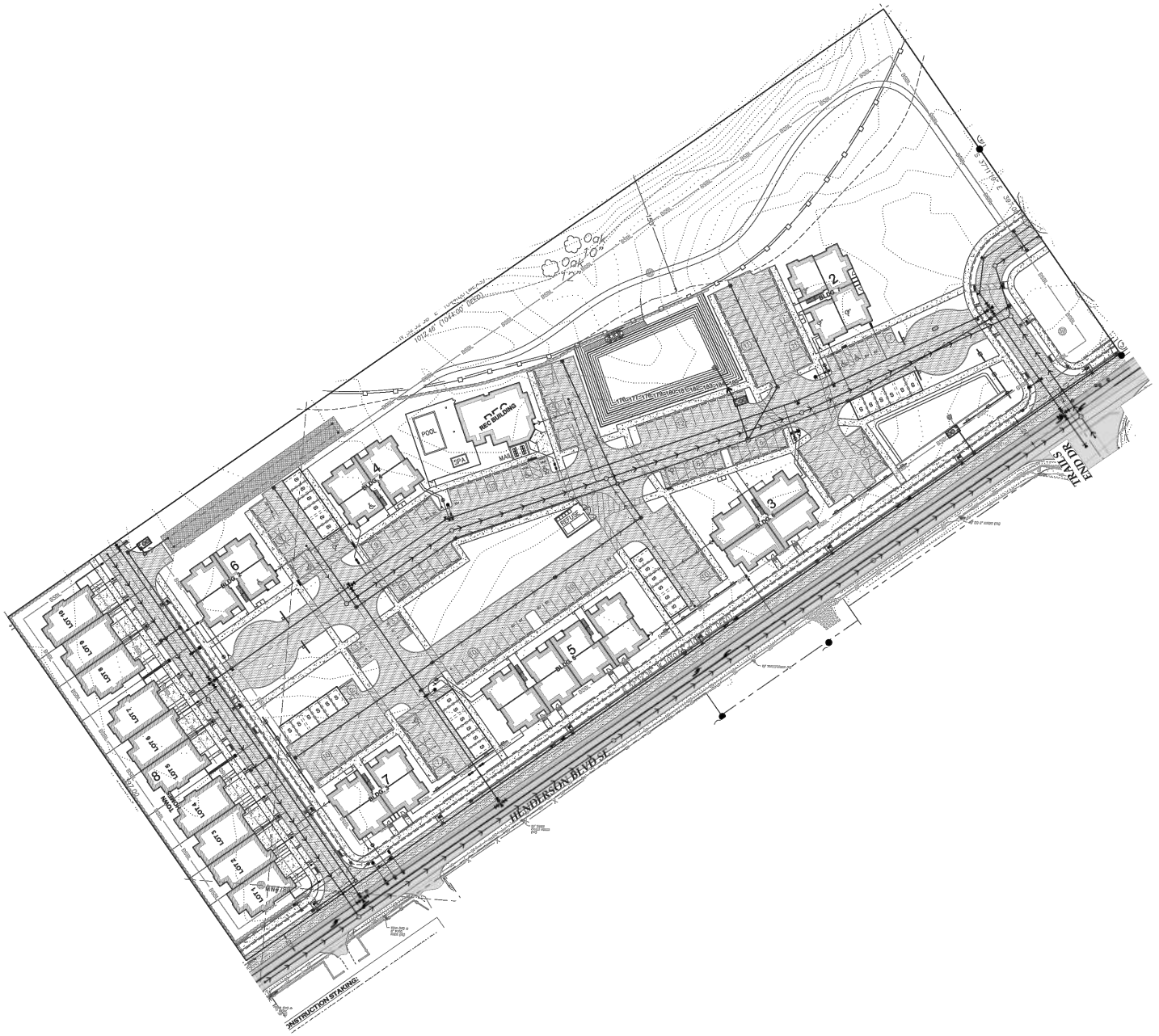
Heath & Associates has been retained to prepare a Traffic Impact Analysis (TIA) for the proposed Henderson Boulevard Apartments project. The purpose of this TIA is to evaluate the potential impacts of the proposed development on the existing and future transportation network within the study area. This analysis provides a comprehensive assessment of the anticipated traffic generated by the project, identifies potential impacts on traffic flow, and recommends necessary mitigation measures to maintain acceptable mobility standards.

2. PROJECT DESCRIPTION

The Henderson Boulevard Apartments project is a proposed residential development comprised of 84 apartment units and 10 townhome units within the City of Tumwater. The subject site is bordered to the southeast via Henderson Boulevard SE situated on 10.0-acres within a single undeveloped tax parcel (number: 12711110300).

Access to the proposed residential plat is planned via two new roadway connections. The first is a northwest extension of Trails End Drive SE and the second is a new access connection to Henderson Boulevard SE, west of Trail Ends Drive SE. Refer to **Figure 1** on the following page for an aerial vicinity map of the subject site and surrounding roadway system. A conceptual site plan is depicted in **Figure 2**, illustrating site access.

Figure 1: Vicinity Map



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SITE PLAN
FIGURE 2

3. EXISTING CONDITIONS

3.1 Existing Street System

The street network serving the proposed project consists of a variety of roadways. The major roadways and arterials defined in the study area are listed and described in **Table 1** below.

Table 1: Roadway Network

Functional Classification	Roadway	Speed Limit	Lanes	Street Parking	Sidewalk	Bike Facilities
Arterial	Capitol Blvd	35 mph	2-5	No	Some	No
	Tumwater Blvd	35 mph	2-5	No	Some	Some
Arterial/Collector	Henderson Blvd	35 mph	2	No	Some	No
Collector	Israel Rd	25 mph	2-3	No	Yes	Yes
	Trail End Dr	25 mph	2	Some	Some	No

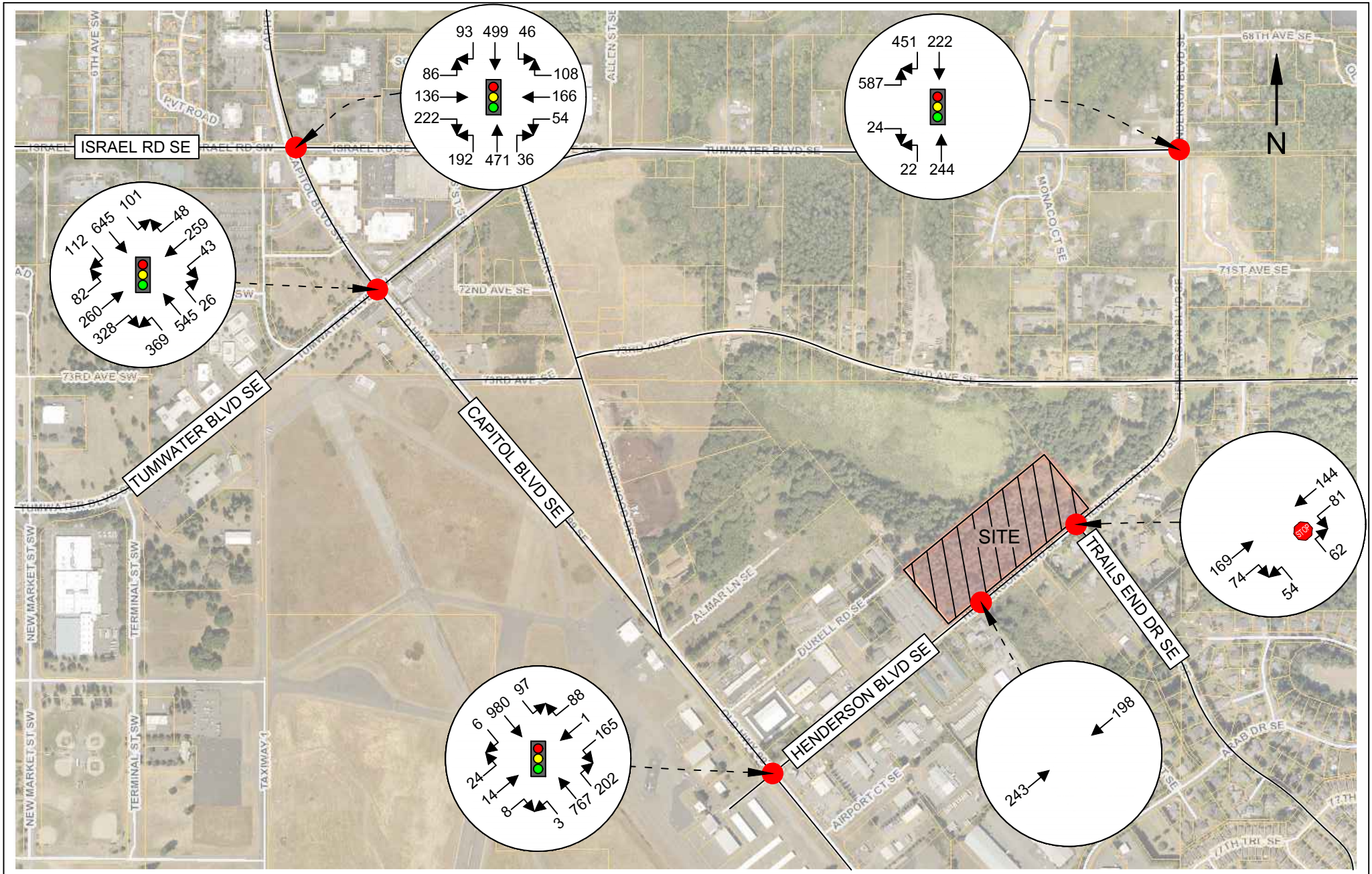
3.2 Existing Peak Hour Volumes & Study Area

Traffic scoping was conducted with the City of Tumwater to establish the study area. A total of six locations were targeted for evaluation. Turning movement counts were collected in December of 2024 between the PM peak period of 4:00-6:00.

Study Area

1. Capitol Boulevard SE & Israel Road
2. Capitol Boulevard SE & Tumwater Boulevard SE
3. Tumwater Boulevard SE & Henderson Boulevard SE
4. Capitol Boulevard SE (Old Highway 99) & Henderson Boulevard SE
5. Henderson Boulevard SE & Trails End Drive SE
6. Henderson Boulevard SE & Access

The peak hour, defined as the single hour with the highest overall intersection volumes, is identified and used for analysis. The City of Tumwater still requires COVID-related adjustment factors due to traffic volumes remaining below pre-pandemic levels. To assess this, 2024 volumes were compared to the City's 2015 counts. While 2024 volumes are generally higher, pre-COVID counts were adjusted upward by 2% per year to reflect current conditions. Using this method, a 14% adjustment increase was applied to all volumes. **Figure 3** reflects the adjusted baseline 2025 PM peak hour volumes.



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BASELINE 2025 PM PEAK HOUR VOLUMES
FIGURE 3

3.3 Non-Motorist Infrastructure

During the PM peak travel hour, all study intersections experienced no more than two pedestrian/bicycle crossing movements. The southern portion of the City has limited non-motorist infrastructure. While the development will include approximately 1,000 feet of new sidewalk along the Henderson Blvd S frontage, sidewalks are largely absent in other areas. Sidewalk becomes available along Old Highway 99, north of 73rd Avenue E (half mile north of Henderson Blvd S). The City plans to install multi-modal improvements along Old Highway 99, south of 73rd Avenue E to 79th Avenue SE which is further discussed in Section 3.5.

School-aged children would likely attend Peter G Schmidt Elementary School or G W Bush Middle School. As both schools are located over a one-mile walking distance, it is assumed that students would utilize bus service.

3.4 Transit Service

The nearest transit service availability in relation to the subject site is located ~1.1-miles walking-distance north at the intersection of Capitol Boulevard SE & Tumwater Boulevard SE. The stop serves bus route 12 – West Tumwater. Route 12 provides service from the Olympia Transit Center to the Labor & Industries Building. Weekday service is provided from 5:42 AM to 11:23 PM and weekend service is provided from 7:30 AM to 11: 23 PM. Refer to the Intercity Transit service schedule for more detailed information.

3.5 Roadway Improvements

The City of Tumwater's Six-Year Transportation Improvement Program 2025-2030 indicates that three improvement projects are planned within the vicinity of the site. Refer to **Table 2** below.

Table 2: Transportation Improvement Projects

Name	Location	Improvement	Cost
Old Hwy 99 Corridor Improvements (Map ID# 4)	79th to 73rd	Design and construct urban road section. The improvement includes addition of traffic lanes, turn lanes, multi-modal facilities, illumination, storm drainage, landscaping, medians and intersection improvements.	$14,400,000
Old Hwy 99 & 79th Ave Roundabout (Map ID# 5)	Intersection	Design and construct roundabout at the intersection of Old Hwy 99 & 79th Ave.	$4,500,000
Tumwater Blvd Interchange (Map ID# 6)	I-5 Interchange at Tumwater Blvd	Design, acquire ROW, and construct improvements. Phased project with an interim signal followed by roundabout, a second roundabout, and overpass widening.	$15,500,000

3.6 Baseline Level of Service

Intersection delays were determined using the *Highway Capacity Manual,* 7th Edition. Capacity analysis was conducted to determine level of service (LOS), an established measure of congestion for transportation facilities. Intersection LOS ranges[1] from LOS A, indicting free flow conditions and low driver delay, to LOS F, indicting saturated conditions and heavy control delays. Level of service calculations were performed using the *Synchro 12* analysis program. Delays presented represent overall weighted average delays for signals. For side-street, stop-controlled intersections (TWSC), LOS is determined by the approach with the highest delay. **Table 3** summarizes baseline 2025 PM peak hour LOS delays for the intersections of study. All signalized intersections utilized signal timing provided by the City of Tumwater.

Table 3: Baseline 2025 Weekday PM Peak Hour Level of Service

Delays given in seconds per vehicle

Ref. #	Intersection	Control	Movement	LOS	Delay
1	Capitol Blvd & Israel Rd	Signal	Overall	C	24.1
2	Capitol Blvd & Tumwater Blvd	Signal	Overall	C	35.0
3	Tumwater Blvd & Henderson Blvd	Signal	Overall	C	29.9
4	Old Highway 99 & Henderson Blvd	Signal	Overall	C	26.4
5	Henderson Blvd & Trails End Dr	Stop	NB	B	12.7

City of Tumwater Level of Service Standards: LOS E for the Tumwater Strategy Corridor (Tumwater Boulevard & Capitol Boulevard and Israel Road & Capitol Boulevard) and LOS D elsewhere.

Baseline 2025 PM peak hour level of service is shown to operate with LOS C conditions or better meeting Tumwater LOS standards.

[1] *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
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 per Vehicle (sec)
A	≤10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	>50

Highway Capacity Manual, 7th Edition

3.7 Safety Analysis

Collision History Analysis

Incident history for the five most recent full years (beginning of 2019 through end of 2023) for the study intersections was requested from WSDOT. **Table 4** below outlines yearly incidents. Collisions were included within the dataset if the collision's junction relationship was noted "at intersection" or "intersection related."

Table 4: Collision History Overview

Intersection/Roadway Segment	2019	2020	2021	2022	2023	Avg/ Yr
1. Capitol Blvd & Israel Rd	4	2	6	5	4	4.2
2. Capitol Blvd & Tumwater Blvd	5	1	2	4	3	3.0
3. Tumwater Blvd & Henderson Blvd	5	3	2	3	2	3.0
4. Old Hwy 99 & Henderson Blvd	2	3	1	3	1	2.0
5. Henderson Blvd & Trails End Dr	0	0	1	1	2	0.8
6. Henderson Blvd & 500' N/S of Access	0	0	0	0	1	0.2

A total of 66 collisions were recorded in the study area with 8 resulting in minor suspected injury. The following sections analyze collision types, severity, and contributing factors.

Collision Type Analysis

Summaries of collision types are provided in **Table 5** below.

Table 5: Collision History Crash Types

	Number of Crashes (2019-2023)					
Crash Type	I/S #1	#2	#3	#4	#5	#6
Rear-end	5	7	11	6	0	0
Entering at angle	4	2	1	2	4	1
Sideswipe	1	4	0	0	0	0
From opposite direction	10	0	0	1	0	0
From same direction	0	1	0	0	0	0
One parked-one moving	0	1	0	0	0	0
Vehicle strikes fence/tree/stump	1	0	3	1	0	0

1. Capitol Boulevard SE & Israel Road SE: 21 collisions were recorded over the 5-year study timeframe, resulting in an average of 4.2 incidents per year. The collision types were listed as "rear-end" (5/21), "entering at angle" (4/21), "sideswipe" (1/21), "from opposite direction" (10/21), and "vehicle strikes fence" (1/21).

2. Capitol Boulevard SE & Tumwater Boulevard SE: 15 collisions were recorded over the 5-year study timeframe, resulting in an average of 3.0 incidents per year. The collision types were listed as "rear-end" (7/15), "entering at angle" (2/15), "sideswipe" (4/15), "from same direction" (1/15), and "one parked-one moving" (1/15).

3. Tumwater Boulevard SE & Henderson Boulevard SE: 15 collisions were recorded over the 5-year study timeframe, resulting in an average of 3.0 incidents per year. The collision types were listed as "rear-end" (11/15), "entering at angle" (1/15), and "vehicle strikes fence" (3/15).

4. Capitol Boulevard SE (Old Hwy 99) & Henderson Boulevard SE: 10 collisions were recorded over the 5-year study timeframe, resulting in an average of 0.8 incidents per year. The collision types were all listed as "entering at angle" (4/4).

5. Henderson Boulevard SE & Trail End Drive SE: 4 collisions were recorded over the 5-year study timeframe, resulting in an average of 2.0 incidents per year. The collision types were listed as "rear-end" (6/10), "entering at angle" (2/10), "from opposite direction" (1/10), and "vehicle strikes utility box" (1/10).

6. Henderson Boulevard SE & Proposed Access: a single incident was recorded over the 5-year study timeframe, resulting in an average of 0.2 collisions per year. The collision type was listed as "entering at angle" (1/1).

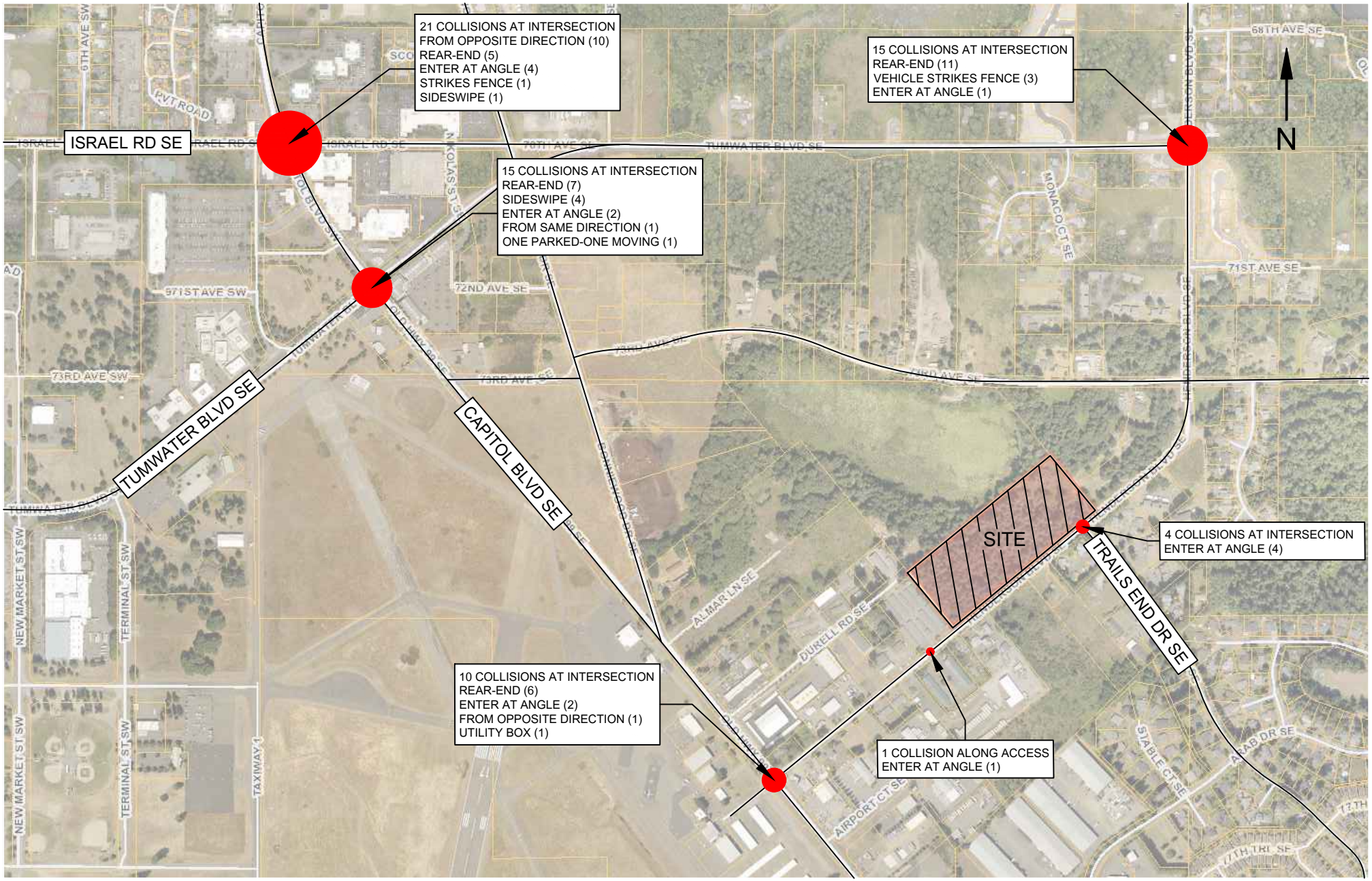
Collision Severity, Contributing Factor Analysis & Trends

A collision severity summary associated with the study intersection is provided on the following page in **Table 6**. No fatalities or serious injuries were recorded at any of the study intersections.

Table 6: Collision History Severity

Crash Type	Number of Crashes (2019-2023)					
	#1	#2	#3	#4	#5	#6
Fatal (K)	0	0	0	0	0	0
Incapacitating Injury (A)	0	0	0	0	0	0
Non-incapacitating Injury (B)	4	0	2	1	1	0
Possible Injury (C)	5	4	1	3	0	1
Property Damage Only (PDO)/Unknown	12	11	12	6	3	0

In review of overall trends, collisions were primarily property damage only and largely contributed to driver error/inattention. No collisions involved non-motorists. Refer to **Figure 4** for the collision history map.



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COLLISION HISTORY MAP
FIGURE 4

4. FORECAST TRAFFIC DEMAND & ANALYSIS

4.1 Project Trip Generation

Trip generation is defined as the number of vehicle movements that enter or exit the respective project site during a designated time period such as the PM peak hour or an entire day. The magnitude of the anticipated vehicle trip generation for the proposed project was derived from the Institute of Transportation Engineers (ITE) publication, Trip Generation Manual, 11th Edition. In review of ITE's Land Use Codes (LUC), LUC 220 – Multifamily Housing (Low-Rise) was selected for the apartment units and LUC 215 – Single-Family Attached Housing was selected for the townhome units. Dwelling units were used as the input variable with ITE's equations (LUC 220) and average rates (LUC 215) to determine trip ends.

Table 7 below highlights the estimated number of trips to/from the proposed development. Refer to the appendix for ITE trip generation sheets.

Table 7: Project Trip Generation

Land Use	Units	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Multifamily LUC - 220	84	614	12	37	49	36	21	57
Single-Family Att. LUC - 215	10	72	1	4	5	3	3	6
Total Trips		**686**	**13**	**41**	**54**	**39**	**24**	**63**

The project is estimated to generate 686 total average weekday daily trips with 54 total AM peak hour trips (13 inbound/41 outbound) and 63 total PM peak hour trips (39 inbound / 24 outbound).

4.2 Distribution and Assignment

Trip distribution and assignment for the proposed Henderson Boulevard Apartments project was based on Thurston Regional Planning Council's (TRPC) Transportation Analysis Zone (TAZ) 229. Site access is to be provided via Henderson Boulevard SE. See **Figure 5** for PM peak hour trip distribution and assignment.

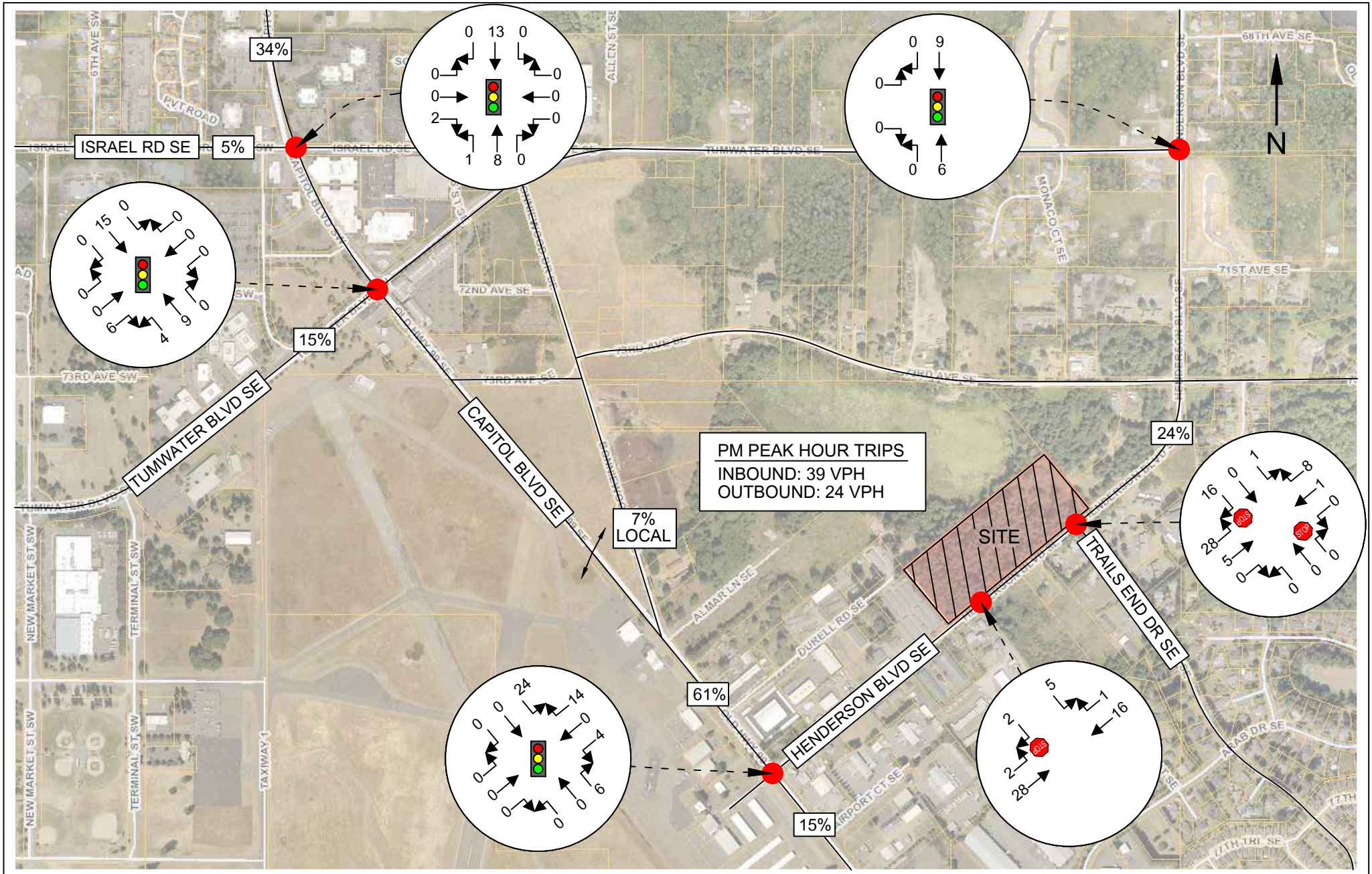
Tumwater Blvd & I-5 Interchange: new development is subject to the SEPA mitigation fees as a funding mechanism for the planned roundabout and interchange improvements (see Section 3.5). An extended trip distribution exhibit is available in the appendix. Using the TAZ 229 model, approximately 7% of the project trips are estimated to travel through the interchange. This represents around 4 AM and 5 PM peak hour trips.

4.3 Future Peak Hour Volumes

A 6-year horizon of 2031 was used for the future analysis scenario assuming the development fully constructed and occupied. Forecast background traffic volumes were derived using the City of Tumwater's 4% annualized growth rate. Moreover, pipeline volumes for the following projects were accounted for: Aspen Apartments, Trestlewood, Belmont Flats, Bertsch Thurston County, Kingswood Apartments, Kingswood Commercial, Littlerock Storage, New Market Apartments, OSOS Library Archive Building, Skyview Estates, South Sound Commerce, Tyee Landing, 6501 Capitol Boulevard Apartments, Littlerock Townhomes, Yorkshire, Vista Views at Black Lake, Habitat for Humanity, Three Lakes Crossing, Tumwater Boulevard Plat, Tumwater O&M, I-5 Bloomberg CC, Trosper Woods, and Kirsop Division III. PM peak hour pipeline volumes are illustrated in **Figure 6.**

Forecast 2031 PM peak hour background volumes (pipeline and growth rate) are illustrated in **Figure 7**. Forecast 2031 PM peak hour volumes with project under full build-out conditions are outlined in **Figure 8**.

It should be noted, the forecast volumes are considered very conservative. While current volumes may not fully account for pre-pandemic conditions, volumes are largely rebounded. With applying a COVID-adjustment factor, a 4% annual growth rate, and volumes 24 in-process developments, the forecast volumes may be higher than what will actually occur.



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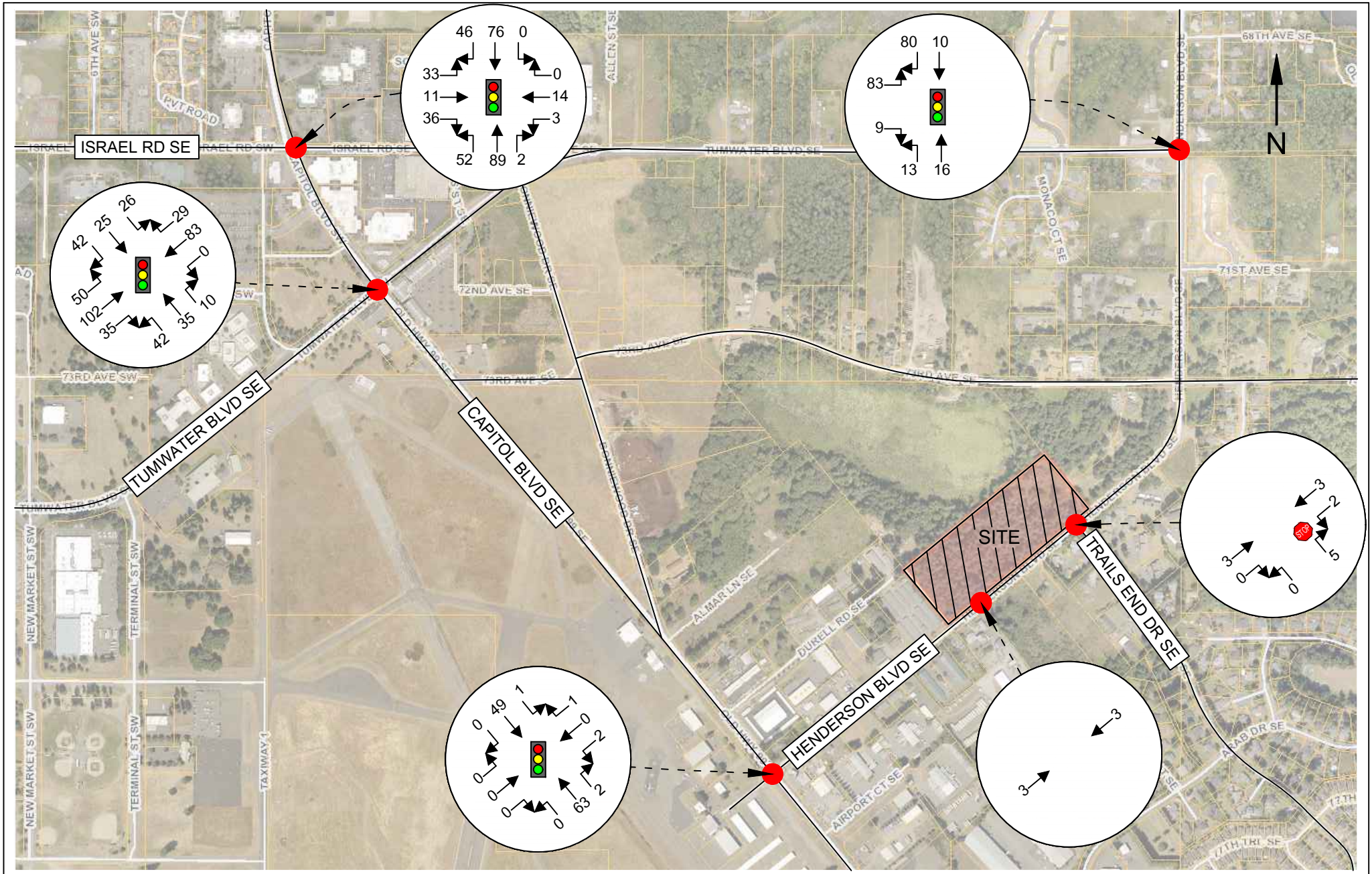
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 5



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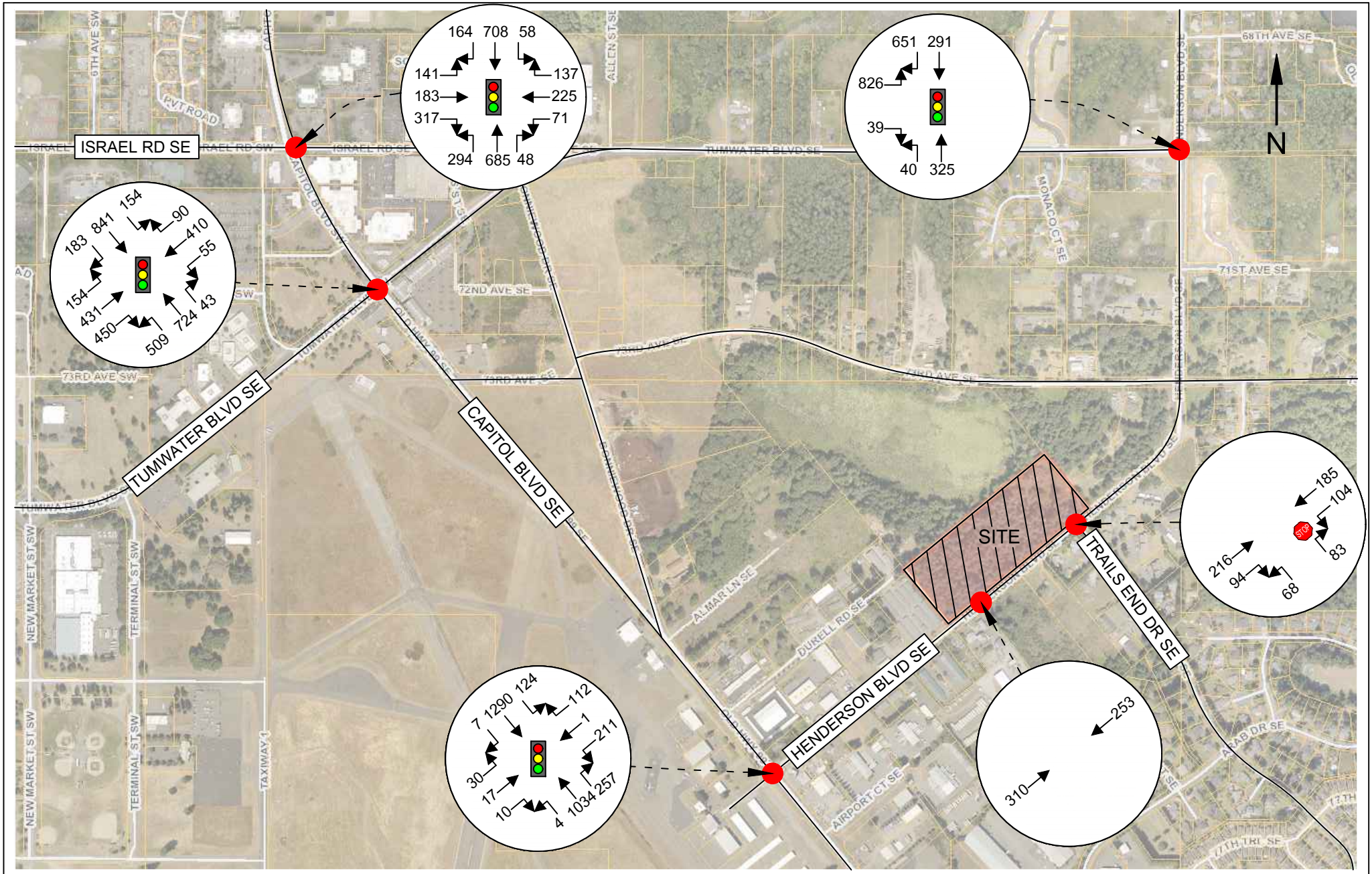
PM PEAK HOUR PIPELINE VOLUMES
FIGURE 6



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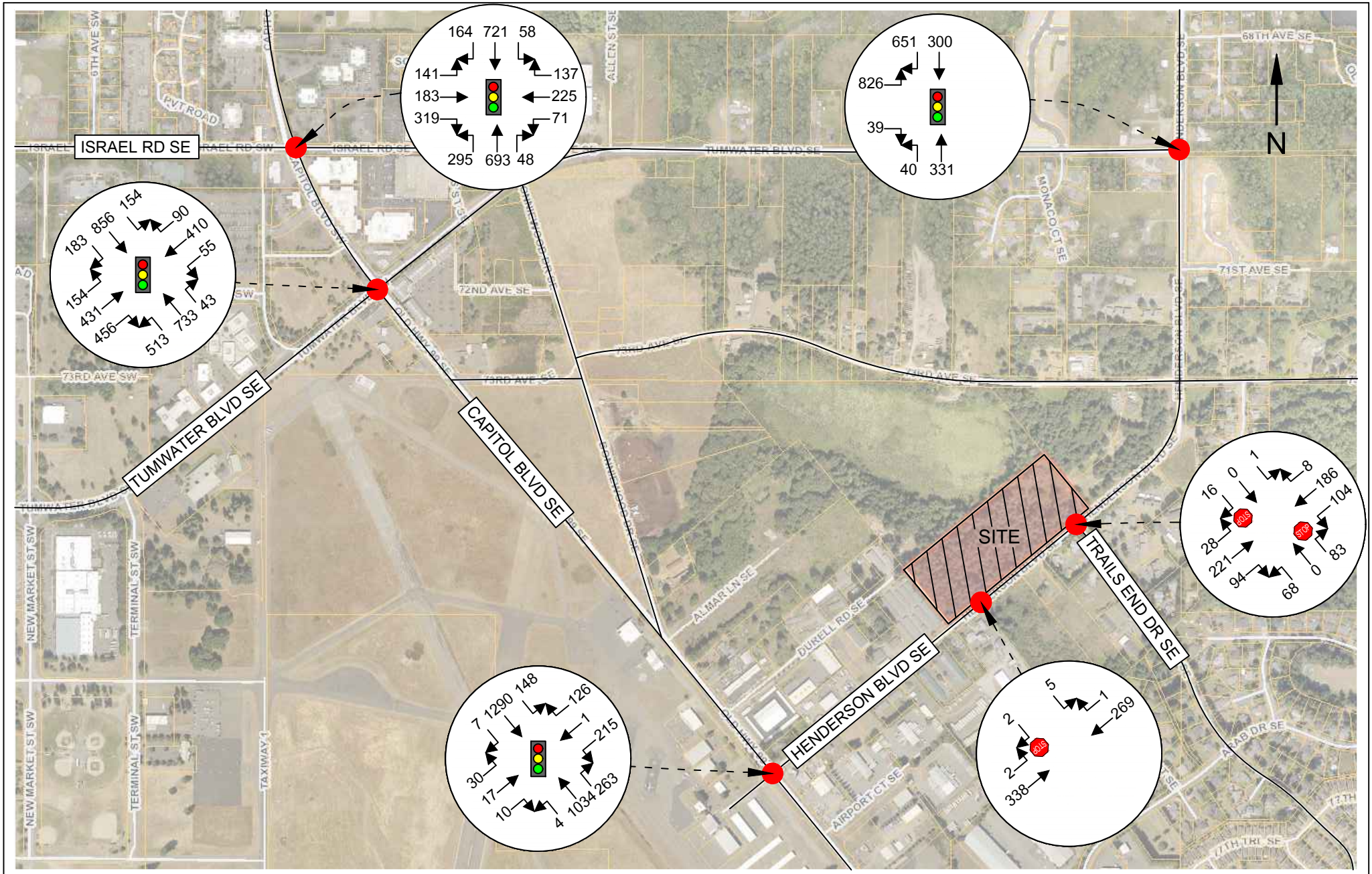
FORECAST 2031 PM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 7



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FORECAST 2031 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 8

4.4 Future Level of Service

A level of service analysis was made of the future PM peak hour volumes without (background) and with project-generated trips. Results for intersection delay conditions were again determined using the *Synchro 12* analysis program. Level of service outputs are provided in **Table 8** below.

Table 8: Forecast 2031 Weekday PM Peak Hour Level of Service

Delays given in seconds per vehicle

				Without Project		*With Project*	
Ref. #	**Intersection**	**Control**	**LOS Standard**	**LOS**	**Delay**	**LOS**	**Delay**
1	Capitol Blvd & Israel Rd	Signal	**E**	D	48.6	D	49.5
2	Capitol Blvd & Tumwater Blvd	Signal	**E**	D	49.4	D	49.8
3	Tumwater Blvd & Henderson Blvd	Signal	**D**	D	49.9	D	51.6
4	Old Hwy 99 & Henderson Blvd	Signal	**D**	**E**	**60.6**	**E**	**64.5**
5	Henderson Blvd & Trails End Dr	Stop	**D**	C	15.8	C	~~19.4~~ 19.8
6	Henderson Blvd & Access	Stop	**D**	--	--	B	~~11.4~~ 12.6

Old Highway 99 & Henderson Boulevard: is projected to operate with LOS E conditions with or without the project. It should be noted that the actual existing volume at this intersection is 2,006 total entering vehicles (TEV). With the adjustment and growth factors required by the City, the volumes are estimated to increase to 3,145 TEV in the 2031 horizon year—a 57% increase. Therefore, the LOS projection should be considered conservative.

Moreover, the City's Comprehensive Plan projects this intersection to operate at LOS B under 2040 conditions, suggesting that current delay estimates may be overly conservative. The projected 2040 TEV is 2,720 vehicles—significantly lower than the 2031 horizon used in this analysis. Additionally, while the Comprehensive Plan identifies a potential future roundabout at this intersection, it is not currently included in the City's Six-Year Plan.

If the signal remains in place and volumes increase in line with the conservative 2031 projections, modifying the signal cycle length from 100 seconds to 150 seconds and adjusting the westbound left-turn phase to protected/permissive could improve operations to LOS D. The City may choose to monitor this intersection over time and implement timing adjustments as needed to optimize performance.

All other study intersections are shown to meet the Tumwater Level of Service standards operating with LOS E conditions or better.

4.5 Project Access & Sight Distance

Access to and from the site is proposed via two connections to Henderson Blvd SE. As part of the frontage improvements, a continuous two-way left-turn lane (TWLTL) will provide storage for left-turning vehicles entering the site. Additionally, the northern access, located opposite Trails End Drive, includes a stub connection to the undeveloped northeast parcel to facilitate future connectivity.

For a 35-mph roadway (with a 45-mph design speed) and a three-lane cross-section on Henderson Blvd SE, AASHTO[2] standards recommend a minimum entering sight distance (ESD) of 530 feet. Preliminary assessments indicate that sight lines exceed 550 feet in both directions at both access points. The roadway is relatively flat and straight, offering an unobstructed view. Final verification will be conducted during the Civil submittal. All new roadways and intersections will be designed in accordance with City of Tumwater engineering standards.

[2]American Association of State Highway and Transportation Officials. (2018). *A policy on geometric design of highways and streets* (7th ed.). AASHTO.

5. CONCLUSIONS & MITIGATION

Henderson Boulevard Apartments is a proposed residential development comprised of 84 apartment units and 10 townhome units located in the city of Tumwater. Development will take place on 10-acres within a single tax parcel, which is bordered to the southeast via Henderson Boulevard SE. Site ingress/egress is proposed via two access connections to Henderson Boulevard SE. Refer to Figure 2, the conceptual site plan, for more details.

According to ITE data, the project is estimated to generate 686 daily trips with 54 AM peak hour trips and 63 PM peak hour trips. The baseline 2025 PM peak hour level of service (LOS) at the five study intersections (refer to Table 3) currently operate with LOS C or better conditions—meeting the City standards. Forecast LOS analysis was performed using a six-year horizon which included a background growth rate, pipeline development and project-generated traffic added to the roadway network.

With the exception of the Old Hwy 99 & Henderson Boulevard intersection, all study intersections are projected to meet the City's LOS standards by the 2031 horizon year. The applied growth projections are considered conservative, as the forecasted 2031 volumes in this analysis are more than 15% higher than the City's 2040 projections from the Comprehensive Plan. Adjustments to signal timing and phasing could improve operations to LOS D. The City may consider monitoring this intersection over time to determine the most effective signal timing and phasing adjustments.

Based on the analysis above, the following mitigation is identified for the Henderson Boulevard Apartments project.

1. All frontage improvements and roadway connections shall conform to City Standards. Final design shall be coordinated and approved by the City.

2. Pay Traffic Impact Fees (TIF) as required by the City of Tumwater and SEPA mitigation fees. A summary of the expected TIF, along with the City's SEPA Mitigation Fee for trips entering the Tumwater Blvd/I-5 Interchange at a rate of $4,333.00 per PM peak hour trip, is provided on the following page in **Table 9**. Trip totals through the Tumwater Blvd/I-5 Interchange are based on the TAZ 229 model.

Table 9: Estimated Traffic Impact Fees

Variable	Tumwater TIF	Total Tumwater TIF	Tumwater Blvd PM Trips	SEPA Fee (per Tumwater Blvd PM Trip)	Total SEPA Fee
10 Single-Fam Attached Units	$4,540.00/unit	$45,400.00	5 trips	$4,333.00	$21,665.00
84 Apartment Units	$2,946.16/unit	$247,477.44			
Total TIF		**$292,877.44**		**Total SEPA**	**$21,665.00**

No other mitigation is identified at this time.

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APPENDIX: INTERSECTION COUNT DATA

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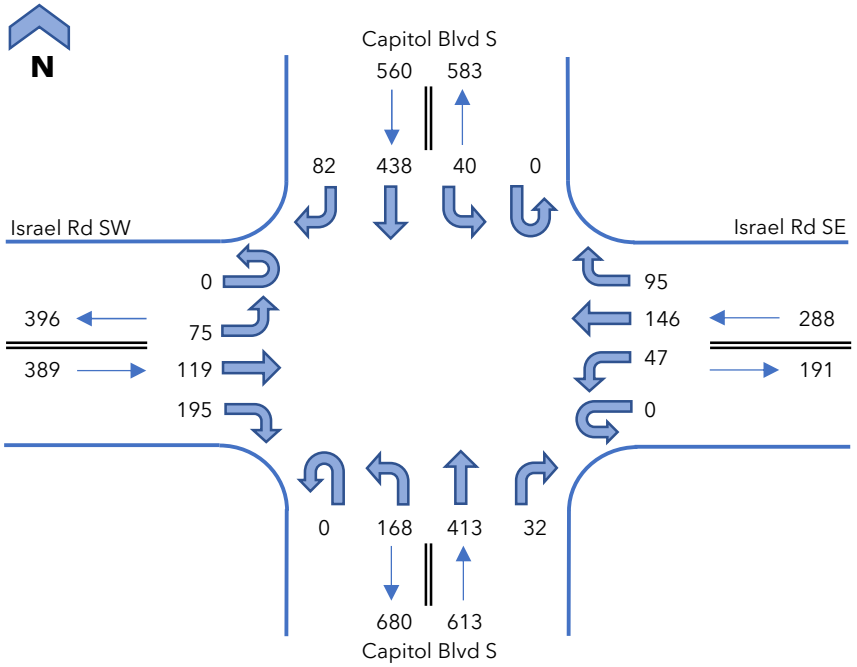
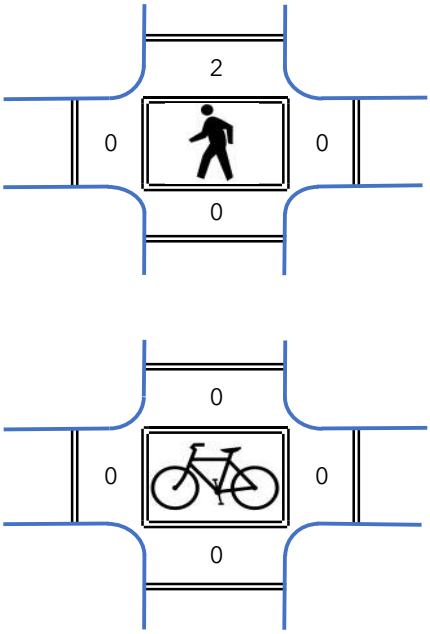
Date Collected: 12/10/2024
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM

Israel Rd SW & Capitol Boulevard S





Interval Start Time	Israel Rd SW Eastbound				Israel Rd SE Westbound				Capitol Blvd S Northbound				Capitol Blvd S 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	26	45	0	12	24	33	0	33	78	6	0	16	106	19	417	
4:15 PM	0	12	26	46	0	7	39	19	0	44	117	13	0	9	110	15	457	
4:30 PM	0	12	30	46	0	14	34	21	0	45	110	7	0	12	117	28	476	
4:45 PM	0	26	34	56	0	11	38	23	0	37	96	10	0	11	97	13	452	1802
5:00 PM	0	25	29	47	0	15	35	32	0	42	90	2	0	8	114	26	465	1850
5:15 PM	0	12	35	52	0	5	27	17	0	54	91	1	0	12	126	21	453	1846
5:30 PM	0	14	22	39	0	3	17	11	0	28	67	4	0	6	105	14	330	1700
5:45 PM	0	15	15	44	0	3	21	10	0	30	76	1	0	4	87	16	322	1570
Count Total	0	135	217	375	0	70	235	166	0	313	725	44	0	78	862	152	3372	--
Peak Hour Total	0	75	119	195	0	47	146	95	0	168	413	32	0	40	438	82	1850	--
PHF	0.84				0.88				0.88				0.89				0.97	--
Heavy Vehicles	0	1	0	2	0	1	3	0	0	3	6	4	0	1	7	7	35	--
HV %	0.0%	1.3%	0.0%	1.0%	0.0%	2.1%	2.1%	0.0%	0.0%	1.8%	1.5%	12.5%	0.0%	2.5%	1.6%	8.5%	1.9%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	0	1	4	4	9
4:15 PM	1	1	6	3	11
4:30 PM	0	2	2	7	11
4:45 PM	2	1	3	3	9
5:00 PM	0	0	2	2	4
5:15 PM	0	4	1	3	8
5:30 PM	0	0	2	4	6
5:45 PM	0	2	3	3	8
Count Total	3	11	23	29	66
Peak Hour Total	3	4	13	15	35
Peak Hour HV%	0.8%	1.4%	2.1%	2.7%	1.9%

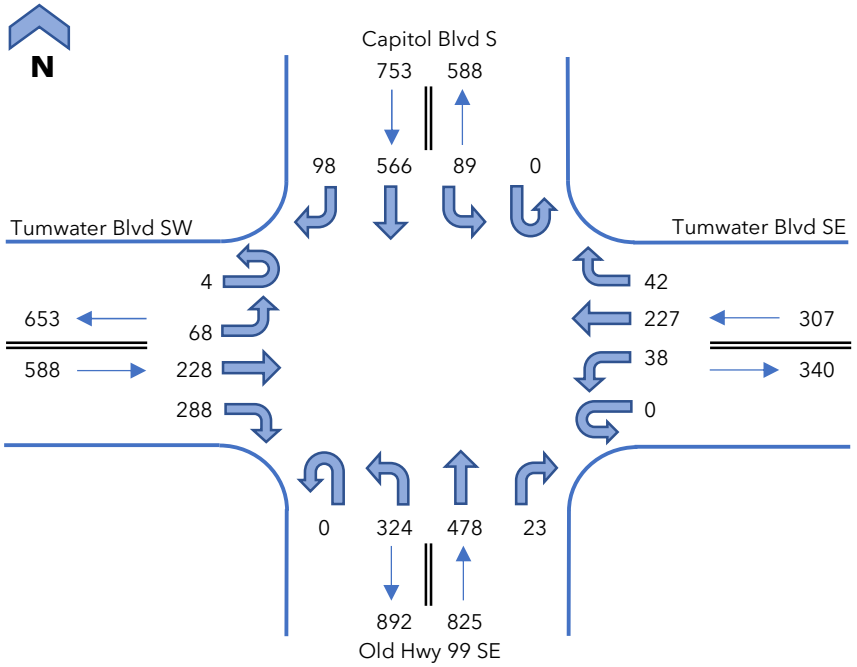
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	1	1
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	1	0	1
0	1	0	0	1
1	0	1	0	2
0	0	0	0	0
1	1	3	1	6
0	0	2	0	2

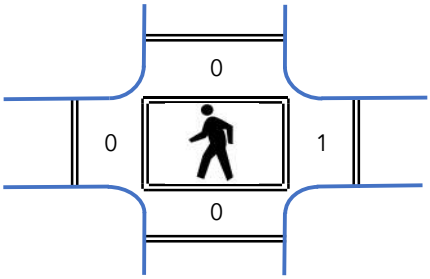
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0

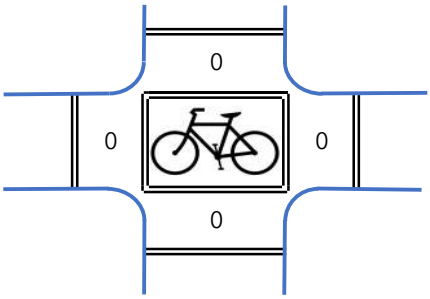
HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 12/10/2024
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM

Tumwater Boulevard SW & Capitol Boulevard S







Interval Start Time	Tumwater Blvd SW Eastbound				Tumwater Blvd SE Westbound				Old Hwy 99 SE Northbound				Capitol Blvd S 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	9	61	76	0	11	38	13	0	80	101	2	0	13	130	11	545	
4:15 PM	1	22	46	69	0	6	46	10	0	63	132	9	0	16	146	17	583	
4:30 PM	1	15	76	81	0	9	61	12	0	102	119	6	0	27	123	29	661	
4:45 PM	2	20	52	80	0	11	70	14	0	58	101	3	0	15	140	19	585	2374
5:00 PM	0	11	54	58	0	12	50	6	0	101	126	5	0	31	157	33	644	2473
5:15 PM	1	5	49	59	0	6	62	15	0	63	93	3	0	24	138	24	542	2432
5:30 PM	0	15	46	52	0	9	45	2	0	47	87	2	0	13	107	19	444	2215
5:45 PM	2	9	36	50	0	10	41	13	0	48	70	1	0	14	117	10	421	2051
Count Total	7	106	420	525	0	74	413	85	0	562	829	31	0	153	1058	162	4425	--
Peak Hour Total	4	68	228	288	0	38	227	42	0	324	478	23	0	89	566	98	2473	--
PHF	0.85				0.81				0.89				0.85				0.94	--
Heavy Vehicles	0	5	3	18	0	1	12	1	0	8	7	0	0	0	7	0	62	--
HV %	0.0%	7.4%	1.3%	6.3%	0.0%	2.6%	5.3%	2.4%	0.0%	2.5%	1.5%	0.0%	0.0%	0.0%	1.2%	0.0%	2.5%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	7	6	5	1	19
4:15 PM	6	2	6	1	15
4:30 PM	5	5	2	5	17
4:45 PM	13	5	3	1	22
5:00 PM	2	2	4	0	8
5:15 PM	3	4	3	3	13
5:30 PM	7	0	1	1	9
5:45 PM	7	2	8	2	19
Count Total	50	26	32	14	122
Peak Hour Total	26	14	15	7	62
Peak Hour HV%	4.4%	4.6%	1.8%	0.9%	2.5%

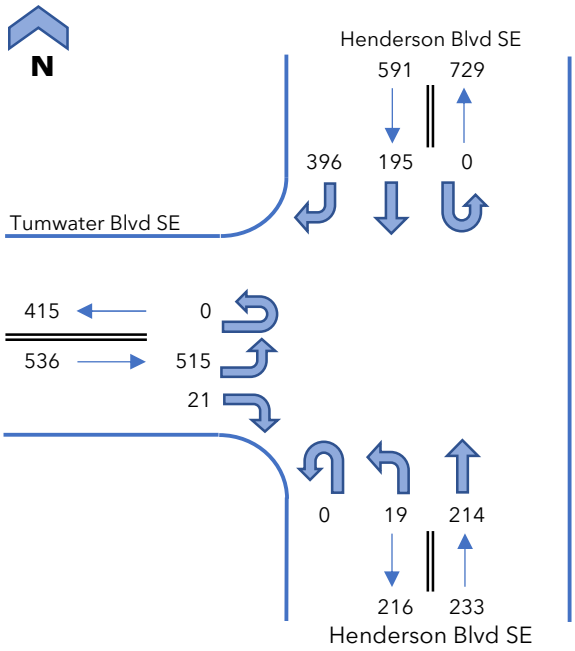
Pedestrians (Leg)				
E	W	N	S	Total
0	0	1	0	1
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	1	1
2	1	0	2	5
0	0	0	1	1
3	1	1	4	9
1	0	0	0	1

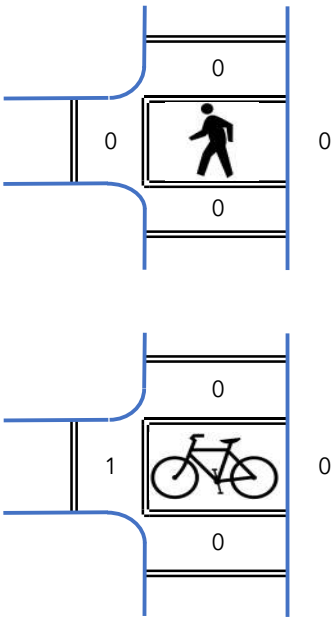
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 12/10/2024
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Tumwater Boulevard SE & Henderson Boulevard SE





Interval Start Time	Tumwater Blvd SE Eastbound								Henderson Blvd SE Northbound				Henderson Blvd SE Southbound				15 Minute Totals	Hourly Totals
	UT	LT	T	RT					UT	LT	T	RT	UT	LT	T	RT		
4:00 PM	0	120	--	10	--	--	--	--	0	0	42	--	0	--	58	77	307	
4:15 PM	0	94	--	4	--	--	--	--	0	5	47	--	0	--	47	98	295	
4:30 PM	0	132	--	2	--	--	--	--	0	5	62	--	0	--	45	93	339	
4:45 PM	0	132	--	5	--	--	--	--	0	5	46	--	0	--	48	123	359	1300
5:00 PM	0	129	--	7	--	--	--	--	0	5	61	--	0	--	58	65	325	1318
5:15 PM	0	122	--	7	--	--	--	--	0	4	45	--	0	--	44	115	337	1360
5:30 PM	0	101	--	9	--	--	--	--	0	4	39	--	0	--	36	77	266	1287
5:45 PM	0	80	--	4	--	--	--	--	0	2	29	--	0	--	36	83	234	1162
Count Total	0	910	--	48	--	--	--	--	0	30	371	--	0	--	372	731	2462	--
Peak Hour Total	0	515	--	21	--	--	--	--	0	19	214	--	0	--	195	396	1360	--
PHF	0.98				--				0.87				0.86				0.95	--
Heavy Vehicles	0	2	--	0	--	--	--	--	0	0	3	--	0	--	6	18	29	--
HV %	0.0%	0.4%	--	0.0%	--	--	--	--	0.0%	0.0%	1.4%	--	0.0%	--	3.1%	4.5%	2.1%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	2	--	2	9	13
4:15 PM	1	--	2	3	6
4:30 PM	0	--	0	7	7
4:45 PM	2	--	1	6	9
5:00 PM	0	--	2	6	8
5:15 PM	0	--	0	5	5
5:30 PM	1	--	0	0	1
5:45 PM	1	--	1	1	3
Count Total	7	--	8	37	52
Peak Hour Total	2	--	3	24	29
Peak Hour HV%	0.4%	--	1.3%	4.1%	2.1%

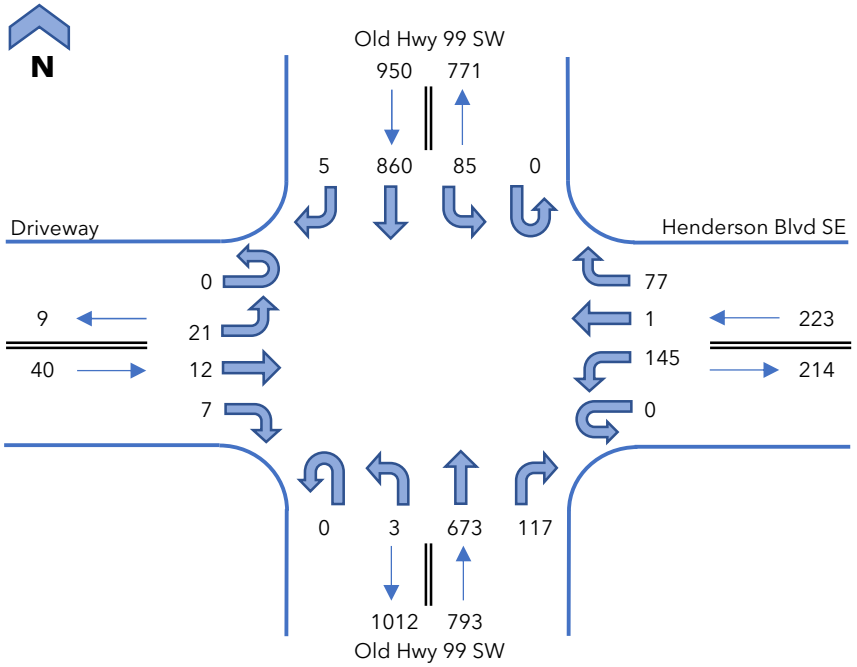
Pedestrians (Leg)					
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

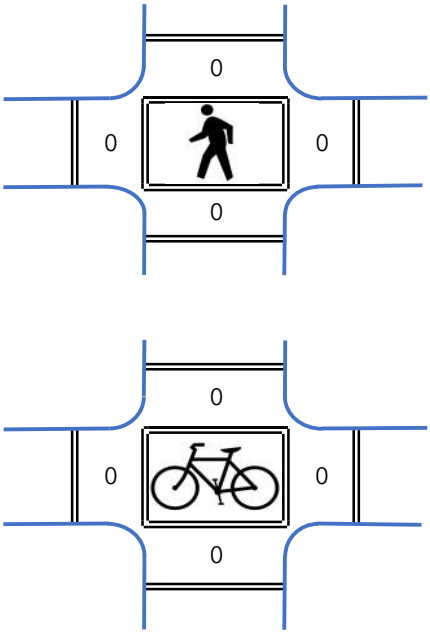
Bicycles (Leg)				
E	W	N	S	Total
0	0	0	1	1
1	0	0	0	1
0	1	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	1	0	1	3
0	1	0	0	1

HEATH&ASSOCIATES
Transportation Planning & Engineering

Date Collected: 12/10/2024
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM

Henderson Blvd SE & Old Hwy 99 SW





Interval Start Time	Driveway Eastbound				Henderson Blvd SE Westbound				Old Hwy 99 SW Northbound				Old Hwy 99 SW 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	2	1	1	0	34	0	18	0	0	164	19	0	21	198	0	458	
4:15 PM	0	9	1	0	0	41	0	19	0	2	157	31	0	17	178	2	457	
4:30 PM	0	6	5	0	0	25	0	17	0	1	201	37	0	21	236	1	550	
4:45 PM	0	1	4	1	0	40	1	16	0	0	162	18	0	17	229	1	490	1955
5:00 PM	0	5	2	6	0	39	0	25	0	0	153	31	0	30	217	1	509	2006
5:15 PM	0	5	1	0	0	31	0	19	0	1	138	27	0	18	201	0	441	1990
5:30 PM	0	8	0	0	0	24	0	17	0	0	102	18	0	16	159	1	345	1785
5:45 PM	0	3	0	0	0	19	0	17	0	0	89	12	0	15	166	0	321	1616
Count Total	0	39	14	8	0	253	1	148	0	4	1166	193	0	155	1584	6	3571	--
Peak Hour Total	0	21	12	7	0	145	1	77	0	3	673	117	0	85	860	5	2006	--
PHF	0.77				0.87				0.83				0.92				0.91	--
Heavy Vehicles	0	1	1	0	0	5	0	3	0	1	15	4	0	1	29	0	60	--
HV %	0.0%	4.8%	8.3%	0.0%	0.0%	3.4%	0.0%	3.9%	0.0%	33.3%	2.2%	3.4%	0.0%	1.2%	3.4%	0.0%	3.0%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	0	2	6	12	20
4:15 PM	1	3	6	6	16
4:30 PM	0	2	0	13	15
4:45 PM	0	2	7	9	18
5:00 PM	1	1	7	2	11
5:15 PM	0	2	2	2	6
5:30 PM	0	1	2	6	9
5:45 PM	0	0	8	3	11
Count Total	2	13	38	53	106
Peak Hour Total	2	8	20	30	60
Peak Hour HV%	5.0%	3.6%	2.5%	3.2%	3.0%

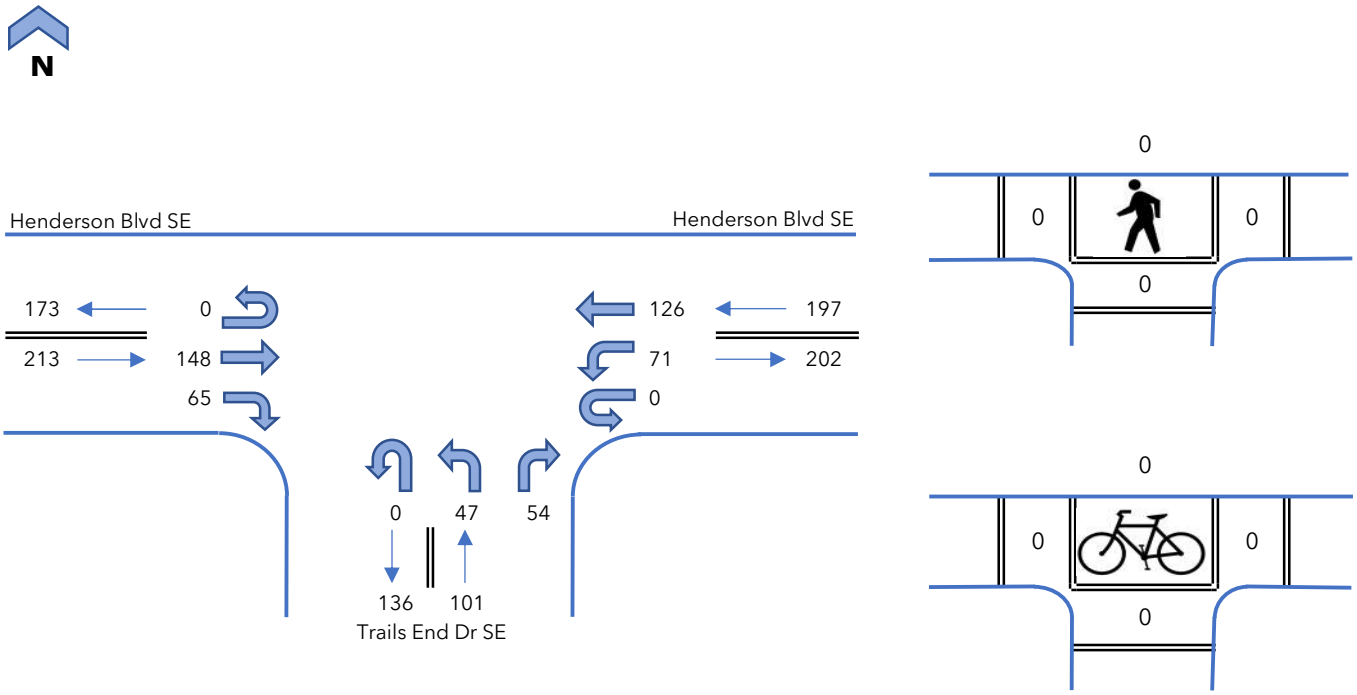
Pedestrians (Leg)				
E	W	N	S	Total
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	1	0	0	1
0	1	0	0	1
0	0	0	0	0

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

HEATH & ASSOCIATES
Transportation Planning & Engineering

Date Collected: 12/10/2024
Day of the Week: Tuesday
Time Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Henderson Blvd SE & Trails End Dr SE



Interval Start Time	Henderson Blvd SE Eastbound				Henderson Blvd SE Westbound				Trails End Dr SE Northbound								15 Minute Totals	Hourly Totals
	UT	LT	T	RT	UT	LT	T	RT	UT	LT	T	RT						
4:00 PM	0	--	24	18	0	24	36	--	0	14	--	16	--	--	--	--	132	
4:15 PM	0	--	34	13	0	15	41	--	0	8	--	19	--	--	--	--	130	
4:30 PM	0	--	51	15	0	17	16	--	0	10	--	17	--	--	--	--	126	
4:45 PM	0	--	24	14	0	11	42	--	0	8	--	10	--	--	--	--	109	497
5:00 PM	0	--	42	15	0	21	32	--	0	15	--	15	--	--	--	--	140	505
5:15 PM	0	--	31	21	0	22	36	--	0	14	--	12	--	--	--	--	136	511
5:30 PM	0	--	26	12	0	11	20	--	0	15	--	12	--	--	--	--	96	481
5:45 PM	0	--	18	11	0	12	22	--	0	13	--	7	--	--	--	--	83	455
Count Total	0	--	250	119	0	133	245	--	0	97	--	108	--	--	--	--	952	--
Peak Hour Total	0	--	148	65	0	71	126	--	0	47	--	54	--	--	--	--	511	--
PHF	0.81				0.85				0.84				--				0.91	--
Heavy Vehicles	0	--	3	0	0	1	6	--	0	0	--	1	--	--	--	--	11	--
HV %	0.0%	--	2.0%	0.0%	0.0%	1.4%	4.8%	--	0.0%	0.0%	--	1.9%	--	--	--	--	2.2%	--

Interval Start Time	Heavy Vehicles				
	EB	WB	NB	SB	Total
4:00 PM	1	2	1	--	4
4:15 PM	1	2	0	--	3
4:30 PM	1	3	1	--	5
4:45 PM	0	1	0	--	1
5:00 PM	2	1	0	--	3
5:15 PM	0	2	0	--	2
5:30 PM	0	0	0	--	0
5:45 PM	0	0	0	--	0
Count Total	5	11	2	--	18
Peak Hour Total	3	7	1	--	11
Peak Hour HV%	1.4%	3.6%	1.0%	--	2.2%

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	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: ITE SHEETS

Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

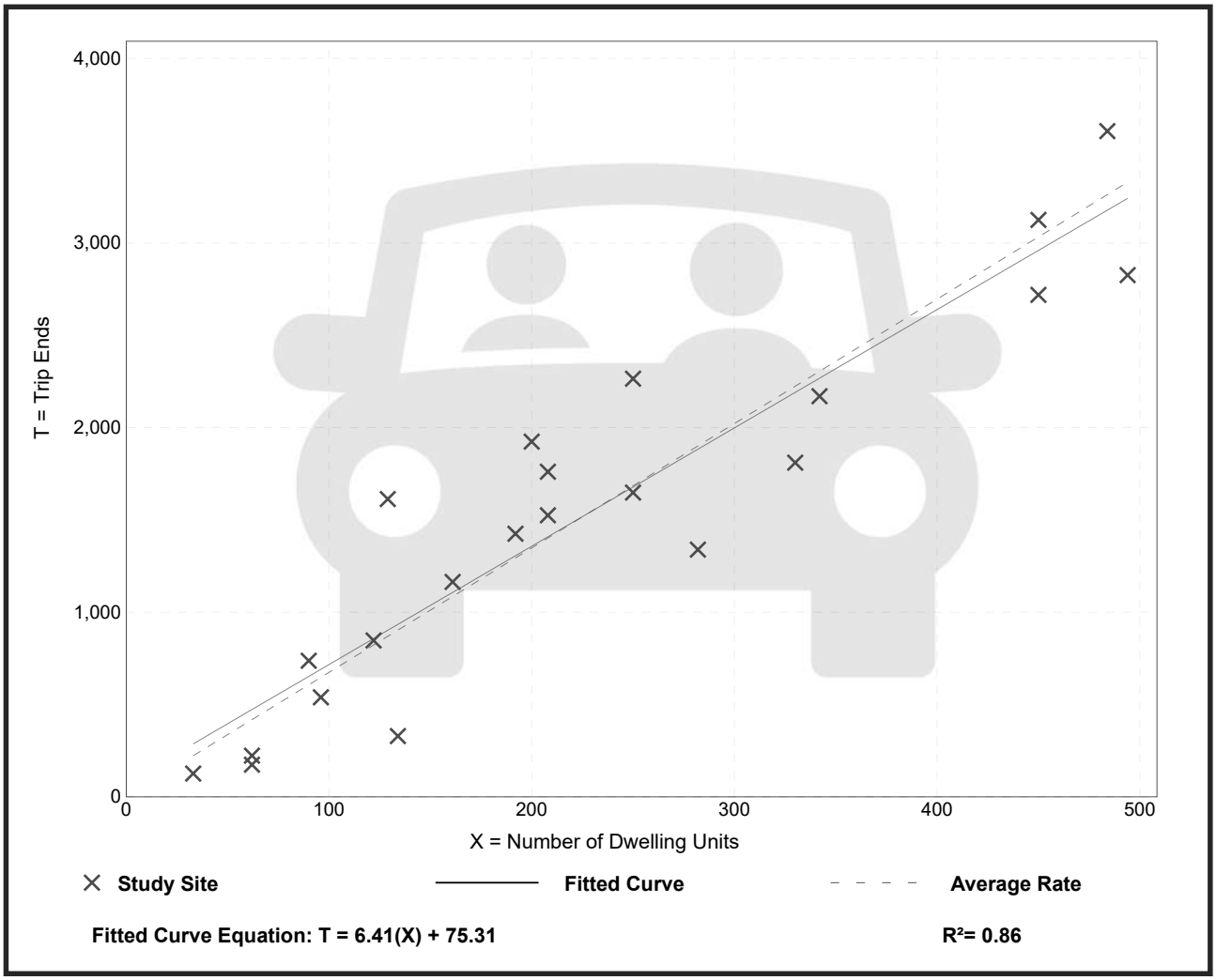
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



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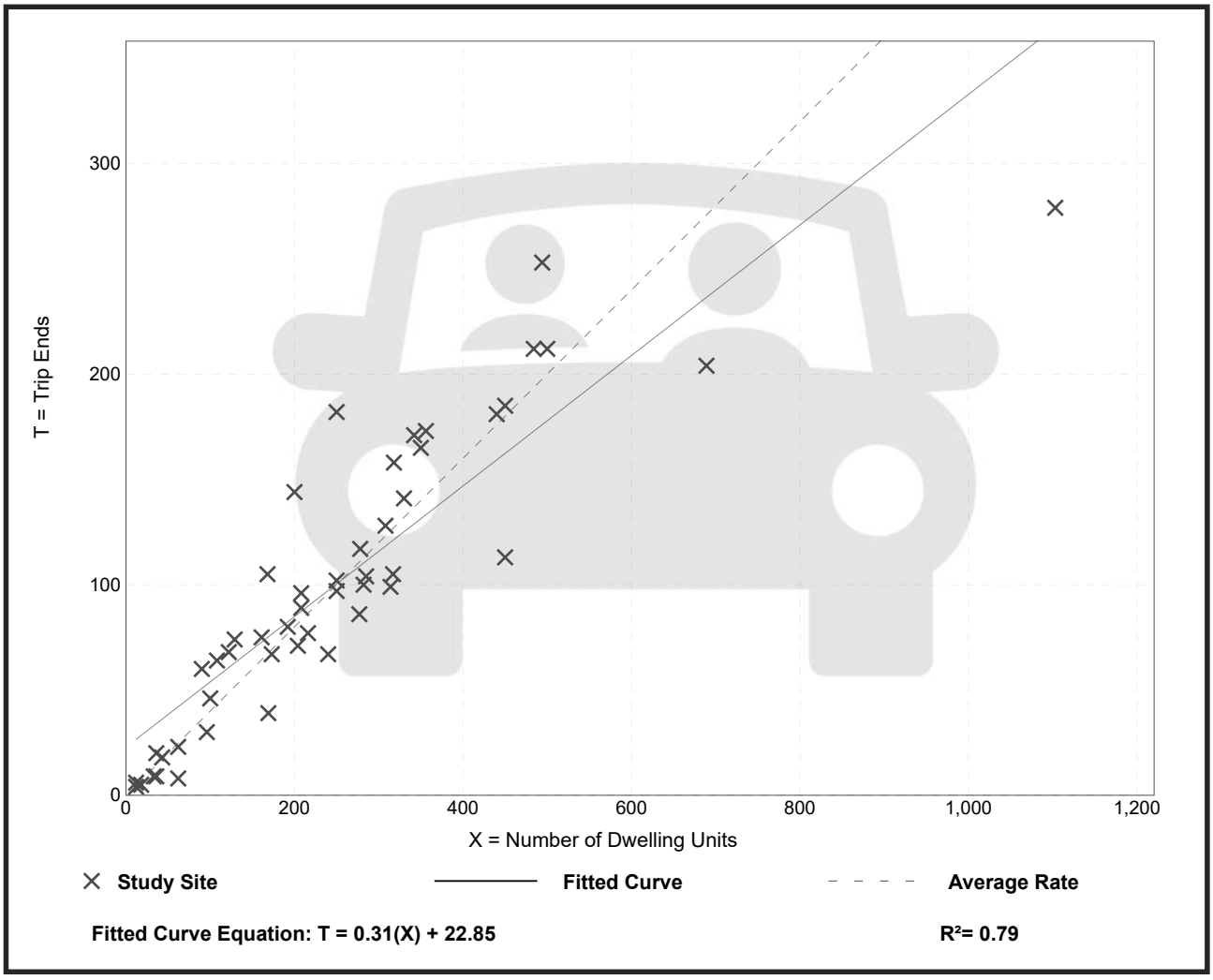
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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: 49
Avg. Num. of Dwelling Units: 249
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



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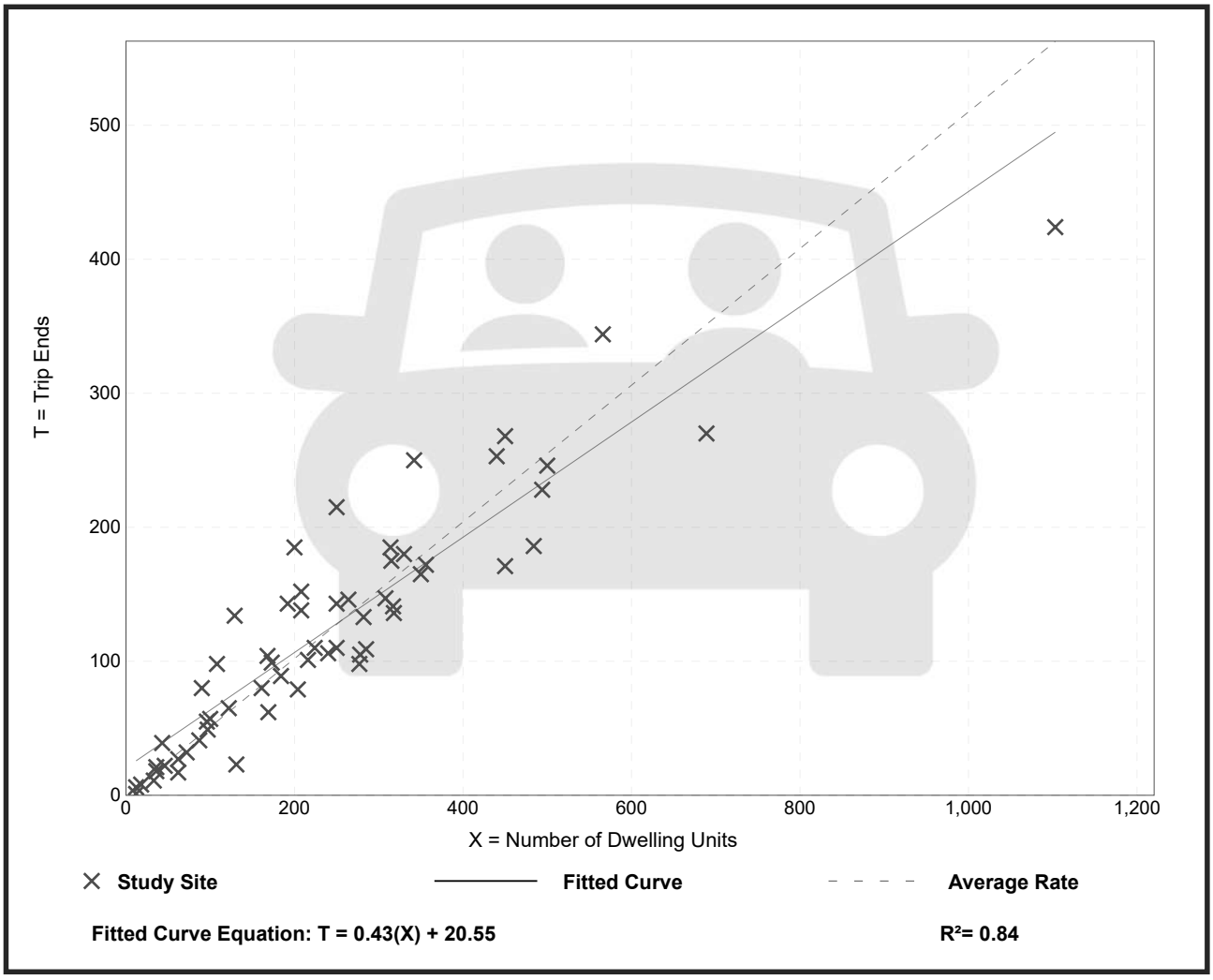
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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: 59
Avg. Num. of Dwelling Units: 241
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



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Single-Family Attached Housing
(215)

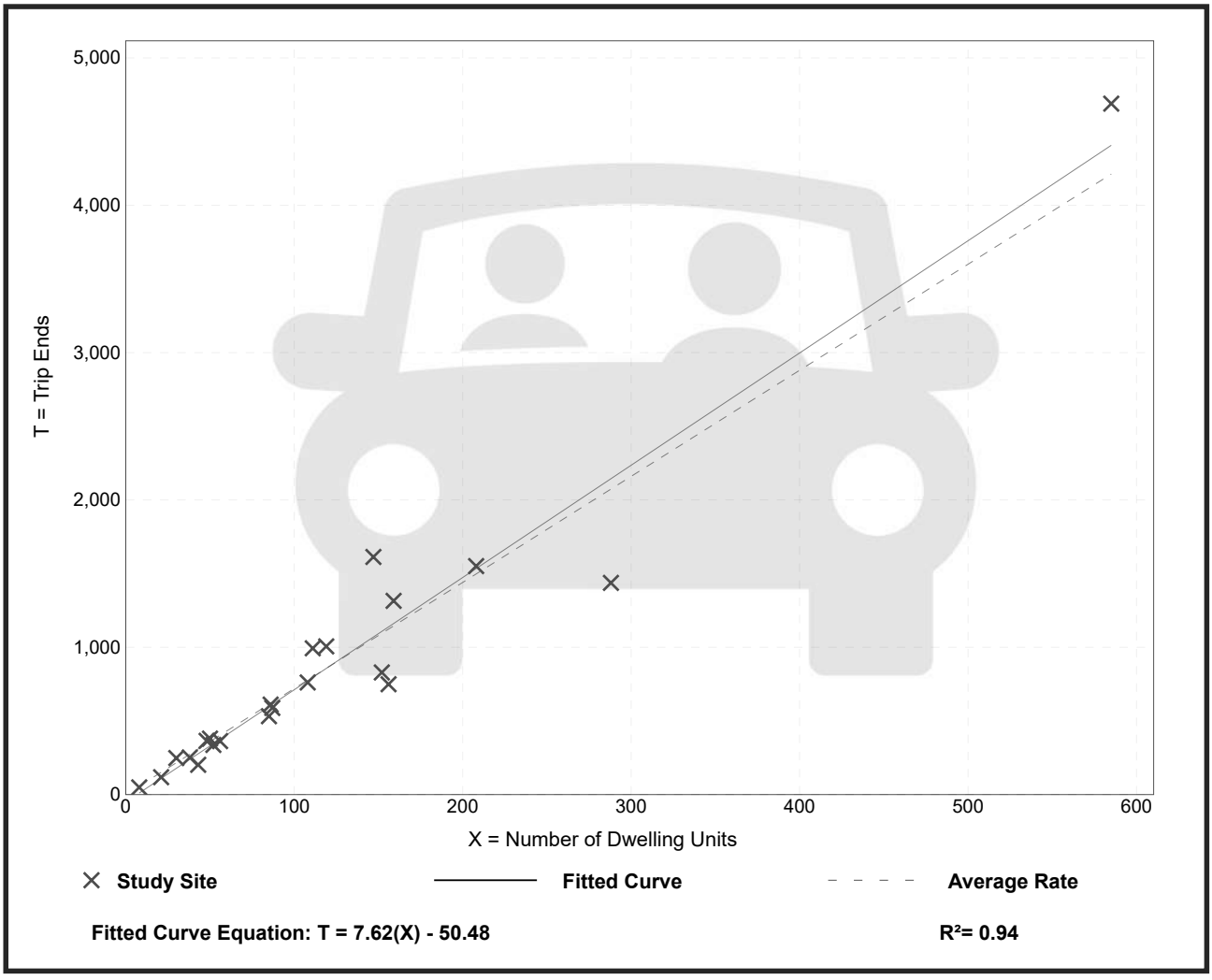
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 120
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.20	4.70 - 10.97	1.61

Data Plot and Equation



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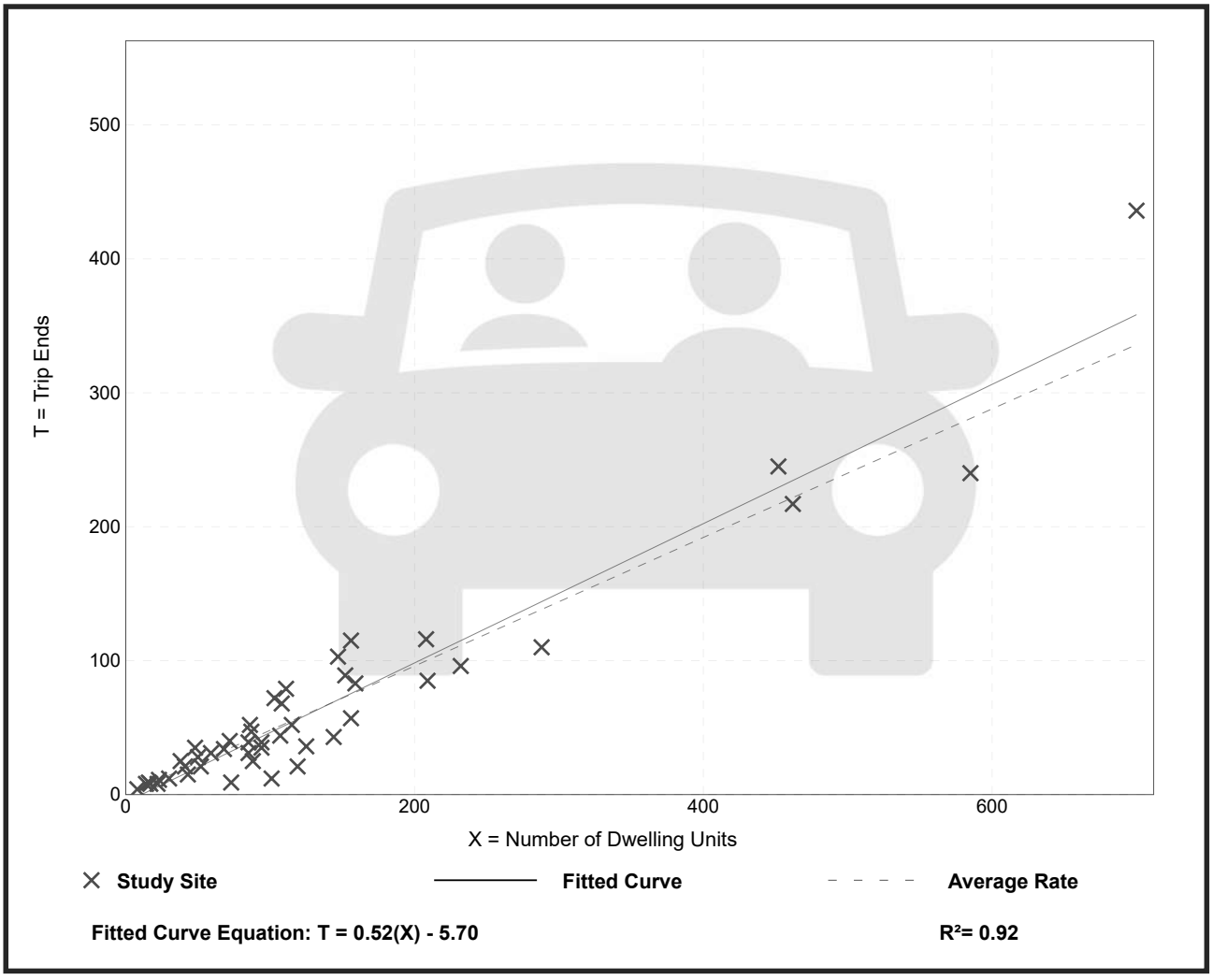
Single-Family Attached Housing
(215)

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: 46
Avg. Num. of Dwelling Units: 135
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



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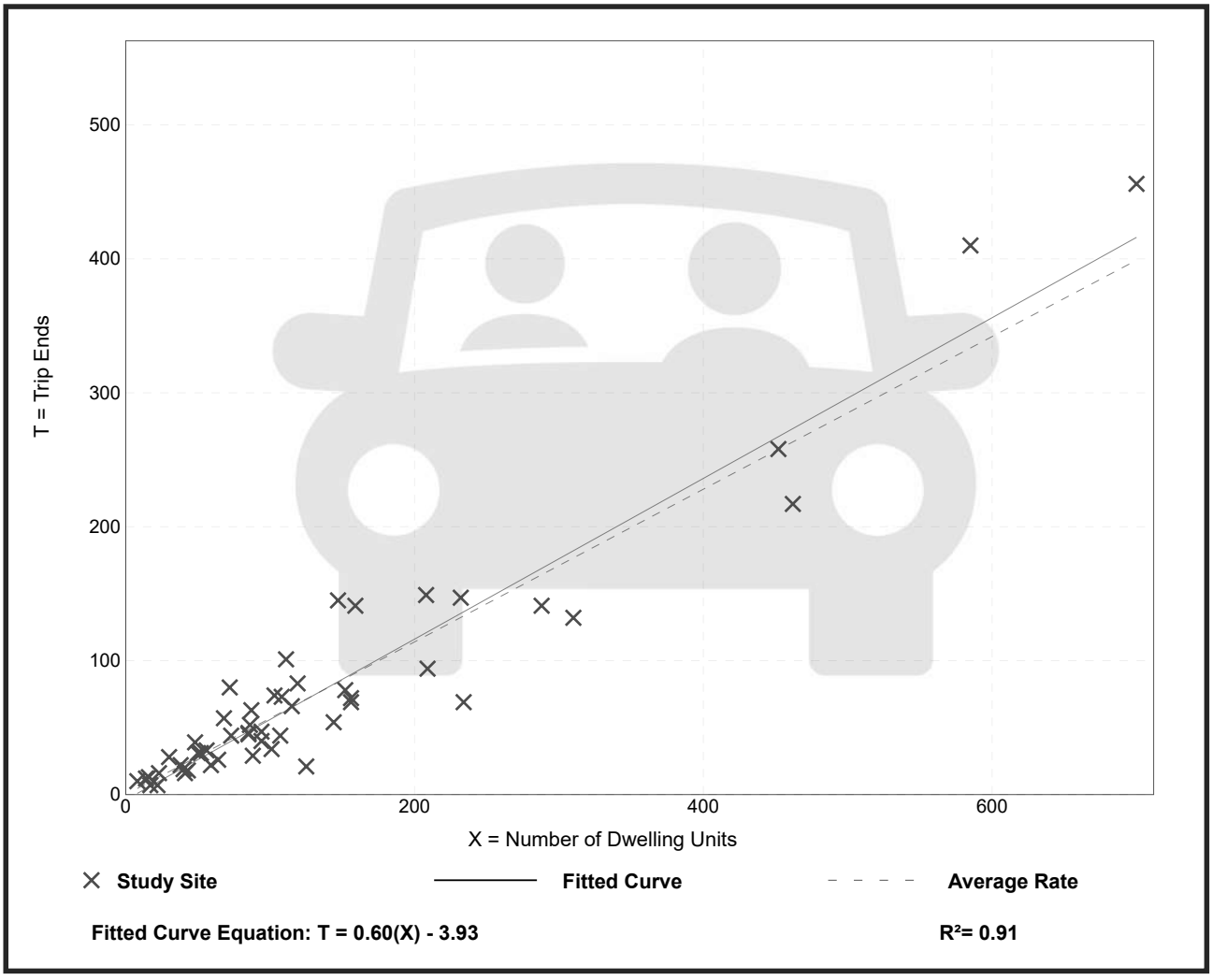
Single-Family Attached Housing
(215)

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: 51
Avg. Num. of Dwelling Units: 136
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation



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HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: PIPELINE VOLUMES

1. Capitol Boulevard & Israel Road
PM Peak Hour
Pipeline Volume Summations

1. Aspen Apartments		4						2				
2. Trestlewood		7						4				
3. Belmont Flats	7				7						5	5
4. Bertch Thurston County		7						22				
5. Kingswood Apartments												
6. Kingswood Commercial	2											2
7. Littlerock Storage												
8. New Market Apartments	15	14				3	2	11				11
9. OSOS Library		4						4				
10. Skyview Estates		2						1				
11. South Sound Commerce		4						8				
12.Tyee Landing	4				3				3	2	3	3
13. 6501 Capitol Blvd Apartments	2	12						18				2
14. Littlerock Townhomes		3						2				
15. Yorkshire	7				4				44	30	3	5
16. Vista Views at Black Lake	5								4	3		3
17. Habitat for Humanity		6						4				
18. Three Lakes Crossing		6						3				
19. Tumwater Blvd Plat		5						4	1	1		
20. Tumwater O&M		2						6				
21. I-5 Bloomberg CC												
22. Trosper Woods												
23. Kirsop Division III	4											2
Totals	46	76	0	0	14	3	2	89	52	36	11	33

2. Capitol Boulevard & Tumwater Boulevard
PM Peak Hour
Pipeline Volume Summations

1. Aspen Apartments	4				4		2				2	
2. Trestlewood	7				7		4				4	
3. Belmont Flats					14				12	9	10	
4. Bertch Thurston County	7				6						21	22
5. Kingswood Apartments												
6. Kingswood Commercial												
7. Littlerock Storage												
8. New Market Apartments					29				15	12	22	
9. OSOS Library	4				3		4				4	
10. Skyview Estates	2											1
11. South Sound Commerce	4				12				4	7	27	8
12.Tyee Landing		2						3				
13. 6501 Capitol Blvd Apartments	11	1						1				17
14. Littlerock Townhomes	3				3				2	2	2	2
15. Yorkshire		11	14	21				17				
16. Vista Views at Black Lake		3						4				
17. Habitat for Humanity		6						4	2	2		
18. Three Lakes Crossing			6	3	3						5	
19. Tumwater Blvd Plat			6	5	2						5	
20. Tumwater O&M		2						6	6	2		
21. I-5 Bloomberg CC												
22. Trosper Woods									1	1		
23. Kirsop Division III												
Totals	42	25	26	29	83	0	10	35	42	35	102	50

3. Tumwater Boulevard & Henderson Boulevard
PM Peak Hour
Pipeline Volume Summations

1. Aspen Apartments	4											2
2. Trestlewood	7											4
3. Belmont Flats	7								7	5		5
4. Bertch Thurston County	6											21
5. Kingswood Apartments												
6. Kingswood Commercial												
7. Littlerock Storage												
8. New Market Apartments	15								5	3		12
9. OSOS Library	3											4
10. Skyview Estates												
11. South Sound Commerce	7											14
12.Tyee Landing	3											3
13. 6501 Capitol Blvd Apartments												
14. Littlerock Townhomes	3											2
15. Yorkshire	21											14
16. Vista Views at Black Lake												
17. Habitat for Humanity		5						3				
18. Three Lakes Crossing		1						1				
19. Tumwater Blvd Plat	4								1	1		2
20. Tumwater O&M		4						12				
21. I-5 Bloomberg CC												
22. Trosper Woods												
23. Kirsop Division III												
Totals	80	10	0	0	0	0	0	16	13	9	0	83

4. Capitol Boulevard & Henderson Boulevard
PM Peak Hour
Pipeline Volume Summations

1. Aspen Apartments												
2. Trestlewood												
3. Belmont Flats		9						12				
4. Bertch Thurston County												
5. Kingswood Apartments												
6. Kingswood Commercial												
7. Littlerock Storage												
8. New Market Apartments		12						15				
9. OSOS Library												
10. Skyview Estates												
11. South Sound Commerce		7						4				
12.Tyee Landing		2						3				
13. 6501 Capitol Blvd Apartments		1						1				
14. Littlerock Townhomes		2						2				
15. Yorkshire		11						17				
16. Vista Views at Black Lake		3						4				
17. Habitat for Humanity			1	1								
18. Three Lakes Crossing						1	1					
19. Tumwater Blvd Plat						1	1					
20. Tumwater O&M		2						5				
21. I-5 Bloomberg CC												
22. Trosper Woods												
23. Kirsop Division III												
Totals	0	49	1	1	0	2	2	63	0	0	0	0

5. Henderson Boulevard & Trail End Drive
PM Peak Hour
Pipeline Volume Summations

1. Aspen Apartments												
2. Trestlewood												
3. Belmont Flats												
4. Bertch Thurston County												
5. Kingswood Apartments												
6. Kingswood Commercial												
7. Littlerock Storage												
8. New Market Apartments												
9. OSOS Library												
10. Skyview Estates												
11. South Sound Commerce												
12.Tyee Landing												
13. 6501 Capitol Blvd Apartments												
14. Littlerock Townhomes												
15. Yorkshire												
16. Vista Views at Black Lake												
17. Habitat for Humanity					1						1	
18. Three Lakes Crossing					1						1	
19. Tumwater Blvd Plat					1						1	
20. Tumwater O&M						2	5					
21. I-5 Bloomberg CC												
22. Trosper Woods												
23. Kirsop Division III												
Totals	0	0	0	0	3	2	5	0	0	0	3	0

HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: FORECAST 2031 VOLUMES

Heath & Associates, Inc
Henderson Blvd Apartments TIA 1-3-2025

PM Peak Hour Forecast Intersection Volumes

Annual Growth Rate: 4 % 2031 2 %
# of Years to Horizon: 6 10 Yr

1. Capitol Blvd & Israel Rd

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL		
Existing	82	438	40	95	146	47	32	413	168	195	119	75	Sum	1850
Baseline 2025	93	499	46	108	166	54	36	471	192	222	136	86		
Project Trips	0	13	0	0	0	0	0	8	1	2	0	0		
Pipeline	46	76	0	0	14	3	2	89	52	36	11	33		
Without	164	708	58	137	225	71	48	685	294	317	183	141		
With	164	721	58	137	225	71	48	693	295	319	183	141		

2. Capitol Blvd & Tumwater Blvd

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL		
Existing	98	566	89	42	227	38	23	478	324	288	228	72	Sum	2473
Baseline 2025	112	645	101	48	259	43	26	545	369	328	260	82		
Project Trips	0	15	0	0	0	0	0	9	4	6	0	0		
Pipeline	42	25	26	29	83	0	10	35	42	35	102	50		
Without	183	841	154	90	410	55	43	724	509	450	431	154		
With	183	856	154	90	410	55	43	733	513	456	431	154		

3. Tumwater Blvd & Henderson Blvd

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	396	195	0	0	0	0	0	214	19	21	0	515
Baseline 2025	451	222	0	0	0	0	0	244	22	24	0	587
Project Trips	0	9	0	0	0	0	0	6	0	0	0	0
Pipeline	80	10	0	0	0	0	0	16	13	9	0	83
Without	651	291	0	0	0	0	0	325	40	39	0	826
With	651	300	0	0	0	0	0	331	40	39	0	826

4. Capitol Blvd & Henderson Blvd

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	5	860	85	77	1	145	177	673	3	7	12	21
Baseline 2025	6	980	97	88	1	165	202	767	3	8	14	24
Project Trips	0	0	24	14	0	4	6	0	0	0	0	0
Pipeline	0	49	1	1	0	2	2	63	0	0	0	0
Without	7	1,290	124	112	1	211	257	1,034	4	10	17	30
With	7	1,290	148	126	1	215	263	1,034	4	10	17	30

5. Henderson Blvd & Trail End Dr

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing	0	0	0	0	126	71	54	0	47	65	148	0
Baseline 2025	0	0	0	0	144	81	62	0	54	74	169	0
Project Trips	16	0	1	8	1	0	0	0	0	0	5	28
Pipeline	0	0	0	0	3	2	5	0	0	0	3	0
Without	0	0	0	0	185	104	83	0	68	94	216	0
With	16	0	1	8	186	104	83	0	68	94	221	28

1. Capitol Blvd & Israel Rd (2015 Data)

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL		
Existing 2015	88	514	71	135	193	94	25	317	106	121	131	80		
Baseline 2025	107	627	87	165	235	115	30	386	129	147	160	98		
Project Trips	0	0	0	0	0	0	0	0	0	0	0	0		
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0	Sum	2286
Without	111	650	90	171	244	119	32	401	134	153	166	101	Adjust Needed	24%
With	111	650	90	171	244	119	32	401	134	153	166	101		

2. Capitol Blvd & Tumwater Blvd

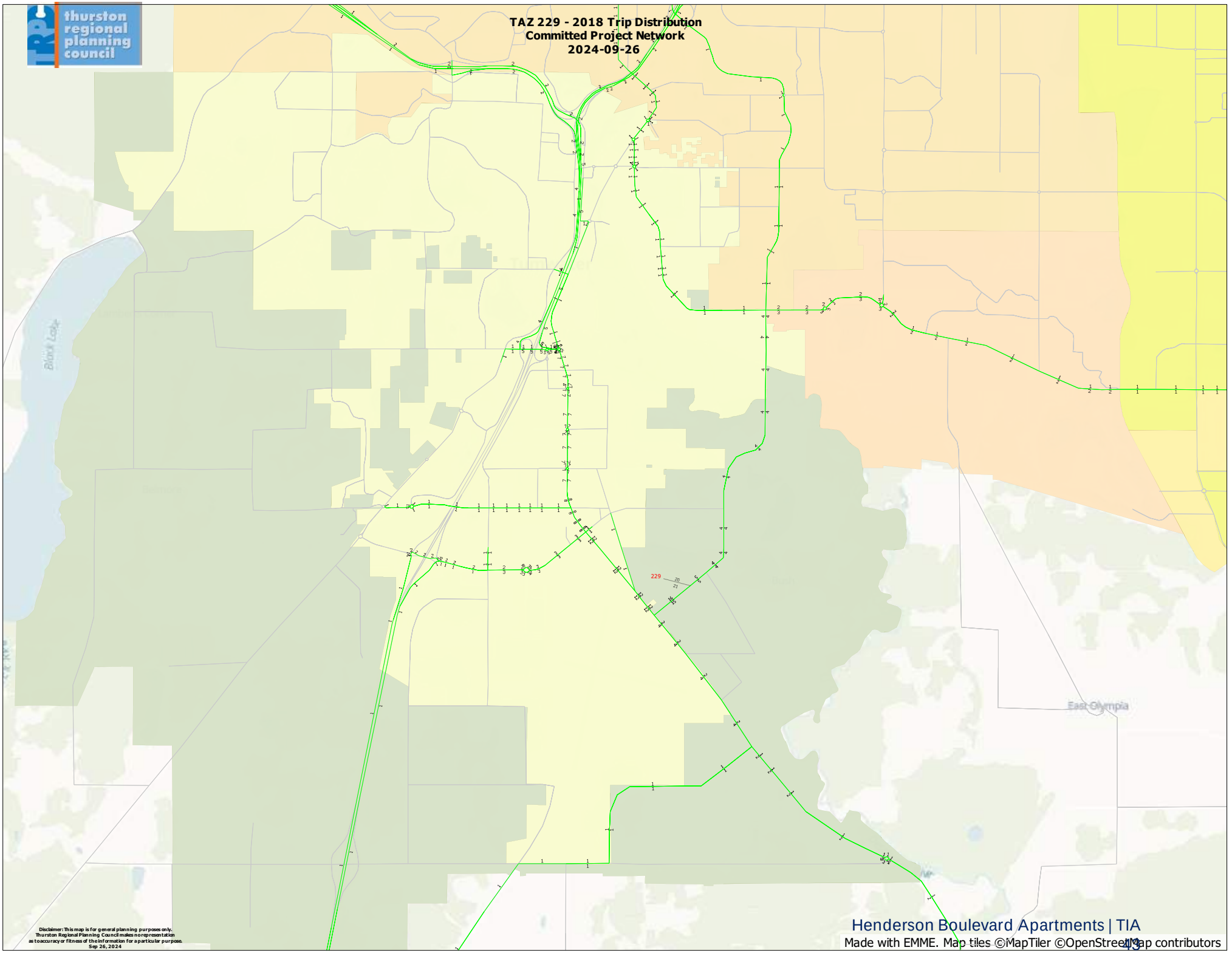
	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL		
Existing 2015	106	475	112	15	325	83	18	304	199	244	305	64		
Baseline 2025	129	579	137	18	396	101	22	371	243	297	372	78	Sum	2743
Project Trips	0	0	0	0	0	0	0	0	0	0	0	0	Adjsut Needed	11%
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0		
Without	134	601	142	19	411	105	23	385	252	309	386	81		
With	134	601	142	19	411	105	23	385	252	309	386	81		

4. Capitol Blvd & Henderson Blvd

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL		
Existing 2015	11	813	105	51	6	142	111	512	2	7	6	16		
Baseline 2025	13	991	128	62	7	173	135	624	2	9	7	20		2172
Project Trips	0	0	0	0	0	0	0	0	0	0	0	0	Adjust Needed	8%
Pipeline	0	0	0	0	0	0	0	0	0	0	0	0		
Without	14	1,029	133	65	8	180	140	648	3	9	8	20		
With	14	1,029	133	65	8	180	140	648	3	9	8	20		

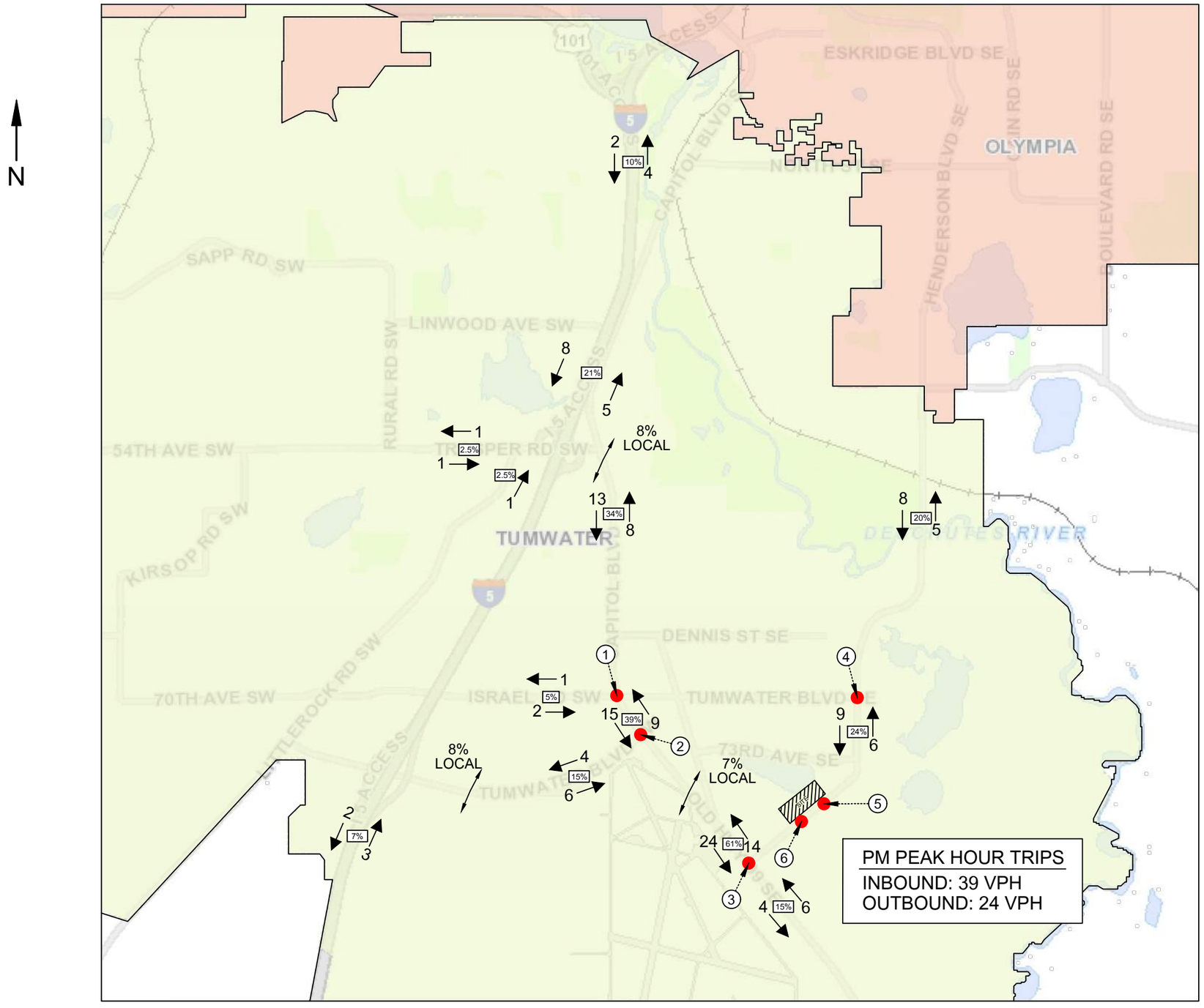
HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: TAZ MAP 229

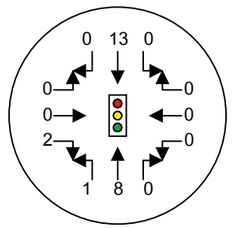

TAZ 229 - 2018 Trip Distribution
Committed Project Network
2024-09-26
thurston regional planning council
229
East Olympia
Disclaimer: This map is for general planning purposes only.
Thurston Regional Planning Council makes no representation
as to accuracy or fitness of the information for a particular purpose.
Sep 26, 2024

TRAFFIC IMPACT ANALYSIS

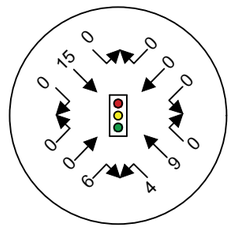
APPENDIX: EXPANDED TRIP DISTRIBUTION



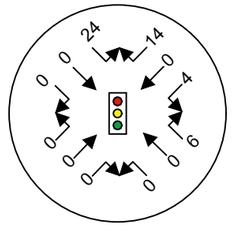
1. CAPITOL BLVD & ISRAEL RD



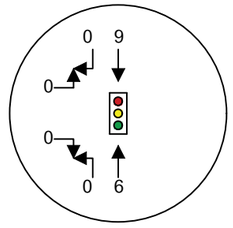
2. CAPITOL BLVD & TUMWATER BLVD



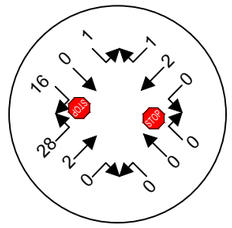
3. CAPITOL BLVD & HENDERSON



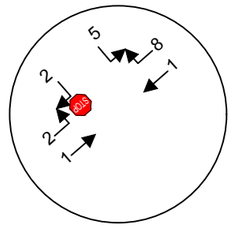
4. HENDERSON BLD & TUMWATER BLVD



5. HENDERSON BLD & TRAILS END



6. HENDERSON & ACCESS



HEATH&ASSOCIATES
Transportation Planning & Engineering

HENDERSON BOULEVARD APARTMENTS

PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 3

HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: BASELINE 2025 PM PEAK HOUR LOS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	136	222	54	166	108	192	471	36	46	499	93
Future Volume (veh/h)	86	136	222	54	166	108	192	471	36	46	499	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1885	1870	1870	1707	1856	1870	1767
Adj Flow Rate, veh/h	89	140	229	56	171	111	198	486	37	47	514	96
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	2	2	1	2	2	13	3	2	9
Cap, veh/h	319	162	266	238	255	165	392	1100	84	370	779	145
Arrive On Green	0.06	0.25	0.25	0.05	0.24	0.24	0.11	0.33	0.33	0.04	0.26	0.26
Sat Flow, veh/h	1795	642	1051	1781	1058	687	1781	3347	254	1767	2989	556
Grp Volume(v), veh/h	89	0	369	56	0	282	198	257	266	47	305	305
Grp Sat Flow(s),veh/h/ln	1795	0	1693	1781	0	1745	1781	1777	1824	1767	1777	1768
Q Serve(g_s), s	2.5	0.0	14.0	1.6	0.0	9.9	5.1	7.7	7.7	1.3	10.3	10.4
Cycle Q Clear(g_c), s	2.5	0.0	14.0	1.6	0.0	9.9	5.1	7.7	7.7	1.3	10.3	10.4
Prop In Lane	1.00		0.62	1.00		0.39	1.00		0.14	1.00		0.31
Lane Grp Cap(c), veh/h	319	0	428	238	0	420	392	584	599	370	463	461
V/C Ratio(X)	0.28	0.00	0.86	0.24	0.00	0.67	0.51	0.44	0.44	0.13	0.66	0.66
Avail Cap(c_a), veh/h	731	0	491	668	0	506	709	1307	1342	806	1307	1300
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	24.0	18.9	0.0	23.1	15.5	17.7	17.7	16.8	22.2	22.2
Incr Delay (d2), s/veh	0.6	0.0	13.7	0.6	0.0	3.0	1.2	0.6	0.6	0.2	1.9	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	7.0	0.7	0.0	4.2	2.0	2.9	3.0	0.5	4.2	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.7	0.0	37.7	19.5	0.0	26.1	16.7	18.4	18.4	17.0	24.1	24.2
LnGrp LOS	B		D	B		C	B	B	B	B	C	C
Approach Vol, veh/h		458			338			721			657	
Approach Delay, s/veh		34.0			25.0			17.9			23.6	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	27.6	8.7	22.5	13.0	23.0	9.6	21.7
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	19.5	49.5	19.5	19.5	19.5	49.5	19.5	19.5
Max Q Clear Time (g_c+I1), s	3.3	9.7	3.6	16.0	7.1	12.4	4.5	11.9
Green Ext Time (p_c), s	0.1	4.1	0.1	0.9	0.5	4.9	0.2	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	24.1
HCM 7th LOS	C

Notes

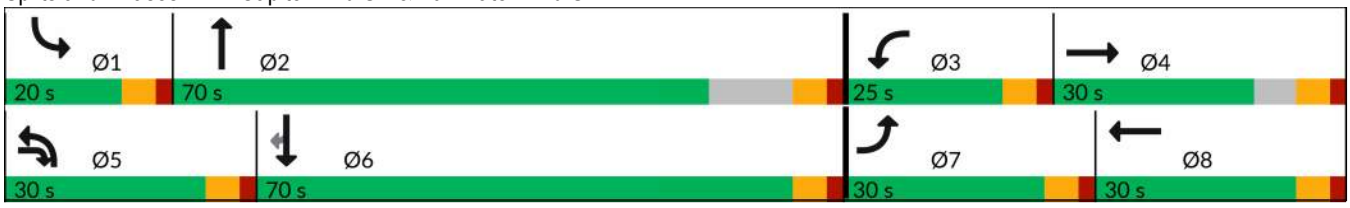
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	260	328	43	259	48	369	545	26	101	645	112
Future Volume (vph)	82	260	328	43	259	48	369	545	26	101	645	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	95		0	190		0	170		180
Storage Lanes	1		1	1		0	2		0	1		1
Taper Length (ft)	125			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00			1.00	1.00		1.00	1.00		1.00		0.99
Frt			0.850		0.977			0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1881	1524	1752	3367	0	3400	3512	0	1787	3574	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1685	1881	1524	1751	3367	0	3396	3512	0	1785	3574	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			349		11			4				143
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1771			1315			611			1159	
Travel Time (s)		34.5			25.6			11.9			22.6	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	7%	1%	6%	3%	5%	2%	3%	2%	1%	1%	1%	1%
Adj. Flow (vph)	87	277	349	46	276	51	393	580	28	107	686	119
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	277	349	46	327	0	393	608	0	107	686	119
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4	5	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	41.0	11.0	11.0	41.0		11.0	36.0		11.0	36.0	36.0
Total Split (s)	30.0	30.0	30.0	25.0	30.0		30.0	70.0		20.0	70.0	70.0
Total Split (%)	18.8%	18.8%	18.8%	15.6%	18.8%		18.8%	43.8%		12.5%	43.8%	43.8%
Maximum Green (s)	24.0	24.0	24.0	19.0	24.0		24.0	64.0		14.0	64.0	64.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Don't Walk (s)		28.0			28.0			23.0			23.0	23.0
Pedestrian Calls (#/hr)		1			1			1			1	1
Act Effct Green (s)	11.4	22.8	18.3	8.6	20.5		18.3	35.0		11.9	28.6	28.6
Actuated g/C Ratio	0.11	0.23	0.18	0.09	0.20		0.18	0.35		0.12	0.28	0.28
v/c Ratio	0.46	0.65	0.62	0.31	0.47		0.63	0.50		0.51	0.67	0.22
Control Delay (s/veh)	56.6	45.5	10.3	56.9	39.0		46.6	28.8		57.8	37.7	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	56.6	45.5	10.3	56.9	39.0		46.6	28.8		57.8	37.7	4.4
LOS	E	D	B	E	D		D	C		E	D	A
Approach Delay (s/veh)		29.6			41.2			35.8			35.7	
Approach LOS		C			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 100.4			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 35.0		Intersection LOS: C	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Capitol Blvd SE & Tumwater Blvd SE

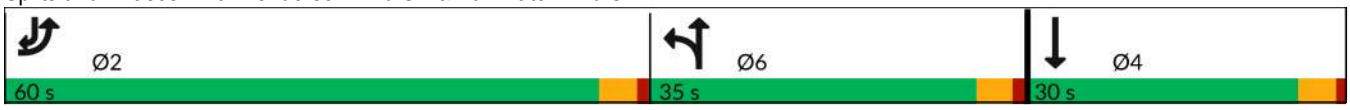


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	587	24	22	244	222	451
Future Volume (vph)	587	24	22	244	222	451
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0			110
Storage Lanes	1	0	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.995					0.850
Flt Protected	0.954			0.996		
Satd. Flow (prot)	1784	0	0	1874	1845	1538
Flt Permitted	0.954			0.996		
Satd. Flow (perm)	1784	0	0	1874	1845	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					475
Link Speed (mph)	35			35	35	
Link Distance (ft)	1384			1713	1307	
Travel Time (s)	27.0			33.4	25.5	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	1%	1%	3%	5%
Adj. Flow (vph)	618	25	23	257	234	475
Shared Lane Traffic (%)						
Lane Group Flow (vph)	643	0	0	280	234	475
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (ft)	20		20	100	100	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		20	6	6	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Split	NA	NA	Over
Protected Phases	2		6	6	4	2
Permitted Phases						
Detector Phase	2		6	6	4	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5
Total Split (s)	60.0		35.0	35.0	30.0	60.0
Total Split (%)	48.0%		28.0%	28.0%	24.0%	48.0%
Maximum Green (s)	55.5		30.5	30.5	25.5	55.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	4.5			4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	1		1	1	1	1
Act Effct Green (s)	40.0			20.4	17.9	40.0
Actuated g/C Ratio	0.43			0.22	0.19	0.43
v/c Ratio	0.84			0.68	0.66	0.51
Control Delay (s/veh)	35.8			45.4	47.9	4.0
Queue Delay	0.0			0.0	0.0	0.0
Total Delay (s/veh)	35.8			45.4	47.9	4.0
LOS	D			D	D	A
Approach Delay (s/veh)	35.8			45.4	18.5	
Approach LOS	D			D	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 92.9			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 29.9		Intersection LOS: C	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Henderson Blvd SE & Tumwater Blvd SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	14	8	165	1	88	3	767	202	97	980	6
Future Volume (veh/h)	24	14	8	165	1	88	3	767	202	97	980	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1781	1885	1856	1885	1841	1411	1870	1856	1885	1856	1885
Adj Flow Rate, veh/h	26	15	9	181	1	97	3	843	222	107	1077	7
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	5	8	1	3	1	4	33	2	3	1	3	1
Cap, veh/h	126	67	30	279	2	235	211	872	230	192	1345	1158
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.61	0.61	0.61	0.05	0.72	0.72
Sat Flow, veh/h	459	450	200	1376	16	1584	393	1427	376	1795	1856	1598
Grp Volume(v), veh/h	50	0	0	181	0	98	3	0	1065	107	1077	7
Grp Sat Flow(s),veh/h/ln	1109	0	0	1376	0	1600	393	0	1803	1795	1856	1598
Q Serve(g_s), s	0.8	0.0	0.0	6.2	0.0	5.2	0.5	0.0	53.0	1.9	36.0	0.1
Cycle Q Clear(g_c), s	6.1	0.0	0.0	12.3	0.0	5.2	25.7	0.0	53.0	1.9	36.0	0.1
Prop In Lane	0.52		0.18	1.00		0.99	1.00		0.21	1.00		1.00
Lane Grp Cap(c), veh/h	222	0	0	279	0	237	211	0	1102	192	1345	1158
V/C Ratio(X)	0.22	0.00	0.00	0.65	0.00	0.41	0.01	0.00	0.97	0.56	0.80	0.01
Avail Cap(c_a), veh/h	222	0	0	279	0	237	217	0	1127	274	1345	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	0.0	0.0	39.5	0.0	36.5	20.5	0.0	17.4	23.4	8.5	3.6
Incr Delay (d2), s/veh	0.5	0.0	0.0	5.2	0.0	1.1	0.0	0.0	19.0	2.5	3.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	4.4	0.0	2.1	0.0	0.0	24.3	1.6	11.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.6	0.0	0.0	44.6	0.0	37.6	20.5	0.0	36.5	25.9	12.1	3.6
LnGrp LOS	D			D		D	C		D	C	B	A
Approach Vol, veh/h		50			279			1068			1191	
Approach Delay, s/veh		36.6			42.2			36.4			13.3	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.7	63.7		20.0		74.4		20.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	9.0	59.0		9.0		59.0		14.0				
Max Q Clear Time (g_c+I1), s	3.9	55.0		8.1		38.0		14.3				
Green Ext Time (p_c), s	0.1	2.7		0.0		9.4		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			26.4									
HCM 7th LOS			C									

Notes

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

Intersection	
Int Delay, s/veh	3.6

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	54	62	169	74	81	144
Future Vol, veh/h	54	62	169	74	81	144
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	91	91	91	91	91	91
Heavy Vehicles, %	1	2	2	1	1	5
Mvmt Flow	59	68	186	81	89	158

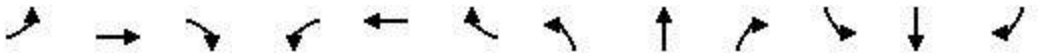
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	563	226	0	0	267	0
Stage 1	226	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Critical Hdwy	6.41	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	489	813	-	-	1303	-
Stage 1	814	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	453	813	-	-	1303	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	672	-	-	-	-	-

Approach	NW	NE	SW
HCM Ctrl Dly, s/v	12.72	0	2.87
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	593	648	-
HCM Lane V/C Ratio	-	-	0.215	0.068	-
HCM Ctrl Dly (s/v)	-	-	12.7	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.2	-

HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: FORECAST 2031 WITHOUT PROJECT LOS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	183	317	71	225	137	294	685	48	58	708	164
Future Volume (veh/h)	141	183	317	71	225	137	294	685	48	58	708	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1885	1870	1870	1707	1856	1870	1767
Adj Flow Rate, veh/h	141	183	317	71	225	137	294	685	48	58	708	164
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	1	2	2	13	3	2	9
Cap, veh/h	240	156	271	162	234	143	382	1399	98	345	931	215
Arrive On Green	0.08	0.25	0.25	0.05	0.22	0.22	0.13	0.42	0.42	0.04	0.33	0.33
Sat Flow, veh/h	1795	618	1071	1781	1087	662	1781	3368	236	1767	2863	663
Grp Volume(v), veh/h	141	0	500	71	0	362	294	361	372	58	439	433
Grp Sat Flow(s),veh/h/ln	1795	0	1689	1781	0	1749	1781	1777	1827	1767	1777	1749
Q Serve(g_s), s	5.4	0.0	22.9	2.8	0.0	18.5	9.3	13.5	13.5	1.9	20.0	20.1
Cycle Q Clear(g_c), s	5.4	0.0	22.9	2.8	0.0	18.5	9.3	13.5	13.5	1.9	20.0	20.1
Prop In Lane	1.00		0.63	1.00		0.38	1.00		0.13	1.00		0.38
Lane Grp Cap(c), veh/h	240	0	427	162	0	377	382	738	759	345	578	568
V/C Ratio(X)	0.59	0.00	1.17	0.44	0.00	0.96	0.77	0.49	0.49	0.17	0.76	0.76
Avail Cap(c_a), veh/h	478	0	427	464	0	377	529	973	1000	651	973	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	33.8	27.8	0.0	35.1	19.1	19.4	19.4	18.9	27.4	27.4
Incr Delay (d2), s/veh	2.7	0.0	99.0	2.3	0.0	35.9	5.2	0.6	0.6	0.3	2.5	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	21.0	1.3	0.0	11.5	4.0	5.4	5.5	0.8	8.5	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.9	0.0	132.8	30.0	0.0	70.9	24.2	20.0	20.0	19.1	29.9	29.9
LnGrp LOS	C		F	C		E	C	C	B	B	C	C
Approach Vol, veh/h		641			433			1027			930	
Approach Delay, s/veh		109.9			64.2			21.2			29.2	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	43.0	9.7	28.4	17.5	34.9	13.0	25.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	19.5	49.5	19.5	19.5	19.5	49.5	19.5	19.5
Max Q Clear Time (g_c+I1), s	3.9	15.5	4.8	24.9	11.3	22.1	7.4	20.5
Green Ext Time (p_c), s	0.1	6.1	0.2	0.0	0.7	7.3	0.3	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	48.6
HCM 7th LOS	D

Notes

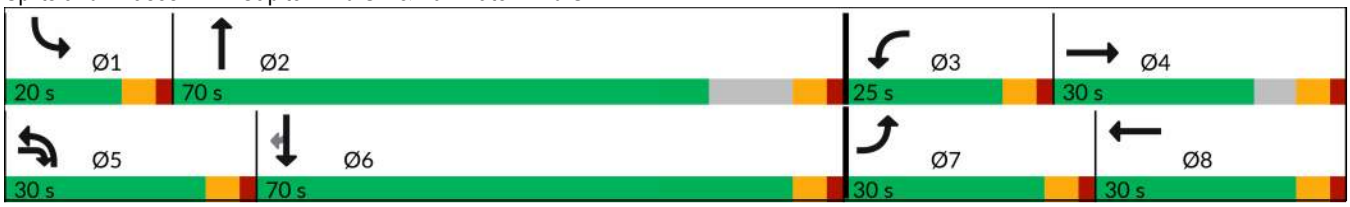
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	431	450	55	410	90	509	724	43	154	841	183
Future Volume (vph)	154	431	450	55	410	90	509	724	43	154	841	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	95		0	190		0	170		180
Storage Lanes	1		1	1		0	2		0	1		1
Taper Length (ft)	125			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00			1.00	1.00		1.00	1.00		1.00		0.99
Frt			0.850		0.973			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1881	1524	1752	3354	0	3400	3508	0	1787	3574	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1686	1881	1524	1751	3354	0	3397	3508	0	1785	3574	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			304		14			5				143
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1771			1315			611			1159	
Travel Time (s)		34.5			25.6			11.9			22.6	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	1%	6%	3%	5%	2%	3%	2%	1%	1%	1%	1%
Adj. Flow (vph)	154	431	450	55	410	90	509	724	43	154	841	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	431	450	55	500	0	509	767	0	154	841	183
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4	5	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	41.0	11.0	11.0	41.0		11.0	36.0		11.0	36.0	36.0
Total Split (s)	30.0	30.0	30.0	25.0	30.0		30.0	70.0		20.0	70.0	70.0
Total Split (%)	18.8%	18.8%	18.8%	15.6%	18.8%		18.8%	43.8%		12.5%	43.8%	43.8%
Maximum Green (s)	24.0	24.0	24.0	19.0	24.0		24.0	64.0		14.0	64.0	64.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Don't Walk (s)		28.0			28.0			23.0			23.0	23.0
Pedestrian Calls (#/hr)		1			1			1			1	1
Act Effct Green (s)	16.8	35.6	24.5	9.6	25.4		24.5	49.3		14.3	39.2	39.2
Actuated g/C Ratio	0.13	0.27	0.19	0.07	0.19		0.19	0.38		0.11	0.30	0.30
v/c Ratio	0.71	0.84	0.84	0.43	0.75		0.80	0.58		0.79	0.78	0.32

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	74.8	62.9	33.1	72.8	57.6		62.5	34.2		85.8	47.7	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	74.8	62.9	33.1	72.8	57.6		62.5	34.2		85.8	47.7	11.0
LOS	E	E	C	E	E		E	C		F	D	B
Approach Delay (s/veh)		51.7			59.1			45.5			47.0	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	123	349	122	44	202		208	259		125	333	24
Queue Length 95th (ft)	240	#605	#396	106	321		#415	390		#328	483	90
Internal Link Dist (ft)		1691			1235			531			1079	
Turn Bay Length (ft)	200			95			190			170		180
Base Capacity (vph)	317	513	533	260	686		638	2034		195	1791	861
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.49	0.84	0.84	0.21	0.73		0.80	0.38		0.79	0.47	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 130.3			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 49.4		Intersection LOS: D	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Capitol Blvd SE & Tumwater Blvd SE



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	826	39	40	325	291	651
Future Volume (vph)	826	39	40	325	291	651
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0			110
Storage Lanes	1	0	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.994					0.850
Flt Protected	0.954			0.995		
Satd. Flow (prot)	1782	0	0	1872	1845	1538
Flt Permitted	0.954			0.995		
Satd. Flow (perm)	1782	0	0	1872	1845	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					626
Link Speed (mph)	35			35	35	
Link Distance (ft)	1384			1713	1307	
Travel Time (s)	27.0			33.4	25.5	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	1%	3%	5%
Adj. Flow (vph)	826	39	40	325	291	651
Shared Lane Traffic (%)						
Lane Group Flow (vph)	865	0	0	365	291	651
Turn Type	Prot		Split	NA	NA	Over
Protected Phases	2		6	6	4	2
Permitted Phases						
Detector Phase	2		6	6	4	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5
Total Split (s)	60.0		35.0	35.0	30.0	60.0
Total Split (%)	48.0%		28.0%	28.0%	24.0%	48.0%
Maximum Green (s)	55.5		30.5	30.5	25.5	55.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	4.5			4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	1		1	1	1	1
Act Effct Green (s)	55.8			26.7	22.3	55.8
Actuated g/C Ratio	0.47			0.23	0.19	0.47
v/c Ratio	1.03			0.87	0.84	0.62

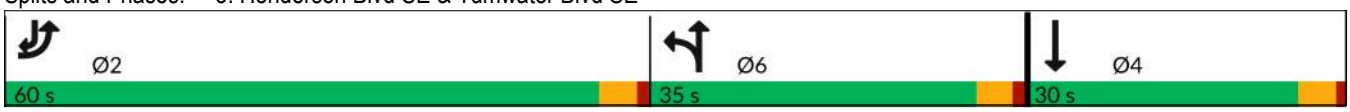
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay (s/veh)	71.1			65.5	67.9	5.0
Queue Delay	0.0			0.0	0.0	0.0
Total Delay (s/veh)	71.1			65.5	67.9	5.0
LOS	E			E	E	A
Approach Delay (s/veh)	71.1			65.5	24.4	
Approach LOS	E			E	C	
Queue Length 50th (ft)	~775			277	222	11
Queue Length 95th (ft)	#1042			#425	#353	94
Internal Link Dist (ft)	1304			1633	1227	
Turn Bay Length (ft)						110
Base Capacity (vph)	841			485	399	1055
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	1.03			0.75	0.73	0.62

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 118.4			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay (s/veh): 49.9		Intersection LOS: D	
Intersection Capacity Utilization 94.0%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Henderson Blvd SE & Tumwater Blvd SE



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	17	10	211	1	112	4	1034	257	124	1290	7
Future Volume (veh/h)	30	17	10	211	1	112	4	1034	257	124	1290	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1781	1885	1856	1885	1841	1411	1870	1856	1885	1856	1885
Adj Flow Rate, veh/h	30	17	10	211	1	112	4	1034	257	124	1290	7
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, %	5	8	1	3	1	4	33	2	3	1	3	1
Cap, veh/h	117	60	26	264	2	232	110	891	221	165	1352	1164
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.62	0.62	0.62	0.05	0.73	0.73
Sat Flow, veh/h	409	414	175	1372	14	1586	321	1446	359	1795	1856	1598
Grp Volume(v), veh/h	57	0	0	211	0	113	4	0	1291	124	1290	7
Grp Sat Flow(s),veh/h/ln	998	0	0	1372	0	1600	321	0	1806	1795	1856	1598
Q Serve(g_s), s	1.4	0.0	0.0	6.3	0.0	6.2	1.1	0.0	59.0	2.4	59.3	0.1
Cycle Q Clear(g_c), s	7.7	0.0	0.0	14.0	0.0	6.2	49.6	0.0	59.0	2.4	59.3	0.1
Prop In Lane	0.53		0.18	1.00		0.99	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	0	264	0	234	110	0	1112	165	1352	1164
V/C Ratio(X)	0.28	0.00	0.00	0.80	0.00	0.48	0.04	0.00	1.16	0.75	0.95	0.01
Avail Cap(c_a), veh/h	203	0	0	264	0	234	110	0	1112	244	1352	1164
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	0.0	0.0	41.8	0.0	37.6	38.5	0.0	18.4	25.5	11.6	3.5
Incr Delay (d2), s/veh	0.7	0.0	0.0	15.8	0.0	1.5	0.1	0.0	82.7	7.0	14.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	6.1	0.0	2.5	0.1	0.0	46.2	2.0	23.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.4	0.0	0.0	57.6	0.0	39.1	38.6	0.0	101.1	32.5	26.5	3.5
LnGrp LOS	D			E		D	D		F	C	C	A
Approach Vol, veh/h		57			324			1295			1421	
Approach Delay, s/veh		38.4			51.2			100.9			26.9	
Approach LOS		D			D			F			C	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.8	65.0		20.0		75.8		20.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	9.0	59.0		9.0		59.0		14.0				
Max Q Clear Time (g_c+I1), s	4.4	61.0		9.7		61.3		16.0				
Green Ext Time (p_c), s	0.1	0.0		0.0		0.0		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			60.6									
HCM 7th LOS			E									

Notes

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

Intersection	
Int Delay, s/veh	4.3

Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Vol, veh/h	68	83	216	94	104	185
Future Vol, veh/h	68	83	216	94	104	185
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	91	91	91	91	91	91
Heavy Vehicles, %	1	2	2	1	1	5
Mvmt Flow	75	91	237	103	114	203

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	721	289	0	0	341	0
Stage 1	289	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Critical Hdwy	6.41	6.22	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.318	-	-	2.209	-
Pot Cap-1 Maneuver	396	750	-	-	1224	-
Stage 1	762	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	354	750	-	-	1224	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	588	-	-	-	-	-

Approach	NW	NE	SW
HCM Ctrl Dly, s/v	15.77	0	2.97
HCM LOS	C		

Minor Lane/Major Mvmt	NET	NER	NWLn1	SWL	SWT
Capacity (veh/h)	-	-	499	648	-
HCM Lane V/C Ratio	-	-	0.333	0.093	-
HCM Ctrl Dly (s/v)	-	-	15.8	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.3	-

HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: FORECAST 2031 WITH PROJECT LOS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	183	319	71	225	137	295	693	48	58	721	164
Future Volume (veh/h)	141	183	319	71	225	137	295	693	48	58	721	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1885	1870	1870	1707	1856	1870	1767
Adj Flow Rate, veh/h	141	183	319	71	225	137	295	693	48	58	721	164
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	2	2	1	2	2	13	3	2	9
Cap, veh/h	238	155	270	161	233	142	380	1411	98	345	944	215
Arrive On Green	0.08	0.25	0.25	0.05	0.21	0.21	0.13	0.42	0.42	0.04	0.33	0.33
Sat Flow, veh/h	1795	616	1073	1781	1087	662	1781	3371	233	1767	2874	653
Grp Volume(v), veh/h	141	0	502	71	0	362	295	365	376	58	446	439
Grp Sat Flow(s),veh/h/ln	1795	0	1689	1781	0	1749	1781	1777	1828	1767	1777	1750
Q Serve(g_s), s	5.5	0.0	22.9	2.8	0.0	18.7	9.3	13.7	13.7	1.9	20.5	20.5
Cycle Q Clear(g_c), s	5.5	0.0	22.9	2.8	0.0	18.7	9.3	13.7	13.7	1.9	20.5	20.5
Prop In Lane	1.00		0.64	1.00		0.38	1.00		0.13	1.00		0.37
Lane Grp Cap(c), veh/h	238	0	425	161	0	375	380	744	765	345	584	575
V/C Ratio(X)	0.59	0.00	1.18	0.44	0.00	0.97	0.78	0.49	0.49	0.17	0.76	0.76
Avail Cap(c_a), veh/h	473	0	425	461	0	375	526	966	994	648	966	952
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.4	0.0	34.1	28.0	0.0	35.4	19.1	19.4	19.4	18.8	27.4	27.4
Incr Delay (d2), s/veh	2.8	0.0	103.3	2.3	0.0	37.6	5.5	0.6	0.6	0.3	2.5	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	21.4	1.3	0.0	11.8	4.1	5.5	5.6	0.8	8.7	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.3	0.0	137.3	30.3	0.0	73.0	24.6	20.0	20.0	19.1	29.9	30.0
LnGrp LOS	C		F	C		E	C	B	B	B	C	C
Approach Vol, veh/h		643			433			1036			943	
Approach Delay, s/veh		113.6			66.0			21.3			29.3	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	43.6	9.7	28.4	17.5	35.4	13.1	25.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	19.5	49.5	19.5	19.5	19.5	49.5	19.5	19.5
Max Q Clear Time (g_c+I1), s	3.9	15.7	4.8	24.9	11.3	22.5	7.5	20.7
Green Ext Time (p_c), s	0.1	6.1	0.2	0.0	0.7	7.4	0.3	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	49.5
HCM 7th LOS	D

Notes

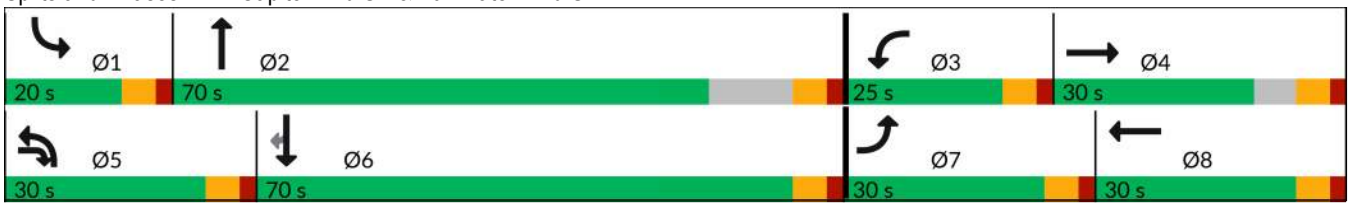
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	431	456	55	410	90	513	733	43	154	856	183
Future Volume (vph)	154	431	456	55	410	90	513	733	43	154	856	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	95		0	190		0	170		180
Storage Lanes	1		1	1		0	2		0	1		1
Taper Length (ft)	125			50			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00			1.00	1.00		1.00	1.00		1.00		0.99
Frt			0.850		0.973			0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	1881	1524	1752	3354	0	3400	3508	0	1787	3574	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1686	1881	1524	1751	3354	0	3397	3508	0	1786	3574	1577
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			308		14			5				143
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1771			1315			611			1159	
Travel Time (s)		34.5			25.6			11.9			22.6	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	1%	6%	3%	5%	2%	3%	2%	1%	1%	1%	1%
Adj. Flow (vph)	154	431	456	55	410	90	513	733	43	154	856	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	431	456	55	500	0	513	776	0	154	856	183
Turn Type	Prot	NA	Over	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases												6
Detector Phase	7	4	5	3	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	41.0	11.0	11.0	41.0		11.0	36.0		11.0	36.0	36.0
Total Split (s)	30.0	30.0	30.0	25.0	30.0		30.0	70.0		20.0	70.0	70.0
Total Split (%)	18.8%	18.8%	18.8%	15.6%	18.8%		18.8%	43.8%		12.5%	43.8%	43.8%
Maximum Green (s)	24.0	24.0	24.0	19.0	24.0		24.0	64.0		14.0	64.0	64.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	Min
Walk Time (s)		7.0			7.0			7.0			7.0	7.0
Flash Don't Walk (s)		28.0			28.0			23.0			23.0	23.0
Pedestrian Calls (#/hr)		1			1			1			1	1
Act Effct Green (s)	16.9	35.6	24.5	9.6	25.4		24.5	50.1		14.3	39.9	39.9
Actuated g/C Ratio	0.13	0.27	0.19	0.07	0.19		0.19	0.38		0.11	0.30	0.30
v/c Ratio	0.71	0.85	0.85	0.43	0.76		0.81	0.58		0.79	0.79	0.32

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	75.4	63.8	33.8	73.3	58.2		63.5	34.2		86.7	47.8	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	75.4	63.8	33.8	73.3	58.2		63.5	34.2		86.7	47.8	10.9
LOS	E	E	C	E	E		E	C		F	D	B
Approach Delay (s/veh)		52.4			59.7			45.8			47.2	
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	124	351	126	44	204		211	263		126	341	24
Queue Length 95th (ft)	242	#614	#405	107	323		#424	395		#331	493	89
Internal Link Dist (ft)		1691			1235			531			1079	
Turn Bay Length (ft)	200			95			190			170		180
Base Capacity (vph)	315	510	535	259	682		635	2023		194	1780	857
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.49	0.85	0.85	0.21	0.73		0.81	0.38		0.79	0.48	0.21

Intersection Summary			
Area Type:	Other		
Cycle Length: 160			
Actuated Cycle Length: 131.1			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 49.8		Intersection LOS: D	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Capitol Blvd SE & Tumwater Blvd SE



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	826	39	40	331	300	651
Future Volume (vph)	826	39	40	331	300	651
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0			110
Storage Lanes	1	0	0			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.994					0.850
Flt Protected	0.954			0.995		
Satd. Flow (prot)	1782	0	0	1872	1845	1538
Flt Permitted	0.954			0.995		
Satd. Flow (perm)	1782	0	0	1872	1845	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					607
Link Speed (mph)	35			35	35	
Link Distance (ft)	1384			1713	1307	
Travel Time (s)	27.0			33.4	25.5	
Confl. Bikes (#/hr)		1				1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	1%	3%	5%
Adj. Flow (vph)	826	39	40	331	300	651
Shared Lane Traffic (%)						
Lane Group Flow (vph)	865	0	0	371	300	651
Turn Type	Prot		Split	NA	NA	Over
Protected Phases	2		6	6	4	2
Permitted Phases						
Detector Phase	2		6	6	4	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	22.5		22.5	22.5	22.5	22.5
Total Split (s)	60.0		35.0	35.0	30.0	60.0
Total Split (%)	48.0%		28.0%	28.0%	24.0%	48.0%
Maximum Green (s)	55.5		30.5	30.5	25.5	55.5
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	4.5			4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Don't Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	1		1	1	1	1
Act Effct Green (s)	55.8			27.1	22.8	55.8
Actuated g/C Ratio	0.47			0.23	0.19	0.47
v/c Ratio	1.04			0.87	0.85	0.62

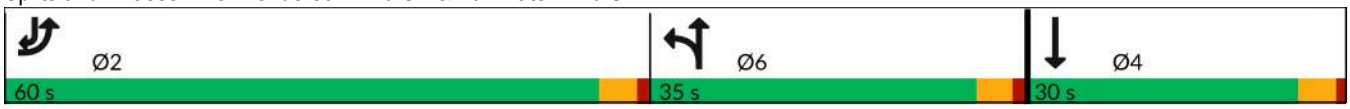
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay (s/veh)	73.7			66.3	69.6	5.6
Queue Delay	0.0			0.0	0.0	0.0
Total Delay (s/veh)	73.7			66.3	69.6	5.6
LOS	E			E	E	A
Approach Delay (s/veh)	73.7			66.3	25.8	
Approach LOS	E			E	C	
Queue Length 50th (ft)	~788			284	233	20
Queue Length 95th (ft)	#1042			#435	#370	112
Internal Link Dist (ft)	1304			1633	1227	
Turn Bay Length (ft)						110
Base Capacity (vph)	835			481	396	1042
Starvation Cap Reductn	0			0	0	0
Spillback Cap Reductn	0			0	0	0
Storage Cap Reductn	0			0	0	0
Reduced v/c Ratio	1.04			0.77	0.76	0.62

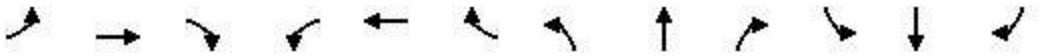
Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 119.2			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay (s/veh): 51.6		Intersection LOS: D	
Intersection Capacity Utilization 94.8%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Henderson Blvd SE & Tumwater Blvd SE





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	17	10	215	1	126	4	1034	263	148	1290	7
Future Volume (veh/h)	30	17	10	215	1	126	4	1034	263	148	1290	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1781	1885	1856	1885	1841	1411	1870	1856	1885	1856	1885
Adj Flow Rate, veh/h	30	17	10	215	1	126	4	1034	263	148	1290	7
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, %	5	8	1	3	1	4	33	2	3	1	3	1
Cap, veh/h	108	56	23	255	2	230	112	877	223	182	1357	1168
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.61	0.61	0.61	0.06	0.73	0.73
Sat Flow, veh/h	358	385	158	1372	13	1587	321	1439	366	1795	1856	1598
Grp Volume(v), veh/h	57	0	0	215	0	127	4	0	1297	148	1290	7
Grp Sat Flow(s),veh/h/ln	900	0	0	1372	0	1600	321	0	1804	1795	1856	1598
Q Serve(g_s), s	1.5	0.0	0.0	5.3	0.0	7.1	1.1	0.0	59.0	3.8	59.3	0.1
Cycle Q Clear(g_c), s	8.7	0.0	0.0	14.0	0.0	7.1	48.6	0.0	59.0	3.8	59.3	0.1
Prop In Lane	0.53		0.18	1.00		0.99	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	187	0	0	255	0	231	112	0	1100	182	1357	1168
V/C Ratio(X)	0.30	0.00	0.00	0.84	0.00	0.55	0.04	0.00	1.18	0.81	0.95	0.01
Avail Cap(c_a), veh/h	187	0	0	255	0	231	112	0	1100	241	1357	1168
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	0.0	42.8	0.0	38.5	38.1	0.0	18.9	28.5	11.5	3.5
Incr Delay (d2), s/veh	0.9	0.0	0.0	22.0	0.0	2.7	0.1	0.0	90.3	14.5	14.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	6.7	0.0	2.9	0.1	0.0	48.4	2.8	22.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	39.5	0.0	0.0	64.7	0.0	41.2	38.2	0.0	109.2	43.0	25.8	3.5
LnGrp LOS	D			E		D	D		F	D	C	A
Approach Vol, veh/h		57			342			1301			1445	
Approach Delay, s/veh		39.5			56.0			108.9			27.4	
Approach LOS		D			E			F			C	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.8	65.0		20.0		76.8		20.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	9.0	59.0		9.0		59.0		14.0				
Max Q Clear Time (g_c+I1), s	5.8	61.0		10.7		61.3		16.0				
Green Ext Time (p_c), s	0.1	0.0		0.0		0.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	64.5
HCM 7th LOS	E

Notes

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

Intersection	
Int Delay, s/veh	4.4

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Vol, veh/h	1	0	16	68	0	83	28	221	94	104	186	8
Future Vol, veh/h	1	0	16	68	0	83	28	221	94	104	186	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	1	2	2	2	2	1	1	5	2
Mvmt Flow	1	0	18	75	0	91	31	243	103	114	204	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	742	845	209	789	798	295	213	0	0	346	0	0
Stage 1	437	437	-	356	356	-	-	-	-	-	-	-
Stage 2	304	408	-	433	442	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.11	6.52	6.22	4.12	-	-	4.11	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.11	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.11	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.509	4.018	3.318	2.218	-	-	2.209	-	-
Pot Cap-1 Maneuver	332	300	832	310	319	745	1357	-	-	1218	-	-
Stage 1	598	579	-	664	629	-	-	-	-	-	-	-
Stage 2	705	597	-	603	576	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	258	265	832	268	283	745	1357	-	-	1218	-	-
Mov Cap-2 Maneuver	352	346	-	378	375	-	-	-	-	-	-	-
Stage 1	542	525	-	648	615	-	-	-	-	-	-	-
Stage 2	605	583	-	535	522	-	-	-	-	-	-	-

Approach	SE	NW	NE	SW
HCM Ctrl Dly, s/v	9.79	15.19	0.63	2.88
HCM LOS	A	C		

Minor Lane/Major Mvmt	NEL	NET	NER	NWLn1	SELn1	SWL	SWT	SWR
Capacity (veh/h)	1357	-	-	518	770	1218	-	-
HCM Lane V/C Ratio	0.023	-	-	0.32	0.024	0.094	-	-
HCM Ctrl Dly (s/v)	7.7	-	-	15.2	9.8	8.3	-	-
HCM Lane LOS	A	-	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.1	0.3	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	5	2	2	338	269	1
Future Vol, veh/h	5	2	2	338	269	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	2	2	367	292	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	665	293	293	0	-	0
Stage 1	293	-	-	-	-	-
Stage 2	372	-	-	-	-	-
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	425	746	1268	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	697	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	425	746	1268	-	-	-
Mov Cap-2 Maneuver	524	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	697	-	-	-	-	-

Approach	SE	NE	SW
HCM Ctrl Dly, s/v	11.37	0.05	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1268	-	573	-	-
HCM Lane V/C Ratio	0.002	-	0.013	-	-
HCM Ctrl Dly (s/v)	7.8	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HENDERSON BOULEVARD APARTMENTS
TRAFFIC IMPACT ANALYSIS

APPENDIX: SITE PLAN

HENDERSON BLVD APARTMENTS

7501 HENDERSON BLVD SE, TUMWATER, WA 98501

SHEET INDEX

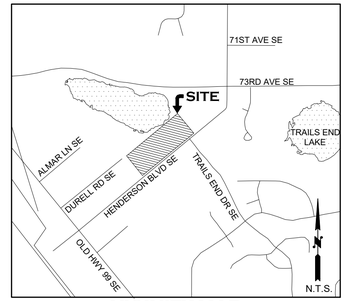
CITY OF TUMWATER	
VERTICAL DATUM	**MERIDIAN HORIZONTAL DATUM**
THURSTON COUNTY HIGH PRECISION SURVEY CONTROL NETWORK CONTROL POINT NO. 283 SURFACE MONUMENT W/ 2" BRASS CAP CENTER OF OLD HWY 99 SE 0.28 MILES SOUTH OF 79th AVE SE ELEVATION = 200.85	THURSTON COUNTY HIGH PRECISION SURVEY CONTROL NETWORK CONTROL POINTS NO.'S 1106 & NGS-Q-259R THE BEARING BETWEEN SAID POINTS EQUALS NORTH 37°11'38" WEST

40 20 0 40 80

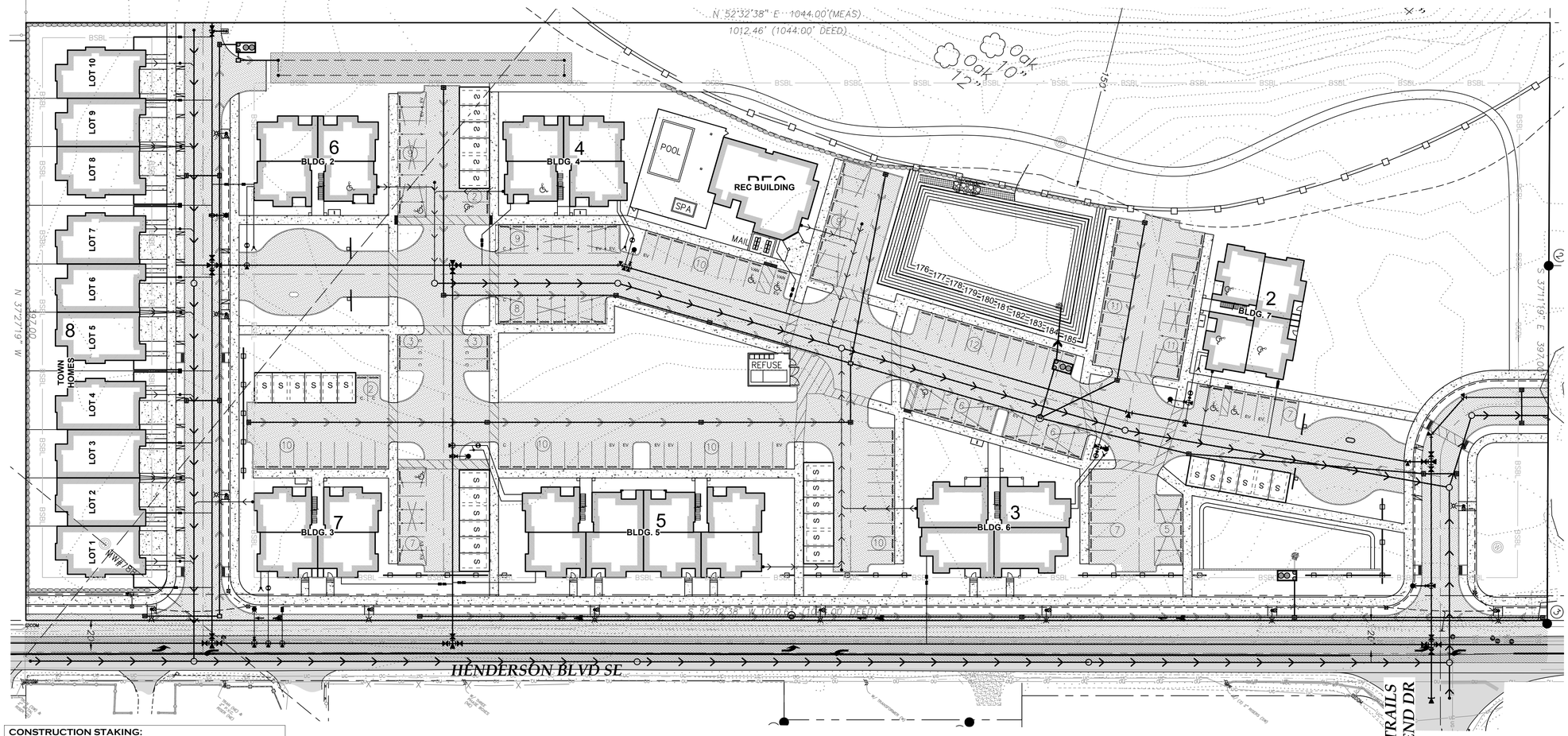
SCALE: 1" = 40'

PROJECT PROPONENT

ALITO PROPERTIES
PO BOX 26116
FEDERAL WAY, WA 98093
DAVID LITOWITZ
(253) 927-6116



VICINITY MAP



CONSTRUCTION STAKING:

THIS PROJECT MUST BE STAKED PRIOR TO CONSTRUCTION BY THE DESIGN ENGINEER OR A LICENSED LAND SURVEYOR.

RECORD DOCUMENTS:

THE CONTRACTOR SHALL FURNISH HATTON GODAT PANTIER WITH A DRAWING(S) SHOWING THE CHANGES MADE TO THE DESIGN DRAWING(S).

THIS DRAWING DOES NOT REPRESENT A RECORD DOCUMENT, UNLESS CERTIFIED BY HATTON GODAT PANTIER.

ANY ALTERATIONS TO THE DESIGN SHOWN HEREON MUST BE REVIEWED AND APPROVED BY HATTON GODAT PANTIER.

NOTE: THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 811 A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

DESIGNED BY: CC
DRAWN BY: MJM
CHECKED BY: SDH
DATE: DECEMBER 2024
SCALE: H 1" = 40'
V N/A

STEVEN D. HATTON — STATE OF WASHINGTON — 24193 — REGISTERED PROFESSIONAL ENGINEER

HATTON GODAT PANTIER
ENGINEERS AND SURVEYORS
3910 MARTIN WAY E, SUITE B
OLYMPIA, WA 98506
TEL: 360.943.1599 FAX: 360.357.6299
hattonpantier.com

REVISIONS: DATE:

TP# 127111110300

HENDERSON BLVD APARTMENTS
7501 HENDERSON BLVD SE, TUMWATER, WA 98501

A PORTION OF THE NE QUARTER OF SECTION 11, TOWNSHIP 17 NORTH, RANGE 2 WEST, W.M.

COVER SHEET

AGENCY NO.
SHEET: 1 OF 31
H:\DGN\16-000\16-036\CDs
INDEX: 16-036 cov.dwg
JOB: 16-036