

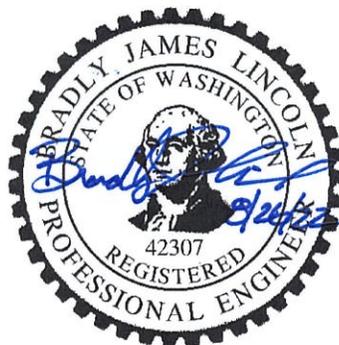
Kimley»»Horn

2828 Colby Avenue
Suite 200
Everett, WA 98201
425.708.8275

Allen Townhomes Traffic Impact Analysis

Jurisdiction: City of Arlington

August 2022



090221501

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1. DEVELOPMENT IDENTIFICATION

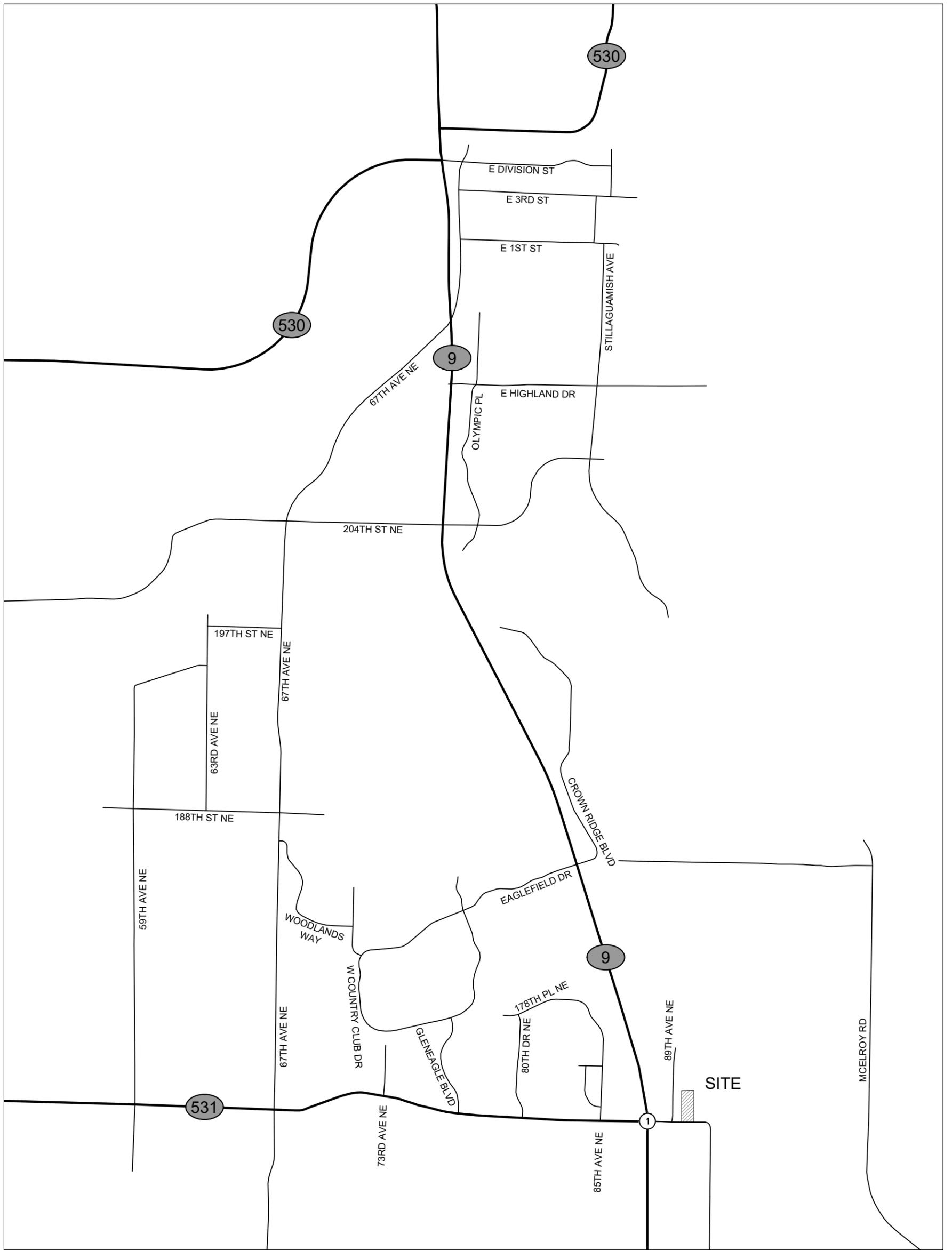
Kimley-Horn and Associates, Inc. has been retained to provide a traffic impact analysis for the proposed Allen Townhomes development to address the City of Arlington, Snohomish County, and Washington State Department of Transportation (WSDOT) traffic impacts. The Allen Townhomes development is proposed to consist of 43 single-family attached residential units. The site is located along the north side of 172nd Street NE, east of SR-9. A site vicinity map has been included in Figure 1. The development is anticipated to be constructed and occupied in the year 2026.

Brad Lincoln, responsible for this report, is a licensed professional engineer (Civil) in the State of Washington and member of the Washington State section of the Institute of Transportation Engineers (ITE).

2. METHODOLOGY

Trip generation calculations for the Allen Townhomes development have been performed according to data contained in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 11th Edition (2021)*. The roundabout at the intersection of SR-9 at 172nd Street NE (SR-531) has been analyzed as part of this report.

The intersection has been analyzed for the 2022 existing, 2028 baseline, and 2028 future with development conditions for the PM peak-hour. The 2028 future year has been utilized to represent a 6-year horizon period, which is past when the development is anticipated to be constructed. The future year 2028 has been chosen to represent a conservatively high calculation of future operations of the study intersection.



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ALLEN TOWNHOMES

CITY OF ARLINGTON

LEGEND



DEVELOPMENT SITE



STUDY INTERSECTION

FIGURE 1
VICINITY MAP

The peak-hour level of service (LOS) analysis calculations have been completed using the software *SIDRA Intersection 9.0* software. This software applies the operational analysis methodology of the current *Highway Capacity Manual 6th Edition (HCM)*. Traffic congestion is generally measured in terms of level of service. In accordance with the HCM, road facilities and intersections are rated between LOS A and LOS F, with LOS A being free flow and LOS F being forced flow or over-capacity conditions. The level of service at two-way stop-controlled intersections is based on the approach with the highest average delay. The level of service at signalized, all-way stop-controlled intersections, and roundabouts is based on the average delay for all approaches. Geometric characteristics and conflicting traffic movements are taken into consideration when determining level of service values. A summary of the level of service criteria has been included in Table 1.

Table 1: Level of Service Criteria for Intersections

Level of ¹ Service	Expected Delay	Intersection Control Delay (Seconds per Vehicle)	
		Unsignalized Intersections	Signalized/Roundabout Intersections
A	Little/No Delay	≤10	≤10
B	Short Delays	>10 and ≤15	>10 and ≤20
C	Average Delays	>15 and ≤25	>20 and ≤35
D	Long Delays	>25 and ≤35	>35 and ≤55
E	Very Long Delays	>35 and ≤50	>55 and ≤80
F	Extreme Delays ²	>50	>80

The City of Arlington has established an acceptable level of service of LOS D. Additionally, WSDOT typically utilizes a volume-to-capacity (v/c) ratio to evaluate the operations of roundabouts. The threshold for roundabouts is typically a v/c of 0.92.

The City of Arlington and Snohomish County have an interlocal agreement that provides for reciprocal mitigation fees. Snohomish County mitigation fees can be calculated based on the default percentage in the interlocal agreement or based on actual impacts. The City of Arlington also has an understanding with WSDOT that provides for mitigation fees to WSDOT for impacts to WSDOT improvement projects. WSDOT improvement projects and their associated fees are based on the most recent Exhibit C list.

¹ **Source:** *Highway Capacity Manual 6th Edition*.

LOS A: Free-flow traffic conditions, with minimal delay to stopped vehicles (no vehicle is delayed longer than one cycle at signalized intersection).

LOS B: Generally stable traffic flow conditions.

LOS C: Occasional back-ups may develop, but delay to vehicles is short term and still tolerable.

LOS D: During short periods of the peak hour, delays to approaching vehicles may be substantial but are tolerable during times of less demand (i.e. vehicles delayed one cycle or less at signal).

LOS E: Intersections operate at or near capacity, with long queues developing on all approaches and long delays.

LOS F: Jammed conditions on all approaches with excessively long delays and vehicles unable to move at times.

² When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection.

3. TRIP GENERATION

The trip generation calculations for the Allen Townhomes development are based on data published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual, 11th Edition (2021)*. The average trip generation rates for ITE Land Use Code (LUC) 215, Single-Family Attached Housing, has been used for the proposed units. The development is proposed to include 43 single-family attached residential units. The trip generation of the Allen Townhomes development is summarized in Table 2.

Table 2: Trip Generation Calculations

43 Single-Family Residential Units	Average Daily Trips			AM Peak-Hour Trips			PM Peak-Hour Trips		
	Inbound	Outbound	Total	Inbound	Outbound	Total	Inbound	Outbound	Total
Generation Rate	7.20 trips per unit			0.48 trips per unit			0.57 trips per unit		
Splits	50%	50%	100%	31%	69%	100%	63%	37%	100%
Trips	155	155	311	7	15	21	14	11	25

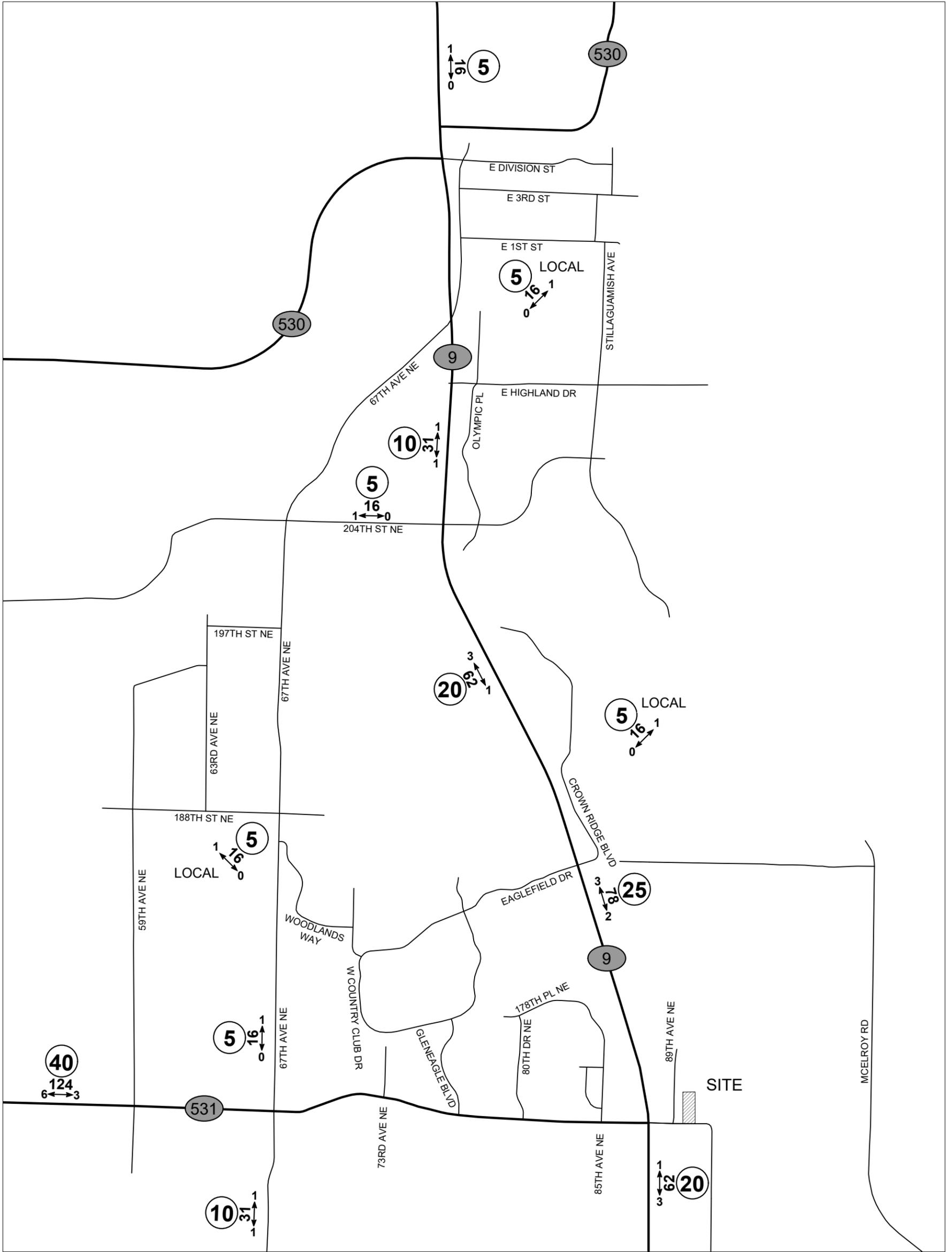
The Allen Townhomes development is anticipated to generate approximately 310 new average daily trips with approximately 21 new AM peak-hour trips and 25 new PM peak-hour trips.

4. TRIP DISTRIBUTION

The trip distribution for the Allen Townhomes development is based on surrounding land uses and approved distributions for similar developments in the site vicinity. It is anticipated that 45% of the trips generated by the development will travel along SR-9, twenty-five percent to and from the north and twenty percent to and from the south. It is estimated that 40% of the trips generated by the development will travel to and from the west along 172nd Street NE/SR-531. The remaining 15% of the trips generated by the development will travel along 67th Avenue NE, five percent to and from the north and ten percent to and from the south. Detailed trip distribution for the AM and PM peak-hours are shown in Figure 2 and Figure 3, respectively.

5. INTERSECTION ANALYSIS

The intersection of SR-9 at 172nd Street NE (SR-531), which is a roundabout, has been analyzed in this report. The intersection has been analyzed for the 2022 existing conditions, 2028 baseline, and 2028 future with development conditions. The only other signalized intersection that is impacted with 10 PM peak-hour trips is the intersection of 67th Avenue NE at 172nd Street NE (SR-531). That intersection is planned to be improved by WSDOT through the funded improvement project for 172nd Street NE (SR-531) from 43rd Avenue NE to 67th Avenue NE.



ALLEN TOWNHOMES

CITY OF ARLINGTON

LEGEND

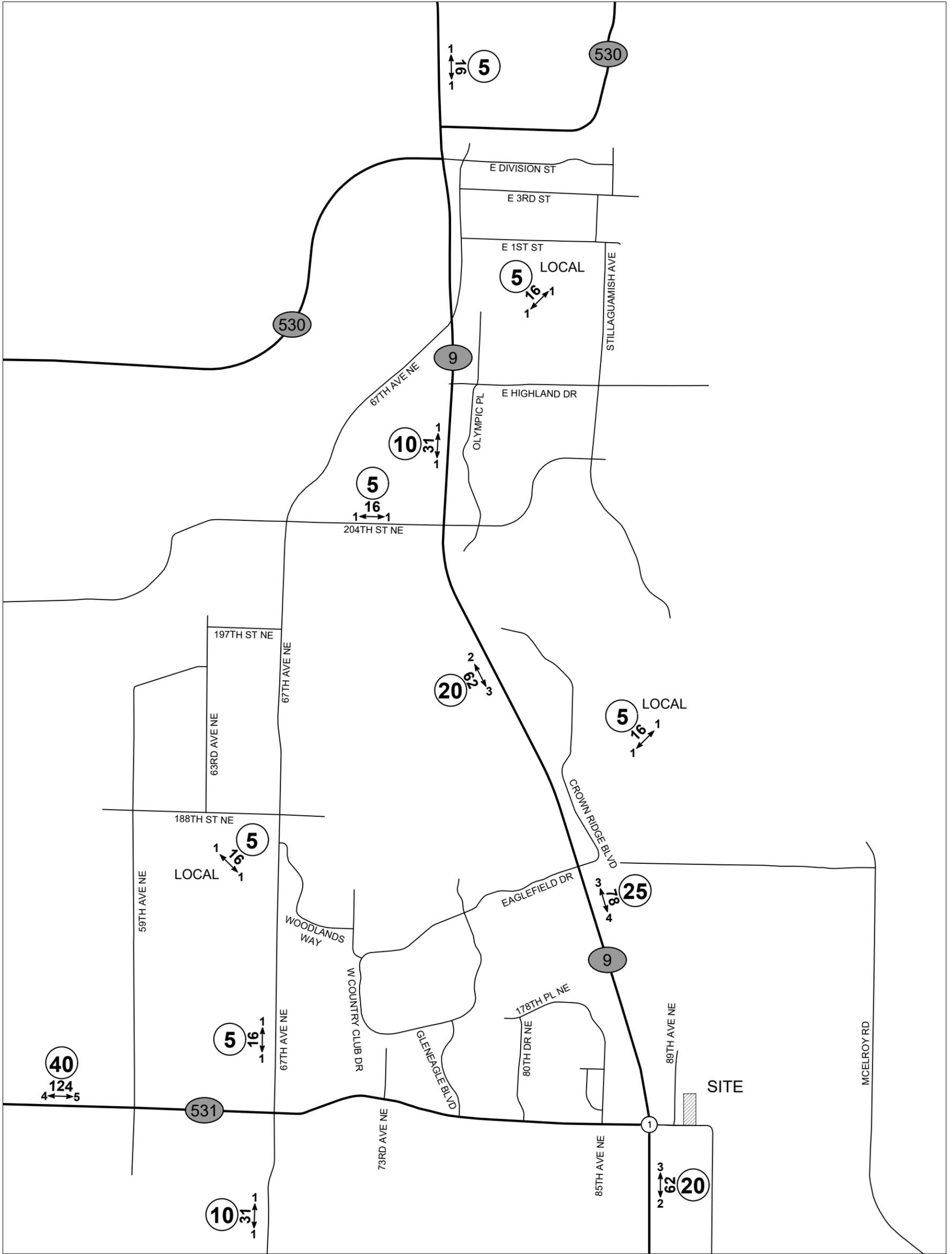
AWDT
AM ← PEAK

NEW DAILY TRAFFIC
NEW PEAK-HOUR TRIPS



TRIP DISTRIBUTION %

FIGURE 2
DEVELOPMENT
TRIP DISTRIBUTION
AM PEAK-HOUR



ALLEN TOWNHOMES

CITY OF ARLINGTON

LEGEND

- AWDT** NEW DAILY TRAFFIC
- PM ← PEAK** NEW PEAK-HOUR TRIPS
- (XX)** TRIP DISTRIBUTION

FIGURE 3
DEVELOPMENT
TRIP DISTRIBUTION
PM PEAK-HOUR

5.1 Turning Movement Calculations

The 2022 existing peak-hour turning movement count for the study intersection was collected by the independent count firm Traffic Data Gathering in June 2022. The 2028 baseline turning movements at the study intersection has been calculated using a 2.0% annually compounding growth rate. The 2028 future with development conditions were analyzed by adding the trips generated by the Allen Townhomes development to the 2028 baseline turning movements. The 2022 existing turning movements, the 2028 baseline turning movements, and the 2028 future with development turning movements at the study intersection for the PM peak-hour are shown in Figure 4. The existing counts and turning movement calculations are included in the attachments.

5.2 Level of Service Analysis

The study intersection has been analyzed using the existing intersection control, channelization, peak-hour factors, and heavy vehicle factors. The level of service results shows that the intersection of SR-9 at 172nd Street NE (SR-531) currently operates at LOS A with a v/c ratio of 0.58. The intersection is anticipated to operate at LOS B with a v/c ratio of 0.70 under the 2028 baseline conditions and LOS B with a v/c ratio of 0.71 under the 2028 future with development conditions. The level of service calculations is included in the attachments.

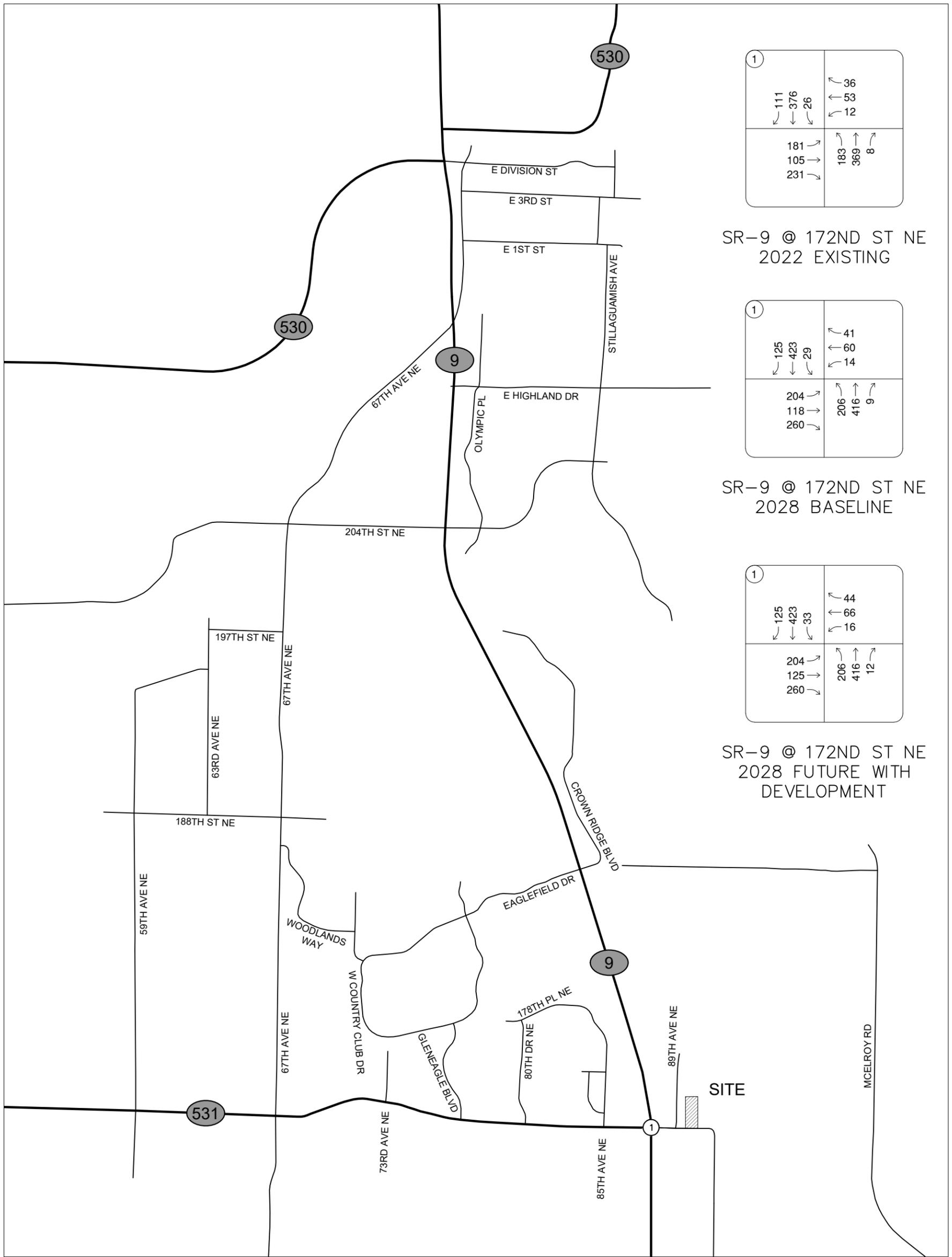
6. TRAFFIC MITIGATION FEES

The City of Arlington collects traffic mitigation fees based on the number of PM peak-hour trips generated by a development. The City of Arlington also has interlocal agreements with Snohomish County and WSDOT for traffic mitigation fees.

6.1 City of Arlington

The City of Arlington currently has a standard traffic mitigation fee of \$3,355 per PM peak-hour trip. The Allen Townhomes development is anticipated to generate 25 new PM peak-hour trips. These trips result in a City of Arlington traffic mitigation fee of \$83,875.00.

It is important to note that City of Arlington traffic mitigation fees do not vest to the time of application. It is possible that the City of Arlington mitigation fees will increase between the time of this report and when the traffic mitigation fees are required to be paid.



1	111 376 26	36 53 12
	181 105 231	183 369 8

SR-9 @ 172ND ST NE
2022 EXISTING

1	125 423 29	41 60 14
	204 118 260	206 416 9

SR-9 @ 172ND ST NE
2028 BASELINE

1	125 423 33	44 66 16
	204 125 260	206 416 12

SR-9 @ 172ND ST NE
2028 FUTURE WITH
DEVELOPMENT



ALLEN TOWNHOMES

CITY OF ARLINGTON

LEGEND
 XXX → PM PEAK-HOUR TURNING
 MOVEMENT VOLUMES

FIGURE 4
TURNING MOVEMENT

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6.2 Snohomish County

The City of Arlington has an interlocal agreement with Snohomish County that provides for mitigation payments for impacts to Snohomish County arterials. The interlocal agreement allows Snohomish County fees for City of Arlington developments to be based on the actual percentage of trips impacting Snohomish County roadways. The trip distribution shows that the nearest Snohomish County improvement project, 67th Avenue NE at 152nd Street NE, is only anticipated to be impacted by 1 PM peak-hour trips in the northbound and southbound directions. This impact will not reach the threshold of three directional PM peak-hour trips identified in the *Snohomish County Traffic Worksheet and Traffic Study Requirements for Development in the City of Arlington*.

6.3 Washington State Department of Transportation

WSDOT improvement projects and their associated fees are based on the most recent Exhibit C list, which is part of the interlocal agreement between Snohomish County and WSDOT. City of Arlington developments are required to pay for WSDOT improvement projects on the Exhibit C list impacted with 10 or more PM peak-hour trips.

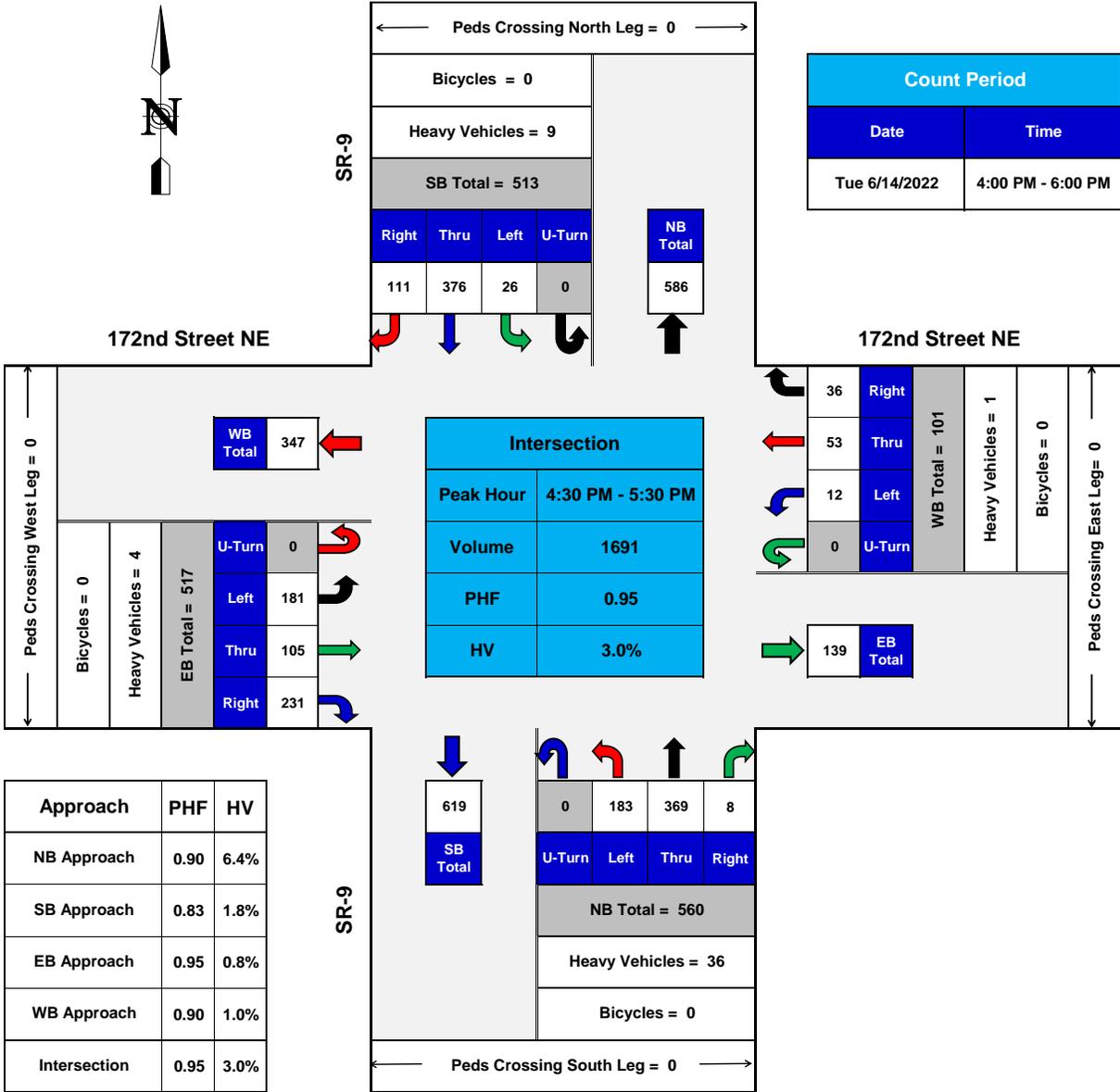
The intersections along SR-531 west of the site from 43rd Avenue NE to 67th Avenue NE are included in the Connecting Washington legislation for fully funded improvements. The improvements for the intersection of 172nd Street NE (SR-531) at 43rd Avenue NE are currently under construction. WSDOT mitigation fees should therefore not be a condition of the Allen Townhomes development.

7. CONCLUSIONS

The Allen Townhomes development is proposed to include 43 single-family attached units. The Allen Townhomes development is anticipated to generate approximately 310 new average daily trips with approximately 21 new AM peak-hour trips and 25 new PM peak-hour trips. The analysis shows the study intersection will operate at acceptable levels of service. Intersection improvements at off-site intersections should therefore not be a condition of the development. The traffic mitigation fees to the City of Arlington should total \$83,875.00, based on the current fee. Snohomish County and WSDOT traffic mitigation fees should not be required.

Counts and Turning Movement Calculations

SR-9 @ 172nd Street NE
Arlington, WA

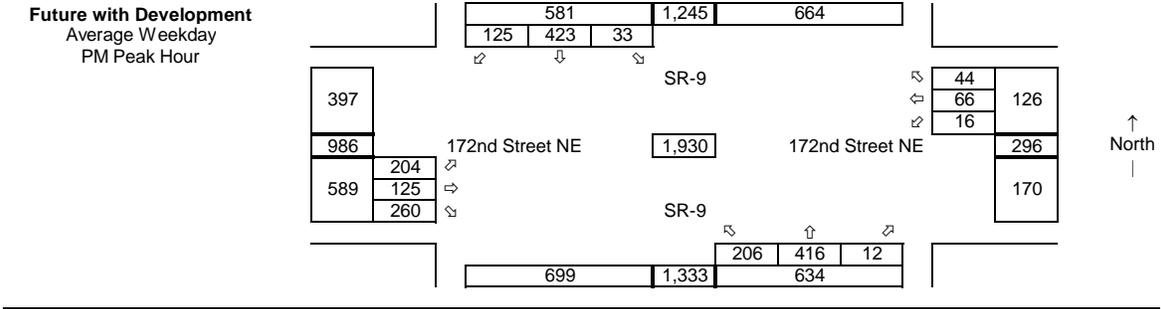
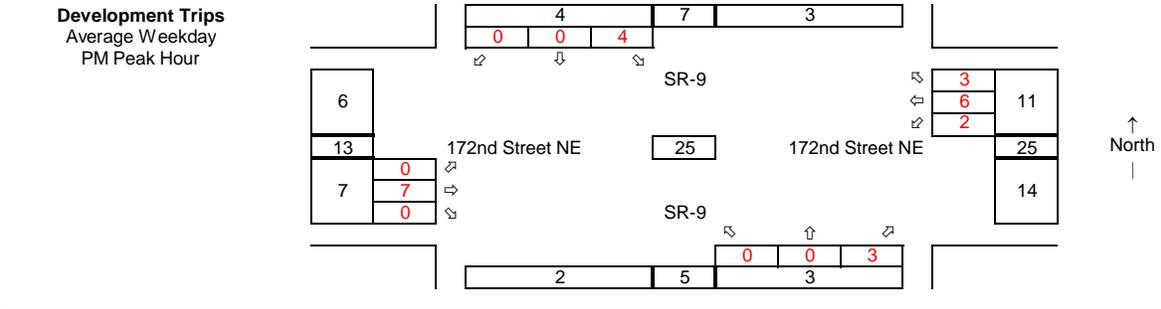
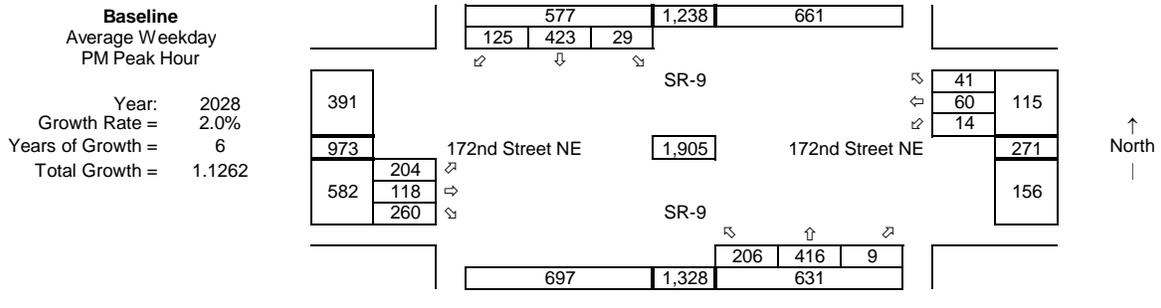
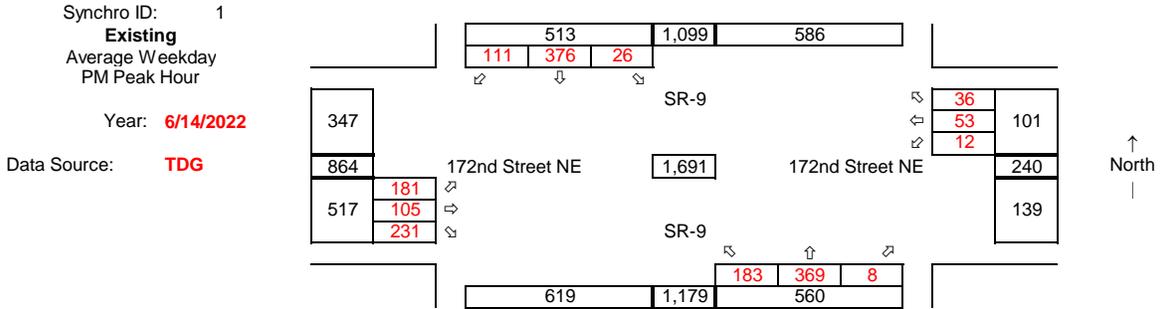


PHF = Peak Hour Factor
 HV = Heavy Vehicles

TURNING MOVEMENTS DIAGRAM
PEAK HOUR SUMMARY



1 SR9 @ 172ND St NE_PM



Level of Service Calculations

SITE LAYOUT

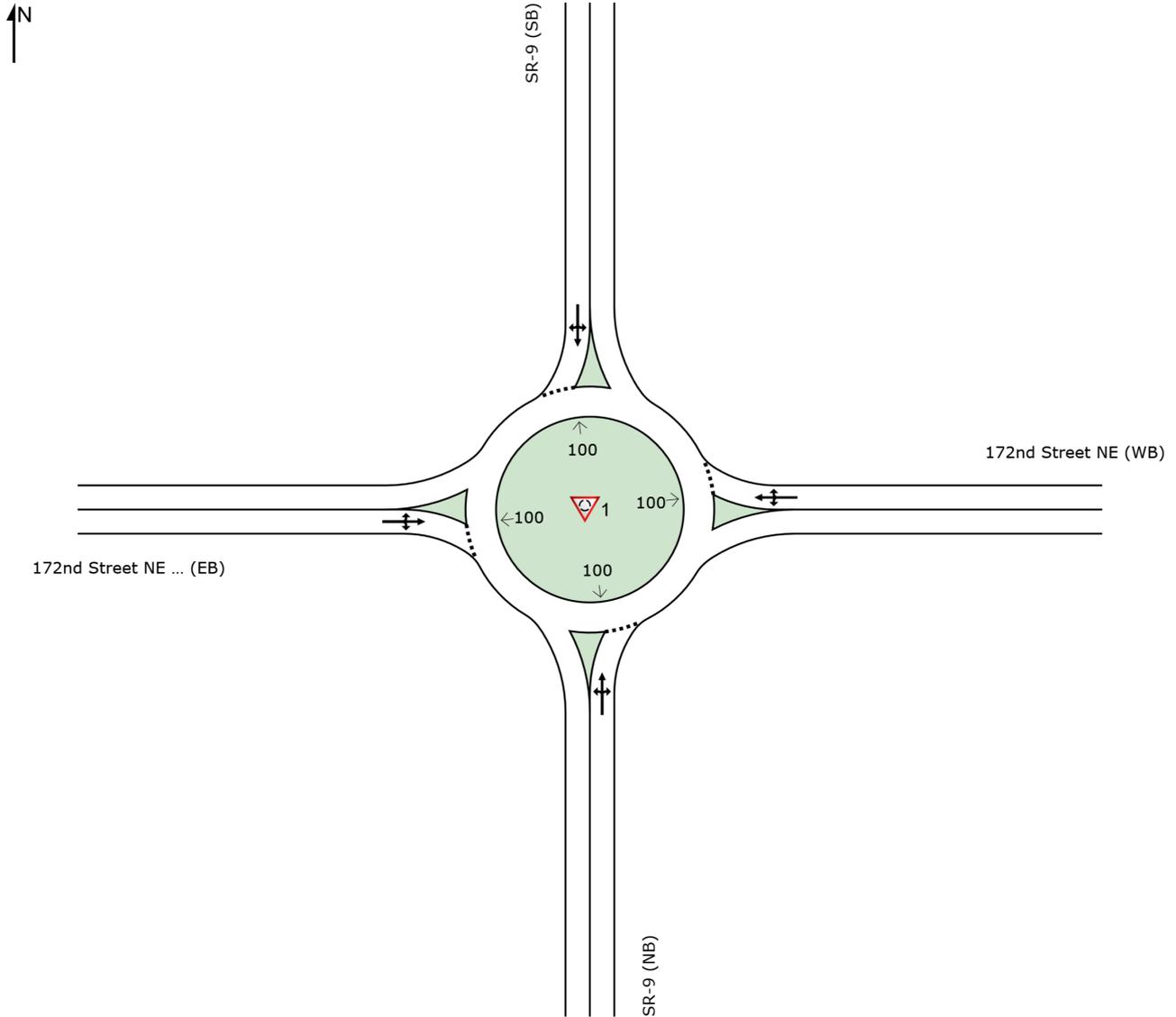
Site: 1 [2022 Existing Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)

Site Category: (None)

Roundabout

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



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MOVEMENT FLOWS FOR SITE (DEMAND)

Approach movement demand flow rates (veh/h)

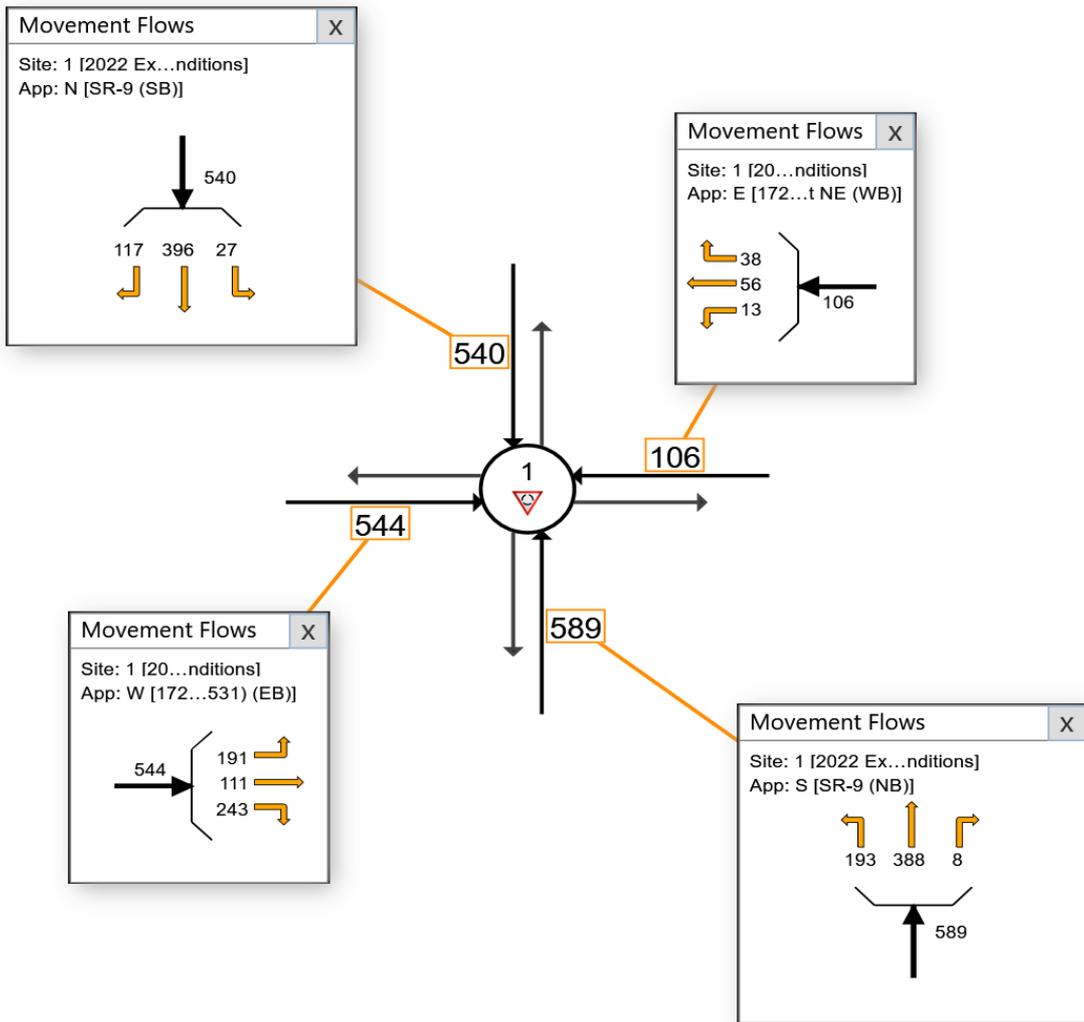
All Movement Classes

Site: 1 [2022 Existing Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)
 Site Category: (None)
 Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
 Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 1 [2022 Existing Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist ft]				
South: SR-9 (NB)														
3	L2	183	3.0	193	3.0	0.577	12.9	LOS B	5.3	135.9	0.76	0.74	0.80	34.7
8	T1	369	3.0	388	3.0	0.577	6.9	LOS A	5.3	135.9	0.76	0.74	0.80	34.7
18	R2	8	3.0	8	3.0	0.577	6.9	LOS A	5.3	135.9	0.76	0.74	0.80	33.7
Approach		560	3.0	589	3.0	0.577	8.8	LOS A	5.3	135.9	0.76	0.74	0.80	34.7
East: 172nd Street NE (WB)														
1	L2	12	3.0	13	3.0	0.159	14.8	LOS B	1.1	27.1	0.80	0.78	0.80	34.9
6	T1	53	3.0	56	3.0	0.159	8.8	LOS A	1.1	27.1	0.80	0.78	0.80	34.8
16	R2	36	3.0	38	3.0	0.159	8.9	LOS A	1.1	27.1	0.80	0.78	0.80	33.8
Approach		101	3.0	106	3.0	0.159	9.6	LOS A	1.1	27.1	0.80	0.78	0.80	34.5
North: SR-9 (SB)														
7	L2	26	3.0	27	3.0	0.491	11.7	LOS B	3.8	98.2	0.63	0.59	0.63	35.9
4	T1	376	3.0	396	3.0	0.491	5.8	LOS A	3.8	98.2	0.63	0.59	0.63	35.9
14	R2	111	3.0	117	3.0	0.491	5.8	LOS A	3.8	98.2	0.63	0.59	0.63	34.8
Approach		513	3.0	540	3.0	0.491	6.1	LOS A	3.8	98.2	0.63	0.59	0.63	35.6
West: 172nd Street NE (SR-531) (EB)														
5	L2	181	3.0	191	3.0	0.579	14.3	LOS B	5.4	139.1	0.81	0.85	0.91	34.4
2	T1	105	3.0	111	3.0	0.579	8.3	LOS A	5.4	139.1	0.81	0.85	0.91	34.3
12	R2	231	3.0	243	3.0	0.579	8.3	LOS A	5.4	139.1	0.81	0.85	0.91	33.4
Approach		517	3.0	544	3.0	0.579	10.4	LOS B	5.4	139.1	0.81	0.85	0.91	33.9
All Vehicles		1691	3.0	1780	3.0	0.579	8.5	LOS A	5.4	139.1	0.74	0.73	0.78	34.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SITE LAYOUT

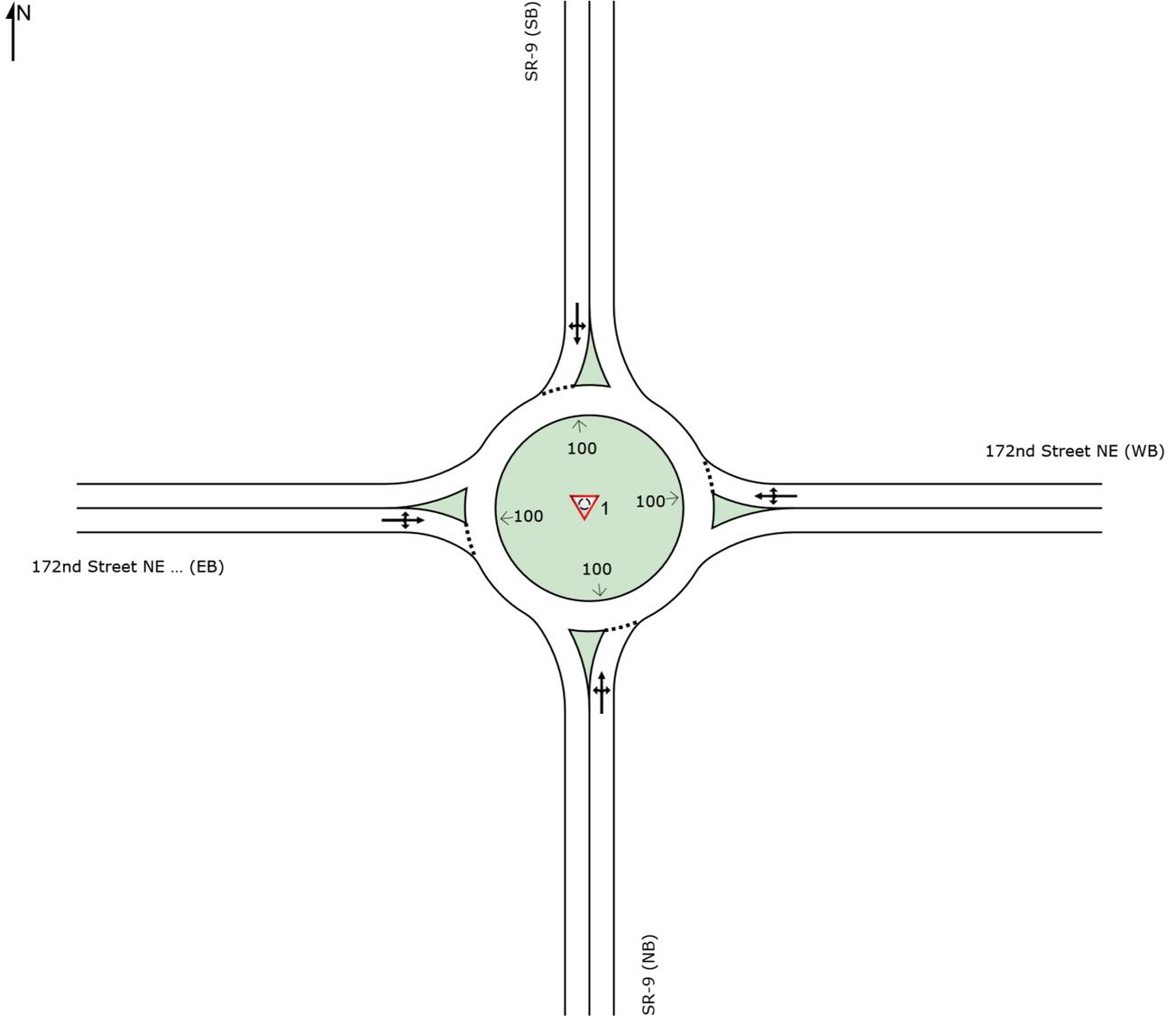
Site: 1 [2028 Baseline Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)

Site Category: (None)

Roundabout

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



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MOVEMENT FLOWS FOR SITE (DEMAND)

Approach movement demand flow rates (veh/h)

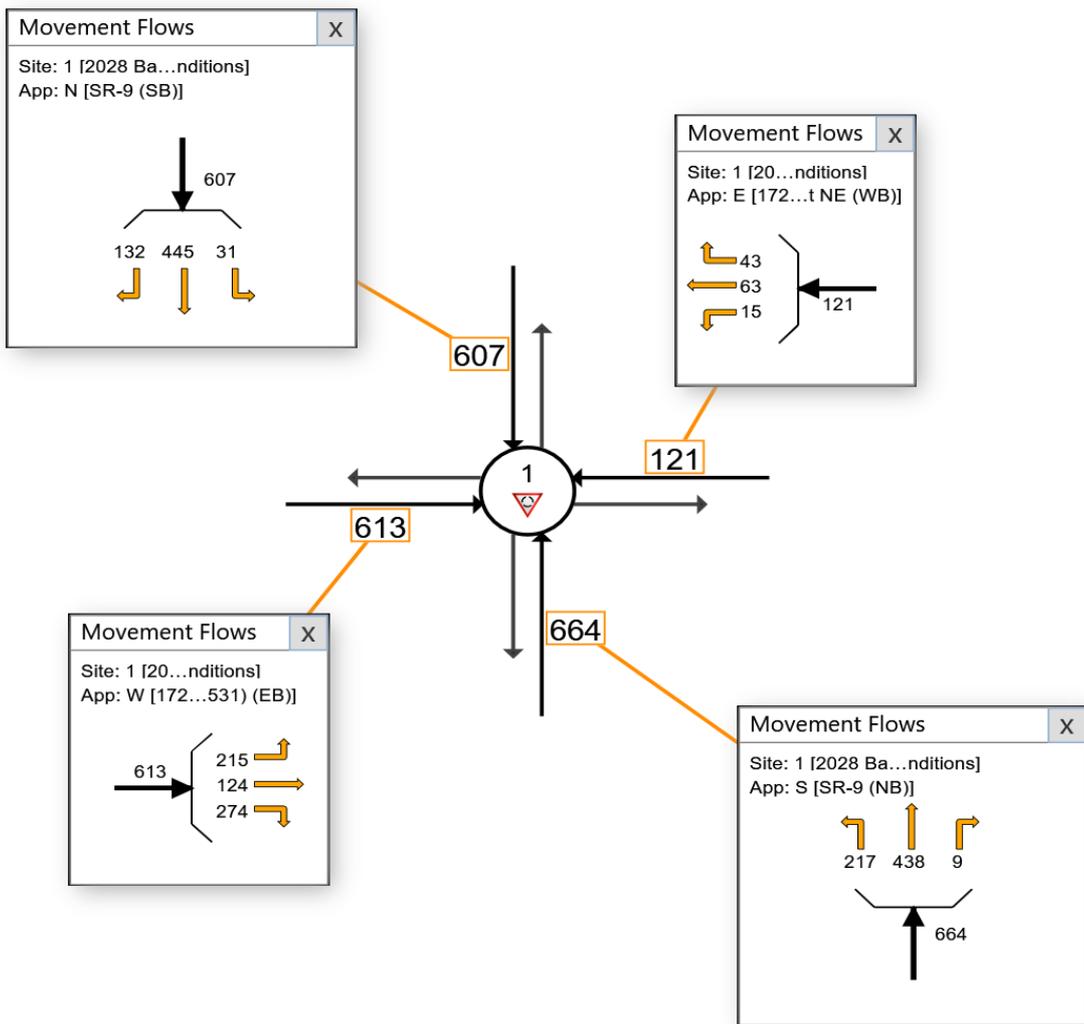
All Movement Classes

Site: 1 [2028 Baseline Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)
 Site Category: (None)
 Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
 Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 1 [2028 Baseline Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist ft]				
South: SR-9 (NB)														
3	L2	206	3.0	217	3.0	0.684	15.0	LOS B	8.1	206.9	0.88	0.88	1.04	34.1
8	T1	416	3.0	438	3.0	0.684	9.0	LOS A	8.1	206.9	0.88	0.88	1.04	34.1
18	R2	9	3.0	9	3.0	0.684	9.1	LOS A	8.1	206.9	0.88	0.88	1.04	33.1
Approach		631	3.0	664	3.0	0.684	11.0	LOS B	8.1	206.9	0.88	0.88	1.04	34.1
East: 172nd Street NE (WB)														
1	L2	14	3.0	15	3.0	0.212	16.1	LOS B	1.5	38.6	0.88	0.85	0.88	34.2
6	T1	60	3.0	63	3.0	0.212	10.1	LOS B	1.5	38.6	0.88	0.85	0.88	34.1
16	R2	41	3.0	43	3.0	0.212	10.2	LOS B	1.5	38.6	0.88	0.85	0.88	33.2
Approach		115	3.0	121	3.0	0.212	10.9	LOS B	1.5	38.6	0.88	0.85	0.88	33.8
North: SR-9 (SB)														
7	L2	29	3.0	31	3.0	0.573	12.4	LOS B	5.1	129.5	0.72	0.66	0.74	35.6
4	T1	423	3.0	445	3.0	0.573	6.4	LOS A	5.1	129.5	0.72	0.66	0.74	35.5
14	R2	125	3.0	132	3.0	0.573	6.5	LOS A	5.1	129.5	0.72	0.66	0.74	34.5
Approach		577	3.0	607	3.0	0.573	6.7	LOS A	5.1	129.5	0.72	0.66	0.74	35.3
West: 172nd Street NE (SR-531) (EB)														
5	L2	204	3.0	215	3.0	0.696	17.2	LOS B	8.4	214.5	0.93	1.00	1.20	33.0
2	T1	118	3.0	124	3.0	0.696	11.2	LOS B	8.4	214.5	0.93	1.00	1.20	32.9
12	R2	260	3.0	274	3.0	0.696	11.3	LOS B	8.4	214.5	0.93	1.00	1.20	32.0
Approach		582	3.0	613	3.0	0.696	13.3	LOS B	8.4	214.5	0.93	1.00	1.20	32.6
All Vehicles		1905	3.0	2005	3.0	0.696	10.4	LOS B	8.4	214.5	0.85	0.85	0.99	33.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
 Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: K:\SNO_TPTO\2021\21-501 Allen Townhomes\Intersection Analysis\Synchro\#5 - SR-9 at 172nd Street NE-SR-531.sip9

SITE LAYOUT

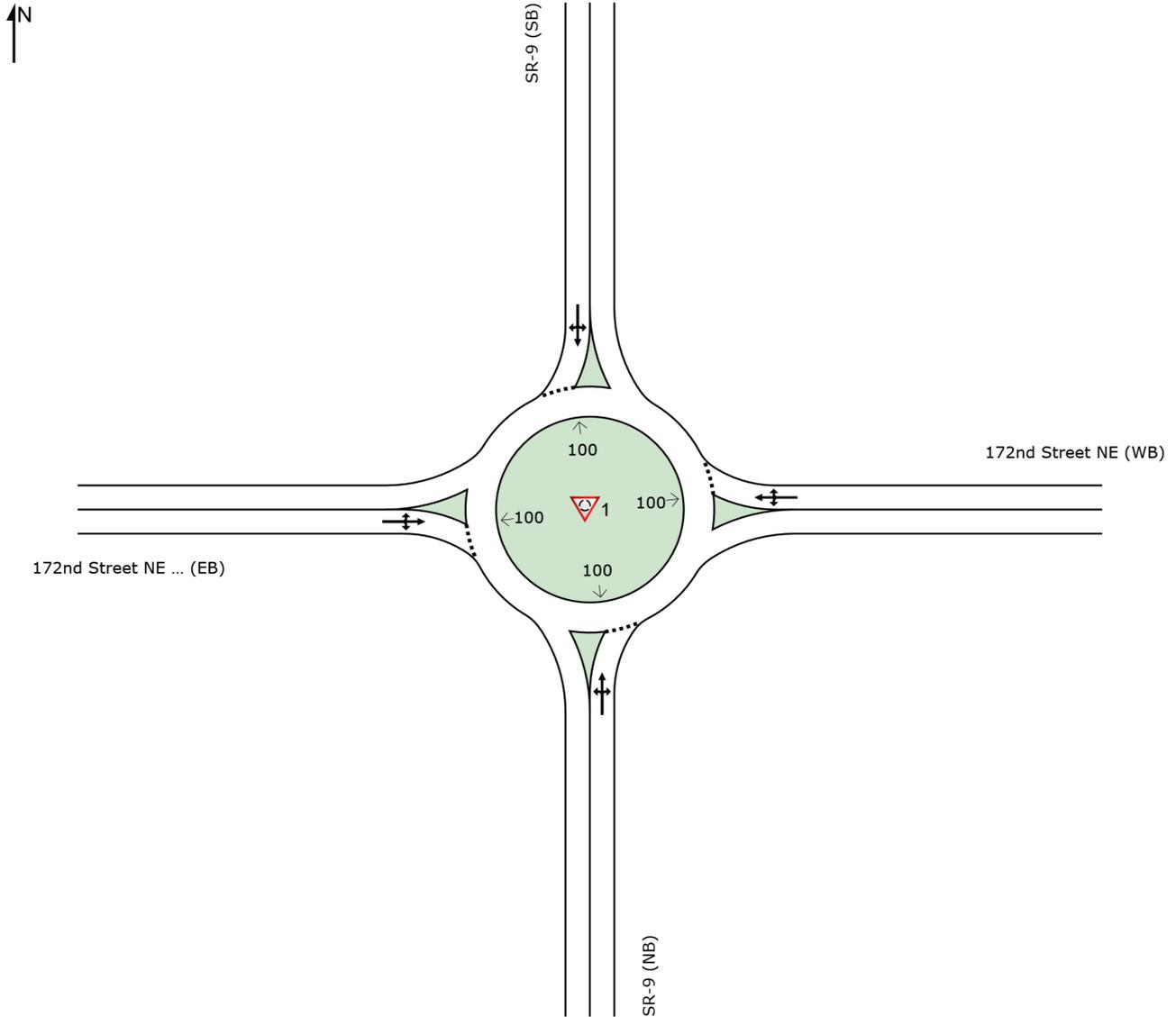
Site: 1 [2028 Future Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)

Site Category: (None)

Roundabout

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



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MOVEMENT FLOWS FOR SITE (DEMAND)

Approach movement demand flow rates (veh/h)

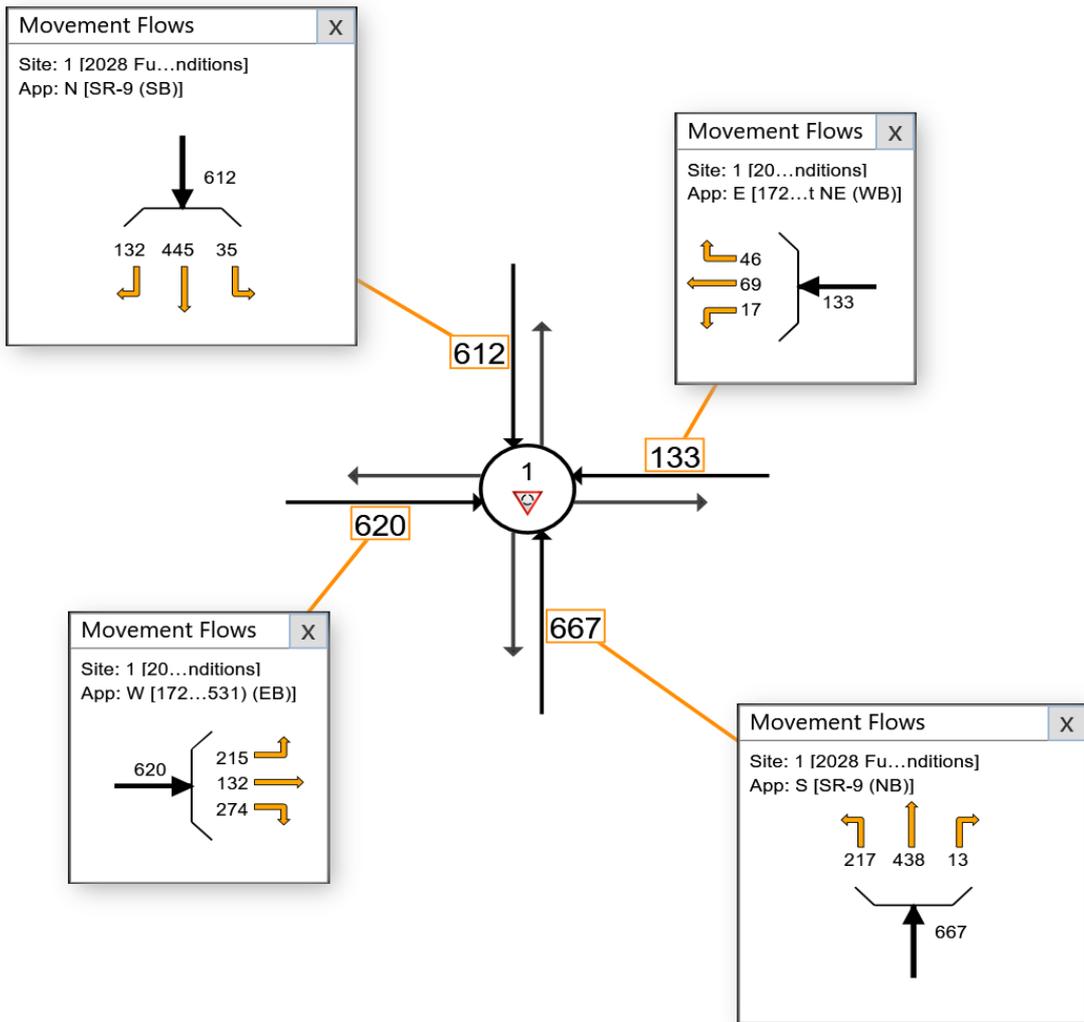
All Movement Classes

Site: 1 [2028 Future Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)
 Site Category: (None)
 Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
 Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 1 [2028 Future Conditions (Site Folder: General)]

SR-9 at 172nd Street NE (SR-531)

Site Category: (None)

Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist ft]				
South: SR-9 (NB)														
3	L2	206	3.0	217	3.0	0.695	15.4	LOS B	8.4	215.9	0.90	0.90	1.08	34.0
8	T1	416	3.0	438	3.0	0.695	9.4	LOS A	8.4	215.9	0.90	0.90	1.08	34.0
18	R2	12	3.0	13	3.0	0.695	9.5	LOS A	8.4	215.9	0.90	0.90	1.08	33.0
Approach		634	3.0	667	3.0	0.695	11.4	LOS B	8.4	215.9	0.90	0.90	1.08	34.0
East: 172nd Street NE (WB)														
1	L2	16	3.0	17	3.0	0.233	16.2	LOS B	1.7	42.9	0.89	0.86	0.89	34.1
6	T1	66	3.0	69	3.0	0.233	10.2	LOS B	1.7	42.9	0.89	0.86	0.89	34.1
16	R2	44	3.0	46	3.0	0.233	10.3	LOS B	1.7	42.9	0.89	0.86	0.89	33.1
Approach		126	3.0	133	3.0	0.233	11.0	LOS B	1.7	42.9	0.89	0.86	0.89	33.7
North: SR-9 (SB)														
7	L2	33	3.0	35	3.0	0.581	12.6	LOS B	5.2	134.3	0.73	0.69	0.76	35.6
4	T1	423	3.0	445	3.0	0.581	6.6	LOS A	5.2	134.3	0.73	0.69	0.76	35.5
14	R2	125	3.0	132	3.0	0.581	6.7	LOS A	5.2	134.3	0.73	0.69	0.76	34.4
Approach		581	3.0	612	3.0	0.581	7.0	LOS A	5.2	134.3	0.73	0.69	0.76	35.3
West: 172nd Street NE (SR-531) (EB)														
5	L2	204	3.0	215	3.0	0.710	17.6	LOS B	8.8	225.3	0.94	1.02	1.24	32.8
2	T1	125	3.0	132	3.0	0.710	11.7	LOS B	8.8	225.3	0.94	1.02	1.24	32.7
12	R2	260	3.0	274	3.0	0.710	11.7	LOS B	8.8	225.3	0.94	1.02	1.24	31.8
Approach		589	3.0	620	3.0	0.710	13.8	LOS B	8.8	225.3	0.94	1.02	1.24	32.4
All Vehicles		1930	3.0	2032	3.0	0.710	10.7	LOS B	8.8	225.3	0.86	0.87	1.02	33.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Traffic Mitigation Offer to Snohomish County

The applicant completes part one and submits it to the city with a completed county traffic worksheet. The city completes part two and sends it to the county. The county completes part three and sends it back to the city.

Part One to be completed by Applicant

Basic Development Information				
Name of City in which development is located	City of Arlington			
Name of Proposed Development	Allen Townhomes			
City Project File Number (if known)				
Name of Applicant				
Address of Applicant				
Proportionate Share Calculation: Choose Option A or B				
<input type="checkbox"/> Option A: Based on a percentage of the County's adopted impact fee (Attach traffic worksheet.)				
1. The applicable percentage of the County's fee: _____%				
2. Net New Average Daily Traffic: _____ADT				
3. The adopted County impact fee for this development: _____\$/ADT				
4. Total Proportionate Share Amount: \$ _____				
<input checked="" type="checkbox"/> Option B: Based on a comprehensive traffic study (Attach traffic worksheet and traffic study)				
<input checked="" type="checkbox"/> No road improvements are impacted. Hence, proportionate share amount is zero.				
<input type="checkbox"/> The following road improvements are impacted. The calculation of proportionate shares is summarized below.				
List by Names/Description the Impacted County Projects (attach other pages if necessary)	County Project ID#	PHTs Impacting Project	Capacity Cost per PHT	Proportionate Share Obligation per Impacted Project
1. The trip distribution shows that the trips generated by the Allen Townhomes development will not impact any Snohomish County projects on the Transportation Needs Report with 3 directional peak-hour trips.				
2. _____				
3. _____				
4. Total Proportionate Share Amount (sum of obligations for each impacted project)				\$ <u>0.00</u>
<input checked="" type="checkbox"/> Trip Distribution and Assignment if Required				
If required, attach AM and PM peak-hour trip distribution and assignment. (Attach traffic worksheet showing whether or not it is required and traffic study).				
<input checked="" type="checkbox"/> Mitigation of Other Impacts if Required for Developments Generating More than 50 Peak-Hour Trips				
Mitigation of Impacts on Level of Service				
<input checked="" type="checkbox"/> No impact or not applicable <input type="checkbox"/> Mitigation as described in attached traffic study.				
Mitigation of Impacts on Inadequate Road Conditions				
<input checked="" type="checkbox"/> No impact or not applicable <input type="checkbox"/> Mitigation as described in attached traffic study.				
Mitigation for Impacts on Access or Circulation				
<input checked="" type="checkbox"/> No impact or not applicable <input type="checkbox"/> Mitigation as described in attached traffic study.				
<input checked="" type="checkbox"/> Written Offer				
The Applicant hereby voluntarily agrees to pay the total proportionate share amount shown above for impacts of the proposed development on the capacity of Snohomish County roads and provide mitigation of all other impacts as indicated above and described in attached documents.				
BY: <u>JM1 Holdings, LLC</u> <u>By: Land Pro Group, Inc. - Authorized Agents</u> <u>Date 8/26/22</u>				
Signature by Authorized Official of Applicant or Authorized Representative				
Print Name and Title <u>By: Ryan C. Larsen - VP Land Development</u>				
<i>Instructions to Applicant.</i> Submit this offer, a completed county traffic worksheet, and any other attachments to the city with your initial application or send directly to Deb Werdal, Snohomish Co. DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201.				

Part Two: To be completed by the City

Receipt of Written Offer and Attachments by City and Routing to County

Name of Proposed Development

City Project File Number

Date Received

City Staffer Assigned to Project

Address

Phone

Instructions to City. Send this offer and all attachments to Deb Werdal, Snohomish Co. DPW Traffic Operations, 3000 Rockefeller M/S 607, Everett WA 98201. Send copy to staffer shown above.

BY:

Date
Initialed by City Staffer Print Name and Title

Part Three: To be completed by Snohomish County

Receipt of Offer and Attachments by Snohomish County and Routing Back to City

Name of Proposed Development

City Project File Number

Received by:

Date

Initialed by County Staffer Print Name and Title

Snohomish County Mitigation Request to City

Snohomish County has reviewed the traffic study worksheet and mitigation offer submitted by the applicant and has determined as follows:

Snohomish County requests that the City impose the mitigation offered above as a condition of approval for the Development. Snohomish County agrees to accept changes in the mitigation payment amount shown above resulting from TDM or lot-yield adjustments approved by the City.

Snohomish County requests that the City require additional supplemental information to adequately evaluate the proposed development's impacts. The information requested is shown in the notes below.

BY:

Date

Signature by Authorized County Staffer Print Name and Title

Routing Back to City

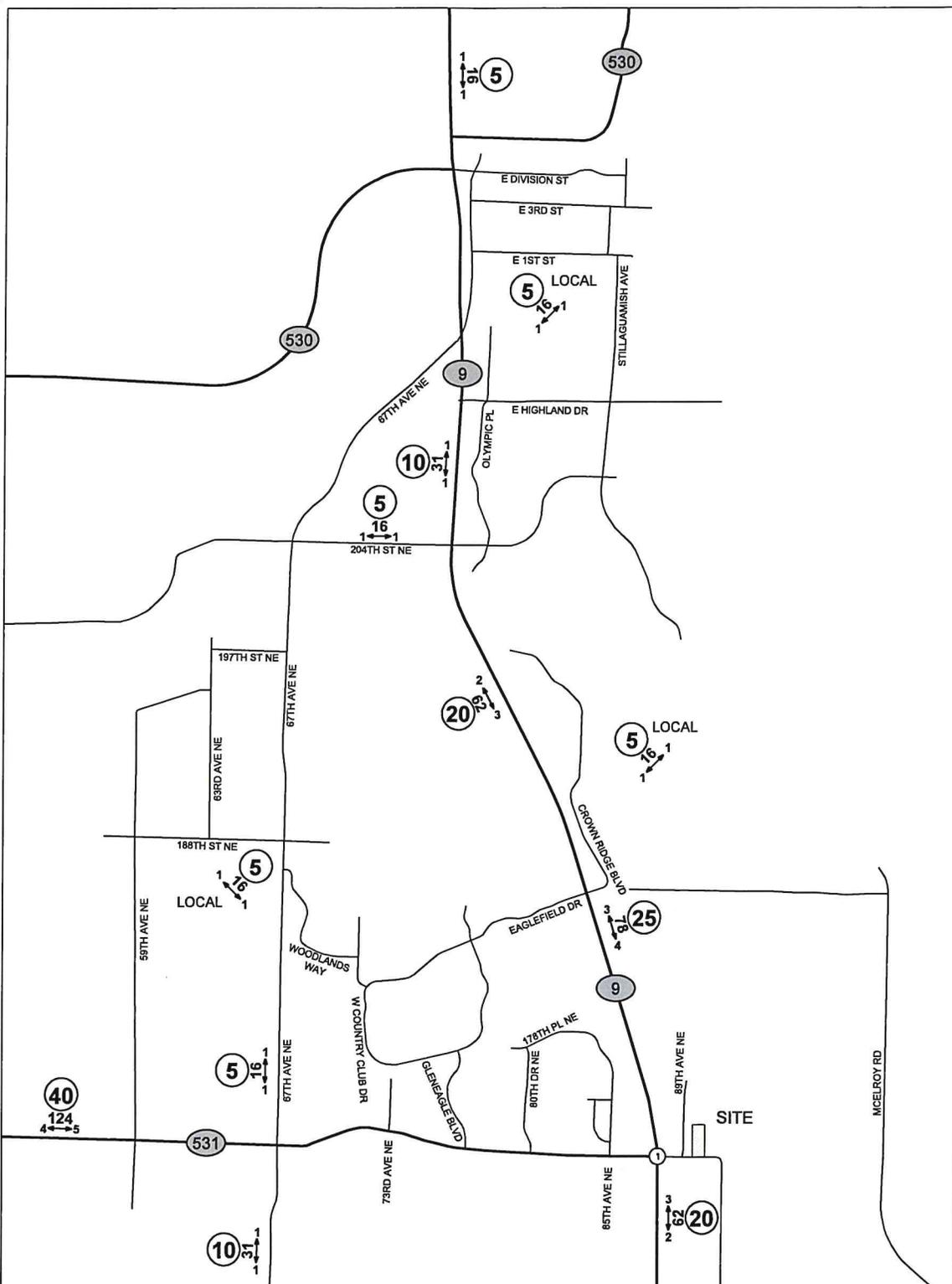
Instructions to County Send this offer and all attachments to the City Staffer shown in Part Two above.

Sent by:

Date

Initialed by City Staffer Print Name and Title

Notes



Date: 10/15/2014 11:58 AM / User: jaym@k...
 Path: C:\Users\j... \Documents\Projects\Allen Townhomes\...

ALLEN TOWNHOMES

CITY OF ARLINGTON

LEGEND

- AWDT → NEW DAILY TRAFFIC
- PM → PEAK → NEW PEAK-HOUR TRIPS
- (XX) TRIP DISTRIBUTION

FIGURE 3
 DEVELOPMENT
 TRIP DISTRIBUTION
 PM PEAK-HOUR

**Snohomish County Traffic Worksheet and Traffic Study Requirements
for Developments in the City of Arlington**

Snohomish County government, through an interlocal agreement (ILA) with the City of Arlington, may request traffic mitigation measures from any new development in the city that impacts roads in the unincorporated county. The City will impose the requested mitigation to the extent that the City determines that the mitigation is reasonably related to the impacts of the development. To determine the impacts, and to determine reasonable mitigation measures, the City of Arlington requires a traffic study from any development in the city that may have impacts on county roads. This 'traffic study' may be as simple as completing sections one and two of the county traffic worksheet below, or having a professional traffic engineer conduct a formal traffic study consistent with the requirements in section three below.

- If a development generates less than ten peak-hour trips and the applicant chooses Option A for mitigation payment (standard payment by percent of county impact fee), then the applicant will generally only have to fill out the first two sections of this traffic worksheet and complete a mitigation offer (see section four).
- However, if a development generates more than ten peak-hour trips, or if the applicant chooses Option B for mitigation payment (comprehensive impact analysis), then the applicant will have to fill out the first section of this worksheet, complete a separate traffic study consistent with the requirements in section three, and complete a mitigation offer (see Section Four).
- Applicants should submit all documents *to the City* as part of their initial submittal.
- Traffic study requirements for impacts on county roads are based on the County's traffic mitigation ordinance (Chapter 30.66B) and the city/county ILA. At the end of this document find references to the county contacts and county web site (sources for many of the documents related to traffic mitigation).
- Following review of the documents submitted, the County may request supplemental information and analysis as necessary to determine the impacts of the development in accordance with the city/county ILA. The City will require the proposed development to submit the supplemental information and analysis to the extent that the City determines that it is necessary to determine the impacts of the development.

Section One (1) Worksheet General Information

1. Name of Proposed Development Allen Townhomes
City Development File Number (if known) _____
2. Name, Address and Phone Number of Applicant _____

3. Development Site Address 172nd Street NE, east of SR-9

4. Is it a residential or commercial development? Residential
5. Description of Development (size and specific type) 43 attached residential units

6. How many new vehicle trips are expected to be generated by the proposed development? (For many common types of developments this information can be provided by the city or the county. For more complex developments trip generation may have to be determined under section three below)
21 AM Peak Hour 25 PM Peak Hour 310 Average Daily Trips (ADT)
7. Proportionate Share Impact Mitigation: All applicants have two options in determining the amount of their traffic mitigation payment:
 For determining the amount based on a percentage of the county fee go to section two.
 X For determining the amount based on a comprehensive traffic study go to section three.

Section Two (2) Proportionate Share Determined by Percentage of County Impact Fee

2(a) Calculation of Payment Amount

1. Standard default estimated percentage of trips impacting county roads 70 % or 2. Other Percentage: (Note: See author's qualifications in section three below.) Estimated percentage of trips impacting county roads from attached trip distribution: _____ %

3. Development New Average Daily Trip Generation (ADT) _____

4. Type of Development (Residential or Commercial) _____

5. County Commercial Fee Rate \$ _____ 6. County Residential Fee Rate \$ _____

(Note: Consistent with county code and the ILA, developments pay the rate in effect at the time of their submittal. As of 2/1/06 the rates were \$206 for commercial developments and \$242 for residential developments. Through ordinance, the County Council can change these rates at any time, so consult with the County or look at Snohomish County Code 30.66B.330 to find the latest fee rates.)

7. Calculation of Proportionate Share Impact Mitigation

$$\frac{\text{\#1 or \#2 above:}}{\% \text{ of trips}} \times \frac{\text{\#3 above:}}{\text{ADT}} \times \frac{\text{\#5 or \#6 above:}}{\text{Fee Rate}} = \$ \frac{\text{proportionate share mitigating payment}}{\text{mitigating payment}}$$

2(b) Determining whether or not an additional traffic study is necessary

Will the development generate more than 10 peak-hour trips *or* are there other impacts that need to be addressed (e.g., level of service, safety, or access and circulation)

_____ No. Skip section three and go to section four.

_____ Yes. Read the introduction to section three and skip to section 3(b).

Section Three (3) Traffic Study Requirements

Introduction: This section outlines requirements for traffic studies for impacts on County roads. If an applicant chooses (or is required) to complete a traffic study, then it should be submitted along with this worksheet and a mitigation offer. (Note on Author's Qualifications: A traffic study under this section must be conducted by an engineer licensed to practice in the state of Washington with special training and experience in traffic engineering and, preferably, membership in the institute of transportation engineers. For individuals/firms not on the City's approved list, the developer will provide, with the traffic study, the credentials of the individual or firm performing the traffic study certifying compliance with these qualifications.)

3(a) Proportionate share impact mitigation based on comprehensive traffic study

1. Development's Trip Generation and Distribution. Determine the PM peak-hour trip generation and distribution for the development consistent with Section 3(b) below.
2. Impacted Improvements. Determine which of the road sections with planned improvements in the county's impact fee cost basis (Transportation Needs Report Appendix D) are impacted by three or more development-generated *directional* PM peak hour trips (PM PHT).
3. Current Counts. For each impacted improvement, provide current traffic counts to determine the PM PHT.
4. Reserve Capacity. Determine "reserve capacity" for each impacted improvement by subtracting the current PM PHT from the maximum service volume (MSV) for the existing facility. Reserve capacity is set to zero if current PM PHT exceeds the MSV. For MSVs see County DPW Rule 4224.
5. New Capacity. New capacity is the incremental increase in PHT that could be accommodated with the planned improvement. Determine the new capacity of each impacted improvement by subtracting the current MSV from the future MSV after the improvement.
6. Chargeable Capacity. For each impacted improvement, add the reserve capacity to the new capacity.
7. Final Adjusted Cost. Find the cost of each impacted improvement and make any adjustments used by the County for tax credits (see Transportation Needs Report Appendix D).
8. Capacity Cost per Peak-Hour Trip. For each impacted improvement, determine the capacity cost per PM PHT by dividing the final adjusted improvement cost by the chargeable capacity.
9. Traffic Impacts. From step one above, take the *total* number of PM PHT (in both directions) impacting each planned improvement.
10. Proportionate Share. For each impacted improvement, determine the proportionate share impact mitigation by multiplying the capacity cost per peak-hour trip by the number of PM PHT impacting the improvement.

3(b) Trip Generation and AM and PM Peak Hour Trip Distribution and Assignment

Calculate AM, PM and Daily trip generation consistent with the ITE Trip Generation Handbook and Snohomish County Public Works Rule 4220. Determine the trip distribution and assignments consistent with the County's document titled "Format for Trip Distributions"(available at County web site, see below).

- Within the developments transportation service area (TSA) the distributions will be carried out to each key intersection at which the approach or departure volumes on any leg have three (3) or more peak hour trips. Get the most current list of key intersections on the web site described below. Trips should be distributed onto the road system as it is expected to be in six years.
- The distribution should be a schematic map showing the broad distributions of trips in terms of percentages on different roads. Show all City boundaries.
- The assignment should be a schematic map with the impacted key intersections identified by ID# and turning movements for each shown in separate diagrams on the same page or on different pages. The assignment should also be presented in tabular form listing each intersection by intersection ID#, and the number of trips at each movement.

3(c) Additional Analysis for Developments Generating More Than Fifty (50) Peak Hour Trips

For large developments (i.e., those generating more than 50 peak-hour trips), the County may request mitigation for impacts on the level of service of County roads, documented safety locations (the County calls such locations "inadequate road conditions" or "IRCs"), and access or circulation. The traffic study requirements below are intended to disclose impacts. Based on this information the County may request through the City that the applicant provide additional information showing possible mitigation measures. If any off-site improvements were needed for mitigation the County would work with the applicant to determine requirements for right-of-way, construction plans, right-of-way use permits, construction/maintenance bonds, and other issues.

Impacts on Level of Service (LOS) of County Arterials

Contact Snohomish County Public Works for the most current list of arterial units in arrears and critical arterial units. Identify any arterial units in arrears or critical arterial units impacted by three or more directional peak-hour trips.

Impacts on Inadequate Road Conditions

Contact Snohomish County Public Works for a list of the current IRCs. Identify any IRCs impacted by three or more peak-hour trips. Note: Unlike LOS impacts in which at least three or more peak hour trips have to be added in one direction to require disclosure (e.g., 3 westbound), for IRCs, any three peak hour trips added to IRC locations are considered an impact for which disclosure is necessary (e.g., 2 westbound plus 1 eastbound).

Impacts on Access or Circulation

The County may request improvements to existing roads to provide safe and efficient access and/or circulation. In some instances, the County may request provisions for future County roads identified in the Comprehensive Plan or in Small Area Transportation Studies. If so, the County will request specific additional information through the City.

Section Four (4) Traffic Mitigation Offer to Snohomish County

The applicant should complete a traffic mitigation offer to Snohomish County that summarizes the mitigation identified in the county traffic worksheet and any additional traffic study. This will facilitate timely review of the development and processing of the application. The form to use for the mitigation offer is titled "Traffic Mitigation Offer to Snohomish County." This form is typically provided to all applicants along with this traffic study checklist. In addition, copies are available from the county contacts or the Snohomish County web site shown below.

Additional Information

County Web Site

Snohomish County Public Works has a web site with many documents related to traffic studies and mitigation requirements for developers. From the Snohomish County Home Page go to:

Departments/Public Works/Divisions/TES/ProgramPlanning/3066B

County Contacts

- Deb Werdal, Snohomish County DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201, (425) 388-3184, debra.werdal@co.snohomish.wa.us
- Maria Schmidt, Snohomish County DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201, (425) 388-3099, maria.schmidt@co.snohomish.wa.us

