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**PROJECT TRAFFIC AND PARKING STUDY**  
*for*

**616 8<sup>th</sup> Ave S**  
**Seattle, WA 98104**

***Project Number 3020991-LU***

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*Prepared for:*

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*c/o:*

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*October 26, 2022*

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October 26, 2022

**To:** John Shaw  
City of Seattle  
SDCI – Transportation

**c/o:** Jeff Walls  
studio19 architects

**From:** William Popp Jr.  
Senior Transportation Engineer  
William Popp Associates

**Subject:** **ID Apartments; Project #3020991-LU  
616 8<sup>th</sup> Ave S, Seattle WA 98104**

**Re:** **Traffic and Parking Analysis (Phase 1 Analysis)**

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A Traffic & Parking Study was previously prepared for this MUP dated February 2, 2018. The project design has recently changed thus a new Traffic & Parking Study was requested.

This report shall serve as a Phase 1 type traffic analysis and parking demand summary for the updated project. Similar to the prior study, this study includes the following:

- A. A traffic study documenting a summary description of the project, a discussion of transit use, trip generation analysis for the existing site and the proposed development, and project vehicle trip assignment for the weekday PM peak hour.  
And,
- B. A parking demand analysis documenting the estimated peak parking demands for the proposed project.

## A. TRAFFIC STUDY

This section provides an estimate of project traffic for average weekday daily and peak hour conditions, as well as identifying net new traffic as a result of existing site use removal, and an estimate of project vehicular origin and destinations (aka trip assignment).

### Proposal

The project site is located in the International District on the east side of 8<sup>th</sup> Ave S north of S Lane St. It also abuts to the west side of I-5. A vicinity map is shown in Figure 1.

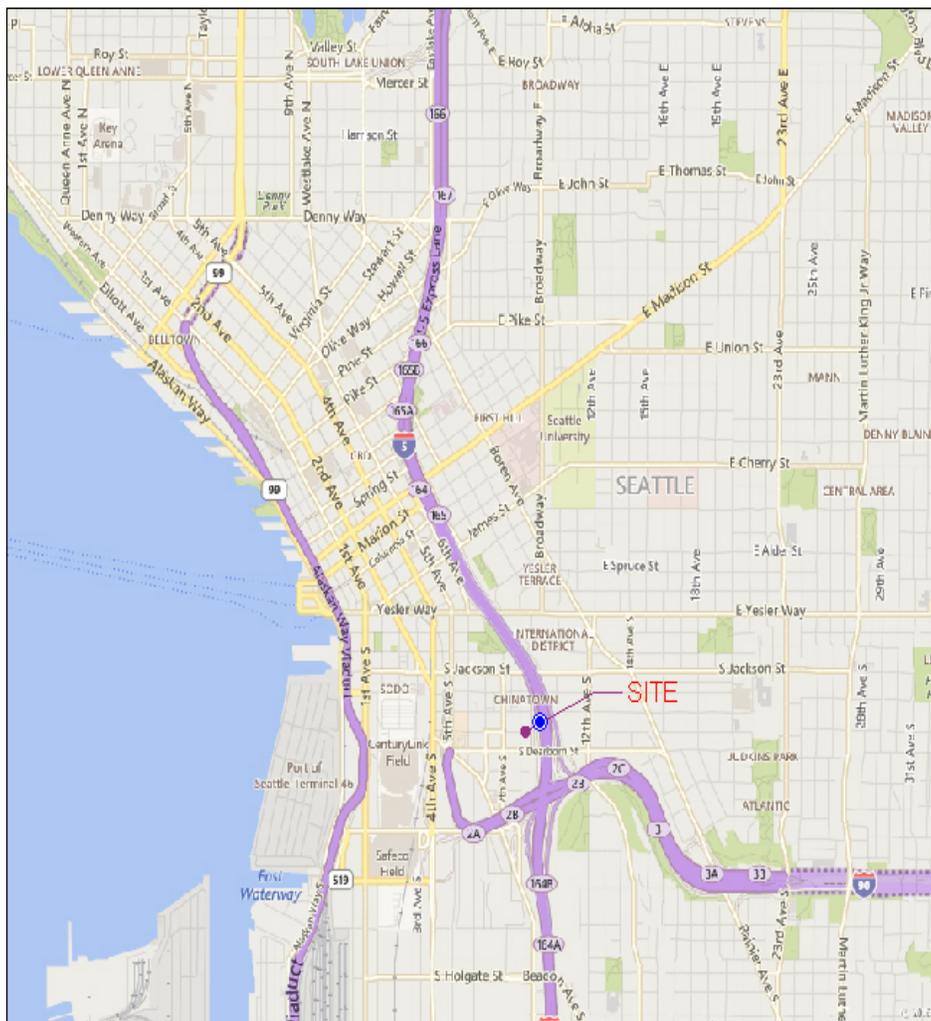


Figure 1: Vicinity Map

The parcel number is 859290-0080 and is zoned IDM 75/85-150. The total land area is 20,160 sf (0.46) ac). A parcel map with site is shown in Figure 2.

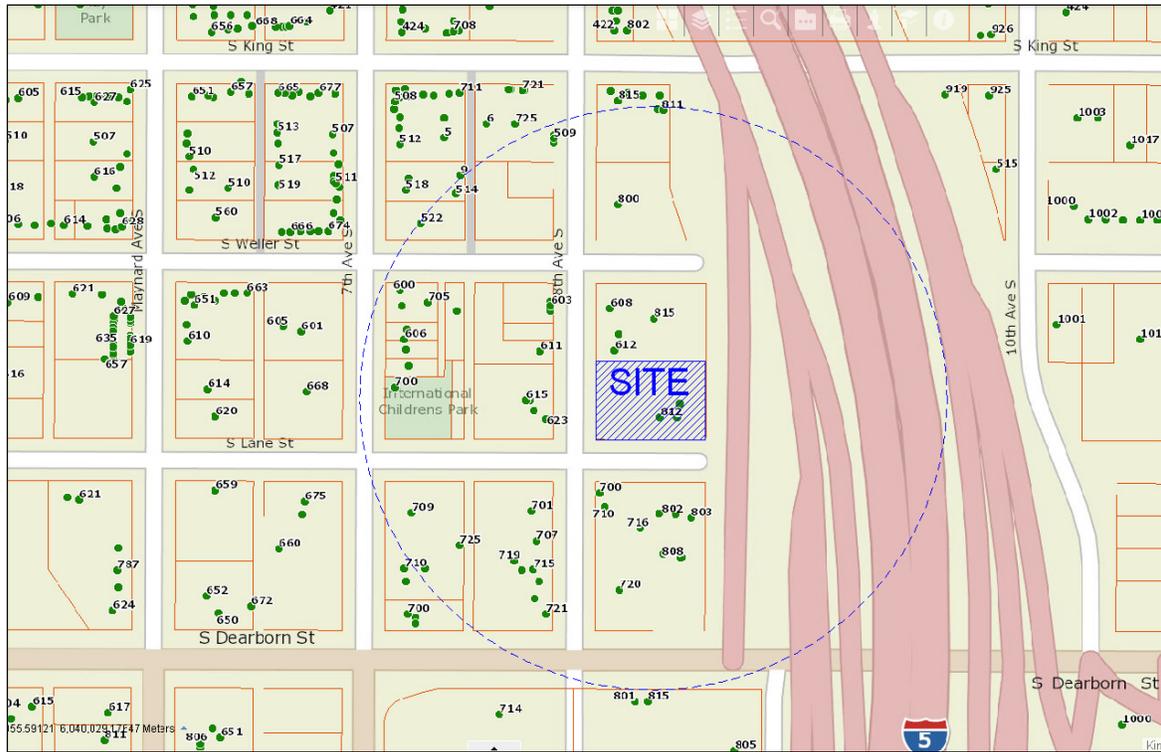


Figure 2: Parcel Map

The proposed development will consist of a 13 story building (above grade) with a mix of apartments and retail. The use descriptions are as follows:

1. 203 apartments (Levels 2 through 13). This would include a mix of 115 studio units, 17 open 1-bedroom units, 62 standard one bedroom units, and 9 two bedroom units.
2. Two Retail Suites (Level 1) that would front 8<sup>th</sup> Ave S. The floor area for the north retail is 2,770 gsf, and the floor area for the south retail is 4,200 gsf.
3. A 74 Parking Stall Garage (below grade, Levels P1-P2). Access would be to S Lane St at the southeast corner of the site.

The garage parking will be intended for use by all tenants. The residential lobby entrance (for persons not using the parking garage) fronts 8<sup>th</sup> Ave S near the northwest end of the site. A basic concept site plan is shown in Figure 3.

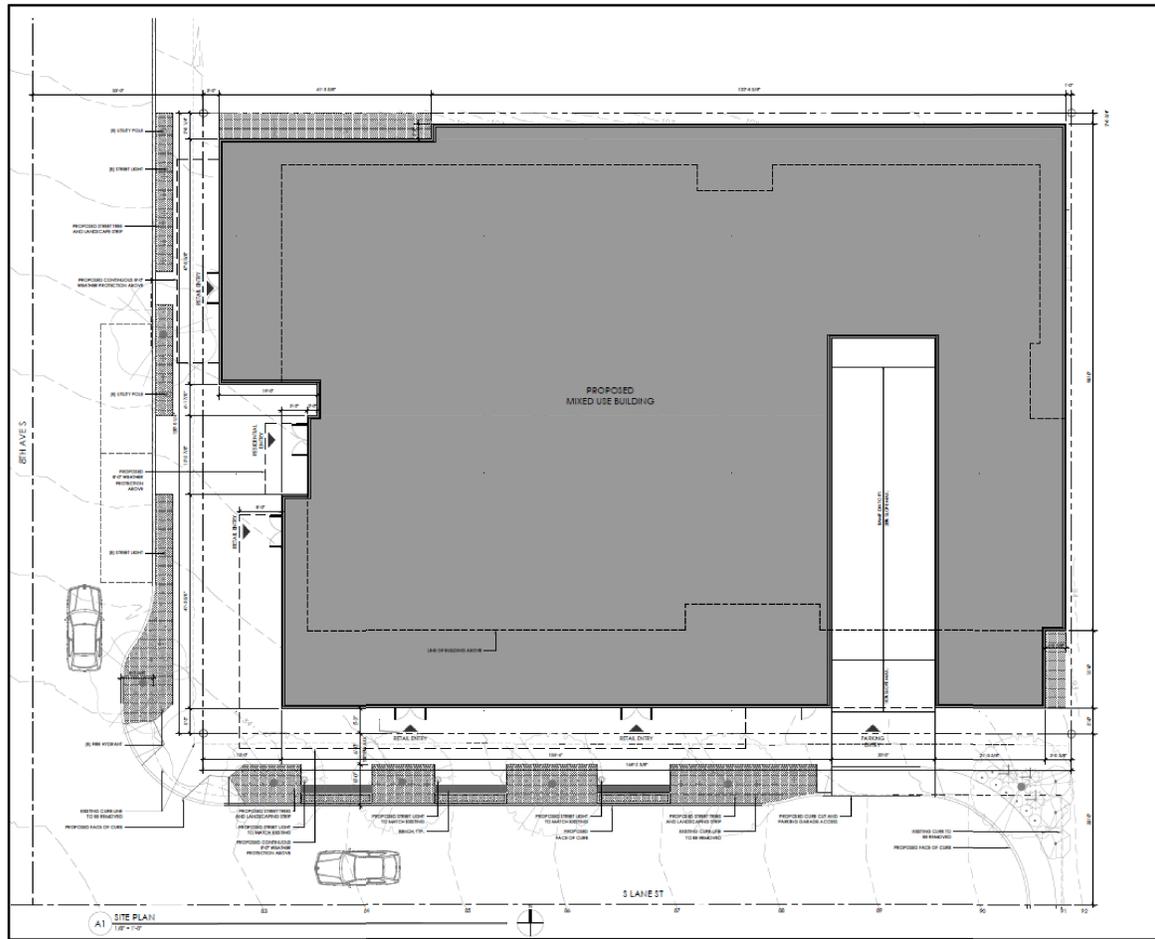


Figure 3: Site Plan

### Existing Use

The site currently is occupied with a 8,103 gsf commercial retail/warehouse use. The current tenant is Reprographics NW. For this analysis, and based on GIS records, it is assumed that 3,900 gsf is designated as office and 4,203 gsf is designated as warehouse.

### Public Transportation Opportunity/Availability

The project is located in the Chinatown-International District Urban Center Village (shown in Figure 4). It is also within a frequent transit corridor according to the City's GIS.

Metro transit routes nearest the site would be on S Jackson St at 8<sup>th</sup> Ave S. Routes would include 1, 7, 14, 36, 49, 70 in the westbound direction, and 7, 14, 36 in the eastbound



## **Trip Generation**

Trip generation for the proposed project was based on rates from the Eleventh Edition of the ITE *Trip Generation Report*. This current edition includes new land use categories for multi-family with ground floor commercial retail use.

The best fit land use category for this project would be Land Use: 232, High-Rise Residential with Ground-Floor Commercial Description. Per the ITE definition, “High-rise residential with ground-floor commercial is a mixed-use multifamily housing building with more than 10 floors of residential living space and commercial space open to the public on the ground level. These facilities are typically found in dense multi-use urban and center city core settings.”

This category also has a subcategory for commercial retail size, stratified into two subcategories: (1) sites with a commercial gross leasable area that ranges between 1,000 and 25,000 square feet, and (2) sites with a commercial gross leasable area that ranges between 25,000 and 65,000 square feet.

Given that the commercial retail area total is approximately 7,000 gsf, the trip rates would be based on subcategory 1.

According to ITE LUC 232, there are no directional distribution percentages provided for each peak hour. Therefore, for this analysis, the directional distribution percentages are based on a weighted average of trips and percentages for LUC 222 (Multi-Family High Rise) and LUC 822 (Strip Retail Plaza <40 kgsf).

For the existing land uses on site to be removed, trip generation rates associated with LUC 150, warehouse, and LUC 710, office, were used. These rates and subsequent trips were not reduced in part due to the relatively small trip generation findings and these are not residential in nature land uses.

The results of the trip generation analysis are presented in Table 1.

**Table 1**  
**Trip Generation (Street Peaks -- AM and PM peak Hours)**

Land Use		AM Peak			PM Peak		
		Total	In	Out	Total	In	Out
<b>Existing Uses <sup>a</sup></b>							
LUC 710; Office	Rate	1.550	0.880	0.120	1.490	0.170	0.830
3,900 gsf	Vol	-6	-5	-1	-6	-1	-5
LUC 150; Warehouse	Rate	0.300	0.790	0.210	0.320	0.250	0.750
-4,203 gsf	Vol	-1	-1	0	-1	0	-1
Existing Subtotal		-7	-6	-1	-7	-1	-6
<b>Project <sup>d</sup></b>							
LUC 232; High-Rise Residential with Ground Floor Commercial (<25 gsf) <sup>b,c</sup>	Rate	0.31	0.21	0.79	0.21	0.61	0.39
203 units/6.95 kgsf Retail	Vol	63	13	50	43	26	17
TOTAL Net New <sup>d</sup>		56	7	49	36	25	11

- a existing uses include a single building with a mix of office and warehouse designated uses.
- b The residential mix consists of 115 studio units, 17 open one-bedroom units, 62 one bedroom type units, and 9 two bedroom units.
- c no directional distribution percentages available. Thus, the percentages used are based on a weighted average of trips from Multi-Family High Rise and Retail Strip Plaza..
- d These totals reflect new project trips less the estimated existing trips.

As shown in Table 1, the project is estimated to generate 63 AM peak hour trips, and 43 PM peak hour trips to the surrounding street system utilizing the rates presented in ITE.

The existing site is estimated to generate 7 AM, and 7 PM peak hour trips to the surrounding street system. Thus, as a result of removal of the existing site use, the net new trips to/from the site is estimated at 56 AM and 36 PM peak hour trips. These trips are vehicle trips. Walk trips, bike trips, and transit trips are not included in this analysis.

### Trip Distribution and Traffic Assignment

An estimate of new project PM peak hour trip assigned to the surrounding street system were based on trip distribution percentages identified in Director’s Rule 5-2009. The distribution percentages used for this analysis are based on selected inbound & outbound distribution tables (origin-destination tables for residential, office, retail, and manufacturing) for both Zone 9 and Zone 11, which generally represent the CBD and SODO areas.

The apartment and condominium uses were based on the residential origin-destinations tables. The retail was based of course on the retail origin-destinations tables.

The following is a summary of the distribution percentages for the proposed project:

- It is estimated that approximately 18% will be to/from the north on I-5.
- 11% of the trips will be south via I-5.
- 9% of the trips will be to and from the east via E Madison St.
- 13% of the trips will be to and from the east via Rainier Ave (to/from I-90 and Rainier Ave south of I-90).
- 4% of the trips will be southwest via the West Seattle Freeway (I-5 in, 4<sup>th</sup> Ave out).
- 8% of the trips will be south via Rainer Ave
- 18% is estimated to stay in the local area of downtown to the north
- 19% of the trips are estimated to be in the local SODO area south of the site.

From the distribution percentages, the proposed project uses were assigned to the surrounding street system for the PM peak hour scenario, shown in Figure 5

According to the distribution percentages for the PM commute peak hour, the assignment of PM peak hour project trips suggests that the majority of the trips will be to and from S Dearborn St. 8<sup>th</sup> Ave S is a one-way only southbound link between S Lane St and S Dearborn St. Therefore, for those vehicles entering the site from S Dearborn St, they must use 7<sup>th</sup> Ave S north then S Lane St east to get to the site.

## **B. PARKING STUDY**

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The required parking for residential uses depends on the location of the project and the zoning code stipulations for that area. In general for multi-family residential the parking requirement is 1 space per unit. For any residential uses within urban centers or within the Station Area Overlay District there is no minimum parking requirement. For any residential use in commercial and multifamily zones within urban villages that are not within urban center or the Station Area Overlay District, if the residential use is located within 1,320 feet of a street with frequent transit service transit stop (walking distance) then there is no minimum parking requirement. These are general parking rates per code.

The estimated parking demand was calculated separately for the two different uses. They are each discussed below:

1. Residential Apartments – The King County, KC Multi-Family Residential Parking Calculator model indicates that for the project parcel, the model yields a parking demand rate of 0.28 vehicles per unit. This is based on the unit mix noted along with average rent and unit size by unit type, the proposed parking supply,



and the default price per parking stall (\$344/mo) noted in the program. The total estimated demand based on 203 apartment units would equate to 57 vehicles.

2. Retail – The ITE Parking Generation manual does not provide information for a general retail type use. However, the City of Seattle Strategic Planning Office conducted a Comprehensive Neighborhood Parking Study<sup>1</sup>, August 2000 that identified parking requirements and demand for several land use categories including: Fast food, Retail, Restaurant, Warehouse/wholesale, and Multi-family. For the retail group, 163 parcels were studied and the demand was found to be 1.7 vehicles per 1,000 gsf. The retail area assumed in this traffic study is 6,970 gsf. Thus, the peak parking demand is estimated to be 12 vehicles based on the SPO reported rate. It is assumed the peak period would occur during the weekday afternoon time.

The parking garage supply is 74 stalls and is assumed to be shared parking. The peak parking demand for the residential is estimated at 57 vehicles, and 12 vehicles for the commercial/retail. It should be noted that the peak parking demand for each of these uses will be at different times of the day.

In order to estimate parking activity throughout the day and identify the peak hour given both the residential uses and the retail use, it was necessary to utilize parking accumulation percentage estimates by hour of day (average weekday) for each use.

The ITE Trip Generation, 4<sup>th</sup> Edition identifies hourly accumulation of parking by percentage for each hour of a given weekday for residential and lodging for urban settings, as well as for other uses. The residential fluctuation was based on apartments and some interpolation was made for mid-day periods. The retail hourly demand was based on ITE and ULI (Urban Land Institute, Shared Parking) information.

Table 3 below identifies the combined site use parking accumulation for each hour of the day for the proposed two uses.

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<sup>1</sup>Comprehensive Neighborhood Parking Study Final Report, City of Seattle, Strategic Planning Office, August 2000, Table 4, page 12.

**Table 3**  
**Proposed Use Parking Accumulation <sup>a</sup>**

Time of Day	APARTMENT <sup>b</sup>		RETAIL <sup>c</sup>		TOTAL <sup>d</sup>		Shortage/ Surplus
	Parking Demand %	Veh	Parking Demand %	Veh	Demand	Supply	
1:00 AM	100%	57	0%	0	57	74	17
2:00 AM	95%	54	0%	0	54	74	20
3:00 AM	90%	51	0%	0	51	74	23
4:00 AM	87%	50	0%	0	50	74	24
5:00 AM	85%	48	0%	0	48	74	26
6:00 AM	85%	48	1%	0	48	74	26
7:00 AM	85%	48	7%	1	49	74	25
8:00 AM	85%	48	18%	2	50	74	24
9:00 AM	85%	48	40%	5	53	74	21
10:00 AM	85%	48	61%	7	55	74	19
11:00 AM	87%	50	87%	10	60	74	14
12:00 PM	90%	51	99%	12	63	74	11
1:00 PM	92%	52	100%	12	64	74	10
2:00 PM	94%	54	95%	11	65	74	9
3:00 PM	96%	55	91%	11	66	74	8
4:00 PM	98%	56	85%	10	66	74	8
5:00 PM	99%	56	69%	8	64	74	10
6:00 PM	100%	57	76%	9	66	74	8
7:00 PM	100%	57	86%	10	67	74	7
8:00 PM	100%	57	79%	10	67	74	7
9:00 PM	100%	57	52%	6	63	74	11
10:00 PM	100%	57	21%	3	60	74	14
11:00 PM	100%	57	10%	1	58	74	16
12:00 AM	100%	57	0%	0	57	74	17

- a Parking demand by hour of day for each of the site uses. The distribution of parking demand by hour of weekday is based information from ITE Parking Generation, 4<sup>th</sup> Edition as well as Urban Land Institute (ULI) Shared Parking.
- b Apartment rate estimated at 0.28 veh/unit.
- c Retail demand estimated at 1.7 veh per 1,000 gsf.
- c Total parking demand by hour of weekday for all three uses; reflects weekday hourly accumulation.

As shown in Table 3, the peak parking demand for the typical weekday is estimated to be 67 vehicles, which occurs between 7pm and 9pm. The parking supply is 74 stalls thus it is estimated that on average there will not be any parking spillover to on-street locations. The peak parking utilization in the garage is estimated to have a surplus of 7 stalls, assuming that the retail is allowed to park in the garage.

## SUMMARY

The proposed project consists of a 13-story building with apartments and ground floor retail. It is located at 616 8<sup>th</sup> Ave S in the International District of Seattle. The current use on the site is an 8,100 gsf office/warehouse building.

For the project, of the 13 above ground floors, Level 1 will be for two retail store fronts. Levels 2 through 13 will be for apartments. There are 203 apartments proposed, with 115 studio, 17 open one-bedroom, 62 standard one-bedroom, and 9 two-bedroom units. In

addition, below grade there will be a two level parking garage with a proposed capacity of 74 stalls. Access to the garage will be from the southeast part of the site to S Lane St.

The project is estimated to generate 63 AM peak hour trips, and 43 PM peak hour trips to the surrounding street system based on ITE rates for the proposed use. The net new trips as a result of the removal of the existing site use results in 56 AM and 36 PM peak hour trips on the surrounding street system.

The peak parking demand for the project is estimated to be 67 vehicles and predicted to occur around 8 pm. The demand declines slightly for overnight conditions which is likely due to assumed retail uses being closed. The parking supply is proposed at 74 stalls, thus it is estimated that peak parking demand will be contained on site.

I trust that the information presented in this Phase 1 report meets your initial questions pertaining to this project and assists in your determination if additional information may be necessary.

Please call me at (425) 401-2124 or email at [bpopplr@wmpoppassoc.com](mailto:bpopplr@wmpoppassoc.com) with your response and/or any questions. Thank you for your time reviewing this project.

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January 24, 2023

**To:** John Shaw  
City of Seattle DCI

**C/o:** Jeff Walls  
Studio19 Architects

**From:** William Popp Jr.  
Senior Transportation Engineer  
William Popp Associates

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**Subject: 616 8<sup>th</sup> Ave S ID Apartments (SDCI #3020991-LU)  
Mixed-Use Multi-Family Residential plus Commercial/Retail**

**Re: Traffic and Parking Study -- SUPPLEMENTAL  
CORRECTION NOTICE – TRANSPORT (August 10, 2022)**

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As you may recall, a Phase 1 Traffic and Parking Study was recently prepared for the latest site plan proposal for the subject project and submitted to SDCI, with a report date of October 26, 2022. The report addressed Items 1 and 5 of the City's Correction Notice (TRANSPORT) dated August 10, 2022. The Correction Notice is attached as Attachment 1. The remaining items are addressed in this study.

The complete Correction Notice requested the following:

1. an estimate of daily and AM and PM peak hour trip generation and a distribution of peak hour trips,
2. an AM and PM peak hour operational analysis at the 8th Ave S/S Lane St intersection;
3. a collision history for the 8th/Lane intersection;
4. an identification of non-motorized transportation impacts;
5. an estimate of peak parking demand and a comparison to the proposed parking supply;
6. an estimate of loading demand (including move-ins/move-outs, freight and package delivery, and passenger ride hailing), and an indication of where these activities would occur.

As noted, Items 1 and 5 were addressed in a new Phase 1 traffic and parking study submitted to the City dated 10/26/22. In the following analysis below, an evaluation and response to the remaining Correction Notice items (Items 2, 3, 4 and 6) are presented below in the following sections.

**2. Conduct an AM and PM peak hour operational analysis at the 8th Ave S/S Lane St intersection.**

In order to calculate the level of service (LOS) analysis at the subject intersection, intersection turning movement traffic counts were conducted for the AM and PM peak hour periods, a forecast of the existing counts were required to estimate future volumes with an assumed 2-year horizon for future project conditions, the project trip assignment from the most recent Phase 1 analysis (plus a reverse trip assignment of the PM for the AM period) were used, and ultimately a LOS analysis was conducted for existing, future background, and future with project conditions.

Traffic Volumes (Counts and Forecasts)

AM and PM peak period traffic counts were conducted at the subject intersection identified above in October of 2022. The counts were conducted Wednesday October 26 between 7am and 9am, and Tuesday October 25 between 4pm and 6pm, without any stadium activity in an effort to count average weekday conditions. The counts also included truck, pedestrian, and bike activity. The counts are included as Attachment 2 and 3.

The project completion year and full occupancy (aka horizon year) was assumed to be two years from existing counts, thus year 2024. The traffic forecasts for this analysis assumed an average annual growth rate of 2%.

Table 1 below identifies the peak hour total entering traffic for each of the five intersections as well as the growth and project traffic as well.

**Table 1  
 Intersection Volumes (Total Entering, AM & PM Peak Hours)**

Intersection	2022 Existing	Est. Growth	2024 Background	Project Traffic	2024 with Project	Project Impact
AM PK: 8th Ave S/S Lane St	179	7	186	63	250	25.4%
PM PK: 8th Ave S/S Lane St	194	8	202	43	245	17.6%

a Existing AM and PM peak hour volumes, counts conducted October 26, 2022 and October 25, 2022 respectively.  
 b Background growth rate assumed at 2% per year

The turn movements for all years and conditions are included in the appendix as Attachment 4. Truck activity, pedestrian and bicycle movements were also recorded however they are not shown in Table 1 but are included in the LOS analyses, and can be found in the Attachment 5 worksheets.

The AM and PM peak hour volumes for existing conditions, project volumes only, and future conditions with project are shown in Figure 1 below.

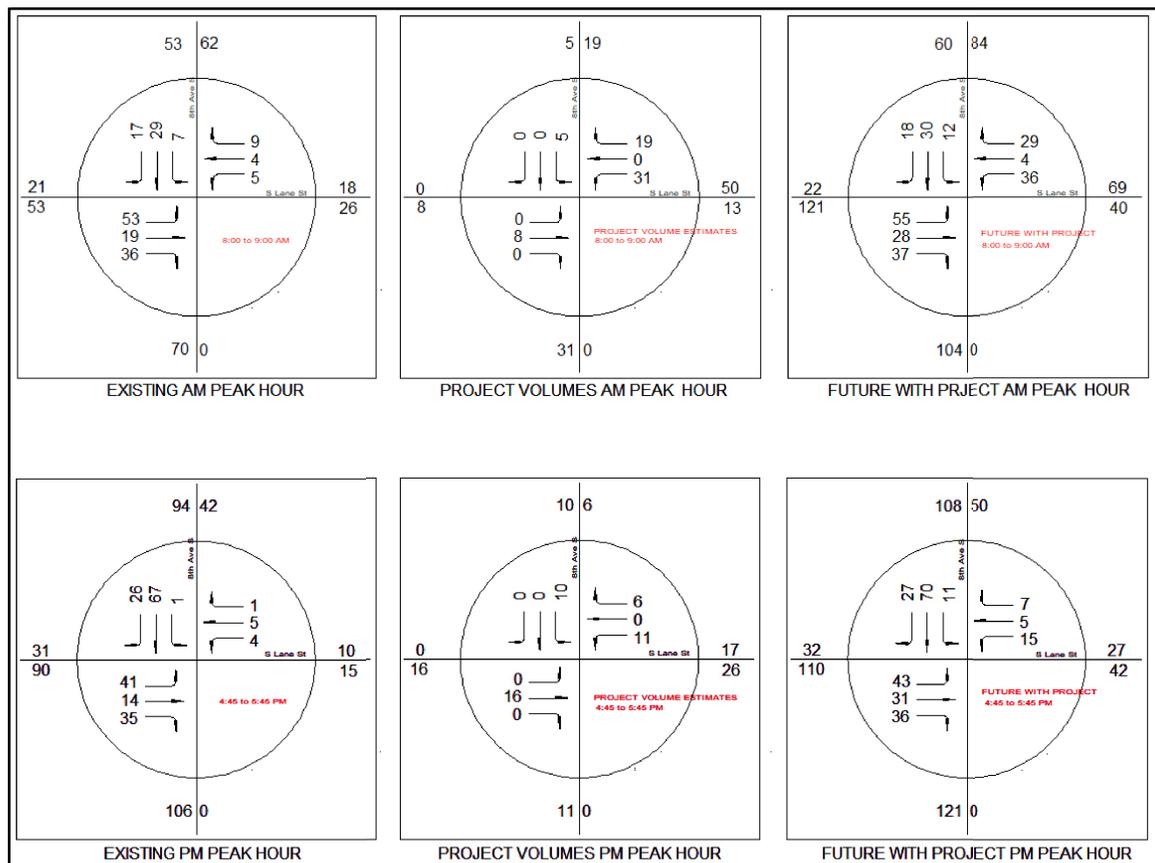


Figure 1 – AM and PM Peak Hour Volumes (north is up)

### AM & PM Peak Hour LOS

Level-of-service (LOS) is a term defined by transportation and traffic engineers as a qualitative and quantitative measure of operational conditions within a traffic stream and the perception of these conditions by motorists and/or passengers. There are several quantitative indices utilized depending on the type of intersection control present. There

are six levels-of-service that are given letter designations from "A" to "F", with "A" being the best, or minimum delay conditions, and "F" being the worst, with maximum delay or jammed conditions. LOS "C" or "D" is generally considered acceptable for planning and design purposes, while LOS "E" represents operating conditions at or near capacity with freedom to maneuver being extremely difficult.

Level-of-service for the existing condition was calculated using Trafficware's Synchro software. This software replicates the analytical procedures specified in the Highway Capacity Manual. The level of service criteria is shown in Table 2. Level-of-service for signalized and non-signalized intersections is quantified in terms of vehicular delay. Delay, measured in terms of time (seconds), also represents driver discomfort, frustration, excess fuel consumption and lost travel time.

**Table 2**  
**Intersection Level-of-Service Criteria**

Level of Service	Definition	Stopped Delay Per Vehicle <sup>1</sup>	
		signalized	non-signalized
A	Little or no delay	Less than 10.0 sec	Less than 10.0 sec
B	Short traffic delays	10.1 to 20 sec	10.1 to 15 sec
C	Average traffic delays	20.1 to 35 sec	15.1 to 25 sec
D	Long traffic delays	35.1 to 55 sec	25.1 to 35 sec
E	Very long traffic delays	55.1 to 80 sec	35.1 to 50 sec
F	Extreme delay	Greater than 80 sec	Greater than 50 sec

<sup>1</sup> Delay; seconds per vehicle

Note that for signalized intersections, the delay presented represents the overall operation of the intersection, whereas the delay presented for unsignalized intersections represents the delay for the critical approach or movement. The results are presented in this manner since the overall intersection delay at a non-signalized intersection is generally quite good because the major through street maneuvers are not impeded and for the most part carry the majority of the traffic.

The level of service results at the subject intersection are presented in Table 3 below.

**Table 3**  
**Intersection Level of Service (Total Entering, AM & PM Peak Hours)**

Intersection	2022 Existing		2024 Background		2024 with Project	
	LOS	Delay	LOS	Delay	LOS	Delay
<b>AM PEAK HOUR</b>						
8th Ave S/S Lane St (all-way stop)						
Overall	A	7.7	A	7.8	A	8.1
EB approach	A	7.9	A	8.0	A	8.3
WB approach	A	7.2	A	7.3	A	8.1
SB approach	A	7.6	A	7.6	A	8.0
<b>PM PEAK HOUR</b>						
8th Ave S/S Lane St (all-way stop)						
Overall	A	7.7	A	7.7	A	8.1
EB approach	A	7.6	A	7.7	A	8.0
WB approach	A	7.8	A	7.8	A	8.1
SB approach	A	7.7	A	7.7	A	8.1

- a Existing AM and PM peak hour volumes, counts conducted October 26, 2022 and October 25, 2022 respectively.
- b Background growth rate assumed at 2% per year
- c overall delay decreased slightly due to more traffic added to non-critical movements

The analysis intersection is estimated to operate at LOS A for all conditions; existing and future with or without the project. All of the LOS calculations are shown in the Attachment 5 worksheets.

**3. Provide a collision history for the 8<sup>th</sup> Ave S/S Lane St intersection.**

An accident report was obtained from WSDOT for all accident data at the subject intersection from January 1, 2018 to current available records September 30, 2022 (report date 10/25/22). The accident data is shown in Attachment 6.

Table 4 below summarizes the collision history for the subject intersection.

**Table 4  
 Collision History**

Intersection	Daily <sup>a</sup> Volume	Days in Period	Acc's <sup>b</sup> per period	Accident Rate
8th Ave S/S Lane St	2,000	1,733	1	0.29

a Estimated total daily volume entering the intersection (estimated from PM peak hour volume)

b Period is January 1, 2018 through September 30, 2022 (1,733 days)

The WSDOT accident data indicated there were 2 accidents reported during the given period at or near the subject intersection. However, one of the accidents was identified as “Not Intersection Related”, thus not included in Table 4. This accident, based on the description, appears to be a vehicle with “defective equipment” backing up, presumably into a parallel parking stall. The one accident identified as “Intersection Related” was a vehicle heading from the west to the east through the intersection and hitting a pedestrian. It is presumed the pedestrian was in either the west leg or east leg crosswalk. The accident occurred at 6:00 PM on January 16, 2019.

#### **4. An identification of non-motorized transportation impacts**

As noted in the October 26, 2022 Phase 1 Traffic and Parking Study, the trip generation for the proposed project was calculated based on rates from the Eleventh Edition of the *ITE Trip Generation Report*. This current edition includes new land use categories for multi-family with ground floor commercial retail use.

The best fit land use category for this project would be Land Use: 232, High-Rise Residential with Ground-Floor Commercial Description. Per the ITE definition, “High-rise residential with ground-floor commercial is a mixed-use multifamily housing building with more than 10 floors of residential living space and commercial space open to the public on the ground level. These facilities are typically found in dense multi-use urban and center city core settings.”

This category also has a subcategory for commercial retail size, stratified into two subcategories: (1) sites with a commercial gross leasable area that ranges between 1,000 and 25,000 square feet, and (2) sites with a commercial gross leasable area that ranges between 25,000 and 65,000 square feet.

Given that the commercial retail area total is approximately 7,000 gsf, the trip rates would be based on subcategory 1.

Within the ITE LUC 232 data set, there are no directional distribution percentages provided for each peak hour. Therefore, the directional distribution percentages are based on a weighted average of trips and percentages for LUC 222 (Multi-Family High Rise) and LUC 822 (Strip Retail Plaza <40 kgsf).

The vehicular trip generation was identified in the 10/26/22 report. This study includes that estimate plus other modes of travel. Table 5 below shows trips by various modes of travel starting with person trips. It should be noted that each of the modes are subset estimates and may not sum to the grand total, however they should be close approximations. The vehicle trips would likely include some element of carpool, thus 1 vehicle trip would not equal 1 person trip.

**Table 5**  
**Trip Generation by Mode (Street Peaks -- AM and PM peak Hours) <sup>a,b</sup>**

Mode of Travel		AM Peak			PM Peak		
		Total	In	Out	Total	In	Out
PERSON TRIPS	Rate	1.03	24%	76%	0.68	59%	41%
	Vol	209	50	159	138	81	57
VEHICLE	Rate	0.31	21%	79%	0.21	61%	39%
	Vol	63	13	50	43	26	17
WALK/BIKE/TRANSIT	Rate	0.67	45%	55%	0.43	45%	55%
	Vol	136	61	75	87	39	48
WALK	Rate	0.31	43%	57%	0.3	45%	55%
	Vol	63	27	36	61	27	33
BIKE	Rate	0.02	75%	25%	0.02	50%	50%
	Vol	4	3	1	4	2	2
TRANSIT	Rate	0.2	24%	76%	0.11	59%	41%
	Vol	41	10	31	22	13	9

a based on 203 apartment units and 6,950 gsf of commercial retail ground floor space.

b no directional distribution percentages available from LUC 232. Thus, the percentages used are based on the percentages from Multi-Family High Rise and Retail Strip Plaza.

As shown in Table 5, the number of walk trips to and from the site is estimated at approximately 60 trips for the AM and PM peak hours. That would equate to about 30 persons to the site and 30 persons leaving the site during those peak hour periods, with slightly more leaving the site in the morning than entering, and slightly more entering the site than leaving in the evening.

The number of bike trips is estimated to be approximately 4 per hour during the peak hour.

The estimated number of persons using transit during the peak hour is about 40 in the morning peak, and 20 in the evening peak. The transit usage would be a mix of bus, trolley, and light rail. This transit usage is estimated not to have a significant impact on any transit use including bus, trolley, or train.

**5. An estimate of loading demand (including move-ins/move-outs, freight and package delivery, and passenger ride hailing), and an indication of where these activities would occur.**

It is estimated that there will be approximately 4 trucks per typical day, and approximately 20 trucks per week (M-F). This estimate is based on parcel delivery from three different services (UPS, FedEx, Amazon/USPS), plus one truck per day for service. Service vans are estimated to use the garage if clearance works. Trucks used for moving are estimated at 10 per month, with most likely to occur on weekends.

Truck load and unload activity likely to vary throughout the day, however the predominant delivery time would be late weekday morning and early weekday afternoon. The estimated duration of stay for typical unloading activity is 5 to 20 minutes.

The current site plan as of this writing does not have a loading berth. However, there will be two 8' x 25' loading zones on 8<sup>th</sup> Ave S at the south end of the project's street frontage, hence all truck deliveries would use those two on-street designated spaces.

The project's frontage improvement on the southwest corner of the site at 8<sup>th</sup> Ave S/S Lane St will include a large bulb-out curb that in theory would serve as a traffic calming feature to enhance the intersection area, provide shorter pedestrian crossing distances across the north leg, and provide a slight buffer for on-street parking on the project frontage.

The loading zone, the site's building footprint, garage entry, walk up residential entry, and walk up retail entry are all shown in Figure 2.

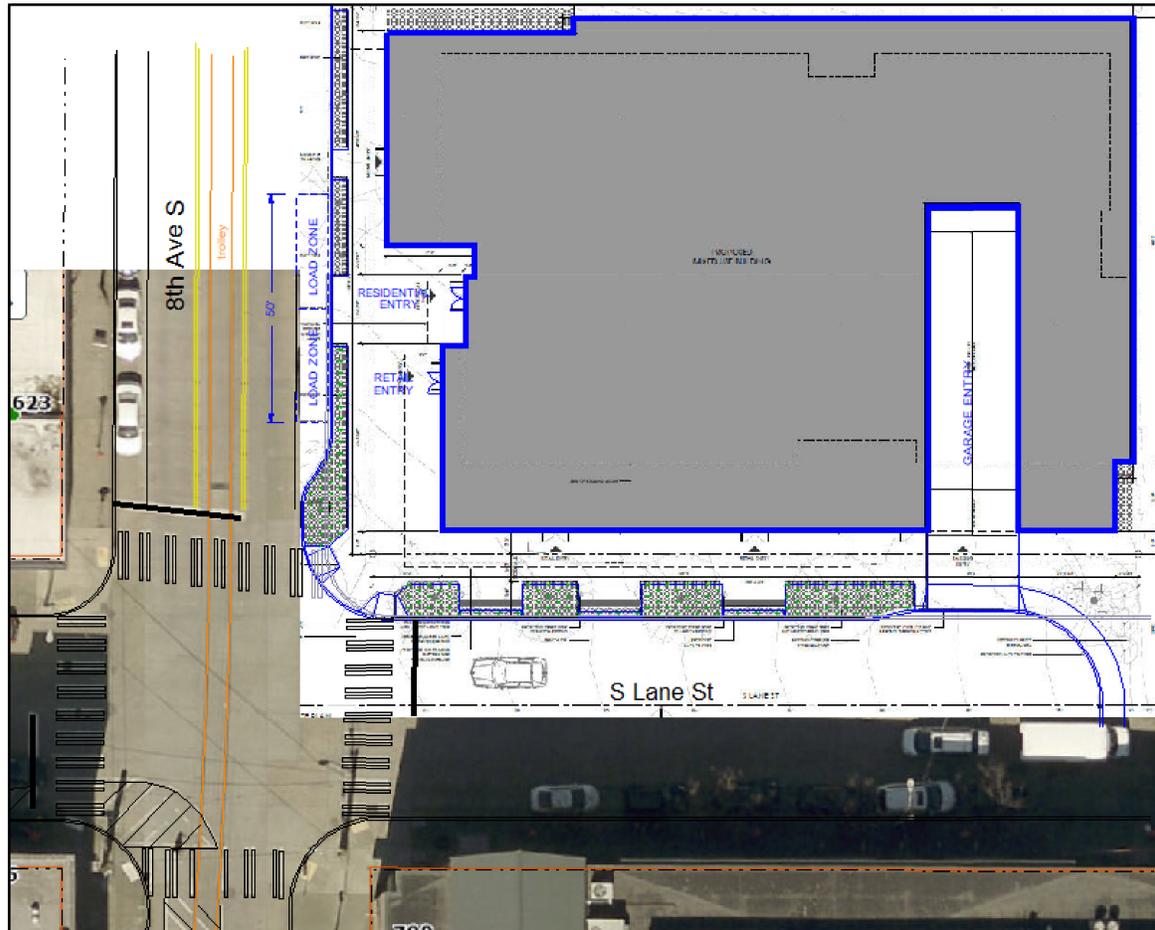


Figure 2 – Load/Unload Zone on 8<sup>th</sup> Ave S (north is up)

Ride hailing is a relatively new mode of travel in so far as there is not a lot of trip generation data to estimate this trip type. As shown in the response to Item 4 above, in the latest ITE Trip Generation manual, there is source data for mixed use projects with vehicle, walk, bike, and transit related person trips. The person trips using motorized vehicles are presumed to include SOV, HOV, taxi, and ride hailing services. The number of AM vehicle trips and the number of PM vehicle trips are estimated to be 63 and 43 respectively.

A research study conducted by zippia.com (<https://www.zippia.com/advice/ridesharing-industry-statistics/>) concluded that the percent of ride hailing services has been significantly increasing, and notes that the estimated number of ride hailing users increased from 15% in 2015 to 36% in 2021. There are many factors to consider in ride hailing users such as age, income, education level, and urban/rural proximity, which has

not been stratified. Thus this information is difficult to stratify and ascertain for a high rise apartment building such as this.

Nevertheless, for this analysis, it was assumed that 35% of the vehicle trips are via ride hailing services. Knowing the total AM and PM peak hour trips (63 and 43 respectively), the estimated number of ride hailing trips would be 22 trips (35%) in the AM peak hour (11 enter and 11 exit), and 15 trips (35%) in the PM peak hour (8 enter and 7 exit). Of course, for ride hailing it was assumed that one vehicle entering is the same vehicle exiting, which is 2 trips. Based on this, it is estimated that most of these vehicles would use the load/unload zone in front of the site on 8<sup>th</sup> Ave S, in front of the residential entrance. If the zone is occupied, it is estimated that the ride hailing vehicle would use the dead-end portion of S Lane St with drop off or pickup on the north side in front of the site. The duration of stay is estimated to be short.

I trust that this summary analysis helps answer the questions raised in the Correction Notice. Thank you for your time reviewing this response.

Attachments:

- 1 8/10/22 Correction Notice (1 page)
- 2 AM Turning Movement Count (1 page)
- 3 PM Turning Movement Count (1 page)
- 4 AM and PM Peak Hour Volume Forecasts (1 page)
- 5 LOS analyses (6 pages)
- 6 Accident History (1 page)



Transportation DPD (1)



**Subject:** General Transportation DPD Review Comment  
**Page Index:** 42  
**Author:** John Shaw  
**X:** 0.6198 in  
**Y:** 1.9819 in  
**Layer:** Review Comment  
**Review Type:** Transportation DPD

Please include the following items in the updated traffic study:

- an estimate of daily and AM and PM peak hour trip generation and a distribution of peak hour trips;
- an AM and PM peak hour operational analysis at the 8th Ave S/S Lane St intersection;
- a collision history for the 8th/Lane intersection;
- an identification of non-motorized transportation impacts;
- an estimate of peak parking demand and a comparison to the proposed parking supply;
- an estimate of loading demand (including move-ins/move-outs, freight and package delivery, and passenger ridehailing), and an indication of where these activities would occur.

\* Click on these icons to jump directly to the review comments right where they were placed in the plan set.

Helpful info on the permitting process, navigating inspections and city codes:



[Permits](#)



[Inspections](#)

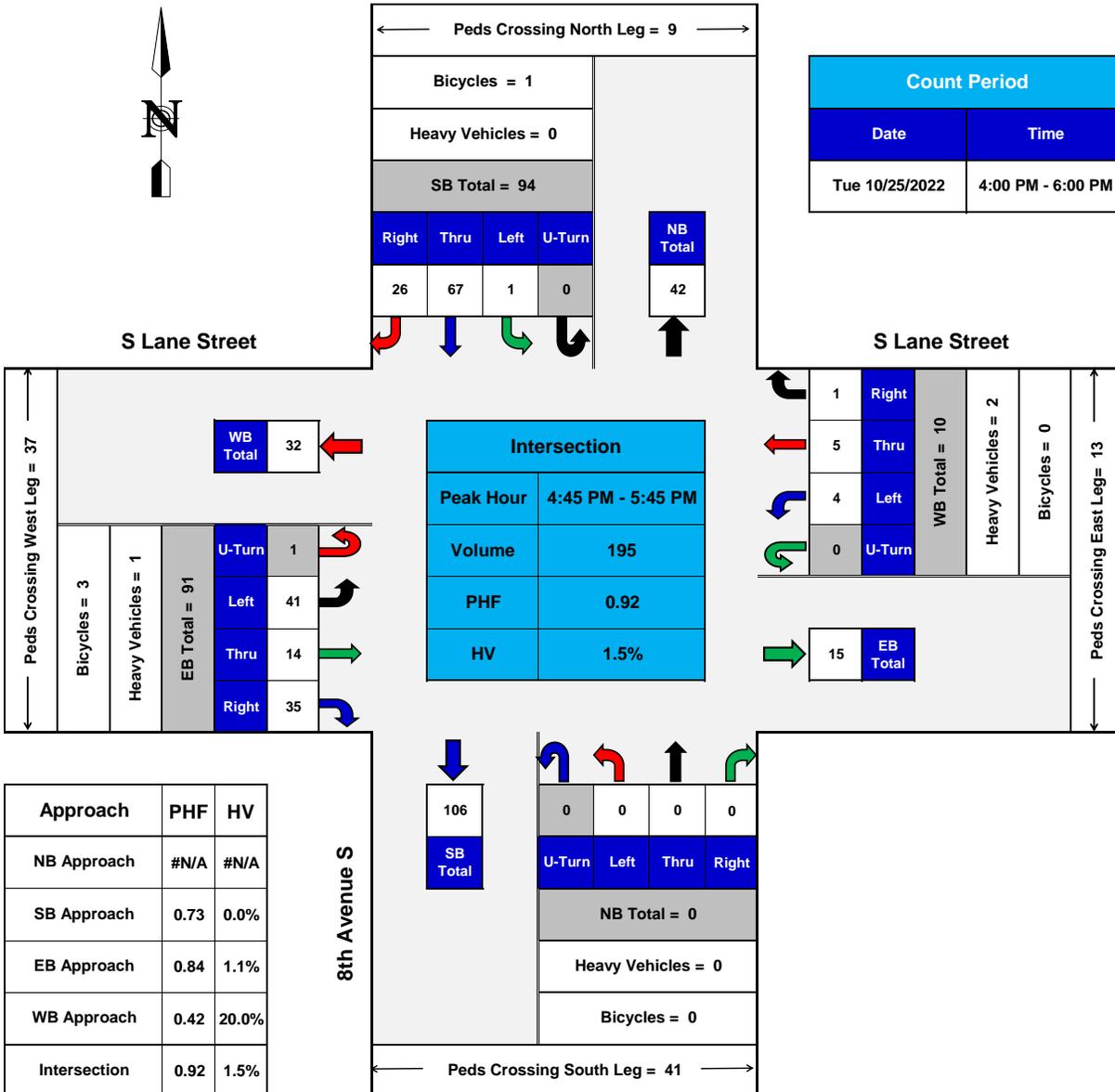


[Codes](#)





**8th Avenue S @ S Lane Street**  
Seattle, WA



PHF = Peak Hour Factor  
HV = Heavy Vehicles

**TURNING MOVEMENTS DIAGRAM**  
**PEAK HOUR SUMMARY**



**ID Apartments**  
PM Peak Hour Turn Movements and Forecasts

**1a 8th Ave S/S Lane St**

Wed 10/26/22; 8:00 - 9:00 AM

no counts for AM in 2017

	Existing 2022 AM PK <sup>a</sup>	Traffic Count Details				2024 Background Growth <sup>b</sup>	2024 Background AM PK	ID Apts	2024 with Project AM PK
		PHF	Heavy Vehicles # of %	Bikes	Peds by Leg				
EBLT	53	0.87	13 12.0%	0	W Leg	2	55	8	55
EBT	19				32	1	20		28
EBRT	36					1	37		37
WBLT	5	0.45	1 5.6%	0	E Leg	0	5	31	36
WBT	4				36	0	4		4
WBRT	9					0	9		29
NBLT	0				S Leg	0	0		0
NBT	0				52	0	0		0
NBRT	0					0	0		0
SBLT	7	0.66	2 3.8%	3	N Leg	0	7	5	12
SBT	29				7	1	30		30
SBRT	17					1	18		18
	<b>179</b>		<b>16</b>	<b>3</b>		<b>7</b>	<b>186</b>	<b>63</b>	<b>250</b> 25.4%

2022 AM PK a

53	62
21	18
108	26
70	0

2024 Background AM PK

55	65
22	19
112	27
73	0

2024 with Project AM PK

60	84
22	69
121	40
104	0

a Count conducted Oct 2022

b GF=2%/yr, a typical conservative estimate for the area

**1p 8th Ave S/S Lane St**

Tue 10/25/22; 4:45 - 5:45 PM

2017  
PM PK

76
9
42
1
5
5
0
0
0
3
95
48

-32%

	Existing 2022 PM PK <sup>a</sup>	Traffic Count Details				2024 Background Growth <sup>b</sup>	2024 Background PM PK	ID Apts	2024 with Project PM PK
		PHF	Heavy Vehicles # of %	Bikes	Peds by Leg				
EBLT	41	0.84	1 1.1%	3	W Leg	2	43	16	43
EBT	14				37	1	15		31
EBRT	35					1	36		36
WBLT	4	0.42	2 20.0%	0	E Leg	0	4	11	15
WBT	5				13	0	5		5
WBRT	1					0	1		7
NBLT	0				S Leg	0	0		0
NBT	0				41	0	0		0
NBRT	0					0	0		0
SBLT	1	0.73	0 0.0%	1	N Leg	0	1	10	11
SBT	67				9	3	70		70
SBRT	26					1	27		27
	<b>194</b>		<b>3</b>	<b>4</b>		<b>8</b>	<b>202</b>	<b>43</b>	<b>245</b> 17.6%

2022 PM PK a

94	42
31	10
90	15
106	0

2024 Background PM PK

98	44
32	10
94	16
110	0

2024 with Project PM PK

108	50
32	27
110	42
121	0

a Count conducted Oct 2022

b GF=2%/yr, a typical conservative estimate for the area

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	53	19	36	5	4	9	0	0	0	7	29	17
Future Vol, veh/h	53	19	36	5	4	9	0	0	0	7	29	17
Peak Hour Factor	0.87	0.87	0.87	0.45	0.45	0.45	0.92	0.92	0.92	0.66	0.66	0.66
Heavy Vehicles, %	12	12	12	6	6	6	0	0	0	4	4	4
Mvmt Flow	61	22	41	11	9	20	0	0	0	11	44	26
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.9	7.2	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	28%	13%
Vol Thru, %	18%	22%	55%
Vol Right, %	33%	50%	32%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	108	18	53
LT Vol	53	5	7
Through Vol	19	4	29
RT Vol	36	9	17
Lane Flow Rate	124	40	80
Geometry Grp	1	1	1
Degree of Util (X)	0.144	0.044	0.091
Departure Headway (Hd)	4.173	3.992	4.084
Convergence, Y/N	Yes	Yes	Yes
Cap	855	887	866
Service Time	2.22	2.062	2.165
HCM Lane V/C Ratio	0.145	0.045	0.092
HCM Control Delay	7.9	7.2	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.1	0.3

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	55	20	37	5	4	9	0	0	0	7	30	18
Future Vol, veh/h	55	20	37	5	4	9	0	0	0	7	30	18
Peak Hour Factor	0.87	0.87	0.87	0.45	0.45	0.45	0.92	0.92	0.92	0.66	0.66	0.66
Heavy Vehicles, %	12	12	12	6	6	6	0	0	0	4	4	4
Mvmt Flow	63	23	43	11	9	20	0	0	0	11	45	27
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	7.3	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	28%	13%
Vol Thru, %	18%	22%	55%
Vol Right, %	33%	50%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	112	18	55
LT Vol	55	5	7
Through Vol	20	4	30
RT Vol	37	9	18
Lane Flow Rate	129	40	83
Geometry Grp	1	1	1
Degree of Util (X)	0.15	0.044	0.095
Departure Headway (Hd)	4.181	4.002	4.087
Convergence, Y/N	Yes	Yes	Yes
Cap	854	884	864
Service Time	2.23	2.075	2.171
HCM Lane V/C Ratio	0.151	0.045	0.096
HCM Control Delay	8	7.3	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.1	0.3

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	55	28	37	36	4	29	0	0	0	12	30	18
Future Vol, veh/h	55	28	37	36	4	29	0	0	0	12	30	18
Peak Hour Factor	0.87	0.87	0.87	0.45	0.45	0.45	0.92	0.92	0.92	0.66	0.66	0.66
Heavy Vehicles, %	12	12	12	6	6	6	0	0	0	4	4	4
Mvmt Flow	63	32	43	80	9	64	0	0	0	18	45	27
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.3	8.1	8
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	52%	20%
Vol Thru, %	23%	6%	50%
Vol Right, %	31%	42%	30%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	120	69	60
LT Vol	55	36	12
Through Vol	28	4	30
RT Vol	37	29	18
Lane Flow Rate	138	153	91
Geometry Grp	1	1	1
Degree of Util (X)	0.164	0.18	0.113
Departure Headway (Hd)	4.392	4.221	4.47
Convergence, Y/N	Yes	Yes	Yes
Cap	822	856	805
Service Time	2.392	2.221	2.479
HCM Lane V/C Ratio	0.168	0.179	0.113
HCM Control Delay	8.3	8.1	8
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.7	0.4

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	41	14	35	4	5	1	0	0	0	1	67	26
Future Vol, veh/h	41	14	35	4	5	1	0	0	0	1	67	26
Peak Hour Factor	0.84	0.84	0.84	0.42	0.42	0.42	0.92	0.92	0.92	0.73	0.73	0.73
Heavy Vehicles, %	1	1	1	20	20	20	0	0	0	0	0	0
Mvmt Flow	49	17	42	10	12	2	0	0	0	1	92	36
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.6	7.8	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	40%	1%
Vol Thru, %	16%	50%	71%
Vol Right, %	39%	10%	28%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	10	94
LT Vol	41	4	1
Through Vol	14	5	67
RT Vol	35	1	26
Lane Flow Rate	107	24	129
Geometry Grp	1	1	1
Degree of Util (X)	0.12	0.03	0.142
Departure Headway (Hd)	4.018	4.57	3.961
Convergence, Y/N	Yes	Yes	Yes
Cap	884	775	896
Service Time	2.081	2.649	2.026
HCM Lane V/C Ratio	0.121	0.031	0.144
HCM Control Delay	7.6	7.8	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.1	0.5

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	43	15	36	4	5	1	0	0	0	1	70	27
Future Vol, veh/h	43	15	36	4	5	1	0	0	0	1	70	27
Peak Hour Factor	0.84	0.84	0.84	0.42	0.42	0.42	0.92	0.92	0.92	0.73	0.73	0.73
Heavy Vehicles, %	1	1	1	20	20	20	0	0	0	0	0	0
Mvmt Flow	51	18	43	10	12	2	0	0	0	1	96	37
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.7	7.8	7.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	46%	40%	1%
Vol Thru, %	16%	50%	71%
Vol Right, %	38%	10%	28%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	94	10	98
LT Vol	43	4	1
Through Vol	15	5	70
RT Vol	36	1	27
Lane Flow Rate	112	24	134
Geometry Grp	1	1	1
Degree of Util (X)	0.125	0.03	0.148
Departure Headway (Hd)	4.032	4.583	3.969
Convergence, Y/N	Yes	Yes	Yes
Cap	881	772	894
Service Time	2.097	2.665	2.037
HCM Lane V/C Ratio	0.127	0.031	0.15
HCM Control Delay	7.7	7.8	7.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.4	0.1	0.5

Intersection

Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	43	31	36	15	5	7	0	0	0	11	70	27
Future Vol, veh/h	43	31	36	15	5	7	0	0	0	11	70	27
Peak Hour Factor	0.84	0.84	0.84	0.42	0.42	0.42	0.92	0.92	0.92	0.73	0.73	0.73
Heavy Vehicles, %	1	1	1	20	20	20	0	0	0	0	0	0
Mvmt Flow	51	37	43	36	12	17	0	0	0	15	96	37
Number of Lanes	0	1	0	0	1	0	0	0	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8	8.1	8.1
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	39%	56%	10%
Vol Thru, %	28%	19%	65%
Vol Right, %	33%	26%	25%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	110	27	108
LT Vol	43	15	11
Through Vol	31	5	70
RT Vol	36	7	27
Lane Flow Rate	131	64	148
Geometry Grp	1	1	1
Degree of Util (X)	0.153	0.083	0.173
Departure Headway (Hd)	4.215	4.666	4.213
Convergence, Y/N	Yes	Yes	Yes
Cap	856	771	855
Service Time	2.215	2.677	2.222
HCM Lane V/C Ratio	0.153	0.083	0.173
HCM Control Delay	8	8.1	8.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.3	0.6

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of THE FOLLOWING INTERSECTION IN THE CITY OF SEATTLE

01/01/2018 - available 2022

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a

JURISDICTION	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	#	#	#	#	#	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)
City Street	Seattle	8TH AVE S	0	S LANE ST					3811479	#####	18:00	Suspected Minor Injury	1	0	1	1	0	Passenger Car		At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	Vehicle going straight hits pedestrian	Going Straight Ahead		West	East			Inattention	
City Street	Seattle	S LANE ST	800		100	F W		8TH AVE S	3753783	#####	16:57	No Apparent Injury	0	0	2	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	Not at Intersection and Not Related	Raining	Wet	Dark-Street Lights On	From same direction - all others	Backing	Stopped for Traffic	Vehicle Backing		Vehicle Stopped		Other Contributing Circ Not Listed	Operating Defective Equipment