DOS LAGOS APARTMENTS - PARCELS “B” & “C”
TRAFFIC IMPACT ANALYSIS

PUYALLUP, WA

12/28/2022

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DOS LAGOS APARTMENTS - PARCELS “B” & “C”
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1. INTRODUCTION

Per City comments, vehicle trips generated by Parcels “B” and “C” must be evaluated as one project/Traffic Impact Analysis (TIA) per SEPA. The main goals of this study focus on the assessment of existing roadway conditions and forecasts of newly generated project traffic. The first task includes the review of general roadway information on the adjacent streets serving the subject site and gathering existing vehicular volumes within a defined study area. Forecasts of future traffic and dispersion patterns on the street system are then determined using established trip generation and distribution techniques. As a final step, appropriate conclusions and mitigation measures are defined, if needed.

2. PROJECT DESCRIPTION

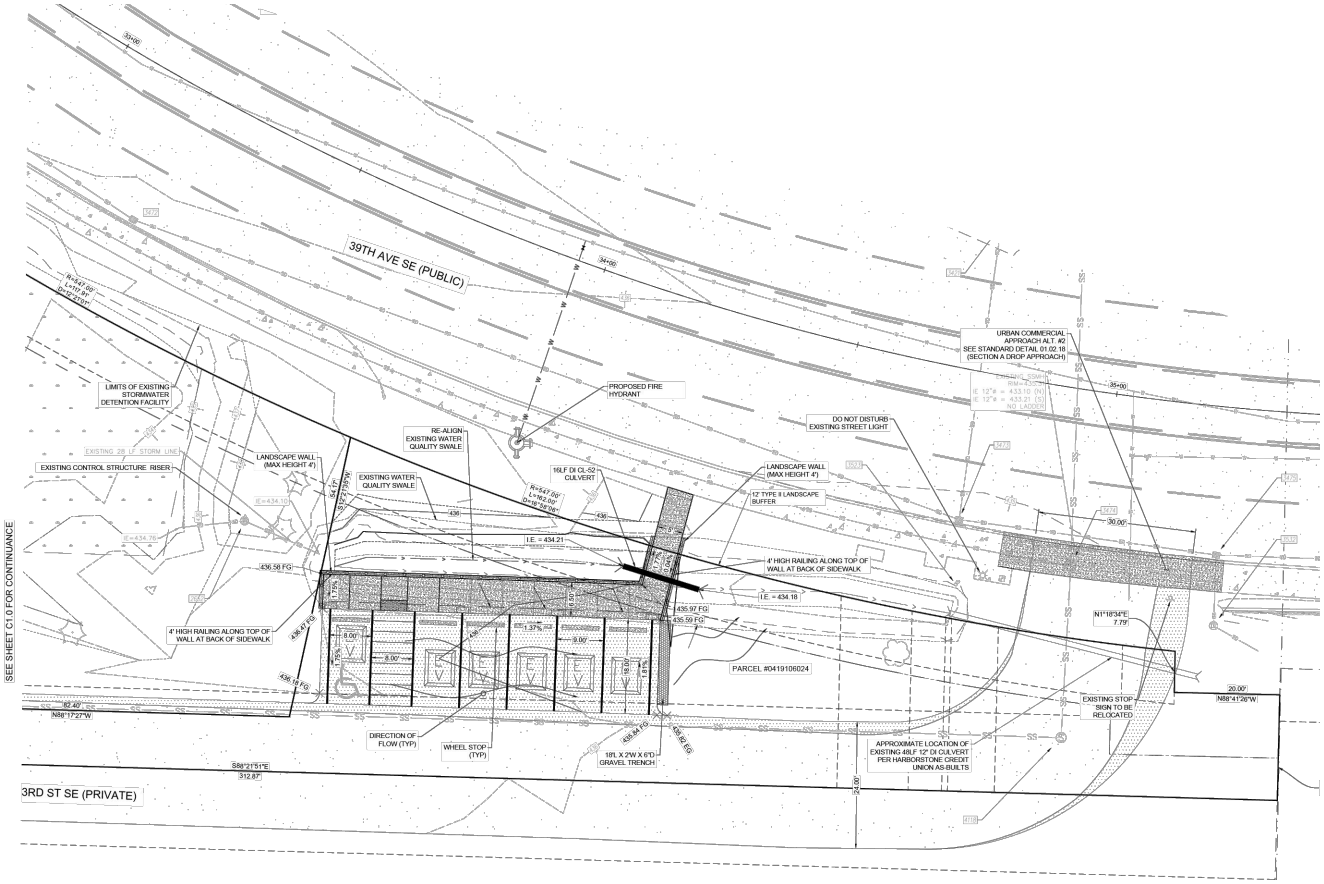
Dos Lagos Apartments - Parcels “B” & “C” propose for the construction of an apartment development comprising 45 multi-family dwelling units and an electric vehicle (EV) charging station within two separate sites (Parcel “B” and Parcel “C”) in the city of Puyallup.

Parcel “B”, comprising a cumulative 0.46-acres, is located within tax parcel #’s: 041910-6024 & -6025 and contains a site address of 212 39th Avenue SE. The site, bordered to the north by 39th Avenue SE, is proposed to comprise 6 EV charging stations (1 ADA). Primary access to Parcel “B” is proposed via one existing, full turning movement driveway extending south from 39th Avenue SE opposite 3rd Street SE. Additional access could also be made via SR 161 through the adjacent driveway serving the shopping center to the west (parcel 0419102095).

Parcel “C”, with a site address of 4202 5th Street SE, is located on undeveloped, 1.34-acre tax parcel #: 041910-6030. Approximately 45 multi-family dwelling units are proposed within Parcel “C”. Parcel “C” is situated on the northwest corner of 5th Street SE & 43rd Avenue SE. Access to Parcel “C” is proposed via one right-in, right-out driveway extending west from 5th Street SE.

Figure 1 on the following page shows the vicinity map and adjacent street system in relation to both subject sites. Conceptual site plans illustrating the proposed site layout for Parcels “B” and “C” are presented in Figures 2A and 2B respectively.

Figure 1: Aerial Vicinity Map



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TRAFFIC AND CIVIL ENGINEERING

DOS LAGOS APARTMENTS - PARCELS "B" & "C"

PARCEL "B" SITE PLAN
FIGURE 2A

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DOS LAGOS APARTMENTS - PARCELS "B" & "C"

PARCEL "C" SITE PLAN
FIGURE 2B

3. EXISTING CONDITIONS

3.1 Surrounding Roadways

The street network serving the proposed project consists of a variety of roadways. The major roadways and arterials surrounding the site are listed and described below.

39th Avenue SE: is an east-west, 5-lane major arterial bordering the subject site to the south. The roadway cross-section in the project vicinity typically consists of 2 travel lanes in either direction and a center two-way left-turn lane or left turn pockets at major intersections. Travel lanes are approximately 10- to 11-feet in width and marked crosswalks provided at major intersections. Curb, gutter and sidewalk are provided along both sides of the roadway in the subject site vicinity. The posted speed limit is 35-mph.

43rd Avenue SE: is an east-west, 3-lane minor arterial bordering Parcel "C" to the south. The roadway cross-section in the project vicinity typically consists of 1 travel lane in either direction and a center two-way left-turn lane or left turn pockets at major intersections. Travel lanes are approximately 11- to 15-feet in width and marked crosswalks provided at major intersections. Curb, gutter and sidewalk are generally provided east of 5th Street SE in the subject site vicinity. Between SR 161 and 5th Street SE, curb, gutter and sidewalk are provided along the southern side of the roadway with narrow paved segments and grass/gravel provided along the northern side. The posted speed limit is 35-mph.

5th Street SE: is a north-south, 3-lane minor arterial located east of the subject site. The roadway cross-section in the project vicinity typically consists of 1 travel lane in either direction and a center two-way left-turn lane or left turn pockets at major intersections. Travel lanes are approximately 13- to 15-feet in width and marked crosswalks provided at major intersections. Curb, gutter and sidewalk are provided along the east side of the roadway. Along the west side of the roadway, curb and gutter are generally provided with segments of sidewalk to the north. The posted speed limit is 25-to 30-mph.

3.2 Transit Service

The Pierce Transit regional bus schedule was referenced to determine if transit is provided in the vicinity of the subject site. Table 1 below outlines specifications of Routes 4, 402 and 425, which provide service within walking distance of the subject parcels.

Table 1: Bus Routes

Route	Description	Weekday Service	Saturday	Sunday	Nearest Stop
4	Lakewood – South Hill: Lakewood TC to Pierce College	5:45 AM – 8:50 PM (every ~30 minutes)	7:45 AM – 10:25 PM (every ~60 minutes)	8:05 AM – 7:53 PM (every ~60 minutes)	43rd Ave SE & 5th St SE
402	Meridian – South Hill Mall TC to Fed. Way TC	5:00 AM – 8:48 PM (every ~60 minutes)	7:10 AM – 8:35 PM (every ~60 minutes)	9:41 AM – 7:26 PM (every ~60 minutes)	43rd Ave SE & SR 161
425	Puyallup Connector – South Hill Mall TC to Puyallup Station	11:19 AM – 5:18 PM (every ~60 minutes)	9:15 AM – 6:21 PM (every ~120 minutes)	Not Provided	43rd Ave SE & 5th St SE

Given the proximity and availability, transit use stemming from the project site can be expected. Refer to the Pierce County Transit schedule for more detailed information.

3.3 Roadway Improvements

The current City of Puyallup Six-Year (2023-2028) Transportation Improvement Program was reviewed to determine if any transportation improvement projects are planned in the vicinity of the subject site. Table 2 below provides descriptions of the nearest projects.

Table 2: Transportation Improvement Projects

Name	Location	Improvement	20 yr. Cost
5th St SE/7th Ave SW Bike Improvements (P.N: 5)	23rd Ave SE to 43rd Ave SE	Add shared use path on one side	$7,000,000
9th St SW Corridor Improvements (P.N: 11)	15th Ave SW to 31st Ave SW	3 lanes with curb, gutter, sidewalk, bike lanes and street lighting on both sides and additional lane capacity at 31st & 9th. Scoping report recommended.	$18,510,000
31st Ave SW Corridor Improvements (P.N: 15)	Fruitland to 9th St SW	3 lanes with curb, gutter, sidewalk, bike lanes and street lighting on both sides and additional lane capacity at 31st & 9th.	$17,900,000
Intersection Signal Control (P.N: 18)	23rd Ave SE & 7th St SE	New signal as part of the road improvement project.	To Be Determined
31st Ave SW & 9th St SW Intersection Improvements (P.N: 23)	Intersection	Add a right-turn only pocket for west bound traffic on 31st Ave SW.	To Be Determined
Intersection Improvements @ 10th St SE (P.N: 24)	43rd Ave SE; Meridian to 10th St SE	RAB or signal at 10th St SE and curb, gutter, sidewalk and street lighting on north half of 43rd Ave SE. Plus complete roadway to city standards from Meridian to 5th St with Meridian intersection improvements adding a right turn lane.	To Be Determined
39th Ave SW Intersection Improvements (P.N: 26)	17th St SW to Meridian	Traffic signal improvements to include flashing yellow arrows and adaptive signal control technology.	To Be Determined
Adaptive on 5th St SE (P.N: 27)	Along 5th St SE	Adaptive signals along 5th St SE at 23rd, 31st, 35th, 37th, 39th, 43rd (6 signals)	To Be Determined
23rd Ave SE Road Improvement (P.N: 33)	Meridian to 9th St SE	3 lanes with curb, gutter, sidewalk and street lighting and a signal at 7th St SE & 23rd Ave SE plus bike lanes.	$6,210,000
39th & 37th Ave SE Road Maintenance (P.N: 46)	10th St SE to 5th St SE	Overlay roadway and striping.	$2,200,000
31st Ave SW Road Maintenance (P.N: 48)	512 Hwy to 200’ W/O 9th	This is primarily an overlay with some improvements at the intersection of 9th St SW & 31st Ave SW.	To Be Determined

3.4 Peak Hour Volumes

Field data for this study was collected in October of 2022. Traffic counts were administered at the following locations:

- 39th Avenue SE & 3rd Street SE/Driveway
- 43rd Avenue SE & 5th Street SE
- South Affinity Driveway & 5th Street SE

Data was obtained during the evening peak period between the hours of 4:00 PM – 6:00 PM, which generally translates to highest overall roadway volumes in a given 24-hour period. The one hour reflecting highest overall roadway volumes (peak hour) was then derived from these counts. Existing PM peak hour volumes at the study intersections are illustrated in Figure 3. Full-count sheets have been included in the appendix.

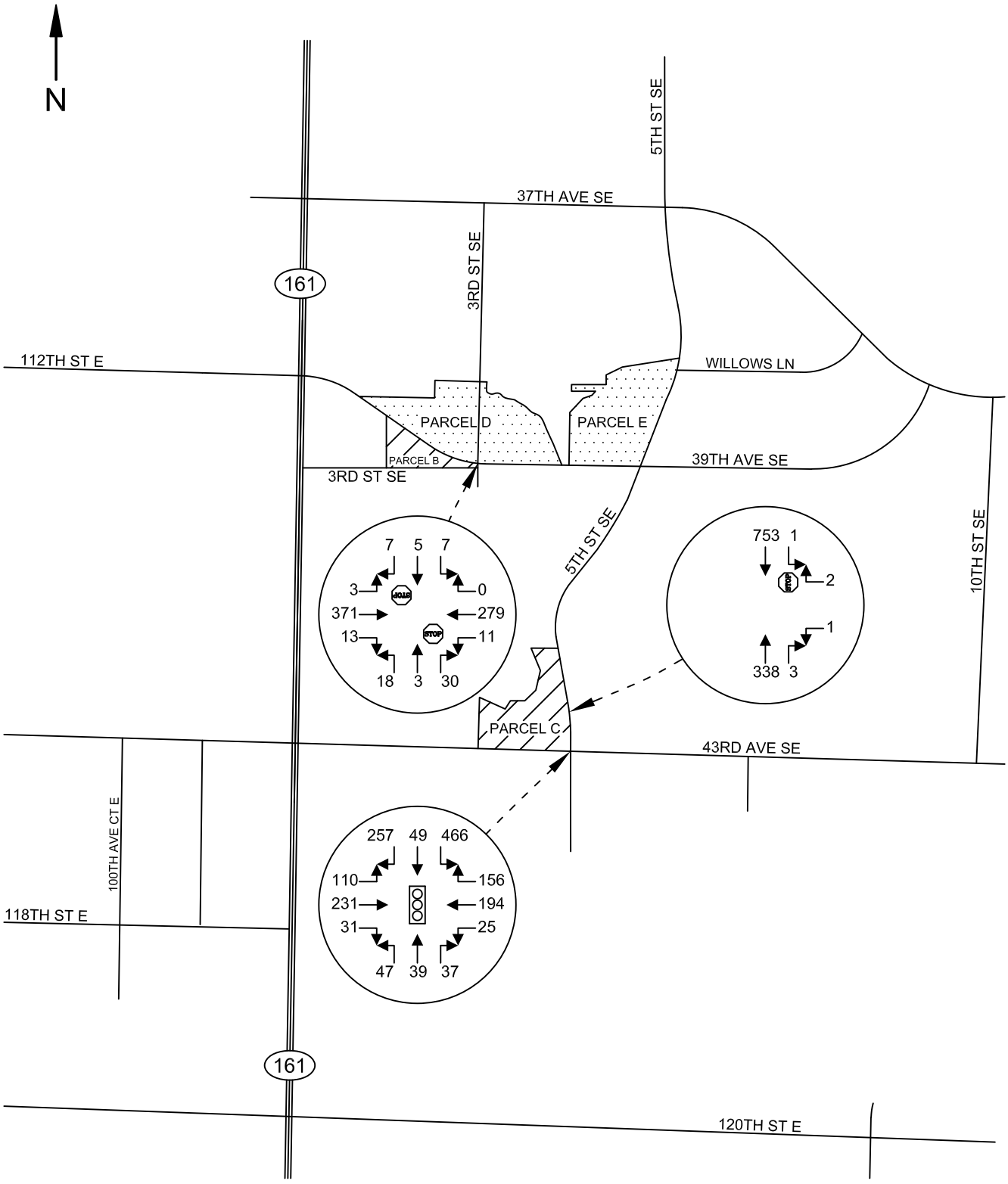
3.5 Peak Hour Non-Motorist Activity & Infrastructure

Non-motorist activity was observed during routine PM peak hour turning movement counts. Table 3 below summarizes weekday PM peak hour non-motorist crossing activity observed at each leg for all study intersections.

Table 3: PM Peak Hour Non-Motorist Movements

Intersection	Peak Hour	Movement Type	Intersection Leg			
			N	E	S	W
39th Ave SE & 3rd St SE	5:00 – 6:00 PM	Ped.	2	0	2	0
		Bike	0	0	1	0
Affinity Driveway & 5th St SE	4:45 – 5:45 PM	Ped.	0	2	0	0
		Bike	0	0	0	0
43rd Ave SE & 5th St SE	4:45 – 5:45 PM	Ped.	0	4	1	1
		Bike	0	0	0	0

As part of site development, frontage improvements would be made on 5th Street SE and 43rd Avenue SE. These improvements would add to the existing pedestrian infrastructure in the vicinity of the subject site. The signalized intersection of 5th Street SE & 43rd Avenue SE facilitates pedestrian crossings via an actuated pedestrian signal phase. Continuous sidewalk paths/pedestrian crossings are available between the subject site and commercial opportunities provided along SR-161 to the west. Moreover, planned City improvements would improve non-motorist connectivity in the subject site vicinity.



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DOS LAGOS APARTMENTS - PARCELS "B" & "C"

EXISTING PM PEAK HOUR VOLUMES
FIGURE 3

3.6 Sight Distance at Access Driveways

Parcel "B"

Primary access to Parcel "B" is proposed via one existing, full turning movement driveway extending south from 39th Avenue SE, opposite 3rd Street SE. Internal connection is additionally to be provided with the shopping center located west of Parcel "B", subsequently providing access to SR 161.

Assessments of the existing 39th Avenue SE driveway were made to determine whether adequate entering sight distance (ESD) and stopping sight distance (SSD) can be provided for project traffic. Based on the 45-mph design speed (35-mph posted speed limit) on 39th Avenue SE and the roadway's major arterial classification, City sight distance standards would require approximately 415-feet of ESD and 400-feet of SSD. Sight lines at the driveway are clear in excess of 500-feet looking either direction. As such, no ESD or SSD deficiencies are identified at this time. Final verification of sight lines will be conducted during the civil review.

Parcel "C"

Primary access to Parcel "C" is proposed via one new driveway on 5th Street SE, opposite the southernmost existing Affinity driveway. Given the access' proximity to the southerly signalized intersection of 43rd Avenue SE & 5th Street SE, the driveway would be restricted to right-turn movements only.

Based on the 40-mph design speed (30-mph posted speed limit) on 5th Street SE at the proposed project access, City standards would require approximately 350-feet of ESD and 325-feet of SSD. A preliminary review of existing roadway geometrics indicates that sight distance requirements are met. As such, no sight distance deficiencies are identified at this time. Final verification of sight lines will be conducted during the civil review.

4. FUTURE TRAFFIC CONDITIONS

4.1 Trip Generation

Parcel "B"

Trip generation is defined as the number of vehicle movements that enter or exit the respective project site during a designated time period such as the PM peak hour or an entire day. Trip generation is typically derived using the Institute of Transportation Engineering Manual, *Trip Generation.* However, no applicable land use code in the 11th Edition manual was identified for electric vehicle charging stations. Therefore, a sample site trip generation analysis of several existing EV charging station sites was performed to provide a more accurate forecast. Three existing EV charging sites were sampled in terms of PM peak hour vehicular demands that were considered similar in nature and operation to that of the proposed Parcel "B". Specifications for the sample sites were obtained through Pierce County GIS. Below are the summaries of each sample site.

A. EVgo Charging Station
   Address: 1112 S M St, Tacoma, WA 98405
   Charging Station Capacity: 4 stalls
   Date Sampled: 11/22/2022 and 11/23/2022

B. Electrify America Charging Station
   Address: 1401 Galaxy Dr NE, Lacey, WA 98516
   Charging Station Capacity: 6 stalls
   Date Sampled: 12/6/2022 and 12/7/2022

C. Tesla Supercharger
   Address: 655 Sleater-Kinney Rd SE, Lacey, WA 98503
   Charging Station Capacity: 12 stalls
   Date Sampled: 12/6/2022 and 12/7/2022

Data collection at each sample site was gathered via physical field counts and consisted of tracking each inbound/outbound movement. Counts were performed for a two-hour period between 4:00-6:00 PM. The one-hour reflecting the highest observed total inbound and outbound movements was then used for calculations and is considered the "peak hour." A spreadsheet outlining volumes observed at each sample site has been attached to the appendix for reference. The spreadsheet illustrates the calculated inbound and outbound trip generation rates for the PM peak hour at each sample site. Rates are based on trips per EV charging stall.

The attached trip generation spreadsheet in the appendix shows the calculated average rate of 0.83 vehicles per charging station with a ~54 percent inbound and ~46 percent outbound split. The calculated trip rate can be applied to the proposed Parcel "B" development for trip generation forecasts, which is illustrated in Table 4 below. A total of 6 EV charging stalls are proposed within Parcel "B".

Table 4: Parcel "B" PM Peak Hour Trip Generation

Land Use	Size Parking Stalls	PM Peak-Hour Trips		
		Inbound (Rate 0.45)	Outbound (Rate 0.38)	Total (Rate 0.83)
EV Charging Station	6	3	2	**5**

Based on the local trip generation study, the proposed EV charging station comprising 7 parking stalls within Parcel "B" is anticipated to generate 5 PM peak hour trips (3 inbound / 2 outbound).

Parcel "C"

The anticipated vehicle trip generation for the Parcel "C" subject site was derived from the Institute of Transportation Engineers (ITE) publication, *Trip Generation,* 11th Edition. Consistent with the ITE Manual, apartment buildings between 4-10 stories are defined under Land Use Code 221, Multifamily Mid-Rise. Dwelling units and square footage were used as the input variables and average rates were used to determine trip ends.

Table 5 below summarizes anticipated vehicular movements for Parcel "B" during the PM peak hour and Parcel "C" average weekday daily trips (AWDT), AM peak hour and PM peak hour trips.

Table 5: Project Trip Generation per Parcel

Parcel	Land Use	Size	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
				In	Out	Total	In	Out	Total
"B"	EV Charging Stations	7 stalls	-	-	-	**-**	3	2	**5**
"C"	Multi-Family (LUC 221)	45 dwelling units	204	4	13	**17**	11	7	**18**

According to sample site data, Parcel "B" is anticipated to generate 5 new PM peak hour trips (3 in / 32 out). Parcel "C" is anticipated to generate 204 average weekday daily trips with 17 trips (4 inbound / 13 outbound) occurring in the AM peak hour and 18 trips (11 inbound / 7 outbound) occurring in the PM peak hour. Trip generation output sheets have been attached in the appendix for reference.

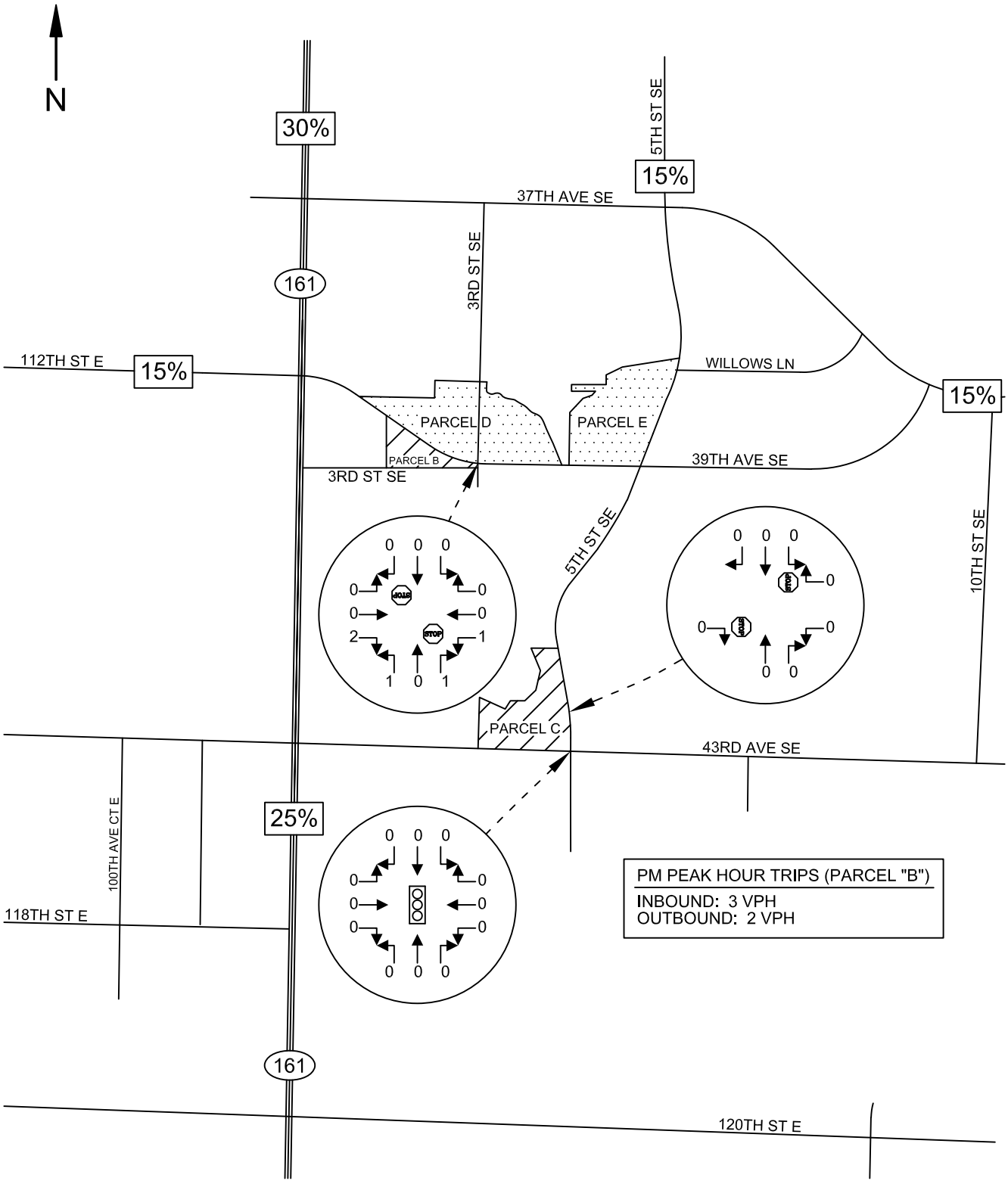
4.2 Distribution & Assignment

Trip distribution describes the process by which project generated trips are dispersed on the roadway network surrounding the site. Trip distribution percentages were derived in discussion with the City during the scoping process. PM Peak hour trip distribution & assignment for Parcel “B” and “C” are provided in Figures 4A and 4B, respectively. For Parcel “B”, all trips were assigned to the proposed 39th Avenue SE access opposite 3rd Street SE. For Parcel “C”, all trips were assigned to the proposed right-in, right-out access on 5th Street SE.

4.3 Peak Hour Volumes

A 3-year horizon of 2025 was used for future traffic delay analysis. Forecast 2025 background traffic volumes were derived by again applying a 2.0 percent compound annual growth rate to the existing PM peak hour volumes shown in Figure 3. In addition, pipeline volumes associated with the proposed Dos Lagos Parcels “D” and “E” projects were incorporated into future volumes. PM pipeline volumes are shown in Figure A in the appendix. Figure B in the appendix illustrates PM peak hour volumes associated with all Dos Lagos projects (Parcels “B”, “C”, “D” and “E”).

Forecast 2025 PM peak hour volumes without project trips are illustrated in Figure 5 while Figure 6 presents forecast volumes with project-generated traffic.



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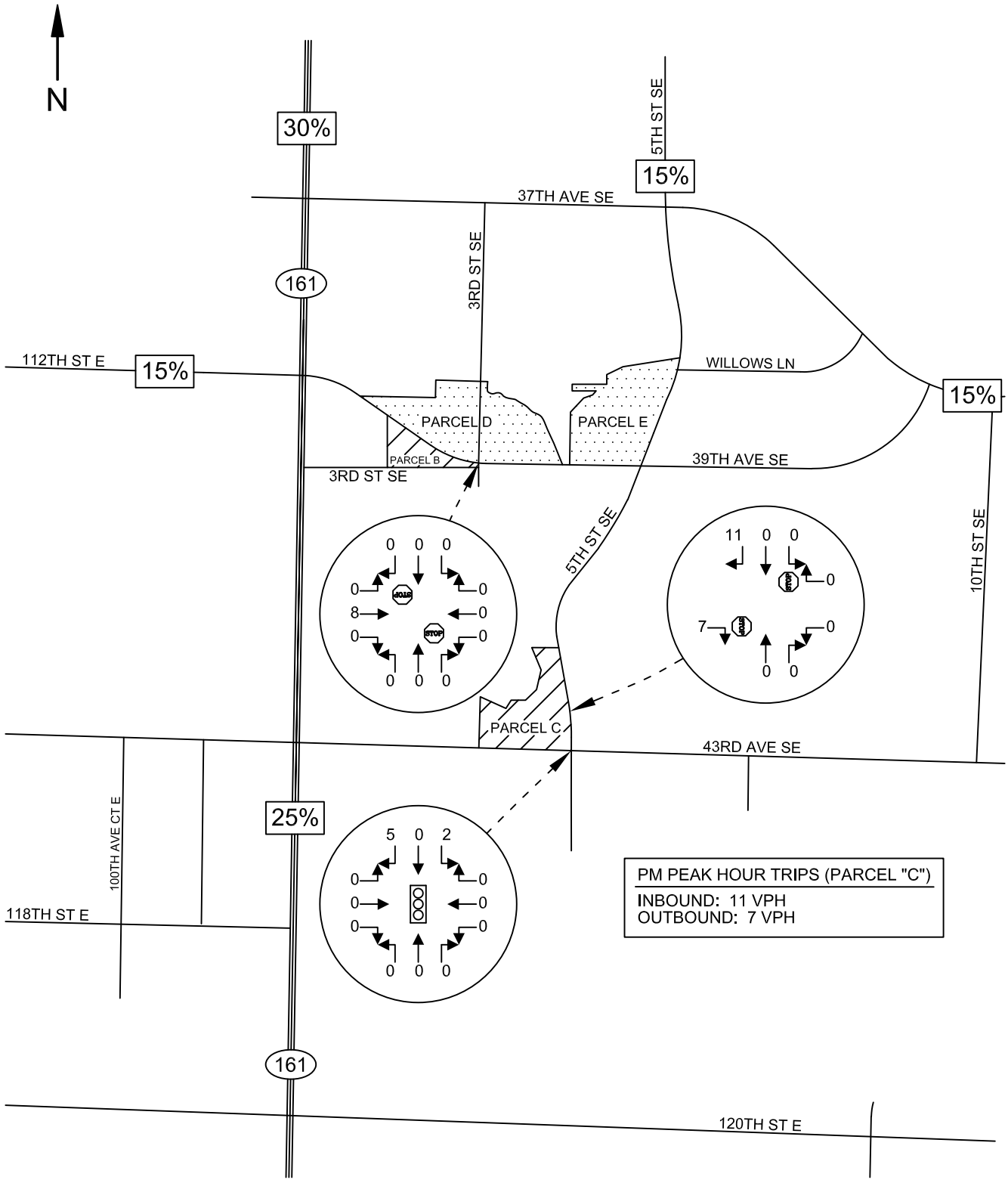
DOS LAGOS APARTMENTS - PARCELS "B" & "C"

PARCEL "B" PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4A



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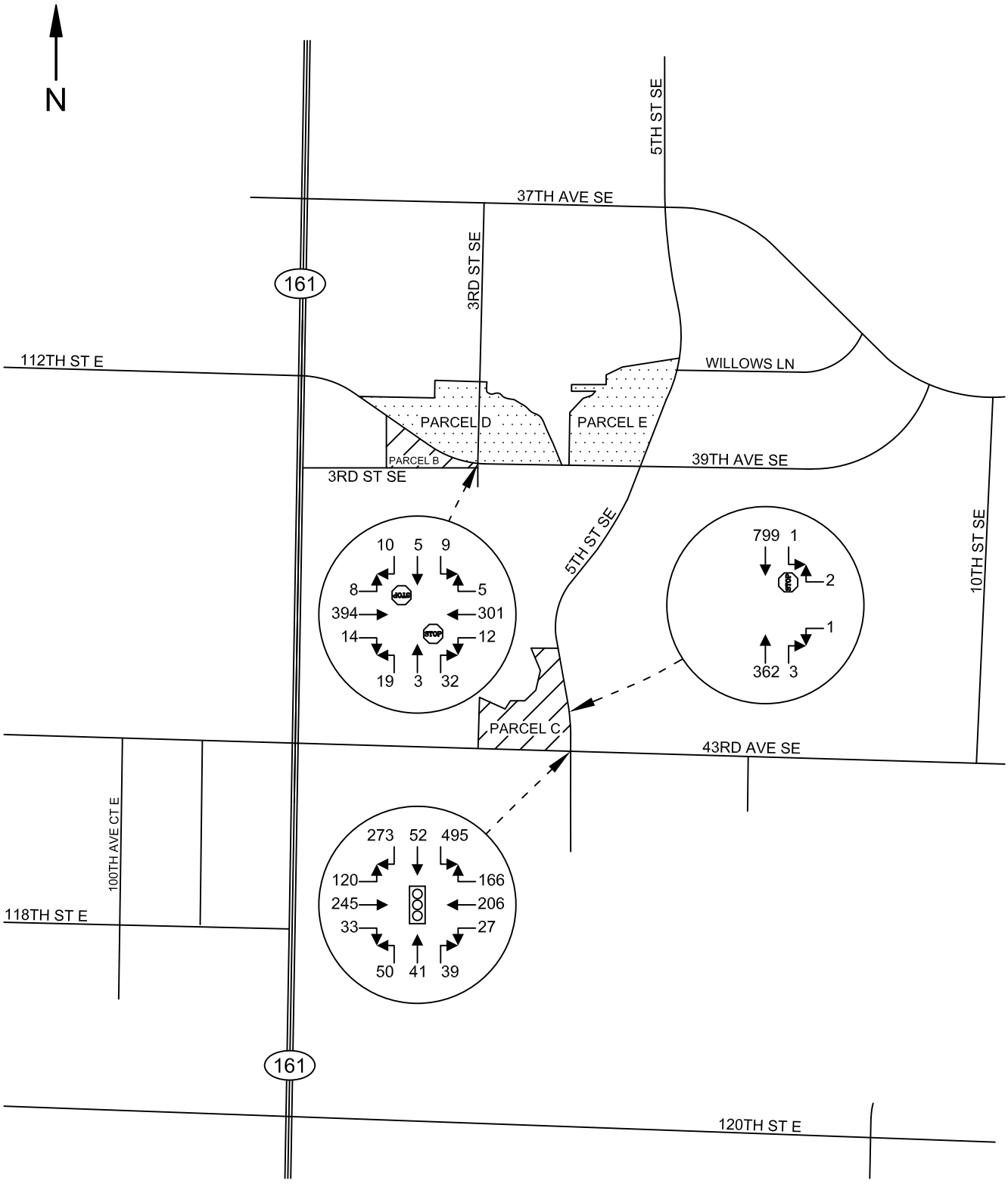
DOS LAGOS APARTMENTS - PARCELS "B" & "C"

PARCEL "C" PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4B



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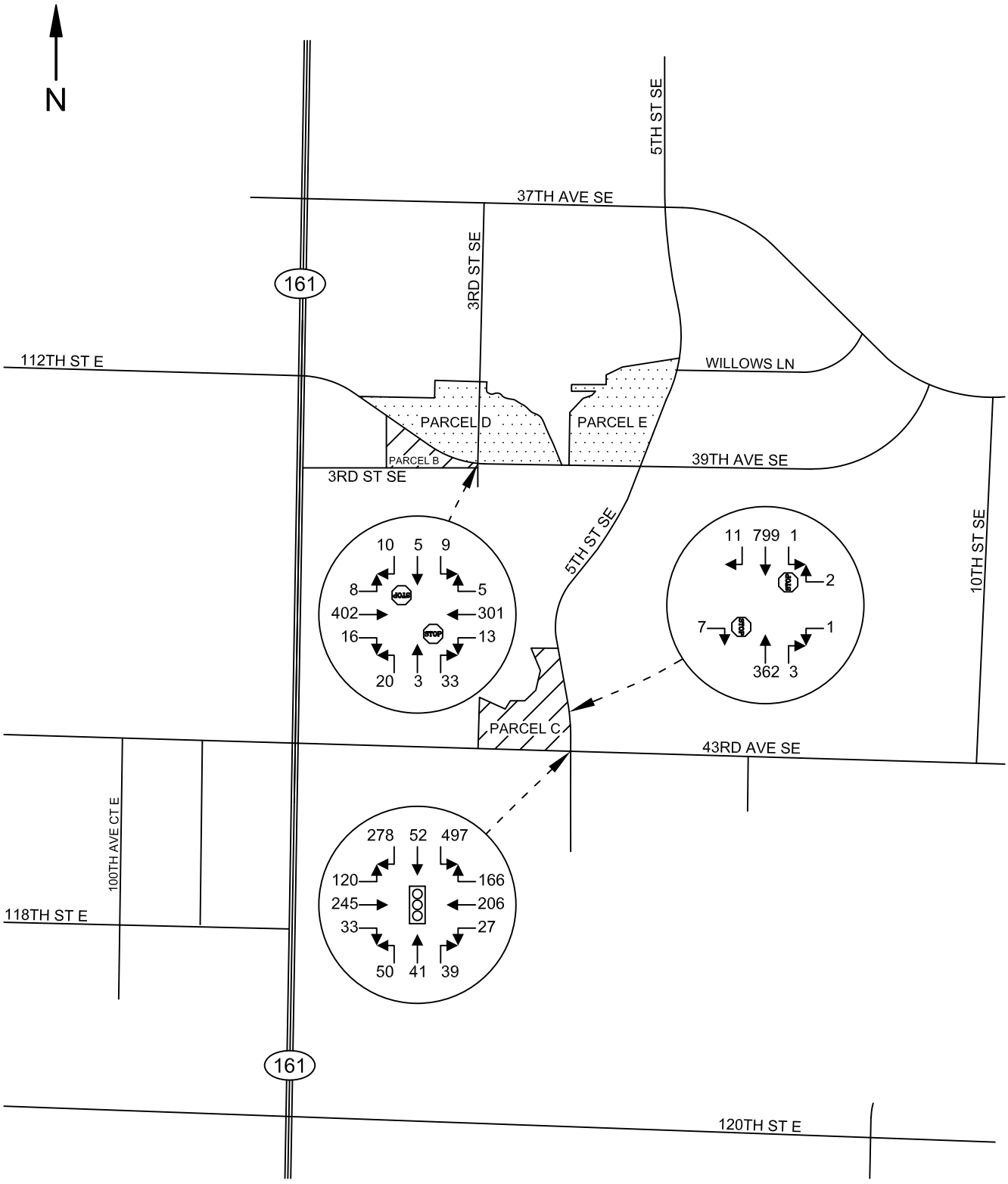
DOS LAGOS APARTMENTS - PARCELS "B" & "C"

FORECAST 2025 PM PEAK HOUR BACKGROUND VOLUMES
FIGURE 5



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DOS LAGOS APARTMENTS - PARCELS "B" & "C"

FORECAST 2025 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 6

4.4 Level of Service

Peak hour delays were determined through the use of the *Highway Capacity Manual* 6th Edition. Capacity analysis is used to determine level of service (LOS) which is an established measure of congestion for transportation facilities. The range[2] for intersection level of service is LOS A to LOS F with the former indicating the best operating conditions with low control delays and the latter indicating the worst conditions with heavy control delays. Detailed descriptions of intersection LOS are given in the 2016 Highway Capacity Manual. Level of service calculations were made through the use of the *Synchro 11* analysis program. Delays presented represent overall weighted average delays for signals. For side-street, stop-controlled intersections, LOS is determined by the approach with the highest delay. Table 6 below summarizes calculated delays for existing and forecast 2025 PM peak hour conditions at the study and access intersections.

Table 6: Existing & Forecast 2025 PM Peak Hour Level of Service

Delays given in seconds per vehicle

		Existing		*2025 Without*		*2025 With*	
Intersection	**Control**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
39th Ave SE & 3rd St SE	Stop	B	11.5	B	11.6	B	11.8
Affinity Driveway/Access & 5th St SE	Stop	B	13.8	B	14.5	C	16.3
43rd Ave SE & 5th St SE	Signal	B	19.4	C	20.9	C	21.0

The City of Puyallup has adopted LOS D standards for most city intersections. PM peak hour delays are shown to operate satisfactorily under forecast analysis with LOS C or better conditions. No intersection deficiencies are identified as a result of the proposed Dos Lagos – Parcels “B” and “C” developments.

Lastly, it should be noted that no unserved demand was observed at the signalized study intersection of 43rd Avenue SE & 5th Street SE.

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[2] *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
A	≤10
B	> 10 and ≤20
C	> 20 and ≤35
D	> 35 and ≤55
E	> 55 and ≤80
F	> 80

Stop Controlled Intersections – Level of Service

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

Highway Capacity Manual, 6th Edition

5. SUMMARY & MITIGATION

The Dos Lagos Apartments - Parcels “B” & “C” project proposes for the construction of 6 electric vehicle charging stations within Parcel “B” and 45 multi-family dwelling units within Parcel “C” in the city of Puyallup. Parcel “B”, comprising tax parcel #’s: 041910-6024 & -6025 (0.46-acres), is bordered to the north by 39th Street SE. Access to Parcel “B” is proposed to continue via an existing driveway extending south from 39th Avenue SE, opposite 3rd Street SE. Moreover, internal connection to the westerly tax parcel #: 0419102095 may subsequently provide access to SR 161 to the west. Parcel “C”, encompassing tax parcel #: 041910-6030, is situated on the northwestern corner of 43rd Avenue SE & 5th Street SE. Access to Parcel “C” is proposed via one new right in, right-out driveway extending west from 5th Street SE. Conceptual site plans for each parcel are provided in Figures 2A and 2B, respectively.

According to sample site data, Parcel “B” is estimated to generate approximately 5 PM peak hour trips (3 inbound / 2 outbound). According to ITE data, Parcel “C” site development would generate an estimated 204 total daily trips with 17 trips occurring during the AM peak hour (4 inbound / 13 outbound) and 18 trips during the PM peak hour (11 inbound / 7 outbound).

Existing and forecast 2025 PM peak hour delays at the outlying study intersection of 43rd Avenue SE & 5th Street SE are shown to operate with acceptable LOS C or better conditions. Moreover, the primary access intersections to Parcels “B” and “C” are shown to meet City LOS D standards, also operating with LOS C or better conditions. Overall, the project was not shown to create a significant impact to the study area.

Proposed mitigation for the project is as follows:

1. Pay Traffic Impact Fees (TIF) as required by the city of Puyallup. Final fees will be calculated and assessed by the City at the time of building permit issuance.

DOS LAGOS APARTMENTS - PARCELS “D” & “E”
TRAFFIC IMPACT ANALYSIS

APPENDIX

Heath & Associates

PO Box 397 Puyallup, WA 98371

File Name : 4506ff
Site Code : 00004506
Start Date : 10/11/2022
Page No : 1

Groups Printed- Passenger + - Heavy

	3rd St SE Southbound				39th Ave SE Westbound				South Driveway Northbound				39th Ave SE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	1	0	0	1	2	84	4	90	11	0	4	15	6	90	2	98	204
04:15 PM	1	0	2	3	0	84	5	89	9	0	4	13	3	72	0	75	180
04:30 PM	2	0	3	5	0	74	5	79	1	4	4	9	1	69	0	70	163
04:45 PM	3	0	1	4	0	74	3	77	4	3	4	11	4	92	1	97	189
Total	7	0	6	13	2	316	17	335	25	7	16	48	14	323	3	340	736
05:00 PM	0	1	1	2	0	76	5	81	4	0	3	7	6	87	0	93	183
05:15 PM	2	2	2	6	0	70	4	74	10	2	6	18	2	88	2	92	190
05:30 PM	2	1	2	5	0	65	0	65	12	0	3	15	1	93	1	95	180
05:45 PM	3	1	2	6	0	68	2	70	4	1	6	11	4	103	0	107	194
Total	7	5	7	19	0	279	11	290	30	3	18	51	13	371	3	387	747
Grand Total	14	5	13	32	2	595	28	625	55	10	34	99	27	694	6	727	1483
Apprch %	43.8	15.6	40.6		0.3	95.2	4.5		55.6	10.1	34.3		3.7	95.5	0.8		
Total %	0.9	0.3	0.9	2.2	0.1	40.1	1.9	42.1	3.7	0.7	2.3	6.7	1.8	46.8	0.4	49	
Passenger +	14	5	13	32	2	583	28	613	54	10	34	98	27	689	6	722	1465
% Passenger +	100	100	100	100	100	98	100	98.1	98.2	100	100	99	100	99.3	100	99.3	98.8
Heavy	0	0	0	0	0	12	0	12	1	0	0	1	0	5	0	5	18
% Heavy	0	0	0	0	0	2	0	1.9	1.8	0	0	1	0	0.7	0	0.7	1.2

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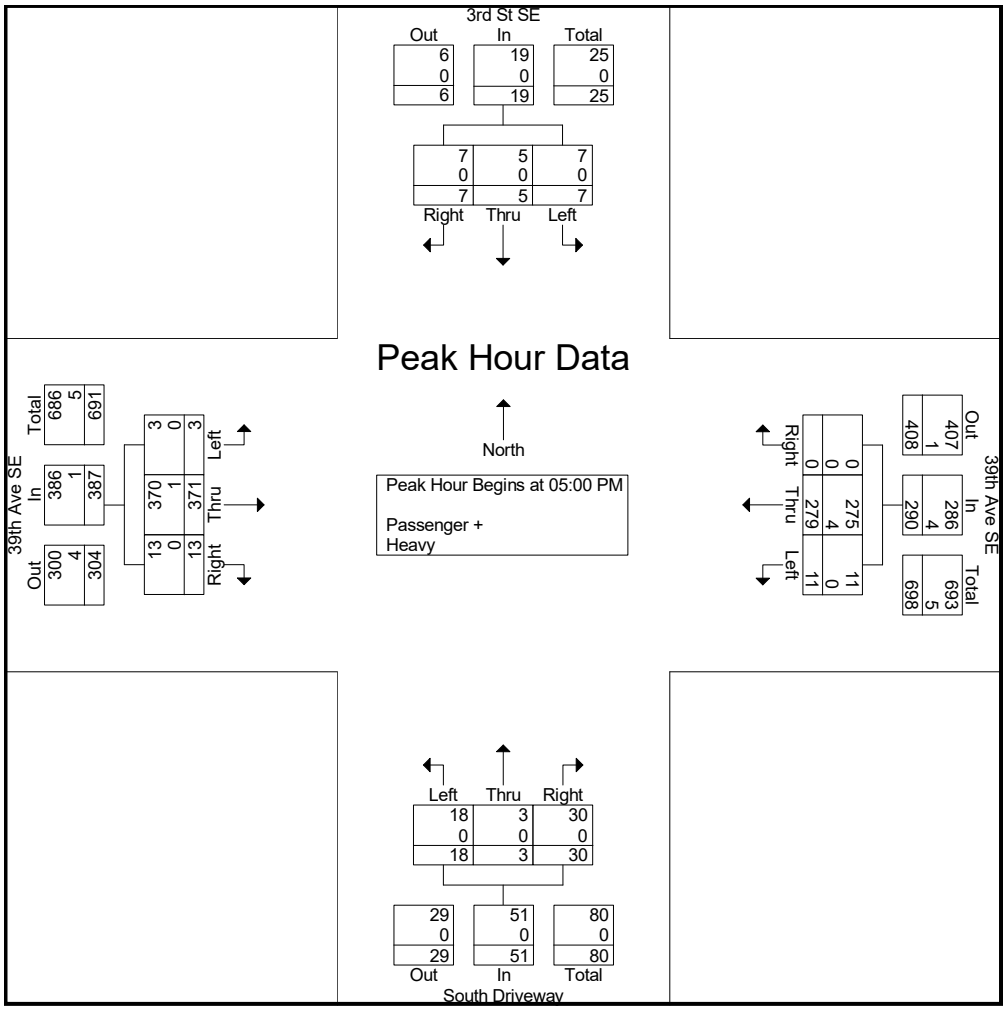
PO Box 397 Puyallup, WA 98371

File Name : 4506ff
Site Code : 00004506
Start Date : 10/11/2022
Page No : 2

	3rd St SE Southbound				39th Ave SE Westbound				South Driveway Northbound				39th Ave SE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	1	1	2	0	**76**	**5**	**81**	4	0	3	7	**6**	87	0	93	183
05:15 PM	2	**2**	**2**	**6**	0	70	4	74	10	**2**	**6**	**18**	2	88	**2**	92	190
05:30 PM	2	1	2	5	0	65	0	65	**12**	0	3	15	1	93	1	95	180
05:45 PM	**3**	1	2	6	0	68	2	70	4	1	6	11	4	**103**	0	**107**	**194**
Total Volume	7	5	7	19	0	279	11	290	30	3	18	51	13	371	3	387	747
% App. Total	36.8	26.3	36.8		0	96.2	3.8		58.8	5.9	35.3		3.4	95.9	0.8		
PHF	.583	.625	.875	.792	.000	.918	.550	.895	.625	.375	.750	.708	.542	.900	.375	.904	.963
Passenger +	7	5	7	19	0	275	11	286	30	3	18	51	13	370	3	386	742
% Passenger +	100	100	100	100	0	98.6	100	98.6	100	100	100	100	100	99.7	100	99.7	99.3
Heavy	0	0	0	0	0	4	0	4	0	0	0	0	0	1	0	1	5
% Heavy	0	0	0	0	0	1.4	0	1.4	0	0	0	0	0	0.3	0	0.3	0.7



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File Name : 4506dd
Site Code : 00004506
Start Date : 10/11/2022
Page No : 1

Groups Printed- Passenger + - Heavy

	5th St SE Southbound			Affinity Access Westbound			5th St SE Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	163	1	164	2	0	2	0	81	81	247
04:15 PM	193	0	193	2	0	2	0	68	68	263
04:30 PM	181	0	181	2	1	3	1	75	76	260
04:45 PM	181	0	181	0	0	0	0	96	96	277
Total	718	1	719	6	1	7	1	320	321	1047
05:00 PM	173	1	174	1	1	2	1	99	100	276
05:15 PM	201	0	201	0	0	0	1	61	62	263
05:30 PM	198	0	198	1	0	1	1	82	83	282
05:45 PM	178	2	180	1	0	1	0	80	80	261
Total	750	3	753	3	1	4	3	322	325	1082
Grand Total	1468	4	1472	9	2	11	4	642	646	2129
Apprch %	99.7	0.3		81.8	18.2		0.6	99.4		
Total %	69	0.2	69.1	0.4	0.1	0.5	0.2	30.2	30.3	
Passenger +	1466	4	1470	9	2	11	4	636	640	2121
% Passenger +	99.9	100	99.9	100	100	100	100	99.1	99.1	99.6
Heavy	2	0	2	0	0	0	0	6	6	8
% Heavy	0.1	0	0.1	0	0	0	0	0.9	0.9	0.4

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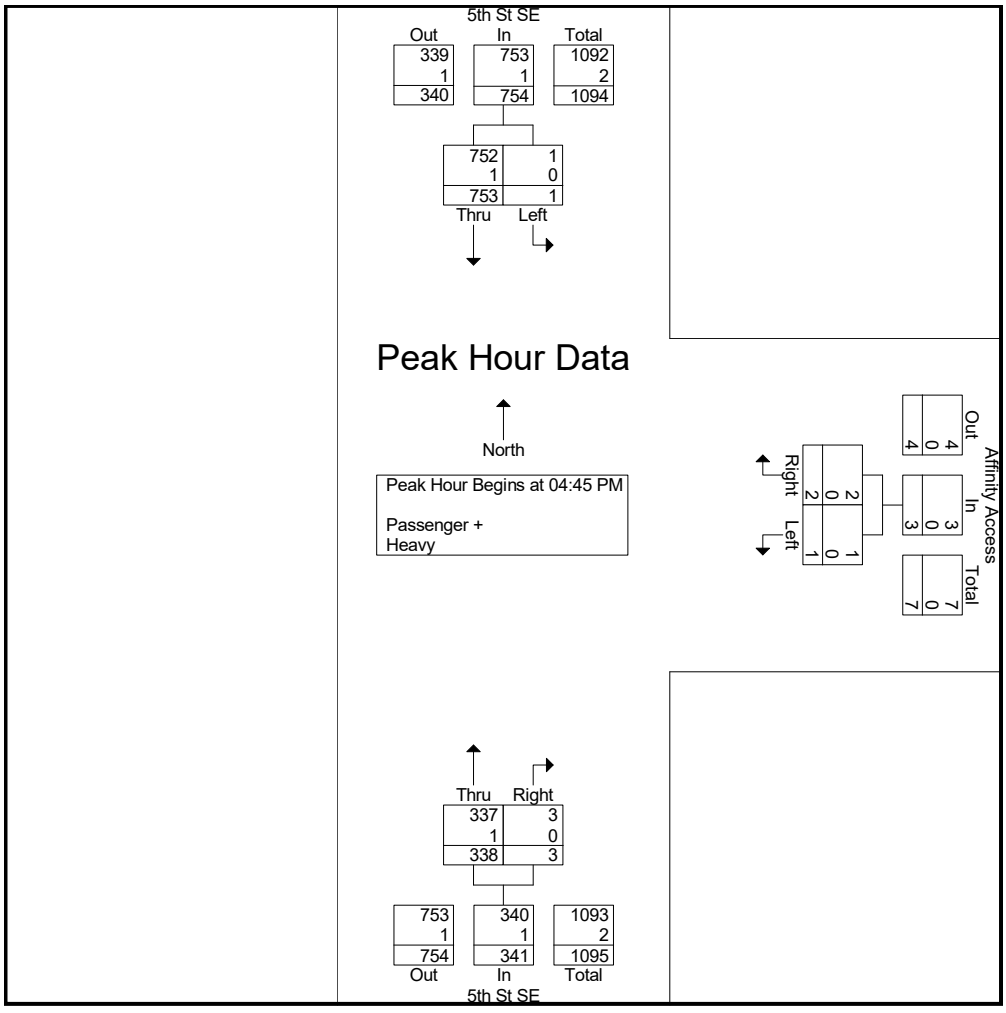
PO Box 397 Puyallup, WA 98371

File Name : 4506dd
Site Code : 00004506
Start Date : 10/11/2022
Page No : 2

	5th St SE Southbound			Affinity Access Westbound			5th St SE Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	181	0	181	0	0	0	0	96	96	277
05:00 PM	173	**1**	174	**1**	**1**	**2**	**1**	**99**	**100**	276
05:15 PM	**201**	0	**201**	0	0	0	1	61	62	263
05:30 PM	198	0	198	1	0	1	1	82	83	**282**
Total Volume	753	1	754	2	1	3	3	338	341	1098
% App. Total	99.9	0.1		66.7	33.3		0.9	99.1		
PHF	.937	.250	.938	.500	.250	.375	.750	.854	.853	.973
Passenger +	752	1	753	2	1	3	3	337	340	1096
% Passenger +	99.9	100	99.9	100	100	100	100	99.7	99.7	99.8
Heavy	1	0	1	0	0	0	0	1	1	2
% Heavy	0.1	0	0.1	0	0	0	0	0.3	0.3	0.2



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PO Box 397 Puyallup, WA 98371

File Name : 4506bb
Site Code : 00004506
Start Date : 10/11/2022
Page No : 1

Groups Printed- Passenger + - Heavy

	5th St SE Southbound				43rd Ave SE Westbound				YMCA Access Northbound				43rd Ave SE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	49	14	92	155	37	49	8	94	5	16	3	24	9	66	29	104	377
04:15 PM	75	11	110	196	31	49	7	87	5	7	4	16	11	61	27	99	398
04:30 PM	48	9	109	166	40	58	8	106	11	4	2	17	16	78	30	124	413
04:45 PM	67	9	117	193	48	50	7	105	11	13	11	35	6	57	24	87	420
Total	239	43	428	710	156	206	30	392	32	40	20	92	42	262	110	414	1608
05:00 PM	67	9	105	181	48	48	9	105	6	4	10	20	9	57	34	100	406
05:15 PM	58	21	125	204	20	42	4	66	14	10	12	36	4	51	26	81	387
05:30 PM	65	10	119	194	40	54	5	99	6	12	14	32	12	66	26	104	429
05:45 PM	53	11	117	181	34	38	9	81	12	9	7	28	5	52	30	87	377
Total	243	51	466	760	142	182	27	351	38	35	43	116	30	226	116	372	1599
Grand Total	482	94	894	1470	298	388	57	743	70	75	63	208	72	488	226	786	3207
Apprch %	32.8	6.4	60.8		40.1	52.2	7.7		33.7	36.1	30.3		9.2	62.1	28.8		
Total %	15	2.9	27.9	45.8	9.3	12.1	1.8	23.2	2.2	2.3	2	6.5	2.2	15.2	7	24.5	
Passenger +	481	94	894	1469	294	380	56	730	69	75	62	206	71	480	222	773	3178
% Passenger +	99.8	100	100	99.9	98.7	97.9	98.2	98.3	98.6	100	98.4	99	98.6	98.4	98.2	98.3	99.1
Heavy	1	0	0	1	4	8	1	13	1	0	1	2	1	8	4	13	29
% Heavy	0.2	0	0	0.1	1.3	2.1	1.8	1.7	1.4	0	1.6	1	1.4	1.6	1.8	1.7	0.9

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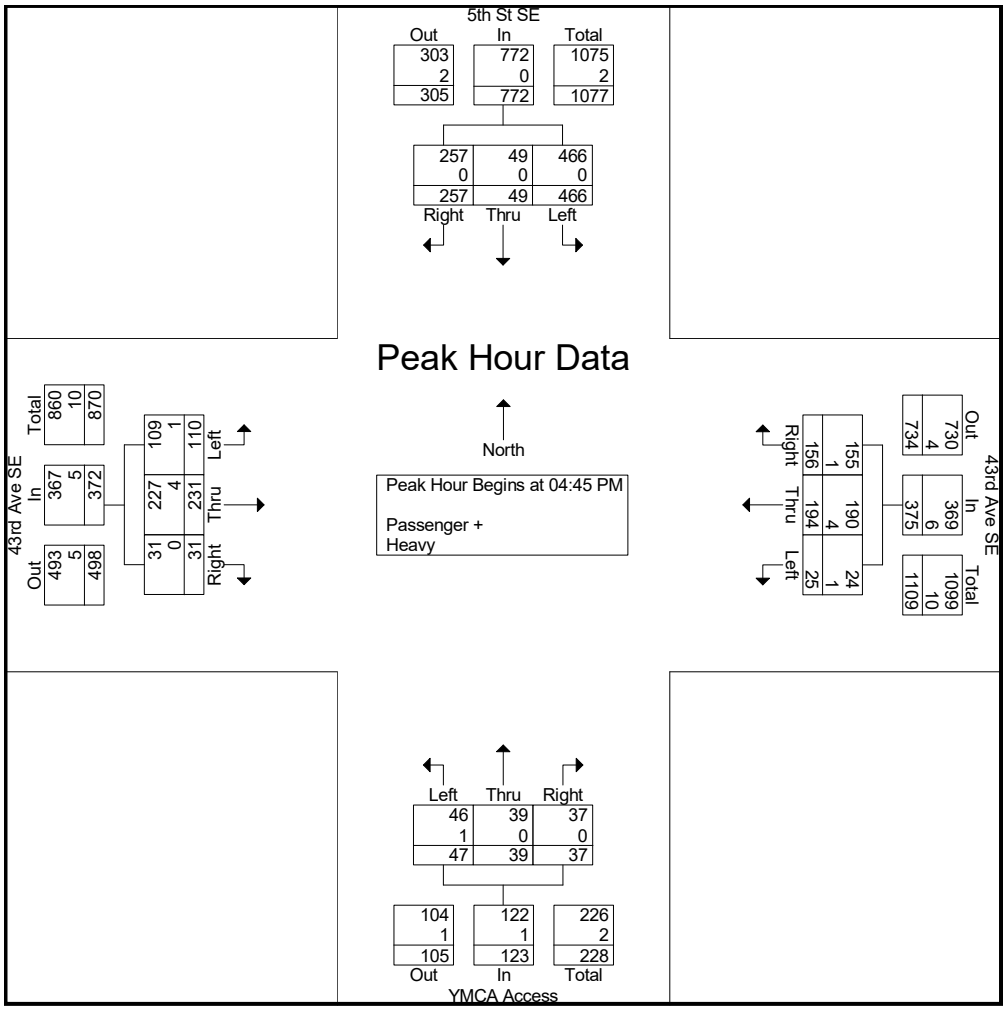
File Name : 4506bb
Site Code : 00004506
Start Date : 10/11/2022
Page No : 2

	5th St SE Southbound				43rd Ave SE Westbound				YMCA Access Northbound				43rd Ave SE Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**67**	9	117	193	**48**	50	7	**105**	11	**13**	11	35	6	57	24	87	420
05:00 PM	67	9	105	181	48	48	**9**	105	6	4	10	20	9	57	**34**	100	406
05:15 PM	58	**21**	**125**	**204**	20	42	4	66	**14**	10	12	**36**	4	51	26	81	387
05:30 PM	65	10	119	194	40	**54**	5	99	6	12	**14**	32	**12**	**66**	26	**104**	**429**
Total Volume	257	49	466	772	156	194	25	375	37	39	47	123	31	231	110	372	1642
% App. Total	33.3	6.3	60.4		41.6	51.7	6.7		30.1	31.7	38.2		8.3	62.1	29.6		
PHF	.959	.583	.932	.946	.813	.898	.694	.893	.661	.750	.839	.854	.646	.875	.809	.894	.957
Passenger +	257	49	466	772	155	190	24	369	37	39	46	122	31	227	109	367	1630
% Passenger +	100	100	100	100	99.4	97.9	96.0	98.4	100	100	97.9	99.2	100	98.3	99.1	98.7	99.3
Heavy	0	0	0	0	1	4	1	6	0	0	1	1	0	4	1	5	12
% Heavy	0	0	0	0	0.6	2.1	4.0	1.6	0	0	2.1	0.8	0	1.7	0.9	1.3	0.7



Project File #: 4506
Project Name: Dos Lagos EV Study
Sample Parameters: 3 locations; 2 days each
Study Timeframe: 4:00 PM to 6:00 PM

EVgo Charging Station - 4 Stalls
Address: 1112 S M St, Tacoma, WA 98405
(Safeway Parking lot)

Day 1: 11/22/2022		Day 2: 11/23/2022	
4:07 In	**5:08 Out**	**5:10 In**	**5:21 Out**
5:15 In	**5:39 Out**		
2 in	2 Out	1 in	1 out
Peak Hour begins at 5:00 PM		Peak Hour begins at 5:00 PM	
3 PM peak hour trips (1 In/2 Out)		**2 PM peak hour trips (1 In/1 Out)**	

Electrify America Charging Station - 6 Stalls
Address: 1401 Galaxy Dr NE, Lacey, WA 98516
(Walmart Parking Lot)

Day 1: 12/6/2022		Day 2: 12/7/2022	
4:25 In	**5:15 Out**	Pre-peak	**4:37 Out**
4:59 In	**5:14 Out**	**4:35 In**	**5:09 Out**
5:46 In	-	**4:42 In**	5:39 Out
		5:18 In	-
		5:29 In	-
3 in	2 out	4 In	3 Out
Peak Hour begins at 4:45 PM		Peak Hour begins at 4:30 PM	
3 PM peak hour trips (1 In/2 Out)		**6 PM peak hour trips (4 In/2 Out)**	

Tesla Supercharger - 12 Stalls
Address: 655 SleaterKinney Rd SE, Lacey, WA 98503
(Shopping Center)

Day 1: 12/6/2022		Day 2: 12/7/2022	
Pre-Peak	4:01 Out	Pre-Peak	4:16 Out
Pre-Peak	4:05 Out	Pre-Peak	4:19 Out
Pre-Peak	4:07 Out	Pre-Peak	4:24 Out
Pre-Peak	**4:52 Out**	4:13 In	4:39 Out
4:30 In	**4:53 Out**	4:20 In	**5:24 Out**
4:48 In	**5:11 Out**	4:26 In	**5:09 Out**
4:49 in	**5:10 Out**	**5:02 In**	**5:27 Out**
5:09 In	5:56 Out	**5:05 In**	**5:28 Out**
5:16 In	5:46 Out	**5:18 In**	**5:29 Out**
5:21 In	5: 57 Out	**5:19 In**	**5:58 Out**
5:48 In	-	**5:22 In**	-
		5:30 in	**5:38 Out**
		5:33 in	-
		5:44 In	-
		5:48 In	-
		5:59 in	-
7 In	10 Out	13 In	11 Out
Peak Hour begins at 4:30 PM		Peak Hour begins at 5:00 PM	
10 PM peak hour trips (6 In/4 Out)		17 PM peak hour trips (10 In/7 Out)	

Evgo Charging Station Trip Rates (Site 1)						
Day	Peak Hour	Stall Count	Inbound Trips	Inbound Trip Rate	Outbound Trips	Outbound Trip Rate
Day 1	5:00-6:00 PM	4	1	0.25	2	0.5
Day 2	5:00-6:00 PM	4	1	0.25	1	0.25

Electrify America Charging Station Trip Rates (Site 2)						
Day	Peak Hour	Stall Count	Inbound Trips	Inbound Trip Rate	Outbound Trips	Outbound Trip Rate
Day 1	4:45-5:45 PM	6	1	0.17	2	0.33
Day 2	4:30-5:30 PM	6	4	0.67	2	0.33

Tesla Supercharger Trip Rates (Site 3)						
Day	Peak Hour	Stall Count	Inbound Trips	Inbound Trip Rate	Outbound Trips	Outbound Trip Rate
Day 1	4:30-5:30 PM	12	6	0.50	4	0.33
Day 2	5:00-6:00 PM	12	10	0.83	7	0.58

Average Trip Rates				
Site	**Day**	**Inbound**	**Outbound**	**Total**
1	1	0.25	0.5	0.75
	2	0.25	0.25	0.50
2	1	0.17	0.33	0.50
	2	0.67	0.33	1.00
3	1	0.50	0.33	0.83
	2	0.83	0.58	1.41
	Average	**0.45**	**0.39**	**0.83**

Average Trip Rates Applied to Project		
Proposed # of charging stalls	Inbound Trips	Outbound Trips
6	**2.7**	**2.3**

Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

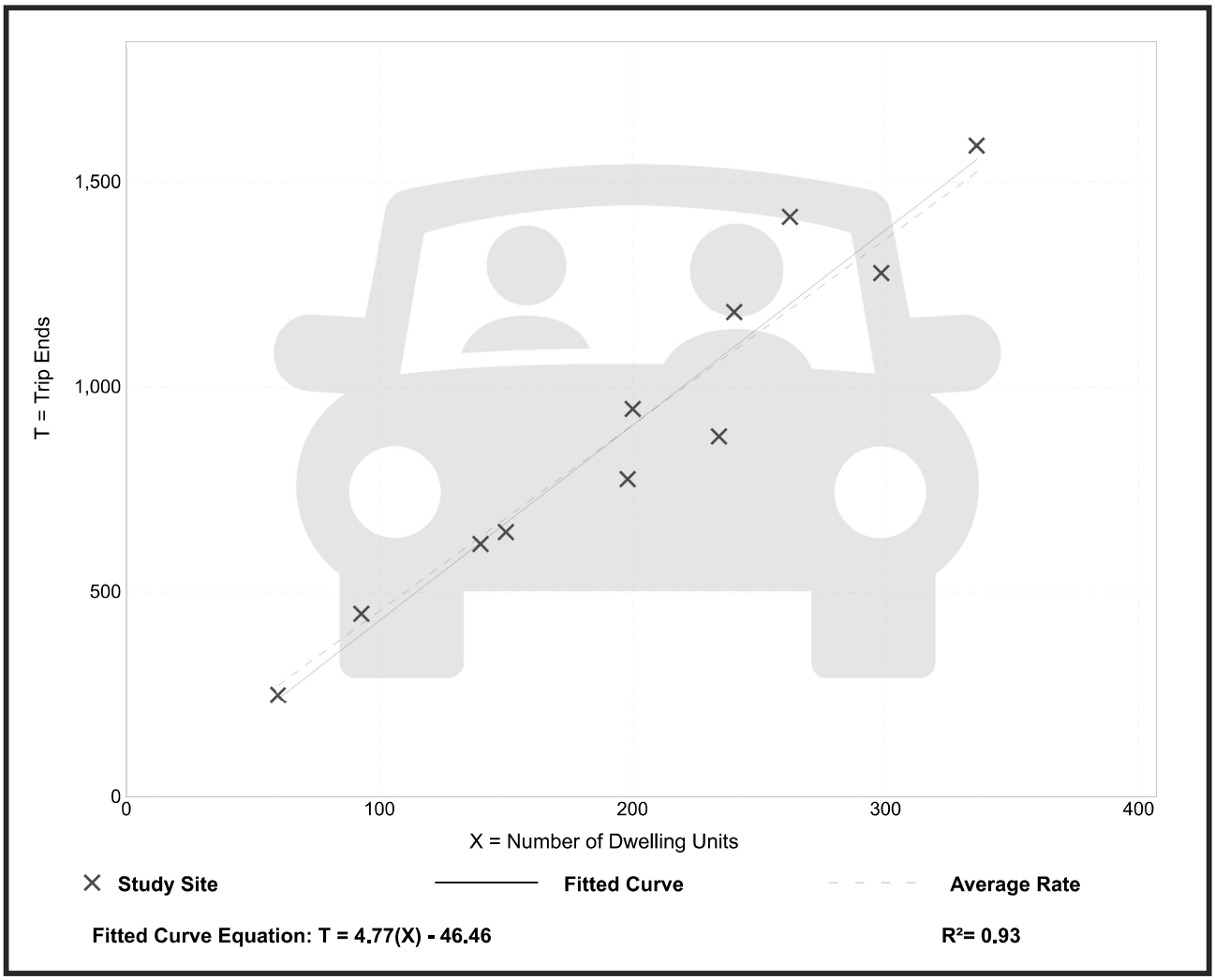
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 11
Avg. Num. of Dwelling Units: 201
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.76 - 5.40	0.51

Data Plot and Equation



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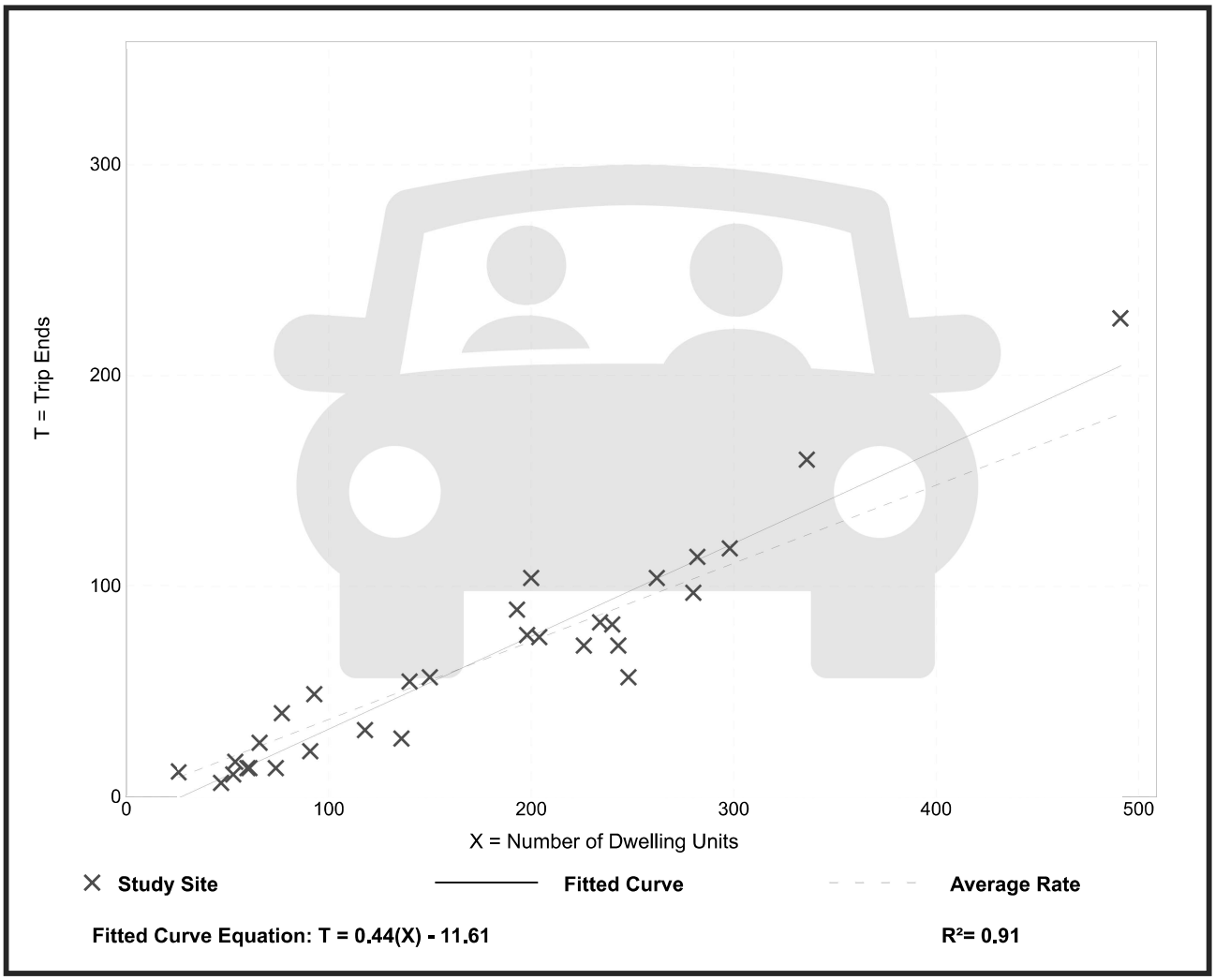
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 30
Avg. Num. of Dwelling Units: 173
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



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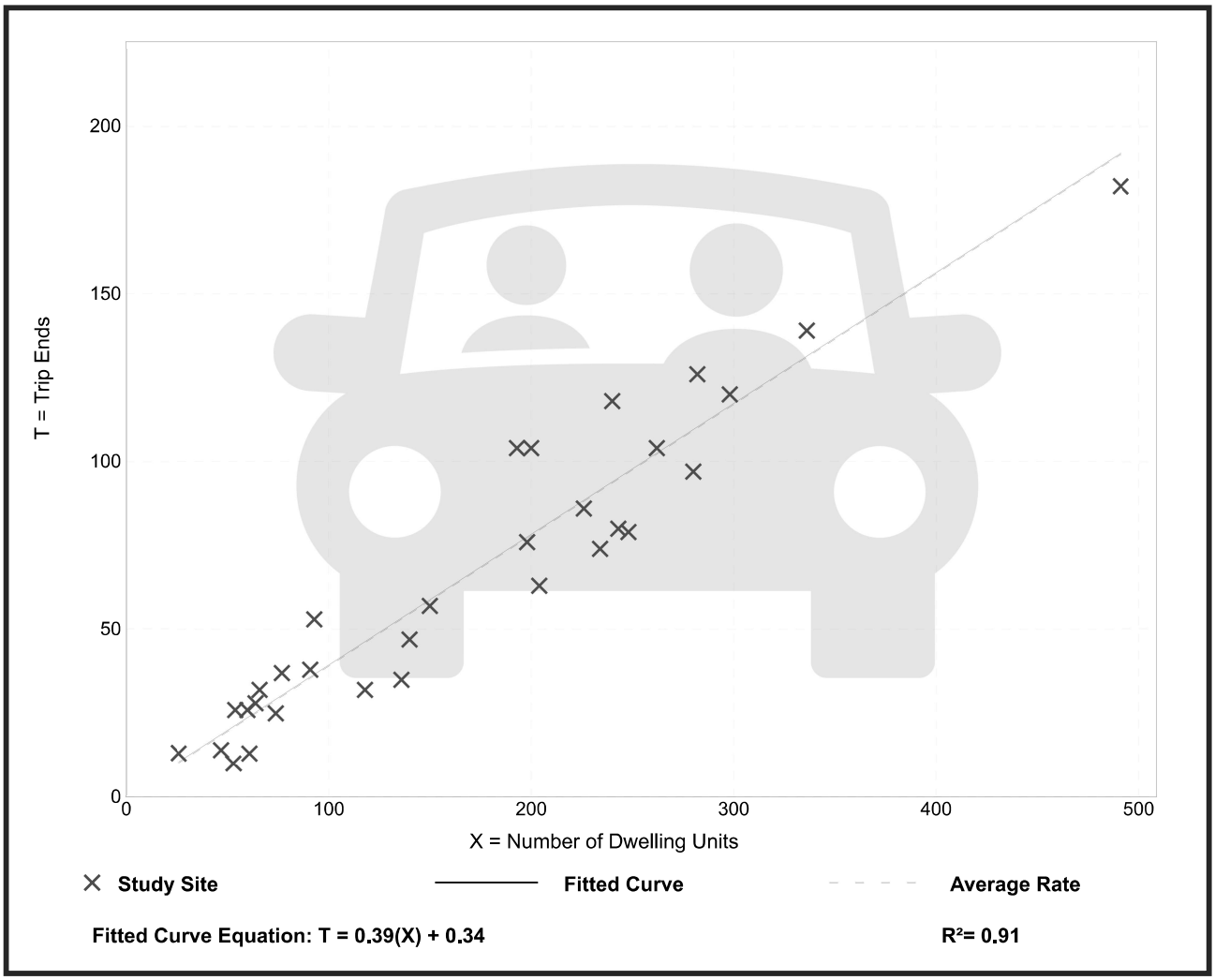
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 31
Avg. Num. of Dwelling Units: 169
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



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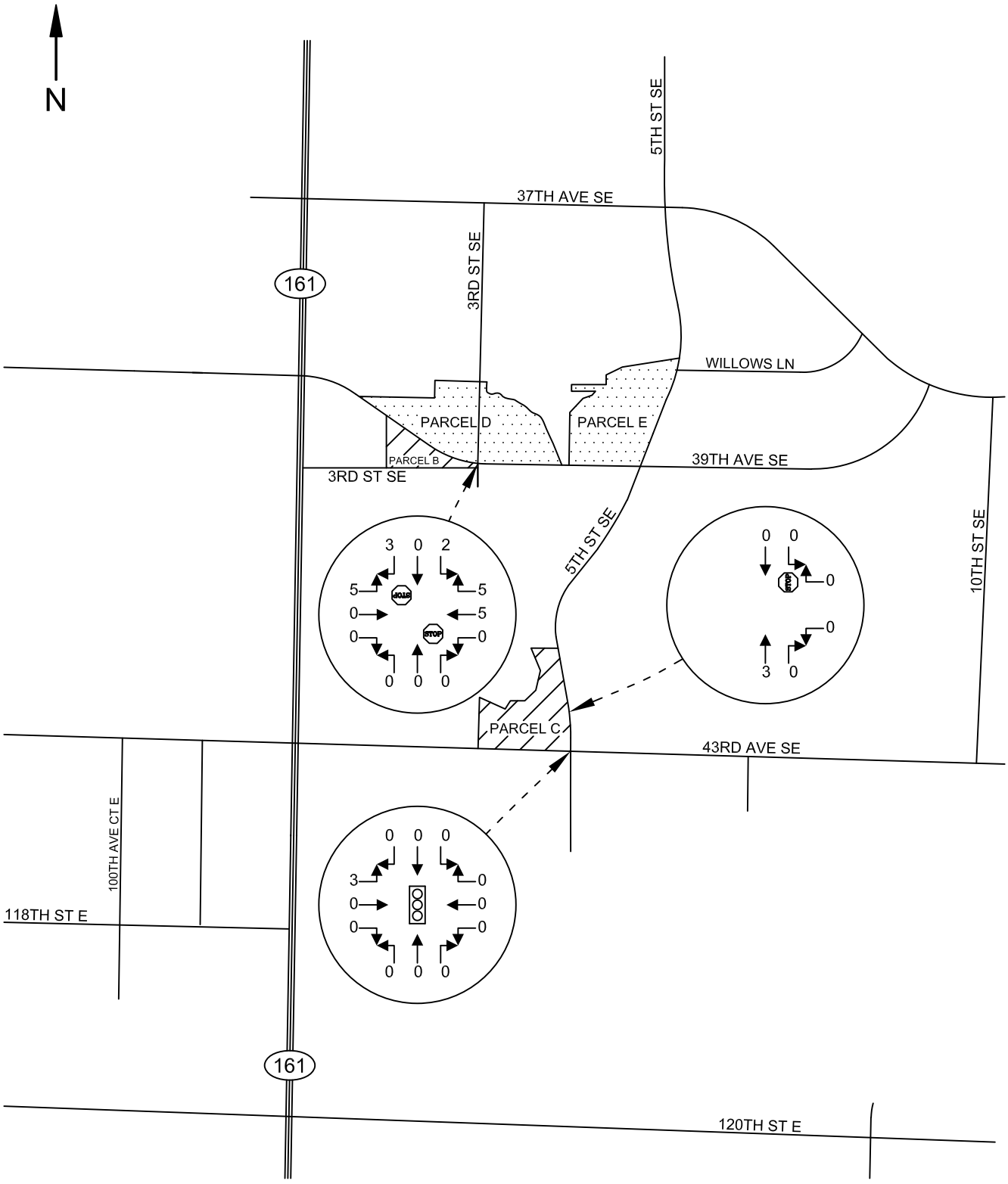
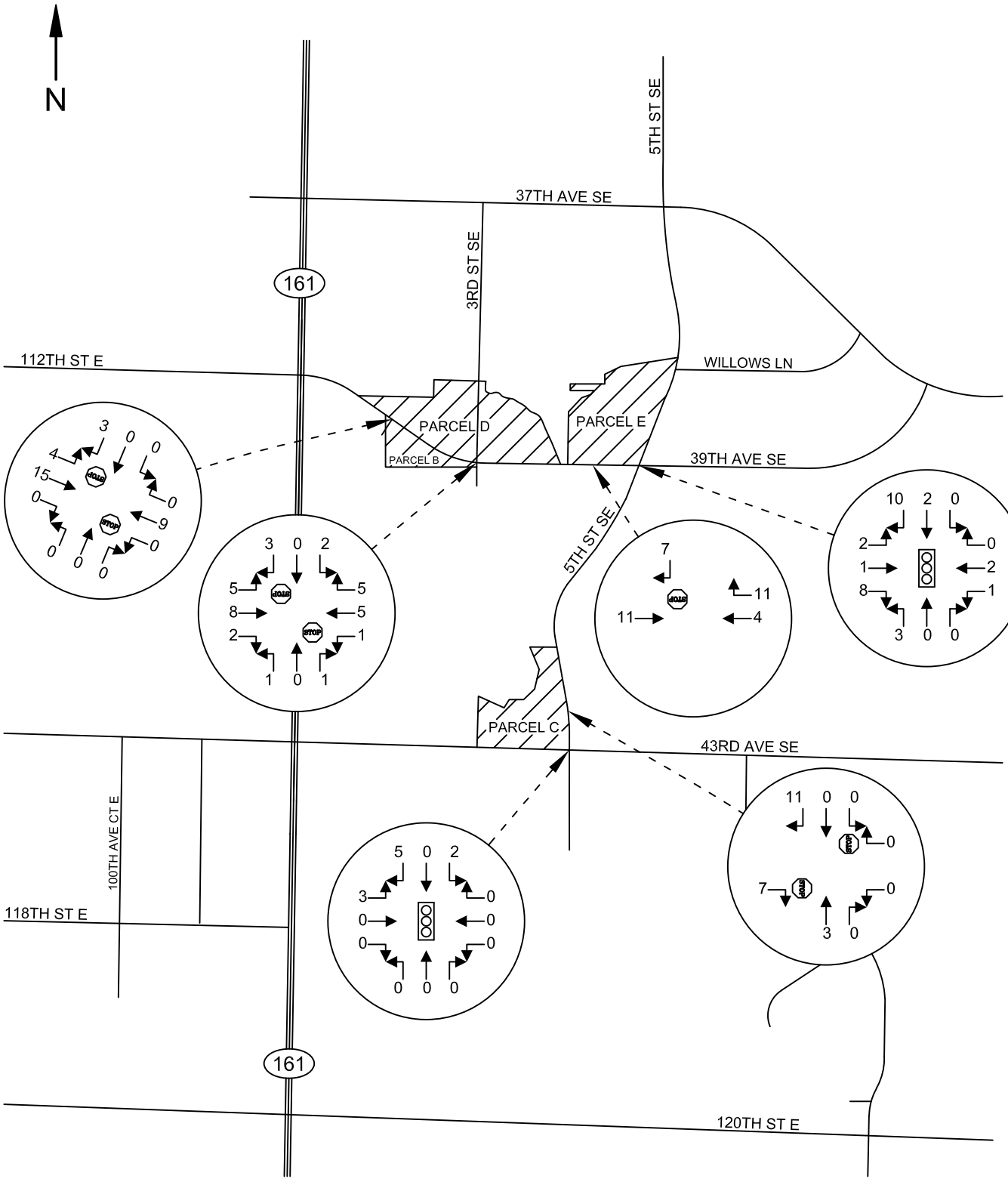


HEATH & ASSOCIATES

TRAFFIC AND CIVIL ENGINEERING

DOS LAGOS APARTMENTS - PARCELS "B" & "C"

PM PEAK HOUR PIPELINE VOLUMES
FIGURE A



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TRAFFIC AND CIVIL ENGINEERING

DOS LAGOS APARTMENTS

CUMULATIVE DOS LAGOS APARTMENTS TRIP DISTRIBUTION & ASSIGNMENT
FIGURE B

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	371	13	11	279	0	18	3	30	7	5	7
Future Vol, veh/h	3	371	13	11	279	0	18	3	30	7	5	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	3	386	14	11	291	0	19	3	31	7	5	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	291	0	0	400	0	0	569	712	200	514	719	146
Stage 1	-	-	-	-	-	-	399	399	-	313	313	-
Stage 2	-	-	-	-	-	-	170	313	-	201	406	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1275	-	-	1162	-	-	407	358	811	446	355	878
Stage 1	-	-	-	-	-	-	601	603	-	675	658	-
Stage 2	-	-	-	-	-	-	818	658	-	785	599	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1275	-	-	1162	-	-	396	354	811	423	351	878
Mov Cap-2 Maneuver	-	-	-	-	-	-	485	446	-	514	441	-
Stage 1	-	-	-	-	-	-	600	602	-	674	652	-
Stage 2	-	-	-	-	-	-	797	652	-	749	598	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	11.2	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	631	1275	-	-	1162	-	-	577
HCM Lane V/C Ratio	0.084	0.002	-	-	0.01	-	-	0.034
HCM Control Delay (s)	11.2	7.8	-	-	8.1	-	-	11.5
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	2	338	3	1	753
Future Vol, veh/h	1	2	338	3	1	753
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	2	348	3	1	776

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1128	350	0	0	351	0
Stage 1	350	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	227	696	-	-	1213	-
Stage 1	716	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	227	696	-	-	1213	-
Mov Cap-2 Maneuver	227	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	455	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	412	1213	-
HCM Lane V/C Ratio	-	-	0.008	0.001	-
HCM Control Delay (s)	-	-	13.8	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	231	31	25	194	156	47	39	37	466	49	257
Future Volume (veh/h)	110	231	31	25	194	156	47	39	37	466	49	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1841	1870	1885	1870	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	115	241	32	26	202	162	49	41	39	485	51	268
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	1	4	2	1	2	1	1	1	1	1
Cap, veh/h	320	499	66	375	257	206	290	74	70	675	83	437
Arrive On Green	0.07	0.31	0.31	0.03	0.27	0.27	0.05	0.08	0.08	0.28	0.32	0.32
Sat Flow, veh/h	1795	1617	215	1753	961	771	1781	888	845	1795	262	1376
Grp Volume(v), veh/h	115	0	273	26	0	364	49	0	80	485	0	319
Grp Sat Flow(s),veh/h/ln	1795	0	1832	1753	0	1732	1781	0	1733	1795	0	1638
Q Serve(g_s), s	2.7	0.0	7.3	0.6	0.0	11.8	1.5	0.0	2.7	13.5	0.0	10.0
Cycle Q Clear(g_c), s	2.7	0.0	7.3	0.6	0.0	11.8	1.5	0.0	2.7	13.5	0.0	10.0
Prop In Lane	1.00		0.12	1.00		0.45	1.00		0.49	1.00		0.84
Lane Grp Cap(c), veh/h	320	0	565	375	0	462	290	0	144	675	0	520
V/C Ratio(X)	0.36	0.00	0.48	0.07	0.00	0.79	0.17	0.00	0.56	0.72	0.00	0.61
Avail Cap(c_a), veh/h	488	0	1253	471	0	1047	369	0	606	1196	0	1359
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	17.0	15.4	0.0	20.5	23.5	0.0	26.6	15.3	0.0	17.5
Incr Delay (d2), s/veh	0.7	0.0	0.6	0.1	0.0	3.0	0.3	0.0	3.4	1.5	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.9	0.2	0.0	4.7	0.6	0.0	1.2	5.0	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	0.0	17.6	15.4	0.0	23.5	23.8	0.0	30.0	16.8	0.0	18.6
LnGrp LOS	B	A	B	B	A	C	C	A	C	B	A	B
Approach Vol, veh/h		388			390			129			804	
Approach Delay, s/veh		17.2			23.0			27.6			17.5	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	9.5	6.3	23.1	7.3	23.7	8.8	20.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	34.5	21.1	5.1	41.3	5.5	50.1	9.9	36.5
Max Q Clear Time (g_c+I1), s	15.5	4.7	2.6	9.3	3.5	12.0	4.7	13.8
Green Ext Time (p_c), s	1.5	0.3	0.0	1.7	0.0	2.3	0.1	2.3

Intersection Summary	
HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	394	14	12	301	5	19	3	32	9	5	10
Future Vol, veh/h	8	394	14	12	301	5	19	3	32	9	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	8	410	15	13	314	5	20	3	33	9	5	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	319	0	0	425	0	0	620	779	213	566	784	160
Stage 1	-	-	-	-	-	-	434	434	-	343	343	-
Stage 2	-	-	-	-	-	-	186	345	-	223	441	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1245	-	-	1138	-	-	374	328	795	409	325	860
Stage 1	-	-	-	-	-	-	573	582	-	648	638	-
Stage 2	-	-	-	-	-	-	801	637	-	762	578	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1245	-	-	1138	-	-	361	322	795	384	319	860
Mov Cap-2 Maneuver	-	-	-	-	-	-	456	420	-	482	416	-
Stage 1	-	-	-	-	-	-	570	579	-	644	631	-
Stage 2	-	-	-	-	-	-	776	630	-	721	575	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	11.5	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	606	1245	-	-	1138	-	-	567
HCM Lane V/C Ratio	0.093	0.007	-	-	0.011	-	-	0.044
HCM Control Delay (s)	11.5	7.9	-	-	8.2	-	-	11.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

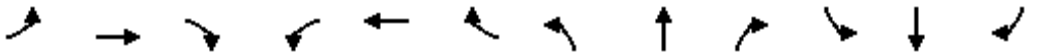
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	2	362	3	1	799
Future Vol, veh/h	1	2	362	3	1	799
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	1	2	373	3	1	824

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1201	375	0	0	376	0
Stage 1	375	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Critical Hdwy	6.41	6.21	-	-	4.11	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	-	-	2.209	-
Pot Cap-1 Maneuver	205	674	-	-	1188	-
Stage 1	697	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	205	674	-	-	1188	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	1188	-
HCM Lane V/C Ratio	-	-	0.008	0.001	-
HCM Control Delay (s)	-	-	14.5	8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	245	33	27	206	166	50	41	39	495	52	273
Future Volume (veh/h)	120	245	33	27	206	166	50	41	39	495	52	273
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1841	1870	1885	1870	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	125	255	34	28	215	173	52	43	41	516	54	284
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	1	4	2	1	2	1	1	1	1	1
Cap, veh/h	308	515	69	368	266	214	278	73	69	685	86	453
Arrive On Green	0.07	0.32	0.32	0.03	0.28	0.28	0.05	0.08	0.08	0.29	0.33	0.33
Sat Flow, veh/h	1795	1616	215	1753	959	772	1781	887	846	1795	262	1376
Grp Volume(v), veh/h	125	0	289	28	0	388	52	0	84	516	0	338
Grp Sat Flow(s),veh/h/ln	1795	0	1832	1753	0	1731	1781	0	1733	1795	0	1638
Q Serve(g_s), s	3.2	0.0	8.4	0.7	0.0	13.7	1.7	0.0	3.1	15.7	0.0	11.4
Cycle Q Clear(g_c), s	3.2	0.0	8.4	0.7	0.0	13.7	1.7	0.0	3.1	15.7	0.0	11.4
Prop In Lane	1.00		0.12	1.00		0.45	1.00		0.49	1.00		0.84
Lane Grp Cap(c), veh/h	308	0	584	368	0	480	278	0	142	685	0	540
V/C Ratio(X)	0.41	0.00	0.49	0.08	0.00	0.81	0.19	0.00	0.59	0.75	0.00	0.63
Avail Cap(c_a), veh/h	438	0	1143	451	0	964	350	0	542	1128	0	1256
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	18.1	16.2	0.0	22.1	25.6	0.0	29.0	16.5	0.0	18.6
Incr Delay (d2), s/veh	0.9	0.0	0.7	0.1	0.0	3.3	0.3	0.0	3.9	1.7	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	3.4	0.3	0.0	5.6	0.7	0.0	1.4	6.0	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.3	0.0	18.7	16.3	0.0	25.4	26.0	0.0	32.9	18.2	0.0	19.8
LnGrp LOS	B	A	B	B	A	C	C	A	C	B	A	B
Approach Vol, veh/h		414			416			136			854	
Approach Delay, s/veh		18.3			24.8			30.3			18.8	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	9.9	6.5	25.4	7.6	26.1	9.2	22.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	35.5	20.5	5.1	40.9	5.7	50.3	9.5	36.5
Max Q Clear Time (g_c+I1), s	17.7	5.1	2.7	10.4	3.7	13.4	5.2	15.7
Green Ext Time (p_c), s	1.6	0.3	0.0	1.8	0.0	2.5	0.1	2.5

Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	402	16	13	301	5	20	3	33	9	5	10
Future Vol, veh/h	8	402	16	13	301	5	20	3	33	9	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	-	75	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	8	419	17	14	314	5	21	3	34	9	5	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	319	0	0	436	0	0	632	791	218	572	797	160
Stage 1	-	-	-	-	-	-	444	444	-	345	345	-
Stage 2	-	-	-	-	-	-	188	347	-	227	452	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	1245	-	-	1127	-	-	367	322	789	405	320	860
Stage 1	-	-	-	-	-	-	565	576	-	647	637	-
Stage 2	-	-	-	-	-	-	799	636	-	758	571	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1245	-	-	1127	-	-	354	316	789	379	314	860
Mov Cap-2 Maneuver	-	-	-	-	-	-	449	416	-	479	411	-
Stage 1	-	-	-	-	-	-	562	573	-	643	629	-
Stage 2	-	-	-	-	-	-	773	628	-	716	568	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	11.7	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	598	1245	-	-	1127	-	-	564
HCM Lane V/C Ratio	0.098	0.007	-	-	0.012	-	-	0.044
HCM Control Delay (s)	11.7	7.9	-	-	8.2	-	-	11.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	7	1	0	2	0	362	3	1	799	11
Future Vol, veh/h	0	0	7	1	0	2	0	362	3	1	799	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	97	92	97	92	97	97	97	97	92
Heavy Vehicles, %	2	2	2	1	2	1	2	1	1	1	1	2
Mvmt Flow	0	0	8	1	0	2	0	373	3	1	824	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	830	1211	1213	375	-	0	0	376	0	0
Stage 1	-	-	-	375	375	-	-	-	-	-	-	-
Stage 2	-	-	-	836	838	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	7.11	6.52	6.21	-	-	-	4.11	-	-
Critical Hdwy Stg 1	-	-	-	6.11	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.11	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	3.509	4.018	3.309	-	-	-	2.209	-	-
Pot Cap-1 Maneuver	0	0	370	160	182	674	0	-	-	1188	-	-
Stage 1	0	0	-	648	617	-	0	-	-	-	-	-
Stage 2	0	0	-	363	382	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	370	157	182	674	-	-	-	1188	-	-
Mov Cap-2 Maneuver	-	-	-	157	182	-	-	-	-	-	-	-
Stage 1	-	-	-	648	617	-	-	-	-	-	-	-
Stage 2	-	-	-	355	382	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	16.3	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	370	321	1188	-	-
HCM Lane V/C Ratio	-	-	0.021	0.01	0.001	-	-
HCM Control Delay (s)	-	-	14.9	16.3	8	-	-
HCM Lane LOS	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	245	33	27	206	166	50	41	39	497	52	278
Future Volume (veh/h)	120	245	33	27	206	166	50	41	39	497	52	278
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1885	1841	1870	1885	1870	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	125	255	34	28	215	173	52	43	41	518	54	290
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	2	1	4	2	1	2	1	1	1	1	1
Cap, veh/h	307	515	69	368	266	214	277	73	69	686	85	456
Arrive On Green	0.07	0.32	0.32	0.03	0.28	0.28	0.05	0.08	0.08	0.30	0.33	0.33
Sat Flow, veh/h	1795	1616	215	1753	959	772	1781	887	846	1795	257	1380
Grp Volume(v), veh/h	125	0	289	28	0	388	52	0	84	518	0	344
Grp Sat Flow(s),veh/h/ln	1795	0	1832	1753	0	1731	1781	0	1733	1795	0	1637
Q Serve(g_s), s	3.2	0.0	8.4	0.7	0.0	13.7	1.7	0.0	3.1	15.8	0.0	11.7
Cycle Q Clear(g_c), s	3.2	0.0	8.4	0.7	0.0	13.7	1.7	0.0	3.1	15.8	0.0	11.7
Prop In Lane	1.00		0.12	1.00		0.45	1.00		0.49	1.00		0.84
Lane Grp Cap(c), veh/h	307	0	584	368	0	479	277	0	142	686	0	541
V/C Ratio(X)	0.41	0.00	0.50	0.08	0.00	0.81	0.19	0.00	0.59	0.76	0.00	0.64
Avail Cap(c_a), veh/h	437	0	1140	450	0	961	349	0	540	1126	0	1253
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	18.1	16.3	0.0	22.2	25.7	0.0	29.1	16.5	0.0	18.7
Incr Delay (d2), s/veh	0.9	0.0	0.7	0.1	0.0	3.3	0.3	0.0	3.9	1.7	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	3.4	0.3	0.0	5.6	0.7	0.0	1.4	6.1	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	0.0	18.8	16.4	0.0	25.5	26.0	0.0	33.0	18.2	0.0	19.9
LnGrp LOS	B	A	B	B	A	C	C	A	C	B	A	B
Approach Vol, veh/h		414			416			136			862	
Approach Delay, s/veh		18.3			24.9			30.3			18.9	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.9	9.9	6.5	25.4	7.6	26.2	9.2	22.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	35.5	20.5	5.1	40.9	5.7	50.3	9.5	36.5
Max Q Clear Time (g_c+I1), s	17.8	5.1	2.7	10.4	3.7	13.7	5.2	15.7
Green Ext Time (p_c), s	1.6	0.3	0.0	1.8	0.0	2.5	0.1	2.5

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C