



# Cloud One

1501 – 1515 Washington  
Miami Beach, Florida 33139

prepared for:

**XK Cappelli Ventures, LLC**

traffic study

---

## TABLE OF CONTENTS

---

<b>INTRODUCTION</b> .....	1
<b>INVENTORY</b> .....	3
Existing Land Use .....	3
Proposed Land Use and Access .....	3
<b>EXISTING CONDITIONS</b> .....	4
Roadway System.....	4
Nearby Intersections .....	4
<b>TRAFFIC COUNTS</b> .....	6
<b>TRIP GENERATION</b> .....	8
<b>TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT</b> .....	9
<b>TRAFFIC ANALYSES</b> .....	12
Future Conditions Traffic Volumes .....	12
Level of Service (LOS) Analyses .....	15
Valet Service and Queuing .....	18
<b>TRANSPORTATION DEMAND MANAGEMENT</b> .....	21
<b>CONCLUSIONS</b> .....	24

### LIST OF FIGURES

FIGURE 1 – Project Location Map .....	2
FIGURE 2 – Existing Lane Geometry .....	5
FIGURE 3 – Existing Traffic Counts .....	7
FIGURE 4A – Project Traffic Assignment.....	15
FIGURE 4B – Valet Parking Trips.....	16
FIGURE 5 – Background Traffic (Year 2026).....	14
FIGURE 6 – Total Traffic with Project (Year 2026).....	15
FIGURE 7 – Valet Parking Traffic Circulation .....	20

### LIST OF TABLES

TABLES 1 & 2 – Trip Generation.....	8
TABLE 3 – Project Trip Distribution .....	10
TABLE 4 – Growth Rate - Historical Counts .....	13
TABLE 5 – Growth Rate - Model .....	13
TABLE 6A – Intersection Capacity Analysis AM Peak Hour .....	16
TABLE 6B – Intersection Capacity Analysis PM Peak Hour .....	17

### APPENDICES

APPENDIX A – Site Plan	
APPENDIX B – Traffic Counts and Trip Generation Rates/Equations	
APPENDIX C – Signal Timing, PSCF, Historical Data, and Growth Rate	
APPENDIX D – Future Turning Movement Volumes	
APPENDIX E – SYNCHRO Analyses	
APPENDIX F – Queuing Analyses	

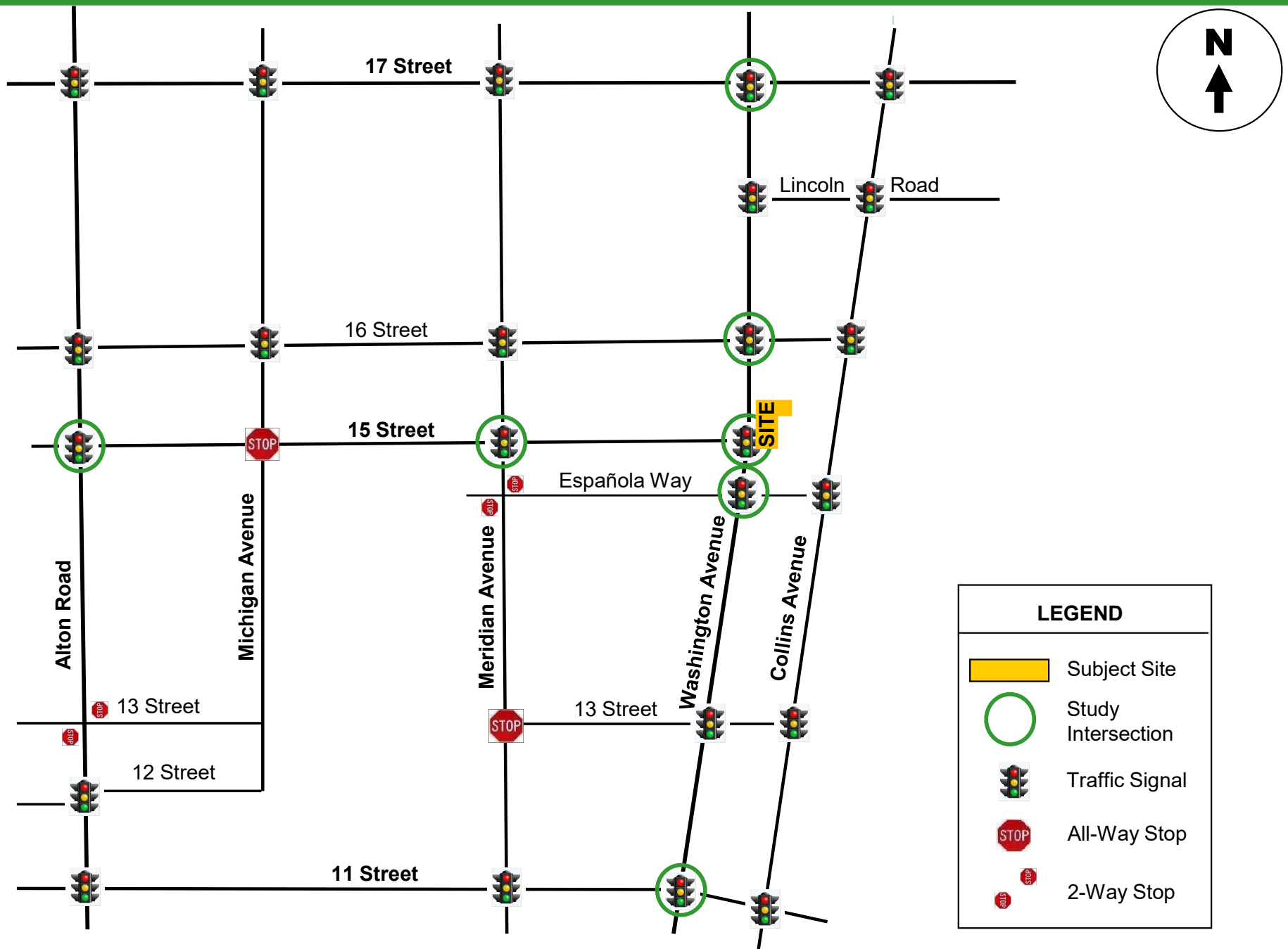
## INTRODUCTION

---

Cloud One is a proposed hotel development planned to be located at 1501-1515 Washington Avenue in the City of Miami Beach in Miami-Dade County, Florida. The location of the project site is illustrated in Figure 1 on the following page.

Traf Tech Engineering, Inc. was retained by XK Cappelli Ventures, LLC to conduct a traffic study in connection with the proposed development. The study addresses trip generation and the traffic impacts created by the proposed project on the nearby transportation network. This study is divided into seven (7) sections, as listed below:

1. Inventory
2. Existing Conditions
3. Traffic Counts
4. Trip Generation
5. Trip Distribution and Traffic Assignment
6. Traffic Impact Analysis
7. Conclusions and Recommendations



## INVENTORY

---

### **Existing Land Use**

The site for the proposed development is currently being used as retail.

### **Proposed Land Uses and Access**

- 240 hotel rooms
- 9,425 SF restaurant. It is important to note that 3,132 square feet of the restaurant space is to be located at Level 7 of the hotel building and therefore, this area is anticipated to be used primarily by hotel guests. However, for purposes of this traffic study, to assess impacts with a conservative approach the entire 9,425 square feet was assumed for traffic impact purposes.

The proposed development is anticipated to be built and occupied in 2026. Appendix A contains a copy of the proposed site plan for the project site.

## **EXISTING CONDITIONS**

---

This section addresses the existing roadway system located in the vicinity of the project site and nearby intersections.

### **Roadway System**

The roadway system located near the project site includes Alton Road, Meridian Avenue, Washington Avenue, 17<sup>th</sup> Street, 16<sup>th</sup> Street, 15<sup>th</sup> Street, Espanola Way, and 11<sup>th</sup> Street.

### **Nearby Intersections**

Seven intersections were identified as the locations that will be impacted the most by the proposed project. These four intersections include:

1. Alton Road and 15<sup>th</sup> Street (signalized)
2. Washington Avenue and 17<sup>th</sup> Street (signalized)
3. Washington Avenue and 15<sup>th</sup> Street (signalized)
4. Washington Avenue and 11<sup>th</sup> Street (signalized)
5. Meridian Avenue and 15<sup>th</sup> Street (signalized)
6. Washington Avenue and 16<sup>th</sup> Street (signalized)
7. Washington Avenue and Espanola Way (signalized)

Figure 2 shows the existing lane geometry of the seven intersections selected for analysis purposes. The number of lanes on the street system surrounding the project site is also depicted in the figures.



LEGEND	
	Left-Turn Lane
	Through Lane
	Right-Turn Lane

## TRAFFIC COUNTS

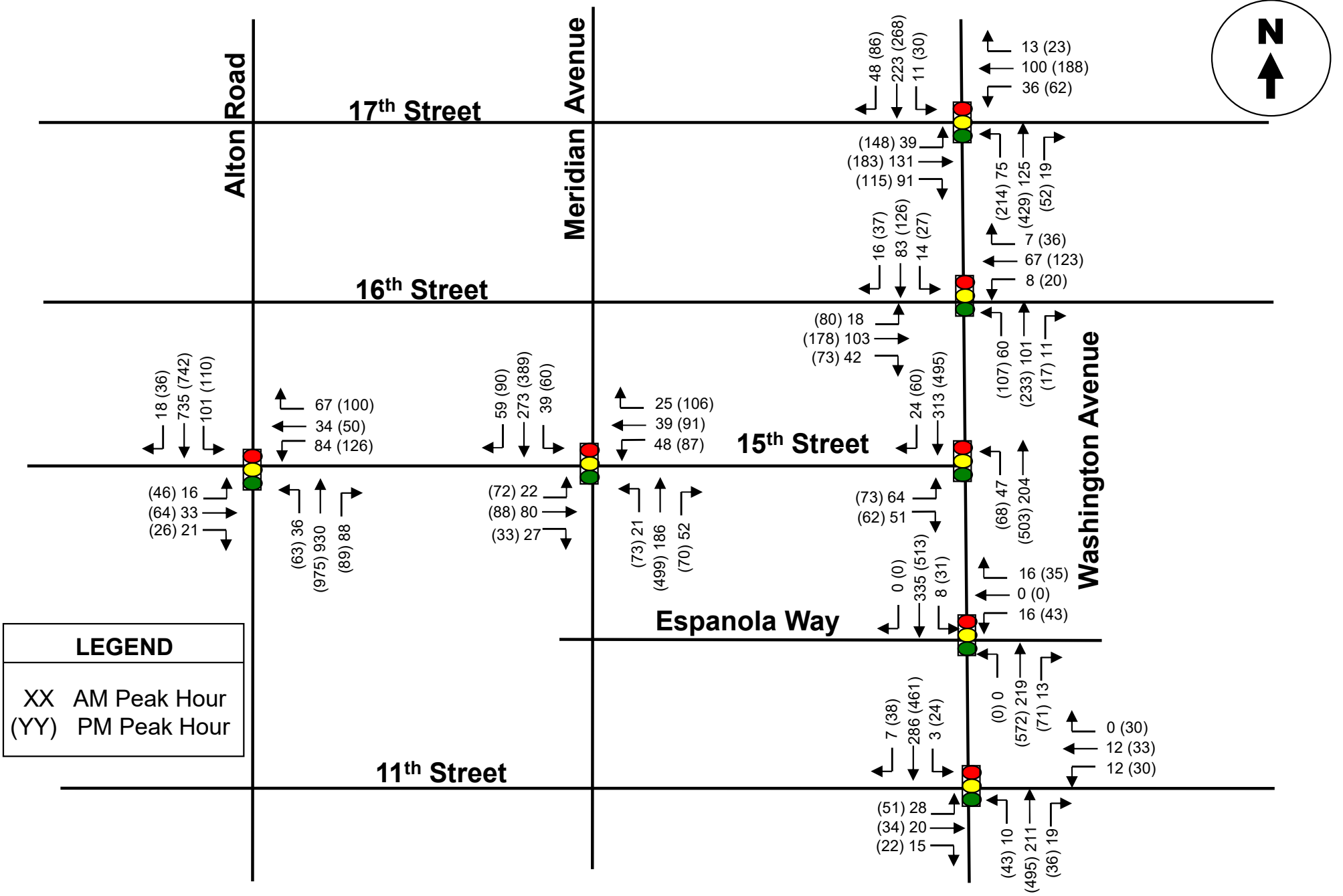
---

Traf Tech Engineering, Inc., collected intersection turning movement counts at the study intersections. The intersection turning movement counts were collected on Tuesday, January 31, 2023 and Thursday July 27, 2023 from 7:00 AM and 9:00 AM and from 4:00 PM and 6:00 PM at the following intersections located near the project site:

1. Alton Road and 15<sup>th</sup> Street
2. Washington Avenue and 17<sup>th</sup> Street
3. Washington Avenue and 15<sup>th</sup> Street
4. Washington Avenue and 11<sup>th</sup> Street
5. Meridian Avenue and 15<sup>th</sup> Street
6. Washington Avenue and 16<sup>th</sup> Street
7. Washington Avenue and Espanola Way

Appendix B contains the intersection turning movement counts, as collected in the field. The latest signal timing plans for the signalized intersections were obtained from Miami-Dade County Traffic Engineering Division and are included in Appendix C. The traffic counts were adjusted to account for peak season conditions. Adjustment factors of 1.02 and 1.06 were applied to counts collected in the field. The State-published adjustment factors are also contained in Appendix C.

Figure 3 shows the 2023 peak season AM and PM peak hour traffic volumes.



**2023 EXISTING TRAFFIC COUNTS – AM & (PM) Peak Hour**

**FIGURE 3**  
Cloud One  
Miami Beach, Florida

## TRIP GENERATION

---

The trip generation for the project was based on information contained in the Institute of Transportation Engineer’s (ITE) *Trip Generation Manual* (11<sup>th</sup> Edition). According to the subject ITE manual, the most appropriate “land use” categories for the proposed land uses include ITE’s Land Use 310 – Hotel, and ITE’s Land Use 931 – Restaurant.

The trip generation analysis was undertaken for Daily, AM peak hour, and PM peak hour conditions. Using the trip generation equations from the ITE document, a trip generation analysis was undertaken for the proposed project. The results of this effort are documented in Tables 1 and 2.

TABLE 1 Trip Generation Summary (Existing Use) 1509 Washington								
Land Use	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound
Retail <40k (LUC 822)	11,000 sf	599	26	16	10	72	36	36
<b>External Trips</b>		<b>599</b>	<b>26</b>	<b>16</b>	<b>10</b>	<b>72</b>	<b>36</b>	<b>36</b>

Source: ITE Trip Generation Manual (11th Edition)

TABLE 2 Trip Generation Summary (Proposed Uses) Cloud One								
Land Use	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound
Hotel (LUC 310)	240 keys	2,178	113	63	50	150	77	73
Restaurant (LUC 931)	9,425 sf	790	7	4	3	74	50	24
Pass-by Restaurant (PM 44%)		-352	0	0	0	-33	-22	-11
<b>External Trips</b>		<b>2,616</b>	<b>120</b>	<b>67</b>	<b>53</b>	<b>191</b>	<b>105</b>	<b>86</b>

Source: ITE Trip Generation Manual (11th Edition)

Difference	Daily Trips	AM Peak Hour			PM Peak Hour		
		Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound
Proposed - Existing	2,017	94	51	43	119	69	50

Please note that to assess impacts with a conservative approach, no trip deduction was applied to account for internal capture associated with the proposed uses.

As indicated at the end of Table 2, the proposed project is anticipated to generate approximately 2,017 new daily trips, approximately 94 AM peak hour trips (51 inbound and 43 outbound) and approximately 119 trips during the typical afternoon peak hour (69 inbound and 50 outbound).

## TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

The trip distribution and traffic assignment for the project were based on Miami-Dade County’s Cardinal Distribution information for the study area. Table 3 summarizes the County’s cardinal distribution data for Traffic Analysis Zone 644, which is applicable to the project site from the latest SERPM data published by Miami-Dade County.

<b>TABLE 3</b>								
<b>Project Trip Distribution</b>								
<b>TAZ #644 for Cloud One</b>								
<b>Year</b>	<b>Movement</b>							
	<b>NNE</b>	<b>ENE</b>	<b>ESE</b>	<b>SSE</b>	<b>SSW</b>	<b>WSW</b>	<b>WNW</b>	<b>NNW</b>
2015	14.8%	0.0%	0.0%	0.0%	16.5%	30.4%	19.0%	19.4%
2045	12.1%	0.0%	0.0%	0.0%	13.9%	34.5%	20.3%	19.2%
2025*	13.9%	0.0%	0.0%	0.0%	15.6%	31.8%	19.4%	19.3%

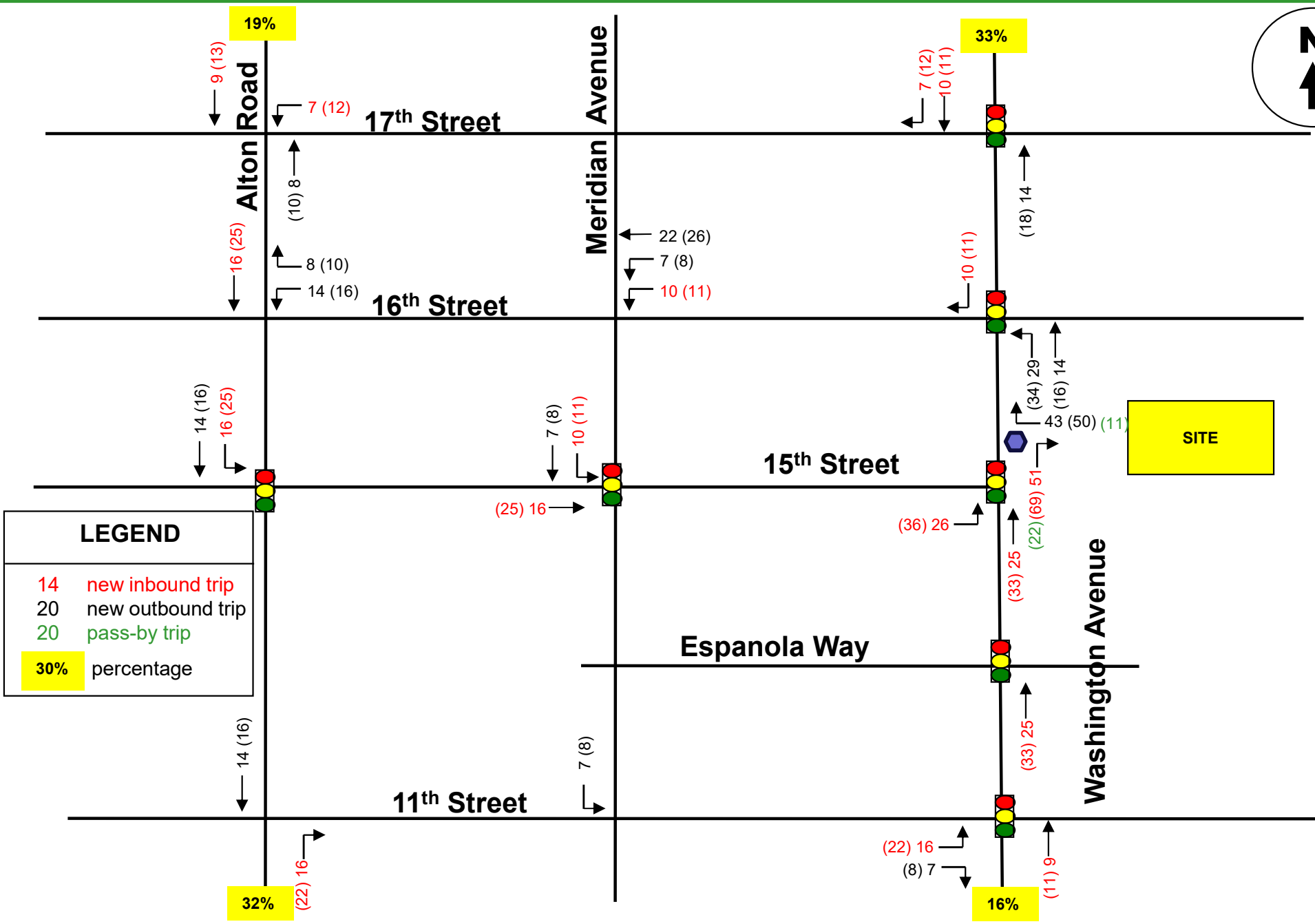
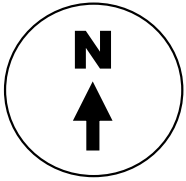
*Note: \* Interpolated Values*

*Source: Miami-Dade County (2015 & 2045 SERPM)*

Using the trip distribution documented in Table 3, the following traffic assignment was assumed for the proposed development:

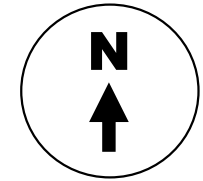
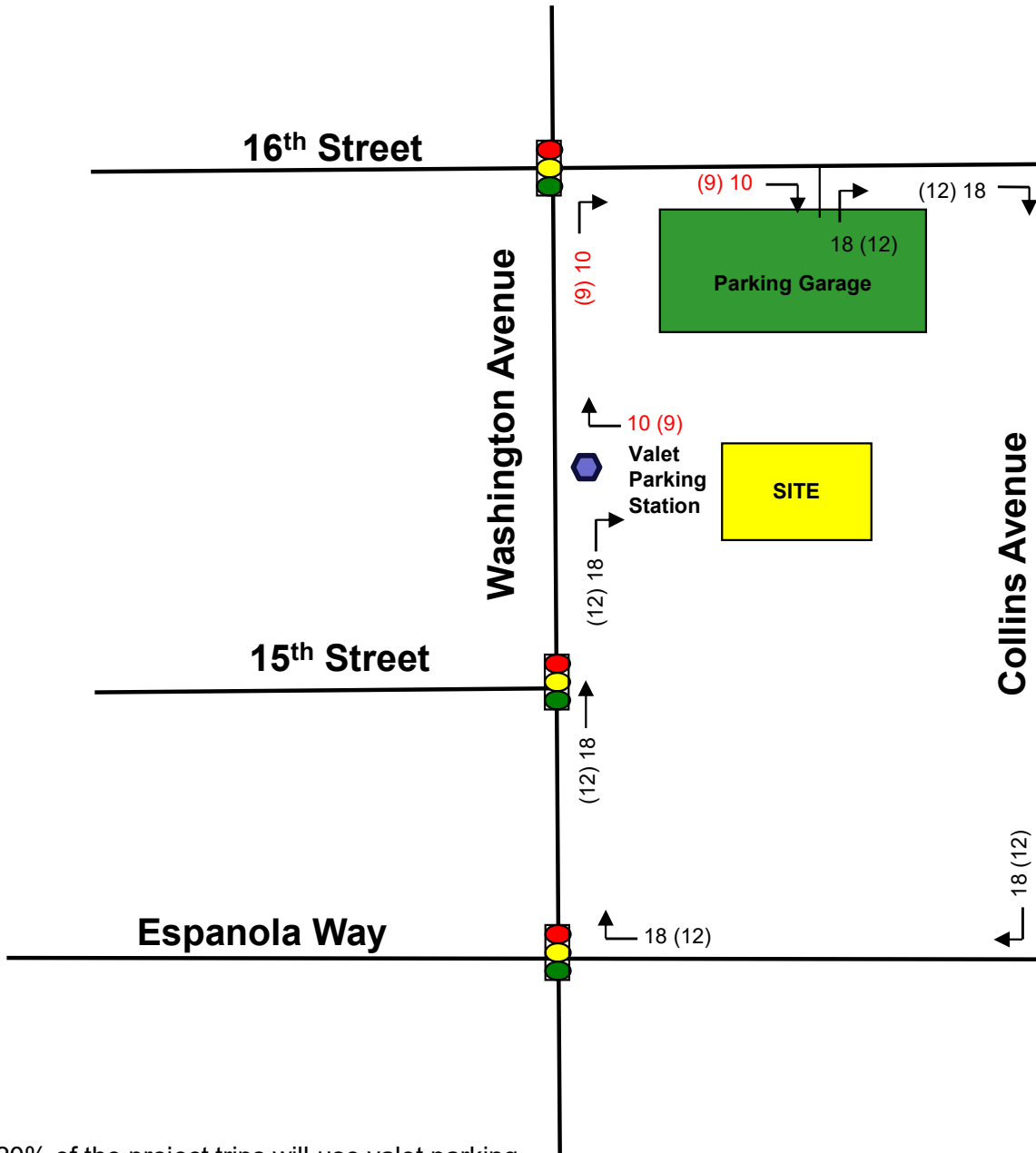
- 19% to/from the north via Alton Road
- 32% to/from the south via Alton Road
- 33% to/from the north via Washington Avenue
- 16% to/from the south via Washington Avenue

The new peak hour traffic generated by the project was assigned to the nearby transportation network using the traffic assignment documented above. The project traffic assignment is summarized in Figure 4. Even though the project does not provide parking on site, and many hotel/restaurant patrons are anticipated to park at nearby public parking garages, all inbound/outbound vehicles were assumed to access the site for a conservative approach.



**NEW PROJECT TRAFFIC ASSIGNMENT**  
Weekday New Peak Hour Trips AM & (PM)

**FIGURE 4A**  
Cloud One  
Miami Beach, Florida



LEGEND
14 Inbound Valet Trip
20 Outbound Valet Trip

Assumed that 20% of the project trips will use valet parking

**VALET PARKING**  
**Weekday New Peak Hour Trips AM & (PM)**

**FIGURE 4B**  
 Cloud One  
 Miami Beach, Florida



## TRAFFIC ANALYSIS

---

This section of the study is divided into two parts. The first part consists of developing the future conditions traffic volumes for the study area. The second part includes level-of-service analyses for existing and future conditions.

### **Future Conditions Traffic Volumes**

Two sets of future traffic volumes were developed. The first set includes project buildout conditions without the proposed project and the second set adds the new trips anticipated to be generated by the project.

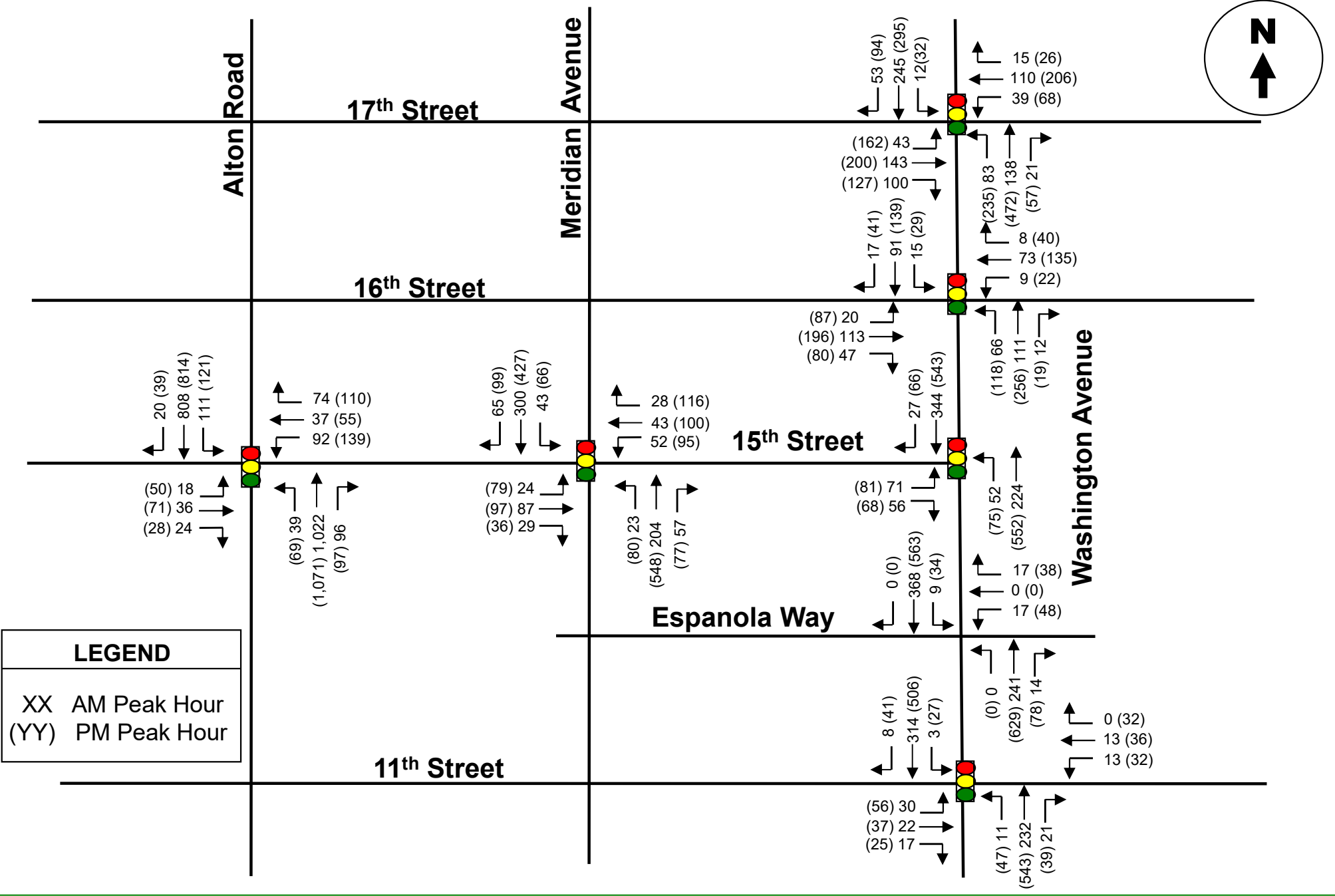
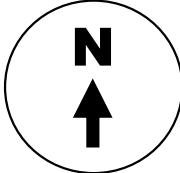
In order to develop year 2026 traffic volumes (project anticipated to be built and occupied by the year 2026), without the proposed project, two separate analyses were undertaken. The first analysis converts the existing peak hour traffic counts collected in the field to average peak season conditions. Based on FDOT's Peak Season Factor Category report, factors of 1.02 and 1.06 are required to convert collected traffic counts to average peak season conditions (refer to Appendix C). The second analysis includes a growth factor to project 2023 peak season traffic volumes to the year 2026. Based on traffic growth data published by the FDOT for nearby traffic count stations and Model (SERP 8.0) plots for years 2015 and 2045, a growth rate of 3.17%, compounded annually was used (refer to Appendix C for details). Please note that the growth rate utilized in the analyses provides a conservative approach and also accounts for unforeseen committed developments in the area.

Tables 4 and 5 show growth rate calculations based on FDOT historical traffic counts and results of the SERP model runs, respectively.

Table 4 - GROWTH RATE CALCULATION BASED ON FDOT HISTORICAL COUNTS						
Growth Rate Trend Analysis Calculations - 5 Years						
Description	FDOT Historical AADT Data					
	8414			8566		
Option	Linear	Exponential	Decaying Exponential	Linear	Exponential	Decaying Exponential
Trend Growth Rate 5 years	-6.45	-6.26	-6.26	-1.89	-1.94	-1.94
Trend R-squared 5 years	60.28	63.81	43.20	25.87	26.24	23.18
Average Growth Rate (5-year) Linear all stations	-4.17					
Average Growth Rate (5-year) Exponential all stations	-4.10					
Average Growth Rate (5-year) Decaying Exponential all stations	-4.10					
Highest R-Square	63.81					
Growth Rate (5-year) with the highest R- Square	-4.10					
Growth Rate Trend Analysis Calculations - 10 Years						
Description	FDOT Historical AADT Data					
	8414			8566		
Option	Linear	Exponential	Decaying Exponential	Linear	Exponential	Decaying Exponential
Trend Growth Rate 10 years	-2.43	-1.68	-1.68	-3.03	-3.69	-3.69
Trend R-squared 10 years	30.72	34.94	11.81	72.24	73.07	82.08
Average Growth Rate (10-year) Linear all stations	-2.73					
Average Growth Rate (10-year) Exponential all stations	-2.69					
Average Growth Rate (10-year) Decaying Exponential all stations	-2.69					
Highest R-Square	82.08					
Growth Rate (10-year) with highest R- Square	-2.69					

Table 5 Growth Rate Analysis Based on Model		
	Year	
Roadway Segment	2015	2045
Washington Ave north of 5th St	7096	18100
Totals	7096	18100
<b>Compound Growth Rate in 30 years =</b>	<b>3.17%</b>	

The new trips generated by the proposed project (refer to Figure 4) were added to the 2026 background traffic in order to develop total traffic conditions. The future traffic projections for the study intersections are presented in tabular format in Appendix D. Figures 5 and 6 present the year 2026 future traffic volumes for the study area. Figure 5 includes background traffic only (without the proposed project) and Figure 6 includes the additional traffic anticipated to be generated by the project.

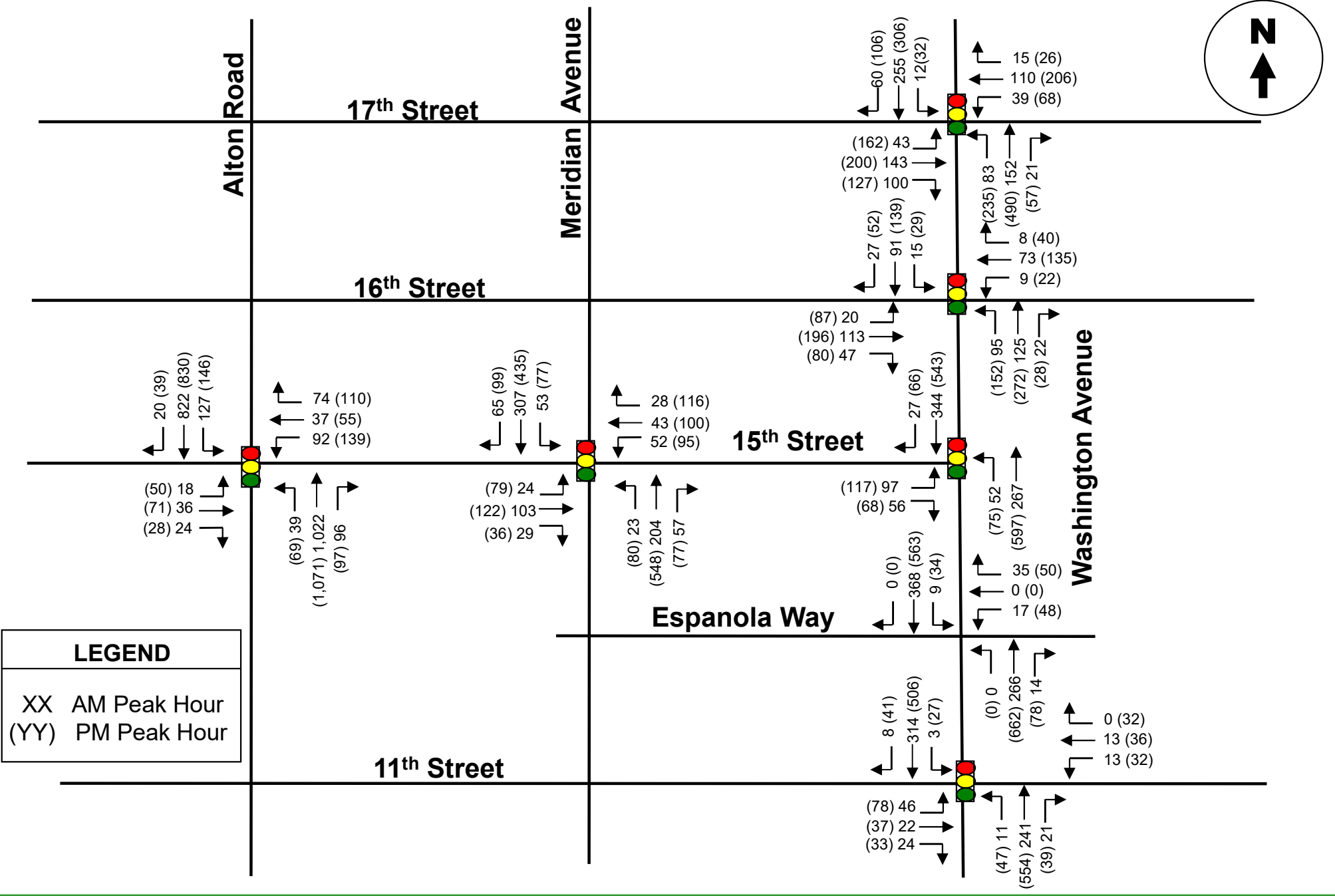
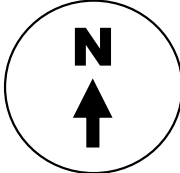


LEGEND	
XX	AM Peak Hour
(YY)	PM Peak Hour



**BACKGROUND TRAFFIC – Year 2026**  
**AM & (PM) Peak Hour**

**FIGURE 5**  
Cloud One  
Miami Beach, Florida



**FUTURE TRAFFIC – Year 2026  
AM & (PM) Peak Hour**

**FIGURE 6  
Cloud One  
Miami Beach, Florida**

## Level of Service Analyses

Intersection capacity/level of service analyses were conducted for the seven study intersections. The analyses were undertaken following the capacity/level of service procedures outlined in the Highway Capacity Manual (HCM) 6<sup>th</sup> Edition using the SYNCHRO 11 software. The results of the capacity analyses are summarized in Tables 6A and 6B.

TABLE 6A AM Peak Hour Intersection Capacity Analysis Cloud One						
Intersection	Scenario	Overall LOS/ Delay (sec)	Approach Delay			
			EB	WB	NB	SB
101: Alton Road & 15 Street	Existing	B/11.5	E/56.2	E/59.5	A/5.9	A/4.5
	Background	B/12.5	E/57.8	E/61.0	A/7.0	A/4.9
	Future	B/12.6	E/57.8	E/61.0	A/7.4	A/5.1
102: Washington Avenue & 17 Street	Existing	B/19.2	C/29.8	C/36.9	A/6.6	B/10.0
	Background	B/19.4	C/29.9	D/37.1	A/6.7	B/10.3
	Future	B/19.1	C/29.9	D/37.1	A/6.6	B/10.3
103: 15 Street & Washington Avenue	Existing	A/6.5	D/38.2		A/0.2	A/0.2
	Background	A/6.5	D/38.1		A/0.3	A/0.3
	Future	A/7.2	D/38.0		A/0.3	A/0.3
104: Washington Avenue & 11 Street	Existing	A/6.5	C/31.9	C/30.9	A/2.4	A/2.4
	Background	A/6.5	C/32.0	C/30.9	A/2.4	A/2.5
	Future	A/7.4	C/32.4	C/30.6	A/2.5	A/2.6
105: Meridian Avenue & 15 Street	Existing	B/10.2	B/12.8	B/13.2	A/8.6	A/9.4
	Background	B/10.6	B/13.2	B/13.7	A/9.0	A/9.9
	Future	B/10.8	B/13.4	B/13.9	A/9.1	B/10.2
106: Washington Avenue & 16 Street	Existing	B/18.5	D/38.8	C/34.8	A/0.2	A/5.3
	Background	B/18.4	D/38.5	C/34.1	A/0.3	A/5.7
	Future	B/16.8	D/38.5	C/34.1	A/0.3	A/5.8
107: Washington Avenue & Espanola Way	Existing	A/5.7		D/38.7	A/3.7	A/4.0
	Background	A/5.8		D/38.7	A/3.8	A/4.1
	Future	A/6.8		D/39.1	A/4.1	A/4.3

Source: Highway Capacity Manual 6<sup>th</sup> Edition.

TABLE 6B PM Peak Hour Intersection Capacity Analysis Cloud One						
Intersection	Scenario	Overall LOS/ Delay (sec)	Approach Delay			
			EB	WB	NB	SB
101: Alton Road & 15 Street	Existing	B/19.7	E/64.0	D/54.3	B/13.7	A/10.0
	Background	C/23.7	E/66.4	D/52.6	B/19.8	B/13.0
	Future	C/24.3	E/66.4	D/52.6	C/21.1	B/13.6
102: Washington Avenue & 17 Street	Existing	C/21.8	D/37.0	D/43.9	A/8.7	B/11.7
	Background	C/22.4	D/38.5	D/44.2	A/9.2	B/12.0
	Future	C/22.2	D/38.5	D/44.2	A/9.2	B/12.1
103: 15 Street & Washington Avenue	Existing	A/8.1	D/41.5		A/0.7	A/7.5
	Background	A/8.3	D/41.8		A/0.8	A/7.8
	Future	A/9.1	D/42.5		A/0.9	A/8.0
104: Washington Avenue & 11 Street	Existing	A/8.4	C/37.4	C/37.1	A/3.1	A/3.1
	Background	A/8.5	D/37.7	D/37.3	A/3.2	A/3.2
	Future	A/9.2	D/38.6	D/37.1	A/3.3	A/3.3
105: Meridian Avenue & 15 Street	Existing	B/16.0	B/16.8	B/16.6	B/17.2	B/14.1
	Background	B/19.2	B/17.2	B/16.9	C/22.9	B/16.7
	Future	B/19.4	B/17.1	B/17.1	C/22.9	B/17.4
106: Washington Avenue & 16 Street	Existing	C/32.0	E/62.0	C/34.2	B/14.9	A/10.0
	Background	D/42.2	F/94.0	C/34.5	B/15.3	B/10.1
	Future	D/40.7	F/94.0	C/34.5	B/15.9	B/10.3
107: Washington Avenue & Espanola Way	Existing	A/6.5		D/41.4	A/7.4	A/0.5
	Background	A/6.7		D/41.7	A/7.7	A/0.6
	Future	A/7.2		D/42.2	A/7.8	A/0.6

Source: Highway Capacity Manual 6<sup>th</sup> Edition.

As indicated in Tables 6A and 6B, all study intersections are currently operating adequately and will continue to operate at a good level of service in the year 2026 with the proposed project in place.

Note that at the intersection of Alton Road and 15<sup>th</sup> Street, the eastbound and westbound approaches during the AM peak hour and the eastbound approach during the PM peak hour are expected to operate at LOS E in the year 2026 with and without the project in place. Moreover, there is no increase in delay due to the project traffic. The computer printouts of the intersection capacity analyses are contained in Appendix E.

---

## Valet Service and Queuing

Valet service will be provided for hotel guests and restaurant customers. It was assumed that 20%<sup>1</sup> of the project trips will use the service. The valet station is provided on the ground-floor along Washington Avenue (please refer to Figure 4B). The parking location for valet vehicles is the parking garage located at 100 16<sup>th</sup> Street, Miami, Florida. Hence, for purposes of this traffic evaluation, the parking location is to be located 2,500 feet

from the site (driving distance on roads plus driving distance inside the parking garage). Therefore, it is recommended that a minimum of two (2) valet drop-off/pick-up spaces are provided.

A queuing analysis was conducted for the valet drop-off/pick-up location. The length of queue anticipated was determined using information contained in ITE's *Transportation and Land Development*, Chapter 8 – Drive-In Facilities<sup>2</sup>. For this analysis, the following input variables were used:

- Service Rate: The distance between the ground-level valet station and the valet parking garage is approximately 2,500 feet. As documented in Appendix F, the service rate for valet purposes is approximately 8 vehicles per hour.
- Demand Rate: As maximum of 18 inbound/outbound valet vehicles were estimated to arrive/depart during the highest hour ( $91 \times 0.20 = 18$  for PM Peak Hour).

---

<sup>1</sup> Based on Park One experience in similar projects in Miami Beach. Park One, hotels valet usage is approximately 24% and commercial uses range between 0% and 20%. Since the Cloud One project consists of hotel and restaurant uses, a 20% valet usage was used.

<sup>2</sup> By Vergil G. Stover and Frank J. Koepke.

---

Using equation 8-9b and Table 8-11 of ITE’s Transportation and Land Development, the maximum length of queue anticipated at the valet station, at the 95% confidence level, is two (2) vehicles. Therefore, the on-site valet station should provide parking for at least two (2) vehicle and have up to four (4) valet runners during peak times. The results of the ITE queuing procedure are included in Appendix F.

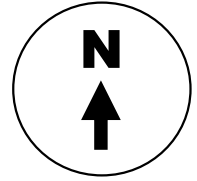
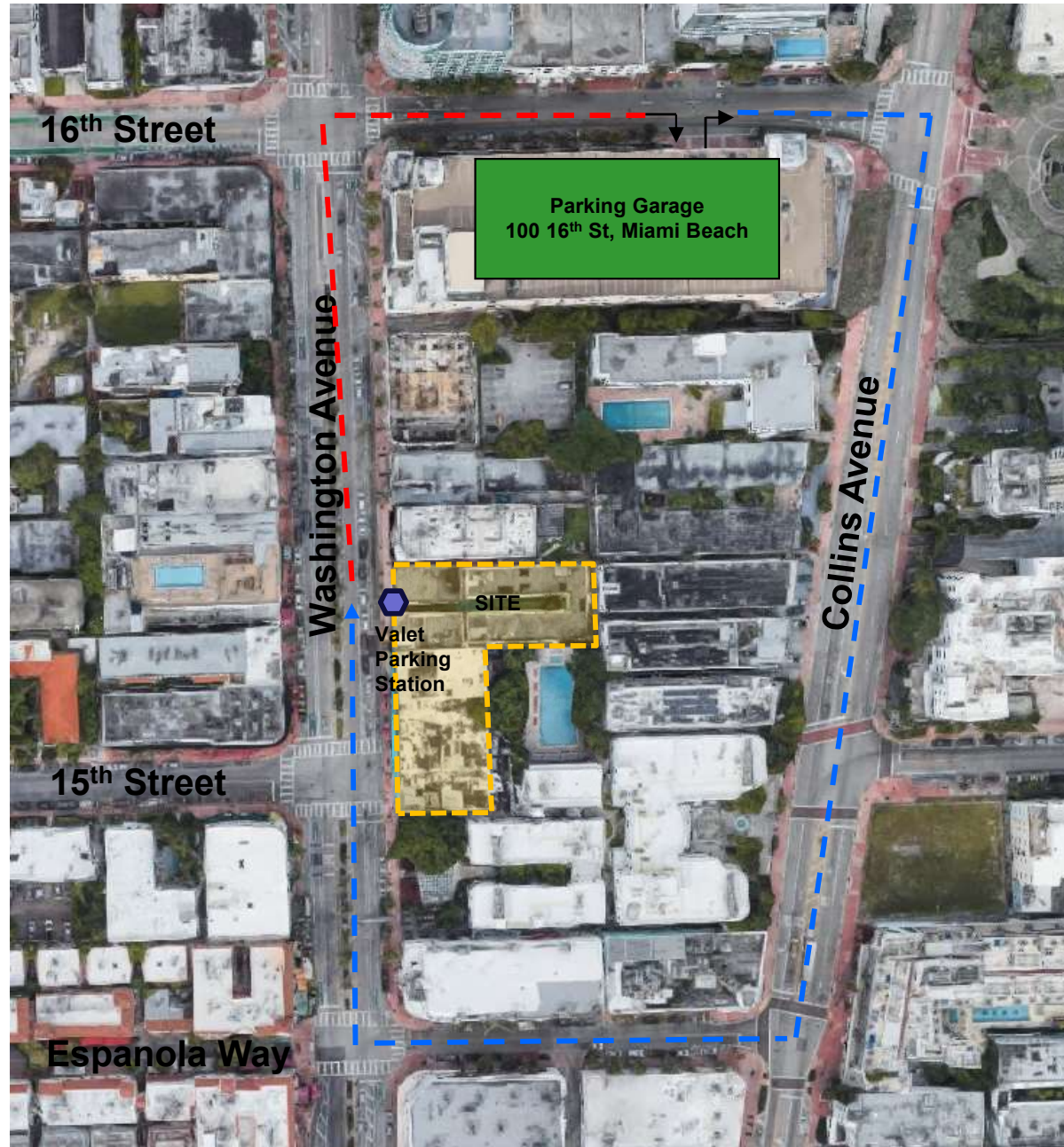
Figure 7 provides detailed information about the location of the Valet Station, Parking Garage, and the valet parking inbound and outbound routes on a map.

### **Parking**

According to Resilience Code Section 5.2.4.2.c.i, there are no parking requirements for hotels and restaurants. Hence, the Cloud One project is exempt from parking.

### **Delivery Vehicles**

As discussed, and agreed with the City of Miami Beach Parking Department during a meeting held on October 5, 2023, the loading for large trucks will include four (4) on-street parking spaces located on the east side of Washington Avenue, just north of the project’s north property line (refer to “Loading Diagram” on the site plan package located in Appendix B). There are currently three parking spaces designated for loading purposes but the City will add a fourth parking stall to accommodate large delivery trucks.



**LEGEND**

- Inbound Valet Trip
- Outbound Valet Trip

## **TRANSPORTATION DEMAND MANAGEMENT**

---

Traf Tech Engineering, Inc. prepared a Transportation Demand Management (TDM) plan for the Cloud One project. Travel Demand Management plans (TDM) establish policies and mechanisms to reduce automobile trips to and from designated facilities. TDM plans usually use several approaches to address all modes of transportation likely to be used to provide access to a facility such as single occupant driving, carpooling, transit, bicycling and walking. The goal of TDM plans is to increase the use of alternatives modes to single occupant driving, i.e., to reduce the number of automobile trips to and from the facility and consequently, minimizing automobile traffic impacts on the street system.

Successful TDM plans not only address all modes of transportation, but also use policies such as inducements for alternative modes (subsidies), physical enhancements (bike lockers, preferential parking for carpools) and disincentives for automobile use (no free parking for employees).

Potential measures for each mode are addressed below. Use of an employee transportation subsidy is also presented.

### **Pedestrian Access**

Walking not only reduces automobile trips and their contribution to congestion and emissions, it also provides health benefits to the employees who use this mode of transportation. It is, however, the mode that is least likely to be used for a number of reasons. It is unlikely that employees of the commercial building use will reside within a reasonable walking distance (within  $\frac{1}{4}$  -  $\frac{1}{2}$  mile) of the subject facility. However, the area near the subject project is a high pedestrian traffic area and therefore, many future residents of the Cloud One development are expected to be walking trips. Sidewalks exist on both sides of Washington Avenue and as well as safe pedestrian crosswalks (with ramps and pedestrian signals) at the adjacent and nearby signalized intersections of Washington Avenue/15th Street, Washington Avenue and Española Way and Washington Avenue/16th Street.

---

The sidewalk width along Washington Avenue varies with a maximum dimension of 13.5 feet. However, due to existing landscaping, and restaurant tables at some locations, the usable width for pedestrians is at least six feet.

### **Bicycling**

The site of the Cloud One project offers two potential approaches to encourage cycling, the use of the Citi Bike program and use of resident-owned bicycles. Additionally, use of Citi Bike could be supported by providing monthly passes to employees. Monthly passes are \$15.00 for unlimited 30-minute rides and \$25.00 for unlimited 60-minute rides. Within the immediate area of the project, there is one (1) convenient Citi Bike rental station (located on the northwest corner of Washington Avenue and 15th Street). Future residents could be informed of this Citi Bike Station. This station has sixteen (16) bicycle rental bicycles.

**(Goal: Offer 2 free City Bike passes to hotel and restaurant employees. Integrate bikeshare information into communication materials for future hotel guests and restaurant patrons).**

### **Mass Transit**

There are several transit options for the Cloud One development. These transit options include Routes L, South Beach Loop, Route 120 and Route 150. The nearest bus stop for these services is located on Washington Avenue, just south of 15th Street (within 200 feet from the project site). These transit routes provide frequent service and access to all of Miami-Dade County as well as connections to other destinations outside of the County.

### **MDT offers three methods to provide transit subsidies:**

The employee uses pre-tax dollars from their salary to purchase monthly transit passes. There is no income tax on the portion of their salary used for transit passes. The pre-tax funds also reduce the employees' taxable salary, reducing the total amount of income tax paid by the employees. The employer pays the total cost of a monthly transit pass using a

---

tax-deductible (to the employer) subsidy. The employer receives a tax deduction equivalent to the value of the transit subsidies provided to the employees. The transit subsidy is a fringe benefit to employees and is not taxable income.

Both the employer and employees share the cost of transit passes, paying for them with pre-tax dollars. The employer reduces his/her payroll taxes. Employees do not pay income tax on the money used for transit passes.

MDT monthly passes if purchased by an individual are \$112.50. Corporate discounts are available based on the number of participating employees. For 4 – 99 employees, monthly passes are \$101.25 per employee, for 100 or more employees, the cost is \$95.65 per employee.

**Goal: Offer 2 free transit passes to hotel and restaurant employees. Provide bus schedule information on the lobby of the hotel building.**

### **Carpooling**

Carpooling is historically the least effective alternative transportation mode, even when implemented on a regional basis. Since no on-site parking spaces are provided at this facility, it is unlikely that carpooling will provide a significant amount of trip reduction.

**Goal: 2 free valet passes to carpool riders of the hotel/restaurant employees.**

## CONCLUSIONS

---

Cloud One Avenue is a proposed residential development planned to be located at 1501-1515 Washington Avenue in the City of Miami Beach in Miami-Dade County, Florida. The site will be developed with the following land use and intensity:

- 240 hotel rooms
- 9,425 Sf restaurant

The conclusions and recommendations of the traffic study are presented below:

- The proposed project is anticipated to generate approximately 2,017 new daily trips, approximately 94 AM peak hour trips (51 inbound and 43 outbound) and approximately 119 trips during the typical afternoon peak hour (69 inbound and 50 outbound).
- All study intersections are currently operating adequately and will continue to operate at a good level of service in the year 2026 with the proposed project in place.
- Results of the queuing analysis revealed that the on-site valet station should provide parking for at least two (2) vehicles and have up to four (4) valet runners during peak times.

# **Traffic Methodology**

**(As Discussed During Methodology Meeting with the City)**



# Cloud One

1501 – 1515 Washington  
Miami Beach, Florida 33139

prepared for:  
**XK Cappelli Ventures, LLC**

traffic methodology

July 27, 2023

Mr. Otniel Rodriguez, E.I.  
Assistant Director  
Transportation & Mobility Department  
1700 Convention Center Drive, 3<sup>rd</sup> Floor  
Miami Beach, Florida 33139

**Re: 1501-1515 Washington – Traffic Statement**

Dear Otniel:

Traf Tech Engineering, Inc. has prepared this traffic memorandum and proposed traffic methodology in connection with a proposed hotel development planned to be located at 1501 - 1515 Washington Avenue in the City of Miami Beach in Miami-Dade County, Florida. The project will consist of 268 hotel rooms including a 5,000 square-foot restaurant. The restaurant will be located within the hotel building and will front Washington Avenue. The restaurant is not intended to be fast food or a high turnover-type eating establishment. It will have a separate operator than the hotel operation. The proposed site plan for the project is contained in Appendix A. As shown on the site plan, off-street parking is not provided and the project will not have a driveway of any kind off of Washington Avenue or nearby side streets/alleys. This traffic memorandum addresses the following topics:

- Trip Generation
- Proposed Traffic Methodology

### **Trip Generation**

A trip generation analysis was performed for the site using the trip generation equations published in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual (11<sup>th</sup> Edition)*. The trip generation analyses were undertaken for daily, AM peak hour, and PM peak hour conditions. The trip generation was performed for the existing uses at the site and the proposed hotel development.

The results of this effort are documented in Tables 1 and 2. As shown in the tables, the proposed hotel-restaurant development is projected to generate approximately 2,616 new daily trips, approximately 120 AM peak hour trips (67 inbound and 53 outbound) and approximately 191 trips during the typical afternoon peak hour (105 inbound and 86 outbound).

When compared against the existing use at the site, the new project will add approximately 2,01 new daily trips, approximately 94 AM peak hour trips (51 inbound and 43 outbound) and approximately 119 trips during the typical afternoon peak hour (69 inbound and 50 outbound).

TABLE 1 Trip Generation Summary (Existing Use) 1509 Washington								
Land Use	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound
Retail <40k (LUC 822)	11,000 sf	599	26	16	10	72	36	36
<b>External Trips</b>		<b>599</b>	<b>26</b>	<b>16</b>	<b>10</b>	<b>72</b>	<b>36</b>	<b>36</b>
<i>Source: ITE Trip Generation Manual (11th Edition)</i>								
TABLE 2 Trip Generation Summary (Proposed Uses) Cloud One								
Land Use	Size	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound
Hotel (LUC 310)	240 keys	2,178	113	63	50	150	77	73
Restaurant (LUC 931)	9,425 sf	790	7	4	3	74	50	24
Pass-by Restaurant (PM 44%)		-352	0	0	0	-33	-22	-11
<b>External Trips</b>		<b>2,616</b>	<b>120</b>	<b>67</b>	<b>53</b>	<b>191</b>	<b>105</b>	<b>86</b>
<i>Source: ITE Trip Generation Manual (11th Edition)</i>								
Difference		Daily Trips	AM Peak Hour			PM Peak Hour		
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound
Proposed - Existing		2,017	94	51	43	119	69	50

Please give me a call if you have any questions.

Sincerely,

TRAF TECH ENGINEERING, INC.

Joaquin E. Vargas, P.E.  
Senior Transportation Engineer

### PROPOSED TRAFFIC METHODOLOGY

- The trip generation analysis will be based upon the Institute of Transportation Engineers (ITE) *Trip Generation Manual (11<sup>th</sup> Edition)*. Tables 1 and 2 on the previous page documents the trip generation associated with the existing retail development (LUC 822) and the proposed hotel-restaurant development (LUC 310 and LUC 931).
- The trip distribution and assignment of project traffic will be based upon the applicable TAZ data contained within the Long-Range Transportation Plan (LRTP) published by the Miami-Dade MPO. The distribution will be interpolated between the 2015 and 2045 model years for the appropriate buildout year (tentatively estimated to be 2025). Table 3 below documents the Cardinal Distribution data for TAZ 644 which is applicable to the project site.

TABLE 3 Project Trip Distribution TAZ #644 for Cloud One								
Year	Movement							
	NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW
2015	14.8%	0.0%	0.0%	0.0%	16.5%	30.4%	19.0%	19.4%
2045	12.1%	0.0%	0.0%	0.0%	13.9%	34.5%	20.3%	19.2%
2025*	13.9%	0.0%	0.0%	0.0%	15.6%	31.8%	19.4%	19.3%
<i>Note: * Interpolated Values</i>								
<i>Source: Miami-Dade County (2015 &amp; 2045 SERPM)</i>								

- The subject traffic study will evaluate the following intersections during the typical AM and PM peak periods:
  - Washington Avenue and 17<sup>th</sup> Street (signalized)
  - Washington Avenue and 16<sup>th</sup> Street (signalized)
  - Washington Avenue and 15<sup>th</sup> Street (signalized)
  - Washington Avenue and Espanola Way (signalized)
  - Washington Avenue and 11<sup>th</sup> Street (signalized)
  - 15<sup>th</sup> Street and Meridian Avenue (signalized)
  - Alton Road and 15<sup>th</sup> Street (signalized)

- Traffic counts recently collected in early 2023 will be used.
- Traffic counts will be adjusted to reflect average peak season conditions based upon the most recent available FDOT adjustment factors.
- No adjustment to account for Covid will be applied (it is believed that traffic conditions are similar to pre-covid conditions).
- A growth factor will be applied to the traffic counts to reflect future traffic conditions at project build-out. The growth factor will be based upon historical traffic data available for the area near the project site.

The growth rate analysis using FDOT count stations will evaluate linear, exponential, and decaying exponential growth rates for the most recent five-year and ten-year periods. The historical growth analysis will be compared to 2015 and 2045 FSUTMS SERPM volume growth in order to select a conservative growth rate for the project.

- Traffic associated with the committed developments will be provided by the City of Miami Beach:
- Existing traffic signal timing data for the study intersections will be obtained from Miami-Dade County DTPW and will be included in the Appendix of the traffic study.
- Traffic analysis will be prepared for each of the study intersections and project driveways for the following scenarios:
  - Existing (2023) traffic conditions
  - Background traffic conditions for buildout year (2025)
  - Future conditions with growth rate, committed development and project traffic for the buildout year (2025)
- The level of service and delay for the study intersections will be summarized by movement and approach as well as for the overall intersection. If necessary, mitigation of impacts will be recommended.
- Intersection analyses will be conducted using the Synchro software (Version 11) for existing conditions, future conditions without the project, and future conditions with the proposed project in place. The Highway

Capacity Manual (HCM) 6<sup>th</sup> or 2000 Edition will be used, as applicable. Synchro files will be provided as part of the traffic study.

- A parking description (required vs provided) will be documented in the traffic study. Nearby available parking for the future patrons will be addressed and will take into account the nearby residential parking zones.
- The traffic study will include a multimodal section addressing non-automobile modes of transportation. Pedestrian features located near the site, such as sidewalks, crosswalks, ramps to access crosswalks, etc. will be documented.
- Transit routes traveling along Washington Avenue and nearby local streets will be documented. Locations of bus stops and proximity to the project will also be addressed in the traffic study.
- Valet service may be provided for this project. Therefore, a valet operations plan will be prepared addressing valet station location, parking and retrieval routes, valet parking and number of valet attendants required to prevent traffic queues from interfering with the through traffic on Washington Avenue. Ridesharing will be documented.

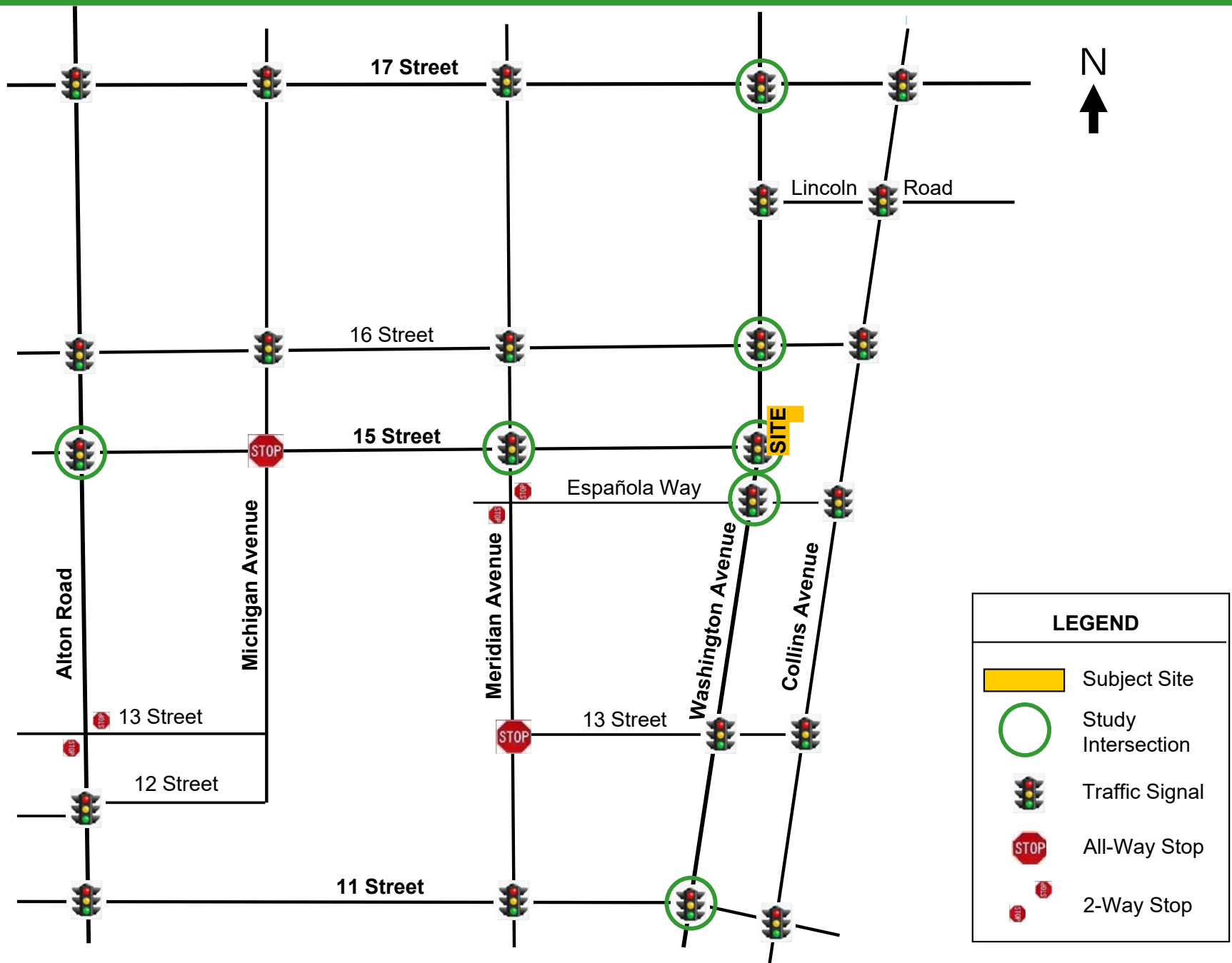
The existing on-street parking spaces will be used for valet purposes, discussions will be held with the City of Miami Beach Parking Department to provide a drop-off/pick-up area for the project.

The agreements reached with the Parking Department will be documented in the traffic report as part of the valet operation. Moreover, the valet parking location (private or public) will be documented.

- The results of the traffic impact analysis will be documented in a technical report with an executive summary. All traffic data obtained for this project will be included in the Appendix of the traffic study.
- Delivery vehicles will be addressed in the traffic study. The curb parking will be used for delivery vehicles since the site has over 200 feet of frontage along Washington Avenue. AutoTURN analysis to ensure delivery vehicles can park and unpark without affecting the through traffic along Washington Avenue will be performed. Since existing on-street parking spaces will be used for delivery vehicles, discussions will be held with the

City of Miami Beach Parking Department. The agreements reached with the Parking Department will be documented in the traffic report.

- A traffic circulation analysis on the impacts from the drop-off/pick up along Washington Avenue will be included in the traffic study.
- The buildout year for the project is anticipated to be the end of 2025.



**PROJECT LOCATION MAP  
&  
STUDY INTERSECTIONS**

**FIGURE 1**  
Cloud One  
Miami Beach, Florida

# **APPENDIX A**

## **Site Plan for Cloud One**

**CLOUD ONE**  
MIAMI BEACH, FLORIDA  
  
PROGRESS SET

**ARQUITECTONICA**

2900 Oak Avenue, Miami, FL 33133  
T 305.372.1812 F 305.372.1175

ALL DESIGNS INDICATED IN THESE DRAWINGS ARE PROPERTY OF ARQUITECTONICA INTERNATIONAL CORP. NO COPIES, TRANSMISSIONS, REPRODUCTIONS OR ELECTRONIC MANIPULATION OF ANY PORTION OF THESE DRAWINGS IN THE WHOLE OR IN PART ARE TO BE MADE WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ARQUITECTONICA INTERNATIONAL CORP. DESIGN INTENT SHOWN IS SUBJECT TO REVIEW AND APPROVAL OF ALL APPLICABLE LOCAL AND GOVERNMENTAL AUTHORITIES HAVING JURISDICTION. ALL COPYRIGHTS RESERVED © 2021.  
THE DATA INCLUDED IN THIS STUDY IS CONCEPTUAL IN NATURE AND WILL CONTINUE TO BE MODIFIED THROUGHOUT THE COURSE OF THE PROJECTS DEVELOPMENT WITH THE EVENTUAL INTEGRATION OF STRUCTURAL, MEP AND LIFE SAFETY SYSTEMS. AS THESE ARE FURTHER REFINED, THE NUMBERS WILL BE ADJUSTED ACCORDINGLY.

CLOUD ONE HOTEL  
1509 - 1515 WASHINGTON AVE  
MIAMI BEACH, FL 33139

DATE:  
NOV 22, 2023

LOT AREA	27,625 SF	(0.634 Acres)
FAR MAX. (2.0)	55,250 SF	
ALLOCATED FAR	40,000 SF	
<b>TOTAL FAR</b>	<b>95,250 SF</b>	

Proposed Building : HOTEL TOWER

	Hotel keys	Hotel NSF	Hotel GSF	Outdoor Amenity SF	F&B NSF	F&B GSF	Outdoor Terrace SF	GSF	FAR	AMENITIES SF	GSF AMENITY DIAGRAM
Roof Top											
Level 07	23 keys	5,373 SF	7,711 SF		3,132 SF	3,222 SF	1,682 SF	10,934 SF	10,935 SF	4,013 SF	12,753 SF
Level 06	42 keys	9,780 SF	12,583 SF					12,583 SF	12,583 SF		12,583 SF
Level 05	42 keys	9,780 SF	12,583 SF					12,583 SF	12,583 SF		12,583 SF
Level 04	42 keys	9,780 SF	12,583 SF					12,583 SF	12,583 SF		12,583 SF
Level 03	42 keys	9,780 SF	12,583 SF					12,583 SF	12,583 SF		12,583 SF
Level 02	38 keys	8,736 SF	11,533 SF	7,550 SF	238 SF	693 SF	356 SF	12,226 SF	12,197 SF	7,906 SF	21,090 SF
Ground Level	11 keys	2,520 SF	12,929 SF	4,304 SF	6,055 SF	8,190 SF	1,392 SF	21,119 SF	16,754 SF	9,584 SF	20,947 SF
<b>TOTAL</b>	<b>240 keys</b>	<b>55,749 SF</b>	<b>82,505 SF</b>	<b>11,854 SF</b>	<b>9,425 SF</b>	<b>12,105 SF</b>	<b>3,430 SF</b>	<b>94,611 SF</b>	<b>90,218 SF</b>	<b>21,503 SF</b>	<b>105,122 SF</b>

**PARKING DISTRICT No. 7: No parking requirement**

**TOTAL FIGURES**

Commercial SF	9,425 SF
Hotel Keys	240 keys
Hotel GSF	82,505 SF
Project GSF	94,611 SF
Project FAR	90,218 SF

Amenities 20%: **21,024 SF**

**ARQUITECTONICA**

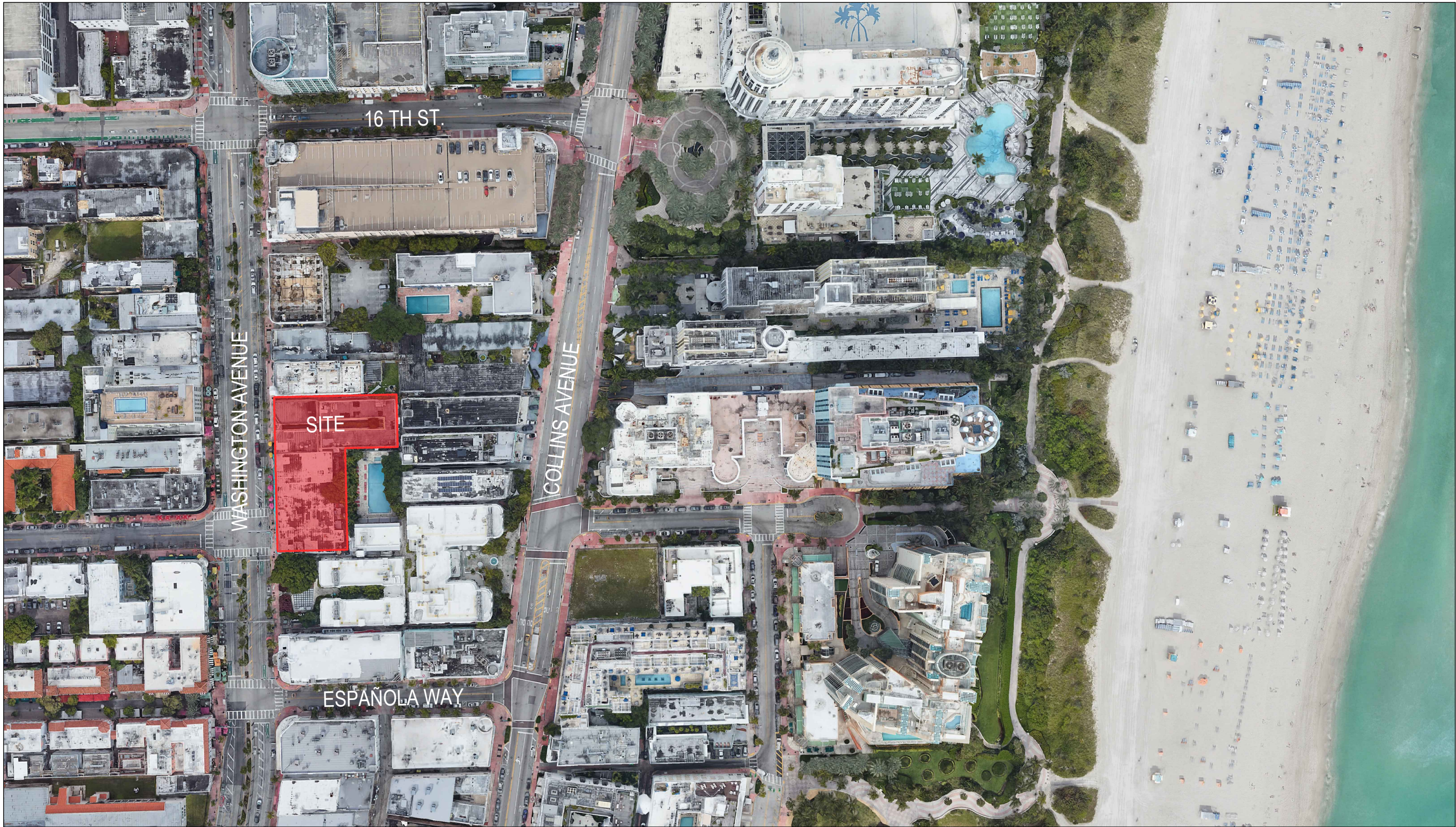
2900 Oak Avenue, Miami, FL 33133  
T 305.372.1812 F 305.372.1175

ALL DESIGNS INDICATED IN THESE DRAWINGS ARE PROPERTY OF ARQUITECTONICA INTERNATIONAL CORP. NO COPIES, TRANSMISSIONS, REPRODUCTIONS OR ELECTRONIC MANIPULATION OF ANY PORTION OF THESE DRAWINGS IN THE WHOLE OR IN PART ARE TO BE MADE WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ARQUITECTONICA INTERNATIONAL CORP. DESIGN INTENT SHOWN IS SUBJECT TO REVIEW AND APPROVAL OF ALL APPLICABLE LOCAL AND GOVERNMENTAL AUTHORITIES HAVING JURISDICTION. ALL COPYRIGHTS RESERVED © 2021.  
THE DATA INCLUDED IN THIS STUDY IS CONCEPTUAL IN NATURE AND WILL CONTINUE TO BE MODIFIED THROUGHOUT THE COURSE OF THE PROJECTS DEVELOPMENT WITH THE EVENTUAL INTEGRATION OF STRUCTURAL, MEP AND LIFE SAFETY SYSTEMS. AS THESE ARE FURTHER REFINED, THE NUMBERS WILL BE ADJUSTED ACCORDINGLY.

CLOUD ONE HOTEL  
1509 - 1515 WASHINGTON AVE  
MIAMI BEACH, FL 33139

PROJECT DATA

DATE:  
NOV 22, 2023



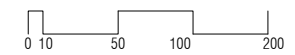
**ARQUITECTONICA**

2900 Oak Avenue, Miami, FL 33133  
T 305.372.1812 F 305.372.1175

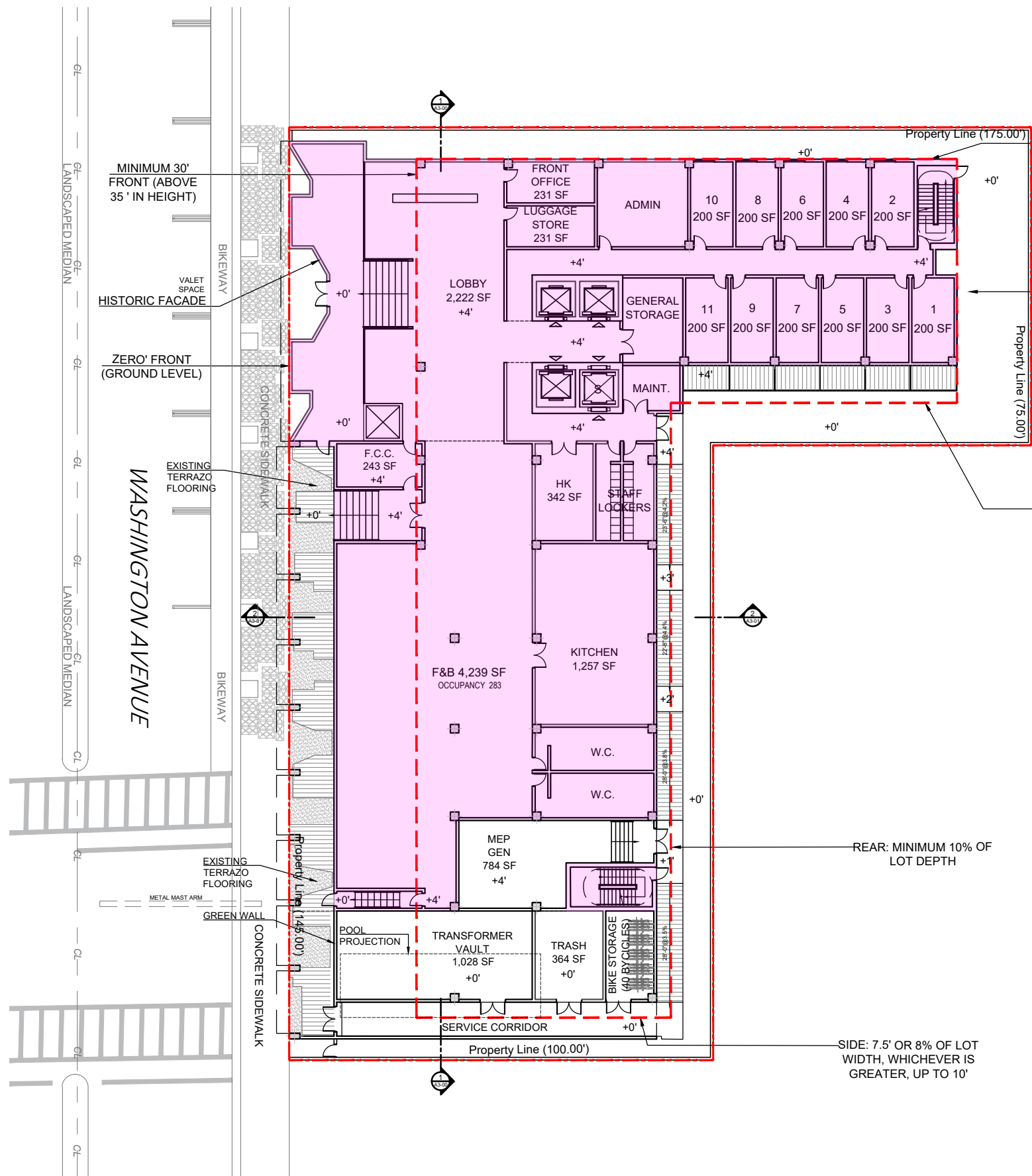
ALL DESIGNS INDICATED IN THESE DRAWINGS ARE PROPERTY OF ARQUITECTONICA INTERNATIONAL CORP. NO COPIES, TRANSMISSIONS, REPRODUCTIONS OR ELECTRONIC MANIPULATION OF ANY PORTION OF THESE DRAWINGS IN THE WHOLE OR IN PART ARE TO BE MADE WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ARQUITECTONICA INTERNATIONAL CORP. DESIGN INTENT SHOWN IS SUBJECT TO REVIEW AND APPROVAL OF ALL APPLICABLE LOCAL AND GOVERNMENTAL AUTHORITIES HAVING JURISDICTION. ALL COPYRIGHTS RESERVED © 2021. THE DATA INCLUDED IN THIS STUDY IS CONCEPTUAL IN NATURE AND WILL CONTINUE TO BE MODIFIED THROUGHOUT THE COURSE OF THE PROJECTS DEVELOPMENT WITH THE EVENTUAL INTEGRATION OF STRUCTURAL, MEP AND LIFE SAFETY SYSTEMS. AS THESE ARE FURTHER REFINED, THE NUMBERS WILL BE ADJUSTED ACCORDINGLY.

**CLOUD ONE HOTEL**  
**1509 - 1515 WASHINGTON AVE**  
**MIAMI BEACH, FL 33139**

**LOCATION MAP**



**DATE:**  
**NOV 22, 2023**



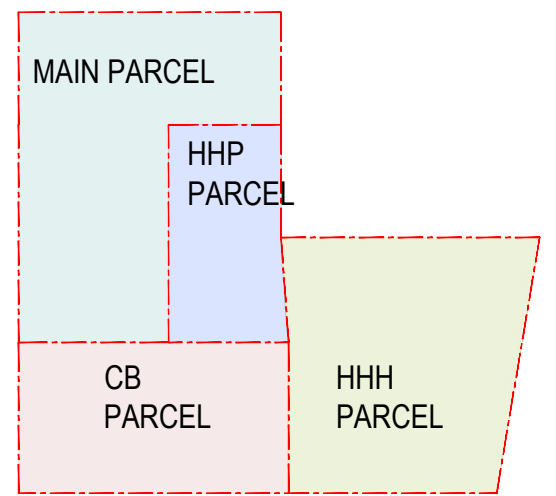
SIDE: 7.5' OR 8% OF LOT WIDTH, WHICHEVER IS GREATER, UP TO 10'

REAR: MINIMUM 10% OF LOT DEPTH

SIDE: 7.5' OR 8% OF LOT WIDTH, WHICHEVER IS GREATER, UP TO 10'

REAR: MINIMUM 10% OF LOT DEPTH

SIDE: 7.5' OR 8% OF LOT WIDTH, WHICHEVER IS GREATER, UP TO 10'



**KEY PLAN**

**LEGEND**

FAR: 16,754 SF

FAR BY LEVEL	
GROUND	: 16,218 SF
LEVEL 2	: 12,197 SF
LEVEL 3	: 12,583 SF
LEVEL 4	: 12,583 SF
LEVEL 5	: 12,583 SF
LEVEL 6	: 12,583 SF
LEVEL 7	: 10,935 SF
<b>TOTAL FAR</b>	<b>: 90,218 SF</b>

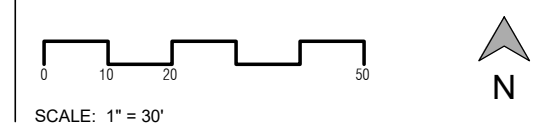
**ARQUITECTONICA**

2900 Oak Avenue, Miami, FL 33133  
T 305.372.1812 F 305.372.1175

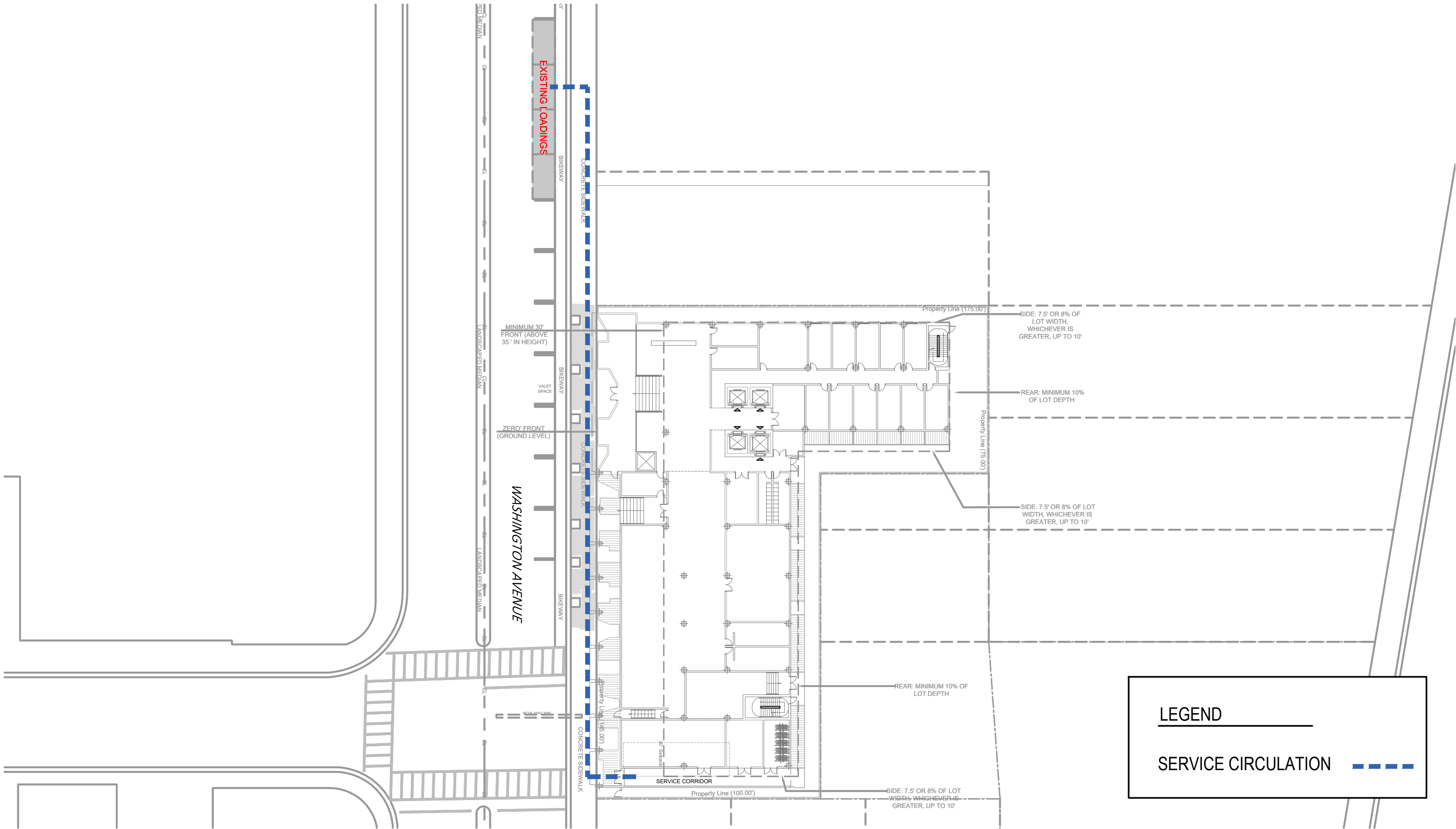
ALL DESIGNS INDICATED IN THESE DRAWINGS ARE PROPERTY OF ARQUITECTONICA INTERNATIONAL CORP. NO COPIES, TRANSMISSIONS, REPRODUCTIONS OR ELECTRONIC MANIPULATION OF ANY PORTION OF THESE DRAWINGS IN THE WHOLE OR IN PART ARE TO BE MADE WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ARQUITECTONICA INTERNATIONAL CORP. DESIGN INTENT SHOWN IS SUBJECT TO REVIEW AND APPROVAL OF ALL APPLICABLE LOCAL AND GOVERNMENTAL AUTHORITIES HAVING JURISDICTION. ALL COPYRIGHTS RESERVED © 2021. THE DATA INCLUDED IN THIS STUDY IS CONCEPTUAL IN NATURE AND WILL CONTINUE TO BE MODIFIED THROUGHOUT THE COURSE OF THE PROJECTS DEVELOPMENT WITH THE EVENTUAL INTEGRATION OF STRUCTURAL, MEP AND LIFE SAFETY SYSTEMS. AS THESE ARE FURTHER REFINED, THE NUMBERS WILL BE ADJUSTED ACCORDINGLY.

**CLOUD ONE HOTEL**  
1509 - 1515 WASHINGTON AVE  
MIAMI BEACH, FL 33139


FAR DIAGRAM - GROUND LEVEL



DATE:  
NOV 22, 2023



**LEGEND**

SERVICE CIRCULATION 

**ARQUITECTONICA**

2900 Oak Avenue, Miami, FL 33133  
 T 305.372.1812 F 305.372.1175

ALL DESIGNS INDICATED IN THESE DRAWINGS ARE PROPERTY OF ARQUITECTONICA INTERNATIONAL CORP. NO COPIES, TRANSMISSIONS, REPRODUCTIONS OR ELECTRONIC MANIPULATION OF ANY PORTION OF THESE DRAWINGS IN THE WHOLE OR IN PART ARE TO BE MADE WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ARQUITECTONICA INTERNATIONAL CORP. DESIGN INTENT SHOWN IS SUBJECT TO REVIEW AND APPROVAL OF ALL APPLICABLE LOCAL AND GOVERNMENTAL AUTHORITIES HAVING JURISDICTION. ALL COPYRIGHTS RESERVED © 2021. THE DATA INCLUDED IN THIS STUDY IS CONCEPTUAL IN NATURE AND WILL CONTINUE TO BE MODIFIED THROUGHOUT THE COURSE OF THE PROJECTS DEVELOPMENT WITH THE EVENTUAL INTEGRATION OF STRUCTURAL, MEP AND LIFE SAFETY SYSTEMS. AS THESE ARE FURTHER REFINED, THE NUMBERS WILL BE ADJUSTED ACCORDINGLY.

**CLOUD ONE HOTEL**  
 1509 - 1515 WASHINGTON AVE  
 MIAMI BEACH, FL 33139

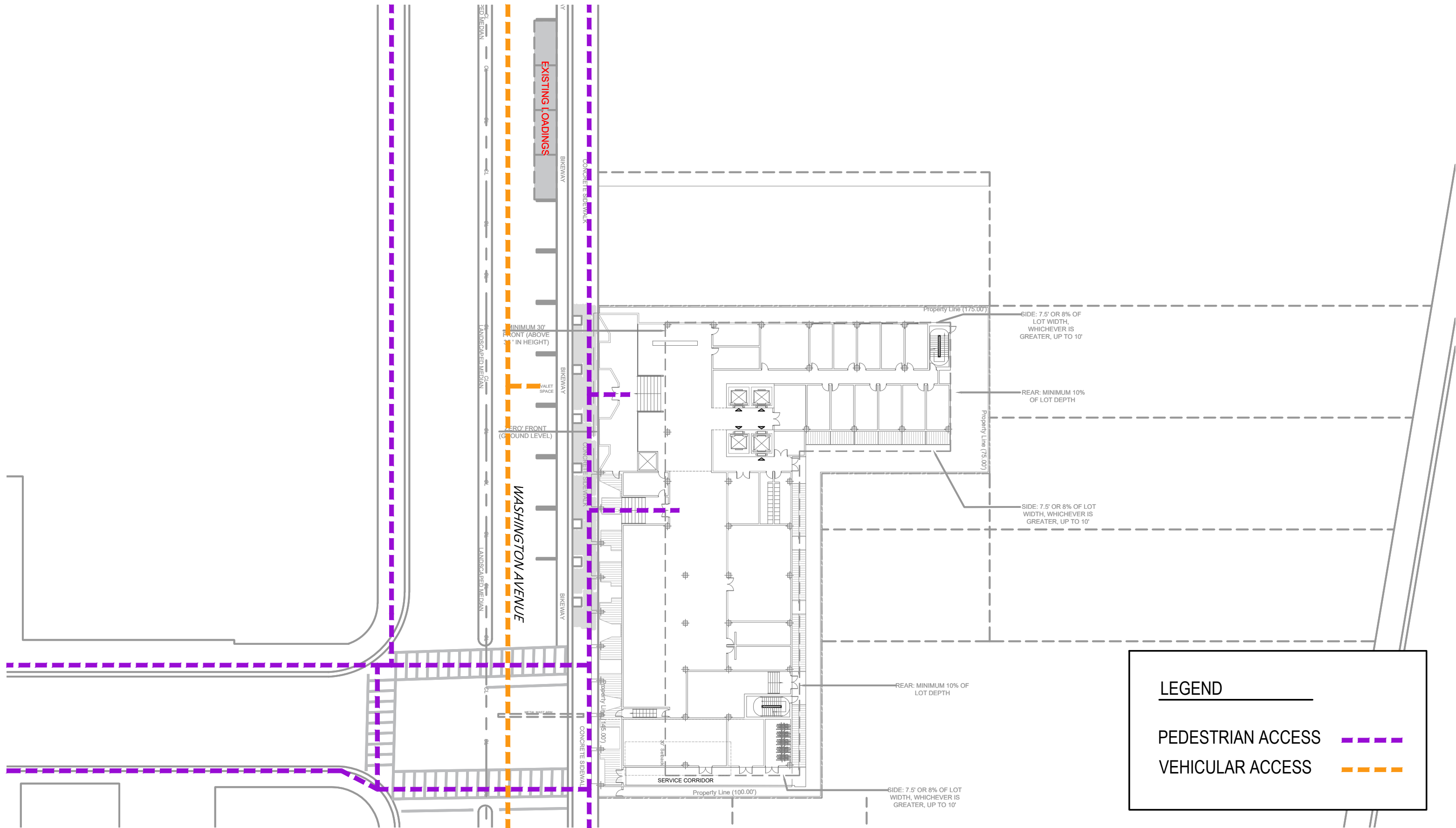
**LOADING DIAGRAM**



SCALE: 1" = 40'



DATE:  
 NOV 22, 2023



**LEGEND**

PEDESTRIAN ACCESS ----

VEHICULAR ACCESS ----

**ARQUITECTONICA**

2900 Oak Avenue, Miami, FL 33133  
 T 305.372.1812 F 305.372.1175

ALL DESIGNS INDICATED IN THESE DRAWINGS ARE PROPERTY OF ARQUITECTONICA INTERNATIONAL CORP. NO COPIES, TRANSMISSIONS, REPRODUCTIONS OR ELECTRONIC MANIPULATION OF ANY PORTION OF THESE DRAWINGS IN THE WHOLE OR IN PART ARE TO BE MADE WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF ARQUITECTONICA INTERNATIONAL CORP. DESIGN INTENT SHOWN IS SUBJECT TO REVIEW AND APPROVAL OF ALL APPLICABLE LOCAL AND GOVERNMENTAL AUTHORITIES HAVING JURISDICTION. ALL COPYRIGHTS RESERVED © 2021. THE DATA INCLUDED IN THIS STUDY IS CONCEPTUAL IN NATURE AND WILL CONTINUE TO BE MODIFIED THROUGHOUT THE COURSE OF THE PROJECTS DEVELOPMENT WITH THE EVENTUAL INTEGRATION OF STRUCTURAL, MEP AND LIFE SAFETY SYSTEMS. AS THESE ARE FURTHER REFINED, THE NUMBERS WILL BE ADJUSTED ACCORDINGLY.

**CLOUD ONE HOTEL**  
**1509 - 1515 WASHINGTON AVE**  
**MIAMI BEACH, FL 33139**

**ACCESS DIAGRAM**



SCALE: 1" = 40'



DATE:  
 NOV 22, 2023

# **APPENDIX B**

## **Traffic Counts and Trip Generation Rates/Equations**

# Traf Tech Engineering Inc.

File Name : 1-Alton Rd & 15th St

Site Code : 00000000

Start Date : 1/31/2023

Page No : 1

## Groups Printed- Peds & Bikes

Start Time	Alton Rd From North				15th St From East				Alton Rd From South				15th St From West				Int. Total
	Bikes			Peds	Bikes			Peds	Bikes			Peds	Bikes			Peds	
07:00	2	0	0	8	1	0	0	4	0	0	0	6	2	0	0	1	24
07:15	2	0	0	7	5	0	0	3	5	0	0	4	3	0	0	2	31
07:30	2	0	0	17	1	0	0	6	3	0	0	3	3	0	0	1	36
07:45	7	0	0	14	5	0	0	8	1	0	0	5	1	0	0	0	41
Total	13	0	0	46	12	0	0	21	9	0	0	18	9	0	0	4	132
08:00	3	0	0	4	0	0	0	3	2	0	0	11	1	0	0	3	27
08:15	6	0	0	13	0	0	0	6	2	0	0	8	3	0	0	1	39
08:30	2	0	0	18	2	0	0	16	0	0	0	8	2	0	0	13	61
08:45	5	0	0	24	4	0	0	7	1	0	0	10	0	0	0	8	59
Total	16	0	0	59	6	0	0	32	5	0	0	37	6	0	0	25	186
*** BREAK ***																	
16:00	17	0	0	19	1	0	0	18	10	0	0	8	2	0	0	19	94
16:15	13	0	0	22	5	0	0	23	1	0	0	18	18	0	0	4	104
16:30	2	0	0	24	6	0	0	14	3	0	0	31	6	0	0	7	93
16:45	9	0	0	12	13	0	0	16	7	0	0	17	6	0	0	7	87
Total	41	0	0	77	25	0	0	71	21	0	0	74	32	0	0	37	378
17:00	4	0	0	37	2	0	0	39	2	1	0	34	6	0	0	4	129
17:15	8	0	0	22	8	0	0	18	9	0	0	12	4	0	0	8	89
17:30	12	0	0	23	2	0	0	19	4	0	0	15	8	0	0	22	105
17:45	5	0	0	36	5	0	0	18	12	0	0	71	2	0	0	12	161
Total	29	0	0	118	17	0	0	94	27	1	0	132	20	0	0	46	484
Grand Total	99	0	0	300	60	0	0	218	62	1	0	261	67	0	0	112	1180
Apprch %	24.8	0	0	75.2	21.6	0	0	78.4	19.1	0.3	0	80.6	37.4	0	0	62.6	
Total %	8.4	0	0	25.4	5.1	0	0	18.5	5.3	0.1	0	22.1	5.7	0	0	9.5	

# Traf Tech Engineering Inc.

File Name : 1-Alton Rd & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 1

## Groups Printed- Autos - Heavy Vehicles

Start Time	Alton Rd From North					15th St From East					Alton Rd From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00	2	131	16	0	149	13	2	13	0	28	12	146	5	0	163	4	2	7	0	13	353
07:15	3	168	18	1	190	9	2	12	0	23	9	143	7	1	160	1	2	1	0	4	377
07:30	5	162	26	0	193	14	3	23	0	40	13	151	6	1	171	6	6	4	0	16	420
07:45	9	190	27	0	226	24	8	16	0	48	22	212	12	1	247	5	14	5	0	24	545
Total	19	651	87	1	758	60	15	64	0	139	56	652	30	3	741	16	24	17	0	57	1695
08:00	3	172	29	0	204	15	3	15	0	33	15	188	7	1	211	4	9	1	0	14	462
08:15	4	182	23	0	209	18	13	19	0	50	31	237	11	0	279	5	9	7	0	21	559
08:30	6	181	24	0	211	19	9	18	0	46	22	228	6	0	256	5	11	5	1	22	535
08:45	5	186	23	0	214	14	8	30	0	52	18	259	8	2	287	7	3	2	0	12	565
Total	18	721	99	0	838	66	33	82	0	181	86	912	32	3	1033	21	32	15	1	69	2121
*** BREAK ***																					
16:00	11	166	23	0	200	34	8	22	0	64	17	231	9	1	258	2	10	16	0	28	550
16:15	6	157	25	0	188	31	11	18	1	61	22	259	11	5	297	3	17	12	0	32	578
16:30	2	172	23	1	198	23	9	18	1	51	25	276	14	5	320	2	16	8	0	26	595
16:45	10	173	19	0	202	26	9	19	0	54	14	241	14	2	271	7	16	9	0	32	559
Total	29	668	90	1	788	114	37	77	2	230	78	1007	48	13	1146	14	59	45	0	118	2282
17:00	10	164	35	1	210	33	12	27	0	72	18	280	13	2	313	6	12	11	0	29	624
17:15	9	160	21	2	192	30	16	28	0	74	18	254	14	1	287	6	20	10	0	36	589
17:30	8	195	24	1	228	24	8	29	0	61	24	197	8	3	232	5	14	8	0	27	548
17:45	8	208	23	1	240	11	13	40	0	64	27	225	17	4	273	8	17	14	2	41	618
Total	35	727	103	5	870	98	49	124	0	271	87	956	52	10	1105	25	63	43	2	133	2379
Grand Total	101	2767	379	7	3254	338	134	347	2	821	307	3527	162	29	4025	76	178	120	3	377	8477
Apprch %	3.1	85	11.6	0.2		41.2	16.3	42.3	0.2		7.6	87.6	4	0.7		20.2	47.2	31.8	0.8		
Total %	1.2	32.6	4.5	0.1	38.4	4	1.6	4.1	0	9.7	3.6	41.6	1.9	0.3	47.5	0.9	2.1	1.4	0	4.4	
Autos	100	2683									3458										
% Autos	99	97	98.4	100	97.2	98.2	99.3	98.8	100	98.7	98.7	98	99.4	100	98.2	98.7	98.9	98.3	100	98.7	97.9
Heavy Vehicles																					
% Heavy Vehicles	1	3	1.6	0	2.8	1.8	0.7	1.2	0	1.3	1.3	2	0.6	0	1.8	1.3	1.1	1.7	0	1.3	2.1

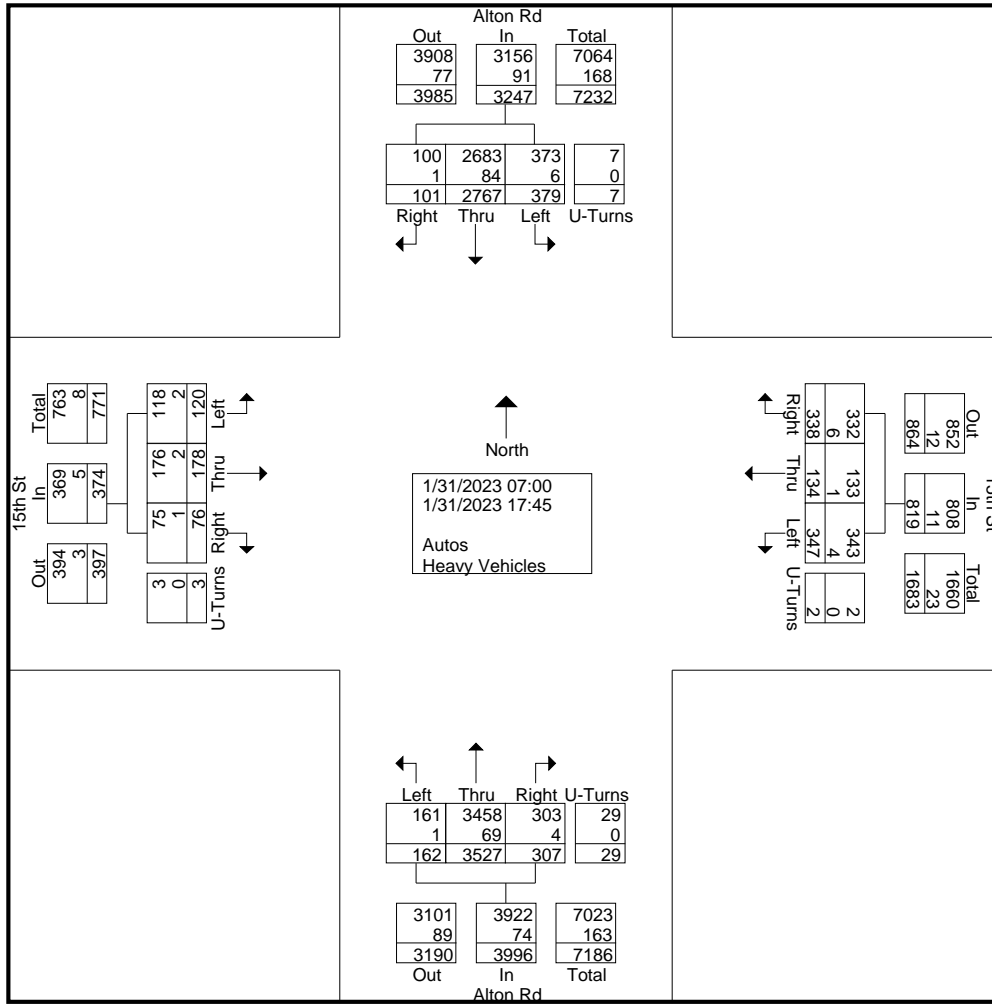
# Traf Tech Engineering Inc.

File Name : 1-Alton Rd & 15th St

Site Code : 00000000

Start Date : 1/31/2023

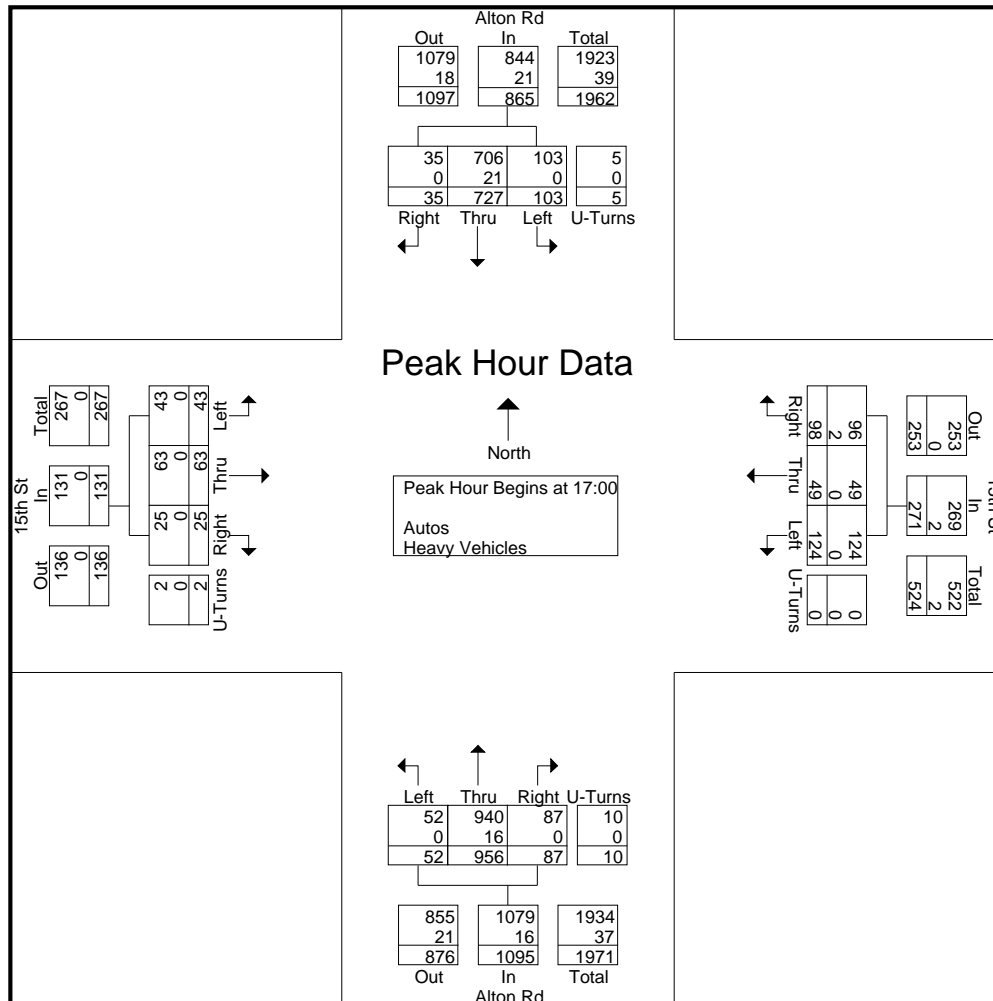
Page No : 2



# Traf Tech Engineering Inc.

File Name : 1-Alton Rd & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 3

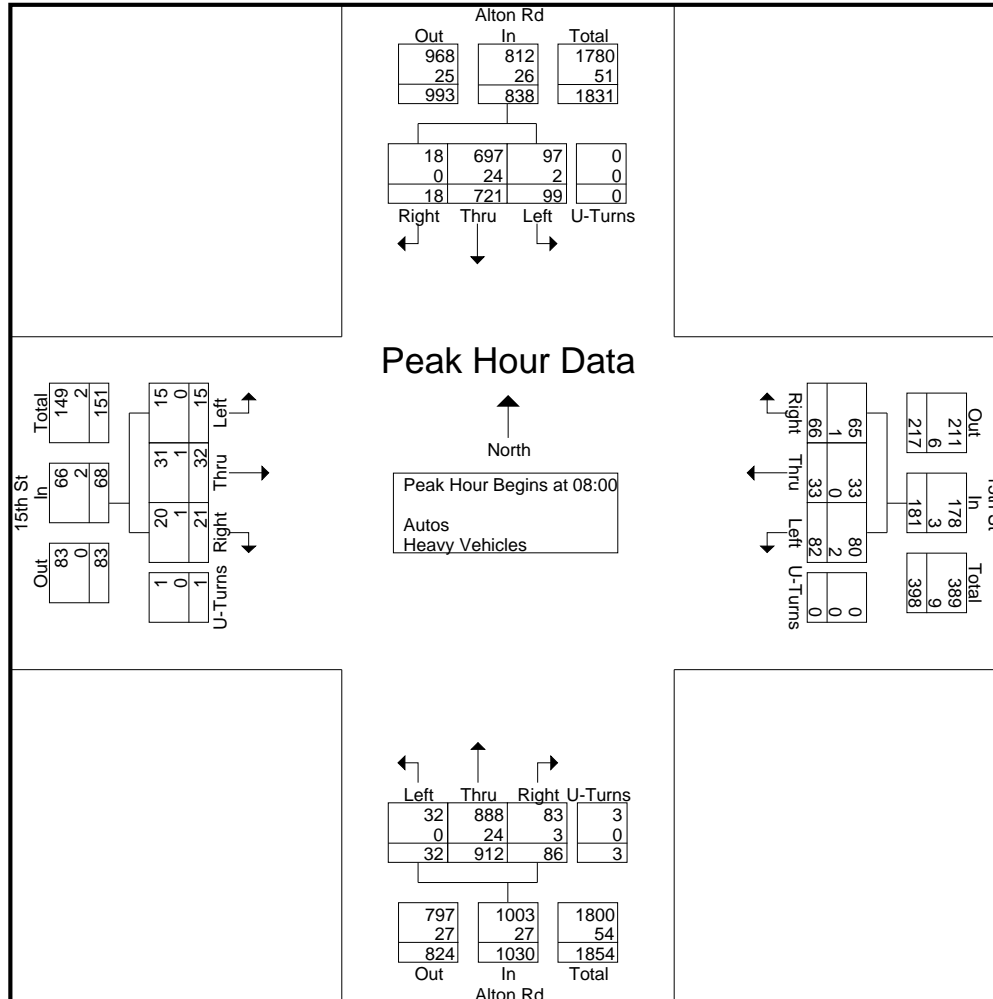
Start Time	Alton Rd From North					15th St From East					Alton Rd From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	10	164	35	1	210	33	12	27	0	72	18	280	13	2	313	6	12	11	0	29	624
17:15	9	160	21	2	192	30	16	28	0	74	18	254	14	1	287	6	20	10	0	36	589
17:30	8	195	24	1	228	24	8	29	0	61	24	197	8	3	232	5	14	8	0	27	548
17:45	8	208	23	1	240	11	13	40	0	64	27	225	17	4	273	8	17	14	2	41	618
Total Volume	35	727	103	5	870	98	49	124	0	271	87	956	52	10	1105	25	63	43	2	133	2379
% App. Total	4	83.6	11.8	0.6		36.2	18.1	45.8	0		7.9	86.5	4.7	0.9		18.8	47.4	32.3	1.5		
PHF	.875	.874	.736	.625	.906	.742	.766	.775	.000	.916	.806	.854	.765	.625	.883	.781	.788	.768	.250	.811	.953
Autos	35	706	103	5	849	96	49	124	0	269	87	940	52	10	1089	25	63	43	2	133	2340
% Autos	100	97.1	100	100	97.6	98.0	100	100	0	99.3	100	98.3	100	100	98.6	100	100	100	100	100	98.4
Heavy Vehicles																					
% Heavy Vehicles	0	2.9	0	0	2.4	2.0	0	0	0	0.7	0	1.7	0	0	1.4	0	0	0	0	0	1.6



# Traf Tech Engineering Inc.

File Name : 1-Alton Rd & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 4

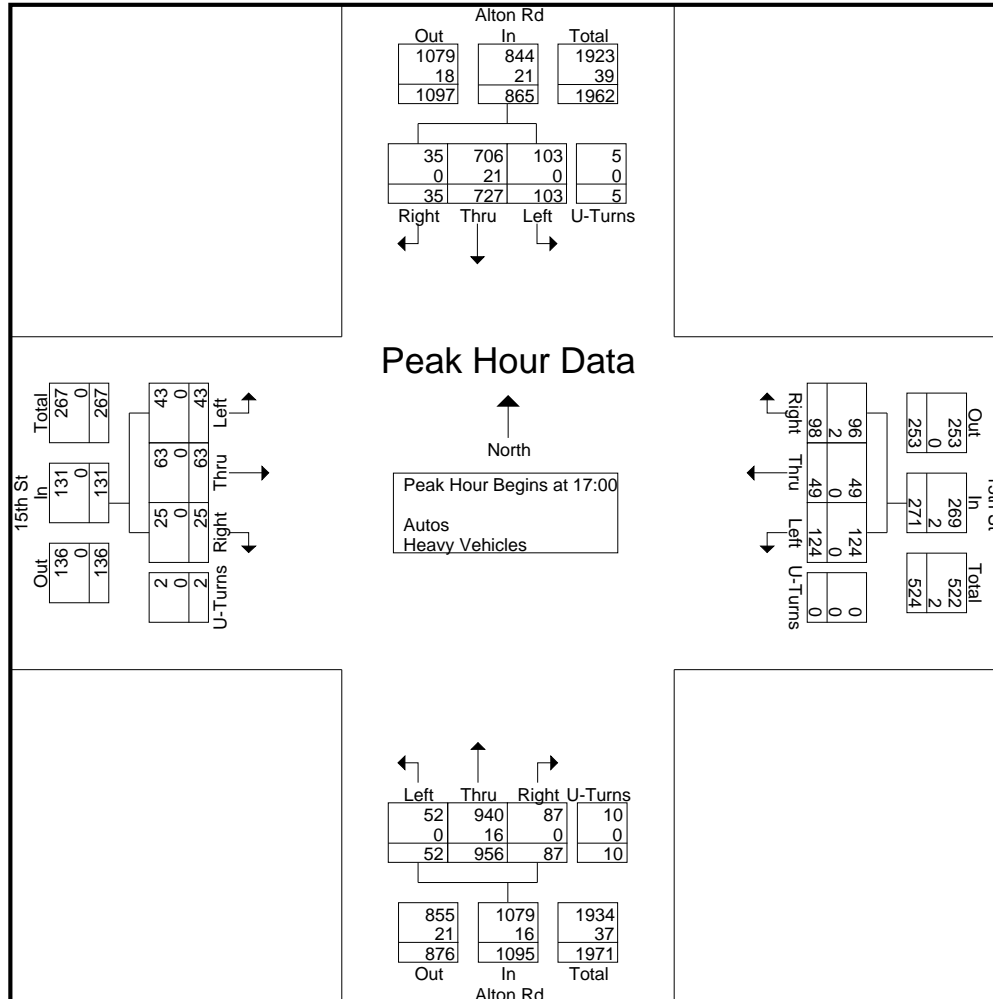
Start Time	Alton Rd From North					15th St From East					Alton Rd From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	3	172	29	0	204	15	3	15	0	33	15	188	7	1	211	4	9	1	0	14	462
08:15	4	182	23	0	209	18	13	19	0	50	31	237	11	0	279	5	9	7	0	21	559
08:30	6	181	24	0	211	19	9	18	0	46	22	228	6	0	256	5	11	5	1	22	535
08:45	5	186	23	0	214	14	8	30	0	52	18	259	8	2	287	7	3	2	0	12	565
Total Volume	18	721	99	0	838	66	33	82	0	181	86	912	32	3	1033	21	32	15	1	69	2121
% App. Total	2.1	86	11.8	0		36.5	18.2	45.3	0		8.3	88.3	3.1	0.3		30.4	46.4	21.7	1.4		
PHF	.750	.969	.853	.000	.979	.868	.635	.683	.000	.870	.694	.880	.727	.375	.900	.750	.727	.536	.250	.784	.938
Autos	18	697	97	0	812	65	33	80	0	178	83	888	32	3	1006	20	31	15	1	67	2063
% Autos	100	96.7	98.0	0	96.9	98.5	100	97.6	0	98.3	96.5	97.4	100	100	97.4	95.2	96.9	100	100	97.1	97.3
Heavy Vehicles																					
% Heavy Vehicles	0	3.3	2.0	0	3.1	1.5	0	2.4	0	1.7	3.5	2.6	0	0	2.6	4.8	3.1	0	0	2.9	2.7



# Traf Tech Engineering Inc.

File Name : 1-Alton Rd & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 5

Start Time	Alton Rd From North					15th St From East					Alton Rd From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	10	164	35	1	210	33	12	27	0	72	18	280	13	2	313	6	12	11	0	29	624
17:15	9	160	21	2	192	30	16	28	0	74	18	254	14	1	287	6	20	10	0	36	589
17:30	8	195	24	1	228	24	8	29	0	61	24	197	8	3	232	5	14	8	0	27	548
17:45	8	208	23	1	240	11	13	40	0	64	27	225	17	4	273	8	17	14	2	41	618
Total Volume	35	727	103	5	870	98	49	124	0	271	87	956	52	10	1105	25	63	43	2	133	2379
% App. Total	4	83.6	11.8	0.6		36.2	18.1	45.8	0		7.9	86.5	4.7	0.9		18.8	47.4	32.3	1.5		
PHF	.875	.874	.736	.625	.906	.742	.766	.775	.000	.916	.806	.854	.765	.625	.883	.781	.788	.768	.250	.811	.953
Autos	35	706	103	5	849	96	49	124	0	269	87	940	52	10	1089	25	63	43	2	133	2340
% Autos	100	97.1	100	100	97.6	98.0	100	100	0	99.3	100	98.3	100	100	98.6	100	100	100	100	100	98.4
Heavy Vehicles																					
% Heavy Vehicles	0	2.9	0	0	2.4	2.0	0	0	0	0.7	0	1.7	0	0	1.4	0	0	0	0	0	1.6



# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 17th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 1

## Groups Printed- Peds & Bikes

Start Time	Washington Ave From North				17th St From East				Washington Ave From South				17th St From West				Int. Total
	Bikes			Peds	Bikes			Peds	Bikes			Peds	Bikes			Peds	
07:00	1	0	0	1	2	0	0	7	9	0	0	6	6	0	0	8	40
07:15	2	0	0	5	0	0	0	3	4	0	0	9	2	0	0	6	31
07:30	2	0	0	2	4	0	0	8	6	0	0	7	6	0	0	8	43
07:45	7	0	0	2	2	0	0	3	5	0	0	11	5	0	0	10	45
Total	12	0	0	10	8	0	0	21	24	0	0	33	19	0	0	32	159
08:00	0	0	0	3	1	0	0	5	2	0	0	2	4	0	0	8	25
08:15	1	0	0	7	2	0	0	8	9	0	0	3	7	0	0	7	44
08:30	0	0	0	13	1	0	0	8	1	0	0	8	1	0	0	18	50
08:45	0	0	0	9	2	0	0	7	2	0	0	7	4	0	0	8	39
Total	1	0	0	32	6	0	0	28	14	0	0	20	16	0	0	41	158
*** BREAK ***																	
16:00	3	0	0	12	3	0	0	16	6	0	0	12	0	0	0	40	92
16:15	2	0	0	7	3	0	0	16	6	0	0	15	12	0	0	51	112
16:30	4	0	0	13	0	0	0	19	1	0	0	24	6	0	0	32	99
16:45	9	0	0	5	2	0	0	4	6	0	0	19	5	0	0	44	94
Total	18	0	0	37	8	0	0	55	19	0	0	70	23	0	0	167	397
17:00	10	0	0	7	4	0	0	11	1	0	0	21	2	0	0	26	82
17:15	8	0	0	17	4	0	0	12	0	0	0	21	15	0	0	24	101
17:30	8	0	0	8	2	0	0	5	2	0	0	12	5	0	0	24	66
17:45	6	0	0	6	1	0	0	12	0	0	0	1	1	0	0	19	46
Total	32	0	0	38	11	0	0	40	3	0	0	55	23	0	0	93	295
Grand Total	63	0	0	117	33	0	0	144	60	0	0	178	81	0	0	333	1009
Apprch %	35	0	0	65	18.6	0	0	81.4	25.2	0	0	74.8	19.6	0	0	80.4	
Total %	6.2	0	0	11.6	3.3	0	0	14.3	5.9	0	0	17.6	8	0	0	33	

# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 17th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 1

## Groups Printed- Autos - Heavy Vehicles

Start Time	Washington Ave From North					17th St From East					Washington Ave From South					17th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00	5	23	1	0	29	1	14	6	2	23	3	21	16	0	40	13	32	12	2	59	151
07:15	12	34	0	1	47	2	22	5	1	30	2	22	16	0	40	21	35	11	0	67	184
07:30	11	32	2	0	45	0	20	4	6	30	4	22	13	0	39	15	35	7	1	58	172
07:45	14	51	1	1	67	4	15	9	0	28	1	26	14	2	43	21	33	13	0	67	205
Total	42	140	4	2	188	7	71	24	9	111	10	91	59	2	162	70	135	43	3	251	712
08:00	11	45	2	0	58	3	22	4	0	29	2	24	18	0	44	25	40	7	1	73	204
08:15	13	52	2	2	69	2	16	6	2	26	8	33	12	0	53	20	27	6	0	53	201
08:30	5	56	1	2	64	4	34	11	0	49	4	36	22	2	64	22	27	11	0	60	237
08:45	18	66	2	0	86	4	26	11	1	42	5	30	20	0	55	22	34	13	0	69	252
Total	47	219	7	4	277	13	98	32	3	146	19	123	72	2	216	89	128	37	1	255	894
*** BREAK ***																					
16:00	29	49	2	0	80	6	51	12	2	71	14	99	52	1	166	29	49	30	2	110	427
16:15	16	59	2	0	77	4	42	14	2	62	18	95	53	0	166	29	40	16	1	86	391
16:30	19	36	3	2	60	2	52	9	0	63	9	121	43	2	175	29	48	31	1	109	407
16:45	26	64	4	0	94	12	39	11	2	64	8	122	55	4	189	28	60	34	3	125	472
Total	90	208	11	2	311	24	184	46	6	260	49	437	203	7	696	115	197	111	7	430	1697
17:00	26	64	7	0	97	3	50	9	1	63	15	109	43	2	169	28	45	32	2	107	436
17:15	17	75	4	4	100	5	48	12	4	69	16	96	48	1	161	34	33	38	0	105	435
17:30	15	60	4	6	85	3	47	16	6	72	12	94	57	0	163	23	41	35	1	100	420
17:45	14	81	4	0	99	4	30	13	4	51	13	73	27	2	115	29	34	22	1	86	351
Total	72	280	19	10	381	15	175	50	15	255	56	372	175	5	608	114	153	127	4	398	1642
Grand Total	251	847	41	18	1157	59	528	152	33	772	134	1023	509	16	1682	388	613	318	15	1334	4945
Apprch %	21.7	73.2	3.5	1.6		7.6	68.4	19.7	4.3		8	60.8	30.3	1		29.1	46	23.8	1.1		
Total %	5.1	17.1	0.8	0.4	23.4	1.2	10.7	3.1	0.7	15.6	2.7	20.7	10.3	0.3	34	7.8	12.4	6.4	0.3	27	
Autos	238	828	40	17	1123	57	517	103	32	709	129	1006									
% Autos	94.8	97.8	97.6	94.4	97.1	96.6	97.9	67.8	97	91.8	96.3	98.3	90.2	100	95.7	92.3	97.4	95.9	100	95.6	95.4
Heavy Vehicles																					
% Heavy Vehicles	5.2	2.2	2.4	5.6	2.9	3.4	2.1	32.2	3	8.2	3.7	1.7	9.8	0	4.3	7.7	2.6	4.1	0	4.4	4.6

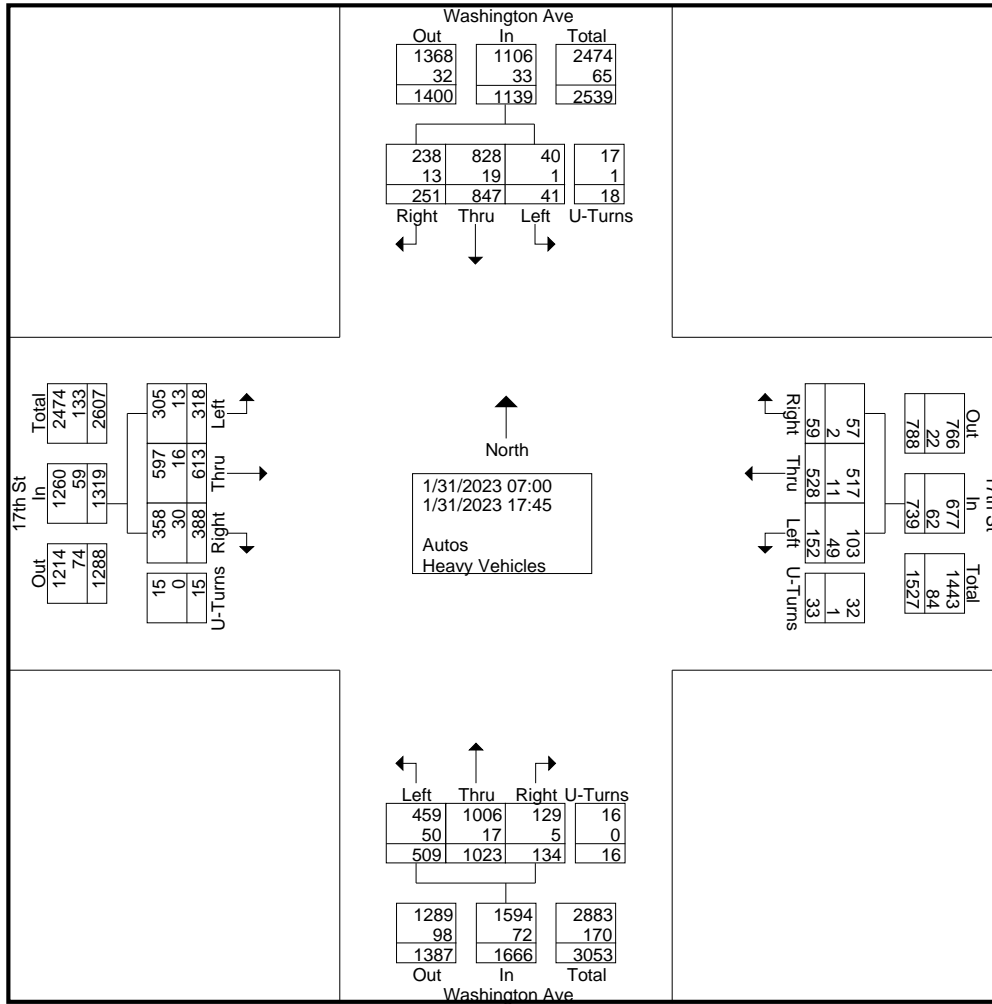
# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 17th St

Site Code : 00000000

Start Date : 1/31/2023

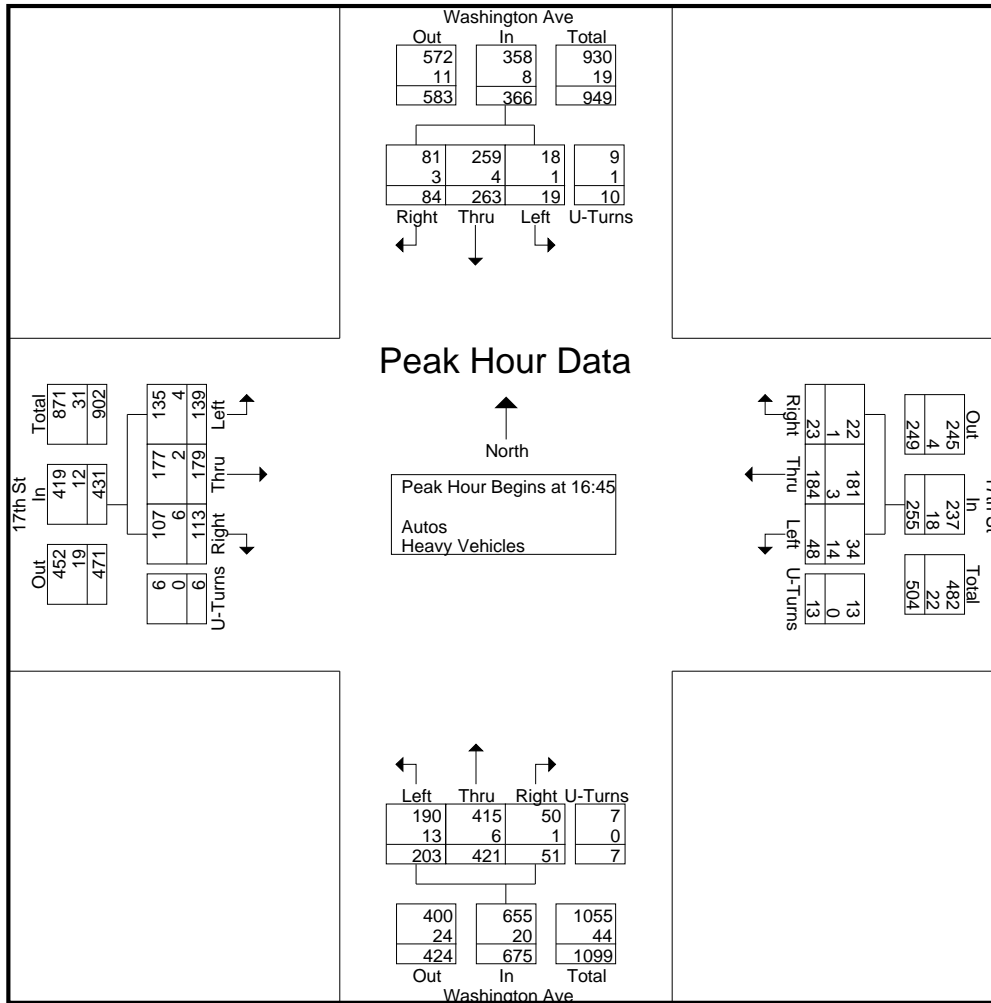
Page No : 2



# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 17th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 3

Start Time	Washington Ave From North					17th St From East					Washington Ave From South					17th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	26	64	4	0	94	12	39	11	2	64	8	122	55	4	189	28	60	34	3	125	472
17:00	26	64	7	0	97	3	50	9	1	63	15	109	43	2	169	28	45	32	2	107	436
17:15	17	75	4	4	100	5	48	12	4	69	16	96	48	1	161	34	33	38	0	105	435
17:30	15	60	4	6	85	3	47	16	6	72	12	94	57	0	163	23	41	35	1	100	420
Total Volume	84	263	19	10	376	23	184	48	13	268	51	421	203	7	682	113	179	139	6	437	1763
% App. Total	22.3	69.9	5.1	2.7		8.6	68.7	17.9	4.9		7.5	61.7	29.8	1		25.9	41	31.8	1.4		
PHF	.808	.877	.679	.417	.940	.479	.920	.750	.542	.931	.797	.863	.890	.438	.902	.831	.746	.914	.500	.874	.934
Autos	81	259	18	9	367	22	181	34	13	250	50	415	190	7	662	107	177	135	6	425	1704
% Autos	96.4	98.5	94.7	90.0	97.6	95.7	98.4	70.8	100	93.3	98.0	98.6	93.6	100	97.1	94.7	98.9	97.1	100	97.3	96.7
Heavy Vehicles																					
% Heavy Vehicles	3.6	1.5	5.3	10.0	2.4	4.3	1.6	29.2	0	6.7	2.0	1.4	6.4	0	2.9	5.3	1.1	2.9	0	2.7	3.3



# Traf Tech Engineering Inc.

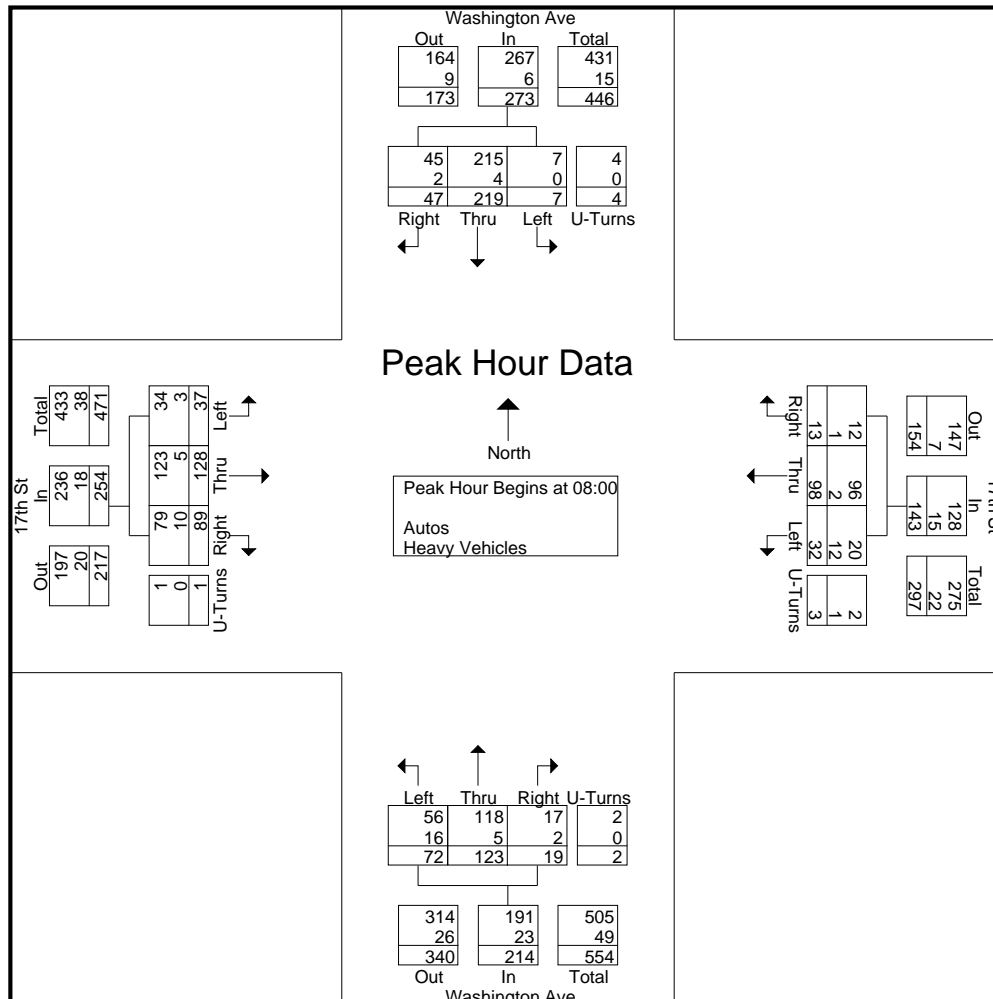
File Name : 2- Washington Ave & 17th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 4

Start Time	Washington Ave From North					17th St From East					Washington Ave From South					17th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00

08:00	11	45	2	0	58	3	22	4	0	29	2	24	18	0	44	25	40	7	1	73	204
08:15	13	52	2	2	69	2	16	6	2	26	8	33	12	0	53	20	27	6	0	53	201
08:30	5	56	1	2	64	4	34	11	0	49	4	36	22	2	64	22	27	11	0	60	237
08:45	18	66	2	0	86	4	26	11	1	42	5	30	20	0	55	22	34	13	0	69	252
Total Volume	47	219	7	4	277	13	98	32	3	146	19	123	72	2	216	89	128	37	1	255	894
% App. Total	17	79.1	2.5	1.4		8.9	67.1	21.9	2.1		8.8	56.9	33.3	0.9		34.9	50.2	14.5	0.4		
PHF	.653	.830	.875	.500	.805	.813	.721	.727	.375	.745	.594	.854	.818	.250	.844	.890	.800	.712	.250	.873	.887
Autos	45	215	7	4	271	12	96	20	2	130	17	118	56	2	193	79	123	34	1	237	831
% Autos	95.7	98.2	100	100	97.8	92.3	98.0	62.5	66.7	89.0	89.5	95.9	77.8	100	89.4	88.8	96.1	91.9	100	92.9	93.0
Heavy Vehicles																					
% Heavy Vehicles	4.3	1.8	0	0	2.2	7.7	2.0	37.5	33.3	11.0	10.5	4.1	22.2	0	10.6	11.2	3.9	8.1	0	7.1	7.0



# Traf Tech Engineering Inc.

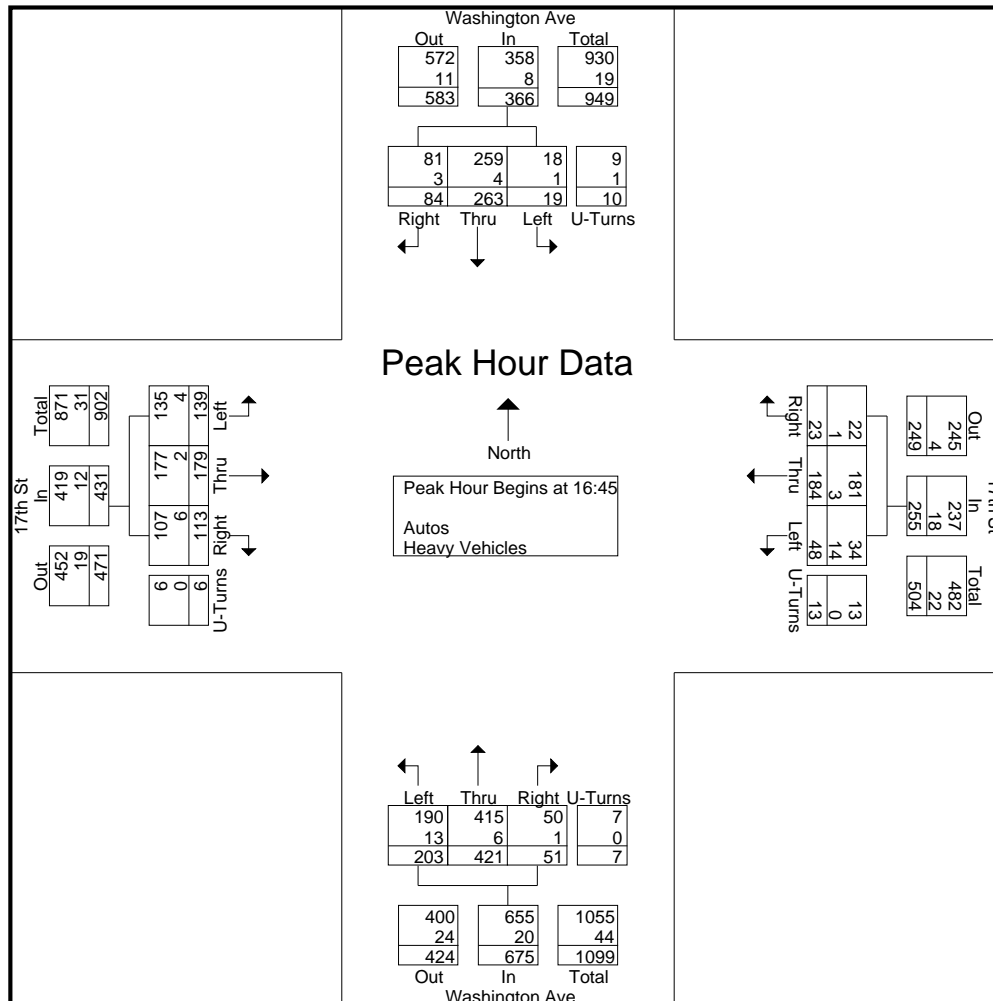
File Name : 2- Washington Ave & 17th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 5

Start Time	Washington Ave From North					17th St From East					Washington Ave From South					17th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 16:45

16:45	26	64	4	0	94	12	39	11	2	64	8	122	55	4	189	28	60	34	3	125	472
17:00	26	64	7	0	97	3	50	9	1	63	15	109	43	2	169	28	45	32	2	107	436
17:15	17	75	4	4	100	5	48	12	4	69	16	96	48	1	161	34	33	38	0	105	435
17:30	15	60	4	6	85	3	47	16	6	72	12	94	57	0	163	23	41	35	1	100	420
Total Volume	84	263	19	10	376	23	184	48	13	268	51	421	203	7	682	113	179	139	6	437	1763
% App. Total	22.3	69.9	5.1	2.7		8.6	68.7	17.9	4.9		7.5	61.7	29.8	1		25.9	41	31.8	1.4		
PHF	.808	.877	.679	.417	.940	.479	.920	.750	.542	.931	.797	.863	.890	.438	.902	.831	.746	.914	.500	.874	.934
Autos	81	259	18	9	367	22	181	34	13	250	50	415	190	7	662	107	177	135	6	425	1704
% Autos	96.4	98.5	94.7	90.0	97.6	95.7	98.4	70.8	100	93.3	98.0	98.6	93.6	100	97.1	94.7	98.9	97.1	100	97.3	96.7
Heavy Vehicles																					
% Heavy Vehicles	3.6	1.5	5.3	10.0	2.4	4.3	1.6	29.2	0	6.7	2.0	1.4	6.4	0	2.9	5.3	1.1	2.9	0	2.7	3.3



# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 1

## Groups Printed- Peds & Bikes

Start Time	Washington Ave From North				15th St From East				Washington Ave From South				15th St From West				Int. Total
	Bikes			Peds	Bikes			Peds	Bikes			Peds	Bikes			Peds	
07:00	1	0	0	4	0	0	0	0	2	0	0	4	8	0	0	8	27
07:15	2	0	0	4	0	0	0	0	1	0	0	2	0	0	0	11	20
07:30	0	0	0	4	0	0	0	0	0	0	0	7	2	0	0	10	23
07:45	1	0	0	4	0	0	0	0	0	0	0	7	9	0	0	19	40
Total	4	0	0	16	0	0	0	0	3	0	0	20	19	0	0	48	110
08:00	1	0	0	2	0	0	0	0	0	0	0	6	1	0	0	16	26
08:15	0	0	0	11	0	0	0	0	1	0	0	10	6	0	0	13	41
08:30	0	0	0	19	0	0	0	0	0	0	0	9	4	0	0	24	56
08:45	2	0	0	2	0	0	0	0	1	0	0	8	5	0	0	25	43
Total	3	0	0	34	0	0	0	0	2	0	0	33	16	0	0	78	166
*** BREAK ***																	
16:00	0	0	0	8	0	0	0	0	0	0	0	13	3	0	0	55	79
16:15	0	0	0	17	0	0	0	0	2	0	0	19	4	0	0	75	117
16:30	0	0	0	11	0	0	0	0	1	0	0	19	2	0	0	73	106
16:45	0	0	0	12	0	0	0	0	0	1	0	9	9	0	0	41	72
Total	0	0	0	48	0	0	0	0	3	1	0	60	18	0	0	244	374
17:00	5	0	0	25	0	0	0	0	0	3	0	18	2	0	0	78	131
17:15	0	0	0	30	0	0	0	0	0	0	0	16	1	0	0	47	94
17:30	1	0	0	19	0	0	0	0	3	0	0	11	6	0	0	49	89
17:45	0	0	0	18	0	0	0	0	1	0	0	15	9	0	0	39	82
Total	6	0	0	92	0	0	0	0	4	3	0	60	18	0	0	213	396
Grand Total	13	0	0	190	0	0	0	0	12	4	0	173	71	0	0	583	1046
Apprch %	6.4	0	0	93.6	0	0	0	0	6.3	2.1	0	91.5	10.9	0	0	89.1	
Total %	1.2	0	0	18.2	0	0	0	0	1.1	0.4	0	16.5	6.8	0	0	55.7	

# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 1

## Groups Printed- Autos - Heavy Vehicles

Start Time	Washington Ave From North					15th St From East					Washington Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00	4	40	0	0	44	0	0	0	0	0	1	38	2	1	42	7	0	8	0	15	101
07:15	6	42	0	1	49	0	0	0	0	0	0	27	2	3	32	4	0	8	0	12	93
07:30	6	54	0	1	61	0	0	0	0	0	0	40	1	3	44	13	0	5	0	18	123
07:45	6	75	0	0	81	0	0	0	0	0	0	38	5	0	43	14	0	16	0	30	154
Total	22	211	0	2	235	0	0	0	0	0	1	143	10	7	161	38	0	37	0	75	471
08:00	4	71	0	0	75	0	0	0	0	0	0	37	5	2	44	15	0	11	0	26	145
08:15	6	75	0	2	83	0	0	0	0	0	0	43	8	4	55	11	0	19	0	30	168
08:30	7	78	0	3	88	0	0	0	0	0	0	56	9	5	70	14	0	22	1	37	195
08:45	7	83	0	4	94	0	0	0	0	0	0	64	9	4	77	10	0	10	0	20	191
Total	24	307	0	9	340	0	0	0	0	0	0	200	31	15	246	50	0	62	1	113	699
*** BREAK ***																					
16:00	13	88	0	5	106	0	0	0	0	0	0	135	10	4	149	19	0	17	0	36	291
16:15	12	106	0	3	121	0	0	0	0	0	0	132	6	5	143	18	0	19	3	40	304
16:30	9	66	0	3	78	0	0	0	0	0	0	158	7	6	171	14	0	22	1	37	286
16:45	4	95	0	5	104	0	0	0	0	0	0	101	8	0	109	8	0	17	0	25	238
Total	38	355	0	16	409	0	0	0	0	0	0	526	31	15	572	59	0	75	4	138	1119
17:00	13	108	0	3	124	0	0	0	0	0	1	137	16	9	163	10	0	18	0	28	315
17:15	18	115	0	2	135	0	0	0	0	0	0	132	17	5	154	18	0	22	1	41	330
17:30	15	114	0	5	134	0	0	0	0	0	1	122	3	4	130	11	0	17	1	29	293
17:45	13	135	0	3	151	0	0	0	0	0	1	99	9	4	113	22	0	13	0	35	299
Total	59	472	0	13	544	0	0	0	0	0	3	490	45	22	560	61	0	70	2	133	1237
Grand Total	143	1345	0	40	1528	0	0	0	0	0	4	1359	117	59	1539	208	0	244	7	459	3526
Apprch %	9.4	88	0	2.6		0	0	0	0		0.3	88.3	7.6	3.8		45.3	0	53.2	1.5		
Total %	4.1	38.1	0	1.1	43.3	0	0	0	0	0	0.1	38.5	3.3	1.7	43.6	5.9	0	6.9	0.2	13	
Autos	142	1285										1297									
% Autos	99.3	95.5	0	100	96	0	0	0	0	0	100	95.4	96.6	89.8	95.3	97.1	0	98.4	100	97.8	95.9
Heavy Vehicles																					
% Heavy Vehicles	0.7	4.5	0	0	4	0	0	0	0	0	0	4.6	3.4	10.2	4.7	2.9	0	1.6	0	2.2	4.1

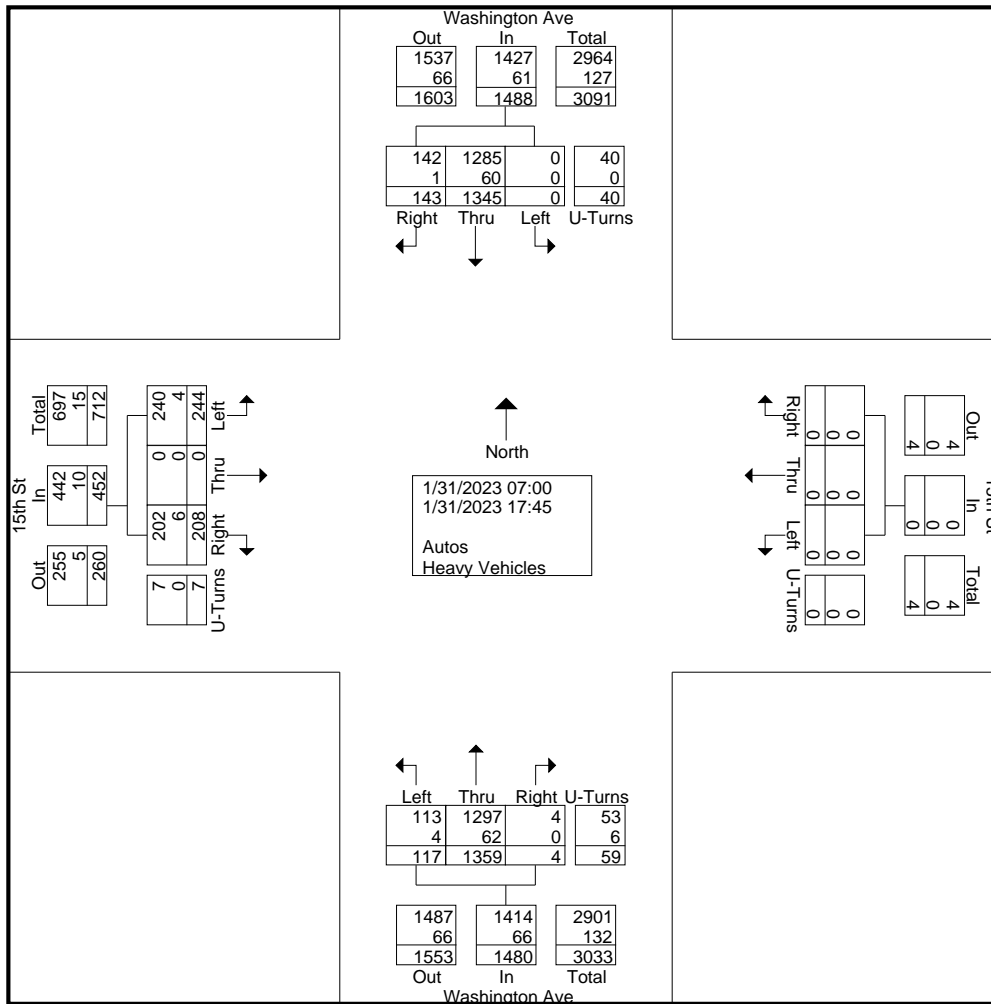
# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & 15th St

Site Code : 00000000

Start Date : 1/31/2023

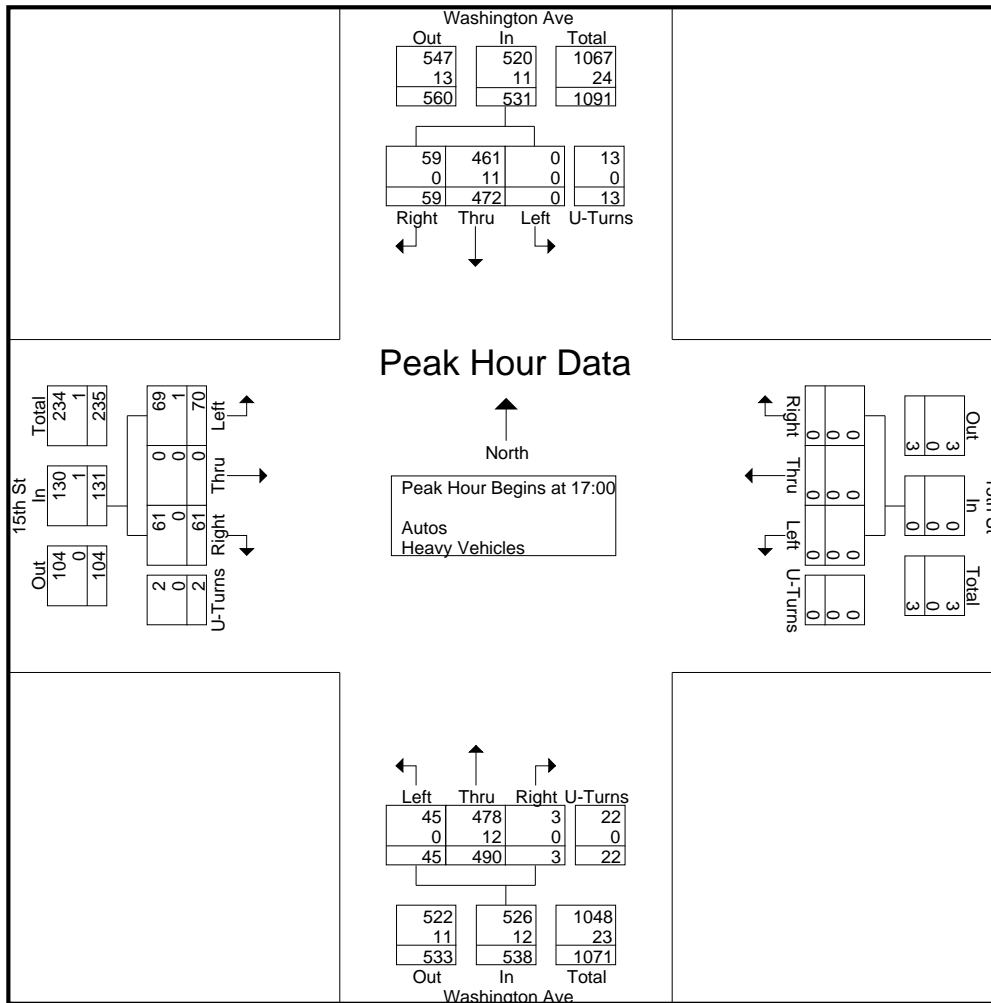
Page No : 2



# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 3

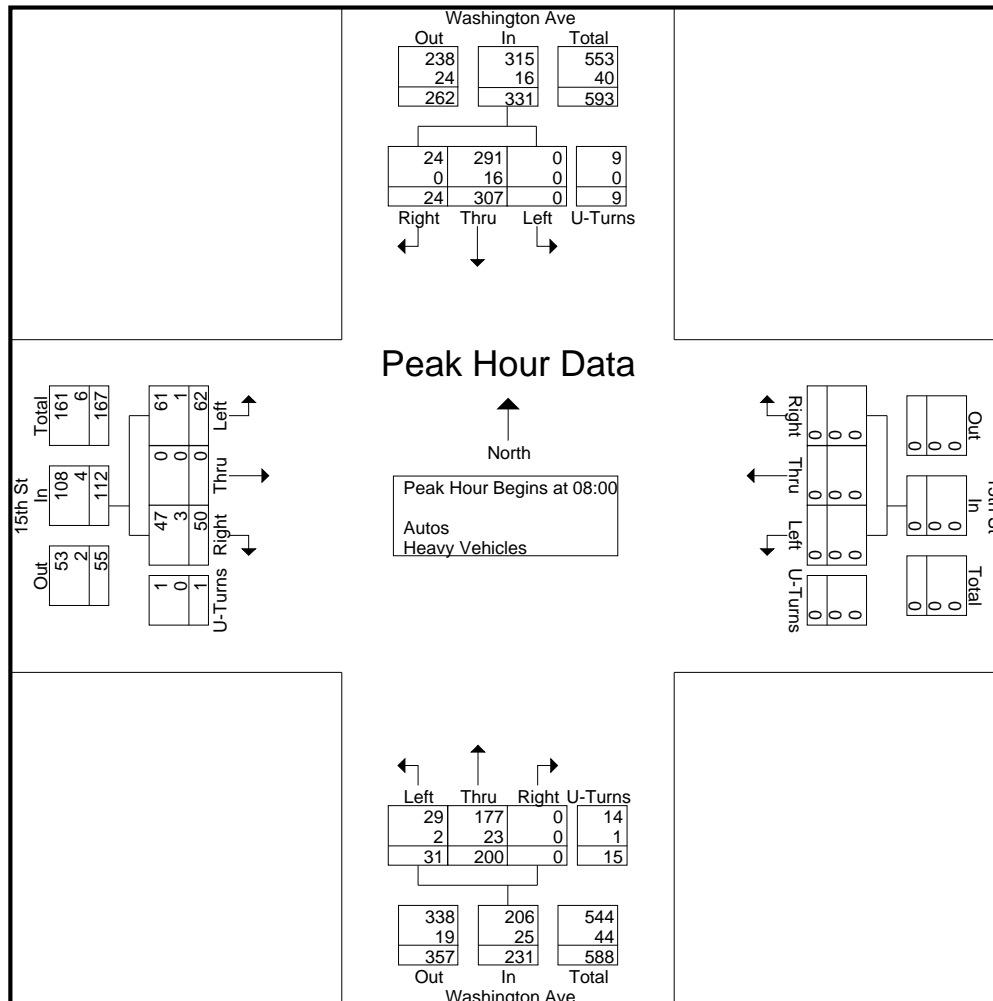
Start Time	Washington Ave From North					15th St From East					Washington Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	13	108	0	3	124	0	0	0	0	0	1	137	16	9	163	10	0	18	0	28	315
17:15	18	115	0	2	135	0	0	0	0	0	0	132	17	5	154	18	0	22	1	41	330
17:30	15	114	0	5	134	0	0	0	0	0	1	122	3	4	130	11	0	17	1	29	293
17:45	13	135	0	3	151	0	0	0	0	0	1	99	9	4	113	22	0	13	0	35	299
Total Volume	59	472	0	13	544	0	0	0	0	0	3	490	45	22	560	61	0	70	2	133	1237
% App. Total	10.8	86.8	0	2.4		0	0	0	0	0	0.5	87.5	8	3.9		45.9	0	52.6	1.5		
PHF	.819	.874	.000	.650	.901	.000	.000	.000	.000	.000	.750	.894	.662	.611	.859	.693	.000	.795	.500	.811	.937
Autos	59	461	0	13	533	0	0	0	0	0	3	478	45	22	548	61	0	69	2	132	1213
% Autos	100	97.7	0	100	98.0	0	0	0	0	0	100	97.6	100	100	97.9	100	0	98.6	100	99.2	98.1
Heavy Vehicles																					
% Heavy Vehicles	0	2.3	0	0	2.0	0	0	0	0	0	0	2.4	0	0	2.1	0	0	1.4	0	0.8	1.9



# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 4

Start Time	Washington Ave From North					15th St From East					Washington Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	4	71	0	0	75	0	0	0	0	0	0	37	5	2	44	15	0	11	0	26	145
08:15	6	75	0	2	83	0	0	0	0	0	0	43	8	4	55	11	0	19	0	30	168
08:30	7	78	0	3	88	0	0	0	0	0	0	56	9	5	70	14	0	22	1	37	195
08:45	7	83	0	4	94	0	0	0	0	0	0	64	9	4	77	10	0	10	0	20	191
Total Volume	24	307	0	9	340	0	0	0	0	0	0	200	31	15	246	50	0	62	1	113	699
% App. Total	7.1	90.3	0	2.6		0	0	0	0	0	0	81.3	12.6	6.1		44.2	0	54.9	0.9		
PHF	.857	.925	.000	.563	.904	.000	.000	.000	.000	.000	.000	.781	.861	.750	.799	.833	.000	.705	.250	.764	.896
Autos	24	291	0	9	324	0	0	0	0	0	0	177	29	14	220	47	0	61	1	109	653
% Autos	100	94.8	0	100	95.3	0	0	0	0	0	0	88.5	93.5	93.3	89.4	94.0	0	98.4	100	96.5	93.4
Heavy Vehicles																					
% Heavy Vehicles	0	5.2	0	0	4.7	0	0	0	0	0	0	11.5	6.5	6.7	10.6	6.0	0	1.6	0	3.5	6.6



# Traf Tech Engineering Inc.

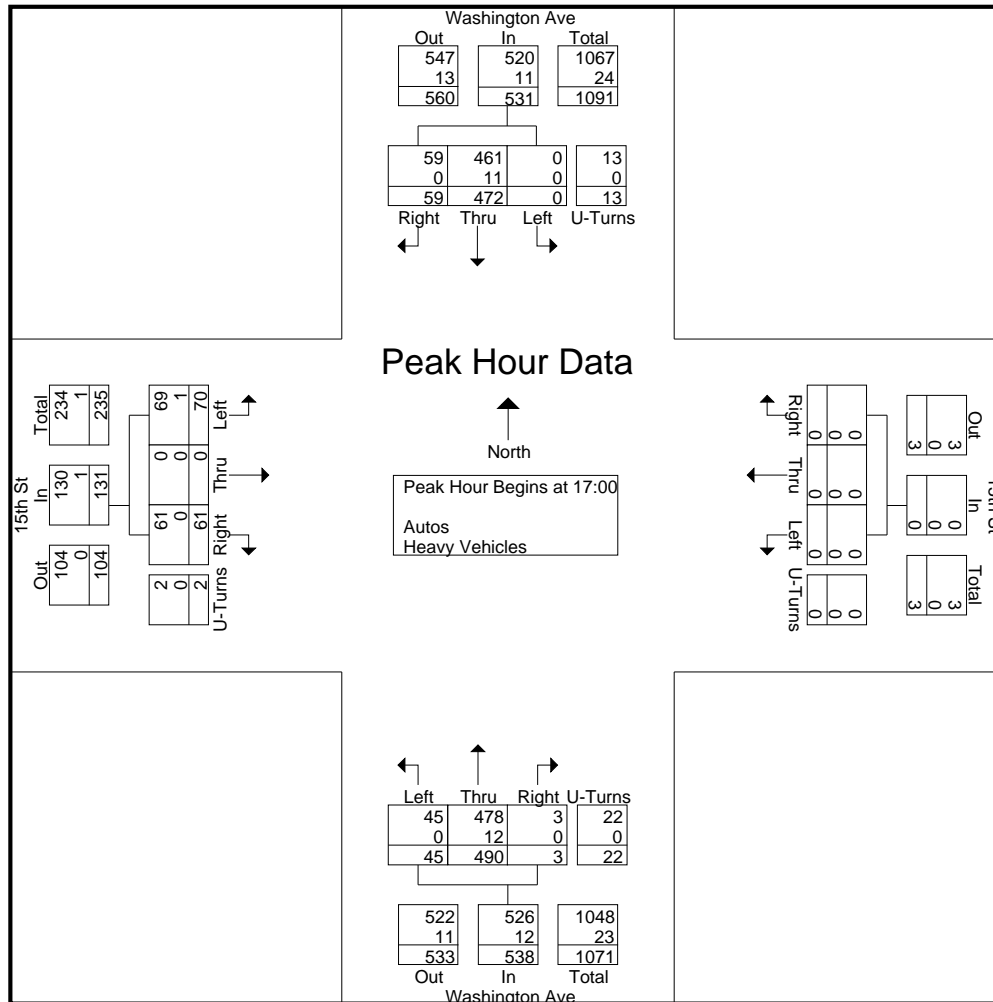
File Name : 3- Washington Ave & 15th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 5

Start Time	Washington Ave From North					15th St From East					Washington Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 17:00

17:00	13	108	0	3	124	0	0	0	0	0	1	137	16	9	163	10	0	18	0	28	315
17:15	18	115	0	2	135	0	0	0	0	0	0	132	17	5	154	18	0	22	1	41	330
17:30	15	114	0	5	134	0	0	0	0	0	1	122	3	4	130	11	0	17	1	29	293
17:45	13	135	0	3	151	0	0	0	0	0	1	99	9	4	113	22	0	13	0	35	299
Total Volume	59	472	0	13	544	0	0	0	0	0	3	490	45	22	560	61	0	70	2	133	1237
% App. Total	10.8	86.8	0	2.4		0	0	0	0	0	0.5	87.5	8	3.9		45.9	0	52.6	1.5		
PHF	.819	.874	.000	.650	.901	.000	.000	.000	.000	.000	.750	.894	.662	.611	.859	.693	.000	.795	.500	.811	.937
Autos	59	461	0	13	533	0	0	0	0	0	3	478	45	22	548	61	0	69	2	132	1213
% Autos	100	97.7	0	100	98.0	0	0	0	0	0	100	97.6	100	100	97.9	100	0	98.6	100	99.2	98.1
Heavy Vehicles	0	2.3	0	0	2.0	0	0	0	0	0	0	2.4	0	0	2.1	0	0	1.4	0	0.8	1.9
% Heavy Vehicles																					



# Traf Tech Engineering Inc.

File Name : 4- Washington Ave & 11th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 1

## Groups Printed- Peds & Bikes

Start Time	Washington Ave From North				11th St From East				Washington Ave From South				11th St From West				Int. Total
	Bikes			Peds	Bikes			Peds	Bikes			Peds	Bikes			Peds	
07:00	0	0	0	4	4	0	0	6	4	0	0	9	4	0	0	5	36
07:15	1	0	0	21	3	0	0	10	4	0	0	6	2	0	0	14	61
07:30	1	0	0	2	1	0	0	14	4	0	0	14	1	0	0	6	43
07:45	0	0	0	2	7	0	0	13	3	0	0	10	5	0	0	5	45
Total	2	0	0	29	15	0	0	43	15	0	0	39	12	0	0	30	185
08:00	0	0	0	9	3	0	0	13	5	0	0	2	3	0	0	9	44
08:15	1	0	0	9	6	0	0	26	3	0	0	8	5	0	0	15	73
08:30	3	0	0	8	4	0	0	18	2	0	0	8	4	0	0	10	57
08:45	3	0	0	12	4	0	0	30	6	0	0	2	9	0	0	17	83
Total	7	0	0	38	17	0	0	87	16	0	0	20	21	0	0	51	257
*** BREAK ***																	
16:00	9	0	0	17	6	0	0	26	8	0	0	14	5	0	0	39	124
16:15	1	0	0	12	10	0	0	24	7	0	0	7	11	0	0	48	120
16:30	4	0	0	40	21	0	0	66	3	0	0	15	9	0	0	41	199
16:45	3	0	0	20	5	0	0	33	5	0	0	16	10	0	0	13	105
Total	17	0	0	89	42	0	0	149	23	0	0	52	35	0	0	141	548
17:00	3	0	0	27	6	0	0	34	4	0	0	17	12	0	0	22	125
17:15	4	0	0	23	8	3	0	43	0	0	0	14	7	0	0	32	134
17:30	4	0	0	12	22	0	0	44	3	0	0	18	10	0	0	18	131
17:45	3	0	0	17	16	0	0	36	4	0	0	12	14	0	0	32	134
Total	14	0	0	79	52	3	0	157	11	0	0	61	43	0	0	104	524
Grand Total	40	0	0	235	126	3	0	436	65	0	0	172	111	0	0	326	1514
Apprch %	14.5	0	0	85.5	22.3	0.5	0	77.2	27.4	0	0	72.6	25.4	0	0	74.6	
Total %	2.6	0	0	15.5	8.3	0.2	0	28.8	4.3	0	0	11.4	7.3	0	0	21.5	

# Traf Tech Engineering Inc.

File Name : 4- Washington Ave & 11th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 1

## Groups Printed- Autos - Heavy Vehicles

Start Time	Washington Ave From North					11th St From East					Washington Ave From South					11th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00	0	35	1	0	36	1	4	2	0	7	3	40	1	2	46	2	7	1	0	10	99
07:15	5	85	3	1	94	0	4	2	0	6	0	24	1	0	25	7	12	14	1	34	159
07:30	2	28	0	0	30	1	6	3	0	10	4	40	2	2	48	0	2	2	0	4	92
07:45	2	43	1	1	47	2	5	0	0	7	2	41	2	0	45	3	7	6	0	16	115
Total	9	191	5	2	207	4	19	7	0	30	9	145	6	4	164	12	28	23	1	64	465
08:00	1	53	0	1	55	3	3	1	3	10	1	43	2	2	48	3	5	7	0	15	128
08:15	3	67	0	0	70	0	3	2	1	6	4	38	0	1	43	5	2	8	0	15	134
08:30	3	79	0	0	82	3	4	2	0	9	11	58	1	0	70	4	6	6	0	16	177
08:45	0	81	2	0	83	3	2	2	1	8	3	68	3	1	75	3	7	6	0	16	182
Total	7	280	2	1	290	9	12	7	5	33	19	207	6	4	236	15	20	27	0	62	621
*** BREAK ***																					
16:00	8	96	5	1	110	11	6	5	0	22	5	123	6	7	141	6	10	10	1	27	300
16:15	7	92	7	0	106	3	7	3	1	14	7	111	5	1	124	5	10	7	3	25	269
16:30	4	78	3	2	87	8	15	12	1	36	5	139	5	4	153	6	11	9	0	26	302
16:45	10	95	5	1	111	10	8	3	0	21	9	101	2	2	114	6	8	5	1	20	266
Total	29	361	20	4	414	32	36	23	2	93	26	474	18	14	532	23	39	31	5	98	1137
17:00	9	108	5	2	124	12	8	9	0	29	8	123	11	6	148	9	9	9	1	28	329
17:15	13	103	6	2	124	8	8	4	1	21	9	145	7	4	165	4	8	11	1	24	334
17:30	8	117	5	0	130	3	13	5	1	22	5	109	5	4	123	5	11	10	2	28	303
17:45	7	124	3	1	135	6	3	8	1	18	13	108	3	2	126	4	5	13	3	25	304
Total	37	452	19	5	513	29	32	26	3	90	35	485	26	16	562	22	33	43	7	105	1270
Grand Total	82	1284	46	12	1424	74	99	63	10	246	89	1311	56	38	1494	72	120	124	13	329	3493
Apprch %	5.8	90.2	3.2	0.8		30.1	40.2	25.6	4.1		6	87.8	3.7	2.5		21.9	36.5	37.7	4		
Total %	2.3	36.8	1.3	0.3	40.8	2.1	2.8	1.8	0.3	7	2.5	37.5	1.6	1.1	42.8	2.1	3.4	3.5	0.4	9.4	
Autos	81	1232										1252									
% Autos	98.8	96	93.5	100	96.1	100	99	98.4	100	99.2	96.6	95.5	96.4	100	95.7	95.8	95.8	99.2	100	97.3	96.2
Heavy Vehicles																					
% Heavy Vehicles	1.2	4	6.5	0	3.9	0	1	1.6	0	0.8	3.4	4.5	3.6	0	4.3	4.2	4.2	0.8	0	2.7	3.8

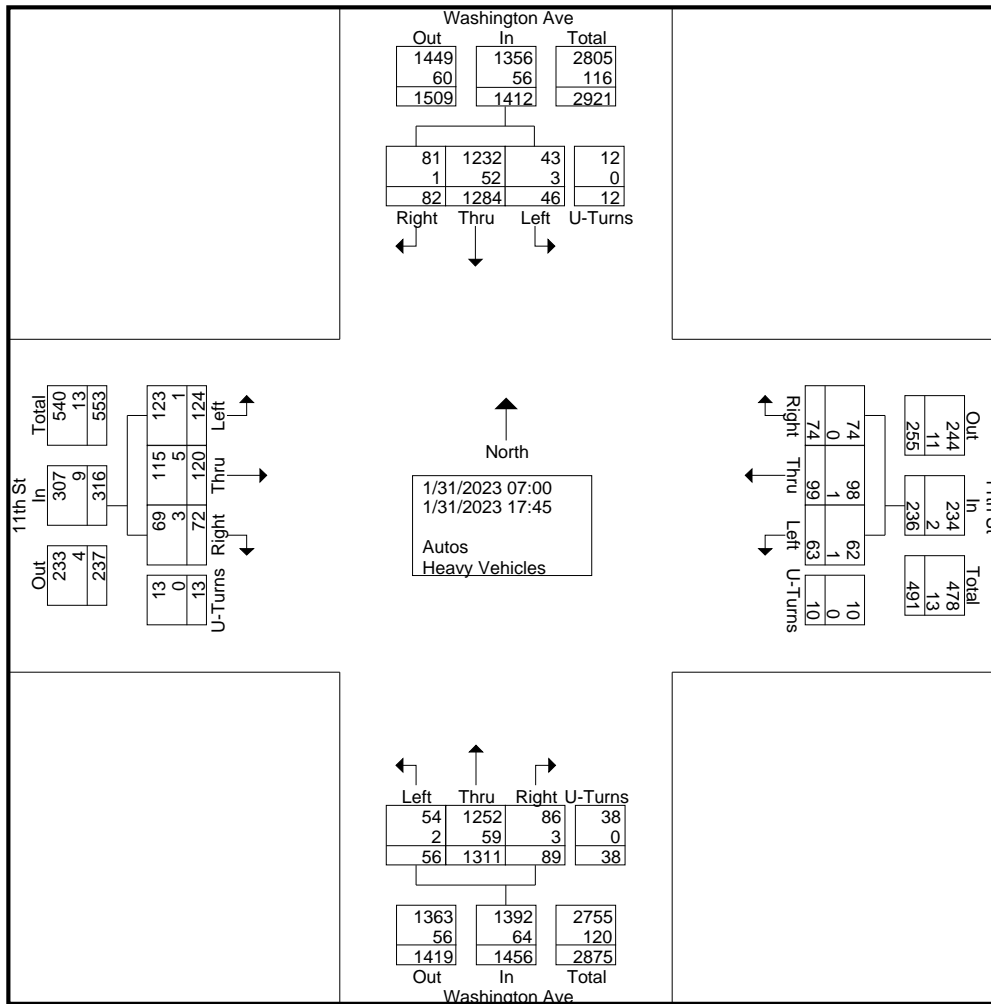
# Traf Tech Engineering Inc.

File Name : 4- Washington Ave & 11th St

Site Code : 00000000

Start Date : 1/31/2023

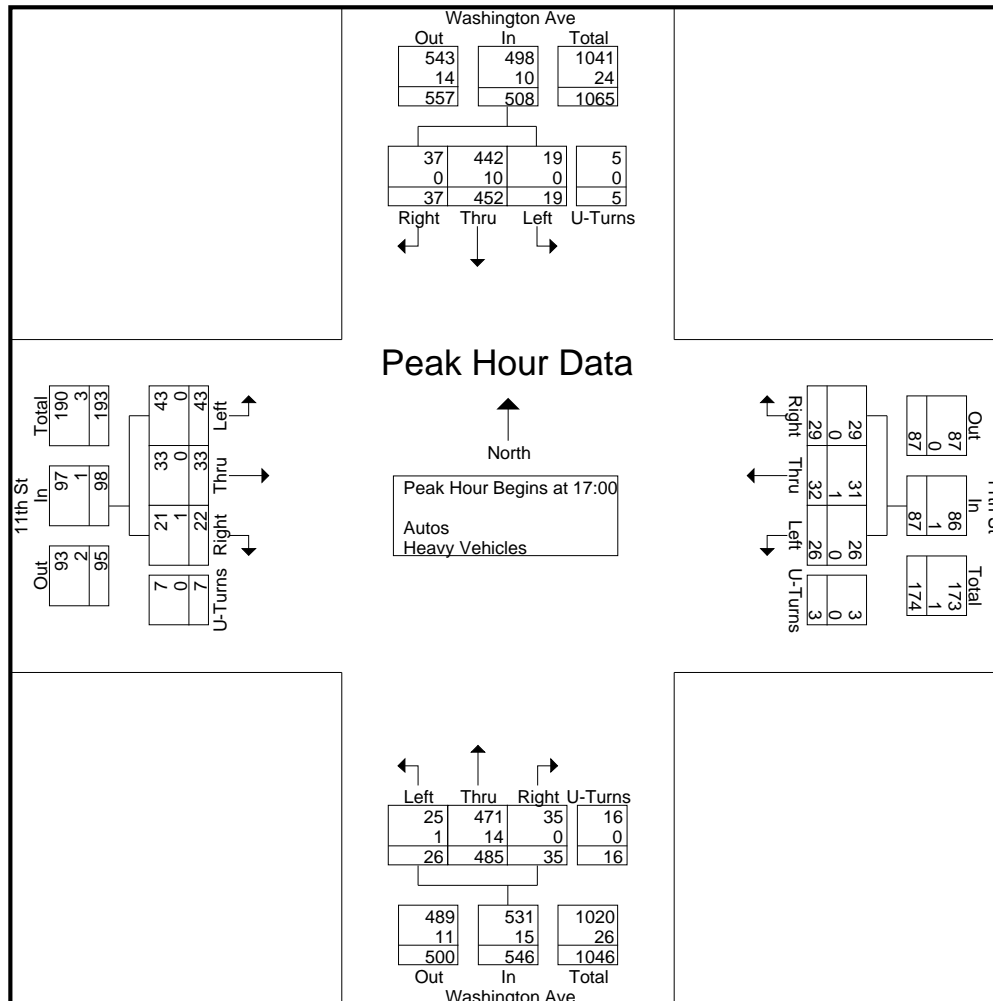
Page No : 2



# Traf Tech Engineering Inc.

File Name : 4- Washington Ave & 11th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 3

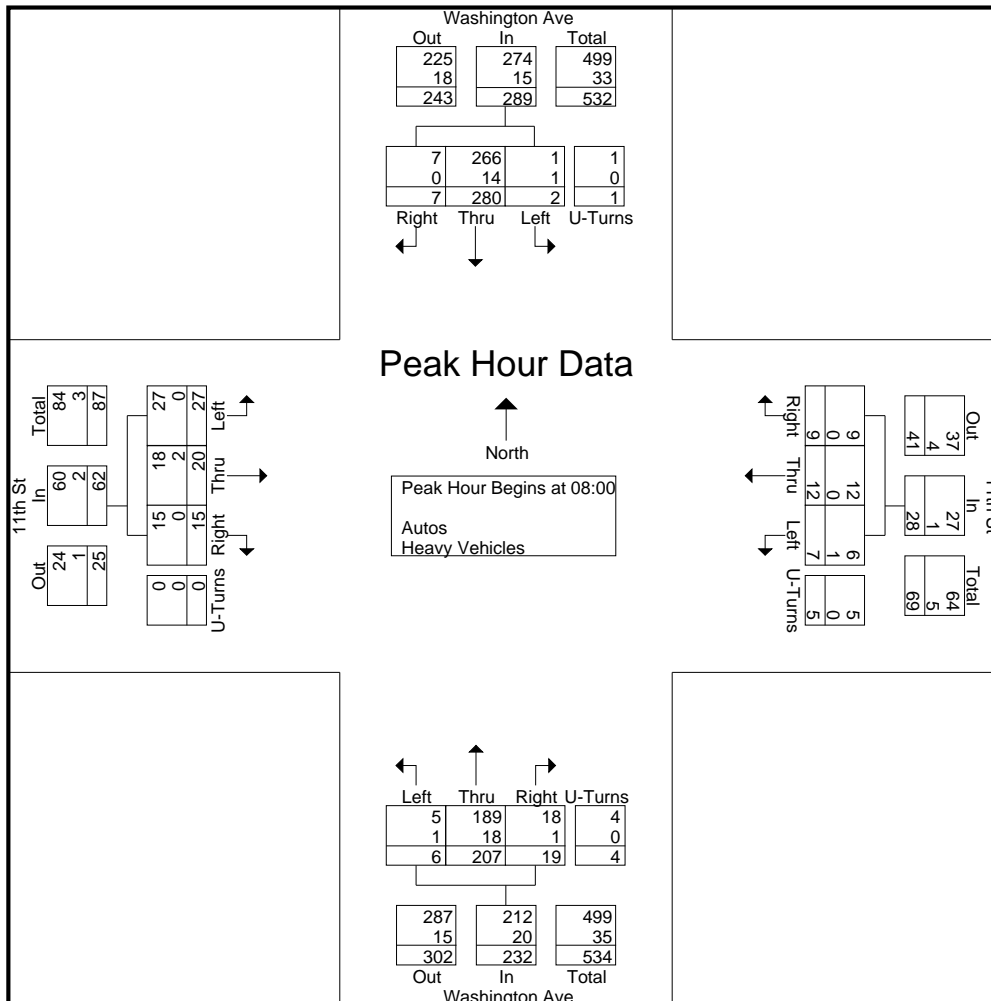
Start Time	Washington Ave From North					11th St From East					Washington Ave From South					11th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	9	108	5	2	124	12	8	9	0	29	8	123	11	6	148	9	9	9	1	28	329
17:15	13	103	6	2	124	8	8	4	1	21	9	145	7	4	165	4	8	11	1	24	334
17:30	8	117	5	0	130	3	13	5	1	22	5	109	5	4	123	5	11	10	2	28	303
17:45	7	124	3	1	135	6	3	8	1	18	13	108	3	2	126	4	5	13	3	25	304
Total Volume	37	452	19	5	513	29	32	26	3	90	35	485	26	16	562	22	33	43	7	105	1270
% App. Total	7.2	88.1	3.7	1		32.2	35.6	28.9	3.3		6.2	86.3	4.6	2.8		21	31.4	41	6.7		
PHF	.712	.911	.792	.625	.950	.604	.615	.722	.750	.776	.673	.836	.591	.667	.852	.611	.750	.827	.583	.938	.951
Autos	37	442	19	5	503	29	31	26	3	89	35	471	25	16	547	21	33	43	7	104	1243
% Autos	100	97.8	100	100	98.1	100	96.9	100	100	98.9	100	97.1	96.2	100	97.3	95.5	100	100	100	99.0	97.9
Heavy Vehicles																					
% Heavy Vehicles	0	2.2	0	0	1.9	0	3.1	0	0	1.1	0	2.9	3.8	0	2.7	4.5	0	0	0	1.0	2.1



# Traf Tech Engineering Inc.

File Name : 4- Washington Ave & 11th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 4

Start Time	Washington Ave From North					11th St From East					Washington Ave From South					11th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	1	53	0	1	55	3	3	1	3	10	1	43	2	2	48	3	5	7	0	15	128
08:15	3	67	0	0	70	0	3	2	1	6	4	38	0	1	43	5	2	8	0	15	134
08:30	3	79	0	0	82	3	4	2	0	9	11	58	1	0	70	4	6	6	0	16	177
08:45	0	81	2	0	83	3	2	2	1	8	3	68	3	1	75	3	7	6	0	16	182
Total Volume	7	280	2	1	290	9	12	7	5	33	19	207	6	4	236	15	20	27	0	62	621
% App. Total	2.4	96.6	0.7	0.3		27.3	36.4	21.2	15.2		8.1	87.7	2.5	1.7		24.2	32.3	43.5	0		
PHF	.583	.864	.250	.250	.873	.750	.750	.875	.417	.825	.432	.761	.500	.500	.787	.750	.714	.844	.000	.969	.853
Autos	7	266	1	1	275	9	12	6	5	32	18	189	5	4	216	15	18	27	0	60	583
% Autos	100	95.0	50.0	100	94.8	100	100	85.7	100	97.0	94.7	91.3	83.3	100	91.5	100	90.0	100	0	96.8	93.9
Heavy Vehicles																					
% Heavy Vehicles	0	5.0	50.0	0	5.2	0	0	14.3	0	3.0	5.3	8.7	16.7	0	8.5	0	10.0	0	0	3.2	6.1



# Traf Tech Engineering Inc.

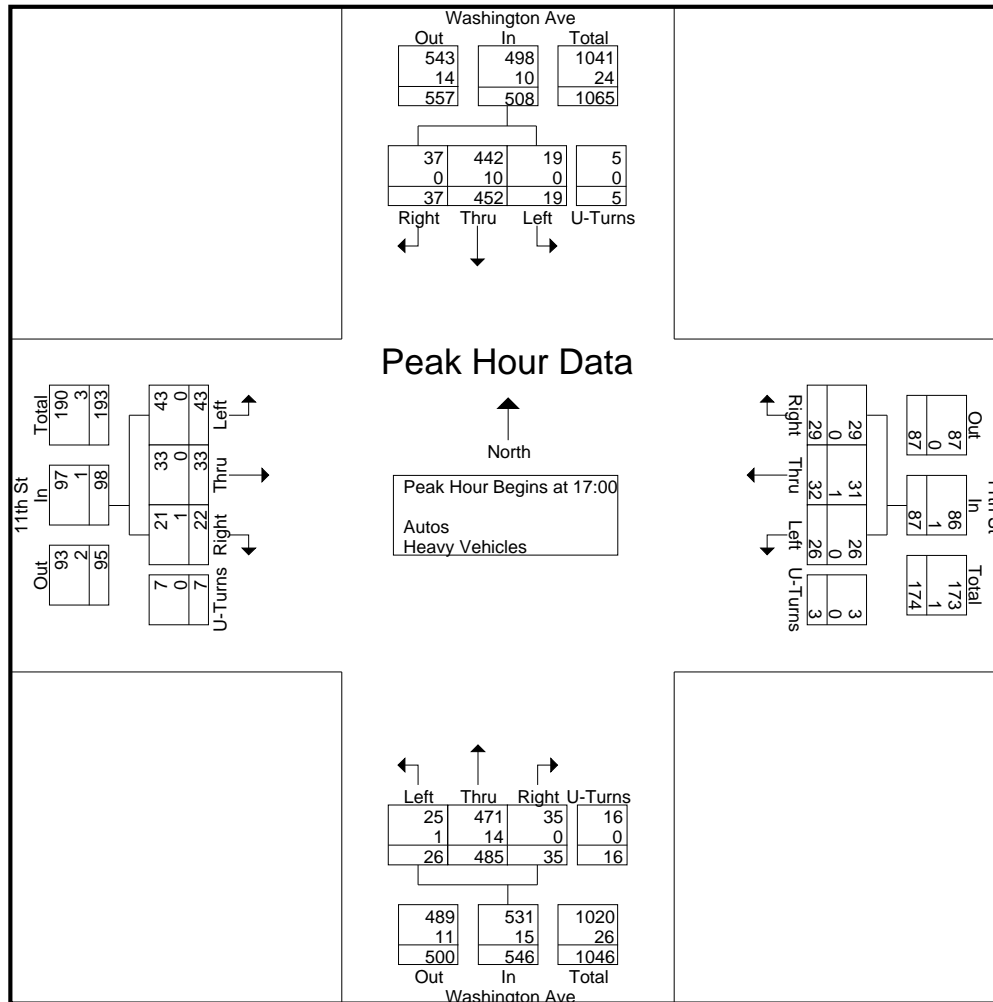
File Name : 4- Washington Ave & 11th St  
 Site Code : 00000000  
 Start Date : 1/31/2023  
 Page No : 5

Start Time	Washington Ave From North					11th St From East					Washington Ave From South					11th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 17:00

17:00	9	108	5	2	124	12	8	9	0	29	8	123	11	6	148	9	9	9	1	28	329
17:15	13	103	6	2	124	8	8	4	1	21	9	145	7	4	165	4	8	11	1	24	334
17:30	8	117	5	0	130	3	13	5	1	22	5	109	5	4	123	5	11	10	2	28	303
17:45	7	124	3	1	135	6	3	8	1	18	13	108	3	2	126	4	5	13	3	25	304
Total Volume	37	452	19	5	513	29	32	26	3	90	35	485	26	16	562	22	33	43	7	105	1270
% App. Total	7.2	88.1	3.7	1		32.2	35.6	28.9	3.3		6.2	86.3	4.6	2.8		21	31.4	41	6.7		
PHF	.712	.911	.792	.625	.950	.604	.615	.722	.750	.776	.673	.836	.591	.667	.852	.611	.750	.827	.583	.938	.951
Autos	37	442	19	5	503	29	31	26	3	89	35	471	25	16	547	21	33	43	7	104	1243
% Autos	100	97.8	100	100	98.1	100	96.9	100	100	98.9	100	97.1	96.2	100	97.3	95.5	100	100	100	99.0	97.9
Heavy Vehicles	0	2.2	0	0	1.9	0	3.1	0	0	1.1	0	2.9	3.8	0	2.7	4.5	0	0	0	1.0	2.1
% Heavy Vehicles																					



# Traf Tech Engineering Inc.

File Name : 1-15th St & Meridian Ave  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 1

## Groups Printed- Peds & Bikes

Start Time	Meridian Ave From North				15th St From East				Meridian Ave From South				15th St From West				Int. Total
	Bikes			Peds	Bikes			Peds	Bikes			Peds	Bikes			Peds	
07:00	0	0	0	4	1	0	0	6	3	0	0	9	0	0	0	5	28
07:15	2	0	0	5	1	0	0	10	1	0	0	1	0	0	0	2	22
07:30	5	0	0	1	4	0	0	4	6	0	0	2	3	0	0	17	42
07:45	0	0	0	22	2	0	0	10	5	0	0	5	0	0	0	21	65
Total	7	0	0	32	8	0	0	30	15	0	0	17	3	0	0	45	157
08:00	5	0	0	12	3	0	0	10	2	0	0	4	4	0	0	17	57
08:15	1	0	0	10	1	0	0	6	1	0	0	6	2	0	0	11	38
08:30	0	0	0	17	1	0	0	7	0	0	0	6	2	0	0	13	46
08:45	4	0	0	18	5	0	0	27	0	0	0	4	8	0	0	21	87
Total	10	0	0	57	10	0	0	50	3	0	0	20	16	0	0	62	228
*** BREAK ***																	
16:00	8	0	0	7	5	0	0	28	8	0	0	14	3	0	0	43	116
16:15	3	0	0	33	2	0	0	37	1	0	0	11	4	0	0	55	146
16:30	4	0	0	21	5	0	0	16	1	0	0	21	6	0	0	38	112
16:45	0	0	0	30	2	0	0	33	3	0	0	34	5	0	0	78	185
Total	15	0	0	91	14	0	0	114	13	0	0	80	18	0	0	214	559
17:00	3	0	0	20	3	0	0	26	5	0	0	22	3	0	0	40	122
17:15	1	0	0	17	2	0	0	33	7	0	0	25	1	0	0	30	116
17:30	5	0	0	15	1	0	0	43	5	0	0	11	5	0	0	20	105
17:45	2	0	0	41	2	0	0	29	3	0	0	27	0	0	0	57	161
Total	11	0	0	93	8	0	0	131	20	0	0	85	9	0	0	147	504
Grand Total	43	0	0	273	40	0	0	325	51	0	0	202	46	0	0	468	1448
Apprch %	13.6	0	0	86.4	11	0	0	89	20.2	0	0	79.8	8.9	0	0	91.1	
Total %	3	0	0	18.9	2.8	0	0	22.4	3.5	0	0	14	3.2	0	0	32.3	

# Traf Tech Engineering Inc.

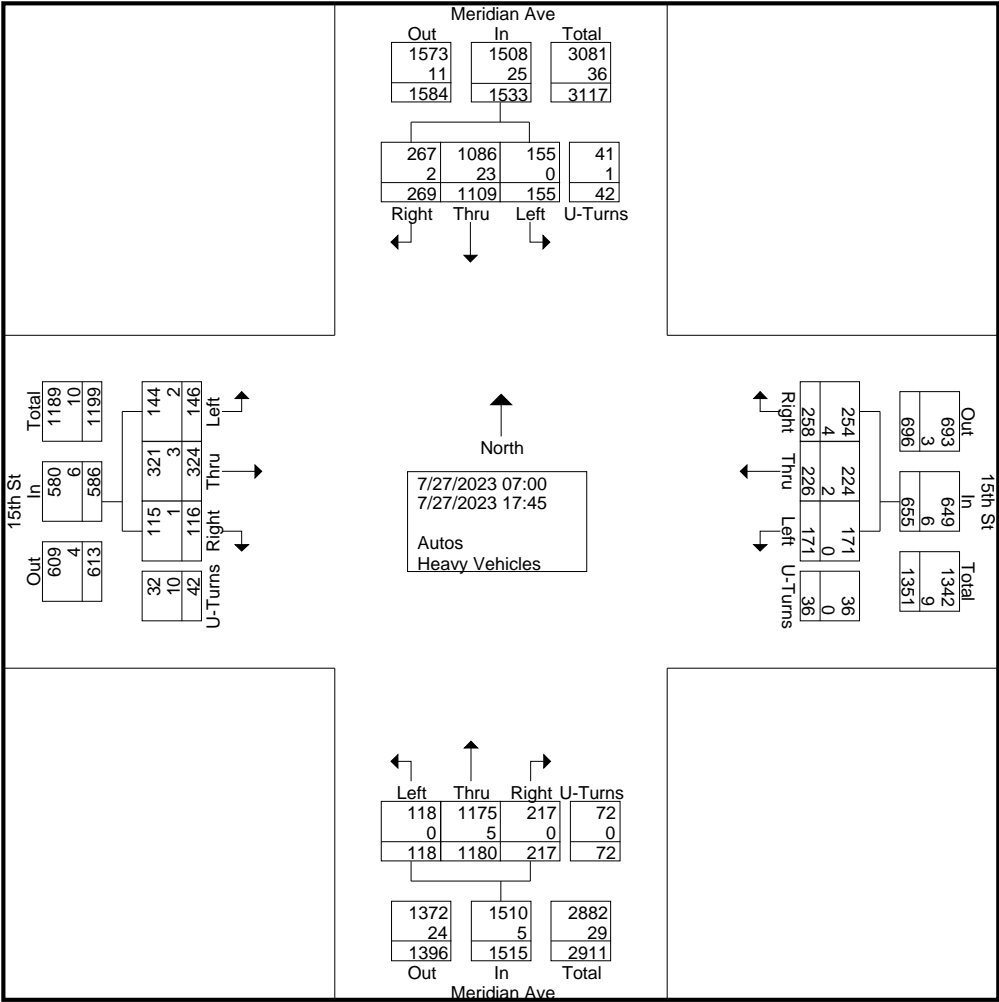
File Name : 1-15th St & Meridian Ave  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 1

## Groups Printed- Autos - Heavy Vehicles

Start Time	Meridian Ave From North					15th St From East					Meridian Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00	5	28	11	1	45	13	6	10	0	29	6	23	5	1	35	6	14	3	2	25	134
07:15	9	34	7	0	50	7	10	10	0	27	10	24	5	0	39	8	24	4	0	36	152
07:30	9	36	9	3	57	6	17	10	0	33	10	28	2	0	40	5	10	5	0	20	150
07:45	10	54	16	5	85	13	6	8	1	28	11	26	7	2	46	5	15	1	1	22	181
Total	33	152	43	9	237	39	39	38	1	117	37	101	19	3	160	24	63	13	3	103	617
08:00	10	60	8	0	78	4	7	6	0	17	10	36	7	5	58	5	20	2	0	27	180
08:15	11	43	12	3	69	10	7	7	1	25	9	35	2	2	48	5	23	5	0	33	175
08:30	14	71	4	1	90	5	14	12	5	36	8	50	3	2	63	5	17	7	2	31	220
08:45	21	84	6	3	114	5	9	8	6	28	10	54	8	3	75	10	15	3	2	30	247
Total	56	258	30	7	351	24	37	33	12	106	37	175	20	12	244	25	75	17	4	121	822
*** BREAK ***																					
16:00	27	68	9	3	107	24	17	13	0	54	21	109	8	10	148	13	28	17	3	61	370
16:15	30	88	5	3	126	22	19	7	2	50	22	95	15	7	139	5	27	17	1	50	365
16:30	20	81	16	2	119	27	14	12	3	56	16	128	4	5	153	9	23	21	3	56	384
16:45	10	88	10	3	111	31	27	9	4	71	16	106	6	9	137	14	17	6	12	49	368
Total	87	325	40	11	463	104	77	41	9	231	75	438	33	31	577	41	95	61	19	216	1487
17:00	20	103	12	3	138	23	23	15	1	62	17	98	12	6	133	5	26	16	10	57	390
17:15	33	85	7	6	131	29	20	14	5	68	20	136	11	6	173	7	18	11	2	38	410
17:30	22	91	12	4	129	17	16	18	7	58	13	131	14	5	163	5	22	9	2	38	388
17:45	18	95	11	2	126	22	14	12	1	49	18	101	9	9	137	9	25	19	2	55	367
Total	93	374	42	15	524	91	73	59	14	237	68	466	46	26	606	26	91	55	16	188	1555
Grand Total	269	1109	155	42	1575	258	226	171	36	691	217	1180	118	72	1587	116	324	146	42	628	4481
Apprch %	17.1	70.4	9.8	2.7		37.3	32.7	24.7	5.2		13.7	74.4	7.4	4.5		18.5	51.6	23.2	6.7		
Total %	6	24.7	3.5	0.9	35.1	5.8	5	3.8	0.8	15.4	4.8	26.3	2.6	1.6	35.4	2.6	7.2	3.3	0.9	14	
Autos	267	1086										1175									
% Autos	99.3	97.9	100	97.6	98.3	98.4	99.1	100	100	99.1	100	99.6	100	100	99.7	99.1	99.1	98.6	76.2	97.5	98.8
Heavy Vehicles																					
% Heavy Vehicles	0.7	2.1	0	2.4	1.7	1.6	0.9	0	0	0.9	0	0.4	0	0	0.3	0.9	0.9	1.4	23.8	2.5	1.2

# Traf Tech Engineering Inc.

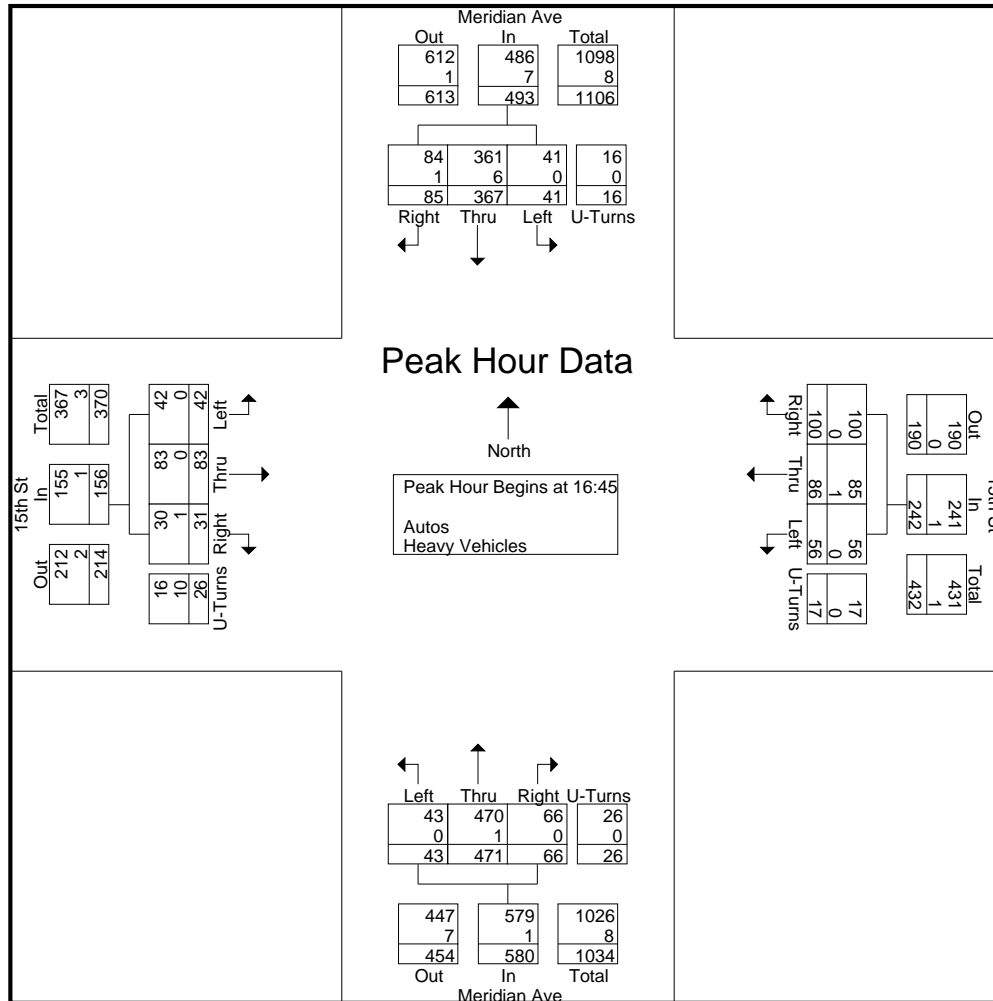
File Name : 1-15th St & Meridian Ave  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 2



# Traf Tech Engineering Inc.

File Name : 1-15th St & Meridian Ave  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 3

Start Time	Meridian Ave From North					15th St From East					Meridian Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	10	88	10	3	111	31	27	9	4	71	16	106	6	9	137	14	17	6	12	49	368
17:00	20	103	12	3	138	23	23	15	1	62	17	98	12	6	133	5	26	16	10	57	390
17:15	33	85	7	6	131	29	20	14	5	68	20	136	11	6	173	7	18	11	2	38	410
17:30	22	91	12	4	129	17	16	18	7	58	13	131	14	5	163	5	22	9	2	38	388
Total Volume	85	367	41	16	509	100	86	56	17	259	66	471	43	26	606	31	83	42	26	182	1556
% App. Total	16.7	72.1	8.1	3.1		38.6	33.2	21.6	6.6		10.9	77.7	7.1	4.3		17	45.6	23.1	14.3		
PHF	.644	.891	.854	.667	.922	.806	.796	.778	.607	.912	.825	.866	.768	.722	.876	.554	.798	.656	.542	.798	.949
Autos	84	361	41	16	502	100	85	56	17	258	66	470	43	26	605	30	83	42	16	171	1536
% Autos	98.8	98.4	100	100	98.6	100	98.8	100	100	99.6	100	99.8	100	100	99.8	96.8	100	100	61.5	94.0	98.7
Heavy Vehicles																					
% Heavy Vehicles	1.2	1.6	0	0	1.4	0	1.2	0	0	0.4	0	0.2	0	0	0.2	3.2	0	0	38.5	6.0	1.3



# Traf Tech Engineering Inc.

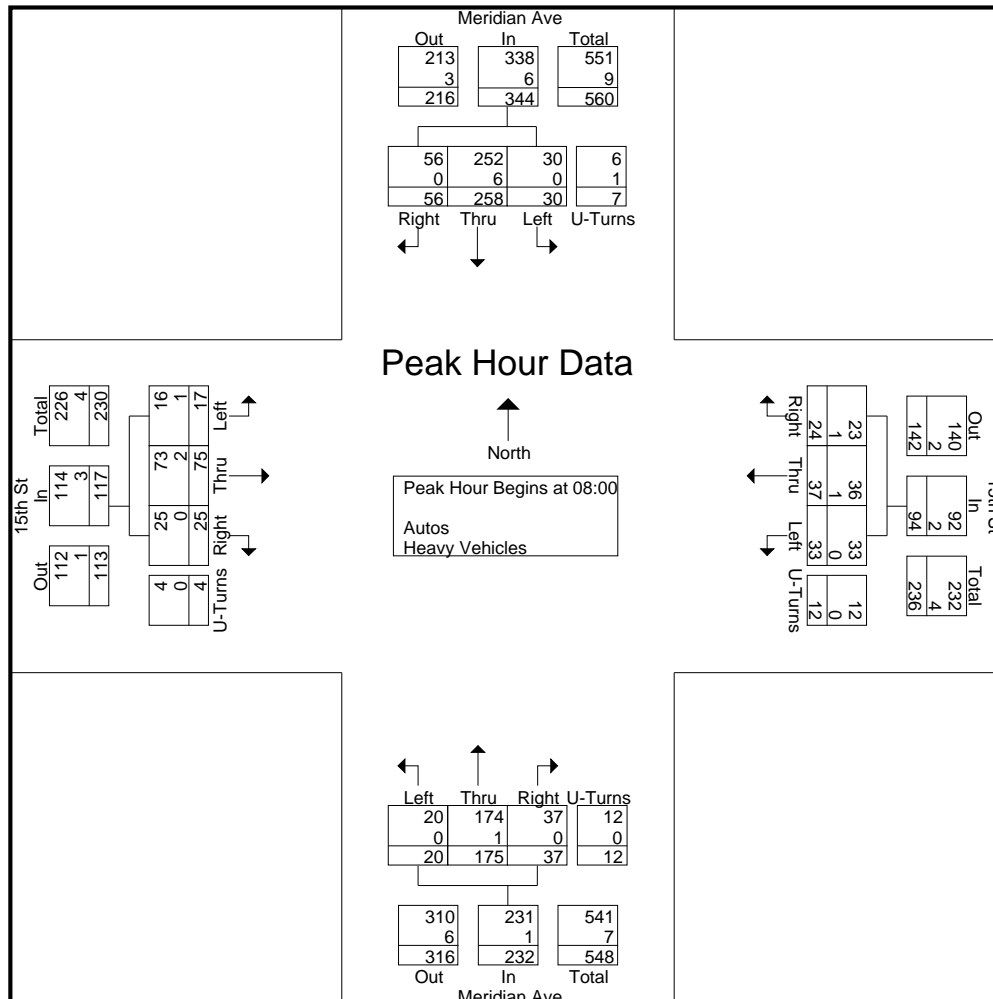
File Name : 1-15th St & Meridian Ave  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 4

Start Time	Meridian Ave From North					15th St From East					Meridian Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00

08:00	10	60	8	0	78	4	7	6	0	17	10	36	7	5	58	5	20	2	0	27	180
08:15	11	43	12	3	69	10	7	7	1	25	9	35	2	2	48	5	23	5	0	33	175
08:30	14	71	4	1	90	5	14	12	5	36	8	50	3	2	63	5	17	7	2	31	220
08:45	21	84	6	3	114	5	9	8	6	28	10	54	8	3	75	10	15	3	2	30	247
Total Volume	56	258	30	7	351	24	37	33	12	106	37	175	20	12	244	25	75	17	4	121	822
% App. Total	16	73.5	8.5	2		22.6	34.9	31.1	11.3		15.2	71.7	8.2	4.9		20.7	62	14	3.3		
PHF	.667	.768	.625	.583	.770	.600	.661	.688	.500	.736	.925	.810	.625	.600	.813	.625	.815	.607	.500	.917	.832
Autos	56	252	30	6	344	23	36	33	12	104	37	174	20	12	243	25	73	16	4	118	809
% Autos	100	97.7	100	85.7	98.0	95.8	97.3	100	100	98.1	100	99.4	100	100	99.6	100	97.3	94.1	100	97.5	98.4
Heavy Vehicles																					
% Heavy Vehicles	0	2.3	0	14.3	2.0	4.2	2.7	0	0	1.9	0	0.6	0	0	0.4	0	2.7	5.9	0	2.5	1.6



# Traf Tech Engineering Inc.

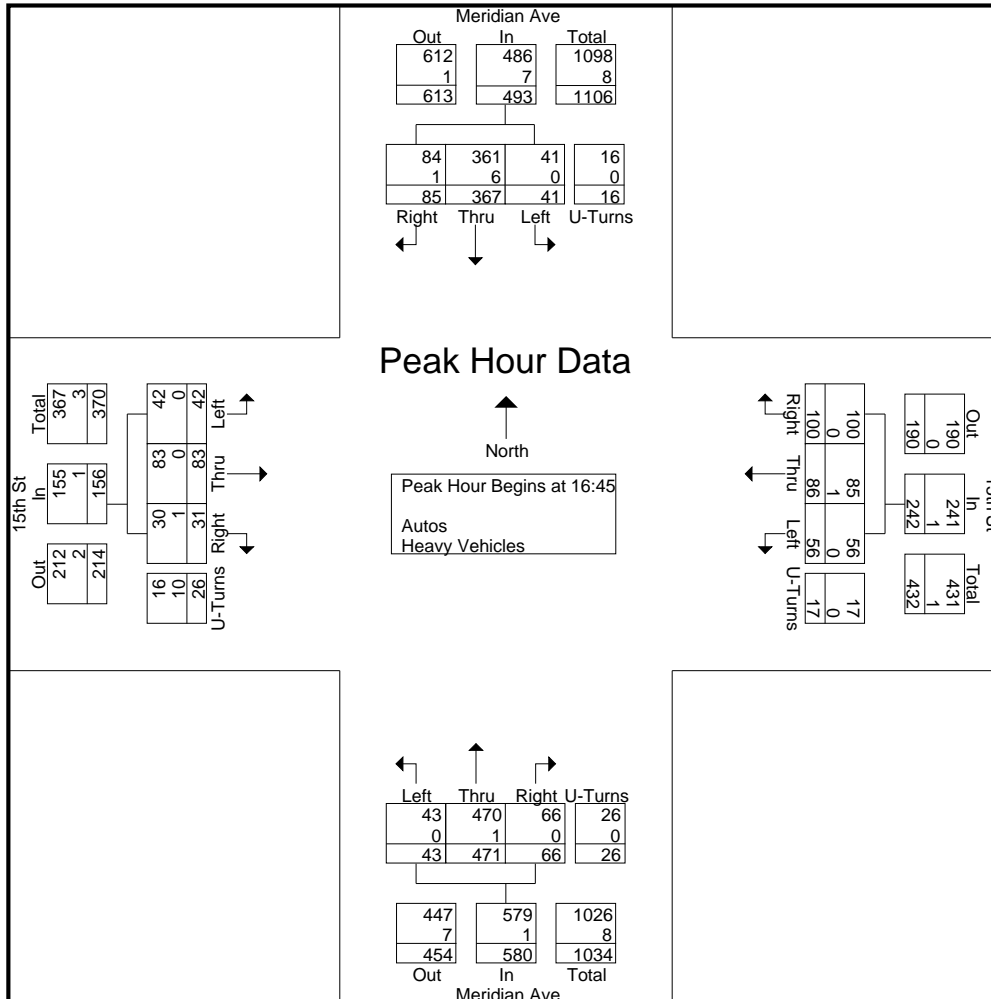
File Name : 1-15th St & Meridian Ave  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 5

Start Time	Meridian Ave From North					15th St From East					Meridian Ave From South					15th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 16:45

16:45	10	88	10	3	111	31	27	9	4	71	16	106	6	9	137	14	17	6	12	49	368
17:00	20	103	12	3	138	23	23	15	1	62	17	98	12	6	133	5	26	16	10	57	390
17:15	33	85	7	6	131	29	20	14	5	68	20	136	11	6	173	7	18	11	2	38	410
17:30	22	91	12	4	129	17	16	18	7	58	13	131	14	5	163	5	22	9	2	38	388
Total Volume	85	367	41	16	509	100	86	56	17	259	66	471	43	26	606	31	83	42	26	182	1556
% App. Total	16.7	72.1	8.1	3.1		38.6	33.2	21.6	6.6		10.9	77.7	7.1	4.3		17	45.6	23.1	14.3		
PHF	.644	.891	.854	.667	.922	.806	.796	.778	.607	.912	.825	.866	.768	.722	.876	.554	.798	.656	.542	.798	.949
Autos	84	361	41	16	502	100	85	56	17	258	66	470	43	26	605	30	83	42	16	171	1536
% Autos	98.8	98.4	100	100	98.6	100	98.8	100	100	99.6	100	99.8	100	100	99.8	96.8	100	100	61.5	94.0	98.7
Heavy Vehicles																					
% Heavy Vehicles	1.2	1.6	0	0	1.4	0	1.2	0	0	0.4	0	0.2	0	0	0.2	3.2	0	0	38.5	6.0	1.3



# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 16th St  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 1

## Groups Printed- Peds & Bikes

Start Time	Washington Ave From North				16th St From East				Washington Ave From South				16th St From West				Int. Total
	Bikes			Peds	Bikes			Peds	Bikes			Peds	Bikes			Peds	
07:00	0	0	0	1	2	0	0	2	0	0	0	1	1	0	0	1	8
07:15	0	0	0	2	4	0	0	1	2	0	0	0	1	0	0	2	12
07:30	0	0	0	3	0	0	0	2	1	0	0	4	0	0	0	1	11
07:45	0	0	0	3	2	0	0	1	0	0	0	0	0	0	0	2	8
Total	0	0	0	9	8	0	0	6	3	0	0	5	2	0	0	6	39
08:00	2	0	0	2	1	0	0	2	1	0	0	2	0	0	0	5	15
08:15	1	0	0	1	1	0	0	2	2	0	0	0	1	0	0	2	10
08:30	0	0	0	6	4	0	0	2	1	0	0	2	0	0	0	4	19
08:45	2	0	0	1	2	0	0	6	1	0	0	3	0	0	0	3	18
Total	5	0	0	10	8	0	0	12	5	0	0	7	1	0	0	14	62
*** BREAK ***																	
16:00	1	0	0	4	2	0	0	5	1	0	0	4	0	0	0	4	21
16:15	5	0	0	6	2	0	0	6	2	0	0	5	0	0	0	4	30
16:30	3	0	0	1	4	0	0	8	4	0	0	7	1	0	0	3	31
16:45	5	0	0	6	3	0	0	6	1	0	0	0	3	0	0	9	33
Total	14	0	0	17	11	0	0	25	8	0	0	16	4	0	0	20	115
17:00	1	0	0	1	7	0	0	10	0	0	0	8	2	0	0	3	32
17:15	2	0	0	8	0	0	0	7	0	0	0	3	3	0	0	2	25
17:30	2	0	0	4	11	0	0	6	0	0	0	2	1	0	0	7	33
17:45	1	0	0	6	1	0	0	12	0	0	0	7	0	0	0	4	31
Total	6	0	0	19	19	0	0	35	0	0	0	20	6	0	0	16	121
Grand Total	25	0	0	55	46	0	0	78	16	0	0	48	13	0	0	56	337
Apprch %	31.2	0	0	68.8	37.1	0	0	62.9	25	0	0	75	18.8	0	0	81.2	
Total %	7.4	0	0	16.3	13.6	0	0	23.1	4.7	0	0	14.2	3.9	0	0	16.6	

# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 16th St  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 1

## Groups Printed- Autos - Heavy Vehicles

Start Time	Washington Ave From North					16th St From East					Washington Ave From South					16th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00	1	6	4	0	11	0	11	0	4	15	0	10	3	0	13	9	18	3	1	31	70
07:15	2	12	0	1	15	0	15	0	0	15	3	10	6	0	19	9	18	1	0	28	77
07:30	6	7	0	0	13	2	16	1	1	20	3	11	9	0	23	12	18	2	0	32	88
07:45	1	16	3	0	20	2	14	1	0	17	0	17	9	0	26	10	30	3	1	44	107
Total	10	41	7	1	59	4	56	2	5	67	6	48	27	0	81	40	84	9	2	135	342
08:00	2	18	3	0	23	2	15	2	0	19	4	23	20	2	49	9	13	2	0	24	115
08:15	4	14	2	0	20	0	14	1	0	15	1	18	7	1	27	9	30	3	1	43	105
08:30	3	28	2	0	33	1	14	3	0	18	4	31	14	1	50	7	23	5	1	36	137
08:45	6	18	4	2	30	4	20	1	1	26	1	23	12	0	36	15	31	5	0	51	143
Total	15	78	11	2	106	7	63	7	1	78	10	95	53	4	162	40	97	15	2	154	500
*** BREAK ***																					
16:00	10	22	5	0	37	6	38	0	1	45	3	45	19	2	69	21	37	8	1	67	218
16:15	6	23	3	1	33	3	23	2	3	31	5	59	18	1	83	15	45	6	1	67	214
16:30	12	27	7	0	46	9	24	2	1	36	2	60	25	2	89	19	49	8	0	76	247
16:45	7	29	6	4	46	13	23	2	1	39	7	54	27	0	88	19	38	7	3	67	240
Total	35	101	21	5	162	31	108	6	6	151	17	218	89	5	329	74	169	29	5	277	919
17:00	6	32	1	1	40	2	34	3	3	42	2	60	15	1	78	16	44	2	2	64	224
17:15	10	31	5	1	47	10	35	6	1	52	5	46	30	1	82	15	37	5	1	58	239
17:30	3	27	4	3	37	10	26	2	0	38	6	61	20	2	89	24	37	12	1	74	238
17:45	6	45	4	2	57	6	34	3	3	46	7	37	15	2	61	21	41	8	0	70	234
Total	25	135	14	7	181	28	129	14	7	178	20	204	80	6	310	76	159	27	4	266	935
Grand Total	85	355	53	15	508	70	356	29	19	474	53	565	249	15	882	230	509	80	13	832	2696
Apprch %	16.7	69.9	10.4	3		14.8	75.1	6.1	4		6	64.1	28.2	1.7		27.6	61.2	9.6	1.6		
Total %	3.2	13.2	2	0.6	18.8	2.6	13.2	1.1	0.7	17.6	2	21	9.2	0.6	32.7	8.5	18.9	3	0.5	30.9	
Autos	84	353	53	15	505	70	352	29	19	470	53	563	243	15	874	229	507	79	13	828	2677
% Autos	98.8	99.4	100	100	99.4	100	98.9	100	100	99.2	100	99.6	97.6	100	99.1	99.6	99.6	98.8	100	99.5	99.3
Heavy Vehicles																					
% Heavy Vehicles	1.2	0.6	0	0	0.6	0	1.1	0	0	0.8	0	0.4	2.4	0	0.9	0.4	0.4	1.2	0	0.5	0.7

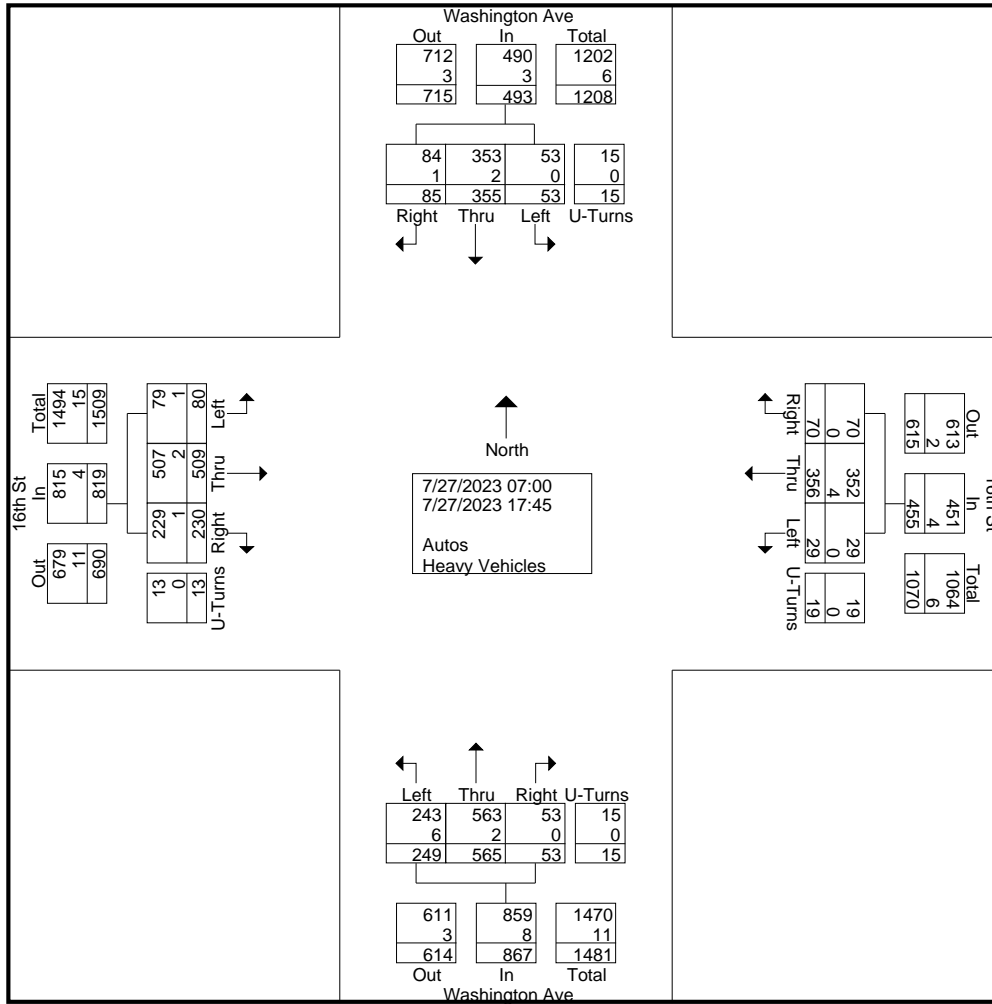
# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 16th St

Site Code : 00000000

Start Date : 7/27/2023

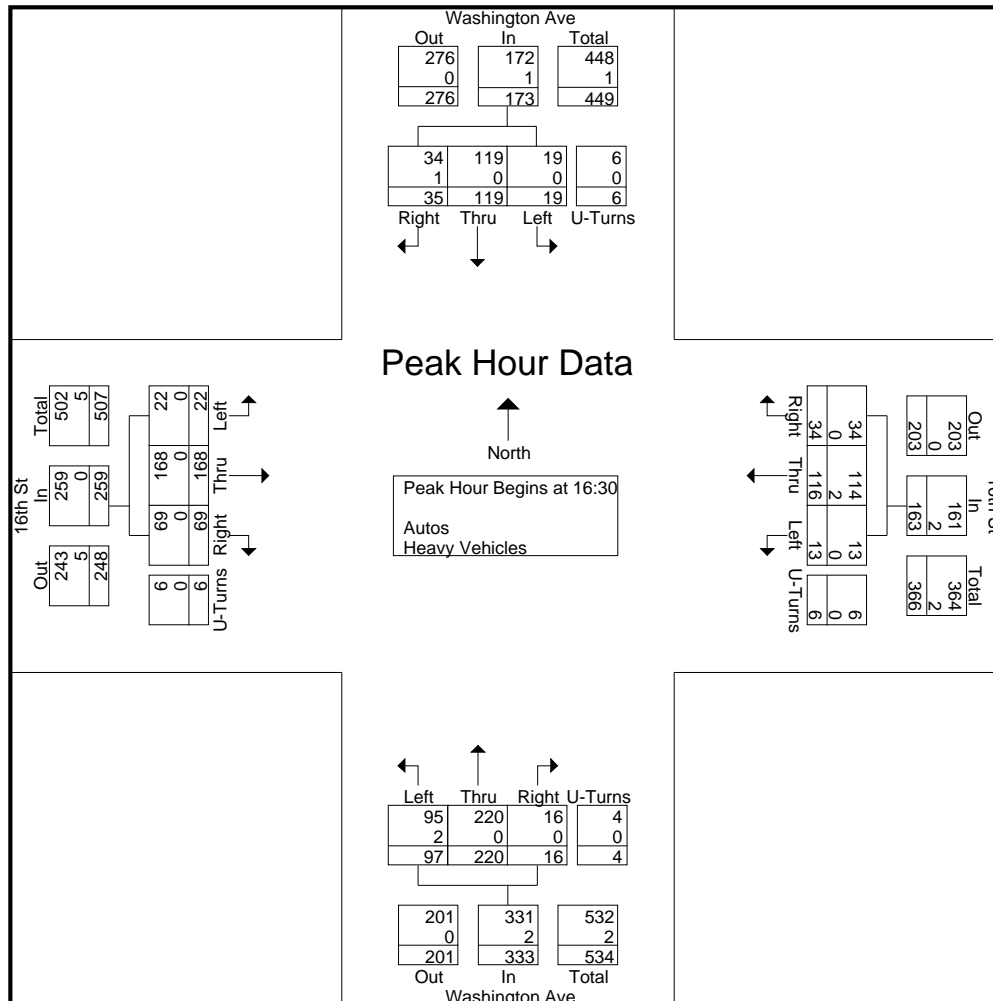
Page No : 2



# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 16th St  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 3

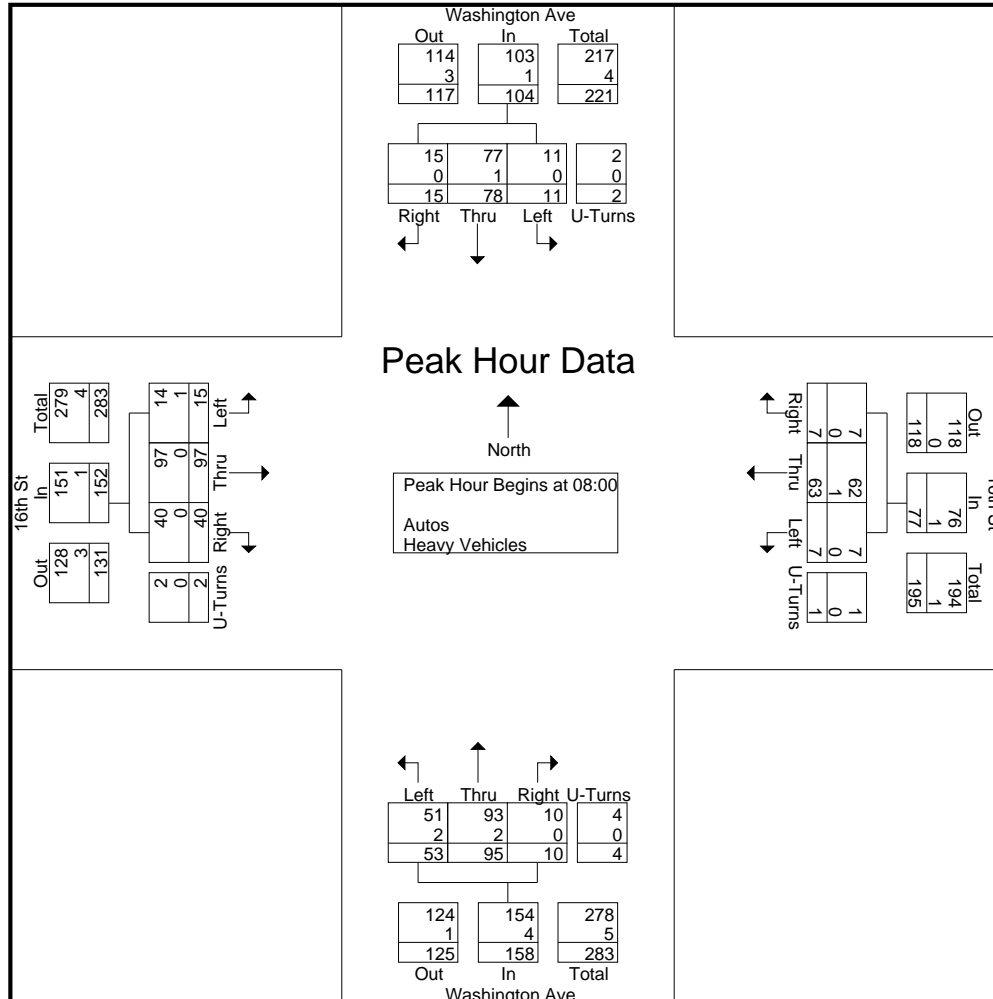
Start Time	Washington Ave From North					16th St From East					Washington Ave From South					16th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	12	27	7	0	46	9	24	2	1	36	2	60	25	2	89	19	49	8	0	76	247
16:45	7	29	6	4	46	13	23	2	1	39	7	54	27	0	88	19	38	7	3	67	240
17:00	6	32	1	1	40	2	34	3	3	42	2	60	15	1	78	16	44	2	2	64	224
17:15	10	31	5	1	47	10	35	6	1	52	5	46	30	1	82	15	37	5	1	58	239
Total Volume	35	119	19	6	179	34	116	13	6	169	16	220	97	4	337	69	168	22	6	265	950
% App. Total	19.6	66.5	10.6	3.4		20.1	68.6	7.7	3.6		4.7	65.3	28.8	1.2		26	63.4	8.3	2.3		
PHF	.729	.930	.679	.375	.952	.654	.829	.542	.500	.813	.571	.917	.808	.500	.947	.908	.857	.688	.500	.872	.962
Autos	34	119	19	6	178	34	114	13	6	167	16	220	95	4	335	69	168	22	6	265	945
% Autos	97.1	100	100	100	99.4	100	98.3	100	100	98.8	100	100	97.9	100	99.4	100	100	100	100	100	99.5
Heavy Vehicles																					
% Heavy Vehicles	2.9	0	0	0	0.6	0	1.7	0	0	1.2	0	0	2.1	0	0.6	0	0	0	0	0	0.5



# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 16th St  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 4

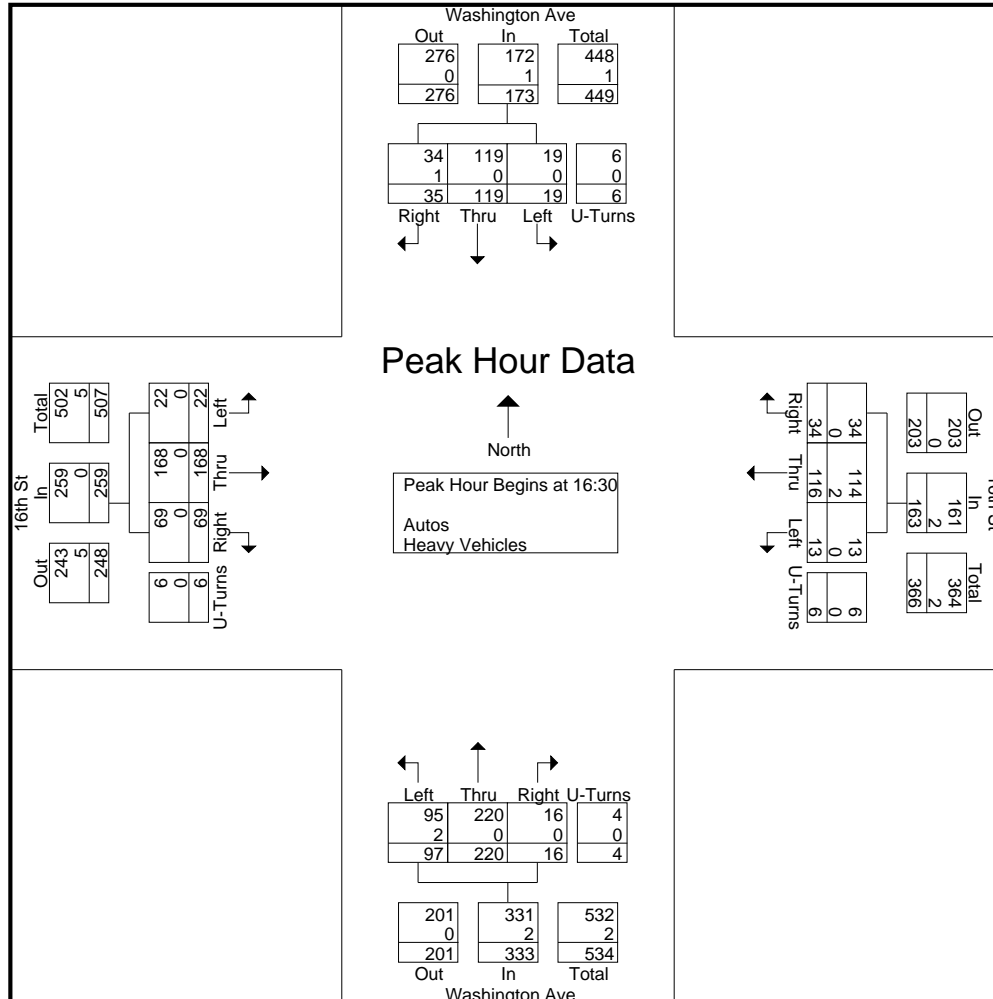
Start Time	Washington Ave From North					16th St From East					Washington Ave From South					16th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	2	18	3	0	23	2	15	2	0	19	4	23	20	2	49	9	13	2	0	24	115
08:15	4	14	2	0	20	0	14	1	0	15	1	18	7	1	27	9	30	3	1	43	105
08:30	3	28	2	0	33	1	14	3	0	18	4	31	14	1	50	7	23	5	1	36	137
08:45	6	18	4	2	30	4	20	1	1	26	1	23	12	0	36	15	31	5	0	51	143
Total Volume	15	78	11	2	106	7	63	7	1	78	10	95	53	4	162	40	97	15	2	154	500
% App. Total	14.2	73.6	10.4	1.9		9	80.8	9	1.3		6.2	58.6	32.7	2.5		26	63	9.7	1.3		
PHF	.625	.696	.688	.250	.803	.438	.788	.583	.250	.750	.625	.766	.663	.500	.810	.667	.782	.750	.500	.755	.874
Autos	15	77	11	2	105	7	62	7	1	77	10	93	51	4	158	40	97	14	2	153	493
% Autos	100	98.7	100	100	99.1	100	98.4	100	100	98.7	100	97.9	96.2	100	97.5	100	100	93.3	100	99.4	98.6
Heavy Vehicles																					
% Heavy Vehicles	0	1.3	0	0	0.9	0	1.6	0	0	1.3	0	2.1	3.8	0	2.5	0	0	6.7	0	0.6	1.4



# Traf Tech Engineering Inc.

File Name : 2- Washington Ave & 16th St  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 5

Start Time	Washington Ave From North					16th St From East					Washington Ave From South					16th St From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	12	27	7	0	46	9	24	2	1	36	2	60	25	2	89	19	49	8	0	76	247
16:45	7	29	6	4	46	13	23	2	1	39	7	54	27	0	88	19	38	7	3	67	240
17:00	6	32	1	1	40	2	34	3	3	42	2	60	15	1	78	16	44	2	2	64	224
17:15	10	31	5	1	47	10	35	6	1	52	5	46	30	1	82	15	37	5	1	58	239
Total Volume	35	119	19	6	179	34	116	13	6	169	16	220	97	4	337	69	168	22	6	265	950
% App. Total	19.6	66.5	10.6	3.4		20.1	68.6	7.7	3.6		4.7	65.3	28.8	1.2		26	63.4	8.3	2.3		
PHF	.729	.930	.679	.375	.952	.654	.829	.542	.500	.813	.571	.917	.808	.500	.947	.908	.857	.688	.500	.872	.962
Autos	34	119	19	6	178	34	114	13	6	167	16	220	95	4	335	69	168	22	6	265	945
% Autos	97.1	100	100	100	99.4	100	98.3	100	100	98.8	100	100	97.9	100	99.4	100	100	100	100	100	99.5
Heavy Vehicles																					
% Heavy Vehicles	2.9	0	0	0	0.6	0	1.7	0	0	1.2	0	0	2.1	0	0.6	0	0	0	0	0	0.5



# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & Española Way  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 1

## Groups Printed- Peds & Bikes

Start Time	Washington Ave From North				Española Way From East				Washington Ave From South				Española Way From West				Int. Total
	Bikes			Peds	Bikes			Peds	Bikes			Peds	Bikes			Peds	
07:00	0	0	0	4	3	0	0	3	2	0	0	7	0	0	0	0	19
07:15	0	0	0	7	1	0	0	4	2	0	0	6	0	0	0	0	20
07:30	0	0	0	2	2	0	0	4	1	0	0	5	0	0	0	0	14
07:45	0	0	0	0	1	0	0	6	2	0	0	12	0	0	0	0	21
Total	0	0	0	13	7	0	0	17	7	0	0	30	0	0	0	0	74
08:00	2	0	0	5	2	0	0	11	0	0	0	14	0	0	0	0	34
08:15	1	0	0	4	1	0	0	6	0	0	0	6	0	0	0	0	18
08:30	1	0	0	5	1	0	0	8	1	0	0	8	0	0	0	0	24
08:45	0	0	0	11	2	0	0	8	2	0	0	12	0	0	0	0	35
Total	4	0	0	25	6	0	0	33	3	0	0	40	0	0	0	0	111
*** BREAK ***																	
16:00	0	0	0	21	1	0	0	41	1	0	0	28	0	0	0	0	92
16:15	0	0	0	26	5	0	0	33	0	0	0	44	0	0	0	0	108
16:30	4	0	0	22	4	0	0	23	1	0	0	26	0	0	0	0	80
16:45	4	0	0	15	2	0	0	33	2	0	0	29	0	0	0	0	85
Total	8	0	0	84	12	0	0	130	4	0	0	127	0	0	0	0	365
17:00	3	0	0	29	2	0	0	14	4	0	0	23	0	0	0	0	75
17:15	0	0	0	18	1	0	0	18	1	0	0	46	0	0	0	0	84
17:30	0	0	0	22	0	0	0	23	0	0	0	32	0	0	0	0	77
17:45	0	0	0	29	0	0	0	21	0	0	0	55	0	0	0	0	105
Total	3	0	0	98	3	0	0	76	5	0	0	156	0	0	0	0	341
Grand Total	15	0	0	220	28	0	0	256	19	0	0	353	0	0	0	0	891
Apprch %	6.4	0	0	93.6	9.9	0	0	90.1	5.1	0	0	94.9	0	0	0	0	
Total %	1.7	0	0	24.7	3.1	0	0	28.7	2.1	0	0	39.6	0	0	0	0	

# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & Española Way

Site Code : 00000000

Start Date : 7/27/2023

Page No : 1

## Groups Printed- Autos - Heavy Vehicles

Start Time	Washington Ave From North					Española Way From East					Washington Ave From South					Española Way From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00	0	44	0	0	44	6	0	7	0	13	2	20	0	3	25	0	0	0	0	0	82
07:15	0	48	1	0	49	2	0	4	1	7	3	35	0	0	38	0	0	0	0	0	94
07:30	0	52	2	0	54	3	0	2	1	6	1	29	0	2	32	0	0	0	0	0	92
07:45	0	63	3	1	67	4	0	4	3	11	5	38	0	5	48	0	0	0	0	0	126
Total	0	207	6	1	214	15	0	17	5	37	11	122	0	10	143	0	0	0	0	0	394
08:00	0	73	1	0	74	8	0	3	0	11	3	46	0	1	50	0	0	0	0	0	135
08:15	0	62	0	0	62	1	0	3	0	4	3	43	0	5	51	0	0	0	0	0	117
08:30	0	80	3	1	84	0	0	6	1	7	3	54	0	1	58	0	0	0	0	0	149
08:45	1	100	2	1	104	6	0	3	3	12	3	64	0	2	69	0	0	0	0	0	185
Total	1	315	6	2	324	15	0	15	4	34	12	207	0	9	228	0	0	0	0	0	586
*** BREAK ***																					
16:00	0	102	7	4	113	13	0	9	0	22	8	147	0	5	160	0	0	0	0	0	295
16:15	0	108	3	2	113	13	0	11	4	28	13	112	0	6	131	0	0	0	0	0	272
16:30	0	100	5	2	107	11	0	8	2	21	14	121	0	0	135	0	0	0	0	0	263
16:45	0	117	9	0	126	9	0	6	4	19	20	106	0	4	130	0	0	0	0	0	275
Total	0	427	24	8	459	46	0	34	10	90	55	486	0	15	556	0	0	0	0	0	1105
17:00	0	120	4	2	126	13	0	10	4	27	15	126	0	5	146	0	0	0	0	0	299
17:15	0	107	1	3	111	6	0	9	1	16	17	146	0	5	168	0	0	0	0	0	295
17:30	0	140	1	2	143	7	0	8	0	15	23	136	0	2	161	0	0	0	0	0	319
17:45	0	117	12	4	133	7	0	14	6	27	12	113	0	7	132	0	0	0	0	0	292
Total	0	484	18	11	513	33	0	41	11	85	67	521	0	19	607	0	0	0	0	0	1205
Grand Total	1	1433	54	22	1510	109	0	107	30	246	145	1336	0	53	1534	0	0	0	0	0	3290
Apprch %	0.1	94.9	3.6	1.5		44.3	0	43.5	12.2		9.5	87.1	0	3.5		0	0	0	0		
Total %	0	43.6	1.6	0.7	45.9	3.3	0	3.3	0.9	7.5	4.4	40.6	0	1.6	46.6	0	0	0	0	0	
Autos	1	1394										1327									
% Autos	100	97.3	92.6	100	97.2	100	0	99.1	96.7	99.2	98.6	99.3	0	100	99.3	0	0	0	0	0	98.3
Heavy Vehicles																					
% Heavy Vehicles	0	2.7	7.4	0	2.8	0	0	0.9	3.3	0.8	1.4	0.7	0	0	0.7	0	0	0	0	0	1.7

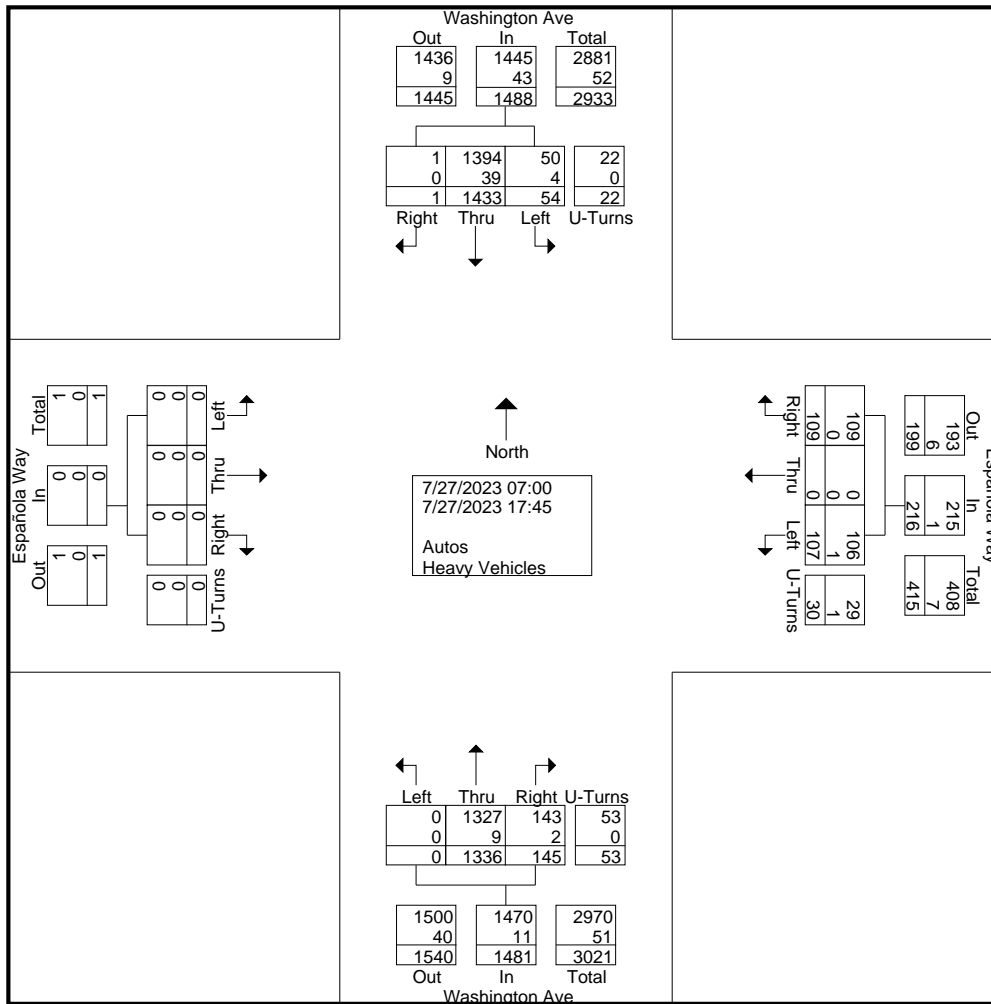
# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & Española Way

Site Code : 00000000

Start Date : 7/27/2023

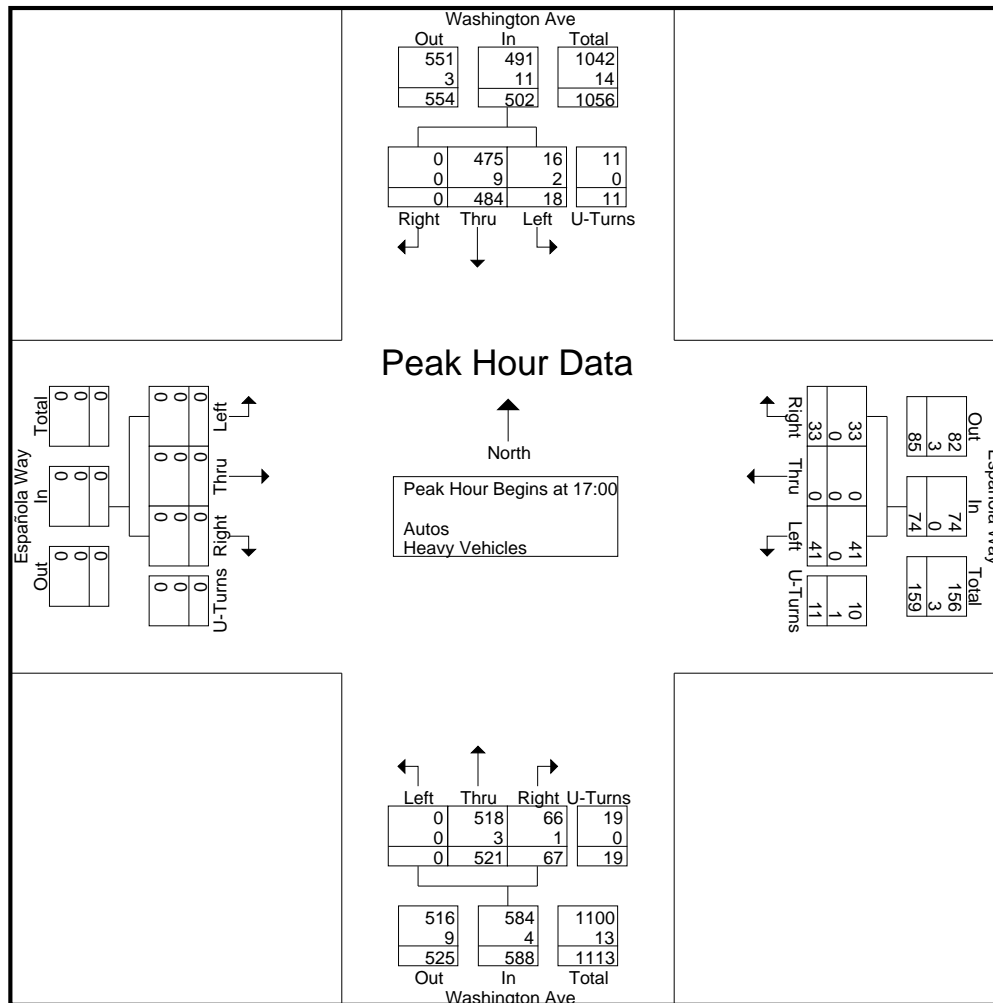
Page No : 2



# Traf Tech Engineering Inc.

File Name : 3- Washington Ave & Española Way  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 3

Start Time	Washington Ave From North					Española Way From East					Washington Ave From South					Española Way From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 17:00																					
17:00	0	120	4	2	126	13	0	10	4	27	15	126	0	5	146	0	0	0	0	0	299
17:15	0	107	1	3	111	6	0	9	1	16	17	146	0	5	168	0	0	0	0	0	295
17:30	0	140	1	2	143	7	0	8	0	15	23	136	0	2	161	0	0	0	0	0	319
17:45	0	117	12	4	133	7	0	14	6	27	12	113	0	7	132	0	0	0	0	0	292
Total Volume	0	484	18	11	513	33	0	41	11	85	67	521	0	19	607	0	0	0	0	0	1205
% App. Total	0	94.3	3.5	2.1		38.8	0	48.2	12.9		11	85.8	0	3.1		0	0	0	0		
PHF	.000	.864	.375	.688	.897	.635	.000	.732	.458	.787	.728	.892	.000	.679	.903	.000	.000	.000	.000	.000	.944
Autos	0	475	16	11	502	33	0	41	10	84	66	518	0	19	603	0	0	0	0	0	1189
% Autos	0	98.1	88.9	100	97.9	100	0	100	90.9	98.8	98.5	99.4	0	100	99.3	0	0	0	0	0	98.7
Heavy Vehicles																					
% Heavy Vehicles	0	1.9	11.1	0	2.1	0	0	0	9.1	1.2	1.5	0.6	0	0	0.7	0	0	0	0	0	1.3



# Traf Tech Engineering Inc.

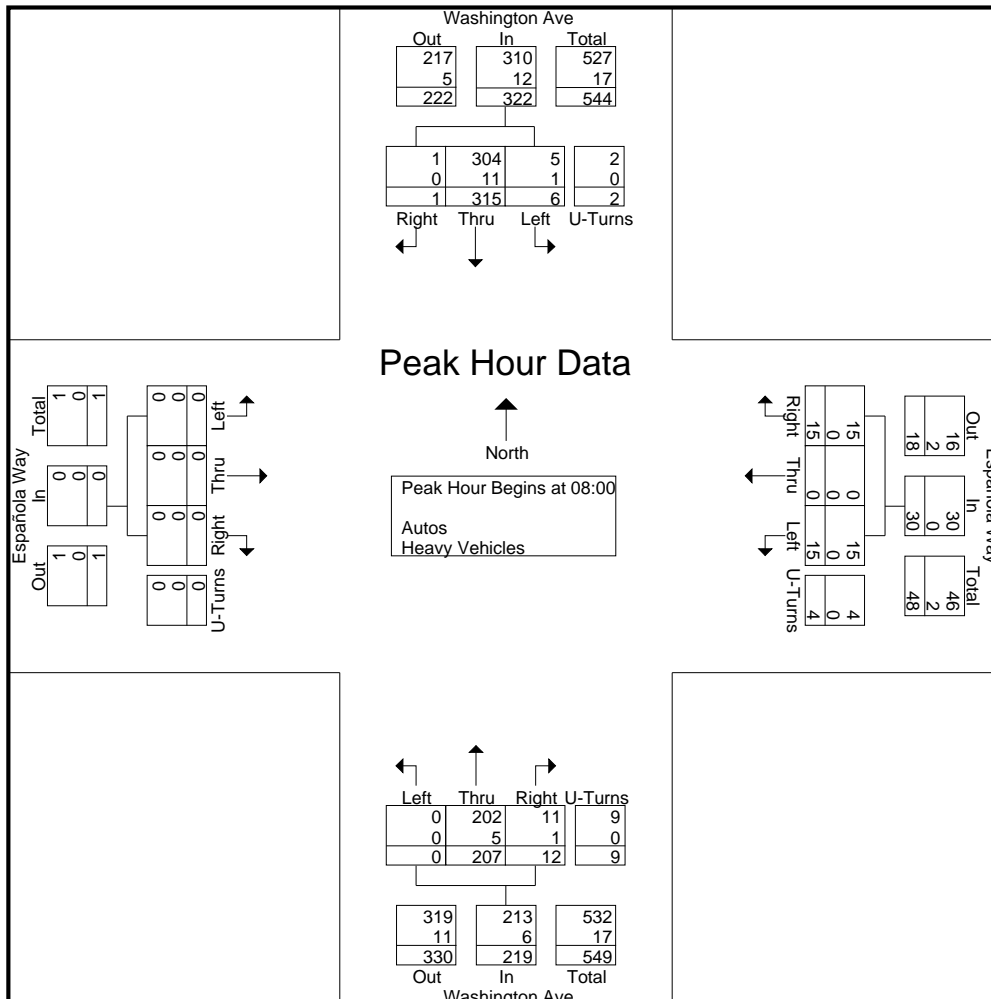
File Name : 3- Washington Ave & Española Way  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 4

Start Time	Washington Ave From North					Española Way From East					Washington Ave From South					Española Way From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00

08:00	0	73	1	0	74	8	0	3	0	11	3	46	0	1	50	0	0	0	0	0	135
08:15	0	62	0	0	62	1	0	3	0	4	3	43	0	5	51	0	0	0	0	0	117
08:30	0	80	3	1	84	0	0	6	1	7	3	54	0	1	58	0	0	0	0	0	149
08:45	1	100	2	1	104	6	0	3	3	12	3	64	0	2	69	0	0	0	0	0	185
Total Volume	1	315	6	2	324	15	0	15	4	34	12	207	0	9	228	0	0	0	0	0	586
% App. Total	0.3	97.2	1.9	0.6		44.1	0	44.1	11.8		5.3	90.8	0	3.9		0	0	0	0		
PHF	.250	.788	.500	.500	.779	.469	.000	.625	.333	.708	1.00	.809	.000	.450	.826	.000	.000	.000	.000	.000	.792
Autos	1	304	5	2	312	15	0	15	4	34	11	202	0	9	222	0	0	0	0	0	568
% Autos	100	96.5	83.3	100	96.3	100	0	100	100	100	91.7	97.6	0	100	97.4	0	0	0	0	0	96.9
Heavy Vehicles																					
% Heavy Vehicles	0	3.5	16.7	0	3.7	0	0	0	0	0	8.3	2.4	0	0	2.6	0	0	0	0	0	3.1



# Traf Tech Engineering Inc.

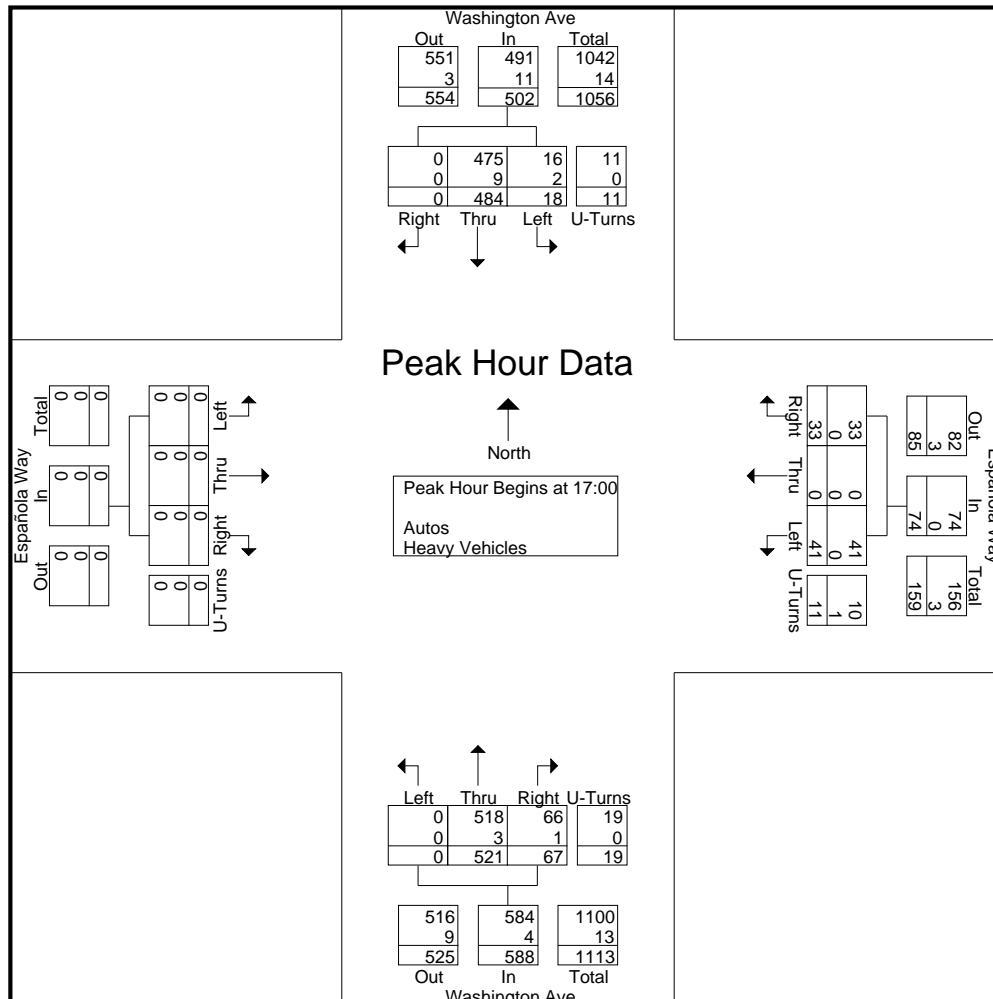
File Name : 3- Washington Ave & Española Way  
 Site Code : 00000000  
 Start Date : 7/27/2023  
 Page No : 5

Start Time	Washington Ave From North					Española Way From East					Washington Ave From South					Española Way From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	

Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 17:00

17:00	0	120	4	2	126	13	0	10	4	27	15	126	0	5	146	0	0	0	0	0	299
17:15	0	107	1	3	111	6	0	9	1	16	17	146	0	5	168	0	0	0	0	0	295
17:30	0	140	1	2	143	7	0	8	0	15	23	136	0	2	161	0	0	0	0	0	319
17:45	0	117	12	4	133	7	0	14	6	27	12	113	0	7	132	0	0	0	0	0	292
Total Volume	0	484	18	11	513	33	0	41	11	85	67	521	0	19	607	0	0	0	0	0	1205
% App. Total	0	94.3	3.5	2.1		38.8	0	48.2	12.9		11	85.8	0	3.1		0	0	0	0		
PHF	.000	.864	.375	.688	.897	.635	.000	.732	.458	.787	.728	.892	.000	.679	.903	.000	.000	.000	.000	.000	.944
Autos	0	475	16	11	502	33	0	41	10	84	66	518	0	19	603	0	0	0	0	0	1189
% Autos	0	98.1	88.9	100	97.9	100	0	100	90.9	98.8	98.5	99.4	0	100	99.3	0	0	0	0	0	98.7
Heavy Vehicles	0	1.9	11.1	0	2.1	0	0	0	9.1	1.2	1.5	0.6	0	0	0.7	0	0	0	0	0	1.3
% Heavy Vehicles	0	1.9	11.1	0	2.1	0	0	0	9.1	1.2	1.5	0.6	0	0	0.7	0	0	0	0	0	1.3



# Land Use: 310

## Hotel

---

### Description

A hotel is a place of lodging that provides sleeping accommodations and supporting facilities such as a full-service restaurant, cocktail lounge, meeting rooms, banquet room, and convention facilities. A hotel typically provides a swimming pool or another recreational facility such as a fitness room. All suites hotel (Land Use 311), business hotel (Land Use 312), motel (Land Use 320), and resort hotel (Land Use 330) are related uses.

### Additional Data

Twenty-five studies provided information on occupancy rates at the time the studies were conducted. The average occupancy rate for these studies was approximately 82 percent.

Some properties in this land use provide guest transportation services (e.g., airport shuttle, limousine service, golf course shuttle service) which may have an impact on the overall trip generation rates.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, District of Columbia, Florida, Georgia, Indiana, Minnesota, New York, Ontario (CAN), Pennsylvania, South Dakota, Texas, Vermont, Virginia, and Washington.

***For all lodging uses, it is important to collect data on occupied rooms as well as total rooms in order to accurately predict trip generation characteristics for the site.***

***Trip generation at a hotel may be related to the presence of supporting facilities such as convention facilities, restaurants, meeting/banquet space, and retail facilities. Future data submissions should specify the presence of these amenities. Reporting the level of activity at the supporting facilities such as full, empty, partially active, number of people attending a meeting/banquet during observation may also be useful in further analysis of this land use.***

### Source Numbers

170, 260, 262, 277, 280, 301, 306, 357, 422, 507, 577, 728, 867, 872, 925, 951, 1009, 1021, 1026, 1046

# Hotel (310)

Vehicle Trip Ends vs: Rooms  
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 7

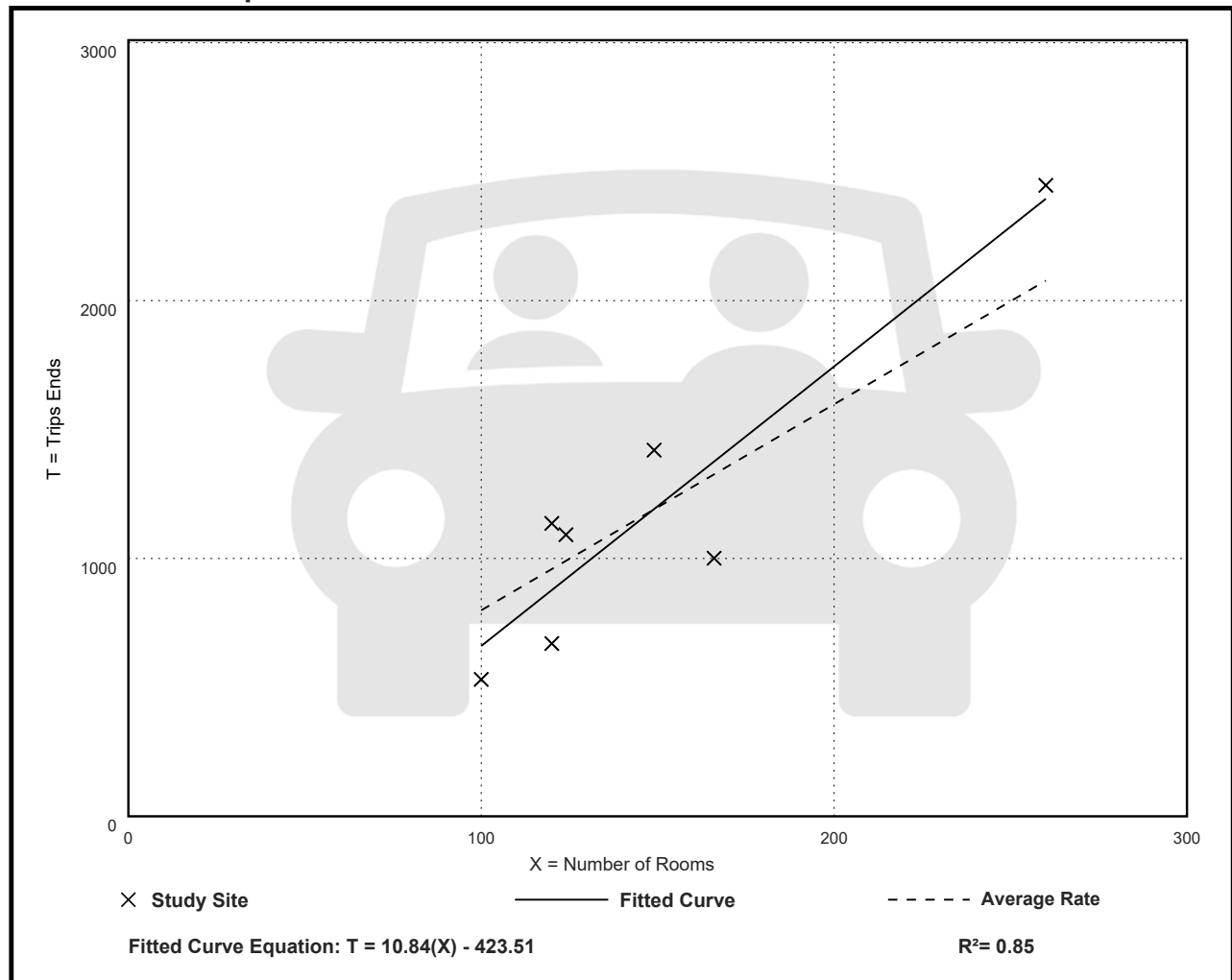
Avg. Num. of Rooms: 148

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
7.99	5.31 - 9.53	1.92

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Rooms

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: 28

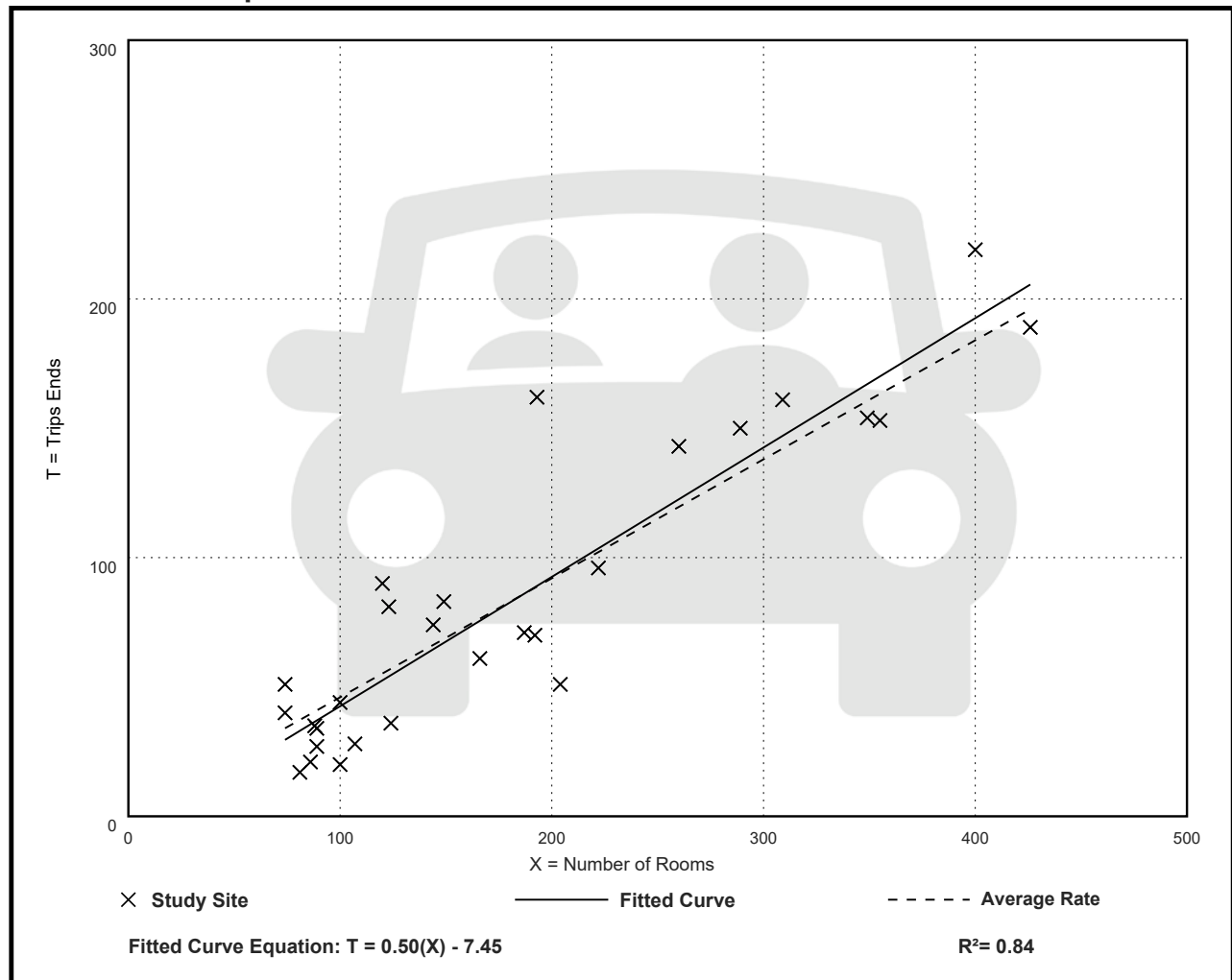
Avg. Num. of Rooms: 182

Directional Distribution: 56% entering, 44% exiting

## Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.46	0.20 - 0.84	0.14

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Rooms

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

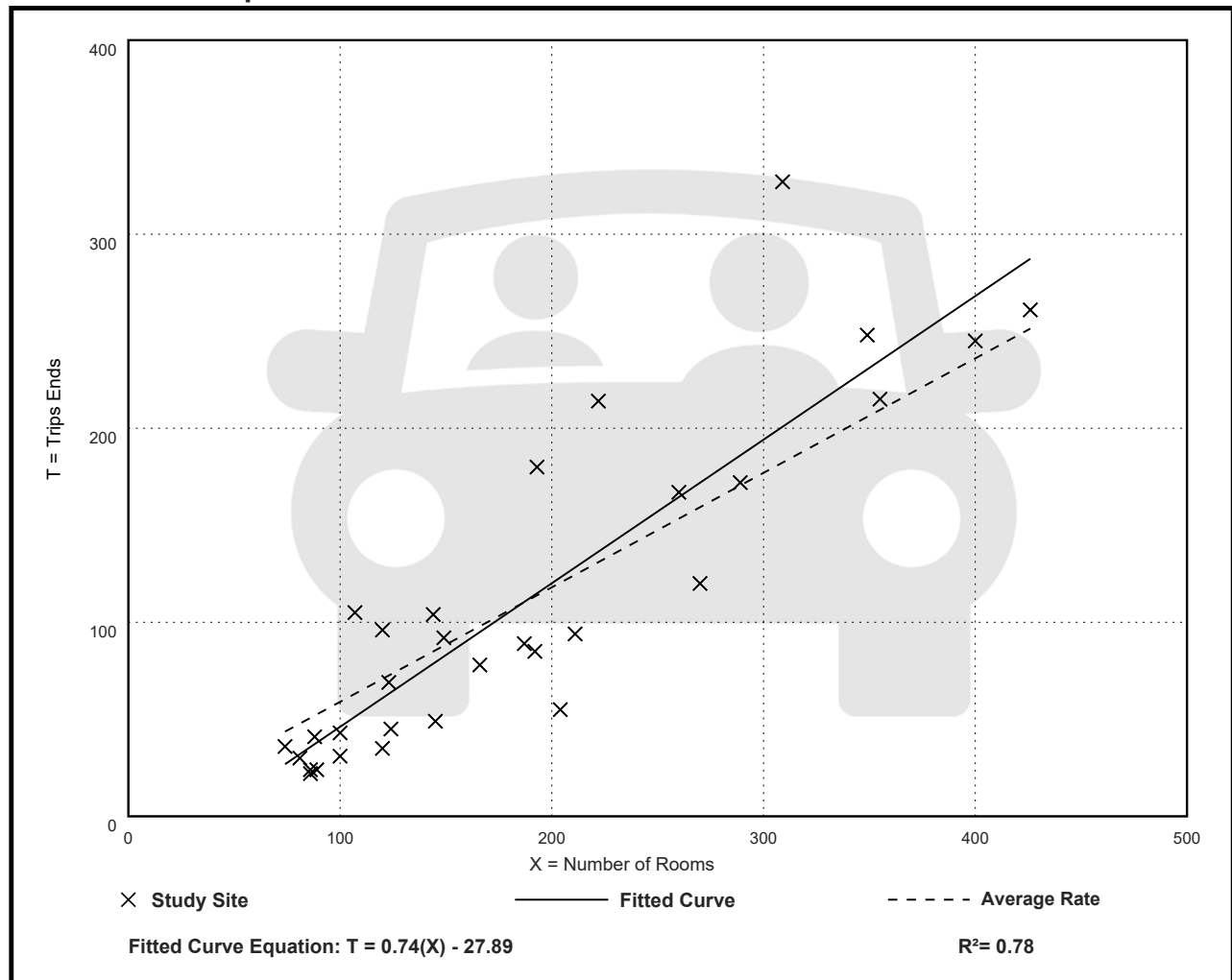
Avg. Num. of Rooms: 186

Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.59	0.26 - 1.06	0.22

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Rooms

On a: **Weekday,**

**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 33

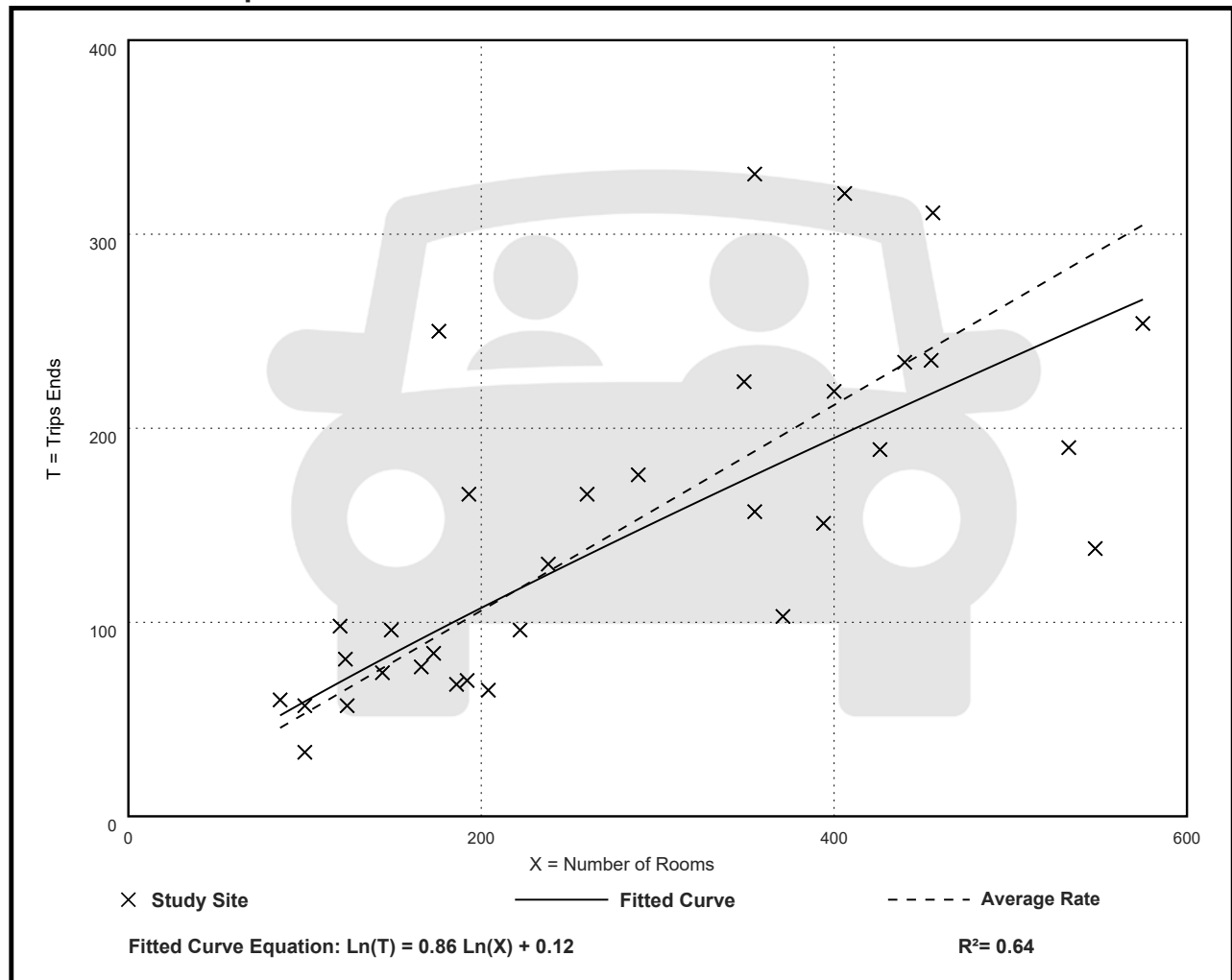
Avg. Num. of Rooms: 282

Directional Distribution: 53% entering, 47% exiting

## Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.53	0.25 - 1.42	0.21

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Rooms

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 32

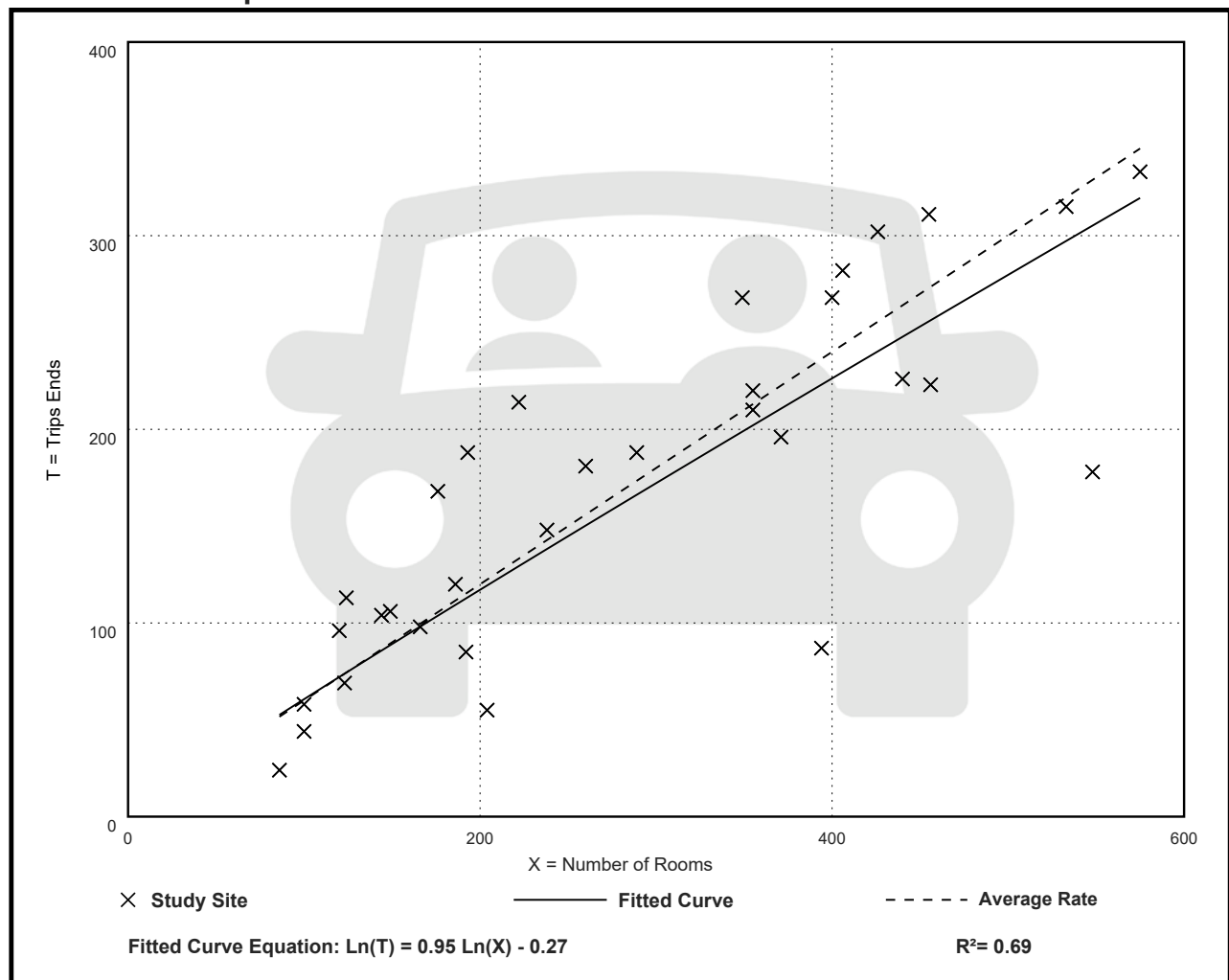
Avg. Num. of Rooms: 285

Directional Distribution: 58% entering, 42% exiting

## Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.60	0.22 - 0.97	0.18

## Data Plot and Equation



# Hotel (310)

Vehicle Trip Ends vs: Rooms  
On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 9

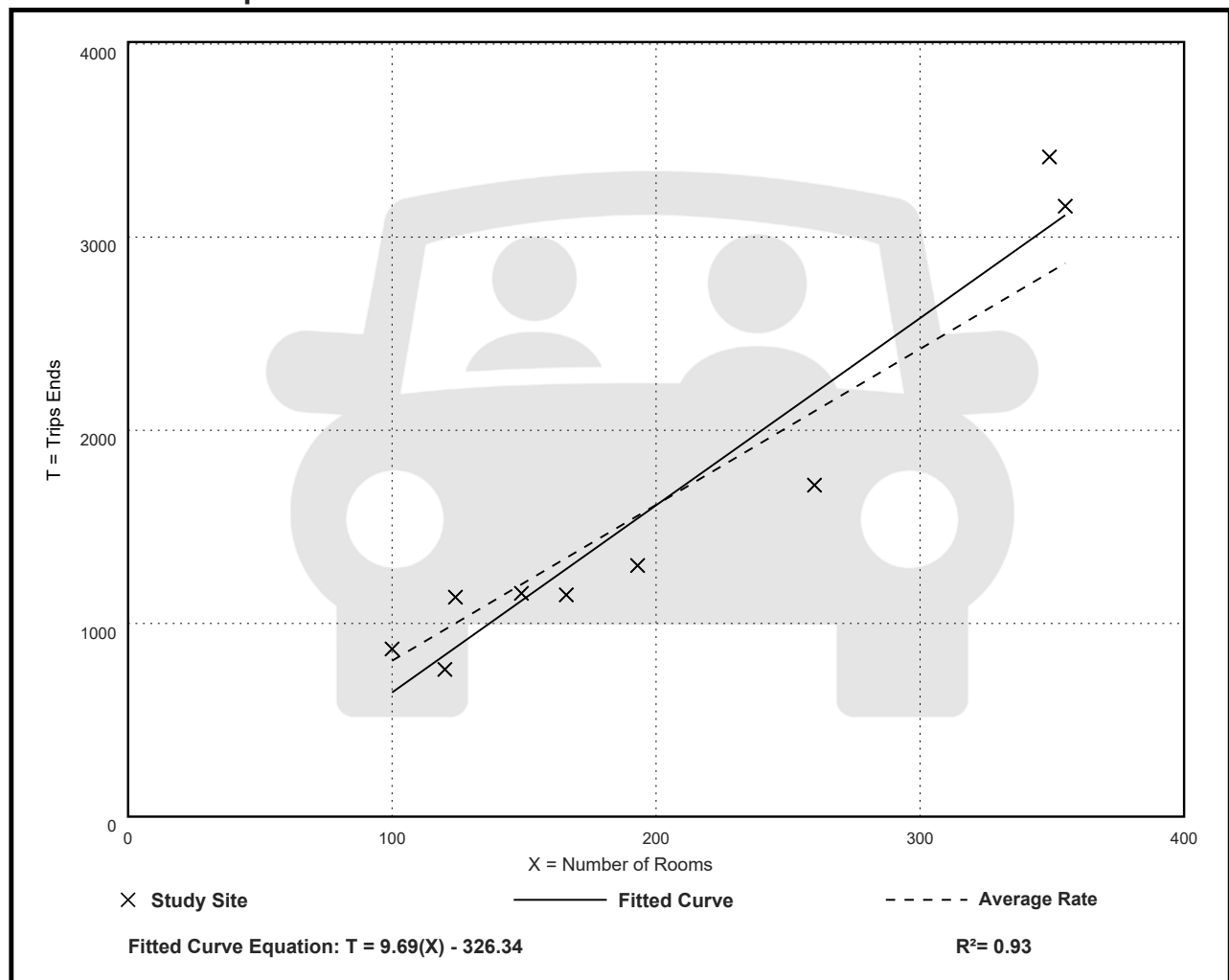
Avg. Num. of Rooms: 202

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
8.07	6.35 - 9.79	1.35

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Rooms

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 10

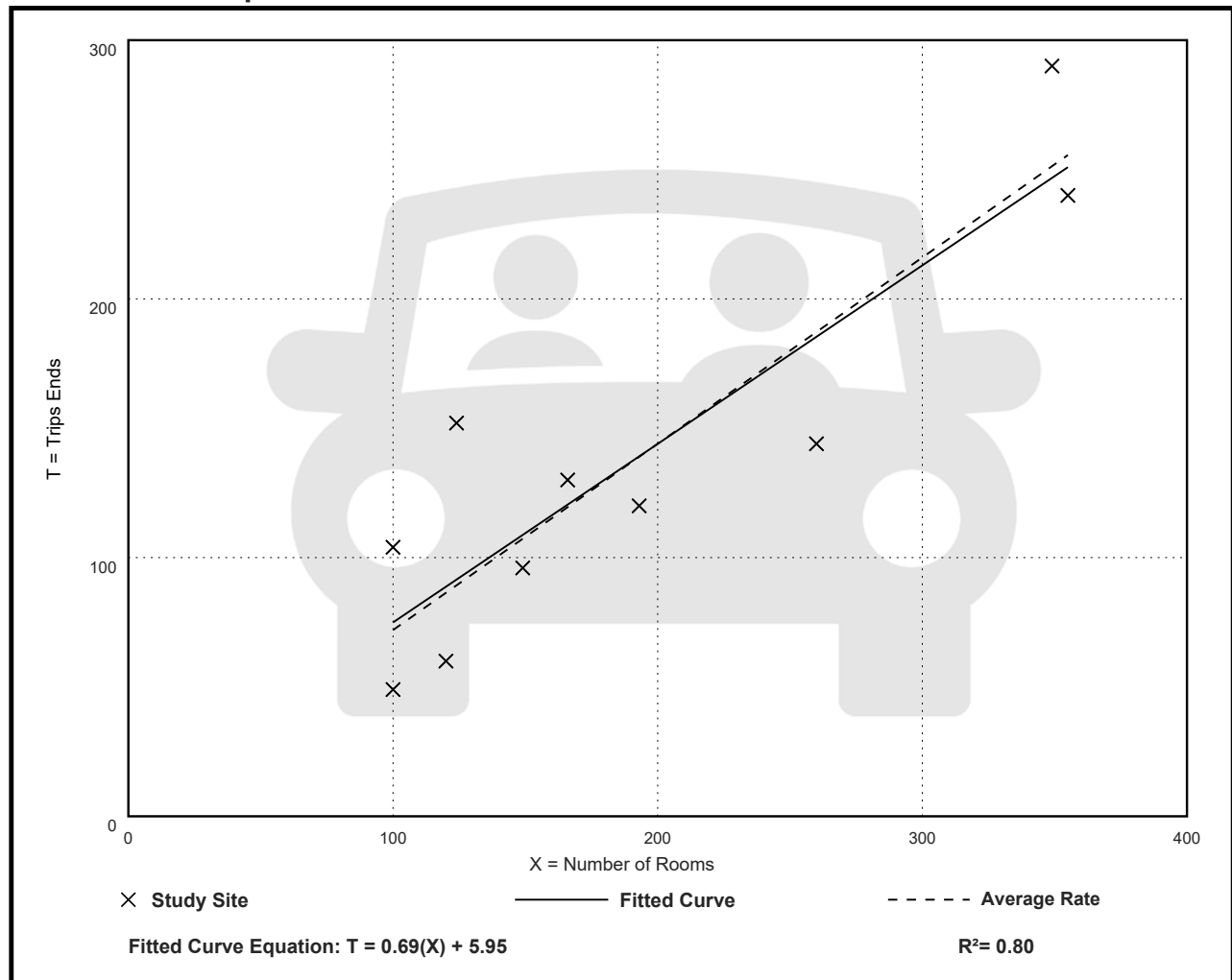
Avg. Num. of Rooms: 192

Directional Distribution: 56% entering, 44% exiting

### Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.72	0.49 - 1.23	0.20

### Data Plot and Equation



# Hotel (310)

Vehicle Trip Ends vs: Rooms  
On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 9

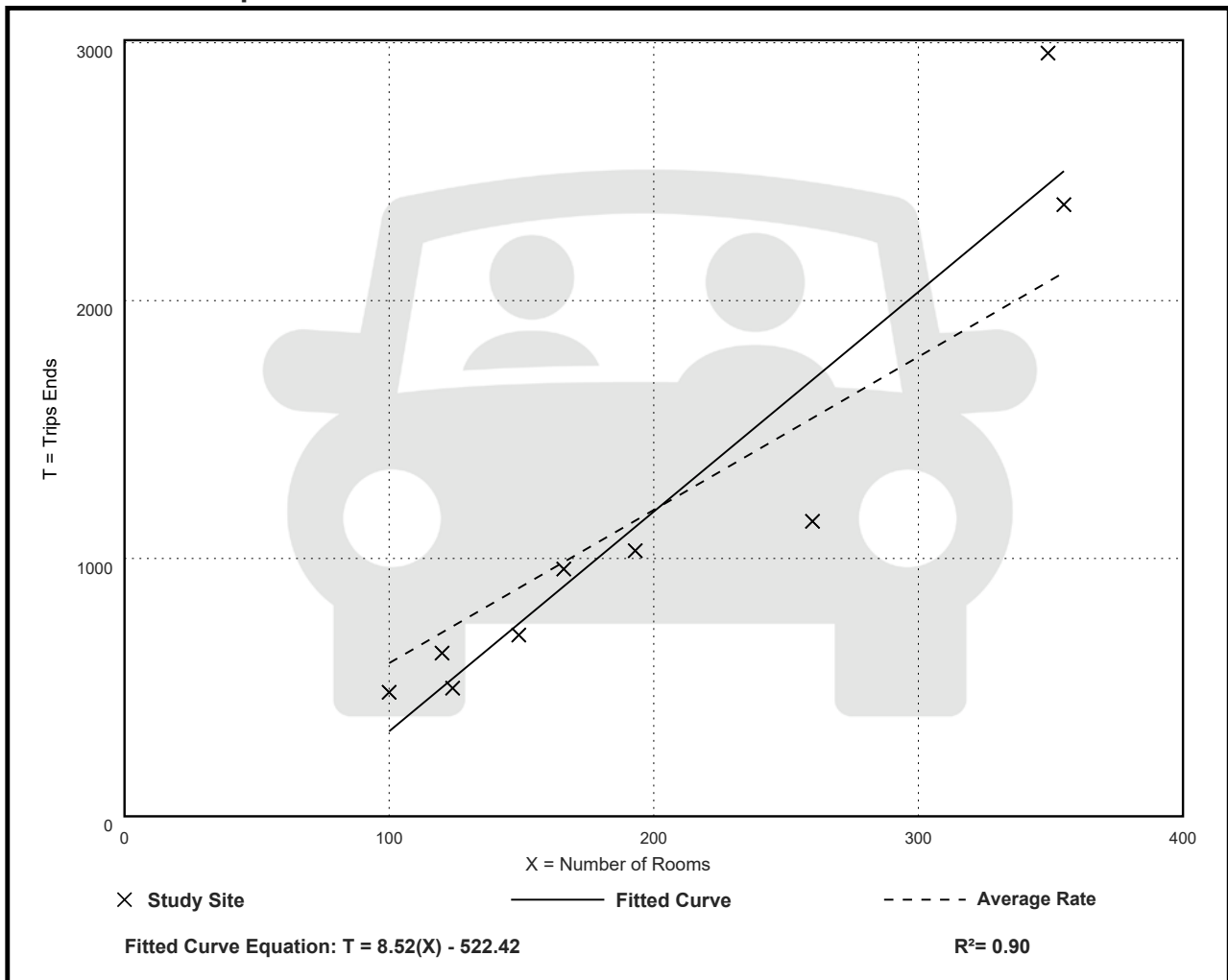
Avg. Num. of Rooms: 202

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
5.94	4.01 - 8.48	1.58

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Rooms

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 9

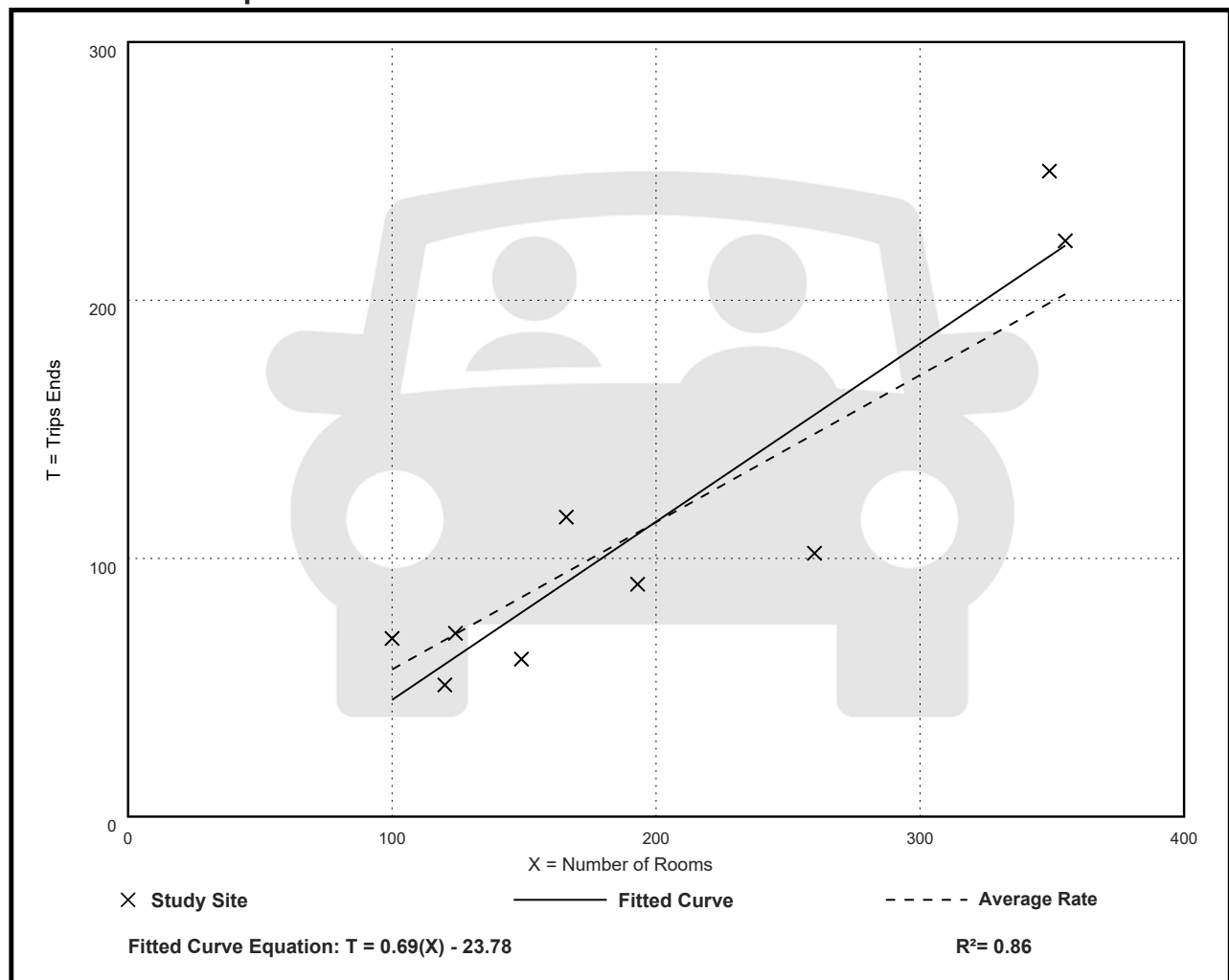
Avg. Num. of Rooms: 202

Directional Distribution: 48% entering, 52% exiting

### Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.57	0.39 - 0.72	0.14

### Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms On a: Weekday

**Setting/Location: General Urban/Suburban**

Number of Studies: 2

Avg. Num. of Occupied Rooms: 250

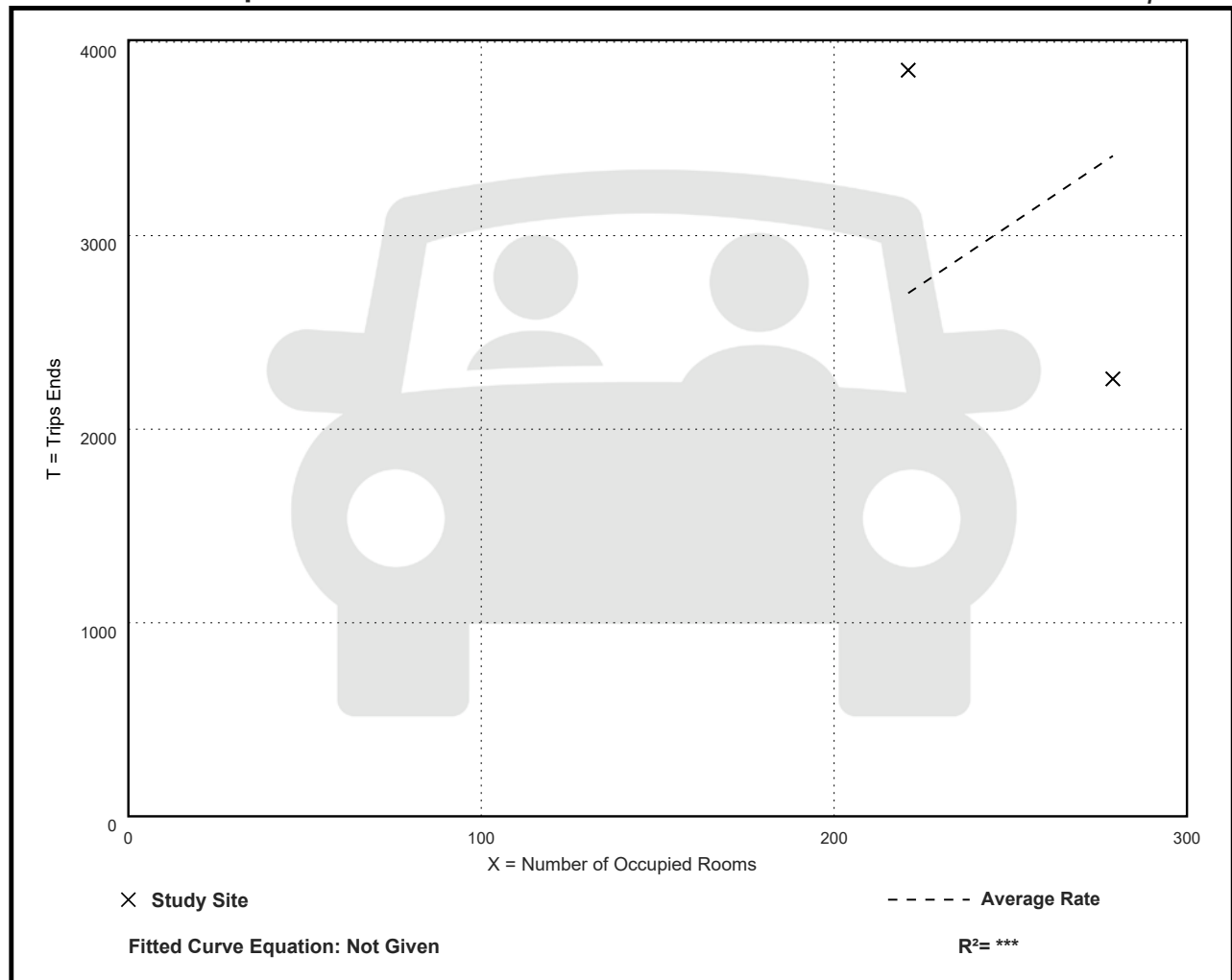
Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
12.23	8.10 - 17.44	***

### Data Plot and Equation

*Caution – Small Sample Size*



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms

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: 13

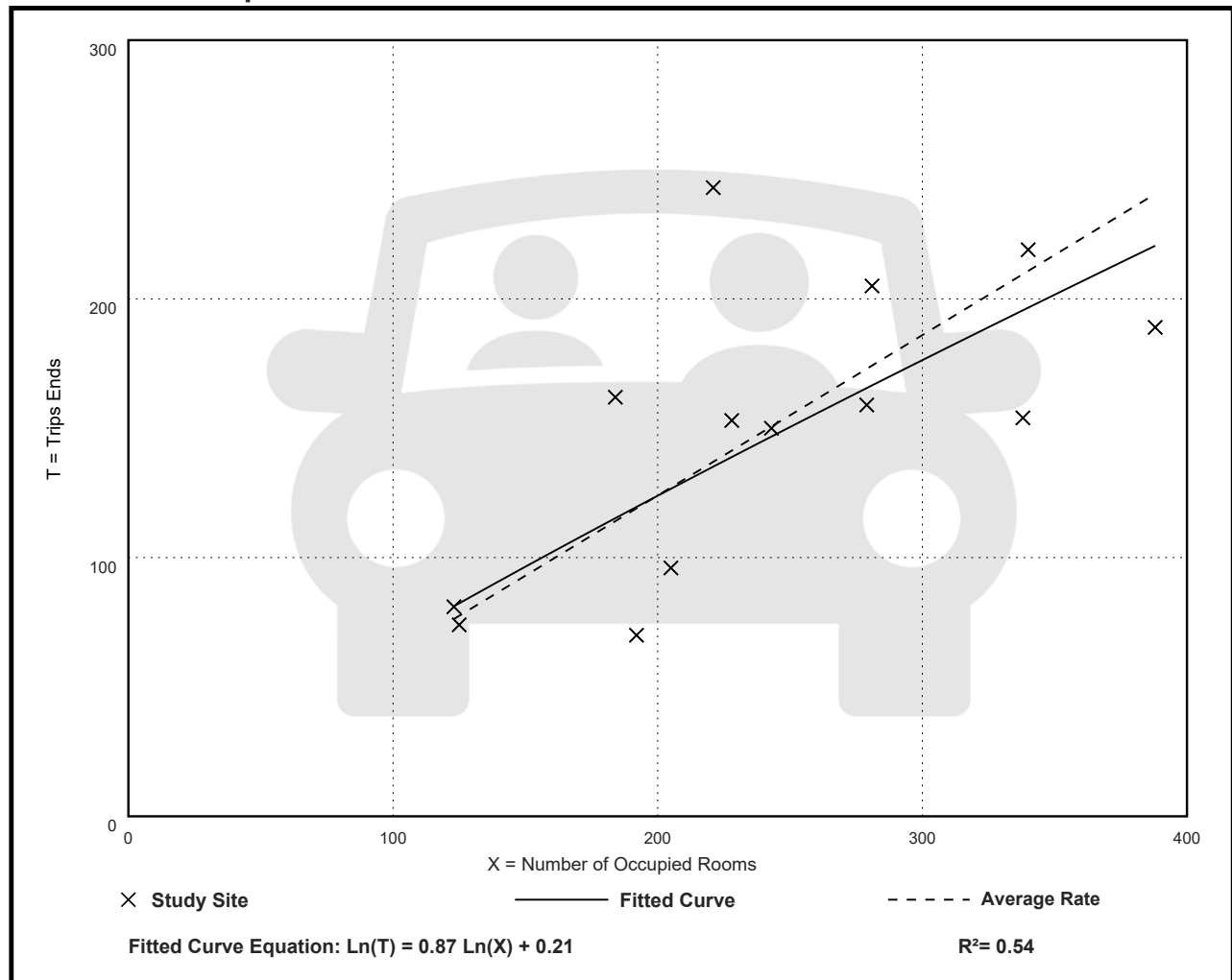
Avg. Num. of Occupied Rooms: 242

Directional Distribution: 56% entering, 44% exiting

## Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
0.62	0.36 - 1.10	0.19

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms

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: 16

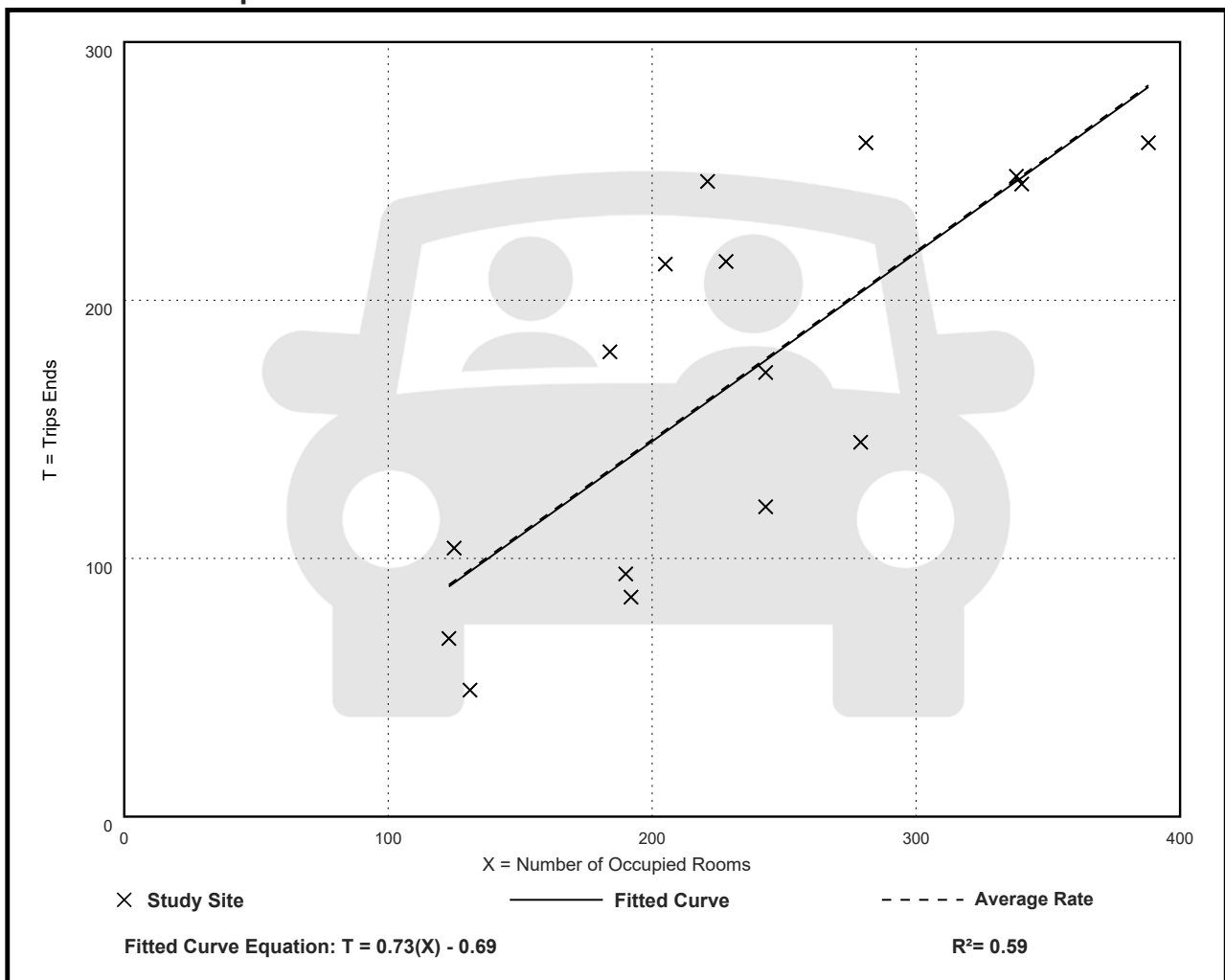
Avg. Num. of Occupied Rooms: 232

Directional Distribution: 49% entering, 51% exiting

## Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
0.73	0.37 - 1.11	0.21

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms

On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 24

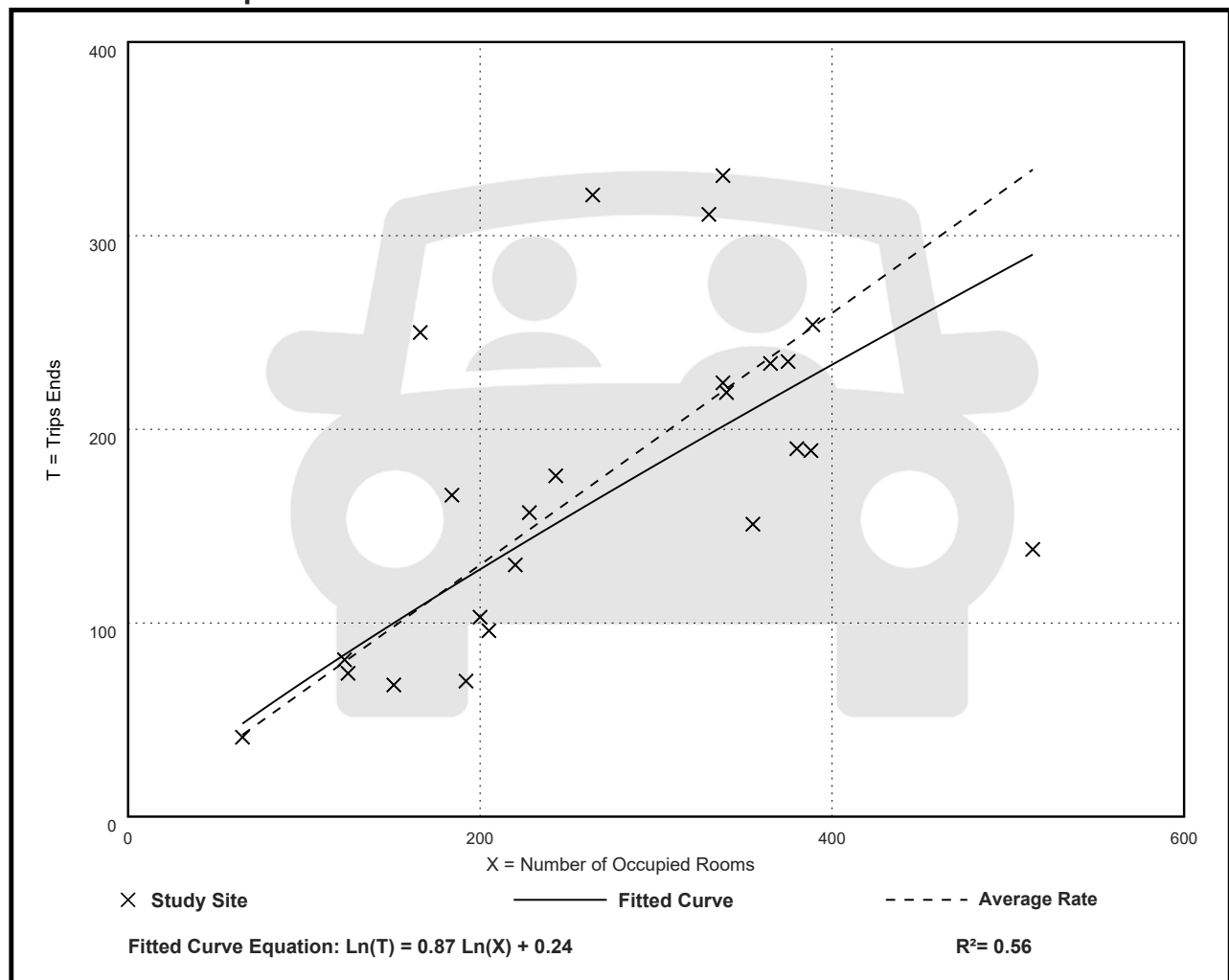
Avg. Num. of Occupied Rooms: 270

Directional Distribution: 54% entering, 46% exiting

### Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
0.65	0.27 - 1.51	0.26

### Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms

On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 24

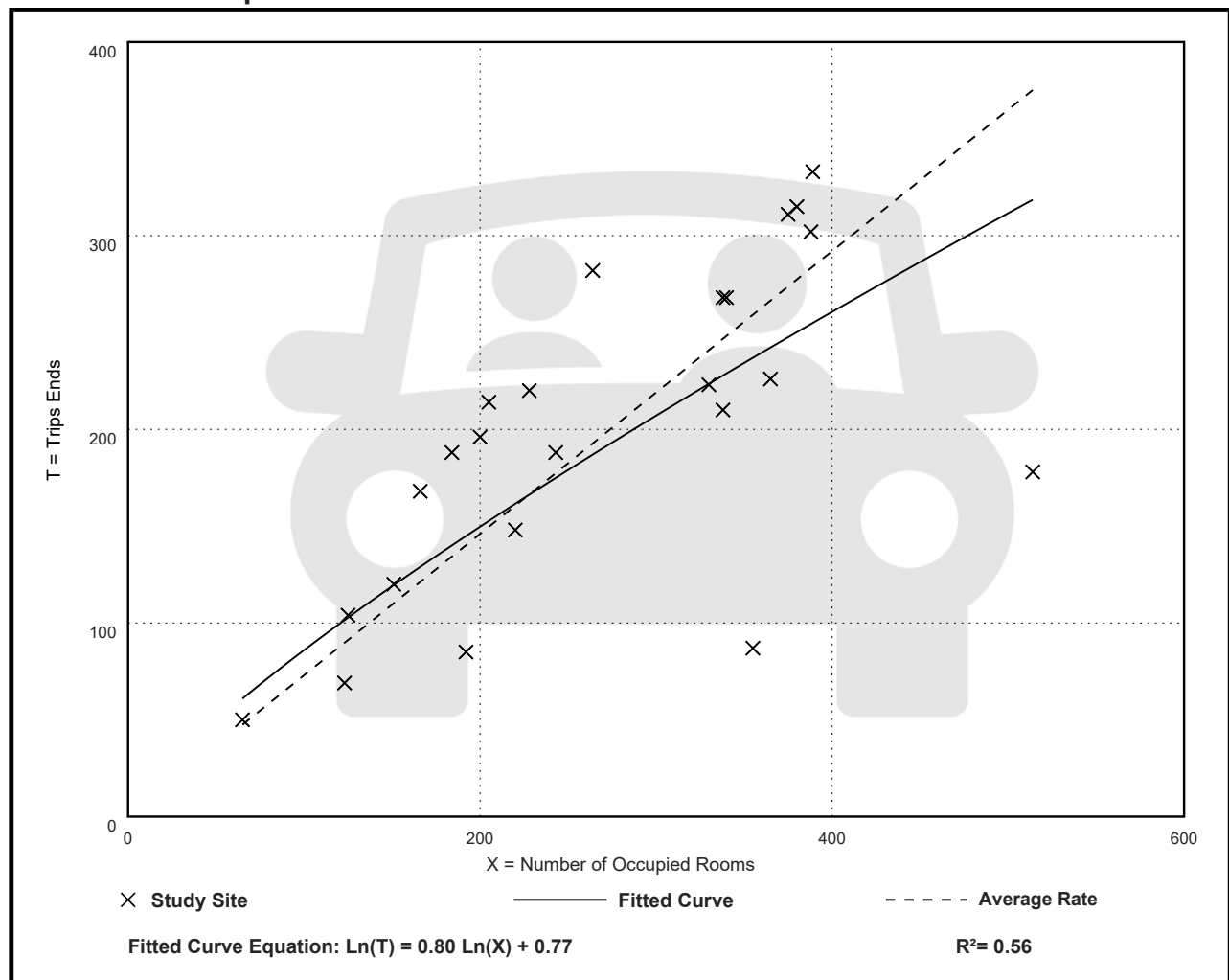
Avg. Num. of Occupied Rooms: 270

Directional Distribution: 57% entering, 43% exiting

### Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
0.73	0.25 - 1.07	0.22

### Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 4

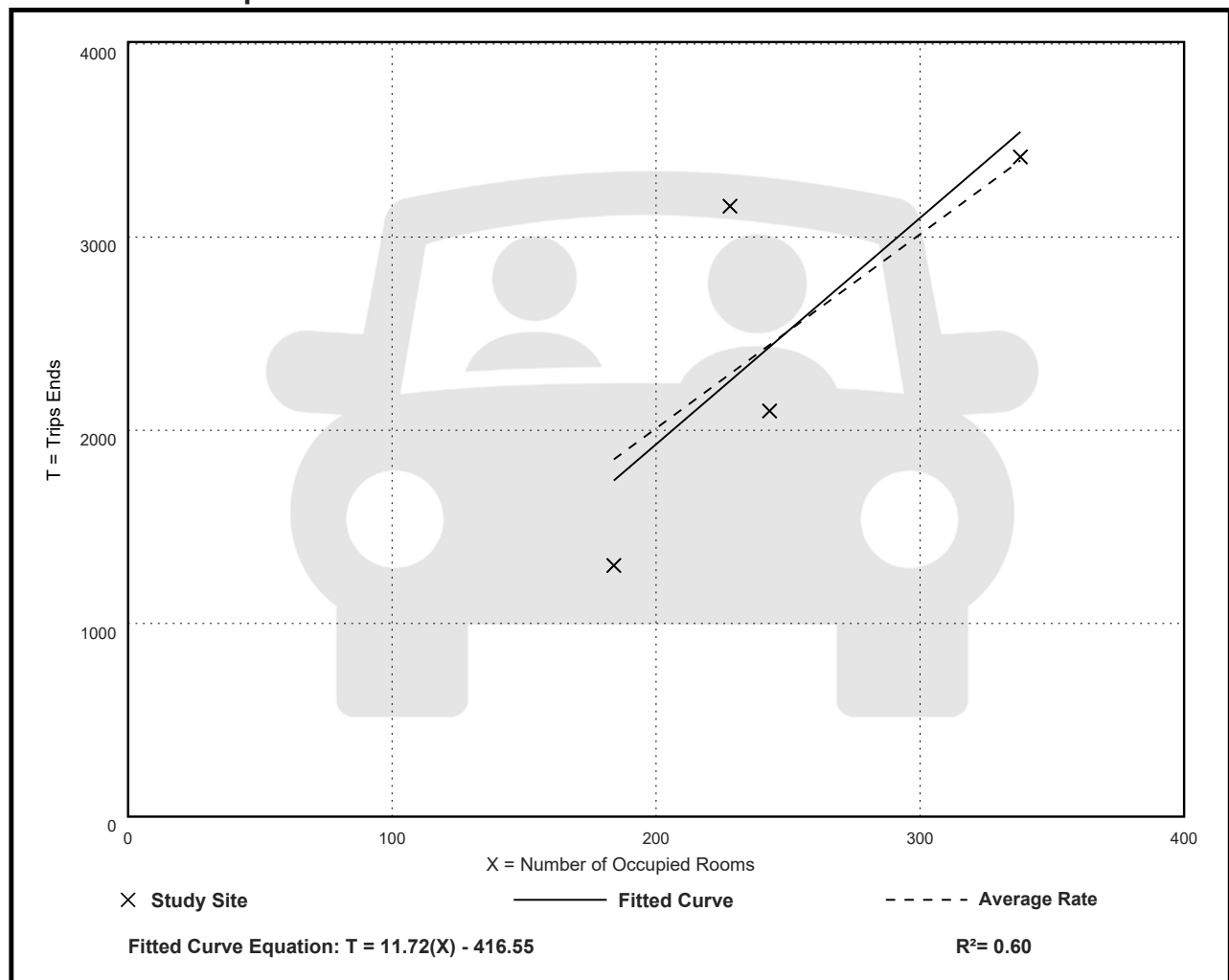
Avg. Num. of Occupied Rooms: 248

Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
10.05	7.07 - 13.86	2.70

### Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 4

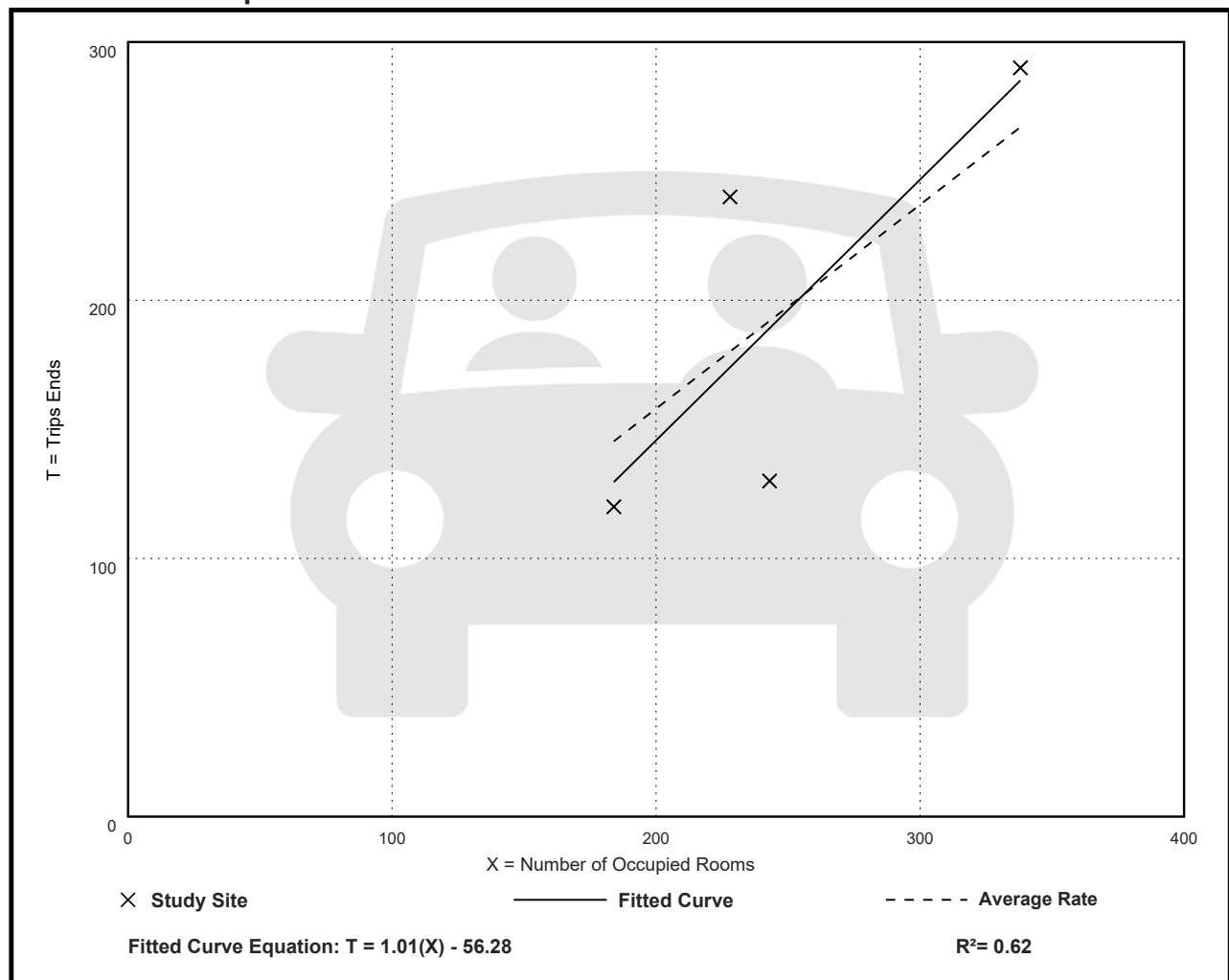
Avg. Num. of Occupied Rooms: 248

Directional Distribution: 45% entering, 55% exiting

### Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
0.79	0.53 - 1.05	0.22

### Data Plot and Equation



# Hotel (310)

**Vehicle Trip Ends vs: Occupied Rooms**  
**On a: Sunday**

**Setting/Location: General Urban/Suburban**

Number of Studies: 4

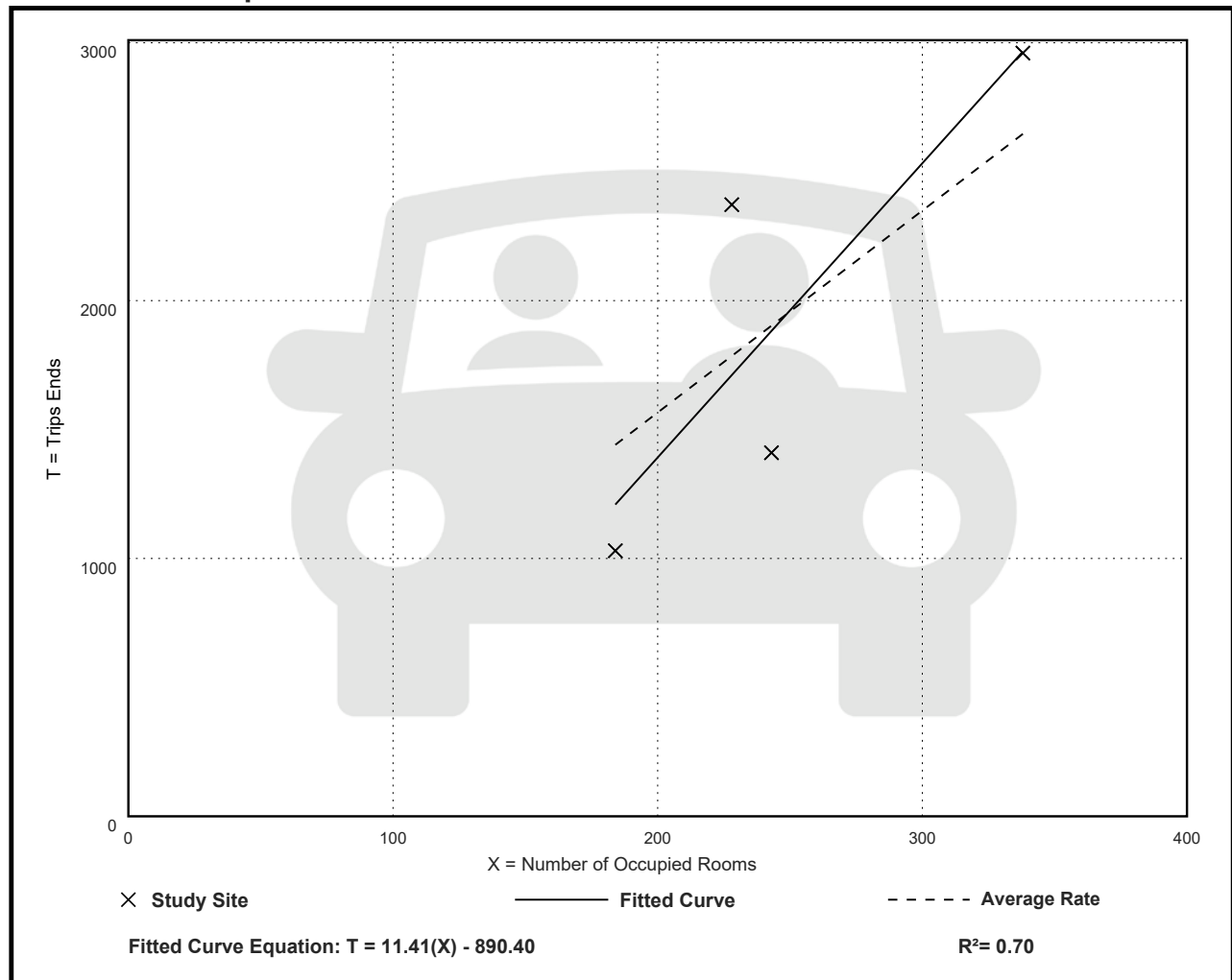
Avg. Num. of Occupied Rooms: 248

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
7.83	5.60 - 10.40	2.23

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Occupied Rooms

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 4

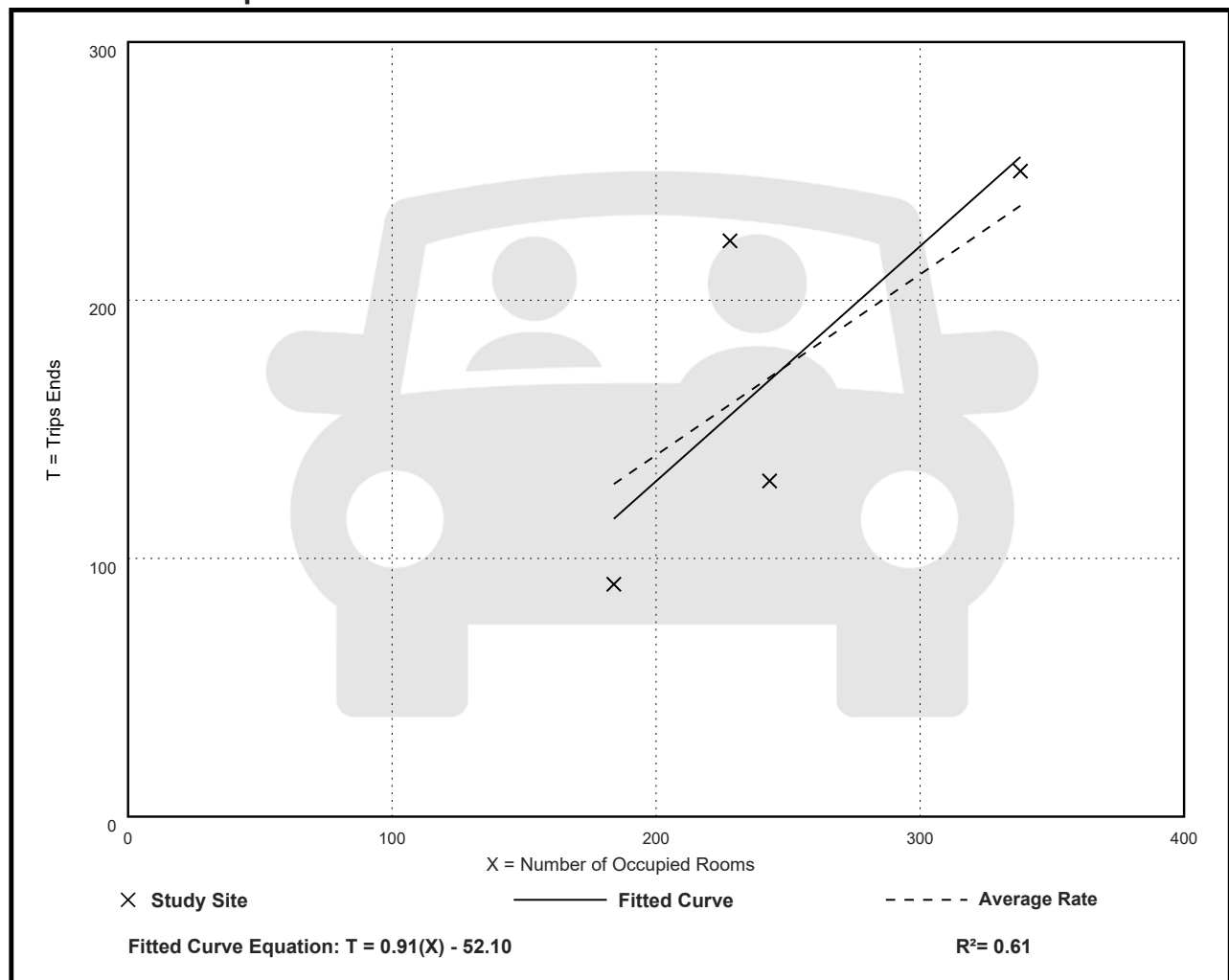
Avg. Num. of Occupied Rooms: 248

Directional Distribution: 53% entering, 47% exiting

### Vehicle Trip Generation per Occupied Room

Average Rate	Range of Rates	Standard Deviation
0.70	0.49 - 0.98	0.21

### Data Plot and Equation



# Hotel (310)

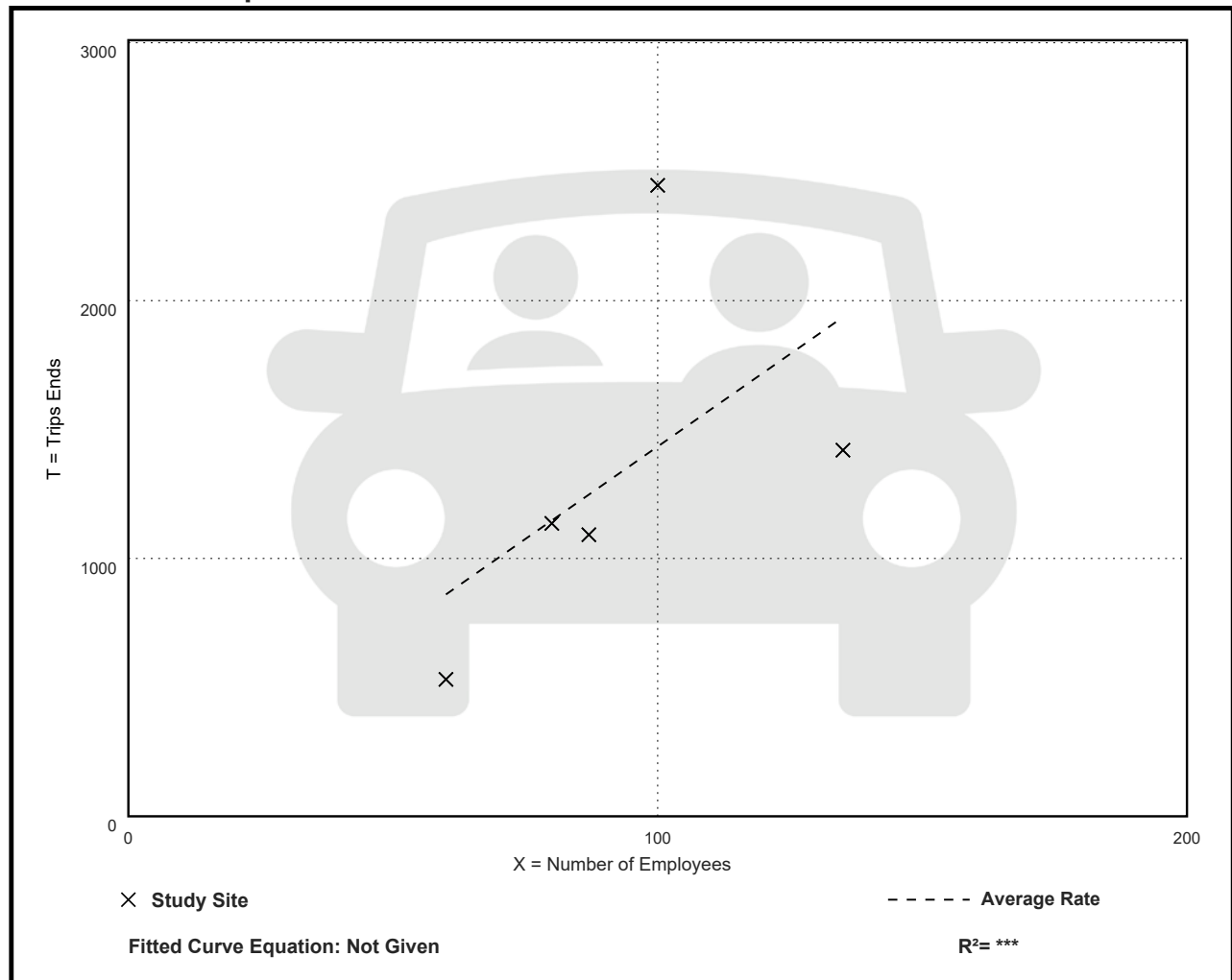
Vehicle Trip Ends vs: Employees  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 5  
Avg. Num. of Employees: 92  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
14.34	8.85 - 24.47	6.22

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Employees

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: 12

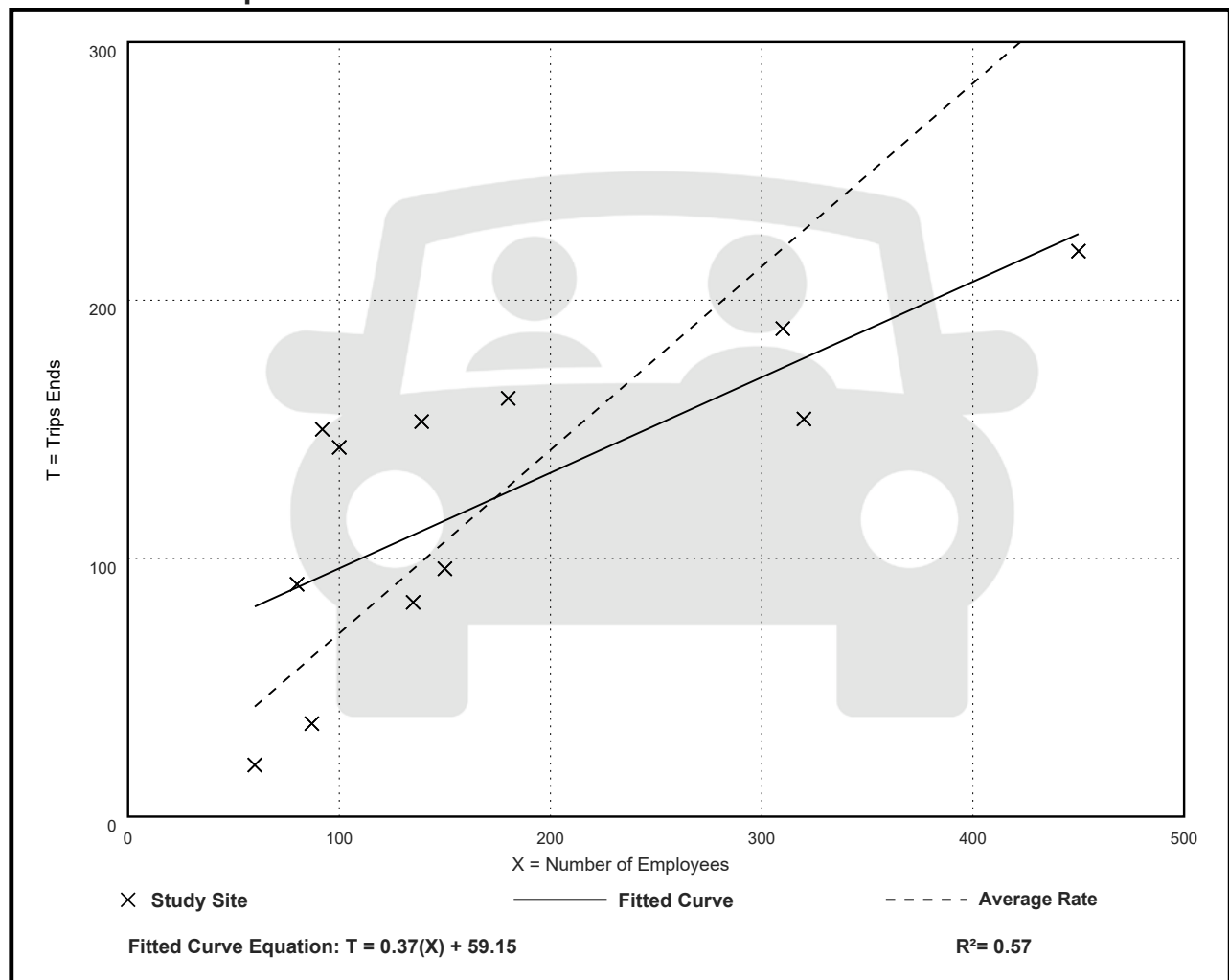
Avg. Num. of Employees: 175

Directional Distribution: 59% entering, 41% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.71	0.33 - 1.63	0.35

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Employees

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: 12

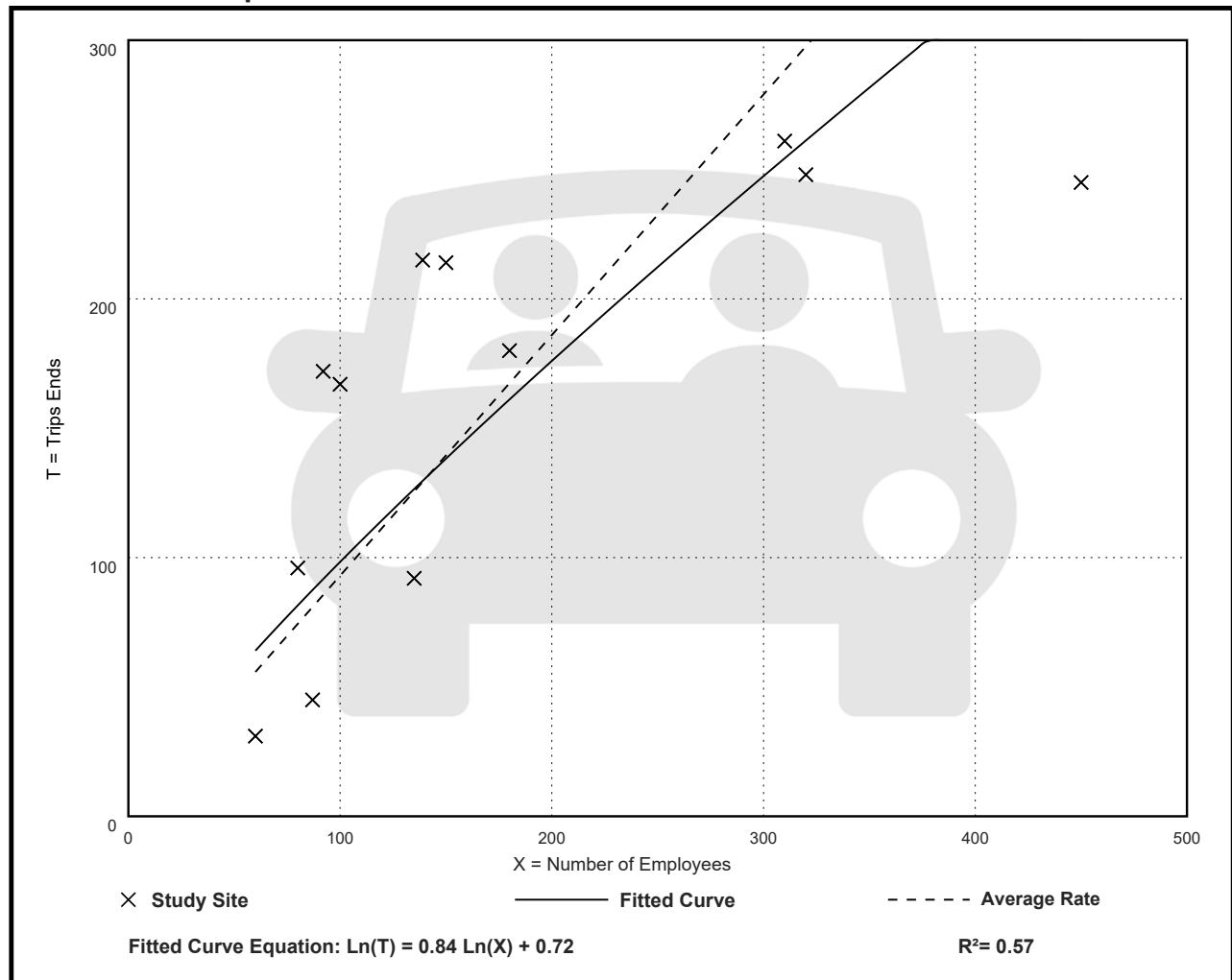
Avg. Num. of Employees: 175

Directional Distribution: 54% entering, 46% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.93	0.52 - 1.87	0.42

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Employees

On a: **Weekday,**

**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 12

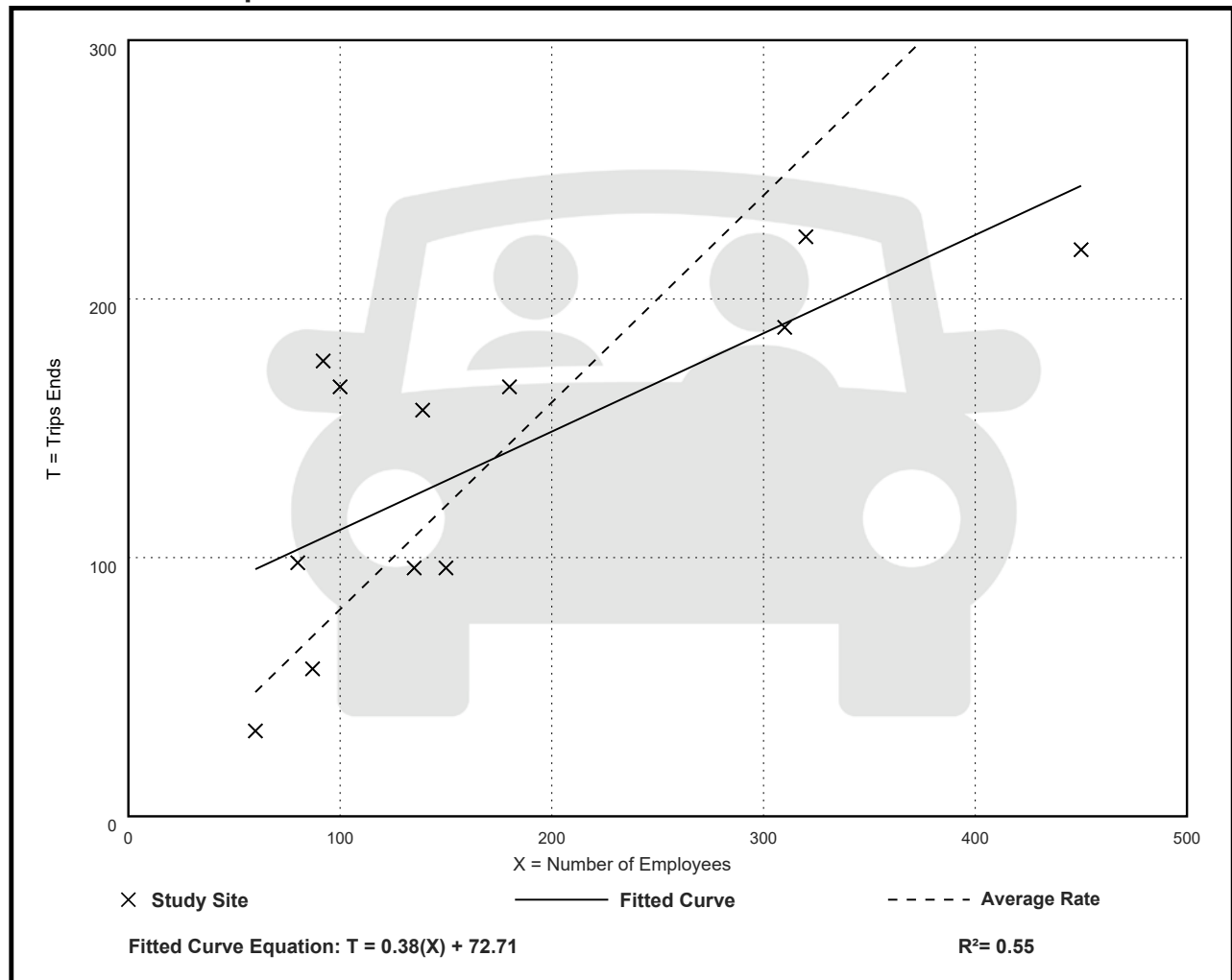
Avg. Num. of Employees: 175

Directional Distribution: 55% entering, 45% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.80	0.49 - 1.91	0.39

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Employees

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 12

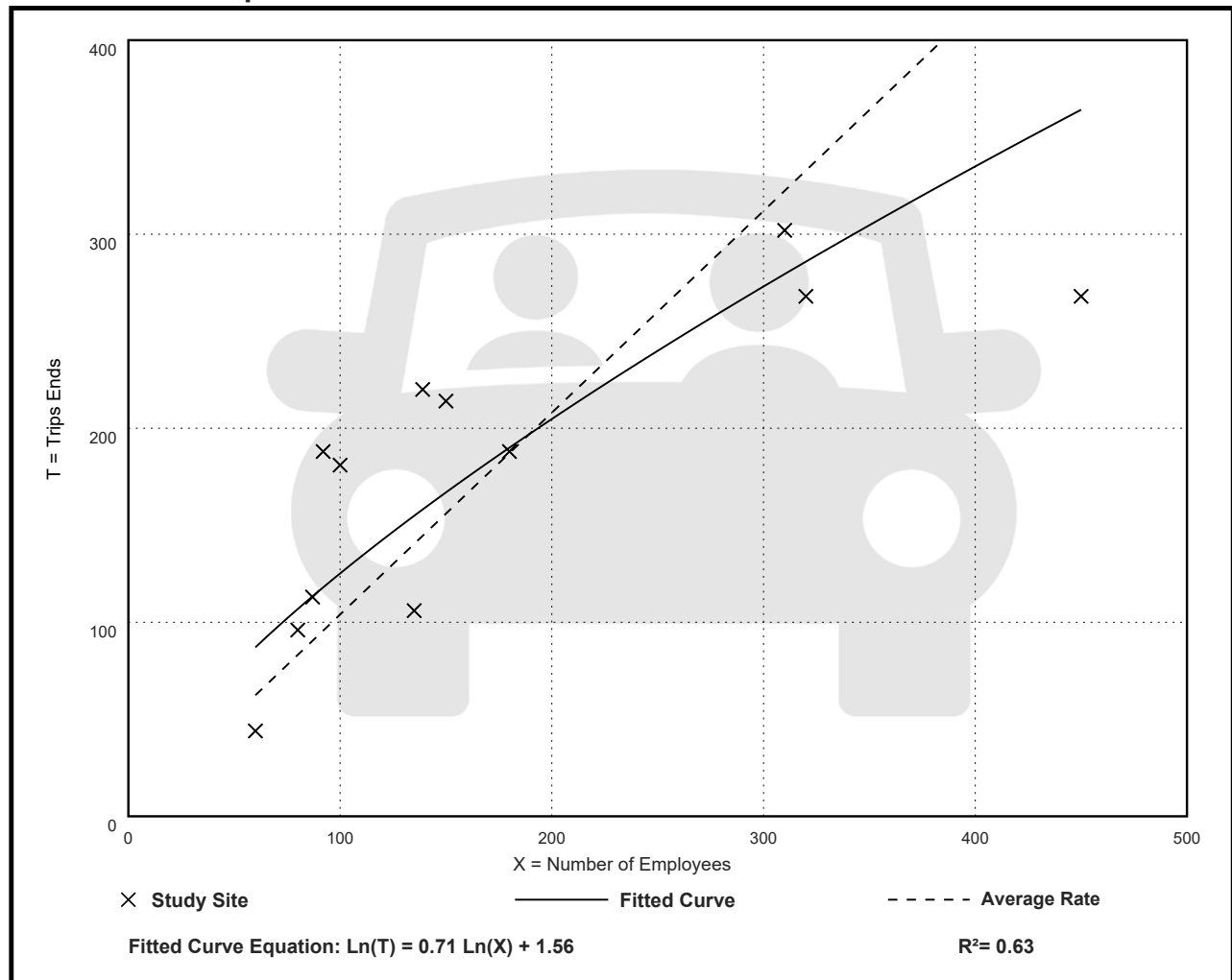
Avg. Num. of Employees: 175

Directional Distribution: 59% entering, 41% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.04	0.60 - 2.04	0.42

## Data Plot and Equation



# Hotel (310)

Vehicle Trip Ends vs: Employees  
On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 9

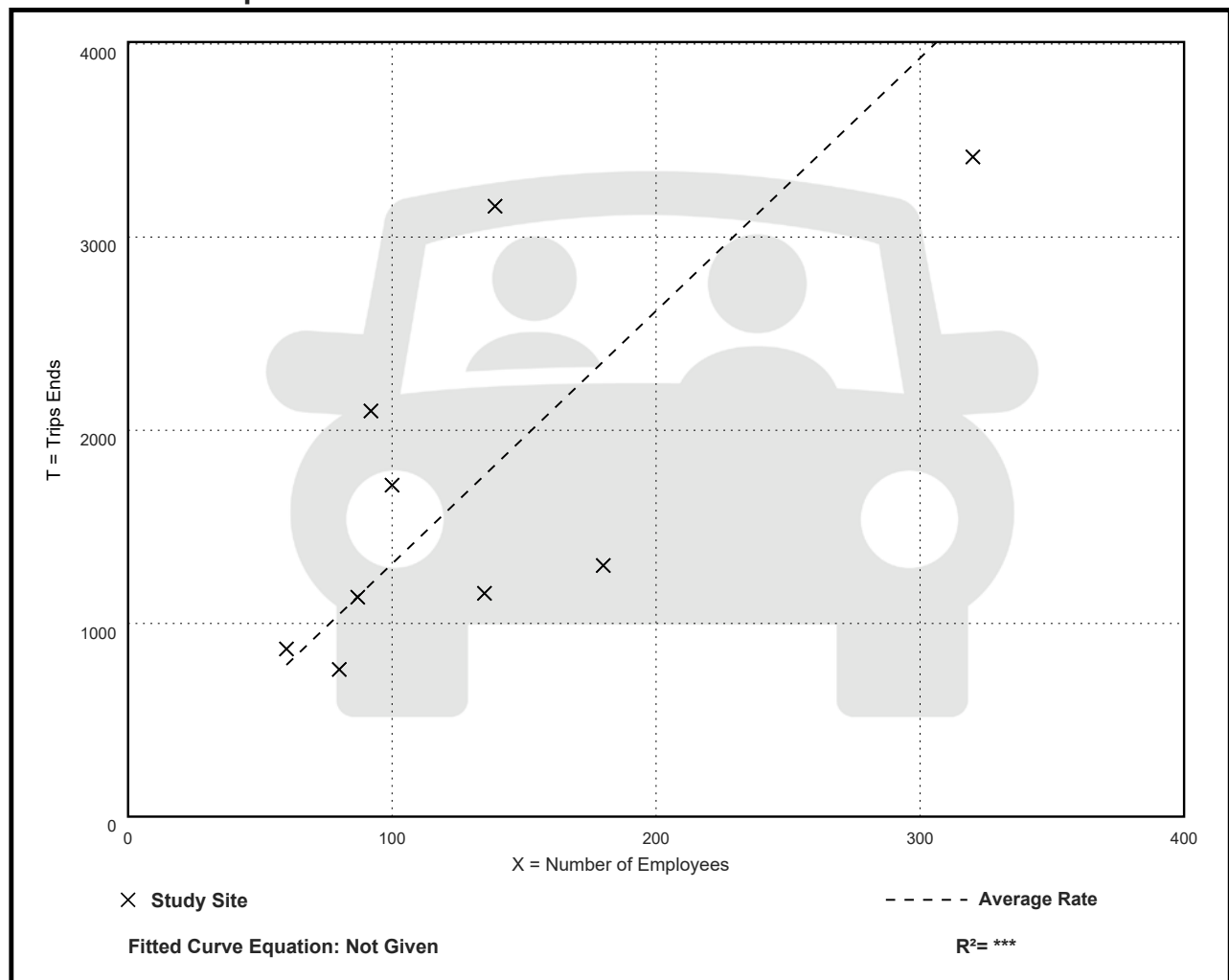
Avg. Num. of Employees: 133

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
13.09	7.22 - 22.83	5.77

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Employees

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 9

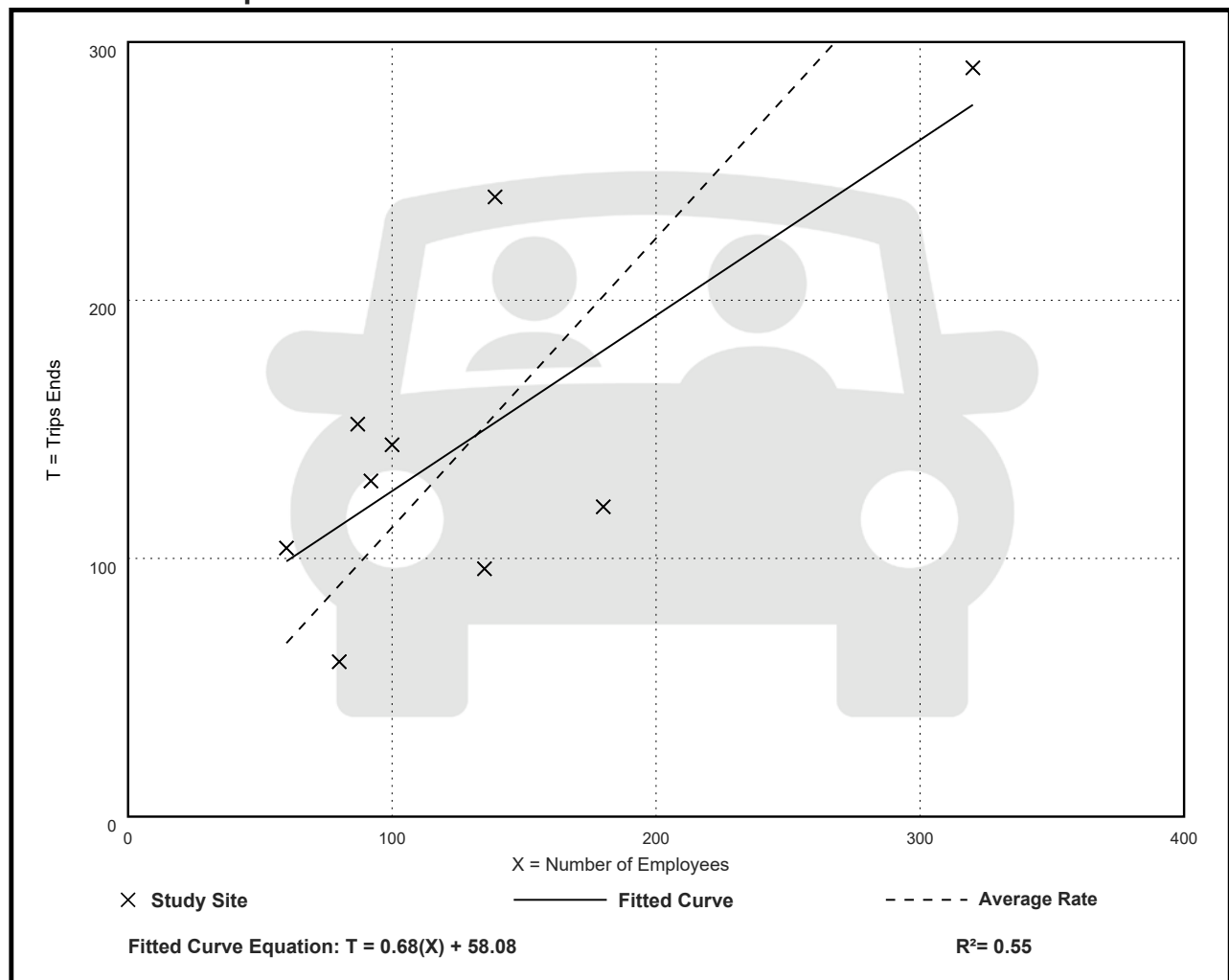
Avg. Num. of Employees: 133

Directional Distribution: 54% entering, 46% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.12	0.67 - 1.75	0.45

### Data Plot and Equation



# Hotel (310)

Vehicle Trip Ends vs: Employees  
On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 9

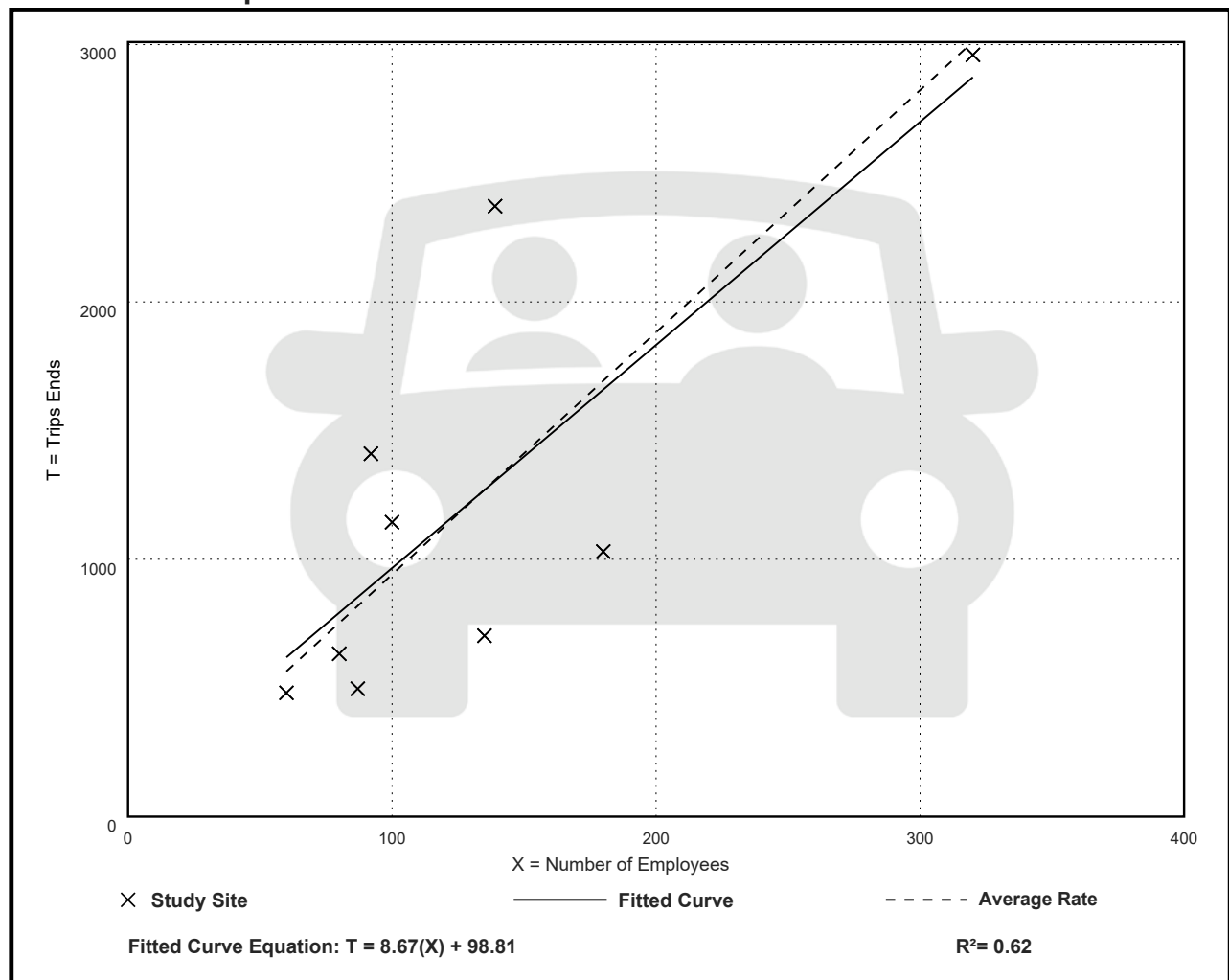
Avg. Num. of Employees: 133

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
9.41	5.21 - 17.06	4.13

## Data Plot and Equation



# Hotel (310)

## Vehicle Trip Ends vs: Employees

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 9

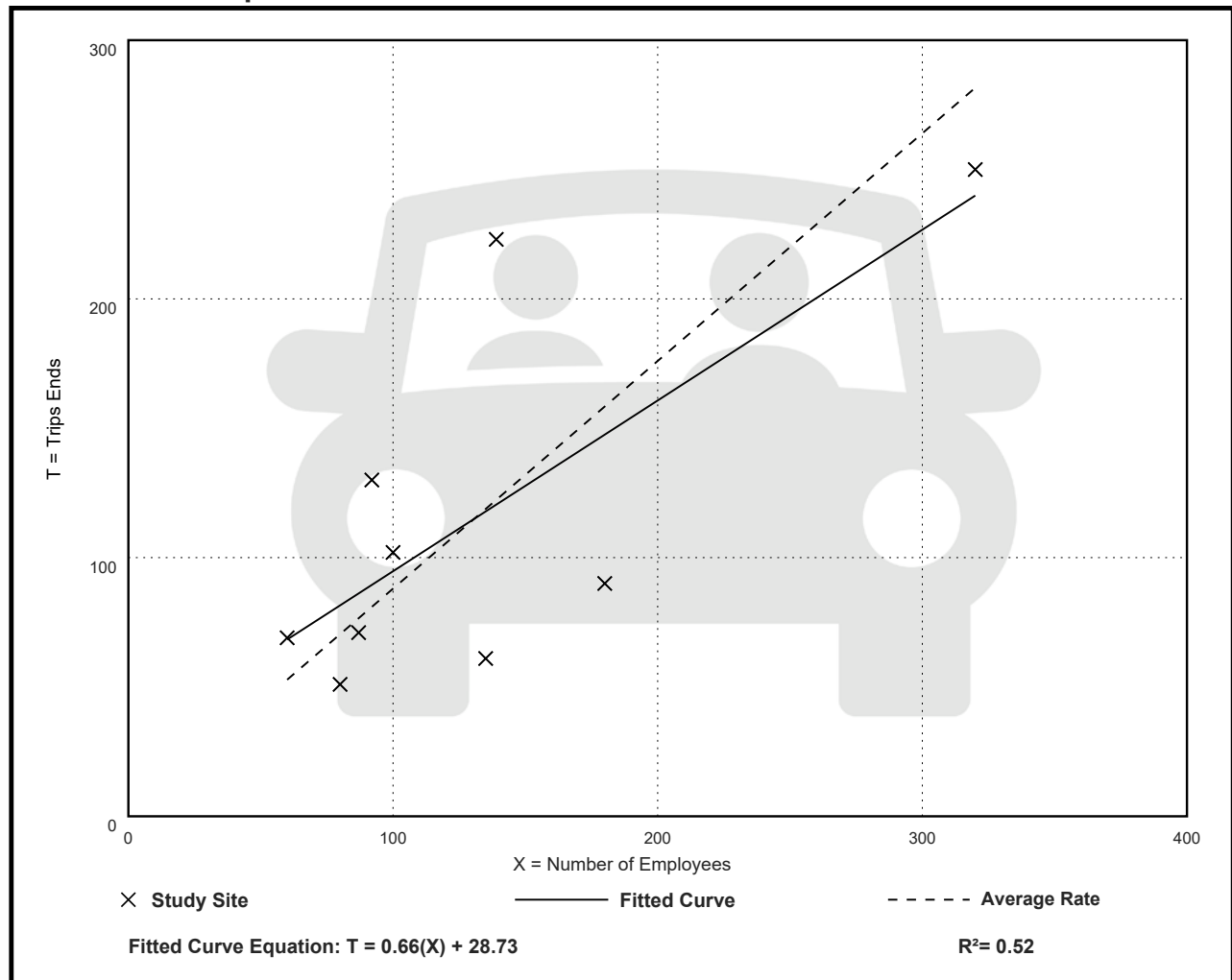
Avg. Num. of Employees: 133

Directional Distribution: 47% entering, 53% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.88	0.45 - 1.60	0.39

### Data Plot and Equation



# Land Use: 822

## Strip Retail Plaza (<40k)

---

### Description

A strip retail plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has less than 40,000 square feet of gross leasable area (GLA). Because a strip retail plaza is open-air, the GLA is the same as the gross floor area of the building.

The 40,000 square feet GFA threshold between strip retail plaza and shopping plaza (Land Use 821) was selected based on an examination of the overall shopping center/plaza database. No shopping plaza with a supermarket as its anchor is smaller than 40,000 square feet GLA.

Shopping center (>150k) (Land use 820), shopping plaza (40-150k) (Land Use 821), and factory outlet center (Land Use 823) are related uses.

### Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Delaware, Florida, New Jersey, Ontario (CAN), South Dakota, Vermont, Washington, and Wisconsin.

### Source Numbers

304, 358, 423, 428, 437, 507, 715, 728, 936, 960, 961, 974, 1009

# Strip Retail Plaza (<40k) (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
On a: Weekday

**Setting/Location: General Urban/Suburban**

Number of Studies: 4

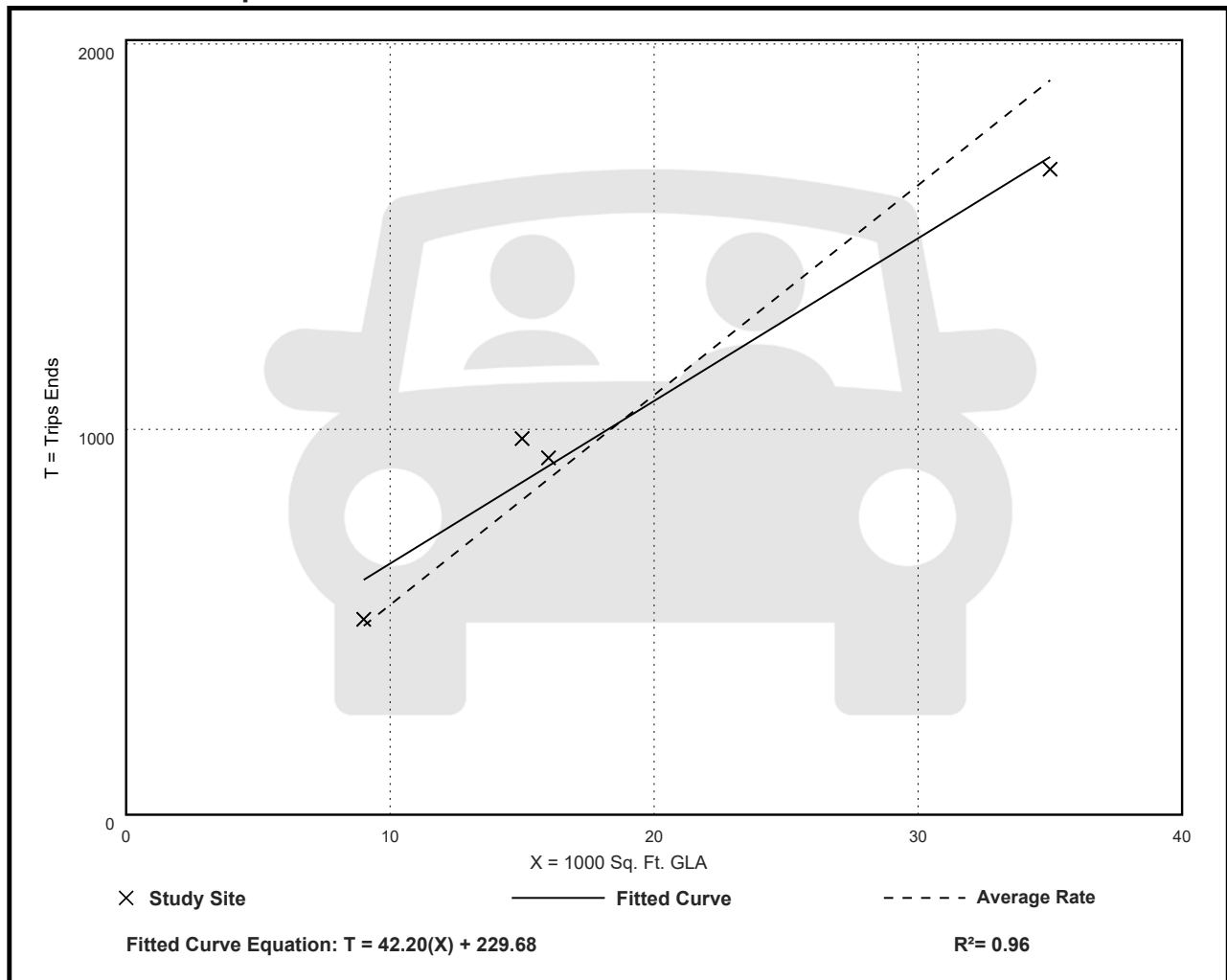
Avg. 1000 Sq. Ft. GLA: 19

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
54.45	47.86 - 65.07	7.81

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**

**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: 5

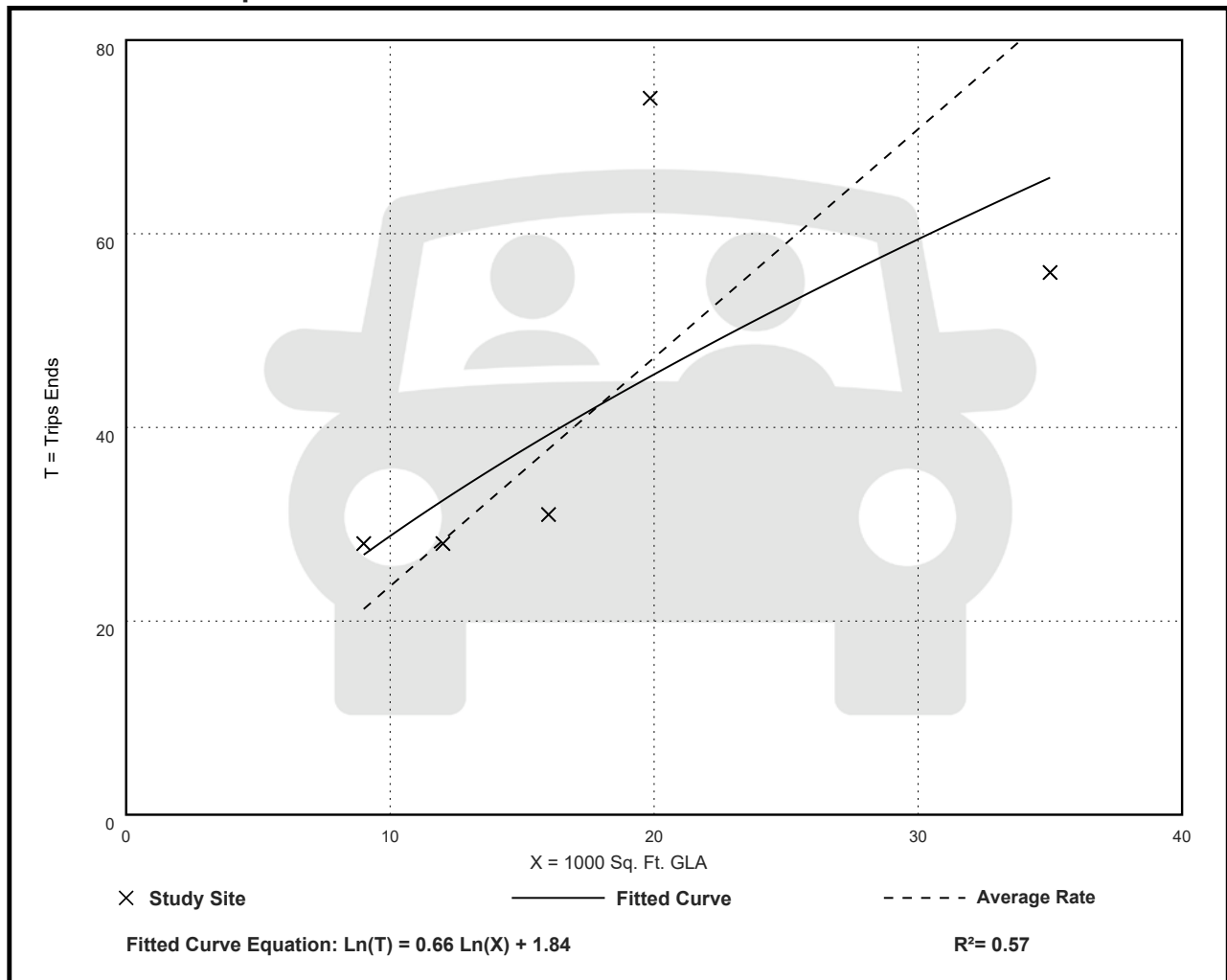
Avg. 1000 Sq. Ft. GLA: 18

Directional Distribution: 60% entering, 40% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**

**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: 25

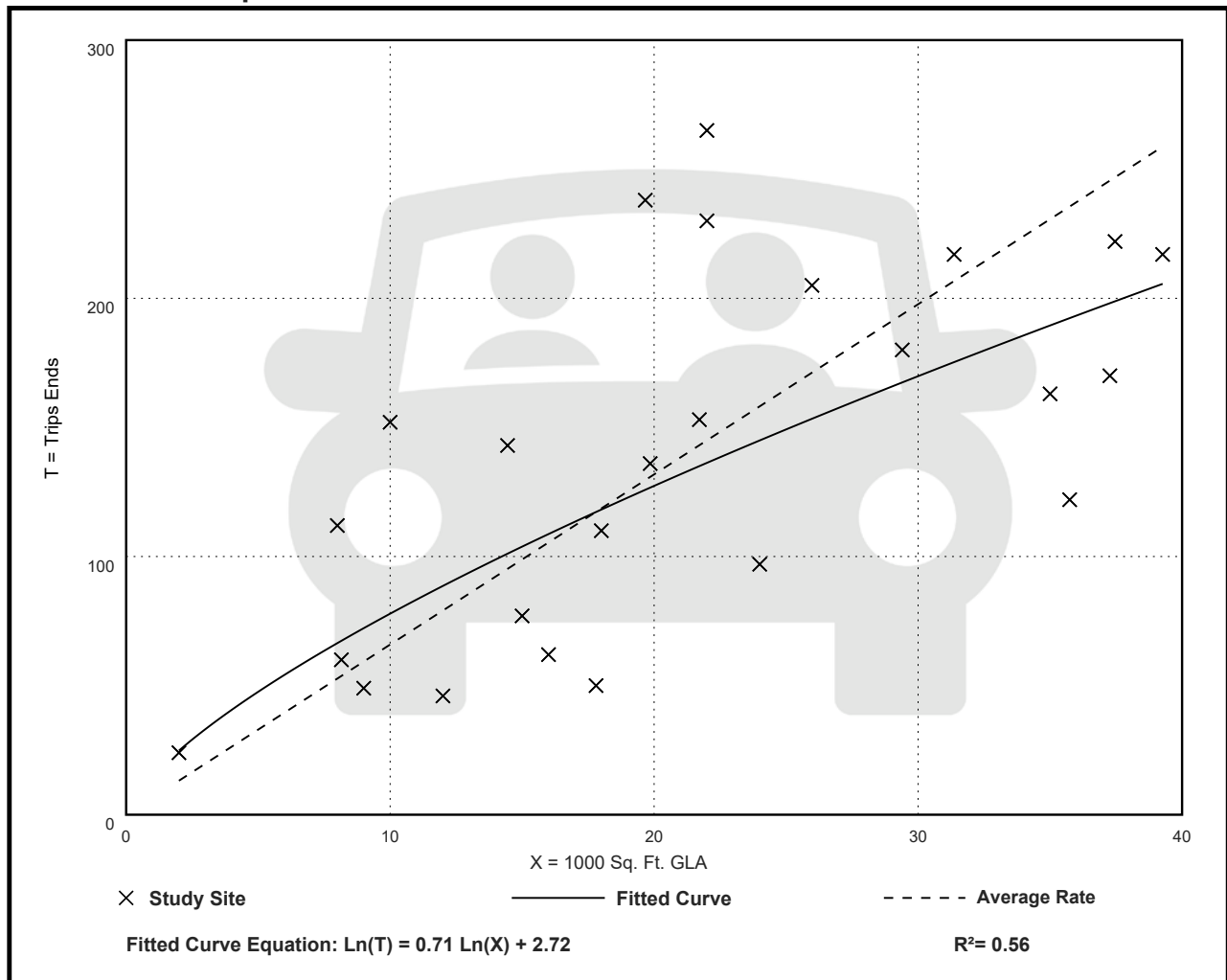
Avg. 1000 Sq. Ft. GLA: 21

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**

**On a: Weekday,**

**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

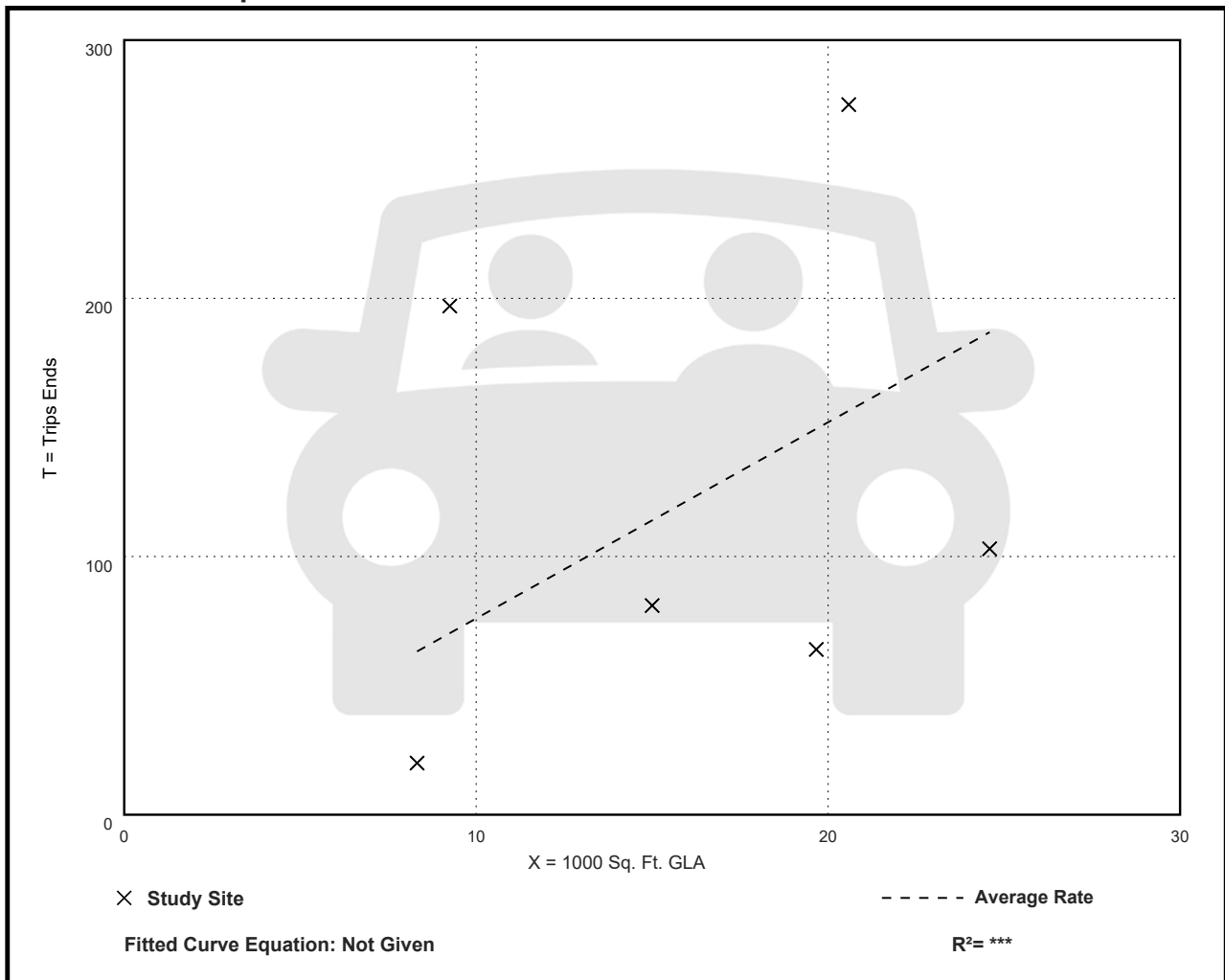
Avg. 1000 Sq. Ft. GLA: 16

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
7.60	2.40 - 21.30	6.45

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

On a: Weekday,

PM Peak Hour of Generator

**Setting/Location: General Urban/Suburban**

Number of Studies: 5

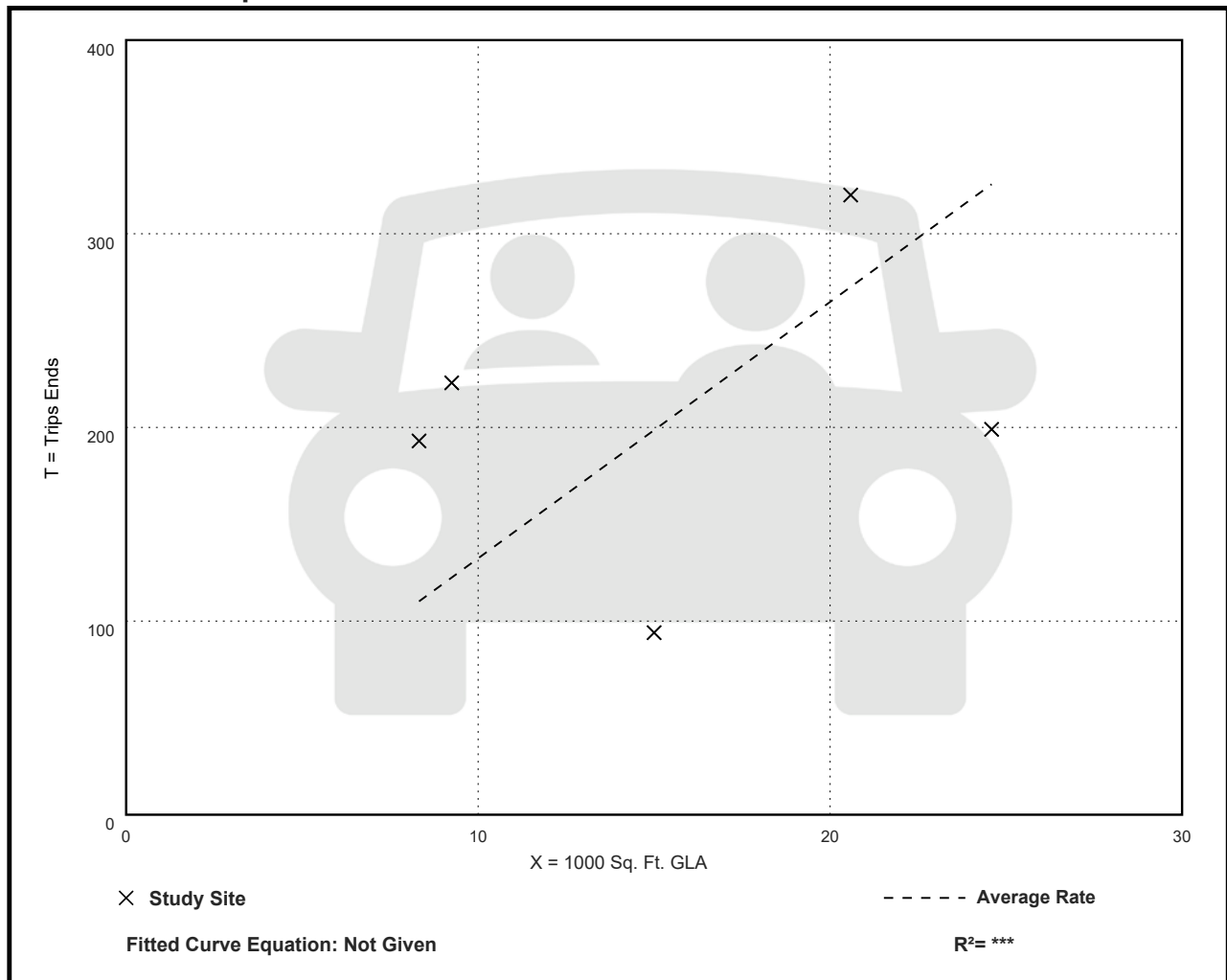
Avg. 1000 Sq. Ft. GLA: 16

Directional Distribution: 54% entering, 46% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
13.24	6.27 - 24.11	7.40

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

On a: Saturday, Peak Hour of Generator

**Setting/Location: General Urban/Suburban**

Number of Studies: 12

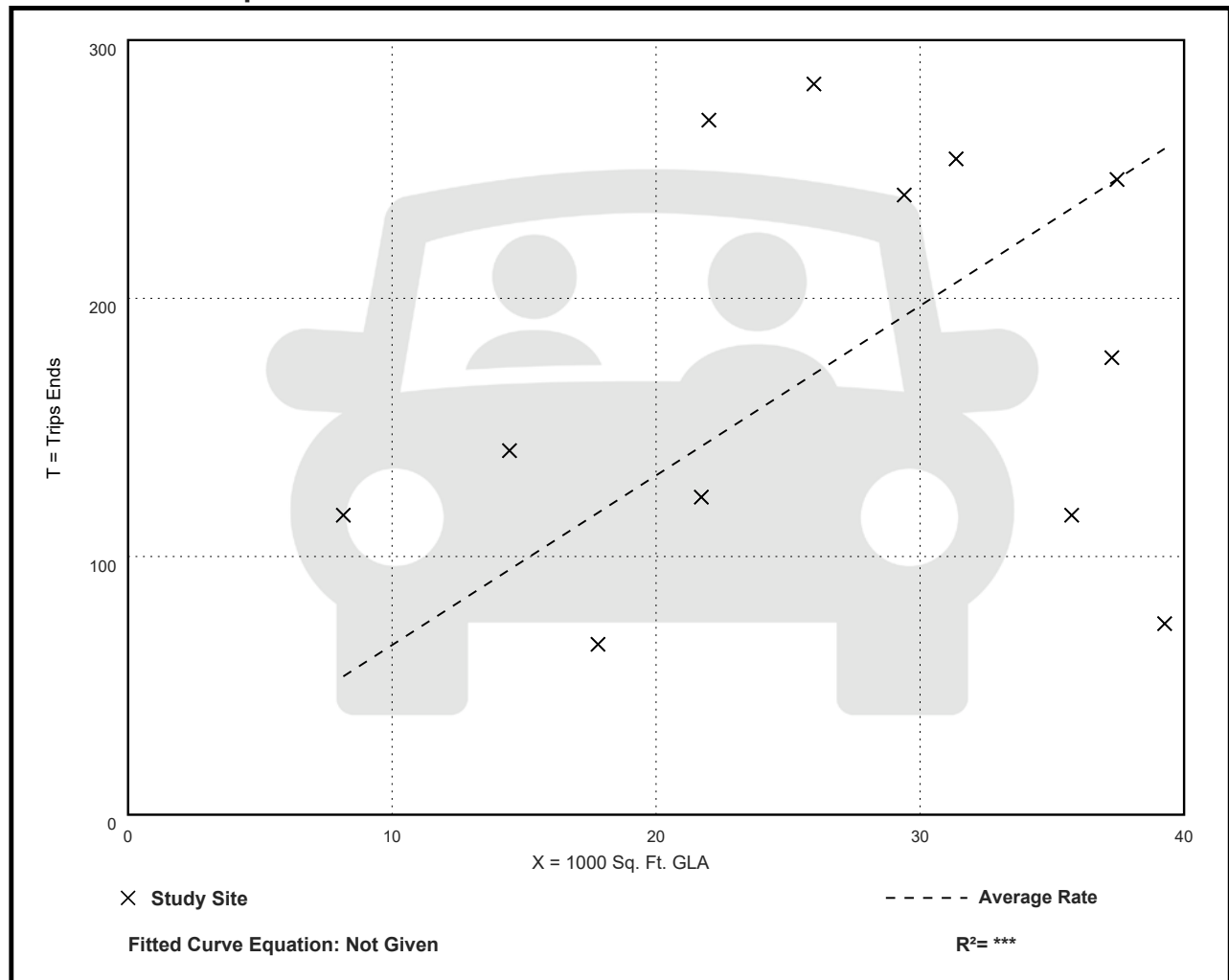
Avg. 1000 Sq. Ft. GLA: 27

Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.57	1.88 - 14.23	3.45

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

## Vehicle Trip Ends vs: Employees

On a: **Weekday,**

**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 2

Avg. Num. of Employees: 21

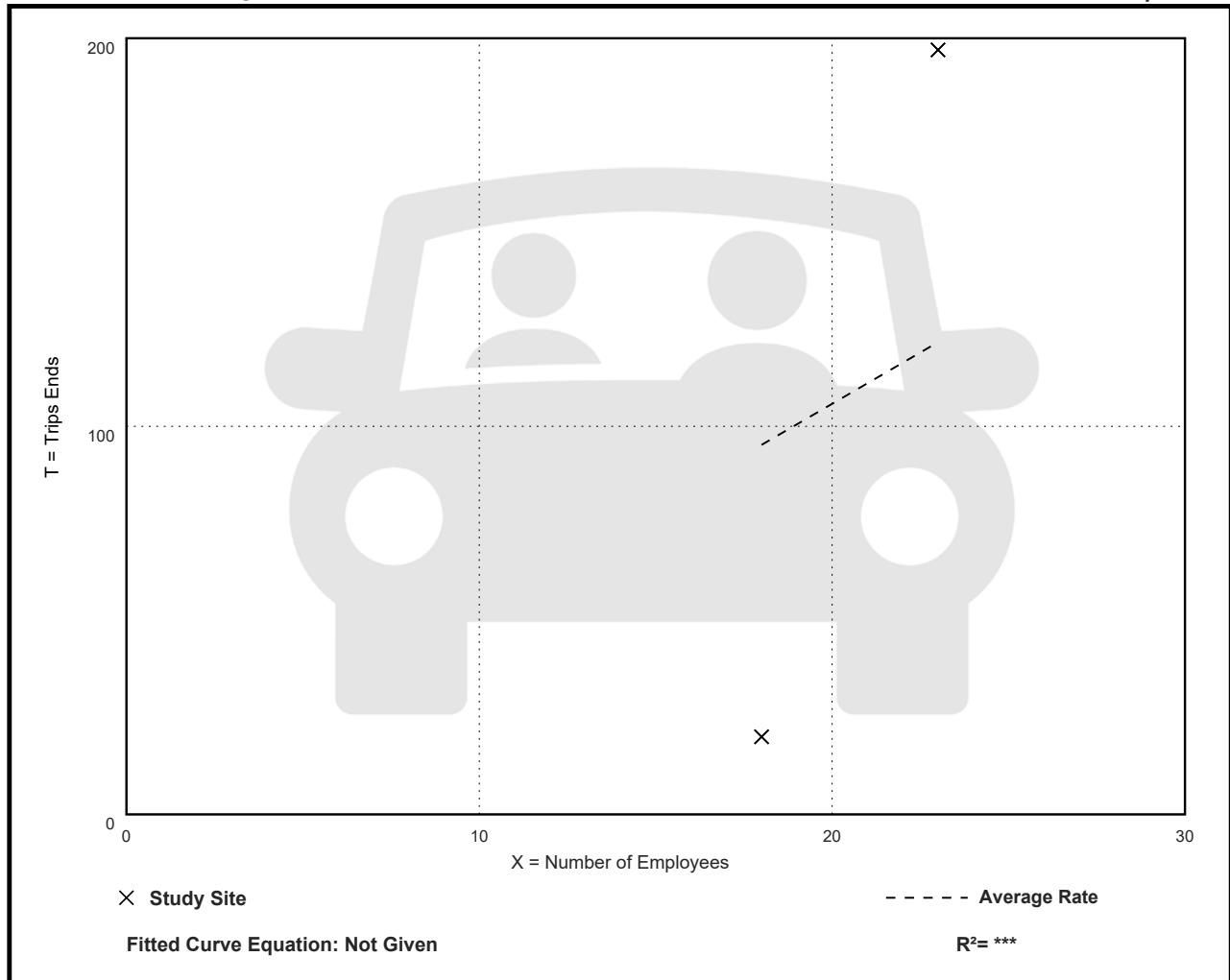
Directional Distribution: 52% entering, 48% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
5.29	1.11 - 8.57	***

### Data Plot and Equation

*Caution – Small Sample Size*



# Strip Retail Plaza (<40k) (822)

## Vehicle Trip Ends vs: Employees

On a: Weekday,  
PM Peak Hour of Generator

**Setting/Location: General Urban/Suburban**

Number of Studies: 2

Avg. Num. of Employees: 21

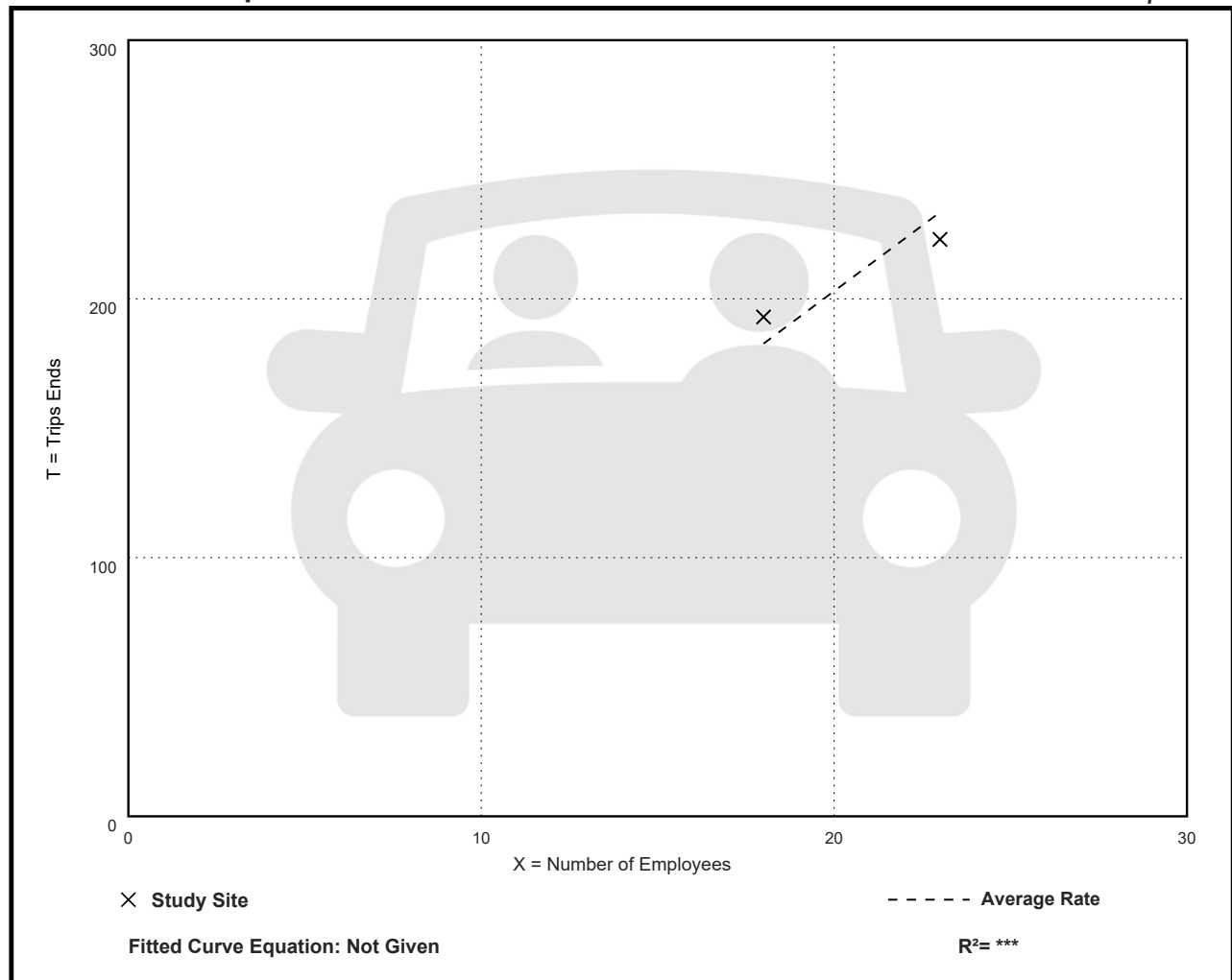
Directional Distribution: 56% entering, 44% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
10.15	9.70 - 10.72	***

### Data Plot and Equation

*Caution – Small Sample Size*



# Strip Retail Plaza (<40k) (822)

**Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GLA**

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: 1

Avg. 1000 Sq. Ft. GLA: 20

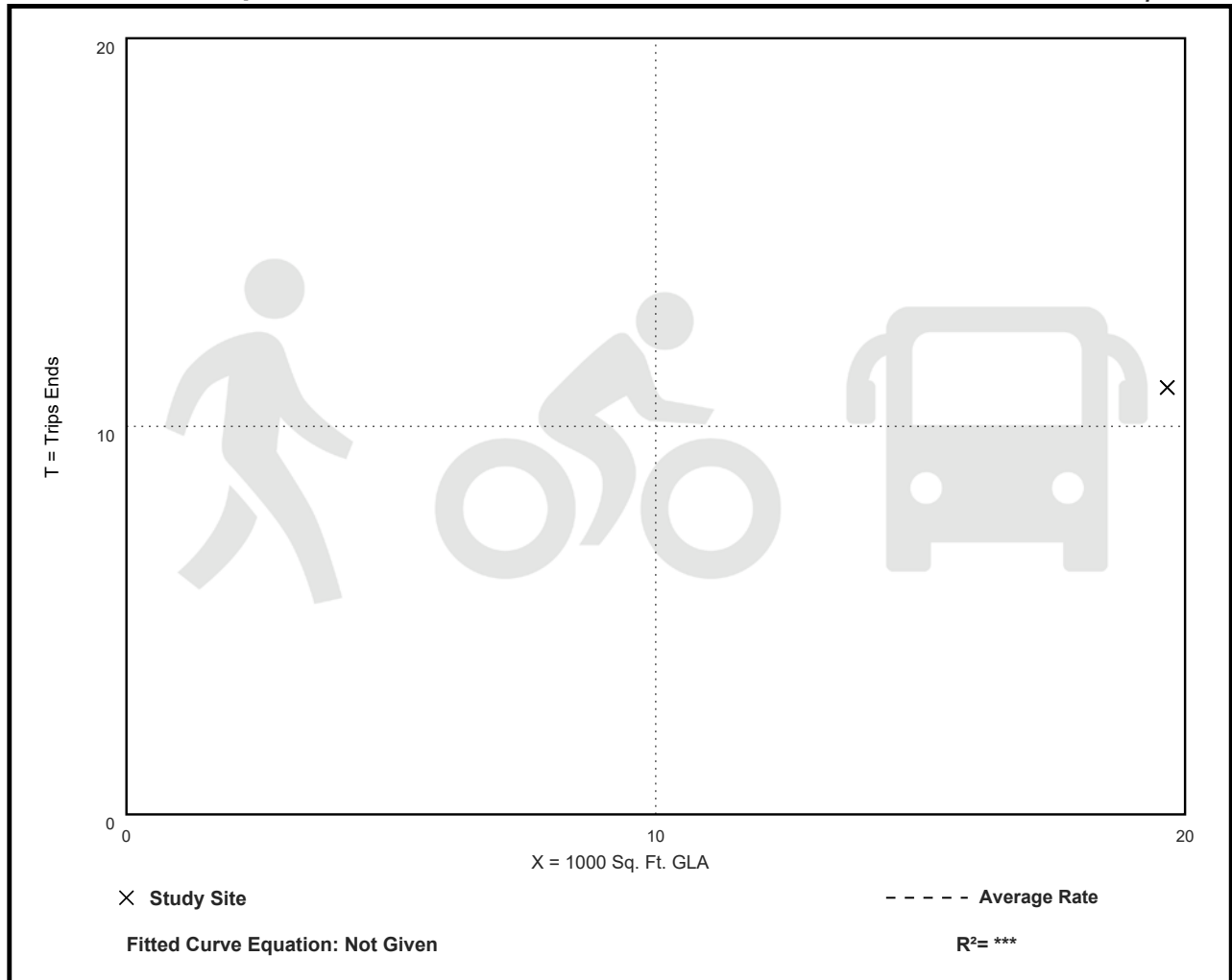
Directional Distribution: Not Available

## Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.56	0.56 - 0.56	***

### Data Plot and Equation

*Caution – Small Sample Size*



# Strip Retail Plaza (<40k) (822)

**Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GLA**

On a: **Weekday,**  
**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 5

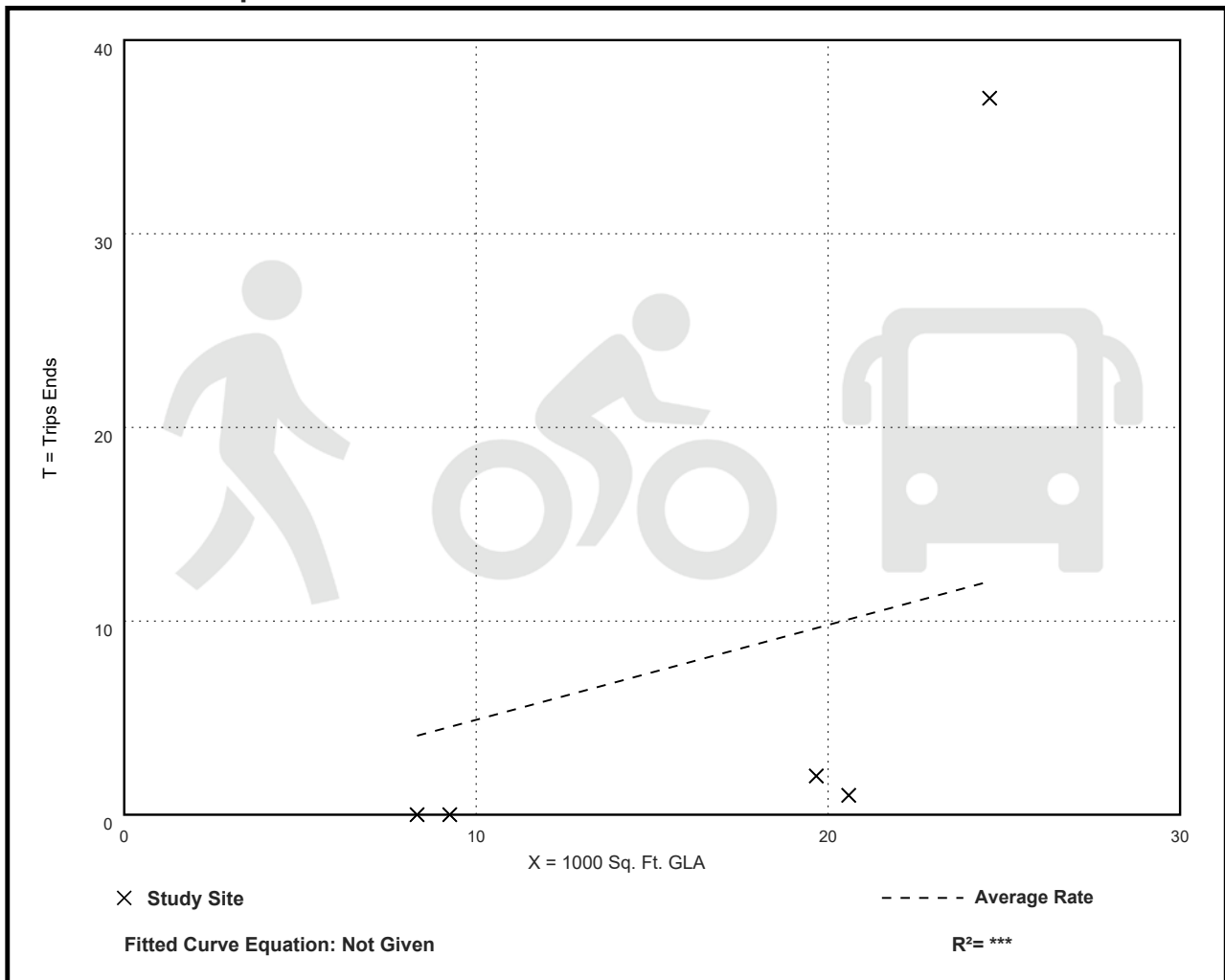
Avg. 1000 Sq. Ft. GLA: 16

Directional Distribution: Not Available

## Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.49	0.00 - 1.50	0.74

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

**Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GLA**

On a: **Weekday,**  
**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 5

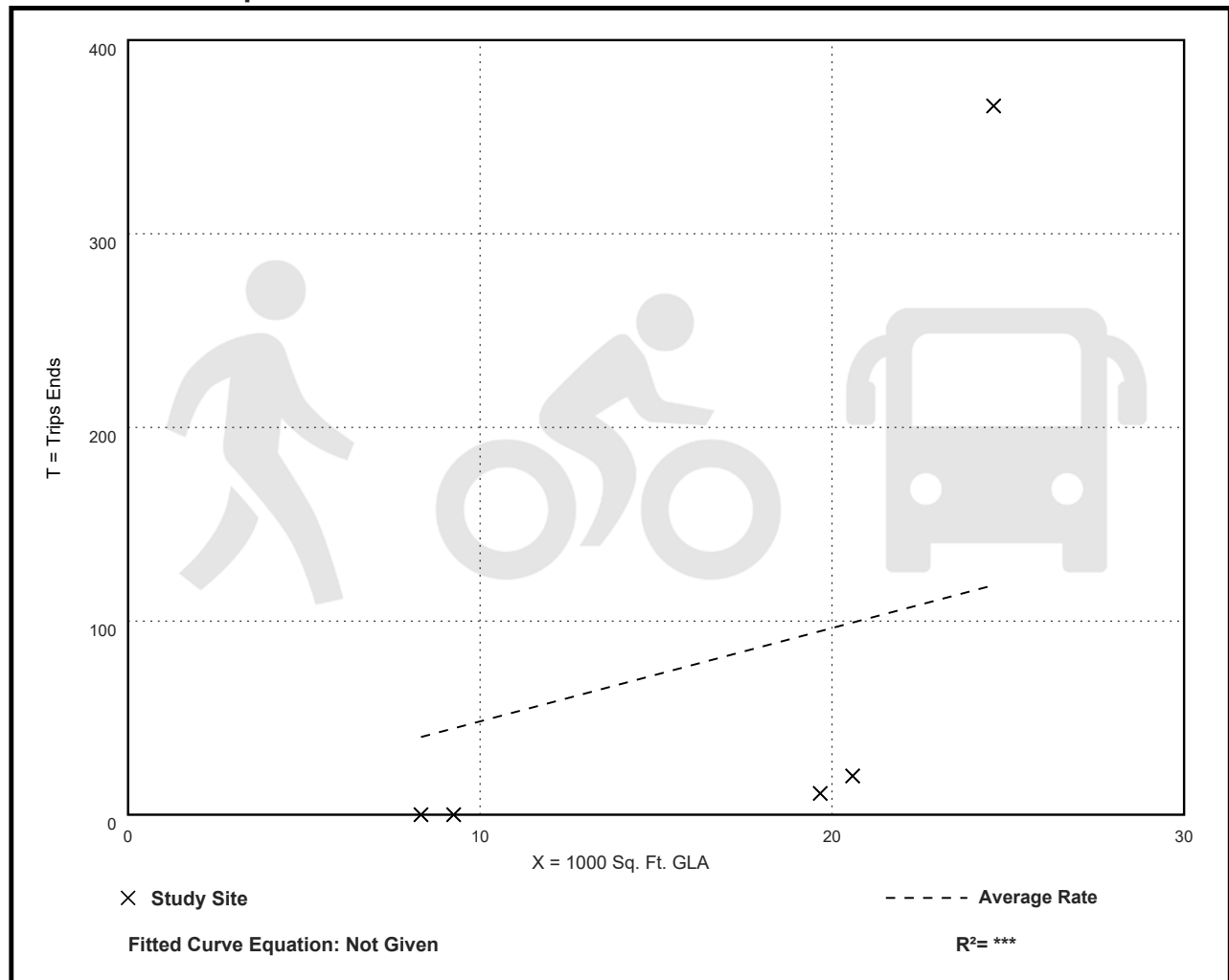
Avg. 1000 Sq. Ft. GLA: 16

Directional Distribution: Not Available

## Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.82	0.00 - 14.88	7.35

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

**Walk+Bike+Transit Trip Ends vs: Employees**

On a: **Weekday,**  
**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 2

Avg. Num. of Employees: 21

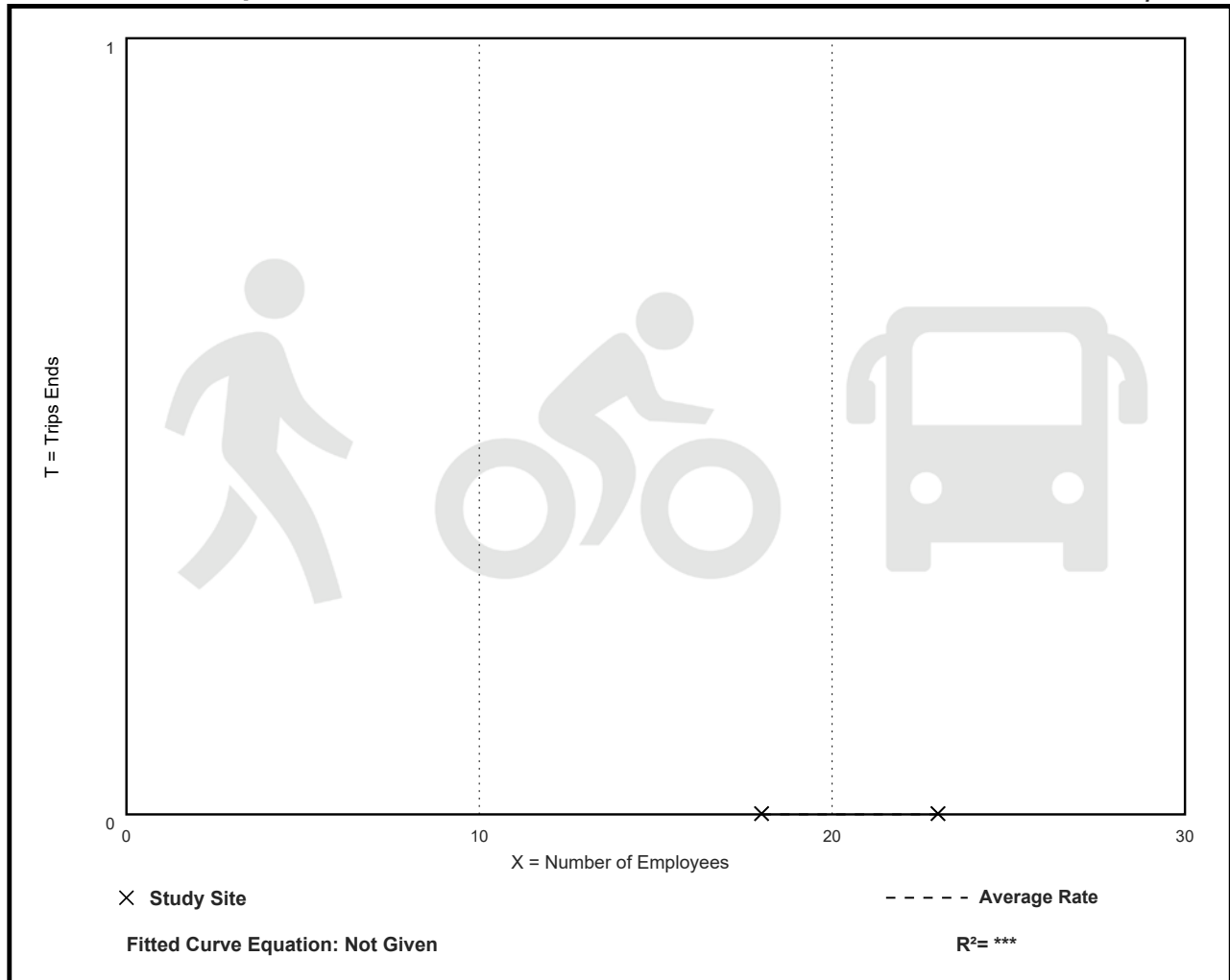
Directional Distribution: Not Available

## Walk+Bike+Transit Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.00	0.00 - 0.00	***

## Data Plot and Equation

*Caution – Small Sample Size*



# Strip Retail Plaza (<40k) (822)

Walk+Bike+Transit Trip Ends vs: Employees

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Employees: 21

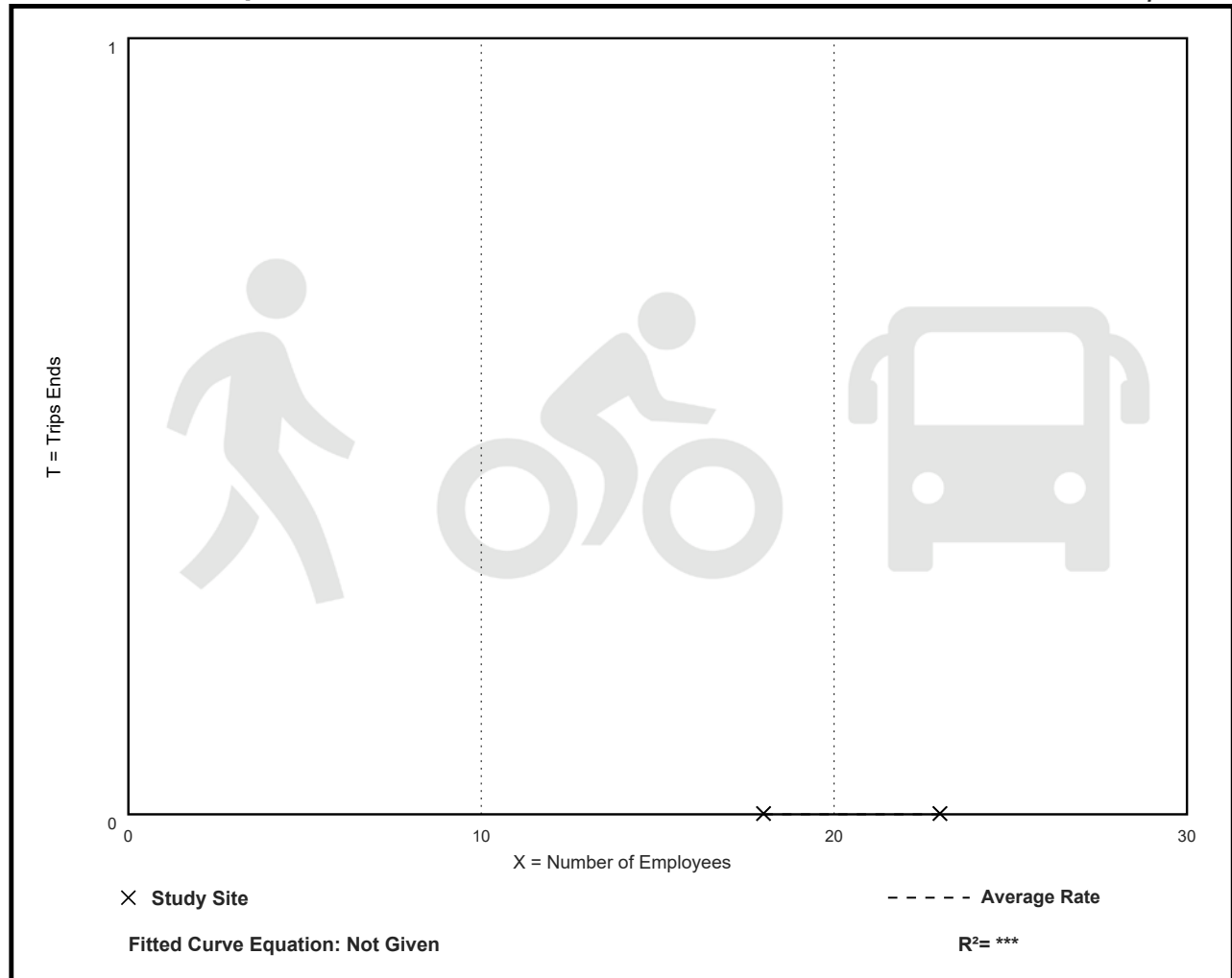
Directional Distribution: Not Available

## Walk+Bike+Transit Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.00	0.00 - 0.00	***

## Data Plot and Equation

Caution – Small Sample Size



# Land Use: 931

## Fine Dining Restaurant

---

### Description

A fine dining restaurant is a full-service eating establishment with a typical duration of stay of at least 1 hour. A fine dining restaurant generally does not serve breakfast; some do not serve lunch; all serve dinner. This type of restaurant often requests and sometimes requires a reservation and is generally not part of a chain. A patron commonly waits to be seated, is served by wait staff, orders from a menu and pays after the meal. Some of the study sites have lounge or bar facilities (serving alcoholic beverages), but meal service is the primary draw to the restaurant. Fast casual restaurant (Land Use 930) and high-turnover (sit-down) restaurant (Land Use 932) are related uses.

### Additional Data

If the fine dining restaurant has outdoor seating, its area is not included in the overall gross floor area. For a restaurant that has significant outdoor seating, the number of seats may be more reliable than GFA as an independent variable on which to establish a trip generation rate.

The sites were surveyed in the 1980s, the 1990s, and the 2010s in Alberta (CAN), California, Colorado, Florida, Indiana, Kentucky, New Jersey, and Utah.

### Source Numbers

126, 260, 291, 301, 338, 339, 368, 437, 440, 976, 1053

# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
On a: Weekday

**Setting/Location: General Urban/Suburban**

Number of Studies: 10

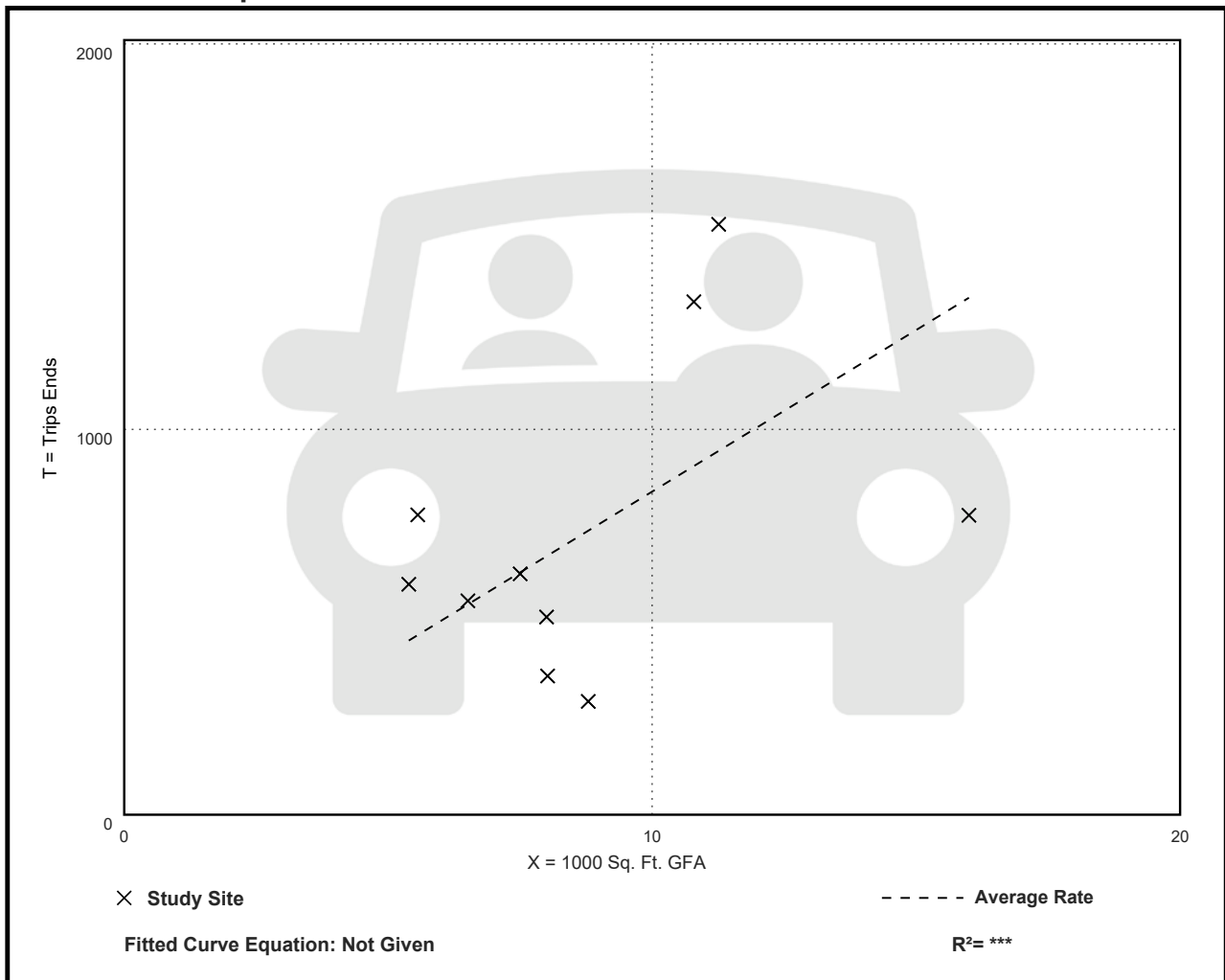
Avg. 1000 Sq. Ft. GFA: 9

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
83.84	33.45 - 139.93	40.01

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**

**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: 7

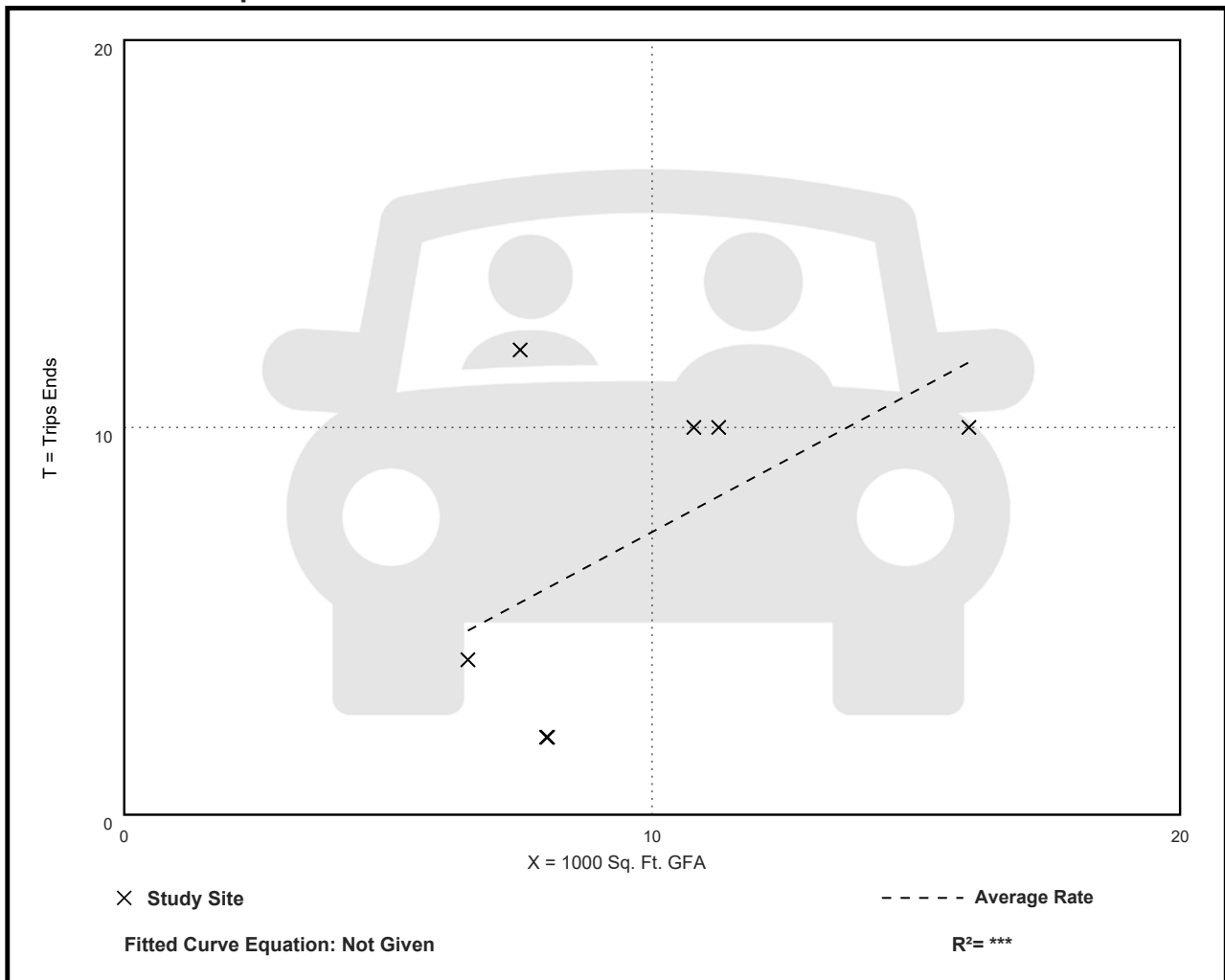
Avg. 1000 Sq. Ft. GFA: 10

Directional Distribution: Not Available

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.73	0.25 - 1.60	0.42

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**

**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: 19

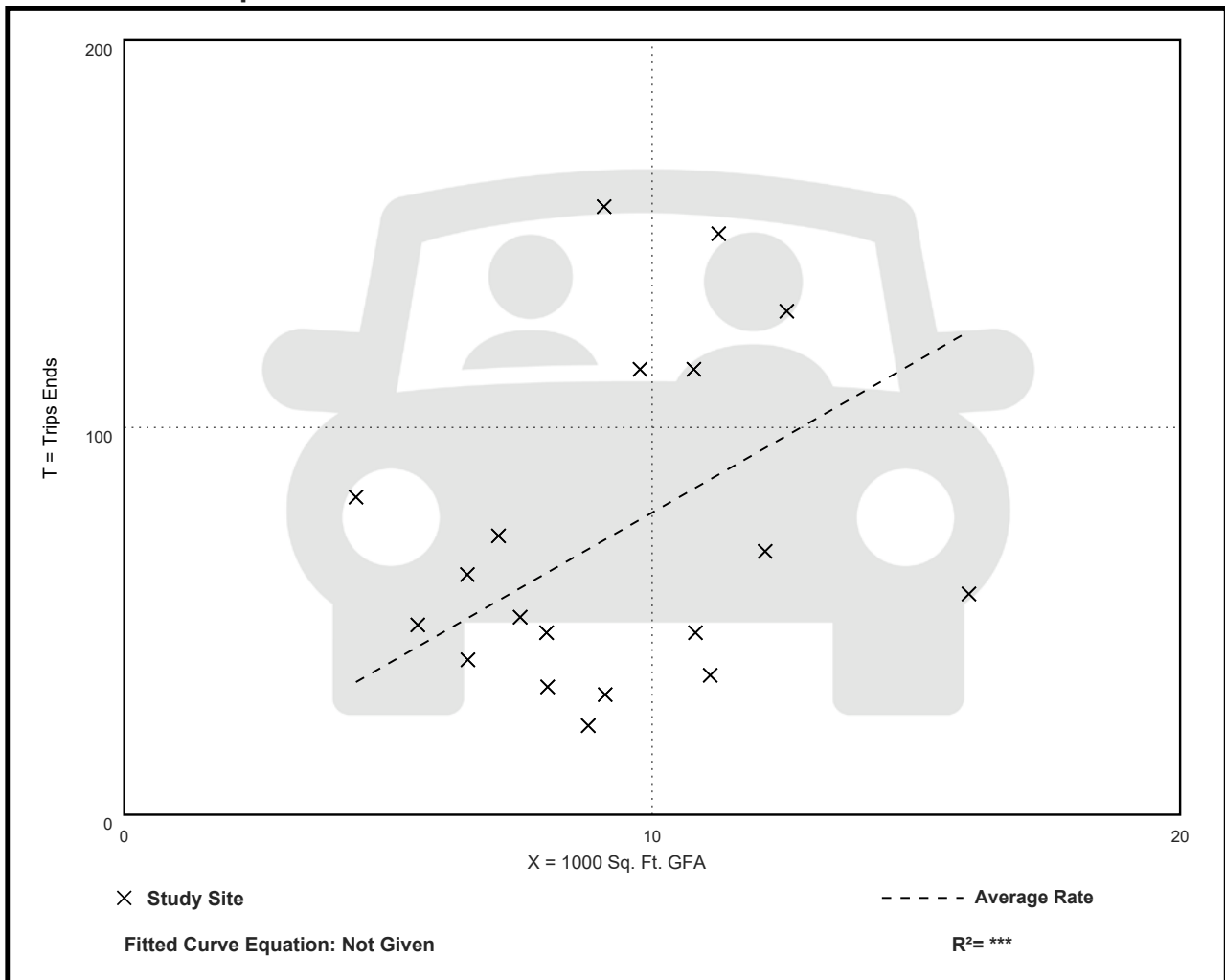
Avg. 1000 Sq. Ft. GFA: 9

Directional Distribution: 67% entering, 33% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
7.80	2.62 - 18.68	4.49

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**

**On a: Weekday,**

**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 12

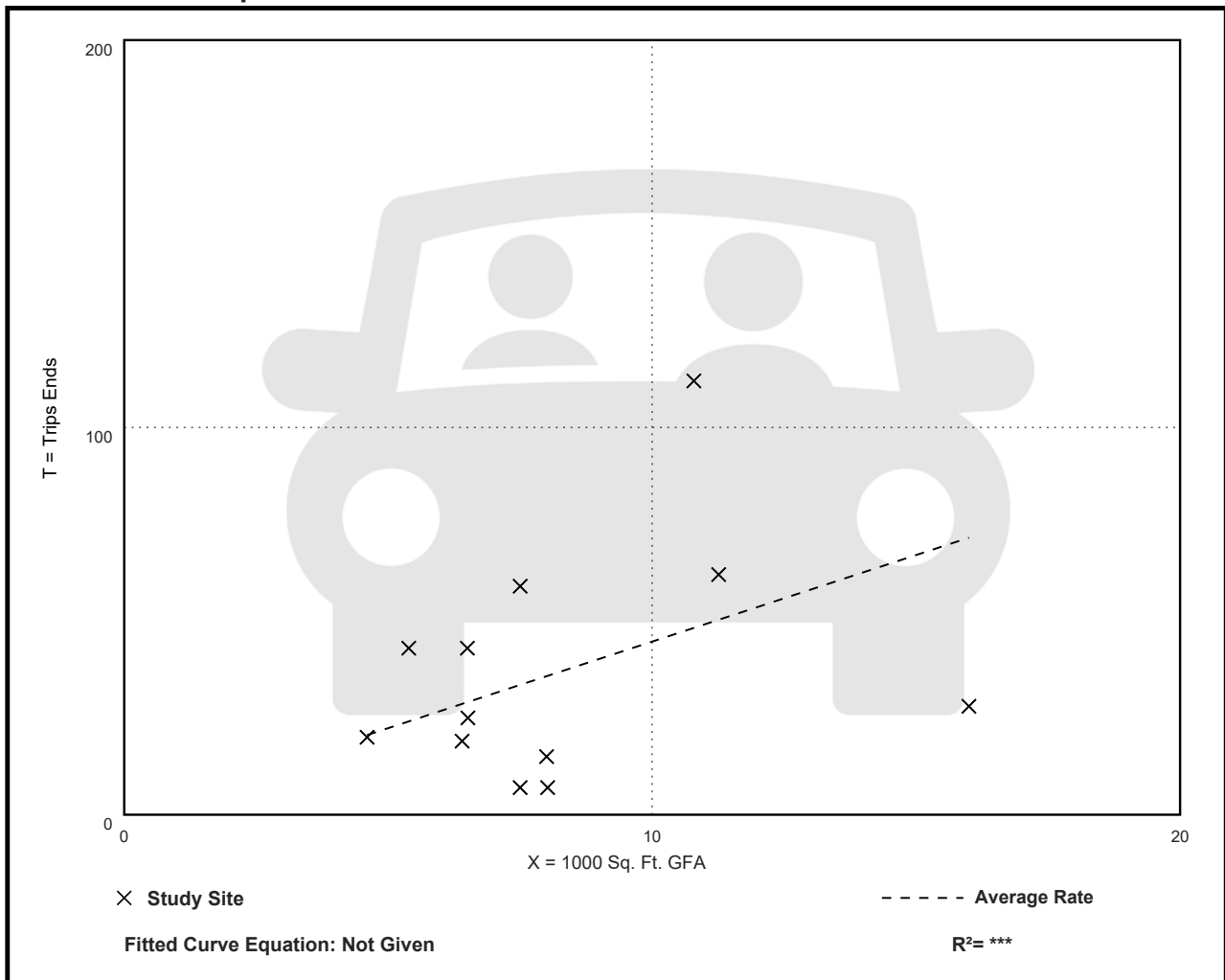
Avg. 1000 Sq. Ft. GFA: 8

Directional Distribution: 80% entering, 20% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.47	0.87 - 10.38	3.26

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**

**On a: Weekday,**

**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 15

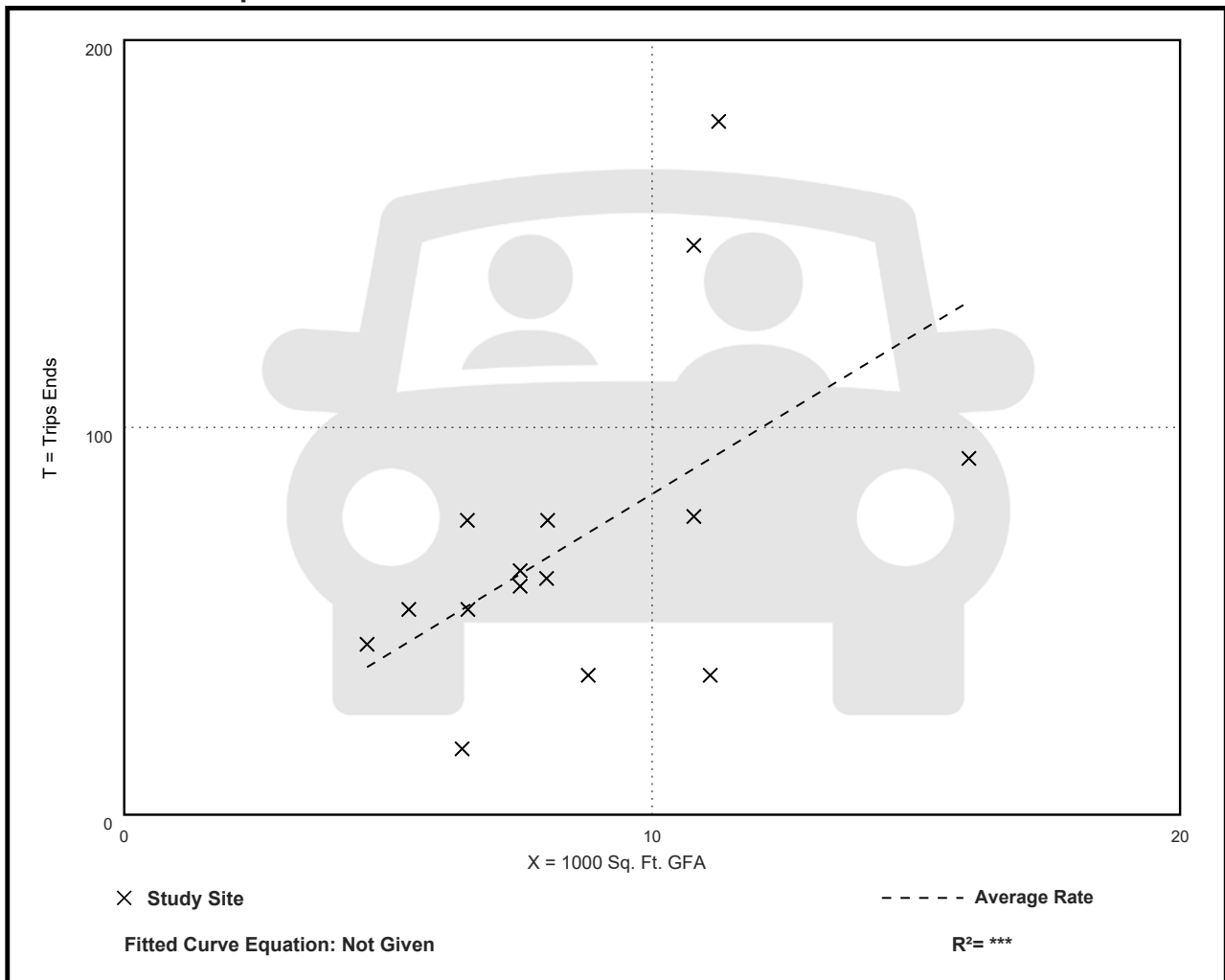
Avg. 1000 Sq. Ft. GFA: 9

Directional Distribution: 61% entering, 39% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
8.28	2.66 - 15.90	3.89

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
On a: Saturday

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

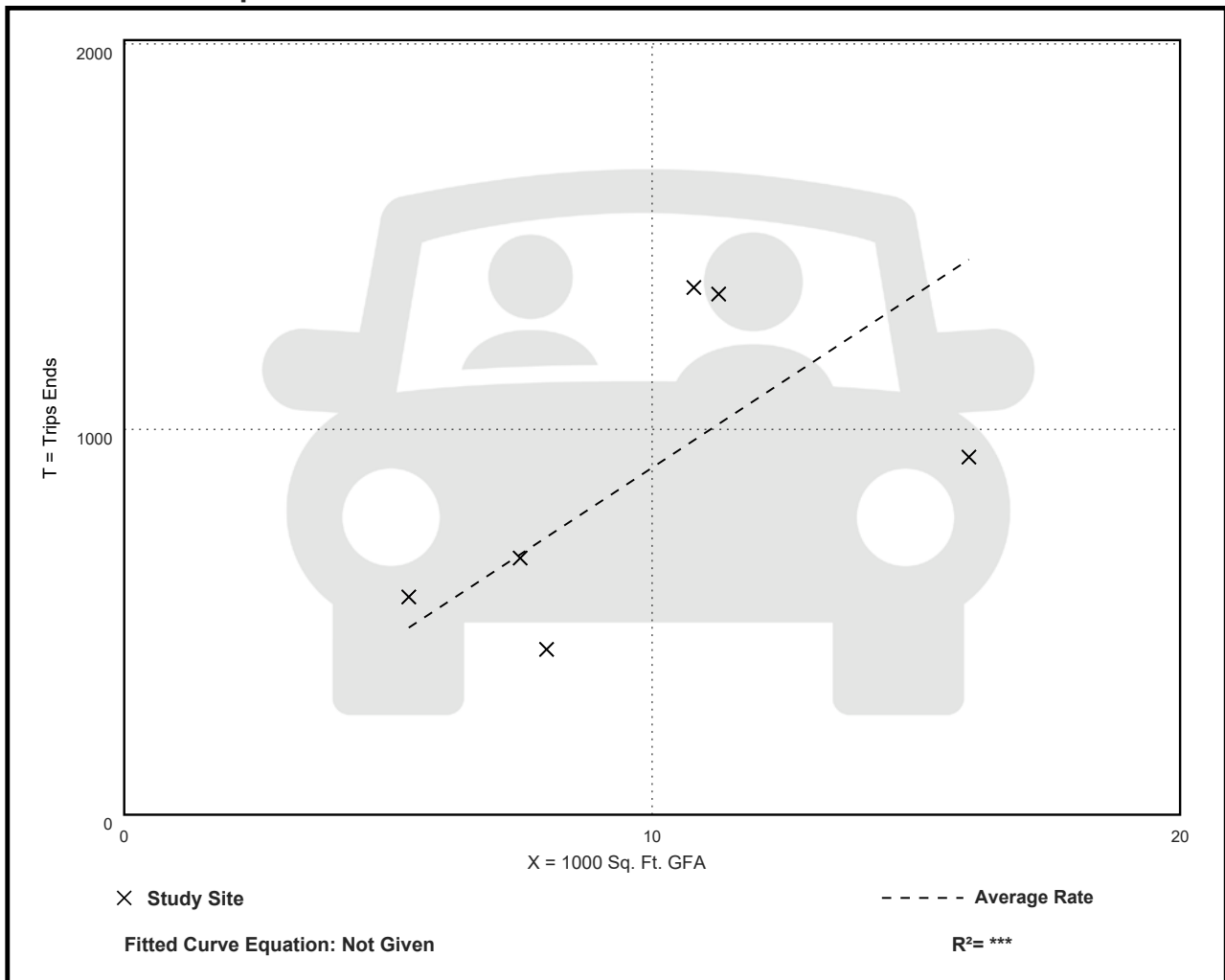
Avg. 1000 Sq. Ft. GFA: 10

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
90.04	53.63 - 126.78	32.81

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**

**On a: Saturday, Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 7

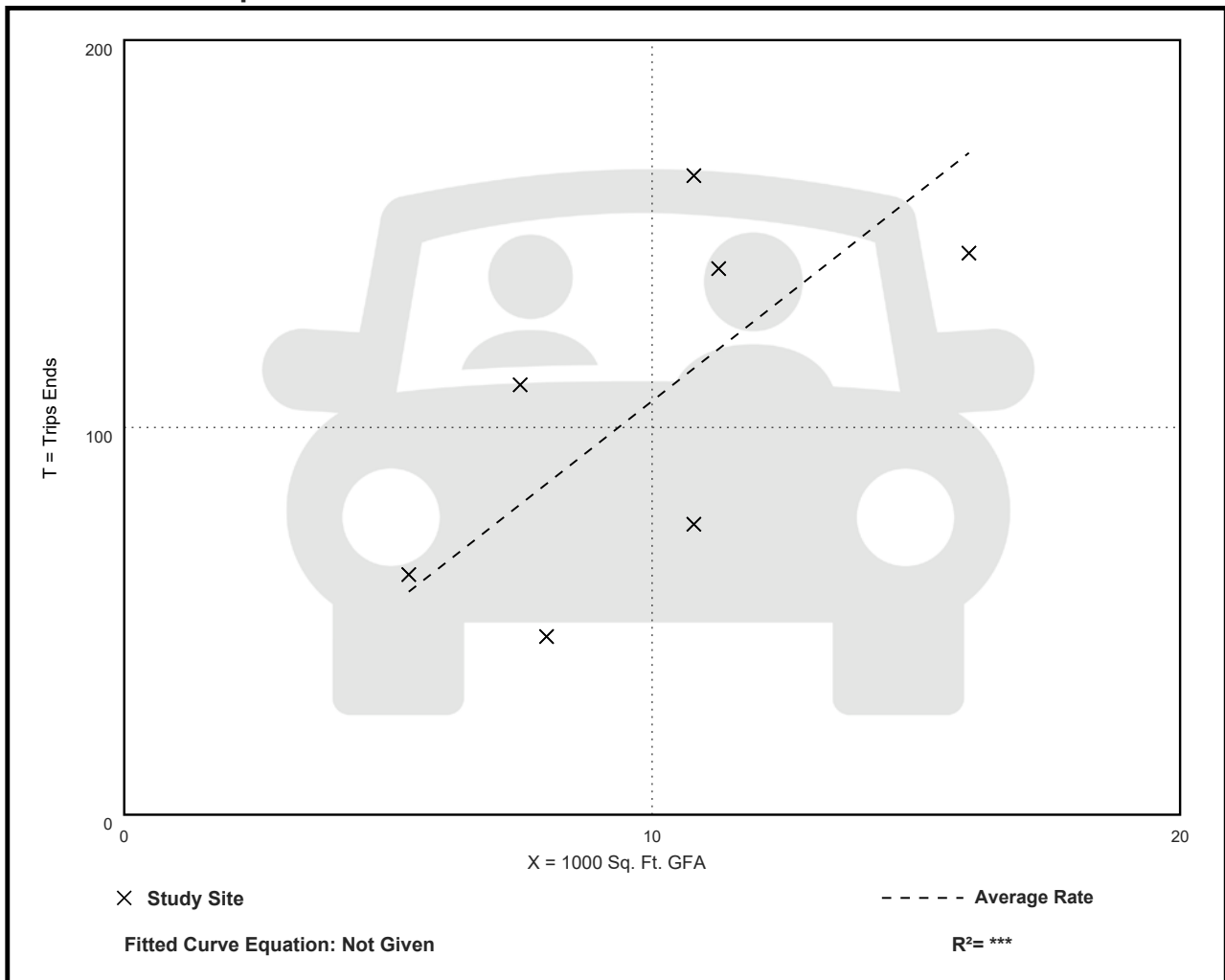
Avg. 1000 Sq. Ft. GFA: 10

Directional Distribution: 59% entering, 41% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
10.68	5.75 - 15.29	3.62

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
On a: Sunday

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

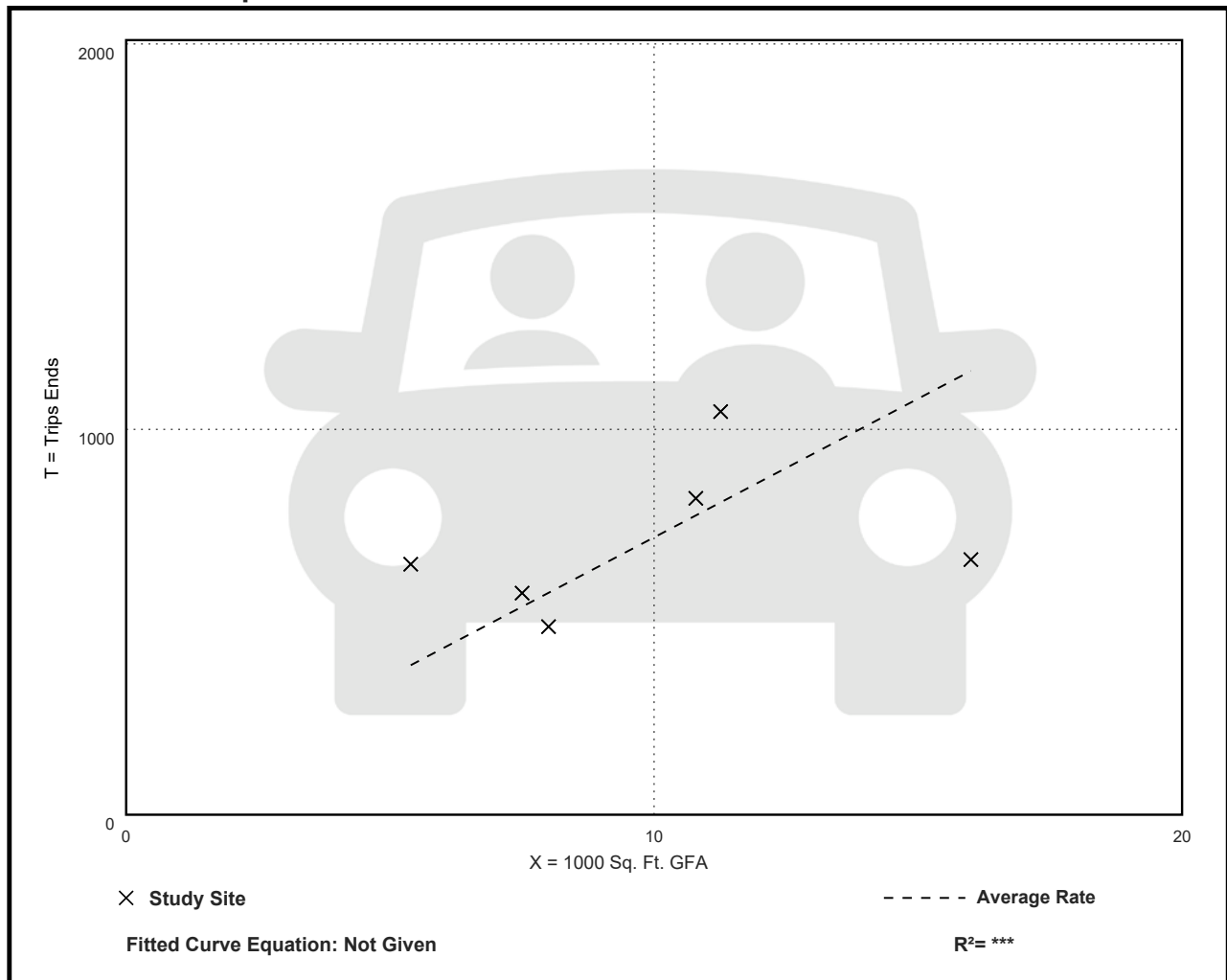
Avg. 1000 Sq. Ft. GFA: 10

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
71.97	41.38 - 120.59	26.30

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**

**On a: Sunday, Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

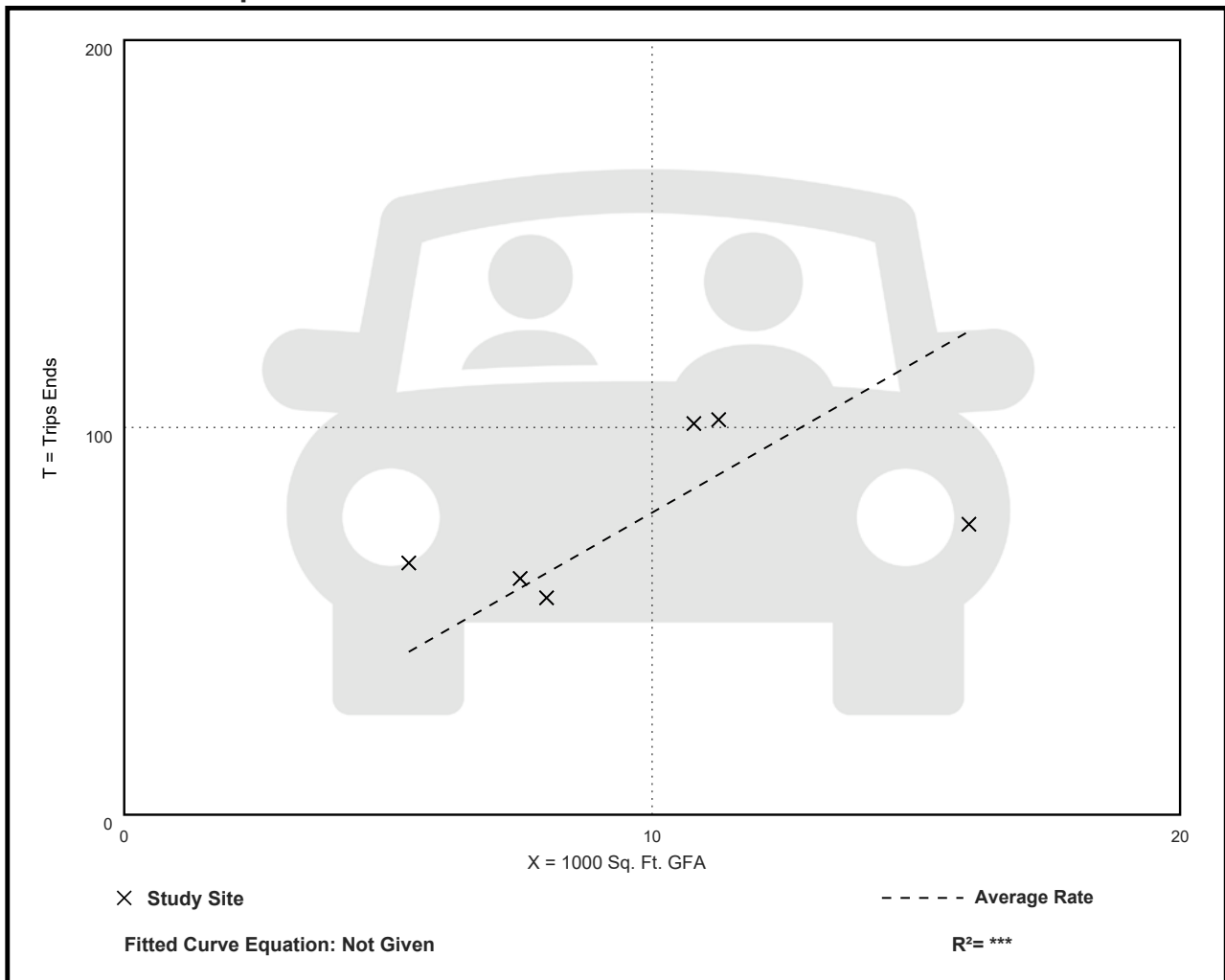
Avg. 1000 Sq. Ft. GFA: 10

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
7.80	4.69 - 12.06	2.48

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: Seats**  
On a: Weekday

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

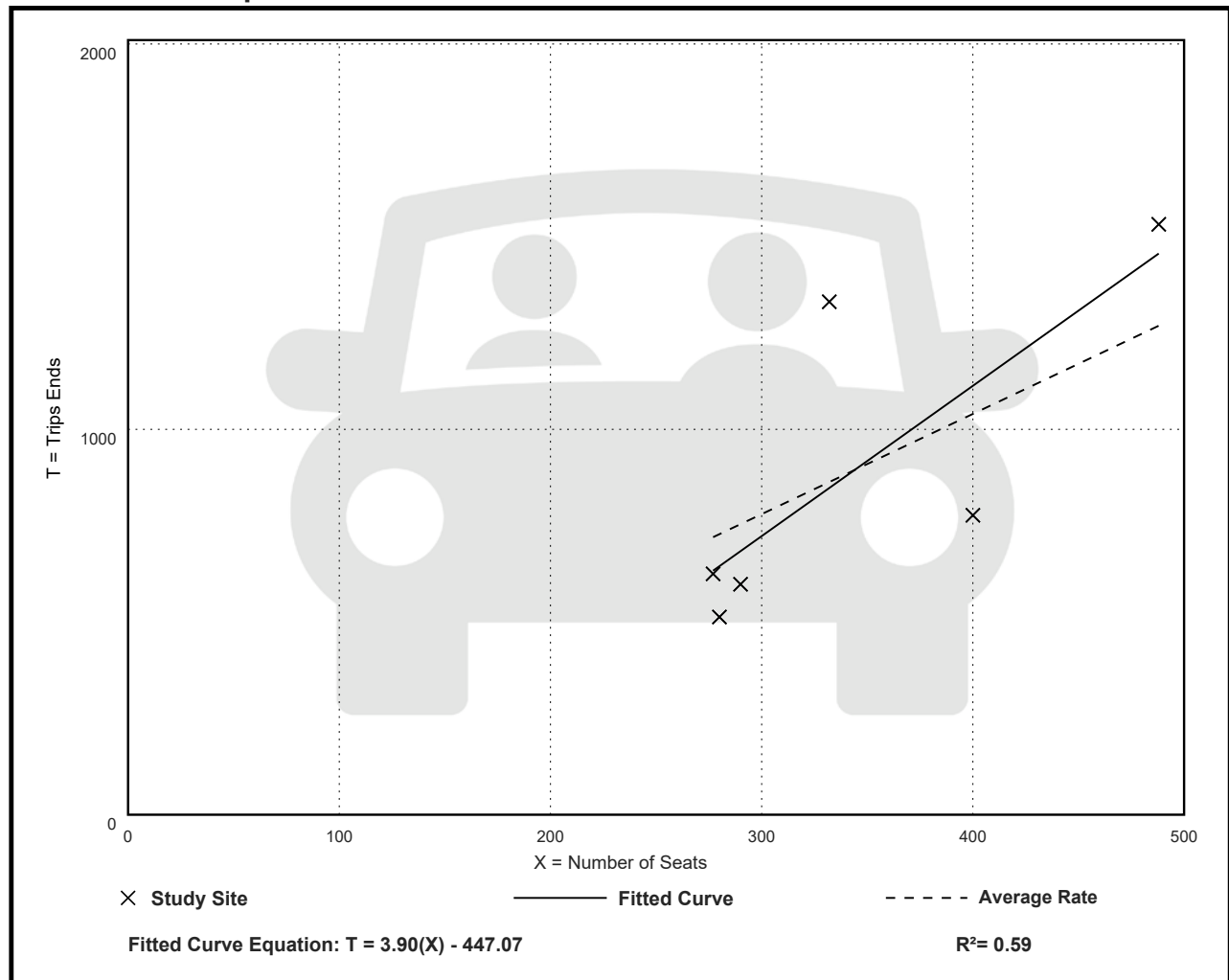
Avg. Num. of Seats: 345

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
2.60	1.83 - 4.01	0.85

## Data Plot and Equation



# Fine Dining Restaurant (931)

### Vehicle Trip Ends vs: Seats

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: 5

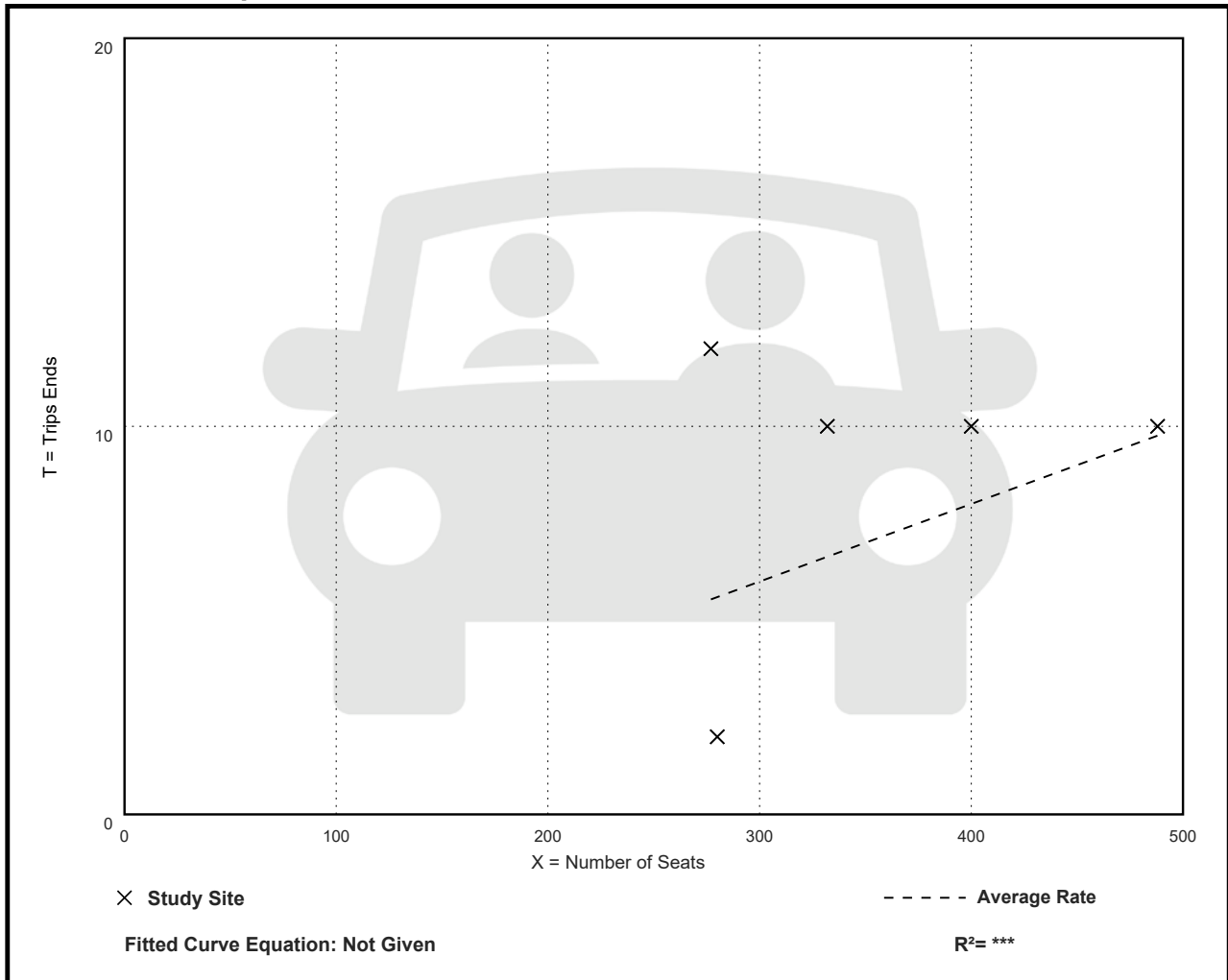
Avg. Num. of Seats: 355

Directional Distribution: Not Available

### Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.02	0.01 - 0.04	0.01

### Data Plot and Equation



# Fine Dining Restaurant (931)

## Vehicle Trip Ends vs: Seats

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: 11

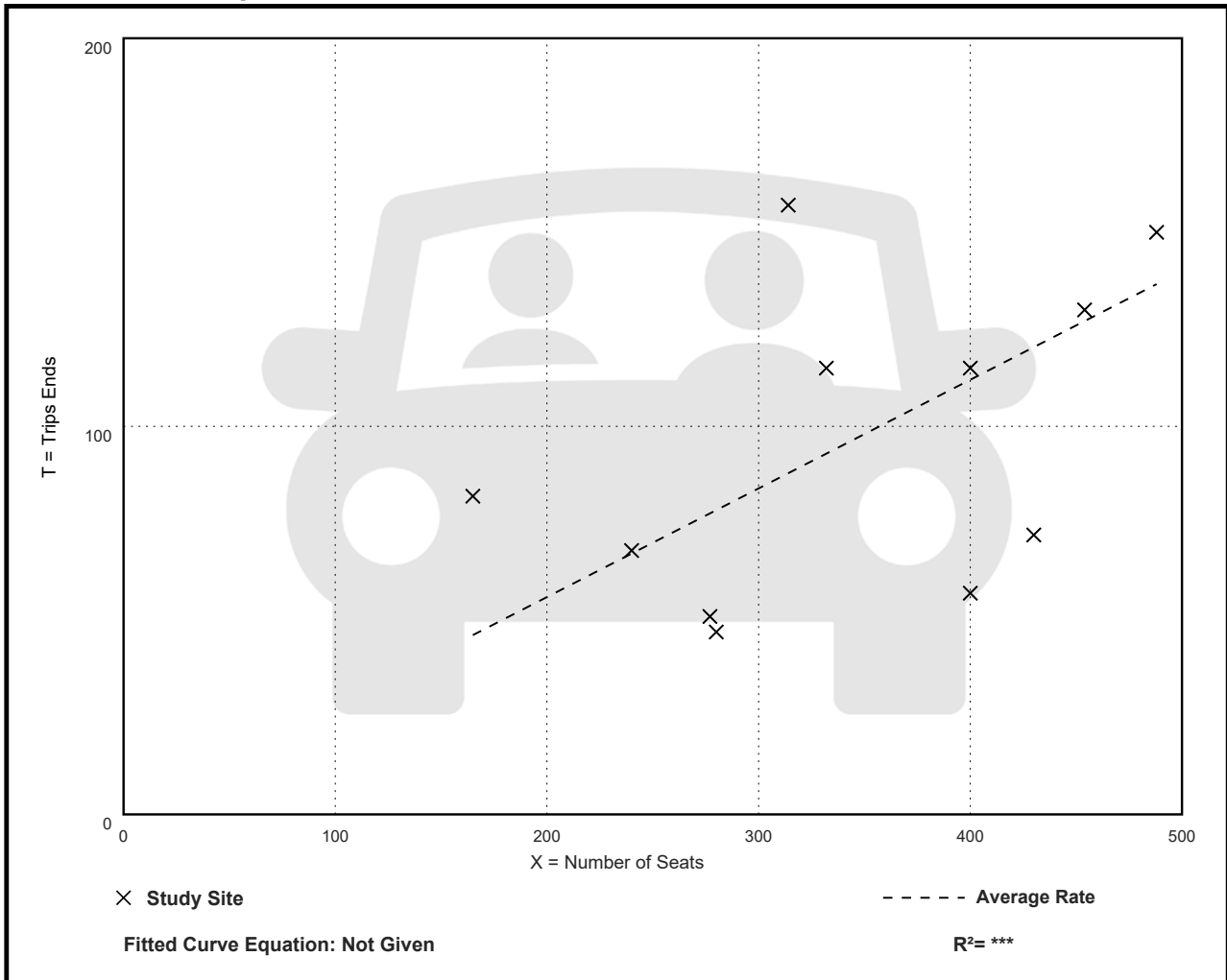
Avg. Num. of Seats: 344

Directional Distribution: 67% entering, 33% exiting

## Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.28	0.14 - 0.50	0.11

## Data Plot and Equation





# Fine Dining Restaurant (931)

## Vehicle Trip Ends vs: Seats

On a: **Weekday,**  
PM Peak Hour of Generator

**Setting/Location: General Urban/Suburban**

Number of Studies: 10

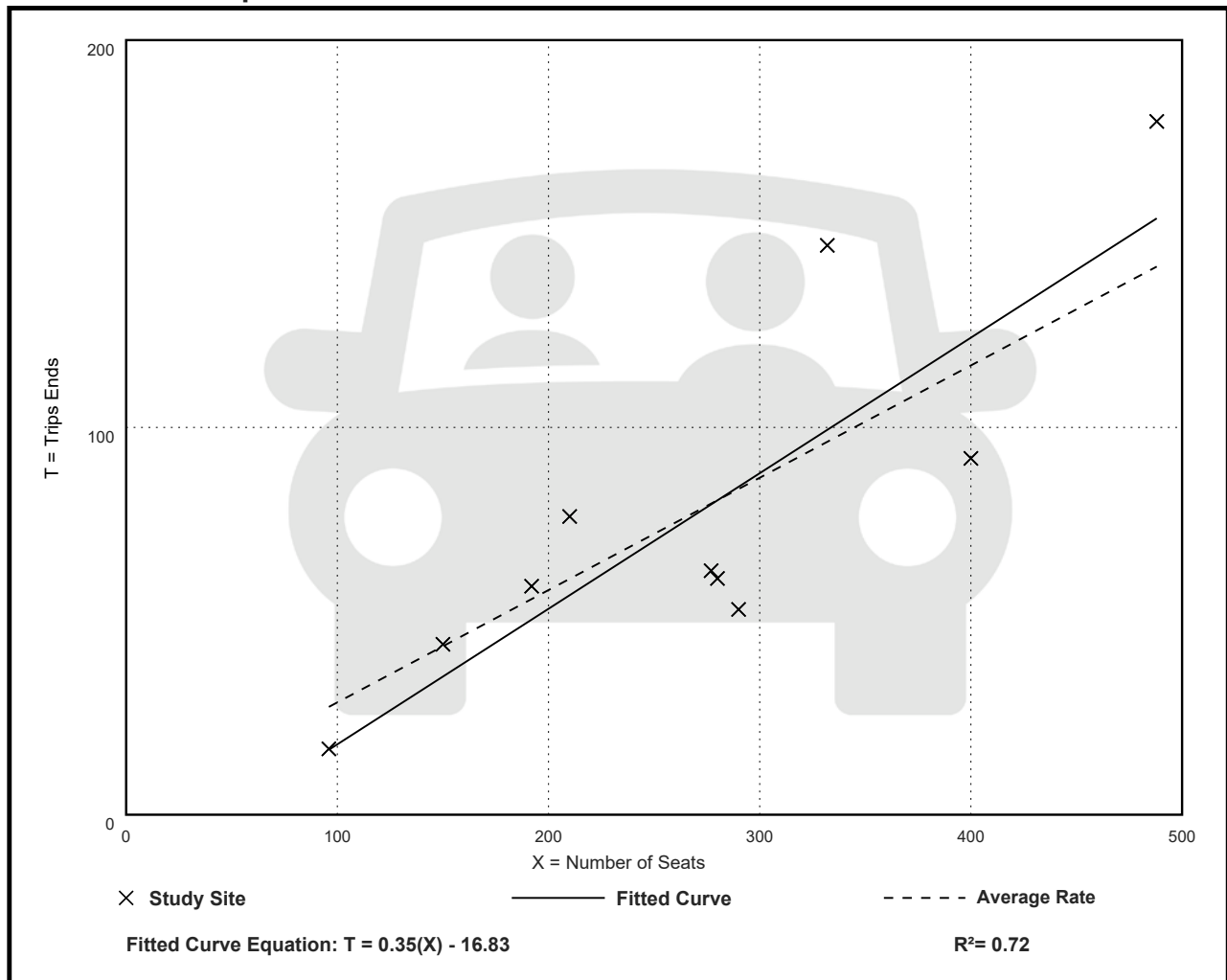
Avg. Num. of Seats: 272

Directional Distribution: 59% entering, 41% exiting

### Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.29	0.18 - 0.44	0.09

### Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: Seats**  
**On a: Saturday**

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

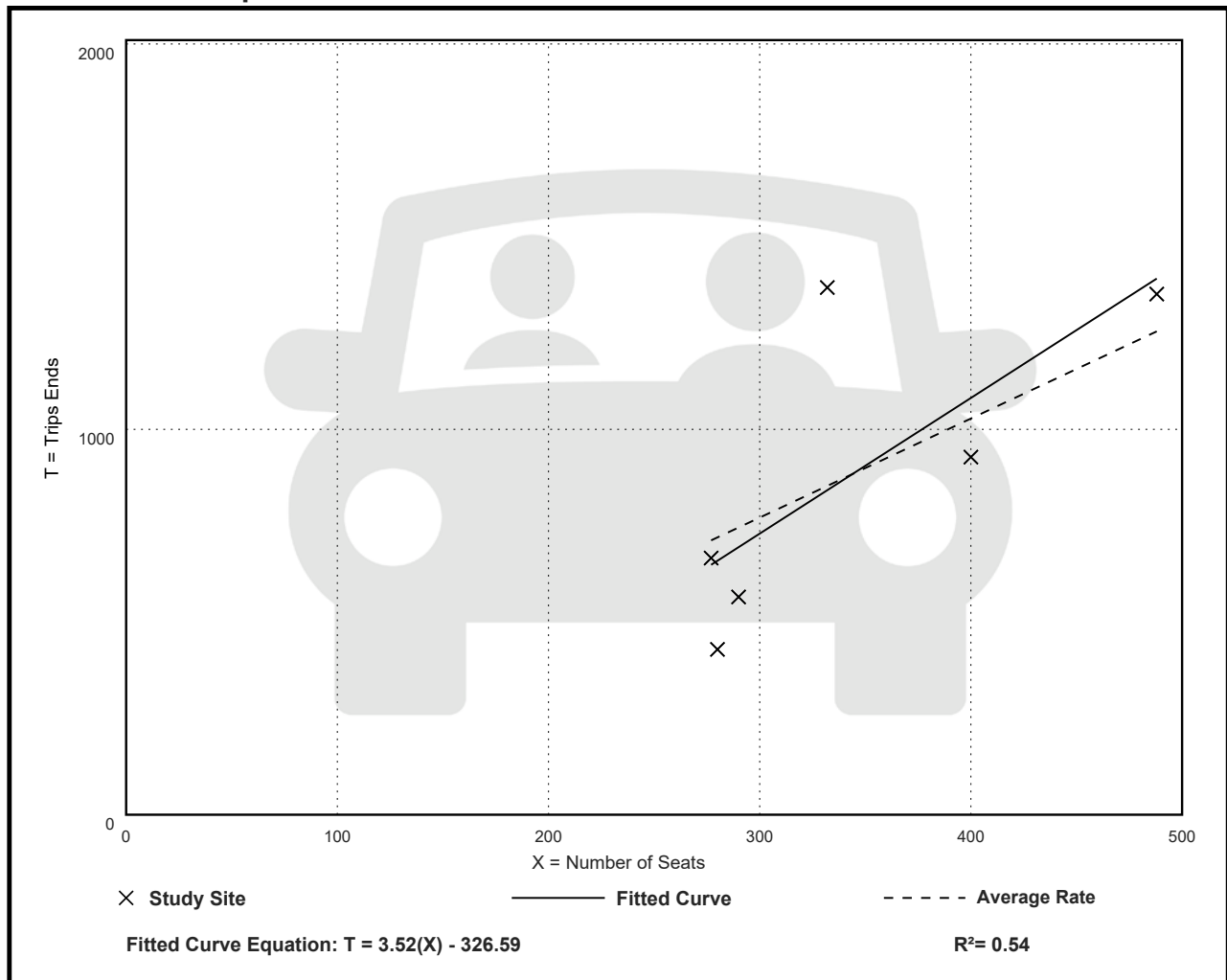
Avg. Num. of Seats: 345

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
2.57	1.53 - 4.12	0.86

## Data Plot and Equation



# Fine Dining Restaurant (931)

Vehicle Trip Ends vs: Seats

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 7

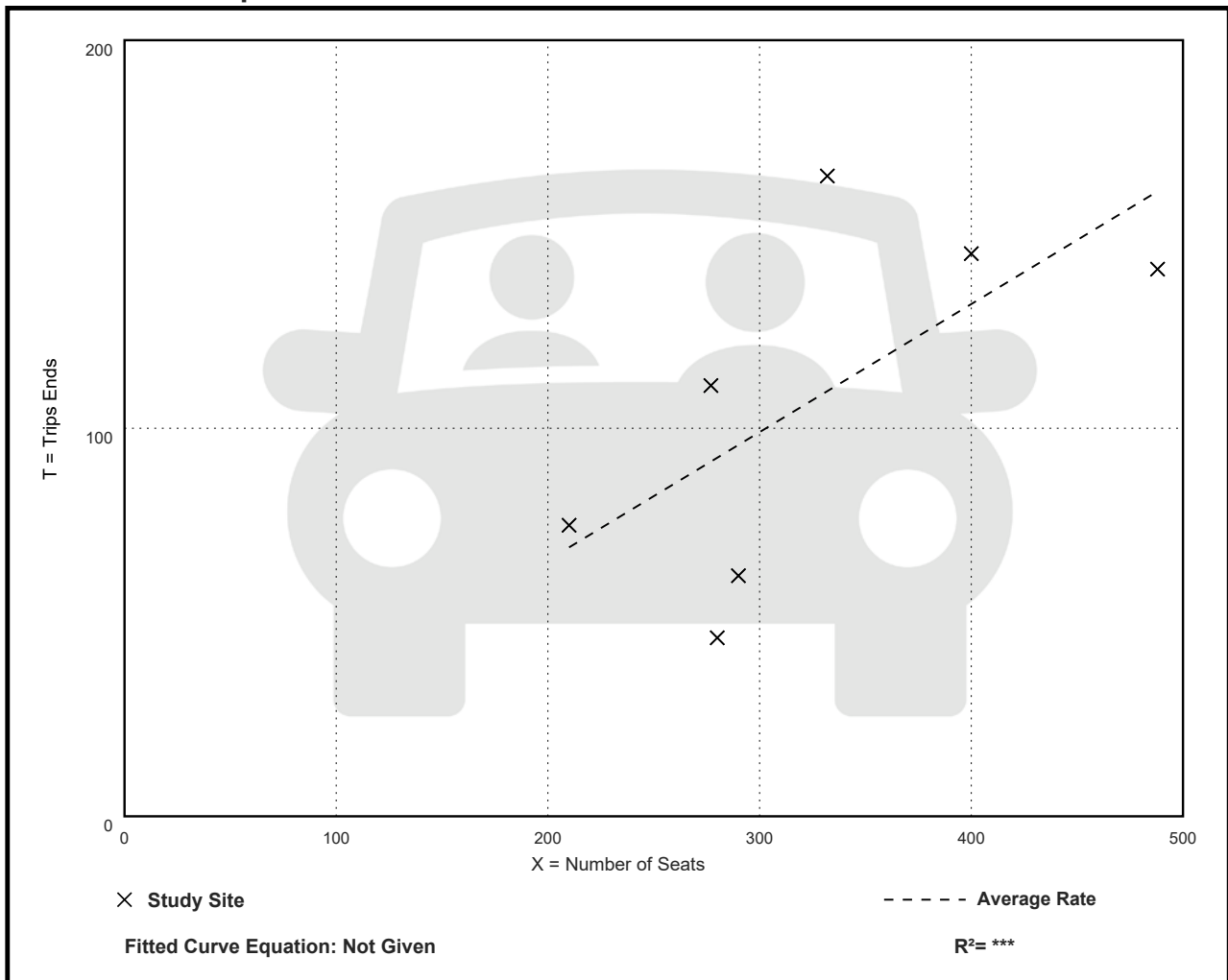
Avg. Num. of Seats: 325

Directional Distribution: 59% entering, 41% exiting

## Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.33	0.16 - 0.50	0.11

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Vehicle Trip Ends vs: Seats**  
**On a: Sunday**

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

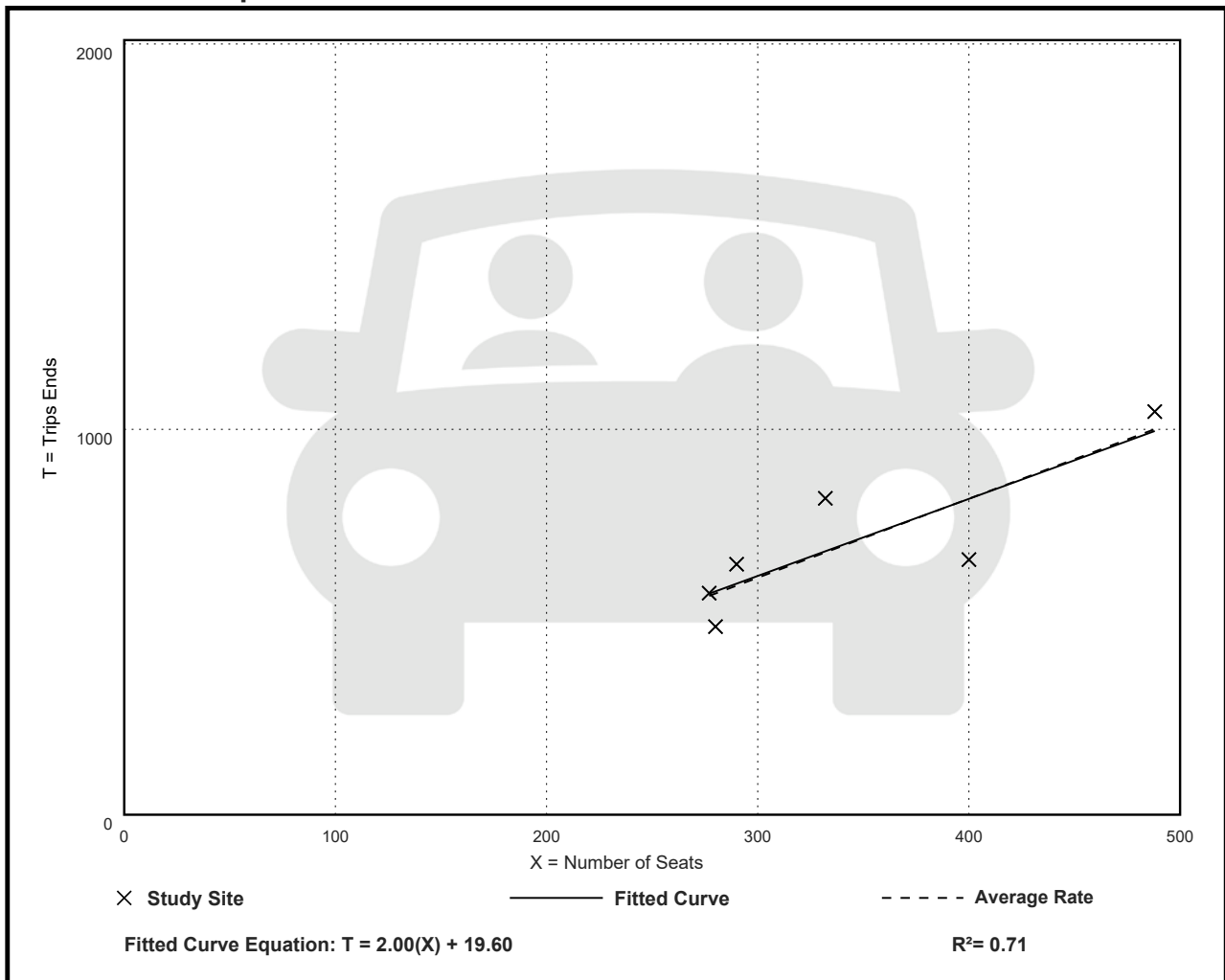
Avg. Num. of Seats: 345

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
2.05	1.66 - 2.47	0.31

## Data Plot and Equation



# Fine Dining Restaurant (931)

## Vehicle Trip Ends vs: Seats

On a: Sunday, Peak Hour of Generator

**Setting/Location: General Urban/Suburban**

Number of Studies: 6

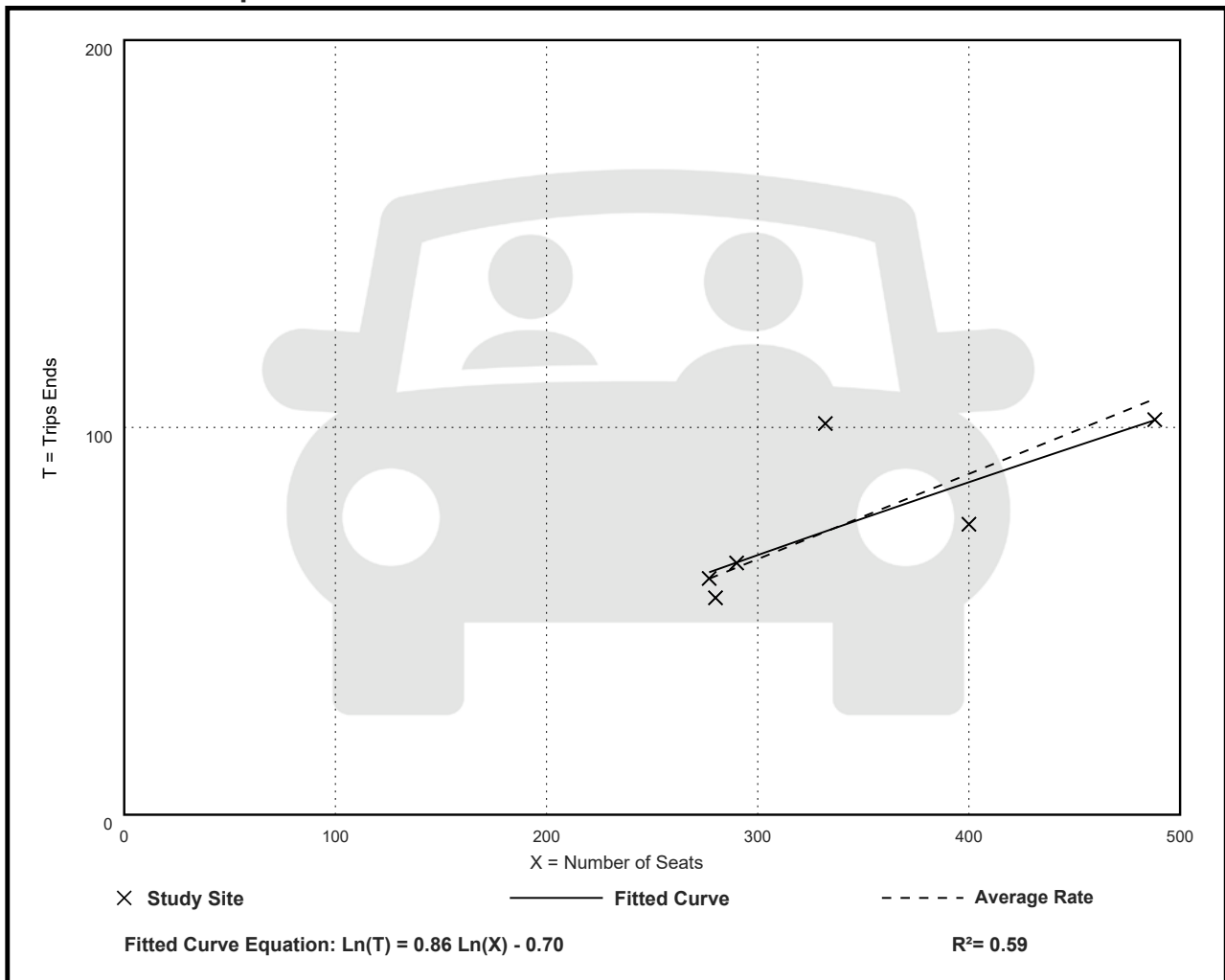
Avg. Num. of Seats: 345

Directional Distribution: 63% entering, 37% exiting

### Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.22	0.19 - 0.30	0.04

### Data Plot and Equation



# Fine Dining Restaurant (931)

Vehicle Trip Ends vs: Employees

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 3

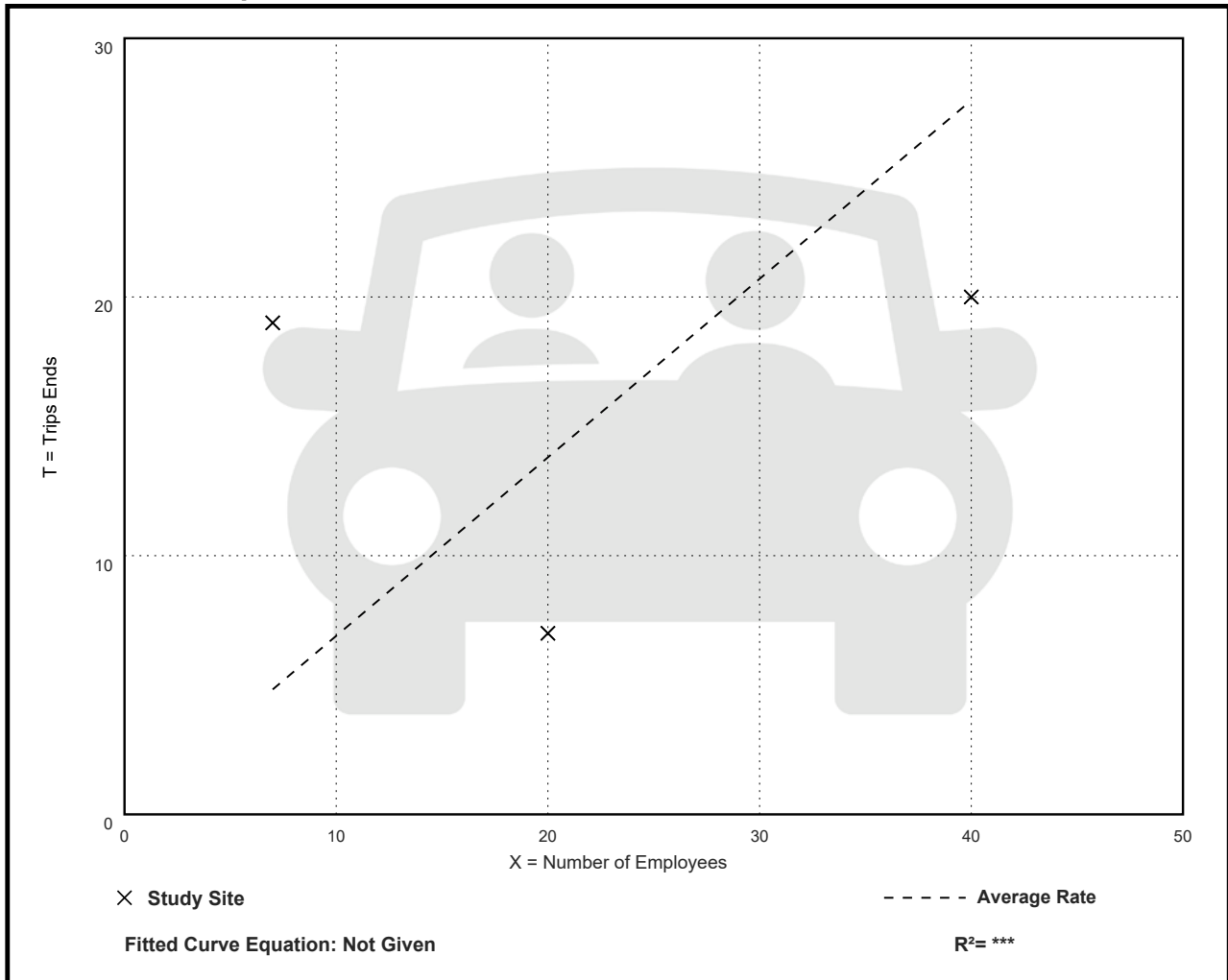
Avg. Num. of Employees: 22

Directional Distribution: 56% entering, 44% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.69	0.35 - 2.71	0.85

## Data Plot and Equation





# Fine Dining Restaurant (931)

**Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GFA**

**On a: Weekday,  
AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 1

Avg. 1000 Sq. Ft. GFA: 5

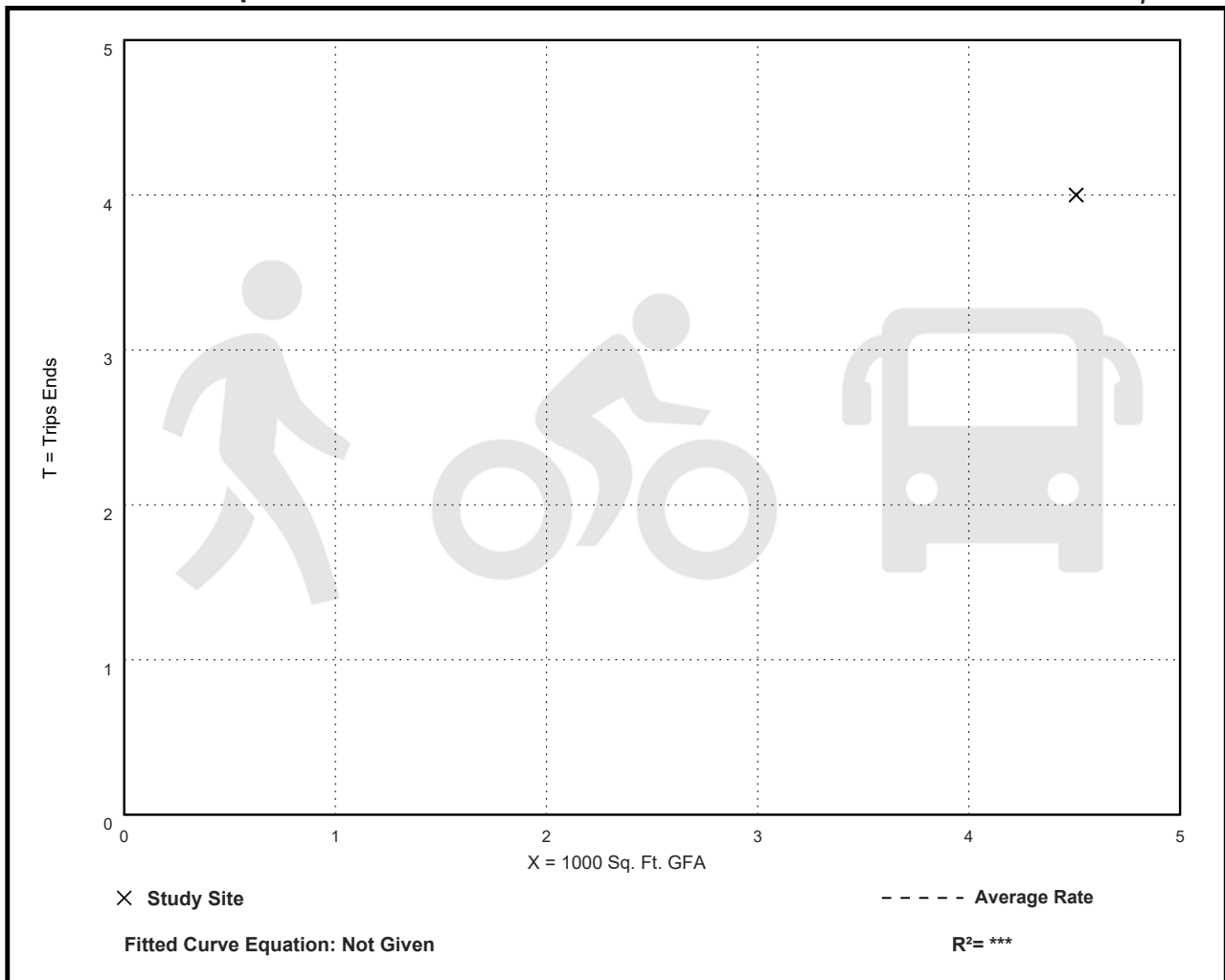
Directional Distribution: 50% entering, 50% exiting

## Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.89	0.89 - 0.89	***

## Data Plot and Equation

*Caution – Small Sample Size*



# Fine Dining Restaurant (931)

**Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GFA**

On a: **Weekday,**  
**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 5

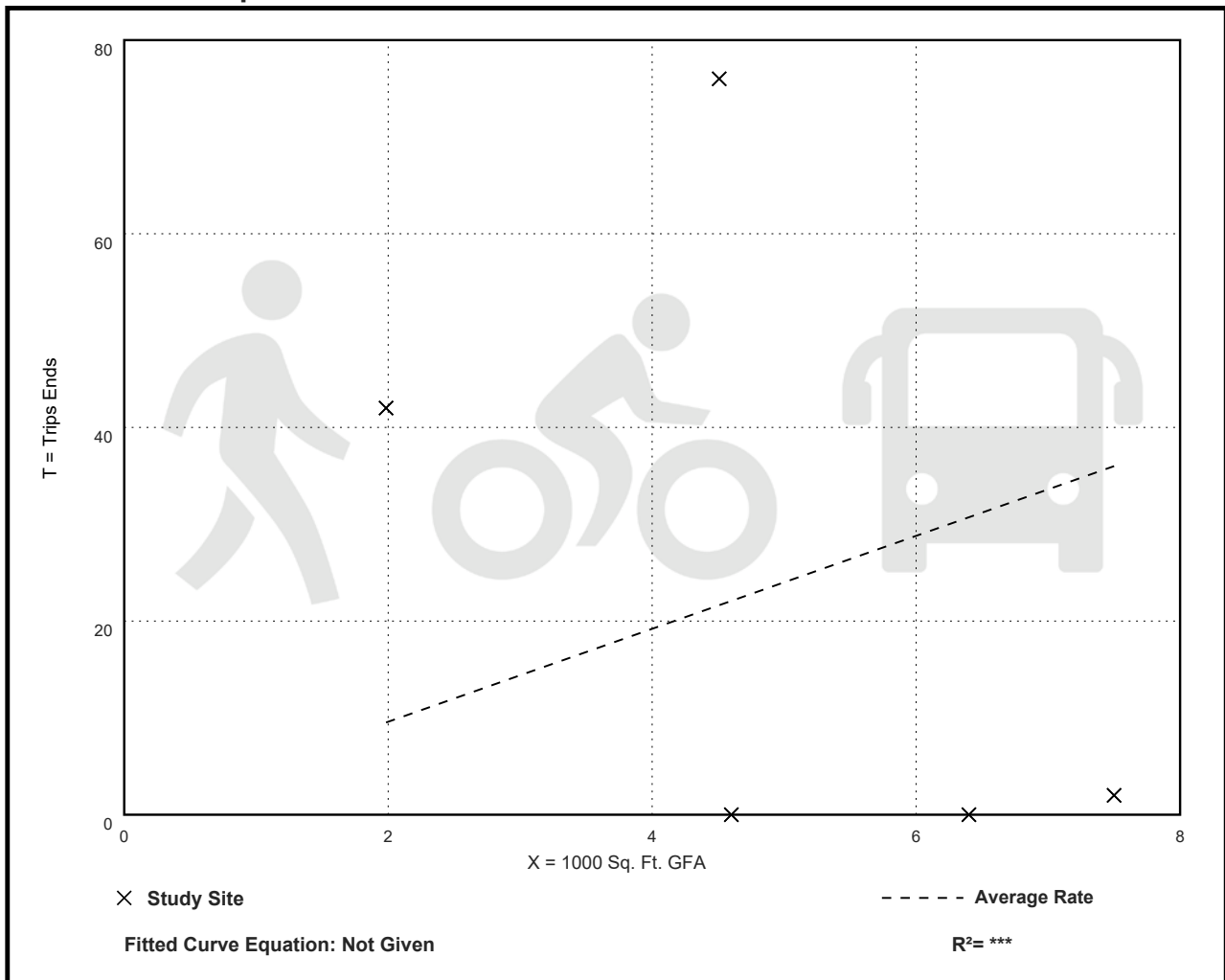
Avg. 1000 Sq. Ft. GFA: 5

Directional Distribution: 47% entering, 53% exiting

## Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.80	0.00 - 21.17	8.93

## Data Plot and Equation



# Fine Dining Restaurant (931)

**Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GFA**

**On a: Saturday, Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 2

Avg. 1000 Sq. Ft. GFA: 3

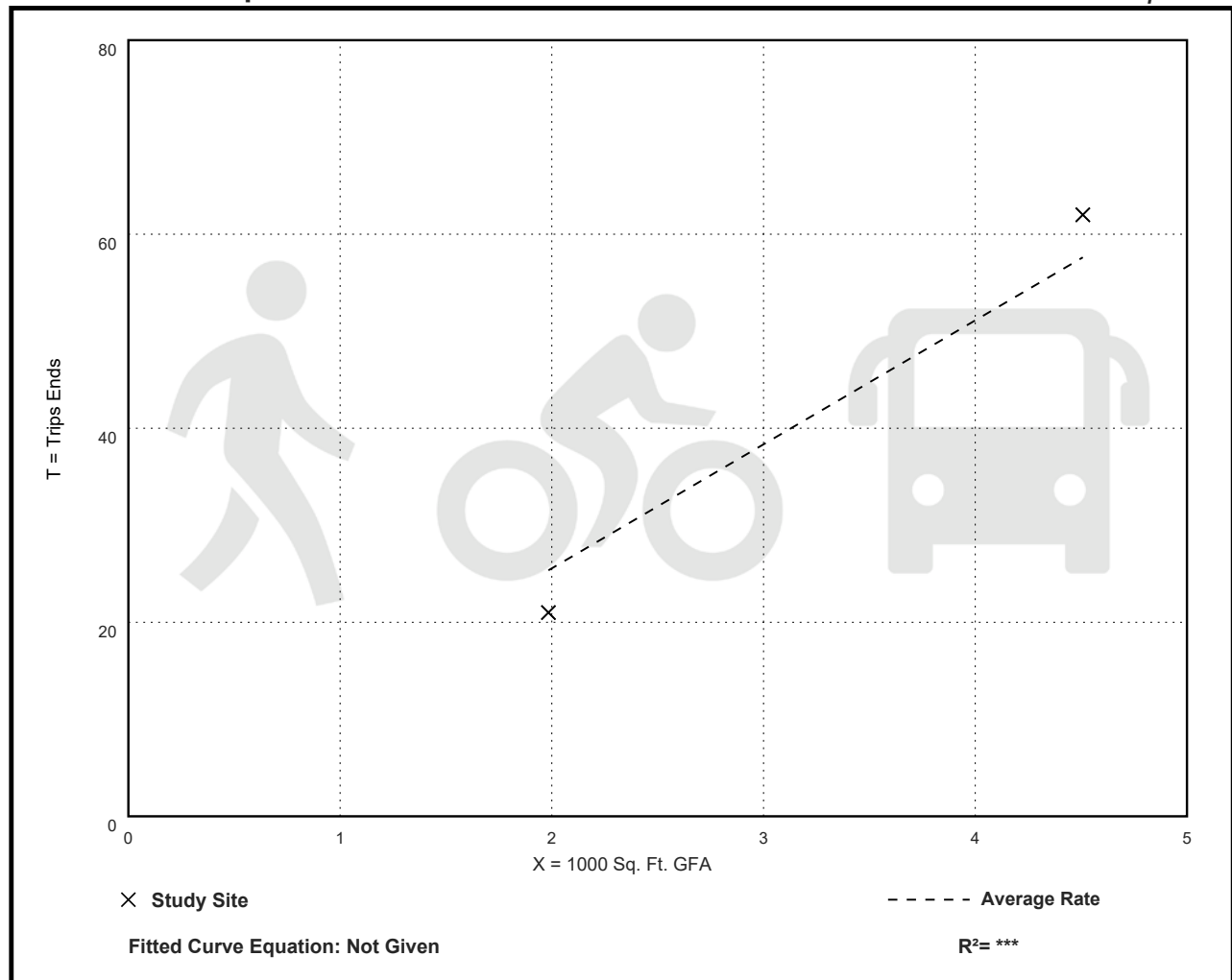
Directional Distribution: 40% entering, 60% exiting

## Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
12.78	10.58 - 13.75	***

## Data Plot and Equation

*Caution – Small Sample Size*



# Fine Dining Restaurant (931)

**Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GFA**

**On a: Sunday, Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 2

Avg. 1000 Sq. Ft. GFA: 3

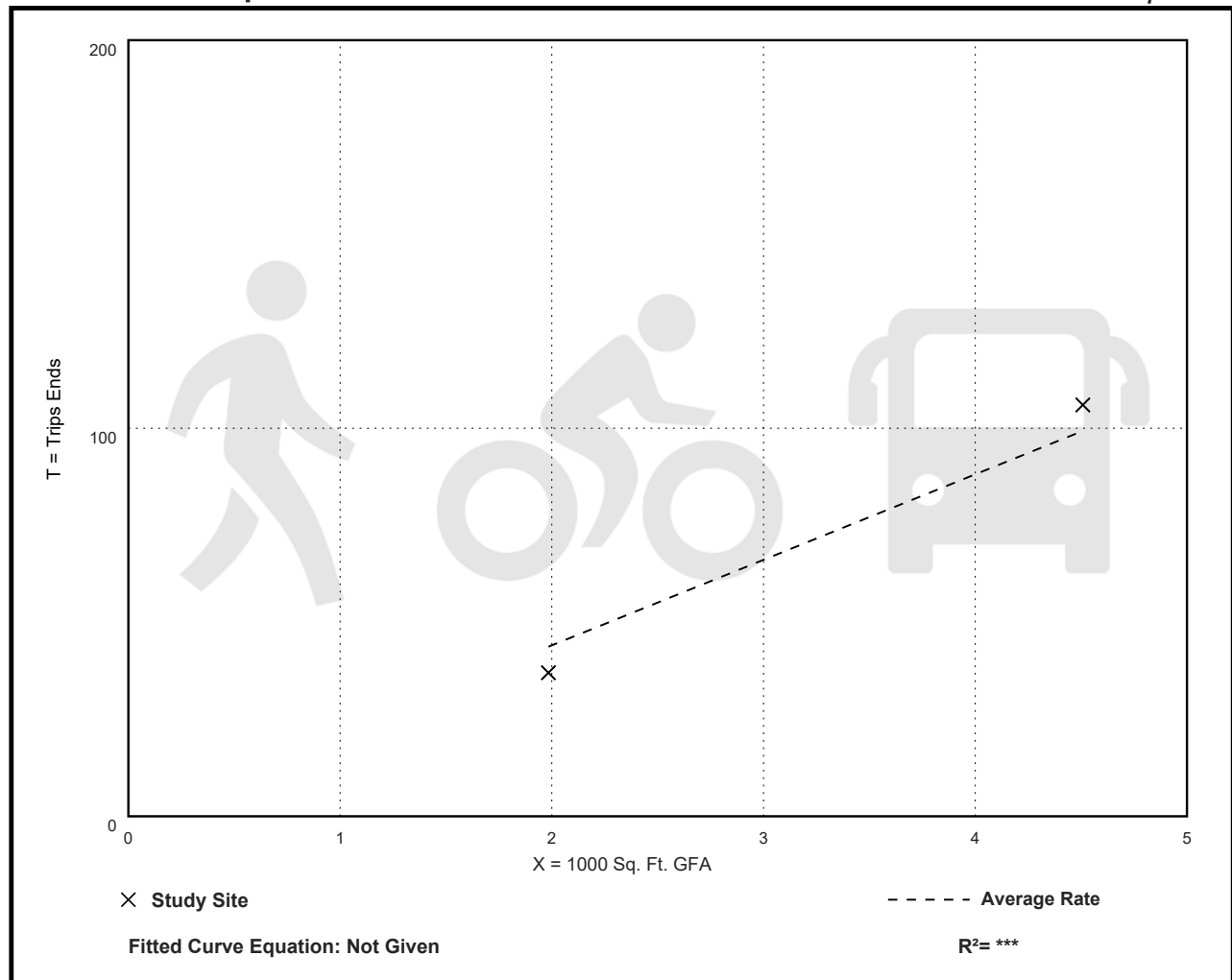
Directional Distribution: 59% entering, 41% exiting

## Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
22.03	18.65 - 23.51	***

## Data Plot and Equation

*Caution – Small Sample Size*



# Fine Dining Restaurant (931)

## Walk+Bike+Transit Trip Ends vs: Seats

On a: **Weekday,**  
**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**

Number of Studies: 3

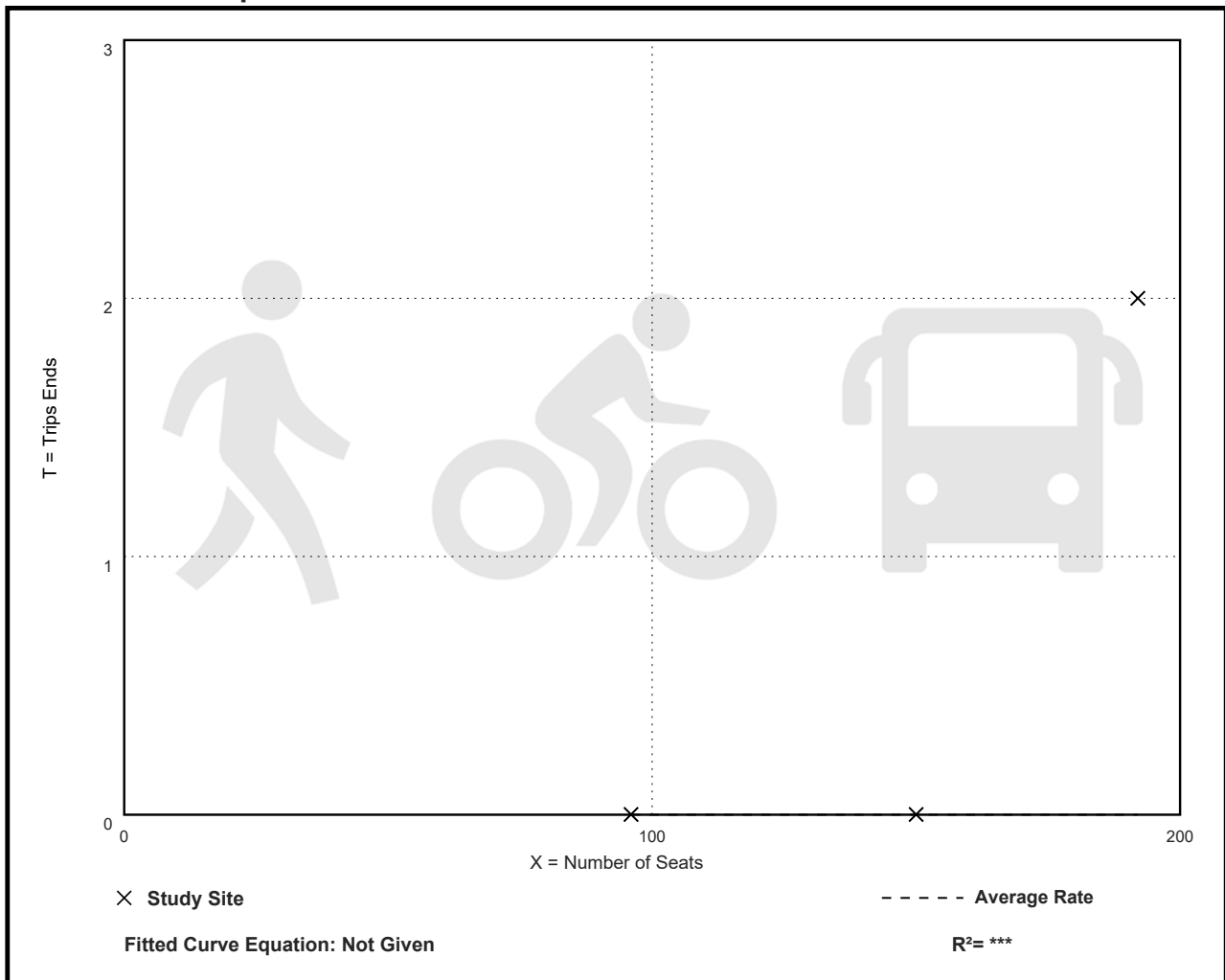
Avg. Num. of Seats: 146

Directional Distribution: 47% entering, 53% exiting

### Walk+Bike+Transit Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.00	0.00 - 0.01	0.01

### Data Plot and Equation





**Table E.28 Pass-By and Non-Pass-By Trips Saturday, Mid-Day Peak Period  
Land Use Code 912—Drive-in Bank**

SIZE (1,000 SQ. FT. GFA)	LOCATION	SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
						PRIMARY	DIVERTED	TOTAL		
3.8	Colonial Park, PA	March 2005	63	11:15 a.m.–12:15 p.m.	33	—	—	67	—	McMahon Associates, Inc.
3.8	Camp Hill Mall, PA	March 2005	103	11:00 a.m.–12:00 p.m.	77	—	—	23	—	McMahon Associates, Inc.
3.8	Exeter Twp, PA	March 2005	34	10:30–11:30 a.m.	37	—	—	63	—	McMahon Associates, Inc.
3.8	York, PA	March 2005	53	10:15–11:15 a.m.	33	—	—	67	—	McMahon Associates, Inc.
3.8	York, PA	March 2005	25	10:45–11:45 a.m.	12	—	—	88	—	McMahon Associates, Inc.

Average Pass-By Trip Percentage: 38

“—” means no data were provided

**Table E.29 Pass-By and Non-Pass-By Trips Weekday, PM Peak Period  
Land Use Code 931—Quality Restaurant**

SEATS	SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS- BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
							PRIMARY	DIVERTED	TOTAL		
240	12	Louisville area, KY	July 1993	38	4:00–6:00 p.m.	26	36	38	74	4,145	Barton-Aschman Assoc.
—	8	Orlando, FL	1992	168	4:00–8:00 p.m.	45	—	—	55	—	TPD Inc.
—	8.8	Orlando, FL	1992	84	2:00–6:00 p.m.	44	40	16	56	—	TPD Inc.
—	6.5	Orlando, FL	1995	173	2:00–6:00 p.m.	62	—	—	38	—	TPD Inc.

Average Pass-By Trip Percentage: 44

“—” means no data were provided

# **APPENDIX C**

**Signal Timing, PSCF, Historical Data,  
and Growth Rate**







**TOD Schedule Report**  
for 2644: Alton Rd&15 St

Print Date:  
10/4/2021

Print Time:  
3:10 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2644	Alton Rd&15 St	DOW-2	TOD	[10] PRE-PM PEAK	150	115	N/A	0	Max 0

**Splits**

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
NBL	SBT	-	WBT	SBL	NBT	-	EBT
0	0	0	0	0	0	0	0
							

Active Phase Bank: Phase Bank 1

Phase	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>	
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
1 NBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	18	12	12	4	2	
2 SBT	7	7	7	12	12	12	7	7	7	1	1	1	40	40	40	0	0	0	4	2	
3 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 WBT	7	7	7	20	20	20	7	7	7	2.5	-2.5	-2.5	20	12	12	50	24	24	4	2.1	
5 SBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	18	12	12	4	2	
6 NBT	7	7	7	12	12	12	7	7	7	1	1	1	40	40	40	0	0	0	4	2	
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 EBT	7	7	7	20	20	20	7	7	7	2.5	-2.5	-2.5	20	12	12	60	24	24	4	2.1	

Last In Service Date: unknown

<b>Permitted Phases</b>	
	<b>12345678</b>
Default	12-456-8
External Permit 0	12-456-8
External Permit 1	12-456-8
External Permit 2	12-456-8

**TOD Schedule Report**  
for 2644: Alton Rd&15 St

Print Date:  
10/4/2021

Print Time:  
3:10 PM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 NBL	2 SBT	3 -	4 WBT	5 SBL	6 NBT	7 -	8 EBT		
1		100	7	48	0	27	7	48	0	27	0	0
3		120	10	48	0	44	10	48	0	44	0	100
5		150	14	68	0	50	14	68	0	50	0	85
10		150	14	68	0	50	14	68	0	50	0	115
13		130	11	74	0	27	11	74	0	27	0	38
19		120	11	64	0	27	11	64	0	27	0	30
20		140	14	64	0	44	14	64	0	44	0	98
21		140	8	64	0	50	8	64	0	50	0	54
22		120	11	64	0	27	11	64	0	27	0	15
25		140	8	57	0	57	8	57	0	57	0	49
26		200	12	143	0	27	12	143	0	27	0	166
27		180	8	97	0	57	8	97	0	57	0	71

Local TOD Schedule		
Time	Plan	DOW
0000	1	Su M T W Th F S
0600	3	Su M T W Th F S
0800	5	M T W Th F
0800	19	Su S
1000	20	Su S
1300	10	M T W Th F
1900	13	Su M T W Th F S
2000	22	Su S

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-----	SuM T W ThF S
0000	VEH RECALL	----4--	M T W ThF
0000	TOD LOCAL MULTIFU	----4--	SuM T W ThF S
0500	TOD LOCAL MULTIFU	-----	SuM T W ThF S
0500	VEH RECALL	-----	M T W ThF
0500	PED RECALL	8--4--	SuM T W ThF S
0600	TOD OUTPUTS	-----	M T W ThF
2000	TOD OUTPUTS	8-----	M T W ThF
2200	PED RECALL	-----	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-----	SuM T W ThF S
0000	VEH RECALL	----4--	M T W ThF
0000	TOD LOCAL MULTIFUNCT	----4--	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	-----	SuM T W ThF S
0500	VEH RECALL	-----	M T W ThF
0500	PED RECALL	8--4--	SuM T W ThF S
0600	TOD OUTPUTS	-----	M T W ThF
0700	TOD OUTPUTS	-----	Su S
2000	TOD OUTPUTS	8-----	M T W ThF
2200	TOD OUTPUTS	8-----	Su S
2200	PED RECALL	-----	SuM T W ThF S

- \* Settings**
- Blank - FREE - Phase Bank 1, Max 1
  - Blank - Plan - Phase Bank 1, Max 2
  - 1 - Phase Bank 2, Max 1
  - 2 - Phase Bank 2, Max 2
  - 3 - Phase Bank 3, Max 1
  - 4 - Phase Bank 3, Max 2
  - 5 - EXTERNAL PERMIT 1
  - 6 - EXTERNAL PERMIT 2
  - 7 - X-PED OMIT
  - 8 - TBA

**No Calendar Defined/Enabled**

**TOD Schedule Report**  
for 2800: Washington Av&11 St

Print Date:  
10/4/2021

Print Time:  
3:33 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2800	Washington Av&11 St	DOW-2	TOD	N/A	0	0	N/A	0	Max 0

**Splits**

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
-	NBT	-	EBT	-	SBT	-	WBT
0	0	0	0	0	0	0	0

Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 NBT	7	7	7	11	11	11	7	7	7	1	1	1	40	50	40	0	0	0	4	2
3 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 EBT	7	7	7	23	23	23	7	7	7	1	1	1	30	30	30	32	0	0	4	2
5 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 SBT	7	7	7	11	11	11	7	7	7	1	1	1	40	50	40	0	0	0	4	2
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 WBT	7	7	7	23	23	23	7	7	7	1	1	1	30	30	30	32	0	0	4	2

Last In Service Date: unknown

<b>Permitted Phases</b>	
	<b>12345678</b>
Default	-2-4-6-8
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

**TOD Schedule Report**  
for 2800: Washington Av&11 St

Print Date:  
10/4/2021

Print Time:  
3:33 PM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 -	2 NBT	3 -	4 EBT	5 -	6 SBT	7 -	8 WBT		
1		90	0	48	0	30	0	48	0	30	0	44
2		110	0	68	0	30	0	68	0	30	0	93
4		120	0	78	0	30	0	78	0	30	0	87
5		90	0	48	0	30	0	48	0	30	0	36
6		120	0	78	0	30	0	78	0	30	0	113
7		90	0	48	0	30	0	48	0	30	0	55
8		110	0	68	0	30	0	68	0	30	0	90
10		110	0	68	0	30	0	68	0	30	0	40
11		100	0	58	0	30	0	58	0	30	0	76
12		120	0	78	0	30	0	78	0	30	0	107
14		130	0	88	0	30	0	88	0	30	0	17
15		110	0	68	0	30	0	68	0	30	0	54
16		150	0	108	0	30	0	108	0	30	0	54
18		90	0	48	0	30	0	48	0	30	0	35
19		100	0	58	0	30	0	58	0	30	0	15
20		110	0	68	0	30	0	68	0	30	0	15
21		120	0	78	0	30	0	78	0	30	0	0

Local TOD Schedule		
Time	Plan	DOW
0000	8	Su M T W Th F S
0200	Free	Su M T W Th F S
0530	10	Su S
0545	10	M T W Th F
0715	2	M T W Th F
0800	11	M T W Th F
0900	4	M T W Th F
1000	4	Su S
1130	14	M T W Th F
1330	12	M T W Th F
1530	6	M T W Th F
1800	8	M T W Th F
2000	8	Su S

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----	SuM T W ThF S
0000	TOD LOCAL MULTIFU	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFU	-----	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	-----	SuM T W ThF S

* Settings
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

**No Calendar Defined/Enabled**

**TOD Schedule Report**  
for 2805: Washington Av&15 St

Print Date:  
10/4/2021

Print Time:  
3:34 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2805	Washington Av&15 St	DOW-2	TOD	N/A	0	0	N/A	0	Max 0

**Splits**

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
-	SBT	-	-	-	NBT	-	EBT
0	0	0	0	0	0	0	0



Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 SBT	7	7	7	16	16	16	7	7	7	1	1	1	35	30	30	0	30	30	4	2
3 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 NBT	7	7	7	16	16	16	7	7	7	1	1	1	35	30	30	0	30	30	4	2
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 EBT	5	5	5	24	24	24	5	5	5	1	1	1	12	15	12	31	30	30	4	2

Last In Service Date: 05/13/2010 13:24

<b>Permitted Phases</b>	
	<b>12345678</b>
Default	-2---6-8
External Permit 0	-2---6-8
External Permit 1	-2---6-8
External Permit 2	-2---6-8

**TOD Schedule Report**  
for 2805: Washington Av&15 St

Print Date:  
10/4/2021

Print Time:  
3:34 PM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 -	2 SBT	3 -	4 -	5 -	6 NBT	7 -	8 EBT		
1		90	0	49	0	0	0	49	0	29	0	81
2		110	0	69	0	0	0	69	0	29	0	35
4		120	0	79	0	0	0	79	0	29	0	29
5		90	0	49	0	0	0	49	0	29	0	72
6		120	0	79	0	0	0	79	0	29	0	57
7		90	0	49	0	0	0	49	0	29	0	1
8		110	0	69	0	0	0	69	0	29	0	35
10		110	0	69	0	0	0	69	0	29	0	95
11		100	0	59	0	0	0	59	0	29	0	20
12		120	0	79	0	0	0	79	0	29	0	49
14		130	0	89	0	0	0	89	0	29	0	92
15		110	0	69	0	0	0	69	0	29	0	105
16		150	0	109	0	0	0	109	0	29	0	1
18		90	0	49	0	0	0	49	0	29	0	85
19		100	0	59	0	0	0	59	0	29	0	18
20		110	0	69	0	0	0	69	0	29	0	18
21		120	0	79	0	0	0	79	0	29	0	0

Local TOD Schedule		
Time	Plan	DOW
0000	8	Su M T W Th F S
0200	Free	Su M T W Th F S
0530	10	Su S
0545	10	M T W Th F
0715	2	M T W Th F
0800	11	M T W Th F
0900	4	M T W Th F
1000	4	Su S
1130	14	M T W Th F
1330	12	M T W Th F
1530	6	M T W Th F
1800	8	M T W Th F
2000	8	Su S

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-----1	SuM T W ThF S
0000	TOD LOCAL MULTIFU	----4--	SuM T W ThF S
0100	TOD OUTPUTS	8----3--	SuM T W
0500	TOD LOCAL MULTIFU	-----	SuM T W ThF S
0600	TOD OUTPUTS	8-----	M T W ThF
0700	TOD OUTPUTS	-----	M T W ThF
0800	TOD OUTPUTS	-----	M T W ThF
2130	TOD OUTPUTS	8-----1	SuM T W ThF S
2300	TOD OUTPUTS	8-----	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-----1	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	----4--	SuM T W ThF S
0100	TOD OUTPUTS	8----3--	SuM T W
0200	TOD OUTPUTS	8----3--	ThF S
0500	TOD LOCAL MULTIFUNCT	-----	SuM T W ThF S
0600	TOD OUTPUTS	8-----	M T W ThF
0700	TOD OUTPUTS	-----	Su S
0700	TOD OUTPUTS	-----	M T W ThF
0800	TOD OUTPUTS	-----	M T W ThF
2130	TOD OUTPUTS	8-----1	SuM T W ThF S
2300	TOD OUTPUTS	8-----	SuM T W ThF S

* Settings
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

**No Calendar Defined/Enabled**







**TOD Schedule Report**  
for 2808: Washington Av&17 St

Print Date:  
10/4/2021

Print Time:  
3:35 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2808	Washington Av&17 St	DOW-2	TOD	N/A	0	0	N/A	0	Max 0

**Splits**

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
NBL	SBT	EBL	WBT	-	NBT	-	EBT
0	0	0	0	0	0	0	0
							

Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 NBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	9	7	9	3.7	2.3
2 SBT	5	5	5	16	16	16	5	5	5	1	1	1	15	15	15	0	15	15	4	2.3
3 EBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	15	15	15	3.7	3.4
4 WBT	5	5	5	18	18	18	7	7	7	2.5	2.5	2.5	50	18	12	50	24	24	4	3.4
5 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3
6 NBT	5	5	5	16	16	16	5	5	5	1	1	1	15	15	15	0	15	15	4	2.3
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 EBT	5	5	5	18	18	18	7	7	7	2.5	2.5	2.5	50	18	12	20	24	24	4	3.4

Last In Service Date: unknown

<b>Permitted Phases</b>	
	<b>12345678</b>
Default	1234-6-8
External Permit 0	1234-6-8
External Permit 1	1234-6-8
External Permit 2	1234-6-8

**TOD Schedule Report**  
for 2808: Washington Av&17 St

Print Date:  
10/4/2021

Print Time:  
3:35 PM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 NBL	2 SBT	3 EBL	4 WBT	5 -	6 NBT	7 -	8 EBT		
1		90	6	28	6	24	0	40	0	37	0	84
2		110	6	48	6	24	0	60	0	37	0	102
4		120	6	58	6	24	0	70	0	37	0	105
5		90	6	28	6	24	0	40	0	37	0	69
6		120	6	58	6	24	0	70	0	37	0	4
7		90	6	28	6	24	0	40	0	37	0	59
8		110	6	48	6	24	0	60	0	37	0	87
10		110	6	48	6	24	0	60	0	37	0	48
11		100	6	38	6	24	0	50	0	37	0	93
12		120	6	58	6	24	0	70	0	37	0	108
14		130	6	68	6	24	0	80	0	37	0	24
15		110	6	48	6	24	0	60	0	37	0	102
16		150	6	88	6	24	0	100	0	37	0	82
18		90	6	28	6	24	0	40	0	37	0	29
19		100	6	38	6	24	0	50	0	37	0	0
20		110	6	48	6	24	0	60	0	37	0	0
21		120	6	48	6	34	0	60	0	47	0	19

Local TOD Schedule		
Time	Plan	DOW
0000	8	Su M T W Th F S
0200	Free	Su M T W Th F S
0530	10	Su S
0545	10	M T W Th F
0715	2	M T W Th F
0800	11	M T W Th F
0900	4	M T W Th F
1000	4	Su S
1130	14	M T W Th F
1330	12	M T W Th F
1530	6	M T W Th F
1800	8	M T W Th F
2000	8	Su S

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	PED RECALL	8---4---	SuM T W ThF S
0000	TOD OUTPUTS	-----	SuM T W ThF S
0000	TOD LOCAL MULTIFU	----4---	SuM T W ThF S
0400	TOD LOCAL MULTIFU	-----	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	PED RECALL	8---4---	SuM T W ThF S
0000	TOD OUTPUTS	-----	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	----4---	SuM T W ThF S
0400	TOD LOCAL MULTIFUNCT	-----	SuM T W ThF S

* Settings
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

**No Calendar Defined/Enabled**



# SIGNAL OPERATING PLAN



	Direction	NB		SB		EB		WB		Ped Heads				
Timing Phases	Head No.	1/6	6	5/2	2		8		4	P2	P6	P4	P8	Movements/Display/Actuation
(1+5) N/SBLT ALTON RD (ACTUATE)	Dwell	<G/R	R	<G/R	R		R		R	DW	DW	DW	DW	
	Clearto (1+6)	<G/R	R	<Y/R	R		R		R	DW	DW	DW	DW	
	Clearto (2+5)	<Y/R	R	<G/R	R		R		R	DW	DW	DW	DW	
	Clearto (2+6)	<Y/R	R	<Y/R	R		R		R	DW	DW	DW	DW	
	Clearto													
(2+5) NB ALTON RD (ACTUATE)	Dwell	R	R	<G/G	G		R		R	W/F	DW	DW	DW	
	Clearto (2+6)	R	R	<Y/G	G		R		R	DW	DW	DW	DW	
	Clearto													
	Clearto													
	Clearto													
(1+6) SB ALTON RD (RECALL)	Dwell	<G/G	G	R	R		R		R	DW	W/F	DW	DW	
	Clearto (2+6)	<Y/G	G	R	R		R		R	DW	DW	DW	DW	
	Clearto													
	Clearto													
	Clearto													
(2+6) N/SB ALTON RD (RECALL)	Dwell	G	G	G	G		R		R	W/F	W/F	DW	DW	
	Clearto (4+8)	Y	Y	Y	Y		R		R	DW	DW	DW	DW	
	Clearto													
	Clearto													
	Clearto													
(4+8) E/WB 15 ST (ACTUATED)	Dwell	R	R	R	R		G		G	DW	DW	W/F	W/F	
	Clearto (1+5)	R	R	R	R		Y		Y	DW	DW	DW	DW	
	Clearto (1+6)	R	R	R	R		Y		Y	DW	DW	DW	DW	
	Clearto (2+6)	R	R	R	R		Y		Y	DW	DW	DW	DW	
	Clearto (2+6)	R	R	R	R		Y		Y	DW	DW	DW	DW	

Flashing Operation

FY FY FY FY FR FR

Page 1 of 1

## Miami-Dade County Public Works Department

Drawn WILLIAM RIVERA PAZ	Date 12/30/2014	<b>ALTON RD &amp; 11 ST</b>		
Checked <i>H. Hernandez</i>	Date 1/6/15	Placed in Service Date	Phasing No. 4	Asset Number 2644



# SIGNAL OPERATING PLAN

Signal Head Number



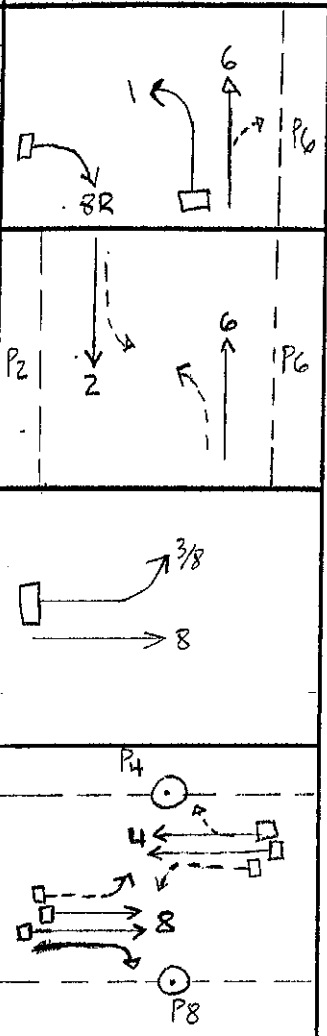
Phase	Clear To	2	6	8	P2	P4	P8						Drawing
Φ 2+6 HEAD (2, 6, P2) NBND & SBND WASHINGTON AV RECALL	R/W	G	G	R	W	DW	DW						
	RED CIR	G	G	R	FDW	DW	DW						
	Φ 8	Y	Y	R	DW	DW	DW						
Φ HEADS (4, P4, P8) EBND 15 ST Φ 8. RECALL P4 & P8 ACTUATED	R/W	R	R	G	DW	W	W						
	RED CIR	R	R	G	DW	FDW	FDW						
	Φ 2+6	R	R	Y	DW	DW	DW						
	R/W												
	R/W												
	R/W												

Flashing Operation	FY	FY	FR										
Miami-Dade County Public Works Department												Sheet   of	
Drawn	Date		WASHINGTON AV & 15 ST										
H. FRANCHILLON	6/9/00												
Check	Date		Placed in Service			Phasing Number			Asset Number				
H. HERNANDEZ	6/14/00		Date			By			2805				
			HORSEPOWER			5							

# SIGNAL OPERATING PLAN



Timing Phases	Direction	NB		SB	EB			WB	Ped Heads				Movements/Display/Actuation
	Head No.	1/6	6	2	3/8	8	8R	4	P2	P6	P4	P8	
1+6 NB WASHINGTON AV ACTUATED	Dwell	←/G	G	R	R	R	R/→	R	DW	W/F	DW	DW	
	Clearance	2+6	←/G	G	R	R	R	R/→	R	DW	DW	DW	DW
2+6 N/S WASHINGTON AV RECALL	Dwell	G	G	G	R	R	R	R	W/F	W/F	DW	DW	
	Clearance	3+8	Y	Y	Y	R	R	R	R	DW	DW	DW	DW
		4+8	Y	Y	Y	R	R	R	R	DW	DW	DW	DW
3+8 EB 17 ST ACTUATED	Dwell	R	R	R	←/G	G	G	R	DW	DW	DW	DW	
	Clearance	4+8	R	R	R	←/G	G	G	R	DW	DW	DW	DW
		1+6	R	R	R	←/Y	Y	Y	R	DW	DW	DW	DW
		2+6	R	R	R	←/Y	Y	Y	R	DW	DW	DW	DW
4+8 E/W 17 ST ACTUATED	Dwell	R	R	R	G	G	G	G	DW	DW	W/F	W/F	
	Clearance	1+6	R	R	R	Y	Y	Y	Y	DW	DW	DW	DW
		2+6	R	R	R	Y	Y	Y	Y	DW	DW	DW	DW
	Dwell												
	Clearance												
	Dwell												
	Clearance												



Flashing Operation    FY   FY   FY   FR   FR   FR   FR    Page 1 of 1

## Miami-Dade County Public Works Department

Drawn	Date	WASHINGTON AV & 17 ST		
H. FRANCILLON	4/10/03			
Checked	Date	Placed in Service	Phasing No.	Asset Number
H. HERNANDEZ	4/11/03	Date	By STI	6
				2808

**TOD Schedule Report**  
for 2745: Meridian Av&15 St

Print Date:  
10/4/2021

Print Time:  
3:24 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2745	Meridian Av&15 St	DOW-2	TOD	N/A	0	0	N/A	0	Max 0

**Splits**

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
-	WBT	-	NBT	-	EBT	-	SBT
0	0	0	0	0	0	0	0

Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	<u>Phase Bank</u>																			
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 WBT	7	7	7	10	10	10	7	7	7	1	1	1	35	35	35	0	0	0	4	2
3 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 NBT	7	7	7	19	19	19	7	7	7	2.5	-2.5	-2.5	26	26	26	0	0	0	4	2
5 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 EBT	7	7	7	10	10	10	7	7	7	1	1	1	35	35	35	0	0	0	4	2
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 SBT	7	7	7	19	19	19	7	7	7	2.5	-2.5	-2.5	26	26	26	0	0	0	4	2

Last In Service Date: unknown

<b>Permitted Phases</b>	
	<b>12345678</b>
Default	-2-4-6-8
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

<u>Current</u>	<u>Plan</u>	<u>Cycle</u>	1	2	3	4	5	6	7	8	<u>Ring Offset</u>	<u>Offset</u>
TOD Schedule			-	WBT	-	NBT	-	EBT	-	SBT		

<b>Local TOD Schedule</b>		
<u>Time</u>	<u>Plan</u>	<u>DOW</u>
0000	Free	Su M T W Th F S

**TOD Schedule Report**  
for 2745: Meridian Av&15 St

Print Date:  
10/4/2021

Print Time:  
3:24 PM

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----	SuM T W ThF S
0000	TOD LOCAL MULTIFU	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFU	-----	SuM T W ThF S
0500	PED RECALL	8---4---	SuM T W ThF S
2200	PED RECALL	-----	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	-----	SuM T W ThF S
0500	PED RECALL	8---4---	SuM T W ThF S
2200	PED RECALL	-----	SuM T W ThF S

* Settings
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

**No Calendar Defined/Enabled**

## TOD Schedule Report

for 2804: Espanola Way&Washington Av

Print Date:  
10/4/2021

Print Time:  
3:34 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2804	Espanola Way&Washington Av	DOW-2	TOD	N/A	0	0	N/A	0	Max 0

### Splits

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
-	SBT	XPD	WBT	-	NBT	-	-
0	0	0	0	0	0	0	0



N/A



Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 SBT	7	7	7	12	12	12	7	7	7	1	1	1	35	35	35	0	35	35	4	2
3 XPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 WBT	7	7	7	18	18	18	7	7	7	1	1	1	12	8	15	30	30	30	4	2
5 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 NBT	7	7	7	12	12	12	7	7	7	1	1	1	35	35	35	0	35	35	4	2
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Last In Service Date: 05/13/2010 14:59

<u>Permitted Phases</u>	
<b>12345678</b>	
Default	-2-4-6--
External Permit 0	-2-4-6--
External Permit 1	-2-4-6--
External Permit 2	-2-4-6--

## TOD Schedule Report

for 2804: Espanola Way & Washington Av

Print Date:  
10/4/2021

Print Time:  
3:34 PM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 -	2 SBT	3 XPD	4 WBT	5 -	6 NBT	7 -	8 -		
1		90	0	38	0	40	0	38	0	0	0	83
2		110	0	58	0	40	0	58	0	0	0	37
4		120	0	68	0	40	0	68	0	0	0	27
5		90	0	38	0	40	0	38	0	0	0	82
6		120	0	68	0	40	0	68	0	0	0	67
7		90	0	38	0	40	0	38	0	0	0	8
8		110	0	58	0	40	0	58	0	0	0	34
10		110	0	58	0	40	0	58	0	0	0	92
11		100	0	48	0	40	0	48	0	0	0	15
12		120	0	68	0	40	0	68	0	0	0	48
14		130	0	78	0	40	0	78	0	0	0	90
15		110	0	58	0	40	0	58	0	0	0	8
16		150	0	98	0	40	0	98	0	0	0	9
18		90	0	38	0	40	0	38	0	0	0	0
19		100	0	48	0	40	0	48	0	0	0	18
20		110	0	58	0	40	0	58	0	0	0	18
21		120	0	68	0	40	0	68	0	0	0	0

Local TOD Schedule		
Time	Plan	DOW
0000	8	Su M T W Th F S
0200	Free	Su M T W Th F S
0530	10	Su S
0545	10	M T W Th F
0715	2	M T W Th F
0800	11	M T W Th F
0900	4	M T W Th F
1000	4	Su S
1130	14	M T W Th F
1330	12	M T W Th F
1530	6	M T W Th F
1800	8	M T W Th F
2000	8	Su S

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----1	SuM T W ThF S
0200	TOD OUTPUTS	-7-----	SuM T W ThF S
0500	TOD OUTPUTS	-----1	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----1	SuM T W ThF S
0200	TOD OUTPUTS	-7-----	SuM T W ThF S
0500	TOD OUTPUTS	-----1	SuM T W ThF S

* Settings
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

**No Calendar Defined/Enabled**

**TOD Schedule Report**  
for 2806: Washington Av&16 St


Print Date:  
10/4/2021

Print Time:  
3:34 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2806	Washington Av&16 St	DOW-2	TOD	N/A	0	0	N/A	0	Max 0

**Splits**

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
-	SBT	-	WBT	SBL	NBT	-	EBT
0	0	0	0	0	0	0	0



Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 SBT	7	7	7	14	14	14	7	7	7	1	1	1	25	31	25	0	28	28	4	2
3 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 WBT	5	5	5	28	28	28	7	7	7	2.5	-2.5	-2.5	12	15	12	28	28	28	4	2
5 SBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	7	7	7	4	2
6 NBT	7	7	7	14	14	14	7	7	7	1	1	1	25	31	25	0	28	28	4	2
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 EBT	5	5	5	28	28	28	7	7	7	2.5	-2.5	-2.5	12	15	12	28	28	28	4	2

Last In Service Date: 05/13/2010 12:37

<b>Permitted Phases</b>	
	<b>12345678</b>
Default	-2-456-8
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

**TOD Schedule Report**  
for 2806: Washington Av&16 St

Print Date:  
10/4/2021

Print Time:  
3:34 PM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 -	2 SBT	3 -	4 WBT	5 SBL	6 NBT	7 -	8 EBT		
1		90	0	45	0	33	5	34	0	33	0	60
2		110	0	65	0	33	5	54	0	33	0	20
4		120	0	75	0	33	5	64	0	33	0	12
5		90	0	45	0	33	5	34	0	33	0	45
6		120	0	75	0	33	5	64	0	33	0	33
7		90	0	45	0	33	5	34	0	33	0	70
8		110	0	65	0	33	5	54	0	33	0	8
10		110	0	65	0	33	5	54	0	33	0	77
11		100	0	55	0	33	5	44	0	33	0	1
12		120	0	75	0	33	5	64	0	33	0	34
14		130	0	85	0	33	5	74	0	33	0	54
15		110	0	65	0	33	5	54	0	33	0	86
16		150	0	105	0	33	5	94	0	33	0	114
18		90	0	45	0	33	5	34	0	33	0	57
19		100	0	55	0	33	5	44	0	33	0	0
20		110	0	65	0	33	5	54	0	33	0	0
21		120	0	75	0	33	5	64	0	33	0	112

Local TOD Schedule		
Time	Plan	DOW
0000	8	Su M T W Th F S
0200	Free	Su M T W Th F S
0530	10	Su S
0545	10	M T W Th F
0715	2	M T W Th F
0800	11	M T W Th F
0900	4	M T W Th F
1000	4	Su S
1130	14	M T W Th F
1330	12	M T W Th F
1530	6	M T W Th F
1800	8	M T W Th F
2000	8	Su S

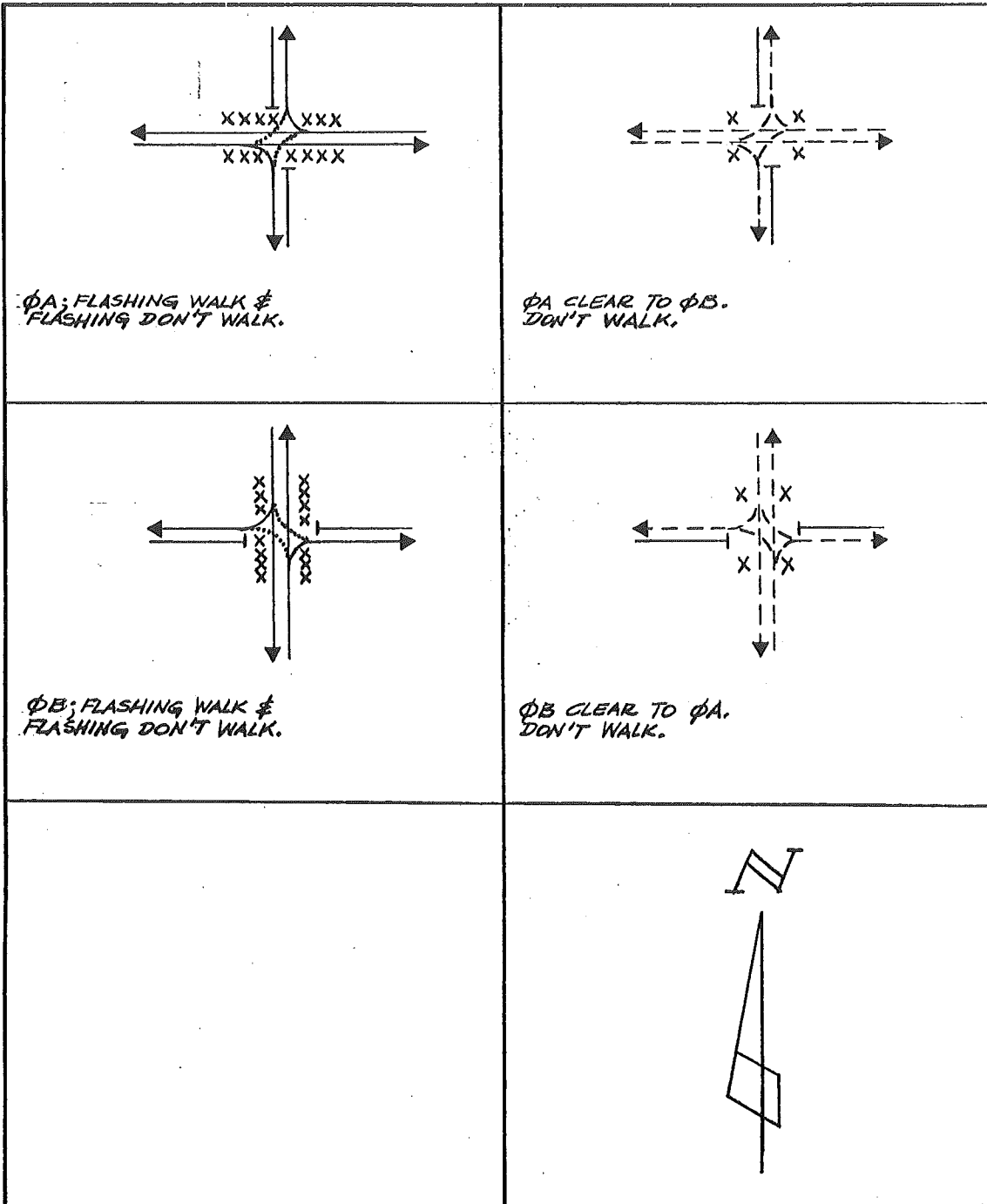
Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	PED RECALL	8--4--	SuM T W ThF S
0000	TOD OUTPUTS	8--5---	SuM T W ThF S
0000	TOD LOCAL MULTIFU	---4---	SuM T W ThF S
0100	TOD OUTPUTS	8--5--1	M T W ThF
0200	TOD OUTPUTS	8--5---	M T W ThF
0500	TOD LOCAL MULTIFU	-----	SuM T W ThF S
0600	TOD OUTPUTS	8--5---	M T W ThF
0715	TOD OUTPUTS	-----	SuM T W ThF S
2300	TOD OUTPUTS	8-----	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	PED RECALL	8--4--	SuM T W ThF S
0000	TOD OUTPUTS	8--5---	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0100	TOD OUTPUTS	8--5--1	M T W ThF
0200	TOD OUTPUTS	8--5---	M T W ThF
0500	TOD LOCAL MULTIFUNCT	-----	SuM T W ThF S
0600	TOD OUTPUTS	8--5---	M T W ThF
0715	TOD OUTPUTS	-----	SuM T W ThF S
2300	TOD OUTPUTS	8-----	SuM T W ThF S

* Settings
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

**No Calendar Defined/Enabled**

TRAFFIC SIGNAL INTERVAL DIAGRAMS



ΦA; FLASHING WALK & FLASHING DON'T WALK.

ΦA CLEAR TO ΦB. DON'T WALK.

ΦB; FLASHING WALK & FLASHING DON'T WALK.

ΦB CLEAR TO ΦA. DON'T WALK.

LEGEND

- ←———— A legal movement on green indication.
- ←..... A movement that must yield to green indication.
- ←----- Movement on yellow indication.
- Stopped condition on red indication.
- XXXXXXXXXX Pedestrian movement
- XX XX Pedestrian clearance

ASSET # 32745

Drawn <i>E.L. ROQUE</i>	Date <i>2/24/76</i>	METROPOLITAN DADE COUNTY DEPARTMENT OF TRAFFIC AND TRANSPORTATION	
Check <i>Wadsworth</i>	Date <i>2/27/76</i>	MERIDIAN AVE. & 15 ST.	
Division Engineer	Date	Placed in Service Date: <i>11/12/75</i>	By: <i>CONTRACTOR</i>
		Timing Number —	Phasing Number <i>2</i>

# SIGNAL OPERATING PLAN



	Direction	SB	NB	WB			Ped Heads	
Timing Phases	Head No.	2	6	7 4			P4 P6 P8	Movements/Display/Actuation
[2+6]  WASHINGTON AV	Dwell	G	G	R R			DW DW DW	
	EXC	Y	Y	R R			DW DW DW	
RECALL	C l e a r t o							
[3] EXCLUSIVE PEDESTRIAN	Dwell	R	R	R R			W/F W/F W/F	
	4	R	R	R R			DW DW DW	
[4] WB HISPANOLA AV PHASE 4	Dwell	R	R	G G			DW DW DW	
	2+6	R	R	Y Y			DW DW DW	
RECALL	C l e a r t o							
	Dwell							
	C l e a r t o							
	Dwell							
	C l e a r t o							
	Dwell							
	C l e a r t o							
Flashing Operation		FY	FY	FR FR				Page 1 of 2
MIAMI-DADE COUNTY PUBLIC WORK DEPARTMENT								
MLH	Date	ESPANOLA WAY & WASHINGTON AV						
Checked	Date	Placed in Service			Phasing No.		Asset Number	
		Date	By	7		2804		

# SIGNAL OPERATING PLAN



	Direction	SB	NB	WB			Ped Heads				
Timing Phases	Head No.	2	6	7 4			P4 P6 P8				Movements/Display/Actuation
[2+6] N/S WASHINGTON AV	Dwell	G	G	R R			DW W/F DW				
	4	Y	Y	R R			DW DW DW				
RECALL	C l e a r t o										
[4] WB ESPANOLA AV	Dwell	R	R	G G			W/F DW W/F				
	2+6	R	R	Y Y			DW DW DW				
	C l e a r t o										
	Dwell										
	C l e a r t o										
	Dwell										
	C l e a r t o										
	Dwell										
	C l e a r t o										
Flashing Operation	Dwell										
	C l e a r t o										
		FY	FY	FR FR							Page 2 of 2
<b>MIAMI-DADE COUNTY PUBLIC WORK DEPARTMENT</b>											
MLH	Date	<b>ESPANOLA WAY &amp; WASHINGTON AV</b>									
Checked	Date	Placed in Service				Phasing No.			Asset Number		
		Date	By	7		2804					

# SIGNAL OPERATING PLAN

		SIGNAL HEAD NUMBER													
PHASE	INT	2	6	4	4R	5	8	P2	P6	P4	P8				
φ2+6 (2+6+P2+P6) NBND & SBND WASHINGTON AV RECALL	R/W	G	G	R	R	G	R	W	W	DW	DW				
	PED. CL	G	G	R	R	G	R	FW	FW	DW	DW				
	TO	φ4+8	Y	Y	R	R	Y	R	DW	DW	DW			DW	
	CLEAR														
φ4+8 (4+8+P4+P8) EBND & WBND 16 ST ACTUATED BY: L4, L8 P4, P8	R/W	R	R	G	<del>F</del>	R	G	DW	DW	W	W				
	PED. CL	R	R	G	<del>F</del>	R	G	DW	DW	FW	FW				
	TO	φ2+5	R	R	Y	<del>Y</del>	R	Y	DW	DW	DW			DW	
	CLEAR	φ2+6	R	R	Y	<del>Y</del>	R	Y	DW	DW	DW			DW	
φ2+5 (2+5+4R+P2) SBND & SBLT & WBRT WASHINGTON AV. ACTUATED BY L5	R/W	G	R	R	<del>R</del>	<del>R</del>	R	W	DW	DW	DW	DW			
	PED. CL	G	R	R	<del>R</del>	<del>R</del>	R	FW	DW	DW	DW	DW			
	TO	φ2+6	G	R	R	<del>R</del>	<del>R</del>	R	FW	DW	DW	DW			DW
	CLEAR														
FLASH OPERATION	R/W														
	PED. CL														
	TO														
	CLEAR														

Drawn	Date	MIAMI-DADE COUNTY DEPARTMENT OF PUBLIC WORKS	
H. FRANCIILLON	10/14/98	<b>ASSET NO. 2806</b>	
Check	Date	WASHINGTON AV & 16 ST	
H. HEINWUDEL	10/19/98		
Division Engineer	Date		
		Placed In Service	Phasing Number
		Date: 10/15/98	By: DTI
			4

2022 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL  
 CATEGORY: 8700 MIAMI-DADE NORTH

WEEK	DATES	SF	MOCF: 0.96 PSCF
1	01/01/2022 - 01/01/2022	1.06	1.10
2	01/02/2022 - 01/08/2022	1.04	1.08
3	01/09/2022 - 01/15/2022	1.02	1.06
4	01/16/2022 - 01/22/2022	1.01	1.05
5	01/23/2022 - 01/29/2022	1.00	1.04
6	01/30/2022 - 02/05/2022	0.98	1.02
7	02/06/2022 - 02/12/2022	0.97	1.01
* 8	02/13/2022 - 02/19/2022	0.96	1.00
* 9	02/20/2022 - 02/26/2022	0.96	1.00
*10	02/27/2022 - 03/05/2022	0.96	1.00
*11	03/06/2022 - 03/12/2022	0.96	1.00
*12	03/13/2022 - 03/19/2022	0.96	1.00
*13	03/20/2022 - 03/26/2022	0.96	1.00
*14	03/27/2022 - 04/02/2022	0.96	1.00
*15	04/03/2022 - 04/09/2022	0.96	1.00
*16	04/10/2022 - 04/16/2022	0.95	0.99
*17	04/17/2022 - 04/23/2022	0.96	1.00
*18	04/24/2022 - 04/30/2022	0.96	1.00
*19	05/01/2022 - 05/07/2022	0.97	1.01
*20	05/08/2022 - 05/14/2022	0.97	1.01
21	05/15/2022 - 05/21/2022	0.98	1.02
22	05/22/2022 - 05/28/2022	0.99	1.03
23	05/29/2022 - 06/04/2022	0.99	1.03
24	06/05/2022 - 06/11/2022	1.00	1.04
25	06/12/2022 - 06/18/2022	1.01	1.05
26	06/19/2022 - 06/25/2022	1.01	1.05
27	06/26/2022 - 07/02/2022	1.01	1.05
28	07/03/2022 - 07/09/2022	1.02	1.06
29	07/10/2022 - 07/16/2022	1.02	1.06
30	07/17/2022 - 07/23/2022	1.02	1.06
31	07/24/2022 - 07/30/2022	1.02	1.06
32	07/31/2022 - 08/06/2022	1.01	1.05
33	08/07/2022 - 08/13/2022	1.01	1.05
34	08/14/2022 - 08/20/2022	1.01	1.05
35	08/21/2022 - 08/27/2022	1.03	1.07
36	08/28/2022 - 09/03/2022	1.04	1.08
37	09/04/2022 - 09/10/2022	1.05	1.09
38	09/11/2022 - 09/17/2022	1.07	1.11
39	09/18/2022 - 09/24/2022	1.05	1.09
40	09/25/2022 - 10/01/2022	1.03	1.07
41	10/02/2022 - 10/08/2022	1.01	1.05
42	10/09/2022 - 10/15/2022	0.99	1.03
43	10/16/2022 - 10/22/2022	1.00	1.04
44	10/23/2022 - 10/29/2022	1.01	1.05
45	10/30/2022 - 11/05/2022	1.01	1.05
46	11/06/2022 - 11/12/2022	1.02	1.06
47	11/13/2022 - 11/19/2022	1.03	1.07
48	11/20/2022 - 11/26/2022	1.04	1.08
49	11/27/2022 - 12/03/2022	1.05	1.09
50	12/04/2022 - 12/10/2022	1.05	1.09
51	12/11/2022 - 12/17/2022	1.06	1.10
52	12/18/2022 - 12/24/2022	1.04	1.08
53	12/25/2022 - 12/31/2022	1.02	1.06

\* PEAK SEASON

23-FEB-2023 09:11:23

830UPD

6\_8700\_PKSEASON.TXT

FLORIDA DEPARTMENT OF TRANSPORTATION  
TRANSPORTATION STATISTICS OFFICE  
2022 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 8414 - WASHINGTON AVE, 200 FT N OF 12 ST (2011 OFF SYSTEM CYCLE)

YEAR	AADT		DIRECTION 1		DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR	
2022	15100	C	N	7000	S	8100	9.00	56.50	4.20
2021	14200	C	N	6500	S	7700	9.00	55.00	3.30
2020	14100	C	N	7100	S	7000	9.00	56.00	10.70
2019	23000	C	N	11000	S	12000	9.00	56.00	2.40
2018	20400	C	N	11500	S	8900	9.00	54.30	2.50
2017	20200	C	N	9200	S	11000	9.00	59.30	2.40
2016	20800	C	N	9800	S	11000	9.00	56.10	1.90
2015	20300	C	N	9800	S	10500	9.00	57.40	17.50
2014	21000	C	N	10000	S	11000	9.00	59.30	13.90
2013	18700	F	N	9200	S	9500	9.00	58.90	16.20
2012	18700	C	N	9200	S	9500	9.00	59.70	16.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE  
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

\*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FLORIDA DEPARTMENT OF TRANSPORTATION  
TRANSPORTATION STATISTICS OFFICE  
2022 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 8566 - 15 ST, 200' EAST OFJEFFERSON AVE (2011 OFF SYSTEM CYCLE)

YEAR	AADT		DIRECTION 1		DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR	
2022	6800	T	E	3400	W	3400	9.00	56.50	3.50
2021	6600	S	E	3300	W	3300	9.00	55.00	2.90
2020	7000	F	E	3500	W	3500	9.00	56.00	4.40
2019	7800	C	E	3900	W	3900	9.00	56.00	4.00
2018	6700	T	E	4000	W	2700	9.00	54.30	3.00
2017	7500	S	E	4500	W	3000	9.00	59.30	2.50
2016	7600	F	E	4600	W	3000	9.00	56.10	5.10
2015	7800	C	E	4700	W	3100	9.00	57.40	7.10
2014	9100	S					9.00	59.30	10.70
2013	9200	F		0		0	9.00	58.90	16.20
2012	9200	C	E	0	W	0	9.00	59.70	16.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE  
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

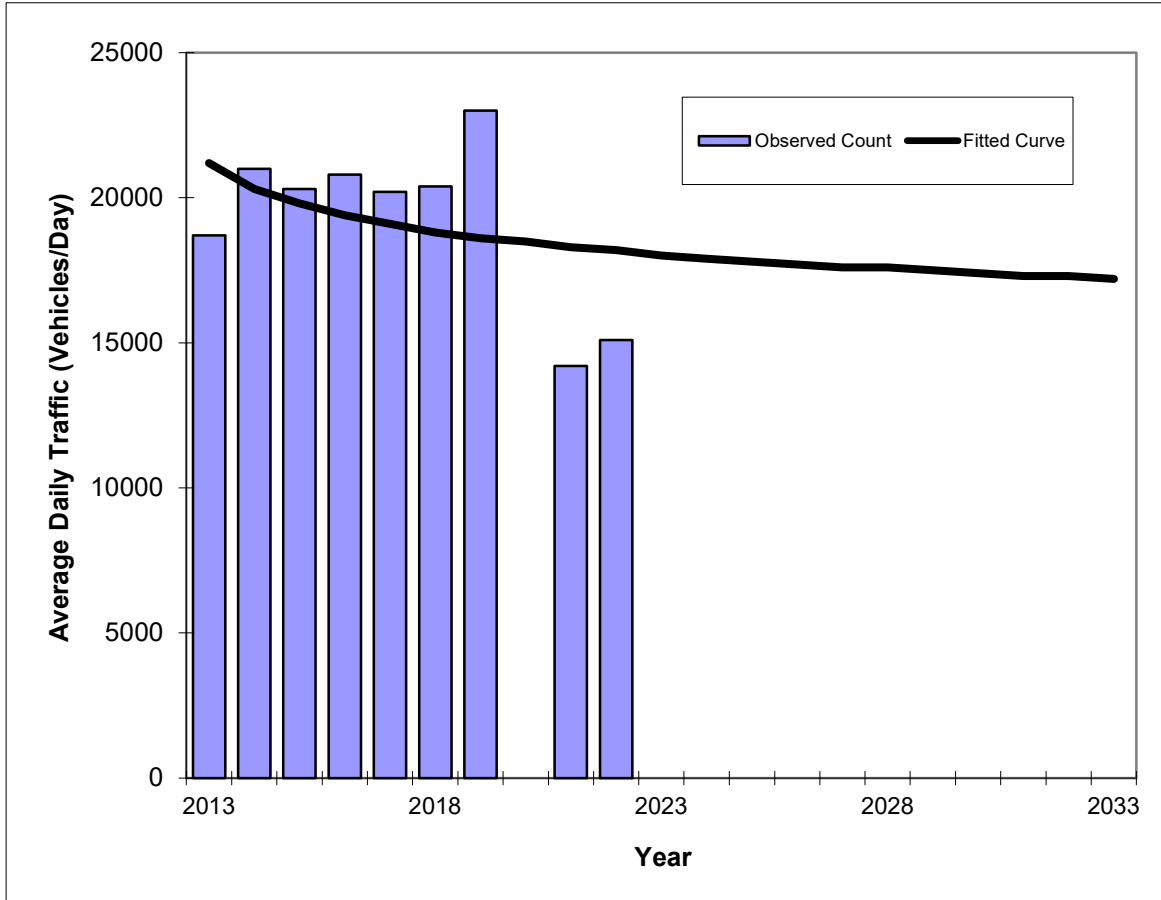
\*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

## Traffic Trends - V03.a

**WASHINGTON AVE -- 200 FT N OF 12 ST (2011 OFF SYSTEM CYCLE)**

FIN#	0
Location	1

<b>County:</b>	MIAMI-DADE
<b>Station #:</b>	8414
<b>Highway:</b>	WASHINGTON AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	18700	21200
2014	21000	20300
2015	20300	19800
2016	20800	19400
2017	20200	19100
2018	20400	18800
2019	23000	18600
2020	N/A	N/A
2021	14200	18300
2022	15100	18200
<b>2023 Opening Year Trend</b>		
2023	N/A	18000
<b>2024 Mid-Year Trend</b>		
2024	N/A	17900
<b>2026 Design Year Trend</b>		
2026	N/A	17700
<b>TRANPLAN Forecasts/Trends</b>		

Trend R-squared:	11.81%
Compounded Annual Historic Growth Rate:	-1.68%
Compounded Growth Rate (2022 to Design Year):	-0.69%
Printed:	3-Aug-23
<b>Decaying Exponential Growth Option</b>	

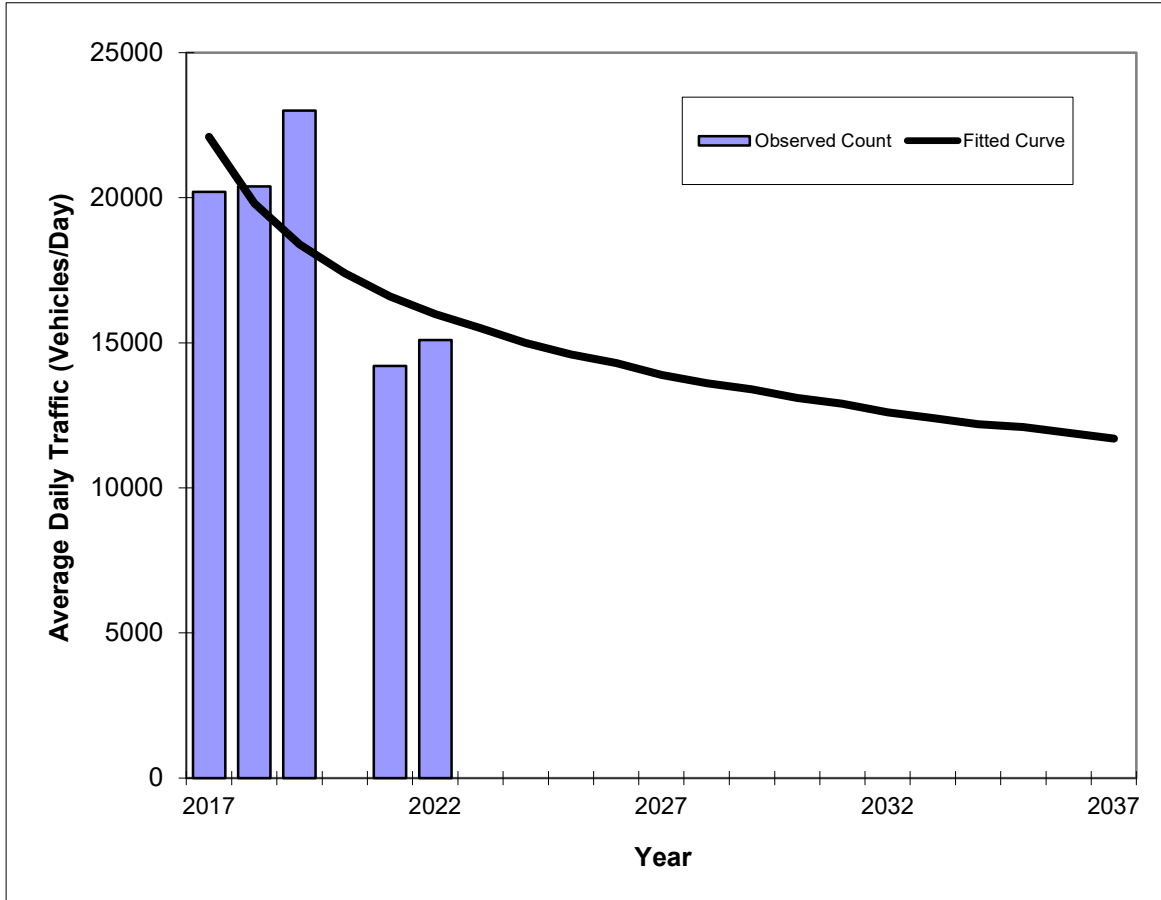
\*Axle-Adjusted

### Traffic Trends - V03.a

WASHINGTON AVE -- 200 FT N OF 12 ST (2011 OFF SYSTEM CYCLE)

FIN#	0
Location	1

County:	MIAMI-DADE
Station #:	8414
Highway:	WASHINGTON AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	20200	22100
2018	20400	19800
2019	23000	18400
2020	N/A	N/A
2021	14200	16600
2022	15100	16000
<b>2023 Opening Year Trend</b>		
2023	N/A	15500
<b>2024 Mid-Year Trend</b>		
2024	N/A	15000
<b>2026 Design Year Trend</b>		
2026	N/A	14300
<b>TRANPLAN Forecasts/Trends</b>		

Trend R-squared:	43.20%
Compounded Annual Historic Growth Rate:	-6.26%
Compounded Growth Rate (2022 to Design Year):	-2.77%
Printed:	3-Aug-23
<b>Decaying Exponential Growth Option</b>	

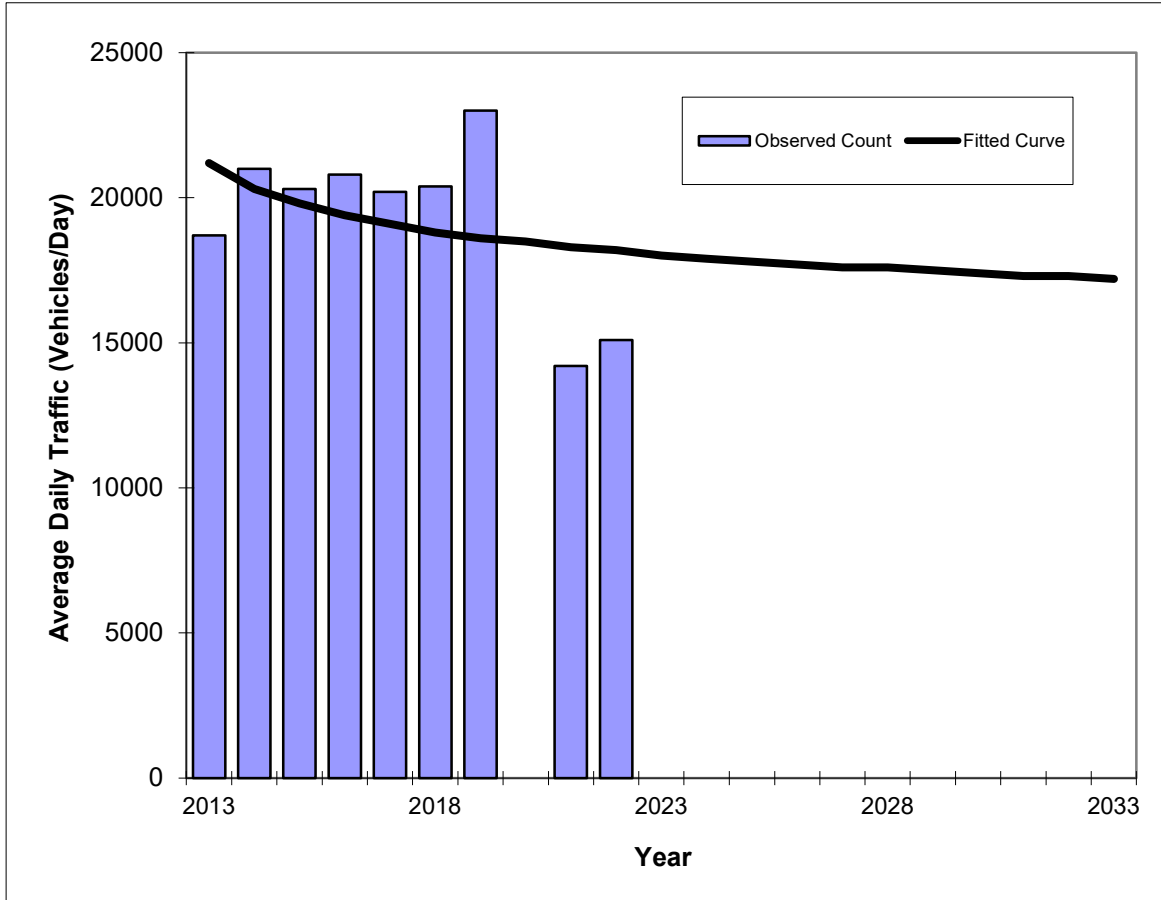
\*Axle-Adjusted

### Traffic Trends - V03.a

WASHINGTON AVE -- 200 FT N OF 12 ST (2011 OFF SYSTEM CYCLE)

FIN#	0
Location	1

County:	MIAMI-DADE
Station #:	8414
Highway:	WASHINGTON AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	18700	21200
2014	21000	20300
2015	20300	19800
2016	20800	19400
2017	20200	19100
2018	20400	18800
2019	23000	18600
2020	N/A	N/A
2021	14200	18300
2022	15100	18200
<b>2023 Opening Year Trend</b>		
2023	N/A	18000
<b>2024 Mid-Year Trend</b>		
2024	N/A	17900
<b>2026 Design Year Trend</b>		
2026	N/A	17700
<b>TRANPLAN Forecasts/Trends</b>		

Trend R-squared:	34.94%
Compounded Annual Historic Growth Rate:	-1.68%
Compounded Growth Rate (2022 to Design Year):	-0.69%
Printed:	3-Aug-23
<b>Exponential Growth Option</b>	

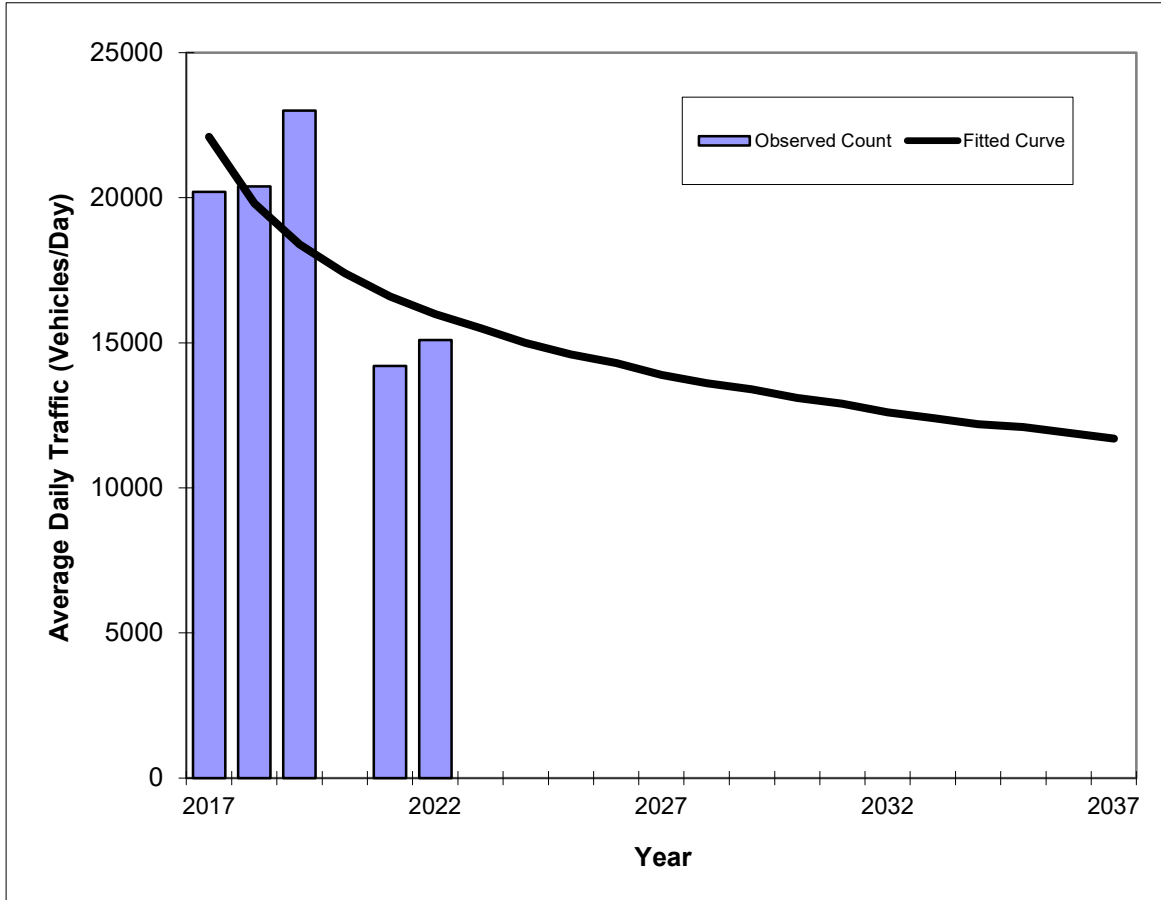
\*Axle-Adjusted

### Traffic Trends - V03.a

WASHINGTON AVE -- 200 FT N OF 12 ST (2011 OFF SYSTEM CYCLE)

FIN#	0
Location	1

County:	MIAMI-DADE
Station #:	8414
Highway:	WASHINGTON AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	20200	22100
2018	20400	19800
2019	23000	18400
2020	N/A	N/A
2021	14200	16600
2022	15100	16000
<b>2023 Opening Year Trend</b>		
2023	N/A	15500
<b>2024 Mid-Year Trend</b>		
2024	N/A	15000
<b>2026 Design Year Trend</b>		
2026	N/A	14300
<b>TRANPLAN Forecasts/Trends</b>		

Trend R-squared:	63.81%
Compounded Annual Historic Growth Rate:	-6.26%
Compounded Growth Rate (2022 to Design Year):	-2.77%
Printed:	3-Aug-23
<b>Exponential Growth Option</b>	

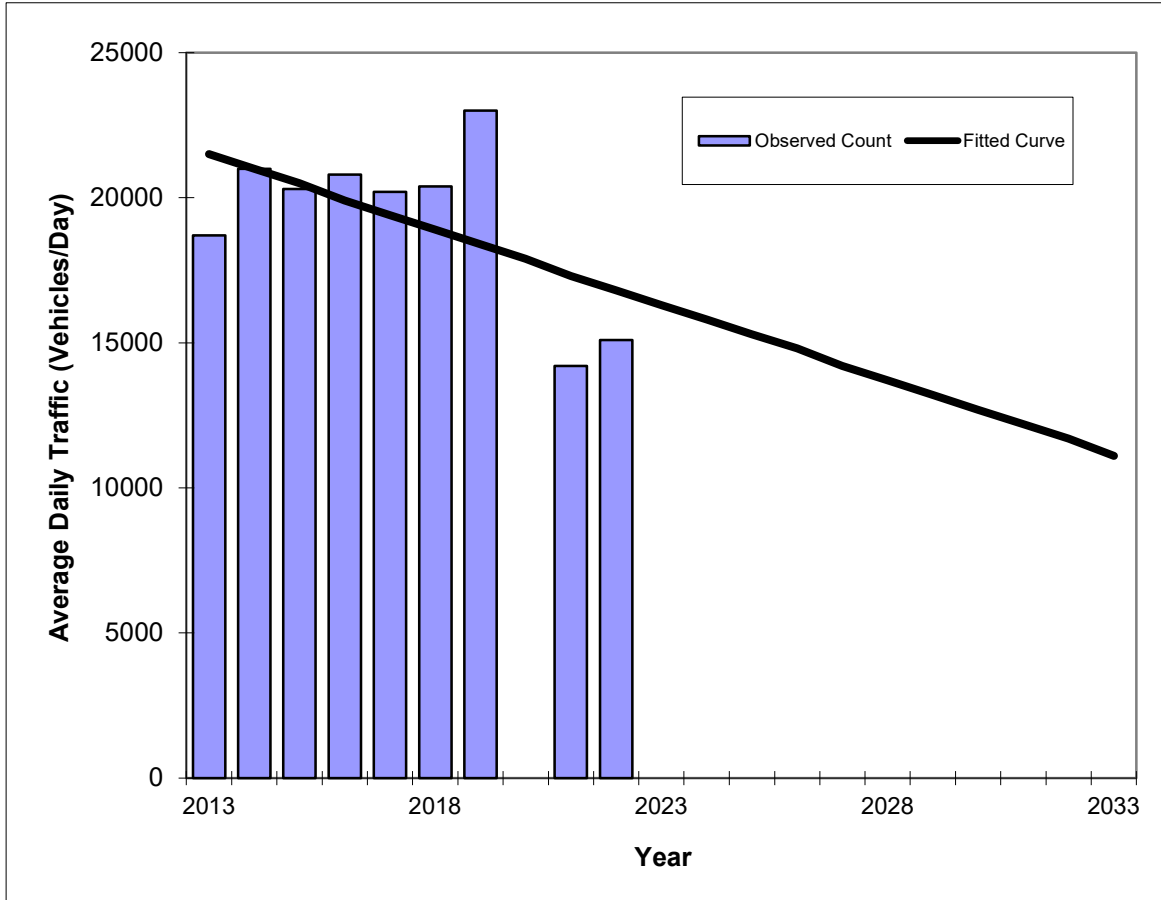
\*Axle-Adjusted

## Traffic Trends - V03.a

**WASHINGTON AVE -- 200 FT N OF 12 ST (2011 OFF SYSTEM CYCLE)**

FIN#	0
Location	1

<b>County:</b>	MIAMI-DADE
<b>Station #:</b>	8414
<b>Highway:</b>	WASHINGTON AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	18700	21500
2014	21000	21000
2015	20300	20500
2016	20800	19900
2017	20200	19400
2018	20400	18900
2019	23000	18400
2020	N/A	N/A
2021	14200	17300
2022	15100	16800
2023 Opening Year Trend		
2023	N/A	16300
2024 Mid-Year Trend		
2024	N/A	15800
2026 Design Year Trend		
2026	N/A	14800
TRANPLAN Forecasts/Trends		

<b>** Annual Trend Increase:</b>	-518
<b>Trend R-squared:</b>	30.72%
<b>Trend Annual Historic Growth Rate:</b>	-2.43%
<b>Trend Growth Rate (2022 to Design Year):</b>	-2.98%
<b>Printed:</b>	3-Aug-23
<b>Straight Line Growth Option</b>	

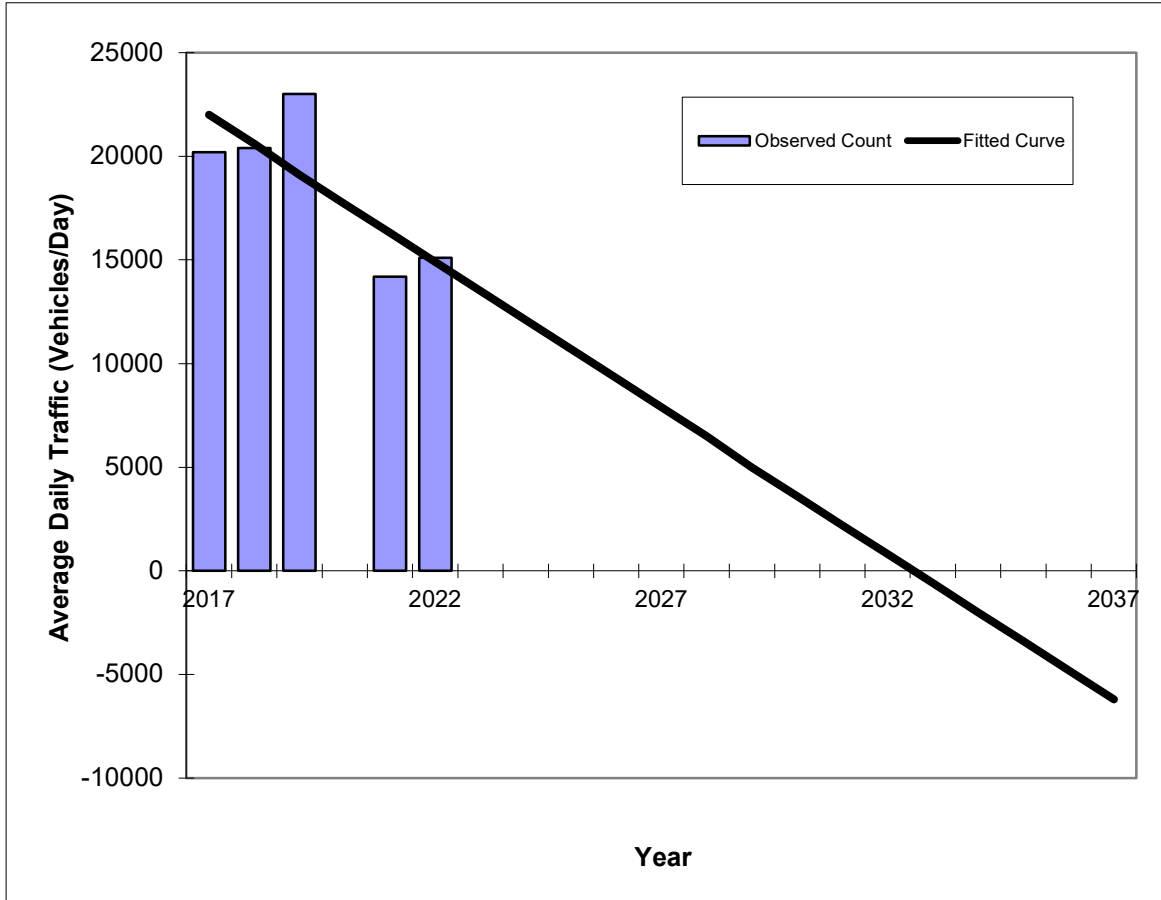
\*Axle-Adjusted

### Traffic Trends - V03.a

WASHINGTON AVE -- 200 FT N OF 12 ST (2011 OFF SYSTEM CYCLE)

FIN#	0
Location	1

County:	MIAMI-DADE
Station #:	8414
Highway:	WASHINGTON AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	20200	22000
2018	20400	20600
2019	23000	19100
2020	N/A	N/A
2021	14200	16300
2022	15100	14900
<b>2023 Opening Year Trend</b>		
2023	N/A	13500
<b>2024 Mid-Year Trend</b>		
2024	N/A	12100
<b>2026 Design Year Trend</b>		
2026	N/A	9300
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	-1,410
Trend R-squared:	60.28%
Trend Annual Historic Growth Rate:	-6.45%
Trend Growth Rate (2022 to Design Year):	-9.40%
Printed:	3-Aug-23

**Straight Line Growth Option**

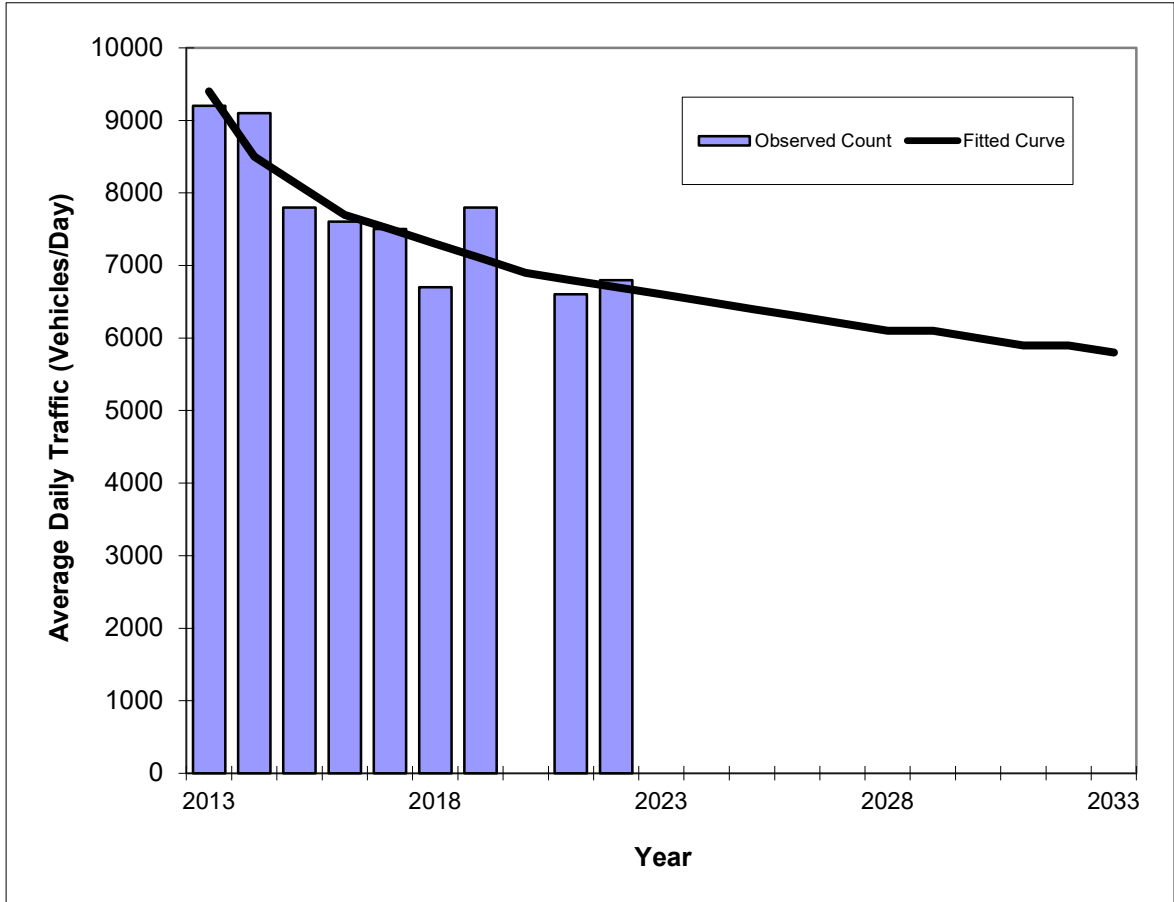
\*Axle-Adjusted

### Traffic Trends - V03.a

15 ST -- 200' EAST OF JEFFERSON AVE (2011 OFF SYSTEM CYCLE)

FIN#	0
Location	2

County:	MIAMI-DADE
Station #:	8566
Highway:	15 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	9200	9400
2014	9100	8500
2015	7800	8100
2016	7600	7700
2017	7500	7500
2018	6700	7300
2019	7800	7100
2020	N/A	N/A
2021	6600	6800
2022	6800	6700
<b>2023 Opening Year Trend</b>		
2023	N/A	6600
<b>2024 Mid-Year Trend</b>		
2024	N/A	6500
<b>2026 Design Year Trend</b>		
2026	N/A	6300
<b>TRANPLAN Forecasts/Trends</b>		

Trend R-squared:	82.08%
Compounded Annual Historic Growth Rate:	-3.69%
Compounded Growth Rate (2022 to Design Year):	-1.53%
Printed:	3-Aug-23
<b>Decaying Exponential Growth Option</b>	

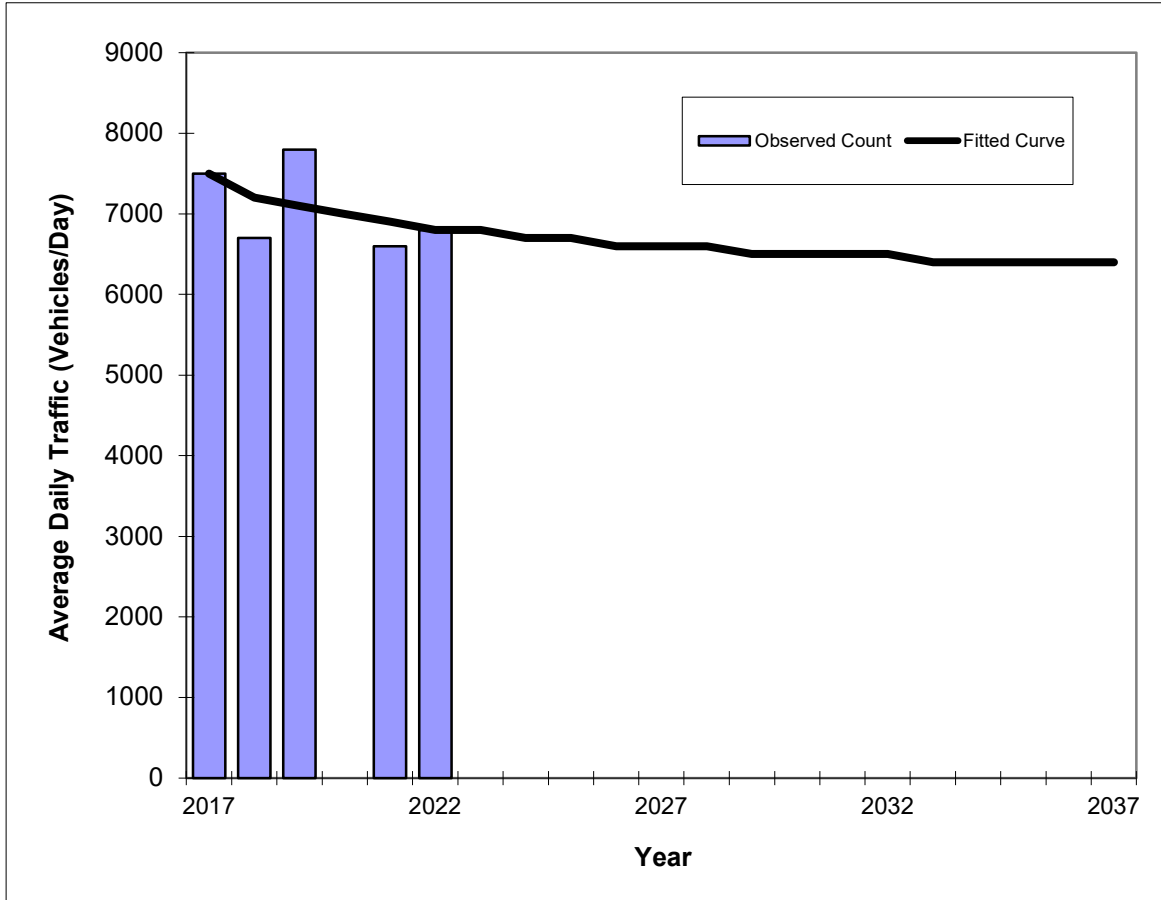
\*Axle-Adjusted

### Traffic Trends - V03.a

15 ST -- 200' EAST OF JEFFERSON AVE (2011 OFF SYSTEM CYCLE)

FIN#	0
Location	2

County:	MIAMI-DADE
Station #:	8566
Highway:	15 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	7500	7500
2018	6700	7200
2019	7800	7100
2020	N/A	N/a
2021	6600	6900
2022	6800	6800
<b>2023 Opening Year Trend</b>		
2023	N/A	6800
<b>2024 Mid-Year Trend</b>		
2024	N/A	6700
<b>2026 Design Year Trend</b>		
2026	N/A	6600
<b>TRANPLAN Forecasts/Trends</b>		

Trend R-squared:	23.18%
Compounded Annual Historic Growth Rate:	-1.94%
Compounded Growth Rate (2022 to Design Year):	-0.74%
Printed:	3-Aug-23
<b>Decaying Exponential Growth Option</b>	

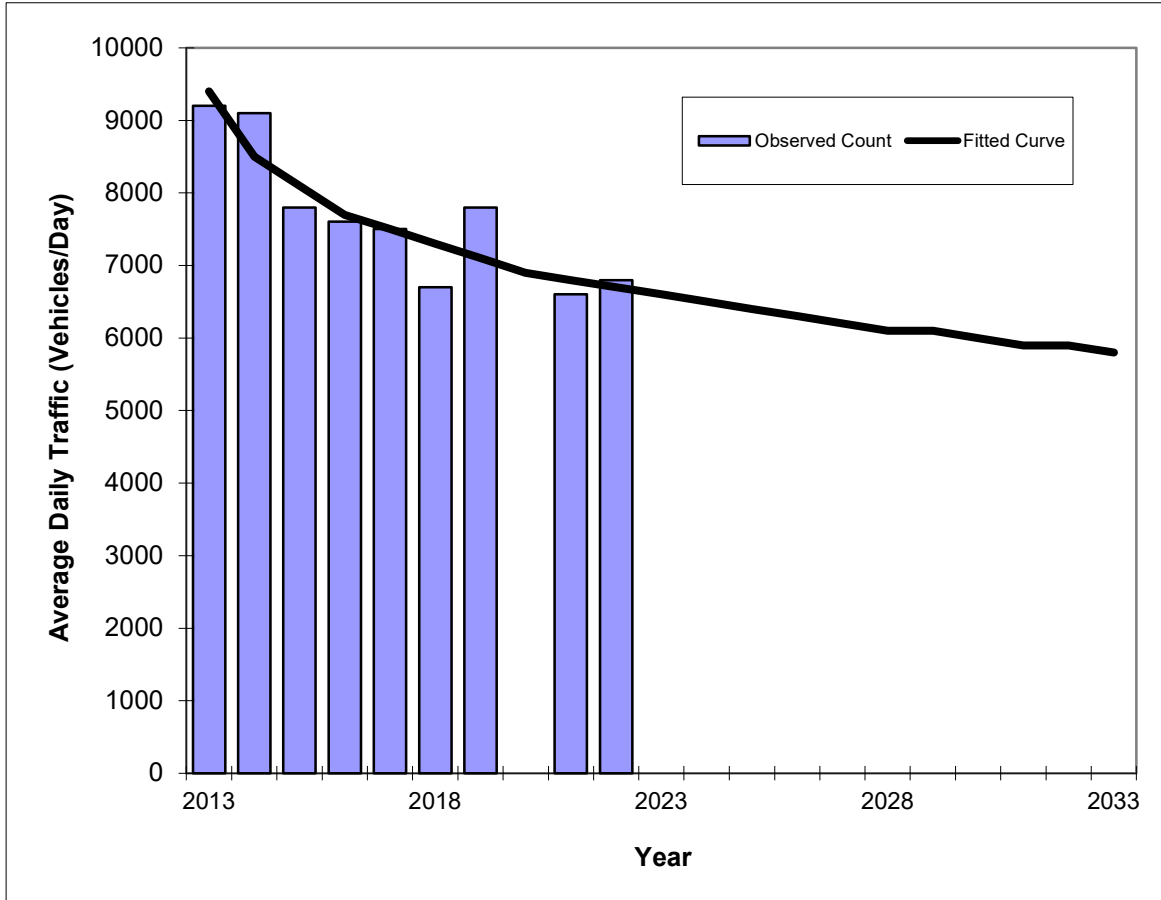
\*Axle-Adjusted

## Traffic Trends - V03.a

**15 ST -- 200' EAST OF JEFFERSON AVE (2011 OFF SYSTEM CYCLE)**

FIN#	0
Location	2

County:	MIAMI-DADE
Station #:	8566
Highway:	15 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	9200	9400
2014	9100	8500
2015	7800	8100
2016	7600	7700
2017	7500	7500
2018	6700	7300
2019	7800	7100
2020	N/A	N/A
2021	6600	6800
2022	6800	6700
<b>2023 Opening Year Trend</b>		
2023	N/A	6600
<b>2024 Mid-Year Trend</b>		
2024	N/A	6500
<b>2026 Design Year Trend</b>		
2026	N/A	6300
<b>TRANPLAN Forecasts/Trends</b>		

	Trend R-squared: 73.07%
	Compounded Annual Historic Growth Rate: -3.69%
	Compounded Growth Rate (2022 to Design Year): -1.53%
	Printed: 3-Aug-23
<b>Exponential Growth Option</b>	

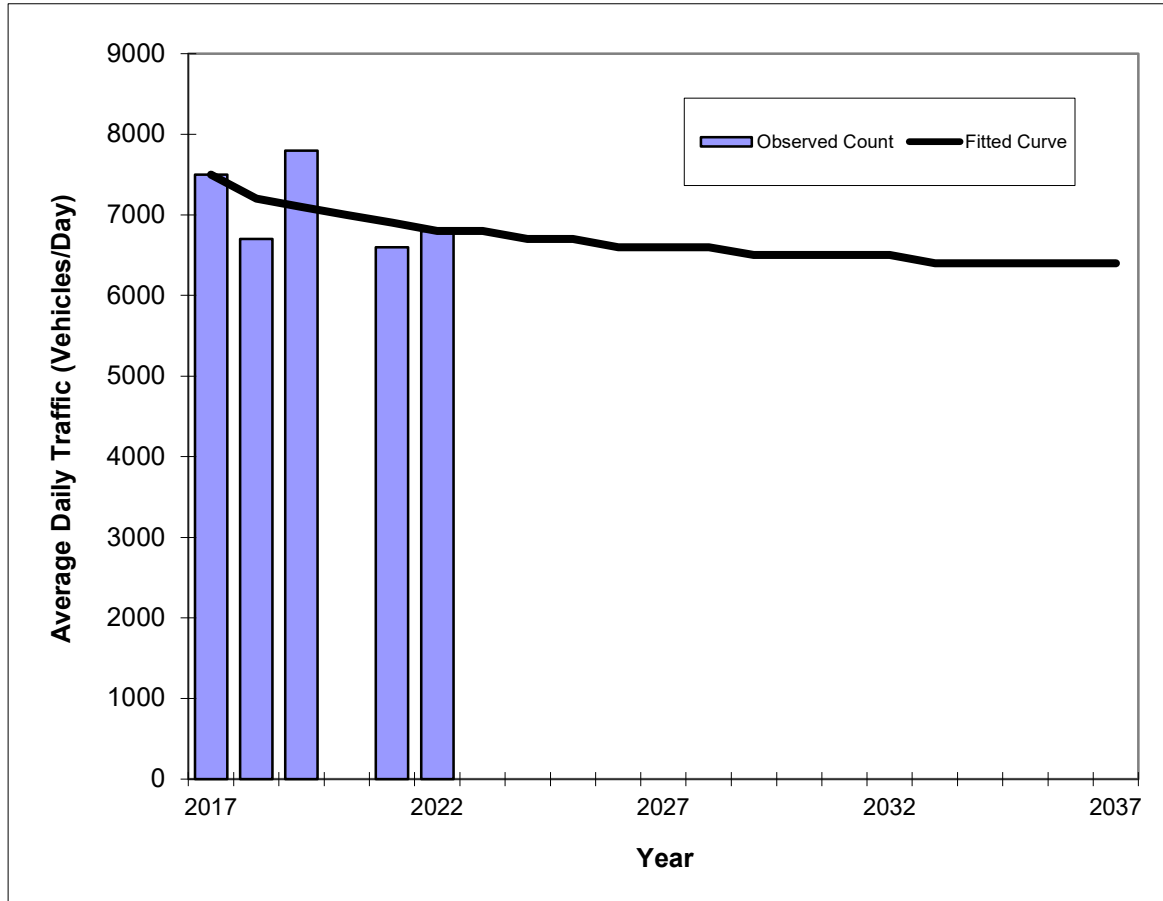
\*Axle-Adjusted

## Traffic Trends - V03.a

**15 ST -- 200' EAST OF JEFFERSON AVE (2011 OFF SYSTEM CYCLE)**

FIN#	0
Location	2

County:	MIAMI-DADE
Station #:	8566
Highway:	15 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	7500	7500
2018	6700	7200
2019	7800	7100
2020	N/A	N/a
2021	6600	6900
2022	6800	6800
<b>2023 Opening Year Trend</b>		
2023	N/A	6800
<b>2024 Mid-Year Trend</b>		
2024	N/A	6700
<b>2026 Design Year Trend</b>		
2026	N/A	6600
<b>TRANPLAN Forecasts/Trends</b>		

Trend R-squared:	26.24%
Compounded Annual Historic Growth Rate:	-1.94%
Compounded Growth Rate (2022 to Design Year):	-0.74%
Printed:	3-Aug-23
Exponential Growth Option	

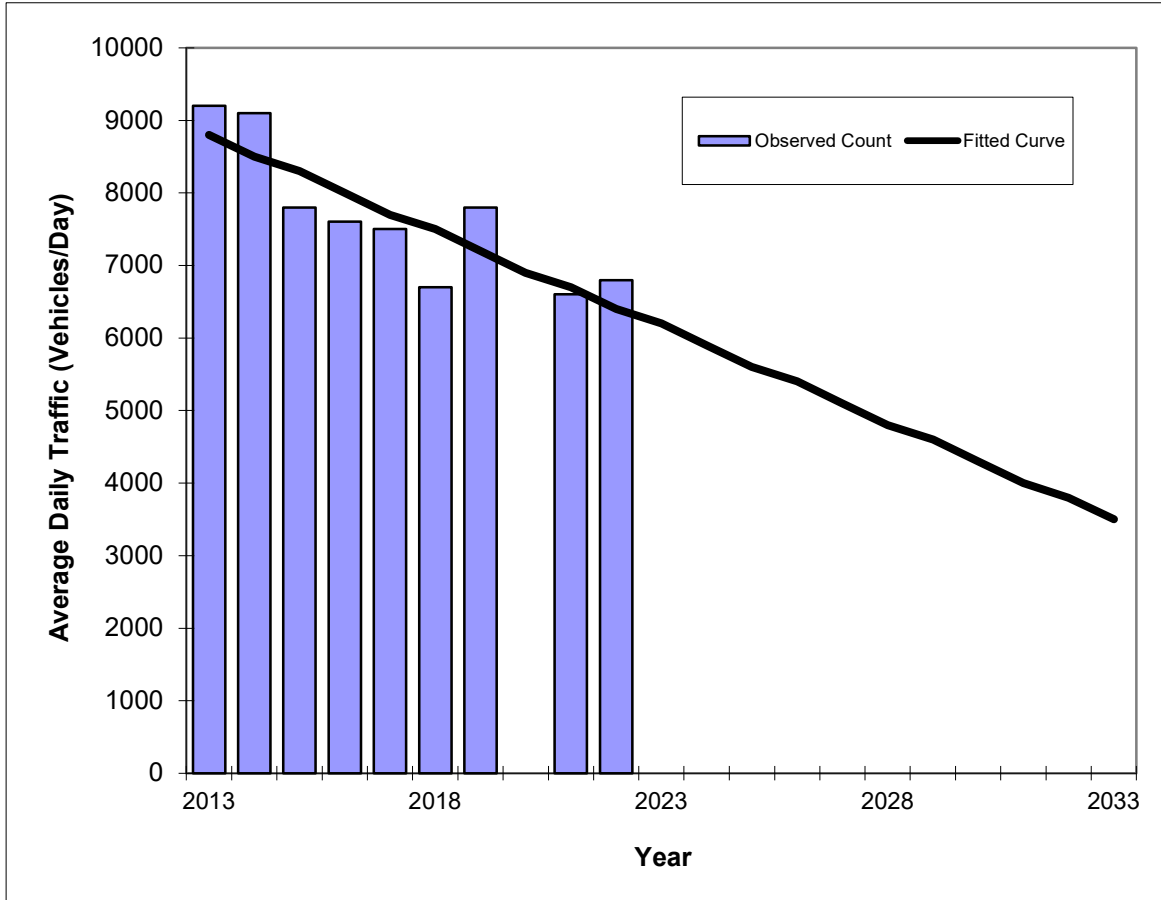
\*Axle-Adjusted

## Traffic Trends - V03.a

**15 ST -- 200' EAST OF JEFFERSON AVE (2011 OFF SYSTEM CYCLE)**

FIN#	0
Location	2

County:	MIAMI-DADE
Station #:	8566
Highway:	15 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2013	9200	8800
2014	9100	8500
2015	7800	8300
2016	7600	8000
2017	7500	7700
2018	6700	7500
2019	7800	7200
2020	N/A	N/A
2021	6600	6700
2022	6800	6400
<b>2023 Opening Year Trend</b>		
2023	N/A	6200
<b>2024 Mid-Year Trend</b>		
2024	N/A	5900
<b>2026 Design Year Trend</b>		
2026	N/A	5400
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	-264
Trend R-squared:	72.24%
Trend Annual Historic Growth Rate:	-3.03%
Trend Growth Rate (2022 to Design Year):	-3.91%
Printed:	3-Aug-23
<b>Straight Line Growth Option</b>	

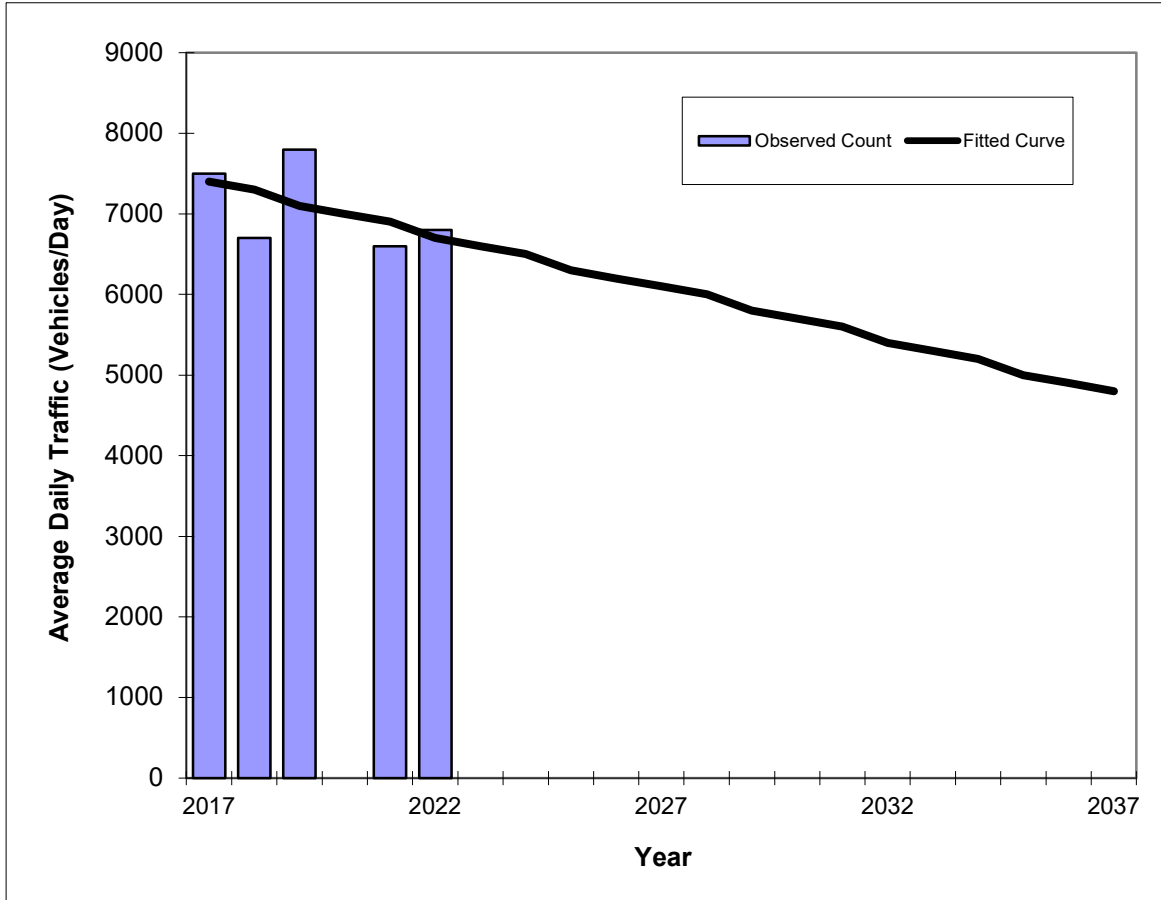
\*Axle-Adjusted

### Traffic Trends - V03.a

15 ST -- 200' EAST OF JEFFERSON AVE (2011 OFF SYSTEM CYCLE)

FIN#	0
Location	2

County:	MIAMI-DADE
Station #:	8566
Highway:	15 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2017	7500	7400
2018	6700	7300
2019	7800	7100
2020	N/A	N/a
2021	6600	6900
2022	6800	6700
<b>2023 Opening Year Trend</b>		
2023	N/A	6600
<b>2024 Mid-Year Trend</b>		
2024	N/A	6500
<b>2026 Design Year Trend</b>		
2026	N/A	6200
<b>TRANPLAN Forecasts/Trends</b>		

** Annual Trend Increase:	-131
Trend R-squared:	25.87%
Trend Annual Historic Growth Rate:	-1.89%
Trend Growth Rate (2022 to Design Year):	-1.87%
Printed:	3-Aug-23

**Straight Line Growth Option**

\*Axle-Adjusted

Growth Rate Trend Analysis Calculations - 5 Years						
Description	FDOT Historical AADT Data					
	8414			8566		
Option	Linear	Exponential	Decaying Exponential	Linear	Exponential	Decaying Exponential
Trend Growth Rate 5 years	-6.45	-6.26	-6.26	-1.89	-1.94	-1.94
Trend R-squared 5 years	60.28	63.81	43.20	25.87	26.24	23.18
Average Growth Rate (5-year) Linear all stations	-4.17					
Average Growth Rate (5-year) Exponential all stations	-4.10					
Average Growth Rate (5-year) Decaying Exponential all stations	-4.10					
<b>Highest R-Square</b>	<b>63.81</b>					
<b>Growth Rate (5-year) with the highest R- Square</b>	<b>-4.10</b>					

Growth Rate Trend Analysis Calculations - 10 Years						
Description	FDOT Historical AADT Data					
	8414			8566		
Option	Linear	Exponential	Decaying Exponential	Linear	Exponential	Decaying Exponential
Trend Growth Rate 10 years	-2.43	-1.68	-1.68	-3.03	-3.69	-3.69
Trend R-squared 10 years	30.72	34.94	11.81	72.24	73.07	82.08
Average Growth Rate (10-year) Linear all stations	-2.73					
Average Growth Rate (10-year) Exponential all stations	-2.69					
Average Growth Rate (10-year) Decaying Exponential all stations	-2.69					
<b>Highest R-Square</b>	<b>82.08</b>					
<b>Growth Rate (10-year) with highest R- Square</b>	<b>-2.69</b>					

Notes:

#### What Is R-squared?

R-squared is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination, or the coefficient of multiple determination for multiple regression.

The definition of R-squared is fairly straight-forward; it is the percentage of the response variable variation that is explained by a linear model. Or:

R-squared = Explained variation / Total variation

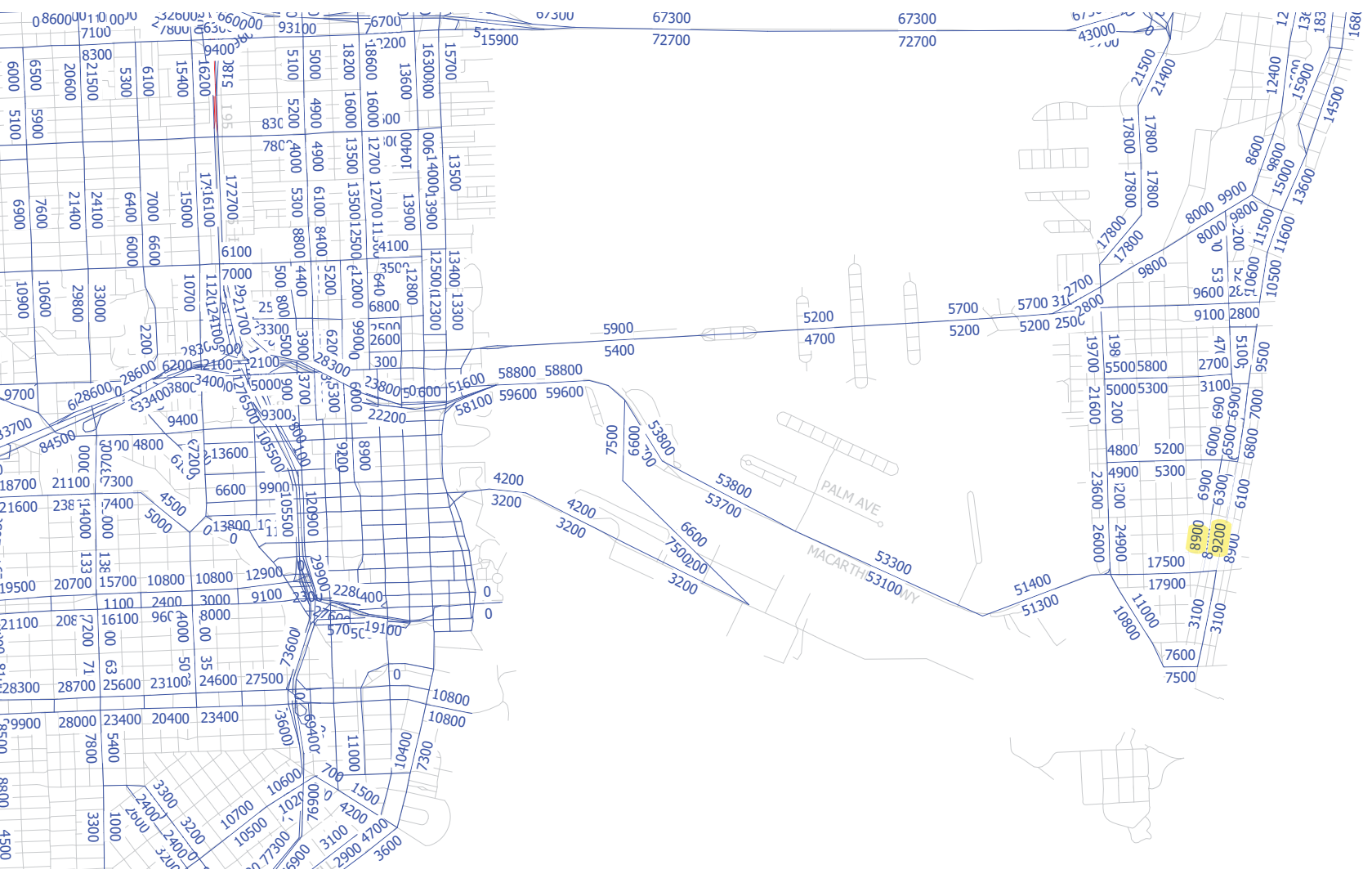
R-squared is always between 0 and 100%:

0% indicates that the model explains none of the variability of the response data around its mean.

100% indicates that the model explains all the variability of the response data around its mean.

In general, the higher the R-squared, the better the model fits your data. However, there are important conditions for this guideline that I'll talk about both in this post and my next post.





<b>Table</b>		
<b>Growth Rate Analysis Based on Model</b>		
	Year	
Roadway Segment	2015	2045
Washington Ave north of 5th St	7096	18100
Totals	7096	18100
<b>Compound Growth Rate in 30 years =</b>		<b>3.17%</b>

# **APPENDIX D**

## **Future Turning Movement Volumes**

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Alton Road and 15th Street AM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			15th Street Eastbound			15th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	35	912	86	99	721	18	16	32	21	82	33	66
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	36	930	88	101	735	18	16	33	21	84	34	67
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	39	1,022	96	111	808	20	18	36	24	92	37	74
One Cloud				16	14							
<b>2026 Total Traffic</b>	<b>39</b>	<b>1,022</b>	<b>96</b>	<b>127</b>	<b>822</b>	<b>20</b>	<b>18</b>	<b>36</b>	<b>24</b>	<b>92</b>	<b>37</b>	<b>74</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Alton Road and 15th Street PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			15th Street Eastbound			15th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	62	956	87	108	727	35	45	63	25	124	49	98
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	63	975	89	110	742	36	46	64	26	126	50	100
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	69	1,071	97	121	814	39	50	71	28	139	55	110
One Cloud				25	16							
<b>2026 Total Traffic</b>	<b>69</b>	<b>1,071</b>	<b>97</b>	<b>146</b>	<b>830</b>	<b>39</b>	<b>50</b>	<b>71</b>	<b>28</b>	<b>139</b>	<b>55</b>	<b>110</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 17th Street AM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			17th Street Eastbound			17th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	74	123	19	11	219	47	38	128	89	35	98	13
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	75	125	19	11	223	48	39	131	91	36	100	13
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	83	138	21	12	245	53	43	143	100	39	110	15
One Cloud		14			10	7						
<b>2026 Total Traffic</b>	<b>83</b>	<b>152</b>	<b>21</b>	<b>12</b>	<b>255</b>	<b>60</b>	<b>43</b>	<b>143</b>	<b>100</b>	<b>39</b>	<b>110</b>	<b>15</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 17th Street PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			17th Street Eastbound			17th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	210	421	51	29	263	84	145	179	113	61	184	23
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	214	429	52	30	268	86	148	183	115	62	188	23
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	235	472	57	32	295	94	162	200	127	68	206	26
One Cloud		18			11	12						
<b>2026 Total Traffic</b>	<b>235</b>	<b>490</b>	<b>57</b>	<b>32</b>	<b>306</b>	<b>106</b>	<b>162</b>	<b>200</b>	<b>127</b>	<b>68</b>	<b>206</b>	<b>26</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 15th Street AM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			15th Street Eastbound			15th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	46	200			307	24	63		50			
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	47	204	0	0	313	24	64	0	51	0	0	0
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	52	224	0	0	344	27	71	0	56	0	0	0
One Cloud Valet		25 18					26					
<b>2026 Total Traffic</b>	<b>52</b>	<b>267</b>	<b>0</b>	<b>0</b>	<b>344</b>	<b>27</b>	<b>97</b>	<b>0</b>	<b>56</b>	<b>0</b>	<b>0</b>	<b>0</b>

*Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition*

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 15th Street PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			15th Street Eastbound			15th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	67	493			485	59	72		61			
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	68	503	0	0	495	60	73	0	62	0	0	0
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	75	552	0	0	543	66	81	0	68	0	0	0
One Cloud Valet		33					36					
<b>2026 Total Traffic</b>	<b>75</b>	<b>597</b>	<b>0</b>	<b>0</b>	<b>543</b>	<b>66</b>	<b>117</b>	<b>0</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>0</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 11th Street AM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			11th Street Eastbound			11th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	10	207	19	3	280	7	27	20	15	12	12	0
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	10	211	19	3	286	7	28	20	15	12	12	0
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	11	232	21	3	314	8	30	22	17	13	13	0
One Cloud		9					16		7			
<b>2026 Total Traffic</b>	<b>11</b>	<b>241</b>	<b>21</b>	<b>3</b>	<b>314</b>	<b>8</b>	<b>46</b>	<b>22</b>	<b>24</b>	<b>13</b>	<b>13</b>	<b>0</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 11th Street PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			11th Street Eastbound			11th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/31/2023)	42	485	35	24	452	37	50	33	22	29	32	29
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
2023 Peak Season Traffic	43	495	36	24	461	38	51	34	22	30	33	30
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	47	543	39	27	506	41	56	37	25	32	36	32
One Cloud		11					22		8			
<b>2026 Total Traffic</b>	<b>47</b>	<b>554</b>	<b>39</b>	<b>27</b>	<b>506</b>	<b>41</b>	<b>78</b>	<b>37</b>	<b>33</b>	<b>32</b>	<b>36</b>	<b>32</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Meridian Avenue and 15th Street AM Peak Hour

Description	Meridian Avenue Northbound			Meridian Avenue Southbound			15th Street Eastbound			15th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/27/2023)	20	175	49	37	258	56	21	75	25	45	37	24
Season Adjustment Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
2023 Peak Season Traffic	21	186	52	39	273	59	22	80	27	48	39	25
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	23	204	57	43	300	65	24	87	29	52	43	28
One Cloud				10	7			16				
<b>2026 Total Traffic</b>	<b>23</b>	<b>204</b>	<b>57</b>	<b>53</b>	<b>307</b>	<b>65</b>	<b>24</b>	<b>103</b>	<b>29</b>	<b>52</b>	<b>43</b>	<b>28</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Meridian Avenue and 15th Street PM Peak Hour

Description	Meridian Avenue Northbound			Meridian Avenue Southbound			15th Street Eastbound			15th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/27/2023)	69	471	66	57	367	85	68	83	31	82	86	100
Season Adjustment Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
2023 Peak Season Traffic	73	499	70	60	389	90	72	88	33	87	91	106
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	80	548	77	66	427	99	79	97	36	95	100	116
One Cloud				11	8			25				
<b>2026 Total Traffic</b>	<b>80</b>	<b>548</b>	<b>77</b>	<b>77</b>	<b>435</b>	<b>99</b>	<b>79</b>	<b>122</b>	<b>36</b>	<b>95</b>	<b>100</b>	<b>116</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 16th Street AM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			16th Street Eastbound			16th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/27/2023)	57	95	10	13	78	15	17	97	40	8	63	7
Season Adjustment Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
2023 Peak Season Traffic	60	101	11	14	83	16	18	103	42	8	67	7
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	66	111	12	15	91	17	20	113	47	9	73	8
One Cloud Valet	29	14	10			10						
<b>2026 Total Traffic</b>	<b>95</b>	<b>125</b>	<b>22</b>	<b>15</b>	<b>91</b>	<b>27</b>	<b>20</b>	<b>113</b>	<b>47</b>	<b>9</b>	<b>73</b>	<b>8</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and 16th Street PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			16th Street Eastbound			16th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/27/2023)	101	220	16	25	119	35	75	168	69	19	116	34
Season Adjustment Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
2023 Peak Season Traffic	107	233	17	27	126	37	80	178	73	20	123	36
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	118	256	19	29	139	41	87	196	80	22	135	40
One Cloud Valet	34	16	9			11						
<b>2026 Total Traffic</b>	<b>152</b>	<b>272</b>	<b>28</b>	<b>29</b>	<b>139</b>	<b>52</b>	<b>87</b>	<b>196</b>	<b>80</b>	<b>22</b>	<b>135</b>	<b>40</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and Espanola Way AM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			Espanola Way Eastbound			Espanola Way Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/27/2023)	0	207	12	8	316					15		15
Season Adjustment Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
2023 Peak Season Traffic	0	219	13	8	335	0	0	0	0	16	0	16
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	0	241	14	9	368	0	0	0	0	17	0	17
One Cloud Valet		25										18
<b>2026 Total Traffic</b>	<b>0</b>	<b>266</b>	<b>14</b>	<b>9</b>	<b>368</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>35</b>

Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

## FUTURE TURNING MOVEMENT VOLUME ANALYSIS

### Washington Avenue and Espanola Way PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			Espanola Way Eastbound			Espanola Way Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/27/2023)		540	67	29	484					41		33
Season Adjustment Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
2023 Peak Season Traffic	0	572	71	31	513	0	0	0	0	43	0	35
Annual Growth Rate	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%	3.17%
Committed Developments												
2026 Background Traffic	0	629	78	34	563	0	0	0	0	48	0	38
One Cloud Valet		33										12
<b>2026 Total Traffic</b>	<b>0</b>	<b>662</b>	<b>78</b>	<b>34</b>	<b>563</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>48</b>	<b>0</b>	<b>50</b>

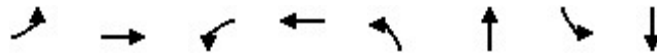
Note: At Signalized intersections, u-turns were added to left-turn volumes in order to provide Capacity Analysis using the HCM 6th Edition

**APPENDIX E**

**SYNCHRO Analyses**

# Timings

## 101: Alton Road & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔	↗	↘	↗	↘	↗	↘
Traffic Volume (vph)	16	33	84	34	36	930	101	735
Future Volume (vph)	16	33	84	34	36	930	101	735
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		8		4	1	6	5	2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	5.0	7.0
Minimum Split (s)	37.1	37.1	37.1	37.1	13.0	29.1	13.0	29.1
Total Split (s)	56.1	56.1	56.1	56.1	24.0	70.0	24.0	70.0
Total Split (%)	37.4%	37.4%	37.4%	37.4%	16.0%	46.6%	16.0%	46.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1	6.1	6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)		16.8	16.8	16.8	113.9	108.5	117.8	112.0
Actuated g/C Ratio		0.11	0.11	0.11	0.76	0.72	0.78	0.75
v/c Ratio		0.44	0.76	0.49	0.08	0.49	0.31	0.34
Control Delay		56.1	100.5	30.7	4.3	10.5	6.0	7.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		56.1	100.5	30.7	4.3	10.5	6.0	7.9
LOS		E	F	C	A	B	A	A
Approach Delay		56.1		62.4		10.3		7.7
Approach LOS		E		E		B		A

### Intersection Summary

Cycle Length: 150.1

Actuated Cycle Length: 150.1

Offset: 85 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 15.2

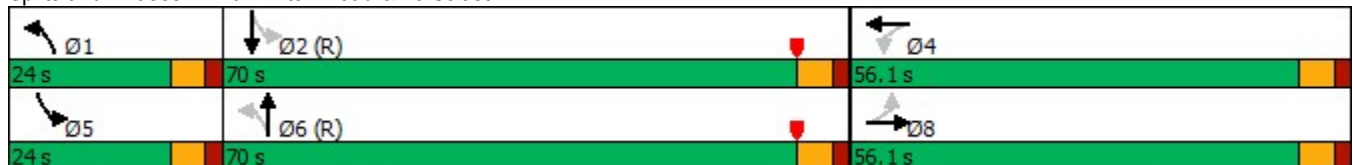
Intersection LOS: B

Intersection Capacity Utilization 74.2%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 101: Alton Road & 15 Street



# Queues

## 101: Alton Road & 15 Street























Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	74	89	107	38	1083	107	801
v/c Ratio	0.44	0.76	0.49	0.08	0.49	0.31	0.34
Control Delay	56.1	100.5	30.7	4.3	10.5	6.0	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	100.5	30.7	4.3	10.5	6.0	7.9
Queue Length 50th (ft)	55	86	33	6	214	18	133
Queue Length 95th (ft)	104	144	91	18	333	41	206
Internal Link Dist (ft)	401		387		285		834
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	470	349	506	573	2223	448	2338
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.26	0.21	0.07	0.49	0.24	0.34

### Intersection Summary

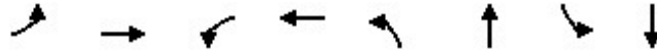
# HCM 6th Signalized Intersection Summary

## 101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	33	21	84	34	67	36	930	88	101	735	18
Future Volume (veh/h)	16	33	21	84	34	67	36	930	88	101	735	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.88	0.93		0.87	0.99		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670
Adj Flow Rate, veh/h	17	35	22	89	36	71	38	989	94	107	782	19
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	85	46	188	66	131	471	1763	168	375	1939	47
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.04	0.89	0.89	0.05	0.90	0.90
Sat Flow, veh/h	130	481	258	1123	374	737	1590	2645	251	1590	2870	70
Grp Volume(v), veh/h	74	0	0	89	0	107	38	593	490	107	432	369
Grp Sat Flow(s),veh/h/ln	869	0	0	1123	0	1111	1590	1586	1310	1590	1586	1353
Q Serve(g_s), s	1.9	0.0	0.0	4.1	0.0	13.2	1.1	12.6	12.6	3.3	6.5	6.5
Cycle Q Clear(g_c), s	15.1	0.0	0.0	19.1	0.0	13.2	1.1	12.6	12.6	3.3	6.5	6.5
Prop In Lane	0.23		0.30	1.00		0.66	1.00		0.19	1.00		0.05
Lane Grp Cap(c), veh/h	183	0	0	188	0	197	471	1058	873	375	1072	914
V/C Ratio(X)	0.40	0.00	0.00	0.47	0.00	0.54	0.08	0.56	0.56	0.29	0.40	0.40
Avail Cap(c_a), veh/h	358	0	0	364	0	370	620	1058	873	509	1072	914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.1	0.0	0.0	60.0	0.0	56.2	7.3	3.5	3.5	7.7	2.8	2.8
Incr Delay (d2), s/veh	1.1	0.0	0.0	1.4	0.0	1.7	0.0	2.1	2.6	0.2	1.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	3.3	0.0	3.8	0.4	3.2	2.7	1.1	1.9	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	0.0	0.0	61.3	0.0	57.9	7.3	5.7	6.1	7.9	3.9	4.1
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		74			196			1121			908	
Approach Delay, s/veh		56.2			59.5			5.9			4.5	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	107.3		32.7	11.3	106.0		32.7				
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1				
Max Green Setting (Gmax), s	18.0	64.0		50.0	18.0	64.0		50.0				
Max Q Clear Time (g_c+I1), s	3.1	8.5		21.1	5.3	14.6		17.1				
Green Ext Time (p_c), s	0.0	1.8		0.8	0.1	2.7		0.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				11.5								
HCM 6th LOS				B								

# Timings

## 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	39	131	36	100	75	125	11	223
Future Volume (vph)	39	131	36	100	75	125	11	223
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	3	8		4	1	6		2
Permitted Phases	8		4		6		2	
Detector Phase	3	8	4	4	1	6	2	2
Switch Phase								
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.1	30.4	30.4	30.4	11.0	27.3	27.3	27.3
Total Split (s)	13.1	44.4	31.4	31.4	12.0	56.3	44.3	44.3
Total Split (%)	13.0%	44.0%	31.2%	31.2%	11.9%	55.9%	43.9%	43.9%
Yellow Time (s)	3.7	4.0	4.0	4.0	3.7	4.0	4.0	4.0
All-Red Time (s)	3.4	3.4	3.4	3.4	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.4	7.4	7.4	6.0	6.3	6.3	6.3
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	17.6	17.3	9.5	9.5	70.1	69.8	59.6	59.6
Actuated g/C Ratio	0.17	0.17	0.09	0.09	0.70	0.69	0.59	0.59
v/c Ratio	0.24	0.39	0.40	0.38	0.12	0.07	0.02	0.15
Control Delay	34.5	21.5	54.0	40.8	7.1	5.7	13.7	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	21.5	54.0	40.8	7.1	5.7	13.7	10.9
LOS	C	C	D	D	A	A	B	B
Approach Delay		23.5		44.0		6.2		11.0
Approach LOS		C		D		A		B

### Intersection Summary

Cycle Length: 100.8

Actuated Cycle Length: 100.8

Offset: 93 (92%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 18.8

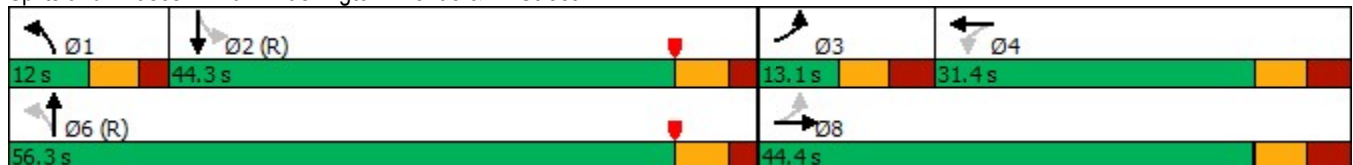
Intersection LOS: B

Intersection Capacity Utilization 63.4%

ICU Level of Service B

Analysis Period (min) 15

### Splits and Phases: 102: Washington Avenue & 17 Street



# Queues

## 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	249	40	127	84	161	12	305
v/c Ratio	0.24	0.39	0.40	0.38	0.12	0.07	0.02	0.15
Control Delay	34.5	21.5	54.0	40.8	7.1	5.7	13.7	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	21.5	54.0	40.8	7.1	5.7	13.7	10.9
Queue Length 50th (ft)	23	41	25	36	18	15	4	45
Queue Length 95th (ft)	49	70	57	62	40	31	14	78
Internal Link Dist (ft)		344		509		587		305
Turn Bay Length (ft)	200		130		130		90	
Base Capacity (vph)	183	1237	254	824	689	2367	686	2001
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.20	0.16	0.15	0.12	0.07	0.02	0.15

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 102: Washington Avenue & 17 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕		↗	↕		↖	↕	
Traffic Volume (veh/h)	39	131	91	36	100	13	75	125	19	11	223	48
Future Volume (veh/h)	39	131	91	36	100	13	75	125	19	11	223	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.90	0.93		0.93	0.99		0.97	0.98		0.96
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	44	147	102	40	112	15	84	140	21	12	251	54
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	293	538	336	243	510	67	630	1824	268	655	1409	296
Arrive On Green	0.04	0.27	0.27	0.16	0.16	0.16	0.06	0.79	0.79	0.65	0.65	0.65
Sat Flow, veh/h	1767	1994	1244	1044	3104	405	1767	3068	450	1191	2873	604
Grp Volume(v), veh/h	44	128	121	40	62	65	84	79	82	12	152	153
Grp Sat Flow(s),veh/h/ln	1767	1763	1475	1044	1763	1746	1767	1763	1756	1191	1763	1714
Q Serve(g_s), s	2.0	5.8	6.6	3.4	3.1	3.2	2.2	1.0	1.1	0.4	3.4	3.6
Cycle Q Clear(g_c), s	2.0	5.8	6.6	3.4	3.1	3.2	2.2	1.0	1.1	0.4	3.4	3.6
Prop In Lane	1.00		0.84	1.00		0.23	1.00		0.26	1.00		0.35
Lane Grp Cap(c), veh/h	293	475	398	243	290	287	630	1048	1044	655	864	841
V/C Ratio(X)	0.15	0.27	0.30	0.16	0.22	0.23	0.13	0.08	0.08	0.02	0.18	0.18
Avail Cap(c_a), veh/h	336	646	540	319	419	415	656	1048	1044	655	864	841
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	29.0	29.3	36.7	36.6	36.6	10.5	4.4	4.4	9.0	9.5	9.6
Incr Delay (d2), s/veh	0.1	0.2	0.3	0.2	0.3	0.3	0.0	0.1	0.1	0.1	0.4	0.5
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	0.9	2.5	2.4	0.9	1.4	1.4	0.8	0.4	0.4	0.1	1.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	29.3	29.7	36.9	36.8	36.9	10.5	4.5	4.5	9.1	10.0	10.0
LnGrp LOS	C	C	C	D	D	D	B	A	A	A	A	B
Approach Vol, veh/h		293			167			245			317	
Approach Delay, s/veh		29.8			36.9			6.6			10.0	
Approach LOS		C			D			A			A	
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	10.5	55.8	10.6	24.0	66.4	34.6						
Change Period (Y+Rc), s	6.0	* 6.3	* 7.1	7.4	* 6.3	7.4						
Max Green Setting (Gmax), s	6.0	* 38	* 6	24.0	* 50	37.0						
Max Q Clear Time (g_c+I1), s	4.2	5.6	4.0	5.4	3.1	8.6						
Green Ext Time (p_c), s	0.0	0.7	0.0	0.6	0.3	1.3						

### Intersection Summary

HCM 6th Ctrl Delay	19.2
HCM 6th LOS	B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# Timings

## 103: 15 Street & Washington Avenue



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	64	47	204	313
Future Volume (vph)	64	47	204	313
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		6	2
Permitted Phases		6		
Detector Phase	8	6	6	2
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	7.0
Minimum Split (s)	35.0	29.0	29.0	29.0
Total Split (s)	35.0	65.0	65.0	65.0
Total Split (%)	35.0%	65.0%	65.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	9.2		78.8	78.8
Actuated g/C Ratio	0.09		0.79	0.79
v/c Ratio	0.68		0.12	0.14
Control Delay	46.9		1.9	4.4
Queue Delay	0.0		0.0	0.0
Total Delay	46.9		1.9	4.4
LOS	D		A	A
Approach Delay	46.9		1.9	4.4
Approach LOS	D		A	A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 20 (20%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.68  
 Intersection Signal Delay: 10.5  
 Intersection Capacity Utilization 59.9%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service B

### Splits and Phases: 103: 15 Street & Washington Avenue



## Queues

### 103: 15 Street & Washington Avenue

---



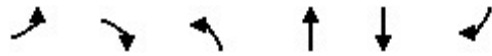
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	128	279	375
v/c Ratio	0.68	0.12	0.14
Control Delay	46.9	1.9	4.4
Queue Delay	0.0	0.0	0.0
Total Delay	46.9	1.9	4.4
Queue Length 50th (ft)	54	6	33
Queue Length 95th (ft)	109	13	54
Internal Link Dist (ft)	344	314	511
Turn Bay Length (ft)			
Base Capacity (vph)	508	2244	2696
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.12	0.14

#### Intersection Summary

---

# HCM 6th Signalized Intersection Summary

## 103: 15 Street & Washington Avenue



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	51	47	204	313	24
Future Volume (veh/h)	64	51	47	204	313	24
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.93	0.97			0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	71	57	52	227	348	27
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	148	119	397	1800	2349	181
Arrive On Green	0.17	0.17	1.00	1.00	1.00	1.00
Sat Flow, veh/h	889	714	488	2608	3385	253
Grp Volume(v), veh/h	129	0	141	138	185	190
Grp Sat Flow(s),veh/h/ln	1615	0	1407	1604	1763	1783
Q Serve(g_s), s	7.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.55	0.44	0.37			0.14
Lane Grp Cap(c), veh/h	269	0	1053	1144	1257	1272
V/C Ratio(X)	0.48	0.00	0.13	0.12	0.15	0.15
Avail Cap(c_a), veh/h	468	0	1053	1144	1257	1272
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.1	0.1	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.2	0.0	0.3	0.2	0.2	0.2
LnGrp LOS	D	A	A	A	A	A
Approach Vol, veh/h	129			279	375	
Approach Delay, s/veh	38.2			0.2	0.2	
Approach LOS	D			A	A	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		77.3			77.3	22.7
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		59.0			59.0	29.0
Max Q Clear Time (g_c+I1), s		2.0			2.0	9.2
Green Ext Time (p_c), s		0.8			0.7	0.1

### Intersection Summary

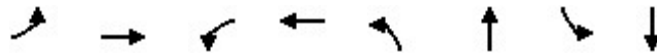
HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

### Notes

User approved volume balancing among the lanes for turning movement.

# Timings

## 104: Washington Avenue & 11 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↗	↕		↕
Traffic Volume (vph)	28	20	12	12	10	211	3	286
Future Volume (vph)	28	20	12	12	10	211	3	286
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0
Total Split (s)	36.0	36.0	36.0	36.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	64.0%	64.0%	64.0%	64.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)		8.4		8.4	83.4	83.4		83.4
Actuated g/C Ratio		0.08		0.08	0.83	0.83		0.83
v/c Ratio		0.54		0.21	0.02	0.10		0.13
Control Delay		49.6		45.6	2.6	2.2		2.3
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		49.6		45.6	2.6	2.2		2.3
LOS		D		D	A	A		A
Approach Delay		49.6		45.6		2.2		2.3
Approach LOS		D		D		A		A

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 76 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 8.8

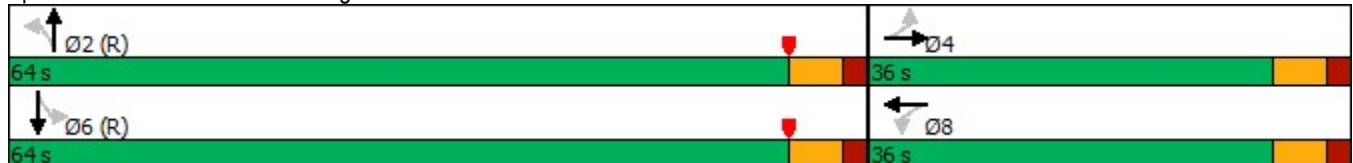
Intersection LOS: A

Intersection Capacity Utilization 44.6%

ICU Level of Service A

Analysis Period (min) 15

### Splits and Phases: 104: Washington Avenue & 11 Street



## Queues

### 104: Washington Avenue & 11 Street

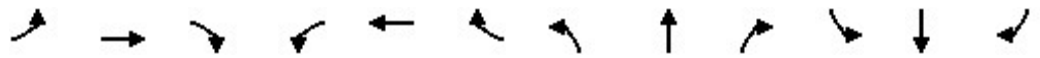


Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	75	28	12	270	348
v/c Ratio	0.54	0.21	0.02	0.10	0.13
Control Delay	49.6	45.6	2.6	2.2	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	45.6	2.6	2.2	2.3
Queue Length 50th (ft)	37	17	1	13	18
Queue Length 95th (ft)	75	41	5	25	33
Internal Link Dist (ft)	327	410		335	214
Turn Bay Length (ft)			80		
Base Capacity (vph)	451	471	762	2827	2760
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.06	0.02	0.10	0.13

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

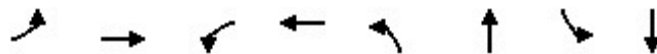
## 104: Washington Avenue & 11 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕			↕	
Traffic Volume (veh/h)	28	20	15	12	12	0	10	211	19	3	286	7
Future Volume (veh/h)	28	20	15	12	12	0	10	211	19	3	286	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.92	0.96		1.00	0.96		0.91	0.96		0.90
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	33	24	18	14	14	0	12	248	22	4	336	8
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	180	126	80	209	192	0	711	2143	188	45	2255	53
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.00	0.88	0.88	0.88	0.88	0.88	0.88
Sat Flow, veh/h	580	574	364	702	871	0	990	3248	284	12	3418	81
Grp Volume(v), veh/h	75	0	0	28	0	0	12	133	137	183	0	165
Grp Sat Flow(s),veh/h/ln	1519	0	0	1573	0	0	990	1763	1770	1846	0	1664
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0	0.2	1.0	1.1	0.0	0.0	1.4
Cycle Q Clear(g_c), s	3.7	0.0	0.0	1.2	0.0	0.0	1.6	1.0	1.1	1.4	0.0	1.4
Prop In Lane	0.44		0.24	0.50		0.00	1.00		0.16	0.02		0.05
Lane Grp Cap(c), veh/h	386	0	0	400	0	0	711	1163	1168	1255	0	1098
V/C Ratio(X)	0.19	0.00	0.00	0.07	0.00	0.00	0.02	0.11	0.12	0.15	0.00	0.15
Avail Cap(c_a), veh/h	505	0	0	522	0	0	711	1163	1168	1255	0	1098
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.8	0.0	0.0	30.9	0.0	0.0	2.3	2.1	2.1	2.2	0.0	2.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	0.5	0.0	0.0	0.0	0.4	0.4	0.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.9	0.0	0.0	30.9	0.0	0.0	2.3	2.3	2.4	2.4	0.0	2.5
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		75			28			282				348
Approach Delay, s/veh		31.9			30.9			2.4				2.4
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		72.0		28.0		72.0		28.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		58.0		30.0		58.0		30.0				
Max Q Clear Time (g_c+I1), s		3.6		5.7		3.4		3.2				
Green Ext Time (p_c), s		0.6		0.1		0.7		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				6.5								
HCM 6th LOS				A								

# Timings

## 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	22	80	48	39	21	186	39	273
Future Volume (vph)	22	80	48	39	21	186	39	273
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		6		2		4		8
Permitted Phases	6		2		4		8	
Detector Phase	6	6	2	2	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	24.0	24.0	24.0	24.0	32.0	32.0	32.0	32.0
Total Split (s)	41.0	41.0	41.0	41.0	32.0	32.0	32.0	32.0
Total Split (%)	56.2%	56.2%	56.2%	56.2%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.4	9.4	9.4	9.4	13.7	13.7	13.7	13.7
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.47	0.47	0.47	0.47
v/c Ratio	0.08	0.24	0.15	0.16	0.06	0.38	0.11	0.53
Control Delay	12.3	10.9	12.9	9.3	6.4	8.0	6.8	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	10.9	12.9	9.3	6.4	8.0	6.8	10.1
LOS	B	B	B	A	A	A	A	B
Approach Delay		11.2		10.9		7.9		9.7
Approach LOS		B		B		A		A

### Intersection Summary

Cycle Length: 73

Actuated Cycle Length: 29.1

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 9.5

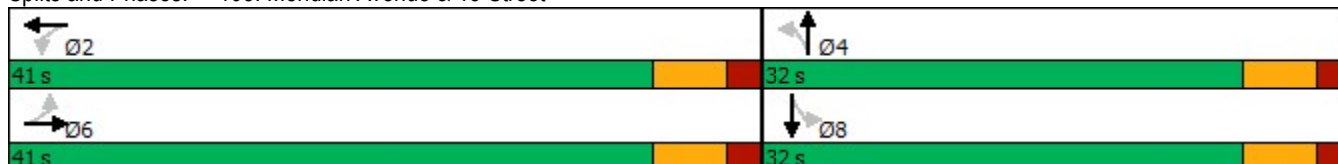
Intersection LOS: A

Intersection Capacity Utilization 55.6%

ICU Level of Service B

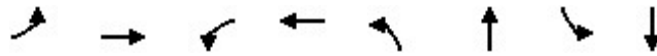
Analysis Period (min) 15

Splits and Phases: 105: Meridian Avenue & 15 Street



## Queues

### 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	129	58	77	25	287	47	400
v/c Ratio	0.08	0.24	0.15	0.16	0.06	0.38	0.11	0.53
Control Delay	12.3	10.9	12.9	9.3	6.4	8.0	6.8	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	10.9	12.9	9.3	6.4	8.0	6.8	10.1
Queue Length 50th (ft)	3	13	8	6	2	29	5	46
Queue Length 95th (ft)	17	45	29	29	10	64	16	97
Internal Link Dist (ft)		220		256		182		130
Turn Bay Length (ft)	100		50		100		150	
Base Capacity (vph)	1083	1527	1174	1434	686	1297	762	1304
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.05	0.05	0.04	0.22	0.06	0.31

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 105: Meridian Avenue & 15 Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	80	27	48	39	25	21	186	52	39	273	59
Future Volume (veh/h)	22	80	27	48	39	25	21	186	52	39	273	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		0.87	0.92		0.87	0.97		0.90	0.96		0.90
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	27	96	33	58	47	30	25	224	63	47	329	71
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	446	313	108	405	245	156	416	550	155	505	586	127
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1198	1141	392	1156	893	570	946	1222	344	1040	1302	281
Grp Volume(v), veh/h	27	0	129	58	0	77	25	0	287	47	0	400
Grp Sat Flow(s),veh/h/ln	1198	0	1533	1156	0	1463	946	0	1566	1040	0	1583
Q Serve(g_s), s	0.8	0.0	2.9	1.8	0.0	1.8	0.9	0.0	5.4	1.4	0.0	8.1
Cycle Q Clear(g_c), s	2.5	0.0	2.9	4.7	0.0	1.8	9.0	0.0	5.4	6.8	0.0	8.1
Prop In Lane	1.00		0.26	1.00		0.39	1.00		0.22	1.00		0.18
Lane Grp Cap(c), veh/h	446	0	420	405	0	401	416	0	705	505	0	713
V/C Ratio(X)	0.06	0.00	0.31	0.14	0.00	0.19	0.06	0.00	0.41	0.09	0.00	0.56
Avail Cap(c_a), veh/h	1079	0	1231	1016	0	1175	554	0	934	658	0	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	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	13.1	0.0	12.5	14.4	0.0	12.1	12.1	0.0	8.1	10.3	0.0	8.8
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.3	0.1	0.0	0.5
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	0.2	0.0	0.8	0.4	0.0	0.5	0.2	0.0	1.4	0.3	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	0.0	12.7	14.5	0.0	12.2	12.2	0.0	8.3	10.4	0.0	9.3
LnGrp LOS	B	A	B	B	A	B	B	A	A	B	A	A
Approach Vol, veh/h		156			135			312			447	
Approach Delay, s/veh		12.8			13.2			8.6			9.4	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.0		25.6		18.0		25.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		35.0		26.0		35.0		26.0				
Max Q Clear Time (g_c+I1), s		6.7		11.0		4.9		10.1				
Green Ext Time (p_c), s		0.2		1.3		0.3		2.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				10.2								
HCM 6th LOS				B								

# Timings

## 106: Washington Avenue & 16 Street

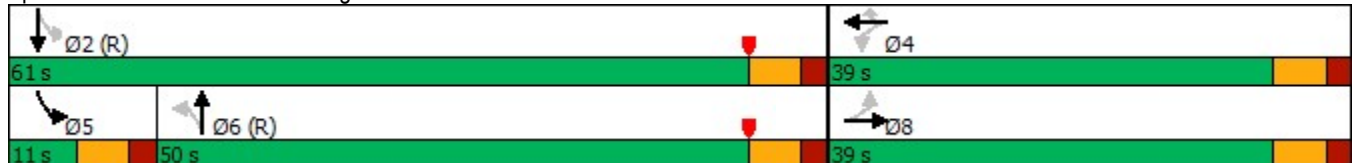


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↔		↕	↗	↖	↕	↖	↗
Traffic Volume (vph)	18	103	8	67	7	60	101	14	83
Future Volume (vph)	18	103	8	67	7	60	101	14	83
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		8		4			6	5	2
Permitted Phases	8		4		4	6		2	
Detector Phase	8	8	4	4	4	6	6	5	2
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0	27.0	27.0	11.0	27.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)		16.0		16.0	16.0	67.5	67.5	72.0	72.0
Actuated g/C Ratio		0.16		0.16	0.16	0.68	0.68	0.72	0.72
v/c Ratio		0.72		0.34	0.03	0.09	0.12	0.02	0.10
Control Delay		50.8		39.2	0.1	7.1	6.3	5.4	4.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		50.8		39.2	0.1	7.1	6.3	5.4	4.7
LOS		D		D	A	A	A	A	A
Approach Delay		50.8		35.9			6.6		4.8
Approach LOS		D		D			A		A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 1 (1%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 24.3  
 Intersection Capacity Utilization 57.5%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service B

### Splits and Phases: 106: Washington Avenue & 16 Street



## Queues

### 106: Washington Avenue & 16 Street

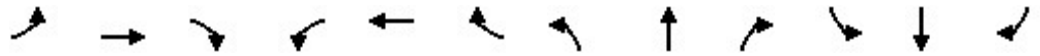


Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	187	86	8	69	129	16	113
v/c Ratio	0.72	0.34	0.03	0.09	0.12	0.02	0.10
Control Delay	50.8	39.2	0.1	7.1	6.3	5.4	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	39.2	0.1	7.1	6.3	5.4	4.7
Queue Length 50th (ft)	103	49	0	9	16	3	16
Queue Length 95th (ft)	157	85	0	34	53	10	40
Internal Link Dist (ft)	176	216			511		587
Turn Bay Length (ft)				90		60	
Base Capacity (vph)	514	524	520	744	1099	750	1161
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.16	0.02	0.09	0.12	0.02	0.10

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 106: Washington Avenue & 16 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Volume (veh/h)	18	103	42	8	67	7	60	101	11	14	83	16
Future Volume (veh/h)	18	103	42	8	67	7	60	101	11	14	83	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.99		0.96	0.99		0.97
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	21	118	48	9	77	8	69	116	13	16	95	18
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	58	195	74	54	324	254	847	905	101	868	942	178
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	1.00	1.00	1.00	0.02	0.69	0.69
Sat Flow, veh/h	96	1049	395	75	1740	1368	1257	1469	165	1767	1357	257
Grp Volume(v), veh/h	187	0	0	86	0	8	69	0	129	16	0	113
Grp Sat Flow(s),veh/h/ln	1540	0	0	1815	0	1368	1257	0	1633	1767	0	1614
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	2.3
Cycle Q Clear(g_c), s	11.1	0.0	0.0	4.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	2.3
Prop In Lane	0.11		0.26	0.10		1.00	1.00		0.10	1.00		0.16
Lane Grp Cap(c), veh/h	327	0	0	377	0	254	847	0	1006	868	0	1120
V/C Ratio(X)	0.57	0.00	0.00	0.23	0.00	0.03	0.08	0.00	0.13	0.02	0.00	0.10
Avail Cap(c_a), veh/h	544	0	0	630	0	451	847	0	1006	925	0	1120
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	0.96	0.00	0.96	0.99	0.00	0.99
Uniform Delay (d), s/veh	37.6	0.0	0.0	34.7	0.0	33.3	0.0	0.0	0.0	6.1	0.0	5.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.2
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	4.3	0.0	0.0	1.8	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	0.0	0.0	35.0	0.0	33.4	0.2	0.0	0.3	6.1	0.0	5.2
LnGrp LOS	D	A	A	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		187			94			198				129
Approach Delay, s/veh		38.8			34.8			0.2				5.3
Approach LOS		D			C			A				A
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		75.4		24.6	7.8	67.6		24.6				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		55.0		33.0	5.0	44.0		33.0				
Max Q Clear Time (g_c+I1), s		4.3		6.0	2.3	2.0		13.1				
Green Ext Time (p_c), s		0.2		0.4	0.0	0.3		0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				18.5								
HCM 6th LOS				B								

# Timings

## 107: Washington Avenue & Espanola Way

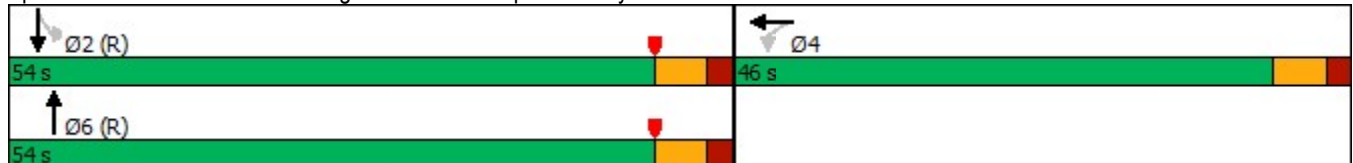


Lane Group	WBT	NBT	SBL	SBT
Lane Configurations	↔	↕		↕
Traffic Volume (vph)	0	219	8	335
Future Volume (vph)	0	219	8	335
Turn Type	NA	NA	Perm	NA
Protected Phases	4	6		2
Permitted Phases			2	
Detector Phase	4	6	2	2
Switch Phase				
Minimum Initial (s)	7.0	7.0	7.0	7.0
Minimum Split (s)	31.0	25.0	25.0	25.0
Total Split (s)	46.0	54.0	54.0	54.0
Total Split (%)	46.0%	54.0%	54.0%	54.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	7.1	88.5		88.5
Actuated g/C Ratio	0.07	0.88		0.88
v/c Ratio	0.30	0.10		0.16
Control Delay	24.9	1.5		1.1
Queue Delay	0.0	0.0		0.0
Total Delay	24.9	1.5		1.1
LOS	C	A		A
Approach Delay	24.9	1.5		1.1
Approach LOS	C	A		A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 15 (15%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.30  
 Intersection Signal Delay: 2.5  
 Intersection Capacity Utilization 40.1%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 107: Washington Avenue & Espanola Way



## Queues

### 107: Washington Avenue & Espanola Way

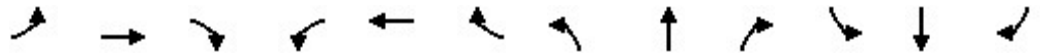
---



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	40	293	434
v/c Ratio	0.30	0.10	0.16
Control Delay	24.9	1.5	1.1
Queue Delay	0.0	0.0	0.0
Total Delay	24.9	1.5	1.1
Queue Length 50th (ft)	4	14	16
Queue Length 95th (ft)	30	19	18
Internal Link Dist (ft)	364	111	314
Turn Bay Length (ft)			
Base Capacity (vph)	596	2907	2787
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.07	0.10	0.16
<b>Intersection Summary</b>			

# HCM 6th Signalized Intersection Summary

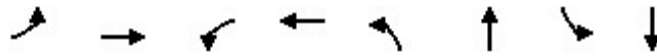
## 107: Washington Avenue & Espanola Way



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↑↔			↔↑	
Traffic Volume (veh/h)	0	0	0	16	0	16	0	219	13	8	335	0
Future Volume (veh/h)	0	0	0	16	0	16	0	219	13	8	335	0
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.90	1.00		0.96	0.99		1.00
Parking Bus, Adj				1.00	0.90	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1856	1856	1856	0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h				20	0	20	0	277	16	10	424	0
Peak Hour Factor				0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %				3	3	3	0	3	3	3	3	0
Cap, veh/h				95	0	95	0	2389	137	68	2526	0
Arrive On Green				0.13	0.00	0.13	0.00	0.75	0.75	0.75	0.75	0.00
Sat Flow, veh/h				705	0	705	0	3298	184	40	3474	0
Grp Volume(v), veh/h				40	0	0	0	151	142	232	202	0
Grp Sat Flow(s),veh/h/ln				1410	0	0	0	1763	1627	1826	1604	0
Q Serve(g_s), s				2.5	0.0	0.0	0.0	2.4	2.4	0.0	3.7	0.0
Cycle Q Clear(g_c), s				2.5	0.0	0.0	0.0	2.4	2.4	3.6	3.7	0.0
Prop In Lane				0.50		0.50	0.00		0.11	0.04		0.00
Lane Grp Cap(c), veh/h				190	0	0	0	1314	1212	1398	1195	0
V/C Ratio(X)				0.21	0.00	0.00	0.00	0.12	0.12	0.17	0.17	0.00
Avail Cap(c_a), veh/h				564	0	0	0	1314	1212	1398	1195	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				38.5	0.0	0.0	0.0	3.6	3.6	3.7	3.7	0.0
Incr Delay (d2), s/veh				0.2	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.9	0.0	0.0	0.0	0.8	0.7	1.2	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				38.7	0.0	0.0	0.0	3.7	3.8	4.0	4.0	0.0
LnGrp LOS				D	A	A	A	A	A	A	A	A
Approach Vol, veh/h					40			293			434	
Approach Delay, s/veh					38.7			3.7			4.0	
Approach LOS					D			A			A	
<b>Timer - Assigned Phs</b>		2		4		6						
Phs Duration (G+Y+Rc), s		80.5		19.5		80.5						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		48.0		40.0		48.0						
Max Q Clear Time (g_c+I1), s		5.7		4.5		4.4						
Green Ext Time (p_c), s		0.9		0.1		0.6						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.7								
HCM 6th LOS				A								

# Timings

## 101: Alton Road & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕	↗	↘	↗	↕	↗	↕
Traffic Volume (vph)	18	36	92	37	39	1022	111	808
Future Volume (vph)	18	36	92	37	39	1022	111	808
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		8		4	1	6	5	2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	5.0	7.0
Minimum Split (s)	37.1	37.1	37.1	37.1	13.0	29.1	13.0	29.1
Total Split (s)	56.1	56.1	56.1	56.1	24.0	70.0	24.0	70.0
Total Split (%)	37.4%	37.4%	37.4%	37.4%	16.0%	46.6%	16.0%	46.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1	6.1	6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)		18.2	18.2	18.2	111.6	106.1	117.2	110.5
Actuated g/C Ratio		0.12	0.12	0.12	0.74	0.71	0.78	0.74
v/c Ratio		0.47	0.80	0.51	0.10	0.55	0.38	0.38
Control Delay		56.6	104.4	32.1	4.9	12.7	7.5	8.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		56.6	104.4	32.1	4.9	12.7	7.5	8.9
LOS		E	F	C	A	B	A	A
Approach Delay		56.6		64.9		12.5		8.8
Approach LOS		E		E		B		A

### Intersection Summary

Cycle Length: 150.1

Actuated Cycle Length: 150.1

Offset: 85 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 16.9

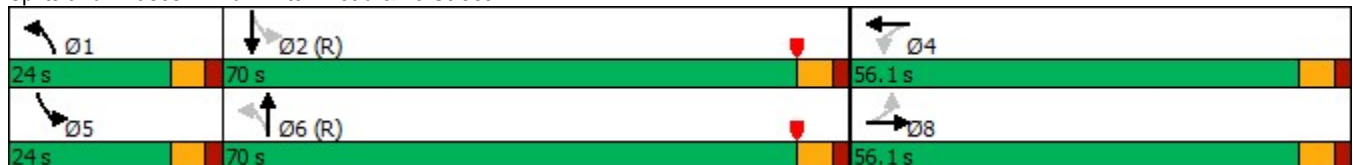
Intersection LOS: B

Intersection Capacity Utilization 78.0%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 101: Alton Road & 15 Street



## Queues

### 101: Alton Road & 15 Street






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	98	118	41	1189	118	881
v/c Ratio	0.47	0.80	0.51	0.10	0.55	0.38	0.38
Control Delay	56.6	104.4	32.1	4.9	12.7	7.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	104.4	32.1	4.9	12.7	7.5	8.9
Queue Length 50th (ft)	62	95	41	7	262	22	159
Queue Length 95th (ft)	112	155	102	20	429	48	246
Internal Link Dist (ft)	401		387		285		834
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	454	336	507	534	2175	405	2306
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.29	0.23	0.08	0.55	0.29	0.38

#### Intersection Summary

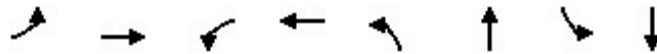
# HCM 6th Signalized Intersection Summary

## 101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	36	24	92	37	74	39	1022	96	111	808	20
Future Volume (veh/h)	18	36	24	92	37	74	39	1022	96	111	808	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.89	0.94		0.87	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670
Adj Flow Rate, veh/h	19	38	26	98	39	79	41	1087	102	118	860	21
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	50	79	45	174	66	133	439	1753	164	341	1930	47
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.04	0.88	0.88	0.05	0.89	0.89
Sat Flow, veh/h	116	439	253	1122	367	743	1590	2649	248	1590	2869	70
Grp Volume(v), veh/h	83	0	0	98	0	118	41	651	538	118	476	405
Grp Sat Flow(s),veh/h/ln	807	0	0	1122	0	1110	1590	1586	1310	1590	1586	1353
Q Serve(g_s), s	3.2	0.0	0.0	4.8	0.0	14.6	1.2	16.2	16.3	3.7	7.9	7.9
Cycle Q Clear(g_c), s	17.9	0.0	0.0	22.7	0.0	14.6	1.2	16.2	16.3	3.7	7.9	7.9
Prop In Lane	0.23		0.31	1.00		0.67	1.00		0.19	1.00		0.05
Lane Grp Cap(c), veh/h	174	0	0	174	0	199	439	1050	867	341	1067	910
V/C Ratio(X)	0.48	0.00	0.00	0.56	0.00	0.59	0.09	0.62	0.62	0.35	0.45	0.45
Avail Cap(c_a), veh/h	345	0	0	347	0	370	586	1050	867	472	1067	910
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	61.7	0.0	56.5	7.5	4.0	4.0	8.4	3.0	3.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	2.1	0.0	2.1	0.0	2.7	3.3	0.2	1.3	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	3.8	0.0	4.3	0.4	3.8	3.3	1.2	2.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	0.0	0.0	63.8	0.0	58.6	7.5	6.7	7.3	8.6	4.3	4.6
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		83			216			1230			999	
Approach Delay, s/veh		57.8			61.0			7.0			4.9	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.1	106.9		33.0	11.7	105.3		33.0				
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1				
Max Green Setting (Gmax), s	18.0	64.0		50.0	18.0	64.0		50.0				
Max Q Clear Time (g_c+l1), s	3.2	9.9		24.7	5.7	18.3		19.9				
Green Ext Time (p_c), s	0.0	2.0		0.9	0.1	3.1		0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				12.5								
HCM 6th LOS				B								

# Timings

## 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↶	↷	↶	↷	↶	↷	↶	↷
Traffic Volume (vph)	43	143	39	110	83	138	12	245
Future Volume (vph)	43	143	39	110	83	138	12	245
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	3	8		4	1	6		2
Permitted Phases	8		4		6		2	
Detector Phase	3	8	4	4	1	6	2	2
Switch Phase								
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.1	30.4	30.4	30.4	11.0	27.3	27.3	27.3
Total Split (s)	13.1	44.4	31.4	31.4	12.0	56.3	44.3	44.3
Total Split (%)	13.0%	44.0%	31.2%	31.2%	11.9%	55.9%	43.9%	43.9%
Yellow Time (s)	3.7	4.0	4.0	4.0	3.7	4.0	4.0	4.0
All-Red Time (s)	3.4	3.4	3.4	3.4	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.4	7.4	7.4	6.0	6.3	6.3	6.3
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.5	20.2	9.8	9.8	67.2	66.9	56.5	56.5
Actuated g/C Ratio	0.20	0.20	0.10	0.10	0.67	0.66	0.56	0.56
v/c Ratio	0.24	0.38	0.44	0.41	0.14	0.08	0.02	0.18
Control Delay	32.6	20.2	55.4	41.4	7.9	6.4	14.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	20.2	55.4	41.4	7.9	6.4	14.3	12.2
LOS	C	C	E	D	A	A	B	B
Approach Delay		22.0		44.7		6.9		12.3
Approach LOS		C		D		A		B

### Intersection Summary

Cycle Length: 100.8

Actuated Cycle Length: 100.8

Offset: 93 (92%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 19.1

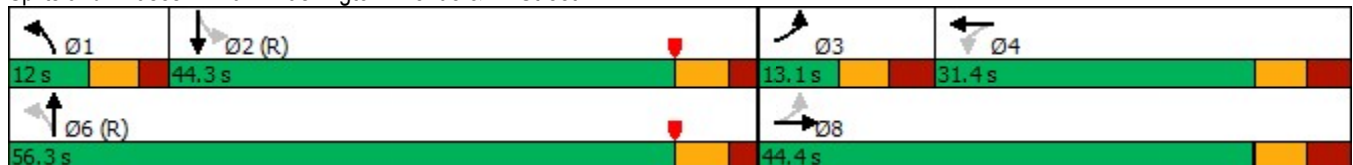
Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

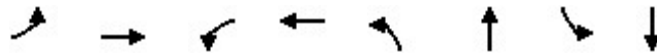
Analysis Period (min) 15

### Splits and Phases: 102: Washington Avenue & 17 Street



## Queues

### 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	273	44	141	93	179	13	335
v/c Ratio	0.24	0.38	0.44	0.41	0.14	0.08	0.02	0.18
Control Delay	32.6	20.2	55.4	41.4	7.9	6.4	14.3	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	20.2	55.4	41.4	7.9	6.4	14.3	12.2
Queue Length 50th (ft)	25	45	27	41	20	17	4	52
Queue Length 95th (ft)	51	74	60	67	44	34	15	88
Internal Link Dist (ft)		344		509		587		305
Turn Bay Length (ft)	200		130		130		90	
Base Capacity (vph)	203	1242	248	824	649	2270	639	1896
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.22	0.18	0.17	0.14	0.08	0.02	0.18

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 102: Washington Avenue & 17 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	143	100	39	110	15	83	138	21	12	245	53
Future Volume (veh/h)	43	143	100	39	110	15	83	138	21	12	245	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.90	0.93		0.93	0.99		0.97	0.98		0.96
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	48	161	112	44	124	17	93	155	24	13	275	60
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	289	539	339	240	508	68	612	1811	274	643	1397	299
Arrive On Green	0.04	0.27	0.27	0.16	0.16	0.16	0.06	0.79	0.79	0.65	0.65	0.65
Sat Flow, veh/h	1767	1986	1251	1024	3093	413	1767	3053	463	1172	2863	612
Grp Volume(v), veh/h	48	141	132	44	69	72	93	88	91	13	167	168
Grp Sat Flow(s),veh/h/ln	1767	1763	1474	1024	1763	1744	1767	1763	1753	1172	1763	1712
Q Serve(g_s), s	2.2	6.4	7.2	3.8	3.5	3.6	2.5	1.1	1.2	0.4	3.8	4.0
Cycle Q Clear(g_c), s	2.2	6.4	7.2	3.8	3.5	3.6	2.5	1.1	1.2	0.4	3.8	4.0
Prop In Lane	1.00		0.85	1.00		0.24	1.00		0.26	1.00		0.36
Lane Grp Cap(c), veh/h	289	478	400	240	290	287	612	1046	1040	643	860	835
V/C Ratio(X)	0.17	0.29	0.33	0.18	0.24	0.25	0.15	0.08	0.09	0.02	0.19	0.20
Avail Cap(c_a), veh/h	330	646	540	315	419	414	636	1046	1040	643	860	835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	29.2	29.5	36.9	36.7	36.8	10.7	4.5	4.5	9.2	9.8	9.8
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.3	0.3	0.3	0.0	0.2	0.2	0.1	0.5	0.5
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	0.9	2.7	2.6	1.0	1.5	1.6	0.9	0.4	0.5	0.1	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	29.4	29.8	37.1	37.0	37.1	10.7	4.6	4.6	9.2	10.3	10.3
LnGrp LOS	C	C	C	D	D	D	B	A	A	A	B	B
Approach Vol, veh/h		321			185			272			348	
Approach Delay, s/veh		29.9			37.1			6.7			10.3	
Approach LOS		C			D			A			B	
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	10.6	55.6	10.8	24.0	66.2	34.8						
Change Period (Y+Rc), s	6.0	* 6.3	* 7.1	7.4	* 6.3	7.4						
Max Green Setting (Gmax), s	6.0	* 38	* 6	24.0	* 50	37.0						
Max Q Clear Time (g_c+l1), s	4.5	6.0	4.2	5.8	3.2	9.2						
Green Ext Time (p_c), s	0.0	0.7	0.0	0.7	0.4	1.4						

### Intersection Summary

HCM 6th Ctrl Delay	19.4
HCM 6th LOS	B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# Timings

## 103: 15 Street & Washington Avenue



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	71	52	224	344
Future Volume (vph)	71	52	224	344
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		6	2
Permitted Phases		6		
Detector Phase	8	6	6	2
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	7.0
Minimum Split (s)	35.0	29.0	29.0	29.0
Total Split (s)	35.0	65.0	65.0	65.0
Total Split (%)	35.0%	65.0%	65.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	9.9		78.1	78.1
Actuated g/C Ratio	0.10		0.78	0.78
v/c Ratio	0.70		0.14	0.15
Control Delay	49.1		2.2	4.7
Queue Delay	0.0		0.0	0.0
Total Delay	49.1		2.2	4.7
LOS	D		A	A
Approach Delay	49.1		2.2	4.7
Approach LOS	D		A	A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 20 (20%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 11.1  
 Intersection Capacity Utilization 60.9%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service B

### Splits and Phases: 103: 15 Street & Washington Avenue



## Queues

### 103: 15 Street & Washington Avenue

---



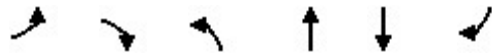
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	141	307	412
v/c Ratio	0.70	0.14	0.15
Control Delay	49.1	2.2	4.7
Queue Delay	0.0	0.0	0.0
Total Delay	49.1	2.2	4.7
Queue Length 50th (ft)	63	7	38
Queue Length 95th (ft)	120	14	61
Internal Link Dist (ft)	344	314	511
Turn Bay Length (ft)			
Base Capacity (vph)	508	2184	2670
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.28	0.14	0.15

#### Intersection Summary

---

# HCM 6th Signalized Intersection Summary

## 103: 15 Street & Washington Avenue



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	71	56	52	224	344	27
Future Volume (veh/h)	71	56	52	224	344	27
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.93	0.97			0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	79	62	58	249	382	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	155	121	396	1764	2330	182
Arrive On Green	0.17	0.17	1.00	1.00	1.00	1.00
Sat Flow, veh/h	900	707	489	2574	3381	256
Grp Volume(v), veh/h	142	0	153	154	204	208
Grp Sat Flow(s),veh/h/ln	1618	0	1375	1604	1763	1782
Q Serve(g_s), s	8.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.56	0.44	0.38			0.14
Lane Grp Cap(c), veh/h	278	0	1024	1136	1249	1263
V/C Ratio(X)	0.51	0.00	0.15	0.14	0.16	0.17
Avail Cap(c_a), veh/h	469	0	1024	1136	1249	1263
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.1	0.1	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.1	0.0	0.3	0.2	0.3	0.3
LnGrp LOS	D	A	A	A	A	A
Approach Vol, veh/h				307	412	
Approach Delay, s/veh				0.3	0.3	
Approach LOS				A	A	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		76.8			76.8	23.2
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		59.0			59.0	29.0
Max Q Clear Time (g_c+I1), s		2.0			2.0	10.0
Green Ext Time (p_c), s		0.9			0.7	0.1

### Intersection Summary

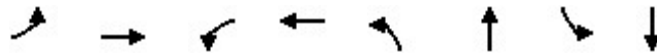
HCM 6th Ctrl Delay	6.5
HCM 6th LOS	A

### Notes

User approved volume balancing among the lanes for turning movement.

# Timings

## 104: Washington Avenue & 11 Street

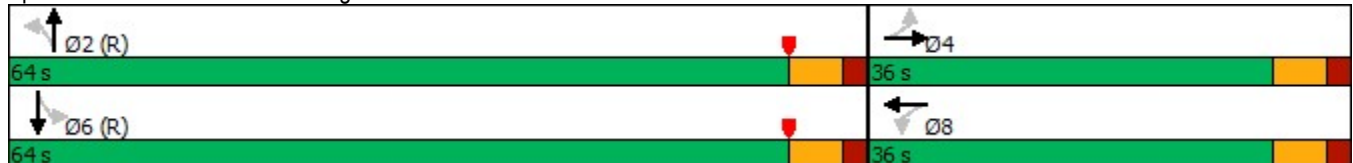


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↙	↕		↕
Traffic Volume (vph)	30	22	13	13	11	232	3	314
Future Volume (vph)	30	22	13	13	11	232	3	314
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0
Total Split (s)	36.0	36.0	36.0	36.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	64.0%	64.0%	64.0%	64.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)		8.7		8.7	83.1	83.1		83.1
Actuated g/C Ratio		0.09		0.09	0.83	0.83		0.83
v/c Ratio		0.57		0.22	0.02	0.11		0.14
Control Delay		50.0		45.5	2.7	2.3		2.5
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		50.0		45.5	2.7	2.3		2.5
LOS		D		D	A	A		A
Approach Delay		50.0		45.5		2.3		2.5
Approach LOS		D		D		A		A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 76 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.57  
 Intersection Signal Delay: 8.8  
 Intersection Capacity Utilization 44.6%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 104: Washington Avenue & 11 Street



## Queues

### 104: Washington Avenue & 11 Street

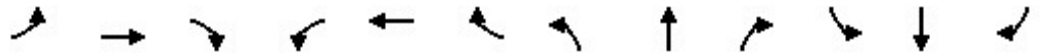


Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	81	30	13	298	382
v/c Ratio	0.57	0.22	0.02	0.11	0.14
Control Delay	50.0	45.5	2.7	2.3	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	45.5	2.7	2.3	2.5
Queue Length 50th (ft)	40	18	1	15	21
Queue Length 95th (ft)	80	42	6	28	37
Internal Link Dist (ft)	327	410		335	214
Turn Bay Length (ft)			80		
Base Capacity (vph)	452	461	738	2812	2749
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.07	0.02	0.11	0.14

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

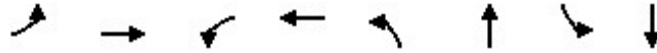
## 104: Washington Avenue & 11 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕			↕	
Traffic Volume (veh/h)	30	22	17	13	13	0	11	232	21	3	314	8
Future Volume (veh/h)	30	22	17	13	13	0	11	232	21	3	314	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.92	0.96		1.00	0.97		0.91	0.96		0.90
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	35	26	20	15	15	0	13	273	25	4	369	9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	177	127	83	209	192	0	691	2135	193	43	2254	54
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.00	0.88	0.88	0.88	0.88	0.88	0.88
Sat Flow, veh/h	568	577	375	703	871	0	962	3237	293	10	3418	83
Grp Volume(v), veh/h	81	0	0	30	0	0	13	147	151	201	0	181
Grp Sat Flow(s),veh/h/ln	1520	0	0	1575	0	0	962	1763	1767	1847	0	1663
Q Serve(g_s), s	1.4	0.0	0.0	0.0	0.0	0.0	0.2	1.2	1.2	0.0	0.0	1.6
Cycle Q Clear(g_c), s	4.0	0.0	0.0	1.3	0.0	0.0	1.8	1.2	1.2	1.6	0.0	1.6
Prop In Lane	0.43		0.25	0.50		0.00	1.00		0.17	0.02		0.05
Lane Grp Cap(c), veh/h	387	0	0	401	0	0	691	1162	1165	1255	0	1097
V/C Ratio(X)	0.21	0.00	0.00	0.07	0.00	0.00	0.02	0.13	0.13	0.16	0.00	0.17
Avail Cap(c_a), veh/h	505	0	0	522	0	0	691	1162	1165	1255	0	1097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.9	0.0	0.0	30.9	0.0	0.0	2.3	2.2	2.2	2.2	0.0	2.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.6	0.0	0.0	0.0	0.4	0.4	0.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	0.0	30.9	0.0	0.0	2.4	2.4	2.4	2.5	0.0	2.5
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		81			30			311				382
Approach Delay, s/veh		32.0			30.9			2.4				2.5
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.9		28.1		71.9		28.1				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		58.0		30.0		58.0		30.0				
Max Q Clear Time (g_c+I1), s		3.8		6.0		3.6		3.3				
Green Ext Time (p_c), s		0.6		0.1		0.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				6.5								
HCM 6th LOS				A								

# Timings

## 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	24	87	52	43	23	204	43	300
Future Volume (vph)	24	87	52	43	23	204	43	300
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		6		2		4		8
Permitted Phases	6		2		4		8	
Detector Phase	6	6	2	2	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	24.0	24.0	24.0	24.0	32.0	32.0	32.0	32.0
Total Split (s)	41.0	41.0	41.0	41.0	32.0	32.0	32.0	32.0
Total Split (%)	56.2%	56.2%	56.2%	56.2%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	8.9	8.9	8.9	8.9	17.7	17.7	17.7	17.7
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.56	0.56	0.56	0.56
v/c Ratio	0.10	0.30	0.20	0.20	0.06	0.36	0.10	0.50
Control Delay	13.8	12.8	14.8	10.4	6.2	7.6	6.5	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	12.8	14.8	10.4	6.2	7.6	6.5	9.3
LOS	B	B	B	B	A	A	A	A
Approach Delay		12.9		12.2		7.4		9.0
Approach LOS		B		B		A		A

### Intersection Summary

Cycle Length: 73

Actuated Cycle Length: 31.8

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.50

Intersection Signal Delay: 9.5

Intersection LOS: A

Intersection Capacity Utilization 55.8%

ICU Level of Service B

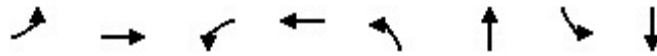
Analysis Period (min) 15

Splits and Phases: 105: Meridian Avenue & 15 Street



## Queues

### 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	140	63	86	28	315	52	439
v/c Ratio	0.10	0.30	0.20	0.20	0.06	0.36	0.10	0.50
Control Delay	13.8	12.8	14.8	10.4	6.2	7.6	6.5	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.8	12.8	14.8	10.4	6.2	7.6	6.5	9.3
Queue Length 50th (ft)	4	16	9	7	3	33	5	52
Queue Length 95th (ft)	20	54	34	34	11	72	17	109
Internal Link Dist (ft)		220		256		182		130
Turn Bay Length (ft)	100		50		100		150	
Base Capacity (vph)	997	1485	1079	1392	632	1234	708	1241
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09	0.06	0.06	0.04	0.26	0.07	0.35

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 105: Meridian Avenue & 15 Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	87	29	52	43	28	23	204	57	43	300	65
Future Volume (veh/h)	24	87	29	52	43	28	23	204	57	43	300	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.88	0.93		0.87	0.97		0.91	0.96		0.90
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	29	105	35	63	52	34	28	246	69	52	361	78
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	435	318	106	394	244	159	388	559	157	486	594	128
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1191	1152	384	1147	883	578	916	1223	343	1017	1302	281
Grp Volume(v), veh/h	29	0	140	63	0	86	28	0	315	52	0	439
Grp Sat Flow(s),veh/h/ln	1191	0	1536	1147	0	1461	916	0	1566	1017	0	1583
Q Serve(g_s), s	0.9	0.0	3.3	2.1	0.0	2.0	1.1	0.0	6.1	1.6	0.0	9.3
Cycle Q Clear(g_c), s	2.9	0.0	3.3	5.3	0.0	2.0	10.4	0.0	6.1	7.8	0.0	9.3
Prop In Lane	1.00		0.25	1.00		0.40	1.00		0.22	1.00		0.18
Lane Grp Cap(c), veh/h	435	0	423	394	0	403	388	0	715	486	0	723
V/C Ratio(X)	0.07	0.00	0.33	0.16	0.00	0.21	0.07	0.00	0.44	0.11	0.00	0.61
Avail Cap(c_a), veh/h	1037	0	1200	973	0	1141	501	0	909	611	0	918
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(l)	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	13.6	0.0	12.9	15.1	0.0	12.5	13.1	0.0	8.3	10.9	0.0	9.2
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.3	0.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	1.0	0.5	0.0	0.6	0.2	0.0	1.6	0.3	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.6	0.0	13.1	15.1	0.0	12.6	13.1	0.0	8.6	11.0	0.0	9.8
LnGrp LOS	B	A	B	B	A	B	B	A	A	B	A	A
Approach Vol, veh/h		169			149			343			491	
Approach Delay, s/veh		13.2			13.7			9.0			9.9	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.4		26.5		18.4		26.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		35.0		26.0		35.0		26.0				
Max Q Clear Time (g_c+I1), s		7.3		12.4		5.3		11.3				
Green Ext Time (p_c), s		0.2		1.4		0.3		2.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				10.6								
HCM 6th LOS				B								

# Timings

## 106: Washington Avenue & 16 Street



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	20	113	9	73	8	66	111	15	91
Future Volume (vph)	20	113	9	73	8	66	111	15	91
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		8		4			6	5	2
Permitted Phases	8		4		4	6		2	
Detector Phase	8	8	4	4	4	6	6	5	2
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0	27.0	27.0	11.0	27.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)		17.4		17.4	17.4	66.1	66.1	70.6	70.6
Actuated g/C Ratio		0.17		0.17	0.17	0.66	0.66	0.71	0.71
v/c Ratio		0.74		0.34	0.03	0.11	0.13	0.02	0.11
Control Delay		50.6		37.9	0.1	7.6	6.8	5.9	5.3
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		50.6		37.9	0.1	7.6	6.8	5.9	5.3
LOS		D		D	A	A	A	A	A
Approach Delay		50.6		34.6			7.1		5.4
Approach LOS		D		C			A		A

### Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 1 (1%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 24.4

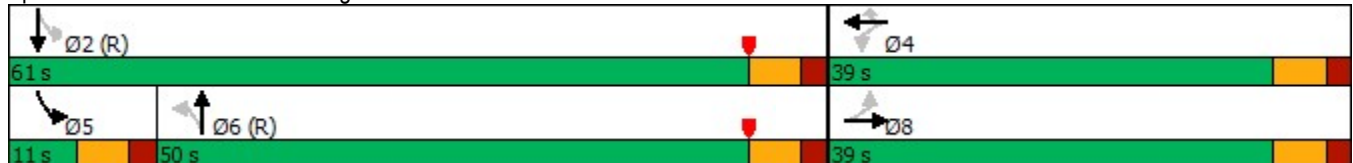
Intersection LOS: C

Intersection Capacity Utilization 58.2%

ICU Level of Service B

Analysis Period (min) 15

### Splits and Phases: 106: Washington Avenue & 16 Street



# Queues

## 106: Washington Avenue & 16 Street

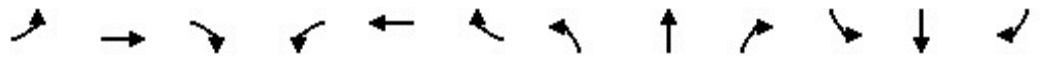


Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	94	9	76	142	17	125
v/c Ratio	0.74	0.34	0.03	0.11	0.13	0.02	0.11
Control Delay	50.6	37.9	0.1	7.6	6.8	5.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	37.9	0.1	7.6	6.8	5.9	5.3
Queue Length 50th (ft)	115	53	0	11	19	3	19
Queue Length 95th (ft)	170	89	0	40	63	11	46
Internal Link Dist (ft)	176	216			511		587
Turn Bay Length (ft)				90		60	
Base Capacity (vph)	514	522	520	721	1076	728	1139
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.18	0.02	0.11	0.13	0.02	0.11

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 106: Washington Avenue & 16 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔		↔	↔	
Traffic Volume (veh/h)	20	113	47	9	73	8	66	111	12	15	91	17
Future Volume (veh/h)	20	113	47	9	73	8	66	111	12	15	91	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.99		0.96	0.99		0.97
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	23	130	54	10	84	9	76	128	14	17	105	20
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	59	204	79	56	340	269	824	891	97	847	927	177
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	1.00	1.00	1.00	0.02	0.68	0.68
Sat Flow, veh/h	97	1040	401	80	1735	1369	1244	1473	161	1767	1356	258
Grp Volume(v), veh/h	207	0	0	94	0	9	76	0	142	17	0	125
Grp Sat Flow(s),veh/h/ln	1538	0	0	1815	0	1369	1244	0	1634	1767	0	1614
Q Serve(g_s), s	4.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	2.7
Cycle Q Clear(g_c), s	12.3	0.0	0.0	4.3	0.0	0.5	0.0	0.0	0.0	0.3	0.0	2.7
Prop In Lane	0.11		0.26	0.11		1.00	1.00		0.10	1.00		0.16
Lane Grp Cap(c), veh/h	342	0	0	396	0	269	824	0	988	847	0	1104
V/C Ratio(X)	0.61	0.00	0.00	0.24	0.00	0.03	0.09	0.00	0.14	0.02	0.00	0.11
Avail Cap(c_a), veh/h	543	0	0	630	0	452	824	0	988	902	0	1104
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	0.96	0.00	0.96	0.99	0.00	0.99
Uniform Delay (d), s/veh	37.2	0.0	0.0	34.0	0.0	32.5	0.0	0.0	0.0	6.4	0.0	5.4
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.2
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	4.8	0.0	0.0	1.9	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	0.0	34.3	0.0	32.6	0.2	0.0	0.3	6.4	0.0	5.6
LnGrp LOS	D	A	A	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		207			103			218				142
Approach Delay, s/veh		38.5			34.1			0.3				5.7
Approach LOS		D			C			A				A
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		74.4		25.6	7.9	66.5		25.6				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		55.0		33.0	5.0	44.0		33.0				
Max Q Clear Time (g_c+I1), s		4.7		6.3	2.3	2.0		14.3				
Green Ext Time (p_c), s		0.3		0.4	0.0	0.3		0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				18.4								
HCM 6th LOS				B								

# Timings

## 107: Washington Avenue & Espanola Way

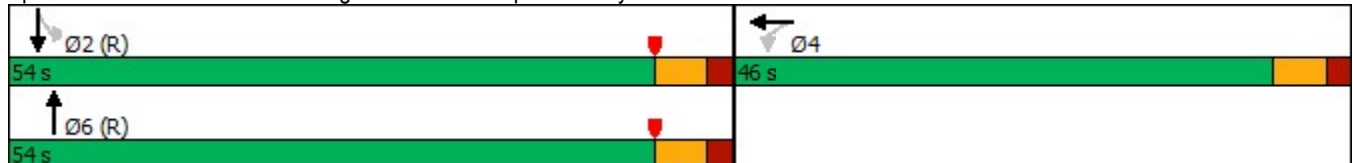


Lane Group	WBT	NBT	SBL	SBT
Lane Configurations	↔	↑↑		↔↑
Traffic Volume (vph)	0	241	9	368
Future Volume (vph)	0	241	9	368
Turn Type	NA	NA	Perm	NA
Protected Phases	4	6		2
Permitted Phases			2	
Detector Phase	4	6	2	2
Switch Phase				
Minimum Initial (s)	7.0	7.0	7.0	7.0
Minimum Split (s)	31.0	25.0	25.0	25.0
Total Split (s)	46.0	54.0	54.0	54.0
Total Split (%)	46.0%	54.0%	54.0%	54.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	7.2	88.4		88.4
Actuated g/C Ratio	0.07	0.88		0.88
v/c Ratio	0.33	0.11		0.17
Control Delay	27.0	1.6		1.1
Queue Delay	0.0	0.0		0.0
Total Delay	27.0	1.6		1.1
LOS	C	A		A
Approach Delay	27.0	1.6		1.1
Approach LOS	C	A		A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 15 (15%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.33  
 Intersection Signal Delay: 2.6  
 Intersection Capacity Utilization 40.9%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 107: Washington Avenue & Espanola Way



## Queues

### 107: Washington Avenue & Espanola Way

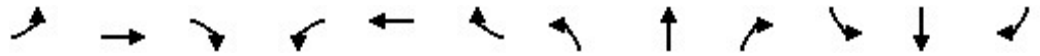
---



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	44	323	477
v/c Ratio	0.33	0.11	0.17
Control Delay	27.0	1.6	1.1
Queue Delay	0.0	0.0	0.0
Total Delay	27.0	1.6	1.1
Queue Length 50th (ft)	7	16	17
Queue Length 95th (ft)	33	22	20
Internal Link Dist (ft)	364	111	314
Turn Bay Length (ft)			
Base Capacity (vph)	596	2904	2782
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.07	0.11	0.17
Intersection Summary			

# HCM 6th Signalized Intersection Summary

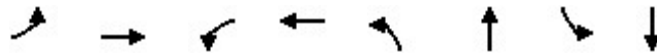
## 107: Washington Avenue & Espanola Way



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↑↔			↔↑	
Traffic Volume (veh/h)	0	0	0	17	0	17	0	241	14	9	368	0
Future Volume (veh/h)	0	0	0	17	0	17	0	241	14	9	368	0
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.90	1.00		0.96	0.99		1.00
Parking Bus, Adj				1.00	0.90	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1856	1856	1856	0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h				22	0	22	0	305	18	11	466	0
Peak Hour Factor				0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %				3	3	3	0	3	3	3	3	0
Cap, veh/h				96	0	96	0	2381	140	68	2520	0
Arrive On Green				0.14	0.00	0.14	0.00	0.74	0.74	0.74	0.74	0.00
Sat Flow, veh/h				706	0	706	0	3294	188	40	3472	0
Grp Volume(v), veh/h				44	0	0	0	167	156	254	223	0
Grp Sat Flow(s),veh/h/ln				1411	0	0	0	1763	1626	1824	1604	0
Q Serve(g_s), s				2.8	0.0	0.0	0.0	2.7	2.7	0.0	4.1	0.0
Cycle Q Clear(g_c), s				2.8	0.0	0.0	0.0	2.7	2.7	4.1	4.1	0.0
Prop In Lane				0.50		0.50	0.00		0.12	0.04		0.00
Lane Grp Cap(c), veh/h				192	0	0	0	1311	1209	1394	1193	0
V/C Ratio(X)				0.23	0.00	0.00	0.00	0.13	0.13	0.18	0.19	0.00
Avail Cap(c_a), veh/h				564	0	0	0	1311	1209	1394	1193	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	0.00	0.00	1.00	1.00	0.99	0.99	0.00
Uniform Delay (d), s/veh				38.5	0.0	0.0	0.0	3.6	3.6	3.8	3.8	0.0
Incr Delay (d2), s/veh				0.2	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.0	0.0	0.0	0.0	0.9	0.8	1.4	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				38.7	0.0	0.0	0.0	3.8	3.8	4.1	4.2	0.0
LnGrp LOS				D	A	A	A	A	A	A	A	A
Approach Vol, veh/h					44			323			477	
Approach Delay, s/veh					38.7			3.8			4.1	
Approach LOS					D			A			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		80.4		19.6		80.4						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		48.0		40.0		48.0						
Max Q Clear Time (g_c+I1), s		6.1		4.8		4.7						
Green Ext Time (p_c), s		1.0		0.1		0.7						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				5.8								
HCM 6th LOS				A								

# Timings

## 101: Alton Road & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕	↗	↖	↗	↕	↗	↕
Traffic Volume (vph)	18	36	92	37	39	1022	127	822
Future Volume (vph)	18	36	92	37	39	1022	127	822
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		8		4	1	6	5	2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	5.0	7.0
Minimum Split (s)	37.1	37.1	37.1	37.1	13.0	29.1	13.0	29.1
Total Split (s)	56.1	56.1	56.1	56.1	24.0	70.0	24.0	70.0
Total Split (%)	37.4%	37.4%	37.4%	37.4%	16.0%	46.6%	16.0%	46.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1	6.1	6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)		18.2	18.2	18.2	110.7	105.2	117.7	110.5
Actuated g/C Ratio		0.12	0.12	0.12	0.74	0.70	0.78	0.74
v/c Ratio		0.47	0.80	0.51	0.10	0.55	0.42	0.39
Control Delay		56.6	104.4	32.1	5.1	13.4	8.2	9.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		56.6	104.4	32.1	5.1	13.4	8.2	9.0
LOS		E	F	C	A	B	A	A
Approach Delay		56.6		64.9		13.1		8.9
Approach LOS		E		E		B		A

### Intersection Summary

Cycle Length: 150.1

Actuated Cycle Length: 150.1

Offset: 85 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 17.2

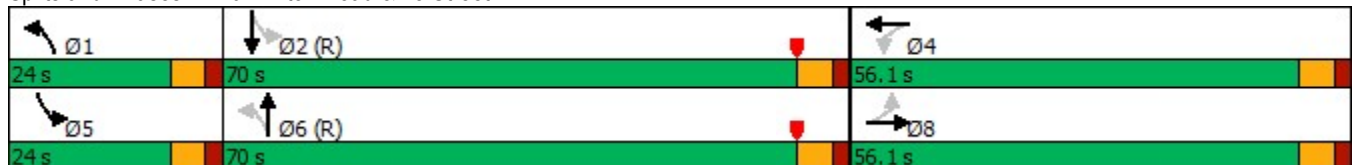
Intersection LOS: B

Intersection Capacity Utilization 79.0%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 101: Alton Road & 15 Street



## Queues

### 101: Alton Road & 15 Street






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	98	118	41	1189	135	895
v/c Ratio	0.47	0.80	0.51	0.10	0.55	0.42	0.39
Control Delay	56.6	104.4	32.1	5.1	13.4	8.2	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	104.4	32.1	5.1	13.4	8.2	9.0
Queue Length 50th (ft)	62	95	41	7	264	25	162
Queue Length 95th (ft)	112	155	102	20	447	54	251
Internal Link Dist (ft)	401		387		285		834
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	454	336	507	530	2156	402	2306
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.29	0.23	0.08	0.55	0.34	0.39

#### Intersection Summary

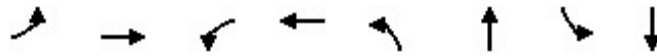
# HCM 6th Signalized Intersection Summary

## 101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	36	24	92	37	74	39	1022	96	127	822	20
Future Volume (veh/h)	18	36	24	92	37	74	39	1022	96	127	822	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.89	0.94		0.87	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670
Adj Flow Rate, veh/h	19	38	26	98	39	79	41	1087	102	135	874	21
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	50	79	45	174	66	133	434	1742	163	344	1931	46
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.04	0.87	0.87	0.06	0.89	0.89
Sat Flow, veh/h	116	439	253	1122	367	743	1590	2649	248	1590	2871	69
Grp Volume(v), veh/h	83	0	0	98	0	118	41	651	538	135	483	412
Grp Sat Flow(s),veh/h/ln	807	0	0	1122	0	1110	1590	1586	1310	1590	1586	1353
Q Serve(g_s), s	3.2	0.0	0.0	4.8	0.0	14.6	1.2	16.9	17.0	4.2	8.1	8.1
Cycle Q Clear(g_c), s	17.9	0.0	0.0	22.7	0.0	14.6	1.2	16.9	17.0	4.2	8.1	8.1
Prop In Lane	0.23		0.31	1.00		0.67	1.00		0.19	1.00		0.05
Lane Grp Cap(c), veh/h	174	0	0	174	0	199	434	1044	862	344	1067	910
V/C Ratio(X)	0.48	0.00	0.00	0.56	0.00	0.59	0.09	0.62	0.62	0.39	0.45	0.45
Avail Cap(c_a), veh/h	345	0	0	347	0	370	581	1044	862	468	1067	910
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.3	0.0	0.0	61.7	0.0	56.5	7.7	4.3	4.3	8.7	3.0	3.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	2.1	0.0	2.1	0.0	2.8	3.4	0.3	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	3.8	0.0	4.3	0.4	4.0	3.5	1.4	2.3	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	0.0	0.0	63.8	0.0	58.6	7.7	7.1	7.7	8.9	4.4	4.6
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		83			216			1230			1030	
Approach Delay, s/veh		57.8			61.0			7.4			5.1	
Approach LOS		E			E			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.1	106.9		33.0	12.3	104.7		33.0				
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1				
Max Green Setting (Gmax), s	18.0	64.0		50.0	18.0	64.0		50.0				
Max Q Clear Time (g_c+l1), s	3.2	10.1		24.7	6.2	19.0		19.9				
Green Ext Time (p_c), s	0.0	2.1		0.9	0.1	3.1		0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				12.6								
HCM 6th LOS				B								

# Timings

## 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Traffic Volume (vph)	43	143	39	110	83	152	12	255
Future Volume (vph)	43	143	39	110	83	152	12	255
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	3	8		4	1	6		2
Permitted Phases	8		4		6		2	
Detector Phase	3	8	4	4	1	6	2	2
Switch Phase								
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.1	30.4	30.4	30.4	11.0	27.3	27.3	27.3
Total Split (s)	13.1	44.4	31.4	31.4	12.0	56.3	44.3	44.3
Total Split (%)	13.0%	44.0%	31.2%	31.2%	11.9%	55.9%	43.9%	43.9%
Yellow Time (s)	3.7	4.0	4.0	4.0	3.7	4.0	4.0	4.0
All-Red Time (s)	3.4	3.4	3.4	3.4	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.4	7.4	7.4	6.0	6.3	6.3	6.3
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.5	20.2	9.7	9.7	67.2	66.9	56.5	56.5
Actuated g/C Ratio	0.20	0.20	0.10	0.10	0.67	0.66	0.56	0.56
v/c Ratio	0.24	0.37	0.43	0.41	0.15	0.09	0.02	0.19
Control Delay	32.7	20.1	55.2	41.4	7.9	6.5	14.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	20.1	55.2	41.4	7.9	6.5	14.3	12.3
LOS	C	C	E	D	A	A	B	B
Approach Delay		22.0		44.7		6.9		12.4
Approach LOS		C		D		A		B

### Intersection Summary

Cycle Length: 100.8

Actuated Cycle Length: 100.8

Offset: 93 (92%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 18.8

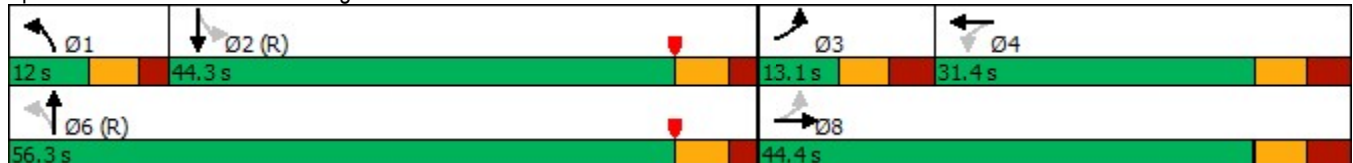
Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

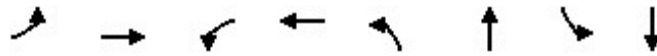
Analysis Period (min) 15

### Splits and Phases: 102: Washington Avenue & 17 Street



## Queues

### 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	273	44	141	93	195	13	354
v/c Ratio	0.24	0.37	0.43	0.41	0.15	0.09	0.02	0.19
Control Delay	32.7	20.1	55.2	41.4	7.9	6.5	14.3	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	20.1	55.2	41.4	7.9	6.5	14.3	12.3
Queue Length 50th (ft)	25	44	27	41	20	20	4	55
Queue Length 95th (ft)	51	74	60	68	44	37	15	93
Internal Link Dist (ft)		344		509		267		305
Turn Bay Length (ft)	200		130		130		90	
Base Capacity (vph)	203	1258	251	824	640	2276	630	1894
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.22	0.18	0.17	0.15	0.09	0.02	0.19

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 102: Washington Avenue & 17 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	143	100	39	110	15	83	152	21	12	255	60
Future Volume (veh/h)	43	143	100	39	110	15	83	152	21	12	255	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.96		0.93	0.99		0.97	0.98		0.96
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	48	161	112	44	124	17	93	171	24	13	287	67
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	289	545	349	244	508	68	602	1837	253	635	1377	315
Arrive On Green	0.04	0.27	0.27	0.16	0.16	0.16	0.06	0.79	0.79	0.65	0.65	0.65
Sat Flow, veh/h	1767	2008	1286	1054	3093	413	1767	3097	427	1156	2822	645
Grp Volume(v), veh/h	48	140	133	44	69	72	93	96	99	13	177	177
Grp Sat Flow(s),veh/h/ln	1767	1763	1531	1054	1763	1744	1767	1763	1761	1156	1763	1705
Q Serve(g_s), s	2.2	6.3	7.0	3.7	3.5	3.6	2.5	1.3	1.3	0.4	4.1	4.3
Cycle Q Clear(g_c), s	2.2	6.3	7.0	3.7	3.5	3.6	2.5	1.3	1.3	0.4	4.1	4.3
Prop In Lane	1.00		0.84	1.00		0.24	1.00		0.24	1.00		0.38
Lane Grp Cap(c), veh/h	289	478	415	244	290	287	602	1046	1044	635	860	832
V/C Ratio(X)	0.17	0.29	0.32	0.18	0.24	0.25	0.15	0.09	0.09	0.02	0.21	0.21
Avail Cap(c_a), veh/h	330	646	561	322	419	414	626	1046	1044	635	860	832
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	29.1	29.4	36.8	36.7	36.8	10.7	4.5	4.5	9.2	9.8	9.8
Incr Delay (d2), s/veh	0.1	0.2	0.3	0.3	0.3	0.3	0.0	0.2	0.2	0.1	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.7	2.6	1.0	1.5	1.6	0.9	0.5	0.5	0.1	1.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	29.4	29.7	37.1	37.0	37.1	10.7	4.6	4.7	9.2	10.3	10.4
LnGrp LOS	C	C	C	D	D	D	B	A	A	A	B	B
Approach Vol, veh/h		321			185			288			367	
Approach Delay, s/veh		29.9			37.1			6.6			10.3	
Approach LOS		C			D			A			B	
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	10.6	55.6	10.8	24.0	66.2	34.8						
Change Period (Y+Rc), s	6.0	* 6.3	* 7.1	7.4	* 6.3	7.4						
Max Green Setting (Gmax), s	6.0	* 38	* 6	24.0	* 50	37.0						
Max Q Clear Time (g_c+I1), s	4.5	6.3	4.2	5.7	3.3	9.0						
Green Ext Time (p_c), s	0.0	0.8	0.0	0.7	0.4	1.4						

### Intersection Summary

HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# Timings

## 103: 15 Street & Washington Avenue



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	97	52	267	344
Future Volume (vph)	97	52	267	344
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		6	2
Permitted Phases		6		
Detector Phase	8	6	6	2
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	7.0
Minimum Split (s)	35.0	29.0	29.0	29.0
Total Split (s)	35.0	65.0	65.0	65.0
Total Split (%)	35.0%	65.0%	65.0%	65.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	12.1		75.9	75.9
Actuated g/C Ratio	0.12		0.76	0.76
v/c Ratio	0.75		0.16	0.16
Control Delay	54.1		3.0	5.7
Queue Delay	0.0		0.0	0.0
Total Delay	54.1		3.0	5.7
LOS	D		A	A
Approach Delay	54.1		3.0	5.7
Approach LOS	D		A	A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 20 (20%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 13.4  
 Intersection Capacity Utilization 62.5%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service B

### Splits and Phases: 103: 15 Street & Washington Avenue



## Queues

### 103: 15 Street & Washington Avenue



Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	170	355	412
v/c Ratio	0.75	0.16	0.16
Control Delay	54.1	3.0	5.7
Queue Delay	0.0	0.0	0.0
Total Delay	54.1	3.0	5.7
Queue Length 50th (ft)	88	12	41
Queue Length 95th (ft)	149	63	65
Internal Link Dist (ft)	344	314	511
Turn Bay Length (ft)			
Base Capacity (vph)	505	2162	2595
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.16	0.16

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 103: 15 Street & Washington Avenue



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	97	56	52	267	344	27
Future Volume (veh/h)	97	56	52	267	344	27
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.93	0.97			0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	108	62	58	297	382	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	189	108	350	1817	2296	179
Arrive On Green	0.18	0.18	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1038	596	433	2686	3381	256
Grp Volume(v), veh/h	171	0	177	178	204	208
Grp Sat Flow(s),veh/h/ln	1644	0	1430	1604	1763	1782
Q Serve(g_s), s	9.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.5	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.63	0.36	0.33			0.14
Lane Grp Cap(c), veh/h	299	0	1046	1120	1231	1244
V/C Ratio(X)	0.57	0.00	0.17	0.16	0.17	0.17
Avail Cap(c_a), veh/h	477	0	1046	1120	1231	1244
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.4	0.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.1	0.1	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.0	0.0	0.4	0.3	0.3	0.3
LnGrp LOS	D	A	A	A	A	A
Approach Vol, veh/h				355	412	
Approach Delay, s/veh	38.0			0.3	0.3	
Approach LOS	D			A	A	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		75.8			75.8	24.2
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		59.0			59.0	29.0
Max Q Clear Time (g_c+I1), s		2.0			2.0	11.5
Green Ext Time (p_c), s		0.9			0.8	0.1

### Intersection Summary

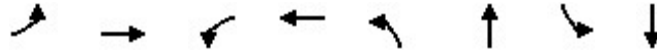
HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A

### Notes

User approved volume balancing among the lanes for turning movement.

# Timings

## 104: Washington Avenue & 11 Street



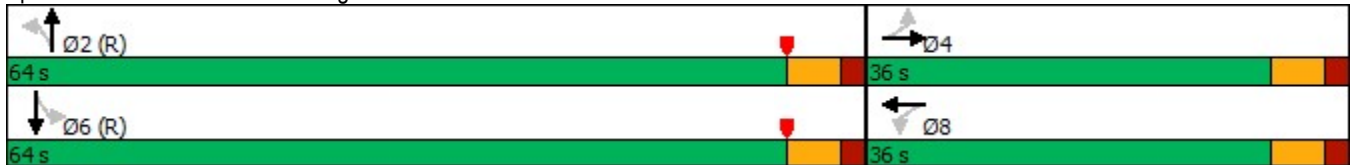
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↙	↕		↕
Traffic Volume (vph)	46	22	13	13	11	241	3	314
Future Volume (vph)	46	22	13	13	11	241	3	314
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0
Total Split (s)	36.0	36.0	36.0	36.0	64.0	64.0	64.0	64.0
Total Split (%)	36.0%	36.0%	36.0%	36.0%	64.0%	64.0%	64.0%	64.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		10.3		10.3	77.7	77.7		77.7
Actuated g/C Ratio		0.10		0.10	0.78	0.78		0.78
v/c Ratio		0.67		0.20	0.02	0.12		0.15
Control Delay		54.8		42.5	3.4	3.0		3.2
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		54.8		42.5	3.4	3.0		3.2
LOS		D		D	A	A		A
Approach Delay		54.8		42.5		3.0		3.2
Approach LOS		D		D		A		A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 76 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.67  
 Intersection Signal Delay: 11.1  
 Intersection Capacity Utilization 44.6%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service A

### Splits and Phases: 104: Washington Avenue & 11 Street



## Queues

### 104: Washington Avenue & 11 Street

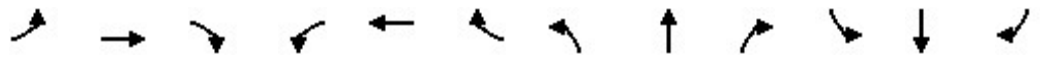


Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	108	30	13	309	382
v/c Ratio	0.67	0.20	0.02	0.12	0.15
Control Delay	54.8	42.5	3.4	3.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	42.5	3.4	3.0	3.2
Queue Length 50th (ft)	56	18	1	18	24
Queue Length 95th (ft)	100	41	7	34	44
Internal Link Dist (ft)	327	410		335	214
Turn Bay Length (ft)			80		
Base Capacity (vph)	440	438	690	2637	2572
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.25	0.07	0.02	0.12	0.15

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

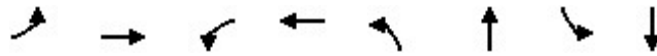
## 104: Washington Avenue & 11 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕			↕	
Traffic Volume (veh/h)	46	22	24	13	13	0	11	241	21	3	314	8
Future Volume (veh/h)	46	22	24	13	13	0	11	241	21	3	314	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.92	0.96		1.00	0.97		0.91	0.96		0.90
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	54	26	28	15	15	0	13	284	25	4	369	9
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	97	86	214	197	0	687	2130	185	43	2241	54
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.00	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	663	433	384	713	878	0	962	3250	283	10	3418	83
Grp Volume(v), veh/h	108	0	0	30	0	0	13	153	156	201	0	181
Grp Sat Flow(s),veh/h/ln	1480	0	0	1591	0	0	962	1763	1770	1847	0	1663
Q Serve(g_s), s	3.8	0.0	0.0	0.0	0.0	0.0	0.2	1.3	1.3	0.0	0.0	1.6
Cycle Q Clear(g_c), s	5.8	0.0	0.0	1.3	0.0	0.0	1.8	1.3	1.3	1.6	0.0	1.6
Prop In Lane	0.50		0.26	0.50		0.00	1.00		0.16	0.02		0.05
Lane Grp Cap(c), veh/h	386	0	0	411	0	0	687	1156	1160	1248	0	1090
V/C Ratio(X)	0.28	0.00	0.00	0.07	0.00	0.00	0.02	0.13	0.13	0.16	0.00	0.17
Avail Cap(c_a), veh/h	496	0	0	526	0	0	687	1156	1160	1248	0	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	0.0	0.0	30.6	0.0	0.0	2.5	2.3	2.3	2.3	0.0	2.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	0.6	0.0	0.0	0.0	0.5	0.5	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.4	0.0	0.0	30.6	0.0	0.0	2.5	2.5	2.5	2.6	0.0	2.6
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		108			30			322				382
Approach Delay, s/veh		32.4			30.6			2.5				2.6
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.6		28.4		71.6		28.4				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		58.0		30.0		58.0		30.0				
Max Q Clear Time (g_c+I1), s		3.8		7.8		3.6		3.3				
Green Ext Time (p_c), s		0.7		0.2		0.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				7.4								
HCM 6th LOS				A								

# Timings

## 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	24	103	52	43	23	204	53	307
Future Volume (vph)	24	103	52	43	23	204	53	307
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		6		2		4		8
Permitted Phases	6		2		4		8	
Detector Phase	6	6	2	2	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	24.0	24.0	24.0	24.0	32.0	32.0	32.0	32.0
Total Split (s)	41.0	41.0	41.0	41.0	32.0	32.0	32.0	32.0
Total Split (%)	56.2%	56.2%	56.2%	56.2%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.3	9.3	9.3	9.3	18.3	18.3	18.3	18.3
Actuated g/C Ratio	0.28	0.28	0.28	0.28	0.56	0.56	0.56	0.56
v/c Ratio	0.10	0.34	0.21	0.20	0.06	0.36	0.13	0.50
Control Delay	14.0	13.9	15.2	10.5	6.3	7.7	6.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	13.9	15.2	10.5	6.3	7.7	6.9	9.6
LOS	B	B	B	B	A	A	A	A
Approach Delay		13.9		12.5		7.6		9.2
Approach LOS		B		B		A		A

### Intersection Summary

Cycle Length: 73	
Actuated Cycle Length: 32.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

### Splits and Phases: 105: Meridian Avenue & 15 Street



# Queues

## 105: Meridian Avenue & 15 Street

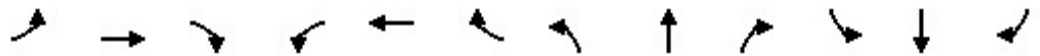


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	159	63	86	28	315	64	448
v/c Ratio	0.10	0.34	0.21	0.20	0.06	0.36	0.13	0.50
Control Delay	14.0	13.9	15.2	10.5	6.3	7.7	6.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	13.9	15.2	10.5	6.3	7.7	6.9	9.6
Queue Length 50th (ft)	4	20	9	8	3	33	6	54
Queue Length 95th (ft)	20	63	35	34	11	76	21	119
Internal Link Dist (ft)		220		256		182		130
Turn Bay Length (ft)	100		50		100		150	
Base Capacity (vph)	963	1472	1009	1369	617	1209	693	1217
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.11	0.06	0.06	0.05	0.26	0.09	0.37

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 105: Meridian Avenue & 15 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	103	29	52	43	28	23	204	57	53	307	65
Future Volume (veh/h)	24	103	29	52	43	28	23	204	57	53	307	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.88	0.93		0.87	0.97		0.91	0.96		0.90
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	29	124	35	63	52	34	28	246	69	64	370	78
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	438	338	95	382	247	161	378	558	156	483	597	126
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	1193	1210	342	1133	884	578	909	1223	343	1017	1309	276
Grp Volume(v), veh/h	29	0	159	63	0	86	28	0	315	64	0	448
Grp Sat Flow(s),veh/h/ln	1193	0	1552	1133	0	1462	909	0	1566	1017	0	1585
Q Serve(g_s), s	0.9	0.0	3.7	2.1	0.0	2.0	1.1	0.0	6.2	2.1	0.0	9.7
Cycle Q Clear(g_c), s	2.9	0.0	3.7	5.9	0.0	2.0	10.8	0.0	6.2	8.3	0.0	9.7
Prop In Lane	1.00		0.22	1.00		0.40	1.00		0.22	1.00		0.17
Lane Grp Cap(c), veh/h	438	0	433	382	0	408	378	0	714	483	0	723
V/C Ratio(X)	0.07	0.00	0.37	0.16	0.00	0.21	0.07	0.00	0.44	0.13	0.00	0.62
Avail Cap(c_a), veh/h	1025	0	1197	939	0	1128	485	0	898	602	0	908
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(l)	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	13.6	0.0	13.1	15.5	0.0	12.5	13.5	0.0	8.4	11.2	0.0	9.4
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.3	0.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	1.1	0.5	0.0	0.6	0.2	0.0	1.6	0.4	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	0.0	13.3	15.6	0.0	12.6	13.5	0.0	8.7	11.3	0.0	10.0
LnGrp LOS	B	A	B	B	A	B	B	A	A	B	A	B
Approach Vol, veh/h		188			149			343			512	
Approach Delay, s/veh		13.4			13.9			9.1			10.2	
Approach LOS		B			B			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.7		26.7		18.7		26.7				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		35.0		26.0		35.0		26.0				
Max Q Clear Time (g_c+I1), s		7.9		12.8		5.7		11.7				
Green Ext Time (p_c), s		0.2		1.4		0.4		2.3				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				10.8								
HCM 6th LOS				B								

# Timings

## 106: Washington Avenue & 16 Street

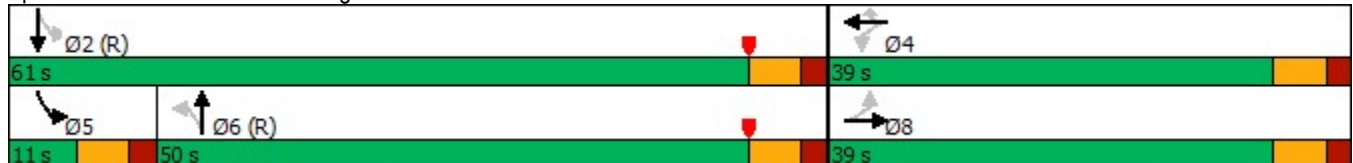


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	20	113	9	73	8	95	125	15	91
Future Volume (vph)	20	113	9	73	8	95	125	15	91
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		8		4			6	5	2
Permitted Phases	8		4		4	6		2	
Detector Phase	8	8	4	4	4	6	6	5	2
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0	27.0	27.0	11.0	27.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	50.0	50.0	11.0	61.0
Total Split (%)	39.0%	39.0%	39.0%	39.0%	39.0%	50.0%	50.0%	11.0%	61.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)		17.4		17.4	17.4	66.1	66.1	70.6	70.6
Actuated g/C Ratio		0.17		0.17	0.17	0.66	0.66	0.71	0.71
v/c Ratio		0.74		0.34	0.03	0.15	0.16	0.02	0.12
Control Delay		50.6		37.9	0.1	7.2	6.3	5.9	5.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		50.6		37.9	0.1	7.2	6.3	5.9	5.0
LOS		D		D	A	A	A	A	A
Approach Delay		50.6		34.6			6.6		5.1
Approach LOS		D		C			A		A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 1 (1%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 22.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 58.2%  
 ICU Level of Service B  
 Analysis Period (min) 15

### Splits and Phases: 106: Washington Avenue & 16 Street



## Queues

### 106: Washington Avenue & 16 Street

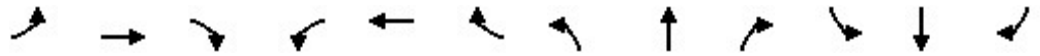


Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	207	94	9	109	169	17	136
v/c Ratio	0.74	0.34	0.03	0.15	0.16	0.02	0.12
Control Delay	50.6	37.9	0.1	7.2	6.3	5.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	37.9	0.1	7.2	6.3	5.9	5.0
Queue Length 50th (ft)	115	53	0	15	21	3	20
Queue Length 95th (ft)	170	89	0	52	67	11	47
Internal Link Dist (ft)	176	216			511		240
Turn Bay Length (ft)				90		60	
Base Capacity (vph)	514	522	520	714	1068	712	1125
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.18	0.02	0.15	0.16	0.02	0.12

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 106: Washington Avenue & 16 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔		↔	↔	
Traffic Volume (veh/h)	20	113	47	9	73	8	95	125	22	15	91	27
Future Volume (veh/h)	20	113	47	9	73	8	95	125	22	15	91	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	0.99		0.96	0.99		0.97
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	23	130	54	10	84	9	109	144	25	17	105	31
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	59	204	79	56	340	269	817	833	145	830	840	248
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	1.00	1.00	1.00	0.02	0.68	0.68
Sat Flow, veh/h	97	1040	401	80	1735	1369	1231	1377	239	1767	1229	363
Grp Volume(v), veh/h	207	0	0	94	0	9	109	0	169	17	0	136
Grp Sat Flow(s),veh/h/ln	1538	0	0	1815	0	1369	1231	0	1616	1767	0	1591
Q Serve(g_s), s	4.1	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	3.0
Cycle Q Clear(g_c), s	12.3	0.0	0.0	4.3	0.0	0.5	0.0	0.0	0.0	0.3	0.0	3.0
Prop In Lane	0.11		0.26	0.11		1.00	1.00		0.15	1.00		0.23
Lane Grp Cap(c), veh/h	342	0	0	396	0	269	817	0	978	830	0	1088
V/C Ratio(X)	0.61	0.00	0.00	0.24	0.00	0.03	0.13	0.00	0.17	0.02	0.00	0.12
Avail Cap(c_a), veh/h	543	0	0	630	0	452	817	0	978	885	0	1088
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.2	0.0	0.0	34.0	0.0	32.5	0.0	0.0	0.0	6.4	0.0	5.5
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.2
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	4.8	0.0	0.0	1.9	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	0.0	0.0	34.3	0.0	32.6	0.3	0.0	0.4	6.4	0.0	5.7
LnGrp LOS	D	A	A	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		207			103			278				153
Approach Delay, s/veh		38.5			34.1			0.3				5.8
Approach LOS		D			C			A				A
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		74.4		25.6	7.9	66.5		25.6				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		55.0		33.0	5.0	44.0		33.0				
Max Q Clear Time (g_c+I1), s		5.0		6.3	2.3	2.0		14.3				
Green Ext Time (p_c), s		0.3		0.4	0.0	0.4		0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				16.8								
HCM 6th LOS				B								

# Timings

## 107: Washington Avenue & Espanola Way

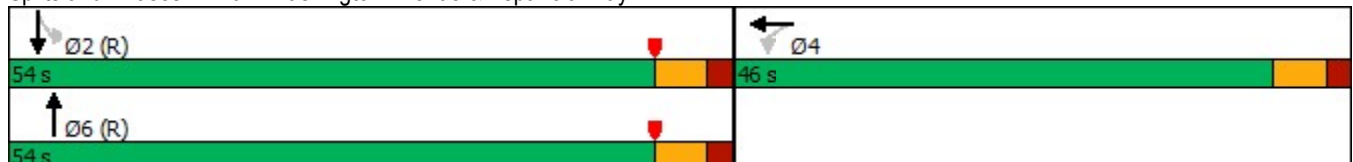


Lane Group	WBT	NBT	SBL	SBT
Lane Configurations	↔	↕		↕
Traffic Volume (vph)	0	266	9	368
Future Volume (vph)	0	266	9	368
Turn Type	NA	NA	Perm	NA
Protected Phases	4	6		2
Permitted Phases			2	
Detector Phase	4	6	2	2
Switch Phase				
Minimum Initial (s)	7.0	7.0	7.0	7.0
Minimum Split (s)	31.0	25.0	25.0	25.0
Total Split (s)	46.0	54.0	54.0	54.0
Total Split (%)	46.0%	54.0%	54.0%	54.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effect Green (s)	7.5	84.3		84.3
Actuated g/C Ratio	0.08	0.84		0.84
v/c Ratio	0.45	0.13		0.18
Control Delay	30.1	2.0		1.4
Queue Delay	0.0	0.0		0.0
Total Delay	30.1	2.0		1.4
LOS	C	A		A
Approach Delay	30.1	2.0		1.4
Approach LOS	C	A		A

### Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 15 (15%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.45  
 Intersection Signal Delay: 3.8  
 Intersection Capacity Utilization 40.9%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

### Splits and Phases: 107: Washington Avenue & Espanola Way



## Queues

### 107: Washington Avenue & Espanola Way



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	66	355	477
v/c Ratio	0.45	0.13	0.18
Control Delay	30.1	2.0	1.4
Queue Delay	0.0	0.0	0.0
Total Delay	30.1	2.0	1.4
Queue Length 50th (ft)	14	18	17
Queue Length 95th (ft)	44	27	20
Internal Link Dist (ft)	364	111	314
Turn Bay Length (ft)			
Base Capacity (vph)	594	2769	2651
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.11	0.13	0.18
<b>Intersection Summary</b>			

# HCM 6th Signalized Intersection Summary

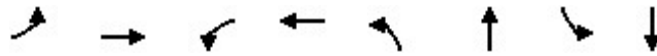
## 107: Washington Avenue & Espanola Way



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↕			↕	
Traffic Volume (veh/h)	0	0	0	17	0	35	0	266	14	9	368	0
Future Volume (veh/h)	0	0	0	17	0	35	0	266	14	9	368	0
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.90	1.00		0.96	0.99		1.00
Parking Bus, Adj				1.00	0.90	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1856	1856	1856	0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h				22	0	44	0	337	18	11	466	0
Peak Hour Factor				0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %				3	3	3	0	3	3	3	3	0
Cap, veh/h				64	0	129	0	2379	126	67	2500	0
Arrive On Green				0.14	0.00	0.14	0.00	0.74	0.74	0.74	0.74	0.00
Sat Flow, veh/h				455	0	909	0	3314	171	40	3470	0
Grp Volume(v), veh/h				66	0	0	0	184	171	254	223	0
Grp Sat Flow(s),veh/h/ln				1364	0	0	0	1763	1630	1822	1604	0
Q Serve(g_s), s				4.4	0.0	0.0	0.0	3.0	3.1	0.0	4.2	0.0
Cycle Q Clear(g_c), s				4.4	0.0	0.0	0.0	3.0	3.1	4.2	4.2	0.0
Prop In Lane				0.33		0.67	0.00		0.11	0.04		0.00
Lane Grp Cap(c), veh/h				193	0	0	0	1302	1204	1383	1185	0
V/C Ratio(X)				0.34	0.00	0.00	0.00	0.14	0.14	0.18	0.19	0.00
Avail Cap(c_a), veh/h				546	0	0	0	1302	1204	1383	1185	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	1.00	0.99	0.99	0.00
Uniform Delay (d), s/veh				38.7	0.0	0.0	0.0	3.8	3.8	4.0	4.0	0.0
Incr Delay (d2), s/veh				0.4	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	0.0	0.0	1.0	0.9	1.4	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				39.1	0.0	0.0	0.0	4.0	4.1	4.3	4.3	0.0
LnGrp LOS				D	A	A	A	A	A	A	A	A
Approach Vol, veh/h					66			355			477	
Approach Delay, s/veh					39.1			4.1			4.3	
Approach LOS					D			A			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		79.8		20.2		79.8						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		48.0		40.0		48.0						
Max Q Clear Time (g_c+I1), s		6.2		6.4		5.1						
Green Ext Time (p_c), s		1.0		0.1		0.7						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				6.8								
HCM 6th LOS				A								

# Timings

## 101: Alton Road & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔	↗	↖	↗	↖	↗	↖
Traffic Volume (vph)	46	64	126	50	63	975	110	742
Future Volume (vph)	46	64	126	50	63	975	110	742
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		8		4	1	6	5	2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	5.0	7.0
Minimum Split (s)	37.1	37.1	37.1	37.1	13.0	29.1	13.0	29.1
Total Split (s)	56.1	56.1	56.1	56.1	24.0	70.0	24.0	70.0
Total Split (%)	37.4%	37.4%	37.4%	37.4%	16.0%	46.6%	16.0%	46.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1	6.1	6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)		27.6	27.6	27.6	102.9	96.4	107.1	100.1
Actuated g/C Ratio		0.18	0.18	0.18	0.69	0.64	0.71	0.67
v/c Ratio		0.73	0.90	0.54	0.16	0.58	0.39	0.40
Control Delay		74.0	110.9	35.0	8.2	18.5	10.9	13.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		74.0	110.9	35.0	8.2	18.5	10.9	13.8
LOS		E	F	D	A	B	B	B
Approach Delay		74.0		69.7		17.9		13.5
Approach LOS		E		E		B		B

### Intersection Summary

Cycle Length: 150.1

Actuated Cycle Length: 150.1

Offset: 115 (77%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 25.3

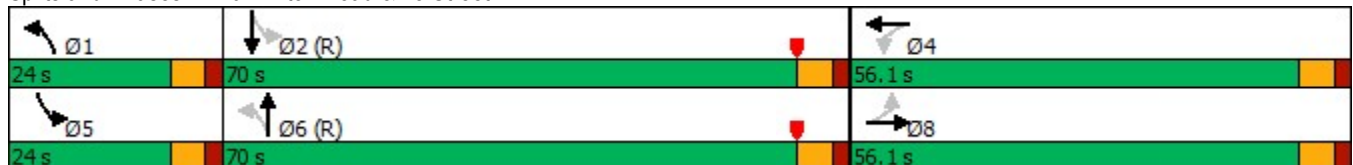
Intersection LOS: C

Intersection Capacity Utilization 105.2%

ICU Level of Service G

Analysis Period (min) 15

### Splits and Phases: 101: Alton Road & 15 Street



## Queues

### 101: Alton Road & 15 Street






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	133	158	66	1120	116	819
v/c Ratio	0.73	0.90	0.54	0.16	0.58	0.39	0.40
Control Delay	74.0	110.9	35.0	8.2	18.5	10.9	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.0	110.9	35.0	8.2	18.5	10.9	13.8
Queue Length 50th (ft)	125	129	77	16	306	29	185
Queue Length 95th (ft)	188	197	140	41	493	66	299
Internal Link Dist (ft)	401		387		285		834
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	346	267	473	512	1936	389	2070
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.50	0.33	0.13	0.58	0.30	0.40

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	64	26	126	50	100	63	975	89	110	742	36
Future Volume (veh/h)	46	64	26	126	50	100	63	975	89	110	742	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.81	1.00		0.81	0.99		0.89	1.00		0.89
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670
Adj Flow Rate, veh/h	48	67	27	133	53	105	66	1026	94	116	781	38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	74	85	30	201	88	175	398	1547	142	301	1663	81
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.04	0.78	0.78	0.06	0.80	0.80
Sat Flow, veh/h	169	342	120	1162	353	700	1590	2636	241	1590	2777	135
Grp Volume(v), veh/h	142	0	0	133	0	158	66	617	503	116	446	373
Grp Sat Flow(s),veh/h/ln	631	0	0	1162	0	1054	1590	1586	1291	1590	1586	1326
Q Serve(g_s), s	15.0	0.0	0.0	0.0	0.0	19.9	2.5	26.5	26.6	4.4	13.7	13.7
Cycle Q Clear(g_c), s	34.9	0.0	0.0	33.9	0.0	19.9	2.5	26.5	26.6	4.4	13.7	13.7
Prop In Lane	0.34		0.19	1.00		0.66	1.00		0.19	1.00		0.10
Lane Grp Cap(c), veh/h	189	0	0	201	0	263	398	931	758	301	950	794
V/C Ratio(X)	0.75	0.00	0.00	0.66	0.00	0.60	0.17	0.66	0.66	0.39	0.47	0.47
Avail Cap(c_a), veh/h	279	0	0	299	0	351	539	931	758	423	950	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.2	0.0	0.0	55.0	0.0	49.7	11.8	9.7	9.7	14.0	7.5	7.5
Incr Delay (d2), s/veh	4.8	0.0	0.0	2.7	0.0	1.6	0.1	3.7	4.5	0.3	1.7	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.0	5.1	0.0	5.4	0.9	7.7	6.5	1.6	4.1	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.0	0.0	0.0	57.7	0.0	51.4	11.9	13.4	14.3	14.3	9.2	9.5
LnGrp LOS	E	A	A	E	A	D	B	B	B	B	A	A
Approach Vol, veh/h		142			291			1186			935	
Approach Delay, s/veh		64.0			54.3			13.7			10.0	
Approach LOS		E			D			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.7	95.8		43.5	12.5	94.0		43.5				
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1				
Max Green Setting (Gmax), s	18.0	64.0		50.0	18.0	64.0		50.0				
Max Q Clear Time (g_c+I1), s	4.5	15.7		35.9	6.4	28.6		36.9				
Green Ext Time (p_c), s	0.0	1.9		1.1	0.1	2.9		0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.7								
HCM 6th LOS				B								

# Timings

## 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↶	↶↷	↶	↶↷	↶	↶↷	↶	↶↷
Traffic Volume (vph)	148	183	62	188	214	429	30	268
Future Volume (vph)	148	183	62	188	214	429	30	268
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	3	8		4	1	6		2
Permitted Phases	8		4		6		2	
Detector Phase	3	8	4	4	1	6	2	2
Switch Phase								
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.1	30.4	30.4	30.4	11.0	27.3	27.3	27.3
Total Split (s)	13.1	44.4	31.4	31.4	12.0	76.3	64.3	64.3
Total Split (%)	10.8%	36.8%	26.0%	26.0%	9.9%	63.2%	53.2%	53.2%
Yellow Time (s)	3.7	4.0	4.0	4.0	3.7	4.0	4.0	4.0
All-Red Time (s)	3.4	3.4	3.4	3.4	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.4	7.4	7.4	6.0	6.3	6.3	6.3
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	27.4	27.1	14.0	14.0	80.3	80.0	64.3	64.3
Actuated g/C Ratio	0.23	0.22	0.12	0.12	0.66	0.66	0.53	0.53
v/c Ratio	0.75	0.40	0.61	0.56	0.38	0.23	0.07	0.22
Control Delay	62.2	25.5	72.6	53.0	10.5	8.6	16.4	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	25.5	72.6	53.0	10.5	8.6	16.4	14.1
LOS	E	C	E	D	B	A	B	B
Approach Delay		37.6		57.4		9.1		14.3
Approach LOS		D		E		A		B

### Intersection Summary

Cycle Length: 120.8

Actuated Cycle Length: 120.8

Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 24.7

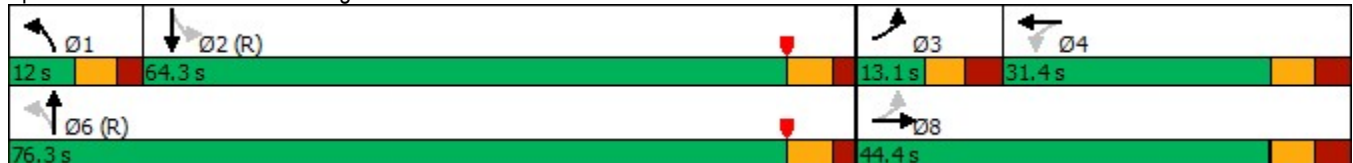
Intersection LOS: C

Intersection Capacity Utilization 76.2%

ICU Level of Service D

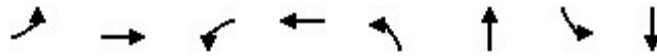
Analysis Period (min) 15

### Splits and Phases: 102: Washington Avenue & 17 Street



## Queues

### 102: Washington Avenue & 17 Street

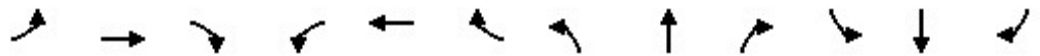


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	159	321	67	227	230	517	32	380
v/c Ratio	0.75	0.40	0.61	0.56	0.38	0.23	0.07	0.22
Control Delay	62.2	25.5	72.6	53.0	10.5	8.6	16.4	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	25.5	72.6	53.0	10.5	8.6	16.4	14.1
Queue Length 50th (ft)	107	70	51	86	62	72	12	68
Queue Length 95th (ft)	160	105	96	120	116	116	33	109
Internal Link Dist (ft)		344		509		267		305
Turn Bay Length (ft)	200		130		130		90	
Base Capacity (vph)	212	1045	189	684	603	2272	440	1726
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.31	0.35	0.33	0.38	0.23	0.07	0.22

### Intersection Summary

# HCM 6th Signalized Intersection Summary

## 102: Washington Avenue & 17 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕		↖	↕		↖	↕	
Traffic Volume (veh/h)	148	183	115	62	188	23	214	429	52	30	268	86
Future Volume (veh/h)	148	183	115	62	188	23	214	429	52	30	268	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.91	0.92		0.84	0.98		0.93	0.97		0.91
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	159	197	124	67	202	25	230	461	56	32	288	92
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	279	597	348	236	562	68	586	1872	226	481	1285	397
Arrive On Green	0.05	0.29	0.29	0.18	0.18	0.18	0.07	0.79	0.79	0.66	0.66	0.66
Sat Flow, veh/h	1767	2059	1200	969	3093	372	1767	3136	378	847	2581	798
Grp Volume(v), veh/h	159	166	155	67	113	114	230	258	259	32	194	186
Grp Sat Flow(s),veh/h/ln	1767	1763	1496	969	1763	1702	1767	1763	1752	847	1763	1616
Q Serve(g_s), s	6.0	9.0	9.9	7.4	6.8	7.1	6.0	4.5	4.6	1.6	5.3	5.6
Cycle Q Clear(g_c), s	6.0	9.0	9.9	7.4	6.8	7.1	6.0	4.5	4.6	1.6	5.3	5.6
Prop In Lane	1.00		0.80	1.00		0.22	1.00		0.22	1.00		0.49
Lane Grp Cap(c), veh/h	279	511	434	236	320	309	586	1052	1046	481	877	804
V/C Ratio(X)	0.57	0.33	0.36	0.28	0.35	0.37	0.39	0.24	0.25	0.07	0.22	0.23
Avail Cap(c_a), veh/h	279	539	457	252	350	338	586	1052	1046	481	877	804
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	33.7	34.0	43.5	43.3	43.4	14.6	5.5	5.5	10.5	11.2	11.2
Incr Delay (d2), s/veh	1.8	0.3	0.4	0.5	0.5	0.5	0.2	0.6	0.6	0.3	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.9	3.7	1.8	3.0	3.1	0.9	1.7	1.7	0.3	2.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	34.0	34.4	44.0	43.8	44.0	14.8	6.0	6.1	10.8	11.7	11.9
LnGrp LOS	D	C	C	D	D	D	B	A	A	B	B	B
Approach Vol, veh/h		480			294			747			412	
Approach Delay, s/veh		37.0			43.9			8.7			11.7	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	12.0	66.5	13.1	29.4	78.5	42.5						
Change Period (Y+Rc), s	6.0	* 6.3	* 7.1	7.4	* 6.3	7.4						
Max Green Setting (Gmax), s	6.0	* 58	* 6	24.0	* 70	37.0						
Max Q Clear Time (g_c+I1), s	8.0	7.6	8.0	9.4	6.6	11.9						
Green Ext Time (p_c), s	0.0	0.9	0.0	1.1	1.1	1.7						

### Intersection Summary

HCM 6th Ctrl Delay	21.8
HCM 6th LOS	C

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# Timings

## 103: 15 Street & Washington Avenue



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	73	68	503	495
Future Volume (vph)	73	68	503	495
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		6	2
Permitted Phases		6		
Detector Phase	8	6	6	2
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	7.0
Minimum Split (s)	35.0	29.0	29.0	29.0
Total Split (s)	35.0	85.0	85.0	85.0
Total Split (%)	29.2%	70.8%	70.8%	70.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	11.9		96.1	96.1
Actuated g/C Ratio	0.10		0.80	0.80
v/c Ratio	0.76		0.28	0.23
Control Delay	63.9		3.1	4.4
Queue Delay	0.0		0.1	0.0
Total Delay	63.9		3.2	4.4
LOS	E		A	A
Approach Delay	63.9		3.2	4.4
Approach LOS	E		A	A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 57 (48%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 10.3  
 Intersection Capacity Utilization 72.3%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

### Splits and Phases: 103: 15 Street & Washington Avenue



## Queues

### 103: 15 Street & Washington Avenue



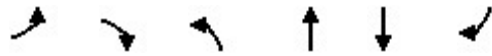
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	144	607	591
v/c Ratio	0.76	0.28	0.23
Control Delay	63.9	3.1	4.4
Queue Delay	0.0	0.1	0.0
Total Delay	63.9	3.2	4.4
Queue Length 50th (ft)	85	41	60
Queue Length 95th (ft)	148	57	m93
Internal Link Dist (ft)	344	314	157
Turn Bay Length (ft)			
Base Capacity (vph)	415	2186	2608
Starvation Cap Reductn	0	679	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.35	0.40	0.23

#### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

## 103: 15 Street & Washington Avenue



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	73	62	68	503	495	60
Future Volume (veh/h)	73	62	68	503	495	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.86	0.96			0.83
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	78	66	72	535	527	64
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	176	149	252	1851	2127	256
Arrive On Green	0.21	0.21	1.00	1.00	0.69	0.69
Sat Flow, veh/h	833	705	311	2774	3183	373
Grp Volume(v), veh/h	145	0	291	316	299	292
Grp Sat Flow(s),veh/h/ln	1548	0	1396	1604	1763	1700
Q Serve(g_s), s	9.8	0.0	0.7	0.0	7.6	7.8
Cycle Q Clear(g_c), s	9.8	0.0	8.5	0.0	7.6	7.8
Prop In Lane	0.54	0.46	0.25			0.22
Lane Grp Cap(c), veh/h	328	0	999	1104	1213	1170
V/C Ratio(X)	0.44	0.00	0.29	0.29	0.25	0.25
Avail Cap(c_a), veh/h	374	0	999	1104	1213	1170
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	41.1	0.0	0.0	0.0	7.0	7.0
Incr Delay (d2), s/veh	0.3	0.0	0.7	0.6	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	0.2	0.2	2.9	2.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.5	0.0	0.8	0.6	7.5	7.5
LnGrp LOS	D	A	A	A	A	A
Approach Vol, veh/h	145			607	591	
Approach Delay, s/veh	41.5			0.7	7.5	
Approach LOS	D			A	A	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		88.6			88.6	31.4
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		79.0			79.0	29.0
Max Q Clear Time (g_c+I1), s		9.8			10.5	11.8
Green Ext Time (p_c), s		1.3			1.5	0.1

### Intersection Summary

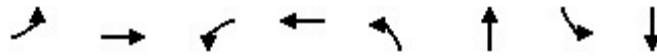
HCM 6th Ctrl Delay	8.1
HCM 6th LOS	A

### Notes

User approved volume balancing among the lanes for turning movement.

# Timings

## 104: Washington Avenue & 11 Street

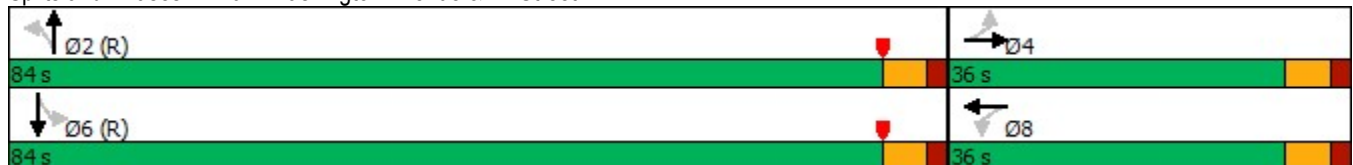


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↙	↕		↕
Traffic Volume (vph)	51	34	30	33	43	495	24	461
Future Volume (vph)	51	34	30	33	43	495	24	461
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0
Total Split (s)	36.0	36.0	36.0	36.0	84.0	84.0	84.0	84.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		12.6		12.6	95.4	95.4		95.4
Actuated g/C Ratio		0.10		0.10	0.80	0.80		0.80
v/c Ratio		0.78		0.61	0.08	0.21		0.23
Control Delay		80.8		56.7	3.8	3.5		3.6
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		80.8		56.7	3.8	3.5		3.6
LOS		F		E	A	A		A
Approach Delay		80.8		56.7		3.5		3.6
Approach LOS		F		E		A		A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 113 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.78  
 Intersection Signal Delay: 13.8  
 Intersection Capacity Utilization 69.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

### Splits and Phases: 104: Washington Avenue & 11 Street



## Queues

### 104: Washington Avenue & 11 Street



Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	113	99	45	559	550
v/c Ratio	0.78	0.61	0.08	0.21	0.23
Control Delay	80.8	56.7	3.8	3.5	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	80.8	56.7	3.8	3.5	3.6
Queue Length 50th (ft)	79	60	6	43	43
Queue Length 95th (ft)	137	113	19	78	78
Internal Link Dist (ft)	327	410		335	214
Turn Bay Length (ft)			80		
Base Capacity (vph)	329	357	553	2661	2422
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.34	0.28	0.08	0.21	0.23

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

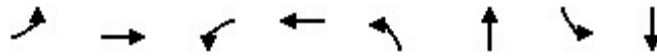
## 104: Washington Avenue & 11 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕			↕	
Traffic Volume (veh/h)	51	34	22	30	33	30	43	495	36	24	461	38
Future Volume (veh/h)	51	34	22	30	33	30	43	495	36	24	461	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.88	0.92		0.88	0.96		0.84	0.96		0.85
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	54	36	23	32	35	32	45	521	38	25	485	40
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	196	127	71	137	146	116	590	2174	158	104	1959	160
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.88	0.88	0.88	0.88	0.88	0.88
Sat Flow, veh/h	639	532	299	410	613	489	833	3284	238	108	2959	241
Grp Volume(v), veh/h	113	0	0	99	0	0	45	278	281	286	0	264
Grp Sat Flow(s),veh/h/ln	1471	0	0	1512	0	0	833	1763	1760	1715	0	1594
Q Serve(g_s), s	0.9	0.0	0.0	0.0	0.0	0.0	1.1	2.9	2.9	0.0	0.0	3.0
Cycle Q Clear(g_c), s	6.5	0.0	0.0	5.7	0.0	0.0	4.1	2.9	2.9	2.8	0.0	3.0
Prop In Lane	0.48		0.20	0.32		0.32	1.00		0.14	0.09		0.15
Lane Grp Cap(c), veh/h	394	0	0	399	0	0	590	1167	1165	1168	0	1055
V/C Ratio(X)	0.29	0.00	0.00	0.25	0.00	0.00	0.08	0.24	0.24	0.24	0.00	0.25
Avail Cap(c_a), veh/h	411	0	0	417	0	0	590	1167	1165	1168	0	1055
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.3	0.0	0.0	37.0	0.0	0.0	2.9	2.6	2.6	2.6	0.0	2.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.3	0.5	0.5	0.5	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	2.4	0.0	0.0	0.2	1.0	1.0	1.1	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	0.0	0.0	37.1	0.0	0.0	3.2	3.1	3.1	3.1	0.0	3.2
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		113			99			604				550
Approach Delay, s/veh		37.4			37.1			3.1				3.1
Approach LOS		D			D			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.4		34.6		85.4		34.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		78.0		30.0		78.0		30.0				
Max Q Clear Time (g_c+I1), s		6.1		8.5		5.0		7.7				
Green Ext Time (p_c), s		1.3		0.2		1.3		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				8.4								
HCM 6th LOS				A								

# Timings

## 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	72	88	87	91	73	499	60	389
Future Volume (vph)	72	88	87	91	73	499	60	389
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		6		2		4		8
Permitted Phases	6		2		4		8	
Detector Phase	6	6	2	2	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	24.0	24.0	24.0	24.0	32.0	32.0	32.0	32.0
Total Split (s)	41.0	41.0	41.0	41.0	32.0	32.0	32.0	32.0
Total Split (%)	56.2%	56.2%	56.2%	56.2%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.6	9.6	9.6	9.6	26.1	26.1	26.1	26.1
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.55	0.55	0.55	0.55
v/c Ratio	0.42	0.39	0.49	0.66	0.21	0.69	0.20	0.60
Control Delay	23.9	16.1	26.2	23.4	8.5	14.4	8.7	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	16.1	26.2	23.4	8.5	14.4	8.7	11.4
LOS	C	B	C	C	A	B	A	B
Approach Delay		19.0		24.2		13.8		11.1
Approach LOS		B		C		B		B

### Intersection Summary

Cycle Length: 73

Actuated Cycle Length: 47.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 15.3

Intersection LOS: B

Intersection Capacity Utilization 77.2%

ICU Level of Service D

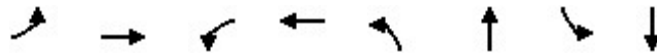
Analysis Period (min) 15

Splits and Phases: 105: Meridian Avenue & 15 Street



# Queues

## 105: Meridian Avenue & 15 Street























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	76	128	92	208	77	599	63	504
v/c Ratio	0.42	0.39	0.49	0.66	0.21	0.69	0.20	0.60
Control Delay	23.9	16.1	26.2	23.4	8.5	14.4	8.7	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	16.1	26.2	23.4	8.5	14.4	8.7	11.4
Queue Length 50th (ft)	18	22	23	38	9	96	7	74
Queue Length 95th (ft)	49	57	57	91	34	#300	30	192
Internal Link Dist (ft)		220		256		182		130
Turn Bay Length (ft)	100		50		100		150	
Base Capacity (vph)	666	1109	688	1018	360	873	308	847
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.12	0.13	0.20	0.21	0.69	0.20	0.60

### Intersection Summary

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

# HCM 6th Signalized Intersection Summary

## 105: Meridian Avenue & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	88	33	87	91	106	73	499	70	60	389	90
Future Volume (veh/h)	72	88	33	87	91	106	73	499	70	60	389	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		0.81	0.88		0.82	0.94		0.80	0.95		0.80
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	76	93	35	92	96	112	77	525	74	63	409	95
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	312	319	120	389	185	215	322	665	94	260	598	139
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1058	1077	405	1108	623	726	831	1384	195	772	1244	289
Grp Volume(v), veh/h	76	0	128	92	0	208	77	0	599	63	0	504
Grp Sat Flow(s),veh/h/ln	1058	0	1482	1108	0	1349	831	0	1579	772	0	1533
Q Serve(g_s), s	3.5	0.0	3.6	3.8	0.0	6.9	4.3	0.0	17.1	4.0	0.0	13.7
Cycle Q Clear(g_c), s	10.4	0.0	3.6	7.3	0.0	6.9	17.9	0.0	17.1	21.1	0.0	13.7
Prop In Lane	1.00		0.27	1.00		0.54	1.00		0.12	1.00		0.19
Lane Grp Cap(c), veh/h	312	0	439	389	0	400	322	0	759	260	0	736
V/C Ratio(X)	0.24	0.00	0.29	0.24	0.00	0.52	0.24	0.00	0.79	0.24	0.00	0.68
Avail Cap(c_a), veh/h	687	0	965	781	0	878	324	0	763	262	0	741
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(l)	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	20.1	0.0	14.6	17.4	0.0	15.7	17.8	0.0	11.7	20.5	0.0	10.8
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.4	0.3	0.0	5.4	0.4	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.1	0.9	0.0	1.9	0.8	0.0	5.8	0.7	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	14.7	17.5	0.0	16.1	18.0	0.0	17.1	20.9	0.0	13.2
LnGrp LOS	C	A	B	B	A	B	B	A	B	C	A	B
Approach Vol, veh/h		204			300			676			567	
Approach Delay, s/veh		16.8			16.6			17.2			14.1	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		21.9		31.8		21.9		31.8				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		35.0		26.0		35.0		26.0				
Max Q Clear Time (g_c+I1), s		9.3		19.9		12.4		23.1				
Green Ext Time (p_c), s		0.6		2.0		0.4		0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				16.0								
HCM 6th LOS				B								

# Timings

## 106: Washington Avenue & 16 Street

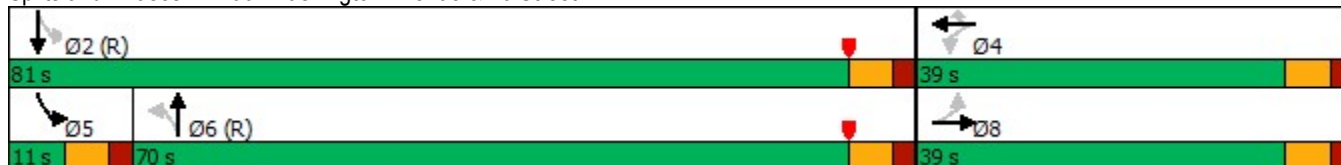


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	80	178	20	123	36	107	233	27	126
Future Volume (vph)	80	178	20	123	36	107	233	27	126
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		8		4			6	5	2
Permitted Phases	8		4		4	6		2	
Detector Phase	8	8	4	4	4	6	6	5	2
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0	27.0	27.0	11.0	27.0
Total Split (s)	39.0	39.0	39.0	39.0	39.0	70.0	70.0	11.0	81.0
Total Split (%)	32.5%	32.5%	32.5%	32.5%	32.5%	58.3%	58.3%	9.2%	67.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max
Act Effct Green (s)		31.8		31.8	31.8	69.6	69.6	76.2	76.2
Actuated g/C Ratio		0.26		0.26	0.26	0.58	0.58	0.64	0.64
v/c Ratio		0.96		0.37	0.09	0.18	0.28	0.05	0.17
Control Delay		81.3		38.7	0.4	11.7	11.6	8.9	8.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		81.3		38.7	0.4	11.7	11.6	8.9	8.4
LOS		F		D	A	B	B	A	A
Approach Delay		81.3		30.9			11.6		8.5
Approach LOS		F		C			B		A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 33 (28%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 36.1  
 Intersection Capacity Utilization 81.9%  
 Analysis Period (min) 15  
 Intersection LOS: D  
 ICU Level of Service D

### Splits and Phases: 106: Washington Avenue & 16 Street



## Queues

### 106: Washington Avenue & 16 Street



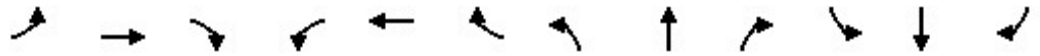
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	344	149	38	111	261	28	170
v/c Ratio	0.96	0.37	0.09	0.18	0.28	0.05	0.17
Control Delay	81.3	38.7	0.4	11.7	11.6	8.9	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.3	38.7	0.4	11.7	11.6	8.9	8.4
Queue Length 50th (ft)	252	93	0	35	80	8	44
Queue Length 95th (ft)	#438	155	2	58	113	19	75
Internal Link Dist (ft)	176	216			274		240
Turn Bay Length (ft)				90		60	
Base Capacity (vph)	370	412	432	601	946	557	1009
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.36	0.09	0.18	0.28	0.05	0.17

#### Intersection Summary

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

# HCM 6th Signalized Intersection Summary

## 106: Washington Avenue & 16 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Volume (veh/h)	80	178	73	20	123	36	107	233	17	27	126	37
Future Volume (veh/h)	80	178	73	20	123	36	107	233	17	27	126	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	0.99		0.96	0.98		0.94	0.99		0.95
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	185	76	21	128	38	111	243	18	28	131	39
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	109	207	79	71	395	374	708	840	62	617	762	227
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.55	0.55	0.55	0.03	0.63	0.63
Sat Flow, veh/h	262	752	288	133	1438	1359	1179	1528	113	1767	1219	363
Grp Volume(v), veh/h	344	0	0	149	0	38	111	0	261	28	0	170
Grp Sat Flow(s),veh/h/ln	1302	0	0	1570	0	1359	1179	0	1642	1767	0	1582
Q Serve(g_s), s	23.8	0.0	0.0	0.0	0.0	2.5	5.6	0.0	10.2	0.8	0.0	5.4
Cycle Q Clear(g_c), s	31.4	0.0	0.0	7.6	0.0	2.5	5.6	0.0	10.2	0.8	0.0	5.4
Prop In Lane	0.24		0.22	0.14		1.00	1.00		0.07	1.00		0.23
Lane Grp Cap(c), veh/h	395	0	0	466	0	374	708	0	902	617	0	989
V/C Ratio(X)	0.87	0.00	0.00	0.32	0.00	0.10	0.16	0.00	0.29	0.05	0.00	0.17
Avail Cap(c_a), veh/h	395	0	0	466	0	374	708	0	902	646	0	989
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(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.7	0.0	0.0	34.3	0.0	32.4	13.4	0.0	14.5	10.8	0.0	9.5
Incr Delay (d2), s/veh	18.2	0.0	0.0	0.3	0.0	0.1	0.5	0.0	0.8	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	0.0	0.0	3.5	0.0	0.8	1.6	0.0	4.0	0.3	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.0	0.0	0.0	34.6	0.0	32.5	13.9	0.0	15.3	10.8	0.0	9.8
LnGrp LOS	E	A	A	C	A	C	B	A	B	B	A	A
Approach Vol, veh/h		344			187			372				198
Approach Delay, s/veh		62.0			34.2			14.9				10.0
Approach LOS		E			C			B				A
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		81.0		39.0	9.0	72.0		39.0				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		75.0		33.0	5.0	64.0		33.0				
Max Q Clear Time (g_c+I1), s		7.4		9.6	2.8	12.2		33.4				
Green Ext Time (p_c), s		0.4		0.8	0.0	0.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				32.0								
HCM 6th LOS				C								

# Timings

## 107: Washington Avenue & Espanola Way

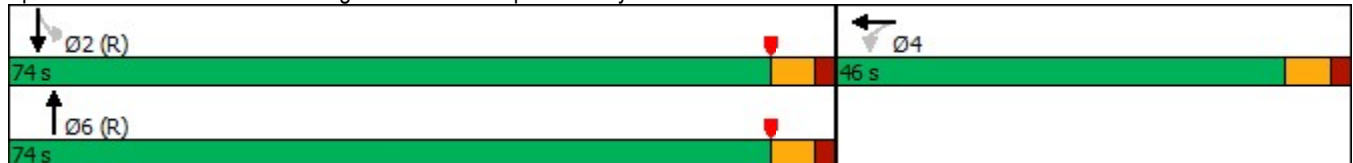


Lane Group	WBT	NBT	SBL	SBT
Lane Configurations	↔	↕		↕
Traffic Volume (vph)	0	572	31	513
Future Volume (vph)	0	572	31	513
Turn Type	NA	NA	Perm	NA
Protected Phases	4	6		2
Permitted Phases			2	
Detector Phase	4	6	2	2
Switch Phase				
Minimum Initial (s)	7.0	7.0	7.0	7.0
Minimum Split (s)	31.0	25.0	25.0	25.0
Total Split (s)	46.0	74.0	74.0	74.0
Total Split (%)	38.3%	61.7%	61.7%	61.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	9.5	102.3		102.3
Actuated g/C Ratio	0.08	0.85		0.85
v/c Ratio	0.63	0.25		0.23
Control Delay	52.8	2.6		1.4
Queue Delay	0.0	0.0		0.1
Total Delay	52.8	2.6		1.6
LOS	D	A		A
Approach Delay	52.8	2.6		1.6
Approach LOS	D	A		A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 67 (56%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 5.2  
 Intersection Capacity Utilization 67.7%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service C

### Splits and Phases: 107: Washington Avenue & Espanola Way



## Queues

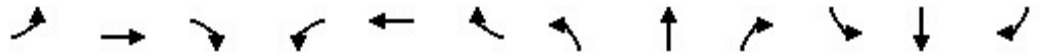
### 107: Washington Avenue & Espanola Way



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	83	685	579
v/c Ratio	0.63	0.25	0.23
Control Delay	52.8	2.6	1.4
Queue Delay	0.0	0.0	0.1
Total Delay	52.8	2.6	1.6
Queue Length 50th (ft)	36	43	23
Queue Length 95th (ft)	87	82	32
Internal Link Dist (ft)	364	111	314
Turn Bay Length (ft)			
Base Capacity (vph)	437	2713	2492
Starvation Cap Reductn	0	0	919
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.19	0.25	0.37
<b>Intersection Summary</b>			

# HCM 6th Signalized Intersection Summary

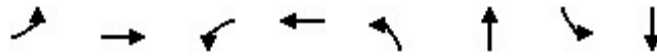
## 107: Washington Avenue & Espanola Way



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↕			↕	
Traffic Volume (veh/h)	0	0	0	43	0	35	0	572	71	31	513	0
Future Volume (veh/h)	0	0	0	43	0	35	0	572	71	31	513	0
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.75	1.00		0.93	0.99		1.00
Parking Bus, Adj				1.00	0.90	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1856	1856	1856	0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h				46	0	37	0	609	76	33	546	0
Peak Hour Factor				0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %				3	3	3	0	3	3	3	3	0
Cap, veh/h				144	0	116	0	2079	259	134	2175	0
Arrive On Green				0.20	0.00	0.20	0.00	0.70	0.70	1.00	1.00	0.00
Sat Flow, veh/h				724	0	582	0	3056	369	144	3185	0
Grp Volume(v), veh/h				83	0	0	0	362	323	296	283	0
Grp Sat Flow(s),veh/h/ln				1306	0	0	0	1763	1569	1640	1604	0
Q Serve(g_s), s				6.5	0.0	0.0	0.0	9.2	9.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s				6.5	0.0	0.0	0.0	9.2	9.3	0.0	0.0	0.0
Prop In Lane				0.55		0.45	0.00		0.23	0.11		0.00
Lane Grp Cap(c), veh/h				259	0	0	0	1237	1100	1184	1125	0
V/C Ratio(X)				0.32	0.00	0.00	0.00	0.29	0.29	0.25	0.25	0.00
Avail Cap(c_a), veh/h				435	0	0	0	1237	1100	1184	1125	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.00	1.00	1.00	0.98	0.98	0.00
Uniform Delay (d), s/veh				41.2	0.0	0.0	0.0	6.7	6.7	0.0	0.0	0.0
Incr Delay (d2), s/veh				0.3	0.0	0.0	0.0	0.6	0.7	0.5	0.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.1	0.0	0.0	0.0	3.4	3.1	0.2	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				41.4	0.0	0.0	0.0	7.3	7.4	0.5	0.5	0.0
LnGrp LOS				D	A	A	A	A	A	A	A	A
Approach Vol, veh/h					83			685			579	
Approach Delay, s/veh					41.4			7.4			0.5	
Approach LOS					D			A			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		90.2		29.8		90.2						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		68.0		40.0		68.0						
Max Q Clear Time (g_c+I1), s		2.0		8.5		11.3						
Green Ext Time (p_c), s		1.4		0.2		1.6						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				6.5								
HCM 6th LOS				A								

# Timings

## 101: Alton Road & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔	↗	↖	↗	↖	↗	↖
Traffic Volume (vph)	50	71	139	55	69	1071	121	814
Future Volume (vph)	50	71	139	55	69	1071	121	814
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		8		4	1	6	5	2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	5.0	7.0
Minimum Split (s)	37.1	37.1	37.1	37.1	13.0	29.1	13.0	29.1
Total Split (s)	56.1	56.1	56.1	56.1	24.0	70.0	24.0	70.0
Total Split (%)	37.4%	37.4%	37.4%	37.4%	16.0%	46.6%	16.0%	46.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1	6.1	6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)		30.2	30.2	30.2	98.8	92.0	104.6	95.0
Actuated g/C Ratio		0.20	0.20	0.20	0.66	0.61	0.70	0.63
v/c Ratio		0.76	0.91	0.55	0.20	0.66	0.48	0.46
Control Delay		74.5	108.8	35.9	9.8	23.7	14.0	16.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		74.5	108.8	35.9	9.8	23.7	14.0	16.7
LOS		E	F	D	A	C	B	B
Approach Delay		74.5		69.1		23.0		16.4
Approach LOS		E		E		C		B

### Intersection Summary

Cycle Length: 150.1

Actuated Cycle Length: 150.1

Offset: 115 (77%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 28.7

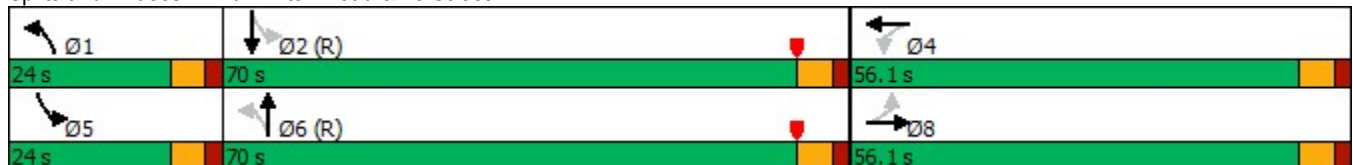
Intersection LOS: C

Intersection Capacity Utilization 109.1%

ICU Level of Service H

Analysis Period (min) 15

### Splits and Phases: 101: Alton Road & 15 Street



## Queues

### 101: Alton Road & 15 Street






















Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	146	174	73	1229	127	898
v/c Ratio	0.76	0.91	0.55	0.20	0.66	0.48	0.46
Control Delay	74.5	108.8	35.9	9.8	23.7	14.0	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.5	108.8	35.9	9.8	23.7	14.0	16.7
Queue Length 50th (ft)	139	141	90	19	383	35	224
Queue Length 95th (ft)	204	212	153	48	645	77	360
Internal Link Dist (ft)	401		387		285		834
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	337	264	473	465	1850	345	1964
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.55	0.37	0.16	0.66	0.37	0.46

#### Intersection Summary

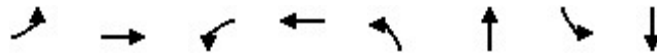
# HCM 6th Signalized Intersection Summary

## 101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	71	28	139	55	110	69	1071	97	121	814	39
Future Volume (veh/h)	50	71	28	139	55	110	69	1071	97	121	814	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.83	1.00		0.83	1.00		0.89	1.00		0.89
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670
Adj Flow Rate, veh/h	53	75	29	146	58	116	73	1127	102	127	857	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	79	93	32	213	97	193	349	1476	133	248	1600	77
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.74	0.74	0.06	0.77	0.77
Sat Flow, veh/h	173	344	117	1152	355	711	1590	2639	238	1590	2779	133
Grp Volume(v), veh/h	157	0	0	146	0	174	73	676	553	127	489	409
Grp Sat Flow(s),veh/h/ln	633	0	0	1152	0	1066	1590	1586	1291	1590	1586	1326
Q Serve(g_s), s	17.0	0.0	0.0	0.0	0.0	21.3	3.0	37.8	38.2	5.2	18.4	18.4
Cycle Q Clear(g_c), s	38.3	0.0	0.0	37.5	0.0	21.3	3.0	37.8	38.2	5.2	18.4	18.4
Prop In Lane	0.34		0.18	1.00		0.67	1.00		0.18	1.00		0.10
Lane Grp Cap(c), veh/h	204	0	0	213	0	290	349	887	722	248	913	763
V/C Ratio(X)	0.77	0.00	0.00	0.69	0.00	0.60	0.21	0.76	0.77	0.51	0.54	0.54
Avail Cap(c_a), veh/h	270	0	0	284	0	355	489	887	722	362	913	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.3	0.0	0.0	53.5	0.0	47.5	14.0	13.3	13.4	19.3	9.6	9.6
Incr Delay (d2), s/veh	8.1	0.0	0.0	3.3	0.0	1.5	0.1	6.2	7.6	0.6	2.2	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	0.0	5.6	0.0	5.8	1.1	12.2	10.3	1.9	5.5	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.4	0.0	0.0	56.8	0.0	49.0	14.1	19.5	20.9	19.9	11.9	12.3
LnGrp LOS	E	A	A	E	A	D	B	B	C	B	B	B
Approach Vol, veh/h		157			320			1302			1025	
Approach Delay, s/veh		66.4			52.6			19.8			13.0	
Approach LOS		E			D			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	92.4		46.9	13.2	89.9		46.9				
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1				
Max Green Setting (Gmax), s	18.0	64.0		50.0	18.0	64.0		50.0				
Max Q Clear Time (g_c+I1), s	5.0	20.4		39.5	7.2	40.2		40.3				
Green Ext Time (p_c), s	0.1	2.1		1.0	0.1	3.2		0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				23.7								
HCM 6th LOS				C								

# Timings

## 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Traffic Volume (vph)	162	200	68	206	235	472	32	295
Future Volume (vph)	162	200	68	206	235	472	32	295
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	3	8		4	1	6		2
Permitted Phases	8		4		6		2	
Detector Phase	3	8	4	4	1	6	2	2
Switch Phase								
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.1	30.4	30.4	30.4	11.0	27.3	27.3	27.3
Total Split (s)	13.1	44.4	31.4	31.4	12.0	76.3	64.3	64.3
Total Split (%)	10.8%	36.8%	26.0%	26.0%	9.9%	63.2%	53.2%	53.2%
Yellow Time (s)	3.7	4.0	4.0	4.0	3.7	4.0	4.0	4.0
All-Red Time (s)	3.4	3.4	3.4	3.4	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.4	7.4	7.4	6.0	6.3	6.3	6.3
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	28.4	28.1	15.0	15.0	79.3	79.0	63.2	63.2
Actuated g/C Ratio	0.24	0.23	0.12	0.12	0.66	0.65	0.52	0.52
v/c Ratio	0.82	0.43	0.63	0.58	0.44	0.25	0.08	0.25
Control Delay	69.7	26.1	73.3	52.6	11.9	9.2	17.1	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	26.1	73.3	52.6	11.9	9.2	17.1	15.0
LOS	E	C	E	D	B	A	B	B
Approach Delay		40.5		57.3		10.0		15.2
Approach LOS		D		E		B		B

### Intersection Summary

Cycle Length: 120.8

Actuated Cycle Length: 120.8

Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 25.9

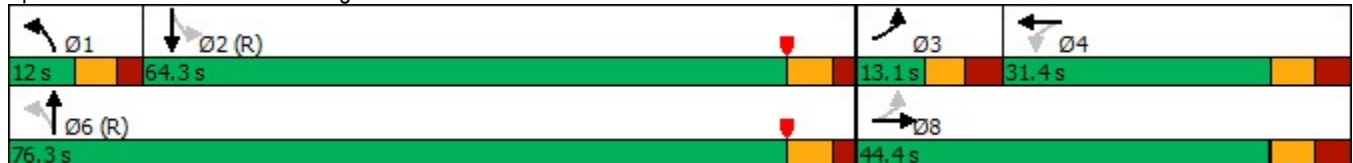
Intersection LOS: C

Intersection Capacity Utilization 77.4%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 102: Washington Avenue & 17 Street



## Queues

### 102: Washington Avenue & 17 Street



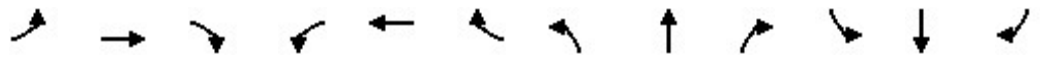
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	174	352	73	250	253	569	34	418
v/c Ratio	0.82	0.43	0.63	0.58	0.44	0.25	0.08	0.25
Control Delay	69.7	26.1	73.3	52.6	11.9	9.2	17.1	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	26.1	73.3	52.6	11.9	9.2	17.1	15.0
Queue Length 50th (ft)	117	79	55	94	71	84	13	80
Queue Length 95th (ft)	#181	114	102	129	132	135	34	122
Internal Link Dist (ft)		344		509		267		305
Turn Bay Length (ft)	200		130		130		90	
Base Capacity (vph)	212	1048	184	684	577	2244	412	1696
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.34	0.40	0.37	0.44	0.25	0.08	0.25

#### Intersection Summary

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

# HCM 6th Signalized Intersection Summary

## 102: Washington Avenue & 17 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	200	127	68	206	26	235	472	57	32	295	94
Future Volume (veh/h)	162	200	127	68	206	26	235	472	57	32	295	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.91	0.93		0.84	0.98		0.93	0.97		0.91
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	174	215	137	73	222	28	253	508	61	34	317	101
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	271	594	352	232	562	69	566	1872	224	462	1282	397
Arrive On Green	0.05	0.29	0.29	0.18	0.18	0.18	0.07	0.79	0.79	0.66	0.66	0.66
Sat Flow, veh/h	1767	2043	1212	946	3084	379	1767	3140	375	809	2580	798
Grp Volume(v), veh/h	174	183	169	73	124	126	253	284	285	34	214	204
Grp Sat Flow(s),veh/h/ln	1767	1763	1493	946	1763	1700	1767	1763	1753	809	1763	1616
Q Serve(g_s), s	6.0	10.0	10.9	8.3	7.5	7.9	6.0	5.1	5.2	1.8	5.9	6.2
Cycle Q Clear(g_c), s	6.0	10.0	10.9	8.3	7.5	7.9	6.0	5.1	5.2	1.8	5.9	6.2
Prop In Lane	1.00		0.81	1.00		0.22	1.00		0.21	1.00		0.49
Lane Grp Cap(c), veh/h	271	512	434	232	321	310	566	1051	1045	462	876	803
V/C Ratio(X)	0.64	0.36	0.39	0.31	0.39	0.41	0.45	0.27	0.27	0.07	0.24	0.25
Avail Cap(c_a), veh/h	271	539	456	247	350	337	566	1051	1045	462	876	803
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.4	34.0	34.3	43.8	43.5	43.7	15.6	5.6	5.6	10.6	11.3	11.4
Incr Delay (d2), s/veh	4.0	0.3	0.4	0.6	0.6	0.6	0.2	0.6	0.6	0.3	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	4.3	4.0	2.0	3.3	3.4	1.6	1.9	1.9	0.4	2.4	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	34.3	34.8	44.4	44.1	44.3	15.8	6.2	6.2	10.9	12.0	12.1
LnGrp LOS	D	C	C	D	D	D	B	A	A	B	B	B
Approach Vol, veh/h		526			323			822			452	
Approach Delay, s/veh		38.5			44.2			9.2			12.0	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	12.0	66.4	13.1	29.5	78.4	42.6						
Change Period (Y+Rc), s	6.0	* 6.3	* 7.1	7.4	* 6.3	7.4						
Max Green Setting (Gmax), s	6.0	* 58	* 6	24.0	* 70	37.0						
Max Q Clear Time (g_c+I1), s	8.0	8.2	8.0	10.3	7.2	12.9						
Green Ext Time (p_c), s	0.0	1.0	0.0	1.2	1.3	1.8						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			22.4									
HCM 6th LOS			C									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

# Timings

## 103: 15 Street & Washington Avenue

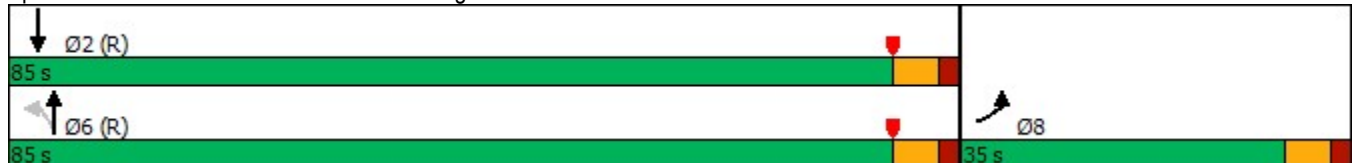


Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	81	75	552	543
Future Volume (vph)	81	75	552	543
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		6	2
Permitted Phases		6		
Detector Phase	8	6	6	2
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	7.0
Minimum Split (s)	35.0	29.0	29.0	29.0
Total Split (s)	35.0	85.0	85.0	85.0
Total Split (%)	29.2%	70.8%	70.8%	70.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	13.0		95.0	95.0
Actuated g/C Ratio	0.11		0.79	0.79
v/c Ratio	0.77		0.32	0.25
Control Delay	64.7		3.4	4.9
Queue Delay	0.0		0.1	0.0
Total Delay	64.7		3.6	4.9
LOS	E		A	A
Approach Delay	64.7		3.6	4.9
Approach LOS	E		A	A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 57 (48%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 10.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 73.9%  
 ICU Level of Service D  
 Analysis Period (min) 15

### Splits and Phases: 103: 15 Street & Washington Avenue



## Queues

### 103: 15 Street & Washington Avenue



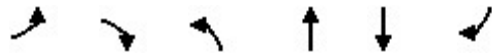
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	158	667	648
v/c Ratio	0.77	0.32	0.25
Control Delay	64.7	3.4	4.9
Queue Delay	0.0	0.1	0.0
Total Delay	64.7	3.6	4.9
Queue Length 50th (ft)	96	45	68
Queue Length 95th (ft)	161	64	m104
Internal Link Dist (ft)	344	314	157
Turn Bay Length (ft)			
Base Capacity (vph)	416	2113	2581
Starvation Cap Reductn	0	547	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.43	0.25

#### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

## 103: 15 Street & Washington Avenue



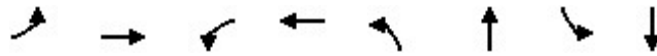
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	81	68	75	552	543	66
Future Volume (veh/h)	81	68	75	552	543	66
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.86	0.97			0.83
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	86	72	80	587	578	70
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	179	150	249	1810	2122	256
Arrive On Green	0.21	0.21	1.00	1.00	0.69	0.69
Sat Flow, veh/h	838	702	307	2721	3183	372
Grp Volume(v), veh/h	159	0	314	353	328	320
Grp Sat Flow(s),veh/h/ln	1550	0	1340	1604	1763	1700
Q Serve(g_s), s	10.8	0.0	1.5	0.0	8.6	8.7
Cycle Q Clear(g_c), s	10.8	0.0	10.2	0.0	8.6	8.7
Prop In Lane	0.54	0.45	0.25			0.22
Lane Grp Cap(c), veh/h	331	0	958	1101	1210	1167
V/C Ratio(X)	0.48	0.00	0.33	0.32	0.27	0.27
Avail Cap(c_a), veh/h	375	0	958	1101	1210	1167
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.97	0.97	1.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	0.1	0.0	7.2	7.3
Incr Delay (d2), s/veh	0.4	0.0	0.9	0.7	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.2	0.2	3.2	3.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.8	0.0	1.0	0.7	7.8	7.8
LnGrp LOS	D	A	A	A	A	A
Approach Vol, veh/h				667	648	
Approach Delay, s/veh	41.8			0.8	7.8	
Approach LOS	D			A	A	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		88.4			88.4	31.6
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		79.0			79.0	29.0
Max Q Clear Time (g_c+I1), s		10.7			12.2	12.8
Green Ext Time (p_c), s		1.5			1.8	0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			8.3			
HCM 6th LOS			A			

### Notes

User approved volume balancing among the lanes for turning movement.

# Timings

## 104: Washington Avenue & 11 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↙	↕		↕
Traffic Volume (vph)	56	37	32	36	47	543	27	506
Future Volume (vph)	56	37	32	36	47	543	27	506
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0
Total Split (s)	36.0	36.0	36.0	36.0	84.0	84.0	84.0	84.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		13.4		13.4	94.6	94.6		94.6
Actuated g/C Ratio		0.11		0.11	0.79	0.79		0.79
v/c Ratio		0.83		0.63	0.09	0.23		0.25
Control Delay		84.5		57.1	4.2	3.8		4.0
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		84.5		57.1	4.2	3.8		4.0
LOS		F		E	A	A		A
Approach Delay		84.5		57.1		3.9		4.0
Approach LOS		F		E		A		A

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 113 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 14.4

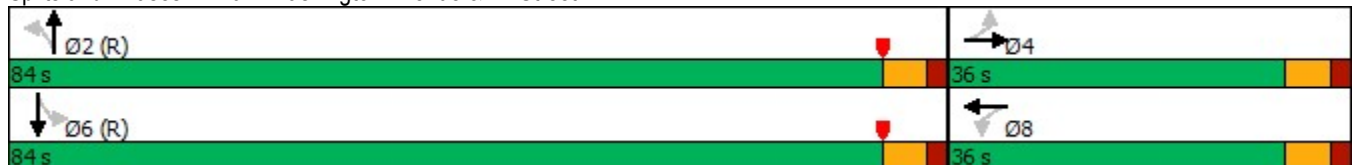
Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 104: Washington Avenue & 11 Street



## Queues

### 104: Washington Avenue & 11 Street

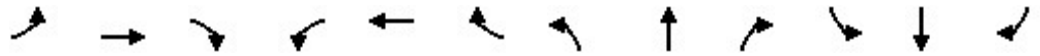


Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	124	106	49	613	604
v/c Ratio	0.83	0.63	0.09	0.23	0.25
Control Delay	84.5	57.1	4.2	3.8	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	57.1	4.2	3.8	4.0
Queue Length 50th (ft)	87	65	7	51	51
Queue Length 95th (ft)	148	119	22	91	92
Internal Link Dist (ft)	327	410		335	214
Turn Bay Length (ft)			80		
Base Capacity (vph)	324	353	530	2640	2385
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.30	0.09	0.23	0.25

#### Intersection Summary

# HCM 6th Signalized Intersection Summary

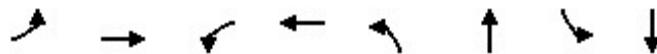
## 104: Washington Avenue & 11 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕			↕	
Traffic Volume (veh/h)	56	37	25	32	36	32	47	543	39	27	506	41
Future Volume (veh/h)	56	37	25	32	36	32	47	543	39	27	506	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.88	0.92		0.88	0.96		0.84	0.96		0.85
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	59	39	26	34	38	34	49	572	41	28	533	43
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	196	125	74	137	149	116	565	2176	155	106	1952	156
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.88	0.88	0.88	0.88	0.88	0.88
Sat Flow, veh/h	637	526	309	409	624	488	798	3289	235	111	2950	235
Grp Volume(v), veh/h	124	0	0	106	0	0	49	306	307	313	0	291
Grp Sat Flow(s),veh/h/ln	1472	0	0	1521	0	0	798	1763	1761	1700	0	1596
Q Serve(g_s), s	1.2	0.0	0.0	0.0	0.0	0.0	1.3	3.2	3.3	0.0	0.0	3.5
Cycle Q Clear(g_c), s	7.3	0.0	0.0	6.1	0.0	0.0	4.7	3.2	3.3	3.1	0.0	3.5
Prop In Lane	0.48		0.21	0.32		0.32	1.00		0.13	0.09		0.15
Lane Grp Cap(c), veh/h	395	0	0	402	0	0	565	1166	1165	1157	0	1056
V/C Ratio(X)	0.31	0.00	0.00	0.26	0.00	0.00	0.09	0.26	0.26	0.27	0.00	0.28
Avail Cap(c_a), veh/h	411	0	0	419	0	0	565	1166	1165	1157	0	1056
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.5	0.0	0.0	37.1	0.0	0.0	3.0	2.6	2.6	2.6	0.0	2.6
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.3	0.5	0.6	0.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	2.6	0.0	0.0	0.2	1.1	1.2	1.2	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	0.0	0.0	37.3	0.0	0.0	3.3	3.2	3.2	3.2	0.0	3.3
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		124			106			662				604
Approach Delay, s/veh		37.7			37.3			3.2				3.2
Approach LOS		D			D			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.4		34.6		85.4		34.6				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		78.0		30.0		78.0		30.0				
Max Q Clear Time (g_c+l1), s		6.7		9.3		5.5		8.1				
Green Ext Time (p_c), s		1.5		0.3		1.4		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				8.5								
HCM 6th LOS				A								

# Timings

## 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↶	↷	↶	↷	↶	↷	↶	↷
Traffic Volume (vph)	79	97	95	100	80	548	66	427
Future Volume (vph)	79	97	95	100	80	548	66	427
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		6		2		4		8
Permitted Phases	6		2		4		8	
Detector Phase	6	6	2	2	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	24.0	24.0	24.0	24.0	32.0	32.0	32.0	32.0
Total Split (s)	41.0	41.0	41.0	41.0	32.0	32.0	32.0	32.0
Total Split (%)	56.2%	56.2%	56.2%	56.2%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	10.5	10.5	10.5	10.5	26.1	26.1	26.1	26.1
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.54	0.54	0.54	0.54
v/c Ratio	0.43	0.40	0.50	0.69	0.26	0.77	0.27	0.67
Control Delay	23.5	16.0	25.6	25.4	10.2	18.7	10.9	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	16.0	25.6	25.4	10.2	18.7	10.9	14.4
LOS	C	B	C	C	B	B	B	B
Approach Delay		18.8		25.5		17.7		14.0
Approach LOS		B		C		B		B

### Intersection Summary

Cycle Length: 73

Actuated Cycle Length: 48.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 18.0

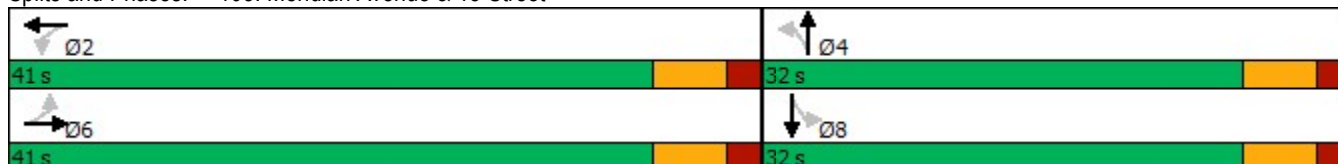
Intersection LOS: B

Intersection Capacity Utilization 81.3%

ICU Level of Service D

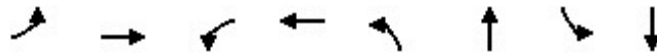
Analysis Period (min) 15

Splits and Phases: 105: Meridian Avenue & 15 Street



## Queues

### 105: Meridian Avenue & 15 Street
























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	140	100	227	84	658	69	553
v/c Ratio	0.43	0.40	0.50	0.69	0.26	0.77	0.27	0.67
Control Delay	23.5	16.0	25.6	25.4	10.2	18.7	10.9	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	16.0	25.6	25.4	10.2	18.7	10.9	14.4
Queue Length 50th (ft)	20	25	25	47	11	122	9	92
Queue Length 95th (ft)	52	61	61	103	42	#364	38	#284
Internal Link Dist (ft)		220		256		182		130
Turn Bay Length (ft)	100		50		100		150	
Base Capacity (vph)	645	1089	671	997	318	857	258	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.13	0.15	0.23	0.26	0.77	0.27	0.67

#### Intersection Summary

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

# HCM 6th Signalized Intersection Summary

## 105: Meridian Avenue & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	97	36	95	100	116	80	548	77	66	427	99
Future Volume (veh/h)	79	97	36	95	100	116	80	548	77	66	427	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		0.81	0.89		0.82	0.94		0.80	0.96		0.80
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	102	38	100	105	122	84	577	81	69	449	104
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	298	324	121	383	187	218	281	663	93	211	596	138
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1047	1082	403	1101	625	726	801	1384	194	737	1244	288
Grp Volume(v), veh/h	83	0	140	100	0	227	84	0	658	69	0	553
Grp Sat Flow(s),veh/h/ln	1047	0	1485	1101	0	1351	801	0	1579	737	0	1533
Q Serve(g_s), s	3.9	0.0	4.0	4.2	0.0	7.7	5.2	0.0	20.2	5.0	0.0	16.0
Cycle Q Clear(g_c), s	11.6	0.0	4.0	8.1	0.0	7.7	21.1	0.0	20.2	25.2	0.0	16.0
Prop In Lane	1.00		0.27	1.00		0.54	1.00		0.12	1.00		0.19
Lane Grp Cap(c), veh/h	298	0	445	383	0	405	281	0	756	211	0	734
V/C Ratio(X)	0.28	0.00	0.31	0.26	0.00	0.56	0.30	0.00	0.87	0.33	0.00	0.75
Avail Cap(c_a), veh/h	660	0	958	763	0	872	281	0	756	211	0	734
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(l)	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	20.9	0.0	14.7	17.8	0.0	16.0	20.1	0.0	12.6	23.9	0.0	11.5
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.1	0.0	0.5	0.4	0.0	10.5	0.7	0.0	4.2
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	0.9	0.0	1.2	1.0	0.0	2.1	0.9	0.0	7.8	0.8	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	14.8	18.0	0.0	16.4	20.6	0.0	23.2	24.5	0.0	15.7
LnGrp LOS	C	A	B	B	A	B	C	A	C	C	A	B
Approach Vol, veh/h		223			327			742			622	
Approach Delay, s/veh		17.2			16.9			22.9			16.7	
Approach LOS		B			B			C			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.3		32.0		22.3		32.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		35.0		26.0		35.0		26.0				
Max Q Clear Time (g_c+l1), s		10.1		23.1		13.6		27.2				
Green Ext Time (p_c), s		0.7		1.2		0.4		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.2								
HCM 6th LOS				B								



## Queues

### 106: Washington Avenue & 16 Street



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	378	164	42	123	287	30	188
v/c Ratio	1.06	0.40	0.10	0.21	0.31	0.06	0.19
Control Delay	105.1	39.1	1.3	12.0	12.0	8.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.1	39.1	1.3	12.0	12.0	8.9	8.8
Queue Length 50th (ft)	~315	104	0	38	89	8	50
Queue Length 95th (ft)	#511	170	5	63	123	20	84
Internal Link Dist (ft)	176	216			274		240
Turn Bay Length (ft)				90		60	
Base Capacity (vph)	357	406	432	582	931	529	994
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.40	0.10	0.21	0.31	0.06	0.19

#### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.




















Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 6th Signalized Intersection Summary

## 106: Washington Avenue & 16 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	80	22	135	40	118	256	19	29	139	41
Future Volume (veh/h)	87	196	80	22	135	40	118	256	19	29	139	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.96	0.98		0.94	0.99		0.95
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	91	204	83	23	141	42	123	267	20	30	145	43
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	106	195	74	70	391	374	697	838	63	595	763	226
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.55	0.55	0.55	0.03	0.63	0.63
Sat Flow, veh/h	252	710	271	129	1422	1359	1160	1527	114	1767	1221	362
Grp Volume(v), veh/h	378	0	0	164	0	42	123	0	287	30	0	188
Grp Sat Flow(s),veh/h/ln	1232	0	0	1551	0	1359	1160	0	1641	1767	0	1583
Q Serve(g_s), s	24.6	0.0	0.0	0.0	0.0	2.8	6.4	0.0	11.5	0.8	0.0	6.1
Cycle Q Clear(g_c), s	33.0	0.0	0.0	8.4	0.0	2.8	6.4	0.0	11.5	0.8	0.0	6.1
Prop In Lane	0.24		0.22	0.14		1.00	1.00		0.07	1.00		0.23
Lane Grp Cap(c), veh/h	376	0	0	461	0	374	697	0	900	595	0	989
V/C Ratio(X)	1.00	0.00	0.00	0.36	0.00	0.11	0.18	0.00	0.32	0.05	0.00	0.19
Avail Cap(c_a), veh/h	376	0	0	461	0	374	697	0	900	622	0	989
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(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.4	0.0	0.0	34.6	0.0	32.5	13.7	0.0	14.8	11.0	0.0	9.6
Incr Delay (d2), s/veh	47.6	0.0	0.0	0.3	0.0	0.1	0.6	0.0	0.9	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.4	0.0	0.0	3.9	0.0	0.9	1.8	0.0	4.5	0.3	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.0	0.0	0.0	34.9	0.0	32.6	14.2	0.0	15.7	11.0	0.0	10.0
LnGrp LOS	F	A	A	C	A	C	B	A	B	B	A	B
Approach Vol, veh/h		378			206			410				218
Approach Delay, s/veh		94.0			34.5			15.3				10.1
Approach LOS		F			C			B				B
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		81.0		39.0	9.2	71.8		39.0				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		75.0		33.0	5.0	64.0		33.0				
Max Q Clear Time (g_c+I1), s		8.1		10.4	2.8	13.5		35.0				
Green Ext Time (p_c), s		0.4		0.8	0.0	0.7		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				42.2								
HCM 6th LOS				D								

# Timings

## 107: Washington Avenue & Espanola Way



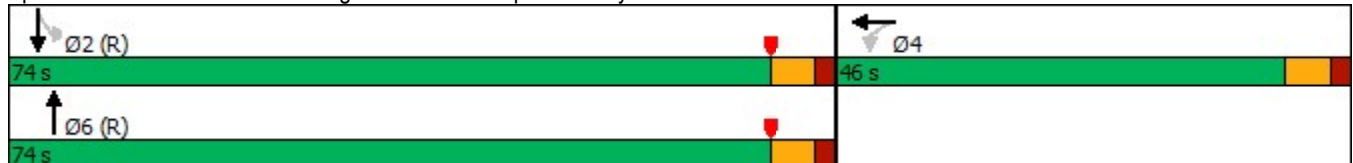
Lane Group	WBT	NBT	SBL	SBT
Lane Configurations	↔	↕		↕
Traffic Volume (vph)	0	629	34	563
Future Volume (vph)	0	629	34	563
Turn Type	NA	NA	Perm	NA
Protected Phases	4	6		2
Permitted Phases			2	
Detector Phase	4	6	2	2
Switch Phase				
Minimum Initial (s)	7.0	7.0	7.0	7.0
Minimum Split (s)	31.0	25.0	25.0	25.0
Total Split (s)	46.0	74.0	74.0	74.0
Total Split (%)	38.3%	61.7%	61.7%	61.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	10.2	97.8		97.8
Actuated g/C Ratio	0.08	0.82		0.82
v/c Ratio	0.66	0.29		0.27
Control Delay	56.1	3.2		1.8
Queue Delay	0.0	0.0		0.2
Total Delay	56.1	3.2		1.9
LOS	E	A		A
Approach Delay	56.1	3.2		1.9
Approach LOS	E	A		A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 67 (56%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 5.9  
 Intersection Capacity Utilization 71.4%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service C

### Splits and Phases: 107: Washington Avenue & Espanola Way



## Queues

### 107: Washington Avenue & Espanola Way

---



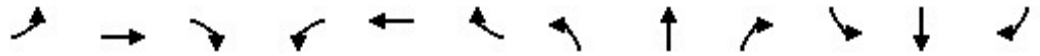
Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	91	752	635
v/c Ratio	0.66	0.29	0.27
Control Delay	56.1	3.2	1.8
Queue Delay	0.0	0.0	0.2
Total Delay	56.1	3.2	1.9
Queue Length 50th (ft)	43	52	26
Queue Length 95th (ft)	95	97	35
Internal Link Dist (ft)	364	111	314
Turn Bay Length (ft)			
Base Capacity (vph)	436	2596	2355
Starvation Cap Reductn	0	0	800
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.21	0.29	0.41

#### Intersection Summary

---

# HCM 6th Signalized Intersection Summary

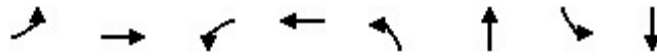
## 107: Washington Avenue & Espanola Way



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↕			↕	
Traffic Volume (veh/h)	0	0	0	48	0	38	0	629	78	34	563	0
Future Volume (veh/h)	0	0	0	48	0	38	0	629	78	34	563	0
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.76	1.00		0.93	0.99		1.00
Parking Bus, Adj				1.00	0.90	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1856	1856	1856	0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h				51	0	40	0	669	83	36	599	0
Peak Hour Factor				0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %				3	3	3	0	3	3	3	3	0
Cap, veh/h				146	0	115	0	2078	257	133	2161	0
Arrive On Green				0.20	0.00	0.20	0.00	0.70	0.70	1.00	1.00	0.00
Sat Flow, veh/h				734	0	576	0	3057	367	142	3167	0
Grp Volume(v), veh/h				91	0	0	0	397	355	322	313	0
Grp Sat Flow(s),veh/h/ln				1310	0	0	0	1763	1569	1621	1604	0
Q Serve(g_s), s				7.2	0.0	0.0	0.0	10.4	10.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s				7.2	0.0	0.0	0.0	10.4	10.5	0.0	0.0	0.0
Prop In Lane				0.56		0.44	0.00		0.23	0.11		0.00
Lane Grp Cap(c), veh/h				260	0	0	0	1236	1100	1170	1125	0
V/C Ratio(X)				0.35	0.00	0.00	0.00	0.32	0.32	0.28	0.28	0.00
Avail Cap(c_a), veh/h				437	0	0	0	1236	1100	1170	1125	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)				1.00	0.00	0.00	0.00	1.00	1.00	0.98	0.98	0.00
Uniform Delay (d), s/veh				41.4	0.0	0.0	0.0	6.9	6.9	0.0	0.0	0.0
Incr Delay (d2), s/veh				0.3	0.0	0.0	0.0	0.7	0.8	0.6	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	0.0	0.0	3.9	3.5	0.2	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				41.7	0.0	0.0	0.0	7.6	7.7	0.6	0.6	0.0
LnGrp LOS				D	A	A	A	A	A	A	A	A
Approach Vol, veh/h					91			752			635	
Approach Delay, s/veh					41.7			7.7			0.6	
Approach LOS					D			A			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		90.1		29.9		90.1						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		68.0		40.0		68.0						
Max Q Clear Time (g_c+I1), s		2.0		9.2		12.5						
Green Ext Time (p_c), s		1.5		0.2		1.7						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				6.7								
HCM 6th LOS				A								

# Timings

## 101: Alton Road & 15 Street



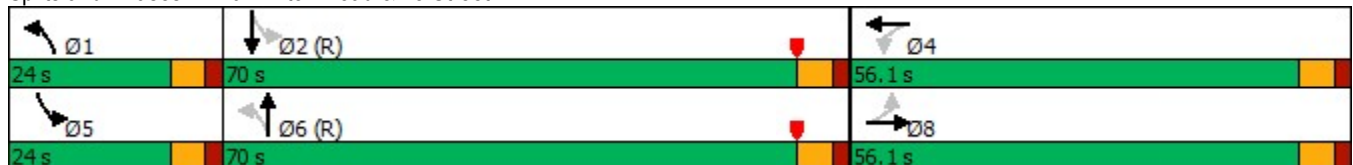
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔	↗	↖	↗	↖	↗	↖
Traffic Volume (vph)	50	71	139	55	69	1071	144	831
Future Volume (vph)	50	71	139	55	69	1071	144	831
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		8		4	1	6	5	2
Permitted Phases	8		4		6		2	
Detector Phase	8	8	4	4	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	5.0	7.0
Minimum Split (s)	37.1	37.1	37.1	37.1	13.0	29.1	13.0	29.1
Total Split (s)	56.1	56.1	56.1	56.1	24.0	70.0	24.0	70.0
Total Split (%)	37.4%	37.4%	37.4%	37.4%	16.0%	46.6%	16.0%	46.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1	6.1	6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
Act Effct Green (s)		30.2	30.2	30.2	97.0	90.2	105.6	95.0
Actuated g/C Ratio		0.20	0.20	0.20	0.65	0.60	0.70	0.63
v/c Ratio		0.76	0.91	0.55	0.21	0.68	0.55	0.47
Control Delay		74.5	108.8	35.9	10.1	25.3	15.7	16.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		74.5	108.8	35.9	10.1	25.3	15.7	16.9
LOS		E	F	D	B	C	B	B
Approach Delay		74.5		69.1		24.5		16.7
Approach LOS		E		E		C		B

### Intersection Summary

Cycle Length: 150.1  
 Actuated Cycle Length: 150.1  
 Offset: 115 (77%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 29.3  
 Intersection Capacity Utilization 110.5%  
 Analysis Period (min) 15

Intersection LOS: C  
 ICU Level of Service H

### Splits and Phases: 101: Alton Road & 15 Street



## Queues

### 101: Alton Road & 15 Street























Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	146	174	73	1229	152	916
v/c Ratio	0.76	0.91	0.55	0.21	0.68	0.55	0.47
Control Delay	74.5	108.8	35.9	10.1	25.3	15.7	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.5	108.8	35.9	10.1	25.3	15.7	16.9
Queue Length 50th (ft)	139	141	90	19	400	43	231
Queue Length 95th (ft)	204	212	153	48	673	90	370
Internal Link Dist (ft)	401		387		285		834
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	337	264	473	459	1814	340	1965
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.55	0.37	0.16	0.68	0.45	0.47

#### Intersection Summary

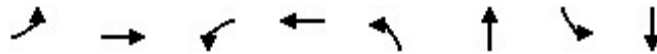
# HCM 6th Signalized Intersection Summary

## 101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	71	28	139	55	110	69	1071	97	144	831	39
Future Volume (veh/h)	50	71	28	139	55	110	69	1071	97	144	831	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.83	1.00		0.83	1.00		0.89	1.00		0.89
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670	1670
Adj Flow Rate, veh/h	53	75	29	146	58	116	73	1127	102	152	875	41
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	79	93	32	213	97	193	343	1455	131	253	1601	75
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.04	0.73	0.73	0.07	0.77	0.77
Sat Flow, veh/h	173	344	117	1152	355	711	1590	2639	238	1590	2783	130
Grp Volume(v), veh/h	157	0	0	146	0	174	73	677	552	152	499	417
Grp Sat Flow(s),veh/h/ln	633	0	0	1152	0	1066	1590	1586	1290	1590	1586	1327
Q Serve(g_s), s	17.0	0.0	0.0	0.0	0.0	21.3	3.0	39.4	39.8	6.3	19.0	19.0
Cycle Q Clear(g_c), s	38.3	0.0	0.0	37.5	0.0	21.3	3.0	39.4	39.8	6.3	19.0	19.0
Prop In Lane	0.34		0.18	1.00		0.67	1.00		0.18	1.00		0.10
Lane Grp Cap(c), veh/h	204	0	0	213	0	290	343	875	712	253	913	763
V/C Ratio(X)	0.77	0.00	0.00	0.69	0.00	0.60	0.21	0.77	0.78	0.60	0.55	0.55
Avail Cap(c_a), veh/h	270	0	0	284	0	355	482	875	712	355	913	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.3	0.0	0.0	53.5	0.0	47.5	14.4	14.2	14.3	20.7	9.7	9.7
Incr Delay (d2), s/veh	8.1	0.0	0.0	3.3	0.0	1.5	0.1	6.6	8.1	0.9	2.3	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	0.0	5.6	0.0	5.8	1.1	12.9	10.9	2.3	5.7	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.4	0.0	0.0	56.8	0.0	49.0	14.5	20.8	22.4	21.6	12.1	12.5
LnGrp LOS	E	A	A	E	A	D	B	C	C	C	B	B
Approach Vol, veh/h		157			320			1302			1068	
Approach Delay, s/veh		66.4			52.6			21.1			13.6	
Approach LOS		E			D			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	92.3		46.9	14.4	88.7		46.9				
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1				
Max Green Setting (Gmax), s	18.0	64.0		50.0	18.0	64.0		50.0				
Max Q Clear Time (g_c+I1), s	5.0	21.0		39.5	8.3	41.8		40.3				
Green Ext Time (p_c), s	0.1	2.2		1.0	0.1	3.2		0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				24.3								
HCM 6th LOS				C								

# Timings

## 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↕	↖	↕	↖	↕	↖	↕
Traffic Volume (vph)	162	200	68	206	235	490	32	306
Future Volume (vph)	162	200	68	206	235	490	32	306
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	3	8		4	1	6		2
Permitted Phases	8		4		6		2	
Detector Phase	3	8	4	4	1	6	2	2
Switch Phase								
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	12.1	30.4	30.4	30.4	11.0	27.3	27.3	27.3
Total Split (s)	13.1	44.4	31.4	31.4	12.0	76.3	64.3	64.3
Total Split (%)	10.8%	36.8%	26.0%	26.0%	9.9%	63.2%	53.2%	53.2%
Yellow Time (s)	3.7	4.0	4.0	4.0	3.7	4.0	4.0	4.0
All-Red Time (s)	3.4	3.4	3.4	3.4	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.4	7.4	7.4	6.0	6.3	6.3	6.3
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	28.4	28.1	15.0	15.0	79.3	79.0	63.2	63.2
Actuated g/C Ratio	0.24	0.23	0.12	0.12	0.66	0.65	0.52	0.52
v/c Ratio	0.82	0.43	0.63	0.58	0.45	0.26	0.08	0.26
Control Delay	69.7	26.1	73.3	52.6	12.0	9.3	17.1	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	26.1	73.3	52.6	12.0	9.3	17.1	15.1
LOS	E	C	E	D	B	A	B	B
Approach Delay		40.5		57.3		10.1		15.2
Approach LOS		D		E		B		B

### Intersection Summary

Cycle Length: 120.8

Actuated Cycle Length: 120.8

Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 25.7

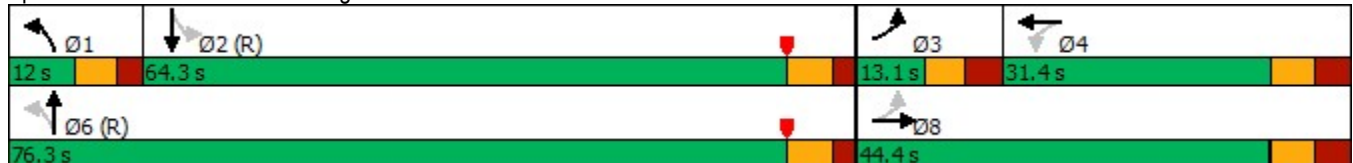
Intersection LOS: C

Intersection Capacity Utilization 77.4%

ICU Level of Service D

Analysis Period (min) 15

### Splits and Phases: 102: Washington Avenue & 17 Street



## Queues

### 102: Washington Avenue & 17 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	174	352	73	250	253	588	34	442
v/c Ratio	0.82	0.43	0.63	0.58	0.45	0.26	0.08	0.26
Control Delay	69.7	26.1	73.3	52.6	12.0	9.3	17.1	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	26.1	73.3	52.6	12.0	9.3	17.1	15.1
Queue Length 50th (ft)	117	79	55	94	71	87	13	84
Queue Length 95th (ft)	#181	114	102	129	132	140	34	128
Internal Link Dist (ft)		344		509		267		305
Turn Bay Length (ft)	200		130		130		90	
Base Capacity (vph)	212	1048	184	684	565	2245	404	1689
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.34	0.40	0.37	0.45	0.26	0.08	0.26

#### Intersection Summary

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

# HCM 6th Signalized Intersection Summary

## 102: Washington Avenue & 17 Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	200	127	68	206	26	235	490	57	32	306	105
Future Volume (veh/h)	162	200	127	68	206	26	235	490	57	32	306	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.91	0.93		0.84	0.98		0.93	0.97		0.91
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	174	215	137	73	222	28	253	527	61	34	329	113
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	271	594	352	232	562	69	554	1881	217	455	1254	419
Arrive On Green	0.05	0.29	0.29	0.18	0.18	0.18	0.07	0.79	0.79	0.66	0.66	0.66
Sat Flow, veh/h	1767	2043	1212	946	3084	379	1767	3155	363	795	2523	842
Grp Volume(v), veh/h	174	183	169	73	124	126	253	293	295	34	227	215
Grp Sat Flow(s),veh/h/ln	1767	1763	1493	946	1763	1700	1767	1763	1756	795	1763	1603
Q Serve(g_s), s	6.0	10.0	10.9	8.3	7.5	7.9	6.0	5.4	5.4	1.9	6.4	6.7
Cycle Q Clear(g_c), s	6.0	10.0	10.9	8.3	7.5	7.9	6.0	5.4	5.4	1.9	6.4	6.7
Prop In Lane	1.00		0.81	1.00		0.22	1.00		0.21	1.00		0.53
Lane Grp Cap(c), veh/h	271	512	434	232	321	310	554	1051	1047	455	876	797
V/C Ratio(X)	0.64	0.36	0.39	0.31	0.39	0.41	0.46	0.28	0.28	0.07	0.26	0.27
Avail Cap(c_a), veh/h	271	539	456	247	350	337	554	1051	1047	455	876	797
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.4	34.0	34.3	43.8	43.5	43.7	15.8	5.6	5.6	10.6	11.4	11.4
Incr Delay (d2), s/veh	4.0	0.3	0.4	0.6	0.6	0.6	0.2	0.7	0.7	0.3	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	4.3	4.0	2.0	3.3	3.4	1.6	1.9	2.0	0.4	2.5	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	34.3	34.8	44.4	44.1	44.3	16.0	6.3	6.3	10.9	12.1	12.3
LnGrp LOS	D	C	C	D	D	D	B	A	A	B	B	B
Approach Vol, veh/h		526			323			841			476	
Approach Delay, s/veh		38.5			44.2			9.2			12.1	
Approach LOS		D			D			A			B	
Timer - Assigned Phs	1	2	3	4	6	8						
Phs Duration (G+Y+Rc), s	12.0	66.4	13.1	29.5	78.4	42.6						
Change Period (Y+Rc), s	6.0	* 6.3	* 7.1	7.4	* 6.3	7.4						
Max Green Setting (Gmax), s	6.0	* 58	* 6	24.0	* 70	37.0						
Max Q Clear Time (g_c+I1), s	8.0	8.7	8.0	10.3	7.4	12.9						
Green Ext Time (p_c), s	0.0	1.1	0.0	1.2	1.3	1.8						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				22.2								
HCM 6th LOS				C								
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

# Timings

## 103: 15 Street & Washington Avenue



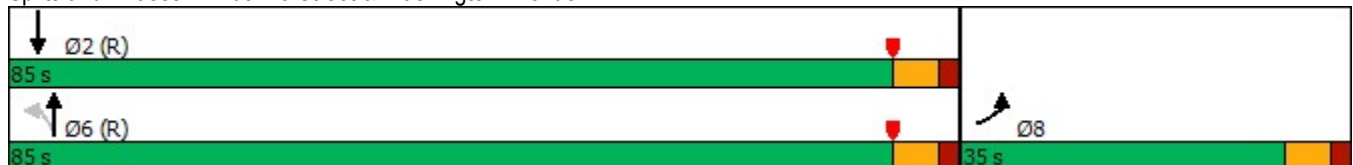
Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	115	75	596	543
Future Volume (vph)	115	75	596	543
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		6	2
Permitted Phases		6		
Detector Phase	8	6	6	2
Switch Phase				
Minimum Initial (s)	5.0	7.0	7.0	7.0
Minimum Split (s)	35.0	29.0	29.0	29.0
Total Split (s)	35.0	85.0	85.0	85.0
Total Split (%)	29.2%	70.8%	70.8%	70.8%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	16.2		91.8	91.8
Actuated g/C Ratio	0.14		0.76	0.76
v/c Ratio	0.80		0.35	0.26
Control Delay	67.5		4.2	6.1
Queue Delay	0.0		0.1	0.0
Total Delay	67.5		4.3	6.1
LOS	E		A	A
Approach Delay	67.5		4.3	6.1
Approach LOS	E		A	A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 57 (48%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 12.9  
 Intersection Capacity Utilization 75.4%  
 Analysis Period (min) 15

Intersection LOS: B  
 ICU Level of Service D

### Splits and Phases: 103: 15 Street & Washington Avenue



## Queues

### 103: 15 Street & Washington Avenue



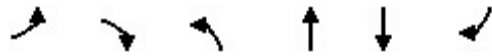
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	194	714	648
v/c Ratio	0.80	0.35	0.26
Control Delay	67.5	4.2	6.1
Queue Delay	0.0	0.1	0.0
Total Delay	67.5	4.3	6.1
Queue Length 50th (ft)	131	54	79
Queue Length 95th (ft)	200	77	m135
Internal Link Dist (ft)	344	314	157
Turn Bay Length (ft)			
Base Capacity (vph)	414	2059	2494
Starvation Cap Reductn	0	484	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.45	0.26

#### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

## 103: 15 Street & Washington Avenue



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	68	75	596	543	66
Future Volume (veh/h)	115	68	75	596	543	66
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.86	0.97			0.83
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	122	72	80	634	578	70
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	216	128	235	1835	2108	254
Arrive On Green	0.22	0.22	1.00	1.00	0.68	0.68
Sat Flow, veh/h	994	586	290	2774	3183	372
Grp Volume(v), veh/h	195	0	339	375	328	320
Grp Sat Flow(s),veh/h/ln	1588	0	1376	1604	1763	1699
Q Serve(g_s), s	13.1	0.0	1.3	0.0	8.7	8.8
Cycle Q Clear(g_c), s	13.1	0.0	10.2	0.0	8.7	8.8
Prop In Lane	0.63	0.37	0.24			0.22
Lane Grp Cap(c), veh/h	346	0	976	1095	1203	1159
V/C Ratio(X)	0.56	0.00	0.35	0.34	0.27	0.28
Avail Cap(c_a), veh/h	384	0	976	1095	1203	1159
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	41.9	0.0	0.1	0.0	7.4	7.5
Incr Delay (d2), s/veh	0.6	0.0	0.9	0.8	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.3	0.2	3.3	3.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.5	0.0	1.0	0.8	8.0	8.0
LnGrp LOS	D	A	A	A	A	A
Approach Vol, veh/h	195			714	648	
Approach Delay, s/veh	42.5			0.9	8.0	
Approach LOS	D			A	A	
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		87.9			87.9	32.1
Change Period (Y+Rc), s		6.0			6.0	6.0
Max Green Setting (Gmax), s		79.0			79.0	29.0
Max Q Clear Time (g_c+I1), s		10.8			12.2	15.1
Green Ext Time (p_c), s		1.5			1.9	0.1

### Intersection Summary

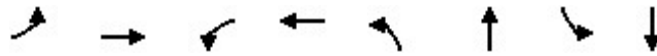
HCM 6th Ctrl Delay	9.1
HCM 6th LOS	A

### Notes

User approved volume balancing among the lanes for turning movement.

# Timings

## 104: Washington Avenue & 11 Street

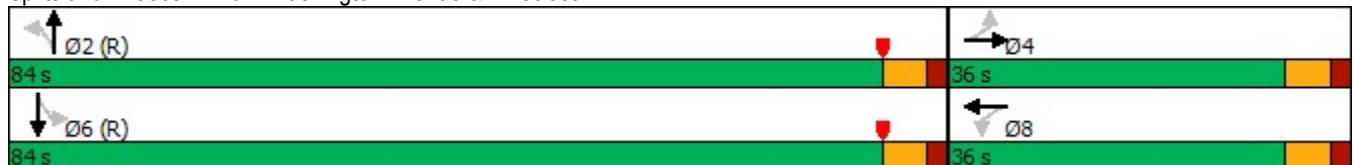


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↗	↕		↕
Traffic Volume (vph)	77	37	32	36	47	554	27	506
Future Volume (vph)	77	37	32	36	47	554	27	506
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	36.0	36.0	24.0	24.0	24.0	24.0
Total Split (s)	36.0	36.0	36.0	36.0	84.0	84.0	84.0	84.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)		16.7		16.7	91.3	91.3		91.3
Actuated g/C Ratio		0.14		0.14	0.76	0.76		0.76
v/c Ratio		0.84		0.51	0.10	0.24		0.26
Control Delay		79.5		46.3	5.4	4.9		5.1
Queue Delay		0.0		0.0	0.0	0.0		0.0
Total Delay		79.5		46.3	5.4	4.9		5.1
LOS		E		D	A	A		A
Approach Delay		79.5		46.3		5.0		5.1
Approach LOS		E		D		A		A

### Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 113 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	

### Splits and Phases: 104: Washington Avenue & 11 Street



## Queues

### 104: Washington Avenue & 11 Street




















Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	155	106	49	624	604
v/c Ratio	0.84	0.51	0.10	0.24	0.26
Control Delay	79.5	46.3	5.4	4.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	79.5	46.3	5.4	4.9	5.1
Queue Length 50th (ft)	110	63	8	62	61
Queue Length 95th (ft)	174	113	25	109	108
Internal Link Dist (ft)	327	410		335	214
Turn Bay Length (ft)			80		
Base Capacity (vph)	323	356	511	2550	2299
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.30	0.10	0.24	0.26

#### Intersection Summary

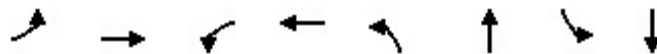
# HCM 6th Signalized Intersection Summary

## 104: Washington Avenue & 11 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	37	33	32	36	32	47	554	39	27	506	41
Future Volume (veh/h)	77	37	33	32	36	32	47	554	39	27	506	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.92		0.88	0.93		0.88	0.96		0.84	0.96		0.85
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	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	81	39	35	34	38	34	49	583	41	28	533	43
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	212	100	78	138	150	117	563	2174	152	106	1945	155
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.88	0.88	0.88	0.88	0.88	0.88
Sat Flow, veh/h	691	417	323	409	623	487	798	3295	231	111	2948	235
Grp Volume(v), veh/h	155	0	0	106	0	0	49	311	313	312	0	292
Grp Sat Flow(s),veh/h/ln	1432	0	0	1520	0	0	798	1763	1763	1698	0	1596
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	1.3	3.4	3.4	0.0	0.0	3.5
Cycle Q Clear(g_c), s	10.2	0.0	0.0	6.2	0.0	0.0	4.8	3.4	3.4	3.2	0.0	3.5
Prop In Lane	0.52		0.23	0.32		0.32	1.00		0.13	0.09		0.15
Lane Grp Cap(c), veh/h	389	0	0	404	0	0	563	1163	1163	1153	0	1053
V/C Ratio(X)	0.40	0.00	0.00	0.26	0.00	0.00	0.09	0.27	0.27	0.27	0.00	0.28
Avail Cap(c_a), veh/h	403	0	0	419	0	0	563	1163	1163	1153	0	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.3	0.0	0.0	37.0	0.0	0.0	3.1	2.7	2.7	2.7	0.0	2.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.1	0.0	0.0	0.3	0.6	0.6	0.6	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	2.6	0.0	0.0	0.2	1.2	1.2	1.2	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.6	0.0	0.0	37.1	0.0	0.0	3.4	3.3	3.3	3.3	0.0	3.4
LnGrp LOS	D	A	A	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		155			106			673			604	
Approach Delay, s/veh		38.6			37.1			3.3			3.3	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.2		34.8		85.2		34.8				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		78.0		30.0		78.0		30.0				
Max Q Clear Time (g_c+I1), s		6.8		12.2		5.5		8.2				
Green Ext Time (p_c), s		1.5		0.3		1.4		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				9.2								
HCM 6th LOS				A								

# Timings

## 105: Meridian Avenue & 15 Street



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	79	120	95	100	80	548	77	435
Future Volume (vph)	79	120	95	100	80	548	77	435
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		6		2		4		8
Permitted Phases	6		2		4		8	
Detector Phase	6	6	2	2	4	4	8	8
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	24.0	24.0	24.0	24.0	32.0	32.0	32.0	32.0
Total Split (s)	41.0	41.0	41.0	41.0	32.0	32.0	32.0	32.0
Total Split (%)	56.2%	56.2%	56.2%	56.2%	43.8%	43.8%	43.8%	43.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	10.5	10.5	10.5	10.5	26.1	26.1	26.1	26.1
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.54	0.54	0.54	0.54
v/c Ratio	0.43	0.47	0.51	0.69	0.27	0.77	0.31	0.68
Control Delay	23.5	18.2	26.1	25.4	10.3	18.7	11.9	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	18.2	26.1	25.4	10.3	18.7	11.9	14.8
LOS	C	B	C	C	B	B	B	B
Approach Delay		20.0		25.6		17.7		14.5
Approach LOS		B		C		B		B

### Intersection Summary

Cycle Length: 73

Actuated Cycle Length: 48.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 18.3

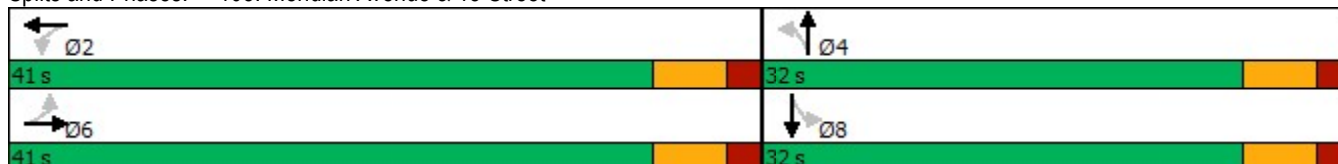
Intersection LOS: B

Intersection Capacity Utilization 81.3%

ICU Level of Service D

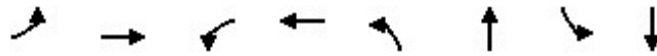
Analysis Period (min) 15

### Splits and Phases: 105: Meridian Avenue & 15 Street



# Queues

## 105: Meridian Avenue & 15 Street
























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	164	100	227	84	658	81	562
v/c Ratio	0.43	0.47	0.51	0.69	0.27	0.77	0.31	0.68
Control Delay	23.5	18.2	26.1	25.4	10.3	18.7	11.9	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.5	18.2	26.1	25.4	10.3	18.7	11.9	14.8
Queue Length 50th (ft)	20	33	25	47	11	122	11	94
Queue Length 95th (ft)	52	74	61	103	42	#364	45	#292
Internal Link Dist (ft)		220		256		182		130
Turn Bay Length (ft)	100		50		100		150	
Base Capacity (vph)	645	1105	660	997	312	857	258	831
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.15	0.15	0.23	0.27	0.77	0.31	0.68

### Intersection Summary

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

# HCM 6th Signalized Intersection Summary

## 105: Meridian Avenue & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	120	36	95	100	116	80	548	77	77	435	99
Future Volume (veh/h)	79	120	36	95	100	116	80	548	77	77	435	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		0.81	0.90		0.82	0.94		0.80	0.96		0.80
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	83	126	38	100	105	122	84	577	81	81	458	104
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	299	348	105	366	188	218	274	663	93	211	599	136
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	1047	1160	350	1085	625	726	795	1384	194	737	1251	284
Grp Volume(v), veh/h	83	0	164	100	0	227	84	0	658	81	0	562
Grp Sat Flow(s),veh/h/ln	1047	0	1509	1085	0	1351	795	0	1579	737	0	1535
Q Serve(g_s), s	3.9	0.0	4.6	4.3	0.0	7.7	5.3	0.0	20.2	5.8	0.0	16.3
Cycle Q Clear(g_c), s	11.6	0.0	4.6	9.0	0.0	7.7	21.6	0.0	20.2	26.0	0.0	16.3
Prop In Lane	1.00		0.23	1.00		0.54	1.00		0.12	1.00		0.19
Lane Grp Cap(c), veh/h	299	0	453	366	0	405	274	0	756	211	0	735
V/C Ratio(X)	0.28	0.00	0.36	0.27	0.00	0.56	0.31	0.00	0.87	0.38	0.00	0.76
Avail Cap(c_a), veh/h	660	0	973	740	0	871	274	0	756	211	0	735
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(l)	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	20.9	0.0	14.9	18.4	0.0	16.0	20.5	0.0	12.6	24.3	0.0	11.6
Incr Delay (d2), s/veh	0.2	0.0	0.2	0.1	0.0	0.5	0.5	0.0	10.6	0.8	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.4	1.0	0.0	2.1	0.9	0.0	7.8	1.0	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	15.1	18.6	0.0	16.4	21.0	0.0	23.2	25.2	0.0	16.2
LnGrp LOS	C	A	B	B	A	B	C	A	C	C	A	B
Approach Vol, veh/h		247			327			742			643	
Approach Delay, s/veh		17.1			17.1			22.9			17.4	
Approach LOS		B			B			C			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.3		32.0		22.3		32.0				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		35.0		26.0		35.0		26.0				
Max Q Clear Time (g_c+I1), s		11.0		23.6		13.6		28.0				
Green Ext Time (p_c), s		0.7		1.1		0.4		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				19.4								
HCM 6th LOS				B								



## Queues

### 106: Washington Avenue & 16 Street



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	378	164	42	160	320	30	199
v/c Ratio	1.06	0.40	0.10	0.28	0.35	0.06	0.20
Control Delay	105.1	39.1	1.3	12.2	11.9	8.9	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.1	39.1	1.3	12.2	11.9	8.9	8.7
Queue Length 50th (ft)	~315	104	0	54	105	8	51
Queue Length 95th (ft)	#511	170	5	80	141	20	86
Internal Link Dist (ft)	176	216			274		240
Turn Bay Length (ft)				90		60	
Base Capacity (vph)	357	406	432	576	923	507	986
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.40	0.10	0.28	0.35	0.06	0.20

#### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.




















Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM 6th Signalized Intersection Summary

## 106: Washington Avenue & 16 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	196	80	22	135	40	154	274	34	29	139	52
Future Volume (veh/h)	87	196	80	22	135	40	154	274	34	29	139	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.96	0.98		0.94	1.00		0.95
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90	1.00	1.00	0.90
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	91	204	83	23	141	42	160	285	35	30	145	54
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	106	195	74	70	391	374	690	794	98	565	714	266
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.55	0.55	0.55	0.03	0.63	0.63
Sat Flow, veh/h	252	710	271	129	1422	1359	1149	1448	178	1767	1142	425
Grp Volume(v), veh/h	378	0	0	164	0	42	160	0	320	30	0	199
Grp Sat Flow(s),veh/h/ln	1232	0	0	1551	0	1359	1149	0	1625	1767	0	1567
Q Serve(g_s), s	24.6	0.0	0.0	0.0	0.0	2.8	8.8	0.0	13.3	0.8	0.0	6.5
Cycle Q Clear(g_c), s	33.0	0.0	0.0	8.4	0.0	2.8	8.8	0.0	13.3	0.8	0.0	6.5
Prop In Lane	0.24		0.22	0.14		1.00	1.00		0.11	1.00		0.27
Lane Grp Cap(c), veh/h	376	0	0	461	0	374	690	0	892	565	0	980
V/C Ratio(X)	1.00	0.00	0.00	0.36	0.00	0.11	0.23	0.00	0.36	0.05	0.00	0.20
Avail Cap(c_a), veh/h	376	0	0	461	0	374	690	0	892	592	0	980
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(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.4	0.0	0.0	34.6	0.0	32.5	14.2	0.0	15.2	11.2	0.0	9.7
Incr Delay (d2), s/veh	47.6	0.0	0.0	0.3	0.0	0.1	0.8	0.0	1.1	0.0	0.0	0.5
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	16.4	0.0	0.0	3.9	0.0	0.9	2.4	0.0	5.1	0.3	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.0	0.0	0.0	34.9	0.0	32.6	15.0	0.0	16.3	11.2	0.0	10.1
LnGrp LOS	F	A	A	C	A	C	B	A	B	B	A	B
Approach Vol, veh/h		378			206			480			229	
Approach Delay, s/veh		94.0			34.5			15.9			10.3	
Approach LOS		F			C			B			B	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		81.0		39.0	9.2	71.8		39.0				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		75.0		33.0	5.0	64.0		33.0				
Max Q Clear Time (g_c+I1), s		8.5		10.4	2.8	15.3		35.0				
Green Ext Time (p_c), s		0.4		0.8	0.0	0.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				40.7								
HCM 6th LOS				D								

# Timings

## 107: Washington Avenue & Espanola Way



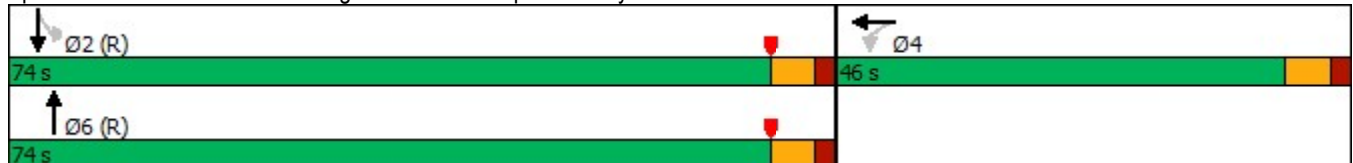
Lane Group	WBT	NBT	SBL	SBT
Lane Configurations	↔	↕		↕
Traffic Volume (vph)	0	661	34	563
Future Volume (vph)	0	661	34	563
Turn Type	NA	NA	Perm	NA
Protected Phases	4	6		2
Permitted Phases			2	
Detector Phase	4	6	2	2
Switch Phase				
Minimum Initial (s)	7.0	7.0	7.0	7.0
Minimum Split (s)	31.0	25.0	25.0	25.0
Total Split (s)	46.0	74.0	74.0	74.0
Total Split (%)	38.3%	61.7%	61.7%	61.7%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	10.4	97.6		97.6
Actuated g/C Ratio	0.09	0.81		0.81
v/c Ratio	0.69	0.30		0.27
Control Delay	53.0	3.3		1.7
Queue Delay	0.0	0.0		0.1
Total Delay	53.0	3.3		1.8
LOS	D	A		A
Approach Delay	53.0	3.3		1.8
Approach LOS	D	A		A

### Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 67 (56%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 6.1  
 Intersection Capacity Utilization 71.4%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service C

### Splits and Phases: 107: Washington Avenue & Espanola Way



## Queues

















### 107: Washington Avenue & Espanola Way



Lane Group	WBT	NBT	SBT
Lane Group Flow (vph)	104	786	635
v/c Ratio	0.69	0.30	0.27
Control Delay	53.0	3.3	1.7
Queue Delay	0.0	0.0	0.1
Total Delay	53.0	3.3	1.8
Queue Length 50th (ft)	44	56	28
Queue Length 95th (ft)	99	107	36
Internal Link Dist (ft)	364	111	314
Turn Bay Length (ft)			
Base Capacity (vph)	444	2595	2339
Starvation Cap Reductn	0	0	762
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.30	0.40
Intersection Summary			

# HCM 6th Signalized Intersection Summary

## 107: Washington Avenue & Espanola Way

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	48	0	50	0	661	78	34	563	0
Future Volume (veh/h)	0	0	0	48	0	50	0	661	78	34	563	0
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.76	1.00		0.93	0.99		1.00
Parking Bus, Adj				1.00	0.90	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1856	1856	1856	0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h				51	0	53	0	703	83	36	599	0
Peak Hour Factor				0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %				3	3	3	0	3	3	3	3	0
Cap, veh/h				125	0	130	0	2089	246	133	2152	0
Arrive On Green				0.20	0.00	0.20	0.00	0.70	0.70	1.00	1.00	0.00
Sat Flow, veh/h				625	0	650	0	3077	352	142	3157	0
Grp Volume(v), veh/h				104	0	0	0	415	371	321	314	0
Grp Sat Flow(s),veh/h/ln				1275	0	0	0	1763	1573	1610	1604	0
Q Serve(g_s), s				8.5	0.0	0.0	0.0	11.1	11.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s				8.5	0.0	0.0	0.0	11.1	11.1	0.0	0.0	0.0
Prop In Lane				0.49		0.51	0.00		0.22	0.11		0.00
Lane Grp Cap(c), veh/h				255	0	0	0	1234	1102	1161	1123	0
V/C Ratio(X)				0.41	0.00	0.00	0.00	0.34	0.34	0.28	0.28	0.00
Avail Cap(c_a), veh/h				425	0	0	0	1234	1102	1161	1123	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)				1.00	0.00	0.00	0.00	1.00	1.00	0.98	0.98	0.00
Uniform Delay (d), s/veh				41.8	0.0	0.0	0.0	7.1	7.1	0.0	0.0	0.0
Incr Delay (d2), s/veh				0.4	0.0	0.0	0.0	0.7	0.8	0.6	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	0.0	0.0	0.0	4.1	3.7	0.2	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				42.2	0.0	0.0	0.0	7.8	7.9	0.6	0.6	0.0
LnGrp LOS				D	A	A	A	A	A	A	A	A
Approach Vol, veh/h					104			786			635	
Approach Delay, s/veh					42.2			7.8			0.6	
Approach LOS					D			A			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		90.0		30.0		90.0						
Change Period (Y+Rc), s		6.0		6.0		6.0						
Max Green Setting (Gmax), s		68.0		40.0		68.0						
Max Q Clear Time (g_c+I1), s		2.0		10.5		13.1						
Green Ext Time (p_c), s		1.5		0.3		1.8						
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				7.2								
HCM 6th LOS				A								

# **APPENDIX F**

## **Queuing Analysis**

## Queuing Analysis based on ITE Procedures Cloud One

$$q = 18 \text{ veh/hr (demand rate)}$$

$$Q = 8 \text{ veh/hr (service rate*)}$$

$$p = \frac{q}{NQ} = 0.562 \text{ (N = 4 valet runners)}$$

$$Q_M = 0.244$$

Using Acceptable Probability of 5% (95% Confidence Level)

$$M = \left( \frac{\text{Ln}(x > M) - \text{Ln}(Q_M)}{\text{Ln}(p)} \right) - 1$$

$$M = \left( \frac{\text{Ln}(0.05) - \text{Ln}(0.244)}{\text{Ln}(0.562)} \right) - 1$$

$$M = \left( \frac{-2.9957 - (-1.410)}{-0.5762} \right) - 1$$

$$M = 2.75 - 1 = 1.75, \text{ say 2 vehicles}$$

- Ticket processing time = **60 sec.** + vehicle travel time at 20 mph (2,500 feet) = **85 sec.**  
+ 1 signal delay = **60 sec.** + walking/running time at 10 ft/sec for 2,500 feet = **250 sec**  
= 455 seconds (7.9 vehicles per hour), **say 8 veh/hr.**

location, a 5% probability of back-up onto the adjacent street is judged to be acceptable. Demand on the system for design is expected to be 110 vehicles in a 45-minute period. Average service time was expected to be 2.2 minutes. Is the queue storage adequate?

Such problems can be quickly solved using Equation (8-9b) given in Table 8-10 and repeated below for convenience.

$$M = \left[ \frac{\ln P(x > M) - \ln Q_M}{\ln \rho} \right] - 1$$

where:

$M$  = queue length which is exceeded  $p$  percent of the time

$N$  = number of service channels (drive-in positions)

$Q$  = service rate per channel (vehicles per hour)

$\rho = \frac{\text{demand rate}}{\text{service rate}} = \frac{q}{NQ} = \text{utilization factor}$

$q$  = demand rate on the system (vehicles per hour)

$Q_M$  = tabled values of the relationship between queue length, number of channels, and utilization factor (see Table 8.11)

**TABLE 8-11**  
Table of  $Q_M$  Values

	$N = 1$	2	3	4	6	8	10
0.0	0.0000	0.0000	0.0000	0.0000			
0.1	.1000	.0182	.0037	.0008	.0000	0.0000	0.0000
.2	.2000	.0666	.0247	.0096	.0015	.0002	.0000
.3	.3000	.1385	.0700	.0370	.0111	.0036	.0011
.4	.4000	.2286	.1411	.0907	.0400	.0185	.0088
.5	.5000	.3333	.2368	.1739	.0991	.0591	.0360
.6	.6000	.4501	.3548	.2870	.1965	.1395	.1013
.7	.7000	.5766	.4923	.4286	.3359	.2706	.2218
.8	.8000	.7111	.6472	.5964	.5178	.4576	.4093
.9	.9000	.8526	.8172	.7878	.7401	.7014	.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

0.4 ---- 0.0907

0.4375 = X

0.5 ---- 0.1739

0.0375/0.1 = Y/0.0832

Y = 0.0312

X = 0.0907 + = 0.0312 = 0.1219

$$\rho = \frac{q}{NQ} = \frac{\text{arrival rate, total}}{(\text{number of channels})(\text{service rate per channel})}$$

$N$  = number of channels (service positions)

**Solution**

Step 1:  $Q = \frac{60 \text{ min/hr}}{2.2 \text{ min/service}} = 27.3 \text{ services per hour}$

Step 2:  $q = (110 \text{ veh/45 min}) \times (60 \text{ min/hr}) = 146.7 \text{ vehicles per hour}$

Step 3:  $\rho = \frac{q}{NQ} = \frac{146.7}{(6)(27.3)} = 0.8956$

Step 4:  $Q_M = 0.7303$  by interpolation between 0.8 and 0.9 for  $N = 6$  from the table of  $Q_M$  values (see Table 8-11).

Step 5: The acceptable probability of the queue,  $M$ , being longer than the storage, 18 spaces in this example, was stated to be 5%.  $P(x > M) = 0.05$ , and:

$$M = \left[ \frac{\ln 0.05 - \ln 0.7303}{\ln 0.8956} \right] - 1 = \left[ \frac{-2.996 - (-0.314)}{-0.110} \right] - 1$$

= 24.38 - 1 = 23.38, say 23 vehicles.