



1601 Drexel Avenue

OPERATIONS PLAN

Planning Board Submission
Final Submission - April 6, 2017

Time Out Market

1601 Drexel Avenue

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Time Out Market

1601 Drexel Avenue

Concept

The concept of Time Out Market is simple: provide the “best of each city under one roof.”

Time Out is the leading worldwide guide to art and entertainment, food and drink, film, travel and more. Time Out Market takes that concept one step further by incorporating it into a unique food, shopping and cultural experience. It brings together the best area chefs and restaurants into one inspiring, convenient and genuine food experience, all under one roof.

Area chefs have an opportunity to launch new concepts as a part of a larger community.

The Market creates various cooking areas, which local chefs or restaurants lease to exhibit their specialties. Patrons share communal tables and are served their meals on non-disposable tableware and silverware.

In addition to the culinary experience, patrons are also treated to a cultural platform for local artists. This platform features local art, master chef classes and/or demonstrations, DJs, and readings. It serves as a creative artist forum. Patrons are able to participate become a part of the experience through participation in master cooking classes and local art.

It is an experience for the senses and a way to get to know your community.

Time Out Market

1601 Drexel Avenue

HOURS OF OPERATIONS

Indoor Restaurant Operating Hours

Sundays - Thursdays | 7:00 AM - 11:00 PM

Fridays - Saturdays | 7:00 AM - 12:00 AM

Outdoor Restaurant Operating Hours

Sundays - Thursdays | 8:00 AM - 10:00 PM

Fridays - Saturdays | 8:00 AM - 11:00 PM

Access

The main guest entrance will be located along Drexel Avenue.

Time Out Market

1601 Drexel Avenue

STAFFING LEVELS FOR THE RESTAURANT

According to the hours of operation applied for under this Conditional Use Permit, the Applicants expect to have 15 cooking stations with the below staffing levels:

SHIFT	NO. OF STAFF
Breakfast	18
Lunch	71
Dinner	76

Time Out Market

1601 Drexel Avenue

ACCESS & SECURITY

The facility will be located on the east side of Drexel Avenue between Lincoln Road and 16th Street, in Miami Beach, Florida. Patrons will gain access to the Market through the main entrance located along Drexel Avenue.

Once inside, patrons will be able to explore the space and pick from a variety of food vendors. Seating will be at bench style tables which promote socialization and elevate the community experience. All food will be served on glass tableware with non-disposable cutlery.

The concept is to have the best local cultural atmosphere from music, and art to the best dining experience, all under one roof. 15 cooking facilities will encompass the interior of the space. Along the Drexel Avenue window perimeter, food preparation will be made into a part of the experience by providing demonstrations and simply showing the art of food. Guests will experience some of the area's best food while enjoying local art and sounds.

A security team will be contracted to manage the overall security of the market. Security staff will man the entrance and exit of the market with additional focus towards the later hours.

The number of staff and security personnel will depend on the day-to-day operations and needs of the facilities.

Time Out Market

1601 Drexel Avenue

PARKING

Time Out Market will be located on the ground level of a main use parking garage. While the Applicant expects that most of its patrons will walk, bike, or use local car services, for those patrons driving to the property, they are expected to use the on-site parking garage.

A detailed traffic and parking study has been prepared by Traff Tech Engineering and has been provided under separate cover.

No valet services are expected for this facility.

Time Out Market

1601 Drexel Avenue

DELIVERIES & COLLECTIONS

The following procedures will be implemented to ensure minimal impact on local residents:

All deliveries will occur during weekday hours between 8:00 AM and 5:00 PM through the designated loading area, which is located along the rear of the property (east of the garage), totally within a private back alley area.

Time Out Market will work with one of the City approved waste collection companies for daily refuse collections.

Collections will occur daily between 8:00 AM and 5:00 PM within the private back alley area, which is located along the east side of the garage. All refuse will be wheeled from the air-conditioned, enclosed garbage room through the existing pathway to the alley area, where collections will take place.

Time Out Market

1601 Drexel Avenue

EXAMPLE OF OFFERINGS IN LISBOA



1 MARISQUEIRA AZUL

What really makes a great marisqueira (seafood eatery) is neither the location nor the space itself. It is the products. [...]



2 BALCÃO DA ESQUINA

The Balcão da Esquina is the ideal place for getting a taste of a concept that Vinho Verde succeeded over in the [...]



3 TRINCAS

Set up by the team behind The Decadence, a bar and restaurant between the Bairro Alto and Príncipe Real, this new [...]



4 COZINHA DA FELICIDADE

Aside from the obvious association between food and happiness, this restaurant whose name literally means 'Kitchen of [...]



9 ALEXANDRE SILVA

With a creative flair that is out of the ordinary, Alexandre Silva does more than reinterpret Portuguese tradition. He [...]



10 MIGUEL CASTRO E SILVA

The veteran among chefs at the Mercado da Ribeira, but that does not make him any bit less original than his peers - [...]



11 HENRIQUE SÁ PESSOA

One of our most high profile chefs, whose fame is not due solely to his media exposure, it is largely thanks to his [...]



12 MARLENE VIEIRA

This chef with roots in the north of Portugal has a strong grasp of traditional cuisine and a flair for reinventing [...]



MEMORANDUM

CORPORATE OFFICE
Punta Gorda, FL

FLORIDA OFFICES
Chipley
Miami
Punta Gorda
Tallahassee
Tampa

GEORGIA OFFICE
Atlanta

MISSOURI OFFICE
Kansas City

DATE: February 27, 2017
TO: Josiel Ferrer-Diaz, EI, Transportation Manager, City of Miami Beach
FROM: Claudia Lamus, P.E.
CC: Ali Soltani Sobh, Ph.D.
Oliver Rodrigues P.E., PTOE
SUBJECT: **1601 Drexel Avenue – PB 16-0062**
Traffic Impact Study - Peer Review No. 3

Florida Transportation Engineering, Inc. was retained by the City of Miami Beach to perform a peer review of the traffic impact study for the proposed redevelopment of the site located at 1601 Drexel Avenue, Miami Beach, FL. These services were performed as part of the City's Traffic Engineering Consulting Services Contract.

The applicant proposes a high-turnover restaurant with 464 seats. The restaurant will occupy the vacant space on the first floor of the existing parking garage. A Traffic Impact Study (TIS) prepared by Traf Tech dated November 2016 was presented to the City. At the request of the City, FTE provided peer review comments dated January 6, 2017 and February 26, 2017. Responses to the comments were submitted by the applicant February 26 and 27 of 2017.

After reviewing the response to comments, FTE found that all comments were satisfactorily addressed.

Should you have any questions concerning our comments, please feel free to contact me at (305) 463-8411, ext. 102. I look forward to assisting you further on this project.

1601 Drexel Avenue - Peer Review Memorandum 3

February 27, 2017

Mr. Josiel Ferrer-Diaz – Transportation Manager
City of Miami Beach
1700 Conversion Center Drive
Miami Beach, Florida 33139

Re: Time Out Market – Transportation Demand Management Plan

Dear Josiel:

Traf Tech Engineering, Inc. prepared a Transportation Demand Management Plan associated with the proposed Time Out Market planned to be located at 1601 Drexel Avenue in the City of Miami Beach in Miami-Dade County, Florida.

Introduction

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 will reside within a reasonable walking distance (within ¼ - ½ mile) of the subject facility. However, the subject site is near Lincoln Road Mall, a high pedestrian traffic area and therefore, many customers of the future restaurant are expected to be walking trips. Wide sidewalks exist on the west and south sides of the restaurant building.

Bicycling

The site of the proposed development offers two potential approaches to encourage the cycling, the use of the DecoBike program and use of employee-owned bicycles. Seventeen (17) bicycle racks are currently provided at the site in order for employees and customers to secure their bicycles on the property.

Use of DecoBikes 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 Time Out Market project, there is one convenient DecoBike rental station (Station 159: 15th Street & Washington Ave). Patrons will be informed of the 17 bicycle racks located on the east side of the facility.
(Goal: 6 employees and 2 Customers)

Mass Transit

There is a wealth of transit options for the Time Out Market. These transit routes include 120, 115, 117, and 123. The nearest bus stop for these services is located at the intersection of Washington Street and 16th Street. 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. Employers of the Time Out Market can provide a significant inducement to employees to use public transportation (Miami-Dade Transit, MDT) through a transit subsidy. Transit subsidies can also provide tax benefits to both employees and employers.

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: 2 employees).**

Carpooling

Carpooling is historically the least effective alternative transportation mode, even when implemented on a regional basis. Given the relatively small employee base of a single employer, it is likely that carpooling will provide a significant amount of trip reduction. However, preferential parking could be made available to employees that carpool. (**Goal: 4 employees**).

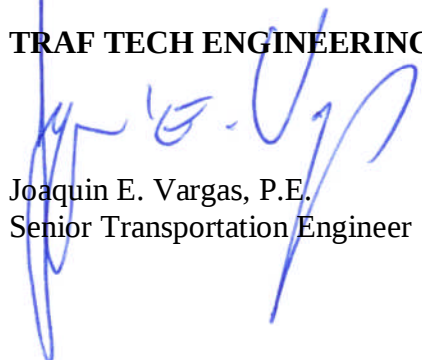
TDM Program Management

An employee of the proposed Time Out Market will have assigned duties to include establishing and management of the TDM program. They will need to be able to explain the transportation subsidy and its benefits relative to each mode transportation. Materials describing the TDM program would be made available to all employees upon its initiation and as part of new employee orientation. The TDM Manager will need to coordinate with the City of Miami Beach, and potentially with MDT and DECOBIKES LLC for monthly transit passes and Citi Bikes, respectively. The TDM Manager will need to set up a method and a schedule to monitor participation of employees for each mode of transportation. The person assigned to manage the TDM plan for the Time Out Market is Mr. Matthias Kiehm (Phone: 781-235-2222/Fax: 781-235-2218/Cell: 781-775-0355)

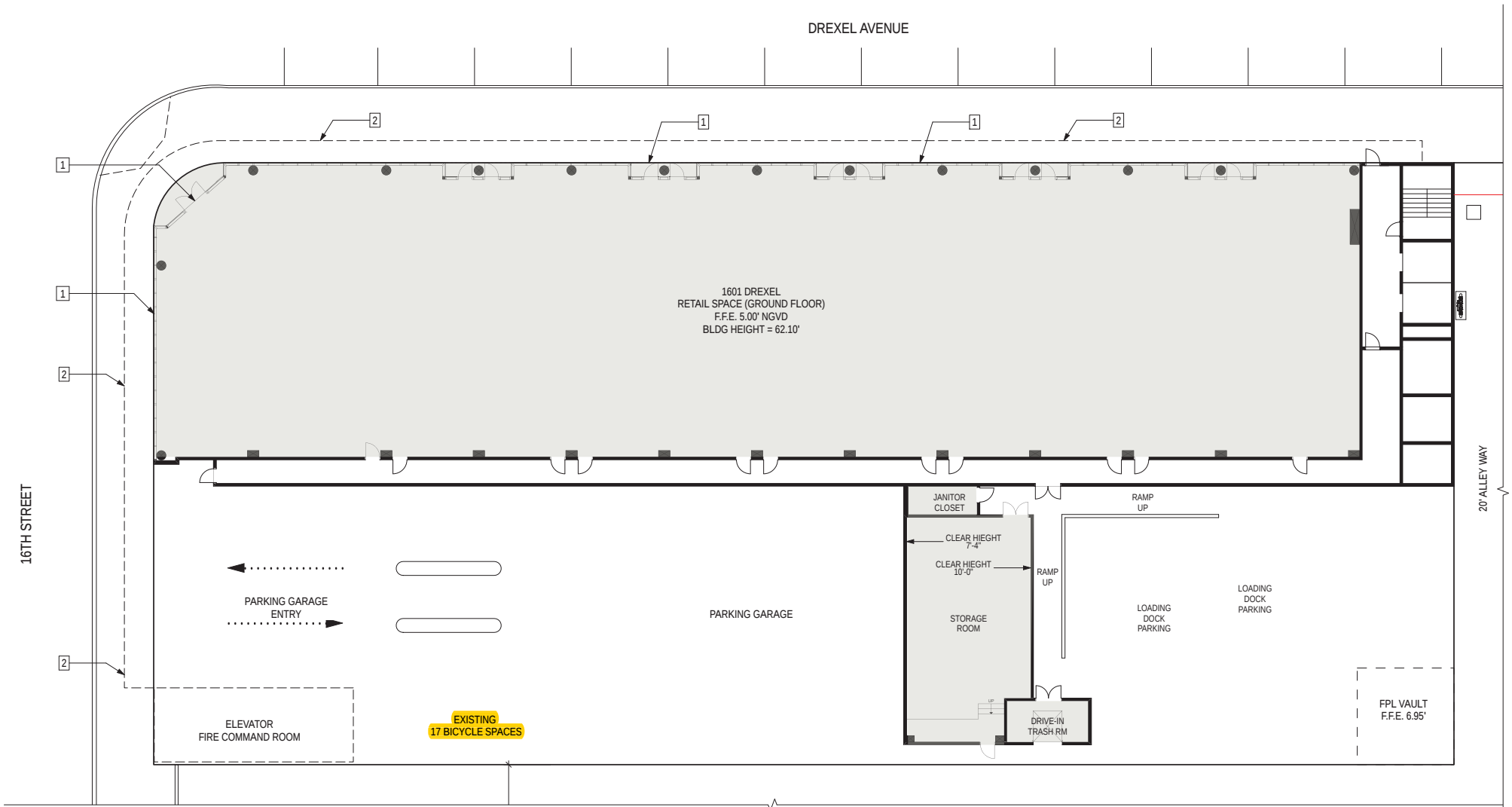
Please give me a call if you have any questions.

Sincerely,

TRAF TECH ENGINEERING, INC.



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



DEMOLITION KEY

- 1 DEMOLITION OF EXISTING STOREFRONT
- 2 REMOVAL OF EXISTING CANVAS OVERHANG

LEGEND

- TENANT SPACE IN SCOPE OF WORK

1 DEMOLITION PLAN

SCALE: 1" = 20'

A-13

P B S U B M I T T A L

1601 DREXEL AVE :: MIAMI BEACH, FL 33139

DEMOLITION PLAN

11/15/2016 URBAN ROBOT © 2016



TABLE 3 Intersection Levels of Service – (Signalized Intersections) Time Out Market			
Intersection	2016 Existing	Future Traffic Conditions	
		2018 w/o Project	2018 With Project
Washington Ave & 17 th St	C	C	C
Washington Ave & 16 th St	B	C	D
Washington Ave & 15 th St	B	B	B
Drexel Ave & 16 th St	A	A	A
Alton Road & 16 th Street	C	C	C

Source: *Highway Capacity Manual*

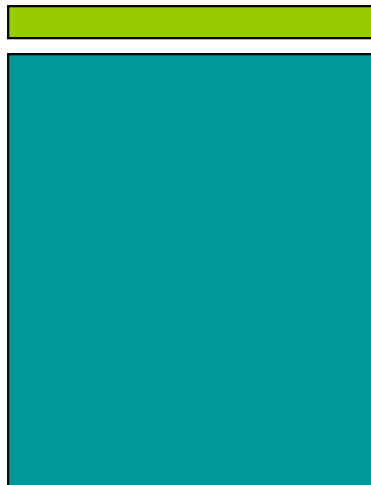
TABLE 4 Intersection Levels of Service (Stop-Controlled Intersections) Time Out Market			
Intersection/Movement	2016 Existing	Future Traffic Conditions	
		2018 w/o Project	2018 With Project
Garage Ent. & 16 th Street			
- SBL	B	B	B
- SBR	B	B	B

Source: *Highway Capacity Manual*

The computer printouts of the intersection capacity analyses are contained in Appendix F.

Time Out Market Miami Beach, Florida

traffic study



prepared for:
Time Out Market

Traf Tech
ENGINEERING, INC.

November 2016

November 28, 2016

Didier Souillat
CEO of Time Out Market
c/o Monika Entin Esq.
Bercow Radell & Fernandez, P.A.
200 S. Biscayne Boulevard, Suite 850
Miami, Florida 33131

Re: Time Out Market Restaurant–Traffic Study

Dear Didier:

Traf Tech Engineering, Inc. is pleased to provide you with the results of the traffic study conducted for the Time Out Market project located in the City of Miami Beach in Miami-Dade County, Florida.

It has been a pleasure working with you on this project.

Sincerely,

TRAF TECH ENGINEERING, INC.

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

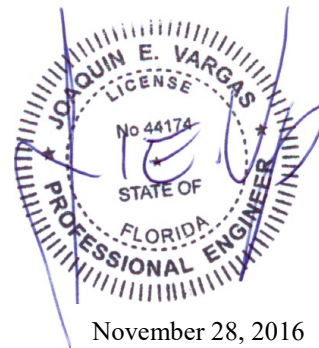


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INTRODUCTION

Time Out Market is a proposed High-turnover (Sit-down) Restaurant planned to occupy the vacant space on the first floor of the existing parking garage building located on the northeast corner of Drexel Avenue and 16th Street 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 Time Out Market to conduct a traffic study¹ in connection with the proposed restaurant. 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

¹ The traffic methodology was discussed and agreed with the City of Miami Beach staff and is included in Appendix A.



INVENTORY

Existing Land Use

The commercial space where the Time Out Market will be housed is currently vacant (first floor of the parking garage building).

Proposed Land Use and Access

The proposed restaurant will consist of 464 seats. Pedestrian access to the development is located on Drexel Avenue and on-site parking for future patrons will be provided in the existing parking garage. Appendix B contains a copy of the 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 Washington Avenue, Drexel Avenue, Alton Road, 17th Street, 16th Street, and 15th Street. Near the project site, Washington Avenue, Alton Road, and Drexel Avenue are oriented in the north and south direction. 17th Street, 16th Street, and 15th Street are oriented in the east and west direction. Washington Avenue, Alton Road and 17th Street are four-lane facilities while Drexel Avenue, 16th Street and 15th Street are two-lane roadways.

Nearby Intersections

With the assistance of City of Miami Beach staff, six intersections (including the garage entrance driveway) were identified as the locations that will be impacted the most by the proposed project. These intersections include:

- Washington Avenue & 17th Street (Signalized)
- Washington Avenue & 16th Street (Signalized)
- Washington Avenue & 15th Street (Signalized)
- Drexel Avenue & 16th Street (Signalized)
- 16th Street and Garage Entrance (Stop controlled)
- Alton Road & 16th Street (Signalized)

Figure 2 on the following page shows the existing lane geometry of the six (6) intersections selected for analysis purposes. The number of lanes on the street system surrounding the project site is also depicted in the figure.



TRAFFIC COUNTS

Traf Tech Engineering, Inc., in association with Traffic Survey Specialists, Inc., collected traffic data at the following locations:

- Washington Avenue & 17th Street (Signalized)
- Washington Avenue & 16th Street (Signalized)
- Washington Avenue & 15th Street (Signalized)
- Drexel Avenue & 16th Street (Signalized)
- 16th Street and Garage Entrance (Stop controlled)
- Alton Road & 16th Street (Signalized)

The intersection turning movement counts performed by Traffic Survey Specialists, Inc., were collected on Friday, March 4, 2016 and August 26, 2016 during the PM peak period (4:00 PM to 7:00 PM).

The existing PM peak hour traffic counts are presented in Figure 3 on the following page. Appendix C contains the traffic data as collected in the field. The signal timing plans for the signalized intersections were obtained from the Miami-Dade County Signals and Signs Division and are included in Appendix C.



TRIP GENERATION

The trip generation for the project was based on information contained in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual (9th Edition)*. According to the subject ITE manual, the most appropriate "land use" category for the proposed land use is: Land Use 932 – High-turnover (Sit-down) Restaurant. Table 1 below summarizes the external trips associated with the proposed Time Out Market Restaurant.

TABLE 1 Trip Generation Summary (Proposed Uses) Time Out Market					
Land Use	Size	Daily Trips	PM Peak Hour		
			Total Trips	Inbound	Outbound
High-Turnover (Sit-Down) Restaurant (LUC 932)	464 Seats	2,241	190	108	82
Gross Trips		2,241	190	108	82
Pass-by (Restaurant - 25%)		-560	-48	-24	-24
Subtotal		1,681	142	84	58
Transit and Pedestrian Reduction (-10%)		-168	-14	-7	-7
Net New Vehicular Trips		1,514	128	77	51

Source: ITE Trip Generation Manual (9th Edition)

Source: ITE Trip Generation Manual (9th Edition)

As indicated in Table 1, The proposed development is anticipated to generate approximately 2,241 gross daily trips and approximately 190 gross trips (108 inbound and 82 outbound) during the typical PM peak hour. The net new trips (proposed trips minus pass-by and minus transit and pedestrian reduction) include approximately 1,514 new daily trips and approximately 128 additional PM peak hour trips (77 inbound and 51 outbound).

ITE Land Use 932 – High-Turnover (Sit-Down) Restaurant

Weekday Trip Generation

$$T = 4.83 (X)$$

Where T = number of weekday trips and

X = number of seats

Weekday PM Peak Hour of Adjacent Street

$$T = 0.41 (X) \text{ (57\% inbound and 43\% outbound)}$$

Where T = number of weekday PM peak hour trips and

X = number of seats

TRIP DISTRUBUTION 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 2 summarizes the County's cardinal distribution data for Traffic Analysis Zone 643, which is applicable to the project site from the latest SERPM data published by Miami-Dade County.

TABLE 2		
Project Trip Distribution		
Time Out Market		
Direction		% of Total Trips
North:	Northwest	15.5
	Northeast	19.9
South:	Southwest	4.3
	Southeast	7.7
East:	Northeast	4.6
	Southeast	0
West:	Northwest	18.9
	Southwest	29.2
Total		100.00%

Source: Miami-Dade County (2040 SERPM)

Based on the above, the following traffic assignment was assumed for the proposed restaurant development:

- o 25% to/from the north via Washington Road
- o 8% to/from the south via Washington Road
- o 2% to/from the south via Drexel Avenue
- o 5% to/from the east via 17th Street
- o 5% to/from the east via 16th Street
- o 25% to/from the west via 17th Street
- o 15% to/from the west via 16th Street
- o 15% to/from the west via 15th Street

The new peak hour traffic generated by the project was assigned to the nearby transportation network using the traffic assignment documented above. The new project traffic assignment is summarized in Figure 4.



TRAFFIC ANALYSIS

This section of the study is divided into three (3) 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. The third section addresses the projected operating conditions of the project's parking garage driveway.

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 2018 traffic volumes (project anticipated to be built and occupied by the year 2018), without the proposed project, two separate analyses were undertaken. The first analysis converts the existing peak hour traffic counts collected in the field during the month of March and August to average peak season conditions. Based on FDOT's Peak Season Factor Category report, a factor of 1.00 and 1.02 are required to convert traffic counts collected during the first week of March and Last week of August to average peak season conditions (refer to Appendix D).

The second analysis includes a growth factor to project 2016 peak season traffic volumes to the year 2018. Based on traffic growth data published by the FDOT for a nearby traffic count stations, minimal traffic growth has occurred during the past five years (refer to Appendix D). However, in order to assess impacts with a conservative approach, and to account for unforeseen approved project (committed trips) that may impact the study intersections, a one and one-half percent (1.5%) growth rate was used for purposes of this study. Moreover, committed development trips associated with several projects were added to the peak season volumes in order to develop 2018 background traffic conditions for the study area.

The new trips generated by the Time Out Market project (refer to Figure 4) were added to the 2018 background traffic in order to develop total traffic conditions. The future traffic projections for the study intersections (peak season adjustments, growth rates, committed development trips and project traffic) are presented in tabular format in Appendix E. Figures 5 and 6 present the year 2018 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 Time Out Market project.

Level of Service Analyses

Intersection capacity/level of service analyses were conducted for the six (6) study intersections and the access driveway. The analyses were undertaken following the capacity/level of service procedures outlined in the Highway Capacity Manual (HCM) using the SYNCHRO software. The results of the capacity analyses are summarized in Tables 3 and 4. As indicated in Tables 3 and 4, all study intersections are currently operating adequately and will continue to operate at a acceptable level of service in the year 2018 with the proposed project in place.

Parking Garage Driveway

The parking garage driveway along 16 Street is projected to operate at level of service “B” (refer to Table 4).





TABLE 3 Intersection Levels of Service – (Signalized Intersections) Time Out Market			
Intersection	2016 Existing	Future Traffic Conditions	
		2018 w/o Project	2018 With Project
Washington Ave & 17 th St	C	C	C
Washington Ave & 16 th St	B	B	C
Washington Ave & 15 th St	B	B	B
Drexel Ave & 16 th St	B	B	B
Alton Road & 16 th Street	C	C	C

Source: Highway Capacity Manual

TABLE 4 Intersection Levels of Service (Stop-Controlled Intersections) Time Out Market			
Intersection/Movement	2016 Existing	Future Traffic Conditions	
		2018 w/o Project	2018 With Project
Garage Ent. & 16 th Street			
- SBL	B	B	B
- SBR	B	B	B

Source: Highway Capacity Manual

The computer printouts of the intersection capacity analyses are contained in Appendix F.

OTHER MODES OF TRANSPORTATION

Throughout much of Miami Beach, and specifically within the immediate area of the proposed Time Out Market project, there are many convenient and cost-effective transportation alternatives for residents, patrons, and visitors alike. Many patrons of the Time Out Market project are likely to avail themselves of alternative travel modes as opposed to the automobile. Several of the more prominent modes in this area include bus transit services, bicycling (including the Deco Bike), and the sidewalk network throughout the surrounding area. Each of these is explained in further detail below.

Miami-Dade Transit

Transit services on Miami Beach are provided by Miami-Dade Transit. There are numerous transit routes serving the immediate study area including 120, 115, 117, and 123 Routes. The nearest bus stop for these services is located at the intersection of Washington Street and 16th Street. 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.

DecoBike

DecoBike is a bicycle sharing and rental program on Miami Beach. This program offers a network of 100 solar-powered bicycle rental stations and a fleet of 1,000 bicycles which can be rented 24 hours per day. Within the immediate area of the Time Out Market project, there is one convenient DecoBike rental station (Station 159: 15th Street & Washington Ave).

Pedestrian Network

Most of Miami Beach is considered a very walkable environment. Specifically, within the project study area, each of the existing roadways has sidewalks on both sides and crosswalks are present at each of the major signalized intersections. There are many attractive destinations within easy access to the Time Out Market Restaurant and the

project has been designed in such a manner as to provide direct access to this sidewalk network.

In summary, this project is located within an area that provides excellent access to alternative modes of transportation. It is expected that many of the customers of the Time Out Market project will utilize these services as opposed to driving passenger vehicles.

CONCLUSIONS AND RECOMMENDATIONS

Time Out Market is a proposed High-turnover (Sit-down) Restaurant planned to occupy the vacant space on the first floor of the existing parking garage building located on the northeast corner of Drexel Avenue and 16th Street in the City of Miami Beach in Miami-Dade County, Florida.

The proposed restaurant will consist of 464 seats. Pedestrian access to the development is located on Drexel Avenue and on-site parking for future patrons will be provided in the existing parking garage.

Traf Tech Engineering, Inc. was retained by Time Out Market to conduct a traffic study in connection with the proposed restaurant development. The study addresses trip generation and the traffic impacts created by the proposed project on the nearby transportation network. The conclusions of the traffic study are presented below:

- The proposed Time Out Market development is anticipated to generate approximately 2,241 gross daily trips and approximately 190 gross trips (108 inbound and 82 outbound) during the typical PM peak hour. The net new trips (proposed trips minus pass-by and minus transit and pedestrian reduction) include approximately 1,514 new daily trips and approximately 128 additional PM peak hour trips (77 inbound and 51 outbound).
- All study intersections are currently operating adequately and will continue to operate at an acceptable level of service in the year 2018 with the proposed project in place.
- The parking garage driveway along 16 Street is projected to operate at level of service “B”.

APPENDIX A

Traffic Methodology

TO: Time-Out Market

FROM: Joaquin Vargas

DATE: October 5, 2016

SUBJECT: Traffic Methodology for Time Out Market

Time-Out Market is a proposed high-turnover (sit-down) restaurant planned to occupy the vacant space on the first floor of the existing parking garage building located on the northeast corner of Drexel Avenue and 16th Street in the City of Miami Beach in Miami-Dade County, Florida.

A traffic study documenting the impacts of the proposed restaurant will be undertaken. The following is our proposed methodology for the traffic study associated with this project:

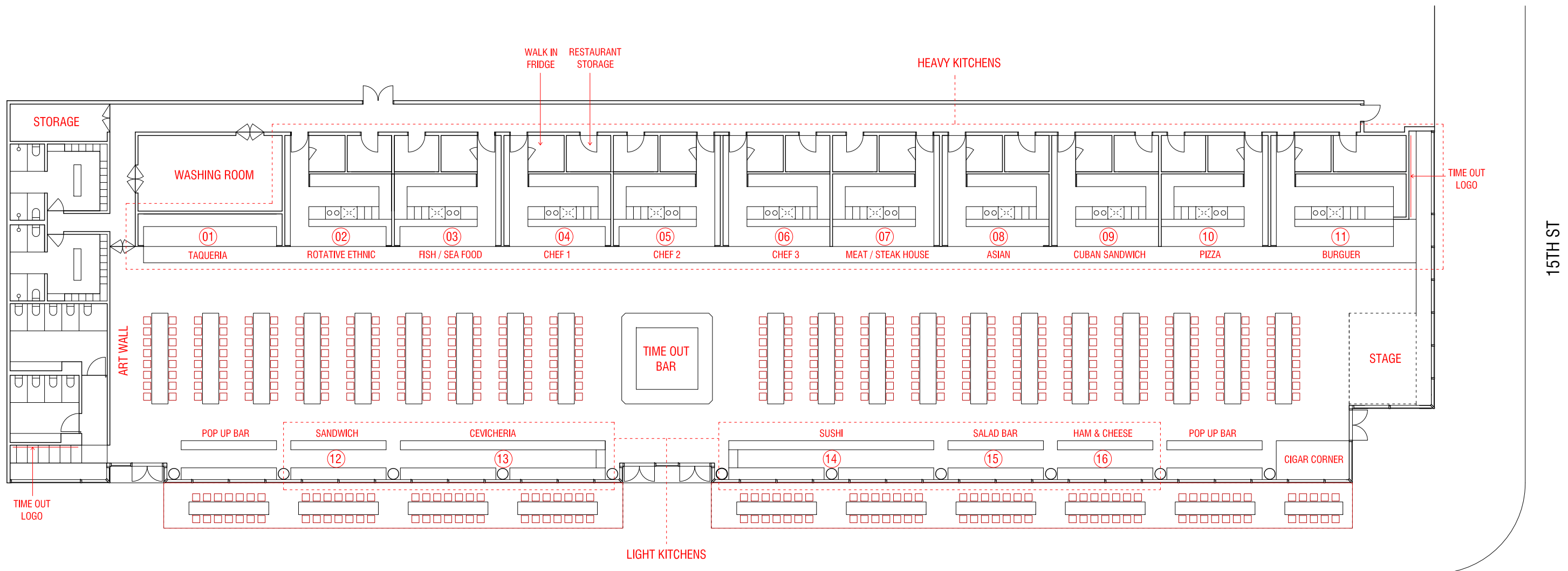
- o The trip generation for the proposed restaurant will be based on ITE's *Trip Generation Manual* (9th Edition). For the proposed restaurant, ITE LUC 932 – High Turnover Site-Down Restaurant will be used. The number of restaurant seats will be used for trip generation purposes.
- o The traffic study will evaluate intersections located in the immediate vicinity of the project. The analyses will be undertaken for the critical PM peak hour (Friday 4PM to 7PM). These intersections are:
 - 1. Washington Avenue & 17th Street (Signalized)
 - 2. Washington Avenue & 16th Street (Signalized)
 - 3. Washington Avenue & 15th Street (Signalized)
 - 4. Drexel Avenue & 16th Street (Signalized)
 - 5. 16th Street and Garage Entrance (Stop controlled)
 - 6. Alton Road & 16th Street (Signalized)
- o Traffic circulation will be evaluated in the traffic study, including its impact to the surrounding street system and adjacent driveways, if any.
- o For purposes of the traffic study, the build-out year will be 2018. For purposes of traffic growth, FDOT historical traffic data will be used.
- o Existing traffic signal timing data and traffic counts will be included in the appendix of the traffic study.

- o The traffic study will address any anticipated / proposed impacts onto the existing on-street vehicular parking, if applicable. Any impacts to on-street parking will be discussed with the City's Parking Department.
- o Traffic figures will be prepared for the following trip generation scenarios for each of the intersections analyzed:
 - 1. Existing trips
 - 2. Proposed site trips distribution
 - 3. Existing + traffic growth
 - 4. Future or build-out + traffic growth + site trips
- o The presence of transit and nearby routes will be discussed as will the provision and location of bicycle racks.
- o Provide bicycle racks at the site to encourage other modes of transportation.
- o The site plan will also include the location of bicycle parking, garbage pick-up area and place designated for deliveries.
- o The submittal of the study will include LOS calculations for review by the peer reviewer.

APPENDIX B

Site Plan

Time Out Market



AREAS
TOTAL AREA TOM: 1590 m ² / 17114 sq ft
FOODHALL: 865 m ² / 9310 sq ft
BACK OF THE HOUSE: 725 m ² / 7803 sq ft
HEAVY KITCHEN UNIT: 41m ² / 441 sq ft
CUSTOMER SERVICE AREA: 14m ² / 150 sq ft
COOKING AREA: 18m ² / 194 sq ft
WALK IN FRIDGE: 4m ² / 43 sq ft
STORAGE: 5m ² / 54 sq ft
LIGHT KITCHEN UNIT: 11m ² / 118 sq ft
TIME OUT BAR: 25m ² / 269 sq ft
OUTSIDE ESPLANADE: 151 m ² / 1625 sq ft

SEATS
FOODHALL SEATS: 320
OUTSIDE ESPLANADE: 136
TOTAL SEATS: 456
PROGRAM
TOTAL KITCHEN UNITS: 16
HEAVY KITCHENS: 11
LIGHT KITCHENS: 5
BARs: 3
ART WALL
PUBLIC TOILETS
STAFF CHANGING ROOMS
WASHING ROOM
GENERAL STORAGE

APPENDIX C

Signal Timing Plan and Traffic Counts

Print Date:
8/17/2013

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2707	Drexel Av&16 St	DOW-7		N/A	0	0	N/A	0	Max 0

<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



Phase	Walk			Don't Walk			Min Initial			Veh Ext			Max Limit			Max 2			Yellow	Red
	Phase Bank																			
	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	0	-	5 - 5	0	-	21 - 21	16	-	5 - 5	1	-	1 - 1	40	-	40 - 30	0	-	40 - 40	4	1
3 -	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	0
4 NBT	0	-	5 - 5	0	-	21 - 21	7	-	7 - 7	2.5	-	2.5 - 2.5	22	-	10 - 10	35	-	35 - 40	4	0.1
5 -	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	0
6 EBT	0	-	5 - 5	0	-	21 - 21	16	-	5 - 5	1	-	1 - 1	40	-	40 - 30	0	-	40 - 40	4	1
7 -	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	-	0 - 0	0	0
8 SBT	0	-	5 - 5	0	-	21 - 21	7	-	7 - 7	2.5	-	2.5 - 2.5	22	-	10 - 10	35	-	35 - 40	4	0.1

Permitted Phases	
	<u>12345678</u>
Default	-234-6-8
External Permit 0	-----
External Permit 1	-----
External Permit 2	-----

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

[illegible]

Current Time of Day Function			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-7-----1	SuM T W ThF S

Local Time of Day Function			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-7-----1	SuM T W ThF S
0130	TOD OUTPUTS	-----	M T W ThF
0230	TOD OUTPUTS	-7-----1	W
0330	TOD OUTPUTS	-7-----1	M T ThF
0800	TOD OUTPUTS	-----	M T W ThF
0900	TOD OUTPUTS	-7-----1	M T W ThF

* 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:
3/24/2014

Print Time:
8:06 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2805	Washington Av&15 St	HOLIDAY-2		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>
<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 SBT	7 - 7 - 7	16 - 16 - 16	7 - 7 - 7	1 - 1 - 1	35 - 30 - 30	0 - 30 - 30	4	0.2
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	0.2
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	0.7

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

Permitted Phases

	<u>12345678</u>
Default	-2---6-8
External Permit 0	-----
External Permit 1	-----
External Permit 2	-----

		Green Time										
Current			1	2	3	4	5	6	7	8		
TOD Schedule	Plan	Cycle	-	SBT	-	-	-	NBT	-	EBT	Ring Offset	Offset
	1	70	0	31	0	0	0	31	0	30	0	3
	2	100	0	61	0	0	0	61	0	30	0	97
	3	80	0	41	0	0	0	41	0	30	0	22
	4	100	0	61	0	0	0	61	0	30	0	7
	5	100	0	61	0	0	0	61	0	30	0	2
	6	110	0	71	0	0	0	71	0	30	0	61
	7	90	0	51	0	0	0	51	0	30	0	4
	8	100	0	61	0	0	0	61	0	30	0	23
	9	80	0	41	0	0	0	41	0	30	0	42
	10	90	0	51	0	0	0	51	0	30	0	78
	11	100	0	61	0	0	0	61	0	30	0	46
	12	110	0	71	0	0	0	71	0	30	0	43
	13	80	0	41	0	0	0	41	0	30	0	58
	14	90	0	51	0	0	0	51	0	30	0	28
	15	110	0	71	0	0	0	71	0	30	0	46
	16	150	0	111	0	0	0	111	0	30	0	139
	18	90	0	51	0	0	0	51	0	30	0	85
	19	100	0	61	0	0	0	61	0	30	0	18
	20	110	0	71	0	0	0	71	0	30	0	18
	21	100	0	61	0	0	0	61	0	30	0	0
	22	70	0	31	0	0	0	31	0	30	0	13
	23	70	0	31	0	0	0	31	0	30	0	13

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	22	Su	S
0000	10	M T W Th F	
0100	23	M T W Th F	
0530	1	Su	S
0600	1	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
1330	12	M T W Th F	
1530	6	M T W Th F	
1800	8	M T W Th F	
2000	10	Su	S

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	8-----1	SuM T W ThF S
0100	TOD OUTPUTS	8----3--	SuM T W
0600	TOD OUTPUTS	8-----	M T W ThF
0700	PERMIT	-----	M T W ThF
0800	TOD OUTPUTS	-----	M T W ThF
0900	TOD OUTPUTS	-----	M T W ThF
1330	TOD OUTPUTS	-----	M T W ThF
1530	CONDITIONAL SERVI	-----	M T ThF
2130	TOD OUTPUTS	8-----1	SuM T W ThF S
2300	PERMIT	8-----	SuM T W ThF S

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	8-----1	SuM T W ThF S
0100	TOD OUTPUTS	8----3--	SuM T W
0200	TOD OUTPUTS	8----3--	ThF S
0600	TOD OUTPUTS	8-----	M T W ThF
0700	TOD OUTPUTS	-----	Su S
0700	PERMIT	-----	M T W ThF
0800	TOD OUTPUTS	-----	M T W ThF
0900	TOD OUTPUTS	-----	M T W ThF
1330	TOD OUTPUTS	-----	M T W ThF
1430	TOD OUTPUTS	-----	W
1530	CONDITIONAL SERVICE	-----	M T ThF
2130	TOD OUTPUTS	8-----1	SuM T W ThF S
2300	PERMIT	8-----	SuM T W ThF S

<u>* Settings</u>	
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

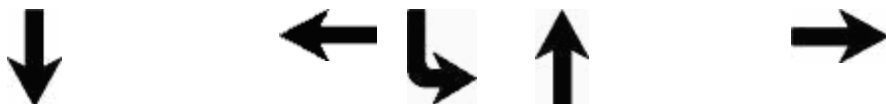
Print Date:
3/24/2014

Print Time:
8:07 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2806	Washington Av&16 St	HOLIDAY-2		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>
<u>Phase Bank</u>								
	1 2 3	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	0.4
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	0.6
5 SBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 5 - 5	7 - 7 - 7	3	0
6 NBT	7 - 7 - 7	14 - 14 - 14	7 - 7 - 7	1 - 1 - 1	25 - 31 - 25	0 - 28 - 28	4	0.4
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	0.6

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

Permitted Phases

12345678

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

		<u>Green Time</u>											
<u>Current</u>			1	2	3	4	5	6	7	8			
<u>TOD Schedule</u>	<u>Plan</u>	<u>Cycle</u>	-	SBT	-	WBT	SBL	NBT	-	EBT	<u>Ring Offset</u>	<u>Offset</u>	
1		70	0	27	0	34	0	27	0	34	0	48	
2		100	0	57	0	34	5	49	0	34	0	92	
3		80	0	37	0	34	5	29	0	34	0	76	
4		100	0	57	0	34	5	49	0	34	0	89	
5		100	0	57	0	34	5	49	0	34	0	55	
6		110	0	67	0	34	5	59	0	34	0	54	
7		90	0	47	0	34	5	39	0	34	0	70	
8		100	0	57	0	34	5	49	0	34	0	22	
9		80	0	37	0	34	5	29	0	34	0	65	
10		90	0	47	0	34	5	39	0	34	0	27	
11		100	0	57	0	34	5	49	0	34	0	54	
12		110	0	67	0	34	5	59	0	34	0	41	
13		80	0	37	0	34	5	29	0	34	0	46	
14		90	0	47	0	34	5	39	0	34	0	54	
15		110	0	67	0	34	5	59	0	34	0	86	
16		150	0	107	0	34	5	99	0	34	0	114	
18		90	0	47	0	34	5	39	0	34	0	57	
19		100	0	57	0	34	5	49	0	34	0	0	
20		110	0	67	0	34	5	59	0	34	0	0	
21		110	0	67	0	34	5	59	0	34	0	0	
22		70	0	27	0	34	5	19	0	34	0	22	

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	22	Su	S
0000	10	M T W Th F	
0100	Free	M T W Th F	
0530	1	Su	S
0600	1	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
1330	12	M T W Th F	
1530	6	M T W Th F	
1800	8	M T W Th F	
2000	10	Su	S

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	8--5----	Su M T W Th F S
0100	TOD OUTPUTS	8--5---1	M T W Th F
0200	TOD OUTPUTS	8--5----	M T W Th F
0600	TOD OUTPUTS	8--5----	M T W Th F
0715	TOD OUTPUTS	-----	Su M T W Th F S
2300	TOD OUTPUTS	8-----	Su M T W Th F S

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	8--5----	Su M T W Th F S
0100	TOD OUTPUTS	8--5---1	M T W Th F
0200	TOD OUTPUTS	8--5----	M T W Th F
0600	TOD OUTPUTS	8--5----	M T W Th F
0715	TOD OUTPUTS	-----	Su M T W Th F S
2300	TOD OUTPUTS	8-----	Su M T W Th F S

<u>* Settings</u>
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

<i>No Calendar Defined/Enabled</i>

TOD Schedule Report
for 2808: Washington Av&17 St

Print Date:
3/24/2014

Print Time:
8:07 AM

<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	HOLIDAY-2		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

Phase	Walk			Don't Walk			Min Initial			Veh Ext			Max Limit			Max 2			Yellow	Red													
Phase Bank																																	
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	8	-	5	-	8	3.7	3.4
4	WBT	5	-	5	-	5	18	-	18	-	18	7	-	7	-	7	2.5	-	2.5	-	2.5	10	-	18	-	12	24	-	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	10	-	18	-	12	24	-	24	-	24	4	3.4

Last In Service Date: unknown

Permitted Phases

	<u>12345678</u>
Default	1234-6-8
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

		Green Time										
Current TOD Schedule	Plan	Cycle	1 NBL	2 SBT	3 EBL	4 WBT	5 -	6 NBT	7 -	8 EBT	Ring Offset	Offset
	1	70	0	21	6	23	0	21	0	36	0	25
	2	90	6	29	6	23	0	41	0	36	0	53
	4	100	6	39	6	23	0	51	0	36	0	54
	5	90	6	29	6	23	0	41	0	36	0	69
	6	90	6	29	6	23	0	41	0	36	0	73
	7	90	6	29	6	23	0	41	0	36	0	59
	11	100	6	39	6	23	0	51	0	36	0	93
	12	110	6	49	6	23	0	61	0	36	0	36
	14	90	6	29	6	23	0	41	0	36	0	73
	15	110	6	49	6	23	0	61	0	36	0	102
	16	150	6	89	6	23	0	101	0	36	0	82
	18	90	6	29	6	23	0	41	0	36	0	29
	19	100	6	39	6	23	0	51	0	36	0	0
	20	110	6	49	6	23	0	61	0	36	0	0
	21	110	6	49	6	23	0	61	0	36	0	0

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	Free	Su	S
0000	Free	M T W Th F	
0100	Free	M T W Th F	
0530	1	Su	S
0600	1	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
1330	12	M T W Th F	
1530	6	M T W Th F	
1800	Free	M T W Th F	
2000	Free	Su	S

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----	M T W ThF
0100	TOD OUTPUTS	-----1	M T W ThF
0550	TOD OUTPUTS	---5---	M T W ThF
0600	TOD OUTPUTS	-----	M T W ThF
0720	TOD OUTPUTS	-----	M T W ThF

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----1	Su S
0000	TOD OUTPUTS	-----	M T W ThF
0100	TOD OUTPUTS	-----1	M T W ThF
0520	TOD OUTPUTS	---5---	Su S
0530	TOD OUTPUTS	-----	Su S
0550	TOD OUTPUTS	---5---	M T W ThF
0600	TOD OUTPUTS	-----	M T W ThF
0605	TOD OUTPUTS	-----	Su S
0720	TOD OUTPUTS	-----	M T W ThF

<u>* Settings</u>	
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 2645: Alton Rd&16 St

Print Date:
1/24/2014

Print Time:
8:09 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2645	Alton Rd&16 St	DOW-6		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>
SBL	NBT	-	EBT	-	SBT	-	WBT
0	0	0	0	0	0	0	0



Active Phase Bank: Phase Bank 1

Phase Bank 1										Phase Bank 2													
Phase	Walk			Don't Walk			Min Initial			Veh Ext			Max Limit			Max 2			Yellow	Red			
Phase Bank																							
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3					
1 SBL	0	-	0	-	0	-	0	-	0	5	-	5	-	5	-	5	8	-	7	-	18	3	0
2 NBT	7	-	7	-	7	-	7	-	7	18	-	18	-	18	-	18	0	-	0	-	0	4	0.2
3 -	0	-	0	-	0	-	0	-	0	0	-	0	-	0	-	0	0	-	0	-	0	0	0
4 EBT	7	-	7	-	7	-	7	-	7	26	-	26	-	26	-	26	47	-	47	-	47	4	0.6
5 -	0	-	0	-	0	-	0	-	0	0	-	0	-	0	-	0	0	-	0	-	0	0	0
6 SBT	7	-	7	-	7	-	7	-	7	18	-	18	-	18	-	18	0	-	0	-	0	4	0.2
7 -	0	-	0	-	0	-	0	-	0	0	-	0	-	0	-	0	0	-	0	-	0	0	0
8 WBT	7	-	7	-	7	-	7	-	7	26	-	26	-	26	-	26	47	-	47	-	47	4	0.6

Last In Service Date: unknown

Permitted Phases

	<u>12345678</u>
Default	-2-4-6-8
External Permit 0	-----
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

<u>Current</u>		<u>Green Time</u>									<u>Ring Offset</u>	<u>Offset</u>
<u>TOD Schedule</u>	<u>Plan</u>	<u>Cycle</u>	1 SBL	2 NBT	3 -	4 EBT	5 -	6 SBT	7 -	8 WBT		
	1	160	0	114	0	37	0	114	0	37	0	21
	2	160	0	114	0	37	0	114	0	37	0	8
	3	120	0	73	0	38	0	73	0	38	0	33
	4	130	0	83	0	38	0	83	0	38	0	50
	5	130	0	84	0	37	0	84	0	37	0	17
	6	130	0	83	0	38	0	83	0	38	0	86
	7	105	0	61	0	35	0	61	0	35	0	20
	8	120	0	73	0	38	0	73	0	38	0	37
	9	120	0	76	0	35	0	76	0	35	0	25
	10	130	0	83	0	38	0	83	0	38	0	0
	11	105	0	61	0	35	0	61	0	35	0	25
	12	105	0	61	0	35	0	61	0	35	0	25
	13	105	0	61	0	35	0	61	0	35	0	20
	14	105	0	61	0	35	0	61	0	35	0	20
	15	130	0	86	0	35	0	86	0	35	0	37
	16	130	0	83	0	38	0	83	0	38	0	101
	17	130	0	83	0	38	0	83	0	38	0	119
	18	90	0	46	0	35	0	46	0	35	0	37
	19	90	0	46	0	35	0	46	0	35	0	15
	20	130	0	83	0	38	0	83	0	38	0	45
	21	90	0	46	0	35	0	46	0	35	0	38
	22	90	0	46	0	35	0	46	0	35	0	25
	23	90	0	46	0	35	0	46	0	35	0	15
	25	140	0	93	0	38	0	93	0	38	0	56
	26	180	0	133	0	38	0	133	0	38	0	152
	27	140	0	93	0	38	0	93	0	38	0	84

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	8	Su M T W Th	S
0000	21		F
0030	11	Su	S
0030	21	M T W Th	
0600	8	Su M T W Th F	S
0800	7	Su	S
0800	5	M T W Th F	
1000	4	Su	
1030	4		S
1515	16	M T W Th F	
1615	6	M T W Th F	
1830	4	Su M T W Th F	S
2000	8	Su M T W Th F	S
2330	21	M T W Th	

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----	SuM T W ThF S
0900	TOD OUTPUTS	---4---	M T W ThF
2000	TOD OUTPUTS	-----	M T W ThF

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----	SuM T W ThF S
0900	TOD OUTPUTS	---4---	M T W ThF
2000	TOD OUTPUTS	-----	M T W ThF

<u>* Settings</u>
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

17TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: ROLANDO MARTINEZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 17STWASH
 Page : 1

ALL VEHICLES

WASHINGTON AVENUE					17TH STREET				WASHINGTON AVENUE				17TH STREET				
From North					From East				From South				From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 08/26/16 -----																	
16:00	0	0	36	21	1	20	58	5	1	64	75	24	1	24	72	64	466
16:15	0	1	24	37	0	11	53	4	1	61	66	20	0	19	70	38	405
16:30	0	1	36	19	0	14	60	8	0	68	82	25	1	17	73	59	463
16:45	0	2	32	21	0	16	54	6	1	58	99	26	0	16	69	58	458
Hr Total	0	4	128	98	1	61	225	23	3	251	322	95	2	76	284	219	1792
17:00	0	1	32	23	1	17	79	5	0	87	83	25	0	29	62	58	502
17:15	0	3	28	22	0	22	61	7	0	82	81	21	0	23	47	44	441
17:30	1	1	30	25	0	20	56	4	0	72	93	26	0	25	59	44	456
17:45	0	1	32	15	0	19	63	2	2	80	91	26	0	28	65	58	482
Hr Total	1	6	122	85	1	78	259	18	2	321	348	98	0	105	233	204	1881
18:00	0	0	34	21	0	22	60	2	0	67	90	25	0	22	55	42	440
18:15	0	0	17	17	0	12	42	3	0	71	72	13	0	26	51	37	361
18:30	0	0	38	17	0	16	44	0	2	57	64	17	0	22	55	39	371
18:45	0	1	26	25	0	18	49	2	0	53	44	20	0	28	54	41	361
Hr Total	0	1	115	80	0	68	195	7	2	248	270	75	0	98	215	159	1533

TOTAL	1	11	365	263	2	207	679	48	7	820	940	268	2	279	732	582	5206

17TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: ROLANDO MARTINEZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 17STWASH
 Page : 2

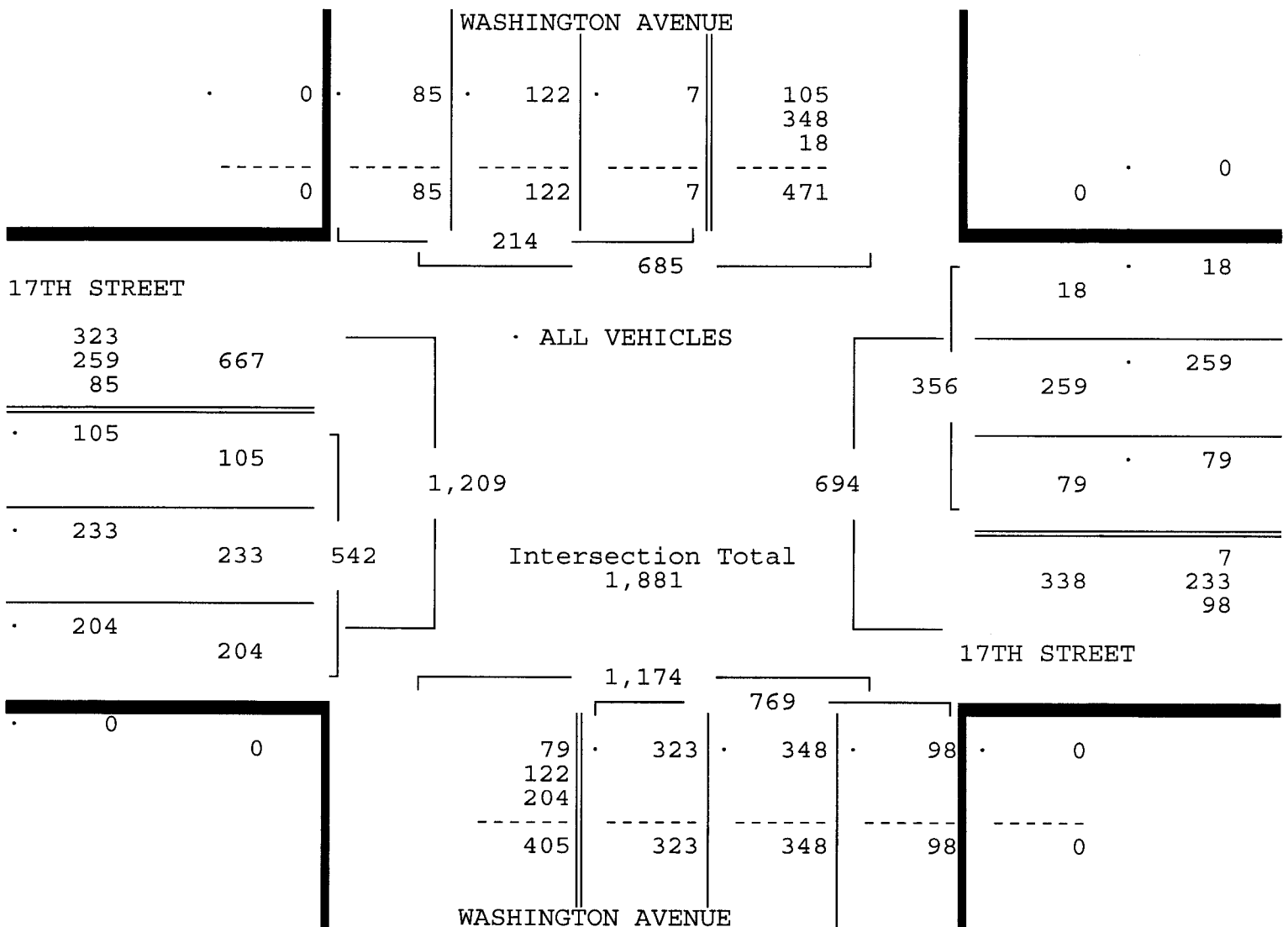
ALL VEHICLES

WASHINGTON AVENUE From North				17TH STREET From East				WASHINGTON AVENUE From South				17TH STREET From West				Total
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	

Date 08/26/16

Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 19:00 on 08/26/16

Peak start 17:00				17:00				17:00				17:00				
Volume	1	6	122	85	1	78	259	18	2	321	348	98	0	105	233	204
Percent	0%	3%	57%	40%	0%	22%	73%	5%	0%	42%	45%	13%	0%	19%	43%	38%
Pk total	214				356				769				542			
Highest	17:30				17:00				17:45				17:45			
Volume	1	1	30	25	1	17	79	5	2	80	91	26	0	28	65	58
Hi total	57				102				199				151			
PHF	.94				.87				.97				.90			



17TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: ROLANDO MARTINEZ
 SIGNALIZED

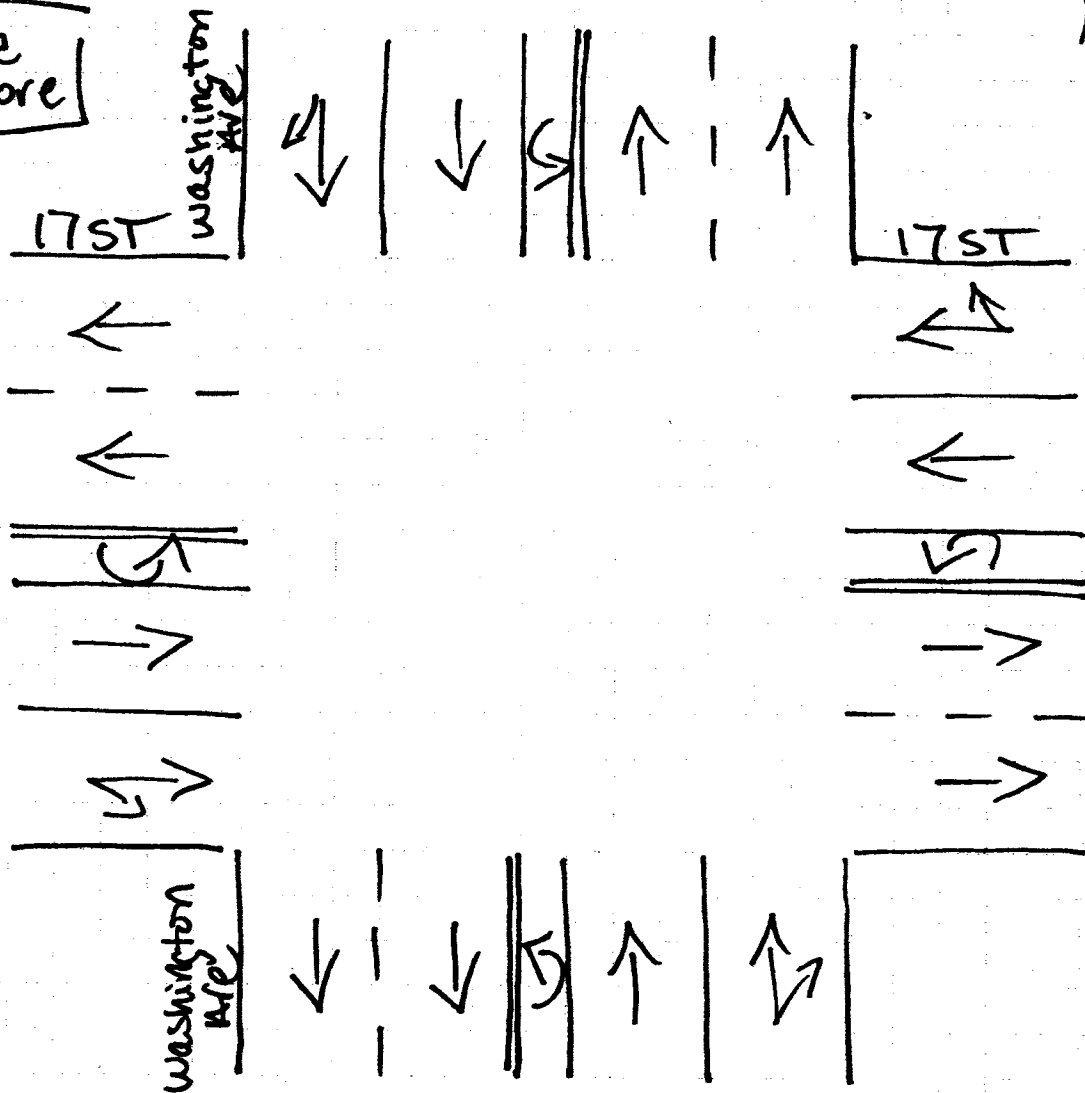
TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 17STWASH
 Page : 1

PEDESTRIANS & BIKES

WASHINGTON AVENUE From North					17TH STREET From East				WASHINGTON AVENUE From South				17TH STREET From West								
Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Total	
Date 08/26/16																					
16:00	0	7	0	5		0	4	0	8		0	2	0	26		0	5	0	4		61
16:15	0	1	0	15		0	2	0	13		0	4	0	21		0	3	0	8		67
16:30	0	5	0	1		0	0	0	16		0	2	0	17		0	2	0	6		49
16:45	0	5	0	7		0	2	0	10		0	1	0	17		0	3	0	5		50
Hr Total	0	18	0	28		0	8	0	47		0	9	0	81		0	13	0	23		227
17:00	0	0	0	0		0	1	0	11		0	7	0	27		0	9	0	15		70
17:15	0	2	0	10		0	0	0	13		0	8	0	32		0	0	0	7		72
17:30	0	2	0	8		0	1	0	16		0	5	0	11		0	6	0	18		67
17:45	0	0	0	5		0	0	0	6		0	1	0	18		0	5	0	16		51
Hr Total	0	4	0	23		0	2	0	46		0	21	0	88		0	20	0	56		260
18:00	0	3	0	5		0	2	0	12		0	4	0	12		0	1	0	2		41
18:15	0	0	0	4		0	0	0	0		0	5	0	16		0	0	0	4		29
18:30	0	3	0	4		0	0	0	0		0	0	0	9		0	1	0	2		19
18:45	0	0	0	3		0	0	0	0		0	0	0	0		0	2	0	4		9
Hr Total	0	6	0	16		0	2	0	12		0	9	0	37		0	4	0	12		98
TOTAL	0	28	0	67		0	12	0	105		0	39	0	206		0	37	0	91		585

The Fillmore



Miami Beach, Florida
January 20, 2015
drawn by: Luis Palomino
signalized ✓

16TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: SEBASTIAN SALVO
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STWASH
 Page : 1

ALL VEHICLES

WASHINGTON AVENUE					16TH STREET				WASHINGTON AVENUE				16TH STREET					
From North					From East				From South				From West					
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total	
Date 08/26/16 -----																		
16:00	1	12	111	27	0	20	36	19	4	15	120	16	0	14	39	9	443	
16:15	1	16	84	20	0	18	24	21	9	19	107	20	0	14	23	7	383	
16:30	1	21	96	28	0	16	32	30	3	12	108	19	0	17	14	12	409	
16:45	2	13	117	33	0	18	32	44	4	20	140	20	0	24	28	18	513	
Hr Total	5	62	408	108	0	72	124	114	20	66	475	75	0	69	104	46	1748	
17:00	1	16	112	24	0	21	30	29	3	9	112	21	0	16	31	9	434	
17:15	0	10	100	31	0	17	39	35	4	15	134	19	0	15	24	10	453	
17:30	6	20	97	24	0	14	52	25	3	17	139	18	0	16	21	12	464	
17:45	3	14	105	29	0	19	37	34	5	12	137	17	0	18	15	5	450	
Hr Total	10	60	414	108	0	71	158	123	15	53	522	75	0	65	91	36	1801	
18:00	1	14	107	46	0	18	31	30	3	10	130	21	0	13	25	16	465	
18:15	3	12	79	27	0	18	42	36	2	15	135	32	0	17	19	10	447	
18:30	1	12	90	30	0	23	36	19	6	16	105	23	1	14	25	12	413	
18:45	2	10	104	19	0	15	35	17	5	14	102	21	0	8	25	16	393	
Hr Total	7	48	380	122	0	74	144	102	16	55	472	97	1	52	94	54	1718	

TOTAL	22	170	1202	338	0	217	426	339	51	174	1469	247	1	186	289	136	5267	

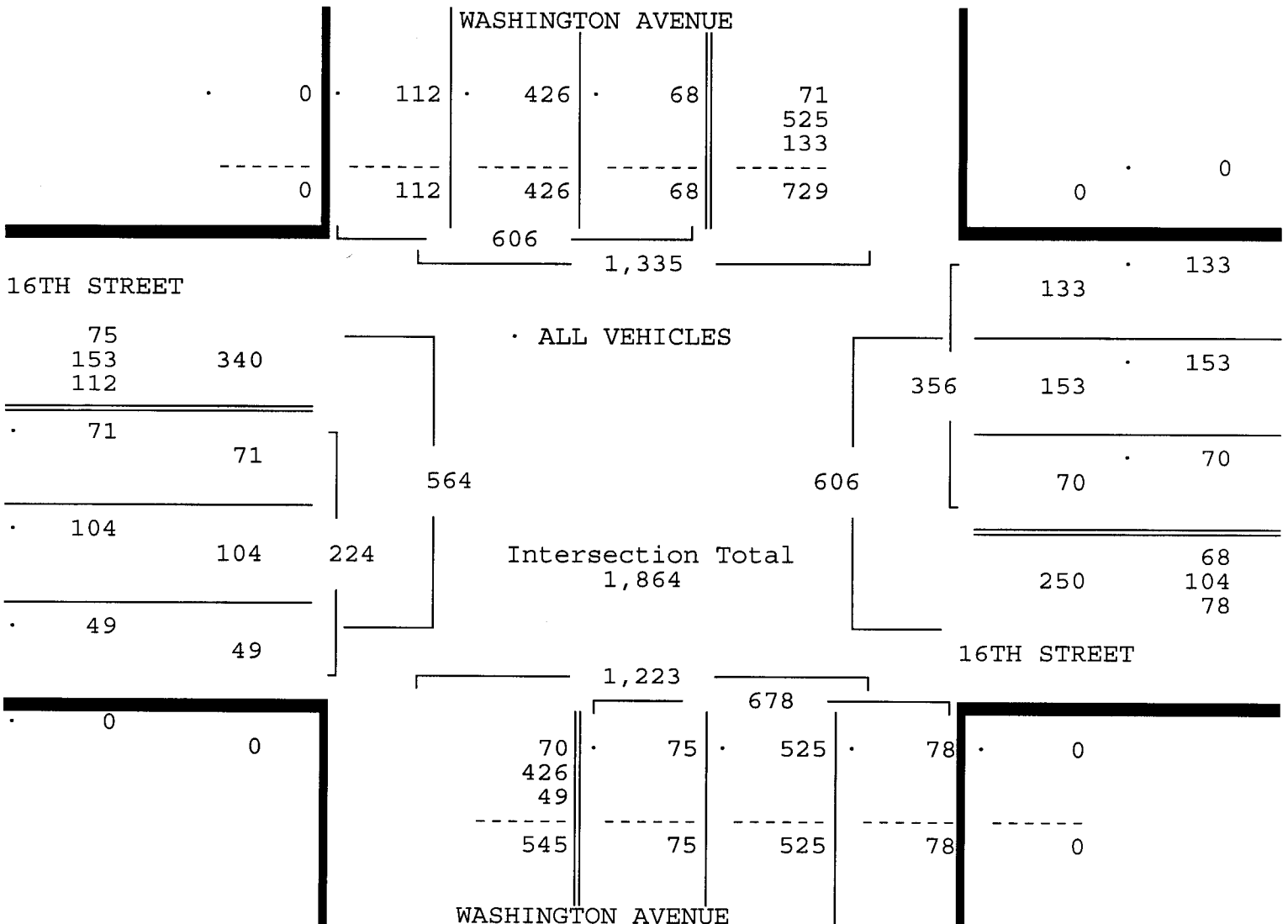
16TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: SEBASTIAN SALVO
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STWASH
 Page : 2

ALL VEHICLES

WASHINGTON AVENUE					16TH STREET				WASHINGTON AVENUE				16TH STREET				Total
From North					From East				From South				From West				
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right		
Date 08/26/16 -----																	
Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 19:00 on 08/26/16																	
Peak start 16:45					16:45				16:45				16:45				
Volume	9	59	426	112	0	70	153	133	14	61	525	78	0	71	104	49	
Percent	1%	10%	70%	18%	0%	20%	43%	37%	2%	9%	77%	12%	0%	32%	46%	22%	
Pk total	606				356				678				224				
Highest	16:45				16:45				16:45				16:45				
Volume	2	13	117	33	0	18	32	44	4	20	140	20	0	24	28	18	
Hi total	165				94				184				70				
PHF	.92				.95				.92				.80				



TRAFFIC SURVEY SPECIALISTS, INC.

16TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: SEBASTIAN SALVO
 SIGNALIZED

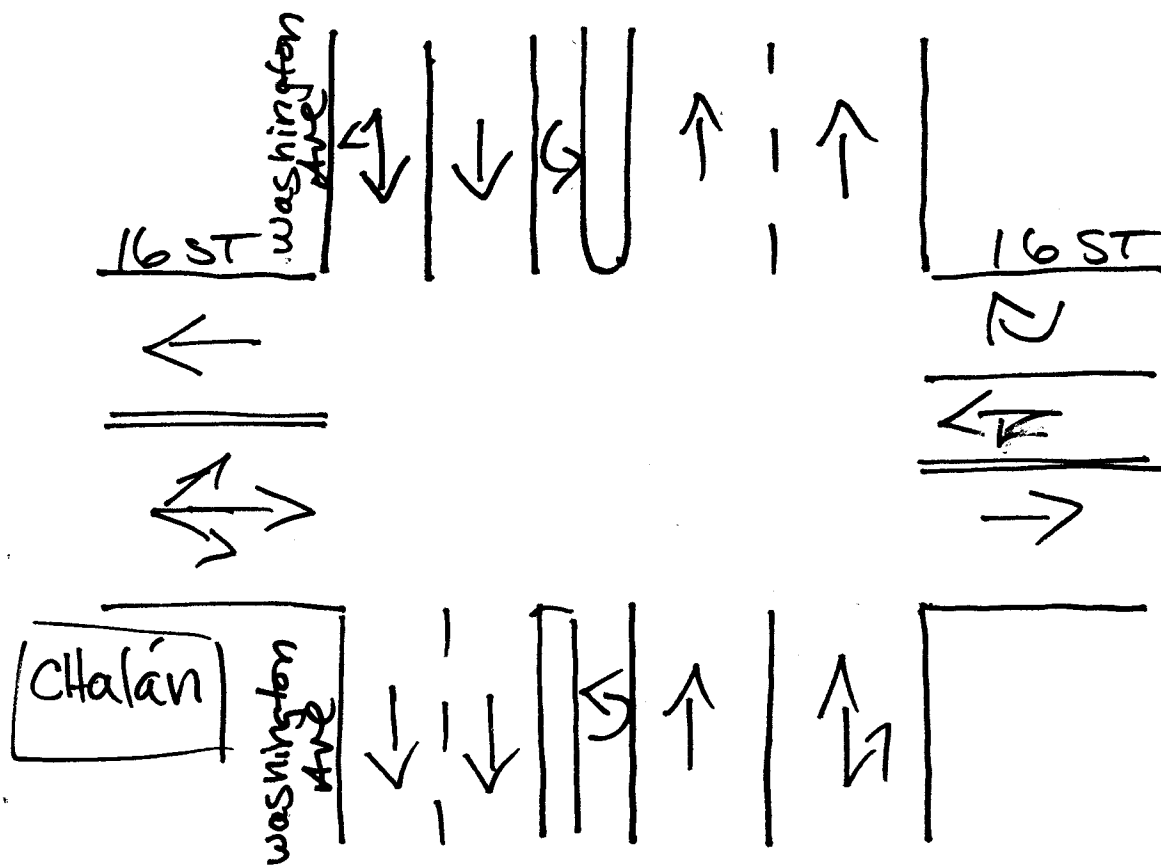
85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STWASH
 Page : 1

PEDESTRIANS & BIKES

WASHINGTON AVENUE				16TH STREET				WASHINGTON AVENUE				16TH STREET					
From North				From East				From South				From West					
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 08/26/16																	
16:00	0	3	0	29	0	7	0	34	0	6	0	28	0	1	0	63	171
16:15	0	0	0	14	0	4	0	68	0	3	0	20	0	0	0	28	137
16:30	0	2	0	23	0	3	0	33	0	2	0	14	0	2	0	67	146
16:45	0	1	0	11	0	4	0	36	0	2	0	10	0	0	0	64	128
Hr Total	0	6	0	77	0	18	0	171	0	13	0	72	0	3	0	222	582
17:00	0	2	0	22	0	6	0	54	0	0	0	16	0	3	0	66	169
17:15	0	1	0	23	0	1	0	50	0	1	0	20	0	6	0	52	154
17:30	0	4	0	15	0	0	0	51	0	4	0	28	0	4	0	76	182
17:45	0	7	0	22	0	1	0	28	0	11	0	31	0	1	0	48	149
Hr Total	0	14	0	82	0	8	0	183	0	16	0	95	0	14	0	242	654
18:00	0	3	0	21	0	1	0	71	0	6	0	24	0	6	0	63	195
18:15	0	1	0	37	0	5	0	51	0	0	0	21	0	5	0	45	165
18:30	0	7	0	32	0	2	0	26	0	1	0	6	0	4	0	53	131
18:45	0	4	0	24	0	3	0	29	0	0	0	21	0	2	0	69	152
Hr Total	0	15	0	114	0	11	0	177	0	7	0	72	0	17	0	230	643
TOTAL	0	35	0	273	0	37	0	531	0	36	0	239	0	34	0	694	1879

North



Miami Bch, Florida
August 25, 2016
drawn by: Luis Palomino
signalized

15TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: RICHARD MENDEZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.

85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 15STWASH
 Page : 1

ALL VEHICLES

WASHINGTON AVENUE					-----					WASHINGTON AVENUE					15TH STREET					
From North					From East					From South					From West					
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		Total
Date 08/26/16 -----																				
16:00	2	0	132	13	0	0	0	0		3	9	145	0		0	19	0	30		353
16:15	1	0	107	8	0	0	0	0		2	23	132	0		0	27	0	33		333
16:30	5	0	106	13	0	0	0	0		0	10	129	0		0	18	0	24		305
16:45	3	0	142	15	0	0	0	0		1	14	151	0		0	29	0	22		377
Hr Total	11	0	487	49	0	0	0	0		6	56	557	0		0	93	0	109		1368
17:00	5	0	123	15	0	0	0	0		2	14	126	0		0	21	0	22		328
17:15	7	0	107	14	0	0	0	0		2	10	149	0		0	10	0	22		321
17:30	6	0	108	12	0	0	0	0		2	9	144	0		0	29	0	26		336
17:45	6	0	119	10	0	0	0	0		3	10	134	0		0	24	0	29		335
Hr Total	24	0	457	51	0	0	0	0		9	43	553	0		0	84	0	99		1320
18:00	4	0	118	13	0	0	0	0		1	18	136	0		0	14	0	26		330
18:15	5	0	100	6	0	0	0	0		3	15	146	0		1	24	0	27		327
18:30	7	0	106	14	0	0	0	0		5	23	132	0		0	18	0	16		321
18:45	8	0	108	20	0	0	0	0		5	12	111	0		0	14	0	18		296
Hr Total	24	0	432	53	0	0	0	0		14	68	525	0		1	70	0	87		1274

TOTAL	59	0	1376	153	0	0	0	0		29	167	1635	0		1	247	0	295		3962

15TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: RICHARD MENDEZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 15STWASH
 Page : 2

ALL VEHICLES

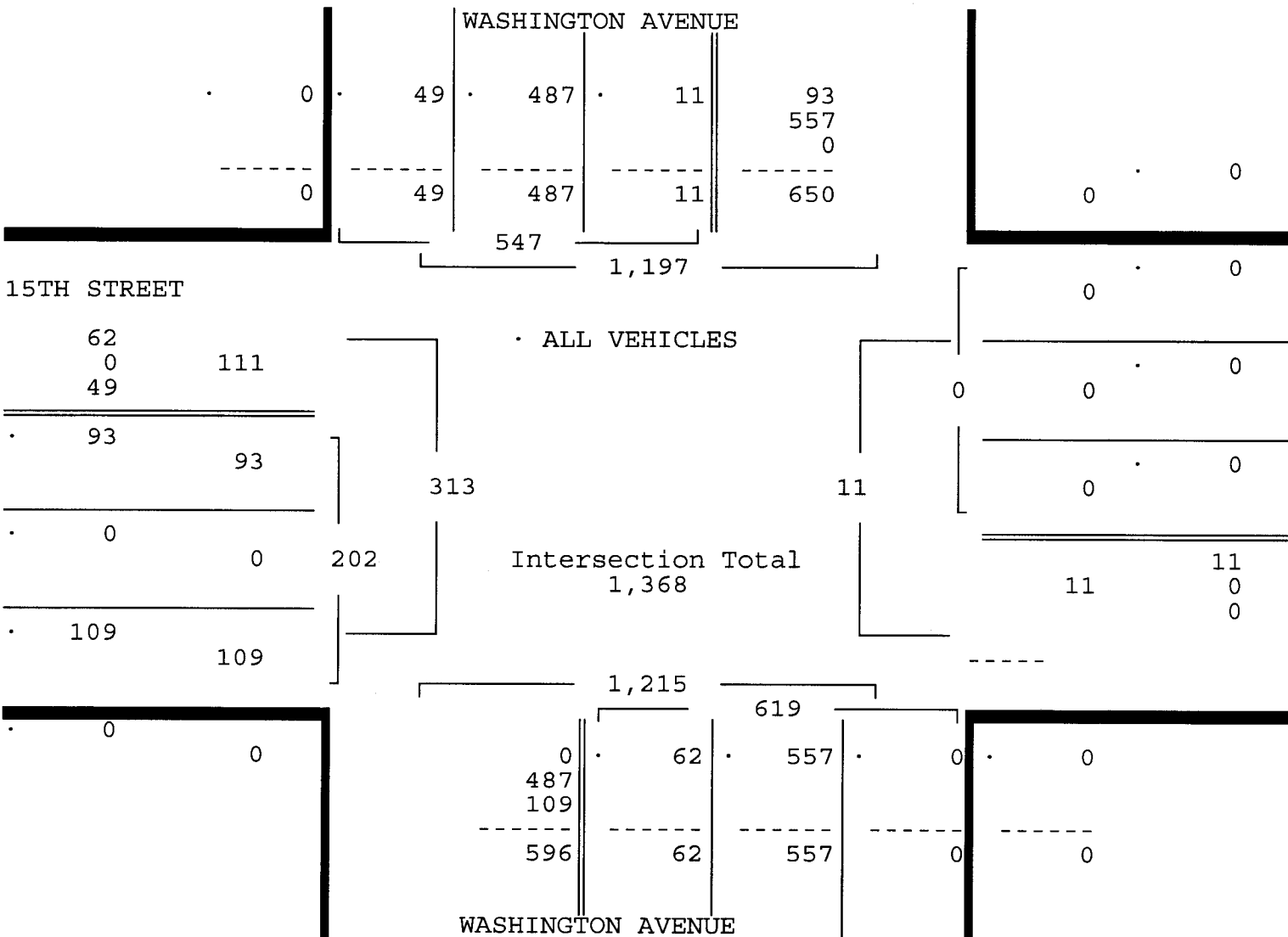
WASHINGTON AVENUE From North					From East					WASHINGTON AVENUE From South					15TH STREET From West					Total
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		

Date 08/26/16

Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 19:00 on 08/26/16

Peak start 16:00

16:00					16:00					16:00					16:00					
Volume	11	0	487	49	0	0	0	0		6	56	557	0		0	93	0	109		
Percent	2%	0%	89%	9%	0%	0%	0%	0%		1%	9%	90%	0%		0%	46%	0%	54%		
Pk total	547				0					619					202					
Highest	16:45				16:00					16:45					16:15					
Volume	3	0	142	15	0	0	0	0		1	14	151	0		0	27	0	33		
Hi total	160				0					166					60					
PHF	.85				.0					.93					.84					



15TH STREET & WASHINGTON AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: RICHARD MENDEZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.

85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

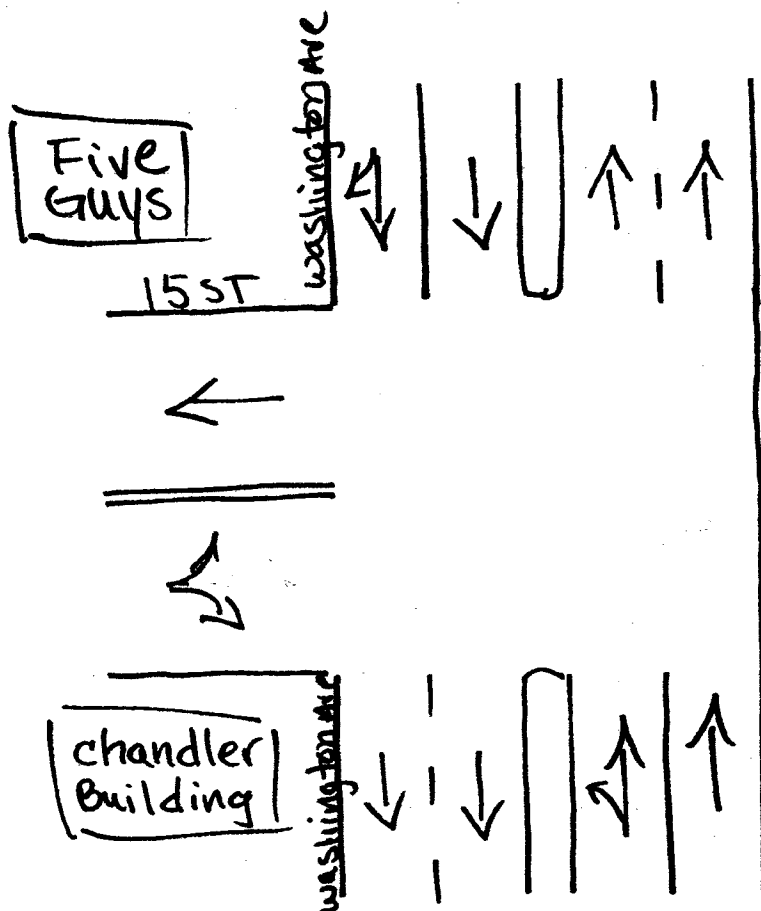
Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 15STWASH
 Page : 1

PEDESTRIANS & BIKES

WASHINGTON AVENUE					-----	WASHINGTON AVENUE					15TH STREET										
From North						From East					From South					From West					
	Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds	Total	
Date 08/26/16 -----																					
16:00	0	1	0	25		0	0	0	0		0	1	0	19		0	2	0	88		136
16:15	0	2	0	9		0	0	0	0		0	1	0	32		0	0	0	81		125
16:30	0	1	0	16		0	0	0	0		0	2	0	25		0	1	0	53		98
16:45	0	2	0	36		0	0	0	0		0	0	0	17		0	2	0	84		141
Hr Total	0	6	0	86		0	0	0	0		0	4	0	93		0	5	0	306		500
17:00	0	0	0	16		0	0	0	0		0	4	0	21		0	4	0	93		138
17:15	0	3	0	10		0	0	0	0		0	1	0	20		0	3	0	89		126
17:30	0	1	0	16		0	0	0	0		0	0	0	22		0	1	0	72		112
17:45	0	3	0	19		0	0	0	0		0	3	0	20		0	1	0	87		133
Hr Total	0	7	0	61		0	0	0	0		0	8	0	83		0	9	0	341		509
18:00	0	2	0	30		0	0	0	0		0	0	0	28		0	3	0	71		134
18:15	0	1	0	34		0	0	0	0		0	0	0	18		0	5	0	105		163
18:30	0	3	0	19		0	0	0	0		0	0	0	43		0	0	0	94		159
18:45	0	0	0	43		0	0	0	0		0	1	0	40		0	3	0	85		172
Hr Total	0	6	0	126		0	0	0	0		0	1	0	129		0	11	0	355		628

TOTAL	0	19	0	273		0	0	0	0		0	13	0	305		0	25	0	1002		1637

↑
North



Miami beach, Florida
January 20, 2015
drawn by: Luis Palomino
Signalized ✓

16TH STREET & DREXEL AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARISA CRUZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.

85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STDREX
 Page : 1

ALL VEHICLES

DREXEL AVENUE From North					16TH STREET From East				DREXEL AVENUE From South				16TH STREET From West								
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		Total	
Date 08/26/16 -----																					
16:00	0	2	3	3		0	5	59	6		0	2	2	5		1	7	58	5		158
16:15	0	0	0	6		0	2	54	7		0	2	2	5		0	6	45	8		137
16:30	0	1	1	4		0	5	59	7		0	1	2	4		0	4	38	2		128
16:45	0	2	0	3		0	3	85	7		0	2	1	7		0	6	58	6		180
Hr Total	0	5	4	16		0	15	257	27		0	7	7	21		1	23	199	21		603
17:00	0	1	0	4		0	4	56	8		0	10	2	8		1	5	48	7		154
17:15	0	4	1	5		0	6	63	12		0	5	1	2		1	6	41	9		156
17:30	0	0	0	8		0	5	87	10		0	3	2	4		0	4	45	5		173
17:45	0	1	1	6		0	8	73	8		0	6	1	4		0	8	33	6		155
Hr Total	0	6	2	23		0	23	279	38		0	24	6	18		2	23	167	27		638
18:00	0	0	0	6		0	4	79	12		1	9	1	4		0	9	53	7		185
18:15	1	3	0	5		0	2	77	11		1	4	0	9		0	4	35	1		153
18:30	0	1	0	5		0	3	83	6		0	6	2	5		0	1	44	1		157
18:45	0	1	1	3		0	5	60	7		0	4	1	4		0	3	41	4		134
Hr Total	1	5	1	19		0	14	299	36		2	23	4	22		0	17	173	13		629

TOTAL	1	16	7	58		0	52	835	101		2	54	17	61		3	63	539	61		1870

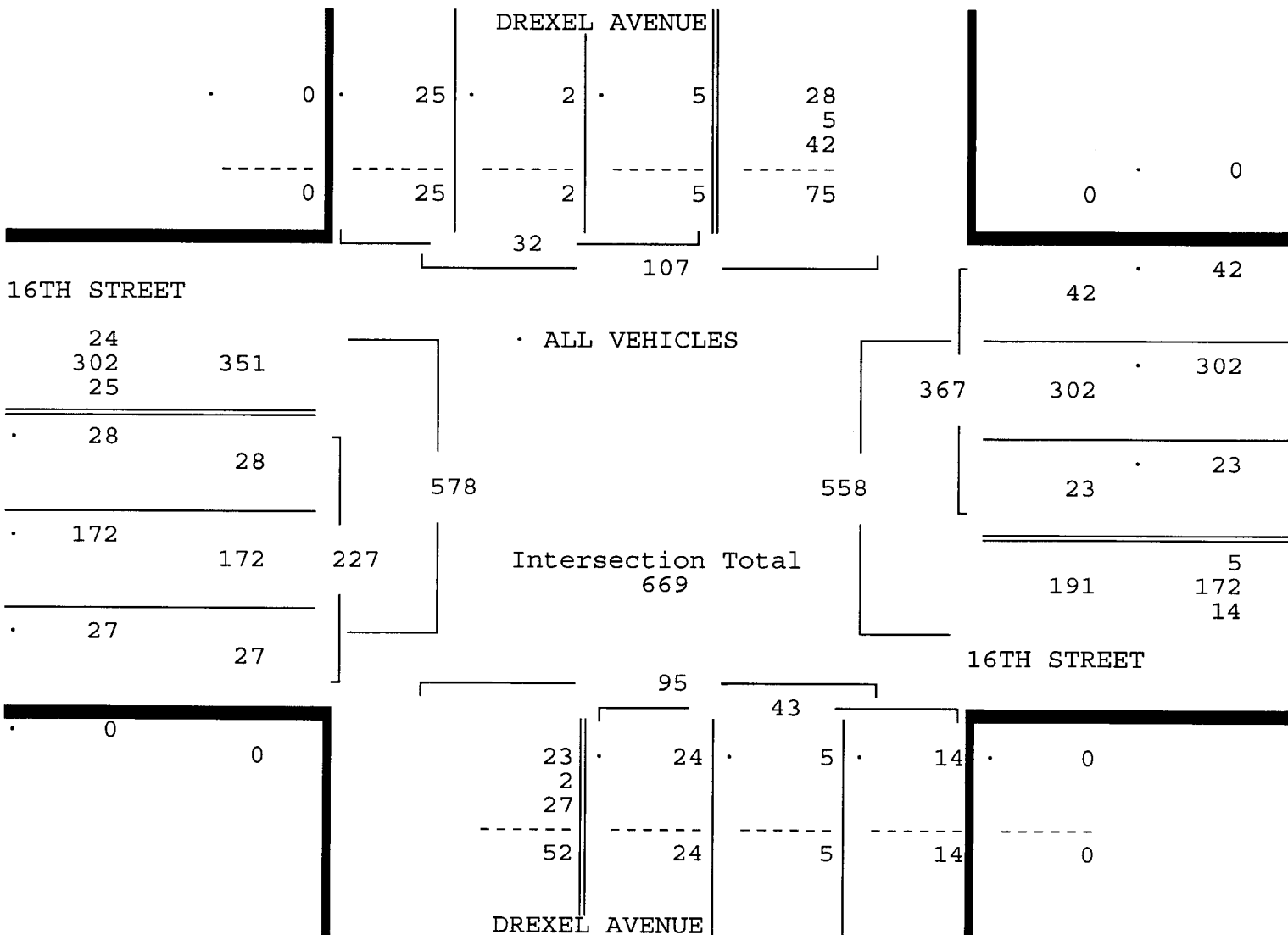
16TH STREET & DREXEL AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARISA CRUZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STDREX
 Page : 2

ALL VEHICLES

DREXEL AVENUE				16TH STREET				DREXEL AVENUE				16TH STREET				Total
From North				From East				From South				From West				
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	
Date 08/26/16 -----																
Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 19:00 on 08/26/16																
Peak start 17:15				17:15				17:15				17:15				
Volume	0	5	2	25	0	23	302	42	1	23	5	14	1	27	172	27
Percent	0%	16%	6%	78%	0%	6%	82%	11%	2%	53%	12%	33%	0%	12%	76%	12%
Pk total	32				367				43				227			
Highest	17:15				17:30				18:00				18:00			
Volume	0	4	1	5	0	5	87	10	1	9	1	4	0	9	53	7
Hi total	10				102				15				69			
PHF	.80				.90				.72				.82			



16TH STREET & DREXEL AVENUE
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARISA CRUZ
 SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

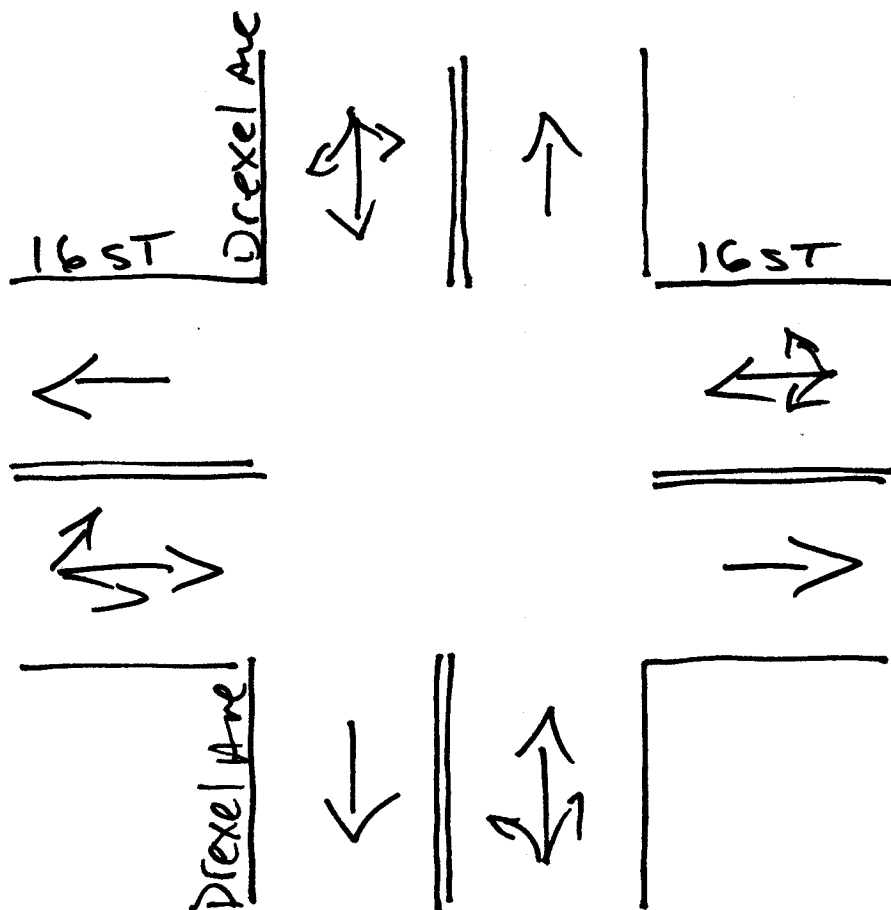
Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STDREX
 Page : 1

PEDESTRIANS & BIKES

DREXEL AVENUE From North					16TH STREET From East				DREXEL AVENUE From South				16TH STREET From West							
Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds	Total	
Date 08/26/16 -----																				
16:00	0	10	0	23		0	0	0	3		0	5	0	19		0	0	0	4	64
16:15	0	7	0	14		0	0	0	12		0	7	0	21		0	0	0	14	75
16:30	0	4	0	15		0	0	0	6		0	4	0	13		0	1	0	9	52
16:45	0	5	0	16		0	2	0	18		0	5	0	12		0	0	0	7	65
Hr Total	0	26	0	68		0	2	0	39		0	21	0	65		0	1	0	34	256
17:00	0	4	0	16		0	4	0	3		0	5	0	18		0	2	0	15	67
17:15	0	8	0	17		0	1	0	13		0	5	0	10		0	0	0	10	64
17:30	0	4	0	7		0	0	0	8		0	7	0	19		0	1	0	3	49
17:45	0	10	0	7		0	2	0	7		0	17	0	14		0	2	0	5	64
Hr Total	0	26	0	47		0	7	0	31		0	34	0	61		0	5	0	33	244
18:00	0	6	0	12		0	2	0	10		0	11	0	17		0	1	0	5	64
18:15	0	2	0	29		0	0	0	9		0	3	0	10		0	0	0	12	65
18:30	0	5	0	19		0	0	0	10		0	7	0	17		0	0	0	8	66
18:45	0	5	0	17		0	0	0	12		0	3	0	17		0	0	0	4	58
Hr Total	0	18	0	77		0	2	0	41		0	24	0	61		0	1	0	29	253

TOTAL	0	70	0	192		0	11	0	111		0	79	0	187		0	7	0	96	753

North



Miami Bch, Florida
August 25, 2016
drawn by: Luis Palomino
signalized

16TH STREET & PARKING GARAGE
 MIAMI BEACH, FLORIDA
 COUNTED BY: AMBER PALOMINO
 NOT SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STGARA
 Page : 1

ALL VEHICLES

PARKING GARAGE					16TH STREET				-----				16TH STREET				
From North					From East				From South				From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 08/26/16 -----																	
16:00	0	0	0	1	0	0	68	3	0	0	0	0	1	2	54	0	129
16:15	0	1	0	5	0	0	58	11	0	0	0	0	1	4	43	0	123
16:30	0	4	0	10	1	0	63	2	0	0	0	0	0	3	39	0	122
16:45	0	5	0	12	0	0	81	6	0	0	0	0	0	2	59	0	165
Hr Total	0	10	0	28	1	0	270	22	0	0	0	0	2	11	195	0	539
17:00	0	4	0	5	0	0	64	9	0	0	0	0	0	0	59	0	141
17:15	0	4	0	5	0	0	75	4	0	0	0	0	0	2	41	0	131
17:30	0	5	0	13	0	0	89	2	0	0	0	0	0	4	45	0	158
17:45	0	2	0	12	0	0	75	2	0	0	0	0	0	1	37	0	129
Hr Total	0	15	0	35	0	0	303	17	0	0	0	0	0	7	182	0	559
18:00	0	3	0	16	0	0	77	2	0	0	0	0	0	1	57	0	156
18:15	0	3	0	12	0	0	80	2	0	0	0	0	0	4	44	0	145
18:30	0	3	0	7	0	0	83	3	0	0	0	0	0	2	49	0	147
18:45	0	3	0	13	0	0	57	4	0	0	0	0	0	2	44	0	123
Hr Total	0	12	0	48	0	0	297	11	0	0	0	0	0	9	194	0	571

TOTAL	0	37	0	111	1	0	870	50	0	0	0	0	2	27	571	0	1669

16TH STREET & PARKING GARAGE
 MIAMI BEACH, FLORIDA
 COUNTED BY: AMBER PALOMINO
 NOT SIGNALIZED

TRAFFIC SURVEY SPECIALISTS, INC.
 85 SE 4TH AVENUE, UNIT 109
 DELRAY BEACH, FLORIDA
 PHONE (561)272-3255

Site Code : 00160180
 Start Date: 08/26/16
 File I.D. : 16STGARA
 Page : 2

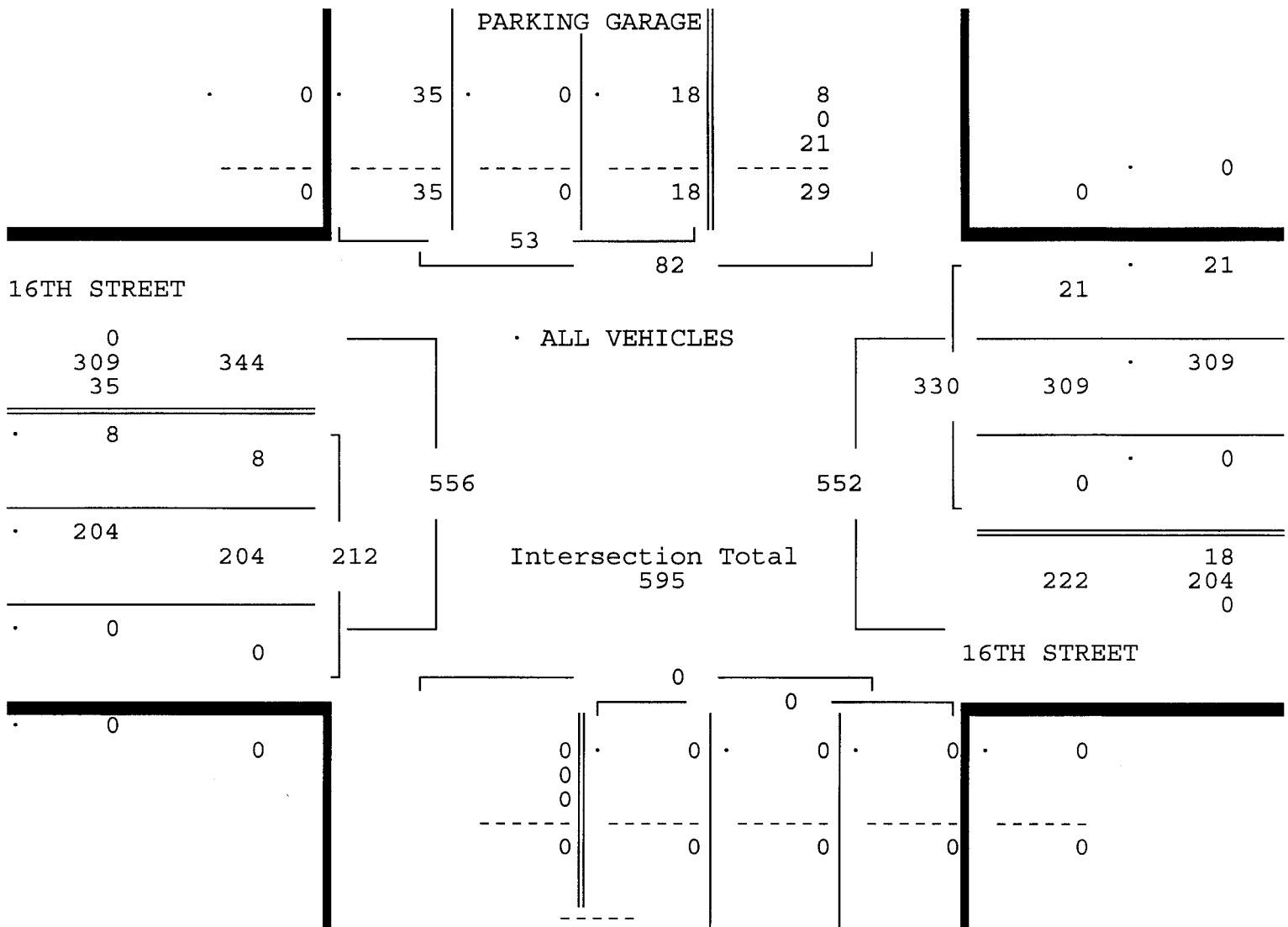
ALL VEHICLES

PARKING GARAGE				16TH STREET				-----				16TH STREET				
From North				From East				From South				From West				
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 08/26/16 -----																

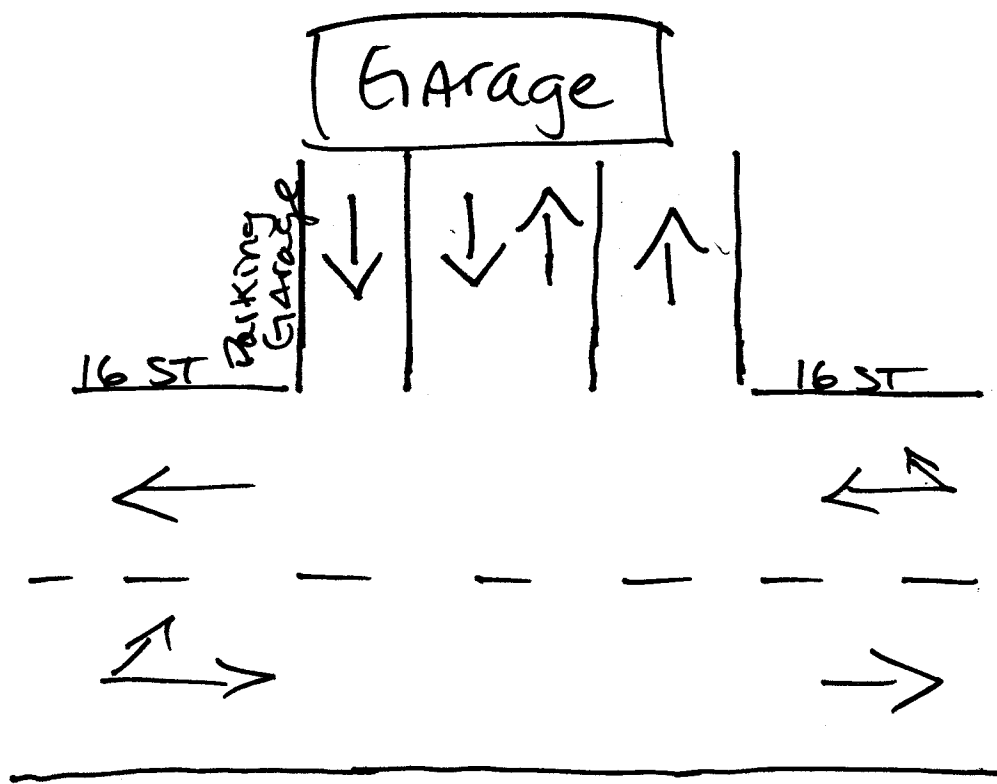
Date 08/26/16

Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 19:00 on 08/26/16

Peak start 16:45					16:45				16:45				16:45			
Volume	0	18	0	35	0	0	309	21	0	0	0	0	0	8	204	0
Percent	0%	34%	0%	66%	0%	0%	94%	6%	0%	0%	0%	0%	0%	4%	96%	0%
Pk total	53					330					0					212
Highest	17:30					17:30					16:00					16:45
Volume	0	5	0	13	0	0	89	2	0	0	0	0	0	2	59	0
Hi total	18					91					0					61
PHF	.74					.91					.0					.87



[illegible]



↑
North

Miami Bch, Florida
August 25, 2016
drawn by: Luis Palomeiro
not signatced

16TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARCELLO MINO-WILZEK
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16STALTR
 Page : 1

ALL VEHICLES

ALTON ROAD From North					16TH STREET From East				ALTON ROAD From South				16TH STREET From West							
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		Total
Date 03/04/16 -----																				
16:30	0	34	192	15	0	28	12	31	0	14	240	43	0	11	20	12				652
16:45	2	23	174	8	0	21	15	33	0	8	223	36	0	17	15	10				585
17:00	0	35	201	16	0	25	15	28	1	16	221	29	0	9	10	16				622
17:15	2	31	208	14	0	27	12	22	1	9	206	31	0	14	17	11				605
Hr Total	4	123	775	53	0	101	54	114	2	47	890	139	0	51	62	49				2464
17:30	0	28	186	14	1	23	11	36	0	12	234	28	0	14	16	9				612
17:45	0	23	211	6	0	25	23	30	0	11	215	28	0	4	15	8				599
18:00	0	28	172	8	0	22	10	30	0	13	211	28	1	7	13	13				556
18:15	0	29	201	7	0	20	16	28	0	14	226	26	0	9	15	16				607
Hr Total	0	108	770	35	1	90	60	124	0	50	886	110	1	34	59	46				2374
18:30	0	30	197	15	0	24	17	31	1	11	211	20	0	5	10	13				585
18:45	0	29	198	11	0	26	10	28	0	18	247	31	0	8	16	12				634
Hr Total	0	59	395	26	0	50	27	59	1	29	458	51	0	13	26	25				1219

TOTAL	4	290	1940	114	1	241	141	297	3	126	2234	300	1	98	147	120				6057

16TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARCELLO MINO-WILZEK
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16STALTR
 Page : 2

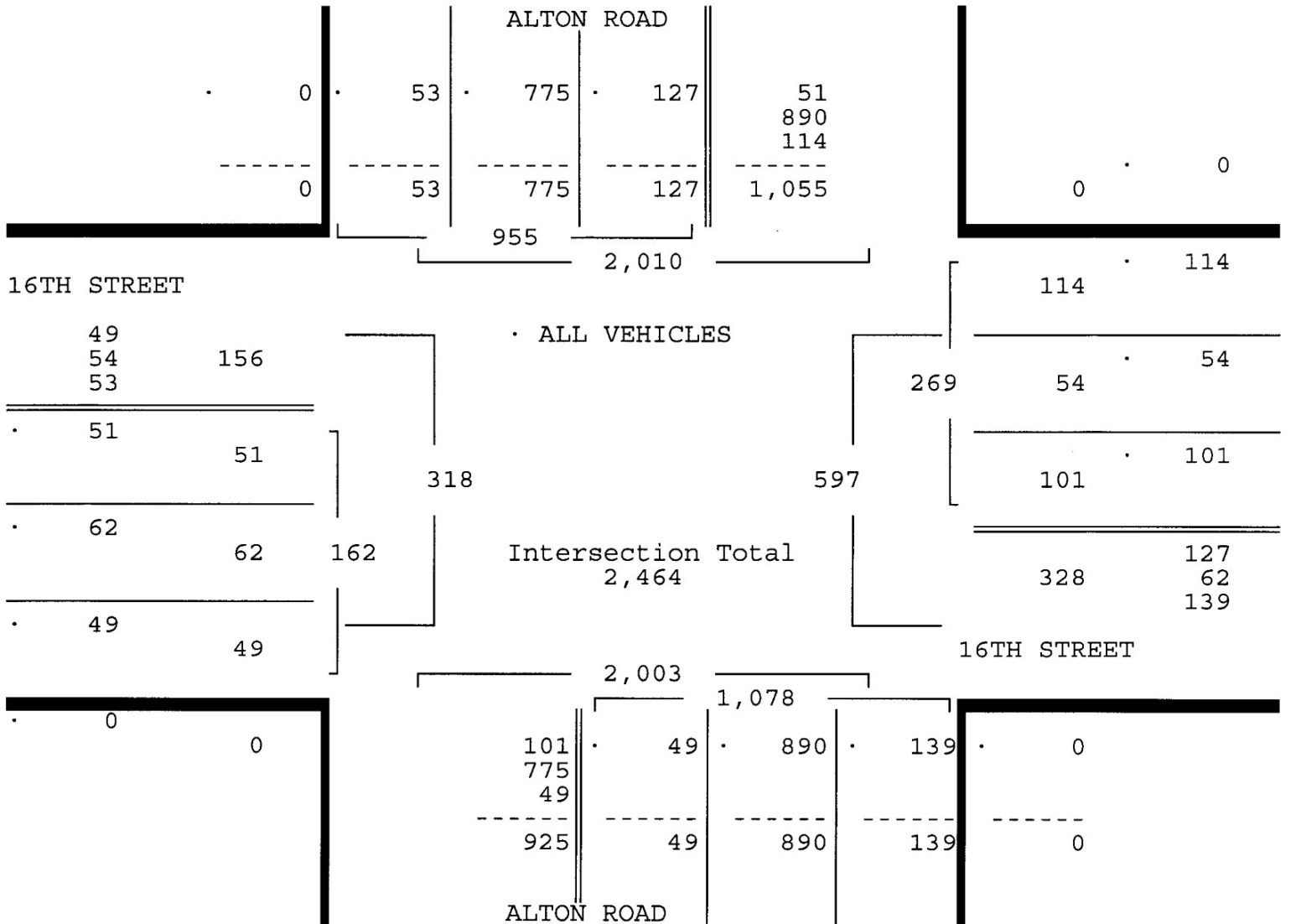
ALL VEHICLES

ALTON ROAD From North				16TH STREET From East				ALTON ROAD From South				16TH STREET From West				Total
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	

Date 03/04/16

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 19:00 on 03/04/16

Peak start	16:30				16:30				16:30				16:30							
Volume	4	123	775	53	0	101	54	114	2	47	890	139	0	51	62	49				
Percent	0%	13%	81%	6%	0%	38%	20%	42%	0%	4%	83%	13%	0%	31%	38%	30%				
Pk total	955				269				1078				162							
Highest	17:15				16:30				16:30				16:30							
Volume	2	31	208	14	0	28	12	31	0	14	240	43	0	11	20	12				
Hi total	255				71				297				43							
PHF	.94				.95				.91				.94							



16TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARCELLO MINO-WILZEK
 SIGNALIZED

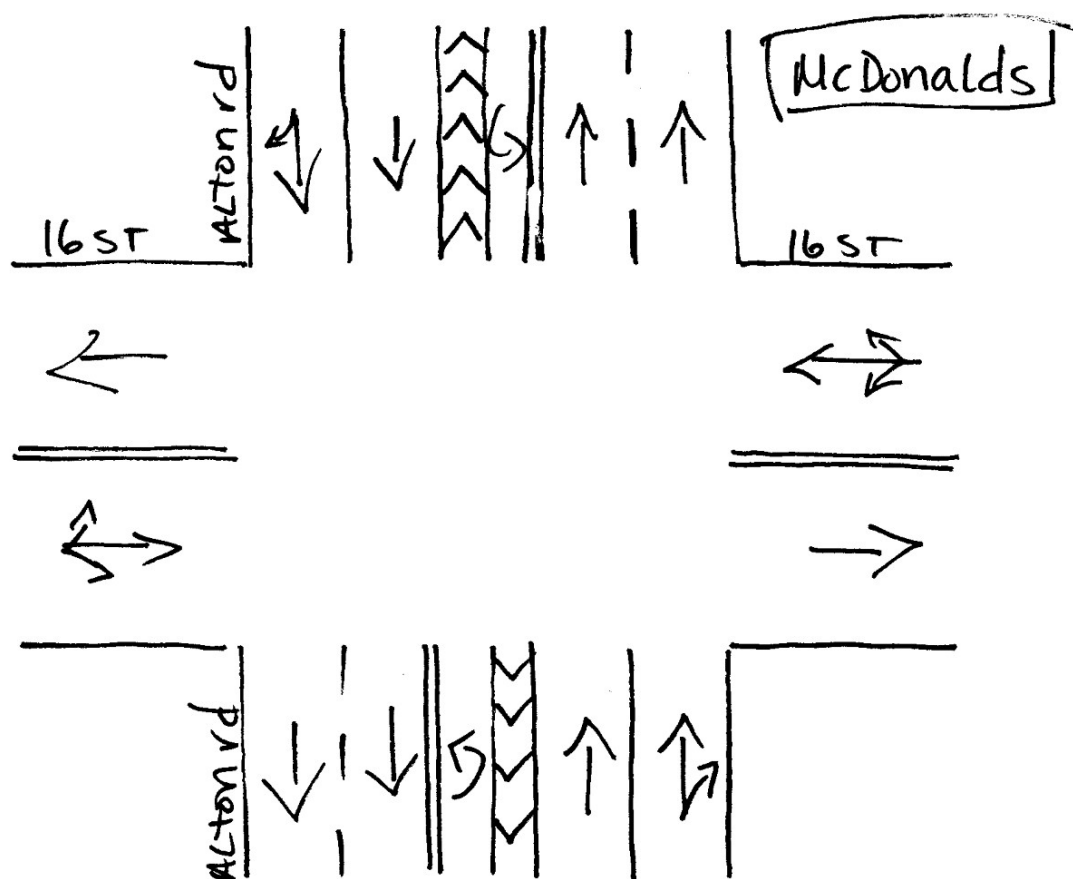
Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16STALTR
 Page : 1

PEDESTRIANS & BIKES

Date 03/04/16	ALTON ROAD From North				16TH STREET From East				ALTON ROAD From South				16TH STREET From West				Total
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	
16:30	0	2	0	7	0	0	0	20	0	0	0	2	0	0	0	5	36
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hr Total	0	2	0	7	0	0	0	20	0	0	0	2	0	0	0	5	36
17:30	0	0	0	11	0	0	0	0	0	0	0	8	0	3	0	3	25
17:45	0	0	0	23	0	0	0	9	0	2	0	12	0	2	0	19	67
18:00	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	11	30
18:15	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	14
Hr Total	0	0	0	48	0	0	0	28	0	2	0	20	0	5	0	33	136
18:30	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0	14	40
18:45	0	10	0	28	0	0	0	9	0	1	0	5	0	0	0	13	66
Hr Total	0	10	0	28	0	0	0	35	0	1	0	5	0	0	0	27	106
TOTAL	0	12	0	83	0	0	0	83	0	3	0	27	0	5	0	65	278

North



Miami Beach, Florida
February 24, 2016
drawn by: Luis Palomino
Signalized

APPENDIX D

Peak Season Conversion Factors and Growth Rate Calculations

2014 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 8701 MIAMI-DADE SOUTH

WEEK	DATES	SF	MOCF: 0.99 PSCF
1	01/01/2014 - 01/04/2014	0.98	0.99
2	01/05/2014 - 01/11/2014	1.01	1.02
3	01/12/2014 - 01/18/2014	1.03	1.04
4	01/19/2014 - 01/25/2014	1.02	1.03
5	01/26/2014 - 02/01/2014	1.01	1.02
6	02/02/2014 - 02/08/2014	1.00	1.01
7	02/09/2014 - 02/15/2014	1.00	1.01
8	02/16/2014 - 02/22/2014	0.99	1.00
* 9	02/23/2014 - 03/01/2014	0.99	1.00
*10	03/02/2014 - 03/08/2014	0.99	1.00
*11	03/09/2014 - 03/15/2014	0.99	1.00
*12	03/16/2014 - 03/22/2014	0.99	1.00
*13	03/23/2014 - 03/29/2014	0.99	1.00
*14	03/30/2014 - 04/05/2014	0.99	1.00
*15	04/06/2014 - 04/12/2014	0.99	1.00
*16	04/13/2014 - 04/19/2014	0.99	1.00
*17	04/20/2014 - 04/26/2014	0.99	1.00
*18	04/27/2014 - 05/03/2014	0.99	1.00
*19	05/04/2014 - 05/10/2014	0.99	1.00
*20	05/11/2014 - 05/17/2014	0.99	1.00
*21	05/18/2014 - 05/24/2014	0.99	1.00
22	05/25/2014 - 05/31/2014	1.00	1.01
23	06/01/2014 - 06/07/2014	1.01	1.02
24	06/08/2014 - 06/14/2014	1.01	1.02
25	06/15/2014 - 06/21/2014	1.02	1.03
26	06/22/2014 - 06/28/2014	1.02	1.03
27	06/29/2014 - 07/05/2014	1.03	1.04
28	07/06/2014 - 07/12/2014	1.03	1.04
29	07/13/2014 - 07/19/2014	1.04	1.05
30	07/20/2014 - 07/26/2014	1.03	1.04
31	07/27/2014 - 08/02/2014	1.02	1.03
32	08/03/2014 - 08/09/2014	1.02	1.03
33	08/10/2014 - 08/16/2014	1.01	1.02
34	08/17/2014 - 08/23/2014	1.00	1.01
35	08/24/2014 - 08/30/2014	1.01	1.02
36	08/31/2014 - 09/06/2014	1.01	1.02
37	09/07/2014 - 09/13/2014	1.01	1.02
38	09/14/2014 - 09/20/2014	1.01	1.02
39	09/21/2014 - 09/27/2014	1.01	1.02
40	09/28/2014 - 10/04/2014	1.00	1.01
41	10/05/2014 - 10/11/2014	1.00	1.01
42	10/12/2014 - 10/18/2014	0.99	1.00
43	10/19/2014 - 10/25/2014	0.99	1.00
44	10/26/2014 - 11/01/2014	1.00	1.01
45	11/02/2014 - 11/08/2014	1.00	1.01
46	11/09/2014 - 11/15/2014	1.00	1.01
47	11/16/2014 - 11/22/2014	1.00	1.01
48	11/23/2014 - 11/29/2014	1.00	1.01
49	11/30/2014 - 12/06/2014	0.99	1.00
50	12/07/2014 - 12/13/2014	0.99	1.00
51	12/14/2014 - 12/20/2014	0.98	0.99
52	12/21/2014 - 12/27/2014	1.01	1.02
53	12/28/2014 - 12/31/2014	1.03	1.04

* PEAK SEASON

09-MAR-2015 16:07:55

830UPD

6_8701_PKSEASON.TXT

Growth Rate Trend Analysis Calculations

Description	Station #				
	8566	8567	8531	8514	
Trend Growth Rate(1)	-5.28	-2.87	-0.18	3.54	
Adjusted Growth Rate	0.50	0.50	0.50	3.54	
Average Growth Rate					1.26
Growth Rate Used					1.50

Notes:

1: Refer to Trend Analysis Chart

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2015 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
----	-----		-----		-----	-----	-----	-----
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

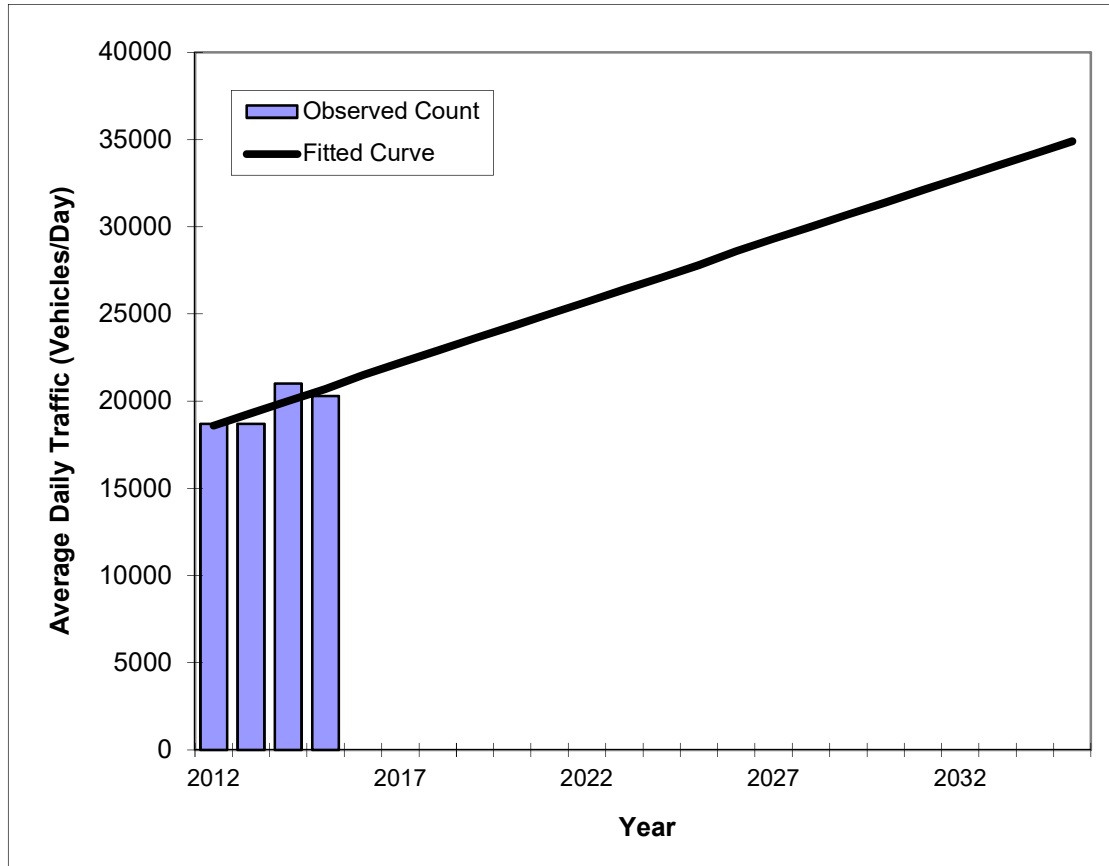
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
 *K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Traffic Trends - V2.0

WASHINGTON AVE -- 200' N OF 12 ST

PIN#	0
Location	4

County:	Miami-Dade (87)
Station #:	8414
Highway:	WASHINGTON AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	18700	18600
2013	18700	19300
2014	21000	20000
2015	20300	20700
2016 Opening Year Trend		
2016	N/A	21500
2017 Mid-Year Trend		
2017	N/A	22200
2018 Design Year Trend		
2018	N/A	22900
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	710
Trend R-squared:	62.27%
Trend Annual Historic Growth Rate:	3.76%
Trend Growth Rate (2015 to Design Year):	3.54%
Printed:	27-Oct-16
Straight Line Growth Option	

*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2015 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 8531 - 17TH ST, 200' EAST OF MERIDIAN AVE (2011 OFF SYSTEM CYCLE)

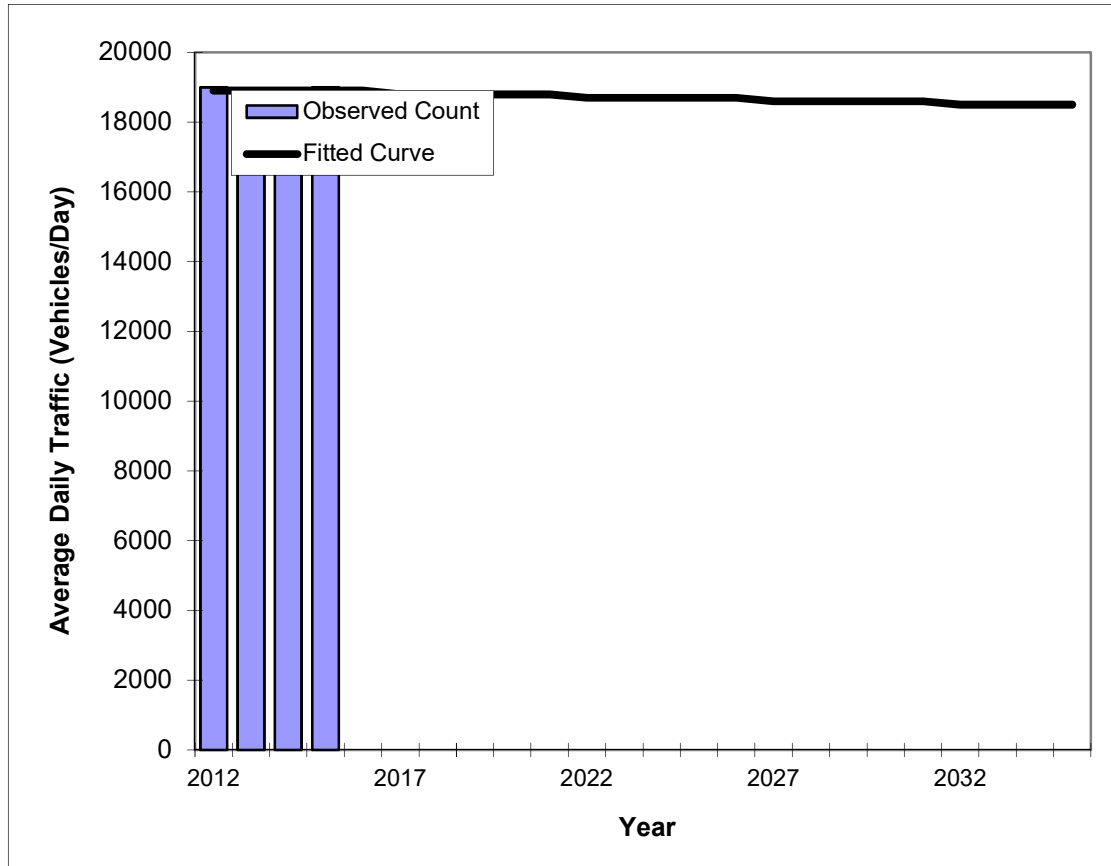
YEAR	AADT		DIRECTION 1		DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
----	-----		-----		-----	-----	-----	-----
2015	19000 C	E	8500	W	10500	9.00	57.40	7.10
2014	18700 S	E	9600	W	9100	9.00	59.30	10.70
2013	18900 F	E	9700	W	9200	9.00	58.90	16.20
2012	19000 C	E	9800	W	9200	9.00	59.70	16.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = 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 - V2.0 **17 ST -- 200' E OF MERIDIAN AVE**

PIN#	0
Location	3

County:	Miami-Dade (87)
Station #:	8531
Highway:	17 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	19000	18900
2013	18900	18900
2014	18700	18900
2015	19000	18900
2016 Opening Year Trend		
2016	N/A	18900
2017 Mid-Year Trend		
2017	N/A	18800
2018 Design Year Trend		
2018	N/A	18800
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-20
Trend R-squared:	3.33%
Trend Annual Historic Growth Rate:	0.00%
Trend Growth Rate (2015 to Design Year):	-0.18%
Printed:	27-Oct-16
Straight Line Growth Option	

*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2015 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
----	-----		-----		-----	-----	-----	-----
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; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

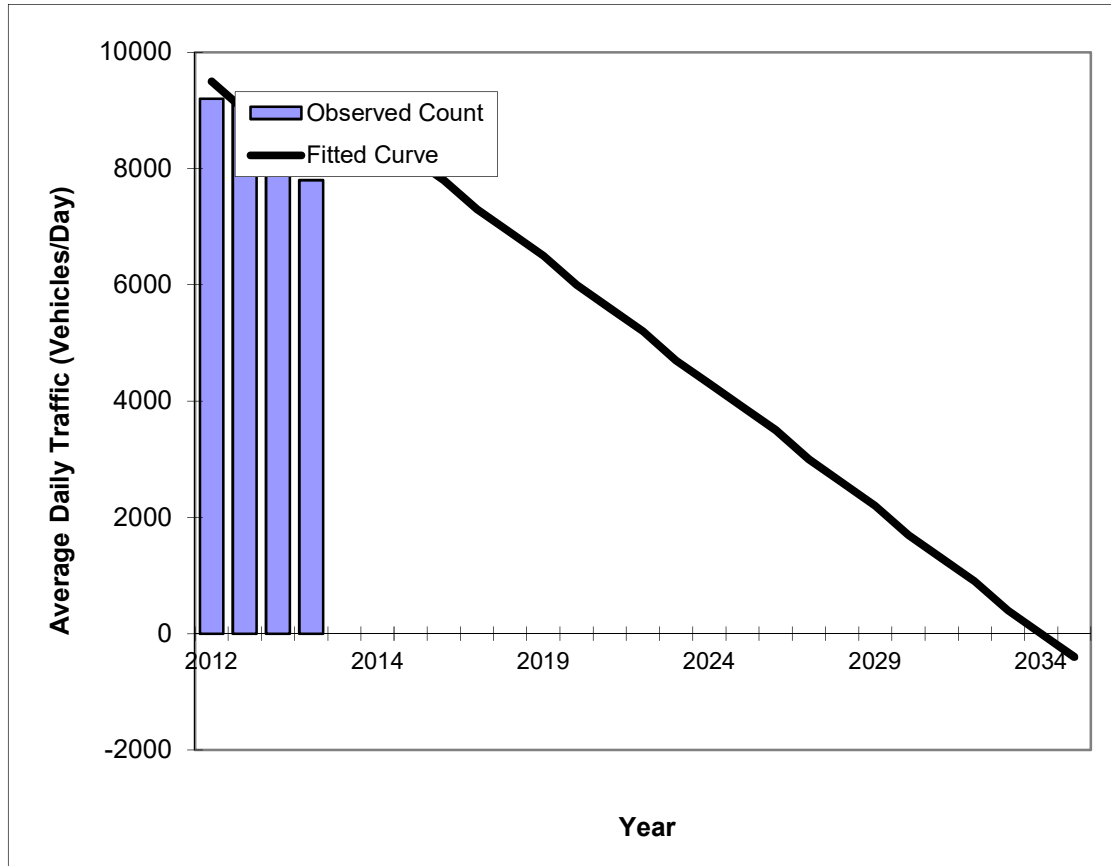
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Traffic Trends - V2.0

15 ST -- 200' E OF JEFFERSON AVE

PIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8566
Highway:	15 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	9200	9500
2013	9200	9000
2014	9100	8600
2015	7800	8200
2016 Opening Year Trend		
2016	N/A	7800
2017 Mid-Year Trend		
2017	N/A	7300
2018 Design Year Trend		
2018	N/A	6900
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-430
Trend R-squared:	65.68%
Trend Annual Historic Growth Rate:	-4.56%
Trend Growth Rate (2015 to Design Year):	-5.28%
Printed:	27-Oct-16
Straight Line Growth Option	

*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2015 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 8567 - 16 ST, 200' EAST OF MERIDIAN AVE (2011 OFF SYSTEM CYCLE)

YEAR	AADT		DIRECTION 1		DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
----	-----		-----		-----	-----	-----	-----
2015	9100 C		E 4400		W 4700	9.00	57.40	7.10
2014	9700 S					9.00	59.30	10.70
2013	9800 F		0		0	9.00	58.90	16.20
2012	9900 C		E 0		W 0	9.00	59.70	16.00

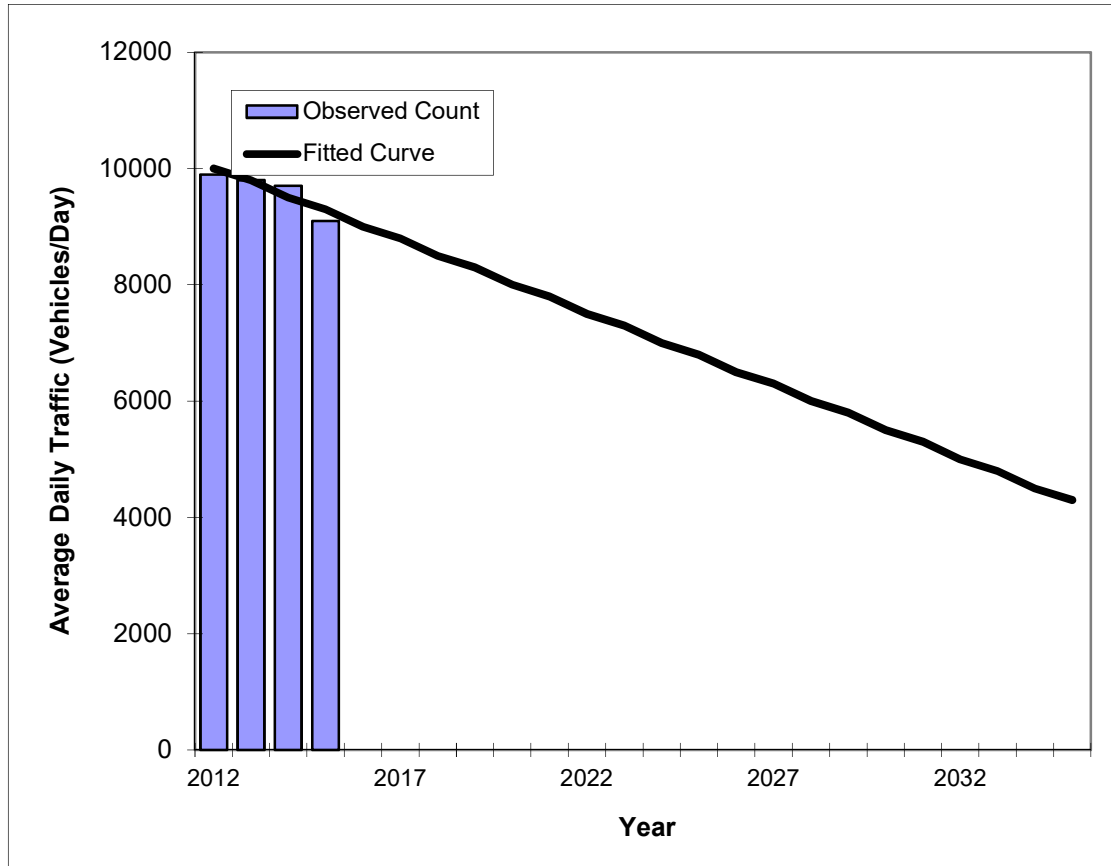
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; F = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Traffic Trends - V2.0

16 ST -- 200' E OF MERIDIAN AVE

PIN#	0
Location	2

County:	Miami-Dade (87)
Station #:	8567
Highway:	16 ST



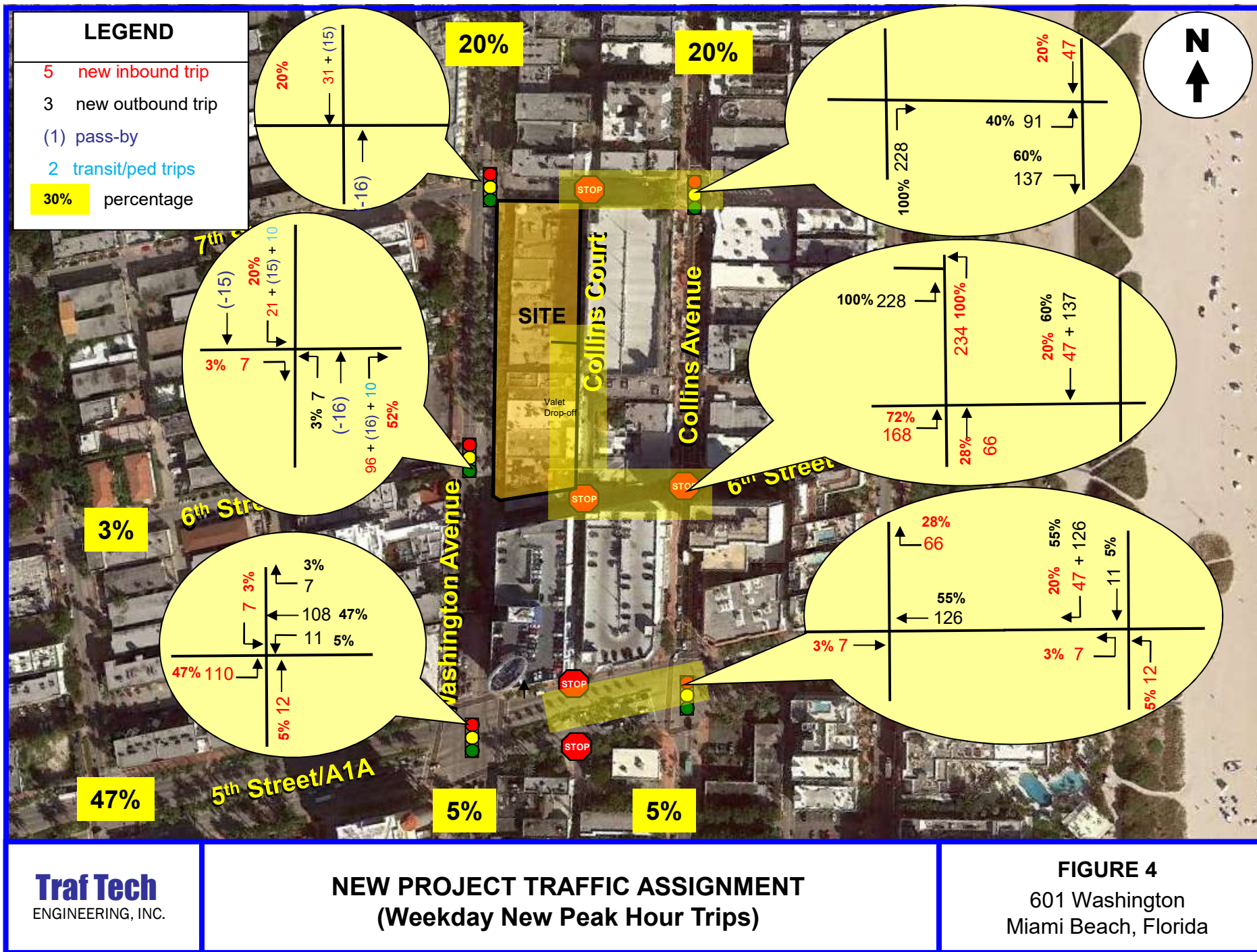
Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	9900	10000
2013	9800	9800
2014	9700	9500
2015	9100	9300
2016 Opening Year Trend		
2016	N/A	9000
2017 Mid-Year Trend		
2017	N/A	8800
2018 Design Year Trend		
2018	N/A	8500
TRANPLAN Forecasts/Trends		

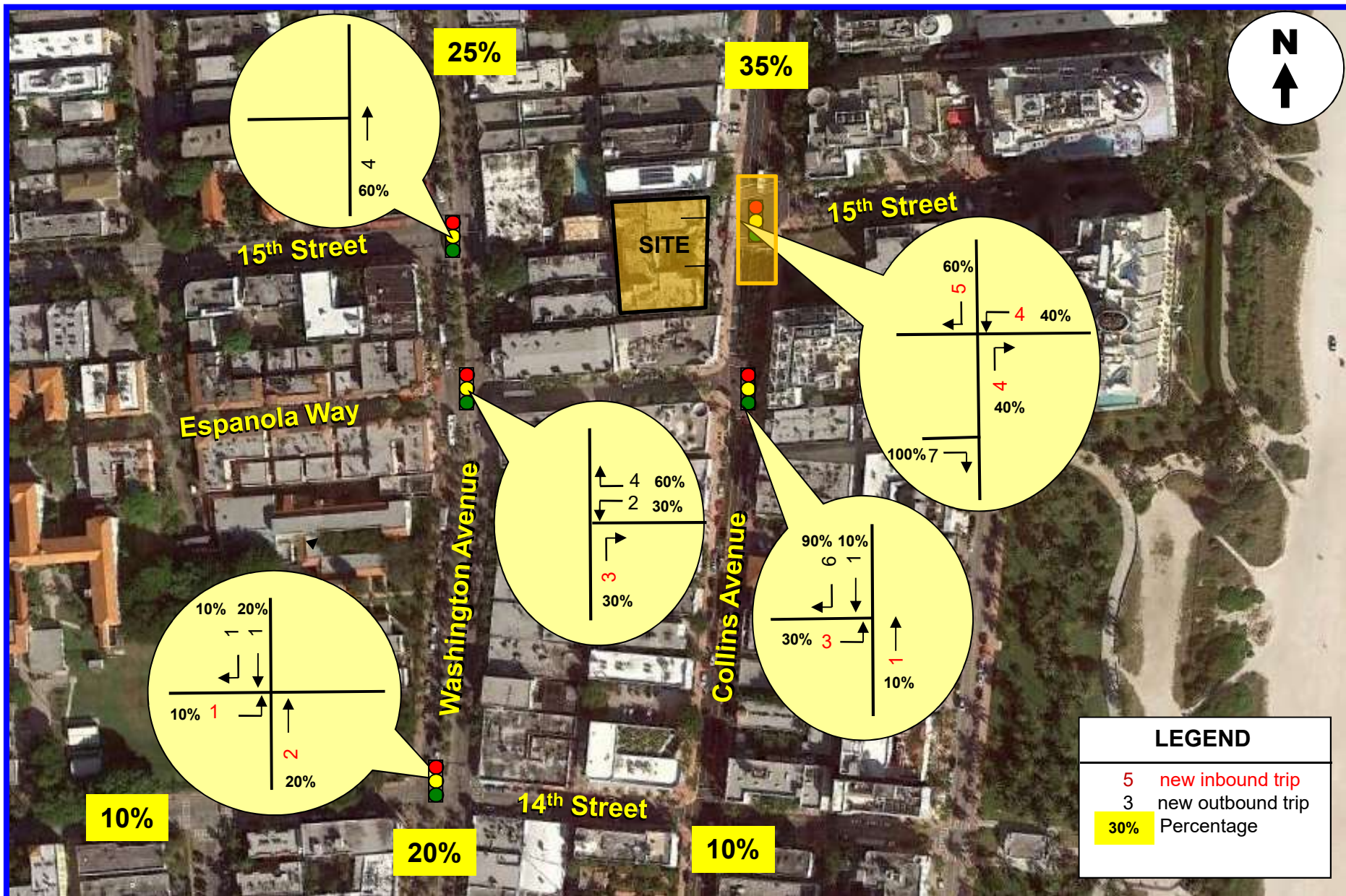
** Annual Trend Increase:	-250
Trend R-squared:	80.65%
Trend Annual Historic Growth Rate:	-2.33%
Trend Growth Rate (2015 to Design Year):	-2.87%
Printed:	27-Oct-16
Straight Line Growth Option	

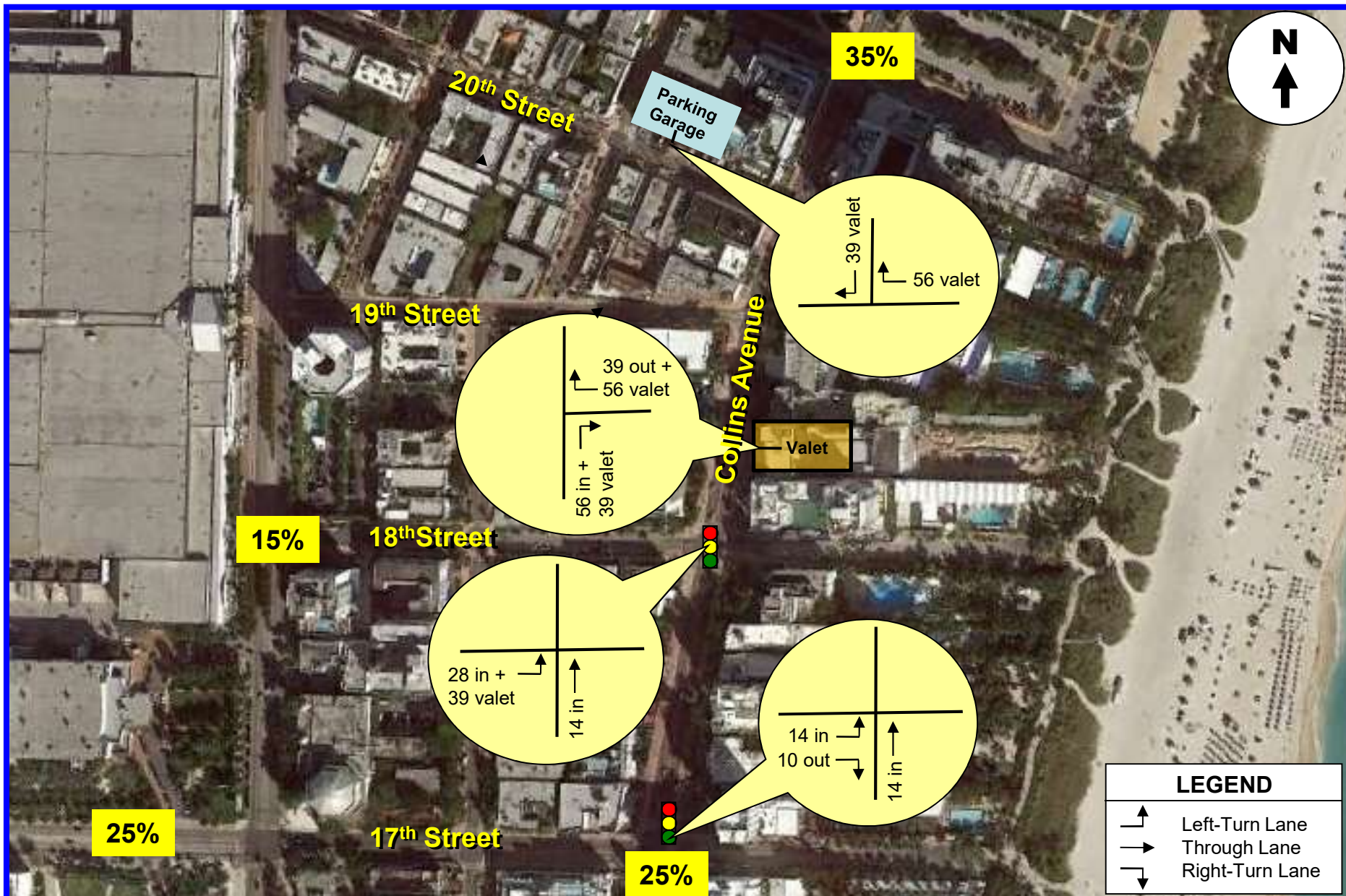
*Axle-Adjusted

APPENDIX E

Committed Developments







APPENDIX F

Future Turning Movement Volumes

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Washington Avenue and 17 Street PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			17 Street Eastbound			17 Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (8/26/2016)	323	348	98	7	122	85	105	233	204	79	259	18
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
2016 Peak Season Traffic	329	355	100	7	124	87	107	238	208	81	264	18
Annual Growth Rate	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Committed Developments												
Haddon Hall		4										
Nautilus								24				
601 Washington					31							
2018 Background Traffic	339	370	103	7	159	89	110	269	214	83	272	19
Time Out Market		17	4		25					5		
Pedestrian and Transit		3			3							
2018 Total Traffic	339	387	107	7	184	89	110	269	214	88	272	19

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Washington Avenue and 16 Street PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			16 Street Eastbound			16 Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (8/26/2016)	75	525	78	68	426	112	71	104	49	70	153	133
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
2016 Peak Season Traffic	77	536	80	69	435	114	72	106	50	71	156	136
Annual Growth Rate	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Committed Developments												
Haddon Hall		4										
Nautilus												
601 Washington					31							
2018 Background Traffic	79	556	82	71	479	118	75	109	51	74	161	140
Time Out Market	5					30	21	4	2		5	
Pedestrian and Transit						3	3		4			
2018 Total Traffic	84	556	82	71	479	148	96	113	53	74	166	140

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Washington Avenue and 15 Street PM Peak Hour

Description	Washington Avenue Northbound			Washington Avenue Southbound			15 Street Eastbound			15 Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (8/26/2016)	62	557	0	0	487	49	93	0	109			
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
2016 Peak Season Traffic	63	568	0	0	497	50	95	0	111	0	0	0
Annual Growth Rate	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Committed Developments												
Haddon Hall		4										
Nautilus												
601 Washington					31							
2018 Background Traffic	65	589	0	0	543	51	98	0	115	0	0	0
Time Out Market		5			2							
Pedestrian and Transit		4			4							
2018 Total Traffic	65	594	0	0	545	51	98	0	115	0	0	0

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Drexel Avenue and 16 Street PM Peak Hour

Description	Drexel Avenue Northbound			Drexel Avenue Southbound			16 Street Eastbound			16 Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (8/26/2016)	24	5	14	5	2	25	28	172	27	23	302	42
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
2016 Peak Season Traffic	24	5	14	5	2	26	29	175	28	23	308	43
Annual Growth Rate	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Committed Developments Haddon Hall Nautilus 601 Washington												
2018 Background Traffic	25	5	15	5	2	26	29	181	28	24	317	44
Time Out Market			18	26				17		14	12	22
2018 Total Traffic	25	5	33	31	2	26	29	198	28	38	329	66

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

16 Street and Garage Entrance PM Peak Hour

Description	Garage Entrance Northbound			Garage Entrance Southbound			16 Street Eastbound			16 Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (8/26/2016)				18	0	35	8	204	0	0	309	21
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
2016 Peak Season Traffic	0	0	0	18	0	36	8	208	0	0	315	21
Annual Growth Rate	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Committed Developments Haddon Hall Nautilus 601 Washington												
2018 Background Traffic	0	0	0	19	0	37	8	214	0	0	325	22
Time Out Market				27		48	49					28
Pass-by							12	-12			-12	12
Pedestrian and Transit				7								7
2018 Total Traffic	0	0	0	46	0	85	69	202	0	0	313	62

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and 16th Street PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			16th Street Eastbound			16th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/4/2016)	49	890	139	127	775	53	51	62	49	101	54	114
Season Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2016 Peak Season Traffic	49	890	139	127	775	53	51	62	49	101	54	114
Annual Growth Rate	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Committed Developments Haddon Hall Nautilus 601 Washington												
2018 Background Traffic	50	917	143	131	798	55	53	64	50	104	56	117
Time Out Market			12					5		8	4	
2018 Total Traffic	50	917	155	131	798	55	53	69	50	112	60	117

APPENDIX G

Intersection Capacity Analyses

HCM Signalized Intersection Capacity Analysis

10/27/2016

1: Washington Avenue & 17 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	238	208	81	264	18	329	355	100	7	124	87
Future Volume (vph)	107	238	208	81	264	18	329	355	100	7	124	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.4		7.4	7.4		6.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.94		1.00	1.00		1.00	0.98		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.95	1.00		0.98	1.00		0.97	1.00	
Frt	1.00	0.93		1.00	0.99		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	3099		1676	3496		1732	3369		1717	3187	
Flt Permitted	0.38	1.00		0.48	1.00		0.50	1.00		0.47	1.00	
Satd. Flow (perm)	710	3099		843	3496		903	3369		855	3187	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	115	256	224	87	284	19	354	382	108	8	133	94
RTOR Reduction (vph)	0	151	0	0	6	0	0	25	0	0	67	0
Lane Group Flow (vph)	115	329	0	87	297	0	354	465	0	8	160	0
Confl. Peds. (#/hr)	23		88	88		23	56		46	46		56
Confl. Bikes (#/hr)			21			4			2			20
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		
Actuated Green, G (s)	29.3	29.3		14.8	14.8		47.0	47.0		25.8	25.8	
Effective Green, g (s)	29.3	29.3		14.8	14.8		47.0	47.0		25.8	25.8	
Actuated g/C Ratio	0.33	0.33		0.16	0.16		0.52	0.52		0.29	0.29	
Clearance Time (s)	7.1	7.4		7.4	7.4		6.0	6.3		6.3	6.3	
Vehicle Extension (s)	2.0	2.5		2.5	2.5		2.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	317	1008		138	574		611	1759		245	913	
v/s Ratio Prot	0.03	c0.11			0.08		c0.10	0.14			0.05	
v/s Ratio Perm	0.09			c0.10			c0.20			0.01		
v/c Ratio	0.36	0.33		0.63	0.52		0.58	0.26		0.03	0.18	
Uniform Delay, d1	22.2	22.9		35.1	34.3		13.2	11.9		23.1	24.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		7.9	0.6		0.8	0.4		0.2	0.4	
Delay (s)	22.5	23.0		43.0	34.9		14.0	12.3		23.4	24.5	
Level of Service	C	C		D	C		B	B		C	C	
Approach Delay (s)		22.9			36.7			13.0			24.5	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			21.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			26.8			
Intersection Capacity Utilization			83.1%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Existing 2016 PM Peak Hour

1: Washington Avenue & 17 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	107	238	81	264	329	355	7	124
Future Volume (vph)	107	238	81	264	329	355	7	124
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	29.3	29.3
Total Split (s)	13.0	43.0	30.0	30.0	12.0	47.0	35.0	35.0
Total Split (%)	14.4%	47.8%	33.3%	33.3%	13.3%	52.2%	38.9%	38.9%
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-Min	C-Min	C-Min
Act Effct Green (s)	28.2	27.9	14.8	14.8	48.7	48.4	27.3	27.3
Actuated g/C Ratio	0.31	0.31	0.16	0.16	0.54	0.54	0.30	0.30
v/c Ratio	0.36	0.43	0.63	0.52	0.57	0.27	0.03	0.22
Control Delay	22.6	12.2	53.5	35.8	18.7	12.5	33.1	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	12.2	53.5	35.8	18.7	12.5	33.1	18.7
LOS	C	B	D	D	B	B	C	B
Approach Delay		14.2		39.7		15.1		19.2
Approach LOS		B		D		B		B

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 73 (81%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 20.0

Intersection LOS: B

Intersection Capacity Utilization 83.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Washington Avenue & 17 Street

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	35 s	13 s	30 s
 Ø6 (R)		 Ø8	
47 s		43 s	

1: Washington Avenue & 17 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	480	87	303	354	490	8	227
v/c Ratio	0.36	0.43	0.63	0.52	0.57	0.27	0.03	0.22
Control Delay	22.6	12.2	53.5	35.8	18.7	12.5	33.1	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.6	12.2	53.5	35.8	18.7	12.5	33.1	18.7
Queue Length 50th (ft)	46	55	47	82	115	69	3	30
Queue Length 95th (ft)	70	76	88	110	228	127	18	73
Internal Link Dist (ft)		319		336		1078		264
Turn Bay Length (ft)	210		215		200		150	
Base Capacity (vph)	321	1392	211	884	626	1872	325	1272
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	0.36	0.34	0.41	0.34	0.57	0.26	0.02	0.18
Intersection Summary								

HCM 2010 Signalized Intersection Summary
2: Washington Avenue & 16 Street

10/27/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	106	50	71	156	136	77	536	80	69	435	114
Future Volume (veh/h)	72	106	50	71	156	136	77	536	80	69	435	114
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	0.99		0.91	0.93		0.79	0.94		0.81
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	80	118	56	79	173	151	86	596	89	77	483	127
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	150	61	142	291	515	454	1602	238	519	1602	415
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	1.00	1.00	1.00	0.04	0.61	0.61
Sat Flow, veh/h	210	483	196	319	937	1446	751	2973	441	1774	2639	683
Grp Volume(v), veh/h	254	0	0	252	0	151	86	353	332	77	321	289
Grp Sat Flow(s),veh/h/ln	888	0	0	1256	0	1446	751	1770	1645	1774	1770	1552
Q Serve(g_s), s	14.1	0.0	0.0	0.0	0.0	8.3	0.6	0.0	0.0	2.0	9.6	9.9
Cycle Q Clear(g_c), s	32.1	0.0	0.0	18.0	0.0	8.3	3.0	0.0	0.0	2.0	9.6	9.9
Prop In Lane	0.31		0.22	0.31		1.00	1.00		0.27	1.00		0.44
Lane Grp Cap(c), veh/h	319	0	0	434	0	515	454	953	886	519	1074	942
V/C Ratio(X)	0.80	0.00	0.00	0.58	0.00	0.29	0.19	0.37	0.37	0.15	0.30	0.31
Avail Cap(c_a), veh/h	322	0	0	436	0	517	454	953	886	526	1074	942
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(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.90	0.90	0.90	0.95	0.95	0.95
Uniform Delay (d), s/veh	39.8	0.0	0.0	31.5	0.0	25.8	0.1	0.0	0.0	9.3	10.4	10.4
Incr Delay (d2), s/veh	12.5	0.0	0.0	1.7	0.0	0.2	0.8	1.0	1.1	0.0	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	8.7	0.0	0.0	6.7	0.0	3.4	0.2	0.3	0.3	1.0	4.8	4.4
LnGrp Delay(d),s/veh	52.3	0.0	0.0	33.2	0.0	26.0	0.9	1.0	1.1	9.4	11.0	11.2
LnGrp LOS	D			C		C	A	A	A	A	B	B
Approach Vol, veh/h		254			403			771			687	
Approach Delay, s/veh		52.3			30.5			1.0			10.9	
Approach LOS		D			C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		71.2		38.8	7.5	63.7		38.8				
Change Period (Y+Rc), s		* 4.4		* 4.6	3.0	* 4.4		* 4.6				
Max Green Setting (Gmax), s		* 67		* 34	5.0	* 59		* 34				
Max Q Clear Time (g_c+I1), s		11.9		20.0	4.0	5.0		34.1				
Green Ext Time (p_c), s		3.4		2.8	0.0	3.4		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			16.0									
HCM 2010 LOS			B									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Existing 2016 PM Peak Hour

2: Washington Avenue & 16 Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	72	106	71	156	136	77	536	69	435
Future Volume (vph)	72	106	71	156	136	77	536	69	435
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases		8		4	5		6	5	2
Permitted Phases	8		4		4	6		2	
Detector Phase	8	8	4	4	5	6	6	5	2
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0
Minimum Split (s)	37.6	37.6	37.6	37.6	9.0	25.4	25.4	9.0	25.4
Total Split (s)	39.0	39.0	39.0	39.0	8.0	63.0	63.0	8.0	71.0
Total Split (%)	35.5%	35.5%	35.5%	35.5%	7.3%	57.3%	57.3%	7.3%	64.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	0.6	0.6	0.6	0.6	0.0	0.4	0.4	0.0	0.4
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.6		4.6	3.0	4.4	4.4	3.0	4.4
Lead/Lag					Lead	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)		26.3		26.3	34.2	65.4	65.4	76.1	74.7
Actuated g/C Ratio		0.24		0.24	0.31	0.59	0.59	0.69	0.68
v/c Ratio		1.02		0.78	0.29	0.24	0.35	0.17	0.29
Control Delay		101.3		54.7	10.4	14.6	12.5	7.9	7.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		101.3		54.7	10.4	14.6	12.5	7.9	7.7
LOS		F		D	B	B	B	A	A
Approach Delay		101.3		38.1			12.7		7.7
Approach LOS		F		D			B		A

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 54 (49%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 90.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Washington Avenue & 16 Street

 Ø2 (R)	 Ø4
71 s	39 s
 Ø5	 Ø8
8 s	39 s
 Ø6 (R)	
63 s	

2: Washington Avenue & 16 Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	254	252	151	86	685	77	610
v/c Ratio	1.02	0.78	0.29	0.24	0.35	0.17	0.29
Control Delay	101.3	54.7	10.4	14.6	12.5	7.9	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.3	54.7	10.4	14.6	12.5	7.9	7.7
Queue Length 50th (ft)	~176	166	27	32	137	16	73
Queue Length 95th (ft)	#283	233	61	80	221	41	132
Internal Link Dist (ft)	170	490			480		1078
Turn Bay Length (ft)				120		100	
Base Capacity (vph)	324	427	523	364	1963	440	2088
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	0.78	0.59	0.29	0.24	0.35	0.17	0.29

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.

3: Washington Avenue & 15 Street

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	95	111	63	568	497	50
Future Volume (vph)	95	111	63	568	497	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7			4.2	4.2	
Lane Util. Factor	1.00			0.95	0.95	
Frbp, ped/bikes	0.94			1.00	0.95	
Flpb, ped/bikes	1.00			0.98	1.00	
Frt	0.93			1.00	0.99	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1579			3441	3311	
Flt Permitted	0.98			0.82	1.00	
Satd. Flow (perm)	1579			2843	3311	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	123	70	631	552	56
RTOR Reduction (vph)	44	0	0	0	4	0
Lane Group Flow (vph)	185	0	0	701	604	0
Confl. Peds. (#/hr)	86	93	306			306
Confl. Bikes (#/hr)		4				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	8			6	2	
Permitted Phases			6			
Actuated Green, G (s)	16.3			84.8	84.8	
Effective Green, g (s)	16.3			84.8	84.8	
Actuated g/C Ratio	0.15			0.77	0.77	
Clearance Time (s)	4.7			4.2	4.2	
Vehicle Extension (s)	1.0			1.0	1.0	
Lane Grp Cap (vph)	233			2191	2552	
v/s Ratio Prot	c0.12				0.18	
v/s Ratio Perm				c0.25		
v/c Ratio	0.79			0.32	0.24	
Uniform Delay, d1	45.2			3.8	3.5	
Progression Factor	1.00			1.00	0.68	
Incremental Delay, d2	15.7			0.4	0.2	
Delay (s)	60.9			4.2	2.6	
Level of Service	E			A	A	
Approach Delay (s)	60.9			4.2	2.6	
Approach LOS	E			A	A	
Intersection Summary						
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.40			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	8.9
Intersection Capacity Utilization			71.4%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

3: Washington Avenue & 15 Street

				
Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	95	63	568	497
Future Volume (vph)	95	63	568	497
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)	33.7	27.2	27.2	27.2
Total Split (s)	35.0	75.0	75.0	75.0
Total Split (%)	31.8%	68.2%	68.2%	68.2%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	0.7	0.2	0.2	0.2
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	4.7		4.2	4.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Min	C-Min	C-Min
Act Effct Green (s)	16.3		84.8	84.8
Actuated g/C Ratio	0.15		0.77	0.77
v/c Ratio	0.82		0.32	0.24
Control Delay	57.4		4.9	2.9
Queue Delay	0.0		0.0	0.0
Total Delay	57.4		4.9	2.9
LOS	E		A	A
Approach Delay	57.4		4.9	2.9
Approach LOS	E		A	A

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 61 (55%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 71.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Washington Avenue & 15 Street

 Ø2 (R)		
75 s		
 Ø6 (R)		 Ø8
75 s		35 s

3: Washington Avenue & 15 Street

	↖	↑	↓
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	229	701	608
v/c Ratio	0.82	0.32	0.24
Control Delay	57.4	4.9	2.9
Queue Delay	0.0	0.0	0.0
Total Delay	57.4	4.9	2.9
Queue Length 50th (ft)	124	65	33
Queue Length 95th (ft)	195	122	58
Internal Link Dist (ft)	422	646	480
Turn Bay Length (ft)			
Base Capacity (vph)	472	2194	2556
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.32	0.24
Intersection Summary			

4: Drexel Avenue & 16 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	175	28	23	308	43	24	5	14	5	2	26
Future Volume (veh/h)	29	175	28	23	308	43	24	5	14	5	2	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.87	0.95		0.88	0.96		0.93	0.95		0.93
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	32	194	31	26	342	48	27	6	16	6	2	29
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	559	82	115	604	81	419	109	189	153	81	471
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	97	1397	205	48	1509	203	699	273	471	121	203	1177
Grp Volume(v), veh/h	257	0	0	416	0	0	49	0	0	37	0	0
Grp Sat Flow(s),veh/h/ln	1699	0	0	1761	0	0	1443	0	0	1501	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.0	0.0	0.0	7.2	0.0	0.0	0.7	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.12		0.12	0.06		0.12	0.55		0.33	0.16		0.78
Lane Grp Cap(c), veh/h	781	0	0	800	0	0	717	0	0	705	0	0
V/C Ratio(X)	0.33	0.00	0.00	0.52	0.00	0.00	0.07	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	781	0	0	800	0	0	717	0	0	705	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.4	0.0	0.0	9.4	0.0	0.0	7.4	0.0	0.0	7.4	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.0	2.4	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	4.0	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	9.5	0.0	0.0	11.8	0.0	0.0	7.6	0.0	0.0	7.5	0.0	0.0
LnGrp LOS	A			B			A			A		
Approach Vol, veh/h	257				416				49		37	
Approach Delay, s/veh	9.5				11.8				7.6		7.5	
Approach LOS	A				B				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	20.0		20.0		20.0		20.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	16.0		16.0		16.0		16.0					
Max Q Clear Time (g_c+I1), s	2.7		6.0		2.6		9.2					
Green Ext Time (p_c), s	0.3		3.1		0.3		2.4					
Intersection Summary												
HCM 2010 Ctrl Delay			10.5									
HCM 2010 LOS			B									

Existing 2016 PM Peak Hour

4: Drexel Avenue & 16 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	29	175	23	308	24	5	5	2
Future Volume (vph)	29	175	23	308	24	5	5	2
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.0		4.0		4.0		4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		16.0		16.0		16.0		16.0
Actuated g/C Ratio		0.40		0.40		0.40		0.40
v/c Ratio		0.38		0.58		0.08		0.06
Control Delay		9.8		12.9		6.2		4.5
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		9.8		12.9		6.2		4.5
LOS		A		B		A		A
Approach Delay		9.8		12.9		6.2		4.5
Approach LOS		A		B		A		A

Intersection Summary

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 43.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Drexel Avenue & 16 Street

 Ø2 (R)	 Ø4
20 s	20 s
 Ø6 (R)	 Ø8
20 s	20 s

4: Drexel Avenue & 16 Street

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	257	416	49	37
v/c Ratio	0.38	0.58	0.08	0.06
Control Delay	9.8	12.9	6.2	4.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.8	12.9	6.2	4.5
Queue Length 50th (ft)	35	64	4	1
Queue Length 95th (ft)	74	127	17	12
Internal Link Dist (ft)	176	70	207	304
Turn Bay Length (ft)				
Base Capacity (vph)	678	715	618	634
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.58	0.08	0.06
Intersection Summary				

Intersection							
Int Delay, s/veh		1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↱	↱		↱	↱	
Traffic Vol, veh/h	8	208	315	21	18	36	
Future Vol, veh/h	8	208	315	21	18	36	
Conflicting Peds, #/hr	51	0	0	51	1	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	0	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	9	231	350	23	20	40	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	424	0	-	0	663	413	
Stage 1	-	-	-	-	413	-	
Stage 2	-	-	-	-	250	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1135	-	-	-	426	639	
Stage 1	-	-	-	-	668	-	
Stage 2	-	-	-	-	792	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1135	-	-	-	387	612	
Mov Cap-2 Maneuver	-	-	-	-	387	-	
Stage 1	-	-	-	-	640	-	
Stage 2	-	-	-	-	752	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0.3		0		12.5		
HCM LOS					B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	1135	-	-	-	387	612	
HCM Lane V/C Ratio	0.008	-	-	-	0.052	0.065	
HCM Control Delay (s)	8.2	0	-	-	14.8	11.3	
HCM Lane LOS	A	A	-	-	B	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.2	

HCM 2010 Signalized Intersection Summary
6: Alton Road & 16th Street

10/27/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	62	49	101	54	114	49	890	139	127	775	53
Future Volume (veh/h)	51	62	49	101	54	114	49	890	139	127	775	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.99	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	57	69	54	112	60	127	54	989	154	141	861	59
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	123	85	139	70	126	313	1600	249	233	1750	120
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	255	409	284	336	233	420	544	2506	390	441	2740	188
Grp Volume(v), veh/h	180	0	0	299	0	0	54	628	515	141	500	420
Grp Sat Flow(s),veh/h/ln	948	0	0	989	0	0	544	1593	1303	441	1593	1336
Q Serve(g_s), s	0.0	0.0	0.0	18.7	0.0	0.0	7.5	30.6	30.7	36.5	21.5	21.5
Cycle Q Clear(g_c), s	20.3	0.0	0.0	39.0	0.0	0.0	29.1	30.6	30.7	67.2	21.5	21.5
Prop In Lane	0.32		0.30	0.37		0.42	1.00		0.30	1.00		0.14
Lane Grp Cap(c), veh/h	321	0	0	335	0	0	313	1017	832	233	1017	853
V/C Ratio(X)	0.56	0.00	0.00	0.89	0.00	0.00	0.17	0.62	0.62	0.61	0.49	0.49
Avail Cap(c_a), veh/h	321	0	0	335	0	0	313	1017	832	233	1017	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	0.0	46.4	0.0	0.0	20.1	14.0	14.1	34.1	12.4	12.4
Incr Delay (d2), s/veh	2.5	0.0	0.0	24.9	0.0	0.0	1.2	2.8	3.4	11.2	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	5.7	0.0	0.0	13.0	0.0	0.0	1.2	14.1	11.8	5.1	9.9	8.4
LnGrp Delay(d),s/veh	40.9	0.0	0.0	71.3	0.0	0.0	21.3	16.8	17.5	45.3	14.1	14.4
LnGrp LOS	D			E			C	B	B	D	B	B
Approach Vol, veh/h	180				299				1197		1061	
Approach Delay, s/veh	40.9				71.3				17.3		18.4	
Approach LOS	D				E				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	87.0		43.0		87.0		43.0					
Change Period (Y+Rc), s	* 4.2		* 4.6		* 4.2		* 4.6					
Max Green Setting (Gmax), s	* 83		* 38		* 83		* 38					
Max Q Clear Time (g_c+I1), s	32.7		22.3		69.2		41.0					
Green Ext Time (p_c), s	9.5		2.4		6.6		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			25.2									
HCM 2010 LOS			C									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Existing 2016 PM Peak Hour

6: Alton Road & 16th Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	62	101	54	49	890	127	775
Future Volume (vph)	51	62	101	54	49	890	127	775
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)	38.0	38.0	38.0	38.0	79.0	79.0	79.0	79.0
Total Split (s)	43.0	43.0	43.0	43.0	87.0	87.0	87.0	87.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	66.9%	66.9%	66.9%	66.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.6	0.6	0.6	0.6	0.2	0.2	0.2	0.2
Lost Time Adjust (s)		-0.6		-0.6	-0.2	-0.2	-0.2	-0.2
Total Lost Time (s)		4.0		4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)		35.1		35.1	86.9	86.9	86.9	86.9
Actuated g/C Ratio		0.27		0.27	0.67	0.67	0.67	0.67
v/c Ratio		0.52		0.90	0.18	0.55	0.64	0.44
Control Delay		41.1		69.5	11.4	12.9	30.6	11.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		41.1		69.5	11.4	12.9	30.6	11.4
LOS		D		E	B	B	C	B
Approach Delay		41.1		69.5		12.8		14.0
Approach LOS		D		E		B		B

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 86 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 21.3

Intersection LOS: C

Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Alton Road & 16th Street

 Ø2 (R)	 Ø4
87 s	43 s
 Ø6 (R)	 Ø8
87 s	43 s

Existing 2016 PM Peak Hour

6: Alton Road & 16th Street

	→	←	↖	↑	↘	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	180	299	54	1143	141	920
v/c Ratio	0.52	0.90	0.18	0.55	0.64	0.44
Control Delay	41.1	69.5	11.4	12.9	30.6	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	69.5	11.4	12.9	30.6	11.4
Queue Length 50th (ft)	114	217	17	253	67	184
Queue Length 95th (ft)	187	#368	40	324	#200	238
Internal Link Dist (ft)	277	359		207		547
Turn Bay Length (ft)			115		115	
Base Capacity (vph)	386	373	301	2102	223	2121
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.80	0.18	0.54	0.63	0.43

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

10/27/2016

1: Washington Avenue & 17 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	269	214	83	272	19	339	370	103	7	159	89
Future Volume (vph)	110	269	214	83	272	19	339	370	103	7	159	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.4		7.4	7.4		6.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.94		1.00	1.00		1.00	0.98		1.00	0.96	
Flpb, ped/bikes	0.99	1.00		0.95	1.00		0.98	1.00		0.97	1.00	
Frt	1.00	0.93		1.00	0.99		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	3122		1681	3495		1736	3371		1718	3231	
Flt Permitted	0.38	1.00		0.46	1.00		0.47	1.00		0.46	1.00	
Satd. Flow (perm)	707	3122		814	3495		857	3371		840	3231	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	289	230	89	292	20	365	398	111	8	171	96
RTOR Reduction (vph)	0	151	0	0	6	0	0	26	0	0	71	0
Lane Group Flow (vph)	118	368	0	89	306	0	365	483	0	8	196	0
Confl. Peds. (#/hr)	23		88	88		23	56		46	46		56
Confl. Bikes (#/hr)			21			4			2			20
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		
Actuated Green, G (s)	30.9	30.9		15.3	15.3		45.4	45.4		23.8	23.8	
Effective Green, g (s)	30.9	30.9		15.3	15.3		45.4	45.4		23.8	23.8	
Actuated g/C Ratio	0.34	0.34		0.17	0.17		0.50	0.50		0.26	0.26	
Clearance Time (s)	7.1	7.4		7.4	7.4		6.0	6.3		6.3	6.3	
Vehicle Extension (s)	2.0	2.5		2.5	2.5		2.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	342	1071		138	594		584	1700		222	854	
v/s Ratio Prot	0.03	c0.12			0.09		c0.11	0.14			0.06	
v/s Ratio Perm	0.09			c0.11			c0.21			0.01		
v/c Ratio	0.35	0.34		0.64	0.52		0.62	0.28		0.04	0.23	
Uniform Delay, d1	21.1	22.0		34.8	34.0		14.3	12.9		24.6	25.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		8.8	0.6		1.5	0.4		0.3	0.6	
Delay (s)	21.3	22.1		43.6	34.5		15.8	13.3		24.9	26.6	
Level of Service	C	C		D	C		B	B		C	C	
Approach Delay (s)		22.0			36.6			14.4			26.5	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			26.8			
Intersection Capacity Utilization			83.7%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Future Background 2018 (w/out Project) PM Peak Hour

1: Washington Avenue & 17 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	110	269	83	272	339	370	7	159
Future Volume (vph)	110	269	83	272	339	370	7	159
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	29.3	29.3
Total Split (s)	13.0	43.0	30.0	30.0	12.0	47.0	35.0	35.0
Total Split (%)	14.4%	47.8%	33.3%	33.3%	13.3%	52.2%	38.9%	38.9%
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-Min	C-Min	C-Min
Act Effct Green (s)	31.1	30.8	15.3	15.3	45.8	45.5	23.8	23.8
Actuated g/C Ratio	0.35	0.34	0.17	0.17	0.51	0.51	0.26	0.26
v/c Ratio	0.34	0.42	0.64	0.52	0.62	0.29	0.04	0.29
Control Delay	21.5	12.2	54.7	35.4	21.2	13.4	33.0	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	12.2	54.7	35.4	21.2	13.4	33.0	20.6
LOS	C	B	D	D	C	B	C	C
Approach Delay		13.9		39.7		16.7		20.9
Approach LOS		B		D		B		C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 73 (81%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 20.6

Intersection LOS: C

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Washington Avenue & 17 Street

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	35 s	13 s	30 s
 Ø6 (R)		 Ø8	
47 s		43 s	

1: Washington Avenue & 17 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	118	519	89	312	365	509	8	267
v/c Ratio	0.34	0.42	0.64	0.52	0.62	0.29	0.04	0.29
Control Delay	21.5	12.2	54.7	35.4	21.2	13.4	33.0	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	12.2	54.7	35.4	21.2	13.4	33.0	20.6
Queue Length 50th (ft)	47	62	48	84	121	74	3	40
Queue Length 95th (ft)	70	84	89	111	239	135	17	86
Internal Link Dist (ft)		319		336		1078		264
Turn Bay Length (ft)	210		215		200		150	
Base Capacity (vph)	344	1408	205	888	586	1766	290	1180
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	0.34	0.37	0.43	0.35	0.62	0.29	0.03	0.23
Intersection Summary								

HCM 2010 Signalized Intersection Summary
2: Washington Avenue & 16 Street

10/27/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	109	51	74	161	140	79	556	82	71	479	118
Future Volume (veh/h)	75	109	51	74	161	140	79	556	82	71	479	118
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	1.00		0.91	0.94		0.79	0.94		0.81
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	83	121	57	82	179	156	88	618	91	79	532	131
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	145	58	142	288	518	431	1600	234	510	1623	395
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	1.00	1.00	1.00	0.04	0.61	0.61
Sat Flow, veh/h	200	462	185	316	920	1446	721	2980	437	1774	2681	653
Grp Volume(v), veh/h	261	0	0	261	0	156	88	366	343	79	349	314
Grp Sat Flow(s),veh/h/ln	848	0	0	1236	0	1446	721	1770	1647	1774	1770	1565
Q Serve(g_s), s	15.1	0.0	0.0	0.0	0.0	8.6	1.0	0.0	0.0	2.1	10.7	10.9
Cycle Q Clear(g_c), s	34.0	0.0	0.0	18.9	0.0	8.6	4.3	0.0	0.0	2.1	10.7	10.9
Prop In Lane	0.32		0.22	0.31		1.00	1.00		0.27	1.00		0.42
Lane Grp Cap(c), veh/h	308	0	0	430	0	518	431	950	884	510	1071	947
V/C Ratio(X)	0.85	0.00	0.00	0.61	0.00	0.30	0.20	0.38	0.39	0.15	0.33	0.33
Avail Cap(c_a), veh/h	308	0	0	430	0	518	431	950	884	517	1071	947
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(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.89	0.89	0.89	0.93	0.93	0.93
Uniform Delay (d), s/veh	40.7	0.0	0.0	31.7	0.0	25.7	0.1	0.0	0.0	9.4	10.7	10.7
Incr Delay (d2), s/veh	18.8	0.0	0.0	2.2	0.0	0.2	0.9	1.0	1.1	0.0	0.8	0.9
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	9.5	0.0	0.0	7.1	0.0	3.5	0.3	0.3	0.3	1.0	5.4	4.9
LnGrp Delay(d),s/veh	59.6	0.0	0.0	33.9	0.0	26.0	1.1	1.0	1.1	9.4	11.4	11.6
LnGrp LOS	E			C		C	A	A	A	A	B	B
Approach Vol, veh/h	261				417				797		742	
Approach Delay, s/veh	59.6				30.9				1.1		11.3	
Approach LOS	E				C				A		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	71.0		39.0		7.6		63.4		39.0			
Change Period (Y+Rc), s	* 4.4		* 4.6		3.0		* 4.4		* 4.6			
Max Green Setting (Gmax), s	* 67		* 34		5.0		* 59		* 34			
Max Q Clear Time (g_c+I1), s	12.9		20.9		4.1		6.3		36.0			
Green Ext Time (p_c), s	3.6		2.8		0.0		3.6		0.0			
Intersection Summary												
HCM 2010 Ctrl Delay			17.0									
HCM 2010 LOS			B									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Future Background 2018 (w/out Project) PM Peak Hour

2: Washington Avenue & 16 Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	75	109	74	161	140	79	556	71	479
Future Volume (vph)	75	109	74	161	140	79	556	71	479
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases		8		4	5		6	5	2
Permitted Phases	8		4		4	6		2	
Detector Phase	8	8	4	4	5	6	6	5	2
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0
Minimum Split (s)	37.6	37.6	37.6	37.6	9.0	25.4	25.4	9.0	25.4
Total Split (s)	39.0	39.0	39.0	39.0	8.0	63.0	63.0	8.0	71.0
Total Split (%)	35.5%	35.5%	35.5%	35.5%	7.3%	57.3%	57.3%	7.3%	64.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	0.6	0.6	0.6	0.6	0.0	0.4	0.4	0.0	0.4
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.6		4.6	3.0	4.4	4.4	3.0	4.4
Lead/Lag					Lead	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)		27.2		27.2	35.2	64.4	64.4	75.2	73.8
Actuated g/C Ratio		0.25		0.25	0.32	0.59	0.59	0.68	0.67
v/c Ratio		1.03		0.78	0.29	0.26	0.37	0.18	0.32
Control Delay		102.8		54.0	11.2	15.7	13.1	8.4	8.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		102.8		54.0	11.2	15.7	13.1	8.4	8.4
LOS		F		D	B	B	B	A	A
Approach Delay		102.8		38.0			13.4		8.4
Approach LOS		F		D			B		A

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 54 (49%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 26.9

Intersection LOS: C

Intersection Capacity Utilization 91.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Washington Avenue & 16 Street

 Ø2 (R)	 Ø4
71 s	39 s
 Ø5	 Ø8
8 s	39 s
 Ø6 (R)	
63 s	

2: Washington Avenue & 16 Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	261	261	156	88	709	79	663
v/c Ratio	1.03	0.78	0.29	0.26	0.37	0.18	0.32
Control Delay	102.8	54.0	11.2	15.7	13.1	8.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.8	54.0	11.2	15.7	13.1	8.4	8.4
Queue Length 50th (ft)	~184	172	31	33	146	17	85
Queue Length 95th (ft)	#292	239	66	85	234	43	150
Internal Link Dist (ft)	170	490			480		1078
Turn Bay Length (ft)				120		100	
Base Capacity (vph)	321	429	531	342	1943	428	2083
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	0.81	0.61	0.29	0.26	0.36	0.18	0.32

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.

3: Washington Avenue & 15 Street

	↖	↗	↑	↓
Lane Group	EBL	NBL	NBT	SBT
Lane Configurations	↖		↗	↗
Traffic Volume (vph)	98	65	589	543
Future Volume (vph)	98	65	589	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)	33.7	27.2	27.2	27.2
Total Split (s)	35.0	75.0	75.0	75.0
Total Split (%)	31.8%	68.2%	68.2%	68.2%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	0.7	0.2	0.2	0.2
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	4.7		4.2	4.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Min	C-Min	C-Min
Act Effct Green (s)	16.8		84.3	84.3
Actuated g/C Ratio	0.15		0.77	0.77
v/c Ratio	0.83		0.34	0.26
Control Delay	57.2		5.2	3.1
Queue Delay	0.0		0.0	0.0
Total Delay	57.2		5.2	3.1
LOS	E		A	A
Approach Delay	57.2		5.2	3.1
Approach LOS	E		A	A

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 61 (55%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Washington Avenue & 15 Street

↓ Ø2 (R)		
75 s		
↖ Ø6 (R)		↗ Ø8
75 s		35 s

HCM Signalized Intersection Capacity Analysis

3: Washington Avenue & 15 Street

10/27/2016

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	98	115	65	589	543	51
Future Volume (vph)	98	115	65	589	543	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7			4.2	4.2	
Lane Util. Factor	1.00			0.95	0.95	
Frbp, ped/bikes	0.93			1.00	0.95	
Flpb, ped/bikes	1.00			0.98	1.00	
Frt	0.93			1.00	0.99	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1578			3449	3325	
Flt Permitted	0.98			0.81	1.00	
Satd. Flow (perm)	1578			2812	3325	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	128	72	654	603	57
RTOR Reduction (vph)	45	0	0	0	4	0
Lane Group Flow (vph)	192	0	0	726	656	0
Confl. Peds. (#/hr)	86	93	306			306
Confl. Bikes (#/hr)		4				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	8			6	2	
Permitted Phases			6			
Actuated Green, G (s)	16.8			84.3	84.3	
Effective Green, g (s)	16.8			84.3	84.3	
Actuated g/C Ratio	0.15			0.77	0.77	
Clearance Time (s)	4.7			4.2	4.2	
Vehicle Extension (s)	1.0			1.0	1.0	
Lane Grp Cap (vph)	241			2155	2548	
v/s Ratio Prot	c0.12				0.20	
v/s Ratio Perm				c0.26		
v/c Ratio	0.80			0.34	0.26	
Uniform Delay, d1	45.0			4.0	3.7	
Progression Factor	1.00			1.00	0.68	
Incremental Delay, d2	15.5			0.4	0.2	
Delay (s)	60.5			4.5	2.8	
Level of Service	E			A	A	
Approach Delay (s)	60.5			4.5	2.8	
Approach LOS	E			A	A	
Intersection Summary						
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	8.9
Intersection Capacity Utilization			72.0%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Future Background 2018 (w/out Project) PM Peak Hour

3: Washington Avenue & 15 Street

			
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	237	726	660
v/c Ratio	0.83	0.34	0.26
Control Delay	57.2	5.2	3.1
Queue Delay	0.0	0.0	0.0
Total Delay	57.2	5.2	3.1
Queue Length 50th (ft)	129	70	37
Queue Length 95th (ft)	201	131	65
Internal Link Dist (ft)	422	646	480
Turn Bay Length (ft)			
Base Capacity (vph)	473	2152	2551
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.34	0.26
Intersection Summary			

4: Drexel Avenue & 16 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	181	28	24	317	44	25	5	15	5	2	26
Future Volume (veh/h)	29	181	28	24	317	44	25	5	15	5	2	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.87	0.95		0.88	0.96		0.93	0.96		0.93
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	32	201	31	27	352	49	28	6	17	6	2	29
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	563	80	116	604	81	418	106	192	153	81	471
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	95	1407	200	50	1509	202	696	266	481	121	203	1177
Grp Volume(v), veh/h	264	0	0	428	0	0	51	0	0	37	0	0
Grp Sat Flow(s),veh/h/ln	1701	0	0	1760	0	0	1442	0	0	1501	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	0.0	7.5	0.0	0.0	0.7	0.0	0.0	0.6	0.0	0.0
Prop In Lane	0.12		0.12	0.06		0.11	0.55		0.33	0.16		0.78
Lane Grp Cap(c), veh/h	781	0	0	800	0	0	716	0	0	705	0	0
V/C Ratio(X)	0.34	0.00	0.00	0.54	0.00	0.00	0.07	0.00	0.00	0.05	0.00	0.00
Avail Cap(c_a), veh/h	781	0	0	800	0	0	716	0	0	705	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.4	0.0	0.0	9.5	0.0	0.0	7.4	0.0	0.0	7.4	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	2.6	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.0	4.3	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	9.6	0.0	0.0	12.0	0.0	0.0	7.6	0.0	0.0	7.5	0.0	0.0
LnGrp LOS	A			B			A			A		
Approach Vol, veh/h	264				428				51		37	
Approach Delay, s/veh	9.6				12.0				7.6		7.5	
Approach LOS	A				B				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	20.0		20.0		20.0		20.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	16.0		16.0		16.0		16.0					
Max Q Clear Time (g_c+I1), s	2.7		6.2		2.6		9.5					
Green Ext Time (p_c), s	0.3		3.2		0.3		2.4					
Intersection Summary												
HCM 2010 Ctrl Delay			10.7									
HCM 2010 LOS			B									

4: Drexel Avenue & 16 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	29	181	24	317	25	5	5	2
Future Volume (vph)	29	181	24	317	25	5	5	2
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.0		4.0		4.0		4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		16.0		16.0		16.0		16.0
Actuated g/C Ratio		0.40		0.40		0.40		0.40
v/c Ratio		0.39		0.60		0.08		0.06
Control Delay		10.0		13.3		6.2		4.5
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		10.0		13.3		6.2		4.5
LOS		A		B		A		A
Approach Delay		10.0		13.3		6.2		4.5
Approach LOS		A		B		A		A

Intersection Summary

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 44.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Drexel Avenue & 16 Street

 Ø2 (R)	 Ø4
20 s	20 s
 Ø6 (R)	 Ø8
20 s	20 s

4: Drexel Avenue & 16 Street

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	264	428	51	37
v/c Ratio	0.39	0.60	0.08	0.06
Control Delay	10.0	13.3	6.2	4.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.0	13.3	6.2	4.5
Queue Length 50th (ft)	36	67	4	1
Queue Length 95th (ft)	76	132	18	12
Internal Link Dist (ft)	176	70	207	304
Turn Bay Length (ft)				
Base Capacity (vph)	678	714	617	634
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.60	0.08	0.06
Intersection Summary				

Intersection							
Int Delay, s/veh		1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↱	↱		↱	↱	
Traffic Vol, veh/h	8	214	325	22	19	37	
Future Vol, veh/h	8	214	325	22	19	37	
Conflicting Peds, #/hr	51	0	0	51	1	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	0	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	9	238	361	24	21	41	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	437	0	-	0	681	424	
Stage 1	-	-	-	-	424	-	
Stage 2	-	-	-	-	257	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1123	-	-	-	416	630	
Stage 1	-	-	-	-	660	-	
Stage 2	-	-	-	-	786	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1123	-	-	-	378	603	
Mov Cap-2 Maneuver	-	-	-	-	378	-	
Stage 1	-	-	-	-	632	-	
Stage 2	-	-	-	-	746	-	
Approach	EB		WB		SB		
HCM Control Delay, s	0.3		0		12.7		
HCM LOS					B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	1123	-	-	-	378	603	
HCM Lane V/C Ratio	0.008	-	-	-	0.056	0.068	
HCM Control Delay (s)	8.2	0	-	-	15.1	11.4	
HCM Lane LOS	A	A	-	-	C	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.2	

6: Alton Road & 16th Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	53	64	104	56	50	917	131	798
Future Volume (vph)	53	64	104	56	50	917	131	798
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)	38.0	38.0	38.0	38.0	79.0	79.0	79.0	79.0
Total Split (s)	43.0	43.0	43.0	43.0	87.0	87.0	87.0	87.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	66.9%	66.9%	66.9%	66.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.6	0.6	0.6	0.6	0.2	0.2	0.2	0.2
Lost Time Adjust (s)		-0.6		-0.6	-0.2	-0.2	-0.2	-0.2
Total Lost Time (s)		4.0		4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)		35.4		35.4	86.6	86.6	86.6	86.6
Actuated g/C Ratio		0.27		0.27	0.67	0.67	0.67	0.67
v/c Ratio		0.54		0.92	0.20	0.57	0.70	0.45
Control Delay		41.9		74.3	11.6	13.2	36.3	11.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		41.9		74.3	11.6	13.2	36.3	11.6
LOS		D		E	B	B	D	B
Approach Delay		41.9		74.3		13.2		14.9
Approach LOS		D		E		B		B

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 86 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 22.4

Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Alton Road & 16th Street

 Ø2 (R)	 Ø4
87 s	43 s
 Ø6 (R)	 Ø8
87 s	43 s

HCM 2010 Signalized Intersection Summary
6: Alton Road & 16th Street

10/27/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↱	↕↕		↱	↕↕	
Traffic Volume (veh/h)	53	64	50	104	56	117	50	917	143	131	798	55
Future Volume (veh/h)	53	64	50	104	56	117	50	917	143	131	798	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.99	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	59	71	56	116	62	130	56	1019	159	146	887	61
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	122	86	139	69	123	302	1600	249	222	1749	120
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	256	408	286	335	228	412	530	2506	390	427	2740	188
Grp Volume(v), veh/h	186	0	0	308	0	0	56	647	531	146	516	432
Grp Sat Flow(s),veh/h/ln	950	0	0	975	0	0	530	1593	1303	427	1593	1335
Q Serve(g_s), s	0.0	0.0	0.0	17.8	0.0	0.0	8.2	32.2	32.3	41.3	22.5	22.5
Cycle Q Clear(g_c), s	21.2	0.0	0.0	39.0	0.0	0.0	30.7	32.2	32.3	73.6	22.5	22.5
Prop In Lane	0.32		0.30	0.38		0.42	1.00		0.30	1.00		0.14
Lane Grp Cap(c), veh/h	321	0	0	331	0	0	302	1017	832	222	1017	853
V/C Ratio(X)	0.58	0.00	0.00	0.93	0.00	0.00	0.19	0.64	0.64	0.66	0.51	0.51
Avail Cap(c_a), veh/h	321	0	0	331	0	0	302	1017	832	222	1017	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	0.0	0.0	47.3	0.0	0.0	20.8	14.3	14.4	36.8	12.6	12.6
Incr Delay (d2), s/veh	2.9	0.0	0.0	32.4	0.0	0.0	1.4	3.0	3.7	14.3	1.8	2.2
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	6.0	0.0	0.0	14.0	0.0	0.0	1.3	14.9	12.4	5.7	10.4	8.8
LnGrp Delay(d),s/veh	41.6	0.0	0.0	79.7	0.0	0.0	22.1	17.4	18.1	51.1	14.4	14.7
LnGrp LOS	D			E			C	B	B	D	B	B
Approach Vol, veh/h	186		308				1234				1094	
Approach Delay, s/veh	41.6		79.7				17.9				19.4	
Approach LOS	D		E				B				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	87.0		43.0		87.0		43.0					
Change Period (Y+Rc), s	* 4.2		* 4.6		* 4.2		* 4.6					
Max Green Setting (Gmax), s	* 83		* 38		* 83		* 38					
Max Q Clear Time (g_c+I1), s	34.3		23.2		75.6		41.0					
Green Ext Time (p_c), s	10.2		2.4		4.6		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			26.8									
HCM 2010 LOS			C									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Future Background 2018 (w/out Project) PM Peak Hour

6: Alton Road & 16th Street

	→	←	↖	↑	↘	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	308	56	1178	146	948
v/c Ratio	0.54	0.92	0.20	0.57	0.70	0.45
Control Delay	41.9	74.3	11.6	13.2	36.3	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	74.3	11.6	13.2	36.3	11.6
Queue Length 50th (ft)	117	224	18	276	77	200
Queue Length 95th (ft)	195	#388	42	340	#220	248
Internal Link Dist (ft)	277	359		207		547
Turn Bay Length (ft)			115		115	
Base Capacity (vph)	378	365	287	2081	210	2099
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.84	0.20	0.57	0.70	0.45

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

10/28/2016

1: Washington Avenue & 17 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	269	214	88	272	19	339	387	107	7	184	89
Future Volume (vph)	110	269	214	88	272	19	339	387	107	7	184	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.1	7.4		7.4	7.4		6.0	6.3		6.3	6.3	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.94		1.00	1.00		1.00	0.98		1.00	0.97	
Flpb, ped/bikes	0.99	1.00		0.95	1.00		0.98	1.00		0.97	1.00	
Frt	1.00	0.93		1.00	0.99		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1760	3122		1681	3495		1739	3372		1720	3259	
Flt Permitted	0.39	1.00		0.46	1.00		0.45	1.00		0.45	1.00	
Satd. Flow (perm)	717	3122		814	3495		833	3372		823	3259	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	289	230	95	292	20	365	416	115	8	198	96
RTOR Reduction (vph)	0	150	0	0	6	0	0	26	0	0	71	0
Lane Group Flow (vph)	118	369	0	95	306	0	365	506	0	8	223	0
Confl. Peds. (#/hr)	23		88	88		23	56		46	46		56
Confl. Bikes (#/hr)			21			4			2			20
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		
Actuated Green, G (s)	31.3	31.3		15.8	15.8		45.0	45.0		23.3	23.3	
Effective Green, g (s)	31.3	31.3		15.8	15.8		45.0	45.0		23.3	23.3	
Actuated g/C Ratio	0.35	0.35		0.18	0.18		0.50	0.50		0.26	0.26	
Clearance Time (s)	7.1	7.4		7.4	7.4		6.0	6.3		6.3	6.3	
Vehicle Extension (s)	2.0	2.5		2.5	2.5		2.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	346	1085		142	613		574	1686		213	843	
v/s Ratio Prot	0.03	c0.12			0.09		c0.11	0.15			0.07	
v/s Ratio Perm	0.09			c0.12			c0.21			0.01		
v/c Ratio	0.34	0.34		0.67	0.50		0.64	0.30		0.04	0.26	
Uniform Delay, d1	20.8	21.7		34.7	33.5		14.5	13.2		25.0	26.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		10.3	0.5		1.7	0.5		0.3	0.8	
Delay (s)	21.1	21.8		44.9	34.0		16.2	13.7		25.3	27.3	
Level of Service	C	C		D	C		B	B		C	C	
Approach Delay (s)		21.7			36.5			14.7			27.2	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			26.8			
Intersection Capacity Utilization			83.7%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Future total 2018 (with Project) PM Peak Hour

1: Washington Avenue & 17 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	110	269	88	272	339	387	7	184
Future Volume (vph)	110	269	88	272	339	387	7	184
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	29.3	29.3
Total Split (s)	13.0	43.0	30.0	30.0	12.0	47.0	35.0	35.0
Total Split (%)	14.4%	47.8%	33.3%	33.3%	13.3%	52.2%	38.9%	38.9%
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-Min	C-Min	C-Min
Act Effct Green (s)	31.6	31.3	15.8	15.8	45.3	45.0	23.3	23.3
Actuated g/C Ratio	0.35	0.35	0.18	0.18	0.50	0.50	0.26	0.26
v/c Ratio	0.34	0.42	0.66	0.50	0.63	0.31	0.04	0.32
Control Delay	21.0	12.0	55.2	34.5	22.4	13.9	33.0	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	12.0	55.2	34.5	22.4	13.9	33.0	21.8
LOS	C	B	E	C	C	B	C	C
Approach Delay		13.7		39.4		17.4		22.1
Approach LOS		B		D		B		C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 73 (81%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 20.9

Intersection LOS: C

Intersection Capacity Utilization 83.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: Washington Avenue & 17 Street

 Ø1	 Ø2 (R)	 Ø3	 Ø4
12 s	35 s	13 s	30 s
 Ø6 (R)		 Ø8	
47 s		43 s	

1: Washington Avenue & 17 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	118	519	95	312	365	531	8	294
v/c Ratio	0.34	0.42	0.66	0.50	0.63	0.31	0.04	0.32
Control Delay	21.0	12.0	55.2	34.5	22.4	13.9	33.0	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	12.0	55.2	34.5	22.4	13.9	33.0	21.8
Queue Length 50th (ft)	46	61	51	83	123	79	4	47
Queue Length 95th (ft)	69	82	93	109	#261	144	17	95
Internal Link Dist (ft)		319		336		1078		264
Turn Bay Length (ft)	210		215		200		150	
Base Capacity (vph)	348	1413	207	895	576	1756	282	1181
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	0.34	0.37	0.46	0.35	0.63	0.30	0.03	0.25

Intersection Summary

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

HCM 2010 Signalized Intersection Summary
2: Washington Avenue & 16 Street

10/28/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	113	53	74	166	140	84	556	82	71	479	148
Future Volume (veh/h)	96	113	53	74	166	140	84	556	82	71	479	148
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	1.00		0.91	0.94		0.79	0.94		0.81
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	107	126	59	82	184	156	93	618	91	79	532	164
Adj No. of Lanes	0	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	131	52	147	305	518	416	1600	234	510	1523	464
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.31	1.00	1.00	1.00	0.04	0.61	0.61
Sat Flow, veh/h	236	420	166	332	976	1446	704	2980	437	1774	2515	767
Grp Volume(v), veh/h	292	0	0	266	0	156	93	366	343	79	373	323
Grp Sat Flow(s),veh/h/ln	822	0	0	1308	0	1446	704	1770	1647	1774	1770	1513
Q Serve(g_s), s	16.3	0.0	0.0	0.0	0.0	8.6	1.4	0.0	0.0	2.1	11.6	11.8
Cycle Q Clear(g_c), s	34.4	0.0	0.0	18.1	0.0	8.6	5.6	0.0	0.0	2.1	11.6	11.8
Prop In Lane	0.37		0.20	0.31		1.00	1.00		0.27	1.00		0.51
Lane Grp Cap(c), veh/h	302	0	0	452	0	518	416	950	884	510	1071	916
V/C Ratio(X)	0.97	0.00	0.00	0.59	0.00	0.30	0.22	0.38	0.39	0.15	0.35	0.35
Avail Cap(c_a), veh/h	302	0	0	452	0	518	416	950	884	517	1071	916
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(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.89	0.89	0.89	0.92	0.92	0.92
Uniform Delay (d), s/veh	43.2	0.0	0.0	31.6	0.0	25.7	0.2	0.0	0.0	9.4	10.8	10.9
Incr Delay (d2), s/veh	42.8	0.0	0.0	1.7	0.0	0.2	1.1	1.0	1.1	0.0	0.8	1.0
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	12.4	0.0	0.0	7.1	0.0	3.5	0.4	0.3	0.3	1.0	5.8	5.1
LnGrp Delay(d),s/veh	86.0	0.0	0.0	33.3	0.0	26.0	1.3	1.0	1.1	9.4	11.7	11.9
LnGrp LOS	F			C		C	A	A	A	A	B	B
Approach Vol, veh/h	292				422				802		775	
Approach Delay, s/veh	86.0				30.6				1.1		11.5	
Approach LOS	F				C				A		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+Rc), s	71.0		39.0		7.6		63.4		39.0			
Change Period (Y+Rc), s	* 4.4		* 4.6		3.0		* 4.4		* 4.6			
Max Green Setting (Gmax), s	* 67		* 34		5.0		* 59		* 34			
Max Q Clear Time (g_c+I1), s	13.8		20.1		4.1		7.6		36.4			
Green Ext Time (p_c), s	3.8		3.1		0.0		3.8		0.0			
Intersection Summary												
HCM 2010 Ctrl Delay			20.9									
HCM 2010 LOS			C									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Future total 2018 (with Project) PM Peak Hour

2: Washington Avenue & 16 Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	96	113	74	166	140	84	556	71	479
Future Volume (vph)	96	113	74	166	140	84	556	71	479
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases		8		4	5		6	5	2
Permitted Phases	8		4		4	6		2	
Detector Phase	8	8	4	4	5	6	6	5	2
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0
Minimum Split (s)	37.6	37.6	37.6	37.6	9.0	25.4	25.4	9.0	25.4
Total Split (s)	39.0	39.0	39.0	39.0	8.0	63.0	63.0	8.0	71.0
Total Split (%)	35.5%	35.5%	35.5%	35.5%	7.3%	57.3%	57.3%	7.3%	64.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0
All-Red Time (s)	0.6	0.6	0.6	0.6	0.0	0.4	0.4	0.0	0.4
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.6		4.6	3.0	4.4	4.4	3.0	4.4
Lead/Lag					Lead	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)		34.4		34.4	42.7	56.9	56.9	68.0	66.6
Actuated g/C Ratio		0.31		0.31	0.39	0.52	0.52	0.62	0.61
v/c Ratio		0.85		0.60	0.25	0.31	0.42	0.21	0.38
Control Delay		56.4		36.7	8.8	23.6	19.6	11.4	11.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		56.4		36.7	8.8	23.6	19.6	11.4	11.6
LOS		E		D	A	C	B	B	B
Approach Delay		56.4		26.4			20.0		11.6
Approach LOS		E		C			C		B

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 54 (49%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 23.0

Intersection LOS: C

Intersection Capacity Utilization 93.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Washington Avenue & 16 Street

 Ø2 (R)	 Ø4
71 s	39 s
 Ø5	 Ø8
8 s	39 s
 Ø6 (R)	
63 s	

2: Washington Avenue & 16 Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	292	266	156	93	709	79	696
v/c Ratio	0.85	0.60	0.25	0.31	0.42	0.21	0.38
Control Delay	56.4	36.7	8.8	23.6	19.6	11.4	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	36.7	8.8	23.6	19.6	11.4	11.6
Queue Length 50th (ft)	182	154	27	42	174	22	115
Queue Length 95th (ft)	277	222	59	104	269	48	176
Internal Link Dist (ft)	170	490			480		1078
Turn Bay Length (ft)				120		100	
Base Capacity (vph)	368	483	624	320	1815	379	1899
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	0.79	0.55	0.25	0.29	0.39	0.21	0.37
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

3: Washington Avenue & 15 Street

10/28/2016

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	98	115	65	594	545	51
Future Volume (vph)	98	115	65	594	545	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7			4.2	4.2	
Lane Util. Factor	1.00			0.95	0.95	
Frbp, ped/bikes	0.93			1.00	0.95	
Flpb, ped/bikes	1.00			0.98	1.00	
Frt	0.93			1.00	0.99	
Flt Protected	0.98			1.00	1.00	
Satd. Flow (prot)	1578			3450	3326	
Flt Permitted	0.98			0.81	1.00	
Satd. Flow (perm)	1578			2814	3326	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	128	72	660	606	57
RTOR Reduction (vph)	45	0	0	0	4	0
Lane Group Flow (vph)	192	0	0	732	659	0
Confl. Peds. (#/hr)	86	93	306			306
Confl. Bikes (#/hr)		4				5
Turn Type	Prot		Perm	NA	NA	
Protected Phases	8			6	2	
Permitted Phases			6			
Actuated Green, G (s)	16.8			84.3	84.3	
Effective Green, g (s)	16.8			84.3	84.3	
Actuated g/C Ratio	0.15			0.77	0.77	
Clearance Time (s)	4.7			4.2	4.2	
Vehicle Extension (s)	1.0			1.0	1.0	
Lane Grp Cap (vph)	241			2156	2548	
v/s Ratio Prot	c0.12				0.20	
v/s Ratio Perm				c0.26		
v/c Ratio	0.80			0.34	0.26	
Uniform Delay, d1	45.0			4.1	3.7	
Progression Factor	1.00			1.00	0.71	
Incremental Delay, d2	15.5			0.4	0.2	
Delay (s)	60.5			4.5	2.9	
Level of Service	E			A	A	
Approach Delay (s)	60.5			4.5	2.9	
Approach LOS	E			A	A	
Intersection Summary						
HCM 2000 Control Delay			12.0		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	8.9
Intersection Capacity Utilization			72.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Future total 2018 (with Project) PM Peak Hour

3: Washington Avenue & 15 Street

	↖	↗	↑	↓
Lane Group	EBL	NBL	NBT	SBT
Lane Configurations	↖		↗	↗
Traffic Volume (vph)	98	65	594	545
Future Volume (vph)	98	65	594	545
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)	33.7	27.2	27.2	27.2
Total Split (s)	35.0	75.0	75.0	75.0
Total Split (%)	31.8%	68.2%	68.2%	68.2%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	0.7	0.2	0.2	0.2
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	4.7		4.2	4.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Min	C-Min	C-Min
Act Effct Green (s)	16.8		84.3	84.3
Actuated g/C Ratio	0.15		0.77	0.77
v/c Ratio	0.83		0.34	0.26
Control Delay	57.2		5.2	3.2
Queue Delay	0.0		0.0	0.0
Total Delay	57.2		5.2	3.2
LOS	E		A	A
Approach Delay	57.2		5.2	3.2
Approach LOS	E		A	A

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 61 (55%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 72.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Washington Avenue & 15 Street

↓ Ø2 (R)		
75 s		
↖ Ø6 (R)		↗ Ø8
75 s		35 s

3: Washington Avenue & 15 Street

			
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	237	732	663
v/c Ratio	0.83	0.34	0.26
Control Delay	57.2	5.2	3.2
Queue Delay	0.0	0.0	0.0
Total Delay	57.2	5.2	3.2
Queue Length 50th (ft)	129	71	42
Queue Length 95th (ft)	201	132	67
Internal Link Dist (ft)	422	646	480
Turn Bay Length (ft)			
Base Capacity (vph)	473	2160	2552
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.34	0.26
Intersection Summary			

4: Drexel Avenue & 16 Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	29	198	38	329	25	5	31	2
Future Volume (vph)	29	198	38	329	25	5	31	2
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)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.0		4.0		4.0		4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		16.0		16.0		16.0		16.0
Actuated g/C Ratio		0.40		0.40		0.40		0.40
v/c Ratio		0.42		0.69		0.11		0.11
Control Delay		10.4		16.3		5.3		5.7
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		10.4		16.3		5.3		5.7
LOS		B		B		A		A
Approach Delay		10.4		16.3		5.3		5.7
Approach LOS		B		B		A		A

Intersection Summary

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 12.8

Intersection LOS: B

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Drexel Avenue & 16 Street

 Ø2 (R)	 Ø4
20 s	20 s
 Ø6 (R)	 Ø8
20 s	20 s

4: Drexel Avenue & 16 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	198	28	38	329	66	25	5	33	31	2	26
Future Volume (veh/h)	29	198	28	38	329	66	25	5	33	31	2	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.87	0.95		0.88	0.96		0.93	0.96		0.93
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	32	220	31	42	366	73	28	6	37	34	2	29
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	576	75	129	552	104	308	98	306	394	57	253
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	90	1440	188	78	1379	261	457	246	765	642	143	632
Grp Volume(v), veh/h	283	0	0	481	0	0	71	0	0	65	0	0
Grp Sat Flow(s),veh/h/ln	1719	0	0	1718	0	0	1467	0	0	1417	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0	9.1	0.0	0.0	1.1	0.0	0.0	1.0	0.0	0.0
Prop In Lane	0.11		0.11	0.09		0.15	0.39		0.52	0.52		0.45
Lane Grp Cap(c), veh/h	788	0	0	785	0	0	712	0	0	704	0	0
V/C Ratio(X)	0.36	0.00	0.00	0.61	0.00	0.00	0.10	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	788	0	0	785	0	0	712	0	0	704	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.5	0.0	0.0	9.9	0.0	0.0	7.5	0.0	0.0	7.5	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	0.0	3.6	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.0	5.1	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	9.8	0.0	0.0	13.4	0.0	0.0	7.8	0.0	0.0	7.8	0.0	0.0
LnGrp LOS	A			B			A			A		
Approach Vol, veh/h	283				481				71		65	
Approach Delay, s/veh	9.8				13.4				7.8		7.8	
Approach LOS	A				B				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	20.0		20.0		20.0		20.0					
Change Period (Y+Rc), s	4.0		4.0		4.0		4.0					
Max Green Setting (Gmax), s	16.0		16.0		16.0		16.0					
Max Q Clear Time (g_c+I1), s	3.1		6.5		3.0		11.1					
Green Ext Time (p_c), s	0.6		3.5		0.6		2.2					
Intersection Summary												
HCM 2010 Ctrl Delay			11.4									
HCM 2010 LOS			B									

Future total 2018 (with Project) PM Peak Hour

4: Drexel Avenue & 16 Street

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	283	481	71	65
v/c Ratio	0.42	0.69	0.11	0.11
Control Delay	10.4	16.3	5.3	5.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.4	16.3	5.3	5.7
Queue Length 50th (ft)	40	78	4	5
Queue Length 95th (ft)	83	#192	20	20
Internal Link Dist (ft)	176	70	207	304
Turn Bay Length (ft)				
Base Capacity (vph)	678	699	621	601
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.69	0.11	0.11

Intersection Summary

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

Intersection							
Int Delay, s/veh		3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↱	↱		↱	↱	
Traffic Vol, veh/h	69	202	313	62	46	85	
Future Vol, veh/h	69	202	313	62	46	85	
Conflicting Peds, #/hr	51	0	0	51	1	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	-	-	-	0	0	
Veh in Median Storage, #	-	0	0	-	0	-	
Grade, %	-	0	0	-	0	-	
Peak Hour Factor	90	90	90	90	90	90	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	77	224	348	69	51	94	
Major/Minor	Major1		Major2		Minor2		
Conflicting Flow All	468	0	-	0	812	433	
Stage 1	-	-	-	-	433	-	
Stage 2	-	-	-	-	379	-	
Critical Hdwy	4.12	-	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1094	-	-	-	348	623	
Stage 1	-	-	-	-	654	-	
Stage 2	-	-	-	-	692	-	
Platoon blocked, %		-	-	-			
Mov Cap-1 Maneuver	1094	-	-	-	294	597	
Mov Cap-2 Maneuver	-	-	-	-	294	-	
Stage 1	-	-	-	-	626	-	
Stage 2	-	-	-	-	610	-	
Approach	EB		WB		SB		
HCM Control Delay, s	2.2		0		14.9		
HCM LOS					B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	1094	-	-	-	294	597	
HCM Lane V/C Ratio	0.07	-	-	-	0.174	0.158	
HCM Control Delay (s)	8.5	0	-	-	19.8	12.2	
HCM Lane LOS	A	A	-	-	C	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6	0.6	

6: Alton Road & 16th Street

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	53	69	112	60	50	917	131	798
Future Volume (vph)	53	69	112	60	50	917	131	798
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)	38.0	38.0	38.0	38.0	79.0	79.0	79.0	79.0
Total Split (s)	43.0	43.0	43.0	43.0	87.0	87.0	87.0	87.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	66.9%	66.9%	66.9%	66.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.6	0.6	0.6	0.6	0.2	0.2	0.2	0.2
Lost Time Adjust (s)		-0.6		-0.6	-0.2	-0.2	-0.2	-0.2
Total Lost Time (s)		4.0		4.0	4.0	4.0	4.0	4.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	Min	Min	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)		37.5		37.5	84.5	84.5	84.5	84.5
Actuated g/C Ratio		0.29		0.29	0.65	0.65	0.65	0.65
v/c Ratio		0.52		0.92	0.20	0.59	0.74	0.46
Control Delay		40.4		73.3	12.3	14.4	43.2	12.5
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		40.4		73.3	12.3	14.4	43.2	12.5
LOS		D		E	B	B	D	B
Approach Delay		40.4		73.3		14.3		16.6
Approach LOS		D		E		B		B

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 86 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 23.6

Intersection LOS: C

Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Alton Road & 16th Street

 Ø2 (R)	 Ø4
87 s	43 s
 Ø6 (R)	 Ø8
87 s	43 s

Future total 2018 (with Project) PM Peak Hour

HCM 2010 Signalized Intersection Summary
6: Alton Road & 16th Street

11/27/2016

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	53	69	50	112	60	117	50	917	155	131	798	55
Future Volume (veh/h)	53	69	50	112	60	117	50	917	155	131	798	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.99	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	59	77	56	124	67	130	56	1019	172	146	887	61
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	131	85	141	68	116	302	1580	266	217	1749	120
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	252	436	283	341	227	387	530	2474	417	421	2740	188
Grp Volume(v), veh/h	192	0	0	321	0	0	56	655	536	146	516	432
Grp Sat Flow(s),veh/h/ln	971	0	0	955	0	0	530	1593	1298	421	1593	1335
Q Serve(g_s), s	0.0	0.0	0.0	17.5	0.0	0.0	8.2	32.9	33.0	42.4	22.5	22.5
Cycle Q Clear(g_c), s	21.5	0.0	0.0	39.0	0.0	0.0	30.7	32.9	33.0	75.5	22.5	22.5
Prop In Lane	0.31		0.29	0.39		0.40	1.00		0.32	1.00		0.14
Lane Grp Cap(c), veh/h	328	0	0	325	0	0	302	1017	829	217	1017	853
V/C Ratio(X)	0.59	0.00	0.00	0.99	0.00	0.00	0.19	0.64	0.65	0.67	0.51	0.51
Avail Cap(c_a), veh/h	328	0	0	325	0	0	302	1017	829	217	1017	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.9	0.0	0.0	48.5	0.0	0.0	20.8	14.4	14.5	37.7	12.6	12.6
Incr Delay (d2), s/veh	3.0	0.0	0.0	46.5	0.0	0.0	1.4	3.1	3.9	15.4	1.8	2.2
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	6.2	0.0	0.0	15.7	0.0	0.0	1.3	15.3	12.7	5.9	10.4	8.8
LnGrp Delay(d),s/veh	41.9	0.0	0.0	95.0	0.0	0.0	22.1	17.6	18.4	53.1	14.4	14.7
LnGrp LOS	D			F			C	B	B	D	B	B
Approach Vol, veh/h		192			321			1247			1094	
Approach Delay, s/veh		41.9			95.0			18.1			19.7	
Approach LOS		D			F			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.0		43.0		87.0		43.0				
Change Period (Y+Rc), s		* 4.2		* 4.6		* 4.2		* 4.6				
Max Green Setting (Gmax), s		* 83		* 38		* 83		* 38				
Max Q Clear Time (g_c+I1), s		35.0		23.5		77.5		41.0				
Green Ext Time (p_c), s		10.3		2.5		3.6		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			29.0									
HCM 2010 LOS			C									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Future total 2018 (with Project) PM Peak Hour

6: Alton Road & 16th Street

	→	←	↖	↑	↘	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	192	321	56	1191	146	948
v/c Ratio	0.52	0.92	0.20	0.59	0.74	0.46
Control Delay	40.4	73.3	12.3	14.4	43.2	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	73.3	12.3	14.4	43.2	12.5
Queue Length 50th (ft)	117	231	20	305	87	217
Queue Length 95th (ft)	201	#418	42	345	#227	248
Internal Link Dist (ft)	277	359		207		547
Turn Bay Length (ft)			115		115	
Base Capacity (vph)	390	366	277	2043	197	2065
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.88	0.20	0.58	0.74	0.46

Intersection Summary

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