ONE ISLAND
OPERATIONAL PLAN

The project consists of office, and restaurant or food service uses, along with the existing marina, as permitted in the I-1 zoning district (the "Project"). The operational criteria for the Project is provided below:

Office

1. Principal hours of operation shall be during customary business hours, 7:00 AM to 6:00 PM, Monday through Friday. After-hours access will be permitted to authorized individuals via a controlled access security system (i.e., access cards or other comparable system).
2. Maximum occupant content of approximately ±1,425 persons for office floors, not including lobby.
3. Maximum number of employees allowed in the offices at one time per floor shall be ±233.

Restaurant/Food Service

4. Approximately ±60 outdoor seats plus additional patron area.
5. Maximum occupant content of approximately ±299 persons, if permitted by the Fire Marshal.
6. Maximum hours of operation shall be limited to 7:00 AM to 3:00 AM, Sunday through Saturday.
7. Maximum of ±50 employees per shift, during normal operations (not including special events).
8. Special Events may occur on the premises, subject to City ordinances, rules or regulations, and may exceed the hours of operation and occupancy loads specified herein, if permitted by the Fire Marshal.

Marina

9. Maximum hours of operation shall be 24 hours a day, seven (7) days per week.
10. Maximum of seven (7) wet slips.
11. Maximum of ±10 employees per shift, not including private yacht crew members.

General Operations; Deliveries; Loading; Trash; Security and Valet

12. All on-site trash disposal, and other equipment and supplies shall be physically blocked from view and noise limited by a wall and roofed enclosures within the Property.
13. All trash rooms shall be air conditioned and enclosed.
14. Trash bins shall be wheeled out via the service elevator to main dumpster(s) located in the loading dock area. Trash removal from main dumpster(s) shall take place non-peak business hours (customary peak business hours are between 7-10 AM and 4-6 PM).

15. Deliveries, loading, trash removal, and waste collection shall occur on the areas designated for loading and off-street loading areas identified on Sheet A1-01, and during non-peak business hours (customary peak business hours are between 7-10 AM and 4-6 PM).
16. There shall be security personnel, on-site, monitoring the garage and premises during all hours of operation.
17. Video surveillance shall be provided to keep occupants, tenants, employees, visitors, and assets safe.
18. The minimum parking required by the land development regulations shall be provided.
19. 61 parking spaces will be reserved for valet operations, which will be available to restaurant/food service patrons, as well as office employees and visitors.
20. Valet pick-up and delivery of vehicles will be located in the designated area, as shown in the Plans.
21. Valet or loading activities shall not block vehicle travel within the property, or garage driveways at any time.
22. Signs to minimize vehicle conflict in the driveways in and out of the property shall be posted in appropriate locations.

Terminal Island

MIAMI BEACH

Traffic Study

Since 1978

Terminal Island
MIAMI BEACH

Prepared By:
David Plummer & Associates

Prepared For:
Related Group

Prepared In:
November 2020

DPA Job #:
20129

TABLE OF CONTENTS

LIST OF EXHIBITS

EXECUTIVE SUMMARY

The project is located at 120 MacArthur Causeway (Terminal Island) in Miami Beach, Florida. The project proposes a new 160,932 SF office building and 7,234 SF restaurant. The existing six boat berth marina will remain. Access to the site will be provided via the internal roadway on Terminal Island which provides access to MacArthur Causeway. For the purpose of this traffic study, project build-out is anticipated by 2022.

An assessment of the traffic impacts associated with the proposed Terminal Island project was performed in accordance with the requirements of the City of Miami Beach. The following intersections are currently operating and projected to operate at acceptable overall LOS:

- MacArthur Causeway / Bridge Road
- MacArthur Causeway / Terminal Isle (AM peak hour)
- Alton Road / 5th Street

As with existing and future without project conditions, the eastbound and westbound approaches of Terminal Isle at the intersection with MacArthur Causeway continue to experience delays during both the morning and afternoon peak hours. The westbound approach of the MacArthur Causeway at the intersection with Terminal Isle also continues to experience delays during the afternoon peak hour and the eastbound approach is projected to experience delays during the morning peak hour. It should be noted that these are existing conditions and the project represents less than 3% of the total projected intersection volume during the morning and afternoon peak hours.

As with the existing and future without project conditions, the southbound approach of the MacArthur Causeway / Bridge Road intersection continues to experience delays during both the morning and afternoon peak hours. The northbound approach of the Alton Road and 5th Street intersection also continues to experience delays during both the morning and afternoon peak hours. This may be due to the fact that the county gives priority to vehicles travelling east/west through this area, therefore, accepting delays on cross-streets. The project driveway was analyzed and the results show adequate operations.

As part of the study, a mobility and circulation plan was completed. The plan shows that the project area is currently served by four Miami-Dade Transit bus routes and a Miami Beach Trolley route. The project is located in an area that provides sidewalk connectivity, clearly marked crosswalks, signalized intersections that provide pedestrian signals, and bike lanes. These conditions encourage the use of other modes of transportation and reduce the vehicular impact on the roadway network.

1.0 INTRODUCTION

1.1 Project Background

The project is located at 120 MacArthur Causeway (Terminal Island) in Miami Beach, Florida (see Exhibit 1). The project proposes a new 160,932 SF office building and a 7,234 SF restaurant. The existing six boat berth marina will remain. Access to the site will be provided via the internal roadway on Terminal Island which provides access to MacArthur Causeway. The proposed site plan is included in Appendix A. For the purpose of this traffic study, project build-out is anticipated by 2022.

1.2 Study Objective

The project will be applying for permits from the City. As part of this permit, the City of Miami Beach will require traffic related studies. The purpose of this study is to assess the traffic impacts associated with the proposed project and to conduct a mobility and circulation analysis.

Project Location

Exhibit 1

Location Map

NORTH
MAP NOT TO SCALE

1.3 Study Area and Methodology

The approved methodology is included in Appendix B. The following is a brief description of the study components and analysis undertaken:

- Traffic Counts (Intersections) – Available turning movement counts collected during the AM (7 – 9) and PM (4 – 6) peak hour conditions of a regular weekday were used to analyze the following intersections:
    - MacArthur Causeway / Bridge Road (Star Island) (Signalized)
    - MacArthur Causeway / Terminal Isle (Signalized)
    - Alton Road / 5th Street (Signalized)
    - Terminal Isle / Project Driveway (Un-signalized)
- Signal Location and Timing – Existing signal phasing and timing for the signalized intersections were obtained from Miami-Dade County. Signal timing plans are included in Appendix C.
- Future Transportation Projects – The 2020 *Transportation Improvement Program* (TIP) and the *2045 Long Range Transportation Plan* (LRTP) were reviewed to include future transportation projects which add capacity to the network.
- Background Traffic – Available Florida Department of Transportation (FDOT) and Miami-Dade County (MDC) traffic counts were consulted to determine a growth factor consistent with historical annual growth in the area. The growth factor was applied to the existing traffic volumes to establish background traffic.
- Committed Developments – Future traffic associated with the committed developments in the vicinity of the project site was considered in the analysis.
- Project Trip Generation – Trip generation for the project was estimated using trip generation information published by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition and site-specific data. Based on U.S. Census Bureau data, a 12.9% deduction for other modes of transportation may be applied. However, for a conservative analysis and as discussed with the City reviewer, a 3% reduction was used for other modes of transportations. Furthermore as discussed with the City reviewer, a 10% reduction was used for pass-by applied to restaurant trips.

- Project Trip Distribution / Trip Assignment – Net new external project vehicular trips were assigned to the adjacent street network using the appropriate cardinal distribution from the *Miami-Dade 2040 Long Range Transportation Plan,* published by the Metropolitan Planning Organization. Area traffic patterns were considered when assigning project trips. A figure showing all of the assigned project trips to the adjacent transportation network was provided as part of the study.
- Future Traffic Conditions – Project traffic was combined with background traffic and committed development traffic to obtain future conditions with project. Intersection capacity analyses were performed for existing and future with project conditions.
- Circulation Analysis / Plan – A circulation plan is provided depicting the project site, driveways, location of street signs/signals, crosswalks, sidewalks, location of bus facilities, and bike facilities in the vicinity of this project.
- An extensive Transportation Demand Management plan (TDM) will be included in the report.

1.4 Project Site Information

The project is located at 120 MacArthur Causeway (Terminal Island) in Miami Beach, Florida. The project proposes a new 160,932 SF office building and a 7,234 SF restaurant. The existing six boat berth marina will remain. Access to the site will be provided via the internal roadway on Terminal Island which provides access to MacArthur Causeway.

2.0 EXISTING CONDITIONS

Data collection for this study included roadway characteristics, intersection traffic counts, signal timing, and seasonal adjustment factors. The data collection effort is described in the following sections.

2.1 Roadway Characteristics

MacArthur Causeway (SR A1A)

MacArthur Causeway is a principal arterial that provides east/west access. It is the only roadway connecting Terminal Island, Star Island, Palm Island, Hibiscus Island, and Watson Island to the mainland and the Miami Beach Island. Within the study area, the MacArthur Causeway is a six-lane, two-way, divided roadway with exclusive left-turn and right-turn lanes at major intersections. The causeway also provides merge lanes at intersections to incorporate left turning vehicles into the roadway. Bike lanes are provided along both sides of the roadway. FDOT has jurisdiction over this portion of the MacArthur Causeway. The posted speed limit is 45 mph.

Terminal Isle

Terminal Isle is the perimeter road within Terminal Island. The road is a two-lane, two-way undivided roadway providing access to the FPL Miami Beach Plant, the Fisher Island Ferry Terminal and the US Coast Guard Station. The City of Miami Beach has jurisdiction over Terminal Isle.

Bridge Road

Bridge Road is a two-lane, two-way undivided roadway bridge connecting Star Island to MacArthur Causeway. Bike lanes are provided along both sides of the bridge. The City of Miami Beach has jurisdiction over Bridge Road.

Alton Road

Alton Road north of 5th Street is a minor arterial that provides north/south access all along the City of Miami Beach. South of 5th Street, Alton Road is a collector roadway. Within the study area, Alton Road is a two-way, four-lane divided roadway. The posted speed limit is 35 mph.

There is on-street parking provided on portions of the roadway. Bike lanes are provided along both sides of Alton Road south of 4th Street. The City of Miami Beach has jurisdiction over Alton Road south of 5th Street.

5th Street

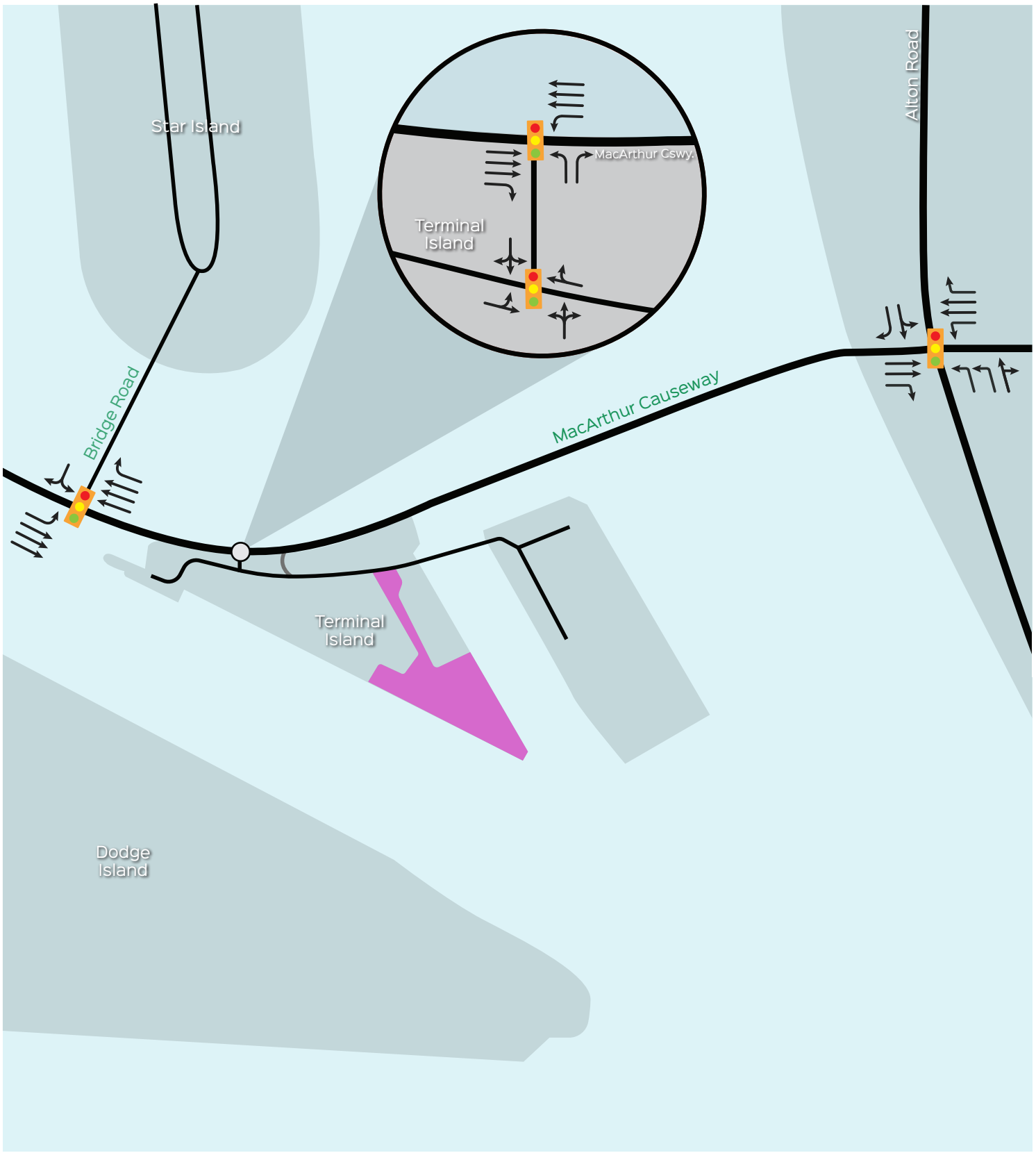
5th Street is a principal arterial that runs east/west across the City of Miami Beach between east of Collins Avenue and Alton Road. The roadway is a two-way, six-lane divided road. There is no on-street parking provided. Bike lanes are provided along both sides of 5th Street east of Lenox Avenue. FDOT has jurisdiction over 5th Street. The posted speed limit is 35mph.

2.2 Traffic Counts

Field TMC's could not be collected as traffic volumes and patterns are currently affected by Miami-Dade's stay at home order due to the Covid-19 pandemic. Consistent with the methodology submitted and approved by the City, peak hour vehicle turning movement counts were provided by the City and obtained from an FDOT Arterial Analysis of SR AIA / MacArthur Causeway with data from November 2017. A 0.5% growth rate was used to grow counts to existing (2020) traffic conditions. Traffic volume documentation is provided in Appendix C. Existing volumes at the intersection are graphically portrayed in Exhibit 2.

2.3 Intersection Data

Existing signal phasing and timing for all the intersections were obtained from Miami-Dade County. This information was used for the signal phasing and timing required for the intersection capacity analysis and can be seen in Appendix C. A field survey was conducted to obtain the intersection lane configurations to be used in the intersection analysis. Exhibit 3 shows the existing lane configurations at the analyzed intersections.

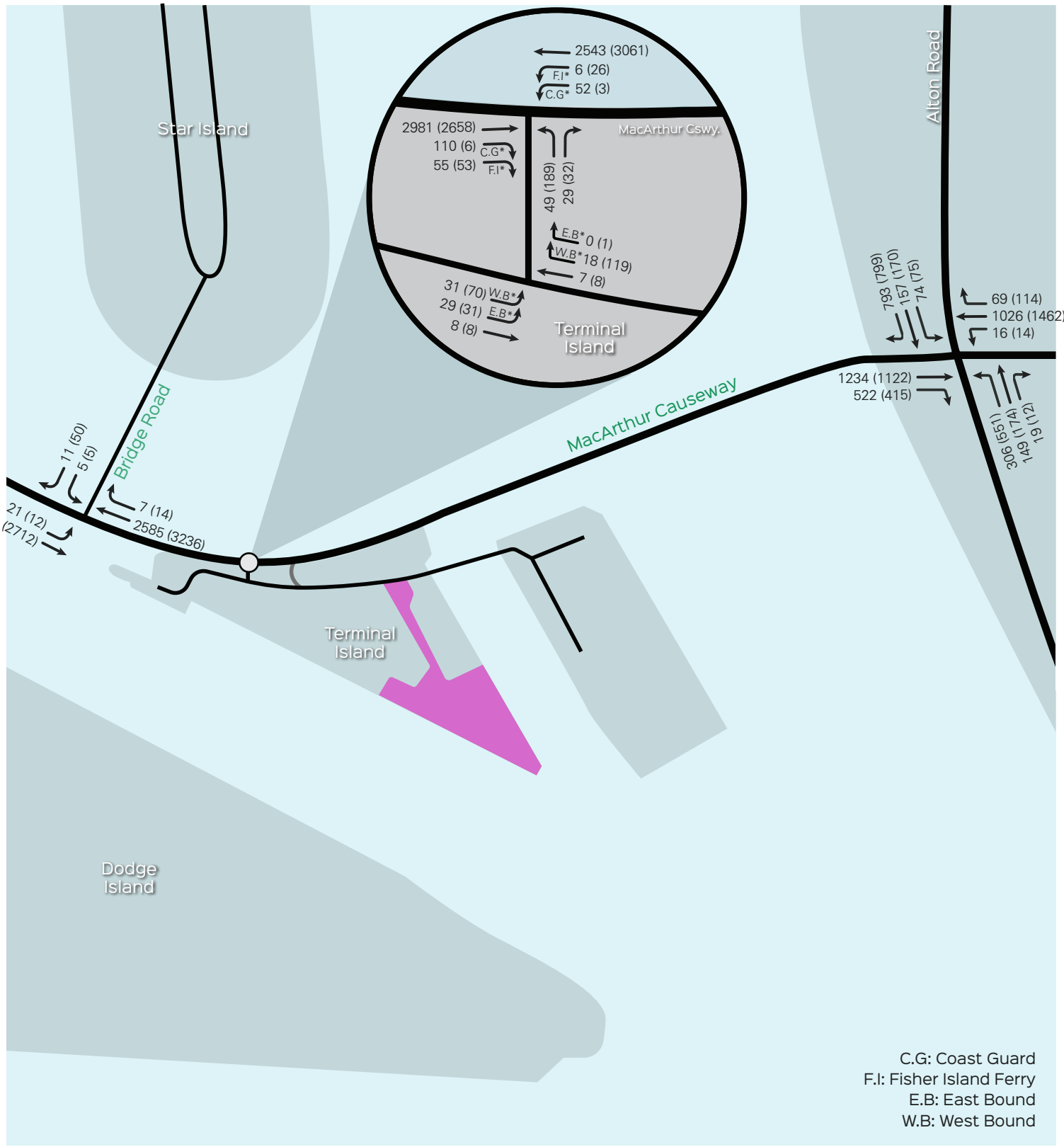


Project Location

Exhibit 3

Existing Lane Configurations

NORTH
MAP NOT TO SCALE



00 AM
(00) PM

Project Location

Exhibit 2

Existing AM & PM Peak Traffic Volumes

NORTH
MAP NOT TO SCALE

2.4 Intersection Capacity Analysis

The Synchro Software, based on procedures of the *Highway Capacity Manual 6th Edition*, was used to perform intersection capacity analysis at the analyzed intersections. Synchro is a macroscopic analysis and optimization software application that implements the intersection capacity utilization method for determining intersection capacity. Results for the existing conditions intersection analysis show that the overall LOS for the following intersections currently operate at acceptable LOS:

- MacArthur Causeway / Bridge Road
- MacArthur Causeway / Terminal Isle (AM peak hour)
- Alton Road / 5th Street

The eastbound and westbound approaches of the Terminal Isle at the intersection with MacArthur Causeway currently experience delays during both the morning and afternoon peak hours. The westbound approach of the MacArthur Causeway at the intersection with Terminal Isle currently experience delays during the afternoon peak hour. The southbound approach of the MacArthur Causeway / Bridge Road intersection currently experience delays during both the morning and afternoon peak hours. The northbound approach of the Alton Road and 5th Street intersection also currently experience delays during both the morning and afternoon peak hours. This may be due to the fact that the county gives priority to vehicles travelling east/west through this area, therefore, accepting delays on cross-streets. Exhibit 4 shows the resulting LOS for the existing AM and PM peak hour conditions. Analysis worksheets are included in Appendix D.

Exhibit 4: Existing Intersection Capacity Analysis
Weekday AM and PM Peak Hour Conditions

Intersection	Signalized/ Un-signalized	Direction	AM Peak LOS	Delay (Sec)	PM Peak LOS	Delay (Sec)
MacArthur Causeway / Bridge Road (Star Island)	S	SB	F	87.5	F	80.4
		EB	A	1.8	A	1.5
		WB	A	6.1	A	4.4
		Overall	***A***	***4.0***	***A***	***3.8***
MacArthur Causeway / Terminal Isle	S	NB	A	0.0	A	0.0
		EB_{SRA1A}	D	45.1	E	63.9
		WB_{SRA1A}	B	12.5	F	90.8
		$EB_{Terminal}$	F	86.4	F	84.1
		$WB_{Terminal}$	E	75.5	E	64.1
		Overall	***C***	***31.2***	***E***	***78.0***
Alton Road / 5th Street	S	NB	F	88.6	F	236.2
		SB	C	22.1	B	19.2
		EB	C	32.8	C	28.5
		WB	C	23.9	C	31.6
		Overall	***C***	***34.2***	***E***	***58.7***

Source: David Plummer & Associates

3.0 PLANNED AND PROGRAMMED ROADWAY IMPROVEMENTS

The 2020 Miami-Dade County *Transportation Improvement Program* (TIP) and the *2045 Long Range Transportation Program* (LRTP) were reviewed to identify any programmed project within the limits of the established study area. These documents show the following projects within the study area:

DT2511563 – Port of Miami Tunnel – New Toad Construction from Port of Miami to SR 836 / I-395

DT2516881 – SR 836/I-395 – Bridge, replace and add lanes from West of I-95 to MacArthur Causeway Bridge

DT4401691 – SR A1A/Collins Avenue Signalized Intersection Lighting from Fountain Street to 17th Street

DT4401781 – SR 907/Alton Road Signalized Intersection Lighting from 6th Street to 20th Street

DT4434321 – SR A1A/MacArthur Causeway Pedestrian/ Bicycle Bike Path Trial from SR-5/Biscayne Blvd to SR-997/Alton Road

PW0001010 – Alton Road and 4th Street Traffic Signal

TA4387491 – DTPW / MDT Transit Connector PTO Study Express bus link downtown Miami to Miami Beach

MDT135 – Beach Corridor – Rapid transit from Midtown Miami/Downtown to Miami Beach Convention Center

MDT231 – Beach Express South – Implement bus express rapid transit service from downtown intermodal terminal to Miami Beach convention Center

These documents are within the study area however, show no officially programmed or planned capacity improvement projects at the study intersections prior to completion of the proposed project. Roadway project documentation is included in Appendix E.

4.0 FUTURE TRAFFIC CONDITIONS

4.1 Background Traffic and Committed Developments

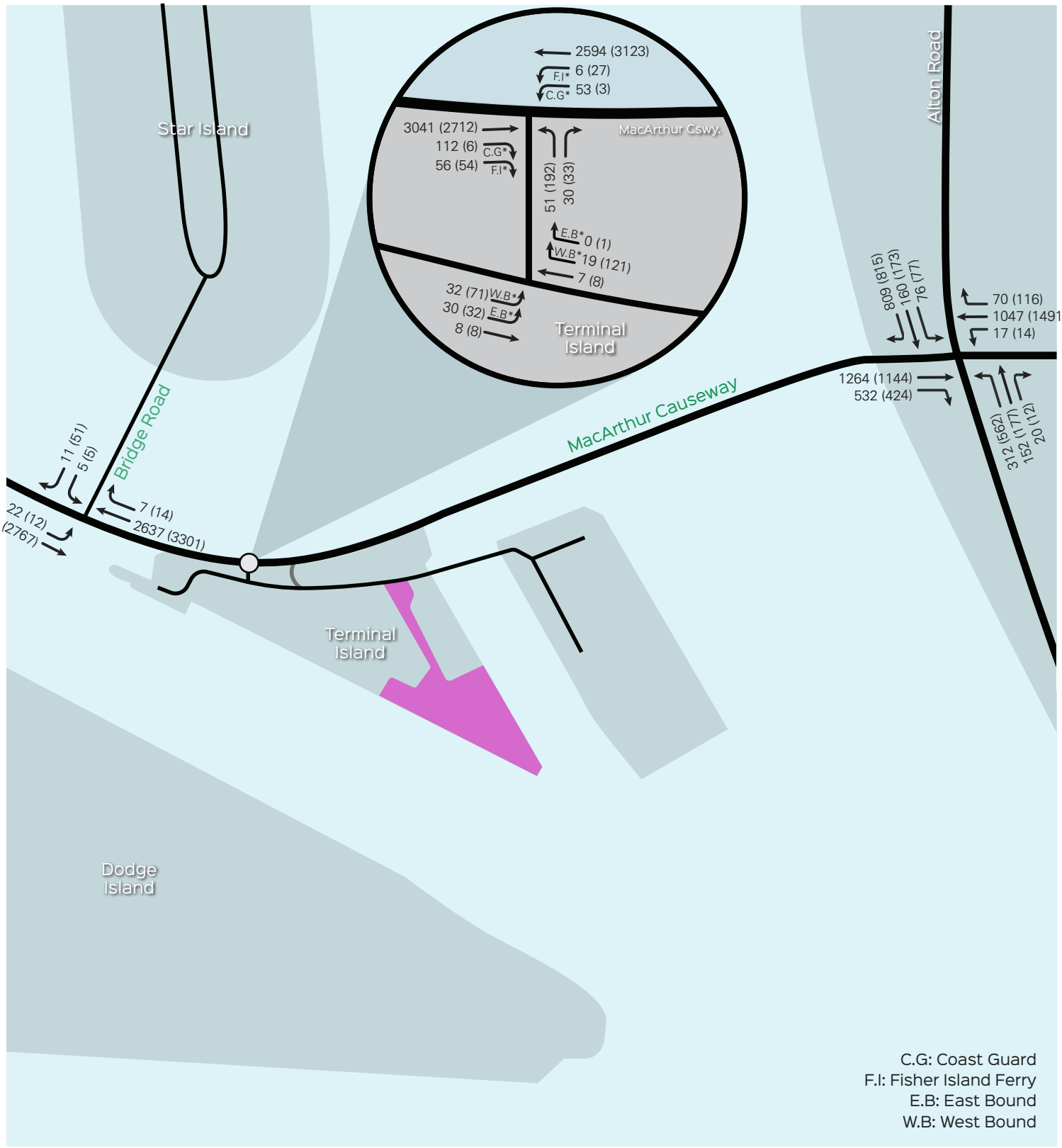
Average Daily Traffic (ADT) counts published by FDOT were reviewed to determine historic growth in the area. This analysis indicated that the annual growth rate is -0.5% in the past five years and -0.8% in the past ten years. However, for a conservative analysis, an annual growth rate of 0.5% was used to project future background traffic conditions. In order to account for traffic associated with any additional committed developments a 0.5% growth rate was added in the analysis. Historic growth rate documentation is included in Appendix C.

4.2 Future without Project Intersection Capacity Analysis

Future without project turning movement volumes were obtained by applying two additional years of background growth to the existing network. Exhibit 5 shows the projected AM and PM peak hour turning movement counts for future without project conditions. Results for intersection analysis for future without project conditions show that the overall LOS for the following intersections continue to operate at acceptable LOS:

- MacArthur Causeway / Bridge Road
- MacArthur Causeway / Terminal Isle (AM peak hour)
- Alton Road / 5th Street

As with existing conditions, the eastbound and westbound approaches of the Terminal Isle at the intersection with MacArthur Causeway continue to experience delays during both the morning and afternoon peak hours. The eastbound and westbound approaches of the MacArthur Causeway at the intersection with Terminal Isle are also projected to experience delays during the afternoon peak hour. As with existing conditions, the southbound approach of the MacArthur Causeway / Bridge Road intersection continues to experience delays during both the morning and afternoon peak hours. The northbound approach of the Alton Road and 5th Street intersection also continues to experience delays during both the morning and afternoon peak hours. Exhibit 6 shows the resulting LOS for the future without project conditions during the AM and PM peak hours. Analysis worksheets are included in Appendix D.



00 AM
(00) PM

Project Location

Exhibit 5

Future Without Project AM and PM Peak Hour Traffic Volumes

NORTH
MAP NOT TO SCALE

Exhibit 6: Future without Project Intersection Capacity Analysis
Weekday AM and PM Peak Hour Conditions

Intersection	Signalized/ Un-signalized	Direction	AM Peak LOS	Delay (Sec)	PM Peak LOS	Delay (Sec)
MacArthur Causeway / Bridge Road (Star Island)	S	SB	F	87.5	F	80.3
		EB	A	1.7	A	1.5
		WB	A	5.9	A	7.0
		Overall	***A***	***3.8***	***A***	***5.2***
MacArthur Causeway / Terminal Isle	S	NB	A	0.0	A	0.0
		EB_{SRA1A}	D	51.0	E	73.9
		WB_{SRA1A}	B	13.8	F	101.7
		$EB_{Terminal}$	F	86.9	F	84.1
		$WB_{Terminal}$	E	75.5	E	64.0
		Overall	***D***	***35.0***	***F***	***88.1***
Alton Road / 5th Street	S	NB	F	89.1	F	246.9
		SB	C	22.2	B	19.6
		EB	C	33.8	C	29.1
		WB	C	24.4	C	33.0
		Overall	***C***	***34.7***	***E***	***61.1***

Source: David Plummer & Associates

4.3 Project Trip Generation

Trip generation for the proposed project was estimated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition, which provides gross trip generation rates and/or equations by land use type. These rates and equations estimate vehicle trip ends at a free-standing site's driveways. ITE trip generation worksheets are provided in Appendix F.

The proposed development plan incorporates residential and restaurant land uses, which can satisfy the lunch/diner trip for some residents, employees, and visitors without making a trip off-site. An internalization matrix was developed to establish the appropriate number of internal project trips. Internal capture rates used are also included in Appendix F.

ITE research shows that a certain percent of restaurant trips are "*pass-by*" trips. These are described as trips "attracted from the traffic passing the site on an adjacent street." These are not new trips, but trips already using the existing roadway network that stop at the proposed use and go back to their original path. Pass-by trips for this use were established based on guidelines provided in ITE's *Trip Generation Handbook* 3rd Edition. The average pass-by rate published by ITE for Restaurant use is 44% during the PM peak hour however, as discussed with the City reviewer, a 10% reduction was used for pass-by applied to restaurant trips.

The study area is pedestrian and bicyclist friendly and transit is readily available (see Section 5 of this report for additional pedestrian and transit information). US Census data shows an existing 12.9% overall use of other modes of transportation in the US Census Tract 9810 where the project is located (see Appendix F). However, for a conservative analysis and as discussed with the City reviewer, a 3% reduction will be used for other modes of transportations. The project trip generation summary is provided in Exhibit 7.

Exhibit 7: Project Trip Generation Summary

Proposed ITE Land Use Designation[1]	Size/Units	Daily (Two-way)	AM Peak Hour Vehicle Trips			PM Peak Hour Vehicle Trips		
			In	Out	Total	In	Out	Total
Office (Land Use 710)	160,932 SF	1,684	153	25	178	29	150	179
Fast Casual Restaurant (Land Use 930)	7,234 SF	2,278	10	5	15	56	46	102
Gross External Trips		**3,962**	**163**	**30**	**193**	**85**	**196**	**281**
Internalization AM, PM		4.1%, 1.4%	-4	-4	-8	-2	-2	-4
Other Modes of Transportation[2]		3%	-5	-1	-6	-3	-5	-8
Pass-By Restaurant (PM)[3]		10%	0	0	0	-5	-5	-10
Proposed Net External Trips			**154**	**25**	**179**	**75**	**184**	**259**

[1]Based on ITE Trip Generation Manual, Tenth Edition
[2]Based on US Census (Tract 9810) is 12.9%, however a 3% was used.
[3]Based on ITE Trip Generation Handbook, 3rd Edition (PM pass-by) is 44%, however 10% was used.

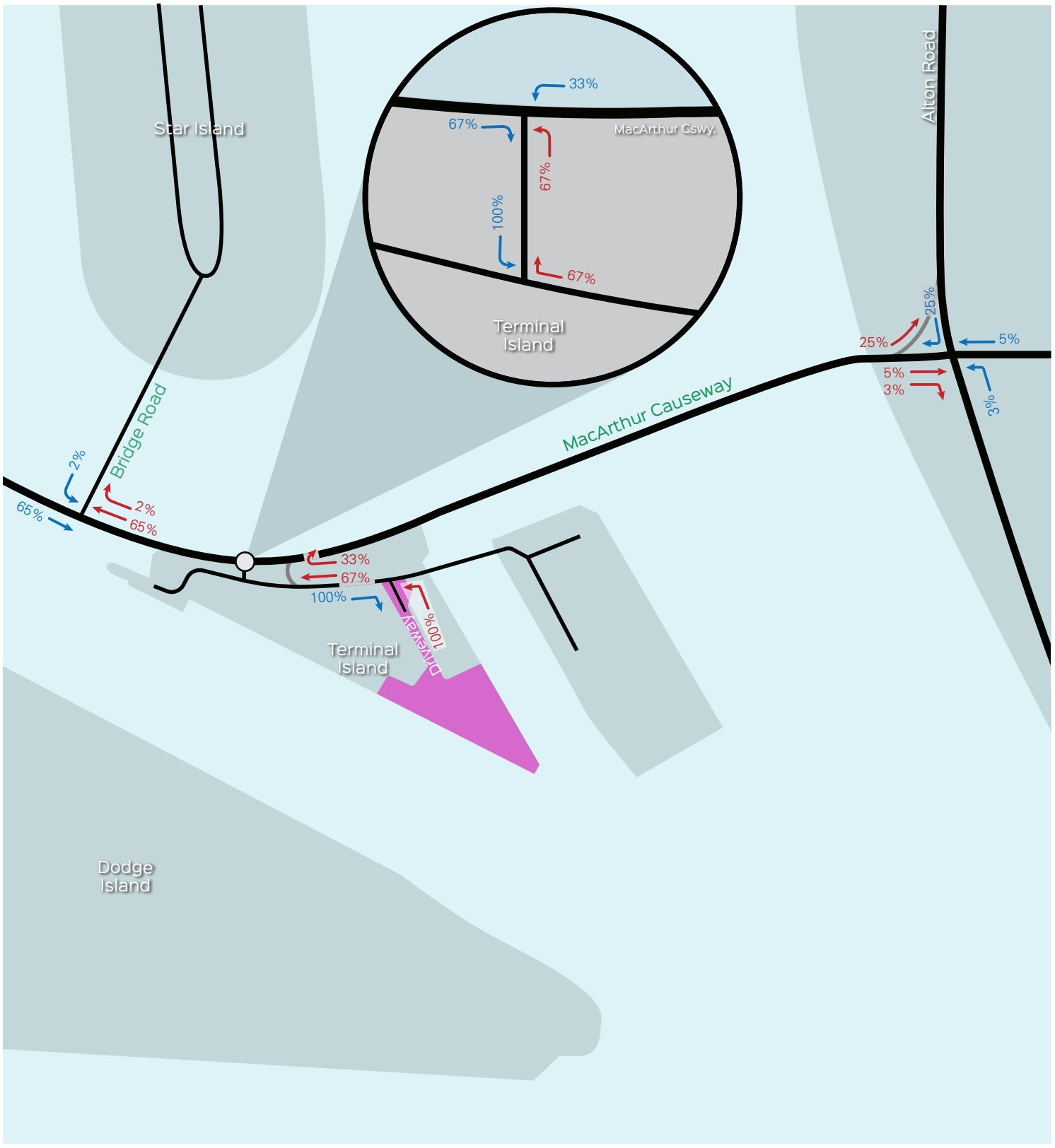
4.4 Project Trip Assignment

Project traffic was distributed and assigned to the study area using the Cardinal Distribution for TAZ 651 shown in Exhibit 8. The Cardinal Distribution gives a generalized distribution of trips from a TAZ to other parts of Miami-Dade County (see Appendix C). For estimating trip distribution for the project traffic, consideration was given to conditions such as the roadway network accessed by the project traffic, roadways available to travel in the desired direction, and attractiveness of traveling on a specific roadway. Exhibit 9 and 10 shows the project trip distribution and project trip assignment for the project.

Exhibit 8: Cardinal Distribution (TAZ 651)

Direction	Distribution
NNE	27.49%
ENE	1.81%
ESE	5.86%
SSE	0.00%
SSW	1.24%
WSW	15.57%
WNW	29.21%
NNW	18.71%
Total	100.00%

Source: Long Range *Transportation Plan*



% In

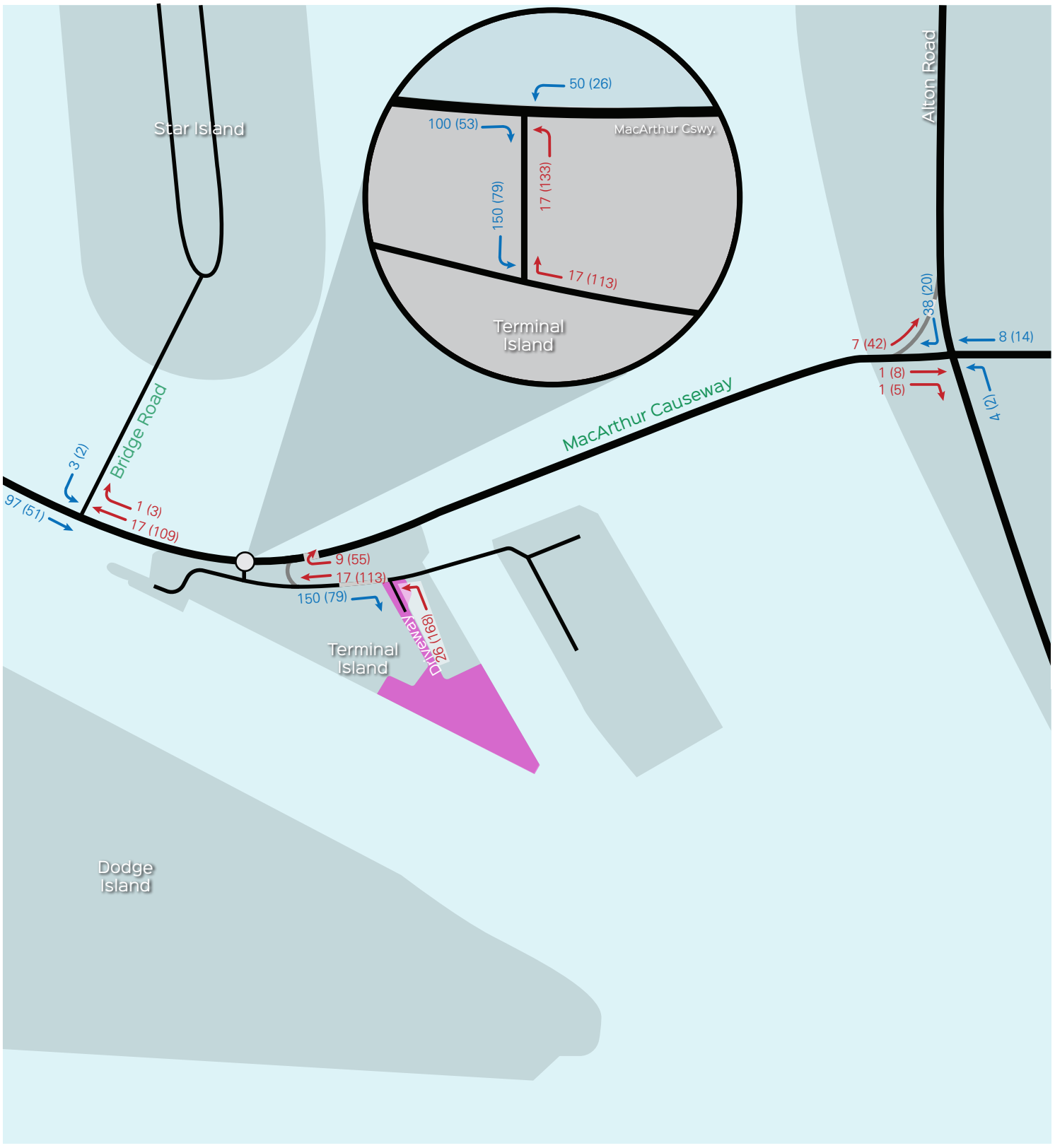
% Out

Project Location

Exhibit 9

Project Trip Distribution

NORTH
MAP NOT TO SCALE



00 AM
(00) PM

Project Location

In

Out

Exhibit 10

Project Trip Assignment

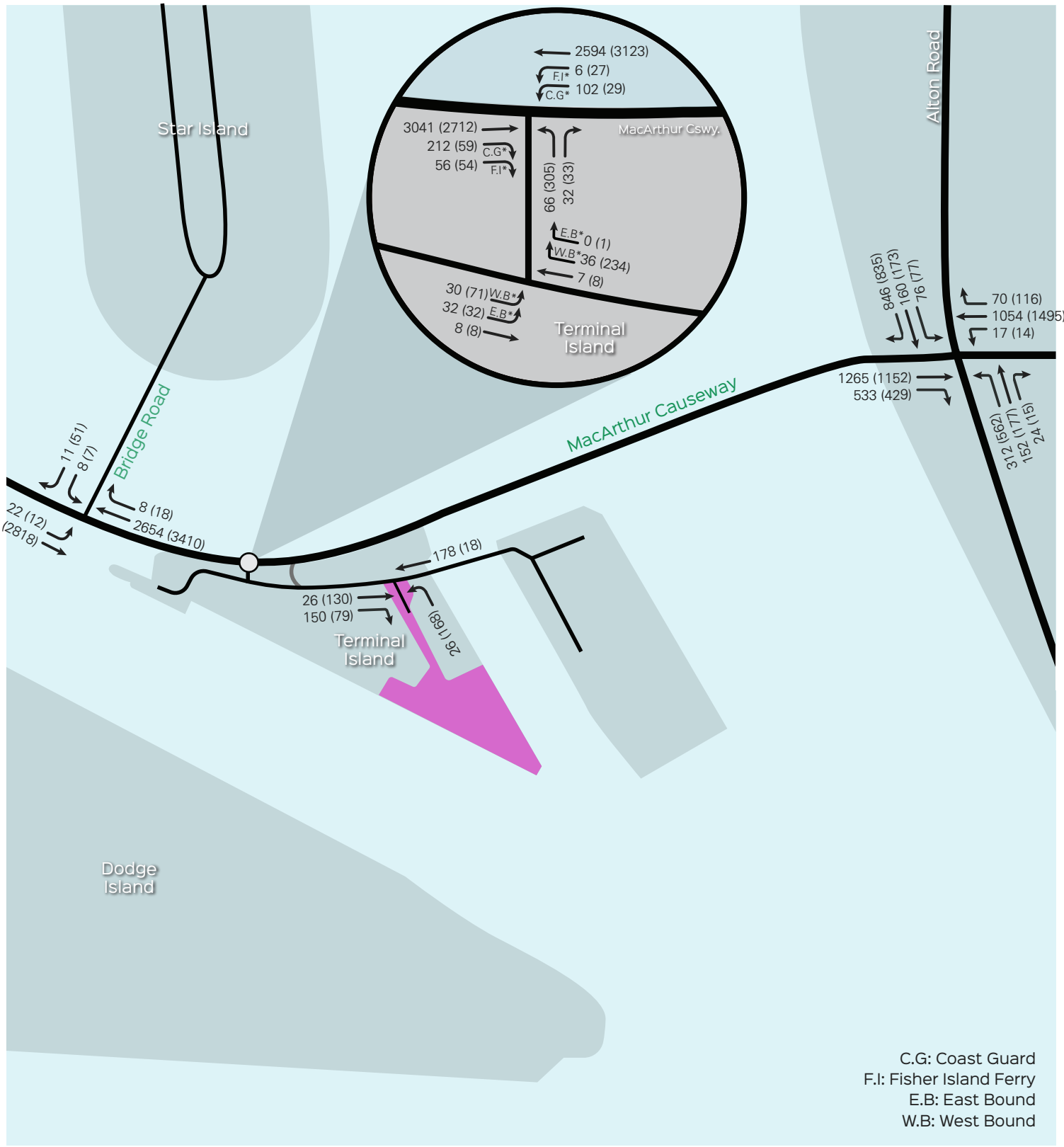
NORTH
MAP NOT TO SCALE

4.5 Future with Project Intersection Capacity Analysis

Future background traffic from the previous section and traffic projections for the project were combined to obtain future traffic with project at the analyzed intersections. Exhibit 11 shows the projected turning movement volumes for future with project conditions. Results of the future with the project conditions intersection analysis are displayed in Exhibit 12. The results show that the overall LOS for the following intersections are projected to operate at acceptable LOS:

- MacArthur Causeway / Bridge Road
- MacArthur Causeway / Terminal Isle (AM peak hour)
- Alton Road / 5th Street

As with existing and future without project conditions, the eastbound and westbound approaches of the Terminal Isle at the intersection with MacArthur Causeway continue to experience delays during both the morning and afternoon peak hours. The westbound approach of the MacArthur Causeway at the intersection with Terminal Isle also continues to experience delays during the afternoon peak hour and the eastbound approach is projected to experience delays during the morning peak hour. It should be noted that this is an existing condition and the project represents less than a 3% of the total projected intersection volume during the morning and afternoon peak hours. As with the existing and future without project conditions, the southbound approach of the MacArthur Causeway / Bridge Road intersection continues to experience delays during both the morning and afternoon peak hours. The northbound approach of the Alton Road and 5th Street intersection also continues to experience delays during both the morning and afternoon peak hours. This may be due to the fact that the county gives priority to vehicles travelling east/west through this area, therefore, accepting delays on cross-streets. The project driveway was analyzed and the results show adequate operations. Intersection capacity worksheets are included in Appendix D.



00 AM
(00) PM

Project Location

Exhibit 11

Future With Project AM and PM Peak Hour Traffic Volumes

NORTH
MAP NOT TO SCALE

Exhibit 12: Future with Project Intersection Capacity Analysis
Weekday AM and PM Peak Hour Conditions

Intersection	Signalized/ Un-signalized	Direction	AM Peak LOS	Delay (Sec)	PM Peak LOS	Delay (Sec)
MacArthur Causeway / Bridge Road (Star Island)	S	SB EB WB ***Overall***	F A A ***A***	88.3 1.8 6.1 ***4.0***	E A A ***A***	79.2 1.6 8.0 ***5.8***
MacArthur Causeway / Terminal Isle	S	NB EB_{SRA1A} WB_{SRA1A} $EB_{Terminal}$ $WB_{Terminal}$ ***Overall***	A F B F E ***E***	0.0 86.4 16.2 86.9 75.0 ***55.4***	A F F F E ***F***	0.0 91.9 101.5 84.1 64.0 ***96.0***
Alton Road / 5th Street	S	NB SB EB WB ***Overall***	F C C C ***C***	89.6 21.7 34.0 24.7 ***34.7***	F B C C ***E***	247.0 19.4 29.3 33.2 ***61.0***
Project Driveway / Terminal Isle	U	NB	B	10.4	B	11

Source: David Plummer & Associates

The approximate existing storage length and the projected 95th percentile back of queue at all the exclusive turn lanes for the AM and PM peak hour conditions are displayed in Exhibit 13. The results show that the existing storage lengths at the intersection of MacArthur Causeway / Bridge Road has enough capacity to accommodate the projected 95th percentile back of queues.

The projected 95th percentile back of queue for the eastbound right turn lane at the MacArthur Causeway / Terminal Isle intersection is currently and projected to exceed the storage length during the AM peak hour. It should be noted this is an existing condition, the project adds the equivalent of less than five vehicles to the projected 95th percentile back of queue. The westbound left turn lane at the MacArthur Causeway / Terminal Isle intersection is also projected to exceed the storage length during the AM peak hour. The project adds the equivalent of less than four vehicles to the projected 95th percentile back of queue.

The Alton Road / 5th Street intersection eastbound right turning lane's 95th percentile back of queue is projected to exceed the existing storage length during the AM peak hour. The Alton Road / 5th Street intersection northbound left turning lane's 95th percentile back of queue is also projected to exceed the existing storage length during both the AM and PM peak hours. It should be noted that these are existing conditions, the project adds the equivalent of less than one vehicle to the projected 95th percentile back of queue at these turning lanes.

Exhibit 13: Projected 95th Percentile Back of Queues and Existing Storage Length (Feet)

Intersection	Direction	Existing		Future without Project		Future with Project		Existing Storage Length
		AM	PM	AM	PM	AM	PM	
MacArthur Causeway / Bridge Road (Star Island)	EBL WBR SBL	6 5 35	5 0 56	6 5 35	5 0 57	6 5 41	1 0 62	145 110 *
MacArthur Causeway / Terminal Isle	EBR_{SRA1A} WBL_{SRA1A}	144 131	70 73	147 132	70 75	264 210	126 119	120 150
Alton Road / 5th Street	EBR WBL WBR NBL SBR	350 51 34 250 0	146 39 43 495 0	367 53 34 250 0	156 39 45 507 0	368 53 35 250 0	161 39 45 507 0	240 140 280 240 **

*SBL movement occurs from continues through lane
**SBR movement is free flow
Source: David Plummer & Associates

5.0 CIRCULATION PLAN

The project is located at 120 MacArthur Causeway (Terminal Island) in Miami Beach, Florida. Access to the site will be provided via the internal roadway on Terminal Island which provides access to MacArthur Causeway. MacArthur Causeway is the only roadway connecting Terminal Island to the mainland and the Miami Beach Island. The Terminal Isle roadway also provides access to the FPL Miami Beach Plant, the Fisher Island Ferry Terminal and the US Coast Guard Station all located within Terminal Island. The project is proposing a Waterfront Sculpture Plaza facing the Miami Municipal Channel along with several landscape gardens.

MacArthur Causeway provides sidewalks on both sides of the road starting from the bus stop bays just west of Fountain Street and just west of Bridge Road. Both of the signalized intersections have clearly marked crosswalks with pedestrian refuge areas, and provide pedestrian signals. The signalized intersection with Terminal Isle has clearly marked crosswalks and provides pedestrian signals. The sidewalk along both sides of the causeway continues toward Miami Beach Island protected by a guardrail/concrete barrier across the causeway bridge. The causeway provides bike lanes on both sides of the road which terminate at the base of the causeway bridge. Bicyclist are directed to use the protected bridge sidewalk. A mobility plan was prepared for the site (see Exhibit 14). The plan shows the project location, bike lanes, sidewalk connections, and pedestrian crosswalks.

There are four bus routes that traverse this area of Miami Beach (Routes: 103, 113, 119, and 120). The closest bus stop to the project site is located on the south side of the MacArthur Causeway just east of the Terminal Isle intersection, approximately 300 feet west of the project. The City of Miami Beach Trolley provides the South Beach Loop which traverse along Alton Road. Exhibit 15 shows the available bus routes and bus stops in the area. Transit documentation is provided in Appendix G.

Project Location
Sidewalk
Crosswalk
Bike Lanes

Exhibit 14

Mobility - Pedestrians

NORTH
MAP NOT TO SCALE

Bus Stop

Project Location

Miami Beach Trolley

Miami-Dade Bus Routes

- 120 Beach Max
- 119 (S)
- 103 (C)
- 113 (M)

NORTH
MAP NOT TO SCALE

Exhibit 15

Mobility - Transit

6.0 TRANSPORTATION MANAGEMENT PLAN

A Transportation Development Management is proposed as part of this project with the following goals:

- ***Reducing congestion*** – by encouraging patrons to shift from single occupancy vehicle trips to use other available modes of transportation.
- ***Conserving energy and reducing emissions*** - the damage caused by vehicle emissions and greenhouse gases is a major contributor to environmental degradation. Therefore, getting people to make better use of shared transportation options is one of the most important ways in which communities can do their part to encourage greener thinking.
- ***Improving community health and fitness levels*** - TDM can lead to better levels of health and fitness among community members by encouraging people to be more active as they move around town. Improving the walkability of cities and adding cycling features are two of the most important ways TDM strategies can be used to promote healthier and more active lifestyles.
- ***Boosting urban livability*** - Studies have shown that community-oriented modes of transportation can lead to significant improvements in personal satisfaction and happiness. People are more engaged when they are active stakeholders in the communities they live in. By improving social quality for residents, commuters, and visitors alike, TDM helps improve the overall livability of cities.

The development will promote the following strategies to further reduce vehicle trips:

- Encourage patrons to participate in ridesharing programs through South Florida Commuter Services. Available information will be obtained and distributed to residents and employees in the development.
- Miami-Dade County Transportation Agency current local and regional mass transit route and schedule information will be provided to potential transit users in a prominent public

area of the development. The information provided and maintained on the premises will be updated, when necessary, at no less than six month intervals.

- Promote mass transit use by encouraging employers to purchase transit passes and make them available to employees at discounted prices or no charge, or in lieu of subsidized parking.
- Encourage employers to implement staggered work hours.

Implementation of these items will generate a shift from single vehicle drivers to use other modes of transportation and, thus, reducing the peak hour vehicle trips.

7.0 CONCLUSIONS

An assessment of the traffic impacts associated with the proposed Terminal Island project was performed in accordance with the requirements of the City of Miami Beach. The following intersections are currently operating and projected to operate at acceptable overall LOS:

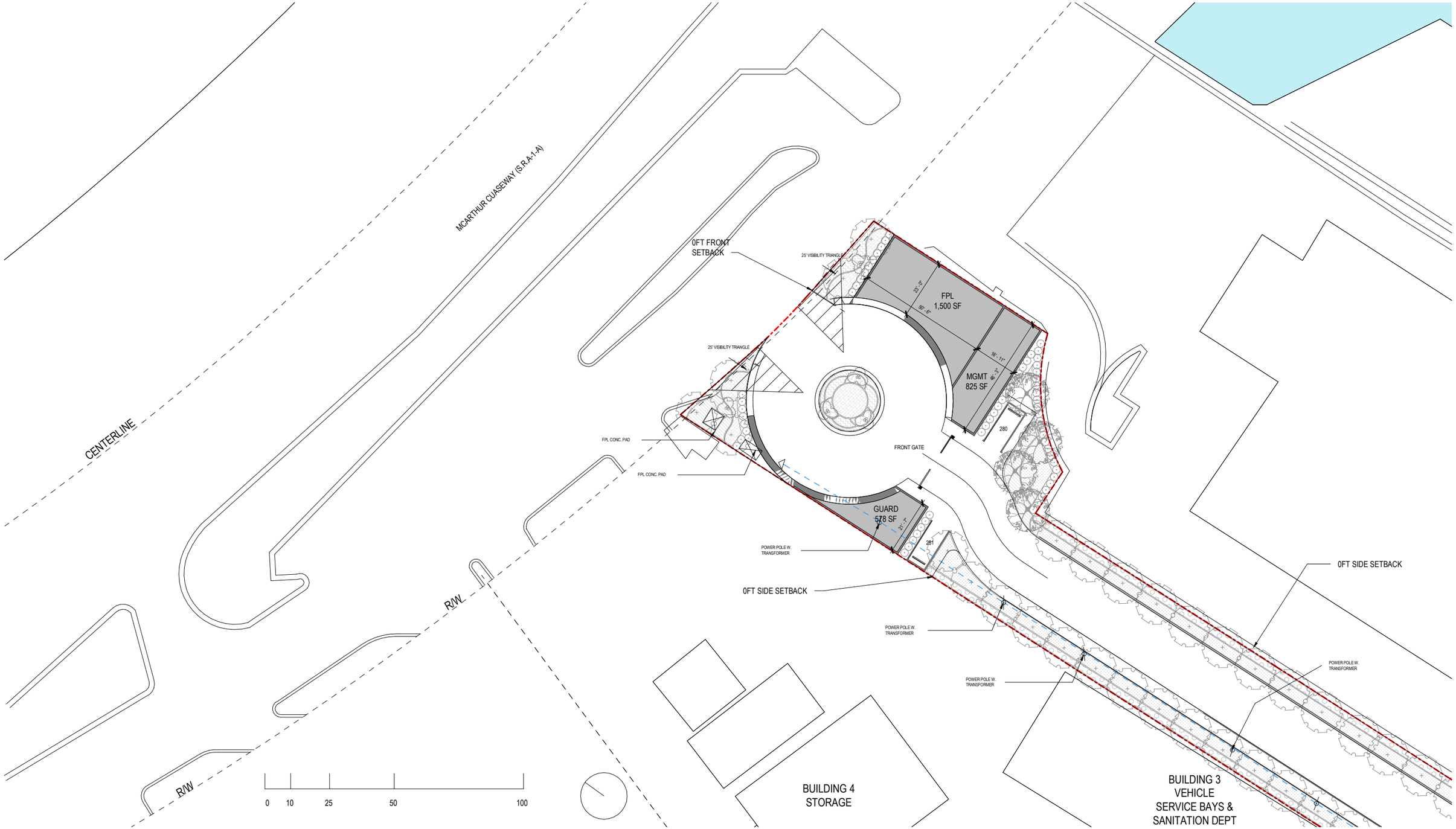
- MacArthur Causeway / Bridge Road
- MacArthur Causeway / Terminal Isle (AM peak hour)
- Alton Road / 5th Street

As with existing and future without project conditions, the eastbound and westbound approaches of the Terminal Isle at the intersection with MacArthur Causeway continue to experience delays during both the morning and afternoon peak hours. The westbound approach of the MacArthur Causeway at the intersection with Terminal Isle also continues to experience delays during the afternoon peak hour and the eastbound approach is projected to experience delays during the morning peak hour. It should be noted that these are existing conditions and the project represents less than a 3% of the total projected intersection volume during the morning and afternoon peak hours.

As with the existing and future without project conditions, the southbound approach of the MacArthur Causeway / Bridge Road intersection continues to experience delays during both the morning and afternoon peak hours. The northbound approach of the Alton Road and 5th Street intersection also continues to experience delays during both the morning and afternoon peak hours. This may be due to the fact that the county gives priority to vehicles travelling east/west through this area, therefore, accepting delays on cross-streets. The project driveway was analyzed and the results show adequate operations.

As part of the study, a mobility and circulation plan was completed. The plan shows that the project area is currently served by four Miami-Dade Transit bus routes and a Miami Beach Trolley route. The project is located in an area that provides sidewalk connectivity, clearly marked crosswalks, signalized intersections that provide pedestrian signals, and bike lanes. These conditions encourage the use of other modes of transportation and reduce the vehicular impact on the roadway network.

Appendix A
Site Plan



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

PB FINAL SUBMITTAL

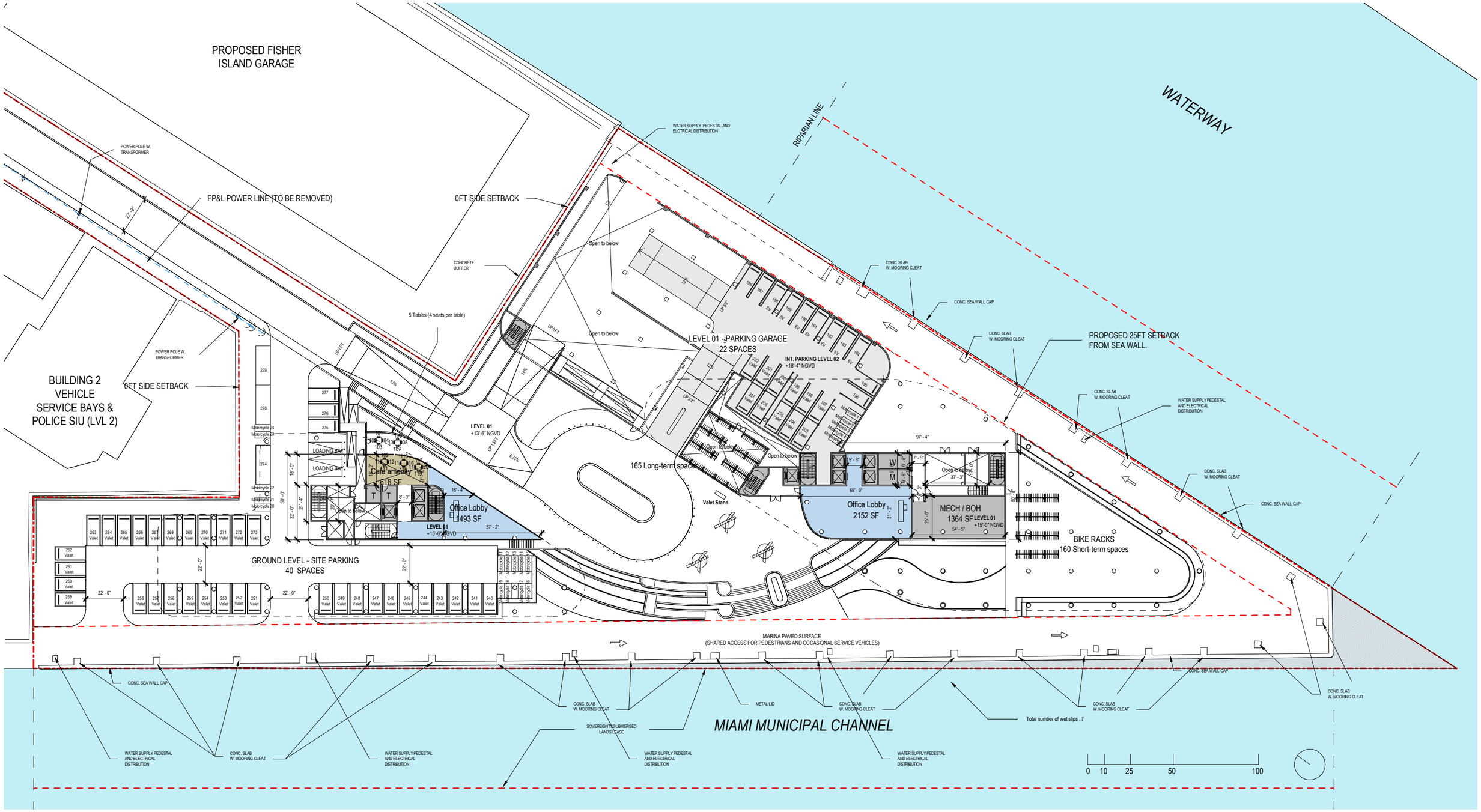
120 MACARTHUR CAUSEWAY
MIAMI BEACH, FL, 33139

ENTRANCE PAVILLION - LEVEL 01

SCALE: 1 : 425

DATE:
11/30/2020

A1-10



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

PB FINAL SUBMITTAL

120 MACARTHUR CAUSEWAY
MIAMI BEACH, FL, 33139

OVERALL OFFICE BUILDINGS LEVEL 01

SCALE: 1 : 640

DATE: 11/30/2020

A1-02

Appendix B
Methodology

DAVID PLUMMER & ASSOCIATES
TRAFFIC ENGINEERING • CIVIL ENGINEERING • TRANSPORTATION PLANNING

1750 PONCE DE LEON BOULEVARD | CORAL GABLES, FLORIDA 33134
305•447•0900 | DPA@DPLUMMER.COM

Terminal Island Miami Beach
Traffic Study Methodology

March 24, 2020
Revised: April 13, 2020

PROJECT LOCATION

The project is located at 120 MacArthur Causeway (Terminal Island) in Miami Beach, Florida. The project proposes a new 160,932 SF office building and an 11,250 SF restaurant. The existing six boat berth marina will remain.

PURPOSE

This methodology will provide the details of the Transportation Impact Study for the proposed development. Confirmation of this methodology will be requested from the City and/or its traffic consultant prior to performing the study.

TRAFFIC STUDY

- Traffic Counts (Intersections) – Available turning movement counts collected during the AM (7 – 9) and PM (4 – 6) peak hour conditions of a regular weekday will be used to analyze the following intersections:
    - MacArthur Causeway / Bridge Road (Star Island) (Signalized)
    - MacArthur Causeway / Terminal Island (Signalized)
    - Alton Road / 5th Street (Signalized)
    - Terminal Island / Project Driveway (Un-signalized)

Traffic counts used as part of this project will be included in the appendix of the Transportation Impact Study submitted to the City.

- Trip Generation – Trip generation for the project was estimated using trip generation information published by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. Based on U.S. Census Bureau data, a 12.9% deduction for other modes of transportation may be applied. However, for a conservative analysis and as discussed with the City reviewer, a 3% reduction will be used for other modes of transportations. Furthermore as discussed with the City reviewer, a 10% reduction will be used for pass-by applied to restaurant trips.

Proposed Trip Generation

Proposed ITE Land Use Designation[1]	Size/Units	Daily (Two-way)	AM Peak Hour Vehicle Trips			PM Peak Hour Vehicle Trips		
			In	Out	Total	In	Out	Total
Office (Land Use 710)	160,932 SF	1,684	153	25	178	29	150	179
Restaurant (Land Use 931)	11,250 SF	944	4	4	8	59	29	88
Gross External Trips		**2,628**	**157**	**29**	**186**	**88**	**179**	**267**
Internalization AM, PM		2.2%, 1.5%	-2	-2	-4	-2	-2	-4
Other Modes of Transportation[2]		3%	-5	-1	-6	-3	-5	-8
Pass-By Restaurant (PM)[3]		10%	0	0	0	-4	-4	-8
Proposed Net External Trips			**150**	**26**	**176**	**79**	**168**	**247**

[1] Based on ITE Trip Generation Manual, 10th Edition

[2] Based on US Census (Tract 9810) is 12.9%, however a 3% was used.

[3] Based on ITE Trip Generation Handbook, 3rd Edition (PM pass-by) is 44%, however 10% was used.

- Signal Location and Timing – Existing signal phasing and timing for the signalized intersections will be obtained from Miami-Dade County. Signal data collected from the county will be included in the appendix of this study.

- Trip Distribution / Trip Assignment – Net new external project traffic will be assigned to the adjacent street network using the appropriate cardinal distribution from the *Miami-Dade Long Range Transportation Plan Update*, published by the *Transportation Planning Organization*. Normal area traffic patterns will also be considered when assigning project trips. A figure showing all of the assigned trips to the adjacent transportation network will be provided as part of the study.

- Background Traffic – Available Florida Department of Transportation (FDOT) and Miami-Dade County (MDC) traffic counts will be consulted to determine a growth factor consistent with historical annual growth in the area. The growth factor will be applied to the existing traffic volumes to establish background traffic. This will be documented in the study.

- Committed Developments – The City will be consulted to determine committed developments in the area. Evidence of the data collected as part of the committed developments will be included in the appendix of the study.

- Future Transportation Projects – The 2020 TIP and the 2040 LRTP will be reviewed and considered in the analysis at project build-out.

- Intersection Capacity Analysis – The intersection capacity analyses will be conducted for the following conditions:
    - Existing conditions
    - Future conditions with Committed Developments
    - Future conditions with Project and Committed Development

  Intersection analysis will be done using the Synchro software based on the Highway Capacity Manual (HCM 6th Ed). Figures depicting trip distribution for each of these scenarios will be provided as part of this study. In addition to the intersections identified above, all projects driveways will be analyzed. If the results of the analysis show any intersection operating below the City's Level of Service standards, specific mitigation measures will be recommended.

- An extensive Transportation Demand Management plan (TDM) will be included in the report.

CIRCULATION ANALYSIS/PLAN

The study will provide a circulation plan depicting the parking garage circulation. The plan will also include a clear site plan defining all of the various land use categories assigned to the project site, driveways, delivery areas, location of street signs/signals, crosswalks, sidewalks, location of bus facilities, bike facilities, adjacent streets configuration (travel lanes, etc.) including names, on-street parking and any other pertinent transportation feature in the vicinity of this project.

As part of the study, any proposed/existing driveways will be analyzed. This analysis will include sight distance for vehicles entering/exiting the proposed driveway. An Auto-turn analysis will be conducted for the proposed building loading area. If deficiencies are determined, mitigation measures will be recommended.

Multimodal – Pedestrian, bicycle and transit facilities will be defined in the Circulation Plan. Existing bus routes including schedule and bus stop locations will be discussed as part of the study. An effort will be made to include bicycle parking facilities within the project site to be utilized either by employees or tenants.

QUEUING ANALYSIS

A queuing analysis will be performed at the gated entrance per the methods outlined in the Institute of Transportation Engineers (ITE) Transportation and Land Development. The vehicle queue (M) will be calculated based on processing rate, demand rate, service positions and utilization factor as necessary. The analysis will be done to ensure that there is sufficient on-site vehicle stacking so that there is no vehicle back-up onto the public right-of-way. Peak hour demand will be estimated at the project's entrances. The analysis will consider both demand and typical service times per vehicle. The gated entrances capacity will be a function of the numbers of lanes, type of service provided and geometrics. The analysis, conclusions and recommendations will be documented in the traffic report.

DOCUMENTATION

The applicant will submit an electronic copy of the report including the Synchro program output calculations for consideration/review by the consultant acting as the peer reviewer. Also included will be the latest version of the site plan, with an AutoCad version.

Other Considerations from the City

- As part of the intersection analysis, a table summarizing/comparing the existing storage length and the proposed queues for all turn lanes will be provided.

- The City reserves the right to request additional analyses including but not limited to, additional traffic counts and level of service analysis for any intersection City staff feels is necessary in order to complete the review process.
- The future layout of the Terminal Island Roadway configuration and intersections will be considered in the future scenario analysis if the latest FDOT plans are provided by the City reviewer.

If you have any questions you can contact me at (305) 447-0900.

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THE OFFICE AT ONE ISLAND PARK

ARQUITECTONICA
2900 Oak Avenue Miami, Florida 33133
305.372.1812 TEL 305.372.1175 FAX
www.arquitectonica.com

Terminal Isl. - Office Scheme
One Island Ave

Cover
SCALE:

DATE:
03/06/20

FS-00

3/6/2020 6:10:47 PM

	West Building						East Building						Guard House						Surface Parking
	Office Usable SF	Office BOMA*	GSF	FAR	Floorplate	Outdoor Café/ Restau.	Office Usable SF	Office BOMA*	GSF	FAR	Floorplate		Office Usable SF	Office BOMA*	Guard	GSF	FAR	Floorplate	
Roof	0 SF	0 SF	4,075 SF	4,075 SF		11,250 SF	0 SF	0 SF	3,735 SF	3,735 SF	52,819 SF								
Level 04	15,581 SF	17,399 SF	18,351 SF	18,351 SF	20,098 SF		21,232 SF	23,088 SF	23,932 SF	23,932 SF	26,048 SF								
Level 03	17,328 SF	19,146 SF	20,098 SF	20,098 SF	21,738 SF		23,350 SF	25,204 SF	26,048 SF	26,048 SF	28,145 SF								
Level 02	18,967 SF	20,786 SF	21,738 SF	21,738 SF	21,738 SF		25,446 SF	27,301 SF	28,145 SF	28,145 SF	28,145 SF								
Level 01	0 SF	4,552 SF	5,380 SF	5,380 SF	5,380 SF		0 SF	5,494 SF	6,205 SF	6,205 SF	6,205 SF		2,523 SF	2,523 SF	731 SF	3,225 SF	3,254 SF	3,225 SF	308 Spaces (100 Stackers)
TOTAL	51,876 SF	61,883 SF	69,642 SF	69,642 SF	68,954 SF		70,028 SF	81,087 SF	88,065 SF	88,065 SF	141,362 SF		2,523 SF	2,523 SF	731 SF	3,225 SF	3,254 SF	3,225 SF	

Total Office Usable	**124,427 SF**
Total Office BOMA*	**145,493 SF**
Total Office GSF	**160,932 SF**
Total FAR	**160,961 SF**
Total Floorplate	**213,541 SF**
Total Parking	**308 Spaces**

*to be verified

3/6/2020 6:10:49 PM

ARQUITECTONICA
2900 Oak Avenue Miami, Florida 33133
305.372.1812 TEL 305.372.1175 FAX
www.arquitectonica.com

Terminal Isl. - Office Scheme

One Island Ave

Project Data

SCALE:

DATE:
03/06/20

FS-01

C:\Users\rheppner\Documents\2020.01.21_Terminal Island Office Scheme_rheppner.rvt

Mgmt.
2523 SF

Guard
731 SF

SERVICE BAYS &
SANITATION DEPT (LVL 2)

GAS
PUMP

LANDSCAPE/
SCULPTURE

LOADING

BOH/
MEP

BOH
1856 SF

car elevator

Office Lobby
3524 SF

Maritime Garden

BOH/
MEP

BOH
1520 SF

Office Lobby
4685 SF

LOADING

Maritime Garden

Waterfront Sculpture Plaza

22'-0"

27'-1"

45'-0"

27'-1"

498'-0"

760'-9"

PROPERTY LINE

MIAMI MUNICIPAL CHANNEL

0 10 25 50 100

FAR : 11,585 SF, Office Usable SF : 0 SF

3/6/2020 6:10:58 PM

ARQUITECTONICA

2900 Oak Avenue Miami, Florida 33133
305.372.1812 TEL 305.372.1175 FAX
www.arquitectonica.com

Terminal Isl. - Office Scheme

One Island Ave

Level 01

SCALE: 1" = 60'-0"

DATE:
03/06/20

FS-03

Scenario - 1

Scenario Name: Proposed
User Group:

Dev. phase: 1
No. of Years to Project Traffic : 0

Analyst Note:

Warning: The time periods among the land uses do not appear to match.

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday	Best Fit (LOG)	842	842	1684
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.97Ln(X) + 2.50	50%	50%	
931 - Quality Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	11.25	Weekday	Average	472	472	944
Data Source: Trip Gen Manual, 10th Ed					83.84	50%	50%	
710(1) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	153	25	178
Data Source: Trip Gen Manual, 10th Ed					T = 0.94(X) + 26.49	86%	14%	
931(1) - Quality Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	11.25	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average	4	4	8
Data Source: Trip Gen Manual, 10th Ed					0.73	50%	50%	
710(2) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LOG)	29	150	179
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.95Ln(X) + 0.36	16%	84%	
931(2) - Quality Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	11.25	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	59	29	88
Data Source: Trip Gen Manual, 10th Ed					7.80	67%	33%	

AM Peak Hour Trip Generation and Internalization

Terminal Island Miami Beach

Office Land Use 710 160,932 Sq Ft			Restaurant Land Use 931 11,250 Sq Ft		
In	**Out**		**In**	**Out**	
153	**25**		**4**	**4**	186 ITE Trips
UNBALANCED INTERNALIZATION					
	63% 16	**1**	*23%* 1		
14% 21		**1**		*31%* 1	
Office			**Restaurant**		
In	**Out**		**In**	**Out**	
153	**25**		**4**	**4**	186 Vehicle Trips
BALANCED INTERNALIZATION					
	-1		*-1*		
-1				*-1*	
-1	-1		-1	-1	-4 Internal
152	24		3	3	182 External Trips
	1.1%			*25.0%*	*2.2%* % Internal
-5	-1		0	0	-6 -3.0% Transit/Pedestrian
147	**23**		**3**	**3**	176
			0	0	0 0% Passby (Restau
147	**23**		**3**	**3**	**176 Net New External Trips**

PM Peak Hour Trip Generation and Internalization

Terminal Island Miami Beach

Office Land Use 710 160,932 Sq Ft			Restaurant Land Use 931 11,250 Sq Ft		
In	**Out**		**In**	**Out**	
29	**150**		**59**	**29**	267 ITE Trips
UNBALANCED INTERNALIZATION					
	4% 6	***1***	*2%* 1		
30% 9		***1***		*3%* 1	
Office			**Restaurant**		
In	**Out**		**In**	**Out**	
29	**150**		**59**	**29**	267 Vehicle Trips
BALANCED INTERNALIZATION					
	-1		*-1*		
-1				*-1*	
-1	-1		-1	-1	-4 Internal
28	149		58	28	263 External Trips
	1.1%			*2.3%*	*1.5%* % Internal
-1	-4		-2	-1	-8 -3.0% Transit/Pedestrian
27	**145**		**56**	**27**	255
			-4	-4	-8 -10% Passby (Restau
27	**145**		**52**	**23**	**247 Net New External Trips**

S0801

COMMUTING CHARACTERISTICS BY SEX

2013-2017 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Technical Documentation section.

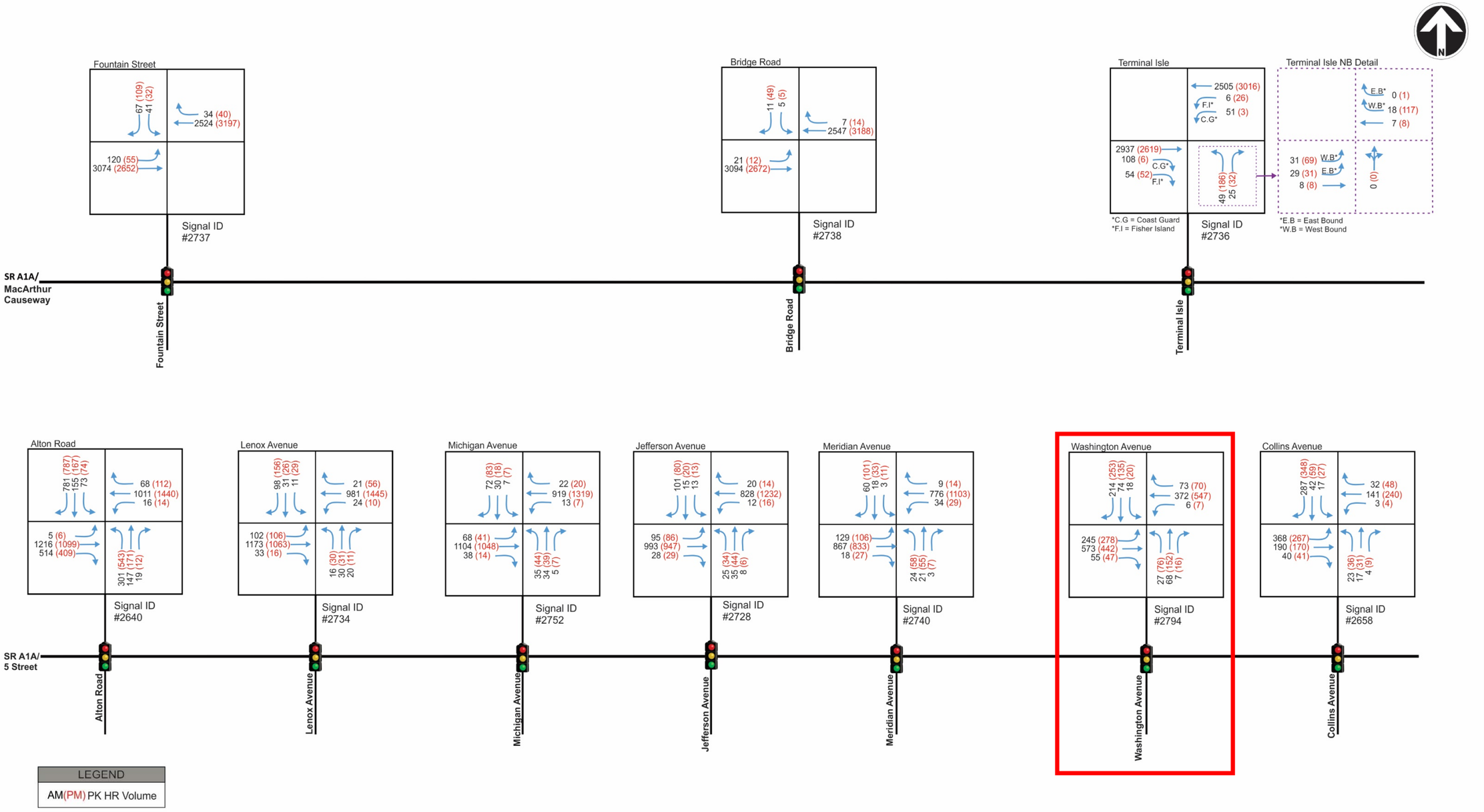
Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Subject	Census Tract 9810, Miami-Dade County, Florida				
	Total		Male		Female
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
Workers 16 years and over	62	+/-21	53	+/-19	9
MEANS OF TRANSPORTATION TO WORK					
Car, truck, or van	51.6%	+/-32.9	52.8%	+/-35.4	44.4%
Drove alone	43.5%	+/-37.2	43.4%	+/-40.3	44.4%
Carpooled	8.1%	+/-14.9	9.4%	+/-17.4	0.0%
In 2-person carpool	8.1%	+/-14.9	9.4%	+/-17.4	0.0%
In 3-person carpool	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
In 4-or-more person carpool	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Workers per car, truck, or van	N	N	N	N	N
Public transportation (excluding taxicab)	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Walked	12.9%	+/-25.0	15.1%	+/-29.5	0.0%
Bicycle	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Taxicab, motorcycle, or other means	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Worked at home	35.5%	+/-27.4	32.1%	+/-29.5	55.6%
PLACE OF WORK					
Worked in state of residence	100.0%	+/-41.8	100.0%	+/-45.2	100.0%
Worked in county of residence	100.0%	+/-41.8	100.0%	+/-45.2	100.0%
Worked outside county of residence	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Worked outside state of residence	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Living in a place	100.0%	+/-41.8	100.0%	+/-45.2	100.0%
Worked in place of residence	100.0%	+/-41.8	100.0%	+/-45.2	100.0%
Worked outside place of residence	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Not living in a place	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Living in 12 selected states	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Worked in minor civil division of residence	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Worked outside minor civil division of residence	0.0%	+/-41.8	0.0%	+/-45.2	0.0%
Not living in 12 selected states	100.0%	+/-41.8	100.0%	+/-45.2	100.0%
Workers 16 years and over who did not work at home	40	+/-23	36	+/-18	4
TIME LEAVING HOME TO GO TO WORK					

Appendix C
Traffic Data

Traffic Volumes



Peak Hour Intersection Volumes - MacArthur Cswy/5 St Figure 3

Signal Timings

TOD Schedule Report
for 2640: Alton Rd&5 St

Print Date: 12/24/2019

Print Time: 10:38 AM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2640	Alton Rd&5 St	DOW-3		N/A	0	0	N/A	0	Max 0

Splits

PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8
WBL	EBT	NBT	SBT	-	WBT	-	-
0	0	0	0	0	0	0	0

Active Phase Bank: Phase Bank 1

Phase	Walk (Phase Bank 1 - 2 - 3)	Don't Walk (1 - 2 - 3)	Min Initial (1 - 2 - 3)	Veh Ext (1 - 2 - 3)	Max Limit (1 - 2 - 3)	Max 2 (1 - 2 - 3)	Yellow	Red
1 WBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 5 - 5	25 - 20 - 7	4	2.3
2 EBT	7 - 7 - 7	22 - 22 - 22	5 - 5 - 5	1 - 1 - 1	30 - 30 - 30	0 - 30 - 30	4	2
3 NBT	7 - 7 - 7	10 - 10 - 10	7 - 7 - 7	3 - 3 - 3	18 - 18 - 16	33 - 30 - 30	4	2
4 SBT	7 - 7 - 7	18 - 18 - 18	7 - 7 - 7	3.5 - 3.5 - 3.5	15 - 17 - 8	38 - 38 - 28	4	2
5 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
6 WBT	7 - 7 - 7	22 - 22 - 22	5 - 5 - 5	1 - 1 - 1	30 - 30 - 30	0 - 30 - 30	4	2
7 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
8 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0

Last In Service Date: unknown

Permitted Phases

	12345678
Default	1234-6--
External Permit 0	1234-6--
External Permit 1	1234-6--
External Permit 2	1234-6--

TOD Schedule Report

for 2640: Alton Rd&5 St

Print Date: 12/24/2019

Print Time: 10:38 AM

Current TOD Schedule	Plan	Cycle	Green Time 1 WB	2 EBT	3 NBT	4 SBT	5 -	6 WBT	7 -	8 -	Ring Offset	Offset
	1	170	10	90	19	27	0	106	0	0	0	61
	2	150	5	64	30	27	0	75	0	0	0	27
	3	120	5	45	18	28	0	56	0	0	0	96
	4	150	5	80	16	25	0	91	0	0	0	109
	5	150	5	64	21	36	0	75	0	0	0	29
	6	180	5	86	27	38	0	97	0	0	0	114
	7	170	5	78	30	33	0	89	0	0	0	99
	8	160	5	68	30	33	0	79	0	0	0	55
	10	160	10	80	20	26	0	96	0	0	0	55
	14	120	5	45	20	26	0	56	0	0	0	118
	15	130	5	51	27	23	0	62	0	0	0	127
	16	120	5	45	20	26	0	56	0	0	0	23
	21	220	10	138	20	28	0	154	0	0	0	44
	22	110	5	35	18	28	0	46	0	0	0	42
	23	110	5	35	18	28	0	46	0	0	0	20
	24	160	5	73	30	28	0	84	0	0	0	44
	25	140	5	65	18	28	0	76	0	0	0	57
	26	200	5	113	30	28	0	124	0	0	0	44
	27	140	5	65	18	28	0	76	0	0	0	0
	28	220	10	138	20	28	0	154	0	0	0	44

Local TOD Schedule

Time	Plan	DOW
0000	3	Su M T W Th F S
0500	2	M T W Th F
0500	3	Su S
0800	6	M T W Th F
1000	10	Su S
1130	5	M T W Th F
1300	6	M T W Th F
1615	25	M T W Th F
1800	1	M T W Th F
1800	7	Su S
2200	8	M T W Th F

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8----3--	SuM T W ThF S
0000	TOD LOCAL MULTIFU	----4---	SuM T W ThF S
0500	TOD LOCAL MULTIFU	--------	SuM T W ThF S
0700	TOD OUTPUTS	--------	M T W ThF
1000	TOD OUTPUTS	------2-	SuM T W ThF
1500	TOD OUTPUTS	--------	SuM T W ThF S
1800	TOD OUTPUTS	8-----2-	M T W ThF
1800	PED RECALL	8---4---	M T W ThF
2200	PED RECALL	--------	M T W ThF

Local Time of Day Function

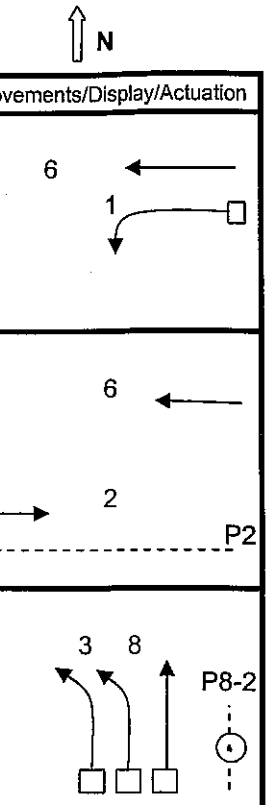
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8----3--	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	----4---	SuM T W ThF S
0000	PED RECALL	8---4---	Su S
0500	TOD LOCAL MULTIFUNCT	--------	SuM T W ThF S
0700	TOD OUTPUTS	--------	M T W ThF
0800	TOD OUTPUTS	--------	Su S
1000	TOD OUTPUTS	------2-	SuM T W ThF
1500	TOD OUTPUTS	--------	SuM T W ThF S
1800	TOD OUTPUTS	8-----2-	M T W ThF
1800	PED RECALL	8---4---	M T W ThF
2000	TOD OUTPUTS	8-----2-	Su S
2200	PED RECALL	--------	M T W ThF
2359	PED RECALL	--------	Su S

* Settings

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

SIGNAL OPERATING PLAN

	Direction	WB		EB	NB			SB		Ped Heads				N
Timing Phases	Head No.	1 LV	6	2	3	3/8	8	7/4	4	P2		P8-2	P8-1	Movements/Display/Actuation
(1+6)	Dwell	<G	G	R	<R	R	R	R	R	DW		DW	DW	
WB	Clear to 2+6	<Y	G	R	<R	R	R	R	R	DW		DW	DW	
	Clear to 3	<Y	Y	R	<R	R	R	R	R	DW		DW	DW	
5 STREET	Clear to 4	<Y	Y	R	<R	R	R	R	R	DW		DW	DW	
(ACTUATED)														
(2+6)	Dwell	<R	G	G	<R	R	R	R	R	W/F		DW	DW	
	Clear to 3	<R	Y	Y	<R	R	R	R	R	DW		DW	DW	
E/WB	Clear to 4	<R	Y	Y	<R	R	R	R	R	DW		DW	DW	
5 STREET														
(RECALL)														
(3)	Dwell	<R	R	R	<G	<G/G	G	R	R	DW		DW	W/F	
NB	Clear to 3	<R	R	R	<Y	Y	Y	R	R	DW		DW	DW	
	Clear to 4	<R	R	R	<Y	Y	Y	R	R	DW		DW	DW	
ALTON RD	Clear to 1+6	<R	R	R	<Y	Y	Y	R	R	DW		DW	DW	
	Clear to 2+6	<R	R	R	<Y	Y	Y	R	R	DW		DW	DW	
(ACTUATED)														
(4)	Dwell	<R	R	R	<R	R	R	<G/G	G	DW		W/F	DW	
	Clear to 1+6	<R	R	R	<R	R	R	Y	Y	DW		DW	DW	
NB	Clear to 2+6	<R	R	R	<R	R	R	Y	Y	DW		DW	DW	
ALTON RD														
(ACTUATED)														
	Dwell													
	Clear to													
	Clear to													
	Clear to													
	Clear to													
	Clear to													
	Clear to													
	Dwell													
	Clear to													
	Clear to													
	Clear to													
	Clear to													
	Clear to													
	Clear to													
Flashing Operation		F<R	FY	FY	F<R	FR	FR	FR	FR					Page 1 of 1

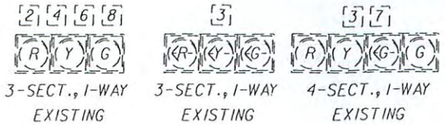


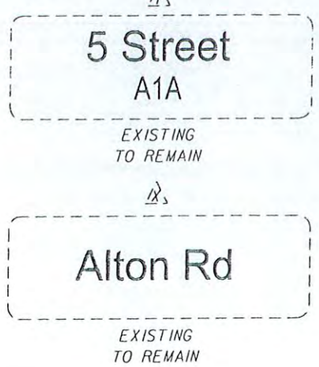
Miami-Dade County Public Works Department

Drawn	Date	
William Rivera-Paz	2/3/2012	ALTON RD & 5 STREET

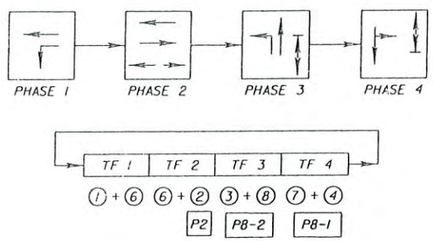
Checked	Date	Placed in Service		Phasing No.	Asset Number
H. HERNANDEZ	2/13/12	Date 3/29/12	By FSS	5	2640

SIGNAL HEAD DETAILS

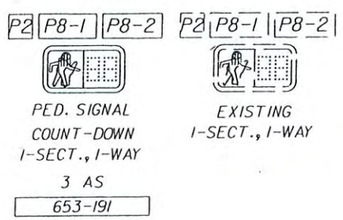




S.O.P.



SIGNAL PEDESTRIAN DETAIL



Pull Boxes (13)
Peds
Loops
Traffic Signal Head + Pedestal
Conduit

NOTES

1. SIGNAL TIMING TO BE PROVIDED BY MIAMI-DADE COUNTY.
2. PEDESTRIAN SIGNAL HEADS SHALL BE ALIGNED TO THE CENTER OF FAR-SIDED END OF CROSSWALK THEY SERVE.
3. PEDESTRIAN DETECTOR TO BE AUDIBLE TYPE. ARROW ON PEDESTRIAN DETECTOR SHALL BE ALIGNED PARALLEL WITH THE CROSSWALK THEY SERVE
4. ITEM 690-100 INCLUDES THE COST OF REMOVAL AND DISPOSAL OF PULL BOXES AT THE INTERSECTION

DETECTORS FOR LOOPS			
LOOP	NO. OF LOOPS	NO. OF NEW DETS.	NO. OF EXIST. DETS.
L-1	1	1	-
L-3	2	-	1
L-4	1	-	1
L-8	1	-	1

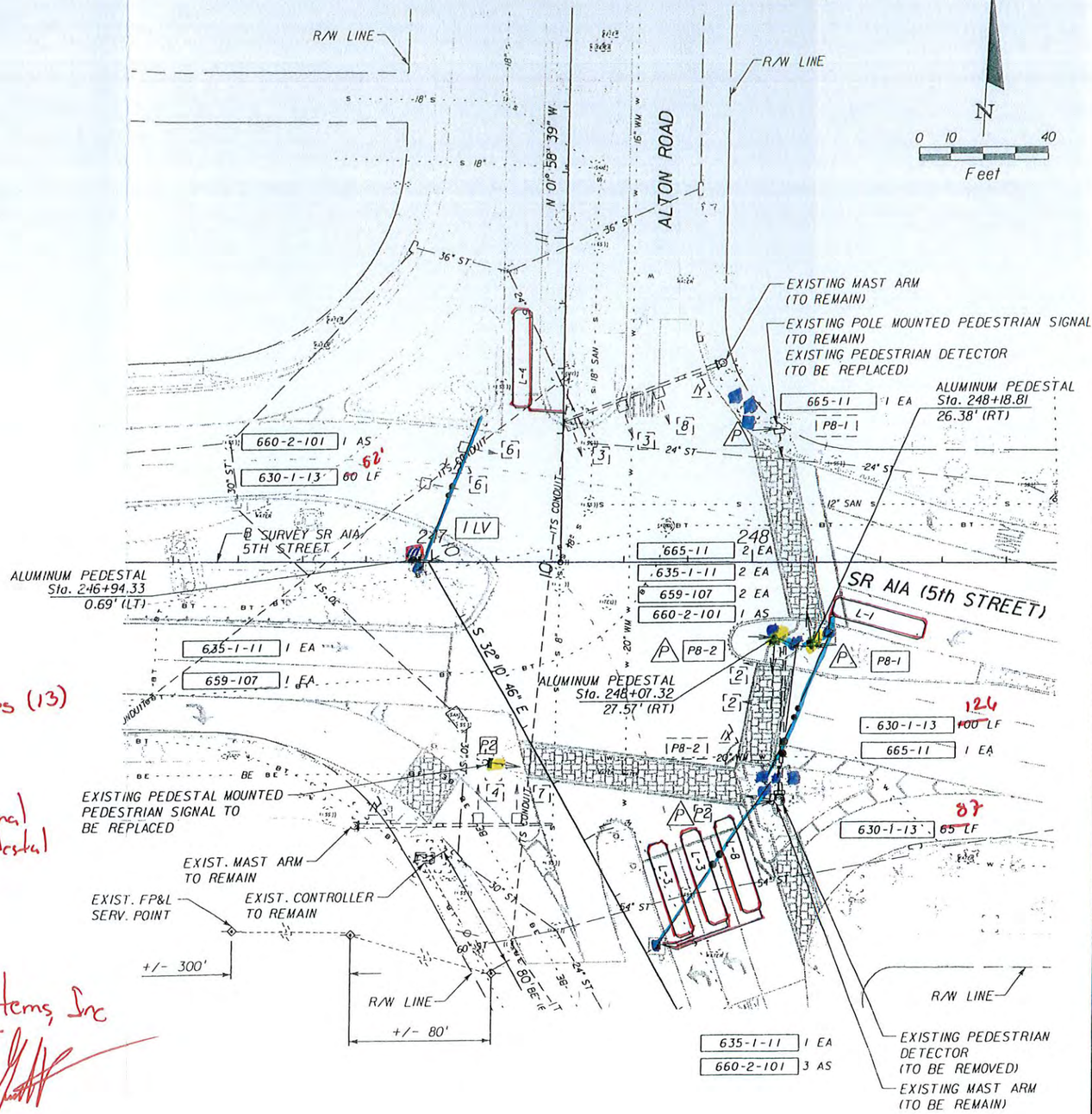
REMOVAL ITEMS

690-20	2 EA
690-70	2 EA
690-100	1 PI

CONTROLLER ITEMS

632-7-1	1 PI
660-1-109	2 EA
670-5-420	1 AS

Florida Sol Systems, Inc
AS-BUILT



INTERSECTION I.D. #2640
AIA/ 5TH STREET AND ALTON RD.

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS		
DESCRIPTION	DATE	DESCRIPTION

CORRADINO
4055 N.W. 97th Avenue, Doral, Florida, 33178
Ph: (305) 594-0735 Fax: (305) 594-0755
Certificate Of Authorization No. 00007665
E.O.R. Favio A. Laverde, P.E. No. 63546

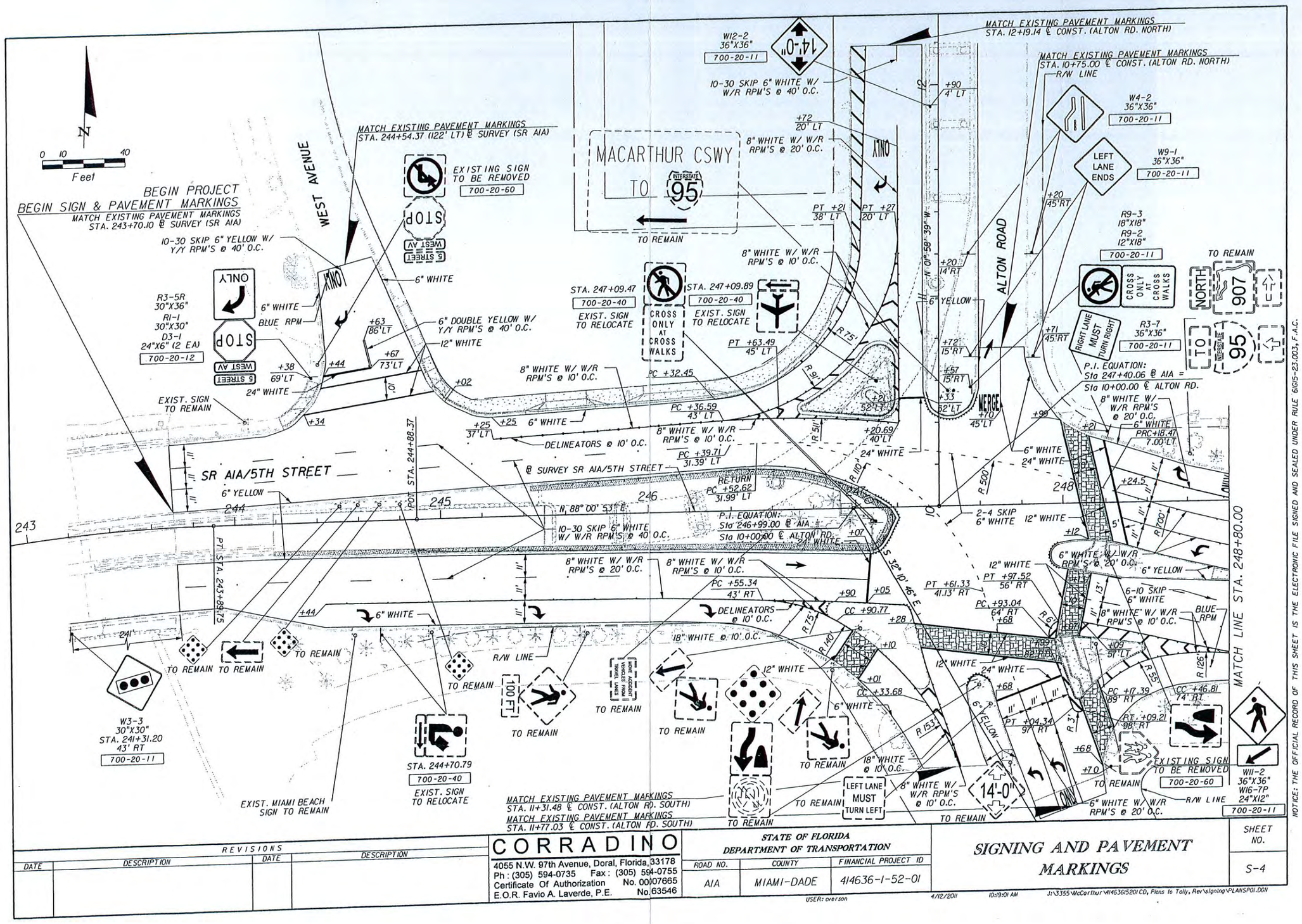
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	MIAMI-DADE	414636-1-52-01

SIGNALIZATION PLAN

SHEET NO. T-4

USER: overson 4/12/2011 10:35:38 AM J:\3355\McCarthur\414636152001CD, Plans to Tally, Rev\signals\PLANS001.DGN



REVISIONS			
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
AIA	MIAMI-DADE	414636-1-52-01

SIGNING AND PAVEMENT MARKINGS

SHEET NO. S-4

USER: overson 4/12/2011 10:39:01 AM J:\3355\McArthur\414636152101_Plans to Tally_Rev\signing\PLANSP01.DGN

TOD Schedule Report

for 2736: Mac Arthur Cswy&Terminal Isle

Print Date: 1/8/2020

Print Time: 2:03 AM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2736	Mac Arthur Cswy&Terminal Isle	DOW-4	TOD	[03] AM PEAK	120	37	N/A	3	Max 2

Splits

PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8
-	WBT	WL+PED	-	WBL	EBT	WU-SERV	NBT
0	96	23	71	53	36	7	18

Active Phase Bank: Phase Bank 3

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	0	0	0	0	0	20	20	20	1	1	1	30	50	60	0	98	60	4.8	2.5
3 WL+	4	4	4	19	19	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 -	0	0	0	0	0	0	10	10	10	3	3	3	10	12	12	26	22	26	4	2
5 WBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	12	12	12	4.8	2
6 EBT	0	0	0	0	0	0	20	20	20	1	1	1	30	50	60	0	98	60	4.8	2.5
7 WU-	0	0	0	0	0	0	7	7	7	3	3	3	7	7	7	7	7	7	4	2
8 NBT	0	0	0	0	0	0	10	10	10	3	3	3	10	10	10	30	30	30	4	2

Last In Service Date: 06/24/2010 14:16

Permitted Phases

	12345678
Default	-2345678
External Permit 0	-2345678
External Permit 1	-2345678
External Permit 2	-2345678

TOD Schedule Report

for 2736: Mac Arthur Cswy&Terminal Isle

Print Date: 1/8/2020

Print Time: 2:03 AM

Current TOD Schedule	Plan	Cycle	Green Time 1	2	3	4	5	6	7	8	Ring Offset	Offset
			-	WBT	WL+	-	WBL	EBT	WU-	NBT		
	1	170	0	79	23	10	12	60	7	26	0	155
	2	150	0	74	23	2	10	57	7	19	0	87
	3	120	0	96	23	71	53	36	7	18	0	37
	4	150	0	74	23	2	10	57	7	19	0	22
	5	150	0	74	23	2	10	57	7	19	0	87
	6	180	0	89	23	10	12	70	7	26	0	37
	7	170	0	74	23	10	9	58	7	31	0	158
	8	160	0	126	23	101	65	54	11	34	0	84
	9	140	0	116	23	91	53	56	7	18	0	49
	10	160	0	69	23	10	12	50	7	26	0	81
	15	150	0	74	23	2	10	57	7	19	0	87
	20	140	0	116	23	91	53	56	7	18	0	49
	21	200	0	104	23	10	9	88	7	31	0	1
	25	180	0	84	23	10	12	65	7	31	0	106
	26	200	0	104	23	10	9	88	7	31	0	71
	27	180	0	84	23	10	12	65	7	31	0	134
	28	220	0	124	23	10	12	105	7	31	0	114

Local TOD Schedule

Time	Plan	DOW
0000	3	Su M T W Th F S
0500	2	M T W Th F
0500	3	Su S
0800	6	M T W Th F
1000	10	Su S
1130	5	M T W Th F
1300	6	M T W Th F
1615	7	M T W Th F
1800	1	M T W Th F
1800	7	Su S
2200	8	M T W Th F

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----3--	M T W ThF
0000	TOD LOCAL MULTIFU	----4---	SuM T W ThF S
0500	TOD OUTPUTS	--------	M T W ThF
0500	TOD LOCAL MULTIFU	--------	SuM T W ThF S
0630	TOD OUTPUTS	------2-	M T W ThF
0930	TOD OUTPUTS	--------	M T W ThF
1445	TOD OUTPUTS	----4---	M T W ThF
1615	TOD OUTPUTS	------2-	M T W ThF
1845	TOD OUTPUTS	--------	M T W ThF

Local Time of Day Function

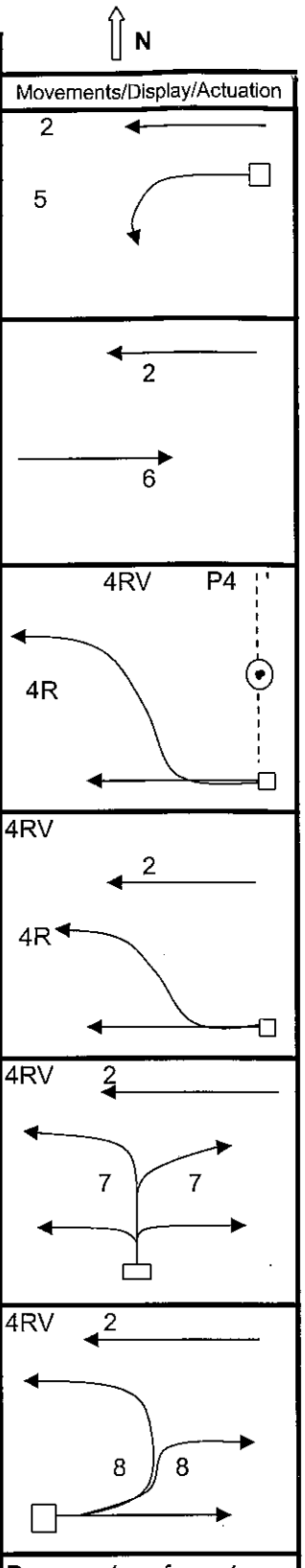
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----3--	M T W ThF
0000	TOD OUTPUTS	--------	Su S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0100	TOD OUTPUTS	-----3--	Su S
0500	TOD OUTPUTS	--------	M T W ThF
0500	TOD LOCAL MULTIFUNCT	-------	SuM T W ThF S
0600	TOD OUTPUTS	--------	Su S
0630	TOD OUTPUTS	------2-	M T W ThF
0930	TOD OUTPUTS	--------	M T W ThF
1000	TOD OUTPUTS	----4---	Su S
1445	TOD OUTPUTS	----4---	M T W ThF
1615	TOD OUTPUTS	------2-	M T W ThF
1800	TOD OUTPUTS	--------	Su S
1845	TOD OUTPUTS	--------	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

SIGNAL OPERATING PLAN

	Direction	EB	WB		WB		NB	EB				Ped Heads			
Timing Phases	Head No.	6	5	2	4RV	4R	7	8L	8					P4	Movements/Display/Actuation
Ø(2+5)	Dwell	R	<G	G	R	R	R	R	R					DW	
WB	Clear to (2+6)	R	<Y	G	R	R	R	R	R					DW	
MacArthur Csw															
(ACTUATED)															
Ø(2+6)	Dwell	G	<R	G	R	R	R	R	R					DW	
E/WB	Clear to 3	Y	<R	Y	R	R	R	R	R					DW	
	4	Y	<R	G	R	R	R	R	R					DW	
MacArthur Csw	7	Y	<R	G	R	R	R	R	R					DW	
	8	Y	<R	G	R	R	R	R	R					DW	
(RECALL)	(2+5)	Y	<R	G	R	R	R	R	R					DW	
Ø3	Dwell	R	<R	R	G	G	R	R	R					W/F	
WB	Clear to 7	R	<R	R	G	Y	R	R	R					DW	
	8	R	<R	R	G	Y	R	R	R					DW	
COAST G. EXIT	(2+5)	R	<R	R	Y	Y	R	R	R					DW	
+ PED	(2+6)	R	<R	R	Y	Y	R	R	R					DW	
(ACTUATED)															
Ø4	Dwell	R	<R	G	G	G	R	R	R					DW	
WB	Clear to 7	R	<R	G	G	Y	R	R	R					DW	
	8	R	<R	G	G	Y	R	R	R					DW	
COAST G. EXIT	(2+5)	R	<R	G	Y	Y	R	R	R					DW	
	(2+6)	R	<R	G	Y	Y	R	R	R					DW	
(ACTUATED)															
Ø7	Dwell	R	<R	G	G	R	G	R	R					DW	
NB	Clear to 8	R	<R	G	G	R	Y	R	R					DW	
	(2+5)	R	<R	G	Y	R	Y	R	R					DW	
FPL EXIT	(2+6)	R	<R	G	Y	R	Y	R	R					DW	
		R	<R	G	Y	R	Y	R	R					DW	
(ACTUATED)															
Ø8	Dwell	R	<R	G	G	R	R	<G/G	G					DW	
EB	Clear to (2+5)	R	<R	G	Y	R	R	Y	Y					DW	
	(2+6)	R	<R	G	Y	R	R	Y	Y					DW	
FERRY EXIT															
(ACTUATED)															
Flashing Operation		FY	F<R	FY	FR	FR	FR	FR	FR						Page 1 of 1



Miami-Dade County Public Works Department

Drawn	Date	MacARTHUR CSWY & TERMINAL ISLE		
WILLIAM RIVERA-PAZ	11/10/2009			
Checked	Date	Placed in Service	Phasing No.	Asset Number
H. HERNANDEZ	11/24/09	Date 1/14/10 By UPL	7	2736

Blank16

4RV

3-SECT., 1-WAY
1 AS
650- 51-311

4R

3-SECT., 1-WAY
2 AS
650- 51-311

8L

4-SECT., 1-WAY
1 AS
650- 51-411

5

3-SECT., 1-WAY
1 AS
650- 51-311

2 4 6 8

3-SECT., 1-WAY
8 AS
650- 51-311

P-4

PED. SIGNAL
COUNT-DOWN (LED)
1-SECT., 1-WAY
(4 AS)
653-191

/A/ LEFT ON GREEN ARROW ONLY

(TO BE REMOVED)

/B/ NO TURN ON RED

/C/ NO TURN ON RED

R10-11B
24" X 24"
(1 EA)
700-48-18

/W/ MacARTHUR CSWY

24" X 72"
INTERNALLY ILLUMINATED SIGN (LED)
(1 EA)
699-1-1

/X/ TERMINAL ISLE

24" X 72"
INTERNALLY ILLUMINATED SIGN (LED)
(2 EA)
699-1-1

/Y/ ← MacARTHUR CSWY

24" X 72"
INTERNALLY ILLUMINATED SIGN (LED)
(1 EA)
699-1-1

/Z/ MacARTHUR CSWY →

24" X 72"
INTERNALLY ILLUMINATED SIGN (LED)
(1 EA)
699-1-1

START CROSSING
Watch For Vehicles
DON'T START
Finish Crossing If Started
TIME REMAINING To Finish Crossing
DON'T CROSS
TO CROSS SR AIA PUSH BUTTON

R10-3E (MODIFIED)
(2 REQ'D)
NOTE: COST OF SIGN IS INCLUDED IN 665-13.

DETECTORS FOR LOOPS		
MVM'T NO.	NO. OF LOOPS	NO. OF DETS.
L-4	1	1
L-4R	1	1
L-5	1	1
L-8	1	1

EXIST. STREET LIGHT PULL BOX TO BE REMOVED AND REPLACED OUTSIDE OF PROPOSED PED. RAMP
715-1-12 [400 LF]
715-2-12 [400 LF]
715-14-12 [1 EA]

STA. 215+43.32 (74.99' LT)
BEARING N52°44'14"W
104-13-1 [250 LF]
630-1-13 [140 LF]
635-1-11 [1 EA]
659-106 [3 EA]
659-107 [1 EA]
659-110 [3 EA]

REPLACE EXIST. INTERCONNECT CABLE TO BRIDGE ROAD INTERSECTION #2738 (APPROX. 1250')
632-8-212 [1,250 LF]

STA. 217+11.11 (58.66' LT)
INSTALL PED. SIGNAL, PED. DETECTOR, AND PED. CROSSING SIGN ON NEW PEDESTAL.
104-13-1 [50 LF]
630-1-13 [30 LF]
635-1-11 [1 EA]
653-191 [1 AS]
659-107 [1 EA]
665-13 [1 EA]

REMOVE EXIST. PED. SIGNAL, PED. DETECTOR, PED. CROSSING SIGN, AND PEDESTAL.

REMOVE EXIST. OVERHEAD STREET NAME SIGN AND R10-5 SIGN AND INSTALL INTERNALLY ILLUMINATED STREET NAME SIGN ON EXIST. MAST ARM.

630-1-13 [150 LF]
635-1-11 [1 EA]

REMOVE EXIST. 3-SECTION VERTICALLY MOUNTED SIGNAL FROM SIGNAL POLE. REMOVE EXIST. OVERHEAD STREET NAME SIGN, PED. SIGNAL, PED. DETECTOR, AND PED. CROSSING SIGN. INSTALL INTERNALLY ILLUMINATED STREET NAME SIGN ON EXIST. MAST ARM.
630-1-13 [30 LF]
635-1-11 [1 EA]

STA. 217+20.13 (52.30' RT)
INSTALL PED. SIGNAL, PED. DETECTOR, AND PED. CROSSING SIGN ON NEW PEDESTAL.
630-1-13 [10 LF]
653-191 [1 AS]
659-107 [1 EA]
665-13 [1 EA]

R/W LINE

SR AIA (MACARTHUR CAUSEWAY)

630-1-13 [120 LF]
635-1-11 [1 EA]

215+00 216+00 217+00 218+00

R=1508.06'

TO PROP. FP&L SERVICE POINT SEE SHEET T-7 FOR CONTINUATION

EXIST. SIGN TO REMAIN

EXIST. ELECTRICAL SERVICE HANDHOLE

REMOVE EXIST. SIGNAL POLE FDN.

@ SURVEY

L-5 L-4R L-8

8" SAN

630-1-13 [140 LF]
635-1-11 [1 EA]

660-2-101 [4 AS]

L-8

5" WM

EXIST. CONC. BLOCK WALL

PROP. ELECTRICAL SERVICE DISCONNECT ON NEW SERVICE POLE
630-1-13 [610 LF]
635-1-11 [6 EA]
639-2-1 [1220 LF]
639-3-11 [1 AS]

REMOVE EXIST. OVERHEAD STREET NAME SIGN AND INSTALL INTERNALLY ILLUMINATED STREET NAME SIGN ON EXIST. MAST ARM.

REMOVAL ITEMS
690-10 [3 EA]
690-20 [2 EA]
690-31 [1 EA]
690-32-2 [1 EA]
690-50 [1 EA]
690-70 [2 EA]
690-100 [1 PI]
700-48-60 [7 EA]

R/W LINE

EXIST. FP&L TRANSFORMER
EXIST. FP&L SERVICE POINT
EXIST. 3-SECTION TRAFFIC SIGNAL ASSY. TO BE REMOVED AND REPLACED WITH 4-SECTION TRAFFIC SIGNAL ASSY.
650-54 [1 AS]
659-106 [4 EA]
700-48-48 [1 EA]

REMOVE EXIST. 3-SECTION VERTICALLY MOUNTED SIGNAL FROM SIGNAL POLE. REMOVE EXIST. OVERHEAD STREET NAME SIGN AND INSTALL INTERNALLY ILLUMINATED STREET NAME SIGN ON EXIST. MAST ARM.
630-1-13 [30 LF]
635-1-11 [1 EA]

630-1-13 [210 LF]
635-1-11 [2 EA]

TERMINAL ISLAND ENTRANCE

EXIST. CONTROLLER ASSEMBLY (TO BE REMOVED) CONTRACTOR SHALL INSTALL NEW CONDUIT FROM EXIST. INTERCONNECT PULL BOX TO THE NEW CONTROLLER CABINET LOCATION. SEE NOTE 5.
630-1-13 [85 LF]

2" WM (ABANDONED)

18" PIPE (ABANDONED)

STA. 216+89.75 (107.57' RT)
BEARING N 03°53'42"W
ARM LENGTH= 34.00'
630-1-13 [160 LF]
635-1-11 [1 EA]
649-31-201 [1 EA]
659-106 [6 EA]

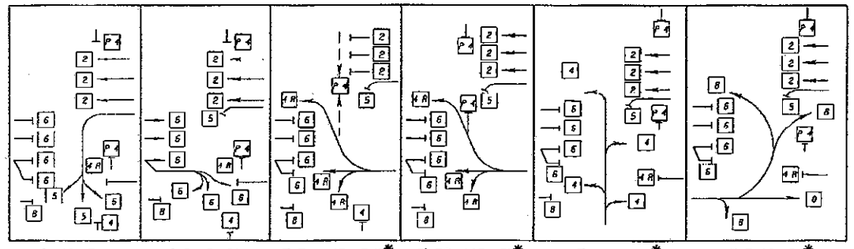
STA. 217+43.86 (62.61' RT)
630-1-13 [45 LF]
632-7-1 [1 PI]
635-1-11 [4 EA]
660-1-109 [4 EA]
670-5-120 [1 AS]
685-120 [1 EA]
685-124 [1 EA]

INTERSECTION ID # 2736

N

0 10 40
Feet

SIGNAL OPERATING PLAN



Ø 1 (2+5) Ø 2 (2+6) Ø 3A (4R+P4)* Ø 3B (4R+2)* Ø 4 (2+4)* Ø 5 (2+8)*

* INCLUDES SIGNAL HEAD 4RV OPERATIONS.

NOTES

1.- MAJOR STREET: SR AIA (MACARTHUR CAUSEWAY)
MINOR STREET: TERMINAL ISLE ENTRANCE
2.- FLASHING OPERATION: YELLOW FOR SIGNAL HEADS 2 AND 6
RED FOR SIGNAL HEADS 4, 4R, 4RV, 5, AND 8.
3.- SIGNAL HEAD 4RV TO OPERATE FOR PHASES 3A, 3B, 4, AND 5.
4.- FP&L SERVICE POINT PER MS. KAREN ELLZEY, PHONE 305-442-5290
5.- PROPOSED FP&L SERVICE POINT TO BE LOCATED AT STA 211+90.00 (55' RT).
6.- THERE IS NO AT&T SERVICE POINT AT THIS INTERSECTION. COMMUNICATIONS FOR THIS INTERSECTION IS SUPPLIED VIA INTERCONNECT CABLE FROM CONTROLLER CABINET AT THE INTERSECTION OF SR AIA AND BRIDGE ROAD. CONTRACTOR SHALL MAINTAIN EXIST. INTERCONNECT PULL BOXES AND CONDUIT IN SERVICE.
7.- SIGNAL HEAD 4RV SHALL BE LOUVERED.
8.- CONTROLLER TIMING TO BE PROVIDED BY MIAMI-DADE PUBLIC WORKS DEPT.
9.- LOOP L-4 SHALL BE 6' X 20'

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/9/08	LB	ADDED BIKE LANES & SIGNS			

CWI Civil Works, Inc.
Consulting Engineers CA 07528
10 NW 42 Ave. Suite 200
Miami, FL 33126 305-448-5955
James Gran, P.E. FL P.E. NO: 41917

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR A1A	MIAMI-DADE	414635-1-52-01

TRAFFIC SIGNAL PLAN

SHEET NO. T-6

USER:Robert Reid 12/17/2008 10:31:03 AM \\Computer-15\Server28\Projects\414635\5201\signals\plansg05.dgn

TOD Schedule Report

for 2738: Mac Arthur Cswy&Star Isle

Print Date: 10/20/2019

Print Time: 2:01 AM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2738	Mac Arthur Cswy&Star Isle	DOW-1		[03] AM PEAK	120	44	N/A	3	Max 2

Splits

PH 1	PH 2	PH 3	PH 4	PH 5	PH 6	PH 7	PH 8
EBL	WBT	EL+PED	-	-	EBT	NBT	SBT+PE
17	54	0	0	0	78	14	14

Active Phase Bank: Phase Bank 3

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 EBL	5	5	5	12	12	12	7	7	7	2.5	2.5	2.5	7	7	7	25	14	22	4.8	2
2 WBT	0	0	0	0	0	0	18	18	18	1	1	1	45	45	45	0	45	60	4.8	2
3 EL+P	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 EBT	0	0	0	0	0	0	18	18	18	1	1	1	45	45	45	0	45	60	4.8	2
7 NBT	5	5	5	9	9	9	0	0	0	0	0	0	16	16	16	16	16	16	0	0
8 SBT+	0	0	0	0	0	0	5	5	5	3	2	2	8	8	8	22	14	22	4.8	2

Last In Service Date: unknown

Permitted Phases

	12345678
Default	12---678
External Permit 0	12---678
External Permit 1	12---678
External Permit 2	12---678

TOD Schedule Report

for 2738: Mac Arthur Cswy&Star Isle

Print Date: 10/20/2019

Print Time: 2:01 AM

Current TOD Schedule	Plan	Cycle	Green Time 1 EBL	2 WBT	3 EL+P	4 -	5 -	6 EBT	7 NBT	8 SBT	Ring Offset	Offset
	1	170	17	104	0	0	0	128	14	14	0	5
	2	150	17	84	0	0	0	108	14	14	0	90
	3	120	17	54	0	0	0	78	14	14	0	44
	4	150	17	84	0	0	0	108	14	14	0	60
	5	150	17	84	0	0	0	108	14	14	0	94
	6	180	17	114	0	0	0	138	14	14	0	58
	7	170	17	104	0	0	0	128	14	14	0	9
	8	160	17	94	0	0	0	118	14	14	0	101
	10	160	17	94	0	0	0	118	14	14	0	96
	15	150	17	84	0	0	0	108	14	14	0	49
	20	140	17	74	0	0	0	98	14	14	0	31
	21	200	17	134	0	0	0	158	14	14	0	34
	25	180	17	114	0	0	0	138	14	14	0	150
	26	200	17	134	0	0	0	158	14	14	0	133
	27	180	17	114	0	0	0	138	14	14	0	133
	28	220	17	154	0	0	0	178	14	14	0	133

Local TOD Schedule

Time	Plan	DOW
0000	3	Su M T W Th F S
0500	2	M T W Th F
0500	3	Su S
0800	6	M T W Th F
1000	10	Su S
1130	5	M T W Th F
1300	6	M T W Th F
1615	7	M T W Th F
1800	1	M T W Th F
1800	7	Su S
2000	4	Su S
2200	8	M T W Th F

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----3--	SuM T W ThF S
0000	TOD LOCAL MULTIFU	----4---	SuM T W ThF S
0500	TOD LOCAL MULTIFU	--------	SuM T W ThF S
1000	TOD OUTPUTS	--------	Su S

Local Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----3--	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	----4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	--------	SuM T W ThF S
0500	TOD OUTPUTS	--------	M T W ThF
0930	TOD OUTPUTS	------2-	M T W ThF
1000	TOD OUTPUTS	--------	Su S
1500	TOD OUTPUTS	--------	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

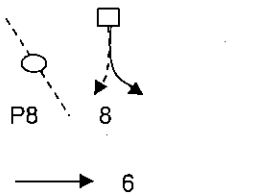
No Calendar Defined/Enabled

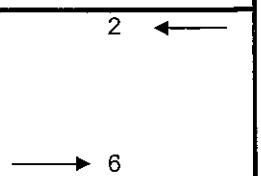
SIGNAL OPERATING PLAN

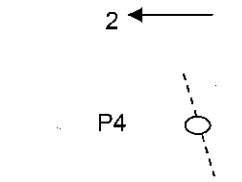
	Direction	EB		WB				SB		Ped Heads			
Timing Phases	Head No.	1	6		2				8			P4	
Ø (1+6)	Dwell	<R	G		R				G			DW	W/F
	Clear to (2+6)	<R	G		R				Y			DW	DW
SB													
STAR ISLE													
(ACTUATED)													
(2+6)	Dwell	<R	G		G				R			DW	DW
	Clear to 7	<R	Y		G				R			DW	DW
E/WB	8	<R	G		Y				R			DW	DW
MacARTHUR	(1+6)	<R	G		Y				R			DW	DW
(RECALL)													
Ø 7	Dwell	<R	R		G				R			W/F	DW
	Clear to 8	<R	R		Y				R			DW	DW
PED	(1+6)	<R	R		Y				R			DW	DW
	(2+6)	<R	R		G				R			DW	DW
(ACTUATED)													
Ø 8	Dwell	<G	G		R				R			DW	DW
EB	Clear to (1+6)	<Y	G		R				R			DW	DW
	(2+6)	<Y	G		R				R			DW	DW
MacARTHUR													
(ACTUATED)													
	Dwell												
	Clear to												
	Dwell												
	Clear to												
Flashing Operation		FR	FY		FY				FR				

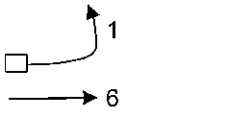
N

Movements/Display/Actuation









Miami-Dade County Public Works Department

Drawn	Date	MacARTHUR Cswy & Star Isle		
William Rivera-Paz	1/25/2010			
Checked	Date	Placed in Service	Phasing No.	Asset Number
H. HERNANDEZ	1/25/10	Date 2/3/10 By MAINT	6	2738

P4 P8

PED. SIGNAL
COUNT-DOWN (LED)
1-SECT., 1-WAY
(4 AS)
653-19I

BRIDGE ROAD
STAR ISLAND

24" X 72"
INTERNALLY ILLUMINATED SIGN (LED)
(2 EA)

699-1-1

R10-3E (MODIFIED)
(2 REQ'D)
NOTE: COST OF SIGN IS INCLUDED IN 665-13.

1

(EXIST. TO REMAIN)

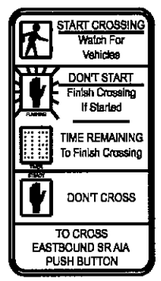
2 6 8
R Y G

(EXIST. TO REMAIN)

MacARTHUR CSWY

24" X 72"
INTERNALLY ILLUMINATED SIGN (LED)
(1 EA)

699-1-1



R10-3E (MODIFIED)
(2 REQ'D)
NOTE: COST OF SIGN IS INCLUDED IN 665-13.

DETECTORS FOR LOOPS		
MVM'T NO.	NO. OF LOOPS	NO. OF DETS.
L-1	1	1
L-8	1	1

REMOVE EXIST. POLE MOUNTED PEDESTRIAN SIGNAL, PEDESTRIAN DETECTOR, PEDESTRIAN CROSSING SIGN, AND OVERHEAD STREET NAME SIGNS. INSTALL INTERNALLY ILLUMINATED STREET NAME SIGNS ON EXIST. MAST ARMS.

STA. 117+83.96 (57.64' LT)
INSTALL PED SIGNAL, PED DETECTOR, AND PED CROSSING SIGN ON NEW PEDESTAL.
630-1-13 [20 LF]
635-1-11 [1 EA]
653-19I [1 AS]
659-107 [1 EA]
665-13 [1 EA]

EXIST. HEDGE TO REMAIN (TYP.)

EXIST. CONTROLLER CABINET TO BE REPLACED WITH NEW CONTROLLER CABINET IN SAME LOCATION.
104-13-1 [50 LF]
630-1-13 [60 LF]
632-7-1 [1 PI]
635-1-11 [5 EA]
660-1-109 [2 EA]
670-5-120 [1 AS]
685-120 [1 EA]
685-124 [1 EA]

INSTALL NEW ELECTRICAL SERVICE DISCONNECT ON NEW SERVICE POLE
630-1-13 [20 LF]
635-1-11 [3 EA]
639-2-1 [40 LF]
639-3-11 [1 AS]

EXIST. CONC. BARRIER WALL TO REMAIN.

EXIST. FP&L ELECTRICAL SERVICE POINT (TO REMAIN)

EXIST. AT&T SERVICE POINT (TO REMAIN)
630-1-13 [65 LF]
635-1-11 [1 EA]

117+00

118+00

S 64°53'56" E

660-2-101 [2 AS]

EXIST. CONC. BARRIER WALL TO REMAIN.

EXIST. PEDESTAL MOUNTED TRAFFIC SIGNAL TO REMAIN, REMOVE EXIST. PEDESTAL MOUNTED PEDESTRIAN SIGNALS, PEDESTRIAN DETECTORS, AND PEDESTRIAN CROSSING SIGNS. REPLACE EXIST. PULL BOX.
635-1-11 [1 EA]

STA. 118+48.09 (52' RT)
INSTALL PED. SIGNAL, PED DETECTOR, AND PED CROSSING SIGN ON NEW PEDESTAL.
630-1-13 [65 LF]
635-1-11 [1 EA]
653-19I [1 AS]
659-107 [1 EA]
665-13 [1 EA]

REPLACE EXIST. STREET LIGHT PULLBOX WITH NEW PULLBOX OUTSIDE OF RAMP
715-1-12 [400 LF]
715-2-12 [400 LF]
715-14-12 [1 EA]

0 10 40
Feet

STA. 118+40.85 (05' RT)
INSTALL PED SIGNALS, PED DETECTORS, AND PED CROSSING SIGNS ON PEDESTAL.
630-1-13 [80 LF]
635-1-11 [1 EA]
653-19I [2 AS]
659-107 [1 EA]
665-13 [2 EA]

BRIDGE ROAD (TO STAR ISLAND)

R/W LINE

SR AIA (MACARTHUR CAUSEWAY)

210+00

B SURVEY

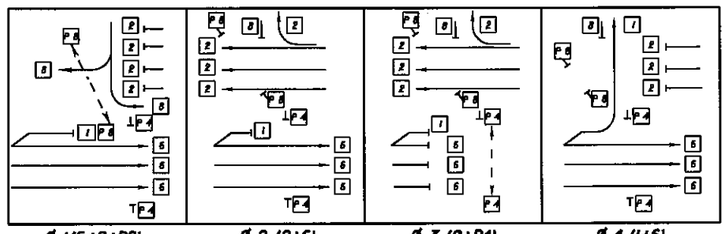
R=1508.06'

AHEAD 118+74.272 209+07.380

REMOVE EXIST. POLE-MOUNTED PEDESTRIAN SIGNAL, PEDESTRIAN DETECTOR, AND OVERHEAD STREET NAME SIGN. INSTALL INTERNALLY ILLUMINATED STREET NAME SIGN ON EXIST. MAST ARM.

R/W LINE

EXISTING SIGNAL OPERATING PLAN



NOTES

1.- THE SIGNAL WORK TO BE DONE AT THIS INTERSECTION IS THE REPLACEMENT OF THE LOOPS, THE PEDESTRIAN SIGNAL FEATURES, THE OVERHEAD STREET NAME SIGNS, AND THE CONTROLLER CABINET ASSEMBLY.
2.- FP&L SERVICE POINT PER MS. KAREN ELLZEY, PHONE 305-442-5290
3.- FP&L SERVICE POINT TO BE PICKED UP AT EXIST. PULLBOX LOCATED NEXT TO GROUND MOUNTED TRANSFORMER AT STA 117+50 (60' LT). CONTRACTOR TO VERIFY EXACT LOCATION PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
4.- AT&T SERVICE POINT PER MR. ANDRES HERNANDEZ, PHONE 305-756-4613
5.- AT&T SERVICE POINT TO BE PICKED UP AT EXIST. PULLBOX NEAR CONTROLLER CABINET. CONTRACTOR TO VERIFY EXACT LOCATION PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
6.- CONTROLLER TIMING TO BE PROVIDED BY MIAMI-DADE PUBLIC WORKS DEPT.

REMOVAL ITEMS

690-20	[4 EA]
690-50	[1 EA]
690-70	[4 EA]
690-100	[1 PI]
700-48-60	[6 EA]

INTERSECTION ID # 2738

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 6G15-23.003, F.A.C.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
12/9/08	LB	ADDED BIKE LANES & SIGNS			
2 12/1/09	LB	REVISED LOOP			

CWI Civil Works, Inc.
Consulting Engineers CA 07528
7855 NW 12 Street, Suite 218
Miami, FL 33126 305-448-5955
Linda M. Bell, P.E. FL P.E. NO.: 38542

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR AIA	MIAMI-DADE	414635-1-52-01

TRAFFIC SIGNAL PLAN

SHEET NO. T-5

USER:HP_Owner 12/2/2009 1:27:34 PM \\Computer-15\Server28\Projects\414635\5201\signals\plansp02.dgn

Historic Background Growth

20129

Terminal Island Miami Beach

Background Growth Rate

Station	Location	2015	2016	2017	2018	2019
2528	SR A1A/Macarthur CSWY, 150' N of Meridian Ave	39,500	35,500	44,000	32,000	31,000
5159	SR A1A/Collins Ave, 200' N 5 ST	13,800	13,100	14,600	11,800	12,900
6059	Ramp from Macarthur CSWY to NB Alton	15,500	18,500	19,000	16,500	16,500
9080	SR A1A/Macarthur CSWY, 1000' W of Palm Isl Ent	87,000	87,500	92,000	88,500	85,500
Total		155,800	154,600	169,600	148,800	145,900
Yearly Growth		2.9%	-0.8%	9.7%	-12.3%	-1.9%
Growth Trend						-0.5%

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 2528 - SR A1A/MACARTHUR CSWY, 150' N OF MERIDIAN AVE

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2019	31000 F	E 15500	W 15500	9.00	54.00	5.00
2018	32000 C	E 16000	W 16000	9.00	55.20	5.60
2017	44000 C	E 20000	W 24000	9.00	54.00	5.30
2016	35500 C	E 18500	W 17000	9.00	55.50	7.80
2015	39500 C	E 20000	W 19500	9.00	55.10	4.60
2014	33000 C	E 17000	W 16000	9.00	54.30	5.10
2013	34000 C	E 17500	W 16500	9.00	54.10	6.10
2012	32500 C	E 14500	W 18000	9.00	53.40	8.40
2011	35000 C	E 16500	W 18500	9.00	51.90	7.50
2010	35000 C	E 16500	W 18500	7.16	52.27	8.80
2009	35500 C	E 16500	W 19000	9.21	57.60	8.40
2008	34500 C	E 16000	W 18500	7.42	52.15	5.30
2007	34000 C	E 16500	W 17500	7.11	53.51	4.90
2006	40500 C	E 19500	W 21000	7.18	52.50	2.20
2005	35000 C	E 16000	W 19000	7.30	52.50	5.50
2004	41500 C	E 20500	W 21000	7.40	52.00	8.20

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

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 5159 - SR AIA/COLLINS AV, 200' N 5 ST(MIAMI BEACH)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2019	12900 C	N 6900	S 6000	9.00	54.60	5.00
2018	11800 C	N 6600	S 5200	9.00	54.30	5.60
2017	14600 C	N 8800	S 5800	9.00	55.00	5.30
2016	13100 C	N 6700	S 6400	9.00	54.50	7.80
2015	13800 C	N 5500	S 8300	9.00	54.70	4.60
2014	13400 C	N 6500	S 6900	9.00	54.50	5.10
2013	16400 C	N 7400	S 9000	9.00	52.40	6.10
2012	16700 C	N 7100	S 9600	9.00	55.70	8.40
2011	13600 C	N 6900	S 6700	9.00	55.10	7.50
2010	12900 C	N 6200	S 6700	8.98	54.08	8.80
2009	15300 C	N 7600	S 7700	8.99	53.24	8.40
2008	13600 C	N 6300	S 7300	9.09	55.75	5.30
2007	14300 C	N 6500	S 7800	8.01	54.34	4.90
2006	13100 C	N 5800	S 7300	7.97	54.22	2.20
2005	16100 C	N 7300	S 8800	8.80	53.80	5.50
2004	17400 C	N 8400	S 9000	9.00	53.30	8.20

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

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 6059 - RAMP 87037200 FRM EB MACARTHUR CSWY TO NB ALTON RD, 300' E OF MACARTHUR CSWY

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2019	16500 F	0	0	9.00	99.90	3.80
2018	16500 C	N 16500	0	9.00	99.90	3.80
2017	19000 F	0	0	9.00	99.90	5.50
2016	18500 C	N 18500	0	9.00	99.90	5.50
2015	15500 F	0	0	9.00	99.90	18.00
2014	15000 C	N 15000		9.00	99.90	18.00
2013	19000 F	0	0	9.00	99.90	2.20
2012	19500 C	N 19500	0	9.00	99.90	2.20
2011	18000 F	0	0	9.00	99.90	2.70
2010	18000 C	N 18000	0	8.98	99.99	2.70
2009	17500 F	0	0	8.99	99.99	7.70
2008	18000 C	N 18000	0	9.09	99.99	7.70
2007	20500 F	0	0	8.01	99.99	1.40
2006	20500 C	N 20500	0	7.97	99.99	1.40
2005	17500 S	N	B	8.80	99.90	2.60
2004	17500 F	N	B	9.00	99.90	2.60

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
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FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 9080 - SR A1A/MACARTHUR CSWY, 1000' W PALM ISL ENT @R31

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2019	85500 C	E 43500	W 42000	9.00	54.00	3.10
2018	88500 C	E 45000	W 43500	9.00	55.20	3.10
2017	92000 C	E 46000	W 46000	9.00	54.00	2.50
2016	87500 C	E 44500	W 43000	9.00	55.50	3.80
2015	87000 C	E 43000	W 44000	9.00	55.10	4.30
2014	90000 C	E 44000	W 46000	9.00	54.30	4.00
2013	77000 C	E 41000	W 36000	9.00	54.10	3.00
2012	96500 C	E 48500	W 48000	9.00	53.40	4.40
2011	90500 C	E 45500	W 45000	9.00	51.90	4.20
2010	87000 C	E 42500	W 44500	7.16	52.27	4.20
2009	94000 C	E 49000	W 45000	9.21	57.60	3.50
2008	87500 C	E 43500	W 44000	7.42	52.15	2.80
2007	91000 C	E 45000	W 46000	7.11	53.51	2.30
2006	76000 C	E 33500	W 42500	7.18	52.50	4.00
2005	69000 C	E 35000	W 34000	7.30	52.50	4.90
2004	76000 C	E 37000	W 39000	7.40	52.00	4.90

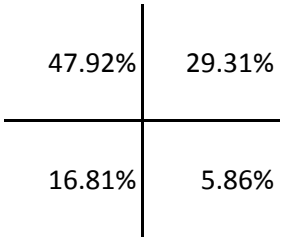
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

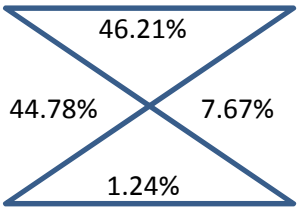
Cardinal Distribution

20129 - Terminal Island

TAZ 651

DIRECTION	2015	2045	2022
NNE	30.20%	18.60%	27.49%
ENE	2.00%	1.20%	1.81%
ESE	6.30%	4.40%	5.86%
SSE	0.00%	0.00%	0.00%
SSW	1.20%	1.36%	1.24%
WSW	13.40%	22.70%	15.57%
WNW	27.20%	35.80%	29.21%
NNW	19.60%	15.80%	18.71%



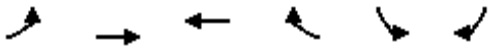


Miami-Dade 2015 Base Year Direction Trip Distribution Summary											
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW	
651	3551	Trips	601	40	126	-	25	267	541	390	2,069
651	3551	Percent	30.2	2.0	6.3	-	1.2	13.4	27.2	19.6	
652	3552	Trips	740	133	112	92	80	539	627	907	3,332
652	3552	Percent	22.9	4.1	3.5	2.8	2.5	16.7	19.4	28.1	
653	3553	Trips	597	120	187	238	48	604	488	661	2,984
653	3553	Percent	20.3	4.1	6.4	8.1	1.6	20.5	16.6	22.5	
654	3554	Trips	648	-	246	192	190	739	849	890	3,940
654	3554	Percent	17.3	-	6.6	5.1	5.1	19.7	22.6	23.7	
655	3555	Trips	2,579	-	-	-	1,029	2,523	3,354	2,903	13,375
655	3555	Percent	20.8	-	-	-	8.3	20.4	27.1	23.4	
656	3556	Trips	683	-	-	-	187	546	1,103	960	3,541
656	3556	Percent	19.6	-	-	-	5.4	15.7	31.7	27.6	
657	3557	Trips	223	26	3	49	34	152	244	154	913
657	3557	Percent	25.2	2.9	0.4	5.5	3.8	17.2	27.6	17.4	
658	3558	Trips	385	-	74	12	19	212	362	296	1,384
658	3558	Percent	28.3	-	5.4	0.9	1.4	15.6	26.6	21.8	
659	3559	Trips	1,748	-	-	-	186	1,331	2,542	2,823	9,143
659	3559	Percent	20.3	-	-	-	2.2	15.4	29.5	32.7	
660	3560	Trips	445	-	-	-	26	214	438	582	1,786
660	3560	Percent	26.1	-	-	-	1.5	12.5	25.7	34.1	
661	3561	Trips	561	-	-	-	29	307	686	550	2,237
661	3561	Percent	26.3	-	-	-	1.4	14.4	32.2	25.8	
662	3562	Trips	247	-	-	-	367	663	1,138	583	3,054
662	3562	Percent	8.2	-	-	-	12.3	22.1	38.0	19.4	
663	3563	Trips	28	-	-	-	80	28	129	132	397
663	3563	Percent	7.1	-	-	-	20.3	7.0	32.4	33.2	
664	3564	Trips	690	1,278	-	2	5	504	1,465	2,405	8,087
664	3564	Percent	10.9	20.1	-	0.0	0.1	7.9	23.1	37.9	
665	3565	Trips	1,047	-	-	16	12	2,003	2,621	4,069	11,382
665	3565	Percent	10.7	-	-	0.2	0.1	20.5	26.8	41.7	
666	3566	Trips	7	-	-	-	-	-	40	97	144
666	3566	Percent	4.6	-	-	-	-	-	27.9	67.5	
667	3567	Trips	69	191	371	354	52	-	-	11	1,049
667	3567	Percent	6.6	18.3	35.4	33.8	5.0	-	-	1.1	
668	3568	Trips	72	316	257	156	343	-	1	27	1,181
668	3568	Percent	6.2	27.0	21.9	13.3	29.2	-	0.1	2.3	
669	3569	Trips	708	1,153	1,379	1,013	424	-	6	148	4,982
669	3569	Percent	14.7	23.9	28.6	21.0	8.8	-	0.1	3.1	
670	3570	Trips	784	1,013	1,374	915	589	74	8	172	5,078
670	3570	Percent	15.9	20.6	27.9	18.6	11.9	1.5	0.2	3.5	
671	3571	Trips	868	1,044	1,129	712	718	1	40	169	4,757
671	3571	Percent	18.5	22.3	24.1	15.2	15.4	0.0	0.9	3.6	
672	3572	Trips	262	156	186	125	162	2	24	57	974
672	3572	Percent	26.9	16.0	19.1	12.8	16.7	0.3	2.4	5.8	
673	3573	Trips	172	261	359	224	207	12	36	140	1,412
673	3573	Percent	12.2	18.5	25.4	15.9	14.6	0.8	2.6	9.9	
674	3574	Trips	866	641	1,000	863	613	112	90	488	4,718
674	3574	Percent	18.5	13.7	21.4	18.5	13.1	2.4	1.9	10.4	
675	3575	Trips	904	864	749	472	371	46	31	226	3,703
675	3575	Percent	24.7	23.6	20.5	12.9	10.1	1.3	0.9	6.2	
676	3576	Trips	43	54	19	23	31	8	-	15	194
676	3576	Percent	22.4	27.9	9.7	11.7	16.2	4.3	-	7.9	

Miami-Dade 2045 Cost Feasible Plan Direction Trip Distribution Summary											
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW	
651	3551	Trips	500	33	118	-	44	610	964	424	2,777
651	3551	Percent	18.6	1.2	4.4	-	1.6	22.7	35.8	15.8	
652	3552	Trips	834	141	140	71	102	864	1,319	966	4,613
652	3552	Percent	18.8	3.2	3.2	1.6	2.3	19.5	29.7	21.8	
653	3553	Trips	563	73	181	185	40	875	1,115	522	3,691
653	3553	Percent	15.8	2.1	5.1	5.2	1.1	24.6	31.4	14.7	
654	3554	Trips	527	-	154	189	209	1,276	1,357	971	4,960
654	3554	Percent	11.3	-	3.3	4.0	4.5	27.2	29.0	20.7	
655	3555	Trips	2,507	-	-	-	984	3,119	4,529	3,116	15,245
655	3555	Percent	17.6	-	-	-	6.9	21.9	31.8	21.9	
656	3556	Trips	752	-	-	-	201	872	1,503	1,028	4,509
656	3556	Percent	17.3	-	-	-	4.6	20.0	34.5	23.6	
657	3557	Trips	255	42	13	51	17	325	482	206	1,441
657	3557	Percent	18.4	3.0	1.0	3.7	1.2	23.4	34.6	14.8	
658	3558	Trips	398	-	50	10	22	302	673	339	1,860
658	3558	Percent	22.2	-	2.8	0.6	1.2	16.8	37.5	18.9	
659	3559	Trips	1,874	-	-	-	244	1,675	3,472	2,524	10,393
659	3559	Percent	19.1	-	-	-	2.5	17.1	35.5	25.8	
660	3560	Trips	386	-	-	-	28	335	726	479	2,047
660	3560	Percent	19.8	-	-	-	1.5	17.2	37.1	24.5	
661	3561	Trips	756	-	-	-	54	536	1,539	649	3,810
661	3561	Percent	21.4	-	-	-	1.5	15.2	43.6	18.4	
662	3562	Trips	292	-	-	-	279	909	1,772	764	4,053
662	3562	Percent	7.3	-	-	-	7.0	22.6	44.1	19.0	
663	3563	Trips	23	-	-	-	29	57	119	164	393
663	3563	Percent	5.9	-	-	-	7.3	14.5	30.4	41.9	
664	3564	Trips	776	1,012	-	8	8	823	2,336	4,104	11,172
664	3564	Percent	8.6	11.2	-	0.1	0.1	9.1	25.8	45.3	
665	3565	Trips	896	-	-	16	21	1,811	3,091	5,025	12,548
665	3565	Percent	8.3	-	-	0.2	0.2	16.7	28.5	46.3	
666	3566	Trips	14	-	-	-	0	4	56	145	235
666	3566	Percent	6.4	-	-	-	0.0	2.0	25.5	66.1	
667	3567	Trips	62	202	356	394	51	-	-	12	1,076
667	3567	Percent	5.8	18.8	33.0	36.6	4.7	-	-	1.1	
668	3568	Trips	190	394	278	333	392	-	1	32	1,620
668	3568	Percent	11.7	24.3	17.2	20.6	24.2	-	0.1	2.0	
669	3569	Trips	1,117	1,381	1,871	1,307	750	-	10	135	6,631
669	3569	Percent	17.0	21.0	28.5	19.9	11.4	-	0.2	2.1	
670	3570	Trips	1,284	1,233	1,894	1,616	1,059	85	15	177	7,535
670	3570	Percent	17.4	16.8	25.7	22.0	14.4	1.2	0.2	2.4	
671	3571	Trips	1,240	959	1,638	945	797	1	46	211	5,998
671	3571	Percent	21.2	16.4	28.1	16.2	13.7	0.0	0.8	3.6	
672	3572	Trips	186	161	294	189	226	24	35	120	1,234
672	3572	Percent	15.0	13.0	23.8	15.4	18.3	1.9	2.8	9.7	
673	3573	Trips	410	361	600	469	343	30	46	233	2,524
673	3573	Percent	16.5	14.5	24.1	18.8	13.8	1.2	1.8	9.4	
674	3574	Trips	1,543	1,530	2,122	1,962	1,401	177	145	1,154	10,169
674	3574	Percent	15.4	15.3	21.2	19.6	14.0	1.8	1.4	11.5	
675	3575	Trips	896	1,067	1,015	818	747	40	74	465	5,206
675	3575	Percent	17.5	20.8	19.8	16.0	14.6	0.8	1.4	9.1	
676	3576	Trips	151	160	192	100	100	18	-	45	766
676	3576	Percent	19.8	20.9	25.1	13.1	13.0	2.3	-	5.9	

Appendix D
Intersection Capacity Analysis Worksheets

Existing Conditions



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	21	3141	2585	7	5	11
Future Volume (vph)	21	3141	2585	7	5	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.90	
Flt Protected	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (prot)	1787	5136	5136	1599	1677	
Flt Permitted	0.03	1.00	1.00	1.00	0.99	
Satd. Flow (perm)	55	5136	5136	1599	1677	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	3414	2810	8	5	12
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	23	3414	2810	8	5	0
Turn Type	pm+pt	NA	NA	Prot	Prot	
Protected Phases	1	6	2	2	8	
Permitted Phases	6	8				
Actuated Green, G (s)	161.7	166.0	150.5	150.5	4.3	
Effective Green, g (s)	161.7	166.0	150.5	150.5	4.3	
Actuated g/C Ratio	0.90	0.92	0.84	0.84	0.02	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	2.5	1.0	1.0	1.0	3.0	
Lane Grp Cap (vph)	89	5136	4294	1336	40	
v/s Ratio Prot	0.01	c0.60	0.55	0.00	0.00	
v/s Ratio Perm	0.23	0.07				
v/c Ratio	0.26	0.66	0.65	0.01	0.13	
Uniform Delay, d1	7.2	1.4	5.3	2.4	86.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3	0.8	0.0	1.5	
Delay (s)	8.4	1.7	6.1	2.4	87.5	
Level of Service	A	A	A	A	F	
Approach Delay (s)		1.8	6.1		87.5	
Approach LOS		A	A		F	

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

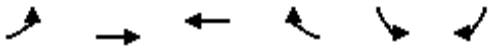
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	21	3141	2585	7	5	11	
Future Volume (vph)	21	3141	2585	7	5	11	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%	0%		0%		
Shared Lane Traffic (%)							
Turn Type	pm+pt	NA	NA	Prot	Prot		
Protected Phases	1	6	2	2	8		7
Permitted Phases	6	8					
Detector Phase	1	6	2	2	8		
Switch Phase							
Minimum Initial (s)	7.0	18.0	18.0	18.0	5.0		1.0
Minimum Split (s)	24.0	25.0	25.0	25.0	21.0		14.0
Total Split (s)	24.0	145.0	121.0	121.0	21.0		14.0
Total Split (%)	13.3%	80.6%	67.2%	67.2%	11.7%		8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 135
Control Type: Actuated-Coordinated

Splits and Phases: 1: MacArthur Causeway & Bridge Road

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	22	3272	2693	7	16
v/c Ratio	0.18	0.64	0.59	0.00	0.23
Control Delay	4.2	0.6	5.4	3.0	52.5
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	4.2	0.6	5.8	3.0	52.5
Queue Length 50th (ft)	2	0	403	1	6
Queue Length 95th (ft)	6	0	465	5	35
Internal Link Dist (ft)		1033	477		902
Turn Bay Length (ft)	140			100	
Base Capacity (vph)	221	5136	4535	1412	140
Starvation Cap Reductn	0	0	1015	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.64	0.77	0.00	0.11

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	2712	3236	14	5	50
Future Volume (vph)	12	2712	3236	14	5	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.88	
Flt Protected	0.95	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1787	5136	5136	1599	1642	
Flt Permitted	0.03	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	51	5136	5136	1599	1642	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	2948	3517	15	5	54
RTOR Reduction (vph)	0	0	0	1	52	0
Lane Group Flow (vph)	13	2948	3517	14	7	0
Turn Type	pm+pt	NA	NA	Prot	Prot	
Protected Phases	1	6	2	2	8	
Permitted Phases	6	8				
Actuated Green, G (s)	150.0	156.0	140.2	140.2	6.0	
Effective Green, g (s)	150.0	156.0	140.2	140.2	6.0	
Actuated g/C Ratio	0.88	0.92	0.82	0.82	0.04	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	2.5	1.0	1.0	1.0	3.0	
Lane Grp Cap (vph)	73	5136	4235	1318	57	
v/s Ratio Prot	0.00	c0.51	c0.68	0.01	0.00	
v/s Ratio Perm	0.15	0.07				
v/c Ratio	0.18	0.57	0.83	0.01	0.12	
Uniform Delay, d1	20.1	1.2	8.3	2.6	79.4	
Progression Factor	1.00	1.00	0.51	0.75	1.00	
Incremental Delay, d2	0.9	0.2	0.2	0.0	1.0	
Delay (s)	21.0	1.4	4.5	2.0	80.4	
Level of Service	C	A	A	A	F	
Approach Delay (s)		1.5	4.4		80.4	
Approach LOS		A	A		F	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	12	2712	3236	14	5	50	
Future Volume (vph)	12	2712	3236	14	5	50	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%	0%		0%		
Shared Lane Traffic (%)							
Turn Type	pm+pt	NA	NA	Prot	Prot		
Protected Phases	1	6	2	2	8		7
Permitted Phases	6	8					
Detector Phase	1	6	2	2	8		
Switch Phase							
Minimum Initial (s)	7.0	18.0	18.0	18.0	5.0		1.0
Minimum Split (s)	24.0	25.0	25.0	25.0	21.0		14.0
Total Split (s)	24.0	135.0	111.0	111.0	21.0		14.0
Total Split (%)	14.1%	79.4%	65.3%	65.3%	12.4%		8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None

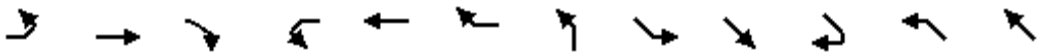
Intersection Summary
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 9 (5%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: MacArthur Causeway & Bridge Road

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	13	2948	3517	15	59
v/c Ratio	0.11	0.57	0.79	0.01	0.49
Control Delay	3.5	0.5	5.7	0.6	34.4
Queue Delay	0.0	0.0	1.3	0.0	0.0
Total Delay	3.5	0.5	6.9	0.6	34.4
Queue Length 50th (ft)	1	0	54	0	6
Queue Length 95th (ft)	5	0	m78	m0	56
Internal Link Dist (ft)		1033	477		902
Turn Bay Length (ft)	140			100	
Base Capacity (vph)	219	5136	4445	1384	184
Starvation Cap Reductn	0	0	653	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.57	0.93	0.01	0.32

Intersection Summary

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



Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	29	31	8	52	6	2543	0	2981	110	55	7	18
Future Volume (vph)	29	31	8	52	6	2543	0	2981	110	55	7	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			7.0	7.0		7.0	7.0			6.0
Lane Util. Factor		1.00			1.00	0.76		0.94	1.00			1.00
Frt		0.98			1.00	0.85		1.00	0.95			1.00
Flt Protected		0.98			0.96	1.00		0.95	1.00			0.99
Satd. Flow (prot)		1812			1801	3646		5040	1787			1855
Flt Permitted		0.98			0.96	1.00		0.94	1.00			0.99
Satd. Flow (perm)		1812			1801	3646		4987	1787			1855
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	34	9	57	7	2764	0	3240	120	60	8	20
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	75	0	0	64	2764	0	3240	180	0	0	28
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 8 7		6				
Actuated Green, G (s)		13.3			10.8	157.3		117.8	117.8			17.1
Effective Green, g (s)		13.3			10.8	155.3		117.8	117.8			17.1
Actuated g/C Ratio		0.07			0.06	0.86		0.65	0.65			0.09
Clearance Time (s)		6.0			7.0	7.0		7.0	7.0			
Vehicle Extension (s)		3.0			2.0	1.0		1.0	1.0			
Lane Grp Cap (vph)		133			107	3128		3245	1163			175
v/s Ratio Prot		0.04			0.04	c0.66			0.10			c0.02
v/s Ratio Perm						0.10		c0.65				
v/c Ratio		0.56			0.60	0.88		1.00	0.15			0.16
Uniform Delay, d1		81.0			83.0	7.5		31.5	12.3			75.3
Progression Factor		1.00			1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		5.4			5.9	3.2		15.4	0.3			0.2
Delay (s)		86.4			88.9	10.8		47.0	12.6			75.5
Level of Service		F			F	B		D	B			E
Approach Delay (s)		86.4			12.5		0.0		45.1			75.5
Approach LOS		F			B		A		D			E

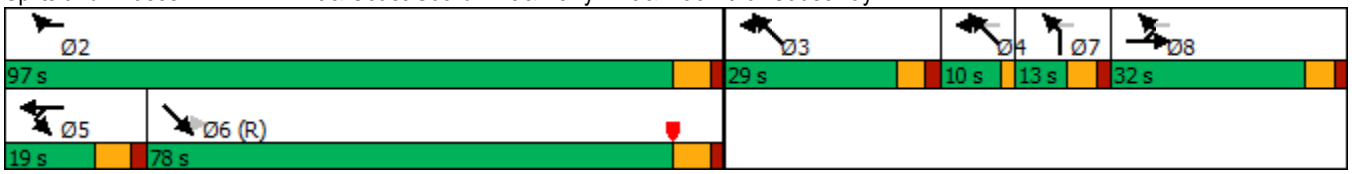
Intersection Summary			
HCM 2000 Control Delay	31.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	181.0	Sum of lost time (s)	34.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	29	31	8	52	6	2543	0	2981	110	55	7	18
Future Volume (vph)	29	31	8	52	6	2543	0	2981	110	55	7	18
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%		0%		0%			0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 8 7		6				
Detector Phase	8	8		5	5	2	7	6	6		3 4	3 4
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	20.0	7.0	20.0	20.0			
Minimum Split (s)	24.0	24.0		19.0	19.0	27.0	13.0	27.0	27.0			
Total Split (s)	32.0	32.0		19.0	19.0	97.0	13.0	78.0	78.0			
Total Split (%)	17.7%	17.7%		10.5%	10.5%	53.6%	7.2%	43.1%	43.1%			
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0	4.0	5.0	5.0			
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0			
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)		6.0			7.0	7.0	6.0	7.0	7.0			
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes			
Recall Mode	None	None		None	None	None	None	C-Max	C-Max			

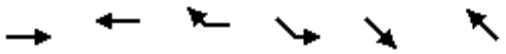
Intersection Summary
Cycle Length: 181
Actuated Cycle Length: 181
Offset: 37 (20%), Referenced to phase 6:SETL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 2: FPL Exit & Coast Guard Exit & Ferry Exit & MacArthur Causeway



Lane Group	Ø3	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Shared Lane Traffic (%)		
Turn Type		
Protected Phases	3	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	8.0
Minimum Split (s)	29.0	10.0
Total Split (s)	29.0	10.0
Total Split (%)	16%	6%
Yellow Time (s)	4.0	2.0
All-Red Time (s)	2.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None

Intersection Summary

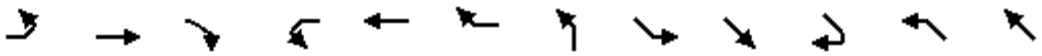


Lane Group	EBT	WBT	WBR	SEL	SET	NWT
Lane Group Flow (vph)	75	64	2764	3240	180	28
v/c Ratio	0.56	0.60	0.83	0.98	0.15	0.20
Control Delay	96.9	104.5	6.5	42.8	14.1	79.8
Queue Delay	0.0	0.0	0.0	41.2	0.0	0.0
Total Delay	96.9	104.5	6.5	84.0	14.1	79.8
Queue Length 50th (ft)	88	76	427	~1429	82	32
Queue Length 95th (ft)	147	131	580	#1622	144	68
Internal Link Dist (ft)	459	1327			265	705
Turn Bay Length (ft)						
Base Capacity (vph)	260	127	3341	3290	1179	235
Starvation Cap Reductn	0	0	0	392	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.50	0.83	1.12	0.15	0.12

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.



Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	31	70	8	3	26	3061	0	2658	6	53	8	119
Future Volume (vph)	31	70	8	3	26	3061	0	2658	6	53	8	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			7.0	7.0		7.0	7.0			6.0
Lane Util. Factor		1.00			1.00	0.76		0.94	1.00			1.00
Frt		0.99			1.00	0.85		1.00	0.87			1.00
Flt Protected		0.99			1.00	1.00		0.95	1.00			1.00
Satd. Flow (prot)		1836			1872	3646		5040	1629			1873
Flt Permitted		0.99			1.00	1.00		0.92	1.00			1.00
Satd. Flow (perm)		1836			1872	3646		4859	1629			1873
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	76	9	3	28	3327	0	2889	7	58	9	129
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	119	0	0	31	3327	0	2889	65	0	0	139
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Actuated Green, G (s)		16.3			6.4	136.6		96.9	96.9			28.4
Effective Green, g (s)		16.3			6.4	134.6		96.9	96.9			28.4
Actuated g/C Ratio		0.10			0.04	0.79		0.57	0.57			0.17
Clearance Time (s)		6.0			7.0	7.0		7.0	7.0			
Vehicle Extension (s)		3.0			2.0	1.0		1.0	1.0			
Lane Grp Cap (vph)		176			70	2886		2769	928			312
v/s Ratio Prot		0.06			0.02	c0.75			0.04			c0.07
v/s Ratio Perm						0.16		0.59				
v/c Ratio		0.68			0.44	1.15		1.04	0.07			0.45
Uniform Delay, d1		74.3			80.1	17.7		36.5	16.4			63.7
Progression Factor		1.00			1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		9.8			1.6	73.2		28.4	0.1			0.4
Delay (s)		84.1			81.7	90.9		64.9	16.5			64.1
Level of Service		F			F	F		E	B			E
Approach Delay (s)		84.1			90.8		0.0		63.9			64.1
Approach LOS		F			F		A		E			E

Intersection Summary			
HCM 2000 Control Delay	78.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	34.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

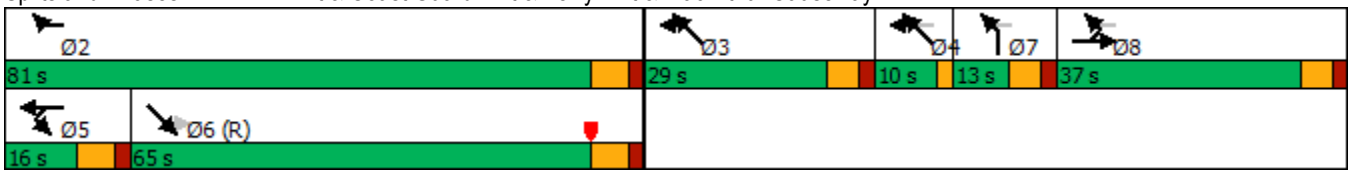
c Critical Lane Group

Movement	NWR
Lane Configurations	
Traffic Volume (vph)	1
Future Volume (vph)	1
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	1
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Lane Group	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	31	70	8	3	26	3061	0	2658	6	53	8	119
Future Volume (vph)	31	70	8	3	26	3061	0	2658	6	53	8	119
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%		0%		0%			0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Detector Phase	8	8		5	5	2	7	6	6		3 4	3 4
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	20.0	7.0	20.0	20.0			
Minimum Split (s)	24.0	24.0		16.0	16.0	27.0	13.0	27.0	27.0			
Total Split (s)	37.0	37.0		16.0	16.0	81.0	13.0	65.0	65.0			
Total Split (%)	21.8%	21.8%		9.4%	9.4%	47.6%	7.6%	38.2%	38.2%			
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0	4.0	5.0	5.0			
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0			
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)		6.0			7.0	7.0	6.0	7.0	7.0			
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes			
Recall Mode	None	None		None	None	None	None	C-Max	C-Max			

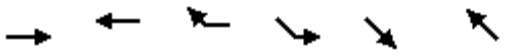
Intersection Summary
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 158 (93%), Referenced to phase 6:SETL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 2: FPL Exit & Coast Guard Exit & Ferry Exit & MacArthur Causeway



Lane Group	NWR	Ø3	Ø4
Lane Configurations			
Traffic Volume (vph)	1		
Future Volume (vph)	1		
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor	0.92		
Growth Factor	100%		
Heavy Vehicles (%)	1%		
Bus Blockages (#/hr)	0		
Parking (#/hr)			
Mid-Block Traffic (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases		3	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)		1.0	8.0
Minimum Split (s)		29.0	10.0
Total Split (s)		29.0	10.0
Total Split (%)		17%	6%
Yellow Time (s)		4.0	2.0
All-Red Time (s)		2.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Recall Mode		None	None

Intersection Summary

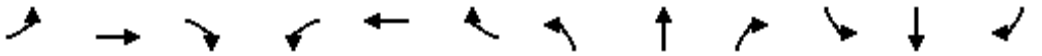


Lane Group	EBT	WBT	WBR	SEL	SET	NWT
Lane Group Flow (vph)	119	31	3327	2889	65	139
v/c Ratio	0.68	0.38	1.09	1.03	0.07	0.52
Control Delay	92.4	91.7	61.7	58.2	19.5	73.8
Queue Delay	0.0	0.0	4.7	0.0	0.0	0.0
Total Delay	92.4	91.7	66.4	58.2	19.5	73.8
Queue Length 50th (ft)	131	34	~1818	~1239	32	146
Queue Length 95th (ft)	199	73	#1942	#1474	70	214
Internal Link Dist (ft)	459	1327			265	705
Turn Bay Length (ft)						
Base Capacity (vph)	334	102	3059	2810	942	273
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	30	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.30	1.10	1.03	0.07	0.51

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.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1239	522	16	1026	69	312	149	19	74	157	793
Future Volume (vph)	0	1239	522	16	1026	69	312	149	19	74	157	793
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	0.98			1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)		3217	1439	1608	3217	1439	3120	1632			1666	1439
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (perm)		3217	1439	1608	3217	1439	3120	1632			1666	1439
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1291	544	17	1069	72	325	155	20	77	164	826
RTOR Reduction (vph)	0	0	141	0	0	25	0	3	0	0	0	0
Lane Group Flow (vph)	0	1291	403	17	1069	47	325	172	0	0	241	826
Confl. Peds. (#/hr)			30	30					48	48		
Confl. Bikes (#/hr)			12			1			5			
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Actuated Green, G (s)		97.5	97.5	3.7	107.2	107.2	23.8	23.8			31.0	180.0
Effective Green, g (s)		97.5	97.5	3.7	107.2	107.2	23.8	23.8			31.0	180.0
Actuated g/C Ratio		0.54	0.54	0.02	0.60	0.60	0.13	0.13			0.17	1.00
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		1.0	1.0	2.0	1.0	1.0	3.0	3.0			3.5	
Lane Grp Cap (vph)		1742	779	33	1915	857	412	215			286	1439
v/s Ratio Prot		c0.40	0.28	0.01	0.33	0.03	0.10	c0.11			c0.14	
v/s Ratio Perm												c0.57
v/c Ratio		0.74	0.52	0.52	0.56	0.06	0.79	0.80			0.84	0.57
Uniform Delay, d1		31.6	26.3	87.3	22.1	15.2	75.7	75.8			72.1	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		2.9	2.5	5.5	1.2	0.1	9.7	19.0			20.1	1.7
Delay (s)		34.5	28.7	92.8	23.2	15.3	85.3	94.8			92.2	1.7
Level of Service		C	C	F	C	B	F	F			F	A
Approach Delay (s)		32.8			23.8			88.6			22.1	
Approach LOS		C			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

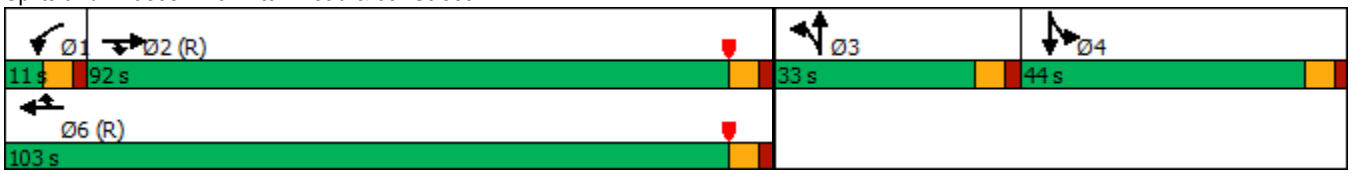
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1239	522	16	1026	69	312	149	19	74	157	793
Future Volume (vph)	0	1239	522	16	1026	69	312	149	19	74	157	793
Confl. Peds. (#/hr)			30	30					48	48		
Confl. Bikes (#/hr)			12			1			5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Detector Phase		2	2	1	6	6	3	3		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0	5.0	7.0	7.0		7.0	7.0	
Minimum Split (s)		35.0	35.0	11.0	35.0	35.0	24.0	24.0		31.0	31.0	
Total Split (s)		92.0	92.0	11.0	103.0	103.0	33.0	33.0		44.0	44.0	
Total Split (%)		51.1%	51.1%	6.1%	57.2%	57.2%	18.3%	18.3%		24.4%	24.4%	
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lead/Lag		Lag	Lag	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode		C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	

Intersection Summary

Cycle Length: 180
Actuated Cycle Length: 180
Offset: 114 (63%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 3: Alton Road & 5th Street



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1291	544	17	1069	72	325	175	241	826
v/c Ratio	0.72	0.58	0.33	0.56	0.08	0.79	0.80	0.84	0.57
Control Delay	35.6	14.9	102.3	24.7	5.6	89.6	100.3	96.1	1.7
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Total Delay	35.6	14.9	102.3	25.4	5.6	89.6	100.3	96.1	1.7
Queue Length 50th (ft)	640	194	20	403	5	193	199	278	0
Queue Length 95th (ft)	797	350	51	524	34	250	291	374	0
Internal Link Dist (ft)	549			717			263	439	
Turn Bay Length (ft)		225	150						
Base Capacity (vph)	1784	934	51	1915	881	468	247	351	1439
Starvation Cap Reductn	0	0	0	462	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.58	0.33	0.74	0.08	0.69	0.71	0.69	0.57

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1122	415	14	1462	114	551	174	12	75	170	799
Future Volume (vph)	0	1122	415	14	1462	114	551	174	12	75	170	799
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	0.99			1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99			1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)		3217	1439	1608	3217	1439	3120	1664			1668	1439
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (perm)		3217	1439	1608	3217	1439	3120	1664			1668	1439
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1194	441	15	1555	121	586	185	13	80	181	850
RTOR Reduction (vph)	0	0	168	0	0	40	0	2	0	0	0	0
Lane Group Flow (vph)	0	1194	273	15	1555	81	586	196	0	0	261	850
Confl. Peds. (#/hr)			34	34					33	33		
Confl. Bikes (#/hr)			11			2			14			
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Actuated Green, G (s)		70.4	70.4	2.0	78.4	78.4	18.0	18.0			25.6	140.0
Effective Green, g (s)		70.4	70.4	2.0	78.4	78.4	18.0	18.0			25.6	140.0
Actuated g/C Ratio		0.50	0.50	0.01	0.56	0.56	0.13	0.13			0.18	1.00
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		1.0	1.0	2.0	1.0	1.0	3.0	3.0			3.5	
Lane Grp Cap (vph)		1617	723	22	1801	805	401	213			305	1439
v/s Ratio Prot		0.37	0.19	0.01	c0.48	0.06	c0.19	0.12			c0.16	
v/s Ratio Perm												0.59
v/c Ratio		0.74	0.38	0.68	0.86	0.10	1.46	0.92			0.86	0.59
Uniform Delay, d1		27.5	21.4	68.7	26.2	14.4	61.0	60.3			55.4	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		3.1	1.5	52.0	5.8	0.2	221.0	40.4			20.7	1.8
Delay (s)		30.6	22.9	120.7	32.0	14.6	282.0	100.7			76.1	1.8
Level of Service		C	C	F	C	B	F	F			E	A
Approach Delay (s)		28.5			31.6			236.2			19.2	
Approach LOS		C			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	58.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

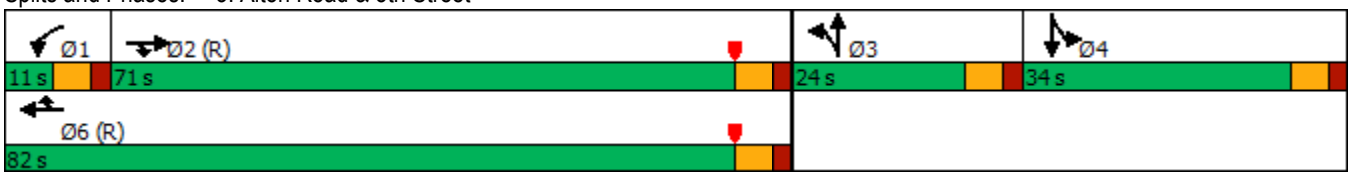
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1122	415	14	1462	114	551	174	12	75	170	799
Future Volume (vph)	0	1122	415	14	1462	114	551	174	12	75	170	799
Confl. Peds. (#/hr)			34	34					33	33		
Confl. Bikes (#/hr)			11			2			14			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Detector Phase		2	2	1	6	6	3	3		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0	5.0	7.0	7.0		7.0	7.0	
Minimum Split (s)		35.0	35.0	11.0	35.0	35.0	24.0	24.0		31.0	31.0	
Total Split (s)		71.0	71.0	11.0	82.0	82.0	24.0	24.0		34.0	34.0	
Total Split (%)		50.7%	50.7%	7.9%	58.6%	58.6%	17.1%	17.1%		24.3%	24.3%	
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lead/Lag		Lag	Lag	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode		C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57 (41%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 125
Control Type: Actuated-Coordinated

Splits and Phases: 3: Alton Road & 5th Street



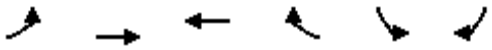
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1194	441	15	1555	121	586	198	261	850
v/c Ratio	0.70	0.48	0.26	0.86	0.14	1.46	0.92	0.86	0.59
Control Delay	29.1	7.4	77.2	33.1	5.2	262.5	103.1	80.4	1.8
Queue Delay	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	7.4	77.2	35.7	5.2	262.5	103.1	80.4	1.8
Queue Length 50th (ft)	402	45	14	638	12	~375	179	228	0
Queue Length 95th (ft)	575	146	39	761	43	#495	#333	#358	0
Internal Link Dist (ft)	549			717			263	439	
Turn Bay Length (ft)		225	150						
Base Capacity (vph)	1699	919	57	1801	846	401	215	333	1439
Starvation Cap Reductn	0	0	0	149	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.48	0.26	0.94	0.14	1.46	0.92	0.78	0.59

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.

Future without Project Conditions



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	3204	2637	7	5	11
Future Volume (vph)	22	3204	2637	7	5	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.91	
Flt Protected	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (prot)	1787	5136	5136	1599	1680	
Flt Permitted	0.03	1.00	1.00	1.00	0.98	
Satd. Flow (perm)	60	5136	5136	1599	1680	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	23	3338	2747	7	5	11
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	23	3338	2747	7	5	0
Turn Type	pm+pt	NA	NA	Prot	Prot	
Protected Phases	1	6	2	2	8	
Permitted Phases	6	8				
Actuated Green, G (s)	161.7	166.0	150.5	150.5	4.3	
Effective Green, g (s)	161.7	166.0	150.5	150.5	4.3	
Actuated g/C Ratio	0.90	0.92	0.84	0.84	0.02	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	2.5	1.0	1.0	1.0	3.0	
Lane Grp Cap (vph)	94	5136	4294	1336	40	
v/s Ratio Prot	0.01	c0.58	0.53	0.00	0.00	
v/s Ratio Perm	0.21	0.07				
v/c Ratio	0.24	0.65	0.64	0.00	0.13	
Uniform Delay, d1	6.4	1.4	5.2	2.4	86.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.3	0.7	0.0	1.5	
Delay (s)	7.4	1.6	5.9	2.4	87.5	
Level of Service	A	A	A	A	F	
Approach Delay (s)		1.7	5.9		87.5	
Approach LOS		A	A		F	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

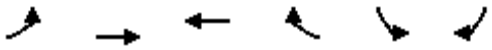
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	22	3204	2637	7	5	11	
Future Volume (vph)	22	3204	2637	7	5	11	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%	0%		0%		
Shared Lane Traffic (%)							
Turn Type	pm+pt	NA	NA	Prot	Prot		
Protected Phases	1	6	2	2	8		7
Permitted Phases	6	8					
Detector Phase	1	6	2	2	8		
Switch Phase							
Minimum Initial (s)	7.0	18.0	18.0	18.0	5.0		1.0
Minimum Split (s)	24.0	25.0	25.0	25.0	21.0		14.0
Total Split (s)	24.0	145.0	121.0	121.0	21.0		14.0
Total Split (%)	13.3%	80.6%	67.2%	67.2%	11.7%		8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 135
Control Type: Actuated-Coordinated

Splits and Phases: 1: MacArthur Causeway & Bridge Road

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	23	3338	2747	7	16
v/c Ratio	0.19	0.65	0.61	0.00	0.23
Control Delay	4.6	0.6	5.6	3.0	52.5
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	4.6	0.6	5.9	3.0	52.5
Queue Length 50th (ft)	2	0	420	1	6
Queue Length 95th (ft)	6	0	484	5	35
Internal Link Dist (ft)		1033	477		902
Turn Bay Length (ft)	140			100	
Base Capacity (vph)	217	5136	4535	1412	140
Starvation Cap Reductn	0	0	991	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.65	0.78	0.00	0.11

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	2767	3301	14	5	51
Future Volume (vph)	12	2767	3301	14	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.88	
Flt Protected	0.95	1.00	1.00	1.00	1.00	
Satd. Flow (prot)	1787	5136	5136	1599	1642	
Flt Permitted	0.03	1.00	1.00	1.00	1.00	
Satd. Flow (perm)	51	5136	5136	1599	1642	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	3008	3588	15	5	55
RTOR Reduction (vph)	0	0	0	1	53	0
Lane Group Flow (vph)	13	3008	3588	14	7	0
Turn Type	pm+pt	NA	NA	Prot	Prot	
Protected Phases	1	6	2	2	8	
Permitted Phases	6	8				
Actuated Green, G (s)	149.9	156.0	140.1	140.1	6.1	
Effective Green, g (s)	149.9	156.0	140.1	140.1	6.1	
Actuated g/C Ratio	0.88	0.92	0.82	0.82	0.04	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	2.5	1.0	1.0	1.0	3.0	
Lane Grp Cap (vph)	73	5136	4232	1317	58	
v/s Ratio Prot	0.00	c0.52	c0.70	0.01	0.00	
v/s Ratio Perm	0.15	0.07				
v/c Ratio	0.18	0.59	0.85	0.01	0.12	
Uniform Delay, d1	22.9	1.2	8.7	2.7	79.4	
Progression Factor	1.00	1.00	0.78	0.20	1.00	
Incremental Delay, d2	0.9	0.2	0.2	0.0	0.9	
Delay (s)	23.8	1.4	7.0	0.5	80.3	
Level of Service	C	A	A	A	F	
Approach Delay (s)		1.5	7.0		80.3	
Approach LOS		A	A		F	

Intersection Summary			
HCM 2000 Control Delay	5.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	12	2767	3301	14	5	51	
Future Volume (vph)	12	2767	3301	14	5	51	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%	0%		0%		
Shared Lane Traffic (%)							
Turn Type	pm+pt	NA	NA	Prot	Prot		
Protected Phases	1	6	2	2	8		7
Permitted Phases	6	8					
Detector Phase	1	6	2	2	8		
Switch Phase							
Minimum Initial (s)	7.0	18.0	18.0	18.0	5.0		1.0
Minimum Split (s)	24.0	25.0	25.0	25.0	21.0		14.0
Total Split (s)	24.0	135.0	111.0	111.0	21.0		14.0
Total Split (%)	14.1%	79.4%	65.3%	65.3%	12.4%		8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None

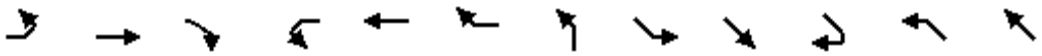
Intersection Summary
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 9 (5%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: MacArthur Causeway & Bridge Road

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	13	3008	3588	15	60
v/c Ratio	0.11	0.59	0.81	0.01	0.50
Control Delay	3.5	0.5	6.8	0.6	34.4
Queue Delay	0.0	0.0	1.8	0.0	0.0
Total Delay	3.5	0.5	8.5	0.6	34.4
Queue Length 50th (ft)	1	0	58	0	6
Queue Length 95th (ft)	5	0	m78	m0	57
Internal Link Dist (ft)		1033	477		902
Turn Bay Length (ft)	140			100	
Base Capacity (vph)	219	5136	4445	1384	185
Starvation Cap Reductn	0	0	653	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.59	0.95	0.01	0.32

Intersection Summary

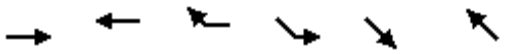
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	30	32	8	53	6	2594	0	3041	112	56	7	19
Future Volume (vph)	30	32	8	53	6	2594	0	3041	112	56	7	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			7.0	7.0		7.0	7.0			6.0
Lane Util. Factor		1.00			1.00	0.76		0.94	1.00			1.00
Frt		0.98			1.00	0.85		1.00	0.95			1.00
Flt Protected		0.98			0.96	1.00		0.95	1.00			0.99
Satd. Flow (prot)		1813			1801	3646		5040	1787			1856
Flt Permitted		0.98			0.96	1.00		0.94	1.00			0.99
Satd. Flow (perm)		1813			1801	3646		4987	1787			1856
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	35	9	58	7	2820	0	3305	122	61	8	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	65	2820	0	3305	183	0	0	29
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Actuated Green, G (s)		13.4			10.9	157.2		117.5	117.5			17.2
Effective Green, g (s)		13.4			10.9	155.2		117.5	117.5			17.2
Actuated g/C Ratio		0.07			0.06	0.86		0.65	0.65			0.10
Clearance Time (s)		6.0			7.0	7.0		7.0	7.0			
Vehicle Extension (s)		3.0			2.0	1.0		1.0	1.0			
Lane Grp Cap (vph)		134			108	3126		3237	1160			176
v/s Ratio Prot		0.04			0.04	c0.67			0.10			c0.02
v/s Ratio Perm						0.10		c0.66				
v/c Ratio		0.57			0.60	0.90		1.02	0.16			0.16
Uniform Delay, d1		81.0			82.9	8.1		31.8	12.4			75.3
Progression Factor		1.00			1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		5.8			6.3	4.0		21.4	0.3			0.2
Delay (s)		86.9			89.3	12.1		53.1	12.7			75.5
Level of Service		F			F	B		D	B			E
Approach Delay (s)		86.9			13.8		0.0		51.0			75.5
Approach LOS		F			B		A		D			E

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	181.0	Sum of lost time (s)	34.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	WBR	SEL	SET	NWT
Lane Group Flow (vph)	77	65	2820	3305	183	29
v/c Ratio	0.57	0.60	0.84	1.01	0.16	0.21
Control Delay	97.1	104.5	7.3	48.4	14.3	79.8
Queue Delay	0.0	0.0	0.0	36.4	0.0	0.0
Total Delay	97.1	104.5	7.3	84.8	14.3	79.8
Queue Length 50th (ft)	90	77	468	~1490	84	33
Queue Length 95th (ft)	149	132	643	#1682	147	70
Internal Link Dist (ft)	459	1327			265	705
Turn Bay Length (ft)						
Base Capacity (vph)	260	128	3339	3280	1175	235
Starvation Cap Reductn	0	0	0	373	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.51	0.84	1.14	0.16	0.12

Intersection Summary

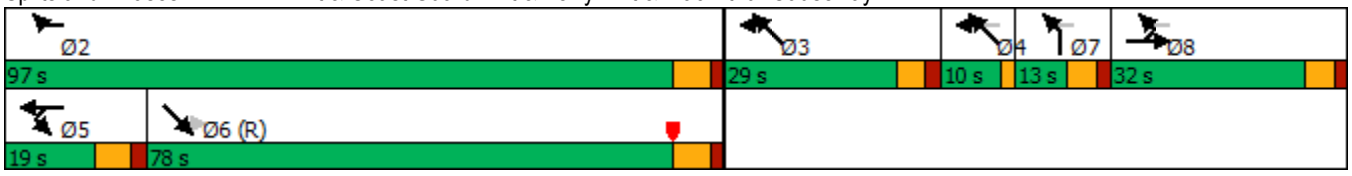
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	30	32	8	53	6	2594	0	3041	112	56	7	19
Future Volume (vph)	30	32	8	53	6	2594	0	3041	112	56	7	19
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%		0%		0%			0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Detector Phase	8	8		5	5	2	7	6	6		3 4	3 4
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	20.0	7.0	20.0	20.0			
Minimum Split (s)	24.0	24.0		19.0	19.0	27.0	13.0	27.0	27.0			
Total Split (s)	32.0	32.0		19.0	19.0	97.0	13.0	78.0	78.0			
Total Split (%)	17.7%	17.7%		10.5%	10.5%	53.6%	7.2%	43.1%	43.1%			
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0	4.0	5.0	5.0			
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0			
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)		6.0			7.0	7.0	6.0	7.0	7.0			
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes			
Recall Mode	None	None		None	None	None	None	C-Max	C-Max			

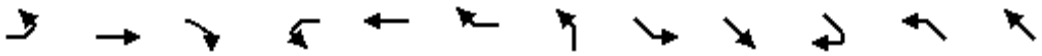
Intersection Summary
Cycle Length: 181
Actuated Cycle Length: 181
Offset: 37 (20%), Referenced to phase 6:SETL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 2: FPL Exit & Coast Guard Exit & Ferry Exit & MacArthur Causeway



Lane Group	Ø3	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Shared Lane Traffic (%)		
Turn Type		
Protected Phases	3	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	8.0
Minimum Split (s)	29.0	10.0
Total Split (s)	29.0	10.0
Total Split (%)	16%	6%
Yellow Time (s)	4.0	2.0
All-Red Time (s)	2.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None

Intersection Summary

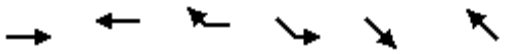


Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	32	71	8	3	27	3123	0	2712	6	54	8	121
Future Volume (vph)	32	71	8	3	27	3123	0	2712	6	54	8	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			7.0	7.0		7.0	7.0			6.0
Lane Util. Factor		1.00			1.00	0.76		0.94	1.00			1.00
Frt		0.99			1.00	0.85		1.00	0.87			1.00
Flt Protected		0.99			1.00	1.00		0.95	1.00			1.00
Satd. Flow (prot)		1836			1872	3646		5040	1629			1873
Flt Permitted		0.99			1.00	1.00		0.92	1.00			1.00
Satd. Flow (perm)		1836			1872	3646		4858	1629			1873
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	77	9	3	29	3395	0	2948	7	59	9	132
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	121	0	0	32	3395	0	2948	66	0	0	142
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Actuated Green, G (s)		16.5			6.5	136.4		96.4	96.4			28.6
Effective Green, g (s)		16.5			6.5	134.4		96.4	96.4			28.6
Actuated g/C Ratio		0.10			0.04	0.79		0.57	0.57			0.17
Clearance Time (s)		6.0			7.0	7.0		7.0	7.0			
Vehicle Extension (s)		3.0			2.0	1.0		1.0	1.0			
Lane Grp Cap (vph)		178			71	2882		2754	923			315
v/s Ratio Prot		0.07			0.02	c0.76			0.04			c0.08
v/s Ratio Perm						0.17		0.61				
v/c Ratio		0.68			0.45	1.18		1.07	0.07			0.45
Uniform Delay, d1		74.2			80.0	17.8		36.8	16.6			63.6
Progression Factor		1.00			1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		9.9			1.7	84.0		38.4	0.1			0.4
Delay (s)		84.1			81.7	101.8		75.2	16.7			64.0
Level of Service		F			F	F		E	B			E
Approach Delay (s)		84.1			101.7		0.0		73.9			64.0
Approach LOS		F			F		A		E			E

Intersection Summary			
HCM 2000 Control Delay	88.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	34.0
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWR
Lane Configurations	
Traffic Volume (vph)	1
Future Volume (vph)	1
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	1
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	



Lane Group	EBT	WBT	WBR	SEL	SET	NWT
Lane Group Flow (vph)	121	32	3395	2948	66	142
v/c Ratio	0.68	0.39	1.11	1.06	0.07	0.52
Control Delay	92.2	91.9	72.2	67.3	19.8	73.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.2	91.9	72.2	67.3	19.8	73.7
Queue Length 50th (ft)	133	35	~1889	~1293	33	149
Queue Length 95th (ft)	201	75	#2010	#1529	m70	218
Internal Link Dist (ft)	459	1327			265	705
Turn Bay Length (ft)						
Base Capacity (vph)	334	102	3053	2794	937	274
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	39	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.31	1.13	1.06	0.07	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

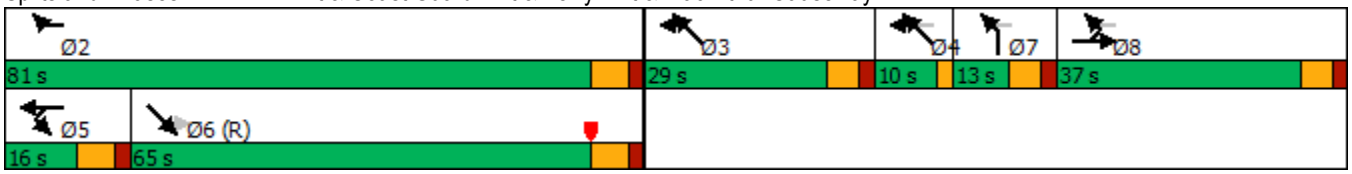
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	32	71	8	3	27	3123	0	2712	6	54	8	121
Future Volume (vph)	32	71	8	3	27	3123	0	2712	6	54	8	121
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%		0%		0%			0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Detector Phase	8	8		5	5	2	7	6	6		3 4	3 4
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	20.0	7.0	20.0	20.0			
Minimum Split (s)	24.0	24.0		16.0	16.0	27.0	13.0	27.0	27.0			
Total Split (s)	37.0	37.0		16.0	16.0	81.0	13.0	65.0	65.0			
Total Split (%)	21.8%	21.8%		9.4%	9.4%	47.6%	7.6%	38.2%	38.2%			
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0	4.0	5.0	5.0			
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0			
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)		6.0			7.0	7.0	6.0	7.0	7.0			
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes			
Recall Mode	None	None		None	None	None	None	C-Max	C-Max			

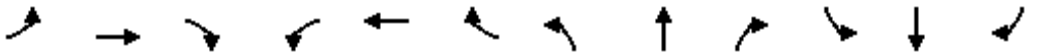
Intersection Summary
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 158 (93%), Referenced to phase 6:SETL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 2: FPL Exit & Coast Guard Exit & Ferry Exit & MacArthur Causeway



Lane Group	NWR	Ø3	Ø4
Lane Configurations			
Traffic Volume (vph)	1		
Future Volume (vph)	1		
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor	0.92		
Growth Factor	100%		
Heavy Vehicles (%)	1%		
Bus Blockages (#/hr)	0		
Parking (#/hr)			
Mid-Block Traffic (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases		3	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)		1.0	8.0
Minimum Split (s)		29.0	10.0
Total Split (s)		29.0	10.0
Total Split (%)		17%	6%
Yellow Time (s)		4.0	2.0
All-Red Time (s)		2.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Recall Mode		None	None

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1264	532	17	1047	70	312	152	20	76	160	809
Future Volume (vph)	0	1264	532	17	1047	70	312	152	20	76	160	809
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	0.98			1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)		3217	1439	1608	3217	1439	3120	1631			1666	1439
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (perm)		3217	1439	1608	3217	1439	3120	1631			1666	1439
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1317	554	18	1091	73	325	158	21	79	167	843
RTOR Reduction (vph)	0	0	141	0	0	25	0	3	0	0	0	0
Lane Group Flow (vph)	0	1317	413	18	1091	48	325	176	0	0	246	843
Confl. Peds. (#/hr)			30	30					48	48		
Confl. Bikes (#/hr)			12			1			5			
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Actuated Green, G (s)		97.0	97.0	3.7	106.7	106.7	23.9	23.9			31.4	180.0
Effective Green, g (s)		97.0	97.0	3.7	106.7	106.7	23.9	23.9			31.4	180.0
Actuated g/C Ratio		0.54	0.54	0.02	0.59	0.59	0.13	0.13			0.17	1.00
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		1.0	1.0	2.0	1.0	1.0	3.0	3.0			3.5	
Lane Grp Cap (vph)		1733	775	33	1906	853	414	216			290	1439
v/s Ratio Prot		c0.41	0.29	0.01	0.34	0.03	0.10	c0.11			c0.15	
v/s Ratio Perm												c0.59
v/c Ratio		0.76	0.53	0.55	0.57	0.06	0.79	0.82			0.85	0.59
Uniform Delay, d1		32.4	26.8	87.3	22.6	15.4	75.6	75.9			72.0	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		3.2	2.6	9.5	1.3	0.1	9.4	20.7			20.4	1.8
Delay (s)		35.6	29.5	96.8	23.8	15.6	85.0	96.6			92.4	1.8
Level of Service		D	C	F	C	B	F	F			F	A
Approach Delay (s)		33.8			24.4			89.1			22.2	
Approach LOS		C			C			F			C	

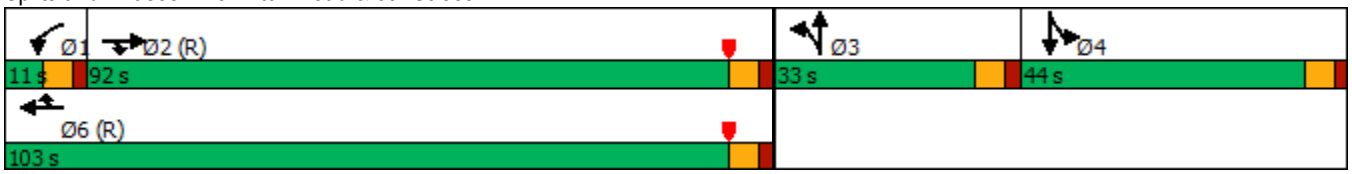
Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1264	532	17	1047	70	312	152	20	76	160	809
Future Volume (vph)	0	1264	532	17	1047	70	312	152	20	76	160	809
Confl. Peds. (#/hr)			30	30					48	48		
Confl. Bikes (#/hr)			12			1			5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Detector Phase		2	2	1	6	6	3	3		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0	5.0	7.0	7.0		7.0	7.0	
Minimum Split (s)		35.0	35.0	11.0	35.0	35.0	24.0	24.0		31.0	31.0	
Total Split (s)		92.0	92.0	11.0	103.0	103.0	33.0	33.0		44.0	44.0	
Total Split (%)		51.1%	51.1%	6.1%	57.2%	57.2%	18.3%	18.3%		24.4%	24.4%	
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lead/Lag		Lag	Lag	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode		C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 114 (63%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

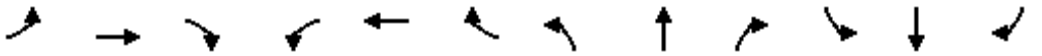
Splits and Phases: 3: Alton Road & 5th Street



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1317	554	18	1091	73	325	179	246	843
v/c Ratio	0.74	0.60	0.35	0.57	0.08	0.79	0.82	0.85	0.59
Control Delay	36.6	15.6	104.1	25.4	5.7	89.2	101.9	96.5	1.8
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	15.6	104.1	26.1	5.7	89.2	101.9	96.5	1.8
Queue Length 50th (ft)	671	210	21	423	6	192	203	284	0
Queue Length 95th (ft)	824	367	53	540	34	250	#299	382	0
Internal Link Dist (ft)	549			717			263	439	
Turn Bay Length (ft)		225	150						
Base Capacity (vph)	1776	931	51	1906	877	468	247	351	1439
Starvation Cap Reductn	0	0	0	448	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.60	0.35	0.75	0.08	0.69	0.72	0.70	0.59

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1144	424	14	1491	116	562	177	12	77	173	815
Future Volume (vph)	0	1144	424	14	1491	116	562	177	12	77	173	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	0.99			1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99			1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)		3217	1439	1608	3217	1439	3120	1664			1667	1439
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (perm)		3217	1439	1608	3217	1439	3120	1664			1667	1439
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1217	451	15	1586	123	598	188	13	82	184	867
RTOR Reduction (vph)	0	0	169	0	0	40	0	2	0	0	0	0
Lane Group Flow (vph)	0	1217	282	15	1586	83	598	199	0	0	266	867
Confl. Peds. (#/hr)			34	34					33	33		
Confl. Bikes (#/hr)			11			2			14			
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Actuated Green, G (s)		70.2	70.2	2.0	78.2	78.2	18.0	18.0			25.8	140.0
Effective Green, g (s)		70.2	70.2	2.0	78.2	78.2	18.0	18.0			25.8	140.0
Actuated g/C Ratio		0.50	0.50	0.01	0.56	0.56	0.13	0.13			0.18	1.00
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		1.0	1.0	2.0	1.0	1.0	3.0	3.0			3.5	
Lane Grp Cap (vph)		1613	721	22	1796	803	401	213			307	1439
v/s Ratio Prot		0.38	0.20	0.01	c0.49	0.06	c0.19	0.12			c0.16	
v/s Ratio Perm												0.60
v/c Ratio		0.75	0.39	0.68	0.88	0.10	1.49	0.94			0.87	0.60
Uniform Delay, d1		28.0	21.7	68.7	26.9	14.5	61.0	60.4			55.4	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		3.3	1.6	52.0	6.7	0.3	233.9	43.5			22.1	1.9
Delay (s)		31.3	23.3	120.7	33.6	14.7	294.9	104.0			77.6	1.9
Level of Service		C	C	F	C	B	F	F			E	A
Approach Delay (s)		29.1			33.0			246.9			19.6	
Approach LOS		C			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	61.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

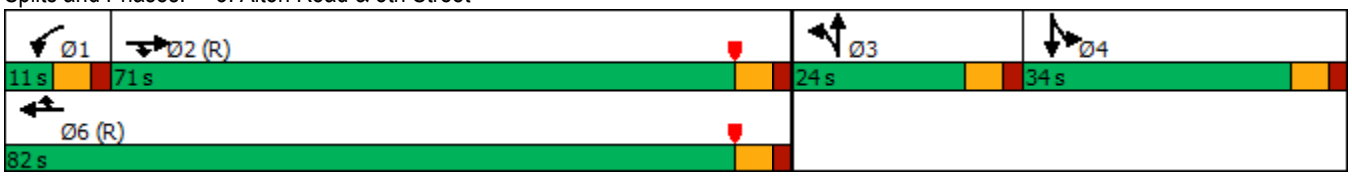
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1144	424	14	1491	116	562	177	12	77	173	815
Future Volume (vph)	0	1144	424	14	1491	116	562	177	12	77	173	815
Confl. Peds. (#/hr)			34	34					33	33		
Confl. Bikes (#/hr)			11			2			14			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Detector Phase		2	2	1	6	6	3	3		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0	5.0	7.0	7.0		7.0	7.0	
Minimum Split (s)		35.0	35.0	11.0	35.0	35.0	24.0	24.0		31.0	31.0	
Total Split (s)		71.0	71.0	11.0	82.0	82.0	24.0	24.0		34.0	34.0	
Total Split (%)		50.7%	50.7%	7.9%	58.6%	58.6%	17.1%	17.1%		24.3%	24.3%	
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lead/Lag		Lag	Lag	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode		C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57 (41%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 135
Control Type: Actuated-Coordinated

Splits and Phases: 3: Alton Road & 5th Street



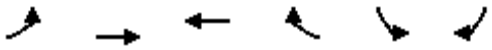
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1217	451	15	1586	123	598	201	266	867
v/c Ratio	0.72	0.49	0.26	0.88	0.15	1.49	0.93	0.87	0.60
Control Delay	29.7	7.7	77.2	34.6	5.4	274.6	105.8	81.5	1.9
Queue Delay	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	7.7	77.2	38.5	5.4	274.6	105.8	81.5	1.9
Queue Length 50th (ft)	415	49	14	663	13	~387	182	233	0
Queue Length 95th (ft)	592	156	39	789	45	#507	#339	#369	0
Internal Link Dist (ft)	549			717			263	439	
Turn Bay Length (ft)		225	150						
Base Capacity (vph)	1695	918	57	1796	843	401	215	333	1439
Starvation Cap Reductn	0	0	0	146	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.49	0.26	0.96	0.15	1.49	0.93	0.80	0.60

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.

Future with Project Conditions



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	3301	2654	8	8	11
Future Volume (vph)	22	3301	2654	8	8	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.92	
Flt Protected	0.95	1.00	1.00	1.00	0.98	
Satd. Flow (prot)	1787	5136	5136	1599	1698	
Flt Permitted	0.03	1.00	1.00	1.00	0.98	
Satd. Flow (perm)	58	5136	5136	1599	1698	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	23	3439	2765	8	8	11
RTOR Reduction (vph)	0	0	0	0	11	0
Lane Group Flow (vph)	23	3439	2765	8	8	0
Turn Type	pm+pt	NA	NA	Prot	Prot	
Protected Phases	1	6	2	2	8	
Permitted Phases	6	8				
Actuated Green, G (s)	161.5	166.0	150.3	150.3	4.5	
Effective Green, g (s)	161.5	166.0	150.3	150.3	4.5	
Actuated g/C Ratio	0.90	0.92	0.84	0.84	0.02	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	2.5	1.0	1.0	1.0	3.0	
Lane Grp Cap (vph)	92	5136	4288	1335	42	
v/s Ratio Prot	0.01	c0.60	0.54	0.00	0.00	
v/s Ratio Perm	0.22	0.07				
v/c Ratio	0.25	0.67	0.64	0.01	0.20	
Uniform Delay, d1	6.8	1.4	5.3	2.5	86.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.3	0.8	0.0	2.3	
Delay (s)	7.8	1.8	6.1	2.5	88.3	
Level of Service	A	A	A	A	F	
Approach Delay (s)		1.8	6.1		88.3	
Approach LOS		A	A		F	

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

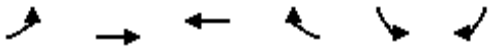
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	22	3301	2654	8	8	11	
Future Volume (vph)	22	3301	2654	8	8	11	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%	0%		0%		
Shared Lane Traffic (%)							
Turn Type	pm+pt	NA	NA	Prot	Prot		
Protected Phases	1	6	2	2	8		7
Permitted Phases	6	8					
Detector Phase	1	6	2	2	8		
Switch Phase							
Minimum Initial (s)	7.0	18.0	18.0	18.0	5.0		1.0
Minimum Split (s)	24.0	25.0	25.0	25.0	21.0		14.0
Total Split (s)	24.0	145.0	121.0	121.0	21.0		14.0
Total Split (%)	13.3%	80.6%	67.2%	67.2%	11.7%		8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 58 (32%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 135
Control Type: Actuated-Coordinated

Splits and Phases: 1: MacArthur Causeway & Bridge Road

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	23	3439	2765	8	19
v/c Ratio	0.19	0.67	0.61	0.01	0.26
Control Delay	4.8	0.7	5.8	3.1	57.1
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	4.8	0.7	6.1	3.1	57.1
Queue Length 50th (ft)	2	0	431	1	9
Queue Length 95th (ft)	6	0	498	5	41
Internal Link Dist (ft)		1033	477		902
Turn Bay Length (ft)	140			100	
Base Capacity (vph)	216	5136	4528	1410	142
Starvation Cap Reductn	0	0	979	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.11	0.67	0.78	0.01	0.13

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	2818	3410	18	7	51
Future Volume (vph)	12	2818	3410	18	7	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0	7.0	7.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	0.88	
Flt Protected	0.95	1.00	1.00	1.00	0.99	
Satd. Flow (prot)	1787	5136	5136	1599	1649	
Flt Permitted	0.03	1.00	1.00	1.00	0.99	
Satd. Flow (perm)	52	5136	5136	1599	1649	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	3063	3707	20	8	55
RTOR Reduction (vph)	0	0	0	1	53	0
Lane Group Flow (vph)	13	3063	3707	19	10	0
Turn Type	pm+pt	NA	NA	Prot	Prot	
Protected Phases	1	6	2	2	8	
Permitted Phases	6	8				
Actuated Green, G (s)	148.6	156.0	138.8	138.8	7.4	
Effective Green, g (s)	148.6	156.0	138.8	138.8	7.4	
Actuated g/C Ratio	0.87	0.92	0.82	0.82	0.04	
Clearance Time (s)	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	2.5	1.0	1.0	1.0	3.0	
Lane Grp Cap (vph)	74	5136	4193	1305	71	
v/s Ratio Prot	0.00	c0.52	c0.72	0.01	0.01	
v/s Ratio Perm	0.15	0.08				
v/c Ratio	0.18	0.60	0.88	0.01	0.15	
Uniform Delay, d1	30.9	1.3	10.3	2.9	78.3	
Progression Factor	1.00	1.00	0.76	0.20	1.00	
Incremental Delay, d2	0.8	0.2	0.3	0.0	1.0	
Delay (s)	31.7	1.5	8.1	0.6	79.2	
Level of Service	C	A	A	A	E	
Approach Delay (s)		1.6	8.0		79.2	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	81.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	12	2818	3410	18	7	51	
Future Volume (vph)	12	2818	3410	18	7	51	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%	0%		0%		
Shared Lane Traffic (%)							
Turn Type	pm+pt	NA	NA	Prot	Prot		
Protected Phases	1	6	2	2	8		7
Permitted Phases	6	8					
Detector Phase	1	6	2	2	8		
Switch Phase							
Minimum Initial (s)	7.0	18.0	18.0	18.0	5.0		1.0
Minimum Split (s)	24.0	25.0	25.0	25.0	21.0		14.0
Total Split (s)	24.0	135.0	111.0	111.0	21.0		14.0
Total Split (%)	14.1%	79.4%	65.3%	65.3%	12.4%		8%
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0		
Lead/Lag	Lead		Lag	Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	None		None

Intersection Summary

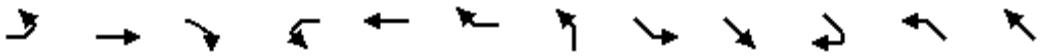
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 9 (5%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 1: MacArthur Causeway & Bridge Road

Lane Group	EBL	EBT	WBT	WBR	SBL
Lane Group Flow (vph)	13	3063	3707	20	63
v/c Ratio	0.11	0.60	0.86	0.01	0.51
Control Delay	3.6	0.5	7.8	0.6	36.3
Queue Delay	0.0	0.0	6.4	0.0	0.0
Total Delay	3.6	0.5	14.2	0.6	36.3
Queue Length 50th (ft)	1	0	100	0	9
Queue Length 95th (ft)	5	0	m89	m1	62
Internal Link Dist (ft)		1033	477		902
Turn Bay Length (ft)	140			100	
Base Capacity (vph)	218	5136	4321	1346	186
Starvation Cap Reductn	0	0	597	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.60	1.00	0.01	0.34

Intersection Summary

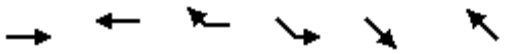
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	30	32	8	102	6	2594	0	3041	212	56	7	36
Future Volume (vph)	30	32	8	102	6	2594	0	3041	212	56	7	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			7.0	7.0		7.0	7.0			6.0
Lane Util. Factor		1.00			1.00	0.76		0.94	1.00			1.00
Frt		0.98			1.00	0.85		1.00	0.97			1.00
Flt Protected		0.98			0.96	1.00		0.95	1.00			0.99
Satd. Flow (prot)		1813			1797	3646		5040	1822			1865
Flt Permitted		0.98			0.96	1.00		0.94	1.00			0.99
Satd. Flow (perm)		1813			1797	3646		4987	1822			1865
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	35	9	111	7	2820	0	3305	230	61	8	39
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	77	0	0	118	2820	0	3305	291	0	0	47
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Actuated Green, G (s)		13.4			19.1	155.8		107.9	107.9			18.6
Effective Green, g (s)		13.4			19.1	153.8		107.9	107.9			18.6
Actuated g/C Ratio		0.07			0.11	0.85		0.60	0.60			0.10
Clearance Time (s)		6.0			7.0	7.0		7.0	7.0			
Vehicle Extension (s)		3.0			2.0	1.0		1.0	1.0			
Lane Grp Cap (vph)		134			189	3098		2972	1086			191
v/s Ratio Prot		0.04			0.07	c0.67			0.16			c0.03
v/s Ratio Perm						0.10		c0.66				
v/c Ratio		0.57			0.62	0.91		1.11	0.27			0.25
Uniform Delay, d1		81.0			77.5	9.0		36.5	17.6			74.7
Progression Factor		1.00			1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		5.8			4.6	4.4		55.8	0.6			0.2
Delay (s)		86.9			82.1	13.5		92.4	18.2			75.0
Level of Service		F			F	B		F	B			E
Approach Delay (s)		86.9			16.2		0.0		86.4			75.0
Approach LOS		F			B		A		F			E

Intersection Summary			
HCM 2000 Control Delay	55.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	181.0	Sum of lost time (s)	34.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBT	WBT	WBR	SEL	SET	NWT
Lane Group Flow (vph)	77	118	2820	3305	291	47
v/c Ratio	0.57	0.62	0.85	1.10	0.26	0.30
Control Delay	97.1	92.2	8.4	83.0	19.8	81.0
Queue Delay	0.0	0.0	0.0	2.0	0.0	0.0
Total Delay	97.1	92.2	8.4	85.0	19.8	81.0
Queue Length 50th (ft)	90	137	529	~1607	166	53
Queue Length 95th (ft)	149	210	741	#1791	264	98
Internal Link Dist (ft)	459	1327			265	705
Turn Bay Length (ft)						
Base Capacity (vph)	260	189	3310	3016	1102	237
Starvation Cap Reductn	0	0	0	290	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.62	0.85	1.21	0.26	0.20

Intersection Summary

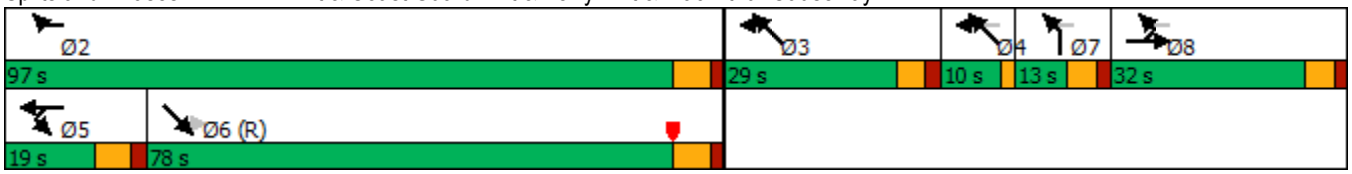
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	30	32	8	102	6	2594	0	3041	212	56	7	36
Future Volume (vph)	30	32	8	102	6	2594	0	3041	212	56	7	36
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%		0%		0%			0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Detector Phase	8	8		5	5	2	7	6	6		3 4	3 4
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	20.0	7.0	20.0	20.0			
Minimum Split (s)	24.0	24.0		19.0	19.0	27.0	13.0	27.0	27.0			
Total Split (s)	32.0	32.0		19.0	19.0	97.0	13.0	78.0	78.0			
Total Split (%)	17.7%	17.7%		10.5%	10.5%	53.6%	7.2%	43.1%	43.1%			
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0	4.0	5.0	5.0			
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0			
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)		6.0			7.0	7.0	6.0	7.0	7.0			
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes			
Recall Mode	None	None		None	None	None	None	C-Max	C-Max			

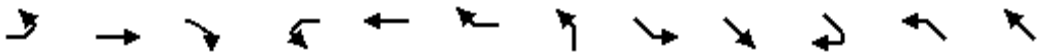
Intersection Summary
Cycle Length: 181
Actuated Cycle Length: 181
Offset: 37 (20%), Referenced to phase 6:SETL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated

Splits and Phases: 2: FPL Exit & Coast Guard Exit & Ferry Exit & MacArthur Causeway



Lane Group	Ø3	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Bus Blockages (#/hr)		
Parking (#/hr)		
Mid-Block Traffic (%)		
Shared Lane Traffic (%)		
Turn Type		
Protected Phases	3	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	8.0
Minimum Split (s)	29.0	10.0
Total Split (s)	29.0	10.0
Total Split (%)	16%	6%
Yellow Time (s)	4.0	2.0
All-Red Time (s)	2.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None

Intersection Summary

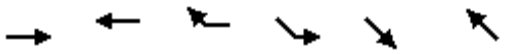


Movement	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	32	71	8	29	27	3123	0	2712	59	54	8	121
Future Volume (vph)	32	71	8	29	27	3123	0	2712	59	54	8	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			7.0	7.0		7.0	7.0			6.0
Lane Util. Factor		1.00			1.00	0.76		0.94	1.00			1.00
Frt		0.99			1.00	0.85		1.00	0.93			1.00
Flt Protected		0.99			0.97	1.00		0.95	1.00			1.00
Satd. Flow (prot)		1836			1833	3646		5040	1746			1873
Flt Permitted		0.99			0.97	1.00		0.91	1.00			1.00
Satd. Flow (perm)		1836			1833	3646		4853	1746			1873
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	77	9	32	29	3395	0	2948	64	59	9	132
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	121	0	0	61	3395	0	2948	123	0	0	142
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Actuated Green, G (s)		16.5			10.2	136.4		92.7	92.7			28.6
Effective Green, g (s)		16.5			10.2	134.4		92.7	92.7			28.6
Actuated g/C Ratio		0.10			0.06	0.79		0.55	0.55			0.17
Clearance Time (s)		6.0			7.0	7.0		7.0	7.0			
Vehicle Extension (s)		3.0			2.0	1.0		1.0	1.0			
Lane Grp Cap (vph)		178			109	2882		2646	952			315
v/s Ratio Prot		0.07			0.03	c0.76			0.07			c0.08
v/s Ratio Perm						0.17		0.61				
v/c Ratio		0.68			0.56	1.18		1.11	0.13			0.45
Uniform Delay, d1		74.2			77.7	17.8		38.6	18.9			63.6
Progression Factor		1.00			1.00	1.00		1.00	1.00			1.00
Incremental Delay, d2		9.9			3.5	84.0		56.3	0.2			0.4
Delay (s)		84.1			81.2	101.8		94.9	19.1			64.0
Level of Service		F			F	F		F	B			E
Approach Delay (s)		84.1			101.5		0.0		91.9			64.0
Approach LOS		F			F		A		F			E

Intersection Summary			
HCM 2000 Control Delay	96.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	34.0
Intersection Capacity Utilization	103.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	NWR
Lane Configurations	
Traffic Volume (vph)	1
Future Volume (vph)	1
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	1
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	



Lane Group	EBT	WBT	WBR	SEL	SET	NWT
Lane Group Flow (vph)	121	61	3395	2948	123	142
v/c Ratio	0.68	0.55	1.11	1.12	0.13	0.52
Control Delay	92.2	95.7	72.2	92.6	21.8	73.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.2	95.7	72.2	92.6	21.8	73.7
Queue Length 50th (ft)	133	67	~1889	~1329	66	149
Queue Length 95th (ft)	201	119	#2010	#1575	126	218
Internal Link Dist (ft)	459	1327			265	705
Turn Bay Length (ft)						
Base Capacity (vph)	334	117	3053	2643	951	274
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	60	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.52	1.13	1.12	0.13	0.52

Intersection Summary

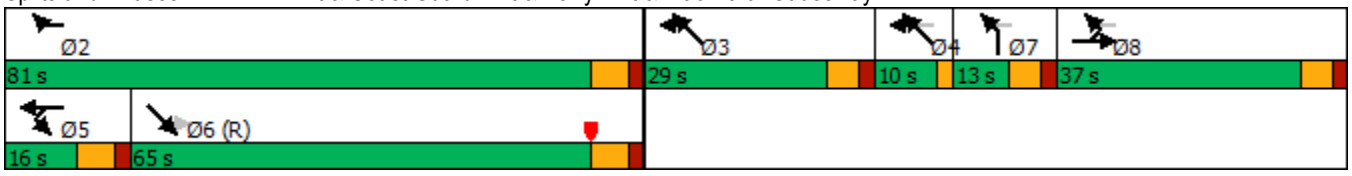
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Lane Group	EBL	EBT	EBR2	WBL2	WBT	WBR	NBL	SEL	SET	SER2	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	32	71	8	29	27	3123	0	2712	59	54	8	121
Future Volume (vph)	32	71	8	29	27	3123	0	2712	59	54	8	121
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%		0%		0%			0%
Shared Lane Traffic (%)												
Turn Type	Split	NA		Split	NA	custom	Prot	Perm	NA		Split	NA
Protected Phases	8	8		5	5	2	7		6		3 4	3 4
Permitted Phases						4 7 8		6				
Detector Phase	8	8		5	5	2	7	6	6		3 4	3 4
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	5.0	20.0	7.0	20.0	20.0			
Minimum Split (s)	24.0	24.0		16.0	16.0	27.0	13.0	27.0	27.0			
Total Split (s)	37.0	37.0		16.0	16.0	81.0	13.0	65.0	65.0			
Total Split (%)	21.8%	21.8%		9.4%	9.4%	47.6%	7.6%	38.2%	38.2%			
Yellow Time (s)	4.0	4.0		5.0	5.0	5.0	4.0	5.0	5.0			
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0			
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)		6.0			7.0	7.0	6.0	7.0	7.0			
Lead/Lag	Lag	Lag		Lead	Lead		Lead	Lag	Lag			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes			
Recall Mode	None	None		None	None	None	None	C-Max	C-Max			

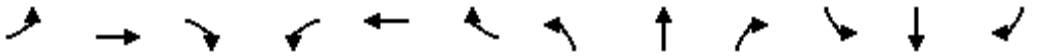
Intersection Summary
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 158 (93%), Referenced to phase 6:SETL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated

Splits and Phases: 2: FPL Exit & Coast Guard Exit & Ferry Exit & MacArthur Causeway



Lane Group	NWR	Ø3	Ø4
Lane Configurations			
Traffic Volume (vph)	1		
Future Volume (vph)	1		
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor	0.92		
Growth Factor	100%		
Heavy Vehicles (%)	1%		
Bus Blockages (#/hr)	0		
Parking (#/hr)			
Mid-Block Traffic (%)			
Shared Lane Traffic (%)			
Turn Type			
Protected Phases		3	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)		1.0	8.0
Minimum Split (s)		29.0	10.0
Total Split (s)		29.0	10.0
Total Split (%)		17%	6%
Yellow Time (s)		4.0	2.0
All-Red Time (s)		2.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Recall Mode		None	None

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1265	533	17	1054	70	312	152	24	76	160	846
Future Volume (vph)	0	1265	533	17	1054	70	312	152	24	76	160	846
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	0.98			1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.98			1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)		3217	1439	1608	3217	1439	3120	1620			1666	1439
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (perm)		3217	1439	1608	3217	1439	3120	1620			1666	1439
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1318	555	18	1098	73	325	158	25	79	167	881
RTOR Reduction (vph)	0	0	141	0	0	25	0	3	0	0	0	0
Lane Group Flow (vph)	0	1318	414	18	1098	49	325	180	0	0	246	881
Confl. Peds. (#/hr)			30	30					48	48		
Confl. Bikes (#/hr)			12			1			5			
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Actuated Green, G (s)		96.8	96.8	3.7	106.5	106.5	24.1	24.1			31.4	180.0
Effective Green, g (s)		96.8	96.8	3.7	106.5	106.5	24.1	24.1			31.4	180.0
Actuated g/C Ratio		0.54	0.54	0.02	0.59	0.59	0.13	0.13			0.17	1.00
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		1.0	1.0	2.0	1.0	1.0	3.0	3.0			3.5	
Lane Grp Cap (vph)		1730	773	33	1903	851	417	216			290	1439
v/s Ratio Prot		c0.41	0.29	0.01	0.34	0.03	0.10	c0.11			c0.15	
v/s Ratio Perm												c0.61
v/c Ratio		0.76	0.54	0.55	0.58	0.06	0.78	0.83			0.85	0.61
Uniform Delay, d1		32.6	27.0	87.3	22.8	15.5	75.4	76.0			72.0	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		3.2	2.6	9.5	1.3	0.1	8.9	22.9			20.4	2.0
Delay (s)		35.8	29.6	96.8	24.1	15.7	84.3	98.9			92.4	2.0
Level of Service		D	C	F	C	B	F	F			F	A
Approach Delay (s)		34.0			24.7			89.6			21.7	
Approach LOS		C			C			F			C	

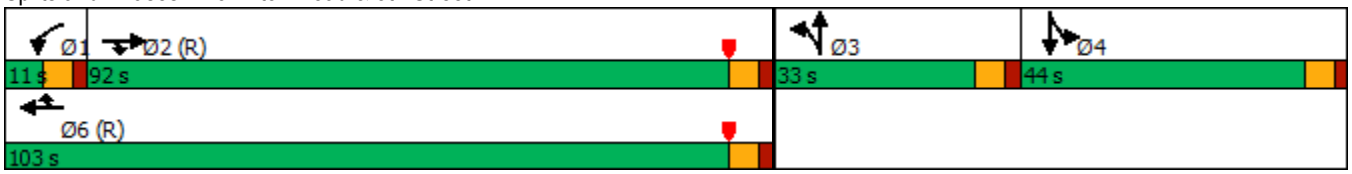
Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1265	533	17	1054	70	312	152	24	76	160	846
Future Volume (vph)	0	1265	533	17	1054	70	312	152	24	76	160	846
Confl. Peds. (#/hr)			30	30					48	48		
Confl. Bikes (#/hr)			12			1			5			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Detector Phase		2	2	1	6	6	3	3		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0	5.0	7.0	7.0		7.0	7.0	
Minimum Split (s)		35.0	35.0	11.0	35.0	35.0	24.0	24.0		31.0	31.0	
Total Split (s)		92.0	92.0	11.0	103.0	103.0	33.0	33.0		44.0	44.0	
Total Split (%)		51.1%	51.1%	6.1%	57.2%	57.2%	18.3%	18.3%		24.4%	24.4%	
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lead/Lag		Lag	Lag	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode		C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 114 (63%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

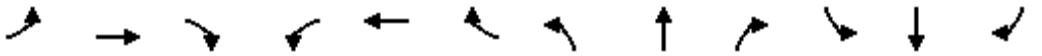
Splits and Phases: 3: Alton Road & 5th Street



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1318	555	18	1098	73	325	183	246	881
v/c Ratio	0.74	0.60	0.35	0.58	0.08	0.78	0.83	0.85	0.61
Control Delay	36.8	15.7	104.1	25.6	5.9	88.5	102.9	96.5	2.0
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	15.7	104.1	26.3	5.9	88.5	102.9	96.5	2.0
Queue Length 50th (ft)	677	213	21	430	6	191	207	284	0
Queue Length 95th (ft)	825	368	53	544	35	250	#318	382	0
Internal Link Dist (ft)	549			717			263	439	
Turn Bay Length (ft)		225	150						
Base Capacity (vph)	1773	930	51	1902	875	468	246	351	1439
Starvation Cap Reductn	0	0	0	442	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.60	0.35	0.75	0.08	0.69	0.74	0.70	0.61

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1152	429	14	1495	116	562	177	15	77	173	835
Future Volume (vph)	0	1152	429	14	1495	116	562	177	15	77	173	835
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	0.99			1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99			1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (prot)		3217	1439	1608	3217	1439	3120	1658			1667	1439
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00			0.98	1.00
Satd. Flow (perm)		3217	1439	1608	3217	1439	3120	1658			1667	1439
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1226	456	15	1590	123	598	188	16	82	184	888
RTOR Reduction (vph)	0	0	169	0	0	40	0	3	0	0	0	0
Lane Group Flow (vph)	0	1226	287	15	1590	83	598	201	0	0	266	888
Confl. Peds. (#/hr)			34	34					33	33		
Confl. Bikes (#/hr)			11			2			14			
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Actuated Green, G (s)		70.2	70.2	2.0	78.2	78.2	18.0	18.0			25.8	140.0
Effective Green, g (s)		70.2	70.2	2.0	78.2	78.2	18.0	18.0			25.8	140.0
Actuated g/C Ratio		0.50	0.50	0.01	0.56	0.56	0.13	0.13			0.18	1.00
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)		1.0	1.0	2.0	1.0	1.0	3.0	3.0			3.5	
Lane Grp Cap (vph)		1613	721	22	1796	803	401	213			307	1439
v/s Ratio Prot		0.38	0.20	0.01	c0.49	0.06	c0.19	0.12			c0.16	
v/s Ratio Perm												c0.62
v/c Ratio		0.76	0.40	0.68	0.89	0.10	1.49	0.95			0.87	0.62
Uniform Delay, d1		28.1	21.7	68.7	27.0	14.5	61.0	60.5			55.4	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		3.4	1.6	52.0	6.8	0.3	233.9	46.0			22.1	2.0
Delay (s)		31.5	23.4	120.7	33.8	14.7	294.9	106.6			77.6	2.0
Level of Service		C	C	F	C	B	F	F			E	A
Approach Delay (s)		29.3			33.2			247.0			19.4	
Approach LOS		C			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	61.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

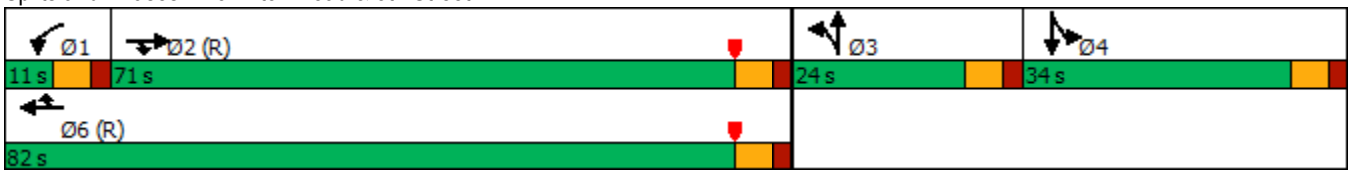
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1152	429	14	1495	116	562	177	15	77	173	835
Future Volume (vph)	0	1152	429	14	1495	116	562	177	15	77	173	835
Confl. Peds. (#/hr)			34	34					33	33		
Confl. Bikes (#/hr)			11			2			14			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Prot	Prot	NA	Prot	Split	NA		Split	NA	Free
Protected Phases		2	2	1	6	6	3	3		4	4	
Permitted Phases												Free
Detector Phase		2	2	1	6	6	3	3		4	4	
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0	5.0	7.0	7.0		7.0	7.0	
Minimum Split (s)		35.0	35.0	11.0	35.0	35.0	24.0	24.0		31.0	31.0	
Total Split (s)		71.0	71.0	11.0	82.0	82.0	24.0	24.0		34.0	34.0	
Total Split (%)		50.7%	50.7%	7.9%	58.6%	58.6%	17.1%	17.1%		24.3%	24.3%	
Yellow Time (s)		4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)		2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0			6.0	
Lead/Lag		Lag	Lag	Lead			Lead	Lead		Lag	Lag	
Lead-Lag Optimize?		Yes	Yes	Yes			Yes	Yes		Yes	Yes	
Recall Mode		C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 57 (41%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 135
Control Type: Actuated-Coordinated

Splits and Phases: 3: Alton Road & 5th Street



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1226	456	15	1590	123	598	204	266	888
v/c Ratio	0.72	0.50	0.26	0.89	0.15	1.49	0.95	0.87	0.62
Control Delay	29.9	7.9	77.2	34.8	5.4	274.6	108.5	81.5	2.0
Queue Delay	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	7.9	77.2	38.9	5.4	274.6	108.5	81.5	2.0
Queue Length 50th (ft)	420	51	14	666	13	~387	185	233	0
Queue Length 95th (ft)	598	161	39	794	45	#507	#346	#369	0
Internal Link Dist (ft)	549			717			263	439	
Turn Bay Length (ft)		225	150						
Base Capacity (vph)	1695	918	57	1796	843	401	215	333	1439
Starvation Cap Reductn	0	0	0	146	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.50	0.26	0.96	0.15	1.49	0.95	0.80	0.62

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.

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	26	150	0	173	26	0
Future Vol, veh/h	26	150	0	173	26	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	28	163	0	188	28	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	191	0	298	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	188	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1389	-	695	946
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1389	-	695	946
Mov Cap-2 Maneuver	-	-	-	-	695	-
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	846	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	695	-	-	1389	-
HCM Lane V/C Ratio	0.041	-	-	-	-
HCM Control Delay (s)	10.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	130	79	0	18	168	0
Future Vol, veh/h	130	79	0	18	168	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	141	86	0	20	183	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	227	0	204	184
Stage 1	-	-	-	-	184	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	4.11	-	6.41	6.21
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1347	-	787	861
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	1005	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1347	-	787	861
Mov Cap-2 Maneuver	-	-	-	-	787	-
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	1005	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	787	-	-	1347	-
HCM Lane V/C Ratio	0.232	-	-	-	-
HCM Control Delay (s)	11	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Appendix E
Committed Development Documentation

PORT OF MIAMI TUNNEL

2020 Transportation Improvement Program

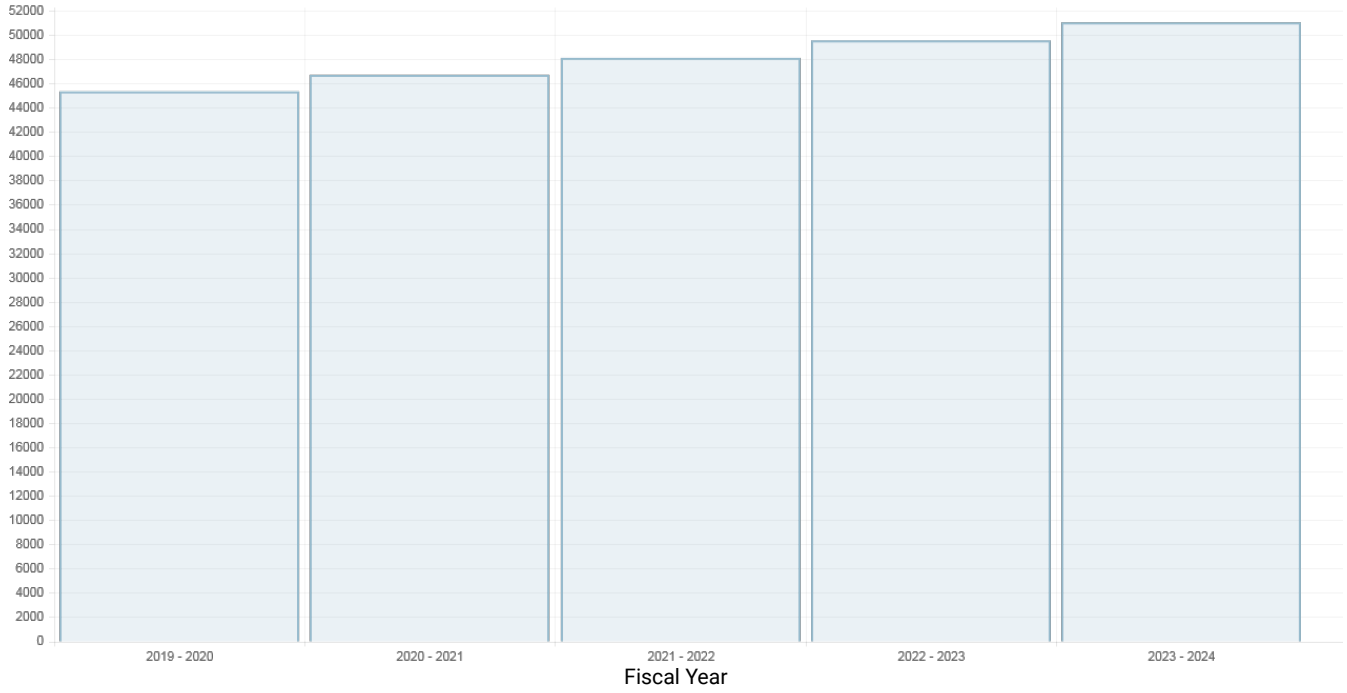
Project Type: Expressway
MPO Project No.: DT2511563
Type of Work: NEW ROAD CONSTRUCTION
TIP Year: 2020
Construction Year: 2020
From: FROM PORT OF MIAMI
To: TO SR 836/I-395
Agency: FL Dept. of Transportation
Management Agency: FDOT
Agency Project No: 2511563
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:

Funding Information $(thousands)

Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
PRELIMINARY ENGINEERING	DIH	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DS	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	GMR	$0	$0	$0	$0	$0
RIGHT OF WAY	LF	$0	$0	$0	$0	$0
RIGHT OF WAY	DIH	$0	$0	$0	$0	$0
RIGHT OF WAY	DS	$0	$0	$0	$0	$0
OPERATIONS	DI	$19,507	$0	$19,729	$21,726	$23,323
OPERATIONS	STED	$0	$19,435	$0	$0	$0
DESIGN/ BUILD	LF	$2,849	$2,935	$3,023	$3,113	$3,207

Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
DESIGN/ BUILD	DC	$0	$0	$0	$0	$0
DESIGN/ BUILD	DIH	$0	$0	$0	$0	$0
DESIGN/ BUILD	DIS	$0	$0	$0	$0	$0
DESIGN/ BUILD	DS	$0	$0	$0	$0	$0
DESIGN/ BUILD	GMR	$22,990	$24,338	$25,357	$24,712	$24,508
PRELIMINARY ENGINEERING	NHAC	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	NHPP	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	FD21	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	LF	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DI	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DIS	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	GMR	$0	$0	$0	$0	$0
DESIGN/ BUILD	NHAC	$0	$0	$0	$0	$0
DESIGN/ BUILD	NHPP	$0	$0	$0	$0	$0
DESIGN/ BUILD	HPP	$0	$0	$0	$0	$0
DESIGN/ BUILD	LF	$0	$0	$0	$0	$0
DESIGN/ BUILD	GMR	$0	$0	$0	$0	$0

Funding Chart $(thousands)



Project Photos

18 PORT OF MIAMI TUNNEL FROM PORT OF MIAMI TO SR 836/I-395
(FM No. 2511563) NEW ROAD CONSTRUCTION

Begin – PORT OF MIAMI TUNNEL FROM PORT OF MIAMI TO SR 836/I-395 – **Looking South East**

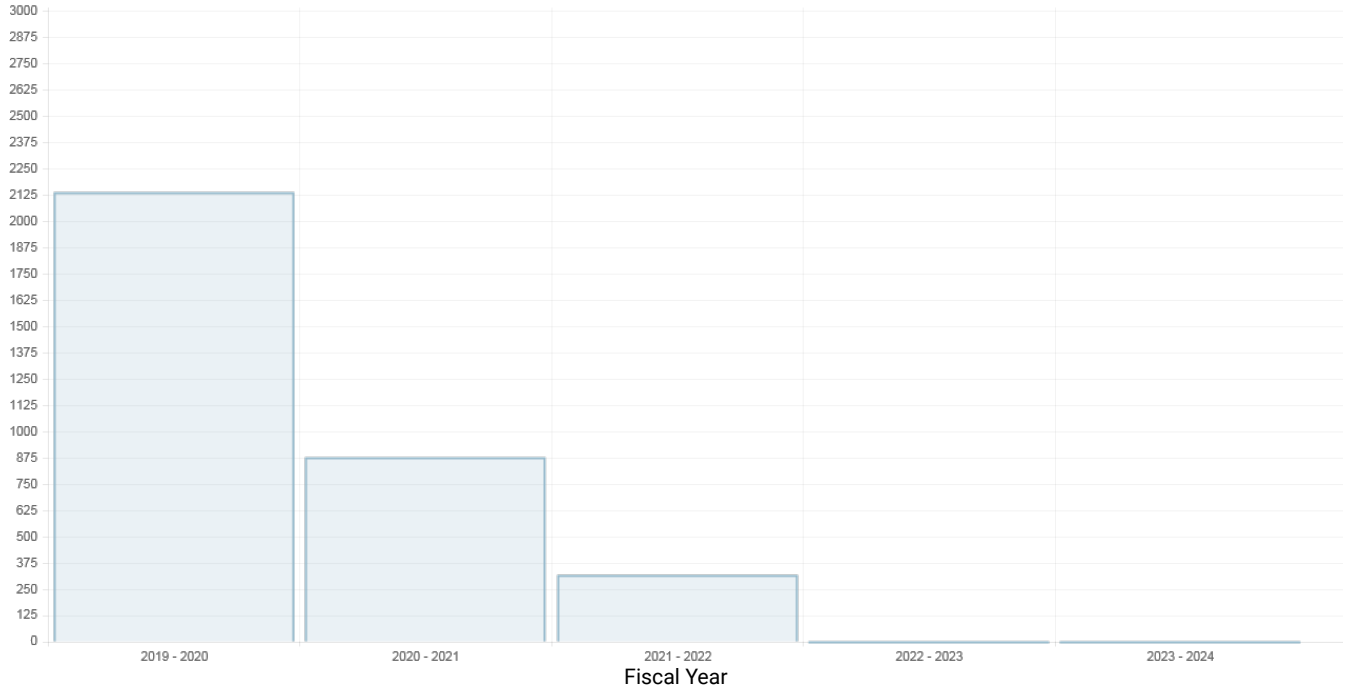
Project Type: Expressway
MPO Project No.: DT2516881
Type of Work: BRIDGE-REPLACE AND ADD LANES
TIP Year: 2020
Construction Year: 2020
From: FROM WEST OF I-95
To: TO MACARTHUR CAUSEWAY BRIDGE
Agency: FL Dept. of Transportation
Management Agency: FDOT
Agency Project No: 2516881
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:

Funding Information $(thousands)

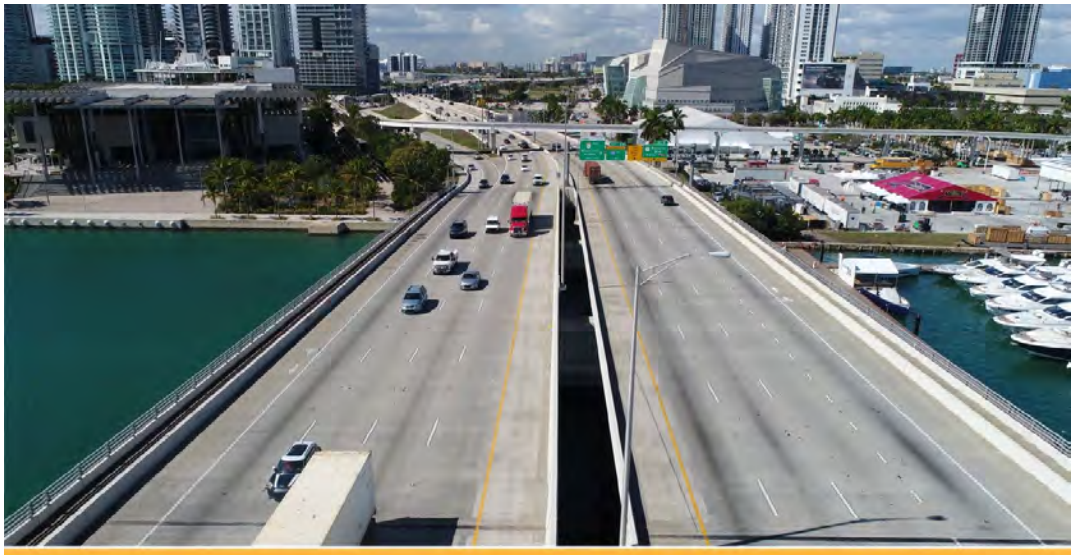
Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
PRELIMINARY ENGINEERING	DDR	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DI	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DIH	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DIS	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DS	$0	$0	$0	$0	$0
RIGHT OF WAY	BNCA	$0	$0	$0	$0	$0
RIGHT OF WAY	BNDS	$0	$0	$0	$0	$0
RIGHT OF WAY	BNIR	$0	$0	$0	$0	$0

Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
RIGHT OF WAY	DDR	$0	$0	$0	$0	$0
RIGHT OF WAY	DI	$0	$0	$0	$0	$0
RIGHT OF WAY	DIH	$0	$0	$0	$0	$0
RIGHT OF WAY	DIS	$0	$0	$0	$0	$0
RIGHT OF WAY	DS	$0	$0	$0	$0	$0
RIGHT OF WAY	GMR	$0	$0	$0	$0	$0
RAILROAD & UTILITIES	LF	$0	$0	$0	$0	$0
RAILROAD & UTILITIES	DI	$0	$0	$0	$0	$0
RAILROAD & UTILITIES	DS	$0	$0	$0	$0	$0
DESIGN/ BUILD	BRRP	$0	$0	$0	$0	$0
DESIGN/ BUILD	DI	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	NHPP	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DI	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	GMR	$0	$0	$0	$0	$0
DESIGN/ BUILD	ACNP	$2,137	$0	$0	$0	$0
DESIGN/ BUILD	NHPP	$0	$0	$0	$0	$0
DESIGN/ BUILD	SA	$0	$307	$316	$0	$0
DESIGN/ BUILD	LF	$0	$0	$0	$0	$0
DESIGN/ BUILD	DI	$0	$569	$0	$0	$0
DESIGN/ BUILD	STED	$0	$0	$0	$0	$0

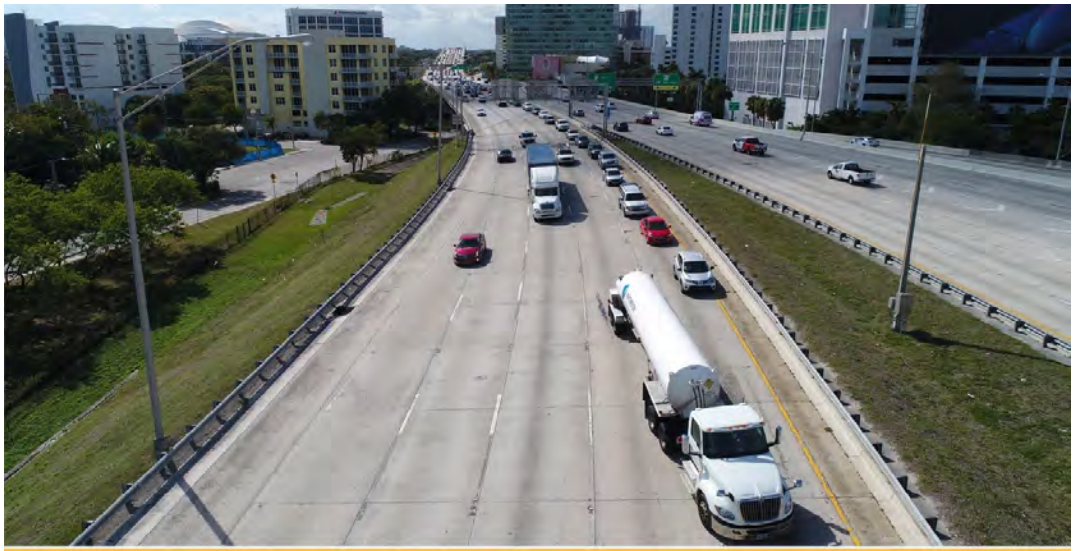
Funding Chart $(thousands)



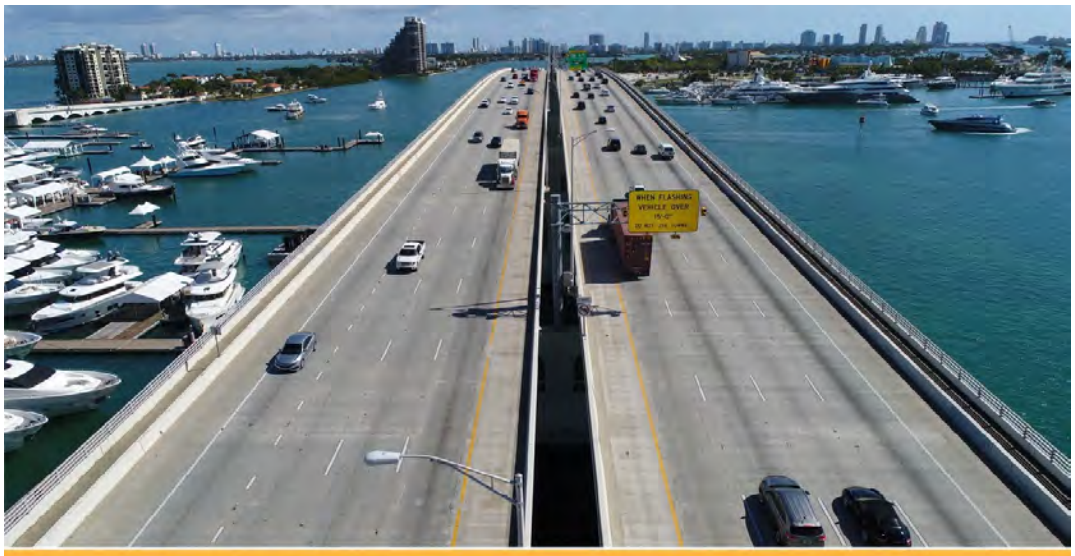
Project Photos



End – SR 836/I-395 FROM WEST OF I-95 TO MACARTHUR CSWY BRIDGE – **Looking West**

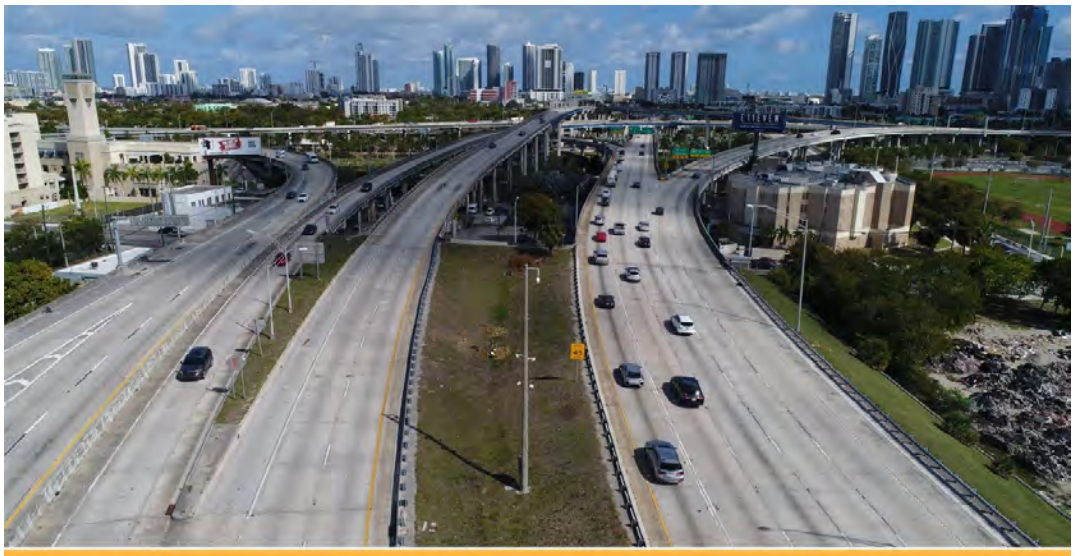


Begin – SR 836/I-395 FROM WEST OF I-95 TO MACARTHUR CSWY BRIDGE – **Looking West**



End – SR 836/I-395 FROM WEST OF I-95 TO MACARTHUR CSWY BRIDGE – **Looking East**

3 SR 836/I-395 FROM WEST OF I-95 TO MACARTHUR CSWY BRIDGE
(FM No. 2516881) BRIDGE –REPLACE AND ADD LANES



Begin – SR 836/I-395 FROM WEST OF I-95 TO MACARTHUR CSWY BRIDGE – **Looking East**

SR A1A/COLLINS AVE SIGNALIZED INTERSECTION LIGHTING

2020 Transportation Improvement Program

Project Type: Arterial/Collector Road
MPO Project No.: DT4401691
Type of Work: LIGHTING
TIP Year: 2020
Construction Year: 2020
From: FROM FOUNTAIN ST
To: TO 17TH ST
Agency: FL Dept. of Transportation
Management Agency: FDOT
Agency Project No: 4401691
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:

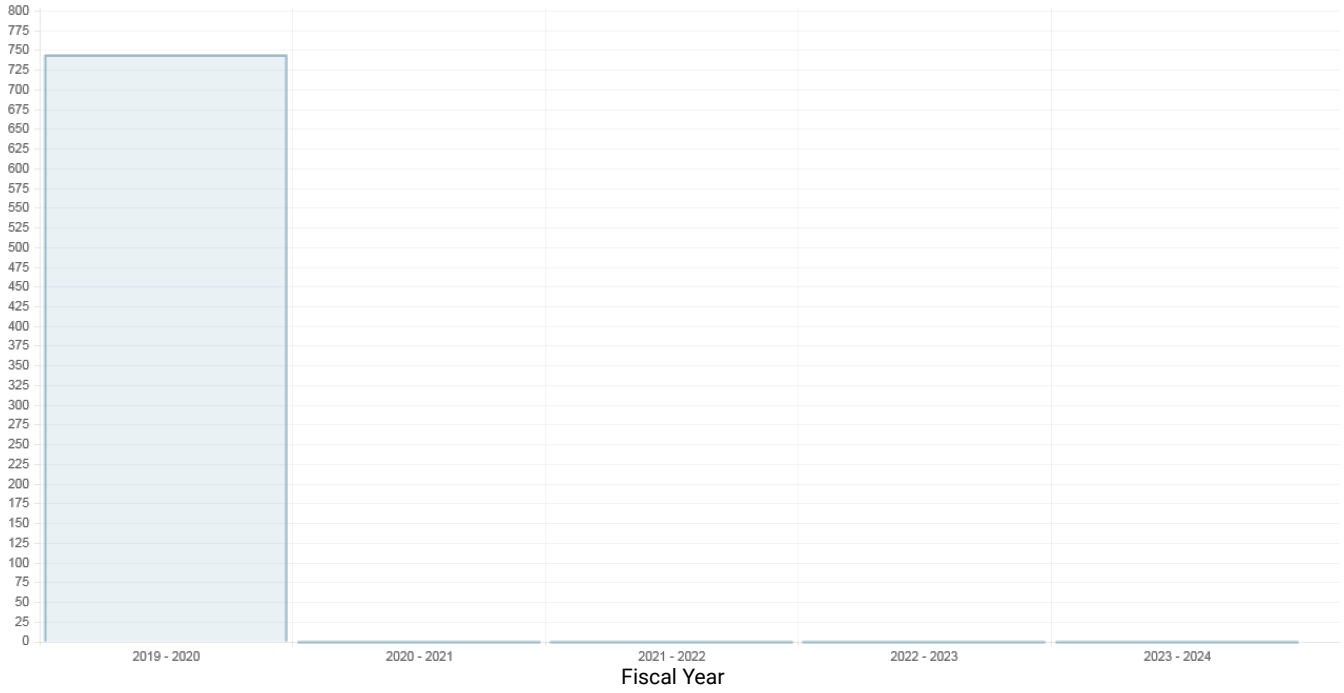
Funding Information $(thousands)

Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
PRELIMINARY ENGINEERING	DIH	$10	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DS	$0	$0	$0	$0	$0
CONSTRUCTION	ACSS	$10	$0	$0	$0	$0
CONSTRUCTION	SA	$7	$0	$0	$0	$0
CONSTRUCTION	DIH	$36	$0	$0	$0	$0
PRELIMINARY ENGINEERING	HSP	$0	$0	$0	$0	$0
CONSTRUCTION	ACSS	$681	$0	$0	$0	$0

SR A1A/COLLINS AVE SIGNALIZED INTERSECTION LIGHTING

2020 Transportation Improvement Program

Funding Chart $(thousands)



SR 907/ALTON RD SIGNALIZED INTERS LIGHTING

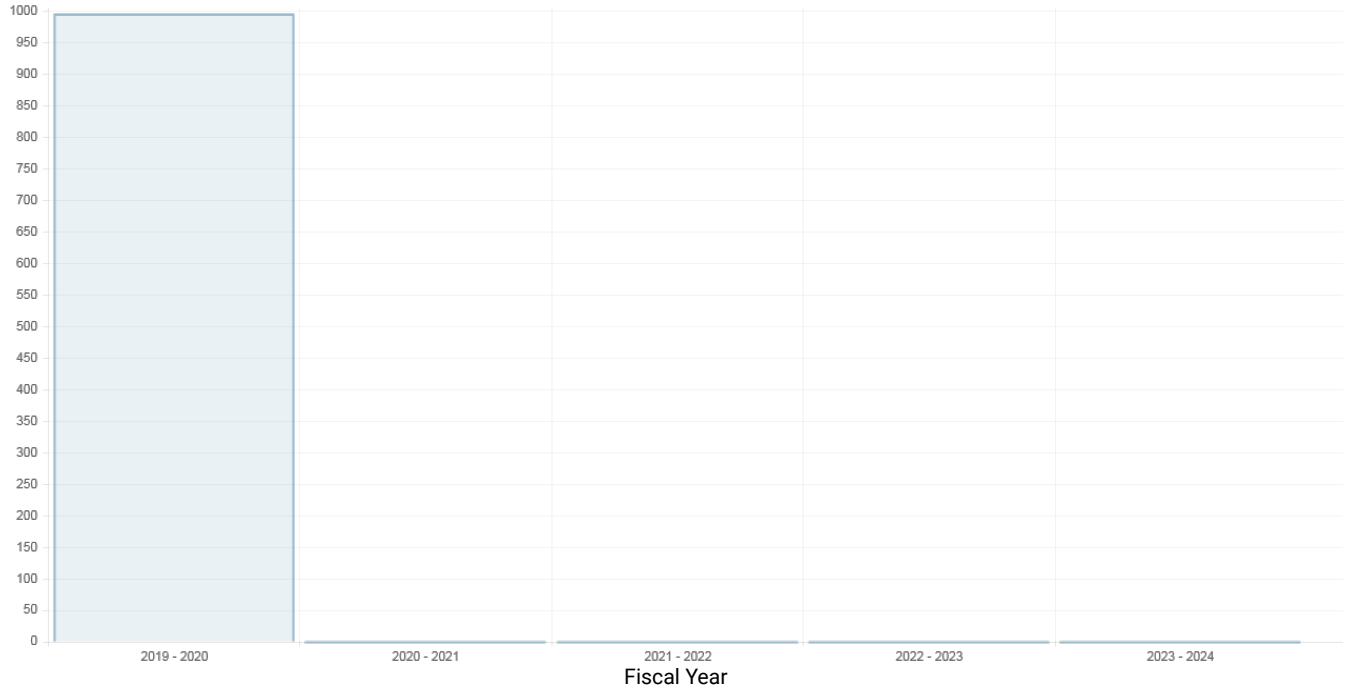
2020 Transportation Improvement Program

Project Type: Arterial/Collector Road
MPO Project No.: DT4401781
Type of Work: LIGHTING
TIP Year: 2020
Construction Year: 2020
From: FROM 6 ST
To: TO 20TH ST
Agency: FL Dept. of Transportation
Management Agency: FDOT
Agency Project No: 4401781
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:

Funding Information $(thousands)

Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
PRELIMINARY ENGINEERING	DIH	$10	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DS	$0	$0	$0	$0	$0
CONSTRUCTION	ACSS	$915	$0	$0	$0	$0
CONSTRUCTION	SA	$21	$0	$0	$0	$0
CONSTRUCTION	DIH	$49	$0	$0	$0	$0

Funding Chart $(thousands)



SR A1A/MACARTHUR CAUSEWAY

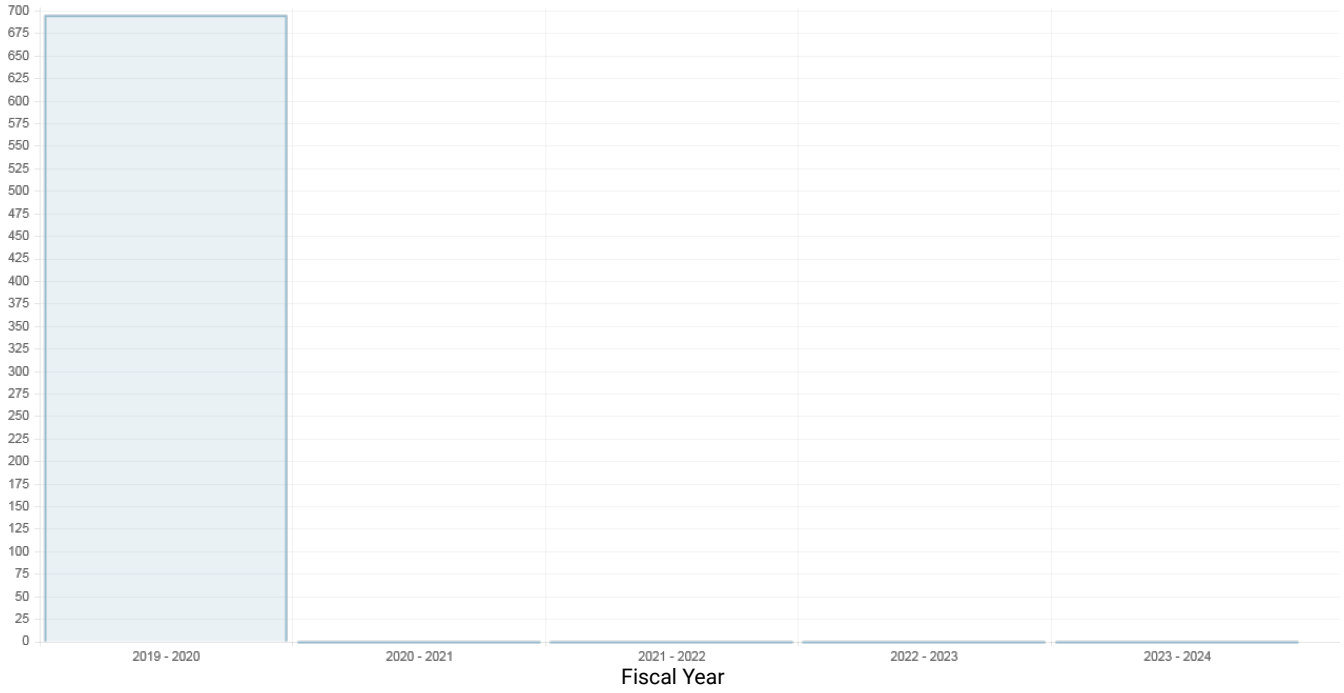
2020 Transportation Improvement Program

Project Type: Pedestrian/Bicycle
MPO Project No.: DT4434321
Type of Work: BIKE PATH/TRAIL
TIP Year: 2020
Construction Year: 2020
From: FROM SR-5/BISCAYNE BLV
To: TO SR-997/ALTON RD
Agency: FL Dept. of Transportation
Management Agency: FDOT
Agency Project No: 4434321
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:

Funding Information $(thousands)

Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
PRELIMINARY ENGINEERING	DIH	$0	$0	$0	$0	$0
PRELIMINARY ENGINEERING	DS	$0	$0	$0	$0	$0
CONSTRUCTION	DDR	$641	$0	$0	$0	$0
CONSTRUCTION	DIH	$54	$0	$0	$0	$0

Funding Chart $(thousands)



Alton Road and 4 Street

2020 Transportation Improvement Program

Project Type: Arterial/Collector Road
MPO Project No.: PW0001010
Type of Work: Traffic signal
TIP Year: 2020
Construction Year:
From:
To:
Agency: Miami-Dade Dept. of Transportation and Public Works
Management Agency: Miami-Dade Dept. of Transportation and Public Works
Agency Project No: 0001010
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:
Traffic signal. Prior Years' Funding as follows: $175,000 for CST.

No Funding Information

DTPW / MDT - TRANSIT CONNECTOR

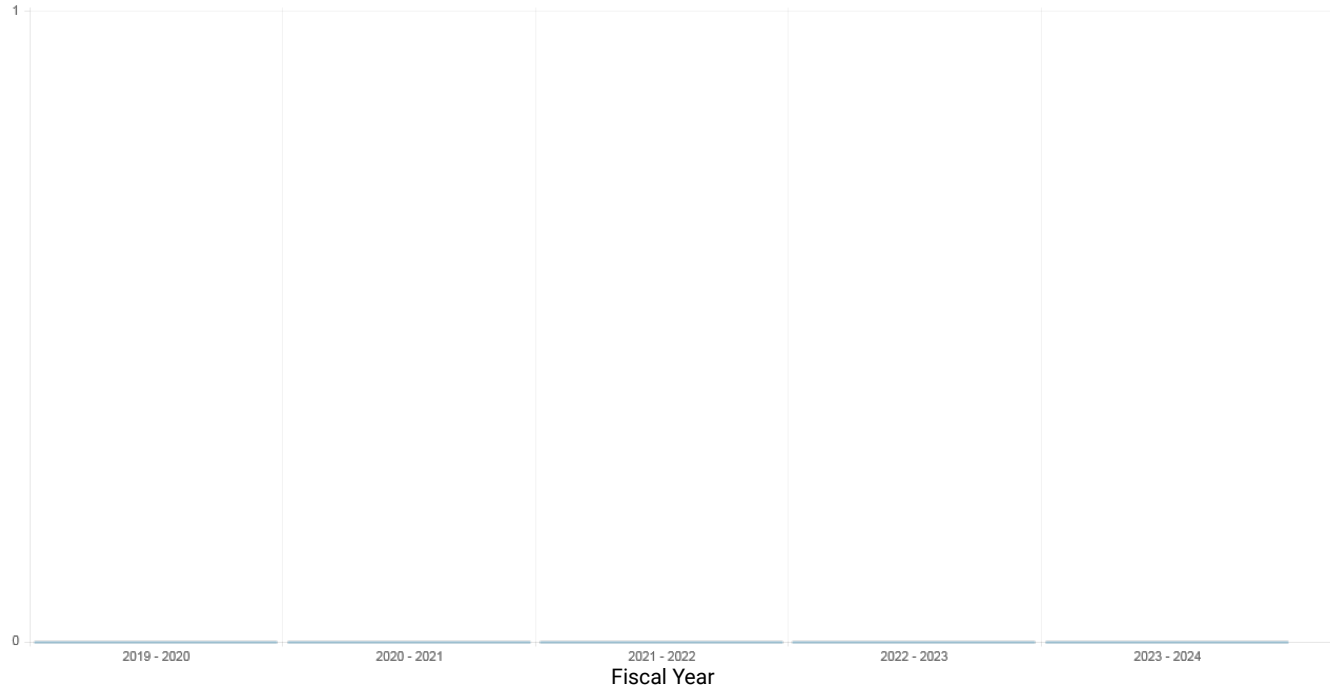
2020 Transportation Improvement Program

Project Type: Transit
MPO Project No.: TA4387491
Type of Work: PTO STUDIES
TIP Year: 2020
Construction Year:
From: FROM MIAMI
To: TO MIAMI BEACH
Agency: FL Dept. of Transportation
Management Agency: Miami-Dade Dept. of Transportation and Public Works
Agency Project No: 4387491
Status: Planning
Contact Person:
Contact Email:
Contact Phone:
Description:
Express bus service that will link Downtown Miami to Miami Beach

Funding Information $(thousands)

Project Phase	Funding	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
CAPITAL	DDR	$0	$0	$0	$0	$0
CAPITAL	DPTO	$0	$0	$0	$0	$0

Funding Chart $(thousands)



Field Name	Field Value
LRTP Project Code	MDT135
Facility	Beach Corridor
Limit From	Midtown Miami and Downtown
Limit To	Miami Beach Convention Center
Description	Rapid Transit connecting Midtown / Miami CBD to Miami Beach Convention Center area.
LRTP Year	2045
Project Type	Transit
Agency Name	Miami-Dade Dept. of Transportation and Public Works
Purpose	
Last Approved Date	
Last Approved User Name	
Last Amended Date	
Last Amended User Name	
Project Costs Funded	$111.186M
Total Capital Cost	$897M

	P1 2020-2025(Y-O-E$)	P2 2026-2030(Y-O-E$)	P3 2031-2035(Y-O-E$)	P4 2036-2045(Y-O-E$)
Preliminary Engineering	$2.973M	$M	$M	$111.186M
Right of Way	$M	$M	$M	$M
Construction	$M	$M	$M	$M
Operations and Maintenance	$M	$M	$M	$M
Capital	$M	$M	$M	$M

Field Name	Field Value
LRTP Project Code	MDT231
Facility	Beach Express South
Limit From	Miami Beach Convention Center
Limit To	Downtown Intermodal Terminal
Description	Implement Bus Express Rapid Transit service
LRTP Year	2045
Project Type	Transit
Agency Name	Miami-Dade Dept. of Transportation and Public Works
Purpose	
Last Approved Date	
Last Approved User Name	
Last Amended Date	
Last Amended User Name	
Project Costs Funded	$201.292M
Total Capital Cost	$9.6M

	P1 2020-2025(Y-O-E$)	P2 2026-2030(Y-O-E$)	P3 2031-2035(Y-O-E$)	P4 2036-2045(Y-O-E$)
Preliminary Engineering	$1.595M	$M	$M	$M
Right of Way	$M	$M	$M	$M
Construction	$9.762M	$M	$M	$M
Operations and Maintenance	$6.283M	$34.848M	$40.92M	$M
Capital	$M	$M	$M	$M

Appendix F
Trip Generation

Scenario - 1

Scenario Name: Proposed
User Group:
Dev. phase: 1
No. of Years to Project: 0
Analyst Note:
Warning: The time periods among the land uses do not appear to match.

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method Rate/Equation	Entry Split%	Exit Split%	Total
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday	Best Fit (LOG)	842	842	1684
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.97Ln(X) + 2.50	50%	50%	
710(1) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	153	25	178
Data Source: Trip Gen Manual, 10th Ed					T = 0.94(X) + 26.49	86%	14%	
710(2) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LOG)	29	150	179
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.95Ln(X) + 0.36	16%	84%	
420(3) - Marina	General Urban/Suburban	Berths	6	Weekday	Average	7	7	14
Data Source: Trip Gen Manual, 10th Ed					2.41	50%	50%	
420(4) - Marina	General Urban/Suburban	Berths	6	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	1	1	2
Data Source: Trip Gen Manual, 10th Ed					0.21	60%	40%	
420(5) - Marina	General Urban/Suburban	Berths	6	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	1	1	2
Data Source: Trip Gen Manual, 10th Ed					0.21	60%	40%	
930(2) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday	Average	1139	1139	2278
Data Source: Trip Gen Manual, 10th Ed					315.17	50%	50%	
930(1) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average	10	5	15
Data Source: Trip Gen Manual, 10th Ed					2.07	67%	33%	
930(3) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	56	46	102
Data Source: Trip Gen Manual, 10th Ed					14.13	55%	45%	
930(4) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, PM Peak Hour of Generator	Average	146	171	317
Data Source: Trip Gen Manual, 10th Ed					43.79	46%	54%	

AM Peak Hour Trip Generation and Internalization

Terminal Island Miami Beach

Office Land Use 710 160,932 Sq Ft			Restaurant Land Use 930 7,234 Sq Ft		
In	**Out**		**In**	**Out**	
153	**25**		**10**	**5**	193 ITE Trips
UNBALANCED INTERNALIZATION					
	63% *16*	*2*	*23%* *2*		
14% *21*		*2*		*31%* *2*	
Office			**Restaurant**		
In	**Out**		**In**	**Out**	
153	**25**		**10**	**5**	193 Vehicle Trips
BALANCED INTERNALIZATION					
	-2		*-2*		
-2				*-2*	
-2	-2		-2	-2	-8 Internal
151	23		8	3	185 External Trips
	2.2%			*26.7%*	*4.1%* % Internal
-5	-1		0	0	-6 -3.0% Transit/Pedestrian
146	**22**		**8**	**3**	179
			0	0	0 0% Passby (Restau
146	**22**		**8**	**3**	**179 Net New External Trips**

PM Peak Hour Trip Generation and Internalization

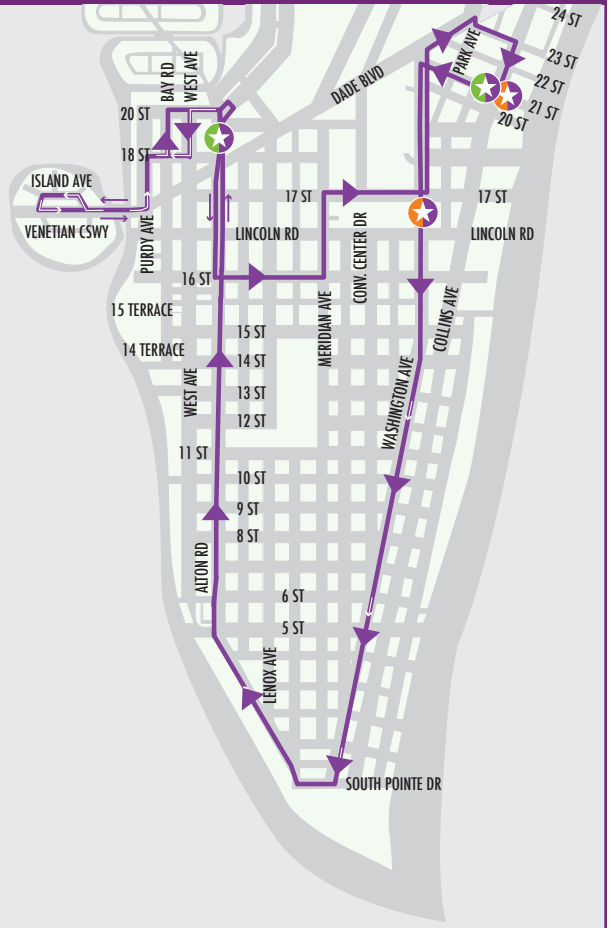
Terminal Island Miami Beach

Office Land Use 710 160,932 Sq Ft			Restaurant Land Use 930 7,234 Sq Ft			
In	**Out**		**In**	**Out**		
29	**150**		**56**	**46**	281	ITE Trips
UNBALANCED INTERNALIZATION						
	4% *6*	***1***	*2%* *1*			
30% *9*		***1***		*3%* *1*		
Office			**Restaurant**			
In	**Out**		**In**	**Out**		
29	**150**		**56**	**46**	281	Vehicle Trips
BALANCED INTERNALIZATION						
	-1		*-1*			
-1				*-1*		
-1	-1		-1	-1	-4	Internal
28	149		55	45	277	External Trips
	1.1%			*2.0%*	*1.4%*	% Internal
-1	-4		-2	-1	-8	-3.0% Transit/Pedestrian
27	**145**		**53**	**44**	269	
			-5	-5	-10	-10% Passby (Restau
27	**145**		**48**	**39**	**259**	**Net New External Trips**

Appendix G
Transit Information

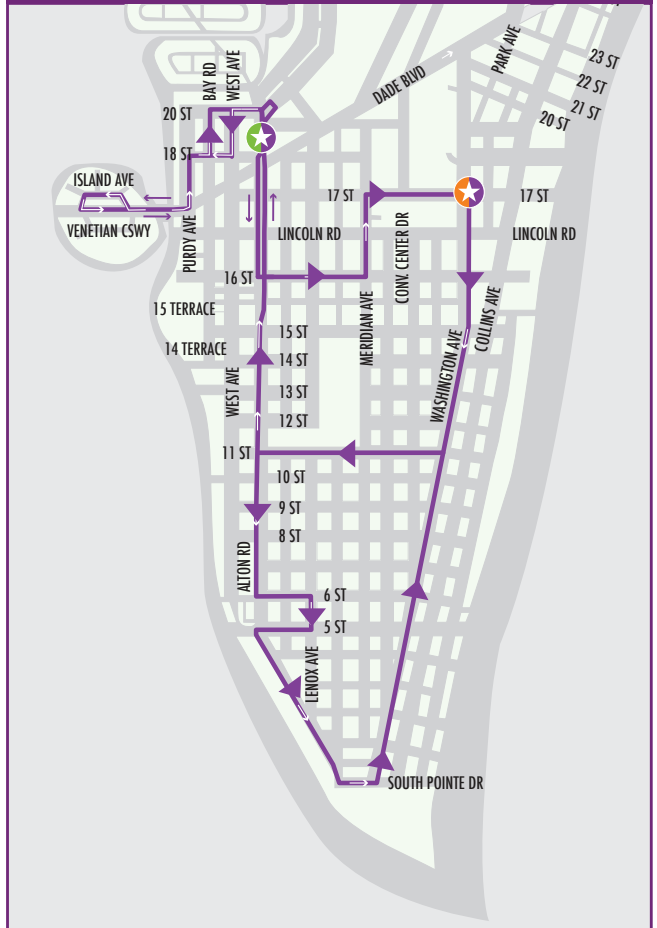
SOUTH BEACH LOOP - A

(Clockwise - Approximately 20 minutes)



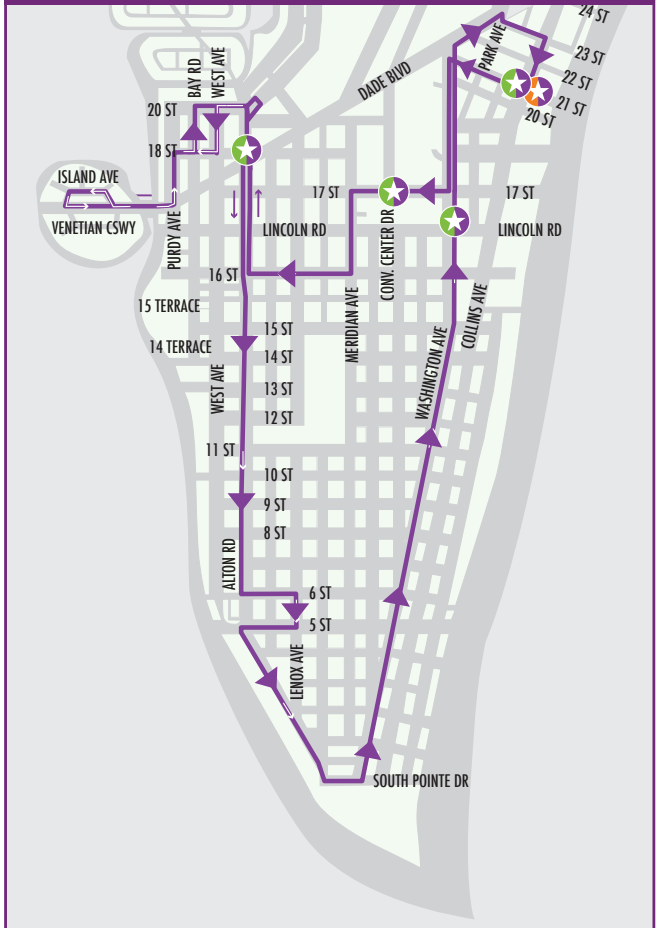
SOUTH BEACH LOOP - VIA 11 ST

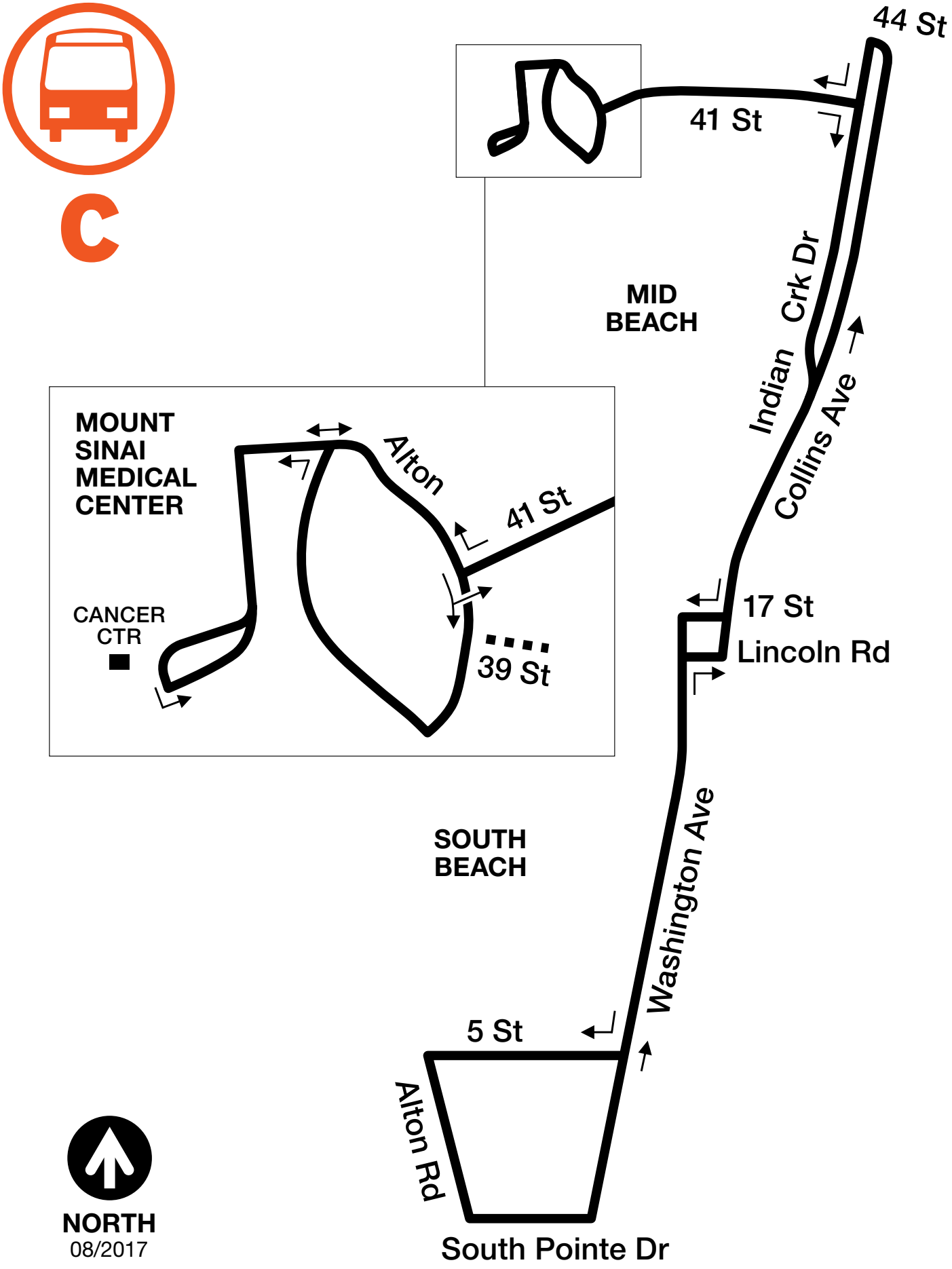
(Approximately 40 minutes)



SOUTH BEACH LOOP - B

(Counter Clockwise - Approximately 20 minutes)




C
44 St
41 St
MID
BEACH
Indian Crk Dr
Collins Ave
MOUNT
SINAI
MEDICAL
CENTER
Alton
41 St
CANCER
CTR
39 St
17 St
Lincoln Rd
SOUTH
BEACH
Washington Ave
5 St
Alton Rd
South Pointe Dr
NORTH
08/2017

Metrobus Routes Schedule

Miami-Dade METROBUS

103 (Northbound) WEEKDAY

ALTON RD & 2 ST	LINCOLN RD & JAMES AV	INDIAN CREEK DR & 43 ST	MT SINAI HOSPITAL	ALTON RD & 39 ST
06:11AM	06:28AM	06:38AM	06:48AM	06:51AM
06:41AM	06:58AM	07:09AM	07:20AM	07:23AM
07:41AM	07:59AM	08:11AM	08:22AM	08:25AM
08:11AM	08:29AM	08:41AM	08:52AM	08:55AM
08:41AM	08:59AM	09:13AM	09:25AM	09:28AM
09:41AM	10:01AM	10:15AM	10:27AM	10:30AM
10:11AM	10:31AM	10:45AM	10:57AM	11:00AM
10:41AM	11:01AM	11:15AM	11:27AM	11:30AM
11:41AM	12:01PM	12:15PM	12:27PM	12:30PM
12:41PM	01:01PM	01:15PM	01:27PM	01:30PM
01:41PM	02:01PM	02:15PM	02:27PM	02:30PM
02:41PM	03:01PM	03:15PM	03:27PM	03:30PM
03:41PM	04:01PM	04:15PM	04:28PM	04:31PM

04:41PM	05:01PM	05:15PM	05:28PM	05:31PM
05:41PM	06:01PM	06:15PM	06:28PM	06:31PM
06:41PM	07:01PM	07:11PM	07:22PM	07:25PM
07:11PM	07:29PM	07:39PM	07:50PM	-
07:41PM	07:59PM	08:09PM	08:20PM	08:23PM
08:26PM	08:44PM	08:54PM	09:05PM	09:08PM
09:11PM	09:29PM	09:39PM	09:50PM	09:53PM
09:56PM	10:14PM	10:25PM	10:34PM	-

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Alice N. Bravo, P.E., Director

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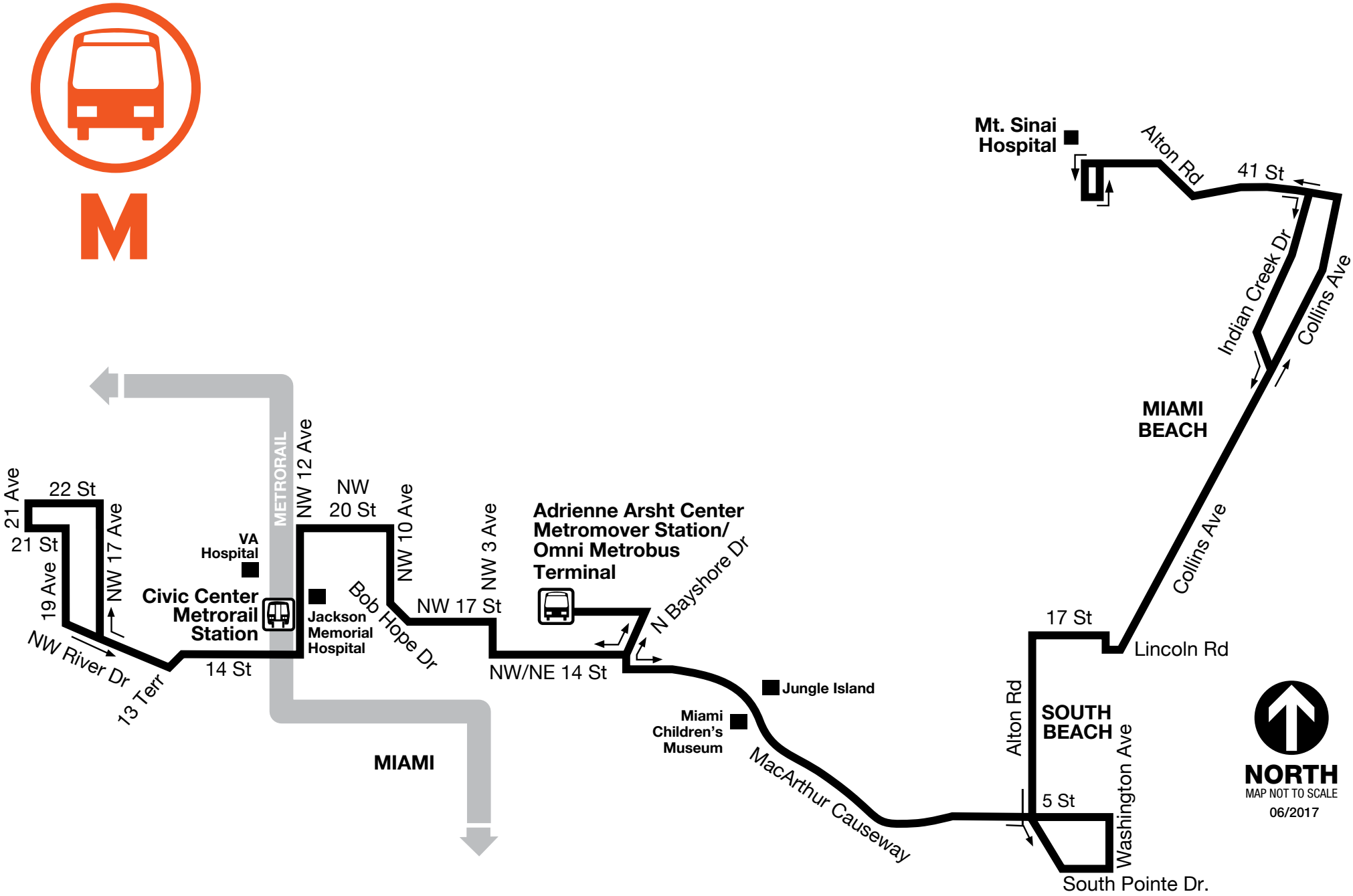
Mt. Sinai Hospital
Alton Rd
41 St
Indian Creek Dr
Collins Ave
MIAMI BEACH
Collins Ave
17 St
Lincoln Rd
Alton Rd
SOUTH BEACH
Washington Ave
5 St
South Pointe Dr.
MacArthur Causeway
Jungle Island
Miami Children's Museum
NW/NE 14 St
N Bayshore Dr
Adrienne Arsht Center Metromover Station/ Omni Metrobus Terminal
NW 3 Ave
NW 17 St
Bob Hope Dr
NW 10 Ave
NW 20 St
NW 12 Ave
METRORAIL
MIAMI
14 St
NW River Dr
13 Terr
Civic Center Metrorail Station
VA Hospital
Jackson Memorial Hospital
NW 17 Ave
19 Ave
21 St
22 St
21 Ave
NORTH
MAP NOT TO SCALE
06/2017

Metrobus Routes Schedule

Miami-Dade METROBUS

113 (Eastbound) WEEKDAY

NW 21 AV & 22 ST	NW 12 AV & 15 ST	OMNI TERMINAL / ARSHT METROMOVER	ALTON RD & 2 ST	5 ST & LENOX AV	17 ST & LENOX AV	LINCOLN RD & JAMES AV	INDIAN CREEK DR & 43 ST	41 ST & MERIDIAN AV	41 ST & ALTON RD	MT SINAI HOSPITAL	ALTON RD & 39 ST
05:42AM	05:48AM	05:58AM	06:08AM	06:13AM	06:21AM	06:26AM	06:35AM	06:42AM	06:43AM	06:45AM	06:47AM
06:55AM	07:03AM	07:16AM	07:27AM	07:33AM	07:43AM	07:49AM	07:59AM	08:06AM	08:08AM	08:10AM	08:12AM
07:45AM	07:53AM	08:06AM	08:17AM	08:23AM	08:33AM	08:39AM	08:51AM	08:58AM	09:00AM	09:02AM	09:04AM
08:30AM	08:38AM	08:51AM	09:02AM	09:08AM	09:18AM	09:25AM	09:37AM	09:44AM	09:46AM	09:48AM	09:50AM
09:55AM	10:03AM	10:17AM	10:28AM	10:34AM	10:44AM	10:51AM	11:03AM	11:10AM	11:12AM	11:14AM	-
10:55AM	11:03AM	11:17AM	11:28AM	11:34AM	11:44AM	11:51AM	12:03PM	12:10PM	12:12PM	12:14PM	-
11:55AM	12:03PM	12:17PM	12:28PM	12:34PM	12:44PM	12:51PM	01:03PM	01:10PM	01:12PM	01:14PM	-
12:55PM	01:03PM	01:17PM	01:28PM	01:34PM	01:44PM	01:51PM	02:03PM	02:10PM	02:12PM	02:14PM	-
01:55PM	02:03PM	02:17PM	02:28PM	02:34PM	02:44PM	02:51PM	03:03PM	03:10PM	03:12PM	03:14PM	-
02:55PM	03:03PM	03:17PM	03:28PM	03:34PM	03:44PM	03:51PM	04:03PM	04:11PM	04:13PM	04:15PM	04:17PM
03:40PM	03:48PM	04:02PM	04:14PM	04:20PM	04:30PM	04:37PM	04:49PM	04:57PM	04:59PM	05:01PM	05:03PM
04:30PM	04:38PM	04:52PM	05:04PM	05:10PM	05:20PM	05:27PM	05:39PM	05:47PM	05:49PM	05:51PM	05:53PM

05:15PM	05:23PM	05:37PM	05:49PM	05:55PM	06:05PM	06:12PM	06:24PM	06:32PM	06:34PM	06:36PM	06:38PM
06:00PM	06:08PM	06:22PM	06:34PM	06:40PM	06:50PM	06:57PM	07:09PM	07:16PM	07:17PM	07:19PM	-
06:45PM	06:53PM	07:07PM	07:18PM	07:24PM	07:32PM	07:38PM	07:49PM	07:56PM	07:57PM	07:59PM	08:01PM
07:35PM	07:42PM	07:55PM	08:06PM	08:12PM	08:20PM	08:26PM	08:37PM	08:44PM	08:45PM	08:47PM	08:49PM
08:35PM	08:42PM	08:55PM	09:06PM	09:12PM	09:20PM	09:26PM	09:37PM	09:44PM	09:45PM	09:47PM	-
09:35PM	09:42PM	09:55PM	10:06PM	10:11PM	10:19PM	10:24PM	10:33PM	10:39PM	10:40PM	10:42PM	-

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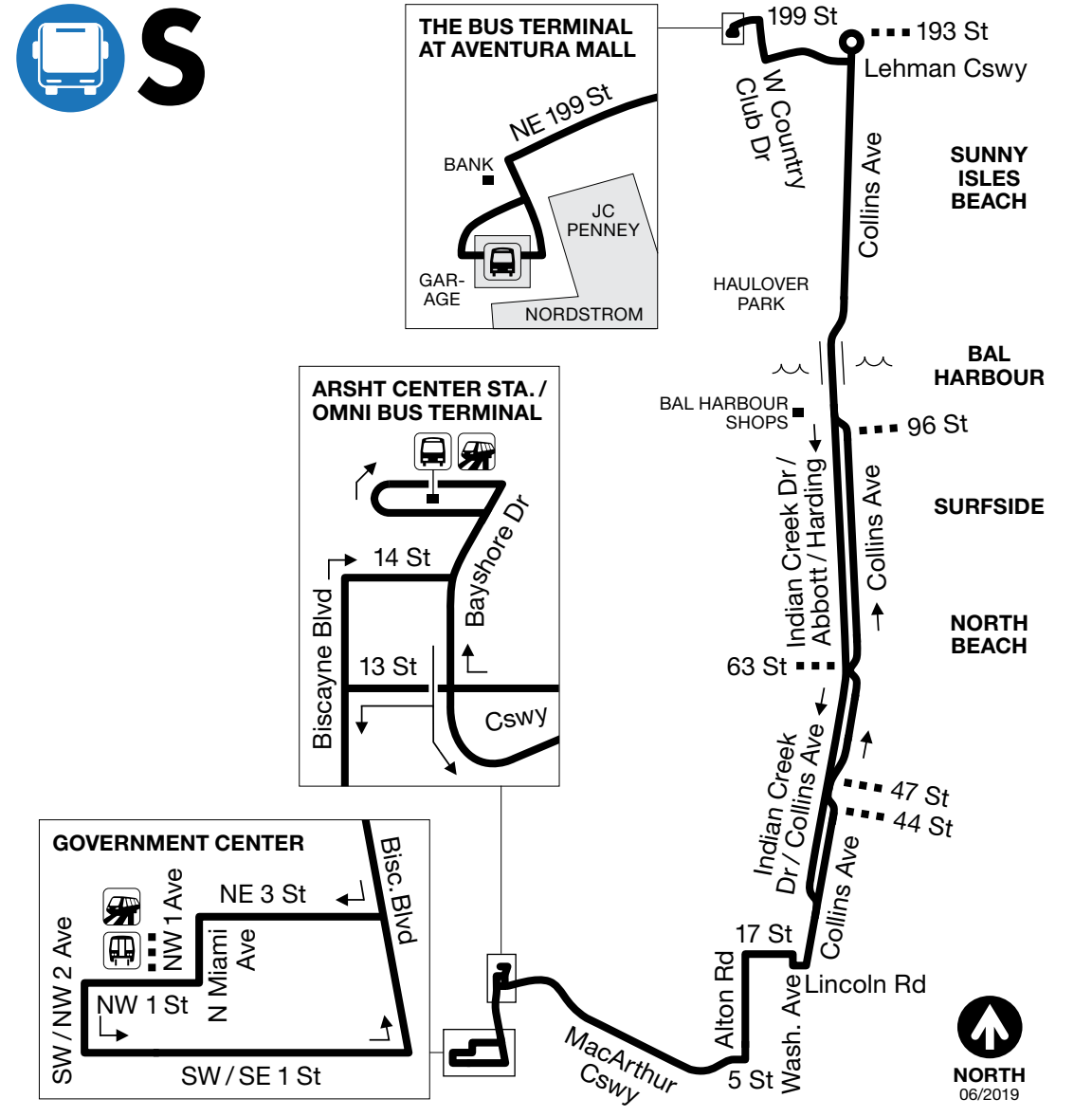
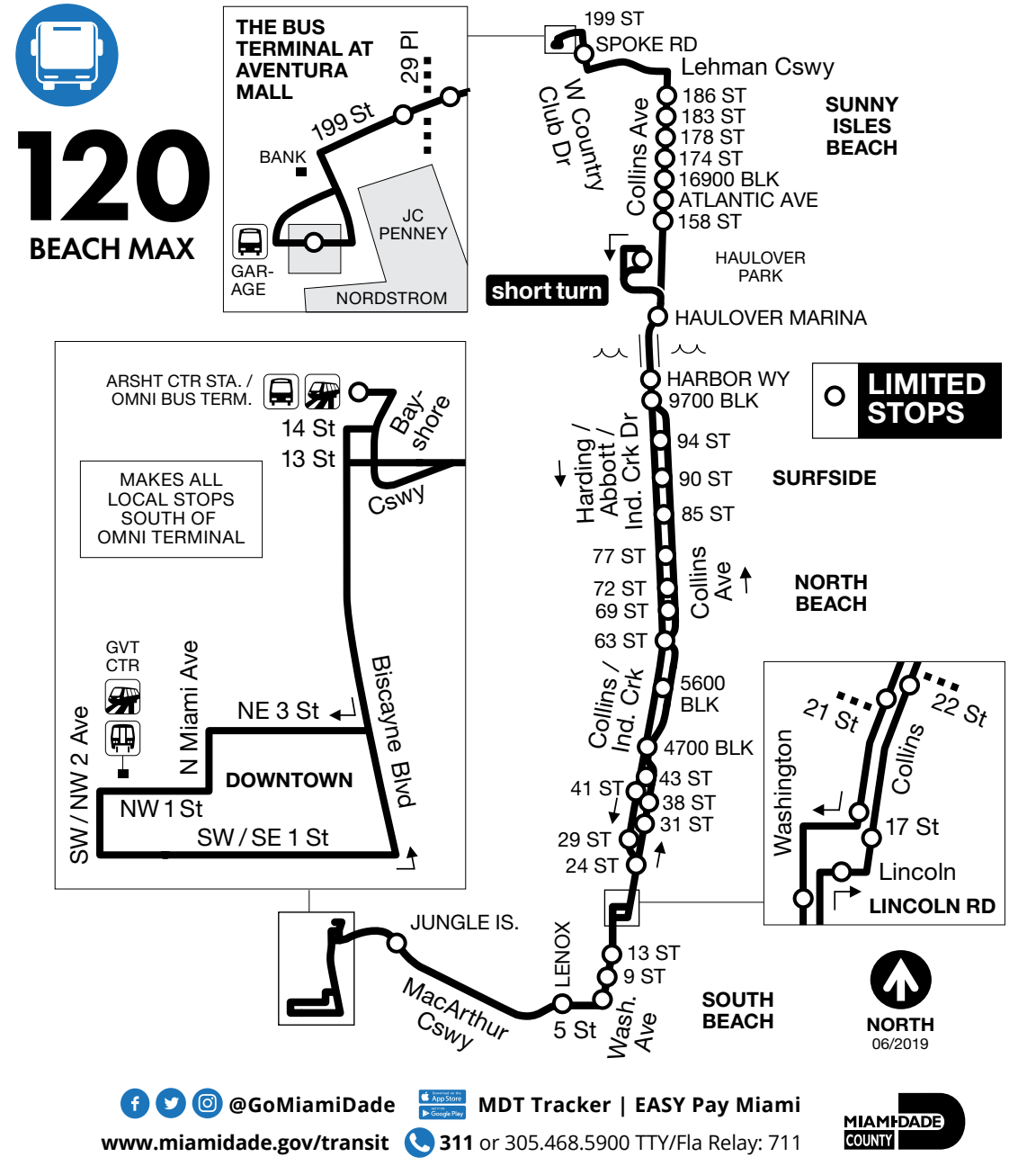

THE BUS TERMINAL AT AVENTURA MALL
NE 199 St
BANK
JC PENNEY
GAR-AGE
NORDSTROM
199 St
193 St
Lehman Cswy
N Country Club Dr
Collins Ave
SUNNY ISLES BEACH
HAULOVER PARK
BAL HARBOUR
BAL HARBOUR SHOPS
96 St
SURFSIDE
Indian Creek Dr / Abbott / Harding
Collins Ave
NORTH BEACH
63 St
ARSHT CENTER STA. / OMNI BUS TERMINAL
Bayshore Dr
14 St
Biscayne Blvd
13 St
Cswy
Indian Creek Dr / Collins Ave
47 St
44 St
Collins Ave
GOVERNMENT CENTER
Bisc. Blvd
NE 3 St
NW 1 Ave
N Miami Ave
NW 1 St
SW / NW 2 Ave
SW / SE 1 St
17 St
Alton Rd
Wash. Ave
Lincoln Rd
MacArthur Cswy
5 St
NORTH
06/2019

120
BEACH MAX



SOUTHBOUND / RUMBO SUR / DIREKSYON SID

WEEKDAYS / DIAS LABORABLES / LASEMÈN

MORNING / MAÑANA / MATIN — AM | PM — AFTERNOON & EVENING / TARDE Y NOCHE / APREMIDI, CHAK ASWÈ

SOUTHBOUND / RUMBO SUR / DIREKSYON SID																																																																
Bus Terminal at Aventura Mall	–	6:00	–	6:30	–	6:54	–	7:21	7:33	7:45	8:00	–	8:27	–	8:59	–	9:31	–	10:05	–	–	10:31	–	10:56	–	11:20	–	11:44	–	12:08	–	12:32	–	12:56	–	1:20	–	1:44	–	2:08	–	2:31	–	2:51	–	3:15	–	3:38	–	3:58	–	4:24	–	4:59	–	5:33	–	6:12	6:37	7:07	7:47	8:27	9:07	9:49	10:31
Collins Ave & Atlantic Ave	–	6:13	–	6:43	–	7:09	–	7:36	7:48	8:02	8:17	–	8:44	–	9:16	–	9:48	–	10:22	–	–	10:48	–	11:13	–	11:37	–	12:01	–	12:25	–	12:49	–	1:13	–	1:37	–	2:01	–	2:25	–	2:48	–	3:08	–	3:32	–	3:55	–	4:17	–	4:43	–	5:18	–	5:52	–	6:28	6:53	7:23	8:03	8:43	9:23	10:05	10:45
Haulover Club Parking Lot	6:00	–	6:30	–	6:55	–	7:23	–	–	–	–	8:29	–	9:02	–	9:32	–	10:00	–	10:11	10:35	–	11:01	–	11:25	–	11:49	–	12:13	–	12:37	–	1:01	–	1:25	–	1:49	–	2:13	–	2:37	–	2:56	–	3:20	–	3:44	–	4:07	–	4:31	–	4:59	–	5:34	–	6:06	–	–	–	–	–	–	–	–
Bal Harbour Shops	6:05	6:19	6:35	6:49	7:02	7:16	7:30	7:43	7:55	8:09	8:24	8:36	8:51	9:09	9:23	9:39	9:55	10:07	10:29	10:18	10:42	10:55	11:08	11:20	11:32	11:44	11:56	12:08	12:20	12:32	12:44	12:56	1:08	1:20	1:32	1:44	1:56	2:08	2:20	2:32	2:44	2:55	3:03	3:15	3:27	3:39	3:51	4:03	4:14	4:25	4:38	4:51	5:06	5:26	5:41	6:00	6:15	6:35	7:00	7:30	8:10	8:50	9:30	10:11	10:51
Abbott Ave & 69 St	6:14	6:28	6:44	6:58	7:14	7:28	7:42	7:55	8:10	8:24	8:39	8:51	9:06	9:20	9:34	9:50	10:06	10:18	10:40	10:29	10:53	11:06	11:19	11:31	11:43	11:55	12:07	12:19	12:31	12:43	12:55	1:07	1:19	1:31	1:43	1:55	2:07	2:19	2:31	2:43	2:55	3:06	3:14	3:26	3:38	3:50	4:02	4:14	4:25	4:36	4:49	5:02	5:17	5:37	5:52	6:10	6:25	6:45	7:10	7:40	8:20	9:00	9:40	10:20	11:00
Indian Creek Dr & 40 St	6:23	6:37	6:53	7:08	7:24	7:38	7:52	8:06	8:21	8:35	8:50	9:04	9:19	9:33	9:47	10:03	10:19	10:31	10:53	10:42	11:06	11:19	11:32	11:44	11:56	12:08	12:20	12:32	12:44	12:56	1:08	1:20	1:32	1:44	1:56	2:08	2:20	2:32	2:44	2:56	3:08	3:19	3:27	3:39	3:51	4:03	4:15	4:27	4:38	4:49	5:02	5:15	5:30	5:50	6:05	6:20	6:35	6:55	7:20	7:50	8:30	9:10	9:50	10:29	11:09
Washington Ave & Lincoln Rd	6:31	6:45	7:02	7:17	7:33	7:47	8:01	8:15	8:30	8:44	8:59	9:14	9:29	9:43	9:57	10:13	10:29	10:41	11:03	10:52	11:16	11:29	11:42	11:54	12:06	12:18	12:30	12:42	12:54	1:06	1:18	1:30	1:42	1:54	2:06	2:18	2:30	2:42	2:54	3:06	3:18	3:29	3:37	3:49	4:01	4:13	4:25	4:37	4:48	4:59	5:12	5:25	5:40	6:00	6:15	6:30	6:45	7:05	7:30	8:00	8:40	9:20	10:00	10:38	11:18
Omni Term. Arsht Metromover	6:46	7:02	7:19	7:34	7:50	8:06	8:20	8:34	8:49	9:04	9:19	9:34	9:49	10:03	10:17	10:33	10:49	11:01	11:23	11:12	11:36	11:49	12:02	12:14	12:26	12:38	12:50	1:02	1:14	1:26	1:38	1:50	2:02	2:14	2:26	2:38	2:50	3:02	3:14	3:26	3:38	3:49	4:01	4:13	4:25	4:37	4:49	5:01	5:12	5:23	5:36	5:49	6:04	6:19	6:34	6:49	7:04	7:24	7:49	8:19	8:59	9:39	10:17	10:55	11:35
Stephen P. Clark Center	6:56	7:13	7:30	7:45	8:01	8:17	8:31	8:45	9:01	9:16	9:31	9:46	10:01	10:15	10:29	10:45	11:01	11:13	11:35	11:24	11:48	12:01	12:14	12:26	12:38	12:50	1:02	1:14	1:26	1:38	1:50	2:02	2:14	2:26	2:38	2:50	3:02	3:14	3:26	3:38	3:50	4:02	4:14	4:26	4:38	4:50	5:02	5:14	5:25	5:36	5:49	6:02	6:15	6:30	6:45	7:00	7:15	7:35	8:00	8:30	9:10	9:50	10:27	11:05	11:45

NORTHBOUND / RUMBO NORTE / DIREKSYON NO

WEEKDAYS / DIAS LABORABLES / LASEMÈN

MORNING / MAÑANA / MATIN — AM | PM — AFTERNOON & EVENING / TARDE Y NOCHE / APREMIDI, CHAK ASWÈ

NORTHBOUND / RUMBO NORTE / DIREKSYON NO																																																															
Stephen P. Clark Center	5:00	5:45	6:15	6:45	7:00	7:13	7:24	7:35	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:12	10:25	10:37	10:48	11:00	11:12	11:24	11:35	11:48	12:00	12:12	12:24	12:36	12:48	1:00	1:12	1:24	1:36	1:48	2:00	2:12	2:24	2:36	2:48	3:00	3:12	3:24	3:36	3:48	4:00	4:12	4:24	4:36	4:48	5:00	5:15	5:30	5:46	6:02	6:20	6:40	7:05	7:35	8:15	8:55	9:30
Omni Term. Arsht Metromover	5:10	5:55	6:26	6:56	7:15	7:28	7:39	7:50	8:03	8:18	8:33	8:48	9:03	9:18	9:33	9:48	10:03	10:18	10:30	10:43	10:55	11:06	11:18	11:30	11:42	11:53	12:06	12:18	12:30	12:42	12:54	1:06	1:18	1:30	1:42	1:54	2:06	2:18	2:30	2:42	2:54	3:07	3:19	3:31	3:43	3:55	4:07	4:19	4:31	4:43	4:55	5:07	5:19	5:34	5:49	6:05	6:21	6:39	6:59	7:18	7:48	8:28	9:08	9:43
Lincoln Rd & James Ave	5:26	6:12	6:43	7:14	7:33	7:46	7:57	8:10	8:23	8:38	8:53	9:10	9:25	9:40	9:55	10:10	10:25	10:40	10:52	11:05	11:17	11:28	11:40	11:52	12:04	12:15	12:28	12:40	12:52	1:04	1:16	1:28	1:40	1:52	2:04	2:16	2:28	2:40	2:52	3:04	3:16	3:29	3:41	3:53	4:05	4:17	4:29	4:41	4:53	5:05	5:17	5:29	5:41	5:56	6:11	6:27	6:43	7:01	7:21	7:38	8:08	8:48	9:28	10:03
Collins Av & 43 St	5:33	6:20	6:51	7:22	7:41	7:54	8:06	8:19	8:32	8:47	9:03	9:20	9:35	9:50	10:05	10:20	10:35	10:50	11:02	11:15	11:27	11:38	11:50	12:02	12:14	12:25	12:38	12:50	1:02	1:14	1:26	1:38	1:50	2:02	2:14	2:26	2:38	2:50	3:02	3:14	3:26	3:39	3:51	4:03	4:15	4:27	4:39	4:51	5:03	5:15	5:27	5:39	5:51	6:06	6:21	6:37	6:53	7:11	7:31	7:48	8:18	8:58	9:38	10:12
Collins Ave & 69 St	5:40	6:28	6:59	7:31	7:50	8:04	8:16	8:29	8:42	8:57	9:13	9:30	9:45	10:00	10:15	10:30	10:45	11:00	11:12	11:25	11:37	11:48	12:00	12:12	12:24	12:35	12:48	1:00	1:12	1:24	1:36	1:48	2:00	2:12	2:24	2:36	2:48	3:01	3:13	3:25	3:37	3:50	4:02	4:14	4:26	4:38	4:50	5:02	5:14	5:26	5:38	5:50	6:02	6:17	6:32	6:48	7:04	7:20	7:40	7:57	8:27	9:07	9:47	10:20
Collins Ave 9700 Block	5:47	6:36	7:08	7:40	7:59	8:13	8:25	8:38	8:52	9:07	9:23	9:40	9:55	10:10	10:25	10:40	10:55	11:10	11:22	11:35	11:47	11:58	12:10	12:22	12:34	12:45	12:58	1:10	1:22	1:34	1:46	1:58	2:10	2:22	2:34	2:46	2:58	3:11	3:23	3:35	3:47	4:00	4:12	4:24	4:36	4:48	5:00	5:12	5:24	5:36	5:48	6:00	6:12	6:27	6:42	6:58	7:12	7:28	7:48	8:05	8:35	9:15	9:55	10:28
Haulover Club Parking Lot	–	–	7:13	–	8:04	–	–	–	8:57	–	9:28	–	10:00	–	10:30	–	11:00	–	11:27	–	11:52	–	12:15	–	12:39	–	1:03	–	1:27	–	1:51	–	2:15	–	2:39	–	3:03	–	3:28	–	3:52	–	4:17	–	4:41	–	5:05	–	5:29	–	5:53	–	6:17	–	6:47	–	7:17	–	–	–	–	–	–	10:32
Collins Ave & Atlantic Ave	5:53	6:42	–	7:47	–	8:21	8:33	8:46	–	9:15	–	9:48	–	10:18	–	10:48	–	11:18	–	11:43	–	12:06	–	12:30	–	12:53	–	1:18	–	1:42	–	2:06	–	2:30	–	2:54	–	3:19	–	3:43	–	4:08	–	4:32	–	4:56	–	5:20	–	5:44	–	6:08	–	6:35	–	7:06	–	7:35	7:55	8:12	8:42	9:22	10:02	–
Bus Terminal at Aventura Mall	5:59	6:50	–	7:59	–	8:33	8:45	8:58	–	9:27	–	10:00	–	10:30	–	11:00	–	11:30	–	11:55	–	12:18	–	12:42	–	1:05	–	1:30	–	1:54	–	2:18	–	2:42	–	3:07	–	3:32	–	3:56	–	4:21	–	4:45	–	5:09	–	5:33	–	5:57	–	6:21	–	6:48	–	7:17	–	7:46	8:06	8:23	8:53	9:33	10:12	–

SATURDAY / SABADO / SANMDI

SOUTHBOUND RUMBO SUR DIREKSYON SID	MORNING / MAÑANA / MATIN																					AFTERNOON & EVENING / TARDE Y NOCHE / APREMIDI, CHAK ASWÈ																													
																					AM	PM																													
Bus Terminal at Aventura Mall	5:49	6:11	–	6:44	–	7:24	–	8:00	–	8:38	–	9:17	–	9:51	–	10:21	–	10:51	–	11:21	–	11:51	–	12:21	–	12:51	–	1:21	–	1:51	–	2:21	–	2:51	–	3:21	–	3:50	–	4:20	–	4:50	–	5:20	–	6:25	6:57	7:29	7:59	8:43	9:35	10:30
Collins Ave & Atlantic Ave	6:02	6:24	–	7:00	–	7:40	–	8:16	–	8:54	–	9:34	–	10:08	–	10:38	–	11:08	–	11:38	–	12:08	–	12:38	–	1:08	–	1:38	–	2:08	–	2:38	–	3:08	–	3:38	–	4:08	–	4:38	–	5:08	–	5:38	–	6:43	7:15	7:45	8:15	8:59	9:51	10:42
Haulover Club Parking Lot	–	–	6:41	–	7:20	–	7:59	–	8:35	–	9:14	–	9:53	–	10:23	–	10:53	–	11:23	–	11:53	–	12:23	–	12:53	–	1:23	–	1:53	–	2:23	–	2:53	–	3:23	–	3:53	–	4:23	–	4:53	–	5:23	–	6:10	–	–	–	–	–	–	–
Bal Harbour Shops	6:10	6:32	6:49	7:08	7:28	7:48	8:07	8:24	8:43	9:03	9:23	9:43	10:02	10:17	10:32	10:47	11:02	11:17	11:32	11:47	12:02	12:17	12:32	12:47	1:02	1:17	1:32	1:47	2:02	2:17	2:32	2:47	3:02	3:17	3:32	3:47	4:02	4:17	4:32	4:47	5:02	5:17	5:32	5:47	6:19	6:52	7:23	7:53	8:23	9:07	9:59	10:49
Abbott Ave & 69 St	6:18	6:40	6:57	7:17	7:37	7:57	8:16	8:33	8:52	9:12	9:32	9:52	10:11	10:26	10:41	10:56	11:11	11:26	11:41	11:56	12:11	12:26	12:41	12:56	1:11	1:26	1:41	1:56	2:11	2:26	2:41	2:56	3:11	3:26	3:41	3:56	4:11	4:26	4:41	4:56	5:11	5:26	5:41	5:56	6:28	7:01	7:31	8:01	8:31	9:15	10:07	10:57
Indian Creek Dr & 40 St	6:26	6:48	7:06	7:26	7:46	8:06	8:25	8:42	9:01	9:21	9:41	10:01	10:20	10:35	10:50	11:05	11:20	11:35	11:50	12:05	12:20	12:35	12:50	1:05	1:20	1:35	1:50	2:05	2:20	2:35	2:50	3:05	3:20	3:35	3:50	4:05	4:20	4:35	4:50	5:05	5:20	5:35	5:50	6:05	6:37	7:09	7:39	8:09	8:39	9:23	10:15	11:05
Washington Ave & Lincoln Rd	6:33	6:55	7:15	7:35	7:55	8:15	8:34	8:51	9:11	9:31	9:51	10:11	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	1:00	1:15	1:30	1:45	2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45	4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45	6:00	6:15	6:47	7:18	7:48	8:18	8:48	9:32	10:22	11:12
Omni Term. Arsht Metromover	6:48	7:11	7:31	7:51	8:11	8:31	8:50	9:10	9:30	9:50	10:10	10:30	10:49	11:04	11:19	11:34	11:49	12:04	12:19	12:34	12:49	1:04	1:19	1:34	1:49	2:04	2:19	2:34	2:49	3:04	3:19	3:34	3:49	4:04	4:19	4:34	4:49	5:04	5:19	5:34	5:49	6:04	6:19	6:34	7:06	7:36	8:06	8:36	9:06	9:50	10:36	11:26
Stephen P Clark Center	6:58	7:22	7:42	8:02	8:22	8:42	9:02	9:22	9:42	10:02	10:22	10:42	11:01	11:16	11:31	11:46	12:01	12:16	12:31	12:46	1:01	1:16	1:31	1:46	2:01	2:16	2:31	2:46	3:01	3:16	3:31	3:46	4:01	4:16	4:31	4:46	5:01	5:16	5:31	5:46	6:01	6:16	6:31	6:46	7:16	7:46	8:16	8:46	9:16	10:00	10:45	11:35

SATURDAY / SÁBADO / SANMDI

NORTHBOUND RUMBO NORTE DIREKSYON NO	MORNING / MAÑANA / MATIN																			AFTERNOON & EVENING / TARDE Y NOCHE / APREMIDI, CHAK ASWÈ																																							
																			AM	PM																																				
Stephen P. Clark Center	6:00	6:36	7:00	7:20	7:40	8:00	8:20	8:40	9:00	9:20	9:40	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	1:00	1:15	1:30	1:45	2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45	4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45	6:00	6:15	6:30	7:00	7:30	8:00	8:30	9:00	9:30	8:00	8:30	9:00	9:30
Omni Term. Arsht Metromover	6:09	6:45	7:09	7:29	7:49	8:10	8:30	8:50	9:10	9:30	9:50	10:10	10:25	10:40	10:55	11:10	11:25	11:40	11:55	12:10	12:25	12:40	12:55	1:10	1:25	1:40	1:55	2:10	2:25	2:40	2:55	3:10	3:25	3:40	3:55	4:10	4:25	4:40	4:55	5:10	5:25	5:40	5:55	6:10	6:25	6:40	7:08	7:38	8:08	8:38	9:08	9:38	8:08	8:38	9:08	9:38
Lincoln Rd & James Ave	6:25	7:01	7:25	7:45	8:07	8:28	8:48	9:08	9:28	9:48	10:08	10:28	10:43	10:58	11:13	11:28	11:43	11:58	12:13	12:28	12:43	12:58	1:13	1:28	1:43	1:58	2:13	2:28	2:43	2:58	3:13	3:28	3:43	3:58	4:14	4:29	4:44	4:59	5:14	5:29	5:44	5:59	6:14	6:29	6:44	6:59	7:24	7:54	8:24	8:54	9:24	9:54	8:24	8:54	9:24	9:54
Collins Av & 43 St	6:34	7:10	7:34	7:54	8:18	8:39	8:59	9:19	9:39	9:59	10:19	10:39	10:54	11:09	11:24	11:39	11:54	12:09	12:24	12:39	12:54	1:09	1:24	1:39	1:54	2:09	2:24	2:39	2:54	3:09	3:24	3:39	3:54	4:09	4:25	4:40	4:55	5:10	5:25	5:40	5:55	6:10	6:25	6:40	6:55	7:10	7:35	8:05	8:35	9:05	9:35	10:05	8:35	9:05	9:35	10:05
Collins Ave & 69 St	6:44	7:20	7:44	8:04	8:28	8:49	9:09	9:29	9:49	10:09	10:29	10:49	11:04	11:19	11:34	11:49	12:04	12:19	12:34	12:49	1:04	1:19	1:34	1:49	2:04	2:19	2:34	2:49	3:04	3:19	3:34	3:49	4:04	4:19	4:35	4:50	5:05	5:20	5:35	5:50	6:05	6:20	6:35	6:50	7:05	7:19	7:44	8:14	8:44	9:14	9:44	10:13	8:44	9:14	9:44	10:13
Collins Ave 9700 Block	6:50	7:26	7:50	8:11	8:35	8:56	9:16	9:36	9:56	10:16	10:36	10:56	11:11	11:26	11:41	11:56	12:11	12:26	12:41	12:56	1:11	1:26	1:41	1:56	2:11	2:26	2:41	2:56	3:11	3:26	3:41	3:56	4:11	4:26	4:42	4:57	5:12	5:27	5:42	5:57	6:12	6:27	6:42	6:57	7:11	7:25	7:50	8:20	8:50	9:20	9:50	10:17	8:50	9:20	9:50	10:17
Haulover Club Parking Lot	–	–	–	8:16	–	9:01	–	9:41	–	10:21	–	11:01	–	11:31	–	12:01	–	12:31	–	1:01	–	1:31	–	2:01	–	2:31	–	3:01	–	3:31	–	4:01	–	4:31	–	5:02	–	5:32	–	6:02	–	6:32	–	–	–	7:30	–	8:25	–	9:25	–	10:21	–	9:25	–	10:21
Collins Ave & Atlantic Ave	6:57	7:33	7:57	–	8:42	–	9:23	–	10:03	–	10:43	–	11:18	–	11:48	–	12:18	–	12:48	–	1:18	–	1:48	–	2:18	–	2:48	–	3:18	–	3:48	–	4:18	–	4:49	–	5:19	–	5:49	–	6:19	–	6:49	7:04	7:17	–	7:56	–	8:56	–	9:56		8:56	–	9:56	–
Bus Terminal at Aventura Mall	7:11	7:47	8:13	–	8:58	–	9:39	–	10:19	–	10:59	–	11:34	–	12:04	–	12:34	–	1:04	–	1:34	–	2:04	–	2:34	–	3:04	–	3:34	–	4:04	–	4:34	–	5:05	–	5:35	–	6:05	–	6:35	–	7:05	7:19	7:32	–	8:11	–	9:11	–	10:11		9:11	–	10:11	–

SOUTHBOUND
RUMBO SUR
DIREKSYON SID

SUNDAY / DOMINGO / DIMANCH

MORNING / MAÑANA / MATIN — AM | PM — **AFTERNOON & EVENING** / TARDE Y NOCHE / APREMIDI, CHAK ASWÈ

Bus Terminal at Aventura Mall	6:01	6:41	7:07	7:34	8:01	8:31	9:00	9:24	9:50	10:20	10:50	11:20	11:50	12:20	12:50	1:20	1:50	2:20	2:50	3:20	3:50	4:20	4:51	5:23	5:55	6:26	6:57	7:30	8:00	8:29	8:59	9:27
Collins Ave & Atlantic Ave	6:12	6:52	7:18	7:45	8:14	8:44	9:13	9:37	10:06	10:36	11:06	11:36	12:06	12:36	1:06	1:36	2:06	2:36	3:06	3:36	4:06	4:36	5:07	5:39	6:11	6:41	7:12	7:45	8:12	8:41	9:11	9:39
Bal Harbour Shops	6:18	6:58	7:24	7:51	8:21	8:51	9:20	9:44	10:14	10:44	11:14	11:44	12:14	12:44	1:14	1:44	2:14	2:44	3:14	3:44	4:14	4:44	5:15	5:47	6:18	6:48	7:19	7:52	8:18	8:47	9:17	9:45
Abbott Ave & 69 St	6:26	7:06	7:32	8:00	8:30	9:00	9:29	9:53	10:23	10:53	11:23	11:53	12:23	12:53	1:23	1:53	2:23	2:53	3:23	3:53	4:23	4:53	5:24	5:56	6:26	6:56	7:27	8:00	8:26	8:55	9:25	9:53
Indian Creek Dr & 40 St	6:34	7:14	7:40	8:09	8:39	9:09	9:38	10:02	10:32	11:02	11:32	12:02	12:32	1:02	1:32	2:02	2:32	3:02	3:32	4:02	4:32	5:02	5:33	6:05	6:35	7:05	7:36	8:08	8:34	9:03	9:33	10:01
Washington Ave & Lincoln Rd	6:40	7:20	7:46	8:16	8:46	9:16	9:45	10:11	10:41	11:11	11:41	12:11	12:41	1:11	1:41	2:11	2:41	3:11	3:41	4:11	4:41	5:11	5:42	6:13	6:43	7:13	7:44	8:15	8:41	9:10	9:40	10:08
Omni Term. Arsht Metromover	6:51	7:31	8:00	8:30	9:00	9:30	9:59	10:29	10:59	11:29	11:59	12:29	12:59	1:29	1:59	2:29	2:59	3:29	3:59	4:29	4:59	5:29	6:00	6:30	7:00	7:30	8:01	8:28	8:54	9:23	9:53	10:21
Stephen P. Clark Center	7:00	7:40	8:10	8:40	9:10	9:40	10:10	10:40	11:10	11:40	12:10	12:40	1:10	1:40	2:10	2:40	3:10	3:40	4:10	4:40	5:10	5:40	6:10	6:40	7:10	7:40	8:10	8:37	9:03	9:32	10:02	10:30

NORTHBOUND
RUMBO NORTE
DIREKSYON NO

SUNDAY / DOMINGO / DIMANCH

MORNING / MAÑANA / MATIN — AM | PM — **AFTERNOON & EVENING** / TARDE Y NOCHE / APREMIDI, CHAK ASWÈ

Stephen P. Clark Center	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	9:00			
Omni Term. Arsht Metromover	6:06	6:36	7:06	7:36	8:08	8:38	9:08	9:38	10:10	10:40	11:10	11:40	12:10	12:40	1:10	1:40	2:10	2:40	3:10	3:40	4:10	4:40	5:10	5:40	6:08	6:38	7:08	7:38	8:06	9:06			
Lincoln Rd & James Ave	6:20	6:50	7:20	7:50	8:24	8:54	9:24	9:54	10:27	10:57	11:27	11:57	12:27	12:57	1:27	1:57	2:27	2:57	3:27	3:57	4:27	4:57	5:27	5:57	6:23	6:53	7:23	7:53	8:20	9:20			
Collins Av & 43 St	6:29	6:59	7:29	7:59	8:33	9:03	9:33	10:05	10:38	11:08	11:38	12:08	12:38	1:08	1:38	2:08	2:38	3:08	3:38	4:08	4:38	5:08	5:38	6:08	6:33	7:03	7:33	8:03	8:29	9:29			
Collins Ave & 69 St	6:37	7:07	7:37	8:08	8:42	9:12	9:42	10:15	10:48	11:18	11:48	12:18	12:48	1:18	1:48	2:18	2:48	3:18	3:48	4:18	4:48	5:18	5:48	6:17	6:42	7:12	7:42	8:11	8:37	9:37			
Collins Av 9700 Block	6:41	7:11	7:41	8:14	8:48	9:18	9:48	10:21	10:54	11:24	11:54	12:24	12:54	1:24	1:54	2:24	2:54	3:24	3:54	4:25	4:55	5:25	5:55	6:23	6:48	7:18	7:48	8:15	8:41	9:41			
Collins Ave & Atlantic Ave	6:47	7:17	7:47	8:21	8:55	9:25	9:55	10:28	11:01	11:31	12:01	12:31	1:01	1:31	2:01	2:31	3:01	3:31	4:01	4:32	5:02	5:32	6:02	6:29	6:54	7:24	7:54	8:21	8:47	9:47			
Bus Terminal at Aventura Mall	7:00	7:30	8:02	8:36	9:10	9:40	10:11	10:44	11:17	11:47	12:17	12:47	1:17	1:47	2:17	2:47	3:17	3:47	4:17	4:48	5:18	5:48	6:16	6:43	7:08	7:38	8:08	8:34	9:00	10:00			

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1750 PONCE DE LEON BOULEVARD | CORAL GABLES, FLORIDA 33134
305•447•0900 | DPA@DPLUMMER.COM

November 30, 2020

Mr. Firat Akcay
Transportation Analyst
City of Miami Beach
Transportation and Mobility Department
1688 Meridian Avenue, Suite 801, Miami Beach, FL 33139
305.673.7000, Ext 26839
FiratAkcay@miamibeachfl.gov

RE: Terminal Island Miami Beach Queuing Analysis - #20129

Dear Firat,

The project is located at 120 MacArthur Causeway (Terminal Island) in Miami Beach, Florida. The project proposes a new 160,932 SF office building and a 7,234 SF restaurant. The existing six boat berth marina will remain. Access to the site will be provided via the internal roadway on Terminal Island which provides access to MacArthur Causeway.

The purpose of this letter is to conduct a queuing analysis for the proposed gated entrance to the development. As per the developer, the gate will remain open through the day with a security guard and will close at night. At night the building can only be accessed with an FOB system.

Queuing Analysis

The queuing analysis was performed based on the methodology outlined in the Institute of Transportation Engineers (ITE) Transportation and Land Development. The analysis was performed to determine if there is sufficient storage to accommodate the anticipated queue at the proposed site entrances during the peak hour (worst case scenario) so that the queue does not extend past the property line (95% confidence level analysis).

Trip generation for the proposed project was estimated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition, which provides gross trip generation rates and/or equations by land use type. These rates and equations estimate vehicle trip ends at a free-standing site's driveways. ITE trip generation worksheets are provided in Attachment A.

The proposed development plan incorporates office and restaurant land uses, which can satisfy the lunch/dinner trip for some employees, and visitors without making a trip off-site. An internalization matrix was developed to establish the appropriate number of internal project trips. Internal capture rates used are also included in Attachment A.

ITE research shows that a certain percent of restaurant trips are "*pass-by*" trips. These are described as trips "attracted from the traffic passing the site on an adjacent street." These are not new trips, but trips already using the existing roadway network that stop at the proposed use and go back to their original path. Pass-by trips for this use were established based on guidelines provided in ITE's *Trip Generation Handbook* 3rd Edition. The average pass-by rate published by ITE for restaurant use is 44% during the PM peak hour however, as discussed with the City reviewer, a 10% reduction was used for pass-by applied to restaurant trips.

The study area is pedestrian and bicycle friendly and transit is readily available. US Census data shows an existing 12.9% overall use of other modes of transportation in the US Census Tract 9810 where the project is located (see Attachment A). However, for a conservative analysis and as discussed with the City reviewer, a 3% reduction will be used for other modes of transportations. The project trip generation summary is provided in Exhibit 1.

Exhibit 1: Project Trip Generation Summary

Proposed ITE Land Use Designation[1]	Size/Units	Daily (Two-way)	AM Peak Hour Vehicle Trips			PM Peak Hour Vehicle Trips		
			In	Out	Total	In	Out	Total
Office (Land Use 710)	160,932 SF	1,684	153	25	178	29	150	179
Fast Casual Restaurant (Land Use 930)	7,234 SF	2,278	10	5	15	56	46	102
Gross External Trips		**3,962**	**163**	**30**	**193**	**85**	**196**	**281**
Internalization AM, PM		4.1%, 1.4%	-4	-4	-8	-2	-2	-4
Other Modes of Transportation[2]		3%	-5	-1	-6	-3	-5	-8
Pass-By Restaurant (PM)[3]		10%	0	0	0	-5	-5	-10
Proposed Net External Trips			**154**	**25**	**179**	**75**	**184**	**259**

[1]Based on ITE Trip Generation Manual, Tenth Edition
[2]Based on US Census (Tract 9810) is 12.9%, however a 3% was used.
[3]Based on ITE Trip Generation Handbook, 3rd Edition (PM pass-by) is 44%, however 10% was used.

The queuing analysis used the single-channel waiting line model with Poisson arrivals and exponential service times. The analysis is based on the coefficient of utilization (ρ) which is the ratio of the average arrival rate of vehicles to the average service rate.

$$\rho = \frac{Average\ Demand\ Rate}{Average\ Sevice\ Rate}$$

The average service rate corresponds to the time it will take a vehicle to gain access through the gate. If the coefficient of utilization is greater than 1, then the calculation will yield an infinite queue length.

The required queue storage (M) is determined using the following equation:

$$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho}\right] - 1$$

In this equation, *P(x > M)* is set at 5% to yield a 95% confidence that the queue will not back-up onto the adjacent street. Although the project trip generation shows the AM peak hour of the adjacent street as the critical inbound hour, the PM peak hour was used in the analysis.

Since the gate will be open and office employees and regular visitors will be able to enter without stopping, the queuing analysis assumed that only 20% of the office trips and all of the restaurant trips will stop at a brief security check. Based on this assumption, the highest volume of vehicles stopping at the gate occur during the PM peak hour (29*0.2 + 56 = 62 vph). A processing rate of 20 seconds per vehicle (0.33 minutes per vehicle) was used. This is the time it will take some visitors to go through and pass the gate. Exhibit 2 provides the queuing calculations based on the Poisson Equation.

Exhibit 2: Entrance Queuing Calculations

Q = Processing rate = $\frac{60\ min/hr}{0.33\ min/process} = 180\ process/hr$

q = Demand Rate = 62 $\frac{veh}{hr}$

N = Service Positions = 1 Lane

ρ = Utilization factor = $\frac{q}{(NQ)} = \frac{62\ veh/hr}{1 \times 180\ process/hr}$ =0.3444

Q_m = Table Value = 0.3444

M = queue length which is exceeded 5% of the time [P(x>M)]

$M = \frac{\ln P(x>M) - \ln(Q_m)}{\ln(\rho)} - 1 = \frac{\ln(0.05) - \ln(0.3444)}{\ln 0.3444} - 1 = 0.81$ say one vehicle in queue.

The analysis shows that only one vehicle queue is expected at the gate during the PM peak hour. Based on the site plan, there is approximately 83 feet of storage between the gate and the property line; this distance is enough to accommodate 4 vehicles in the queue. Therefore, no spillback onto the adjacent street is expected.

We stand ready to provide any support needed for this proposed project. Should you have any questions or comments, please call me at (305) 447-0900.

Sincerely,

Juan Espinosa, PE
Vice President – Transportation

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Attachment A

MCARTHUR CUASEWAY (S.R.A-1-A)

CENTERLINE

R/W

R/W

0FT FRONT SETBACK

25' VISIBILITY TRIANGLE

25' VISIBILITY TRIANGLE

FPL
1,500 SF

MGMT
825 SF

280

FPL CONC. PAD

FPL CONC. PAD

90' QUEUE STORAGE

FRONT GATE

GUARD
578 SF

281

POWER POLE W. TRANSFORMER

0FT SIDE SETBACK

POWER POLE W. TRANSFORMER

POWER POLE W. TRANSFORMER

0FT SIDE SETBACK

POWER POLE W. TRANSFORMER

BUILDING 4
STORAGE

BUILDING 3
VEHICLE
SERVICE BAYS &
SANITATION DEPT

0 10 25 50 100

Scenario - 1

Scenario Name: Proposed
User Group:
Dev. phase: 1
No. of Years to Project: 0
Analyst Note:
Warning: The time periods among the land uses do not appear to match.

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method / Rate/Equation	Entry / Split%	Exit / Split%	Total
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday	Best Fit (LOG)	842	842	1684
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.97Ln(X) + 2.50	50%	50%	
710(1) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	153	25	178
Data Source: Trip Gen Manual, 10th Ed					T = 0.94(X) + 26.49	86%	14%	
710(2) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LOG)	29	150	179
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.95Ln(X) + 0.36	16%	84%	
420(3) - Marina	General Urban/Suburban	Berths	6	Weekday	Average	7	7	14
Data Source: Trip Gen Manual, 10th Ed					2.41	50%	50%	
420(4) - Marina	General Urban/Suburban	Berths	6	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	1	1	2
Data Source: Trip Gen Manual, 10th Ed					0.21	60%	40%	
420(5) - Marina	General Urban/Suburban	Berths	6	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	1	1	2
Data Source: Trip Gen Manual, 10th Ed					0.21	60%	40%	
930(2) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday	Average	1139	1139	2278
Data Source: Trip Gen Manual, 10th Ed					315.17	50%	50%	
930(1) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average	10	5	15
Data Source: Trip Gen Manual, 10th Ed					2.07	67%	33%	
930(3) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	56	46	102
Data Source: Trip Gen Manual, 10th Ed					14.13	55%	45%	

AM Peak Hour Trip Generation and Internalization

Terminal Island Miami Beach

Office Land Use 710 160,932 Sq Ft			Restaurant Land Use 930 7,234 Sq Ft		
In	**Out**		**In**	**Out**	
153	**25**		**10**	**5**	193 ITE Trips
UNBALANCED INTERNALIZATION					
	63% *16*	*2*	*23%* *2*		
14% *21*		*2*		*31%* *2*	
Office			**Restaurant**		
In	**Out**		**In**	**Out**	
153	**25**		**10**	**5**	193 Vehicle Trips
BALANCED INTERNALIZATION					
	-2		*-2*		
-2				*-2*	
-2	-2		-2	-2	-8 Internal
151	23		8	3	185 External Trips
	2.2%			*26.7%*	*4.1%* % Internal
-5	-1		0	0	-6 -3.0% Transit/Pedestrian
146	**22**		**8**	**3**	179
			0	0	0 0% Passby (Restau
146	**22**		**8**	**3**	**179 Net New External Trips**

PM Peak Hour Trip Generation and Internalization

Terminal Island Miami Beach

Office Land Use 710 160,932 Sq Ft			Restaurant Land Use 930 7,234 Sq Ft			
In	**Out**		**In**	**Out**		
29	**150**		**56**	**46**	281	ITE Trips
UNBALANCED INTERNALIZATION						
	4% *6*	***1***	*2%* *1*			
30% *9*		***1***		*3%* *1*		
Office			**Restaurant**			
In	**Out**		**In**	**Out**		
29	**150**		**56**	**46**	281	Vehicle Trips
BALANCED INTERNALIZATION						
	-1		*-1*			
-1				*-1*		
-1	-1		-1	-1	-4	Internal
28	149		55	45	277	External Trips
	1.1%			*2.0%*	*1.4%*	% Internal
-1	-4		-2	-1	-8	-3.0% Transit/Pedestrian
27	**145**		**53**	**44**	269	
			-5	-5	-10	-10% Passby (Restau
27	**145**		**48**	**39**	**259**	**Net New External Trips**

location, a 5% probability of back-up onto the adjacent street is judged to be acceptable. Demand on the system for design is expected to be 110 vehicles in a 45-minute period. Average service time was expected to be 2.2 minutes. Is the queue storage adequate?

Such problems can be quickly solved using Equation (8–9b) given in Table 8-10 and repeated below for convenience.

$$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho}\right] - 1$$

where:

M = queue length which is exceeded p percent of the time
N = number of service channels (drive-in positions)
Q = service rate per channel (vehicles per hour)
$\rho = \dfrac{\text{demand rate}}{\text{service rate}} = \dfrac{q}{NQ}$ = utilization factor
q = demand rate on the system (vehicles per hour)
Q_M = tabled values of the relationship between queue length, number of channels, and utilization factor (see Table 8.11)

TABLE 8-11
Table of Q_M Values

ρ	$N = 1$	2	3	4	6	8	10
0.0	0.0000	0.0000	0.0000	0.0000			
0.1	.1000	.0182	.0037	.0008	.0000	0.0000	0.0000
.2	.2000	.0666	.0247	.0096	.0015	.0002	.0000
.3	.3000	.1385	.0700	.0370	.0111	.0036	.0011
.4	.4000	.2286	.1411	.0907	.0400	.0185	.0088
.5	.5000	.3333	.2368	.1739	.0991	.0591	.0360
.6	.6000	.4501	.3548	.2870	.1965	.1395	.1013
.7	.7000	.5766	.4923	.4286	.3359	.2706	.2218
.8	.8000	.7111	.6472	.5964	.5178	.4576	.4093
.9	.9000	.8526	.8172	.7878	.7401	.7014	.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

$\rho = \dfrac{q}{NQ} = \dfrac{\text{arrival rate, total}}{(\text{number of channels})(\text{service rate per channel})}$
N = number of channels (service positions)

Solution

Step 1: $Q = \dfrac{60 \text{ min/hr}}{2.2 \text{ min/service}} = 27.3$ services per hour

Step 2: $q = (110 \text{ veh}/45 \text{ min}) \times (60 \text{ min/hr}) = 146.7$ vehicles per hour

Step 3: $\rho = \dfrac{q}{NQ} = \dfrac{146.7}{(6)(27.3)} = 0.8956$

Step 4: $Q_M = 0.7303$ by interpolation between 0.8 and 0.9 for $N = 6$ from the table of Q_M values (see Table 8-11).

Step 5: The acceptable probability of the queue, M, being longer than the storage, 18 spaces in this example, was stated to be 5%. $P(x > M) = 0.05$, and:

$$M = \left[\frac{\ln 0.05 - \ln 0.7303}{\ln 0.8956}\right] - 1 = \left[\frac{-2.996 - (-0.314)}{-0.110}\right] - 1$$
$$= 24.38 - 1 = 23.38, \text{ say } 23 \text{ vehicles.}$$

DAVID PLUMMER & ASSOCIATES
TRAFFIC ENGINEERING • CIVIL ENGINEERING • TRANSPORTATION PLANNING

1750 PONCE DE LEON BOULEVARD | CORAL GABLES, FLORIDA 33134
305•447•0900 | DPA@DPLUMMER.COM

November 30, 2020

Mr. Firat Akcay
Transportation Analyst
City of Miami Beach
Transportation and Mobility Department
1688 Meridian Avenue, Suite 801, Miami Beach, FL 33139
305.673.7000, Ext 26839
FiratAkcay@miamibeachfl.gov

RE: Terminal Island Miami Beach Valet Queuing Analysis - #20129

Dear Firat,

The project is located at 120 MacArthur Causeway (Terminal Island) in Miami Beach, Florida. The project proposes a new 160,932 SF office building and a 7,234 SF restaurant. The existing six boat berth marina will remain. Access to the site will be provided via the internal roadway on Terminal Island which provides access to MacArthur Causeway.

The purpose of this letter is to conduct a queuing analysis for the proposed valet operations to ensure that the drop-off / pick-up demand at the proposed valet station would not extend past the provided storage space at the valet station during the peak hour of the generator.

Queuing Analysis

The queuing analysis was performed based on the methodology outlined in the *Institute of Transportation Engineers (ITE) Transportation and Land Development*, to determine the number of valet parking attendants required during the PM peak hour of the generator so that the queue does not extend past the valet storage area (95% confidence level analysis). The potential queues were calculated based on the PM peak hour of the generator published by the *Institute of Transportation Engineers* (ITE) trip generation rates and/or equations for the proposed

development plan. The pick-up / drop-off area will be located internal to the site on the east side of the circular drive. The project is proposing valet parking to be used by 100% of restaurant guest and by office visitors. It was assumed that a conservative 10% of the office demand will be visitors using the valet parking. Exhibit 1 provides the trip generation for the pick-up / drop-off area during the PM peak hour of the generator. Trip generation documentation is available in Attachment A.

Exhibit 1: PM Peak Hour of the Generator Trip Generation Summary

Proposed ITE Land Use Designation[1]	Size/Units	Daily (Two-way)	PM Peak of Generator Vehicle Trips		
			In	Out	Total
Office[2] (Land Use 710)	160,932 SF	1,684	9	48	57
Fast Casual Restaurant (Land Use 930)	7,234 SF	2,278	146	171	317
Gross External Trips		**3,962**	**155**	**219**	**374**
Internalization PM		2.70%	-5	-5	-10
Other Modes of Transportation[3]		3%	-4	-6	-10
Proposed Net External Trips			**146**	**208**	**354**
Proposed valet Trips (10% Office, 100% Restaurant)			**141**	**168**	**309**

[1] Based on ITE Trip Generation Manual, 10th Edition

[2] Based on ITE daily rate for 5:45 pm

[3] Based on US Census (Tract 9810) is 12.9%, however a 3% was used.

The queuing analysis used the single-channel waiting line model with Poisson arrivals and exponential service times. The analysis is based on the coefficient of utilization (ρ) which is the ratio of the average arrival rate of vehicles to the average service rate.

$$\rho = \frac{Average\ Demand\ Rate}{Average\ Sevice\ Rate}$$

The average service rate corresponds to the time it will take a vehicle to gain access through the gate. If the coefficient of utilization is greater than 1, then the calculation will yield an infinite queue length.

The required queue storage (M) is determined using the following equation:

$$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho}\right] - 1$$

In this equation, *P(x > M)* is set at 5% to yield a 95% confidence that the queue will not back-up past the valet storage area.

The processing rate was calculated by adding the time it will take a valet attendant to process the vehicles (**processing time**), the time it will take the valet to circulate to/from the parking space (**driving time**), the time it will take to park or retrieve a vehicle (**park processing time**), and the time it will take to walk to/from the parking area (**walking time**). A processing time of 51 seconds per vehicle was used in the analysis. This information is based on data collected from a hotel on Miami Beach (see Attachment B). The driving time for the valet attendant was calculated on a speed of 15 mph, and the walking time for the valet attendant was calculated on a jogging speed of 8 ft/sec.

Valet attendants will have assigned parking spaces within the site as follows: 10 tandem and 17 standard parking spaces within the parking garage located east of the entrance drive, and 34 standard parking spaces within a ground surface lot located west of the entrance drive. The pick-up / drop-off area will be located internal to the site on the east side of the circular drive. Since the distance from the valet drop-off / pick-up area differs for inbound / outbound, a weighted average was taken of the inbound / outbound valet processing times for the tandem and standard spaces located in the garage. The weighted average was based on the inbound / outbound trip distribution, which is 46% inbound and 54% outbound during the PM peak hour of the generator. The valet processing times for valet parking locations are shown in Exhibits 2-4.

Exhibit 2: Inbound / Outbound Valet Processing Rate to/from Tandem Spaces in Garage

Inbound Valet Processing Time

***Processing time*:**	51 sec / 60 sec / 1 min = ***0.85 min***
***Driving time*:**	207 ft * 1 mile / 5280 ft * 1hr / 15 miles * 60 min / hr = ***0.16 min***
Park Processing time:	***0.45 min***
Walking time:	210 ft / 8 ft / sec / 60 sec / min = ***0.44 min***
Total	**= 1.89 min**

Outbound Valet Processing Time

***Processing time*:**	51 sec / 60 sec / 1 min = ***0.85 min***
***Driving time*:**	307 ft * 1 mile / 5280 ft * 1hr / 15 miles * 60 min / hr = ***0.28 min***
Park Processing time:	***0.45 min***
Walking time:	210 ft / 8 ft / sec / 60 sec / min = ***0.44 min***
Total	**= 2.02 min**

Weighted Inbound / Outbound Valet Time

46% Inbound:	0.46 * 1.89 min = ***0.87 min***
54% Outbound:	0.54 * 2.02 min = ***1.09 min***
Total	**= 1.96 min**

Exhibit 3: Inbound / Outbound Valet Processing Rate to/from Standard Space in Garage

Inbound Valet Processing Time

***Processing time*:**	51 sec / 60 sec / 1 min = ***0.85 min***
***Driving time*:**	374 ft * 1 mile / 5280 ft * 1hr / 15 miles * 60 min / hr = ***0.28 min***
Park Processing time:	***0.15 min***
Walking time:	202 ft / 8 ft / sec / 60 sec / min = ***0.42 min***
Total	**= 1.70 min**

Outbound Valet Processing Time

***Processing time*:**	51 sec / 60 sec / 1 min = ***0.85 min***
***Driving time*:**	401 ft * 1 mile / 5280 ft * 1hr / 15 miles * 60 min / hr = ***0.30 min***
Park Processing time:	***0.15 min***
Walking time:	202 ft / 8 ft / sec / 60 sec / min = ***0.42 min***
Total	**= 1.72 min**

Weighted Inbound / Outbound Valet Time

46% Inbound:	0.46 * 1.70 min = ***0.78 min***
54% Outbound:	0.54 * 1.72 min = ***0.93 min***
Total	**= 1.71 min**

Exhibit 4: Inbound / Outbound Valet Processing Rate to/from Standard Spaces on Ground Level

Inbound / Outbound Valet Processing Time

***Processing time*:**	51 sec / 60 sec / 1 min = ***0.85 min***
***Driving time*:**	451 ft * 1 mile / 5280 ft * 1hr / 15 miles * 60 min / hr = ***0.34 min***
Park Processing time:	***0.15 min***
Walking time:	416 ft / 8 ft / sec / 60 sec / min = ***0.87 min***
Total	**= 2.21 min**

Furthermore, since the total valet processing time differs for each valet parking space location (tandem, garage, and ground), a weighted average was taken. The weighted average was based on the number of parking spaces assigned to each location. There are 10 tandem parking spaces (16%) and 17 standard parking spaces within the garage (28%), and an additional 34 standard parking spaces within the ground lot (56%). The weighted average valet processing time is shown in Exhibit 5.

Exhibit 5: Weight Valet Processing Rate

Weighted Valet Time

16% Tandem:	0.16 * 1.96 min = ***0.32 min***
28% Standard (Garage):	0.28 * 1.71 min = ***0.48 min***
56% Standard (Ground):	0.56 * 1.98 min = ***1.10 min***
Total	**= 1.90 min**

Exhibit 6 shows the queuing calculations for the valet drop-off / pick-up area during the PM peak hour of generator.

Exhibit 6: PM Peak Hour Valet Drop-off / Pick-up Queuing Calculations

Q = Processing rate = $\frac{60\ min/hr}{1.90\ min/process} = 31.54\ process/hr$

q = Demand Rate = 309 $\frac{veh}{hr}$

N = Service Positions = 14 attendants

ρ = Utilization factor = $\frac{q}{(NQ)} = \frac{309\ veh/hr}{14 \times 31.54\ process/hr} = 0.6998$

Q_m = Table Value = 0.1537

M = queue length which is exceeded 5% of the time [P(x>M)]

$M = \frac{\ln P(x>M) - \ln(Q_m)}{\ln(\rho)} - 1 = \frac{\ln(0.05) - \ln(0.1537)}{\ln(0.6998)} - 1 = 2.15,\ say$ 3 Vehicles on queue

The results of the analysis show that a total of ten valet attendants would be able to handle the inbound / outbound demand at the drop-off / pick-up area with approximately three vehicles in the queue during the PM peak hour of the generator. As the project is providing approximately 200 feet of storage (approximately nine vehicles) for the valet station, the queue will not extend past the drop-off / pick–up area. It should be noted that the queuing analysis considers the worst case scenario during the peak hours to ensure that the queue fits within the provided storage. Once operational the development can assess the actual need for valet attendants.

We stand ready to provide any support needed for this proposed project. Should you have any questions or comments, please call me at (305) 447-0900.

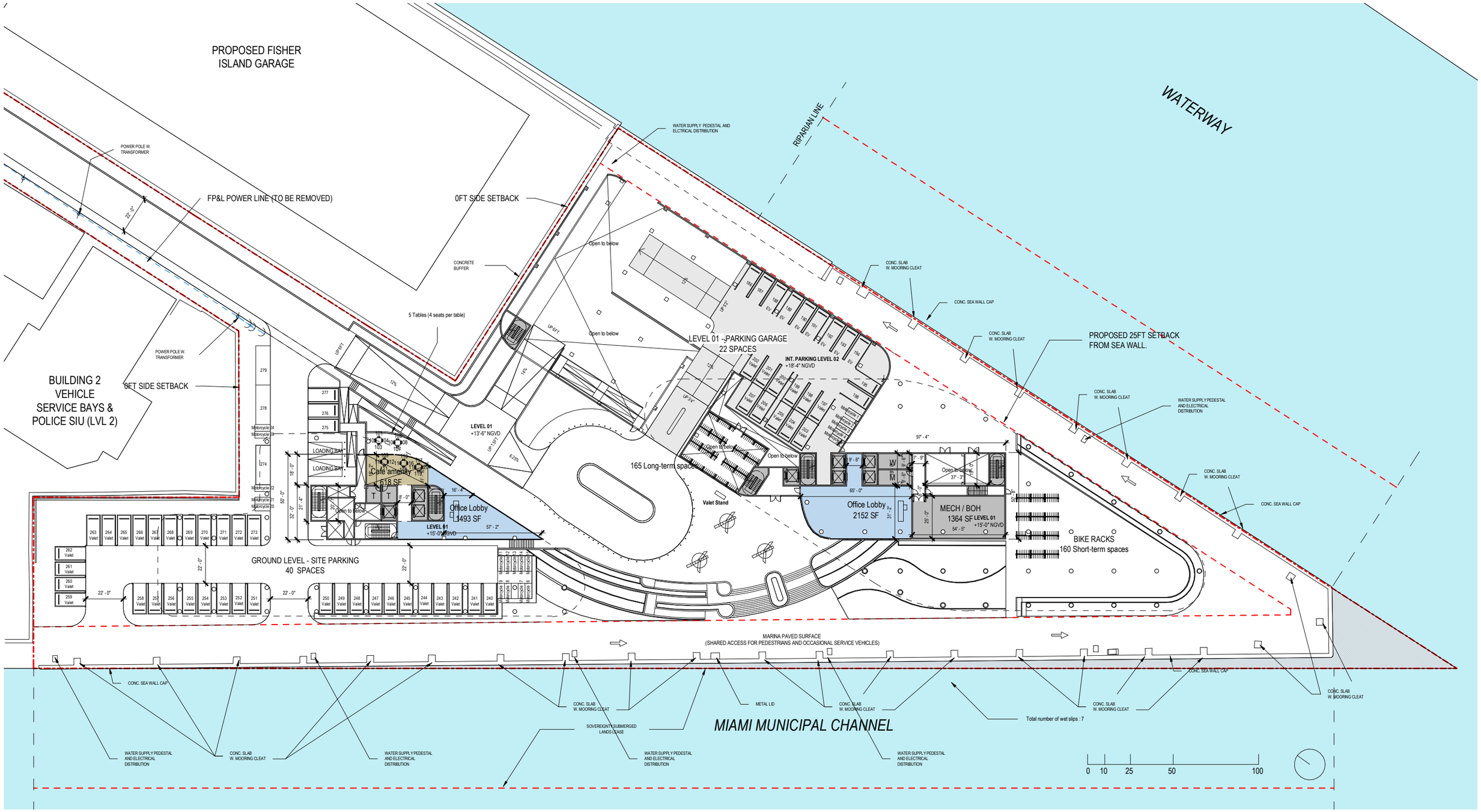
Sincerely,

Juan Espinosa, PE

Vice President – Transportation

w:\20\20129\response to comments nov 2020\valet queuing nov 2020\valet queuing analysis_ november 24 2020.docx

Attachment A



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

PB FINAL SUBMITTAL

120 MACARTHUR CAUSEWAY
MIAMI BEACH, FL, 33139

OVERALL OFFICE BUILDINGS LEVEL 01

SCALE: 1 : 640

DATE: 11/30/2020

A1-02

Scenario - 1

Scenario Name: Proposed
User Group:
Dev. phase: 1
No. of Years to Project: 0
Analyst Note:
Warning: The time periods among the land uses do not appear to match.

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
710 - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday	Best Fit (LOG)	842	842	1684
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.97Ln(X) + 2.50	50%	50%	
710(1) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	153	25	178
Data Source: Trip Gen Manual, 10th Ed					T = 0.94(X) + 26.49	86%	14%	
710(2) - General Office Building	General Urban/Suburban	1000 Sq. Ft. GFA	160.93	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LOG)	29	150	179
Data Source: Trip Gen Manual, 10th Ed					Ln(T) =0.95Ln(X) + 0.36	16%	84%	
930(2) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday	Average	1139	1139	2278
Data Source: Trip Gen Manual, 10th Ed					315.17	50%	50%	
930(1) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average	10	5	15
Data Source: Trip Gen Manual, 10th Ed					2.07	67%	33%	
930(3) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	56	46	102
Data Source: Trip Gen Manual, 10th Ed					14.13	55%	45%	
930(4) - Fast Casual Restaurant	General Urban/Suburban	1000 Sq. Ft. GFA	7.23	Weekday, PM Peak Hour of Generator	Average	146	171	317
Data Source: Trip Gen Manual, 10th Ed					43.79	46%	54%	

PM Peak Hour Trip Generation and Internalization

Terminal Island Miami Beach

Use PM adjacent split & ITE Daily rates LU 710 at 5:45 pm

Office Land Use 710 160,932 Sq Ft			Restaurant Land Use 930 4,830 Sq Ft			
In	**Out**		**In**	**Out**		
9	**48**		**146**	**171**	374	ITE Trips
UNBALANCED INTERNALIZATION						
	4% *2*	***2***		*2%* *3*		
30% *3*		***3***			*3%* *5*	
Office			**Restaurant**			
In	**Out**		**In**	**Out**		
9	**48**		**146**	**171**	374	Vehicle Trips
BALANCED INTERNALIZATION						
	-2			*-2*		
-3					*-3*	
-3	-2		-2	-3	-10	Internal
6	46		144	168	364	External Trips
	8.8%			*1.6%*	*2.7%*	% Internal
0	-1		-4	-5	-10	-3.0% Transit/Pedestrian
6	**45**		**140**	**163**	354	
			0	0	0	0% Passby (Restau
6	**45**		**140**	**163**	**354**	**Net New External Trips**
1	**5**		**140**	**163**	**309**	**Net New External Trips with 10% Office Trips**

Land Use	912 Drive-in Bank				930 Fast Casual Restaurant				932 High-Turnover (Sit-Down) Restaurant					
Setting	General Urban/ Suburban		Center City Core		General Urban/Suburban				General Urban/Suburban					
Time Period	Weekday		Weekday		Weekday		Saturday		Weekday		Saturday		Sunday	
Trip Type	Vehicle		Vehicle		Vehicle		Vehicle		Vehicle		Vehicle		Vehicle	
# Data Sites	18		1		1		1		38		2		2	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	0.0	11.0	0.1	11.8	0.2	13.9	0.0	8.3	0.5	12.0	0.3	7.5	1.6	9.7
12:15	0.0	11.0	0.1	12.0	0.1	12.6	0.0	10.0	0.5	11.2	0.3	9.0	1.6	8.9
12:30	0.0	11.0	0.2	12.8	0.1	11.6	0.0	10.7	0.4	10.4	0.2	9.1	0.9	7.8
12:45	0.0	10.9	0.3	12.9	0.1	10.2	0.0	11.4	0.3	9.3	0.0	8.2	0.6	7.3
1:00	0.0	10.3	0.2	11.9	0.1	9.1	0.0	11.4	0.2	8.3	0.0	7.6	0.2	6.4
1:15	0.0	9.5	0.2	12.0	0.0	7.9	0.0	10.9	0.1	7.2	0.0	6.6	0.1	6.3
1:30	0.0	9.4	0.1	10.5	0.0	7.5	0.0	11.5	0.2	5.9	0.0	5.7	0.0	5.5
1:45	0.0	9.4	0.1	10.3	0.0	7.2	0.0	10.2	0.2	5.2	0.0	5.9	0.0	4.6
2:00	0.0	9.5	0.1	9.7	0.0	6.7	0.0	9.4	0.2	4.4	0.0	4.9	0.0	5.3
2:15	0.0	10.2	0.1	8.0	0.0	6.3	0.3	8.7	0.3	4.0	0.0	3.7	0.0	5.2
2:30	0.0	10.1	0.1	8.7	0.0	5.2	0.3	8.4	0.2	3.7	0.0	4.6	0.0	5.5
2:45	0.0	9.6	0.1	9.5	0.1	5.5	0.3	8.1	0.2	3.4	0.0	4.2	0.0	5.8
3:00	0.0	9.5	0.0	10.0	0.1	5.7	0.5	8.0	0.2	3.6	0.0	4.3	0.0	4.1
3:15	0.0	9.5	0.0	11.4	0.1	5.6	0.2	7.8	0.2	3.6	0.1	4.4	0.0	3.7
3:30	0.0	9.4	0.1	10.9	0.1	6.7	0.2	8.2	0.2	4.1	0.1	3.7	0.0	3.6
3:45	0.0	9.3	0.2	9.6	0.0	6.7	0.2	10.6	0.2	4.6	0.1	4.2	0.1	3.8
4:00	0.0	9.3	0.3	9.2	0.0	7.9	0.0	11.1	0.2	5.2	0.2	4.6	0.1	4.1
4:15	0.0	9.0	0.3	8.4	0.1	9.0	0.0	11.6	0.2	6.1	0.1	5.4	0.1	4.2
4:30	0.1	8.8	0.2	7.1	0.1	9.8	0.2	11.3	0.2	6.9	0.1	6.0	0.1	5.2
4:45	0.0	8.8	0.3	5.8	0.2	10.6	0.2	11.4	0.2	7.9	0.1	6.7	0.1	6.0
5:00	0.1	8.5	0.4	4.1	0.3	11.0	0.2	11.7	0.5	8.9	0.1	8.5	0.2	6.5
5:15	0.1	7.5	0.4	2.5	0.3	11.7	0.2	12.1	0.8	9.5	0.3	9.7	0.4	6.6
5:30	0.1	6.2	0.6	1.9	0.3	11.9	0.0	11.3	1.0	9.8	0.3	10.6	0.4	6.8
5:45	0.3	4.7	0.9	1.7	0.2	12.1	0.0	10.0	1.3	10.0	0.2	11.5	0.3	6.7
6:00	0.4	3.4	1.1	1.6	0.2	11.9	0.0	9.0	1.3	9.9	0.2	11.5	0.4	7.8
6:15	0.7	2.3	1.2	1.4	0.2	11.9	0.0	8.9	1.5	9.8	0.2	11.8	0.3	8.7
6:30	1.0	1.6	2.0	1.3	0.2	11.3	0.1	10.4	1.6	9.5	0.4	11.8	0.5	8.6
6:45	1.3	1.0	3.2	1.3	0.3	10.1	0.1	9.5	1.7	8.9	0.8	11.1	0.7	9.2
7:00	1.8	0.6	3.8	1.0	0.3	9.2	0.2	8.8	2.1	8.3	1.2	9.5	1.2	8.5
7:15	3.2	0.3	5.0	0.8	0.5	7.6	0.8	8.0	2.2	7.5	1.9	7.8	1.5	8.1
7:30	4.8	0.1	5.4	0.7	0.7	6.9	0.6	6.4	2.8	6.9	2.5	6.8	1.9	7.8
7:45	5.7	0.1	5.2	0.4	0.7	6.2	0.6	6.2	3.1	6.6	2.8	6.3	2.4	6.6
8:00	6.7	0.0	5.6	0.3	0.6	5.4	0.5	5.7	3.2	6.0	3.3	7.0	2.8	6.5
8:15	6.9	0.0	6.5	0.3	0.3	5.0	0.2	4.5	3.4	5.6	3.4	7.1	3.9	6.1
8:30	7.1	0.0	7.1	0.3	0.2	4.0	0.2	5.0	3.2	5.0	3.8	7.1	5.0	5.5
8:45	7.9	0.0	7.7	0.4	0.3	3.9	0.2	4.3	3.4	4.4	4.0	6.8	5.6	5.2
9:00	8.6	0.0	8.2	0.4	0.7	3.2	0.2	4.5	3.6	4.0	4.3	6.0	6.5	4.6
9:15	8.9	0.1	8.5	0.5	0.8	3.0	0.1	4.5	3.8	3.6	4.7	5.2	6.8	3.8
9:30	9.5	0.1	8.4	0.3	0.9	2.2	0.8	2.7	4.0	3.2	5.5	4.7	7.7	3.3
9:45	9.5	0.1	8.3	0.3	0.9	1.5	1.1	2.1	4.2	2.9	6.1	3.8	9.0	3.1
10:00	9.6	0.1	8.4	0.3	1.0	0.9	1.3	0.9	4.7	2.5	6.0	3.0	10.0	2.8
10:15	9.8	0.0	8.4	0.3	3.0	0.5	2.4	0.8	5.2	2.1	6.8	2.9	10.3	2.6
10:30	9.6	0.0	9.8	0.3	4.9	0.4	3.2	0.8	6.3	1.7	6.3	2.2	9.7	2.7
10:45	9.9	0.0	10.3	0.3	8.3	0.2	5.2	0.4	8.0	1.3	7.1	1.9	9.6	2.2
11:00	10.2	0.0	11.1	0.3	11.4	0.2	7.5	0.6	9.3	1.0	8.3	1.7	9.3	1.8
11:15	10.8	0.0	11.4	0.3	13.3	0.2	7.8	0.2	10.9	0.7	7.5	1.0	9.5	1.4
11:30	11.1	0.0	10.8	0.3	14.8	0.2	7.5	0.2	11.9	0.7	7.8	0.8	10.2	1.5
11:45	11.2	0.0	10.9	0.1	14.6	0.2	7.7	0.2	12.2	0.6	7.7	0.6	9.9	1.3

Percent of Daily Traffic During the 60-Minute Period Beginning at Displayed Time

Land Use	710 General Office Building																			
Setting	General Urban/Suburban								Dense Multi-Use Urban						Center City Core					
Time Period	Weekday		Weekday		Saturday		Sunday		Weekday		Saturday		Sunday		Weekday		Saturday		Sunday	
Trip Type	Vehicle		Person		Person		Person		Person		Person		Person		Person		Person		Person	
# Data Sites	16		3		1		1		3		3		3		4		4		4	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	0.1	10.4	0.0	10.0	0.7	16.6	0.9	6.4	0.7	9.2	2.1	8.6	2.8	9.0	0.2	10.2	3.0	13.6	2.0	8.3
12:15	0.1	10.0	0.0	9.2	0.7	13.9	0.9	8.3	0.6	9.8	2.4	7.4	1.6	7.0	0.2	11.3	2.6	13.9	0.1	11.4
12:30	0.1	9.5	0.0	9.6	0.0	11.3	0.9	6.4	0.4	10.2	1.4	6.8	1.4	5.5	0.2	11.7	3.0	12.2	0.1	11.6
12:45	0.1	8.9	0.0	11.1	0.0	9.9	0.0	10.1	0.4	10.0	1.1	7.6	1.3	4.6	0.2	11.8	2.5	11.9	0.0	10.8
1:00	0.0	8.2	0.1	10.9	0.0	4.6	0.0	9.2	0.4	9.3	0.9	8.3	1.3	5.6	0.2	11.3	2.4	9.9	0.0	11.9
1:15	0.0	7.7	0.2	11.0	0.0	2.6	0.0	7.3	0.2	8.5	0.5	9.0	0.9	6.4	0.2	10.7	1.8	9.2	0.1	9.1
1:30	0.0	7.5	0.2	10.6	0.0	4.0	3.7	6.4	0.2	7.8	0.6	9.8	0.6	6.0	0.1	10.2	1.0	9.1	0.3	8.4
1:45	0.0	7.5	0.4	8.5	0.0	4.0	3.7	2.8	0.2	7.7	0.5	10.9	0.5	8.0	0.1	9.3	0.7	8.1	0.4	8.2
2:00	0.0	7.5	0.5	8.0	1.3	4.0	3.7	1.8	0.1	7.4	0.5	10.3	0.3	7.8	0.0	8.2	0.3	7.3	0.4	9.0
2:15	0.0	7.6	0.5	7.3	1.3	4.0	3.7	0.9	0.1	7.0	0.3	8.9	0.3	8.1	0.1	7.4	0.2	6.2	0.3	9.5
2:30	0.0	7.6	0.9	7.0	1.3	4.6	0.0	0.9	0.1	7.0	0.2	8.3	0.4	8.5	0.1	6.9	0.5	6.0	0.1	10.8
2:45	0.1	7.4	0.6	7.5	1.3	4.0	0.0	0.9	0.1	6.7	0.3	6.8	0.7	6.3	0.1	6.8	0.6	6.6	0.0	10.6
3:00	0.1	7.4	0.7	7.3	0.0	3.3	0.0	2.6	0.1	6.7	0.6	7.0	1.0	7.0	0.1	6.8	0.8	6.2	0.0	8.0
3:15	0.1	8.1	0.6	7.7	0.0	4.0	0.0	2.8	0.2	7.4	0.7	6.7	1.3	7.1	0.1	6.7	0.8	5.9	0.1	6.8
3:30	0.1	8.7	0.7	7.7	0.0	2.0	0.0	12.8	0.3	7.2	0.8	5.8	1.3	6.4	0.1	6.3	0.9	5.3	0.1	5.9
3:45	0.2	9.7	0.5	7.5	0.0	4.0	0.0	14.7	0.3	7.5	1.1	5.2	1.9	7.1	0.0	5.8	0.7	4.7	0.1	5.6
4:00	0.2	10.1	0.5	7.8	0.0	7.3	0.0	13.8	0.4	7.9	1.5	4.5	2.7	5.7	0.0	5.7	0.7	4.6	0.1	6.4
4:15	0.2	11.4	0.7	10.0	1.3	11.3	0.0	15.6	0.5	9.7	2.2	5.0	3.8	4.3	0.0	6.5	0.7	5.0	0.0	7.9
4:30	0.2	11.7	0.7	9.9	1.3	13.2	0.0	6.4	0.6	10.3	2.4	4.9	4.2	3.5	0.1	6.9	0.5	5.0	0.0	7.4
4:45	0.1	11.4	0.9	9.8	1.3	11.9	0.0	7.3	0.6	10.3	2.4	4.2	4.0	3.4	0.1	7.4	0.6	5.0	0.1	7.9
5:00	0.2	10.4	0.9	9.4	1.3	8.6	0.0	7.3	0.8	10.0	2.0	3.7	3.5	3.6	0.1	8.0	0.5	4.6	0.7	7.5
5:15	0.6	7.3	1.1	6.0	1.3	10.6	0.9	7.3	0.9	7.7	2.1	2.3	2.6	3.4	0.2	8.1	0.5	3.6	0.8	5.5
5:30	0.9	5.3	0.8	5.2	1.3	10.6	0.9	7.3	1.1	7.1	2.7	1.6	3.4	4.2	0.3	8.5	0.6	3.3	1.3	7.6
5:45	1.6	3.4	1.0	4.3	1.3	9.9	0.9	4.6	1.2	6.1	3.0	1.7	3.5	3.8	0.4	8.4	0.9	2.6	1.2	7.0
6:00	2.2	2.4	1.0	3.4	2.0	9.9	1.8	3.7	1.7	5.3	4.6	1.6	3.4	4.2	0.5	7.6	3.4	3.1	1.5	6.2
6:15	3.0	2.1	1.3	2.8	1.3	2.6	5.5	2.8	2.1	4.0	5.0	2.2	4.8	4.5	0.6	6.7	4.5	3.0	1.5	6.3
6:30	3.6	1.7	1.8	2.0	1.3	2.6	5.5	1.8	2.6	3.1	5.5	2.5	4.7	4.2	0.9	5.8	4.9	2.9	2.0	3.6
6:45	5.0	1.6	2.0	1.4	2.6	3.3	6.4	1.8	3.6	2.6	6.2	2.6	5.6	4.1	1.2	5.4	4.7	3.2	2.3	2.9
7:00	7.0	1.7	2.9	1.8	4.0	4.0	6.4	1.8	4.3	2.0	5.9	2.5	6.0	3.2	1.7	4.9	2.8	3.0	2.3	2.8
7:15	8.9	1.3	4.0	1.4	7.9	4.6	2.8	1.8	5.5	1.9	6.6	2.1	5.1	3.2	2.5	3.9	2.8	2.9	3.2	2.8
7:30	10.5	1.4	4.6	1.4	9.3	2.6	3.7	4.6	6.5	1.6	6.3	2.3	5.2	3.3	3.4	3.2	3.6	2.8	3.5	2.7
7:45	10.2	1.1	6.0	1.1	13.9	2.0	3.7	6.4	7.4	1.4	6.1	2.3	4.5	3.3	4.6	2.2	4.7	2.4	3.7	3.6
8:00	8.8	1.0	7.9	0.7	12.6	2.0	4.6	5.5	9.4	1.3	7.5	1.9	5.4	2.9	6.6	1.7	5.4	2.0	3.7	3.9
8:15	7.3	1.0	9.4	1.0	7.9	1.3	4.6	4.6	11.0	1.2	7.0	1.6	6.6	2.5	9.1	1.4	6.0	2.0	4.7	4.1
8:30	6.0	1.0	10.4	1.0	7.9	1.3	3.7	1.8	11.6	1.0	7.1	1.2	5.9	2.0	11.1	1.2	6.3	1.8	6.2	4.3
8:45	5.2	1.1	10.6	1.1	5.3	1.3	7.3	0.0	11.3	1.1	7.4	1.2	5.8	1.5	12.5	1.3	6.4	1.6	6.8	2.7
9:00	5.4	1.0	9.6	1.2	4.6	0.0	6.4	2.8	9.5	1.1	5.9	1.6	5.4	1.7	12.5	1.2	6.9	1.6	7.2	2.1
9:15	5.4	1.7	8.3	0.9	6.0	0.0	8.3	2.8	7.6	0.9	6.7	1.7	4.1	1.8	11.1	1.1	6.4	1.5	6.3	1.2
9:30	5.9	1.5	7.6	0.9	5.3	0.0	8.3	2.8	6.6	1.2	6.8	1.8	4.9	1.9	9.3	1.0	6.2	2.0	5.5	0.9
9:45	6.0	1.3	7.0	0.9	4.0	0.7	5.5	2.8	5.9	1.1	6.4	1.9	5.2	2.3	7.4	0.8	7.0	2.1	6.7	0.7
10:00	5.9	1.2	6.6	0.7	4.6	0.7	6.4	1.8	5.3	1.1	6.8	2.1	4.2	3.0	5.9	0.7	6.9	1.8	6.7	1.2
10:15	6.2	0.5	6.2	0.6	4.0	0.7	3.7	4.6	5.3	1.0	7.6	2.1	5.7	3.7	4.9	0.6	8.0	1.8	7.0	1.5
10:30	6.3	0.5	6.3	0.6	4.6	2.6	6.4	4.6	5.0	0.7	7.9	2.0	5.5	3.6	4.3	0.5	8.6	1.5	5.9	2.3
10:45	7.8	0.4	6.6	0.4	4.0	2.0	11.0	4.6	5.1	0.7	8.5	2.0	5.2	4.1	4.9	0.4	7.4	1.6	5.1	2.4
11:00	8.4	0.4	7.7	0.2	6.0	2.0	10.1	2.8	5.4	0.6	8.0	1.5	6.7	3.4	5.5	0.4	7.5	1.9	5.9	2.1
11:15	9.2	0.1	9.9	0.2	10.6	2.0	11.0	0.0	6.4	0.7	8.5	1.5	7.4	4.0	6.4	0.3	8.1	2.7	6.2	3.6
11:30	9.9	0.1	10.1	0.2	11.9	0.7	11.0	0.0	7.2	0.8	9.1	2.2	9.3	4.0	7.7	0.4	9.4	2.6	7.0	2.4
11:45	9.8	0.1	10.5	0.1	12.6	0.7	4.6	0.9	8.1	0.8	8.5	2.1	10.3	3.1	8.6	0.3	10.6	3.1	8.7	2.4

Percent of Daily Traffic During the 60-Minute Period Beginning at Displayed Time

Attachment B

Grand Beach Hotel

Date: July 20,2011
Observer: J. Espinosa (DPA)

Vehicle	In	Out	Type	Arrival Time	Processing Time	Notes
1		X	Car	8:34 AM	0:00:37	Valet Return
2		X	Car	8:35 AM	0:01:06	Valet Return
3		X	Car	8:36 AM	0:00:25	Valet Return
4		X	Car	8:36 AM	0:00:38	Pick Up (Personal)
5	X		Car	8:41 AM	0:00:18	Guest In
6		X	Car	8:45 AM	0:00:30	Valet Return
7	X		Car	8:52 AM	0:01:17	Check In
8		X	Car	9:02 AM	0:01:46	Check Out
9	X		Car	9:04 AM	0:01:01	Check In
10	X		Car	9:05 AM	0:00:51	Check In
11		X	Van	9:06 AM	0:00:32	Tour
12		X	Taxi	9:09 AM	0:00:26	Guest Out
13	X		Car	9:09 AM	0:02:34	Check In
14		X	Car	9:10 AM	0:00:26	Valet Return
15		X	Car	9:11 AM	0:00:37	Valet Return
16	X		Car	9:14 AM	0:00:28	Guest In
17		X	Car	9:14 AM	0:00:22	Valet Return
18	X		Car	9:18 AM	0:01:02	Check In
19		X	Car	9:18 AM	0:00:36	Valet Return
20		X	Taxi	9:21 AM	0:00:22	Guest Out
21		X	Car	9:21 AM	0:01:26	Check Out
22		X	Car	9:22 AM	0:00:44	Valet Return
23	X		Car	9:25 AM	0:01:21	Check In
24		X	Car	9:25 AM	0:01:06	Valet Return
25		X	Car	9:26 AM	0:00:23	Valet Return
26		X	Car	9:28 AM	0:00:25	Valet Return
27		X	Car	9:29 AM	0:00:22	Valet Return
28		X	Car	9:29 AM	0:00:21	Valet Return
29		X	Car	9:34 AM	0:00:46	Valet Return
30	X		Car	9:38 AM	0:01:04	Check In
31		X	Car	9:38 AM	0:00:36	Valet Return
32		X	Car	9:39 AM	0:00:21	Valet Return
33		X	Car	9:41 AM	0:00:34	Guest Out
34		X	Car	9:43 AM	0:00:14	Valet Return
35		X	Car	9:45 AM	0:02:04	Check Out
36	X		Car	9:45 AM	0:01:20	Check In
37		X	Taxi	9:48 AM	0:00:48	Check Out
38		X	Car	9:49 AM	0:00:26	Guest Out
39		X	Car	9:49 AM	0:00:48	Valet Return
40	X		Car	9:51 AM	0:00:37	Check In
41		X	Car	9:51 AM	0:00:30	Valet Return
42		X	Car	9:57 AM	0:00:28	Valet Return
43		X	Car	9:58 AM	0:01:22	Check Out
44		X	Car	10:02 AM	0:00:32	Valet Return
45		X	Car	10:03 AM	0:00:35	Valet Return
46		X	Van	10:04 AM	0:00:46	Valet Return
47	X		Car	10:06 AM	0:00:39	Check In
48		X	Car	10:08 AM	0:01:58	Check Out
49		X	Taxi	10:08 AM	0:01:48	Check Out
50		X	Car	10:09 AM	0:00:41	Valet Return
51		X	Car	10:10 AM	0:00:44	Valet Return
52		X	Car	10:12 AM	0:00:26	Valet Return
53	X		Taxi	10:13 AM	0:00:42	Check In
54		X	Taxi	10:14 AM	0:02:21	Check Out
55			Taxi	10:16 AM	0:01:48	Check Out
56		X	Car	10:18 AM	0:00:37	Valet Return
57		X	Car	10:18 AM	0:00:56	Valet Return
58	X		Car	10:20 AM	0:00:40	Guest In
59		X	Car	10:24 AM	0:00:57	Valet Return

Total Processing Time: **0:50:10**
Average Processing Time: **0:00:51**

location, a 5% probability of back-up onto the adjacent street is judged to be acceptable. Demand on the system for design is expected to be 110 vehicles in a 45-minute period. Average service time was expected to be 2.2 minutes. Is the queue storage adequate?

Such problems can be quickly solved using Equation (8–9b) given in Table 8-10 and repeated below for convenience.

$$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho}\right] - 1$$

where:

M = queue length which is exceeded p percent of the time
N = number of service channels (drive-in positions)
Q = service rate per channel (vehicles per hour)
$\rho = \dfrac{\text{demand rate}}{\text{service rate}} = \dfrac{q}{NQ}$ = utilization factor
q = demand rate on the system (vehicles per hour)
Q_M = tabled values of the relationship between queue length, number of channels, and utilization factor (see Table 8.11)

TABLE 8-11
Table of Q_M Values

ρ	$N = 1$	2	3	4	6	8	10
0.0	0.0000	0.0000	0.0000	0.0000			
0.1	.1000	.0182	.0037	.0008	.0000	0.0000	0.0000
.2	.2000	.0666	.0247	.0096	.0015	.0002	.0000
.3	.3000	.1385	.0700	.0370	.0111	.0036	.0011
.4	.4000	.2286	.1411	.0907	.0400	.0185	.0088
.5	.5000	.3333	.2368	.1739	.0991	.0591	.0360
.6	.6000	.4501	.3548	.2870	.1965	.1395	.1013
.7	.7000	.5766	.4923	.4286	.3359	.2706	.2218
.8	.8000	.7111	.6472	.5964	.5178	.4576	.4093
.9	.9000	.8526	.8172	.7878	.7401	.7014	.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

$\rho = \dfrac{q}{NQ} = \dfrac{\text{arrival rate, total}}{(\text{number of channels})(\text{service rate per channel})}$
N = number of channels (service positions)

Solution

Step 1: $Q = \dfrac{60 \text{ min/hr}}{2.2 \text{ min/service}} = 27.3$ services per hour

Step 2: $q = (110 \text{ veh}/45 \text{ min}) \times (60 \text{ min/hr}) = 146.7$ vehicles per hour

Step 3: $\rho = \dfrac{q}{NQ} = \dfrac{146.7}{(6)(27.3)} = 0.8956$

Step 4: $Q_M = 0.7303$ by interpolation between 0.8 and 0.9 for $N = 6$ from the table of Q_M values (see Table 8-11).

Step 5: The acceptable probability of the queue, M, being longer than the storage, 18 spaces in this example, was stated to be 5%. $P(x > M) = 0.05$, and:

$$M = \left[\frac{\ln 0.05 - \ln 0.7303}{\ln 0.8956}\right] - 1 = \left[\frac{-2.996 - (-0.314)}{-0.110}\right] - 1$$
$$= 24.38 - 1 = 23.38, \text{ say } 23 \text{ vehicles.}$$