7140 COLLINS HOTEL

Traffic Study

David Plummer & Associates

PROFESSIONAL ENGINEER CERTIFICATE

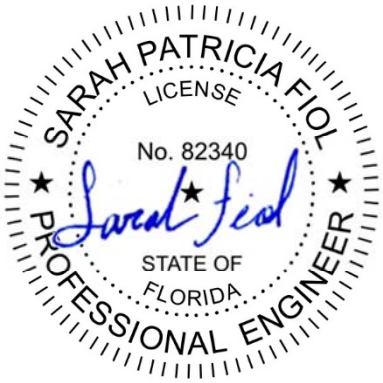
I hereby certify that I am a registered professional engineer in the State of Florida practicing with David Plummer and Associates, Inc., a corporation authorized to operate as an engineering business by the State of Florida Department of Professional Regulations, Board of Professional Engineers and that I have prepared or approved the evaluation, findings, conclusions, or technical advice hereby for:

Project:	7140 Collins Hotel – Traffic Study
Location:	Miami Beach
Client:	Collins & 72 Street Developers, LLC

I acknowledge that the procedures and references used to develop the results contained in these computations are standard to the professional practice of transportation engineering as applied through professional judgement and experience.

Name:	Sarah Fiol, P.E.
P.E. Number:	82340
Date:	*March 22*, 2018

Signature:



DAVID PLUMMER & ASSOCIATES
TRANSPORTATION ● CIVIL ● STRUCTURAL ● ENVIRONMENTAL

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Responses to City of Miami Beach Comments *(March 16th, 2018)* Re: Review of 7140 Collins Hotel Traffic Impact Analysis Dated February 2018

1. **Traffic Counts – Please review the peak season conversion factor (1.04).**

   Response: Traffic counts have been updated with the 2016 FDOT Peak season conversion factor of 1.04. Intersection analysis has been revised for all scenarios. Tables and exhibits have also been revised as necessary.

2. **This development requires a Transportation Demand Management Plan (TDM).**

   Response: The TDM has been included in Appendix I.

3. **Growth Rate – Please include stations 872541 and 875191 to complete the one way roadway pairs.**

   Response: As requested both stations have been added to the historical growth rate calculations. The revised growth rate continues to be negative and the traffic counts were grown using a 1.6% growth rate.

4. **Committed Developments – Please include the Ocean Terrace project as part of your committed developments.**

   Response: The committed development Ocean Terrace has been reviewed. The trip generation included as part of traffic statement shows that the net new trips for the PM peak hour are negative. If this committed development would be included in the traffic analysis it will deduct trips from the network. Therefore the committed development Ocean Terrace was not included in the analysis, providing a more conservative analysis.

5. **The analysis indicates that the valet service will be restricted to 20% of the expected commercial trips. How will they restrict the service?**

   Response: Text was revised to say that it is expected that 20% of the retail will use valet. This is based on the availability / proximity of both on-street parking and the parking lot located just north of the site.

6. **Exhibit 14 – please review the projected traffic volumes. It seems that the trip assignment for the commercial portion of the project was not properly added.**

   Response: Project trip assignment for the commercial portion of the project was revised to show the correct trips addition.

7. **Valet calculations should account for pass-by trips.**

   Response: Pass-by trips have been added to the demand for valet drop-off / pick-up calculations. Queuing analysis has been updated with revised demand.

8. **The proposed access to the site will impact existing parallel parking. Please coordinate with the City's parking department.**

   Response: Comment noted.

9. **Loading and Trash Pickup - Please indicate the type of loading vehicles that will be serving the project and provide a loading zone maneuverability analysis. In addition, please discuss the garbage pickup operations and provide maneuverability analysis diagrams for this operation as well.**

   Response: Single unit trucks (SU-30) and delivery trucks comparable to P-design vehicles will be used for trash and loading activities. Text has been added to section 5.0 in the report discussing trash pick-up and the Autoturn analysis has been included as Attachment A.

10. **Intersection Analysis**

    - **Synchro models – Please mark the adjacent parking when present.**

    Response: Adjacent parking has been marked on all synchro files when present.

    - **Please review the signal timing inputs and signal phases. During a spot check there were inconsistencies between the Synchro inputs and the timings provided in the appendix (Intersections of Abbot at 72nd street and 71st street, and Indian Creek at 71st street).**

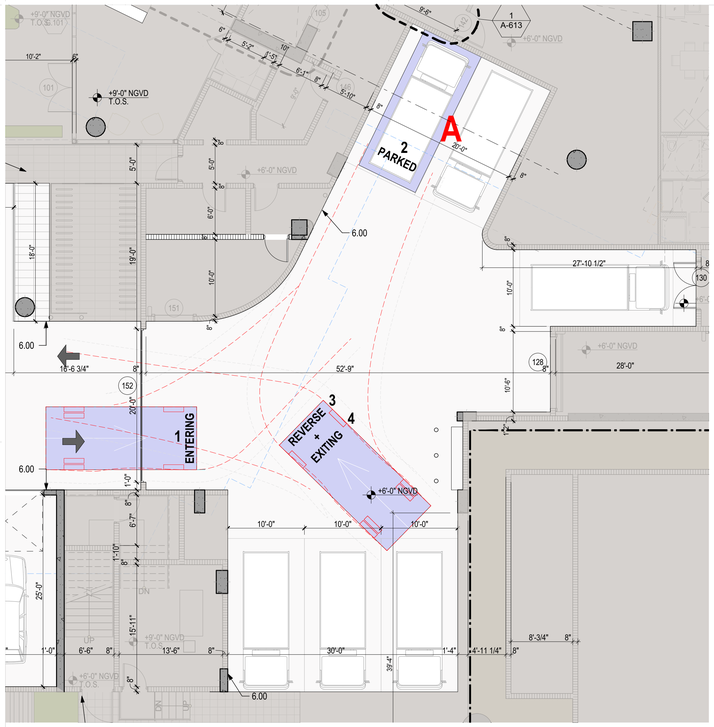
    Response: Signal timing and phasing inputs have been reviewed. Revisions were made as necessary at intersections listed above. Synchro analysis and exhibits have also been revised as necessary.

    - **Please note that the City is currently not accepting signalized optimization as a mitigation measure, unless previously approved.**

    Response: Based on the revised traffic analysis, all signalized intersections are currently operating and projected to operate within the LOS standards adopted by the City of Miami Beach. Signal timing adjustment are being recommended to improve operations, not as a mitigation measure.

Attachment 1

NOT FOR CONSTRUCTION



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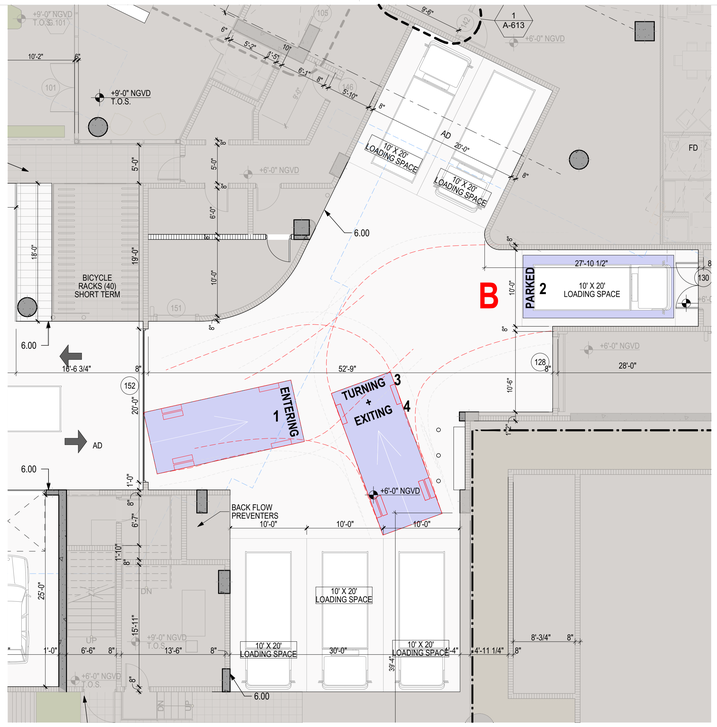

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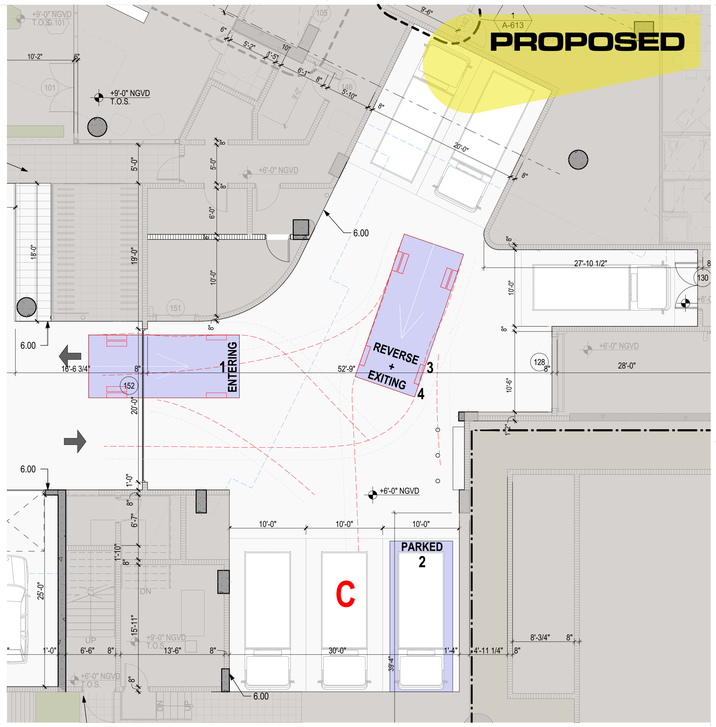

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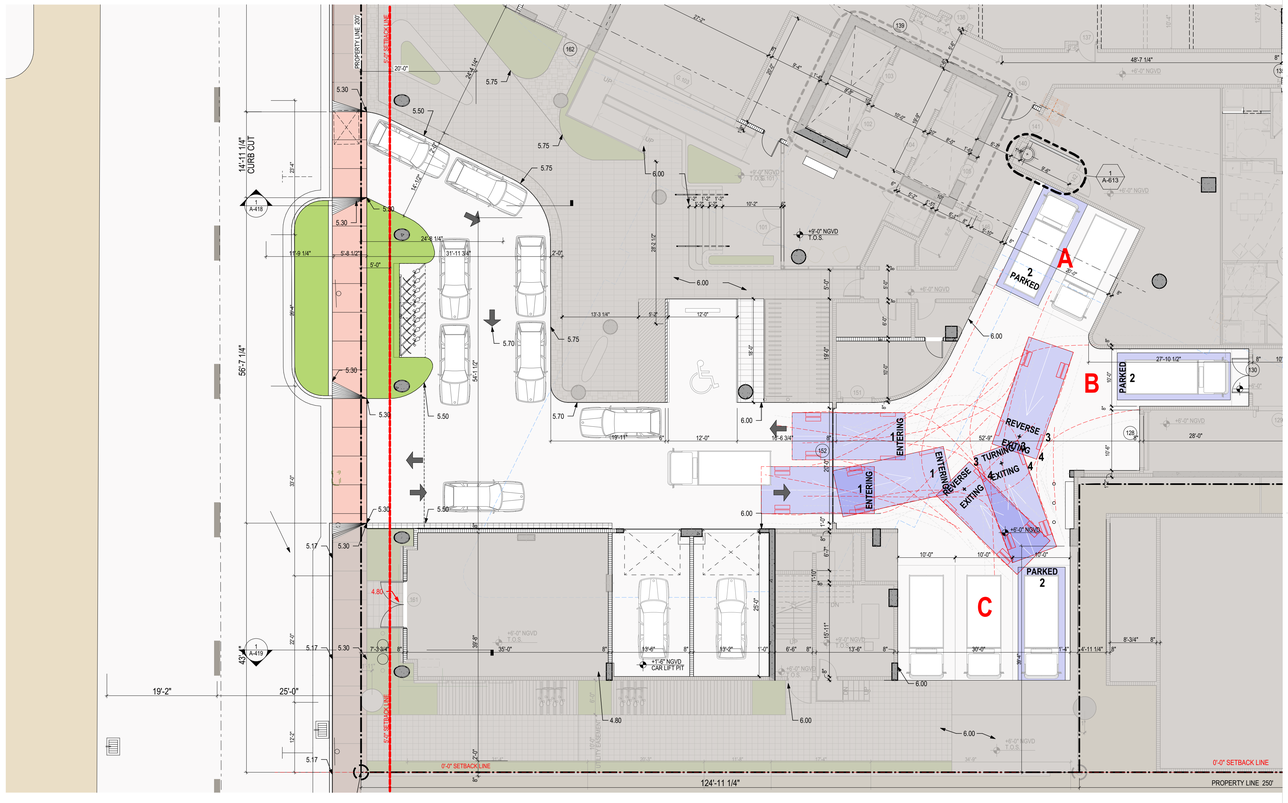

ENTRANCE/ EXIT LOADING DOCKS

AUTO TURN STUDIES | 1

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Project

72+ COLLINS HOTEL

7118 - 7140 COLLINS AVENUE & 7121 - 7145 HARDING AVENUE
MIAMI BEACH - FLORIDA. 33141

Permit Revisions

Owner Information

RETI

9537 Harding Avenue
Surfside, Florida 33154

(305) 867-6344

Consultant

Design by

Luis O. Revuelta
AR-0007972

ZONING PRESENTATION

Date
02.16.2018

Scale
AS SHOWN

Project No.
1729

Sheet Name

AUTO- TURN STUDY

Sheet No.
A-018

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Prepared By:
David Plummer & Associates

Prepared For:
Collins & 72 Street Developers, LLC

Prepared In:
March 2018

DPA Job #:
16204

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EXECUTIVE SUMMARY

The project is located at 7140 Collins Avenue in Miami Beach, Florida. The project proposes a 187- room hotel 24 residential units, and 18,520 SF of commercial space on the ground floor. The site is currently occupied by an existing 12,043 SF of commercial space and a vacant lot. The project is proposing a parking garage, providing 138 parking spaces (16 standard, 122 mechanical lift) with two car elevators. Guests will also have access to the public parking lot located directly north of the site. The proposed garage will operate as all valet. Access to the project will be via two driveways (one inbound only, one inbound/outbound) creating a circular driveway on Harding Avenue. For the purpose of this traffic study, project build-out is anticipated by 2020.

An assessment of the traffic impacts associated with the proposed 7140 Collins Hotel was performed in accordance with the requirements of the City of Miami Beach. The overall LOS for the following intersections will meet the City's LOS standards with the proposed project:

- Abbott Avenue / 72nd Street
- Collins Avenue / 72nd Street
- Abbott Avenue / 71st Street
- Harding Avenue / 71st Street
- Collins Avenue / 71st Street
- Indian Creek Drive / 71st Street

As with the existing and future without project conditions the un-signalized intersection of Harding Avenue / 72nd Street continues to experience delays. This is due to the fact that for un-signalized intersections the software tends to overestimate delay measurements for the minor approaches and does not account for gaps in traffic created by the upstream signalized intersections to allow the minor street traffic flow. Both eastbound and westbound approaches of the Collins Avenue / 71st Street intersection also continue to experience delays due to the fact that the County (with the consent of the State) gives priority to vehicles travelling north through this area, and, therefore, accepting delays on minor cross-streets. The northbound and southbound approaches at the intersection of Indian Creek Drive / 71st Street also continues to experience

delay. It should be noted that this is an existing condition and the project only represents a 2% of the total projected intersection volume during the afternoon peak hours. Even though the intersection of Indian Creek Drive / 71st Street is projected to operate within the LOS standards adopted by the City of Miami Beach, the project is recommending to adjust the signal timing to provide additional green time to the northbound and eastbound left movements. The project driveway was analyzed and results show adequate operations.

A mobility and circulation plan was completed as part of the study. The plan shows that the project area is currently served by various Miami-Dade Transit bus routes. The project is located in an area that is conducive for pedestrian and bicycle activities providing shared bike lanes, ample sidewalks, and crosswalks.

In addition, an assessment of circulation as it relates to the valet services during the peak hour was performed. The valet drop-off/pickup area queuing analysis shows that the anticipated queue during the typical peak traffic conditions can be accommodated within the project site.

Furthermore, a Transportation Demand Management Plan (TDMP) was developed for the project. The plan consists of strategies that increase over-all system efficiency by encouraging a shift from single-occupant vehicle (SOV) trips to non-SOV modes, or shifting auto trips out of peak periods. This plan seeks to reduce auto trips by increasing travel options, by providing incentives and information to encourage and help individuals modify their travel behavior, or by reducing the physical need to travel through transportation-efficient lands uses. Implementation of the TDM plan could result in a potential ten percent (10%) reduction of peak hour vehicle trips.

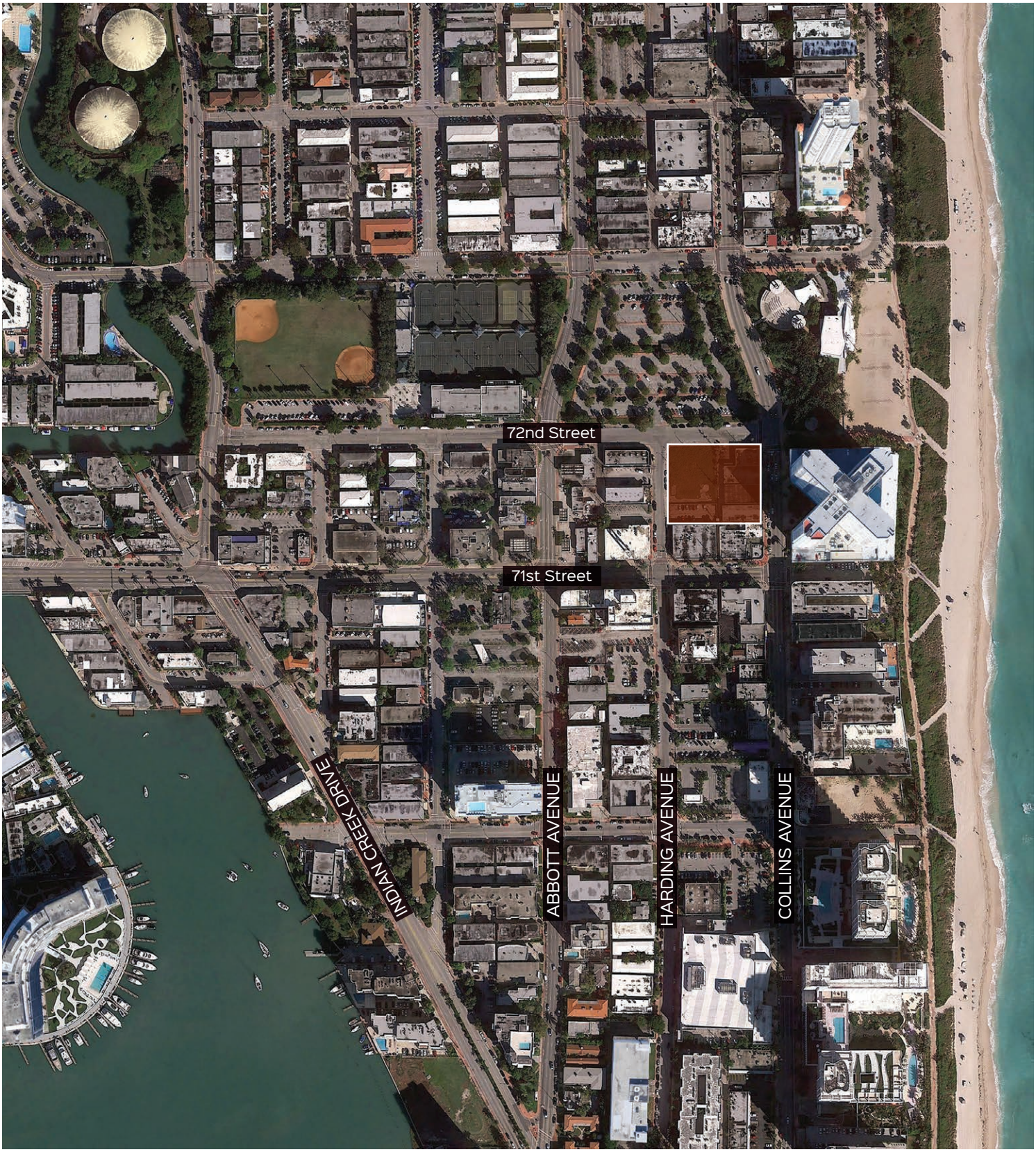
1.0 INTRODUCTION

1.1 Project Background

The project is located at 7140 Collins Avenue in Miami Beach, Florida (see Exhibit 1). The project proposes a 187- room hotel, 24 residential units, and 18,520 SF of commercial space on the ground. The site is currently vacant in addition to an existing 12,043 SF of commercial space. The project is proposing a parking garage, providing 138 parking spaces (16 standard, 122 mechanical lift) with two car elevators. The proposed garage will operate as all valet. The proposed site plan is included in Appendix A. For the purpose of this traffic study, project build-out is anticipated by 2020.

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) – Two-hour turning movement counts were collected on Friday September 2, 2016 during the PM (4:30-6:30 PM) peak hours at the following intersections:
    - Collins Avenue / 71st Street (S)
    - Collins Avenue / 72nd Street (S)
    - Harding Avenue / 71st Street (S)
    - Harding Avenue / 72nd Street (U)
    - Abbott Avenue / 71st Street (S)
    - Abbott Avenue / 72nd Street (S)
    - Indian Creek Drive / 71st Street (S)

    S = Signalized
    U = 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, Traffic Data*.

- Future Transportation Projects – The 2017 *Transportation Improvement Program* (TIP) and the *2040 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.
- 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.

1.4 Project Site Information

The project is located at 7140 Collins Avenue in Miami Beach, Florida. The project proposes a 187- room hotel, 24 residential units, and 18,520 SF of commercial space on the ground floor. The site is currently occupied by an existing 12,043 SF of commercial space and a vacant lot. The project is proposing a parking garage, providing 138 parking spaces (16 standard, 122 mechanical lift) with two car elevators. Guests will also have access to the public parking lot located directly north of the site. The proposed garage will operate as all valet. Access to the project will be via two driveways (one inbound only, one inbound/outbound) creating a circular driveway on Harding Avenue.

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

71st Street (SR 934)

Within the study area, 71st Street is a state principal arterial that provides east/west access all along the City of Miami Beach. West of Indian Creek Drive, 71st Street is a two-way, four-lane divided roadway. East of Indian Creek Drive, 71st Street is a two-way, two-lane divided roadway. There is on-street parking provided on portions of the roadway. Bike lanes are provided along the roadway. FDOT has jurisdiction over this portion of 71st Street. The posted speed limit is 30 mph.

72nd Street

72nd Street is a local roadway that runs east/west between Collins Avenue and Dickens Avenue. It is a two-way, two-lane undivided road. There is on-street parking provided on both sides of the roadway. The City of Miami Beach has jurisdiction over 72nd Street. The speed limit is not posted on this segment of 72nd Street, however, if not posted, the City's speed limit is 30 mph.

Collins Avenue (SR A1A)

Collins Avenue is a state principal arterial that provides north/south access throughout the county. Within the study area, Collins Avenue is a one-way, three-lane northbound roadway. There is on-street parking provided on portions of the roadway. FDOT has jurisdiction over Collins Avenue. The posted speed limit is 30 mph.

Abbott Avenue

Within the study area, Abbott Avenue is a principal arterial that provides east/west access along the City of Miami Beach. Abbott Avenue is one-way, three-lane southbound roadway that runs between Indian Creek Drive and 72nd Street. There is on-street parking provided on portion of the

roadway. A southbound bike lane is provided along the roadway. FDOT has jurisdiction over this portion of Abbott Avenue. The posted speed limit is 30 mph.

Harding Avenue

Harding Avenue is a principal arterial that runs north/south between 67th Street and 72nd Street. North of 69th Street, Harding Avenue is a two-way, two-lane undivided road. There is on-street parking provided on both sides of the roadway. Miami-Dade County has jurisdiction over Harding Avenue. The speed limit is not posted on this segment of Harding Avenue, however, if not posted; the City's speed limit is 30 mph.

Indian Creek Drive

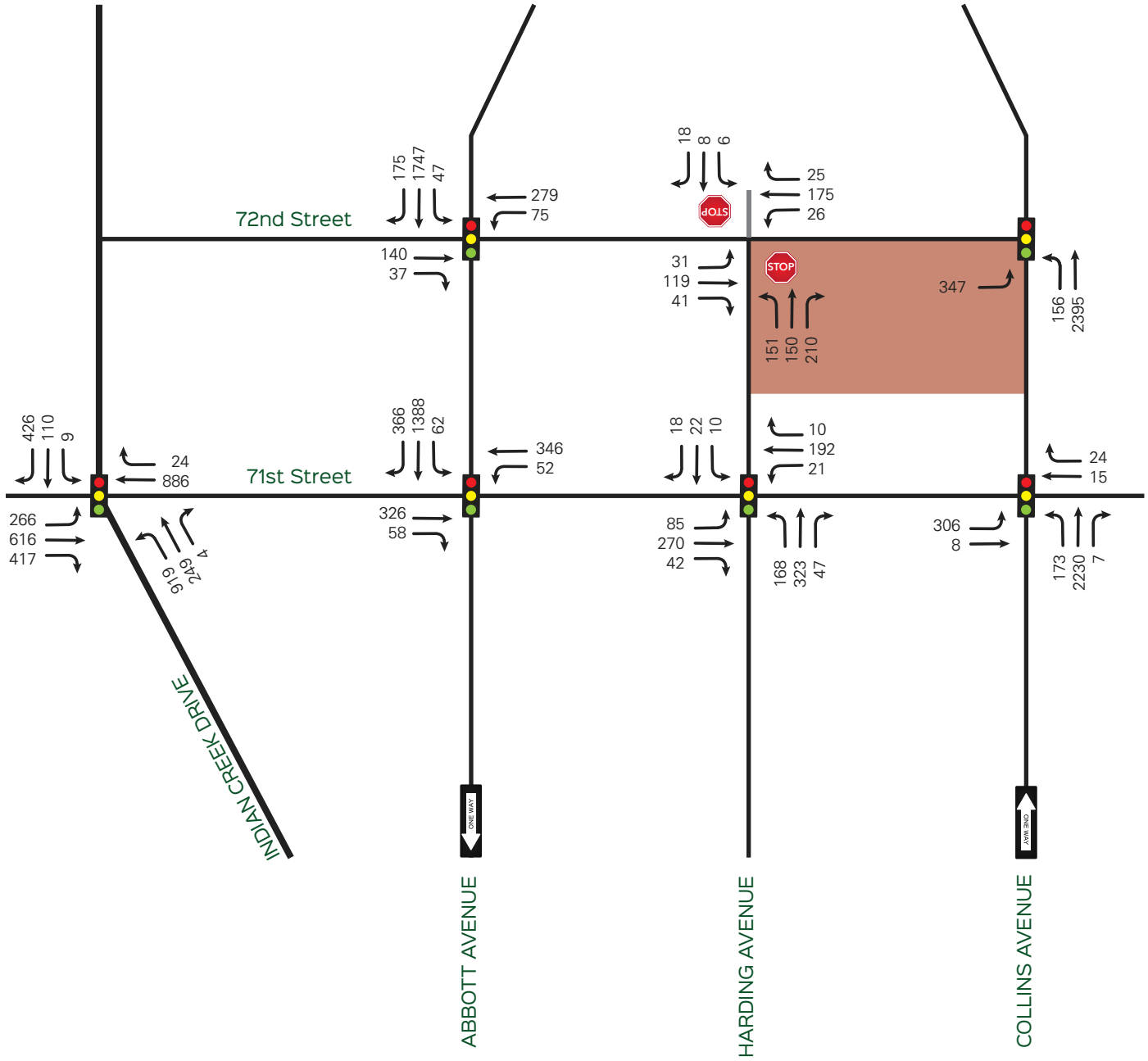
Within the study area, Indian Creek Drive is a minor arterial that runs north/south between 71st Street and Abbott Avenue. It is a two-way, four-lane undivided road. There is on-street parking provided on portion of the roadway. A bike lane is provided along the portion of roadway between 71st and 69th Street. Miami-Dade County has jurisdiction over Indian Creek Drive. The posted speed limit is 30 mph.

2.2 Traffic Counts

Peak hour vehicle turning movement counts were collected on September 2, 2016 at the study intersections during the Friday PM peak period. A peak season conversion factor of 1.04 (for Miami-Dade County North) corresponding to the dates of the counts was used to adjust the raw traffic counts to peak season conditions. The weekly factor was obtained from FDOT. Counts collected were grown by two years to existing conditions (2018) by applying the annual growth rate discussed in section 4.1 of this report. 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 2

Existing PM Peak Hour Traffic Volumes

NORTH
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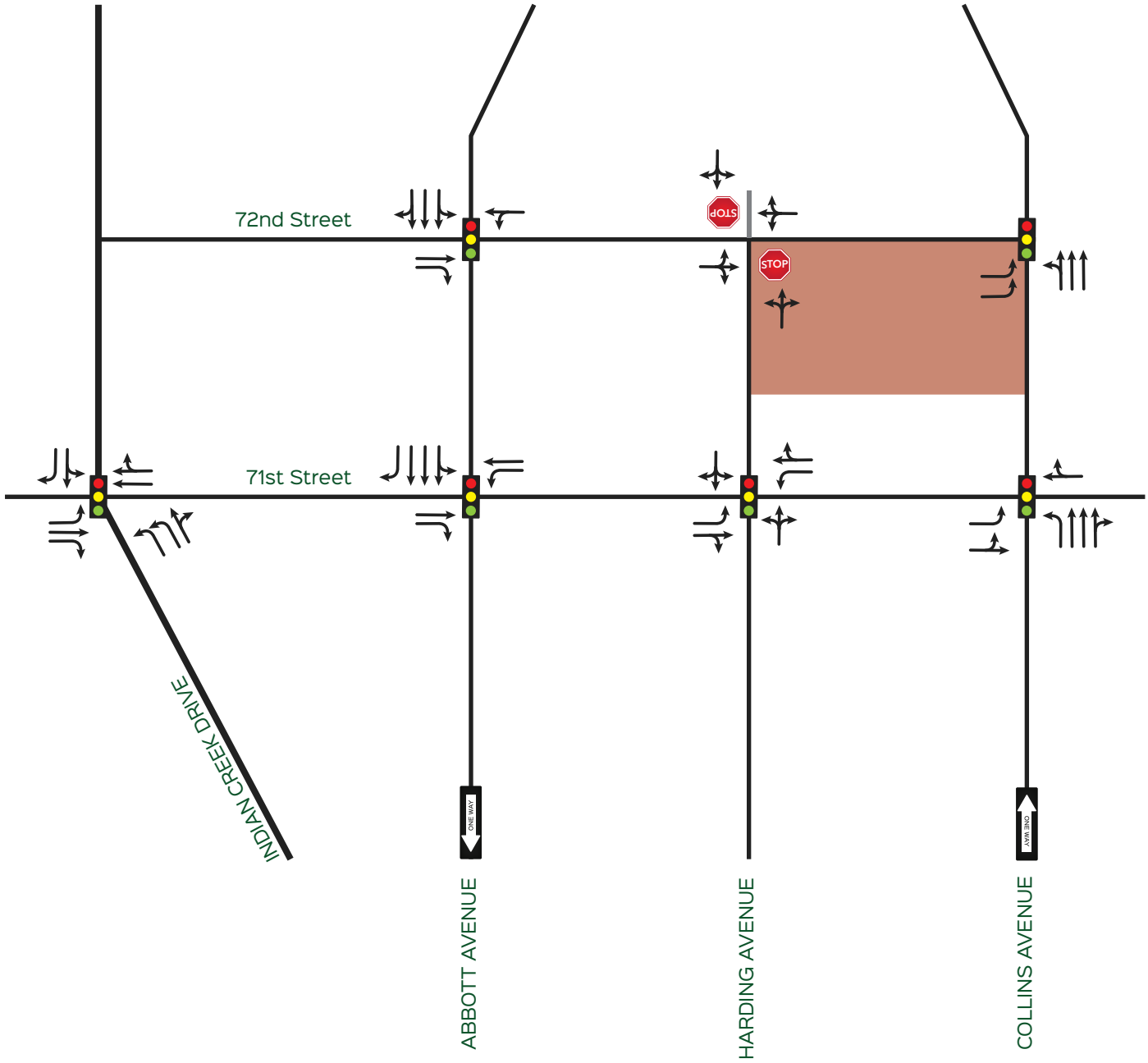


Project Location

Exhibit 3

Existing Lane Configurations

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 existing conditions intersection analysis show that the overall LOS for the following intersections currently operate within the LOS standards adopted by the City of Miami Beach:

- Abbott Avenue / 72nd Street
- Collins Avenue / 72nd Street
- Abbott Avenue / 71st Street
- Harding Avenue / 71st Street
- Collins Avenue / 71st Street
- Indian Creek / 71st Street

However, the analysis shows that the un-signalized intersection of Harding Avenue / 72nd Street is experiencing delays. This is due to the fact that for un-signalized intersections the software tends to overestimate delay measurements for the minor approaches and does not account for gaps in traffic created by the upstream signalized intersections to allow the minor street traffic flow. If the minor approach delays do reach the software estimates, observed behavior shows drivers will find alternative routes. It can also be noted that both eastbound and westbound approaches during the afternoon peak at the intersection of Collins Avenue / 71st Street currently experiences delay. This may be due to the fact that the county (with the consent of the state) gives priority to vehicles travelling north through this area, and, therefore, accepting delays on minor cross-streets. The analysis also shows that the northbound and southbound approaches at the intersection of Indian Creek Drive / 71st Street currently experiences delay. Exhibit 4 shows the resulting LOS for the existing Friday PM peak hour conditions. Analysis worksheets are included in Appendix D.

Exhibit 4
Existing Intersection Capacity Analysis
Friday PM Peak Hour Condition

Intersection	Signalized/ Un-signalized	Direction	PM Peak LOS	Delay (Sec)	LOS Standard
Abbott Avenue / 72nd Street	S	SB EB WB ***Overall***	B C D ***B***	15.7 25.9 36.3 ***19.4***	D+20 D+20 D+20 ***D+20***
Harding Avenue / 72nd Street	U	NB SB	F B	64.9 13.8	D+20 D+20
Collins Avenue / 72nd Street	S	NB	D	40.7	D+20
Abbott Avenue / 71st Street	S	SB EB WB ***Overall***	A C D ***B***	2.3 33.4 44.8 ***13.4***	D+20 D+20 D+20 ***D+20***
Harding Avenue / 71st Street	S	NB SB EB WB ***Overall***	D B B B ***C***	38.3 19.1 12.1 18.0 ***25.2***	D+20 D+20 D+20 D+20 ***D+20***
Collins Avenue / 71st Street	S	NB EB WB ***Overall***	B E F ***C***	12.8 76.2 86.6 ***21.0***	D+20 D+20 D+20 ***D+20***
Indian Creek / 71st Street	S	NB SB EB WB ***Overall***	F E C D ***E***	89.6 69.0 30.0 46.5 ***57.1***	D+20 D+20 D+20 D+20 ***D+20***

Source: David Plummer & Associates

3.0 PLANNED AND PROGRAMMED ROADWAY IMPROVEMENTS

The 2017 Miami-Dade County *Transportation Improvement Program* (TIP) and the *2040 Long Range Transportation Program* (LRTP) were reviewed to identify any programmed project within the limits of the study area established. These documents show no officially programmed or planned capacity improvement projects within the study area prior to completion of the proposed project.

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 negative in the past five years. However, for consistency with the previous analysis an annual growth rate of 1.6% was used. Historic growth rate documentation is included in Appendix C.

Five committed developments in the vicinity of the project site were considered for estimating future traffic volumes in this study: The Deauville Hotel, 6080 Collins Avenue, 6747 Collins Avenue, 6901 Collins Avenue, and 6800 Indian Creek Drive. The committed development Ocean Terrace was also reviewed. The trip generation included as part of traffic statement shows that the net new trips are negative for the PM peak hour, therefore it was not considered in this analysis. The traffic studies for the Deauville Hotel project were provided by the City of Miami Beach therefore the project trip assignments were used to distribute volumes to the intersections of study. A trip generation analysis was completed for the remaining committed developments using the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition and data collected at local sites with similar land uses within the study area. A TAZ number for each appropriate committed development was then used to distribute a cardinal distribution. A project trip distribution and a project trip assignment was then developed for each committed development in order to determine if additional volumes were distributed to the intersections of study. Exhibit 5 provides a tabulation of PM peak hour trips generated by the committed development, along with the approved land uses. Committed development information is included in Appendix E.

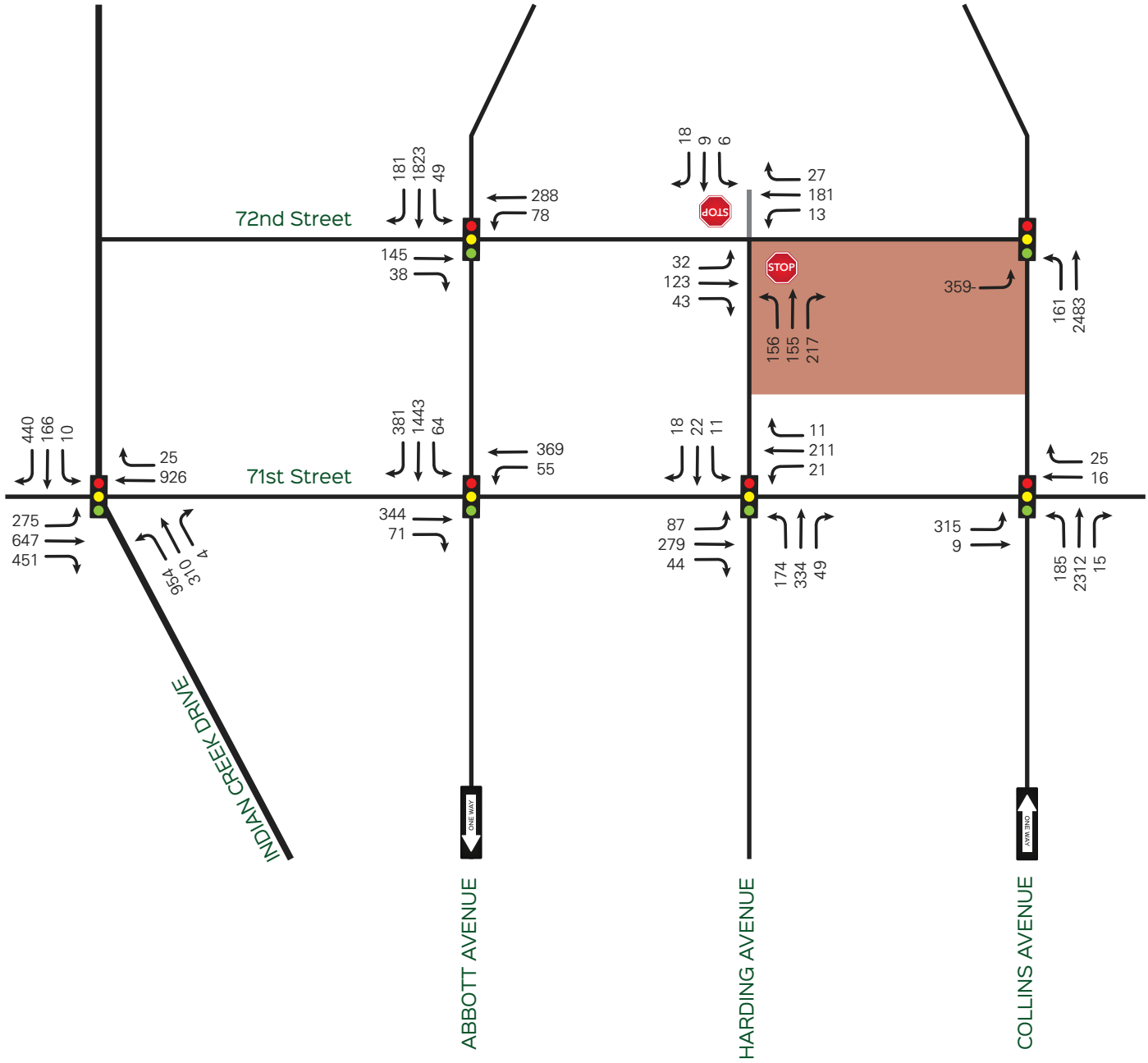
Exhibit 5
Committed Development Trip Generation

Project	ITE Land Use	Size/Units	PM Peak Hour Vehicle Trips		
			In	Out	Total
Deauville Hotel 6701 Collins Avenue	Hotel (Land Use 310)	968 Rooms	296	285	581
6080 Collins Avenue	Hotel (Land Use 310)	35 Rooms	11	10	21
	Residential Condo (Land Use 230)	35 DU	17	8	25
6747 Collins Avenue	Residential Condo (Land Use 230)	42 DU	20	10	30
6901 Collins Avenue	Residential Condo (Land Use 230)	22 DU	11	6	17
6800 Indian Creek Drive	Residential Condo (Land Use 230)	22 DU	15	7	22

* Committed development documentation is included in Appendix E.

4.2 Future without Project Intersection Capacity Analysis

Future without project turning movement volumes were obtained by applying two additional years of background growth with committed development trips. Exhibits 6 shows the projected Friday PM peak hour turning movement counts for future without project conditions. As with existing conditions, the un-signalized intersection of Harding Avenue / 72nd Street continue to experience delays. As previously mentioned, this is due to the fact that for un-signalized intersections the software tends to overestimate delay measurements for the minor approaches and does not account for gaps in traffic created by the upstream signalized intersections to allow the minor street traffic flow. Both eastbound and westbound approaches of the Collins Avenue / 71st Street intersection also continues to experience delays. As previously stated, this condition may be due to the fact that the County (with the consent of the State) gives priority to vehicles travelling north through this area, and, therefore, accepting delays on minor cross-streets. The northbound and southbound approaches at the intersection of Indian Creek Drive / 71st Street also continues to experience delay. Exhibit 7 shows the resulting LOS for the existing Friday PM peak hour conditions. Analysis worksheets are included in Appendix D.



Project Location

Exhibit 6

Future Without Project PM Peak Hour Traffic Volumes

NORTH
MAP NOT TO SCALE

Exhibit 7
Future without Project Intersection Capacity Analysis
Friday PM Peak Hour Condition

Intersection	Signalized/ Un-signalized	Direction	PM Peak LOS	Delay (Sec)	LOS Standard
Abbott Avenue / 72nd Street	S	SB EB WB ***Overall***	B C D ***B***	16.0 25.7 38.2 ***19.8***	D+20 D+20 D+20 ***D+20***
Harding Avenue / 72nd Street	U	NB SB	F B	80.4 14.2	D+20 D+20
Collins Avenue / 72nd Street	S	NB	D	42.6	D+20
Abbott Avenue / 71st Street	S	SB EB WB ***Overall***	A C D ***B***	2.4 32.8 45.4 ***13.7***	D+20 D+20 D+20 ***D+20***
Harding Avenue / 71st Street	S	NB SB EB WB ***Overall***	D B B B ***C***	38.9 18.5 12.8 19.2 ***25.8***	D+20 D+20 D+20 D+20 ***D+20***
Collins Avenue / 71st Street	S	NB EB WB ***Overall***	B E F ***C***	13.7 76.2 86.6 ***21.7***	D+20 D+20 D+20 ***D+20***
Indian Creek / 71st Street	S	NB SB EB WB ***Overall***	F E D D ***E***	99.6 78.9 36.2 49.3 ***64.5***	D+20 D+20 D+20 D+20 ***D+20***

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. The ITE manual 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. The ITE trip generation worksheet is provided in Appendix F.

The proposed development plan incorporates hotel, residential and retail land uses, which can satisfy the dining, and retail needs for some residents, hotel guests, 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 retail 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 Shopping Center and the existing volume of the adjacent street were used to establish the pass-by component.

Furthermore, the study area is pedestrian friendly and mass transit is available (see Section 5 of this report for additional pedestrian and transit information). For a conservative analysis, a 10% deduction was used for pedestrian/transit. The project trip generation summary is provided in Exhibit 8.

Exhibit 8
Project Trip Generation Summary

Proposed ITE Land Use Designation[1]	Number of Units	PM Peak Hour Vehicle Trips		
		In	Out	Total
Hotel *Land Use Code:310*	187 Rooms	58	56	114
		$T = 0.75(X) - 26.02$		
		51% in	49% out	
Multifamily Housing (Mid-Rise) *Land Use Code: 221*	24 DU	7	4	11
		$Ln(T) = 0.96Ln(X) - 0.63$		
		61% in	39% out	
Shopping Center *Land Use Code: 820*	18,520 SF	84	83	167
		$Ln(T) = 0.72Ln(X) + 3.02$		
		50% in	50% out	
Subtotal Gross Vehicle Trips		**149**	**143**	**292**
Internalization[2]	PM 7.5%	-11	-11	-22
Pass-By Trips[3] (Shopping Center)	PM 34%	-27	-26	-53
Transit/Pedestrian Trips	10%	-11	-11	-22
Net External Trips (Proposed)		**100**	**95**	**195**

[1]Based on ITE Trip Generation Manual, Tenth Edition
[2] Internal capture is based on ITE Trip Generation Manual User's Guide and Handbook, Tenth Edition,
[3] Pass by is based on ITE Trip Generation Manual User's Guide and Handbook, Tenth Edition,

Exhibit 8- continued
Existing Trip Generation Summary

Existing ITE Land Use Designation[1]	Number of Units	PM Peak Hour Vehicle Trips		
		In	Out	Total
Shopping Center *Land Use Code: 820*	12,043 SF	62	61	123
		$Ln(T) = 0.72Ln(X) + 3.02$		
		50% in	50% out	
Subtotal Gross Vehicle Trips		**62**	**61**	**123**
Pass-By Trips[2] (Shopping Center)	PM 34%	-21	-21	-42
Transit/Pedestrian Trips	10%	-4	-4	-8
Net External Trips (Existing)		**37**	**36**	**73**

Proposed Uses	**100**	**95**	**195**
Existing Uses	-37	-36	-73
Net New External Trips	**63**	**59**	**122**

[1] Based on ITE Trip Generation Manual, Tenth Edition
[2] Pass by is based on ITE Trip Generation Manual User's Guide and Handbook, Tenth Edition,

4.4 Project Trip Assignment

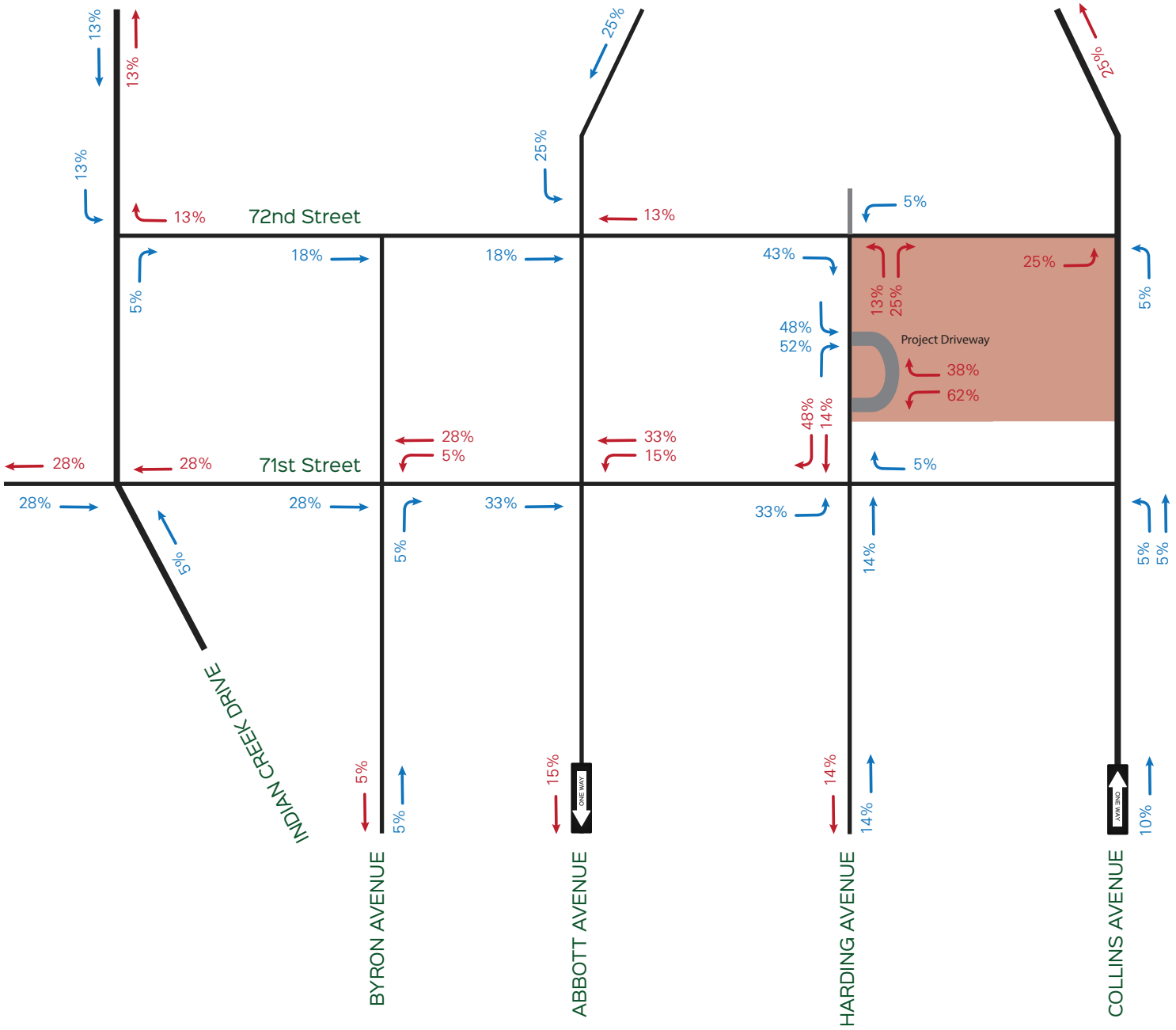
Project traffic was distributed and assigned to the study area using the Cardinal Distribution for TAZ 622 shown in Exhibit 9. The Cardinal Distribution gives a generalized distribution of trips from a TAZ to other parts of Miami-Dade County (see Appendix C). For estimating trip distribution for the 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
Cardinal Distribution
(TAZ 622)

Direction	Distribution
NNE	11.03%
ENE	0.00%
ESE	0.00%
SSE	8.47%
SSW	20.50%
WSW	27.47%
WNW	10.97%
NNW	21.67%
Total	100.00%

Source: Long Range *Transportation Plan*

It should be noted that the residential and hotel components will use the proposed garage (all valet). The retail component and existing restaurant will have access to the public parking lot located directly north of the site. The valet service will be open to the retail component, however, based on the availability / proximity of both on-street parking and the public parking lot located just north of the site, it is expected that 20% of the retail component will use the valet services. In order to assign each component individually, two separate project trip distributions were completed. Exhibit 10 and 11 shows the project trip distribution for the residential/hotel and retail component. Exhibit 12 and 13 shows the project trip assignment for the residential/hotel and retail component.



% IN

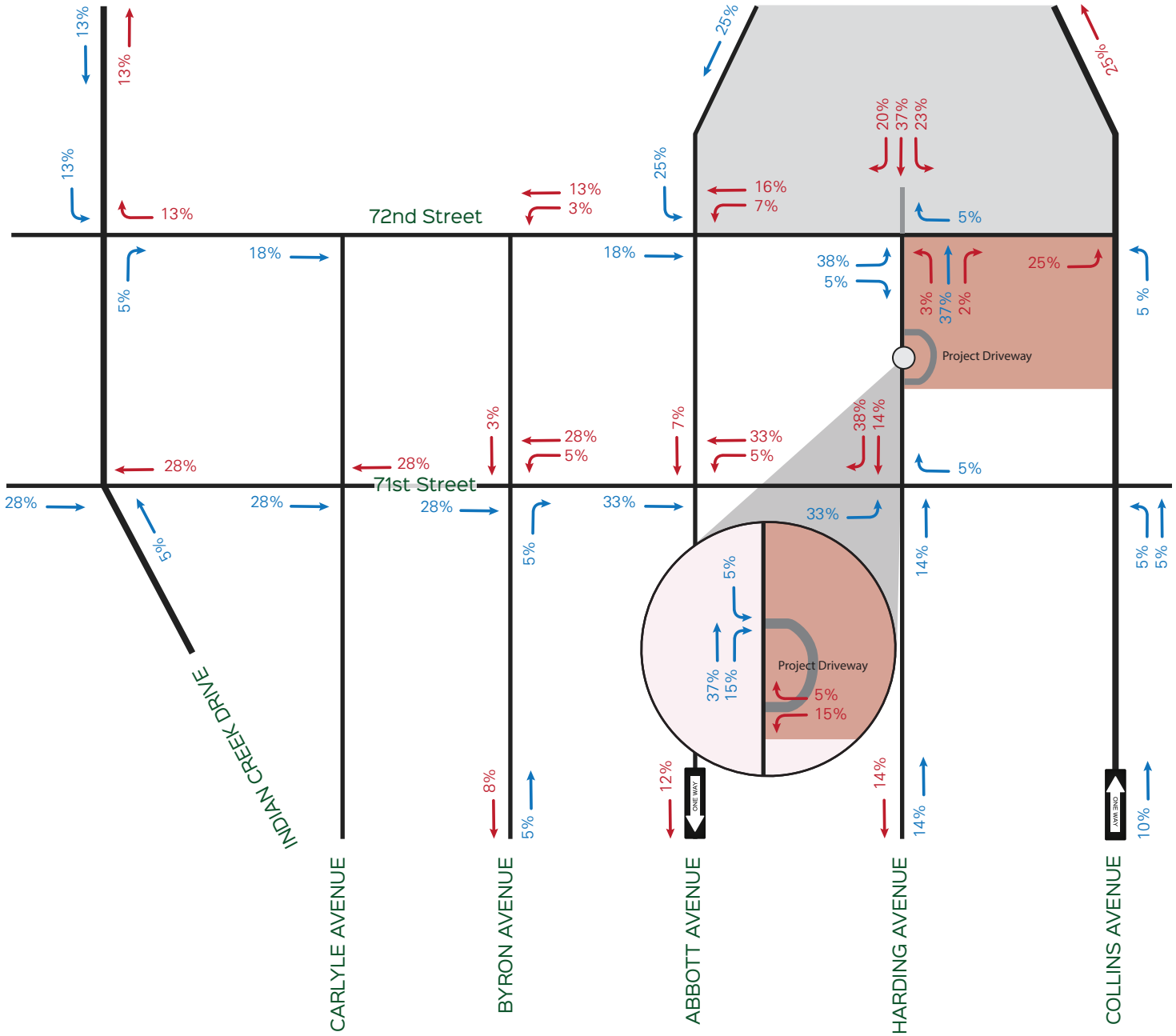
% OUT

Project Location

Exhibit 10 (Hotel & Residential)

Project Trip Distribution

NORTH
MAP NOT TO SCALE



IN

OUT

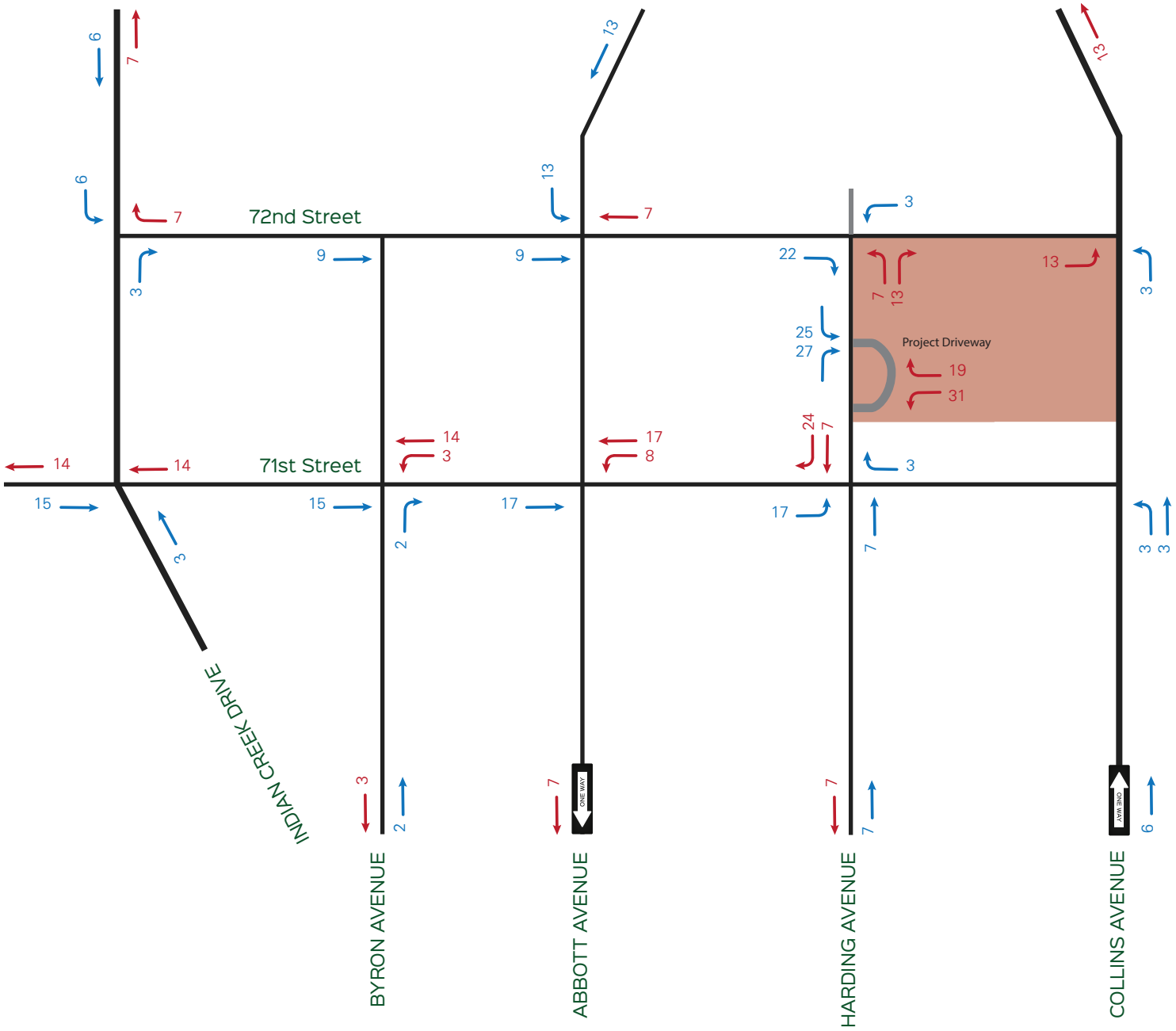
Off-Site Parking Lot

Project Location

Exhibit 11 (Commercial)

Project Trip Distribution

NORTH
MAP NOT TO SCALE



IN

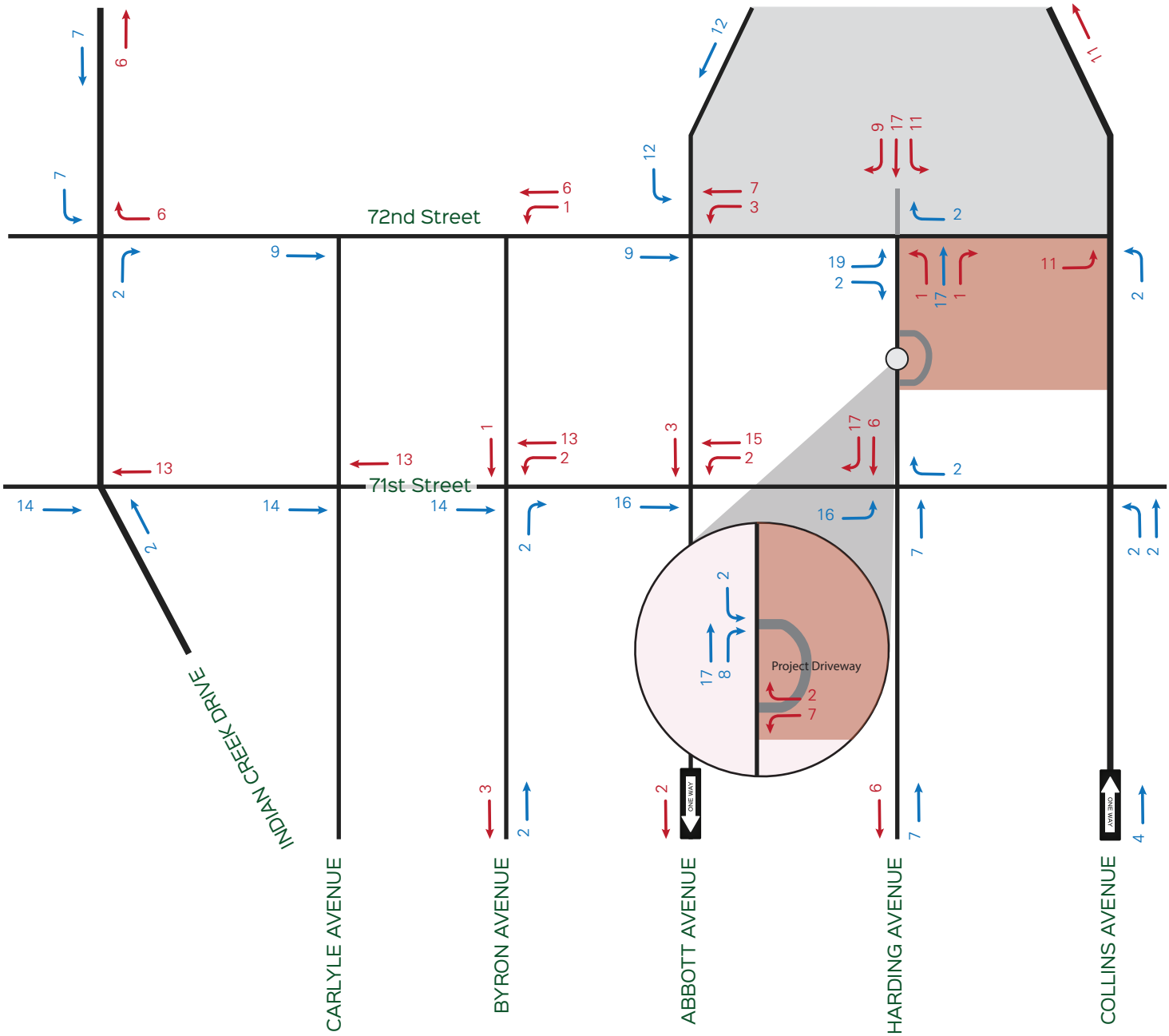
OUT

Project Location

Exhibit 12 (Hotel & Residential)

Project Trip Assignment

NORTH
MAP NOT TO SCALE



IN

OUT

Off-Site Parking Lot

Project Location

Exhibit 13 (Commercial)

Project Trip Assignment

NORTH
MAP NOT TO SCALE

4.5 Future with Project Intersection Capacity Analysis

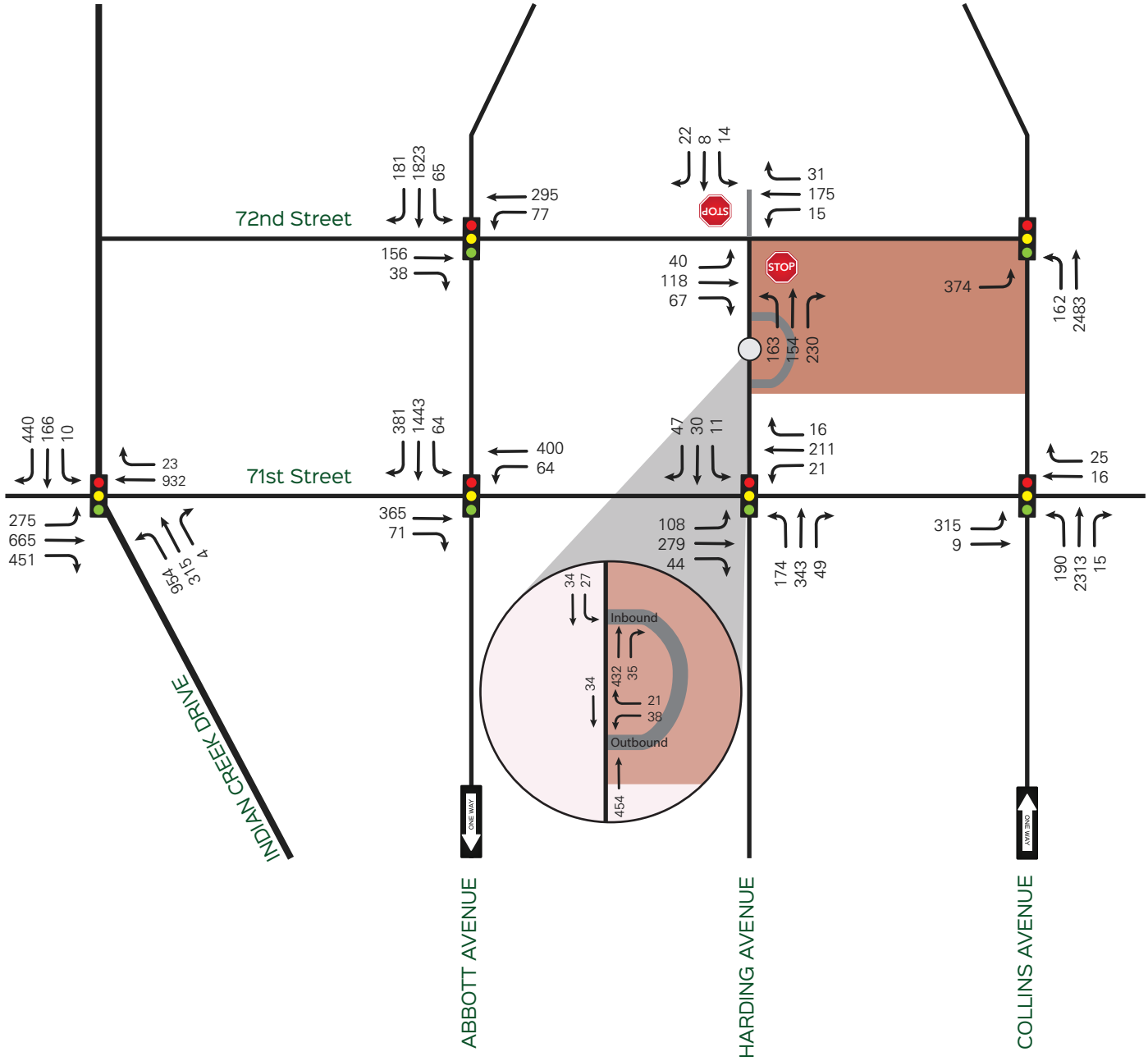
Future background traffic from the previous section and traffic projections for the project were combined to obtain future traffic with project at the analyzed intersections. Exhibit 14 shows the total future with project conditions projected turning movement volumes. Results of the future with the project conditions intersection analysis show that the overall LOS for the following intersections are projected to operate within the LOS standards adopted by the City of Miami Beach:

- Abbott Avenue / 72nd Street
- Collins Avenue / 72nd Street
- Abbott Avenue / 71st Street
- Harding Avenue / 71st Street
- Collins Avenue / 71st Street
- Indian Creek Drive / 71st Street

As with the existing and future without project conditions the un-signalized intersection of Harding Avenue / 72nd Street continues to experience delays. This is due to the fact that for un-signalized intersections the software tends to overestimate delay measurements for the minor approaches and does not account for gaps in traffic created by the upstream signalized intersections to allow the minor street traffic flow. Both eastbound and westbound approaches of the Collins Avenue / 71st Street intersection also continue to experience delays due to the fact that the County (with the consent of the State) gives priority to vehicles travelling north through this area, and, therefore, accepting delays on minor cross-streets. The northbound and southbound approaches at the intersection of Indian Creek Drive / 71st Street also continues to experience delay. It should be noted that this is an existing condition and the project only represents a 2% of the total projected intersection volume during the afternoon peak hours. Even though the intersection of Indian Creek Drive / 71st Street is projected to operate within the LOS standards adopted by the City of Miami Beach, the project is recommending to adjust the signal timing to provide additional green time to the northbound and eastbound left movements. Exhibit 15 shows

resulting LOS the Friday peak hour conditions for future with project. Exhibit 16 shows the resulting LOS for the intersection with improvements.

The project driveway was analyzed and results show adequate operations. Intersection capacity worksheets with the recommended improvement are included in Appendix D. Exhibit 17 shows the approximate existing storage length and the projected 95th percentile queue at all the left turn lanes for the Friday PM peak hour conditions.



Project Location

Exhibit 14

Future With Project PM Peak Hour Traffic Volumes

NORTH
MAP NOT TO SCALE

Exhibit 15
Future with Project Intersection Capacity Analysis
Friday PM Peak Hour Condition

Intersection	Signalized/ Un-signalized	Direction	PM Peak LOS	Delay (Sec)	LOS Standard
Abbott Avenue / 72nd Street	S	SB EB WB ***Overall***	B C D ***C***	17.2 25.7 39.6 ***21.0***	D+20 D+20 D+20 ***D+20***
Harding Avenue / 72nd Street	U	NB SB	F C	104.3 17.8	D+20 D+20
Collins Avenue / 72nd Street	S	NB	D	42.6	D+20
Abbott Avenue / 71st Street	S	SB EB WB ***Overall***	A D D ***B***	2.6 36.6 46.0 ***15.1***	D+20 D+20 D+20 ***D+20***
Harding Avenue / 71st Street	S	NB SB EB WB ***Overall***	D B B C ***C***	39.2 18.6 13.3 20.0 ***25.9***	D+20 D+20 D+20 D+20 ***D+20***
Collins Avenue / 71st Street	S	NB EB WB ***Overall***	B E F ***C***	13.7 75.9 86.6 ***21.7***	D+20 D+20 D+20 ***D+20***
Indian Creek / 71st Street	S	NB SB EB WB ***Overall***	F E D D ***E***	99.6 78.9 36.2 49.4 ***64.6***	D+20 D+20 D+20 D+20 ***D+20***
S Project Driveway / Harding Avenue	U	WB	B	12.4	NA

Source: David Plummer & Associates

Exhibit 16
Future with Project with Improvements Intersection Capacity Analysis
PM Peak Hour Condition

Intersection	Signalized/ Un-signalized	Direction	PM Peak LOS	Delay (Sec)
Indian Creek / 71st Street	S	NB	E	66.5
		SB	E	79.0
		EB	C	34.2
		WB	D	53.3
		Overall	***D***	***54.4***

Exhibit 17
Projected Queues and Existing Storage Length

Intersection	Direction	95th Percentile Back of Queue (Feet)				Existing Storage Length (Feet)
		Existing	Future without Project	Future with Project	Future with Improvements	
Abbott Avenue / 72nd Street	EBR	24	24	24	-	70
Collins Avenue / 72nd Avenue	NBL	53	68	73	-	70
Abbott Avenue / 71st Street	SBR EBR WBL	0 36 47	0 44 50	0 44 56	- - -	200 90 60
Harding Avenue / 71st Street	EBL WBL	38 11	40 11	51 11	- -	50 65
Collins Avenue / 71st Street	NBL EBL	109 269	118 287	120 285	- -	150 100
Indian Creek / 71st Street	NBL SBR EBL EBR	615 524 337 43	651 552 394 92	651 552 395 92	534 542 390 93	370 60 160 180

5.0 CIRCULATION PLAN

As mentioned before, access to the project will be via two driveways (one inbound only, one inbound/outbound) creating a circular driveway on Harding Avenue. The proposed project will provide a total of 138 parking spaces (including 16 standard and 122 mechanical lift) with two car elevators. The residential and hotel components will used the proposed garage, which will operate as all valet. The retail component and existing restaurant will use the public parking lot located directly north of the site.

Based on the owners' Letter of Intent, the following summarizes the loading area and trash pick-up operations. The trash pick-up location is internal to the building and located behind a roll down door. The trash room is enclosed and air-conditioned. Based on the restrictions in the previously approved CUP, deliveries and waste collection are limited to between the hours of 7:00 AM and 4:00 PM. The roll down door will remain closed and secured when not in use and dumpster covers will be closed when not in use. The location of the loading spaces and trash pick-up area is internal to the building and shielded away from the residential building on the east side of Collins Avenue. Deliveries from the loading spaces can be taken to the hotel and retail stores without needing to use the outside sidewalks.

The project is located in an area that is conducive for pedestrian and bicycle activities. 72nd Street, 71st Street, Abbott Avenue, Harding Avenue, and Collins Avenue provide sidewalks on both sides of the road. All intersections adjacent to the site, with the exception of Harding Avenue / 72nd Street, have clearly marked crosswalks and signalized intersections provide pedestrian signals. 71st Street from Collins Avenue to Abbott Avenue provides a shared bike lane on both sides of the road, where it then has its own bike lane to Indian Creek Drive. There is a Citi bikes station located on Byron Avenue just south of 71st Street. A mobility plan was prepared for the site (see Exhibit 18). The plan shows the project location, bike lanes, shared bike lanes, sidewalk connections, and pedestrian crosswalks. It should be noted that the project is proposing to provide bicycle parking above and beyond the minimum required bicycle parking. The hotel will have its own branded fleet of bicycles that it will offer to guests staying in the hotel as a means of getting

around the City in lieu of using an automobile. Also, short term bicycle parking racks are provided throughout the project site near the front doors of the retail businesses.

The area surrounding the project is served by transit. Two trolleys, the North Beach Loop and the Collins Express, are provided by the City of Miami Beach with stops close to the project site. There are six bus routes that traverse that area of Miami Beach (Routes: 79, 108, 112, 115, 119, and 120). The closest bus stops to the project site are located on the intersection of Abbott Avenue and 71ST Street. Exhibit 19 shows the available bus routes and bus stops in the area. Appendix G shows the bus route maps and schedules.

Furthermore, a Transportation Demand Management Plan (TDMP) was developed for the project. The plan consists of strategies that increase over-all system efficiency by encouraging a shift from single-occupant vehicle (SOV) trips to non-SOV modes, or shifting auto trips out of peak periods. This plan seeks to reduce auto trips by increasing travel options, by providing incentives and information to encourage and help individuals modify their travel behavior, or by reducing the physical need to travel through transportation-efficient lands uses. Appendix I provides the proposed TDM plan. Implementation of the TDM plan could result in a potential ten percent (10%) reduction of peak hour vehicle trips.

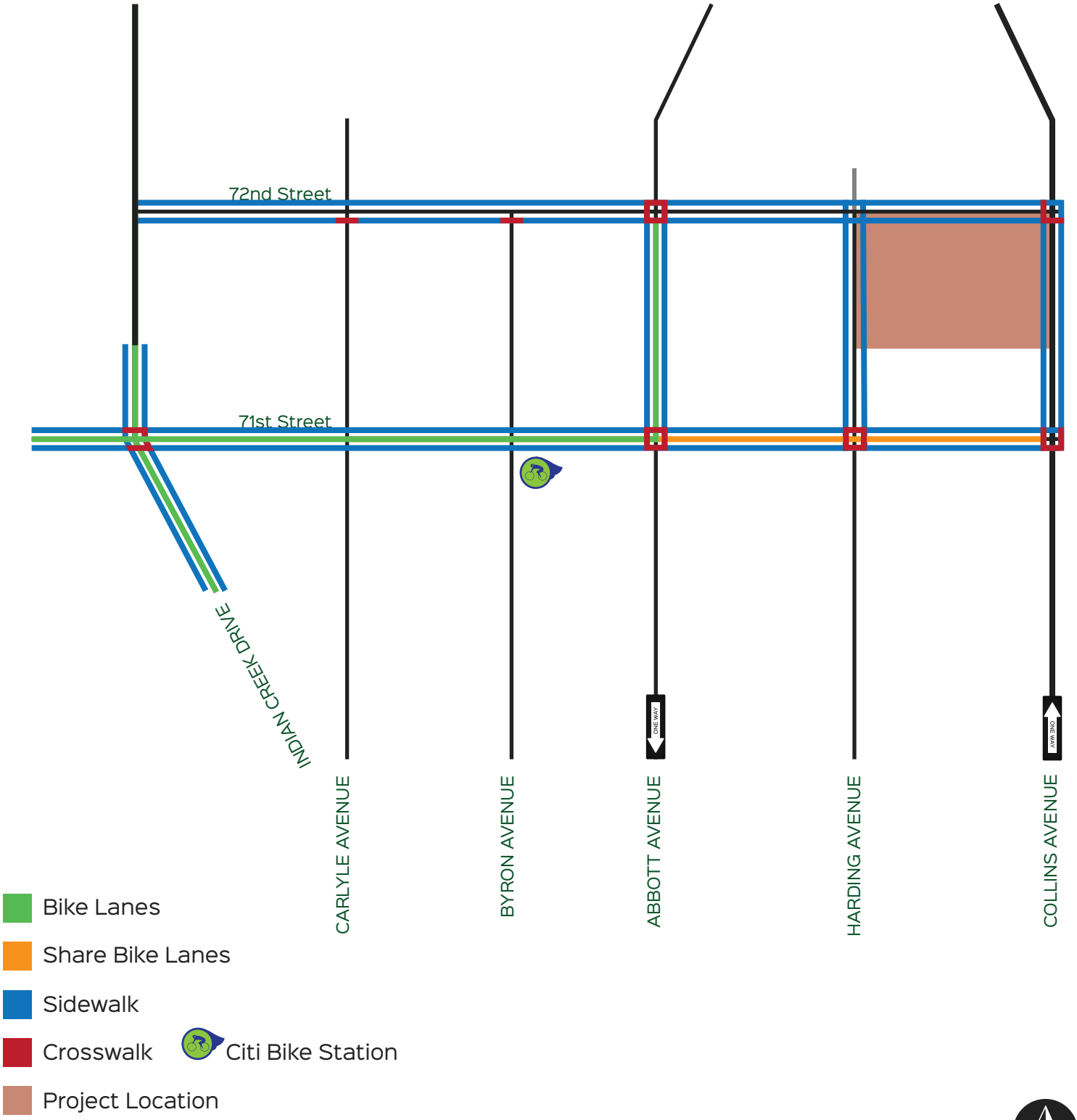
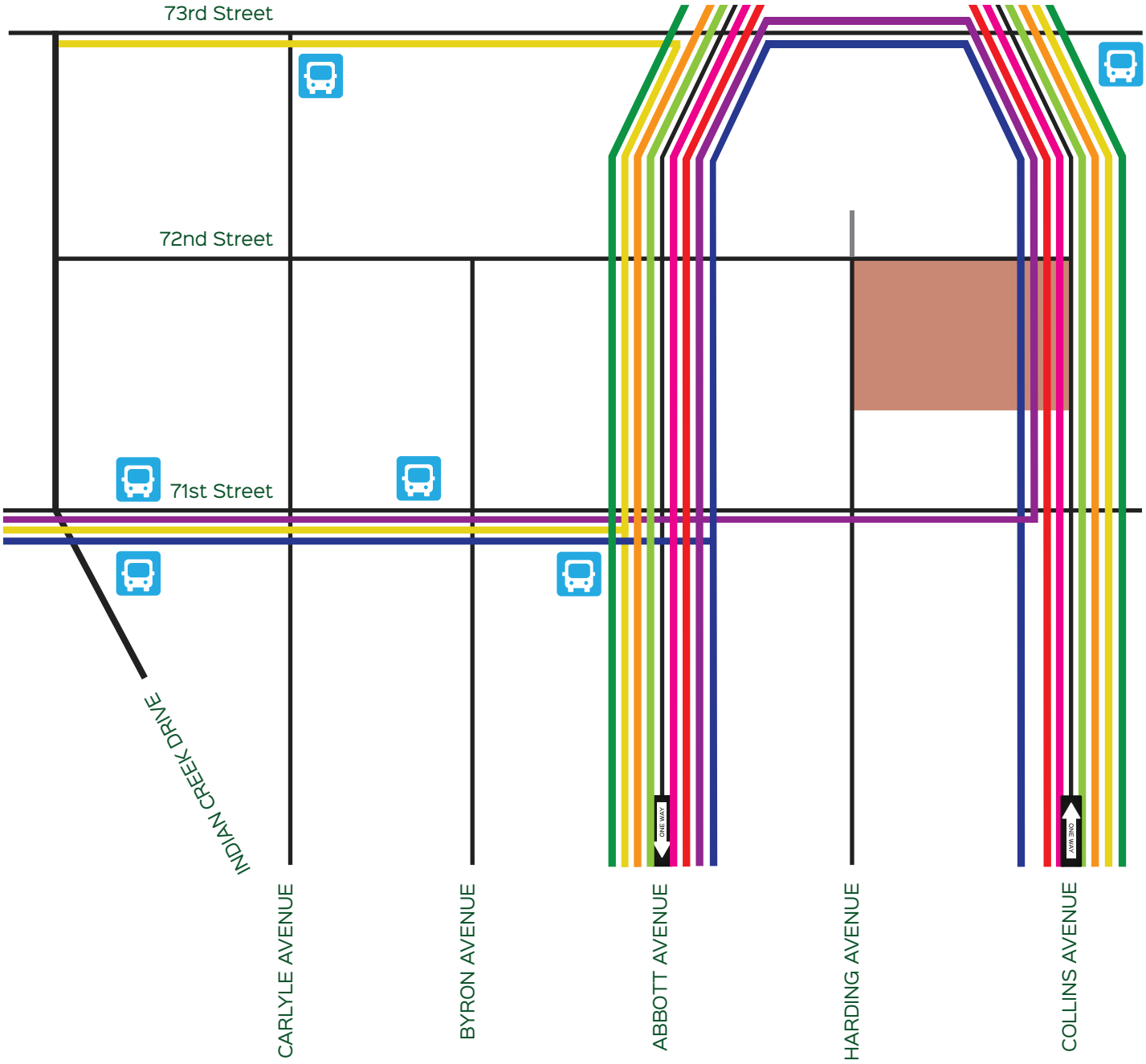


Exhibit 18

Circulation Plan - Mobility

NORTH
MAP NOT TO SCALE



Bus Stop

Project Location

Bus Routes
Bus Route 119 (S)
Bus Route 108 (H)
Bus Route 120
Bus Route 115
Bus Route 79
Bus Route 112 (L)

Miami Beach Trolley
Collins Express
North Beach Loop

Exhibit 19

Circulation Plan - Bus Routes

NORTH
MAP NOT TO SCALE

6.0 QUEUING ANALYSIS

6.1 Valet Drop-Off / Pick-Up Area

The queuing analysis for the valet drop off/ pick up area was performed based on the methodology outlined in the *Institute of Transportation Engineers (ITE) Transportation and Land Development*. The analysis was performed to determine the number of valet parking attendants required during the peak period so that the queue does not extend past the entrance (95% confidence level analysis). The potential queue at the drop-off area of the valet operations was calculated based on the peak hour traffic published by the Institute of Transportation Engineers (ITE) trip generation rates and/or equations for the proposed development plan. It should be noted that all of the residential and hotel component and an expected 20% of the retail component will have access to the proposed garage (all valet) during the PM peak hour. As previously noted this is based on the availability / proximity of both on-street parking and the public parking lot located just north of the site. The remaining retail component and existing restaurant will use the public parking lot located directly north of the site. Exhibit 20 provides the total project trip generation for the drop-off / pick-up area during peak hour conditions (worst case scenario).

Exhibit 20
Demand at Valet Drop-off / Pick-up Area

Proposed ITE Land Use Designation	PM Peak Hour Vehicle Trips			Usual of Garage	PM Peak Hour Vehicle Trips		
	In	Out	Total		In	Out	Total
Hotel *(Land Use 310)*	48	48	96	100%	48	48	96
Multifamily (Mid-Rise) *(Land Use 221)*	4	2	6	100%	4	2	6
Retail *(Land Use 820)*	75	71	146	20%	15	14	29
Valet Demand					**67**	**64**	**131**

Source: ITE Trip Generation Manual, 10th Edition

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 valet parking attendant to park or `retrieve a vehicle. 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.

6.2 Valet Operations

Parking for the proposed garage will be all valet. As previously mentioned, the project is providing 138 parking spaces (16 standard, 122 tandem lift). Since the distance from the valet drop/off pick up area differs for inbound and outbound trips, a weighted average was taken of the inbound /outbound valet processing time. The weighted average was based on the inbound/outbound trip distribution, which is 51% inbound and 49% outbound. In order to calculate the number of valet attendants required in a worst case scenario, valet operations were split into the following three processes:

1. The amount of time required for the valet attendant to process a vehicle, drive it to the car elevator, take the car elevator from the ground floor to the parking level, station it in front of the elevator (leaving the vehicle for the next process), take the stairs from the parking level to the ground floor, and walk back to the valet area.
2. The amount of time required for the elevator to arrive at the parking level and back to the ground floor. In order to make sure an elevator will always be available, the process will require one valet attendant per elevator. Since the project provides two car elevators the analyses assumes two service positions.
3. The amount of time required for a valet attendant to drive a vehicle from the car stationed in front of the car elevator at the parking level to the farthest parking space, wait for the mechanical lift to come to its most suspended position, maneuver the vehicle into the parking space, and walk back to the car elevator.

The processing rates were calculated by adding the time it will take a valet attendant to process the vehicles (**processing time**), the time it will take him to park or retrieve a vehicle (**driving time**), the time it will take the car elevator from ground floor to parking level (**car elevator time**), the time it will take him to park or retrieve a vehicle (**mechanical lift processing time** and **park processing time**), and the time it will take him 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 on a hotel in Miami Beach included in Appendix H. The driving time for the valet attendant was calculated on a conservative speed of 10 mph, and the walking time for the valet attendant was calculated on a jogging speed of 6ft/sec.

The total processing time for the car elevator was obtained by adding the time it takes for the car elevator to open and close its doors (**Door Open / Close time**), the time it will take the car elevator to travel from the ground floor to the parking level, obtained by using the contract speed of the device (200 ft/min) (see Appendix H) and multiplying the estimated height of 2 floors (25'), plus 1.5 seconds for an acceleration unknown profile system (**Flight time**), and the time associated with **start delay** and the **leveling** of the car elevator. For a conservative analysis, this time was doubled to assume that the car elevator will return to the ground level and to ensure it will always be available for the next vehicle to load. The analysis assumes 50% of the overall demand occurs simultaneously, meaning that when an inbound vehicle travels from the ground level to the parking level an outbound vehicle will return inside the car elevator to the ground level. The rest of the time the car elevator is assumed to return to ground floor empty.

The ***mechanical lift time*** has a process time of 30 seconds per platform lift. This timing was doubled to assume that every vehicle would need to wait for the lift to come from the most suspended position in order to load. Since the third process time differs for tandem/lift and standard parking, a weighted average of the tandem/lift and standard parking space valet processing time was used. The weighted average was based on the parking space distribution, which is 89% tandem/lift and 11% standard. Valet processing rate for Process 1, 2, and 3 can be seen in Exhibits 21, 22, and 23 respectively.

Exhibit 21
Valet Processing Rate - Process 1
Valet Drop-off / Pick-up

Valet Time (Inbound)

***Processing time*:**	51 sec / 60 sec / 1 min = ***0.85 min***
***Driving time*:**	84 ft * 1 mile / 5280 ft * 1hr / 10 miles * 60 min / hr = ***0.10 min***
Car Elevator time:	17.5 sec * 1 min / 60 sec ***= 0.29 min***
Walking time:	225 ft / 6 ft / sec / 60 sec / min = ***0.63 min***
Total	**= 1.86 min**

Valet Time (Outbound)

***Processing time*:**	51 sec / 60 sec / 1 min = ***0.85 min***
***Driving time*:**	194 ft * 1 mile / 5280 ft * 1hr / 10 miles * 60 min / hr = ***0.22 min***
Car Elevator time:	17.5 sec * 1 min / 60 sec ***= 0.29 min***
Walking time:	225 ft / 6 ft / sec / 60 sec / min = ***0.63 min***
Total	**= 1.99 min**

Weighted Valet Time

51% Inbound:	0.51 * 1.86 min = ***0.95 min***
49% Outbound:	0.49 * 1.99 min = ***0.97 min***
Total	**= 1.92 min**

Exhibit 22
Valet Processing Rate - Process 2
Car Elevator

Car Elevator Time (Inbound/ Outbound)

Door Open / Close time:	15 sec * 1 min / 60 sec ***= 0.25 min***
Flight time:	18 sec * 1 min / 60 sec ***= 0.30 min***
Start Delay:	1 sec * 1 min / 60 sec ***= 0.017 min***
Leveling time:	1 sec * 1 min / 60 sec ***= 0.017 min***
Total	**= 0.58 min**

Exhibit 23
Valet Processing Rate - Process 3
Tandem / Mechanical / Standard Parking

Tandem Valet Time (Inbound)

***Driving time*:**	167 ft * 1 mile / 5280 ft * 1hr / 10 miles * 60 min / hr = ***0.19 min***
Mechanical Lift Processing time:	30 sec / lift * 2 lift * 1 min / 60sec = ***1 min***
***Park Processing time*:**	***1 min***
Walking time:	167 ft / 6 ft / sec / 60 sec / min = ***0.32 min***
Total	**= 2.65 min**

Tandem Valet Time (Outbound)

***Driving time*:**	406 ft * 1 mile / 5280 ft * 1hr / 10 miles * 60 min / hr = ***0.46 min***
Mechanical Lift Processing time:	30 sec / lift * 2 lift * 1 min / 60sec = ***1 min***
***Park Processing time*:**	***1 min***
Walking time:	167 ft / 6 ft / sec / 60 sec / min = ***0.46 min***
Total	**= 2.93 min**

Tandem Weighted Valet Time

51% Inbound:	0.51 * 2.65 min = ***1.35 min***
49% Outbound:	0.49 * 2.93 min = ***1.43 min***
Total	**= 2.79 min**

Exhibit 23- Continued:
Valet Processing Rate - Process 3
Tandem / Mechanical / Standard Parking

Standard Valet Time (Inbound)

***Driving time*:**	280 ft * 1 mile / 5280 ft * 1hr / 10 miles * 60 min / hr = ***0.32 min***
***Park Processing time*:**	***0.50 min***
Walking time:	280 ft / 6 ft / sec / 60 sec / min = ***0.78 min***
Total	**= 1.60 min**

Standard Valet Time (Outbound)

***Driving time*:**	227 ft * 1 mile / 5280 ft * 1hr / 10 miles * 60 min / hr = ***0.31 min***
***Park Processing time*:**	***0.50 min***
Walking time:	280 ft / 6 ft / sec / 60 sec / min = ***0.78 min***
Total	**= 1.59 min**

Standard Weighted Valet Time

51% Inbound:	0.51 * 1.60 min = ***0.81 min***
49% Outbound:	0.49 * 1.59 min = ***0.78 min***
Total	**= 1.59 min**

Weighted Tandem Lift / Standard Parking Valet Processing Rate

Weighted Valet Time

89% Tandem parking:	0.89 * 2.79 min = ***2.48 min***
11% Standard parking:	0.11 * 1.59 min = ***0.18 min***
Total	**= 2.66 min**

An iterative approach was used to determine the minimum number of valet attendants required during the PM peak hour to serve both the entering and exiting vehicles that will ensure that the average valet queue will not extend past the property entrance. Moreover, for the elevators to always be available the results of Process 2 should not show a queue Exhibit 24 shows the calculations for the inbound /outbound valet (drop-off /pick-up area) during the PM peak hour for the three processes. The site plan is included as an attachment.

Exhibit 24
Queueing Calculations

Process 1
Valet Drop-off / Pick-up Queuing Calculations

Q = Processing rate = $\frac{60\ min/hr}{1.92\ min/process} = 31.25\ process/hr$

q = Demand Rate = $131\ \frac{veh}{hr}$

N = Service Positions = 7 attendants

ρ = Utilization factor = $\frac{q}{(NQ)} = \frac{131\ veh/hr}{7 \times 31.25\ process/hr} = 0.5988$

Q_m = Table Value = 0.1670

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

$$M = \frac{\ln P(x>M) - \ln(Q_m)}{\ln(\rho)} - 1 = \frac{\ln(0.05) - \ln(0.1670)}{\ln(0.5988)} - 1 = 1.35, \quad say\ 2 \text{ vehicles}$$

Process 2:
Car Elevator Queue Calculations

Q = Processing rate = $\frac{60\ min/hr}{0.58\ min/process} = 103.45\ process/hr$

q = Demand Rate = 66 $\frac{veh}{hr}$

N = Service Positions = 2 attendants (one per elevator)

ρ = Utilization factor = $\frac{q}{(NQ)} = \frac{66\ veh/hr}{2 \times 103.45\ \ process/hr} = 0.3190$

Q_m = Table Value = 0.1556

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

$M = \frac{\ln P(x>M) - \ln(Q_m)}{\ln(\rho)} - 1 = \frac{\ln(0.05) - \ln(0.1556)}{\ln(0.3190)} - 1 = -0.01, \quad say\ \ no$ queue

Process 3:
Tandem / Mechanical / Standard Parking
Queue Calculations

Q = Processing rate = $\frac{60\ min/hr}{2.66\ min/process} = 22.56\ process/hr$

q = Demand Rate = 131 $\frac{veh}{hr}$

N = Service Positions = 10 attendants

ρ = Utilization factor = $\frac{q}{(NQ)} = \frac{131\ veh/hr}{10 \times 22.56\ \ process/hr} = 0.5807$

Q_m = Table Value = 0.0887

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

$M = \frac{\ln P(x>M) - \ln(Q_m)}{\ln(\rho)} - 1 = \frac{\ln(0.05) - \ln(0.0887)}{\ln(0.5807)} - 1 = 0.05, \quad say$ no queue

The results of the analysis show that, if all residents, hotel patrons and a subjective number of retail patrons use the valet service, a total of 19 valet attendants would be able to handle the demand during peak hour at the drop-off / pick-up area with an average queue of approximately 2 vehicles or less. A number of valet attendants were assigned to each process in order for the queueing not to exceed the proposed sites accommodation of 3 vehicles. Seven valet attendants will be assigned to process one, where they will pick up / drop off a vehicle to the elevator. Two valet attendants will be assigned to the car elevator (one attendant at each). Ten valet attendants will be assigned to process three, where they will circulate the parking level to and from the car elevator and maneuver vehicles in and out of the parking spaces.

It should be noted that this scenario only represents the demand during the peak hour. It should also be noted that the queuing analysis considers worst case scenario during the peak hours to make sure that the queues don't spill onto to the public right-of-way. Once operational the development can assess the actual need for valet attendants.

7.0 CONCLUSIONS

An assessment of the traffic impacts associated with the proposed 7140 Collins Hotel was performed in accordance with the requirements of the City of Miami Beach. The overall LOS for the following intersections will meet the City's LOS standards with the proposed project:

- Abbott Avenue / 72nd Street
- Collins Avenue / 72nd Street
- Abbott Avenue / 71st Street
- Harding Avenue / 71st Street
- Collins Avenue / 71st Street
- Indian Creek Drive / 71st Street

As with the existing and future without project conditions the un-signalized intersection of Harding Avenue / 72nd Street continues to experience delays. This is due to the fact that for un-signalized intersections the software tends to overestimate delay measurements for the minor approaches and does not account for gaps in traffic created by the upstream signalized intersections to allow the minor street traffic flow. Both eastbound and westbound approaches of the Collins Avenue / 71st Street intersection also continue to experience delays due to the fact that the County (with the consent of the State) gives priority to vehicles travelling north through this area, and, therefore, accepting delays on minor cross-streets. The northbound and southbound approaches at the intersection of Indian Creek Drive / 71st Street also continues to experience delay. It should be noted that this is an existing condition and the project only represents a 2% of the total projected intersection volume during the afternoon peak hours. Even though the intersection of Indian Creek Drive / 71st Street is projected to operate within the LOS standards adopted by the City of Miami Beach, the project is recommending to adjust the signal timing to provide additional green time to the northbound and eastbound left movements. The project driveway was analyzed and results show adequate operations.

A mobility and circulation plan was completed as part of the study. The plan shows that the project area is currently served by various Miami-Dade Transit bus routes. The project is located

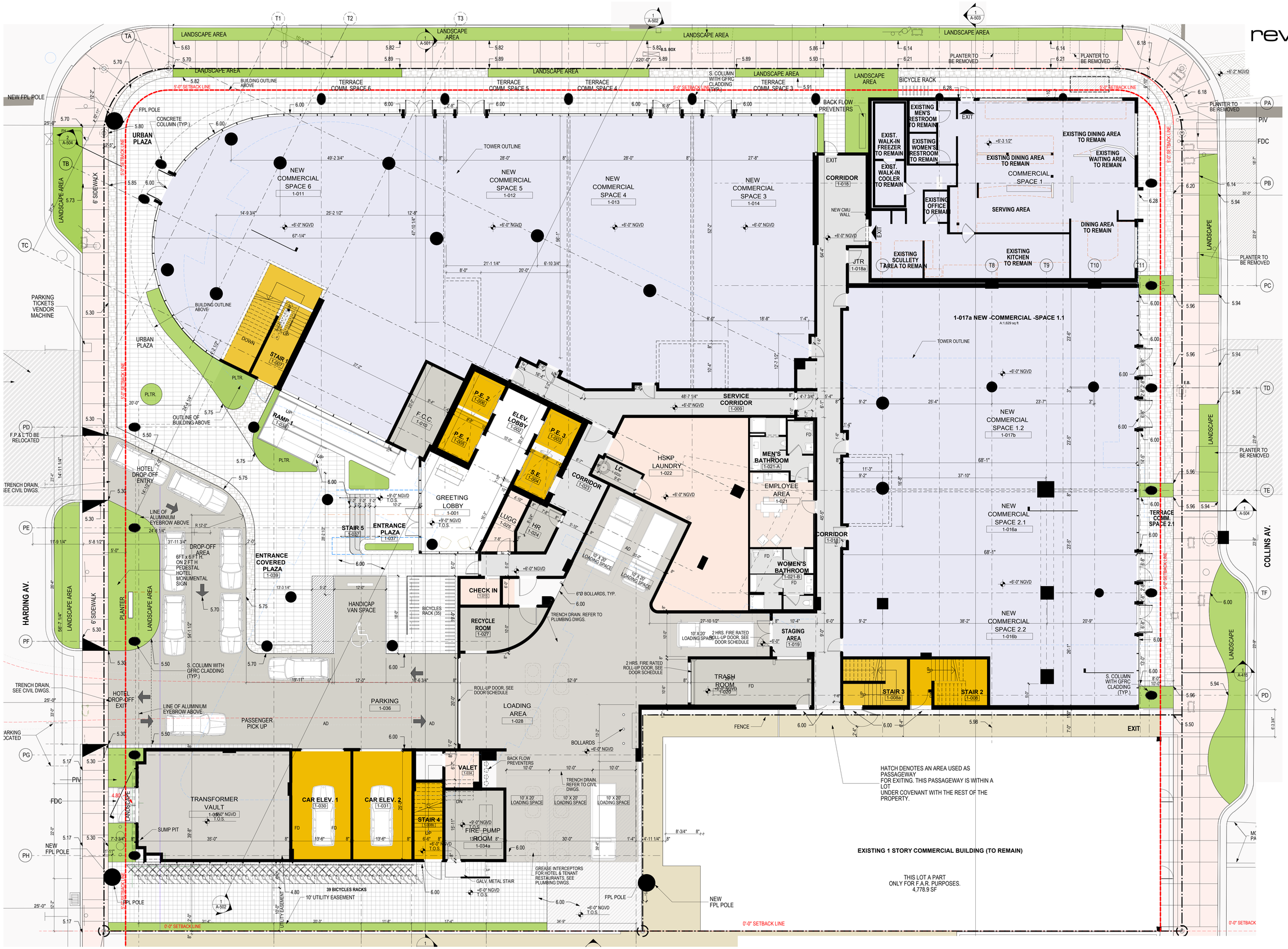
in an area that is conducive for pedestrian and bicycle activities providing shared bike lanes, ample sidewalks, and crosswalks.

In addition, an assessment of circulation as it relates to the valet services during the peak hour was performed. The valet drop-off/pickup area queuing analysis shows that the anticipated queue during the typical peak traffic conditions can be accommodated within the project site.

Furthermore, a Transportation Demand Management Plan (TDMP) was developed for the project. The plan consists of strategies that increase over-all system efficiency by encouraging a shift from single-occupant vehicle (SOV) trips to non-SOV modes, or shifting auto trips out of peak periods. This plan seeks to reduce auto trips by increasing travel options, by providing incentives and information to encourage and help individuals modify their travel behavior, or by reducing the physical need to travel through transportation-efficient lands uses. Implementation of the TDM plan could result in a potential ten percent (10%) reduction of peak hour vehicle trips.

Appendix A
Site Plan

revuelta
architecture
international



JANUARY 26, 2018

GROUND LEVEL- DROP OFF-LOADING-COMMERCIAL | 1

SCALE: 1/8"=1'-0"

ELEVATION = +6'-0" N.G.V.D.

N

72 + COLLINS HOTEL
MIAMI BEACH

A.09

Appendix B
Methodology

DAVID PLUMMER & ASSOCIATES
TRANSPORTATION • CIVIL • STRUCTURAL • ENVIRONMENTAL

1750 PONCE DE LEON BOULEVARD, CORAL GABLES, FLORIDA 33134
305 447-0900 • FAX: 305 444-4986 • EMAIL: DPA@DPLUMMER.COM

7140 Collins Hotel
Transportation Impact Study Methodology

August 24, 2016

PROJECT LOCATION

The project is located at 7140 Collins Avenue in Miami Beach, Florida. The project proposes to replace an existing 7,005 SF of commercial space with a new development consisting of a 179-room hotel with approximately 18,652 SF of commercial space on the ground floor. The project is proposing a parking garage, providing 119 parking spaces (11 standard, 108 mechanical lift) with three car elevators. The hotel will operate as all valet. The retail and existing restaurant will not park on-site.

PURPOSE

This methodology will provide the details of the Transportation Impact Study for the proposed development. This methodology is based on discussions from a methodology meeting held with city staff on August 18, 2016. 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) – Two-hour turning movement counts (including pedestrians) will be collected for the PM (4:30 – 6:30 PM) peak period on a Friday. The analysis will be conducted for the following intersections:

  - Collins Avenue / 71st Street (S)
  - Collins Avenue / 72nd Street (S)
  - Harding Avenue / 71st Street (S)
  - Harding Avenue / 72nd Street (U)
  - Abbott Avenue / 71st Street (S)
  - Abbott Avenue / 72nd Street (S)
  - Indian Creek Drive / 71st Street (S)

  S= Signalized
  U=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, 9th edition. As agreed with city staff, a 10% reduction was applied to account for other modes of transportation. Credit for vehicle trips generated by the existing uses was based on ITE Trip Generation Manual, 9th edition.

Trip Generation Analysis

Proposed Land Uses

Proposed ITE Land Use Designation[1]	Number of Units	PM Peak Hour Vehicle Trips		
		In	Out	Total
Hotel *Land Use Code: 310*	179 Units	55	52	107
		$Rate = 0.60 \frac{trips}{unit}$		
		51% in	49% out	
Shopping Center *Land Use Code: 820*	18,652 SF	93	101	194
		$Ln(T) = 0.67Ln(X) + 3.31$		
		48% in	52% out	
Subtotal Gross Vehicle Trips		**148**	**153**	**301**
Internalization[2]	PM 4.7%	-7	-7	-14
Pass-By Trips (Shopping Center)	PM 34%	-32	-32	-64
Transit/Pedestrian Trips	**10%**	-11	-11	-22
Net External Trips (Proposed)		**98**	**103**	**201**

[1]Based on ITE Trip Generation Manual, Ninth Edition
[2]Internal capture is based on ITE Trip Generation Manual User's Guide and Handbook, Ninth Edition,
[3]Pass by is based on ITE Trip Generation Manual User's Guide and Handbook, Ninth Edition,

Existing Land Uses

Existing ITE Land Use Designation[1]	Number of Units	PM Peak Hour Vehicle Trips		
		In	Out	Total
Shopping Center *Land Use Code: 820*	7,005 SF	48	53	101
		$Ln(T) = 0.67Ln(X) + 3.31$		
		48% in	52% out	
Subtotal Gross Vehicle Trips		**48**	**53**	**101**
Pass-By Trips[2] (Shopping Center)	PM 34%	-17	-17	-34
Transit/Pedestrian Trips	**10%**	-3	-4	-7
Net External Trips (Existing)		**28**	**32**	**60**

Proposed Uses	**98**	**103**	**201**
Existing Uses	-28	-32	-60
Net New External Trips	**70**	**71**	**141**

[1] Based on ITE Trip Generation Manual, Ninth Edition
[2]Pass by is based on ITE Trip Generation Manual User's Guide and Handbook, Ninth Edition,

- 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 *Metropolitan 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 2016 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

The analysis will be done during the PM peak hour of a regular weekday. Intersection analysis will be done using Highway Capacity Software (HCS 2010) or the Synchro software both based on the 2010 Highway Capacity Manual (HCM). 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.

- A 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 bank drive-through area and 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

The potential queue at the project drop-off area will be calculated based on the peak hour traffic published by ITE's Trip Generation, Ninth Edition. The project trip generation for the PM peak hour (the critical inbound hour) will be used for the analysis. A processing rate will be used for valet operations. Arrival flow rate from the traffic distribution will be converted to a random distribution using the Poisson formula (if applicable). The queuing analysis will be based on the ITE's Transportation and Land Development publication – using Poisson arrivals and negative exponential service time. Entrance capacity will be a function of the numbers of lanes, number of valet attendance, and geometrics. The analysis, conclusions, and recommendations including the number of valet attendants required during peak hour of operations will be documented in the traffic report.

DOCUMENTATION

The applicant will submit one original, 13 hard copies and four CDs of the traffic study. The submittal will include a CD with the HCS 2010 or 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.
- Counts will be schedule not to coincide with any religious or government designated holidays.

w:\16\16204\7140 collins_methodology.docx

Appendix C
Traffic Data
Traffic Volumes
Signal Timings
Historic Background Growth
Cardinal Distribution

Traffic Volumes

DAVID PLUMMER & ASSOCIATES, INC.

TURNING MOVEMENT COUNTS

Project Name: 7140 Collins Avenue
Location: Abbott Avenue / 72nd Street
Observer: Traffic Survey Specialists, Inc.

Project Number: 16204
Count Date: 9/2/2016
Day of Week: Friday

TIME INTERVAL		Abbott Avenue								72nd Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	04:45 PM	0	0	0	0	9	443	29	481	0	28	12	40	20	67	0	87	608
04:45 PM	05:00 PM	0	0	0	0	11	402	46	459	0	35	8	43	18	56	0	74	576
05:00 PM	05:15 PM	0	0	0	0	13	379	46	438	0	29	10	39	17	70	0	87	564
05:15 PM	05:30 PM	0	0	0	0	11	403	42	456	0	39	5	44	15	67	0	82	582
05:30 PM	05:45 PM	0	0	0	0	7	368	43	418	0	33	8	41	19	57	0	76	535
05:45 PM	06:00 PM	0	0	0	0	9	394	32	435	0	34	10	44	20	63	0	83	562
06:00 PM	06:15 PM	0	0	0	0	14	392	31	437	0	29	9	38	17	57	0	74	549
06:15 PM	06:30 PM	0	0	0	0	4	422	19	445	0	28	12	40	11	37	0	48	533

PM PEAK HOUR TURNING MOVEMENT COUNT SUMMARY

ANNUAL AVERAGE DAILY TRAFFIC CONDITIONS

TIME INTERVAL		Abbott Avenue								72nd Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	05:30 PM	0	0	0	0	46	1692	170	1907	0	136	36	173	73	270	0	343	2,423
PEAK HOUR FACTOR					NA				0.95				0.94				0.95	0.96

Note: 2016 FDOT Peak Season Conversion Factor = 1.04

DAVID PLUMMER & ASSOCIATES, INC.

TURNING MOVEMENT COUNTS

Project Name: 7140 Collins Avenue
Location: Harding Avenue / 72nd Street
Observer: Traffic Survey Specialists, Inc.

Project Number: 16204
Count Date: 9/2/2016
Day of Week: Friday

TIME INTERVAL		Harding Avenue								72nd Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	04:45 PM	29	28	56	113	1	2	1	4	5	26	6	37	5	53	7	65	219
04:45 PM	05:00 PM	31	31	44	106	3	5	6	14	8	31	7	46	2	41	5	48	214
05:00 PM	05:15 PM	38	38	48	124	2	0	5	7	9	25	7	41	3	36	6	45	217
05:15 PM	05:30 PM	42	42	47	131	0	1	4	5	7	29	18	54	2	33	6	41	231
05:30 PM	05:45 PM	41	40	38	119	4	2	2	8	4	31	5	40	1	29	4	34	201
05:45 PM	06:00 PM	44	44	48	136	3	3	6	12	9	26	4	39	0	36	4	40	227
06:00 PM	06:15 PM	36	36	55	127	0	5	10	15	5	27	8	40	3	22	5	30	212
06:15 PM	06:30 PM	27	27	47	101	2	3	7	12	4	28	4	36	3	17	7	27	176

PM PEAK HOUR TURNING MOVEMENT COUNT SUMMARY

ANNUAL AVERAGE DAILY TRAFFIC CONDITIONS

TIME INTERVAL		Harding Avenue								72nd Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	05:30 PM	146	145	203	493	6	8	17	31	30	115	40	185	12	170	25	207	916
PEAK HOUR FACTOR					0.90				0.54				0.82				0.77	0.95

Note: 2016 FDOT Peak Season Conversion Factor = 1.04

DAVID PLUMMER & ASSOCIATES, INC.

TURNING MOVEMENT COUNTS

Project Name: 7140 Collins Avenue
Location: Collins Avenue / 72nd Street
Observer: Traffic Survey Specialists, Inc.

Project Number: 16204
Count Date: 9/2/2016
Day of Week: Friday

TIME INTERVAL		Collins Avenue								72nd Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	04:45 PM	53	524	0	577	0	0	0	0	87	0	0	87	0	0	0	0	664
04:45 PM	05:00 PM	49	516	0	565	0	0	0	0	75	0	0	75	0	0	0	0	640
05:00 PM	05:15 PM	35	538	0	573	0	0	0	0	76	0	0	76	0	0	0	0	649
05:15 PM	05:30 PM	34	588	0	622	0	0	0	0	88	0	0	88	0	0	0	0	710
05:30 PM	05:45 PM	35	562	0	597	0	0	0	0	79	0	0	79	0	0	0	0	676
05:45 PM	06:00 PM	41	525	0	566	0	0	0	0	80	0	0	80	0	0	0	0	646
06:00 PM	06:15 PM	24	484	0	508	0	0	0	0	79	0	0	79	0	0	0	0	587
06:15 PM	06:30 PM	25	479	0	504	0	0	0	0	76	0	0	76	0	0	0	0	580

PM PEAK HOUR TURNING MOVEMENT COUNT SUMMARY
ANNUAL AVERAGE DAILY TRAFFIC CONDITIONS

TIME INTERVAL		Collins Avenue								72nd Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
05:00 PM	06:00 PM	151	2302	0	2452	0	0	0	0	336	0	0	336	0	0	0	0	2,788
PEAK HOUR FACTOR					0.95				NA				0.92				NA	0.94

Note: 2016 FDOT Peak Season Conversion Factor = 1.04

DAVID PLUMMER & ASSOCIATES, INC.

TURNING MOVEMENT COUNTS

Project Name: 7140 Collins Avenue
Location: Abbott Avenue / 71st Street
Observer: Traffic Survey Specialists, Inc.

Project Number: 16204
Count Date: 9/2/2016
Day of Week: Friday

TIME INTERVAL		Abbott Avenue								71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	04:45 PM	0	0	0	0	10	349	103	462	0	65	21	86	10	50	0	60	608
04:45 PM	05:00 PM	0	0	0	0	10	356	82	448	0	79	13	92	2	61	0	63	603
05:00 PM	05:15 PM	0	0	0	0	8	305	96	409	0	79	28	107	5	67	0	72	588
05:15 PM	05:30 PM	0	0	0	0	12	329	84	425	0	88	9	97	6	71	0	77	599
05:30 PM	05:45 PM	0	0	0	0	16	303	87	406	0	69	10	79	13	79	0	92	577
05:45 PM	06:00 PM	0	0	0	0	16	330	74	420	0	82	14	96	10	78	0	88	604
06:00 PM	06:15 PM	0	0	0	0	9	322	80	411	0	88	16	104	15	81	0	96	611
06:15 PM	06:30 PM	0	0	0	0	17	338	100	455	0	65	14	79	10	84	0	94	628

PM PEAK HOUR TURNING MOVEMENT COUNT SUMMARY
ANNUAL AVERAGE DAILY TRAFFIC CONDITIONS

TIME INTERVAL		Abbott Avenue								71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
05:30 PM	06:30 PM	0	0	0	0	60	1345	355	1760	0	316	56	372	50	335	0	385	2,517
PEAK HOUR FACTOR					NA				0.93				0.86				0.96	0.96

Note: 2016 FDOT Peak Season Conversion Factor = 1.04

DAVID PLUMMER & ASSOCIATES, INC.

TURNING MOVEMENT COUNTS

Project Name: 7140 Collins Avenue
Location: Harding Avenue / 71st Street
Observer: Traffic Survey Specialists, Inc.

Project Number: 16204
Count Date: 9/2/2016
Day of Week: Friday

TIME INTERVAL		Harding Avenue								71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	04:45 PM	25	75	10	110	4	6	1	11	17	57	9	83	6	32	1	39	243
04:45 PM	05:00 PM	32	66	11	109	5	4	4	13	19	58	10	87	6	11	6	23	232
05:00 PM	05:15 PM	37	74	4	115	3	3	4	10	26	54	9	89	1	27	4	32	246
05:15 PM	05:30 PM	36	76	7	119	4	8	2	14	19	68	11	98	7	39	3	49	280
05:30 PM	05:45 PM	48	67	13	128	2	4	2	8	16	59	10	85	2	39	4	45	266
05:45 PM	06:00 PM	39	84	8	131	0	3	6	9	25	61	10	96	4	46	2	52	288
06:00 PM	06:15 PM	34	74	16	124	4	5	6	15	19	64	8	91	6	55	1	62	292
06:15 PM	06:30 PM	26	63	12	101	0	4	1	5	11	62	11	84	8	52	4	64	254

PM PEAK HOUR TURNING MOVEMENT COUNT SUMMARY
ANNUAL AVERAGE DAILY TRAFFIC CONDITIONS

TIME INTERVAL		Harding Avenue								71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
05:15 PM	06:15 PM	163	313	46	522	10	21	17	48	82	262	41	385	20	186	10	216	1,171
PEAK HOUR FACTOR					0.96				0.77				0.94				0.84	0.96

Note: 2016 FDOT Peak Season Conversion Factor = 1.04

DAVID PLUMMER & ASSOCIATES, INC.

TURNING MOVEMENT COUNTS

Project Name: 7140 Collins Hotel
Location: Collins Avenue / 71st Street
Observer: Traffic Survey Specialists, Inc.

Project Number: 16204
Count Date: 9/2/2016
Day of Week: Friday

TIME INTERVAL		Collins Avenue									71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND					EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	U	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	04:45 PM	39	490	1	530		0	0	0	0	71	2	0	73	0	2	12	14	617
04:45 PM	05:00 PM	16	512	5	533		0	0	0	0	60	4	0	64	0	5	6	11	608
05:00 PM	05:15 PM	29	508	1	538		0	0	0	0	71	1	0	72	0	4	5	9	619
05:15 PM	05:30 PM	45	528	2	575		0	0	0	0	75	1	0	76	0	3	5	8	659
05:30 PM	05:45 PM	39	543	4	586		0	0	0	0	68	4	0	72	0	4	6	10	668
05:45 PM	06:00 PM	49	498	0	547		0	0	0	0	71	2	0	73	0	3	6	9	629
06:00 PM	06:15 PM	57	435	2	494		0	0	0	0	78	2	0	80	0	3	5	8	582
06:15 PM	06:30 PM	56	420	2	478		0	0	0	0	78	1	0	79	0	7	2	9	566

PM PEAK HOUR TURNING MOVEMENT COUNT SUMMARY
ANNUAL AVERAGE DAILY TRAFFIC CONDITIONS

TIME INTERVAL		Collins Avenue									71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND					EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	U	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
05:00 PM	06:00 PM	168	2160	7	2336	0	0	0	0	0	296	8	0	305	0	15	23	37	2,678
PEAK HOUR FACTOR					0.96					NA				0.96				0.90	0.96

Note: 2016 FDOT Peak Season Conversion Factor = 1.04

DAVID PLUMMER & ASSOCIATES, INC.

TURNING MOVEMENT COUNTS

Project Name: 7140 Collins Avenue
Location: Indian Creek Drive / 71st Street
Observer: Traffic Survey Specialists, Inc.

Project Number: 16204
Count Date: 9/2/2016
Day of Week: Friday

TIME INTERVAL		Indian Creek Drive								71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
04:30 PM	04:45 PM	156	33	0	189	1	29	110	140	74	120	101	295	0	204	8	212	836
04:45 PM	05:00 PM	177	33	2	212	0	39	103	142	62	137	93	292	0	208	4	212	858
05:00 PM	05:15 PM	217	38	2	257	0	27	110	137	64	147	104	315	1	194	7	202	911
05:15 PM	05:30 PM	174	25	2	201	2	25	103	130	69	159	96	324	0	231	5	236	891
05:30 PM	05:45 PM	257	58	0	315	3	33	88	124	55	118	97	270	1	199	7	207	916
05:45 PM	06:00 PM	204	63	1	268	2	30	111	143	63	169	103	335	0	188	4	192	938
06:00 PM	06:15 PM	221	86	1	308	2	15	95	112	61	128	92	281	0	207	6	213	914
06:15 PM	06:30 PM	154	62	0	216	0	41	114	155	62	91	84	237	2	185	8	195	803

PM PEAK HOUR TURNING MOVEMENT COUNT SUMMARY
ANNUAL AVERAGE DAILY TRAFFIC CONDITIONS

TIME INTERVAL		Indian Creek Drive								71st Street								GRAND TOTAL
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	L	T	R	TOTAL	
05:15 PM	06:15 PM	890	241	4	1136	9	107	413	529	258	597	404	1258	1	858	23	882	3,805
PEAK HOUR FACTOR					0.87				0.89				0.90				0.90	0.98

Note: 2016 FDOT Peak Season Conversion Factor = 1.04

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

71ST STREET & A1A
MIAMI BEACH, FLORIDA
COUNTED BY: ROLANDO MARTINEZ
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71ST_A1A
Page : 1

ALL VEHICLES

	A1A From North				71ST STREET From East				A1A From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
16:30	0	0	0	0	0	0	2	12	0	39	490	1	0	71	2	0	617
16:45	0	0	0	0	0	0	5	6	0	16	512	5	0	60	4	0	608
17:00	0	0	0	0	0	0	4	5	0	29	508	1	0	71	1	0	619
17:15	0	0	0	0	0	0	3	5	0	45	528	2	0	75	1	0	659
Hr Total	0	0	0	0	0	0	14	28	0	129	2038	9	0	277	8	0	2503
17:30	0	0	0	0	0	0	4	6	0	39	543	4	0	68	4	0	668
17:45	0	0	0	0	0	0	3	6	0	49	498	0	0	71	2	0	629
18:00	0	0	0	0	0	0	3	5	0	57	435	2	0	78	2	0	582
18:15	0	0	0	0	0	0	7	2	0	56	420	2	0	78	1	0	566
Hr Total	0	0	0	0	0	0	17	19	0	201	1896	8	0	295	9	0	2445
TOTAL	0	0	0	0	0	0	31	47	0	330	3934	17	0	572	17	0	4948

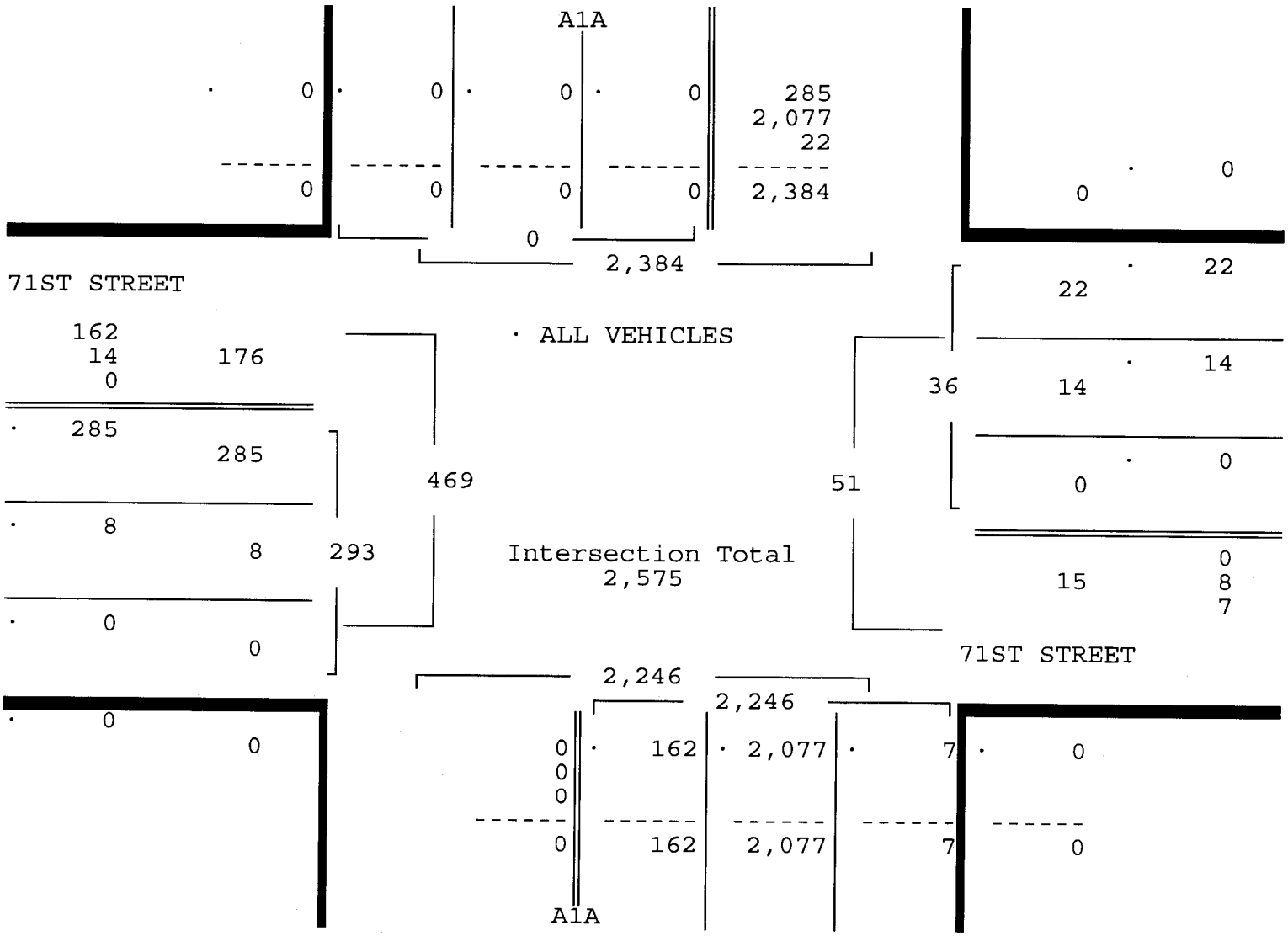
TRAFFIC SURVEY SPECIALISTS, INC.
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

71ST STREET & A1A
MIAMI BEACH, FLORIDA
COUNTED BY: ROLANDO MARTINEZ
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71ST_A1A
Page : 2

ALL VEHICLES

	A1A From North				71ST STREET From East				A1A From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 18:30 on 09/02/16																	
Peak start 17:00					17:00				17:00				17:00				
Volume	0	0	0	0	0	0	14	22	0	162	2077	7	0	285	8	0	
Percent	0%	0%	0%	0%	0%	0%	39%	61%	0%	7%	92%	0%	0%	97%	3%	0%	
Pk total	0				36				2246				293				
Highest	16:30				17:30				17:30				17:15				
Volume	0	0	0	0	0	0	4	6	0	39	543	4	0	75	1	0	
Hi total	0				10				586				76				
PHF	.0				.90				.96				.96				



TRAFFIC SURVEY SPECIALISTS, INC.

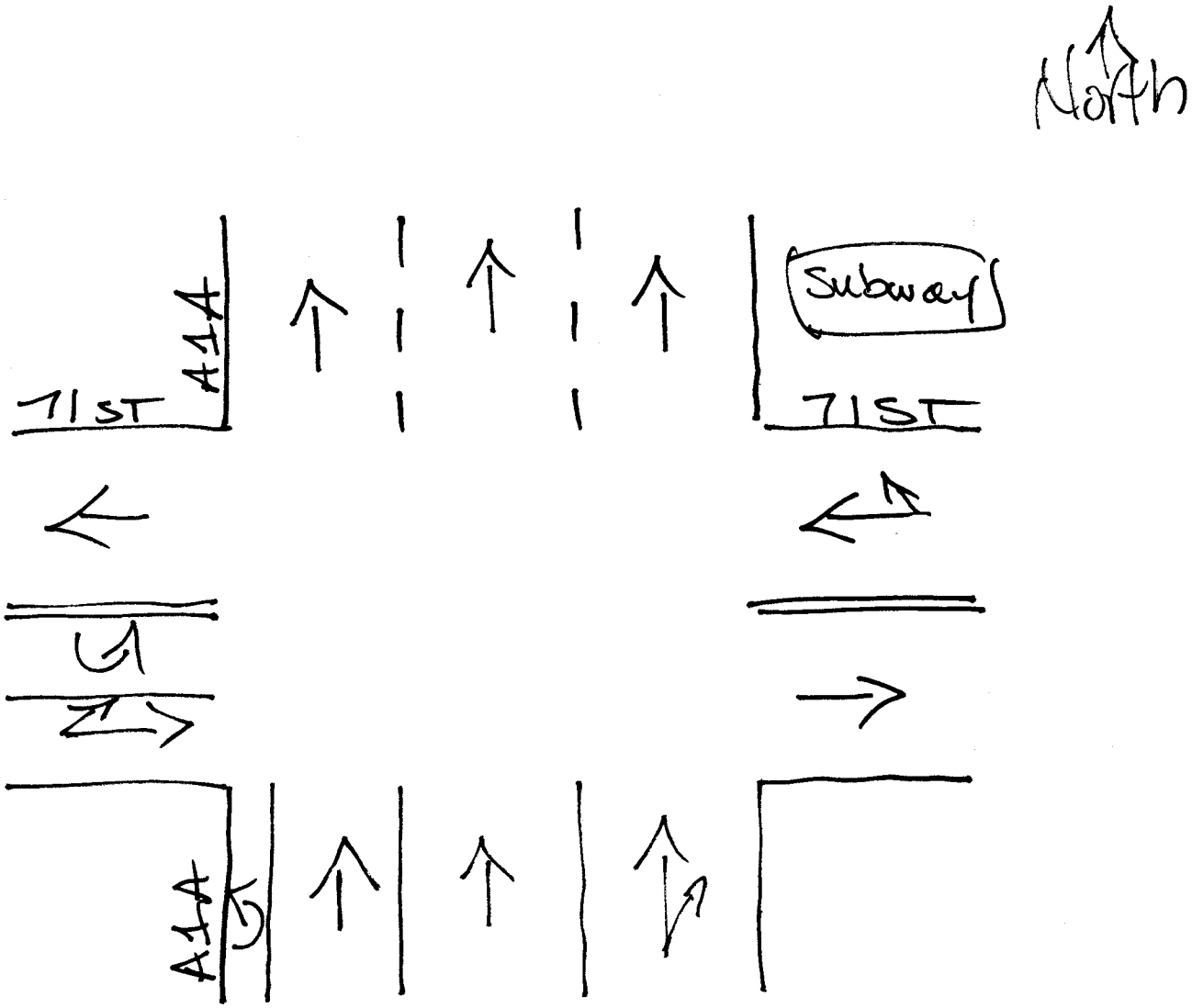
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

71ST STREET & A1A
MIAMI BEACH, FLORIDA
COUNTED BY: ROLANDO MARTINEZ
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71ST_A1A
Page : 1

PEDESTRIANS & BIKES

	A1A From North				71ST STREET From East				A1A From South				71ST STREET From West				
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 09/02/16																	
16:30	0	0	0	11	0	2	0	5	0	2	0	9	0	1	0	25	55
16:45	0	1	0	4	0	1	0	5	0	2	0	16	0	2	0	22	53
17:00	0	0	0	1	0	1	0	2	0	1	0	9	0	5	0	19	38
17:15	0	1	0	1	0	2	0	4	0	3	0	5	0	1	0	40	57
Hr Total	0	2	0	17	0	6	0	16	0	8	0	39	0	9	0	106	203
17:30	0	0	0	4	0	1	0	0	0	1	0	15	0	1	0	32	54
17:45	0	0	0	8	0	3	0	1	0	1	0	5	0	1	0	51	70
18:00	0	1	0	7	0	0	0	4	0	1	0	13	0	1	0	32	59
18:15	0	0	0	5	0	2	0	1	0	1	0	9	0	0	0	19	37
Hr Total	0	1	0	24	0	6	0	6	0	4	0	42	0	3	0	134	220
TOTAL	0	3	0	41	0	12	0	22	0	12	0	81	0	12	0	240	423



Miami Bch, Florida
September 02, 2016
drawn by: luis Palomino
signalized

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

72ND STREET & A1A
MIAMI BEACH, FLORIDA
COUNTED BY: ADAM JOHNSON
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72ST_A1A
Page : 1

ALL VEHICLES

	A1A From North				----- From East				A1A From South				72ND STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
16:30	0	0	0	0	0	0	0	0	0	53	524	0	0	87	0	0	664
16:45	0	0	0	0	0	0	0	0	0	49	516	0	0	75	0	0	640
17:00	0	0	0	0	0	0	0	0	0	35	538	0	0	76	0	0	649
17:15	0	0	0	0	0	0	0	0	0	34	588	0	0	88	0	0	710
Hr Total	0	0	0	0	0	0	0	0	0	171	2166	0	0	326	0	0	2663
17:30	0	0	0	0	0	0	0	0	0	35	562	0	0	79	0	0	676
17:45	0	0	0	0	0	0	0	0	0	41	525	0	1	80	0	0	647
18:00	0	0	0	0	0	0	0	0	0	24	484	0	1	79	0	0	588
18:15	0	0	0	0	0	0	0	0	0	25	479	0	0	76	0	0	580
Hr Total	0	0	0	0	0	0	0	0	0	125	2050	0	2	314	0	0	2491
TOTAL	0	0	0	0	0	0	0	0	0	296	4216	0	2	640	0	0	5154

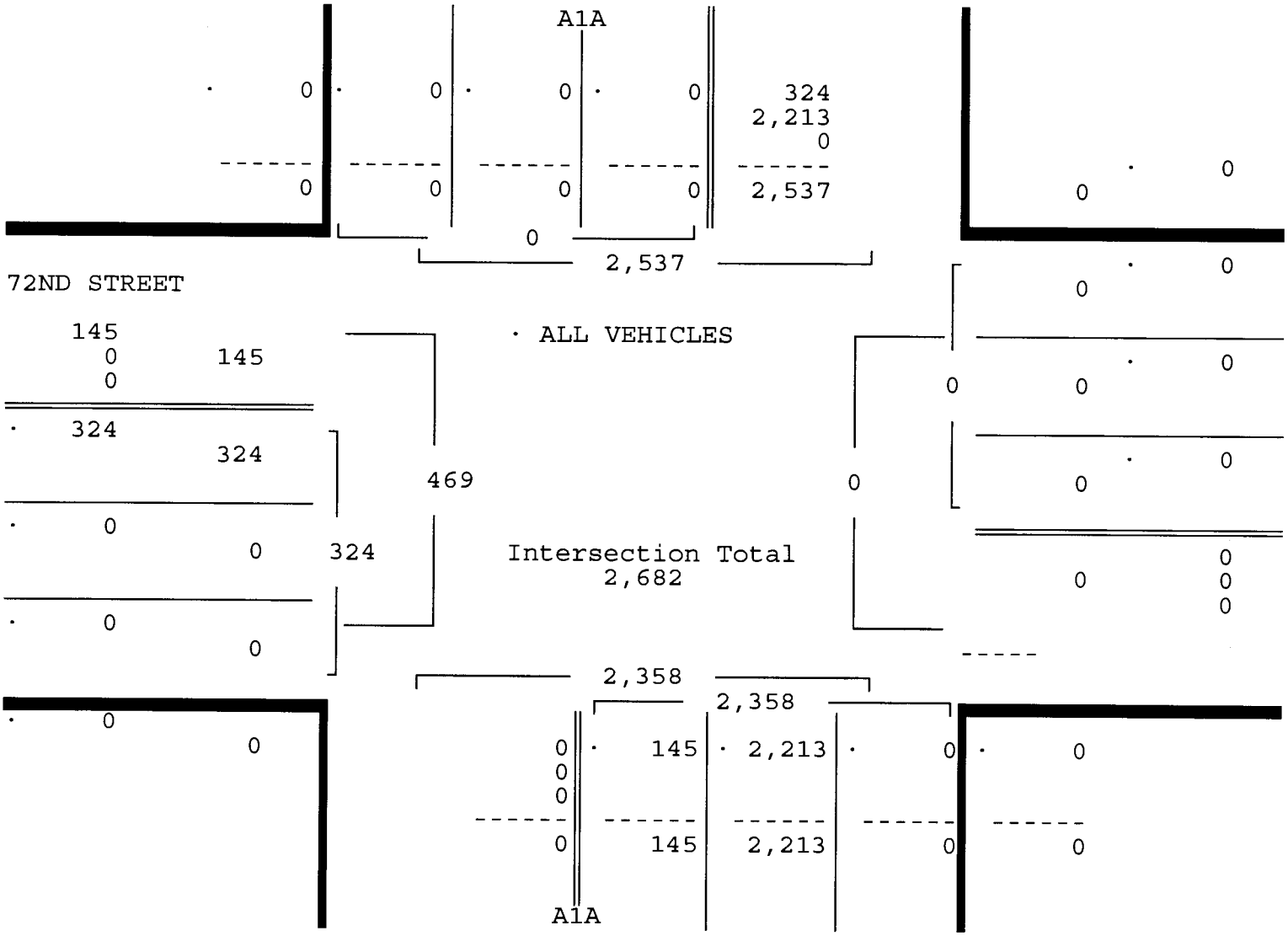
72ND STREET & A1A
MIAMI BEACH, FLORIDA
COUNTED BY: ADAM JOHNSON
SIGNALIZED

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

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72ST_A1A
Page : 2

ALL VEHICLES

	A1A From North				----- From East				A1A From South				72ND STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 18:30 on 09/02/16																	
Peak start 17:00					17:00				17:00				17:00				
Volume	0	0	0	0	0	0	0	0	0	145	2213	0	1	323	0	0	
Percent	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	94%	0%	0%	100%	0%	0%	
Pk total	0				0				2358				324				
Highest	16:30				16:30				17:15				17:15				
Volume	0	0	0	0	0	0	0	0	0	34	588	0	0	88	0	0	
Hi total	0				0				622				88				
PHF	.0				.0				.95				.92				



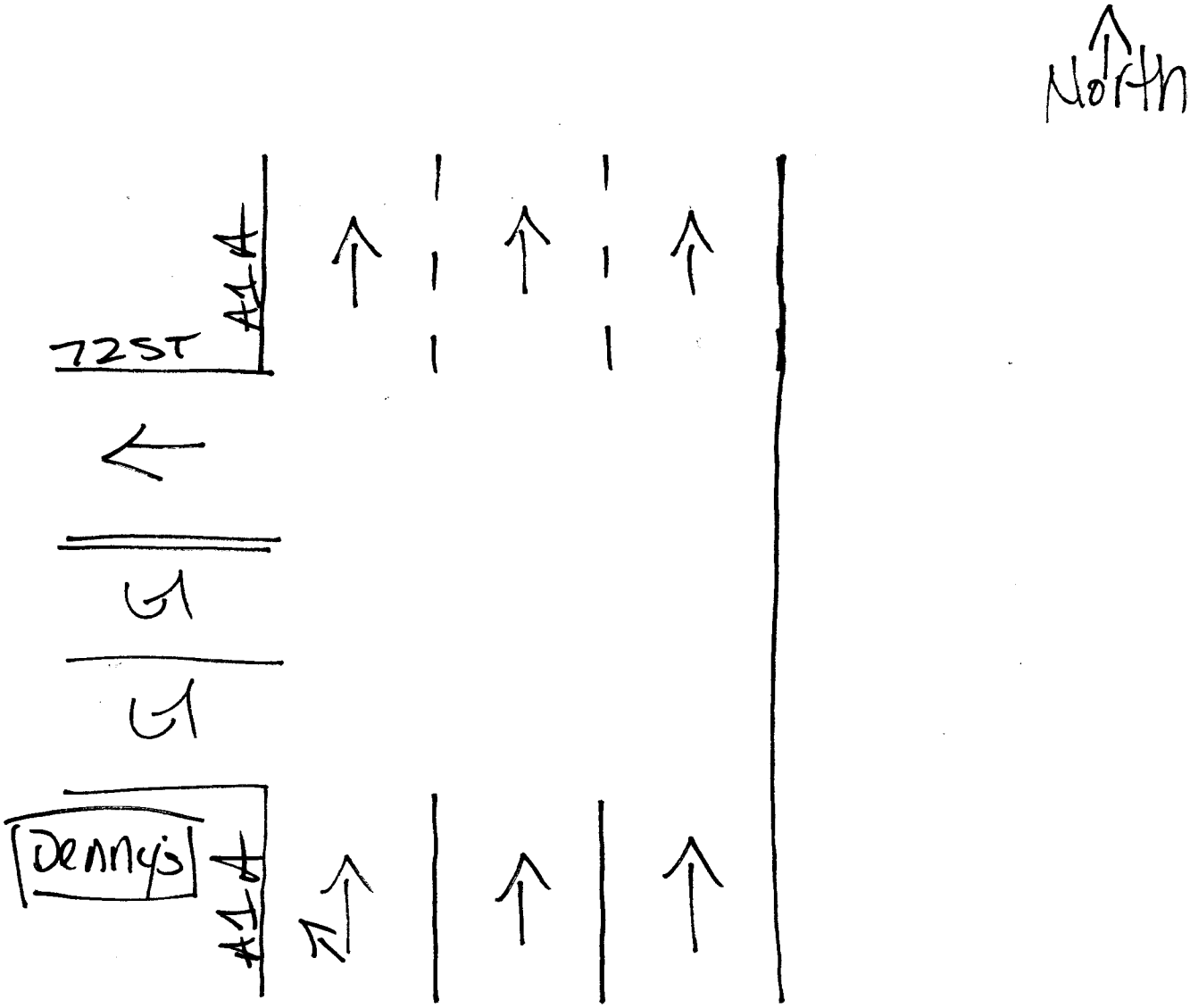
TRAFFIC SURVEY SPECIALISTS, INC.
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

72ND STREET & A1A
MIAMI BEACH, FLORIDA
COUNTED BY: ADAM JOHNSON
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72ST_A1A
Page : 1

PEDESTRIANS & BIKES

	A1A From North				----- From East				A1A From South				72ND STREET From West				
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 09/02/16																	
16:30	0	0	0	4	0	0	0	0	0	2	0	24	0	0	0	8	38
16:45	0	0	0	2	0	0	0	0	0	0	0	34	0	0	0	15	51
17:00	0	0	0	5	0	0	0	0	0	0	0	16	0	0	0	6	27
17:15	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	12	20
Hr Total	0	0	0	11	0	0	0	0	0	2	0	82	0	0	0	41	136
17:30	0	0	0	4	0	0	0	0	0	0	0	17	0	0	0	28	49
17:45	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	44	69
18:00	0	0	0	2	0	0	0	0	0	0	0	18	0	0	0	28	48
18:15	0	0	0	1	0	0	0	0	0	0	0	16	0	0	0	24	41
Hr Total	0	0	0	7	0	0	0	0	0	0	0	76	0	0	0	124	207
TOTAL	0	0	0	18	0	0	0	0	0	2	0	158	0	0	0	165	343



Miami Bch, Florida
September 02, 2016
drawn by: Luis Palomino
Signalized

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

71ST STREET & HARDING AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: MICHAEL MALONE
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STHARD
Page : 1

ALL VEHICLES

	HARDING AVENUE From North				71ST STREET From East				HARDING AVENUE From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
16:30	0	4	6	1	0	6	31	1	0	25	75	10	0	17	57	9	242
16:45	0	5	4	4	0	6	11	6	0	32	66	11	0	19	58	10	232
17:00	0	3	3	4	0	1	27	4	0	37	74	4	0	26	54	9	246
17:15	0	4	8	2	0	7	39	3	0	36	76	7	0	19	68	11	280
Hr Total	0	16	21	11	0	20	108	14	0	130	291	32	0	81	237	39	1000
17:30	0	2	4	2	0	2	39	4	0	48	67	13	0	16	59	10	266
17:45	0	0	3	6	0	4	46	2	0	39	84	8	0	25	61	10	288
18:00	0	4	5	6	0	6	55	1	0	34	74	16	0	19	64	8	292
18:15	0	0	4	1	0	8	52	4	0	26	63	12	0	11	62	11	254
Hr Total	0	6	16	15	0	20	192	11	0	147	288	49	0	71	246	39	1100
TOTAL	0	22	37	26	0	40	300	25	0	277	579	81	0	152	483	78	2100

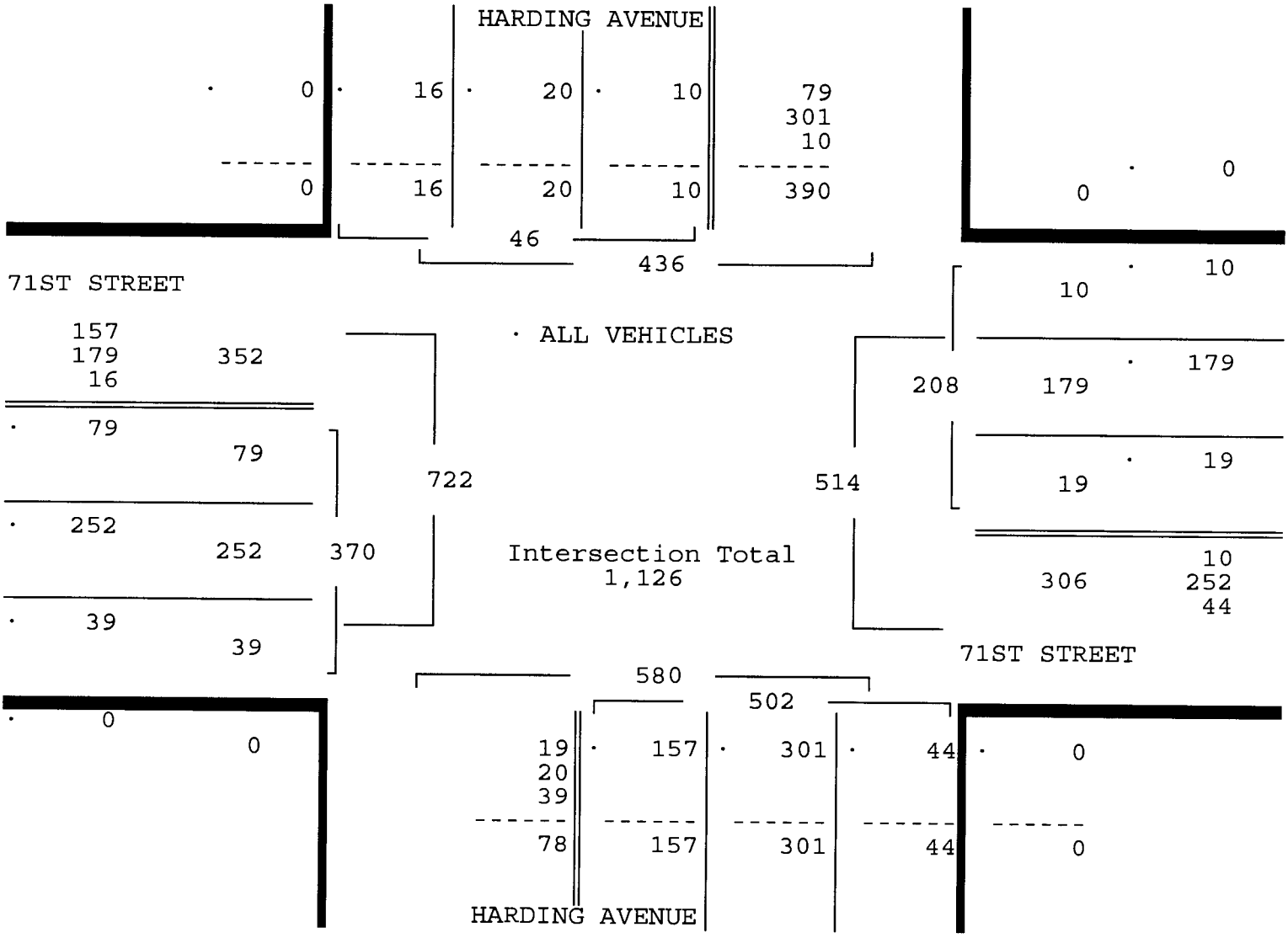
71ST STREET & HARDING AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: MICHAEL MALONE
SIGNALIZED

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

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STHARD
Page : 2

ALL VEHICLES

	HARDING AVENUE From North				71ST STREET From East				HARDING AVENUE From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 18:30 on 09/02/16																	
Peak start 17:15					17:15				17:15				17:15				
Volume	0	10	20	16	0	19	179	10	0	157	301	44	0	79	252	39	
Percent	0%	22%	43%	35%	0%	9%	86%	5%	0%	31%	60%	9%	0%	21%	68%	11%	
Pk total	46				208				502				370				
Highest	18:00				18:00				17:45				17:15				
Volume	0	4	5	6	0	6	55	1	0	39	84	8	0	19	68	11	
Hi total	15				62				131				98				
PHF	.77				.84				.96				.94				



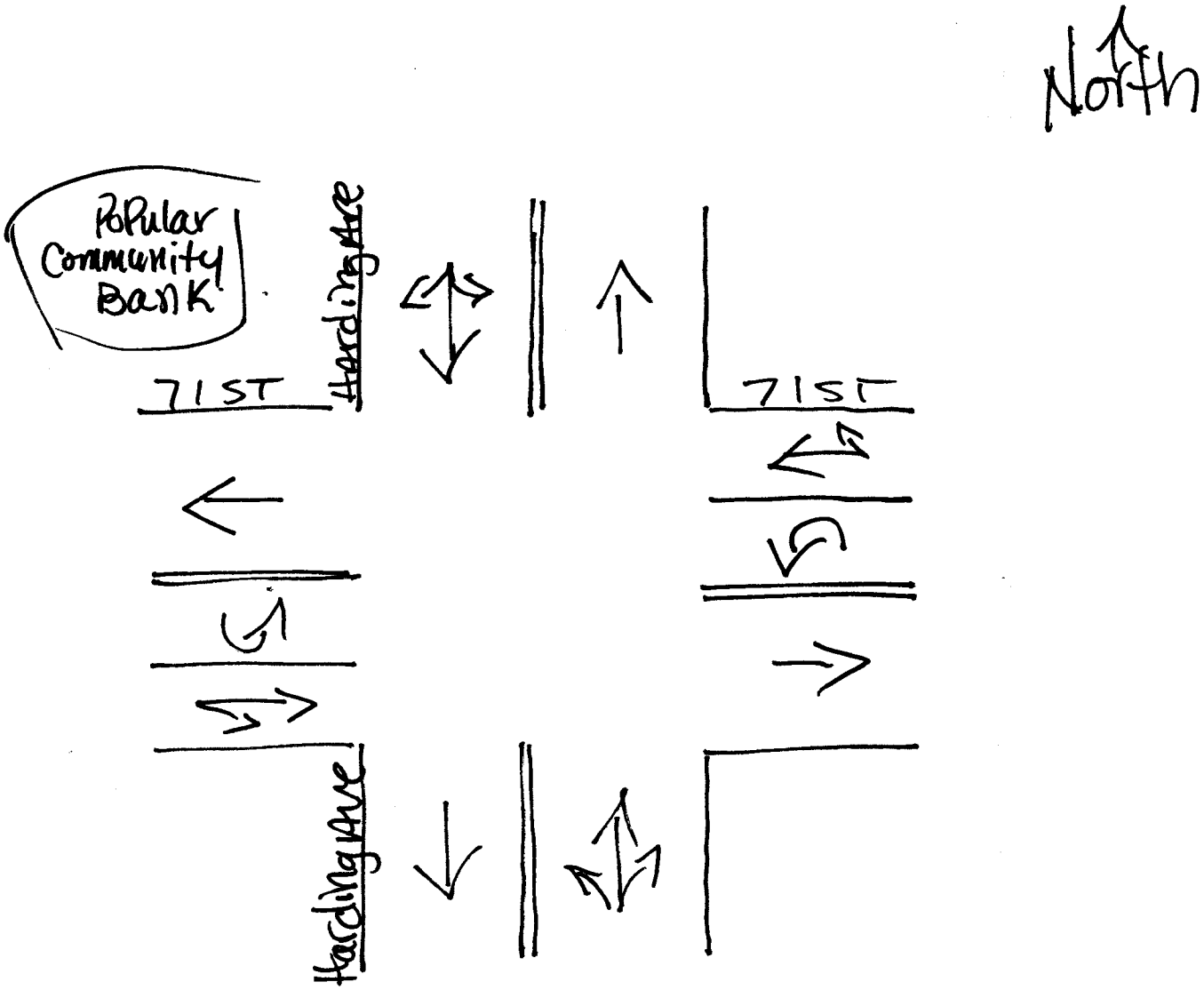
TRAFFIC SURVEY SPECIALISTS, INC.
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

71ST STREET & HARDING AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: MICHAEL MALONE
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STHARD
Page : 1

PEDESTRIANS & BIKES

	HARDING AVENUE From North				71ST STREET From East				HARDING AVENUE From South				71ST STREET From West				
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 09/02/16																	
16:30	0	10	0	5	0	4	0	2	0	6	0	2	0	4	0	1	34
16:45	0	12	0	0	0	6	0	0	0	18	0	0	0	10	0	0	46
17:00	0	10	0	0	0	7	0	0	0	10	0	0	0	2	0	0	29
17:15	0	5	0	0	0	9	0	0	0	16	0	0	0	7	0	0	37
Hr Total	0	37	0	5	0	26	0	2	0	50	0	2	0	23	0	1	146
17:30	0	7	0	0	0	7	0	0	0	9	0	0	0	6	0	0	29
17:45	0	17	0	1	0	3	0	2	0	9	0	7	0	2	0	3	44
18:00	0	0	0	5	0	2	0	11	0	2	0	21	0	0	0	8	49
18:15	0	18	0	0	0	3	0	3	0	20	0	2	0	3	0	0	49
Hr Total	0	42	0	6	0	15	0	16	0	40	0	30	0	11	0	11	171
TOTAL	0	79	0	11	0	41	0	18	0	90	0	32	0	34	0	12	317



Miami Bch, Florida
September 02, 2016
drawn by: Luis Palomino
Signalized

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

72ND STREET & HARDING AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: AMBER PALOMINO
NOT SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72STHARD
Page : 1

ALL VEHICLES

	DRIVEWAY From North				72ND STREET From East				HARDING AVENUE From South				72ND STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
16:30	0	1	2	1	0	5	53	7	1	28	5	56	0	5	26	6	196
16:45	0	3	5	6	0	2	41	5	0	31	8	44	0	8	31	7	191
17:00	0	2	0	5	0	3	36	6	0	38	10	48	0	9	25	7	189
17:15	0	0	1	4	0	2	33	6	0	42	9	47	0	7	29	18	198
Hr Total	0	6	8	16	0	12	163	24	1	139	32	195	0	29	111	38	774
17:30	0	4	2	2	0	1	29	4	1	40	8	38	0	4	31	5	169
17:45	0	3	3	6	0	0	36	4	0	44	6	48	0	9	26	4	189
18:00	0	0	5	10	0	3	22	5	0	36	7	55	0	5	27	8	183
18:15	0	2	3	7	1	3	17	7	0	27	6	47	0	4	28	4	156
Hr Total	0	9	13	25	1	7	104	20	1	147	27	188	0	22	112	21	697
TOTAL	0	15	21	41	1	19	267	44	2	286	59	383	0	51	223	59	1471

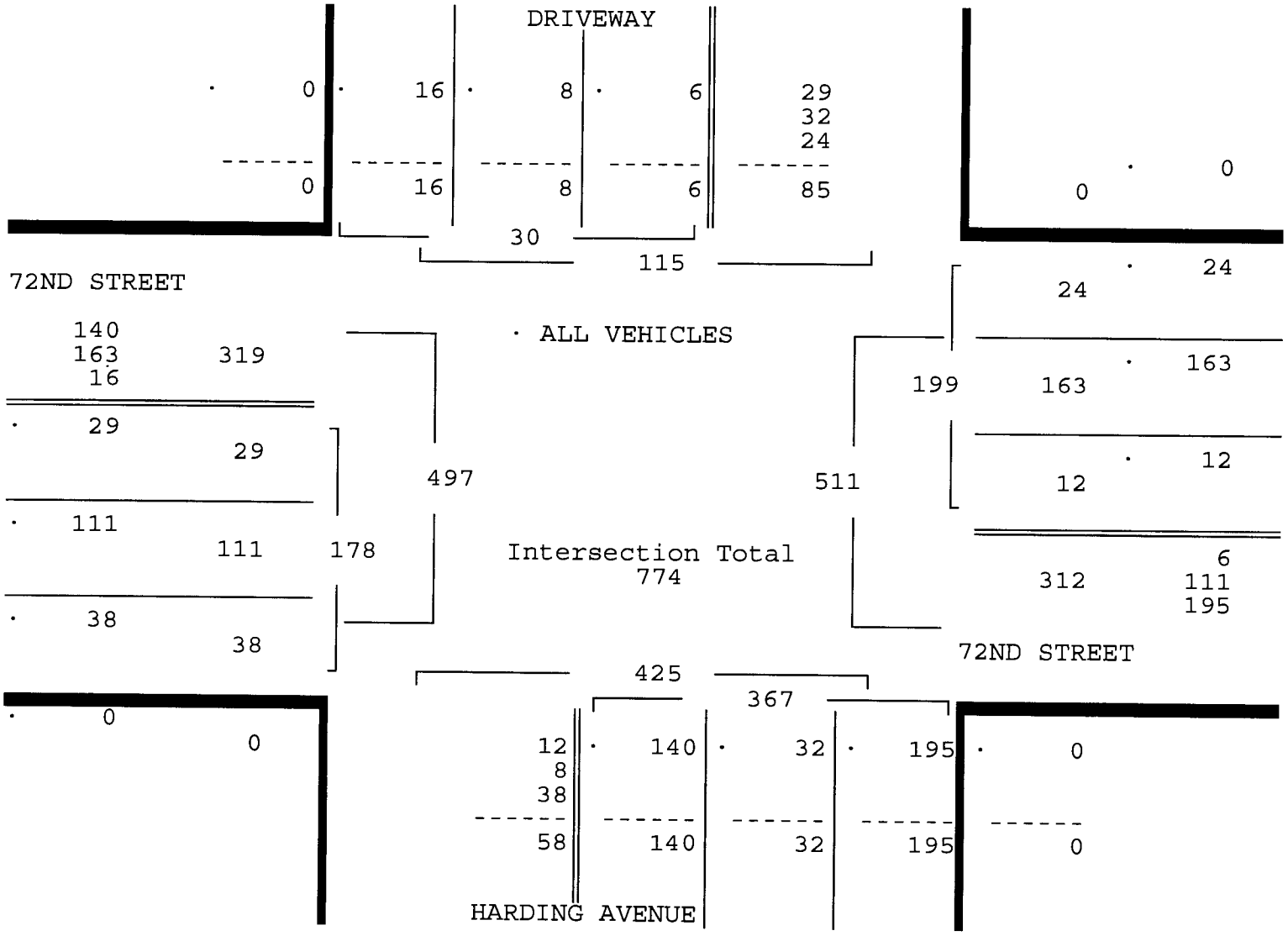
72ND STREET & HARDING AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: AMBER PALOMINO
NOT SIGNALIZED

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

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72STHARD
Page : 2

ALL VEHICLES

	DRIVEWAY From North				72ND STREET From East				HARDING AVENUE From South				72ND STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 18:30 on 09/02/16																	
Peak start 16:30					16:30				16:30				16:30				
Volume	0	6	8	16	0	12	163	24	1	139	32	195	0	29	111	38	
Percent	0%	20%	27%	53%	0%	6%	82%	12%	0%	38%	9%	53%	0%	16%	62%	21%	
Pk total	30				199				367				178				
Highest	16:45				16:30				17:15				17:15				
Volume	0	3	5	6	0	5	53	7	0	42	9	47	0	7	29	18	
Hi total	14				65				98				54				
PHF	.54				.77				.94				.82				



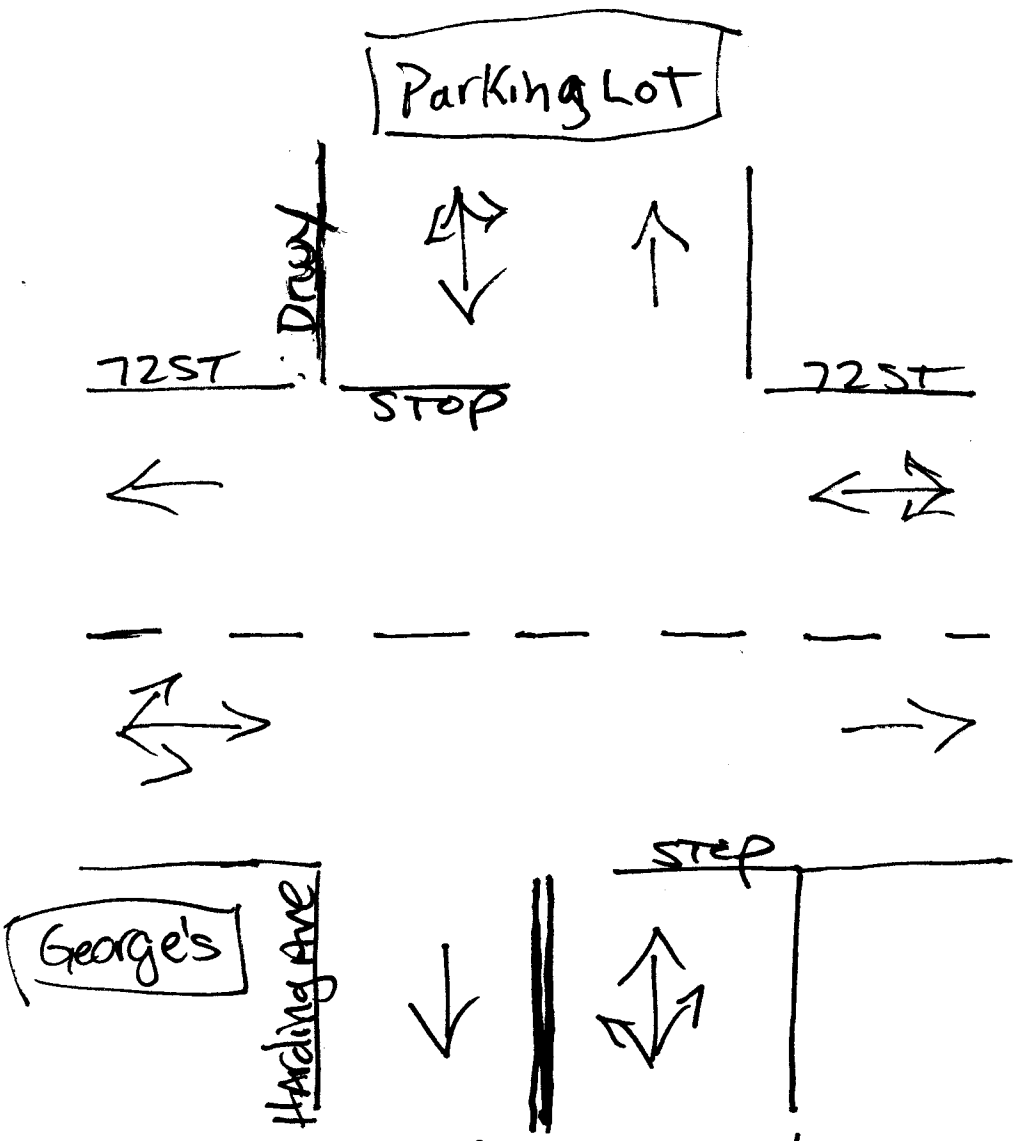
TRAFFIC SURVEY SPECIALISTS, INC.
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

72ND STREET & HARDING AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: AMBER PALOMINO
NOT SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72STHARD
Page : 1

PEDESTRIANS & BIKES

	DRIVEWAY From North				72ND STREET From East				HARDING AVENUE From South				72ND STREET From West				
Date 09/02/16	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
16:30	0	1	0	4	0	1	0	1	0	1	0	10	0	0	0	2	20
16:45	0	0	0	6	0	0	0	3	0	0	0	5	0	1	0	4	19
17:00	0	0	0	2	0	0	0	2	0	0	0	6	0	0	0	2	12
17:15	0	0	0	2	0	0	0	1	0	2	0	12	0	0	0	1	18
Hr Total	0	1	0	14	0	1	0	7	0	3	0	33	0	1	0	9	69
17:30	0	0	0	6	0	0	0	5	0	1	0	5	0	0	0	3	20
17:45	0	0	0	6	0	0	0	1	0	0	0	5	0	0	0	7	19
18:00	0	0	0	10	0	0	0	6	0	0	0	5	0	1	0	3	25
18:15	0	0	0	1	0	0	0	1	0	0	0	6	0	0	0	2	10
Hr Total	0	0	0	23	0	0	0	13	0	1	0	21	0	1	0	15	74
TOTAL	0	1	0	37	0	1	0	20	0	4	0	54	0	2	0	24	143



Miami Bch, Florida
September 02, 2016
drawn by: Luis Palomino
not signalized

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

71ST STREET & ABBOTT AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: RICHARD MENDEZ
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STABBO
Page : 1

ALL VEHICLES

	ABBOTT AVENUE From North				71ST STREET From East				ABBOTT AVENUE From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
16:30	0	10	349	103	0	10	50	0	0	0	0	0	0	0	65	21	608
16:45	0	10	356	82	0	2	61	0	0	0	0	0	0	0	79	13	603
17:00	0	8	305	96	0	5	67	0	0	0	0	0	0	0	79	28	588
17:15	0	12	329	84	0	6	71	0	0	0	0	0	0	0	88	9	599
Hr Total	0	40	1339	365	0	23	249	0	0	0	0	0	0	0	311	71	2398
17:30	0	16	303	87	0	13	79	0	0	0	0	0	0	0	69	10	577
17:45	0	16	330	74	0	10	78	0	0	0	0	0	0	0	82	14	604
18:00	0	9	322	80	0	15	81	0	0	0	0	0	0	0	88	16	611
18:15	0	17	338	100	0	10	84	0	0	0	0	0	0	0	65	14	628
Hr Total	0	58	1293	341	0	48	322	0	0	0	0	0	0	0	304	54	2420
TOTAL	0	98	2632	706	0	71	571	0	0	0	0	0	0	0	615	125	4818

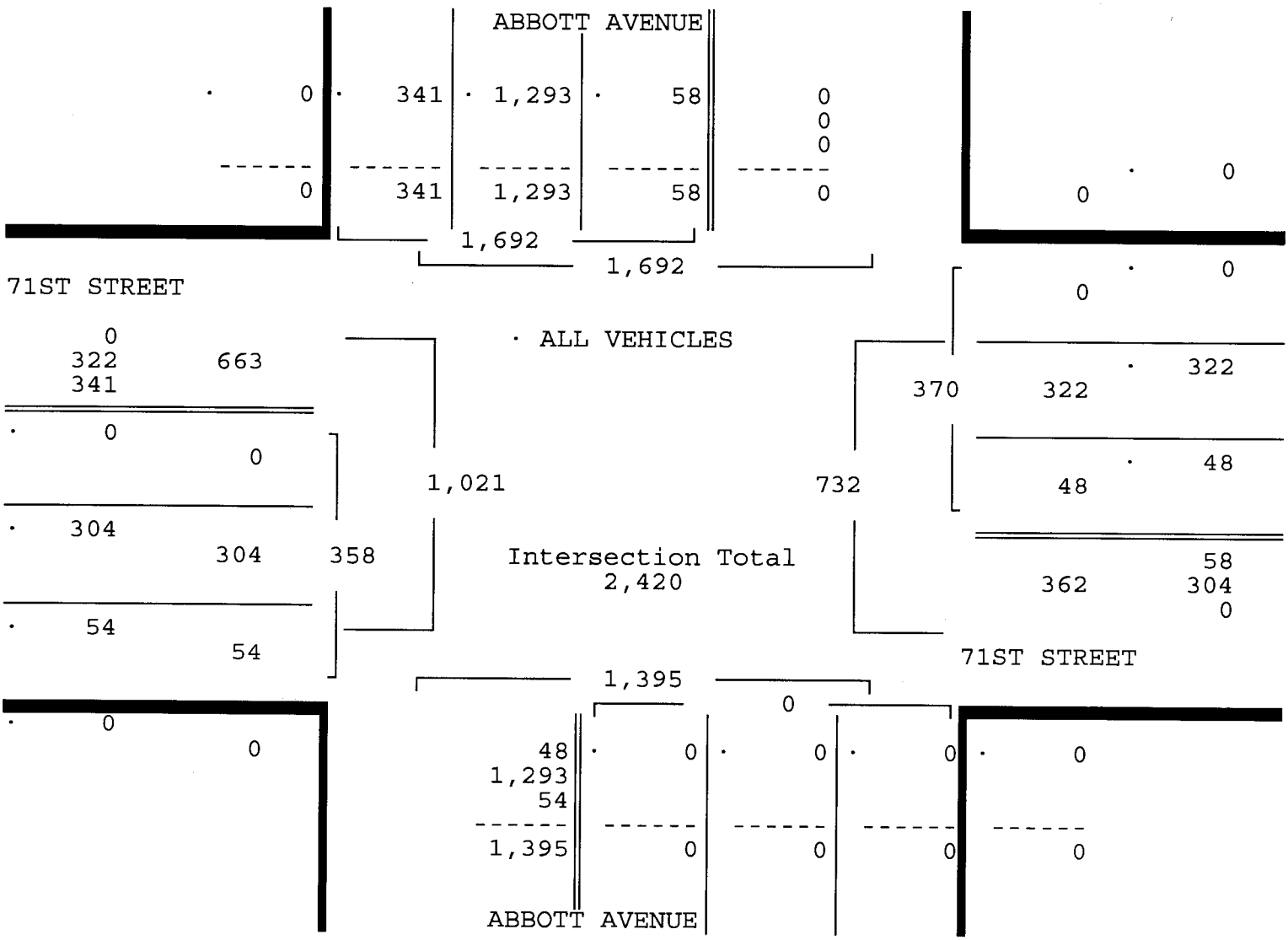
71ST STREET & ABBOTT AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: RICHARD MENDEZ
SIGNALIZED

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

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STABBO
Page : 2

ALL VEHICLES

	ABBOTT AVENUE From North				71ST STREET From East				ABBOTT AVENUE From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 18:30 on 09/02/16																	
Peak start	17:30				17:30				17:30				17:30				
Volume	0	58	1293	341	0	48	322	0	0	0	0	0	0	0	304	54	
Percent	0%	3%	76%	20%	0%	13%	87%	0%	0%	0%	0%	0%	0%	0%	85%	15%	
Pk total	1692				370				0				358				
Highest	18:15				18:00				16:30				18:00				
Volume	0	17	338	100	0	15	81	0	0	0	0	0	0	0	88	16	
Hi total	455				96				0				104				
PHF	.93				.96				.0				.86				



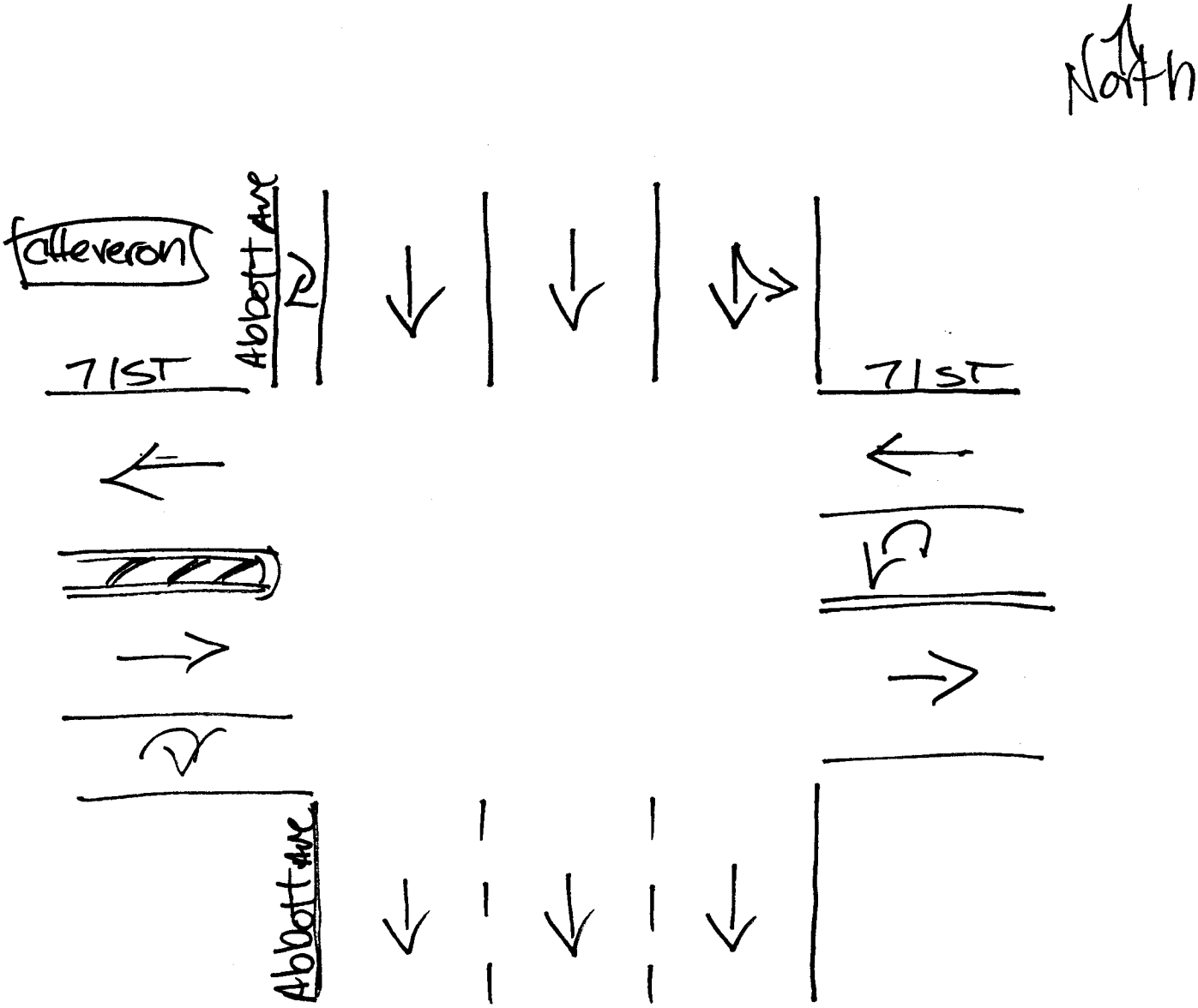
71ST STREET & ABBOTT AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: RICHARD MENDEZ
SIGNALIZED

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

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STABBO
Page : 1

PEDESTRIANS & BIKES

	ABBOTT AVENUE From North				71ST STREET From East				ABBOTT AVENUE From South				71ST STREET From West				
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 09/02/16																	
16:30	0	1	0	10	0	0	0	2	0	1	0	7	0	0	0	7	28
16:45	0	2	0	6	0	1	0	2	0	0	0	15	0	0	0	4	30
17:00	0	3	0	15	0	2	0	5	0	3	0	14	0	0	0	2	44
17:15	0	1	0	8	0	1	0	0	0	1	0	12	0	2	0	3	28
Hr Total	0	7	0	39	0	4	0	9	0	5	0	48	0	2	0	16	130
17:30	0	1	0	13	0	0	0	0	0	2	0	15	0	0	0	4	35
17:45	0	3	0	12	0	1	0	10	0	2	0	17	0	0	0	8	53
18:00	0	0	0	8	0	0	0	5	0	3	0	15	0	0	0	6	37
18:15	0	1	0	15	0	1	0	8	0	2	0	15	0	0	0	12	54
Hr Total	0	5	0	48	0	2	0	23	0	9	0	62	0	0	0	30	179
TOTAL	0	12	0	87	0	6	0	32	0	14	0	110	0	2	0	46	309



Miami Bch, Florida
September 02, 2016
drawn by: Luis Palomino
Signalized

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

72ND STREET & ABBOTT AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: MARISA CRUZ
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72STABBO
Page : 1

ALL VEHICLES

	ABBOTT AVENUE From North				72ND STREET From East				ABBOTT AVENUE From South				72ND STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
16:30	0	9	443	29	0	20	67	0	0	0	0	0	0	0	28	12	608
16:45	0	11	402	46	0	18	56	0	0	0	0	0	0	0	35	8	576
17:00	0	13	379	46	0	17	70	0	0	0	0	0	0	0	29	10	564
17:15	0	11	403	42	0	15	67	0	0	0	0	0	0	0	39	5	582
Hr Total	0	44	1627	163	0	70	260	0	0	0	0	0	0	0	131	35	2330
17:30	0	7	368	43	0	19	57	0	0	0	0	0	0	0	33	8	535
17:45	0	9	394	32	0	20	63	0	0	0	0	0	0	0	34	10	562
18:00	0	14	392	31	0	17	57	0	0	0	0	0	0	0	29	9	549
18:15	0	4	422	19	0	11	37	0	0	0	0	0	0	0	28	12	533
Hr Total	0	34	1576	125	0	67	214	0	0	0	0	0	0	0	124	39	2179
TOTAL	0	78	3203	288	0	137	474	0	0	0	0	0	0	0	255	74	4509

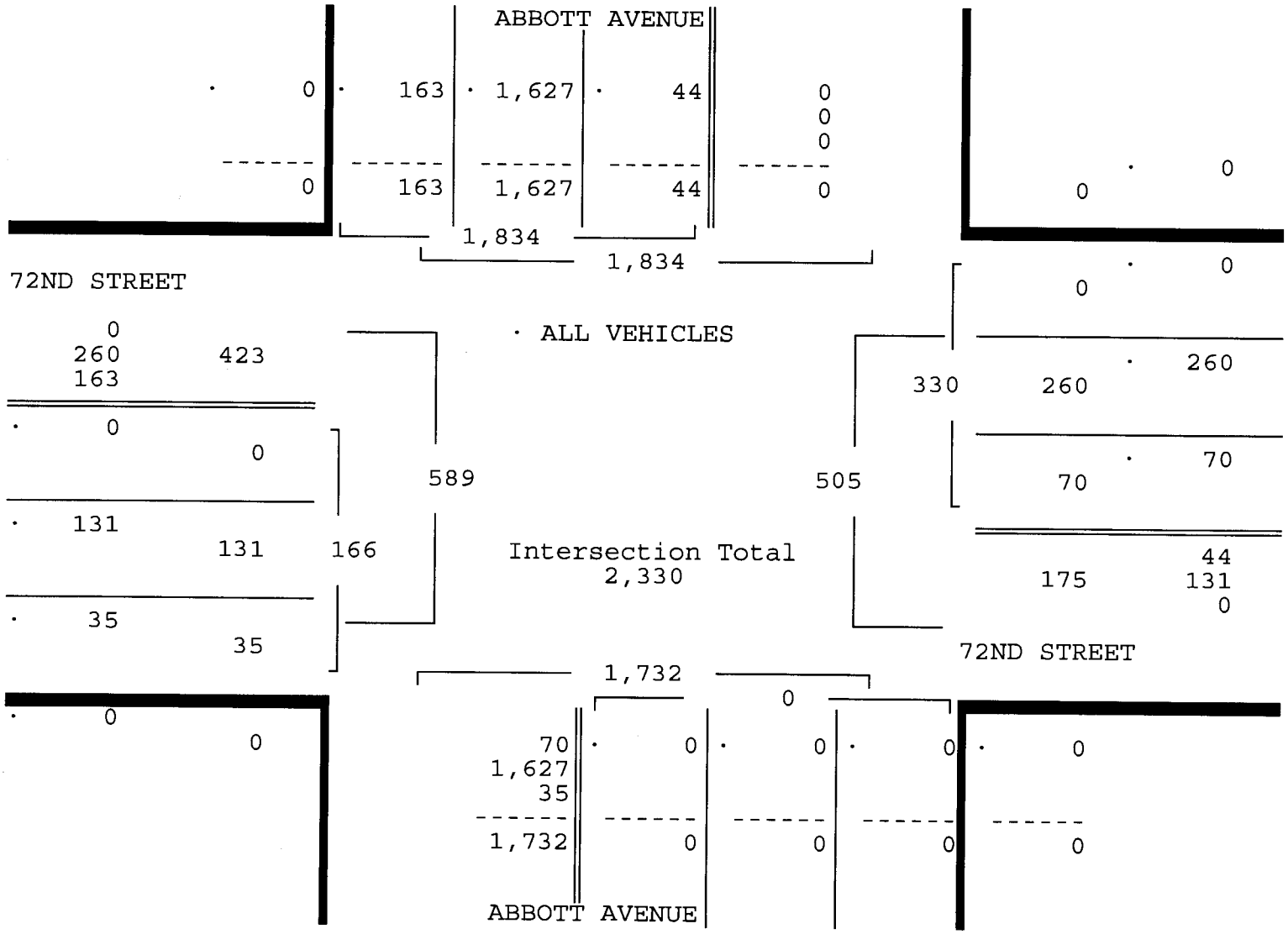
72ND STREET & ABBOTT AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: MARISA CRUZ
SIGNALIZED

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

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72STABBO
Page : 2

ALL VEHICLES

	ABBOTT AVENUE From North				72ND STREET From East				ABBOTT AVENUE From South				72ND STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 18:30 on 09/02/16																	
Peak start 16:30					16:30				16:30				16:30				
Volume	0	44	1627	163	0	70	260	0	0	0	0	0	0	0	131	35	
Percent	0%	2%	89%	9%	0%	21%	79%	0%	0%	0%	0%	0%	0%	0%	79%	21%	
Pk total	1834				330				0				166				
Highest	16:30				16:30				16:30				17:15				
Volume	0	9	443	29	0	20	67	0	0	0	0	0	0	0	39	5	
Hi total	481				87				0				44				
PHF	.95				.95				.0				.94				



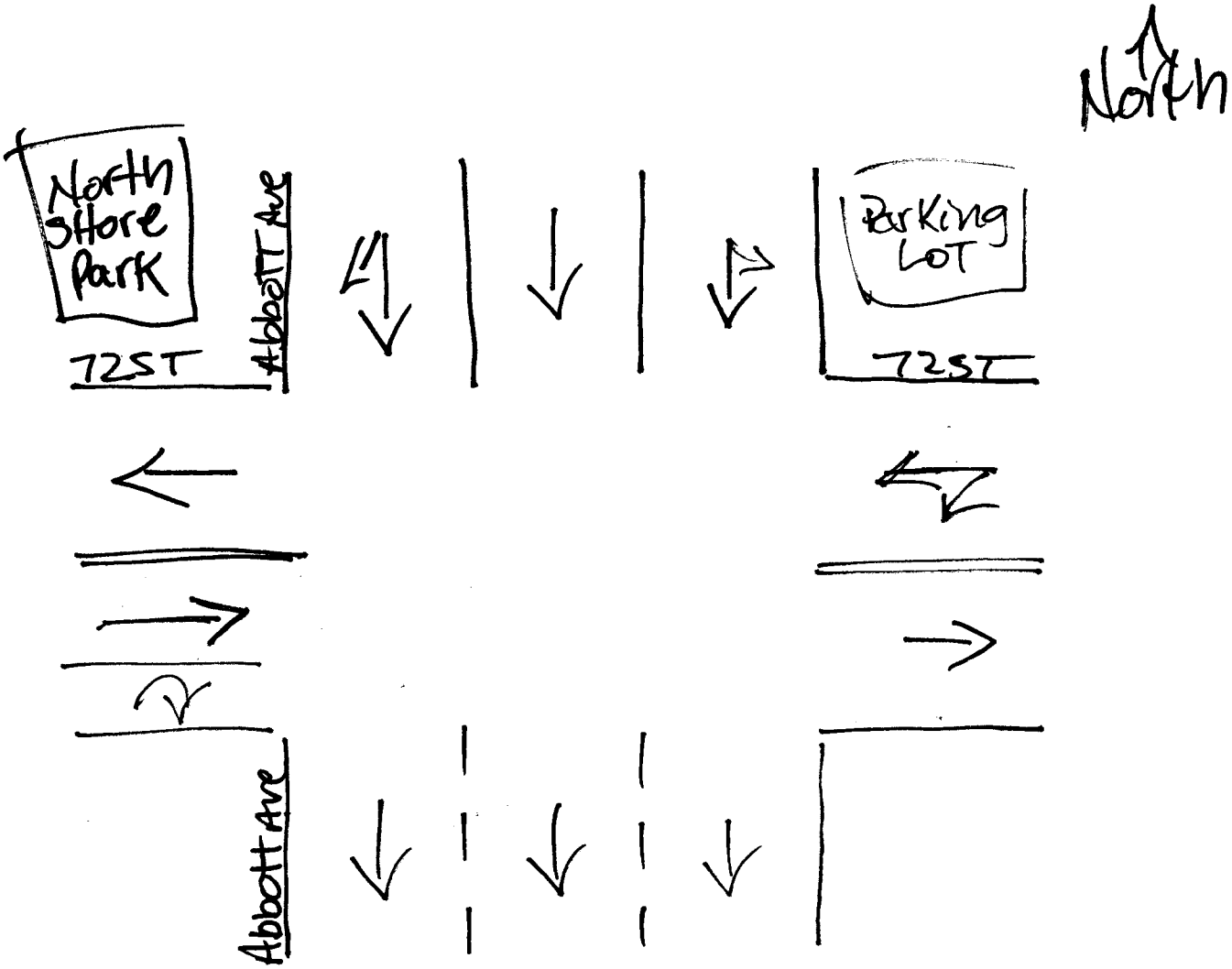
TRAFFIC SURVEY SPECIALISTS, INC.
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

72ND STREET & ABBOTT AVENUE
MIAMI BEACH, FLORIDA
COUNTED BY: MARISA CRUZ
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 72STABBO
Page : 1

PEDESTRIANS & BIKES

	ABBOTT AVENUE From North				72ND STREET From East				ABBOTT AVENUE From South				72ND STREET From West				
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 09/02/16																	
16:30	0	2	0	15	0	0	0	4	0	2	0	6	0	2	0	12	43
16:45	0	0	0	14	0	0	0	5	0	1	0	5	0	0	0	12	37
17:00	0	0	0	10	0	0	0	2	0	3	0	12	0	0	0	5	32
17:15	0	0	0	15	0	2	0	8	0	2	0	6	0	3	0	3	39
Hr Total	0	2	0	54	0	2	0	19	0	8	0	29	0	5	0	32	151
17:30	0	1	0	11	0	0	0	1	0	0	0	6	0	3	0	11	33
17:45	0	1	0	4	0	0	0	0	0	0	0	8	0	1	0	8	22
18:00	0	0	0	17	0	0	0	2	0	1	0	2	0	0	0	13	35
18:15	0	0	0	11	0	1	0	5	0	0	0	5	0	1	0	8	31
Hr Total	0	2	0	43	0	1	0	8	0	1	0	21	0	5	0	40	121
TOTAL	0	4	0	97	0	3	0	27	0	9	0	50	0	10	0	72	272



Miami Bch, Florida
September 02, 2016
drawn by: Luis Palomino
Signalized

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

71ST STREET & INDIAN CREEK DRIVE
MIAMI BEACH, FLORIDA
COUNTED BY: SEBASTIAN SALVO
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STINDI
Page : 1

ALL VEHICLES

	DICKENS AVENUE From North				71ST STREET From East				INDIAN CREEK DRIVE From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
16:30	0	1	29	110	0	0	204	8	0	156	33	0	0	74	120	101	836
16:45	0	0	39	103	0	0	208	4	0	177	33	2	0	62	137	93	858
17:00	0	0	27	110	0	1	194	7	0	217	38	2	0	64	147	104	911
17:15	0	2	25	103	0	0	231	5	0	174	25	2	0	69	159	96	891
Hr Total	0	3	120	426	0	1	837	24	0	724	129	6	0	269	563	394	3496
17:30	0	3	33	88	0	1	199	7	0	257	58	0	0	55	118	97	916
17:45	0	2	30	111	0	0	188	4	0	204	63	1	1	63	169	103	939
18:00	0	2	15	95	0	0	207	6	0	221	86	1	0	61	128	92	914
18:15	0	0	41	114	0	2	185	8	0	154	62	3	0	62	91	84	806
Hr Total	0	7	119	408	0	3	779	25	0	836	269	5	1	241	506	376	3575
TOTAL	0	10	239	834	0	4	1616	49	0	1560	398	11	1	510	1069	770	7071

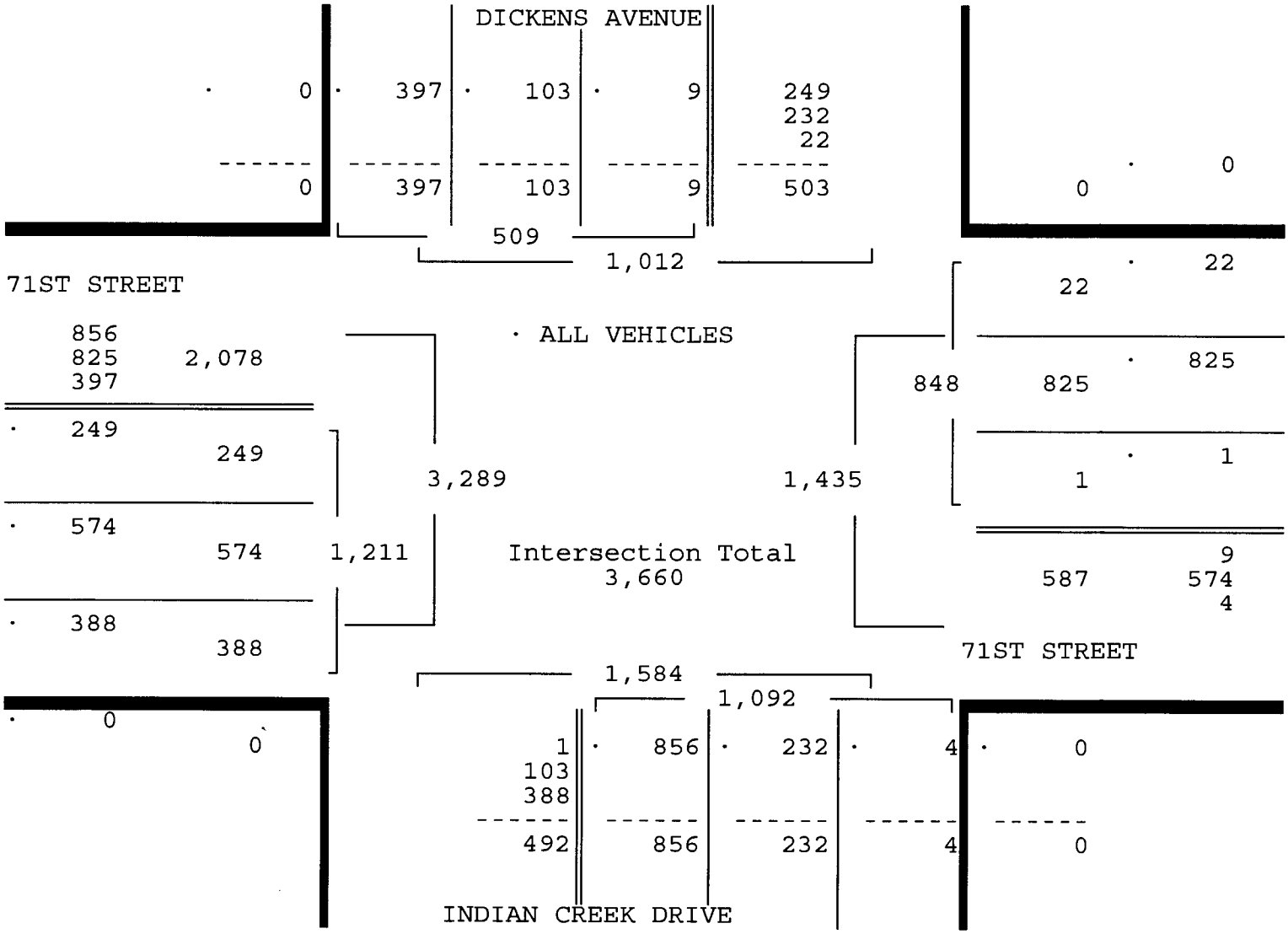
TRAFFIC SURVEY SPECIALISTS, INC.
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

71ST STREET & INDIAN CREEK DRIVE
MIAMI BEACH, FLORIDA
COUNTED BY: SEBASTIAN SALVO
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STINDI
Page : 2

ALL VEHICLES

	DICKENS AVENUE From North				71ST STREET From East				INDIAN CREEK DRIVE From South				71ST STREET From West				
	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 09/02/16																	
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 18:30 on 09/02/16																	
Peak start 17:15					17:15				17:15				17:15				
Volume	0	9	103	397	0	1	825	22	0	856	232	4	1	248	574	388	
Percent	0%	2%	20%	78%	0%	0%	97%	3%	0%	78%	21%	0%	0%	20%	47%	32%	
Pk total	509				848				1092				1211				
Highest	17:45				17:15				17:30				17:45				
Volume	0	2	30	111	0	0	231	5	0	257	58	0	1	63	169	103	
Hi total	143				236				315				336				
PHF	.89				.90				.87				.90				



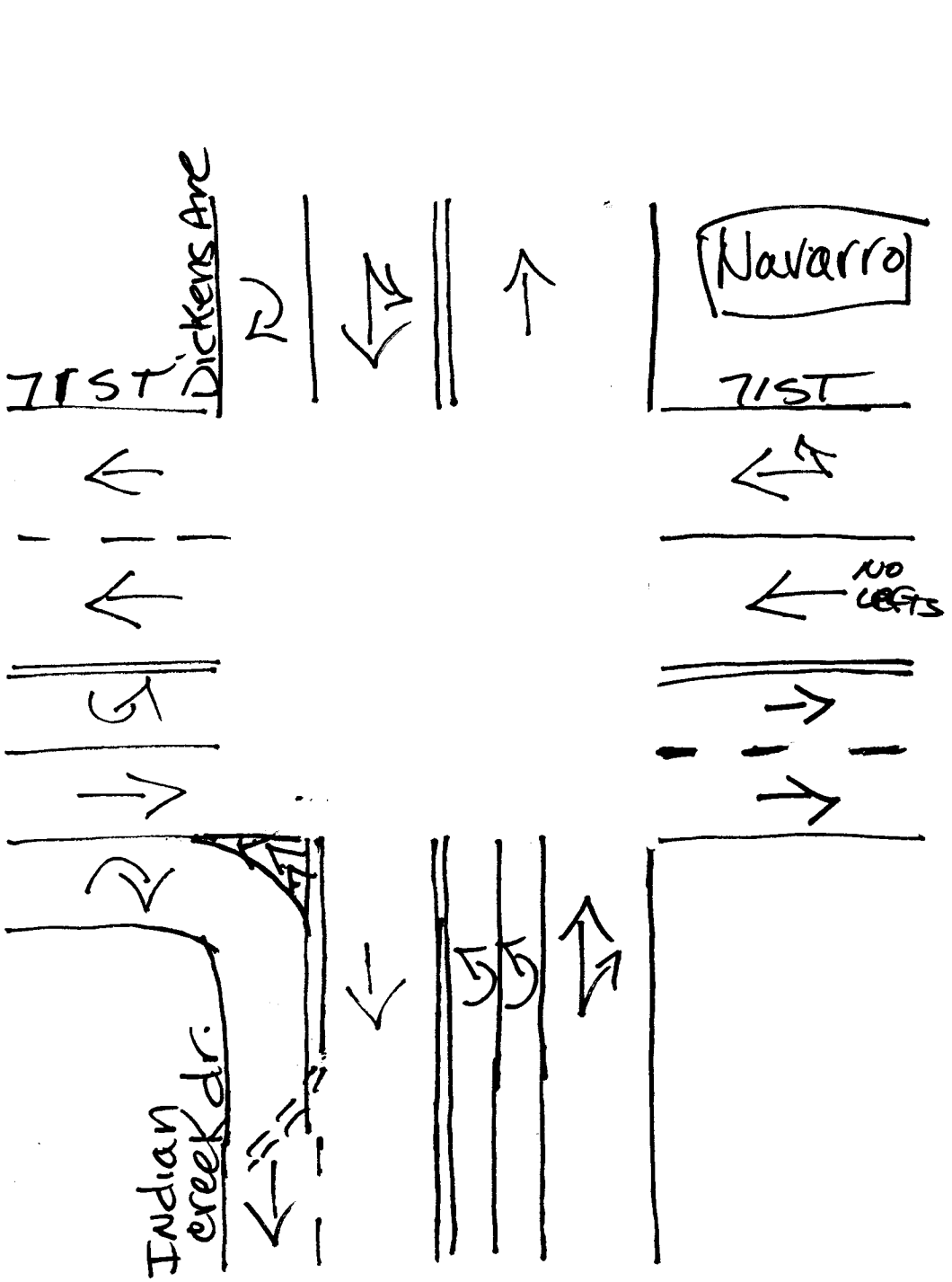
TRAFFIC SURVEY SPECIALISTS, INC.
85 SE 4TH AVENUE, UNIT 109
DELRAY BEACH, FLORIDA
PHONE (561)272-3255

71ST STREET & INDIAN CREEK DRIVE
MIAMI BEACH, FLORIDA
COUNTED BY: SEBASTIAN SALVO
SIGNALIZED

Site Code : 00160184
Start Date: 09/02/16
File I.D. : 71STINDI
Page : 1

PEDESTRIANS & BIKES

	DICKENS AVENUE From North				71ST STREET From East				INDIAN CREEK DRIVE From South				71ST STREET From West				
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 09/02/16																	
16:30	0	5	0	14	0	0	0	15	0	1	0	9	0	0	0	1	45
16:45	0	6	0	17	0	1	0	14	0	3	0	11	0	0	0	1	53
17:00	0	7	0	12	0	1	0	6	0	3	0	9	0	1	0	1	40
17:15	0	3	0	16	0	2	0	8	0	1	0	9	0	0	0	1	40
Hr Total	0	21	0	59	0	4	0	43	0	8	0	38	0	1	0	4	178
17:30	0	6	0	9	0	0	0	25	0	1	0	11	0	0	0	0	52
17:45	0	8	0	15	0	4	0	17	0	3	0	11	0	1	0	0	59
18:00	0	2	0	12	0	1	0	2	0	1	0	4	0	0	0	0	22
18:15	0	0	0	8	0	0	0	6	0	2	0	13	0	0	0	0	29
Hr Total	0	16	0	44	0	5	0	50	0	7	0	39	0	1	0	0	162
TOTAL	0	37	0	103	0	9	0	93	0	15	0	77	0	2	0	4	340



Miami Bch, Florida
September 02, 2016
drawn by: Luis Palomino
signalized

Signal Timings

TOD Schedule Report

for 2637: Abbott Av&71 St

Print Date: 1/5/2018

Print Time: 2:01 AM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2637	Abbott Av&71 St	DOW-6		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
-	SBT	-	WBT	-	-	WBL	EBT
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 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
2 SBT	7 - 7 - 7	18 - 18 - 18	7 - 7 - 7	1 - 1 - 1	35 - 35 - 35	0 - 48 - 48	4	2.3
3 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
4 WBT	7 - 7 - 7	18 - 18 - 18	7 - 7 - 7	1 - 1 - 1	17 - 17 - 17	65 - 48 - 48	4	2.3
5 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
6 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
7 WBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 0	2 - 2 - 0	5 - 7 - 0	12 - 12 - 0	4	2
8 EBT	7 - 7 - 7	18 - 18 - 18	7 - 7 - 7	1 - 1 - 1	17 - 17 - 17	65 - 48 - 48	4	2.3

Last In Service Date: unknown

Permitted Phases

	12345678
Default	-2-4--78
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

TOD Schedule Report

for 2637: Abbott Av&71 St

Print Date: 1/5/2018

Print Time: 2:01 AM

Current TOD Schedule	Plan	Cycle	Green Time 1 -	2 SBT	3 -	4 WBT	5 -	6 -	7 WBL	8 EBT	Ring Offset	Offset
	1	90	0	47	0	31	0	0	0	31	0	30
	2	100	0	41	0	47	0	0	0	47	0	27
	3	90	0	42	0	36	0	0	0	36	0	3
	4	80	0	37	0	31	0	0	0	31	0	65
	5	120	0	72	0	36	0	0	0	36	0	109
	6	70	0	30	0	28	0	0	0	28	0	20
	7	70	0	30	0	28	0	0	0	28	0	20
	8	70	0	32	0	26	0	0	0	26	0	28
	9	90	0	39	0	39	0	0	6	27	0	17
	10	70	0	32	0	26	0	0	0	26	0	29
	11	70	0	30	0	28	0	0	0	28	0	20
	12	100	0	44	0	44	0	0	0	44	0	35
	13	70	0	30	0	28	0	0	0	28	0	28
	14	90	0	46	0	32	0	0	6	20	0	41
	20	70	0	30	0	28	0	0	0	28	0	20
	22	80	0	37	0	31	0	0	0	31	0	54
	23	80	0	37	0	31	0	0	0	31	0	54
	26	110	0	67	0	31	0	0	0	31	0	30

Local TOD Schedule

Time	Plan	DOW
0000	8	Su M T W Th F S
0600	10	Su M T W Th F
0700	1	M T W Th F
0800	10	Su S
1000	14	Su S
1630	12	Su S
1830	10	Su S
1930	10	M T W Th F
2100	13	Su M T W Th F S

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	---5----	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
1930	TOD OUTPUTS	---5----	M T W ThF

Local Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	---5----	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	--------	SuM T W ThF S
0700	TOD OUTPUTS	--------	M T W ThF
1000	TOD OUTPUTS	--------	Su S
1830	TOD OUTPUTS	---5----	Su S
1930	TOD OUTPUTS	---5----	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 HEAD DETAILS

7/4

5-SECT., 1-WAY
1 AS
650-51-511

2 4 8

3-SECT., 1-WAY
6 EXISTING
1 TO BE REMOVED

P2 P4 P6 P8

PED. SIGNAL
COUNT-DOWN
1-SECT., 1-WAY
6 AS
653-191

P4 / P6

PED. SIGNAL
COUNT-DOWN
1-SECT., 2-WAY
1 AS
653-192

INTERNALLY ILLUMINATED LED STREET NAME SIGNS

(X)

71 Street

1 EXISTING
(TO REMAIN)

(Y)

Abbott Av

2 EXISTING
(TO REMAIN)

(A) 1 EXISTING

(B) 1 EXISTING

(C) TURNING TRAFFIC MUST YIELD TO PEDESTRIANS
R10-15
24" x 30"
700-48-18
1 EA

(D) NO TURN ON RED
R10-11a
24" x 30"
700-48-18
1 EA

PROPOSED S.O.P.

PHASE 1 → PHASE 2 → PHASE 3

TF 1 → TF 2 → TF 3

(4) + (7) (P4) | (4) + (8) (P4) + (P8) | (2) (P2) + (P6)

DETECTORS FOR LOOPS			
LOOP	NO. OF LOOPS	NO. OF NEW DETS.	NO. OF EXIST. DETS.
L-7	1	1	
L-			
L-			
L-			
L-			

CONTROLLER OPERATIONS

1. MAJOR STREET IS ABBOTT AVE.
   MINOR STREET IS SR 934 / 71 ST.
2. SIGNAL OPERATING PER PHASING DIAGRAM SHOWN.
3. FLASHING OPERATION IS
   YELLOW: MOVEMENT (2)
   RED: MOVEMENT (4) + (8)

NOTES:

(1) ALIGN PROPOSED PEDESTRIAN SIGNALS WITH CENTER OF CROSSWALK.

(2) FOR PULL BOXES THAT ARE REPLACED, INSTALL NEW CONDUIT SEGMENT BETWEEN THE PROPOSED PULL BOX AND EXISTING CONDUIT. REMOVE EXISTING CONDUCTOR AND RUN NEW CONDUCTOR FROM PULL BOX TO CONTROLLER WITH NO SPLICING.

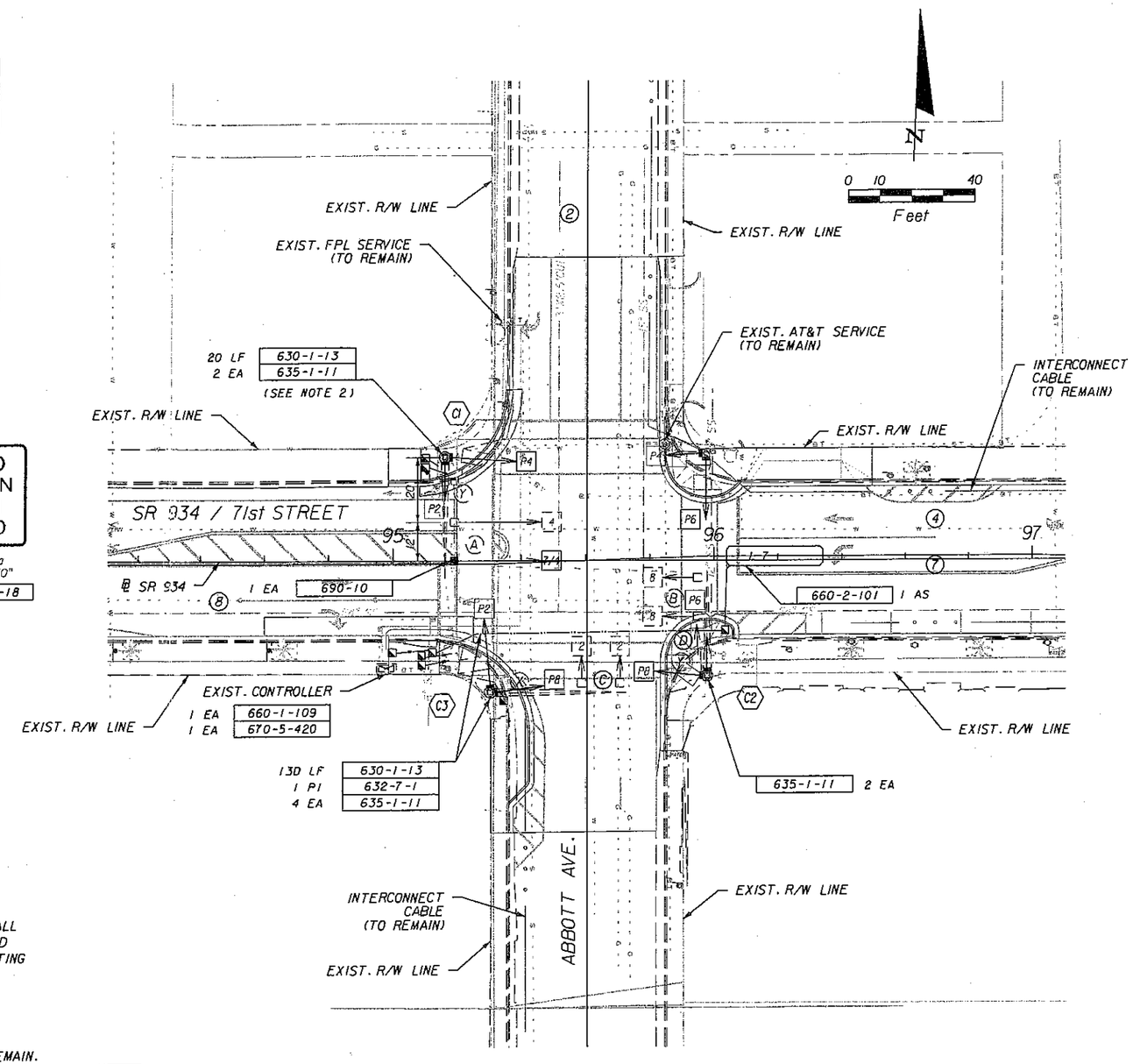
(3) ALL INTERCONNECT CABLE TO REMAIN.

(4) EXIST. OVERHEAD STREET NAME SIGNS TO REMAIN.

(5) REMOVE EXISTING PEDESTRIAN SIGNALS.

(6) UTILIZE EXIST. EMPTY CONDUIT AT PULL BOX NEAR CONTROLLER TO CONNECT THE PROPOSED LOOP.

690-20	8 EA
690-100	1 PI



SR 934 (NE 71 ST.) & ABBOTT AVE. (ID # 2637)

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Alvarez Engineers, Inc.
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7538
RAMON TESONE, PE No. 56070
10560 N.W. 27th Street, Suite 102
Miami, Florida 33172
Tel. (305) 640-1345 Fax (305) 640-1346
E-mail AlvarezeAlvarezEng.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
934	MIAMI-DADE	419825-1-52-01

SIGNALIZATION PLAN

SHEET NO. T-6

SIGNAL OPERATING PLAN

N

Timing Phases	Direction / Head No.	SB 2	WB 8	EB 7/4	EB 4	Ped Heads P6	P2	P4	P8	Movements/Display/Actuation
(2+6) SB ABBOTT AV (RECALL)	Dwell	G	R	R	R	W/F	W/F	DW	DW	P6 2 P2
	Clear to (7+4)	Y	R	R	R	DW	DW	DW	DW	
	Clear to (4+8)	Y	R	R	R	DW	DW	DW	DW	
	Dwell									
	Clear to									
(7+4) WB 71 STREET (ACTUATED)	Dwell	R	G	<G/G	R	DW	DW	DW	W/F	P4 4 7/4
	Clear to (4+8)	R	Y	<Y/G	R	DW	DW	DW	DW	
	Dwell									
	Clear to									
(4+8) E/WB 71 STREET (RECALL)	Dwell	R	G	G	G	DW	DW	W/F	W/F	P4 4 7/4 8 P8
	Clear to (2+6)	R	R	Y	Y	DW	DW	DW	DW	
	Dwell									
	Clear to									
Flashing Operation		FY	FR	FR	FR					Page 1 of 1

Miami-Dade County Public Works Department

Drawn	Date	ABBOTT AV & 71 STREET			
WILLIAM RIVERA-PAZ	10/20/2011				
Checked	Date	Placed in Service		Phasing No.	Asset Number
H. HERNANDEZ	10/20/11	Date 12/16/2011	By SGI	5	2637

Blank12

TOD Schedule Report

for 2638: Abbott Av&72 St

Print Date: 11/20/2017

Print Time: 3:14 PM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2638	Abbott Av&72 St	DOW-2		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
-	SBT	-	WBT	-	-	-	EBT
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 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
2 SBT	5 - 5 - 5	15 - 15 - 15	5 - 5 - 5	1 - 1 - 1	38 - 38 - 38	0 - 0 - 0	4	2.4
3 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
4 WBT	5 - 5 - 5	20 - 20 - 20	7 - 7 - 7	2 - 2 - 2	22 - 22 - 22	30 - 30 - 30	4	2.3
5 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
6 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
7 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
8 EBT	5 - 5 - 5	20 - 20 - 20	7 - 7 - 7	2 - 2 - 2	22 - 22 - 22	30 - 30 - 30	4	2.4

Last In Service Date: unknown

Permitted Phases

	12345678
Default	-2-4---8
External Permit 0	-2-4---8
External Permit 1	-2-4---8
External Permit 2	-2-4---8

TOD Schedule Report

for 2638: Abbott Av&72 St

Print Date: 11/20/2017

Print Time: 3:14 PM

Current TOD Schedule	Plan	Cycle	Green Time 1 -	2 SBT	3 -	4 WBT	5 -	6 -	7 -	8 EBT	Ring Offset	Offset
	1	90	0	52	0	26	0	0	0	26	0	25
	2	100	0	62	0	26	0	0	0	26	0	41
	3	90	0	52	0	26	0	0	0	26	0	11
	4	80	0	42	0	26	0	0	0	26	0	68
	5	120	0	82	0	26	0	0	0	26	0	0
	6	70	0	32	0	26	0	0	0	26	0	22
	7	70	0	32	0	26	0	0	0	26	0	22
	8	70	0	32	0	26	0	0	0	26	0	18
	9	90	0	52	0	26	0	0	0	26	0	26
	10	70	0	32	0	26	0	0	0	26	0	20
	11	70	0	32	0	26	0	0	0	26	0	22
	12	100	0	62	0	26	0	0	0	26	0	48
	13	70	0	32	0	26	0	0	0	26	0	23
	14	90	0	52	0	26	0	0	0	26	0	40
	20	70	0	32	0	26	0	0	0	26	0	22
	22	80	0	42	0	26	0	0	0	26	0	60
	23	80	0	42	0	26	0	0	0	26	0	60

Local TOD Schedule

Time	Plan	DOW
0000	8	Su M T W Th F S
0600	10	Su M T W Th F
0700	1	M T W Th F
0800	10	Su S
1000	14	Su S
1630	12	Su S
1830	10	Su S
1930	10	M T W Th F
2100	13	Su M T W Th F S

Current Time of Day Function

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

Local Time of Day Function

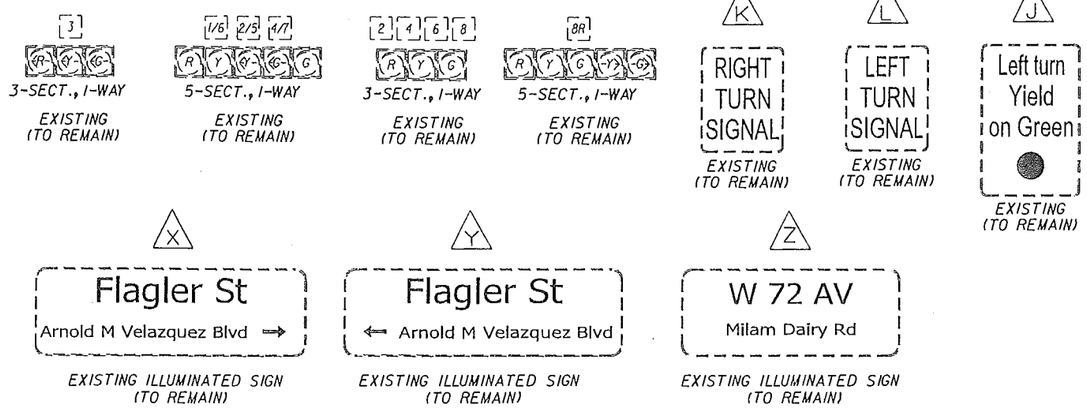
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	--------	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	--------	SuM T W ThF S

* Settings

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

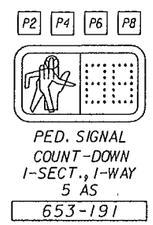
No Calendar Defined/Enabled

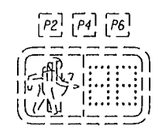
SIGNAL HEAD & SIGN DETAILS

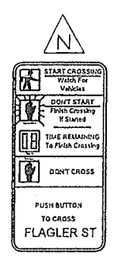


NOTES:

1. FINAL SIGNAL TIMING TO BE PROVIDED BY MIAMI-DADE COUNTY SIGNAL DIVISION.
2. PED SIGNAL HEADS TO BE ALIGNED WITH CENTER OF FAR-SIDED END OF CROSSWALK THEY SERVE.



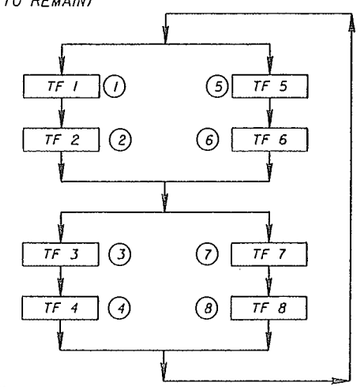


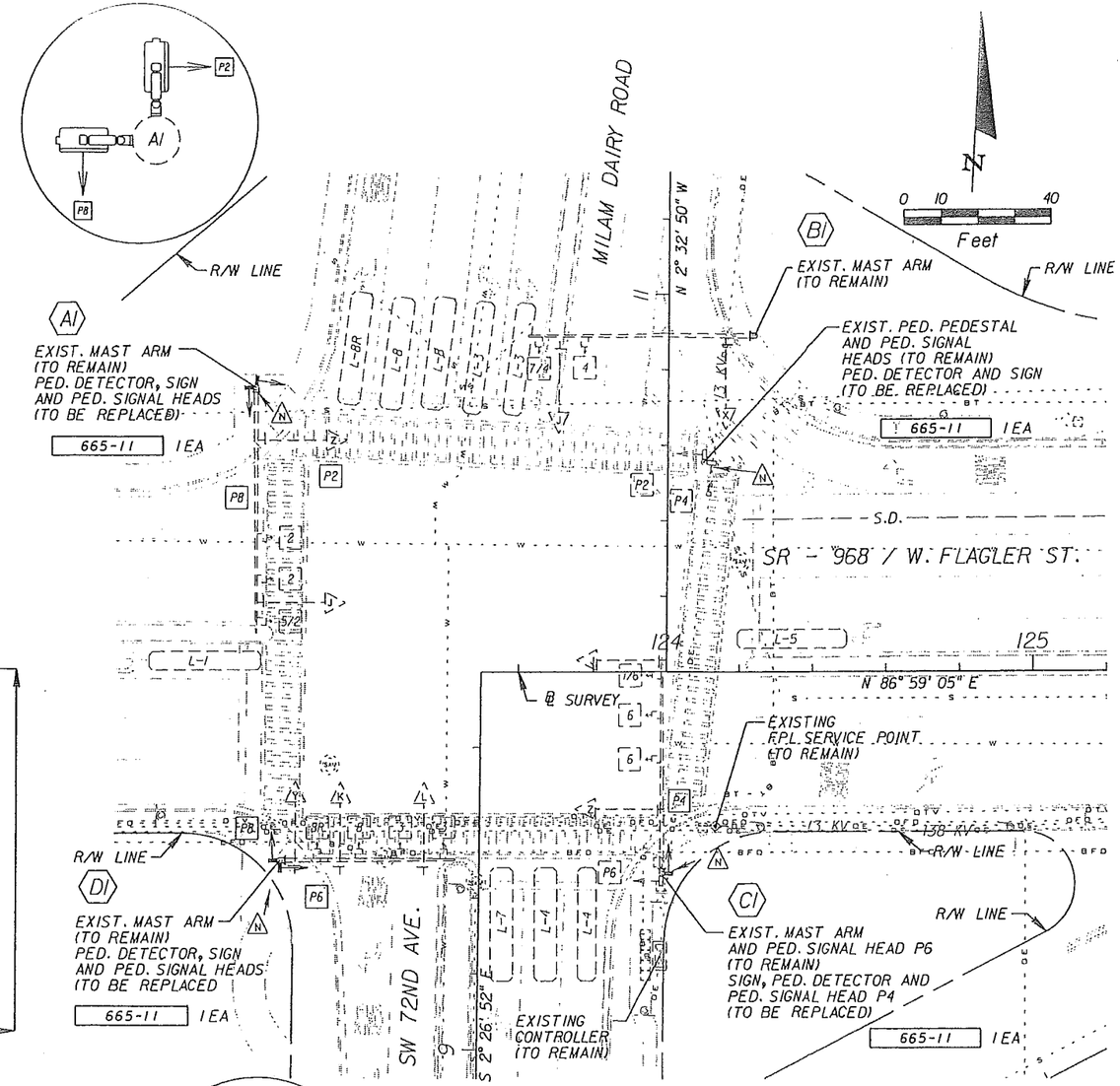


R10-3E (MODIFIED)
9" X 15"
(COST INCLUDED IN PAY ITEM 665-11)

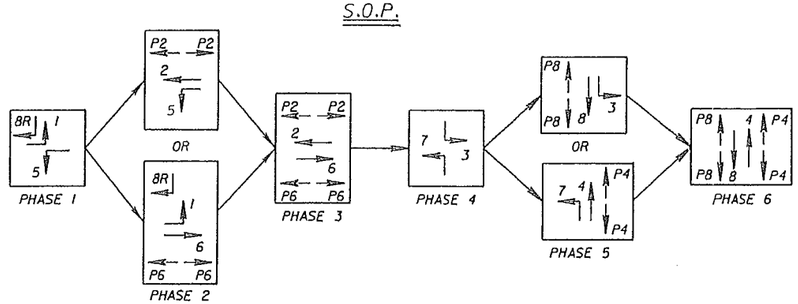
CONTROLLER OPERATIONS

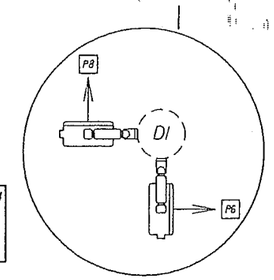
1. MAJOR STREET: W FLAGLER ST.
   MINOR STREET: SW 72 AV. / MILAM DIARY RD.
2. S.O.P: AS SHOWN IN SIGNALIZATION PLAN
3. PHASES 3 (RECALL)
   PHASE 6 (ACTUATION)
4. SIGNAL COORDINATION ON PHASE 3
5. FLASHING OPERATION: 1/6, 2, 5/2 & 6 - YELLOW
   3, 4, 7/4 & 8 - RED





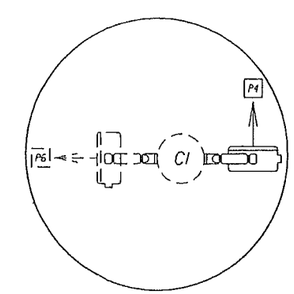
S.O.P.





REMOVAL ITEMS

690-20	5 EA
690-70	4 EA



SR-968 / W FLAGLER STREET & MILAM DAIRY ROAD

ID No.: 3618

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD:
A&P Consulting Transportation Engineers Corporation
10305 N.W. 41 Street, suite 115
Miami, FL 33178
(305) 592-7283 / fax: (305) 593-1594
CA No.: EB-0007797
Elihel M. Sierra, P.E. No. 55401

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
968	MIAMI-DADE	425271-1-52-01

SIGNALIZATION PLAN

SHEET NO. T-5

Sec #70

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

SIGNAL OPERATING PLAN

	Direction		SB	EB	WB	Ped Heads				
Timing Phases	Head No.		2	8	4	P6	P2	P8	P4	Movements/Display/Actu
(2)	Dwell		G	R	R	W/F	W/F	DW	DW	P2
	Clear to (4+8)		Y	R	R	DW	DW	DW	DW	2
SB ABBOTT (RECALL)										P6
	Dwell									
	Clear to									
(4+8)	Dwell		R	G	G	DW	DW	W/F	W/F	
	Clear to (2)		R	Y	Y	DW	DW	DW	DW	P4 4
E/WB 72 STREET (ACTUATED)										8 P8
	Dwell									
	Clear to									
	Dwell									
	Clear to									
	Dwell									
	Clear to									
Flashing Operation			FY	FR	FR					Page 1 of 1

N

Miami-Dade County Public Works Department

Drawn	Date	Abbott Av & 72nd ST		
WILLIAM RIVERA PAZ	9/19/2012			
Checked	Date	Placed in Service	Phasing No.	Asset Number
H. HERNANDEZ	9/27/12	Date 11/13/12 By ~~SHU~~ F.S.	5	2638

Blank12

TOD Schedule Report

for 2692: Collins Av&71 St

Print Date: 11/20/2017

Print Time: 3:22 PM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2692	Collins Av&71 St	DOW-2		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
PED	NBT	EBT	WBT	NBL	-	-	-
0	0	0	0	0	0	0	0

N/A

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 PED	4 - 4 - 4	16 - 16 - 16	0 - 0 - 0	0 - 0 - 0	20 - 20 - 20	20 - 20 - 20	0	0
2 NBT	4 - 4 - 4	10 - 10 - 10	4 - 4 - 4	1 - 1 - 1	16 - 16 - 16	0 - 0 - 0	4	2
3 EBT	4 - 4 - 4	15 - 15 - 15	7 - 7 - 7	1 - 1 - 1	12 - 12 - 12	33 - 21 - 21	4	2
4 WBT	0 - 0 - 0	0 - 0 - 0	7 - 7 - 7	2.5 - 2.5 - 2.5	7 - 7 - 7	20 - 12 - 12	4	2
5 NBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	1 - 1 - 1	20 - 20 - 20	20 - 20 - 20	4	2
6 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
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	12345---
External Permit 0	12345---
External Permit 1	12345---
External Permit 2	12345---

Current TOD Schedule	Plan	Cycle	Green Time 1 PED	2 NBT	3 EBT	4 WBT	5 NBL	6 -	7 -	8 -	Ring Offset	Offset
	1	90	23	16	19	14	16	0	0	0	0	15
	2	140	21	75	19	7	75	0	0	0	0	26
	3	180	24	89	31	18	89	0	0	0	0	83
	4	180	20	102	30	10	102	0	0	0	0	80
	5	90	21	20	19	12	20	0	0	0	0	68
	6	100	21	26	19	16	26	0	0	0	0	23
	12	90	20	26	19	7	26	0	0	0	0	60
	13	70	29	9	19	**	9	0	0	0	0	26
	14	90	19	20	19	14	20	0	0	0	0	78

Local TOD Schedule

Time	Plan	DOW
0000	13	Su S
0000	1	M T W Th F
0600	5	M T W Th F
1000	14	Su S
1600	3	M T W Th F
1630	6	Su S
1900	12	M T W Th F

TOD Schedule Report

for 2692: Collins Av&71 St

Print Date: 11/20/2017

Print Time: 3:22 PM

Current Time of Day Function

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

Local Time of Day Function

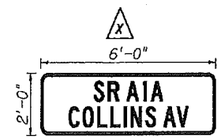
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	--------	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	-------	SuM T W ThF S

*** Settings**

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

No Calendar Defined/Enabled

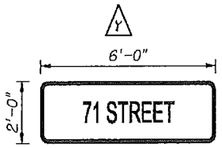
INTERNALLY ILLUMINATED LED SIGNS



SPECIAL SIGN NO. 1

2 EA

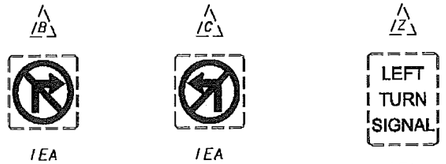
699-1-1



SPECIAL SIGN NO. 5

1 EA

699-1-1



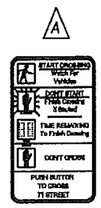
1 EA (TO REMAIN) | 1 EA (TO REMAIN) | 1 EA (TO REMAIN)

PEDESTRIAN SIGNAL HEAD AND SIGN DETAILS

PED. SIGNAL COUNT-DOWN 1-SECT., 1-WAY

6 AS

653-191

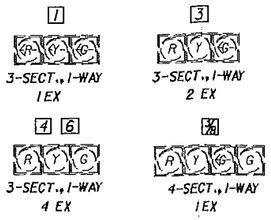


R10-3E (MODIFIED) 9" X 15"

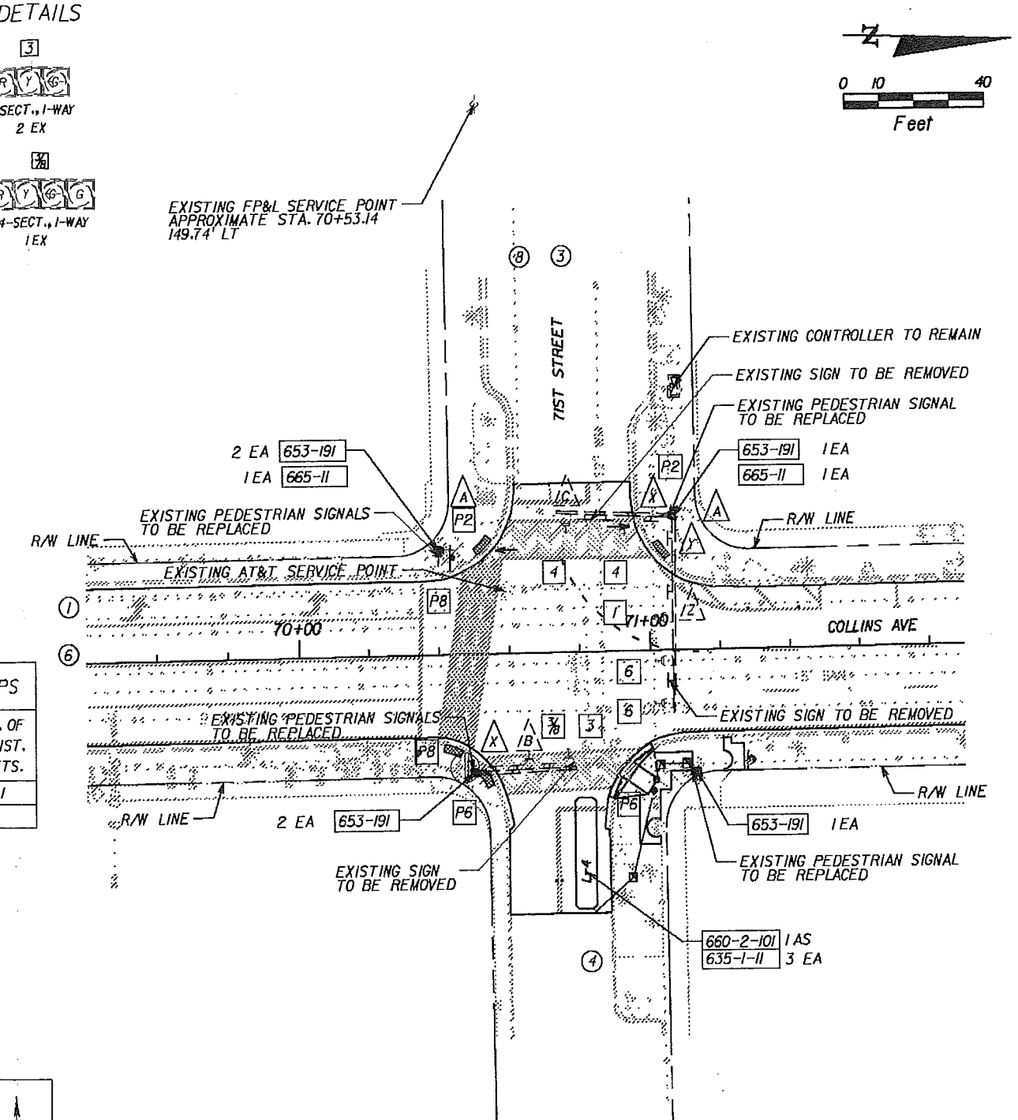
2 EA

COST TO BE INCLUDED IN PAY ITEM 665-11

SIGNAL HEAD DETAILS



3-SECT., 1-WAY 1 EX | 3-SECT., 1-WAY 2 EX | 3-SECT., 1-WAY 4 EX | 4-SECT., 1-WAY 1 EX



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

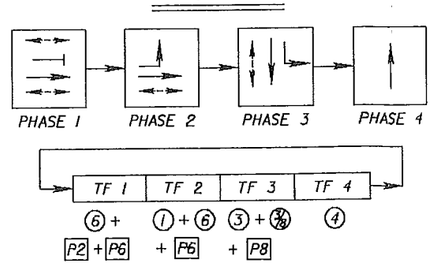
CONTROLLER OPERATIONS

1. TYPE OF CONTROLLER FOUR PHASE PARTIALLY PRE-TIMED, PARTIALLY ACTUATED CONTROLLER
2. MAJOR STREET: SR A1A (COLLINS AVENUE) MINOR STREET: 71ST STREET
3. SOP: SOP AS SHOWN BELOW
4. PED. SIGNALS (P-2) UPON ACTUATION ONLY.

NOTES

1. SIGNAL TIMING TO BE PROVIDED BY MIAMI-DADE COUNTY SIGNAL DIVISION.
2. CENTER OF INTERNALLY ILLUMINATED SIGNS TO BE INSTALLED 5 FEET FROM FACE OF POLE.
3. ALL PEDESTRIAN SIGNAL HEADS SHALL BE ALIGNED TO THE CENTER OF THE FAR SIDE OF THE CROSSWALK THEY SERVE.

S.O.P.



REMOVAL ITEMS			
690-20	SIGNAL PEDESTRIAN ASSEMBLY REMOVAL	6	EA
690-70	DETECTOR PEDESTRIAN ASSEMBLY REMOVAL	2	EA
690-100	SIGNAL EQUIPMENT MISCELLANOUS REMOVE	1	PI
700-48-60	SIGN PANEL, REMOVE	3	EA

AIA/ COLLINS AVENUE & 71ST STREET

ID No.: 2692

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

SANCHEZ, ZEINALI & ASSOCIATES
10305 NW 41st STREET SUITE 103
MIAMI, FLORIDA 33178
(305) 477-4467
CERTIFICATE OF AUTHORIZATION NO. 7840
ENGINEER OF RECORD: FRANK PANELLAS, P.E.
P.E. LICENSE NO. 59448

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	MIAMI DADE	424579-1-52-01

SIGNALIZATION PLAN

SHEET NO. T-7

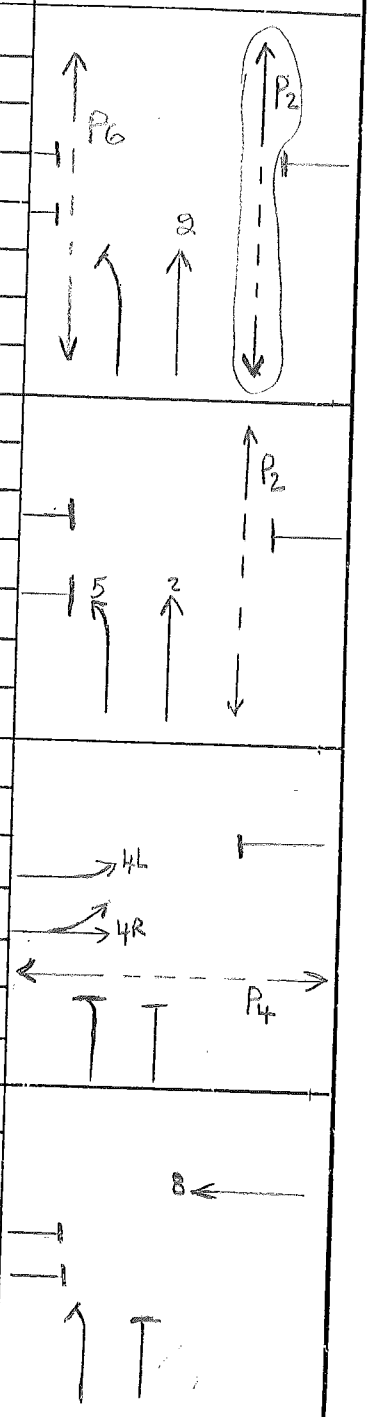
minastrilla 1/27/2010 9:10:06 AM Z:\FDOT\424579152\01\signals\PLANSG04.DGN

286

SIGNAL OPERATING PLAN

4 N

PHASE	INT	SIGNAL HEAD NUMBER 2	4L	5	8	4R	P2	P4	P6
Φ ~~2~~ 1 NBND	R/W	G	R	R	R	R	W	DW	W
	PED CLR	G	R	R	R	R	F DW	DW	F DW
	CLEAR TO Φ2+5	G	R	R	R	R	DW	DW	DW
RECALL									
Φ 2+5 NBND & NBNDL	R/W	G	R	←	R	R	W	DW	DW
	PED CLR	G	R	←	R	R	F DW	DW	DW
	CLEAR TO Φ4	Y	R	~~←~~	R	R	DW	DW	DW
RECALL									
Φ ~~4~~ 3 EBND	R/W	R	←	R	R	G/←	DW	W	DW
	PED CLR	R	←	R	R	G/←	DW	F DW	DW
	CLEAR TO Φ8	R	Y	R	R	Y	DW	DW	DW
	CLEAR TO Φ2								
RECALL									
Φ ~~8~~ 4 WBND	R/W	R	R	R	G	R	DW	DW	DW
	PED CLR	R	R	R	G	R	DW	DW	DW
	CLEAR TO Φ2	R	R	R	Y	R	DW	DW	DW
ACTUATED									



Drawn	Date
H FRANCILLON	9/2/94
Check	**Date**
F. BADRAMPOUR	9/2/94
Division Engineer	**Date**

METROPOLITAN DADE COUNTY
DEPARTMENT OF PUBLIC WORKS

ASSET NO: 2692

COLLINS AVE & 71 ST

Placed in Service		Phasing Number
Date: -194	By: MITCHELL	5

TOD Schedule Report

for 2725: Indian Creek Dr&71 St

Print Date: 11/20/2017

Print Time: 3:27 PM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2725	Indian Creek Dr&71 St	DOW-2		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
EBL	WBT	-	-	-	EBT	NBT	SBT
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	EBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	12 - 12 - 20	20 - 0 - 20	3.7	2
2	WBT	4 - 4 - 4	23 - 23 - 23	4 - 4 - 4	1 - 1 - 1	30 - 30 - 30	0 - 0 - 0	4	2.5
3	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
4	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
5	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
6	EBT	4 - 4 - 4	23 - 23 - 23	4 - 4 - 4	1 - 1 - 1	30 - 30 - 30	0 - 0 - 0	4	2.5
7	NBT	4 - 4 - 4	18 - 18 - 18	7 - 7 - 7	2.5 - 2.5 - 2.5	22 - 20 - 16	45 - 0 - 38	4	2.5
8	SBT	0 - 0 - 0	0 - 0 - 0	7 - 7 - 7	4 - 2.5 - 4	22 - 25 - 18	45 - 0 - 35	4	2.5

Last In Service Date: unknown

Permitted Phases

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

Current TOD Schedule	Plan	Cycle	Green Time 1 EBL	2 WBT	3 -	4 -	5 -	6 EBT	7 NBT	8 SBT	Ring Offset	Offset
	2	140	17	47	0	0	0	70	36	16	0	7
	3	140	17	44	0	0	0	67	32	23	0	98
	4	110	16	27	0	0	0	49	23	20	0	31
	5	100	5	29	0	0	0	41	25	16	0	89
	12	130	17	34	0	0	0	57	32	23	0	98
	14	120	18	29	0	0	0	53	23	26	0	93
	15	130	5	58	0	0	0	70	30	12	0	50
	22	140	15	45	0	0	0	66	40	16	0	7

Local TOD Schedule

Time	Plan	DOW
0000	Free	Su M T W Th F S
0600	5	M T W Th F
0700	14	Su S
0700	14	M T W Th F
0915	4	M T W Th F
1400	12	F
1500	3	M T W Th F
1645	2	M T W Th F
1730	22	M T W Th F
2000	4	M T W Th F
2300	Free	Su M T W Th F S

TOD Schedule Report

for 2725: Indian Creek Dr&71 St

Print Date: 11/20/2017

Print Time: 3:27 PM

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-------1	SuM T W ThF S
0000	TOD LOCAL MULTIFU	----4---	SuM T W ThF S
0500	TOD LOCAL MULTIFU	--------	SuM T W ThF S
0600	TOD OUTPUTS	--------	M T W ThF
1430	TOD OUTPUTS	--------	M T W ThF
1600	TOD OUTPUTS	--------	M T W ThF
2300	TOD OUTPUTS	-------1	SuM T W ThF S

Local Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-------1	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	----4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	--------	SuM T W ThF S
0600	TOD OUTPUTS	--------	M T W ThF
0700	TOD OUTPUTS	--------	Su S
1430	TOD OUTPUTS	--------	M T W ThF
1600	TOD OUTPUTS	--------	M T W ThF
2300	TOD OUTPUTS	-------1	SuM T W ThF S

* Settings

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

No Calendar Defined/Enabled

SIGNAL HEAD DETAILS

7/4 — 4-SECT., 1-WAY, 1 AS 650-51-411

3/8 — 4-SECT., 1-WAY, 2 EXISTING (1 TO BE REMOVED) 7/4

1/6 — 5-SECT., 1-WAY, 1 EXISTING

3-SECT., 1-WAY, 1 EXISTING TO BE REMOVED 8R

4 — 3-SECT., 1-WAY, 1 AS 650-51-311

8R — 5-SECT., 1-WAY, 1 AS 650-51-511

2 6 8 — 3-SECT., 1-WAY, 5 EXISTING (1 TO BE REMOVED) 4

6R — 3-SECT., 1-WAY, 1 EXISTING

P2 P4 P6 — PED. SIGNAL COUNT-DOWN 1-SECT., 1-WAY, 4 AS 653-191

P2 / P4 — PED. SIGNAL COUNT-DOWN 1-SECT., 2-WAY, 1 AS 653-192

(E) R10-03E (9"X15") MOD. PER COUNTY PEDESTRIAN SIGN INCLUDED IN COST OF PAY ITEM 665-1x [2 EA]

(F) R10-03E (9"X15") MOD. PER COUNTY PEDESTRIAN SIGN INCLUDED IN COST OF PAY ITEM 665-1x [2 EA]

INTERNALLY ILLUMINATED LED STREET NAME SIGNS

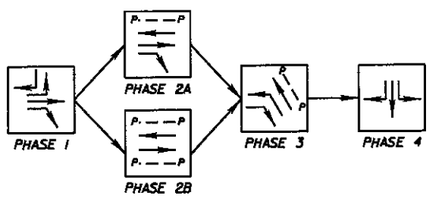
(Y) 71 Street — 699-1-1 [2 EA]

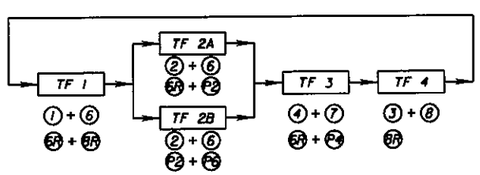
SEE GUIDESIGN WORKSHEET FOR ILLUMINATED SIGN DETAILS

(X) ← Dickens Av / Indian Creek Dr → — 699-1-1 [1 EA]

(Z) Dickens Av → / ← Indian Creek Dr — 699-1-1 [1 EA]

EXISTING S.O.P.





DETECTORS FOR LOOPS			
LOOP	NO. OF LOOPS	NO. OF NEW DETS.	NO. OF EXIST. DETS.
L-			
L-1	1		1
L-4	1		1
L-7	2	1	
L-8	1		1
L-8R	1		

(A) 1 EXISTING

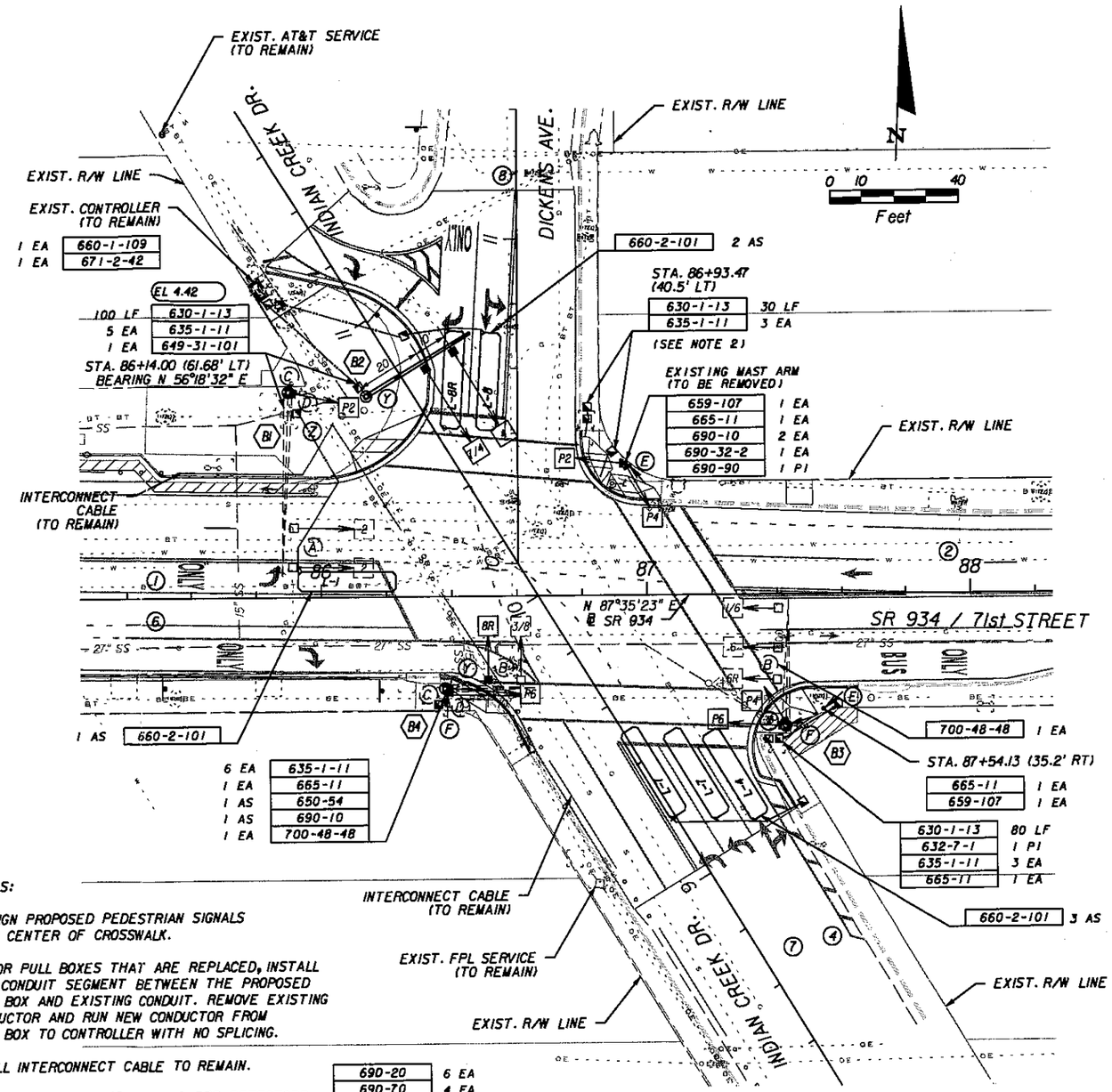
(B) NO TURN ON RED — 2 EXISTING (TO BE RELOCATED)

(C) USE CROSSWALK — 2 EXISTING

(D) CROSS ONLY AT CROSS WALKS — 4 EXISTING

CONTROLLER OPERATIONS

1. MAJOR STREET IS SR 934 / 71 ST.
   MINOR STREET IS DICKENS AVE. / INDIAN CREEK DR.
2. SIGNAL OPERATING PER PHASING DIAGRAM SHOWN.
3. FLASHING OPERATION IS
   YELLOW: MOVEMENT ② + ⑥
   RED: MOVEMENT ④ + ⑦ + ⑧



NOTES:

(1) ALIGN PROPOSED PEDESTRIAN SIGNALS WITH CENTER OF CROSSWALK.

(2) FOR PULL BOXES THAT ARE REPLACED, INSTALL NEW CONDUIT SEGMENT BETWEEN THE PROPOSED PULL BOX AND EXISTING CONDUIT. REMOVE EXISTING CONDUCTOR AND RUN NEW CONDUCTOR FROM PULL BOX TO CONTROLLER WITH NO SPLICING.

(3) ALL INTERCONNECT CABLE TO REMAIN.

(4) REMOVE EXIST. PED. SIGNALS, PED DETECTORS AND OVERHEAD STREET NAME SIGNS.

SR 934 (NE 71 ST.) & INDIAN CREEK DR. (ID # 2725)

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Alvarez Engineers, Inc.
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7538
RAMON TESONE, PE No. 56070
10560 N.W. 27th Street, Suite 102
Miami, Florida 33172
Tel. (305) 640-1345 Fax (305) 640-1346
E-mail Alvarez@AlvarezEng.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
934	MIAMI-DADE	419825-1-52-01

SIGNALIZATION PLAN

SHEET NO. T-5

SIGNAL OPERATING PLAN

N

	Direction		EB			WB	NB		SB		Ped Heads			
Timing Phases	Head No.		1/6	6	6R	2	7/4	4	3/8	8R	P6	P2	P4	Movements/Display/Actuation
(1+6)	Dwell		G/<G	G	G>	R	R	R	R	R/G>	DW	DW	DW	
EB	Clear to	2+6/6P	G/<Y	G	Y>	R	R	R	R	R/Y>	DW	DW	DW	8R 1/6
		2+6	G/<Y	G	G>	R	R	R	R	R/Y>	DW	DW	DW	
71 STREET														6
(ACTUATED)														6R
(2+6+P6)	Dwell		G	G	R>	G	R	R	R	R	W/F	W/F	DW	
E/WB	Clear to	2+6	G	G	R>	G	R	R	R	R	DW	W/F	DW	P2 2
71 STREET														1/6
(ACUATED)														6 P6
(2+6)	Dwell		G	G	G>	G	R	R	R	R	DW	W/F	DW	
E/WB	Clear to	7	Y	Y	G>	Y	R	R	R	R	DW	DW	DW	P2 2
		8	Y	Y	Y>	Y	R	R	R	R	DW	DW	DW	
		2+6/6P	G	G	Y>	Y	R	R	R	R	DW	W/F	DW	1/6
71 STREET														6
(RECALL)														6R
7	Dwell		R	R	G>	R	<G/G	G	R	R	DW	DW	W/F	P4
NB	Clear to	8	R	R	Y>	R	Y	Y	R	R	DW	DW	DW	4
		2+6	R	R	G>	R	Y	Y	R	R	DW	DW	DW	
Indian Creek Dr														7/4
(ACTUATED)														6R
8	Dwell		R	R	R>	R	R	R	G/<G	G/G>	DW	DW	DW	
SB	Clear to	1+6	R	R	R>	R	R	R	Y	Y	DW	DW	DW	
		2+6/6P	R	R	R>	R	R	R	Y	Y	DW	DW	DW	
		2+6	R	R	R>	R	R	R	Y	Y	DW	DW	DW	
Dickens Av														8R 3/8
(ACTUATED)														
Flashing Operation			FY	FY	FY	FY	FR	FR	FR	FR				Page 1 of 1

Miami-Dade County Public Works Department

Drawn	Date				
William Rivera-Paz	4/9/2014	Indian Creek Dr & 71 Street			
Checked	Date	Placed in Service		Phasing No.	Asset Number
H. Hernandez	6/5/14	Date 6/10/14	By Maint	13	2725

TOD Schedule Report

for 3544: Harding Av&71 St

Print Date: 11/20/2017

Print Time: 5:03 PM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
3544	Harding Av&71 St	DOW-2		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
EBL	WBT	-	NBT	WBL	EBT	-	SBT
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 EBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 12 - 5	12 - 0 - 12	3	0
2 WBT	7 - 7 - 7	9 - 6 - 9	7 - 7 - 7	1 - 2.5 - 1	40 - 50 - 50	0 - 0 - 0	4	2.1
3 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
4 NBT	7 - 7 - 7	16 - 16 - 16	7 - 7 - 7	1 - 2.5 - 1	21 - 30 - 30	43 - 0 - 0	4	2.3
5 WBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 12 - 5	12 - 0 - 12	3	0
6 EBT	7 - 7 - 7	9 - 6 - 9	7 - 7 - 7	1 - 2.5 - 1	40 - 50 - 50	0 - 0 - 0	4	2.1
7 -	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
8 SBT	7 - 7 - 7	16 - 16 - 16	7 - 7 - 7	1 - 2.5 - 1	21 - 30 - 30	43 - 0 - 0	4	2.3

Last In Service Date: 03/17/2010 16:48

Permitted Phases

	12345678
Default	12-456-8
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

TOD Schedule Report

for 3544: Harding Av&71 St

Print Date: 11/20/2017

Print Time: 5:03 PM

Current TOD Schedule	Plan	Cycle	Green Time 1 EBL	2 WBT	3 -	4 NBT	5 WBL	6 EBT	7 -	8 SBT	Ring Offset	Offset
	1	90	6	34	0	35	6	34	0	35	0	41
	2	100	6	37	0	42	6	37	0	42	0	48
	3	90	4	31	0	40	4	31	0	40	0	26
	4	80	**	46	0	22	**	46	0	22	0	47
	5	120	4	79	0	22	4	79	0	22	0	6
	6	70	4	29	0	22	4	29	0	22	0	5
	7	70	4	29	0	22	4	29	0	22	0	5
	8	70	4	29	0	22	4	29	0	22	0	61
	9	90	4	49	0	22	4	49	0	22	0	12
	10	70	4	29	0	22	4	29	0	22	0	60
	11	70	4	29	0	22	4	29	0	22	0	5
	12	100	4	39	0	42	4	39	0	42	0	48
	13	70	4	29	0	22	4	29	0	22	0	5
	14	90	4	31	0	40	4	31	0	40	0	81
	20	70	4	29	0	22	4	29	0	22	0	5
	22	80	4	30	0	31	4	30	0	31	0	19
	23	80	4	30	0	31	4	30	0	31	0	19

Local TOD Schedule

Time	Plan	DOW
0000	13	Su M T W Th F S
0030	8	M T W Th F
0100	8	Su S
0600	10	M T W Th F
0700	1	M T W Th F
1000	14	Su S
1830	10	Su S
1930	10	M T W Th F
2100	13	Su M T W Th F S

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	---5----	SuM T W ThF S
0000	TOD LOCAL MULTIFU	----4---	SuM T W ThF S
0500	TOD LOCAL MULTIFU	--------	SuM T W ThF S
0600	TOD OUTPUTS	--------	M T W ThF
2100	TOD OUTPUTS	---5----	SuM T W ThF S

Local Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	---5----	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	--------	SuM T W ThF S
0600	TOD OUTPUTS	--------	M T W ThF
1000	TOD OUTPUTS	--------	Su S
2100	TOD OUTPUTS	---5----	SuM T W ThF S

* Settings

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

No Calendar Defined/Enabled

SIGNAL HEAD DETAILS

1/6 5/2 — 2 4 6 8

5-SECT., 1-WAY
2 AS
650- 51-511

3-SECT., 1-WAY
8 EXISTING
2 TO BE REMOVED

P2 P4 P6 P8

PED. SIGNAL
COUNT-DOWN
1-SECT., 1-WAY
8 AS
653-191

(B) R10-03E (9"X15")
MOD. PER COUNTY
PEDESTRIAN SIGN
INCLUDED IN COST OF
PAY ITEM 665-1x
[4 EA]

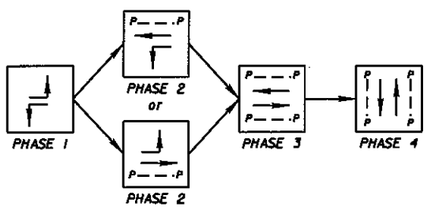
(A) DO NOT BLOCK INTERSECTION
1 EXISTING

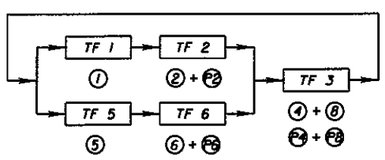
INTERNALLY ILLUMINATED LED STREET NAME SIGNS

(Y) 71 Street
2 EXISTING
(TO REMAIN)

(X) Harding Av
2 EXISTING
(TO REMAIN)

PROPOSED S.O.P.





DETECTORS FOR LOOPS			
LOOP	NO. OF LOOPS	NO. OF NEW DETS.	NO. OF EXIST. DETS.
L-1	1	1	
L-5	1	1	
L-			
L-			
L-			

CONTROLLER OPERATIONS

1. MAJOR STREET IS SR 934 / 71 ST.
   MINOR STREET IS HARDING AVE.
2. SIGNAL OPERATING PER PHASING DIAGRAM SHOWN.
3. FLASHING OPERATION IS
   YELLOW: MOVEMENT ②+⑥
   RED: MOVEMENT ④+⑧

NOTES:

(1) ALIGN PROPOSED PEDESTRIAN SIGNALS WITH CENTER OF CROSSWALK.

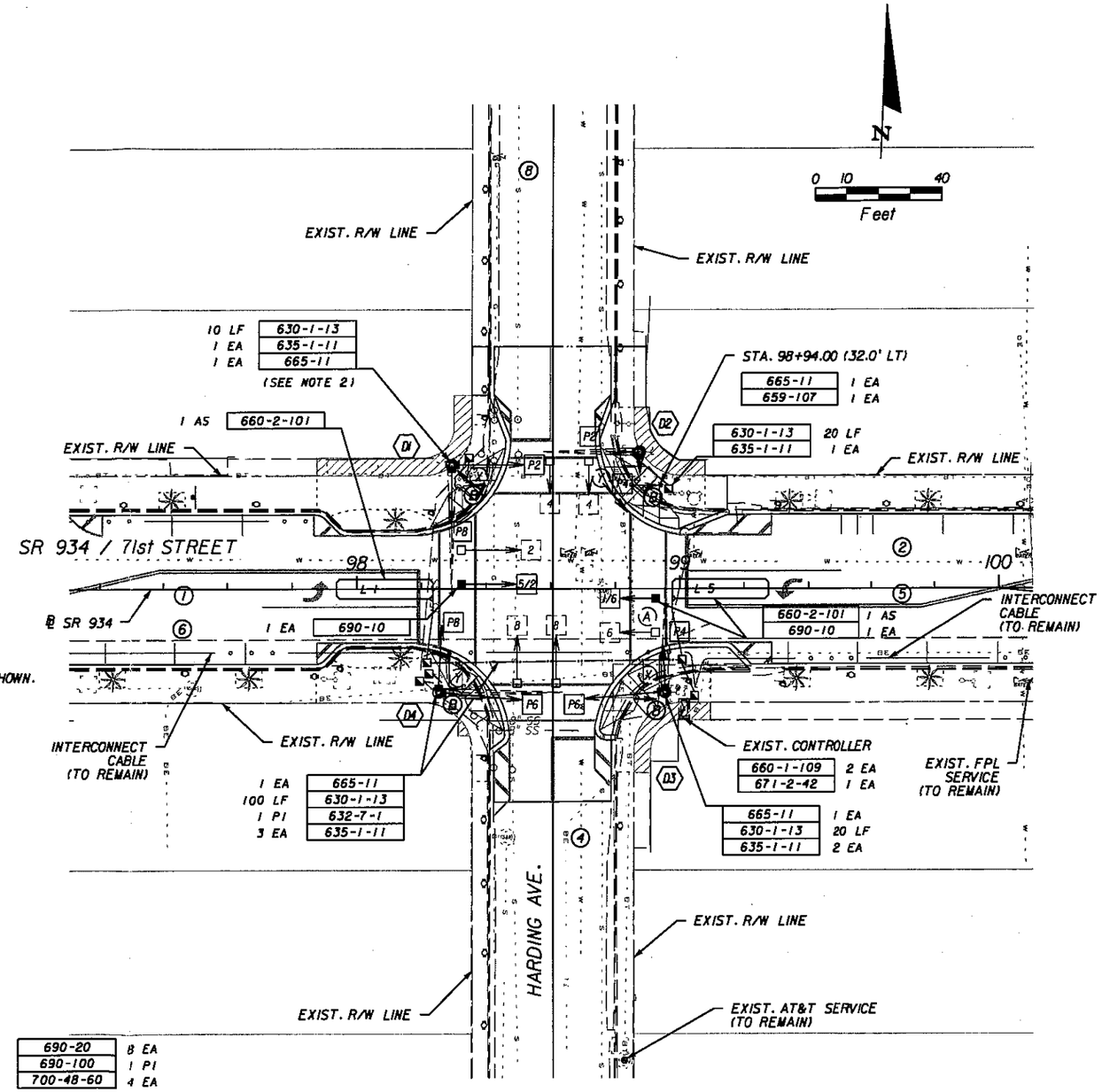
(2) FOR PULL BOXES THAT ARE REPLACED, INSTALL NEW CONDUIT SEGMENT BETWEEN THE PROPOSED PULL BOX AND EXISTING CONDUIT. REMOVE EXISTING CONDUCTOR AND RUN NEW CONDUCTOR FROM PULL BOX TO CONTROLLER WITH NO SPLICING.

(3) ALL INTERCONNECT CABLE TO REMAIN.

(4) EXIST. OVERHEAD STREET NAME SIGNS TO REMAIN.

(5) REMOVE EXIST. PEDESTRIAN SIGNALS

(6) UTILIZE EXIST. EMPTY CONDUIT AT PULL BOX NEAR CONTROLLER TO CONNECT THE PROPOSED LOOPS.



690-20 8 EA
690-100 1 PI
700-48-60 4 EA

SR 934 (NE 71 ST.) & HARDING AVE. (ID # 3544)

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

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Alvarez Engineers, Inc.
FLORIDA CERTIFICATE OF AUTHORIZATION No. 7538
RAMON TESONE, PE No. 56070
10560 N.W. 27th Street, Suite 102
Miami, Florida 33172
Tel. (305) 640-1345 Fax (305) 640-1345
E-mail Alvarez@AlvarezEng.com

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

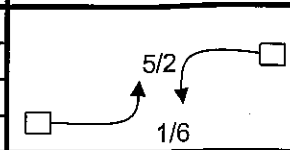
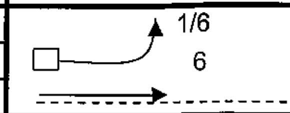
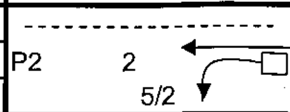
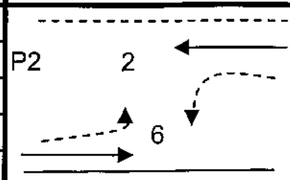
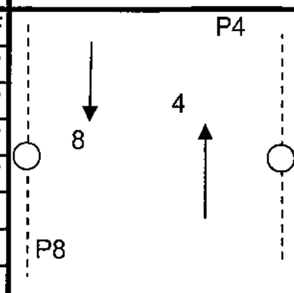
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
934	MIAMI-DADE	419825-1-52-01

SIGNALIZATION PLAN

SHEET NO. T-7

SIGNAL OPERATING PLAN

↑ N

	Direction		EB		WB		SB		NB		Ped Heads				
Timing Phases	Head No.		1/6	6	5/2	2		8		4	P6	P2	P4	P8	Movements/Display/Actuation
(1+5)	Dwell		R/<G	R	R/<G	R		R		R	DW	DW	DW	DW	
E/WLT	clear to	1+6	R/<G	R	R/<Y	R		R		R	DW	DW	DW	DW	
71 STREET		2+5	R/<Y	R	R/<G	R		R		R	DW	DW	DW	DW	
(ACTUATED)		2+6	R/<Y	R	R/<Y	R		R		R	DW	DW	DW	DW	
(1+6)	Dwell		G/<G	G	R	R		R		R	W/F	DW	DW	DW	
EB	clear	2+6	G/<Y	G	R	R		R		R	W/F	DW	DW	DW	
(ACTUATED)															
(2+5)	Dwell		R	R	G/<G	G		R		R	DW	W/F	DW	DW	
WB	to	2+6	R	R	G/<Y	G		R		R	DW	W/F	DW	DW	
(ACTUATED)											DW	DW	DW	DW	
(2+6)	Dwell		G	G	G	G		R		R	W/F	W/F	DW	DW	
E/WB	clear	4+8	Y	Y	Y	Y		R		R	DW	DW	DW	DW	
71 STREET															
(RECALL)															
(4+8)	Dwell		R	R	R	R		G		G	DW	DW	W/F	W/F	
	clear to	1+5	R	R	R	R		Y		Y	DW	DW	DW	DW	
N/SB		1+6	R	R	R	R		Y		Y	DW	DW	DW	DW	
		2+5	R	R	R	R		Y		Y	DW	DW	DW	DW	
HARDING AV		2+6	R	R	R	R		Y		Y	DW	DW	DW	DW	
(ACTUATED)															
			FY	FY	FY	FY		FR		FR					

Miami-Dade County Public Works Department

Drawn	Date	Harding Av & 71 Street		
William Rivera-Paz	10/19/2011			
Checked	Date	Placed in Service	Phasing No.	Asset Number
H. HERNANDEZ	10/20/11	Date 12/17/2011 By SGI	4	3544

Blank12

TOD Schedule Report
for 3880: Collins Av&72 St

Print Date: 11/20/2017

Print Time: 5:50 PM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
3880	Collins Av&72 St	DOW-2		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
-	NBT	-	EBT	-	-	-	-
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	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
2	NBT	6 - 6 - 6	12 - 12 - 12	6 - 6 - 6	1 - 1 - 1	39 - 39 - 39	0 - 0 - 0	4	2.8
3	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
4	EBT	6 - 6 - 6	12 - 12 - 12	7 - 7 - 7	1 - 1 - 1	21 - 21 - 21	45 - 21 - 21	4	2.8
5	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
6	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
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	-2-4----
External Permit 0	-2-4----
External Permit 1	-2-4----
External Permit 2	-2-4----

Current TOD Schedule	Plan	Cycle	Green Time 1 -	2 NBT	3 -	4 EBT	5 -	6 -	7 -	8 -	Ring Offset	Offset
	1	90	0	57	0	19	0	0	0	0	0	53
	2	140	0	107	0	19	0	0	0	0	0	42
	3	180	0	143	0	23	0	0	0	0	0	125
	4	180	0	143	0	23	0	0	0	0	0	119
	5	90	0	57	0	19	0	0	0	0	0	89
	6	100	0	67	0	19	0	0	0	0	0	57
	8	70	0	37	0	19	0	0	0	0	0	34
	10	70	0	37	0	19	0	0	0	0	0	0
	12	90	0	57	0	19	0	0	0	0	0	77
	13	70	0	37	0	19	0	0	0	0	0	49
	14	90	0	57	0	19	0	0	0	0	0	12

Local TOD Schedule

Time	Plan	DOW
0000	13	Su S
0000	1	M T W Th F
0600	5	M T W Th F
1000	14	Su S
1600	3	M T W Th F
1630	6	Su S
1900	12	M T W Th F

TOD Schedule Report

for 3880: Collins Av&72 St

Print Date: 11/20/2017

Print Time: 5:50 PM

Current Time of Day Function

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

Local Time of Day Function

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

*** Settings**

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

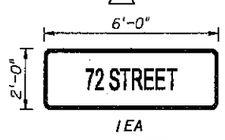
No Calendar Defined/Enabled

INTERNALLY ILLUMINATED LED SIGNS

SPECIAL SIGN NO. 1

1 EA

699-1-1



SPECIAL SIGN NO. 6

1 EA

699-1-1

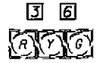
1 EA
(TO REMAIN)

PEDESTRIAN SIGNAL HEAD AND SIGN DETAILS

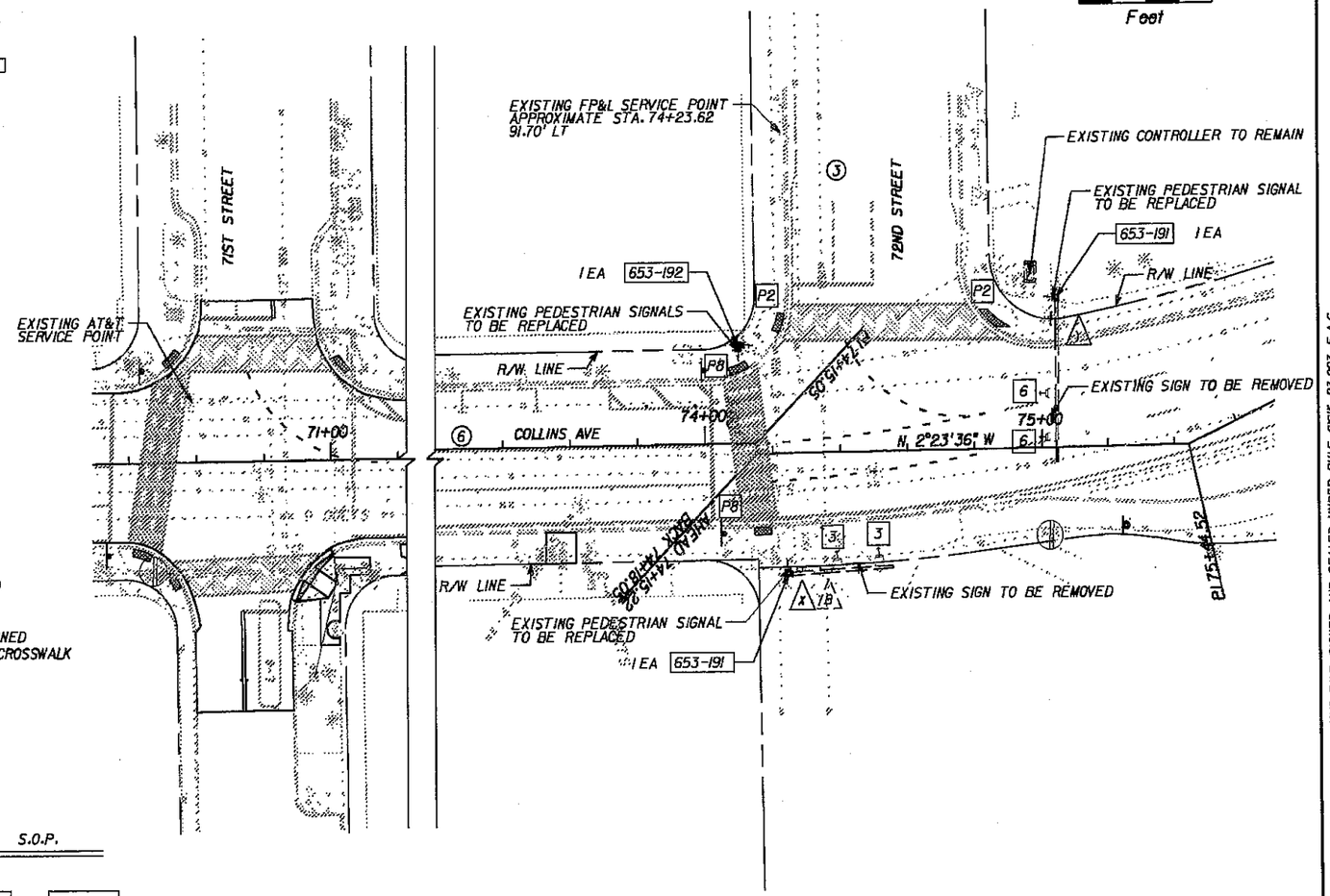
PED. SIGNAL
COUNT-DOWN
1-SECT., 1-WAY
2 AS
653-191

PED. SIGNAL
COUNT-DOWN
1-SECT., 2-WAY
1 AS
653-192

SIGNAL HEAD DETAILS



3-SECT., 1-WAY
4 EX



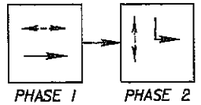
CONTROLLER OPERATIONS

1. TYPE OF CONTROLLER TWO PHASE PRE-TIMED CONTROLLER
2. MAJOR STREET: SR A1A (COLLINS AVENUE)
   MINOR STREET: 72ND STREET
3. SOP: SOP AS SHOWN BELLOW

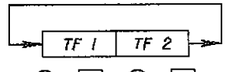
NOTES

1. SIGNAL TIMING TO BE PROVIDED BY MIAMI-DADE COUNTY SIGNAL DIVISION.
2. CENTER OF INTERNALLY ILLUMINATED SIGNS TO BE INSTALLED 5 FEET FROM FACE OF POLE.
3. ALL PEDESTRIAN SIGNAL HEADS SHALL BE ALIGNED TO THE CENTER OF THE FAR SIDE OF THE CROSSWALK THEY SERVE.

S.O.P.



PHASE 1 PHASE 2



6 + P2 3 + P8

REMOVAL ITEMS			
690-20	SIGNAL PEDESTRIAN ASSEMBLY REMOVAL	4	EA
690-100	SIGNAL EQUIPMENT MISCELLANOUS REMOVE	1	P1
700-48-60	SIGN PANEL, REMOVE	2	EA

AIA/ COLLINS AVENUE & 72ND STREET

ID No.: 3880

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

SANCHEZ, ZEINALI & ASSOCIATES
10305 NW 41st STREET SUITE 103
MIAMI, FLORIDA 33178
(305) 477-4467
CERTIFICATE OF AUTHORIZATION NO. 7840
ENGINEER OF RECORD:
FRANK PANELLAS, P.E.
P.E. LICENSE NO. 59448

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
A1A	MIAMI DADE	424579-1-52-01

SIGNALIZATION PLAN

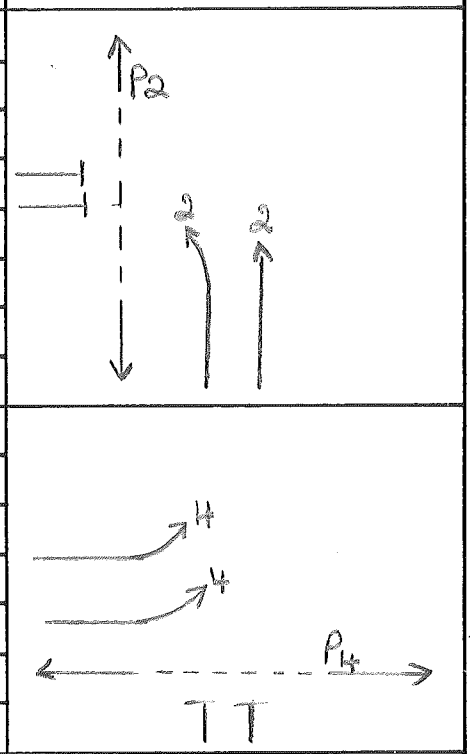
SHEET NO.
T-8

minastrilla 1/27/2010 9:10:09 AM Z:\FDOT\424579152011\signals\PLANS905.DGN

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

SIGNAL OPERATING PLAN

PHASE	INT	SIGNAL HEAD NUMBER											
		2	4		P2	P4							
Φ 2 NBND PRETIMED	R/W	G	R		W	DW							
	PED. CL.	G	R		FDW	DW							
	TO CLEAR Φ4	Y	R		DW	DW							
Φ4 EBND PRETIMED	R/W	R	G		DW	W							
	PED. CL.	R	G		DW	FDW							
	TO CLEAR Φ2	R	Y		DW	DW							
	R/W												
	PED. CL.												
	TO CLEAR												
	R/W												
	PED. CL.												
	TO CLEAR												



Drawn	Date	METROPOLITAN DADE COUNTY DEPARTMENT OF TRAFFIC AND TRANSPORTATION
H. FRANCILLON	9/6/94	ASSET NO. 3880
Check: E Lee	Date: 9/6/94	COLLINS AVE (A1A) & 72 ST
Division Engineer	Date	

Placed in Service		Phasing Number
Date:	By:	4

Historic Background Growth

Historic Growth Trend
7140 Collins Hotel

Station	Location	2012	2013	2014	2015	2016
5189	SR 934 /71 ST, 200' W SR A1A / HARDING AV	16,600	11,600	12,000	11,700	11,100
0115	SR 934 / NORMANDY DR. WB. 100' W RUE VERSAILLES	21,500	18,500	17,500	18,000	19,500
5191	SR 934/ NE 79th ST/ 71st ST, 100' W of RUE VERSAILLES	19,500	20,500	16,500	19,500	18,500
0520	SR A1A/HARDING AV/ONE-WAY PAIR SB, 100' N 87 ST	26,000	25,500	26,000	26,500	27,000
0525	SR A1A/COLLINS AV/ONE-WAY PAIR NB, 100' N 87 ST	32,500	25,000	21,500	24,500	25,000
2541	SR A1A/COLLINS AVE, 500' S of 63rd ST	19,000	21,000	21,500	20,000	21,000
TOTAL		135,100	122,100	115,000	120,200	122,100
Yearly Growth			-9.6%	-5.8%	4.5%	1.6%
Growth Trend						-2.3%

`

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2016 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 0115 - SR 934/NORMANDY DR. WB. 100' W RUE VERSAILLES.

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2016	19500 C	W 19500	0	9.00	99.90	7.20
2015	18000 C	W 18000	0	9.00	99.90	11.80
2014	17500 C	W 17500		9.00	99.90	10.40
2013	18500 C	W 18500	0	9.00	99.90	9.00
2012	21500 C	W 21500	0	9.00	99.90	10.50
2011	18000 C	W 18000	0	9.00	99.90	10.50
2010	18000 C	W 18000	0	8.98	99.99	9.50
2009	16000 C	W 16000	0	8.99	99.99	8.40
2008	16500 C	W 16500	0	9.09	99.99	9.60
2007	18000 C	W 18000	0	8.01	99.99	6.60
2006	17000 C	W 17000	0	7.97	99.99	8.80

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
2016 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 0525 - SR A1A/COLLINS AV/ONE-WAY PAIR NB, 100' N 87 ST

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2016	25000 C	N 25000	0	9.00	99.90	7.80
2015	24500 C	N 24500	0	9.00	99.90	4.60
2014	21500 C	N 21500		9.00	99.90	5.10
2013	25000 C	N 25000	0	9.00	99.90	6.10
2012	32500 C	N 32500	0	9.00	99.90	8.40
2011	22000 C	N 22000	0	9.00	99.90	7.50
2010	22500 C	N 22500	0	8.98	99.99	8.80
2009	22500 C	N 22500	0	8.99	99.99	8.40
2008	24500 C	N 24500	0	9.09	99.99	5.30
2007	26000 C	N 26000	0	8.01	99.99	4.90
2006	24000 C	N 24000	0	7.97	99.99	2.20
2005	25000 C	N 25000	S	8.80	99.90	5.50
2004	24000 C	N 24000	S	9.00	99.90	8.20
2003	26500 C	N 26500	S	8.80	99.90	4.90
2002	26000 C	N 26000	S	9.80	99.90	2.60
2001	27000 C	N 27000	S	8.20	99.90	3.00

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

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2016 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 0520 - SR A1A/HARDING AV/ONE-WAY PAIR SB, 100' N 87 ST

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2016	27000 C	S 27000	0	9.00	99.90	9.10
2015	26500 C	S 26500	0	9.00	99.90	7.60
2014	26000 C	S 26000		9.00	99.90	5.40
2013	25500 C	S 25500	0	9.00	99.90	3.00
2012	26000 C	S 26000	0	9.00	99.90	3.80
2011	23500 C	S 23500	0	9.00	99.90	7.50
2010	24000 C	S 24000	0	8.98	99.99	8.80
2009	23000 C	S 23000	0	8.99	99.99	8.40
2008	24000 C	S 24000	0	9.09	99.99	5.30
2007	24000 C	S 24000	0	8.01	99.99	4.90
2006	24000 C	S 24000	0	7.97	99.99	2.20
2005	27000 C	S 27000	0	8.80	99.90	5.50
2004	27500 C	S 27500	0	9.00	99.90	8.20
2003	26000 C	S 26000	0	8.80	99.90	4.90
2002	27500 C	S 27500	0	9.80	99.90	2.60
2001	28500 C	S 28500	0	8.20	99.90	3.00

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

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2016 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 2541 - SR A1A/COLLINS AVE, 500' S OF 63 ST (MIAMI BEACH)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2016	21000 C	N 21000	0	9.00	99.90	7.80
2015	20000 C	N 20000	0	9.00	99.90	4.60
2014	21500 C	N 21500		9.00	99.90	5.10
2013	21000 C	N 21000	0	9.00	99.90	6.10
2012	19000 C	N 19000	0	9.00	99.90	8.40
2011	17000 C	N 17000	0	9.00	99.90	7.50
2010	15000 C	N 15000	0	8.98	99.99	8.80
2009	21000 C	N 21000	0	8.99	99.99	8.40
2008	18000 C	N 18000	0	9.09	99.99	5.30
2007	16000 S	0	0	8.01	99.99	4.90
2006	16000 F			7.97	99.99	2.20
2005	16000 C	N 16000		8.80	99.90	5.50
2004	17000 C	N 17000		9.00	99.90	8.20
2003	18000 C	N 18000		8.80	99.90	4.90
2002	18500 C	N 18500		9.80	99.90	2.60
2001	18500 C	N 18500		8.20	99.90	3.00

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

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2016 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 5189 - SR 934/71 ST, 200' W SR A1A/HARDING AV

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2016	11100 C	E 5600	W 5500	9.00	54.50	4.30
2015	11700 C	E 5900	W 5800	9.00	54.70	3.80
2014	12000 C	E 6100	W 5900	9.00	54.50	3.80
2013	11600 C	E 5900	W 5700	9.00	52.40	3.70
2012	16600 C	E 7100	W 9500	9.00	55.70	10.50
2011	12000 C	E 5900	W 6100	9.00	55.10	10.50
2010	13800 C	E 5900	W 7900	8.98	54.08	9.50
2009	14400 C	E 6500	W 7900	8.99	53.24	8.40
2008	13800 C	E 6200	W 7600	9.09	55.75	9.60
2007	13800 C	E 5900	W 7900	8.01	54.34	6.60
2006	12700 C	E 5800	W 6900	7.97	54.22	8.80
2005	15800 C	E 8100	W 7700	8.80	53.80	5.50
2004	21000 C	E 9500	W 11500	9.00	53.30	12.00
2003	17200 C	E 8000	W 9200	8.80	53.40	7.50
2002	18600 C	E 8100	W 10500	9.80	52.30	7.10
2001	17700 C	E 7800	W 9900	8.20	53.50	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
2016 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 5191 - SR934/NE 79TH ST/NORTH BAY CSWY/71ST ST, 100' W OF RUE VERSAILLES

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2016	18500 C	E 18500	0	9.00	99.90	7.20
2015	19000 C	E 19000	0	9.00	99.90	11.80
2014	16500 C	E 16500		9.00	99.90	10.40
2013	20500 C	E 20500	0	9.00	99.90	9.00
2012	19500 C	E 19500	0	9.00	99.90	10.50
2011	18500 C	E 18500	0	9.00	99.90	10.50
2010	16500 C	E 16500	0	8.98	99.99	9.50
2009	17500 C	E 17500	0	8.99	99.99	8.40

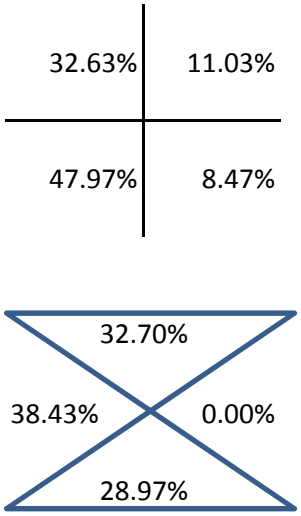
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Cardinal Distribution

7140 Collins Hotel **# 16204**

TAZ 622

DIRECTION	2010	2040	2020
NNE	10.60%	11.90%	11.03%
ENE	0.00%	0.00%	0.00%
ESE	0.00%	0.00%	0.00%
SSE	6.90%	11.60%	8.47%
SSW	21.00%	19.50%	20.50%
WSW	28.10%	26.20%	27.47%
WNW	11.10%	10.70%	10.97%
NNW	22.40%	20.20%	21.67%



Appendix D
Intersection Capacity Analysis Worksheets

Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	140	37	75	279	0	0	0	0	47	1747	175
Future Volume (veh/h)	0	140	37	75	279	0	0	0	0	47	1747	175
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	0.96		1.00				1.00		0.95
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00				0.90	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1900	1870	1900
Adj Flow Rate, veh/h	0	146	39	78	291	0				49	1820	182
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	504	357	121	365	0				69	2719	279
Arrive On Green	0.00	0.27	0.27	0.27	0.27	0.00				0.60	0.60	0.60
Sat Flow, veh/h	0	1870	1323	269	1355	0				116	4554	468
Grp Volume(v), veh/h	0	146	39	369	0	0				711	656	684
Grp Sat Flow(s),veh/h/ln	0	1870	1323	1624	0	0				1678	1702	1758
Q Serve(g_s), s	0.0	5.6	2.0	13.9	0.0	0.0				26.7	22.7	23.1
Cycle Q Clear(g_c), s	0.0	5.6	2.0	19.4	0.0	0.0				26.7	22.7	23.1
Prop In Lane	0.00		1.00	0.21		0.00				0.07		0.27
Lane Grp Cap(c), veh/h	0	504	357	486	0	0				1002	1016	1049
V/C Ratio(X)	0.00	0.29	0.11	0.76	0.00	0.00				0.71	0.65	0.65
Avail Cap(c_a), veh/h	0	540	382	518	0	0				1002	1016	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	26.0	24.7	31.1	0.0	0.0				12.7	11.9	12.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	5.2	0.0	0.0				4.3	3.2	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.4	1.1	12.7	0.0	0.0				15.2	13.4	13.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.2	24.8	36.3	0.0	0.0				16.9	15.1	15.1
LnGrp LOS	A	C	C	D	A	A				B	B	B
Approach Vol, veh/h		185			369						2051	
Approach Delay, s/veh		25.9			36.3						15.7	
Approach LOS		C			D						B	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		59.7		30.3				30.3				
Change Period (Y+Rc), s		6.0		6.0				6.0				
Max Green Setting (Gmax), s		52.0		26.0				26.0				
Max Q Clear Time (g_c+I1), s		28.7		21.4				7.6				
Green Ext Time (p_c), s		6.1		0.7				0.5				

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	140	37	75	279	0	0	0	0	47	1747	175
Future Volume (vph)	0	140	37	75	279	0	0	0	0	47	1747	175
Confl. Peds. (#/hr)	29		54	54		29	32		19	19		32
Confl. Bikes (#/hr)			2			8			2			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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)			0		0					0		
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		8			4					2	2	
Permitted Phases			8	4								
Detector Phase		8	8	4	4					2	2	
Switch Phase												
Minimum Initial (s)		7.0	7.0	7.0	7.0					5.0	5.0	
Minimum Split (s)		32.0	32.0	32.0	32.0					28.0	28.0	
Total Split (s)		32.0	32.0	32.0	32.0					58.0	58.0	
Total Split (%)		35.6%	35.6%	35.6%	35.6%					64.4%	64.4%	
Yellow Time (s)		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	
Lost Time Adjust (s)		0.0	0.0		0.0						0.0	
Total Lost Time (s)		6.0	6.0		6.0						6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None	None	None	None					C-Max	C-Max	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:SBTL and 6:, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: 72nd Street & Abbott Avenue

Intersection	
Int Delay, s/veh	35.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	119	41	12	175	26	151	150	210	6	8	18
Future Vol, veh/h	31	119	41	12	175	26	151	150	210	6	8	18
Conflicting Peds, #/hr	14	0	33	33	0	14	9	0	7	7	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	125	43	13	184	27	159	158	221	6	8	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	225	0	0	201	0	0	492	497	187	647	505	221
Stage 1	-	-	-	-	-	-	246	246	-	238	238	-
Stage 2	-	-	-	-	-	-	246	251	-	409	267	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1344	-	-	1371	-	-	487	475	855	384	470	819
Stage 1	-	-	-	-	-	-	758	703	-	765	708	-
Stage 2	-	-	-	-	-	-	758	699	-	619	688	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1326	-	-	1328	-	-	436	437	823	192	432	801
Mov Cap-2 Maneuver	-	-	-	-	-	-	436	437	-	192	432	-
Stage 1	-	-	-	-	-	-	713	662	-	734	691	-
Stage 2	-	-	-	-	-	-	717	682	-	333	648	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.4	64.9	13.8
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	541	1326	-	-	1328	-	-	443
HCM Lane V/C Ratio	0.994	0.025	-	-	0.01	-	-	0.076
HCM Control Delay (s)	64.9	7.8	0	-	7.7	0	-	13.8
HCM Lane LOS	F	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	14	0.1	-	-	0	-	-	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	347	0	156	2395	0	0
Future Volume (veh/h)	347	0	156	2395	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	0	1870	1870		
Adj Flow Rate, veh/h	369	0	166	2548		
Peak Hour Factor	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	0	2	2		
Cap, veh/h	0	0	1752	3415		
Arrive On Green	0.00	0.00	0.32	0.32		
Sat Flow, veh/h	0		1781	3647		
Grp Volume(v), veh/h	0.0		166	2548		
Grp Sat Flow(s),veh/h/ln			1781	1777		
Q Serve(g_s), s			11.8	115.4		
Cycle Q Clear(g_c), s			11.8	115.4		
Prop In Lane			1.00			
Lane Grp Cap(c), veh/h			1752	3415		
V/C Ratio(X)			0.09	0.75		
Avail Cap(c_a), veh/h			1752	3415		
HCM Platoon Ratio			0.33	0.33		
Upstream Filter(I)			0.72	0.72		
Uniform Delay (d), s/veh			6.4	41.8		
Incr Delay (d2), s/veh			0.1	1.1		
Initial Q Delay(d3),s/veh			0.0	0.0		
%ile BackOfQ(95%),veh/ln			2.4	64.3		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			6.5	42.9		
LnGrp LOS			A	D		
Approach Vol, veh/h				2714		
Approach Delay, s/veh				40.7		
Approach LOS				D		

Timer - Assigned Phs	2
Phs Duration (G+Y+Rc), s	180.0
Change Period (Y+Rc), s	7.0
Max Green Setting (Gmax), s	143.0
Max Q Clear Time (g_c+I1), s	117.4
Green Ext Time (p_c), s	13.0

Intersection Summary	
HCM 6th Ctrl Delay	40.7
HCM 6th LOS	D

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	347	0	156	2395	0	0
Future Volume (vph)	347	0	156	2395	0	0
Confl. Peds. (#/hr)	9	66	90			
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)			0			
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Turn Type	Prot		Perm	NA		
Protected Phases	4			2		
Permitted Phases			2			
Detector Phase	4		2	2		
Switch Phase						
Minimum Initial (s)	7.0		6.0	6.0		
Minimum Split (s)	26.0		26.0	26.0		
Total Split (s)	30.0		150.0	150.0		
Total Split (%)	16.7%		83.3%	83.3%		
Yellow Time (s)	4.0		4.0	4.0		
All-Red Time (s)	3.0		3.0	3.0		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	7.0		7.0	7.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max	C-Max		

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 125 (69%), Referenced to phase 2:NBTL and 6:, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 3: 72nd Street & Collins Avenue

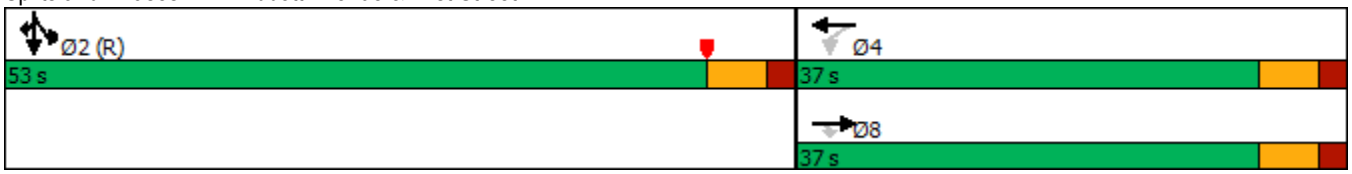
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	326	58	52	346	0	0	0	0	62	1388	366
Future Volume (vph)	0	326	58	52	346	0	0	0	0	62	1388	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0						6.0	6.0
Lane Util. Factor		1.00	1.00	1.00	1.00						0.91	1.00
Frpb, ped/bikes		1.00	0.95	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	0.99	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)		1863	1358	1745	1676						5074	1583
Flt Permitted		1.00	1.00	0.32	1.00						1.00	1.00
Satd. Flow (perm)		1863	1358	595	1676						5074	1583
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	340	60	54	360	0	0	0	0	65	1446	381
RTOR Reduction (vph)	0	0	27	0	0	0	0	0	0	0	0	75
Lane Group Flow (vph)	0	340	33	54	360	0	0	0	0	0	1511	306
Confl. Peds. (#/hr)	48		23	23		48	30		23	23		30
Confl. Bikes (#/hr)			9			5			3			
Parking (#/hr)			0		0							
Turn Type		NA	Perm	Perm	NA					Split	NA	Prot
Protected Phases		8			4					2	2	2
Permitted Phases			8	4								
Actuated Green, G (s)		23.0	23.0	23.0	23.0						55.0	55.0
Effective Green, g (s)		23.0	23.0	23.0	23.0						55.0	55.0
Actuated g/C Ratio		0.26	0.26	0.26	0.26						0.61	0.61
Clearance Time (s)		6.0	6.0	6.0	6.0						6.0	6.0
Vehicle Extension (s)		1.0	1.0	1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		476	347	152	428						3100	967
v/s Ratio Prot		0.18			c0.21						c0.30	0.19
v/s Ratio Perm			0.02	0.09								
v/c Ratio		0.71	0.10	0.36	0.84						0.49	0.32
Uniform Delay, d1		30.5	25.6	27.4	31.8						9.7	8.4
Progression Factor		1.00	1.00	1.12	1.12						0.23	0.02
Incremental Delay, d2		4.2	0.0	0.4	11.2						0.4	0.6
Delay (s)		34.7	25.6	31.1	46.9						2.7	0.8
Level of Service		C	C	C	D						A	A
Approach Delay (s)		33.4			44.8			0.0			2.3	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
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	326	58	52	346	0	0	0	0	62	1388	366
Future Volume (vph)	0	326	58	52	346	0	0	0	0	62	1388	366
Confl. Peds. (#/hr)	48		23	23		48	30		23	23		30
Confl. Bikes (#/hr)			9			5			3			
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)			0		0							
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA					Split	NA	Prot
Protected Phases		8			4					2	2	2
Permitted Phases			8	4								
Detector Phase		8	8	4	4					2	2	2
Switch Phase												
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Minimum Split (s)		28.0	28.0	28.0	28.0					28.0	28.0	28.0
Total Split (s)		37.0	37.0	37.0	37.0					53.0	53.0	53.0
Total Split (%)		41.1%	41.1%	41.1%	41.1%					58.9%	58.9%	58.9%
Yellow Time (s)		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
Lost Time Adjust (s)		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
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None	None	None	None					C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Abbott Avenue & 71st Street



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	340	60	54	360	1511	381
v/c Ratio	0.71	0.16	0.36	0.84	0.49	0.37
Control Delay	38.5	12.7	34.2	50.0	2.8	0.8
Queue Delay	0.3	0.0	0.0	2.4	0.1	0.3
Total Delay	38.8	12.7	34.2	52.4	3.0	1.1
Queue Length 50th (ft)	176	10	34	240	30	0
Queue Length 95th (ft)	238	36	m47	m257	36	m0
Internal Link Dist (ft)	819			218	298	
Turn Bay Length (ft)		100	100			200
Base Capacity (vph)	641	492	204	577	3101	1042
Starvation Cap Reductn	0	0	0	115	517	246
Spillback Cap Reductn	55	0	0	0	200	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.12	0.26	0.78	0.58	0.48

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	270	42	21	192	10	168	323	47	10	22	18
Future Volume (veh/h)	85	270	42	21	192	10	168	323	47	10	22	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.92	0.99		0.92	0.98		0.94	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	89	281	44	22	200	10	175	336	49	10	23	19
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	550	702	110	492	726	36	226	365	52	119	263	193
Arrive On Green	0.06	0.60	0.60	0.02	0.41	0.41	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1781	1558	244	1781	1758	88	484	1016	144	200	734	537
Grp Volume(v), veh/h	89	0	325	22	0	210	560	0	0	52	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1802	1781	0	1846	1644	0	0	1471	0	0
Q Serve(g_s), s	2.5	0.0	8.6	0.6	0.0	6.8	28.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	8.6	0.6	0.0	6.8	29.8	0.0	0.0	1.8	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.05	0.31		0.09	0.19		0.37
Lane Grp Cap(c), veh/h	550	0	812	492	0	762	643	0	0	576	0	0
V/C Ratio(X)	0.16	0.00	0.40	0.04	0.00	0.28	0.87	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	560	0	812	569	0	762	692	0	0	620	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.63	0.00	0.63	0.99	0.00	0.99	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.6	0.0	11.6	14.6	0.0	17.5	27.9	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	0.9	10.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	5.2	0.5	0.0	5.4	18.9	0.0	0.0	1.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.6	0.0	11.7	14.6	0.0	18.4	38.3	0.0	0.0	19.1	0.0	0.0
LnGrp LOS	B	A	B	B	A	B	D	A	A	B	A	A
Approach Vol, veh/h		414			232			560			52	
Approach Delay, s/veh		12.1			18.0			38.3			19.1	
Approach LOS		B			B			D			B	

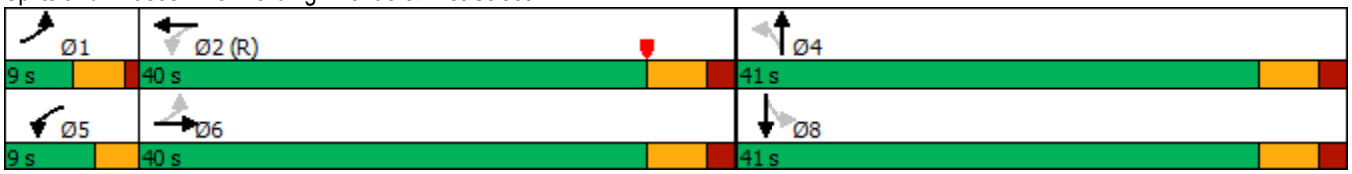
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	43.2		38.3	5.1	46.6		38.3
Change Period (Y+Rc), s	4.5	6.0		6.0	3.0	6.0		6.0
Max Green Setting (Gmax), s	4.5	34.0		35.0	6.0	34.0		35.0
Max Q Clear Time (g_c+I1), s	4.5	8.8		31.8	2.6	10.6		3.8
Green Ext Time (p_c), s	0.0	0.4		0.6	0.0	0.7		0.1

Intersection Summary	
HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	270	42	21	192	10	168	323	47	10	22	18
Future Volume (vph)	85	270	42	21	192	10	168	323	47	10	22	18
Confl. Peds. (#/hr)	6		28	28		6	11		13	13		11
Confl. Bikes (#/hr)			36			29			21			15
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0			0			0			0	
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	4.5	7.0		5.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	9.0	24.0		9.0	24.0		29.0	29.0		29.0	29.0	
Total Split (s)	9.0	40.0		9.0	40.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.0%	44.4%		10.0%	44.4%		45.6%	45.6%		45.6%	45.6%	
Yellow Time (s)	3.5	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		0.0	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)	4.5	6.0		3.0	6.0			6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	C-Max		None	None		None	None	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 5: Harding Avenue & 71st Street



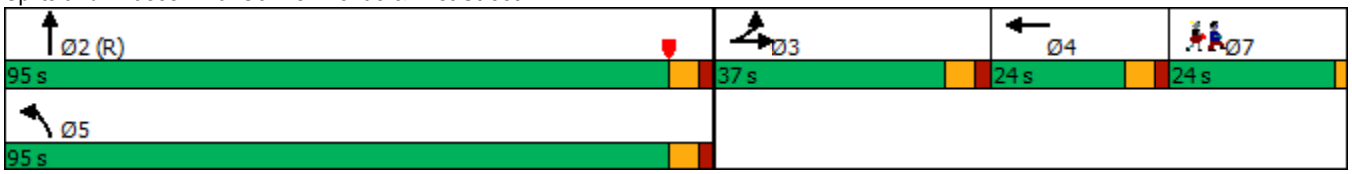
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	306	8	0	0	15	24	173	2230	7	0	0	0
Future Volume (vph)	306	8	0	0	15	24	173	2230	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0		6.0	6.0				
Lane Util. Factor	*1.00	0.95			1.00		1.00	0.91				
Frpb, ped/bikes	1.00	1.00			0.92		1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.92		1.00	1.00				
Flt Protected	1.00	0.96			1.00		0.95	1.00				
Satd. Flow (prot)	1863	1522			1575		1770	5082				
Flt Permitted	1.00	0.96			1.00		0.95	1.00				
Satd. Flow (perm)	1863	1522			1575		1770	5082				
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)	319	8	0	0	16	25	180	2323	7	0	0	0
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	0	0	0	0
Lane Group Flow (vph)	223	104	0	0	17	0	180	2330	0	0	0	0
Confl. Peds. (#/hr)	14		34	34		14	142		7	7		142
Confl. Bikes (#/hr)			6			1			7			8
Parking (#/hr)		0										
Turn Type	Split	NA			NA		Prot	NA				
Protected Phases	3	3			4		5	2				
Permitted Phases												
Actuated Green, G (s)	24.5	24.5			6.6		130.9	130.9				
Effective Green, g (s)	24.5	24.5			6.6		130.9	130.9				
Actuated g/C Ratio	0.14	0.14			0.04		0.73	0.73				
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0				
Vehicle Extension (s)	1.0	1.0			2.5		1.0	1.0				
Lane Grp Cap (vph)	253	207			57		1287	3695				
v/s Ratio Prot	c0.12	0.07			c0.01		0.10	c0.46				
v/s Ratio Perm												
v/c Ratio	0.88	0.50			0.30		0.14	0.63				
Uniform Delay, d1	76.3	72.1			84.4		7.5	12.4				
Progression Factor	0.79	0.80			1.00		1.00	1.00				
Incremental Delay, d2	24.5	0.6			2.1		0.0	0.8				
Delay (s)	84.5	58.6			86.6		7.5	13.2				
Level of Service	F	E			F		A	B				
Approach Delay (s)		76.2			86.6			12.8			0.0	
Approach LOS		E			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
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)	306	8	0	0	15	24	173	2230	7	0	0	0
Future Volume (vph)	306	8	0	0	15	24	173	2230	7	0	0	0
Confl. Peds. (#/hr)	14		34	34		14	142		7	7		142
Confl. Bikes (#/hr)			6			1			7			8
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0										
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)	30%											
Turn Type	Split	NA			NA		Prot	NA				
Protected Phases	3	3			4		5	2				
Permitted Phases												
Detector Phase	3	3			4		5	2				
Switch Phase												
Minimum Initial (s)	7.0	7.0			7.0		5.0	4.0				
Minimum Split (s)	25.0	25.0			13.0		11.0	32.0				
Total Split (s)	37.0	37.0			24.0		95.0	95.0				
Total Split (%)	20.6%	20.6%			13.3%		52.8%	52.8%				
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0				
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0				
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0				
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0				
Lead/Lag	Lead	Lead			Lag							
Lead-Lag Optimize?	Yes	Yes			Yes							
Recall Mode	None	None			None		None	C-Max				

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 83 (46%), Referenced to phase 2:NBT and 6:, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Collins Avenue & 71st Street



Lane Group	Ø7
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	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	13%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None

Intersection Summary

Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	223	104	41	180	2330
v/c Ratio	0.88	0.50	0.42	0.14	0.62
Control Delay	88.9	64.5	53.8	8.6	14.0
Queue Delay	8.1	1.0	0.0	0.0	0.2
Total Delay	96.9	65.5	53.8	8.6	14.1
Queue Length 50th (ft)	197	84	19	61	482
Queue Length 95th (ft)	m269	m148	63	109	630
Internal Link Dist (ft)		201	194		286
Turn Bay Length (ft)	100			200	
Base Capacity (vph)	320	262	187	1298	3730
Starvation Cap Reductn	64	49	0	0	0
Spillback Cap Reductn	0	0	0	40	449
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.49	0.22	0.14	0.71

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	266	616	417	0	866	24	919	249	4	9	110	426
Future Volume (vph)	266	616	417	0	866	24	919	249	4	9	110	426
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
Lane Util. Factor	1.00	1.00	1.00		0.95		0.97	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		3509		3433	1853			1856	1583
Flt Permitted	0.11	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	214	1863	1583		3509		3433	1853			1856	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	271	629	426	0	884	24	938	254	4	9	112	435
RTOR Reduction (vph)	0	0	60	0	1	0	0	1	0	0	0	51
Lane Group Flow (vph)	271	629	366	0	907	0	938	257	0	0	121	385
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Turn Type	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Actuated Green, G (s)	70.0	70.0	112.0		47.0		36.0	36.0			16.0	39.0
Effective Green, g (s)	70.0	70.0	112.0		47.0		36.0	36.0			16.0	39.0
Actuated g/C Ratio	0.50	0.50	0.80		0.34		0.26	0.26			0.11	0.28
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0			6.0	
Vehicle Extension (s)	2.0	1.0			1.0		2.5	2.5			4.0	
Lane Grp Cap (vph)	295	931	1266		1178		882	476			212	440
v/s Ratio Prot	0.11	0.34	0.23		0.26		c0.27	0.14			0.07	c0.24
v/s Ratio Perm	c0.35											
v/c Ratio	0.92	0.68	0.29		0.77		1.06	0.54			0.57	0.87
Uniform Delay, d1	34.5	26.4	3.6		41.7		52.0	44.9			58.7	48.2
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	35.2	3.9	0.6		4.9		48.6	4.4			10.7	20.8
Delay (s)	69.6	30.3	4.2		46.5		100.6	49.2			69.4	68.9
Level of Service	E	C	A		D		F	D			E	E
Approach Delay (s)		30.0			46.5			89.6			69.0	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	92.5%	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)	266	616	417	0	866	24	919	249	4	9	110	426
Future Volume (vph)	266	616	417	0	866	24	919	249	4	9	110	426
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
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	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Detector Phase	1	6	6 7		2		7	7		8	8	8 1
Switch Phase												
Minimum Initial (s)	5.0	4.0			4.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	40.0			40.0		35.0	35.0		22.0	22.0	
Total Split (s)	23.0	76.0			53.0		42.0	42.0		22.0	22.0	
Total Split (%)	16.4%	54.3%			37.9%		30.0%	30.0%		15.7%	15.7%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead				Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes				Yes		Yes	Yes		Yes	Yes	
Recall Mode	Max	Max			C-Max		Max	Max		Max	Max	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 7 (5%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 7: Indian Creek Drive & 71st Street

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	271	629	426	908	938	258	121	435
v/c Ratio	0.92	0.68	0.32	0.77	1.06	0.54	0.57	0.89
Control Delay	65.9	31.0	1.6	46.9	97.7	49.6	70.1	61.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.8
Total Delay	65.9	31.0	1.6	46.9	97.7	49.6	70.1	111.0
Queue Length 50th (ft)	167	422	21	388	~483	203	106	328
Queue Length 95th (ft)	#337	563	43	471	#615	296	176	#524
Internal Link Dist (ft)		544		819		518	291	
Turn Bay Length (ft)								
Base Capacity (vph)	295	931	1326	1179	882	477	212	491
Starvation Cap Reductn	0	0	0	0	0	0	0	109
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.68	0.32	0.77	1.06	0.54	0.57	1.14

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	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	145	38	78	288	0	0	0	0	49	1823	181
Future Volume (veh/h)	0	145	38	78	288	0	0	0	0	49	1823	181
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	0.96		1.00				1.00		0.95
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1900	1870	1900
Adj Flow Rate, veh/h	0	151	40	81	300	0				51	1899	189
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	510	361	122	363	0				71	2803	286
Arrive On Green	0.00	0.27	0.27	0.27	0.27	0.00				0.59	0.59	0.59
Sat Flow, veh/h	0	1870	1324	268	1331	0				120	4718	482
Grp Volume(v), veh/h	0	151	40	381	0	0				793	658	688
Grp Sat Flow(s),veh/h/ln	0	1870	1324	1599	0	0				1864	1702	1754
Q Serve(g_s), s	0.0	5.7	2.0	14.9	0.0	0.0				27.0	23.0	23.6
Cycle Q Clear(g_c), s	0.0	5.7	2.0	20.6	0.0	0.0				27.0	23.0	23.6
Prop In Lane	0.00		1.00	0.21		0.00				0.06		0.27
Lane Grp Cap(c), veh/h	0	510	361	484	0	0				1107	1011	1042
V/C Ratio(X)	0.00	0.30	0.11	0.79	0.00	0.00				0.72	0.65	0.66
Avail Cap(c_a), veh/h	0	540	383	511	0	0				1107	1011	1042
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	25.9	24.5	31.4	0.0	0.0				12.9	12.1	12.2
Incr Delay (d2), s/veh	0.0	0.1	0.0	6.8	0.0	0.0				4.0	3.3	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.6	1.1	13.4	0.0	0.0				16.7	13.6	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.0	24.6	38.2	0.0	0.0				16.9	15.4	15.5
LnGrp LOS	A	C	C	D	A	A				B	B	B
Approach Vol, veh/h		191			381						2139	
Approach Delay, s/veh		25.7			38.2						16.0	
Approach LOS		C			D						B	

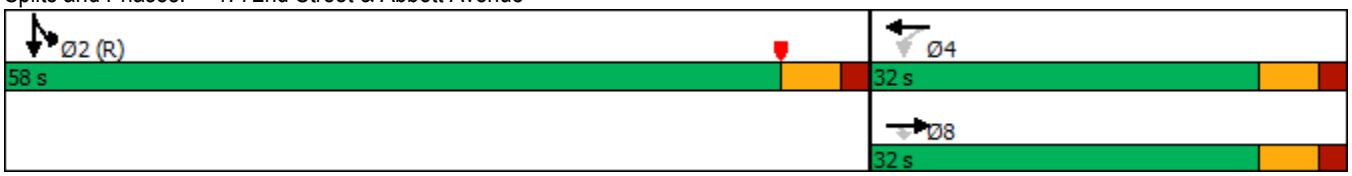
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		59.5		30.5				30.5				
Change Period (Y+Rc), s		6.0		6.0				6.0				
Max Green Setting (Gmax), s		52.0		26.0				26.0				
Max Q Clear Time (g_c+I1), s		29.0		22.6				7.7				
Green Ext Time (p_c), s		6.5		0.5				0.5				

Intersection Summary												
HCM 6th Ctrl Delay			19.8									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	145	38	78	288	0	0	0	0	49	1823	181
Future Volume (vph)	0	145	38	78	288	0	0	0	0	49	1823	181
Confl. Peds. (#/hr)	29		54	54		29	32		19	19		32
Confl. Bikes (#/hr)			2			8			2			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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)			0		0							
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		8			4					2	2	
Permitted Phases			8	4								
Detector Phase		8	8	4	4					2	2	
Switch Phase												
Minimum Initial (s)		7.0	7.0	7.0	7.0					5.0	5.0	
Minimum Split (s)		32.0	32.0	32.0	32.0					28.0	28.0	
Total Split (s)		32.0	32.0	32.0	32.0					58.0	58.0	
Total Split (%)		35.6%	35.6%	35.6%	35.6%					64.4%	64.4%	
Yellow Time (s)		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	
Lost Time Adjust (s)		0.0	0.0		0.0						0.0	
Total Lost Time (s)		6.0	6.0		6.0						6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None	None	None	None					C-Max	C-Max	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:SBTL and 6:, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: 72nd Street & Abbott Avenue



Intersection	
Int Delay, s/veh	44.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	123	43	13	181	27	156	155	217	6	9	18
Future Vol, veh/h	32	123	43	13	181	27	156	155	217	6	9	18
Conflicting Peds, #/hr	14	0	33	33	0	14	9	0	7	7	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	129	45	14	191	28	164	163	228	6	9	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	233	0	0	207	0	0	509	514	192	669	522	228
Stage 1	-	-	-	-	-	-	253	253	-	247	247	-
Stage 2	-	-	-	-	-	-	256	261	-	422	275	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1335	-	-	1364	-	-	475	464	850	371	459	811
Stage 1	-	-	-	-	-	-	751	698	-	757	702	-
Stage 2	-	-	-	-	-	-	749	692	-	609	683	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1317	-	-	1321	-	-	424	426	818	178	421	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	424	426	-	178	421	-
Stage 1	-	-	-	-	-	-	706	657	-	725	684	-
Stage 2	-	-	-	-	-	-	706	675	-	318	643	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.5	80.4	14.2
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	530	1317	-	-	1321	-	-	424
HCM Lane V/C Ratio	1.049	0.026	-	-	0.01	-	-	0.082
HCM Control Delay (s)	80.4	7.8	0	-	7.8	0	-	14.2
HCM Lane LOS	F	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	16.1	0.1	-	-	0	-	-	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	359	0	161	2483	0	0
Future Volume (veh/h)	359	0	161	2483	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	0	1870	1870		
Adj Flow Rate, veh/h	382	0	171	2641		
Peak Hour Factor	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	0	2	2		
Cap, veh/h	0	0	1752	3415		
Arrive On Green	0.00	0.00	0.32	0.32		
Sat Flow, veh/h	0		1781	3647		
Grp Volume(v), veh/h	0.0		171	2641		
Grp Sat Flow(s),veh/h/ln			1781	1777		
Q Serve(g_s), s			12.2	121.0		
Cycle Q Clear(g_c), s			12.2	121.0		
Prop In Lane			1.00			
Lane Grp Cap(c), veh/h			1752	3415		
V/C Ratio(X)			0.10	0.77		
Avail Cap(c_a), veh/h			1752	3415		
HCM Platoon Ratio			0.33	0.33		
Upstream Filter(I)			0.68	0.68		
Uniform Delay (d), s/veh			6.6	43.7		
Incr Delay (d2), s/veh			0.1	1.2		
Initial Q Delay(d3),s/veh			0.0	0.0		
%ile BackOfQ(95%),veh/ln			3.1	66.9		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			6.6	44.9		
LnGrp LOS			A	D		
Approach Vol, veh/h				2812		
Approach Delay, s/veh				42.6		
Approach LOS				D		

Timer - Assigned Phs	2
Phs Duration (G+Y+Rc), s	180.0
Change Period (Y+Rc), s	7.0
Max Green Setting (Gmax), s	143.0
Max Q Clear Time (g_c+I1), s	123.0
Green Ext Time (p_c), s	12.1

Intersection Summary	
HCM 6th Ctrl Delay	42.6
HCM 6th LOS	D

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	359	0	161	2483	0	0
Future Volume (vph)	359	0	161	2483	0	0
Confl. Peds. (#/hr)	9	66	90			
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)			0			
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Turn Type	Prot		Perm	NA		
Protected Phases	4			2		
Permitted Phases			2			
Detector Phase	4		2	2		
Switch Phase						
Minimum Initial (s)	7.0		6.0	6.0		
Minimum Split (s)	26.0		26.0	26.0		
Total Split (s)	30.0		150.0	150.0		
Total Split (%)	16.7%		83.3%	83.3%		
Yellow Time (s)	4.0		4.0	4.0		
All-Red Time (s)	3.0		3.0	3.0		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	7.0		7.0	7.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max	C-Max		

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 125 (69%), Referenced to phase 2:NBTL and 6:, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 3: 72nd Street & Collins Avenue

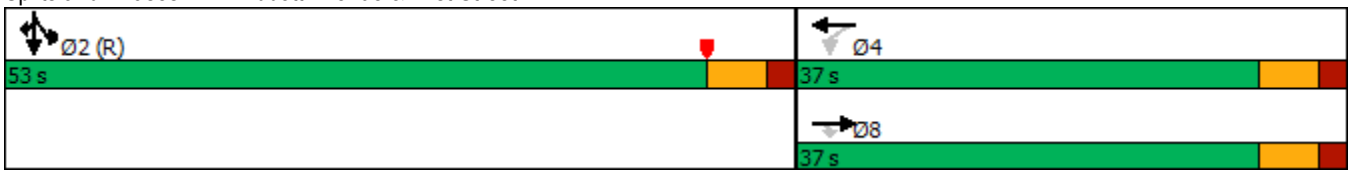
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	344	71	55	369	0	0	0	0	64	1443	381
Future Volume (vph)	0	344	71	55	369	0	0	0	0	64	1443	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0						6.0	6.0
Lane Util. Factor		1.00	1.00	1.00	1.00						0.91	1.00
Frpb, ped/bikes		1.00	0.95	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	0.99	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)		1863	1358	1746	1676						5074	1583
Flt Permitted		1.00	1.00	0.31	1.00						1.00	1.00
Satd. Flow (perm)		1863	1358	571	1676						5074	1583
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	358	74	57	384	0	0	0	0	67	1503	397
RTOR Reduction (vph)	0	0	26	0	0	0	0	0	0	0	0	70
Lane Group Flow (vph)	0	358	48	57	384	0	0	0	0	0	1570	327
Confl. Peds. (#/hr)	48		23	23		48	30		23	23		30
Confl. Bikes (#/hr)			9			5			3			
Parking (#/hr)			0		0							
Turn Type		NA	Perm	Perm	NA					Split	NA	Prot
Protected Phases		8			4					2	2	2
Permitted Phases			8	4								
Actuated Green, G (s)		24.0	24.0	24.0	24.0						54.0	54.0
Effective Green, g (s)		24.0	24.0	24.0	24.0						54.0	54.0
Actuated g/C Ratio		0.27	0.27	0.27	0.27						0.60	0.60
Clearance Time (s)		6.0	6.0	6.0	6.0						6.0	6.0
Vehicle Extension (s)		1.0	1.0	1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		496	362	152	446						3044	949
v/s Ratio Prot		0.19			c0.23						c0.31	0.21
v/s Ratio Perm			0.04	0.10								
v/c Ratio		0.72	0.13	0.38	0.86						0.52	0.34
Uniform Delay, d1		30.0	25.1	26.9	31.4						10.4	9.1
Progression Factor		1.00	1.00	1.09	1.12						0.23	0.02
Incremental Delay, d2		4.4	0.1	0.5	12.5						0.4	0.7
Delay (s)		34.3	25.1	29.8	47.7						2.8	0.8
Level of Service		C	C	C	D						A	A
Approach Delay (s)		32.8			45.4			0.0			2.4	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
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	344	71	55	369	0	0	0	0	64	1443	381
Future Volume (vph)	0	344	71	55	369	0	0	0	0	64	1443	381
Confl. Peds. (#/hr)	48		23	23		48	30		23	23		30
Confl. Bikes (#/hr)			9			5			3			
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)			0		0							
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA					Split	NA	Prot
Protected Phases		8			4					2	2	2
Permitted Phases			8	4								
Detector Phase		8	8	4	4					2	2	2
Switch Phase												
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Minimum Split (s)		28.0	28.0	28.0	28.0					28.0	28.0	28.0
Total Split (s)		37.0	37.0	37.0	37.0					53.0	53.0	53.0
Total Split (%)		41.1%	41.1%	41.1%	41.1%					58.9%	58.9%	58.9%
Yellow Time (s)		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
Lost Time Adjust (s)		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
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None	None	None	None					C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Abbott Avenue & 71st Street



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	358	74	57	384	1570	397
v/c Ratio	0.72	0.19	0.38	0.86	0.52	0.39
Control Delay	37.9	14.5	33.5	50.2	2.9	0.9
Queue Delay	0.5	0.0	0.0	4.5	0.2	0.4
Total Delay	38.3	14.5	33.5	54.8	3.1	1.2
Queue Length 50th (ft)	183	16	36	254	32	0
Queue Length 95th (ft)	252	44	m50	m273	37	m0
Internal Link Dist (ft)	819			218	298	
Turn Bay Length (ft)		100	100			200
Base Capacity (vph)	641	492	195	577	3043	1019
Starvation Cap Reductn	0	0	0	127	503	233
Spillback Cap Reductn	64	0	0	0	203	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.15	0.29	0.85	0.62	0.51

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	279	44	21	211	11	174	334	49	11	22	18
Future Volume (veh/h)	87	279	44	21	211	11	174	334	49	11	22	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.92	0.99		0.92	0.98		0.94	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	91	291	46	22	220	11	181	348	51	11	23	19
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	520	684	108	468	704	35	232	375	53	129	260	190
Arrive On Green	0.06	0.59	0.59	0.02	0.40	0.40	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	1555	246	1781	1758	88	486	1014	145	217	702	513
Grp Volume(v), veh/h	91	0	337	22	0	231	580	0	0	53	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1801	1781	0	1846	1645	0	0	1432	0	0
Q Serve(g_s), s	2.6	0.0	9.3	0.6	0.0	7.7	29.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.6	0.0	9.3	0.6	0.0	7.7	30.9	0.0	0.0	1.8	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.05	0.31		0.09	0.21		0.36
Lane Grp Cap(c), veh/h	520	0	792	468	0	740	661	0	0	578	0	0
V/C Ratio(X)	0.17	0.00	0.43	0.05	0.00	0.31	0.88	0.00	0.00	0.09	0.00	0.00
Avail Cap(c_a), veh/h	527	0	792	545	0	740	692	0	0	606	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.00	0.62	0.99	0.00	0.99	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.1	0.0	12.4	15.3	0.0	18.5	27.5	0.0	0.0	18.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	1.1	11.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	0.0	5.6	0.5	0.0	6.2	19.7	0.0	0.0	1.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.2	0.0	12.5	15.3	0.0	19.6	38.9	0.0	0.0	18.5	0.0	0.0
LnGrp LOS	B	A	B	B	A	B	D	A	A	B	A	A
Approach Vol, veh/h		428			253			580			53	
Approach Delay, s/veh		12.8			19.2			38.9			18.5	
Approach LOS		B			B			D			B	

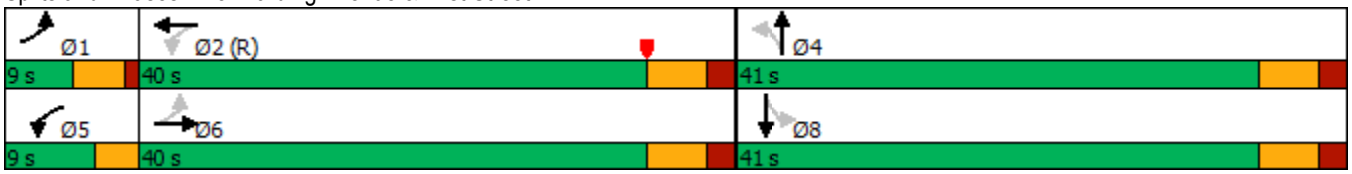
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	42.1		39.3	5.1	45.6		39.3
Change Period (Y+Rc), s	4.5	6.0		6.0	3.0	6.0		6.0
Max Green Setting (Gmax), s	4.5	34.0		35.0	6.0	34.0		35.0
Max Q Clear Time (g_c+I1), s	4.6	9.7		32.9	2.6	11.3		3.8
Green Ext Time (p_c), s	0.0	0.5		0.4	0.0	0.7		0.1

Intersection Summary		
HCM 6th Ctrl Delay		25.8
HCM 6th LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	279	44	21	211	11	174	334	49	11	22	18
Future Volume (vph)	87	279	44	21	211	11	174	334	49	11	22	18
Confl. Peds. (#/hr)	6		28	28		6	11		13	13		11
Confl. Bikes (#/hr)			36			29			21			15
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0			0			0			0	
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	4.5	7.0		5.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	9.0	24.0		9.0	24.0		29.0	29.0		29.0	29.0	
Total Split (s)	9.0	40.0		9.0	40.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.0%	44.4%		10.0%	44.4%		45.6%	45.6%		45.6%	45.6%	
Yellow Time (s)	3.5	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		0.0	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)	4.5	6.0		3.0	6.0			6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	C-Max		None	None		None	None	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 5: Harding Avenue & 71st Street



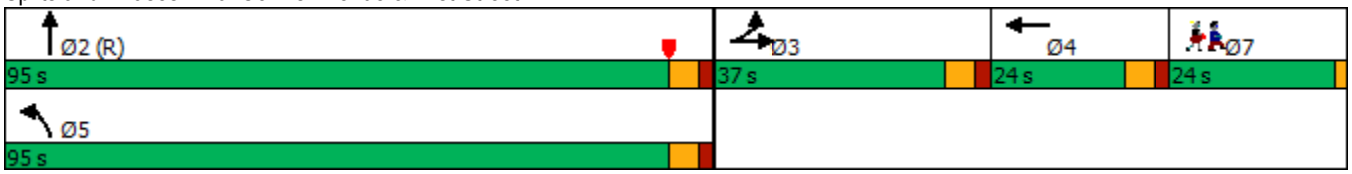
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	9	0	0	16	25	185	2312	15	0	0	0
Future Volume (vph)	315	9	0	0	16	25	185	2312	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0		6.0	6.0				
Lane Util. Factor	*1.00	0.95			1.00		1.00	0.91				
Frpb, ped/bikes	1.00	1.00			0.92		1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.92		1.00	1.00				
Flt Protected	1.00	0.96			1.00		0.95	1.00				
Satd. Flow (prot)	1863	1523			1579		1770	5078				
Flt Permitted	1.00	0.96			1.00		0.95	1.00				
Satd. Flow (perm)	1863	1523			1579		1770	5078				
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)	328	9	0	0	17	26	193	2408	16	0	0	0
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	0	0	0	0
Lane Group Flow (vph)	230	107	0	0	18	0	193	2424	0	0	0	0
Confl. Peds. (#/hr)	14		34	34		14	142		7	7		142
Confl. Bikes (#/hr)			6			1			7			8
Parking (#/hr)		0										
Turn Type	Split	NA			NA		Prot	NA				
Protected Phases	3	3			4		5	2				
Permitted Phases												
Actuated Green, G (s)	25.1	25.1			6.7		130.2	130.2				
Effective Green, g (s)	25.1	25.1			6.7		130.2	130.2				
Actuated g/C Ratio	0.14	0.14			0.04		0.72	0.72				
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0				
Vehicle Extension (s)	1.0	1.0			2.5		1.0	1.0				
Lane Grp Cap (vph)	259	212			58		1280	3673				
v/s Ratio Prot	c0.12	0.07			c0.01		0.11	c0.48				
v/s Ratio Perm												
v/c Ratio	0.89	0.50			0.31		0.15	0.66				
Uniform Delay, d1	76.1	71.7			84.4		7.7	13.2				
Progression Factor	0.79	0.81			1.00		1.00	1.00				
Incremental Delay, d2	24.7	0.6			2.2		0.0	0.9				
Delay (s)	84.5	58.3			86.6		7.8	14.1				
Level of Service	F	E			F		A	B				
Approach Delay (s)		76.2			86.6			13.7			0.0	
Approach LOS		E			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
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)	315	9	0	0	16	25	185	2312	15	0	0	0
Future Volume (vph)	315	9	0	0	16	25	185	2312	15	0	0	0
Confl. Peds. (#/hr)	14		34	34		14	142		7	7		142
Confl. Bikes (#/hr)			6			1			7			8
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0										
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)	30%											
Turn Type	Split	NA			NA		Prot	NA				
Protected Phases	3	3			4		5	2				
Permitted Phases												
Detector Phase	3	3			4		5	2				
Switch Phase												
Minimum Initial (s)	7.0	7.0			7.0		5.0	4.0				
Minimum Split (s)	25.0	25.0			13.0		11.0	32.0				
Total Split (s)	37.0	37.0			24.0		95.0	95.0				
Total Split (%)	20.6%	20.6%			13.3%		52.8%	52.8%				
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0				
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0				
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0				
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0				
Lead/Lag	Lead	Lead			Lag							
Lead-Lag Optimize?	Yes	Yes			Yes							
Recall Mode	None	None			None		None	C-Max				

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 83 (46%), Referenced to phase 2:NBT and 6:, Start of Yellow
Natural Cycle: 125
Control Type: Actuated-Coordinated

Splits and Phases: 6: Collins Avenue & 71st Street



Lane Group	Ø7
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	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	13%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None

Intersection Summary

Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	230	107	43	193	2424
v/c Ratio	0.89	0.50	0.43	0.15	0.65
Control Delay	89.1	64.2	54.2	8.9	14.9
Queue Delay	10.9	1.2	0.0	0.0	0.2
Total Delay	100.0	65.4	54.2	8.9	15.1
Queue Length 50th (ft)	207	87	20	67	527
Queue Length 95th (ft)	m287	m153	66	118	679
Internal Link Dist (ft)		201	194		286
Turn Bay Length (ft)	100			200	
Base Capacity (vph)	320	262	188	1292	3708
Starvation Cap Reductn	66	52	0	0	0
Spillback Cap Reductn	0	0	0	65	439
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.91	0.51	0.23	0.16	0.74

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	647	451	0	926	25	954	310	4	10	166	440
Future Volume (vph)	275	647	451	0	926	25	954	310	4	10	166	440
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
Lane Util. Factor	1.00	1.00	1.00		0.95		0.97	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		3509		3433	1855			1858	1583
Flt Permitted	0.09	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	167	1863	1583		3509		3433	1855			1858	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	281	660	460	0	945	26	973	316	4	10	169	449
RTOR Reduction (vph)	0	0	30	0	1	0	0	0	0	0	0	51
Lane Group Flow (vph)	281	660	430	0	970	0	973	320	0	0	179	399
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Turn Type	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Actuated Green, G (s)	70.0	70.0	112.0		47.0		36.0	36.0			16.0	39.0
Effective Green, g (s)	70.0	70.0	112.0		47.0		36.0	36.0			16.0	39.0
Actuated g/C Ratio	0.50	0.50	0.80		0.34		0.26	0.26			0.11	0.28
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0			6.0	
Vehicle Extension (s)	2.0	1.0			1.0		2.5	2.5			4.0	
Lane Grp Cap (vph)	278	931	1266		1178		882	477			212	440
v/s Ratio Prot	0.12	0.35	0.27		0.28		c0.28	0.17			0.10	c0.25
v/s Ratio Perm	c0.38											
v/c Ratio	1.01	0.71	0.34		0.82		1.10	0.67			0.84	0.91
Uniform Delay, d1	41.8	27.1	3.8		42.7		52.0	46.7			60.8	48.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	56.8	4.6	0.7		6.6		62.6	7.3			31.7	24.8
Delay (s)	98.5	31.7	4.6		49.3		114.6	54.0			92.5	73.5
Level of Service	F	C	A		D		F	D			F	E
Approach Delay (s)		36.2			49.3			99.6			78.9	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	64.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	98.2%	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)	275	647	451	0	926	25	954	310	4	10	166	440
Future Volume (vph)	275	647	451	0	926	25	954	310	4	10	166	440
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
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	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Detector Phase	1	6	6 7		2		7	7		8	8	8 1
Switch Phase												
Minimum Initial (s)	5.0	4.0			4.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	40.0			40.0		35.0	35.0		22.0	22.0	
Total Split (s)	23.0	76.0			53.0		42.0	42.0		22.0	22.0	
Total Split (%)	16.4%	54.3%			37.9%		30.0%	30.0%		15.7%	15.7%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead				Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes				Yes		Yes	Yes		Yes	Yes	
Recall Mode	Max	Max			C-Max		Max	Max		Max	Max	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 7 (5%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 7: Indian Creek Drive & 71st Street

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	281	660	460	971	973	320	179	449
v/c Ratio	1.01	0.71	0.35	0.82	1.10	0.67	0.84	0.91
Control Delay	93.4	32.3	3.2	49.6	110.2	54.7	92.5	65.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.8
Total Delay	93.4	32.3	3.2	49.6	110.2	54.7	92.5	113.2
Queue Length 50th (ft)	~201	455	59	426	~518	263	162	345
Queue Length 95th (ft)	#394	606	92	514	#651	372	#295	#552
Internal Link Dist (ft)		544		819		518	291	
Turn Bay Length (ft)								
Base Capacity (vph)	278	931	1296	1179	882	477	212	491
Starvation Cap Reductn	0	0	0	0	0	0	0	108
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.71	0.35	0.82	1.10	0.67	0.84	1.17

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	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	156	38	77	295	0	0	0	0	65	1823	181
Future Volume (veh/h)	0	156	38	77	295	0	0	0	0	65	1823	181
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	0.96		1.00				1.00		0.95
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00				1.00	1.00	0.90
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1900	1870	1900
Adj Flow Rate, veh/h	0	162	40	80	307	0				68	1899	189
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	0	2	2	2	2	0				0	2	0
Cap, veh/h	0	513	364	118	363	0				91	2677	273
Arrive On Green	0.00	0.27	0.27	0.27	0.27	0.00				0.59	0.59	0.59
Sat Flow, veh/h	0	1870	1325	255	1324	0				153	4522	462
Grp Volume(v), veh/h	0	162	40	387	0	0				826	686	644
Grp Sat Flow(s),veh/h/ln	0	1870	1325	1579	0	0				1863	1702	1572
Q Serve(g_s), s	0.0	6.2	2.0	15.2	0.0	0.0				29.3	24.8	25.4
Cycle Q Clear(g_c), s	0.0	6.2	2.0	21.4	0.0	0.0				29.3	24.8	25.4
Prop In Lane	0.00		1.00	0.21		0.00				0.08		0.29
Lane Grp Cap(c), veh/h	0	513	364	482	0	0				1103	1008	931
V/C Ratio(X)	0.00	0.32	0.11	0.80	0.00	0.00				0.75	0.68	0.69
Avail Cap(c_a), veh/h	0	540	383	505	0	0				1103	1008	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	25.9	24.4	31.6	0.0	0.0				13.5	12.5	12.7
Incr Delay (d2), s/veh	0.0	0.1	0.0	8.0	0.0	0.0				4.7	3.7	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	4.9	1.1	13.8	0.0	0.0				18.1	14.5	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	26.1	24.5	39.6	0.0	0.0				18.1	16.3	16.9
LnGrp LOS	A	C	C	D	A	A				B	B	B
Approach Vol, veh/h		202			387						2156	
Approach Delay, s/veh		25.7			39.6						17.2	
Approach LOS		C			D						B	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		59.3		30.7				30.7				
Change Period (Y+Rc), s		6.0		6.0				6.0				
Max Green Setting (Gmax), s		52.0		26.0				26.0				
Max Q Clear Time (g_c+I1), s		31.3		23.4				8.2				
Green Ext Time (p_c), s		6.4		0.4				0.6				

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	156	38	77	295	0	0	0	0	65	1823	181
Future Volume (vph)	0	156	38	77	295	0	0	0	0	65	1823	181
Confl. Peds. (#/hr)	29		54	54		29	32		19	19		32
Confl. Bikes (#/hr)			2			8			2			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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)			0		0							0
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		8			4					2	2	
Permitted Phases			8	4								
Detector Phase		8	8	4	4					2	2	
Switch Phase												
Minimum Initial (s)		7.0	7.0	7.0	7.0					5.0	5.0	
Minimum Split (s)		32.0	32.0	32.0	32.0					28.0	28.0	
Total Split (s)		32.0	32.0	32.0	32.0					58.0	58.0	
Total Split (%)		35.6%	35.6%	35.6%	35.6%					64.4%	64.4%	
Yellow Time (s)		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	
Lost Time Adjust (s)		0.0	0.0		0.0						0.0	
Total Lost Time (s)		6.0	6.0		6.0						6.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None	None	None	None					C-Max	C-Max	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 25 (28%), Referenced to phase 2:SBTL and 6:, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: 72nd Street & Abbott Avenue

Intersection	
Int Delay, s/veh	56.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	118	67	15	175	31	163	154	230	14	8	22
Future Vol, veh/h	40	118	67	15	175	31	163	154	230	14	8	22
Conflicting Peds, #/hr	14	0	33	33	0	14	9	0	7	7	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	124	71	16	184	33	172	162	242	15	8	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	231	0	0	228	0	0	534	540	200	700	559	224
Stage 1	-	-	-	-	-	-	277	277	-	247	247	-
Stage 2	-	-	-	-	-	-	257	263	-	453	312	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1337	-	-	1340	-	-	457	449	841	354	438	815
Stage 1	-	-	-	-	-	-	729	681	-	757	702	-
Stage 2	-	-	-	-	-	-	748	691	-	586	658	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1319	-	-	1298	-	-	404	408	809	162	398	797
Mov Cap-2 Maneuver	-	-	-	-	-	-	404	408	-	162	398	-
Stage 1	-	-	-	-	-	-	681	636	-	720	683	-
Stage 2	-	-	-	-	-	-	701	672	-	293	615	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.5	104.3	17.8
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	514	1319	-	-	1298	-	-	328
HCM Lane V/C Ratio	1.12	0.032	-	-	0.012	-	-	0.141
HCM Control Delay (s)	104.3	7.8	0	-	7.8	0	-	17.8
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	19.1	0.1	-	-	0	-	-	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	374	0	162	2483	0	0
Future Volume (veh/h)	374	0	162	2483	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	0	1870	1870		
Adj Flow Rate, veh/h	398	0	172	2641		
Peak Hour Factor	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	0	2	2		
Cap, veh/h	0	0	1752	3415		
Arrive On Green	0.00	0.00	0.32	0.32		
Sat Flow, veh/h	0		1781	3647		
Grp Volume(v), veh/h	0.0		172	2641		
Grp Sat Flow(s),veh/h/ln			1781	1777		
Q Serve(g_s), s			12.3	121.0		
Cycle Q Clear(g_c), s			12.3	121.0		
Prop In Lane			1.00			
Lane Grp Cap(c), veh/h			1752	3415		
V/C Ratio(X)			0.10	0.77		
Avail Cap(c_a), veh/h			1752	3415		
HCM Platoon Ratio			0.33	0.33		
Upstream Filter(I)			0.68	0.68		
Uniform Delay (d), s/veh			6.6	43.7		
Incr Delay (d2), s/veh			0.1	1.2		
Initial Q Delay(d3),s/veh			0.0	0.0		
%ile BackOfQ(95%),veh/ln			3.3	66.9		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh			6.7	44.9		
LnGrp LOS			A	D		
Approach Vol, veh/h				2813		
Approach Delay, s/veh				42.6		
Approach LOS				D		

Timer - Assigned Phs	2
Phs Duration (G+Y+Rc), s	180.0
Change Period (Y+Rc), s	7.0
Max Green Setting (Gmax), s	143.0
Max Q Clear Time (g_c+I1), s	123.0
Green Ext Time (p_c), s	12.1

Intersection Summary	
HCM 6th Ctrl Delay	42.6
HCM 6th LOS	D

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	374	0	162	2483	0	0
Future Volume (vph)	374	0	162	2483	0	0
Confl. Peds. (#/hr)	9	66	90			
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)			0			
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Turn Type	Prot		Perm	NA		
Protected Phases	4			2		
Permitted Phases			2			
Detector Phase	4		2	2		
Switch Phase						
Minimum Initial (s)	7.0		6.0	6.0		
Minimum Split (s)	26.0		26.0	26.0		
Total Split (s)	30.0		150.0	150.0		
Total Split (%)	16.7%		83.3%	83.3%		
Yellow Time (s)	4.0		4.0	4.0		
All-Red Time (s)	3.0		3.0	3.0		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	7.0		7.0	7.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max	C-Max		

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 125 (69%), Referenced to phase 2:NBTL and 6:, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 3: 72nd Street & Collins Avenue

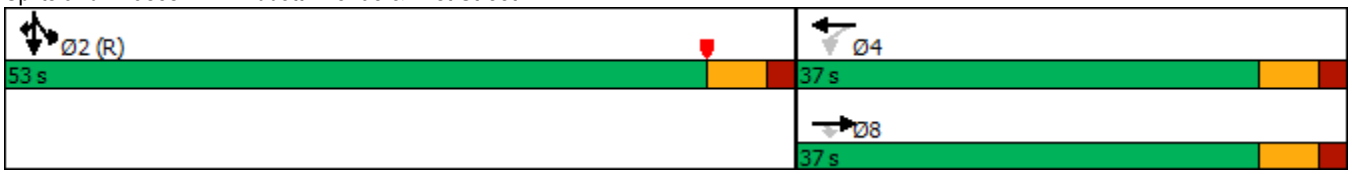
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	365	71	64	400	0	0	0	0	64	1443	381
Future Volume (vph)	0	365	71	64	400	0	0	0	0	64	1443	381
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0						6.0	6.0
Lane Util. Factor		1.00	1.00	1.00	1.00						0.91	1.00
Frpb, ped/bikes		1.00	0.95	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	0.99	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						1.00	1.00
Satd. Flow (prot)		1676	1510	1748	1676						5074	1583
Flt Permitted		1.00	1.00	0.30	1.00						1.00	1.00
Satd. Flow (perm)		1676	1510	548	1676						5074	1583
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	380	74	67	417	0	0	0	0	67	1503	397
RTOR Reduction (vph)	0	0	26	0	0	0	0	0	0	0	0	64
Lane Group Flow (vph)	0	380	48	67	417	0	0	0	0	0	1570	333
Confl. Peds. (#/hr)	48		23	23		48	30		23	23		30
Confl. Bikes (#/hr)			9			5			3			
Parking (#/hr)		0			0	0						
Turn Type		NA	Perm	Perm	NA					Split	NA	Prot
Protected Phases		8			4					2	2	2
Permitted Phases			8	4								
Actuated Green, G (s)		25.4	25.4	25.4	25.4						52.6	52.6
Effective Green, g (s)		25.4	25.4	25.4	25.4						52.6	52.6
Actuated g/C Ratio		0.28	0.28	0.28	0.28						0.58	0.58
Clearance Time (s)		6.0	6.0	6.0	6.0						6.0	6.0
Vehicle Extension (s)		1.0	1.0	1.0	1.0						1.0	1.0
Lane Grp Cap (vph)		473	426	154	473						2965	925
v/s Ratio Prot		0.23			c0.25						c0.31	0.21
v/s Ratio Perm			0.03	0.12								
v/c Ratio		0.80	0.11	0.44	0.88						0.53	0.36
Uniform Delay, d1		30.0	23.9	26.4	30.9						11.3	9.8
Progression Factor		1.00	1.00	1.06	1.11						0.23	0.02
Incremental Delay, d2		9.0	0.0	0.6	14.4						0.5	0.7
Delay (s)		39.0	24.0	28.6	48.8						3.0	0.9
Level of Service		D	C	C	D						A	A
Approach Delay (s)		36.6			46.0			0.0			2.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
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	365	71	64	400	0	0	0	0	64	1443	381
Future Volume (vph)	0	365	71	64	400	0	0	0	0	64	1443	381
Confl. Peds. (#/hr)	48		23	23		48	30		23	23		30
Confl. Bikes (#/hr)			9			5			3			
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0			0	0						
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type		NA	Perm	Perm	NA					Split	NA	Prot
Protected Phases		8			4					2	2	2
Permitted Phases			8	4								
Detector Phase		8	8	4	4					2	2	2
Switch Phase												
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
Minimum Split (s)		28.0	28.0	28.0	28.0					28.0	28.0	28.0
Total Split (s)		37.0	37.0	37.0	37.0					53.0	53.0	53.0
Total Split (%)		41.1%	41.1%	41.1%	41.1%					58.9%	58.9%	58.9%
Yellow Time (s)		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
Lost Time Adjust (s)		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
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None	None	None	None					C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 30 (33%), Referenced to phase 2:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Abbott Avenue & 71st Street



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	380	74	67	417	1570	397
v/c Ratio	0.81	0.16	0.44	0.88	0.53	0.40
Control Delay	43.0	13.7	34.0	51.5	3.1	1.0
Queue Delay	0.6	0.0	0.0	9.6	0.2	0.4
Total Delay	43.6	13.7	34.0	61.1	3.3	1.3
Queue Length 50th (ft)	197	16	40	261	33	0
Queue Length 95th (ft)	282	44	m56	m285	37	m0
Internal Link Dist (ft)	819			218	298	
Turn Bay Length (ft)		100	100			200
Base Capacity (vph)	577	544	188	577	2967	989
Starvation Cap Reductn	0	0	0	130	489	220
Spillback Cap Reductn	37	0	0	0	203	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.14	0.36	0.93	0.63	0.52

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	279	44	21	211	16	174	343	49	11	30	47
Future Volume (veh/h)	108	279	44	21	211	16	174	343	49	11	30	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.92	0.99		0.92	0.99		0.94	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	112	291	46	22	220	17	181	357	51	11	31	49
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	675	107	460	665	51	231	383	53	88	231	320
Arrive On Green	0.07	0.58	0.58	0.02	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1781	1555	246	1781	1701	131	476	1021	142	115	615	852
Grp Volume(v), veh/h	112	0	337	22	0	237	589	0	0	91	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1800	1781	0	1833	1638	0	0	1582	0	0
Q Serve(g_s), s	3.3	0.0	9.5	0.7	0.0	8.1	28.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	9.5	0.7	0.0	8.1	31.5	0.0	0.0	3.3	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.07	0.31		0.09	0.12		0.54
Lane Grp Cap(c), veh/h	509	0	782	460	0	717	668	0	0	639	0	0
V/C Ratio(X)	0.22	0.00	0.43	0.05	0.00	0.33	0.88	0.00	0.00	0.14	0.00	0.00
Avail Cap(c_a), veh/h	509	0	782	537	0	717	689	0	0	659	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.00	0.49	0.99	0.00	0.99	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.5	0.0	12.8	15.8	0.0	19.2	27.2	0.0	0.0	18.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	0.0	1.2	12.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.3	0.0	5.4	0.5	0.0	6.5	20.0	0.0	0.0	2.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.5	0.0	12.8	15.8	0.0	20.4	39.2	0.0	0.0	18.6	0.0	0.0
LnGrp LOS	B	A	B	B	A	C	D	A	A	B	A	A
Approach Vol, veh/h		449			259			589			91	
Approach Delay, s/veh		13.3			20.0			39.2			18.6	
Approach LOS		B			C			D			B	

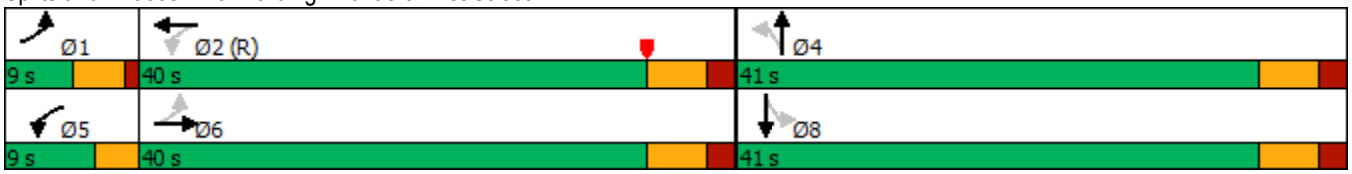
Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	41.2		39.8	5.1	45.1		39.8
Change Period (Y+Rc), s	4.5	6.0		6.0	3.0	6.0		6.0
Max Green Setting (Gmax), s	4.5	34.0		35.0	6.0	34.0		35.0
Max Q Clear Time (g_c+I1), s	5.3	10.1		33.5	2.7	11.5		5.3
Green Ext Time (p_c), s	0.0	0.5		0.3	0.0	0.7		0.2

Intersection Summary	
HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	279	44	21	211	16	174	343	49	11	30	47
Future Volume (vph)	108	279	44	21	211	16	174	343	49	11	30	47
Confl. Peds. (#/hr)	6		28	28		6	11		13	13		11
Confl. Bikes (#/hr)			36			29			21			15
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0			0			0			0	
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	4.5	7.0		5.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	9.0	24.0		9.0	24.0		29.0	29.0		29.0	29.0	
Total Split (s)	9.0	40.0		9.0	40.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.0%	44.4%		10.0%	44.4%		45.6%	45.6%		45.6%	45.6%	
Yellow Time (s)	3.5	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	2.0		0.0	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)	4.5	6.0		3.0	6.0			6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	C-Max		None	None		None	None	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:WBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 5: Harding Avenue & 71st Street



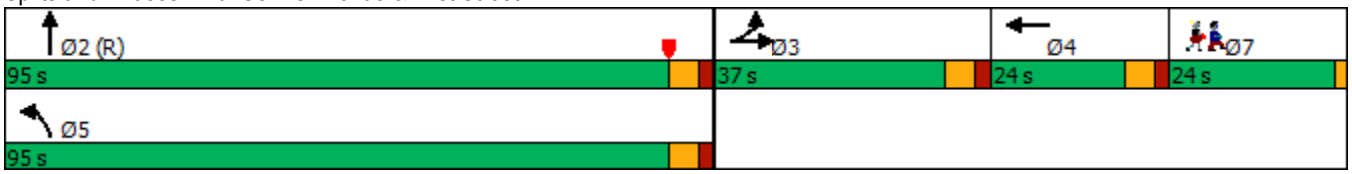
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	9	0	0	16	25	190	2313	15	0	0	0
Future Volume (vph)	315	9	0	0	16	25	190	2313	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0			6.0		6.0	6.0				
Lane Util. Factor	*1.00	0.95			1.00		1.00	0.91				
Frpb, ped/bikes	1.00	1.00			0.92		1.00	1.00				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.92		1.00	1.00				
Flt Protected	1.00	0.96			1.00		0.95	1.00				
Satd. Flow (prot)	1863	1523			1579		1770	5078				
Flt Permitted	1.00	0.96			1.00		0.95	1.00				
Satd. Flow (perm)	1863	1523			1579		1770	5078				
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)	328	9	0	0	17	26	198	2409	16	0	0	0
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	0	0	0	0
Lane Group Flow (vph)	230	107	0	0	18	0	198	2425	0	0	0	0
Confl. Peds. (#/hr)	14		34	34		14	142		7	7		142
Confl. Bikes (#/hr)			6			1			7			8
Parking (#/hr)		0										
Turn Type	Split	NA			NA		Prot	NA				
Protected Phases	3	3			4		5	2				
Permitted Phases												
Actuated Green, G (s)	25.1	25.1			6.7		130.2	130.2				
Effective Green, g (s)	25.1	25.1			6.7		130.2	130.2				
Actuated g/C Ratio	0.14	0.14			0.04		0.72	0.72				
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0				
Vehicle Extension (s)	1.0	1.0			2.5		1.0	1.0				
Lane Grp Cap (vph)	259	212			58		1280	3673				
v/s Ratio Prot	c0.12	0.07			c0.01		0.11	c0.48				
v/s Ratio Perm												
v/c Ratio	0.89	0.50			0.31		0.15	0.66				
Uniform Delay, d1	76.1	71.7			84.4		7.8	13.2				
Progression Factor	0.78	0.80			1.00		1.00	1.00				
Incremental Delay, d2	24.6	0.6			2.2		0.0	0.9				
Delay (s)	84.2	58.2			86.6		7.8	14.1				
Level of Service	F	E			F		A	B				
Approach Delay (s)		75.9			86.6			13.7			0.0	
Approach LOS		E			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
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)	315	9	0	0	16	25	190	2313	15	0	0	0
Future Volume (vph)	315	9	0	0	16	25	190	2313	15	0	0	0
Confl. Peds. (#/hr)	14		34	34		14	142		7	7		142
Confl. Bikes (#/hr)			6			1			7			8
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 (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)		0										
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)	30%											
Turn Type	Split	NA			NA		Prot	NA				
Protected Phases	3	3			4		5	2				
Permitted Phases												
Detector Phase	3	3			4		5	2				
Switch Phase												
Minimum Initial (s)	7.0	7.0			7.0		5.0	4.0				
Minimum Split (s)	25.0	25.0			13.0		11.0	32.0				
Total Split (s)	37.0	37.0			24.0		95.0	95.0				
Total Split (%)	20.6%	20.6%			13.3%		52.8%	52.8%				
Yellow Time (s)	4.0	4.0			4.0		4.0	4.0				
All-Red Time (s)	2.0	2.0			2.0		2.0	2.0				
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0				
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0				
Lead/Lag	Lead	Lead			Lag							
Lead-Lag Optimize?	Yes	Yes			Yes							
Recall Mode	None	None			None		None	C-Max				

Intersection Summary
Cycle Length: 180
Actuated Cycle Length: 180
Offset: 83 (46%), Referenced to phase 2:NBT and 6:, Start of Yellow
Natural Cycle: 125
Control Type: Actuated-Coordinated

Splits and Phases: 6: Collins Avenue & 71st Street



Lane Group	Ø7
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	7
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	24.0
Total Split (s)	24.0
Total Split (%)	13%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None

Intersection Summary

Lane Group	EBL	EBT	WBT	NBL	NBT
Lane Group Flow (vph)	230	107	43	198	2425
v/c Ratio	0.89	0.50	0.43	0.15	0.65
Control Delay	88.7	64.0	54.2	8.9	14.9
Queue Delay	10.9	1.2	0.0	0.0	0.2
Total Delay	99.6	65.2	54.2	8.9	15.1
Queue Length 50th (ft)	207	87	20	69	528
Queue Length 95th (ft)	m285	m152	66	120	680
Internal Link Dist (ft)		201	194		286
Turn Bay Length (ft)	100			200	
Base Capacity (vph)	320	262	188	1292	3708
Starvation Cap Reductn	66	52	0	0	0
Spillback Cap Reductn	0	0	1	70	439
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.91	0.51	0.23	0.16	0.74

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	275	665	451	0	932	23	954	315	4	10	166	440
Future Volume (vph)	275	665	451	0	932	23	954	315	4	10	166	440
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
Lane Util. Factor	1.00	1.00	1.00		0.95		0.97	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		3513		3433	1855			1858	1583
Flt Permitted	0.09	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	165	1863	1583		3513		3433	1855			1858	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	281	679	460	0	951	23	973	321	4	10	169	449
RTOR Reduction (vph)	0	0	30	0	1	0	0	0	0	0	0	51
Lane Group Flow (vph)	281	679	430	0	973	0	973	325	0	0	179	399
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Turn Type	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Actuated Green, G (s)	70.0	70.0	112.0		47.0		36.0	36.0			16.0	39.0
Effective Green, g (s)	70.0	70.0	112.0		47.0		36.0	36.0			16.0	39.0
Actuated g/C Ratio	0.50	0.50	0.80		0.34		0.26	0.26			0.11	0.28
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0			6.0	
Vehicle Extension (s)	2.0	1.0			1.0		2.5	2.5			4.0	
Lane Grp Cap (vph)	277	931	1266		1179		882	477			212	440
v/s Ratio Prot	0.12	0.36	0.27		0.28		c0.28	0.18			0.10	c0.25
v/s Ratio Perm	c0.38											
v/c Ratio	1.01	0.73	0.34		0.82		1.10	0.68			0.84	0.91
Uniform Delay, d1	42.0	27.5	3.8		42.7		52.0	46.8			60.8	48.7
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	57.8	5.0	0.7		6.6		62.6	7.7			31.7	24.8
Delay (s)	99.8	32.5	4.6		49.4		114.6	54.5			92.5	73.5
Level of Service	F	C	A		D		F	D			F	E
Approach Delay (s)		36.8			49.4			99.6			78.9	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM 2000 Control Delay	64.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	98.3%	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)	275	665	451	0	932	23	954	315	4	10	166	440
Future Volume (vph)	275	665	451	0	932	23	954	315	4	10	166	440
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
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	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Detector Phase	1	6	6 7		2		7	7		8	8	8 1
Switch Phase												
Minimum Initial (s)	5.0	4.0			4.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	40.0			40.0		35.0	35.0		22.0	22.0	
Total Split (s)	23.0	76.0			53.0		42.0	42.0		22.0	22.0	
Total Split (%)	16.4%	54.3%			37.9%		30.0%	30.0%		15.7%	15.7%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead				Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes				Yes		Yes	Yes		Yes	Yes	
Recall Mode	Max	Max			C-Max		Max	Max		Max	Max	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 7 (5%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 7: Indian Creek Drive & 71st Street

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	281	679	460	974	973	325	179	449
v/c Ratio	1.01	0.73	0.35	0.83	1.10	0.68	0.84	0.91
Control Delay	94.6	33.3	3.2	49.7	110.2	55.2	92.5	65.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.8
Total Delay	94.6	33.3	3.2	49.7	110.2	55.2	92.5	113.2
Queue Length 50th (ft)	~203	475	59	427	~518	268	162	345
Queue Length 95th (ft)	#395	632	92	516	#651	379	#295	#552
Internal Link Dist (ft)		544		819		518	291	
Turn Bay Length (ft)								
Base Capacity (vph)	277	931	1296	1180	882	477	212	491
Starvation Cap Reductn	0	0	0	0	0	0	0	108
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	0.73	0.35	0.83	1.10	0.68	0.84	1.17

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)	275	665	451	0	932	23	850	315	4	10	166	440
Future Volume (vph)	275	665	451	0	932	23	850	315	4	10	166	440
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
Lane Util. Factor	1.00	1.00	1.00		0.95		0.97	1.00			1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		3512		3433	1855			1858	1583
Flt Permitted	0.08	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)	146	1863	1583		3512		3433	1855			1858	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	281	679	460	0	951	23	867	321	4	10	169	449
RTOR Reduction (vph)	0	0	25	0	1	0	0	0	0	0	0	50
Lane Group Flow (vph)	281	679	435	0	973	0	867	325	0	0	179	399
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Turn Type	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Actuated Green, G (s)	70.0	70.0	113.0		45.0		37.0	37.0			15.0	40.0
Effective Green, g (s)	70.0	70.0	113.0		45.0		37.0	37.0			15.0	40.0
Actuated g/C Ratio	0.50	0.50	0.81		0.32		0.26	0.26			0.11	0.29
Clearance Time (s)	6.0	6.0			6.0		6.0	6.0			6.0	
Vehicle Extension (s)	2.0	1.0			1.0		2.5	2.5			4.0	
Lane Grp Cap (vph)	293	931	1277		1128		907	490			199	452
v/s Ratio Prot	0.13	0.36	0.27		0.28		c0.25	0.18			0.10	c0.25
v/s Ratio Perm	c0.35											
v/c Ratio	0.96	0.73	0.34		0.86		0.96	0.66			0.90	0.88
Uniform Delay, d1	43.8	27.5	3.6		44.6		50.7	45.9			61.8	47.8
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	43.1	5.0	0.7		8.8		20.9	6.9			42.0	21.3
Delay (s)	86.9	32.5	4.3		53.3		71.6	52.9			103.7	69.1
Level of Service	F	C	A		D		E	D			F	E
Approach Delay (s)		34.2			53.3			66.5			79.0	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	54.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	95.4%	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)	275	665	451	0	932	23	850	315	4	10	166	440
Future Volume (vph)	275	665	451	0	932	23	850	315	4	10	166	440
Confl. Peds. (#/hr)	52		35	35		52	1		52	52		1
Confl. Bikes (#/hr)			6			19			7			1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
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	pm+pt	NA	pt+ov		NA		Split	NA		Split	NA	pt+ov
Protected Phases	1	6	6 7		2		7	7		8	8	8 1
Permitted Phases	6											
Detector Phase	1	6	6 7		2		7	7		8	8	8 1
Switch Phase												
Minimum Initial (s)	5.0	4.0			4.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	40.0			40.0		35.0	35.0		22.0	22.0	
Total Split (s)	25.0	76.0			51.0		43.0	43.0		21.0	21.0	
Total Split (%)	17.9%	54.3%			36.4%		30.7%	30.7%		15.0%	15.0%	
Yellow Time (s)	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	
Lost Time Adjust (s)	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	
Lead/Lag	Lead				Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes				Yes		Yes	Yes		Yes	Yes	
Recall Mode	Max	Max			C-Max		Max	Max		Max	Max	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 7 (5%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 7: Indian Creek Drive & 71st Street

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	281	679	460	974	867	325	179	449
v/c Ratio	0.96	0.73	0.35	0.86	0.96	0.66	0.90	0.89
Control Delay	83.1	33.3	3.2	53.6	71.5	53.6	104.3	61.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3
Total Delay	83.1	33.3	3.2	53.6	71.5	53.6	104.3	111.1
Queue Length 50th (ft)	206	475	60	437	403	265	164	342
Queue Length 95th (ft)	#390	632	93	527	#534	375	#307	#542
Internal Link Dist (ft)		544		819		518	291	
Turn Bay Length (ft)								
Base Capacity (vph)	293	931	1303	1129	907	490	198	502
Starvation Cap Reductn	0	0	0	0	0	0	0	116
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.73	0.35	0.86	0.96	0.66	0.90	1.16

Intersection Summary

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

Appendix E
Committed Development Documentation

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: Collins Hotel

Open Date: 9/13/2016
Analysis Date: 9/13/2016

ITE	Land Use		Weekday Average Daily Trips *	Enter	Exit	Total	Weekday AM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Weekday PM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total
230	CONDO 1			129	129	258		4	18	22		17	8	25
	35	Dwelling Units												
310	HOTEL 1			143	143	286		11	8	19		11	10	21
	35	Rooms												
Unadjusted Volume				272	272	544		15	26	41		28	18	46
Internal Capture Trips				0	0	0		0	0	0		0	0	0
Pass-By Trips				0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets				272	272	544		15	26	41		28	18	46

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

TRIP GENERATION 2014, TRAFFICWARE, LLC

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: Collins Hotel 16204

Open Date: 9/13/2016
Analysis Date: 9/13/2016

ITE	Land Use	Weekday Average Daily Trips *	Enter	Exit	Total	Weekday AM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Weekday PM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total
230	CONDO 1		151	151	302		4	22	26		20	10	30
	42 Dwelling Units												
Unadjusted Volume			151	151	302		4	22	26		20	10	30
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			151	151	302		4	22	26		20	10	30

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: Collins Hotel 16204

Open Date: 9/13/2016
Analysis Date: 9/13/2016

ITE	Land Use	Weekday Average Daily Trips *	Enter	Exit	Total	Weekday AM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Weekday PM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total
230	CONDO 1		113	113	226		3	17	20		15	7	22
	30 Dwelling Units												
Unadjusted Volume			113	113	226		3	17	20		15	7	22
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			113	113	226		3	17	20		15	7	22

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: Collins Hotel

Open Date: 9/13/2016
Analysis Date: 9/13/2016

ITE	Land Use		Weekday Average Daily Trips *	Enter	Exit	Total	Weekday AM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total	Weekday PM Peak Hour of Adjacent Street Traffic *	Enter	Exit	Total
230	CONDO 1			86	86	172		3	12	15		11	6	17
	22	Dwelling Units												
Unadjusted Volume				86	86	172		3	12	15		11	6	17
Internal Capture Trips				0	0	0		0	0	0		0	0	0
Pass-By Trips				0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets				86	86	172		3	12	15		11	6	17

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

Deauville Hotel

traffic study

prepared for:
Deauville Hotel

Traf Tech
ENGINEERING, INC.

August 2016

Revised September 2016

TRIP GENERATION

The trip generation for the project was based on information contained in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual* (9th Edition). According to the subject ITE manual, the most appropriate "land use" category for the proposed land use is Land Use 310 – Hotel. Table 1 summarizes the external trips associated with the proposed development.

Table 1
Trip Generation Summary
Deauville Hotel

Land Use	Size	Daily Trips	PM Peak Hour Trips In	Out	Total
Existing - Hotel	539 Rooms	4,404	165	158	323
Proposed - Hotel	968 Rooms	7,909	296	285	581
Difference	429 Rooms	3,505	131	127	258
Total New Trips		**3,505**	**131**	**127**	**258**

Compiled by: Traf Tech Engineering, Inc. (July 2016).
Source: Institute of Transportation Engineers (ITE) Trip Generation (9th Edition).

As indicated in Table 1, the external new trips anticipated to be generated by the proposed project consist of approximately 3,505 daily trips and approximately 258 trips during the weekday PM peak hour (131 inbound and 127 outbound). The trip generation rate used to determine the trips associated with the proposed use is presented below:

ITE Land Use 310 – Hotel

Daily Trips

$T = 8.17 (X)$

Where T = average daily vehicle trip ends

X = number of rooms

PM Peak Hour of Adjacent Street (Typical Afternoon Peak Hour)

$T = 0.60 (X)$ (51% inbound and 49% outbound)

Where T = average AM peak hour vehicle trip ends

X = number of rooms

TRIP DISTRUBUTION AND TRAFFIC ASSIGNMENT

The trip distribution and traffic assignment for the project were based on Miami-Dade County's Cardinal Distribution information for the study area. Table 2 summarizes the County's cardinal distribution data for Traffic Analysis Zone 627, which is applicable to the project site from the latest SERPM data published by Miami-Dade County.

TABLE 2
Project Trip Distribution
Deauville Hotel

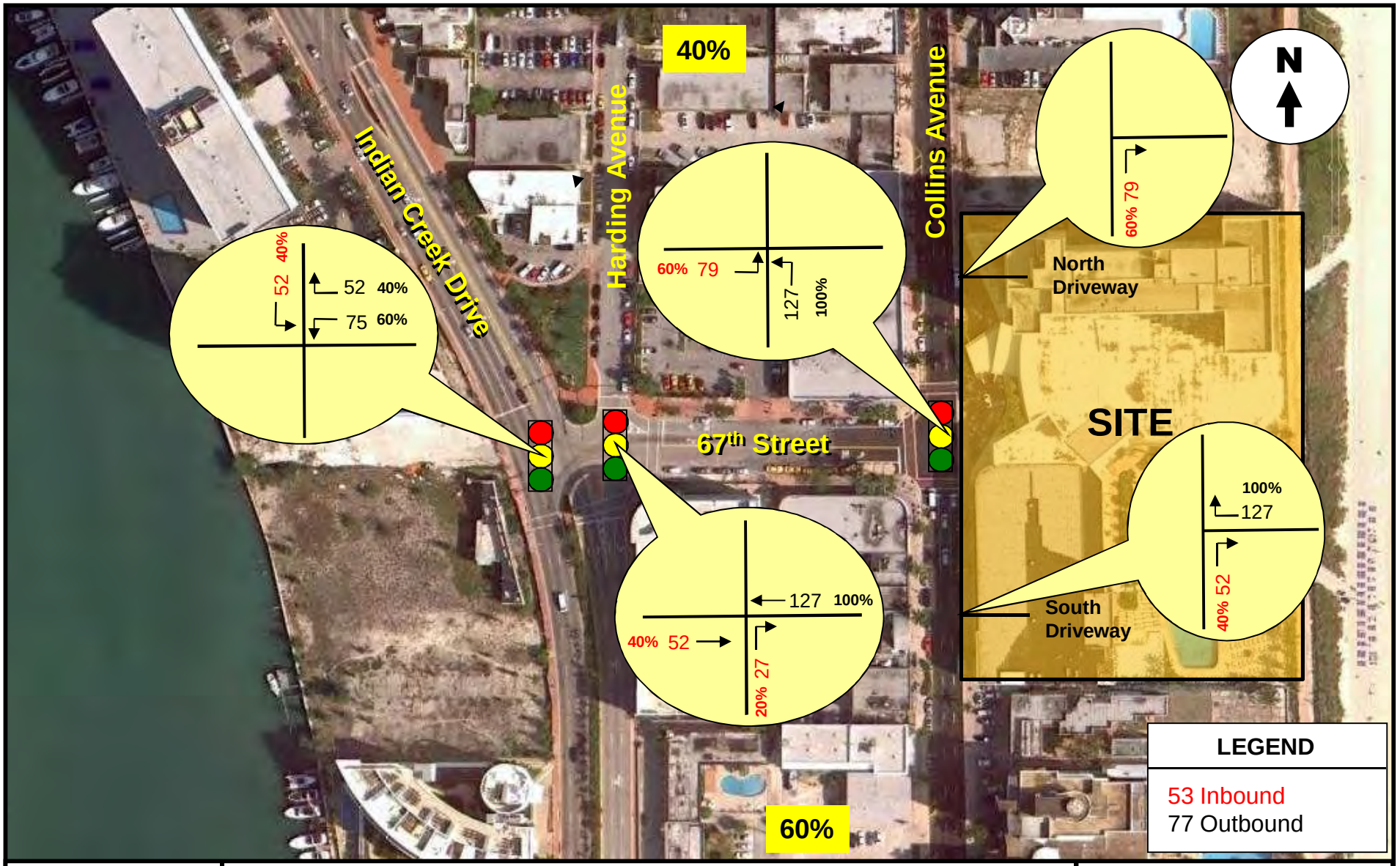
Direction		% of Total Trips
North:	Northwest	24.7
	Northeast	4.7
South:	Southwest	31.7
	Southeast	0.00
East:	Northeast	0.00
	Southeast	0.00
West:	Northwest	12.9
	Southwest	26.0
	Total	100.00%

Source: Miami-Dade County (2040 SERPM)

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

- 60% from the south via Collins Avenue/Indian Creek Drive
- 40% to and from the north via Indian Creek Drive/Collins Avenue

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



Traf Tech
ENGINEERING, INC.

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

FIGURE 4
Deauville Hotel
Miami Beach, Florida

Appendix F
Trip Generation

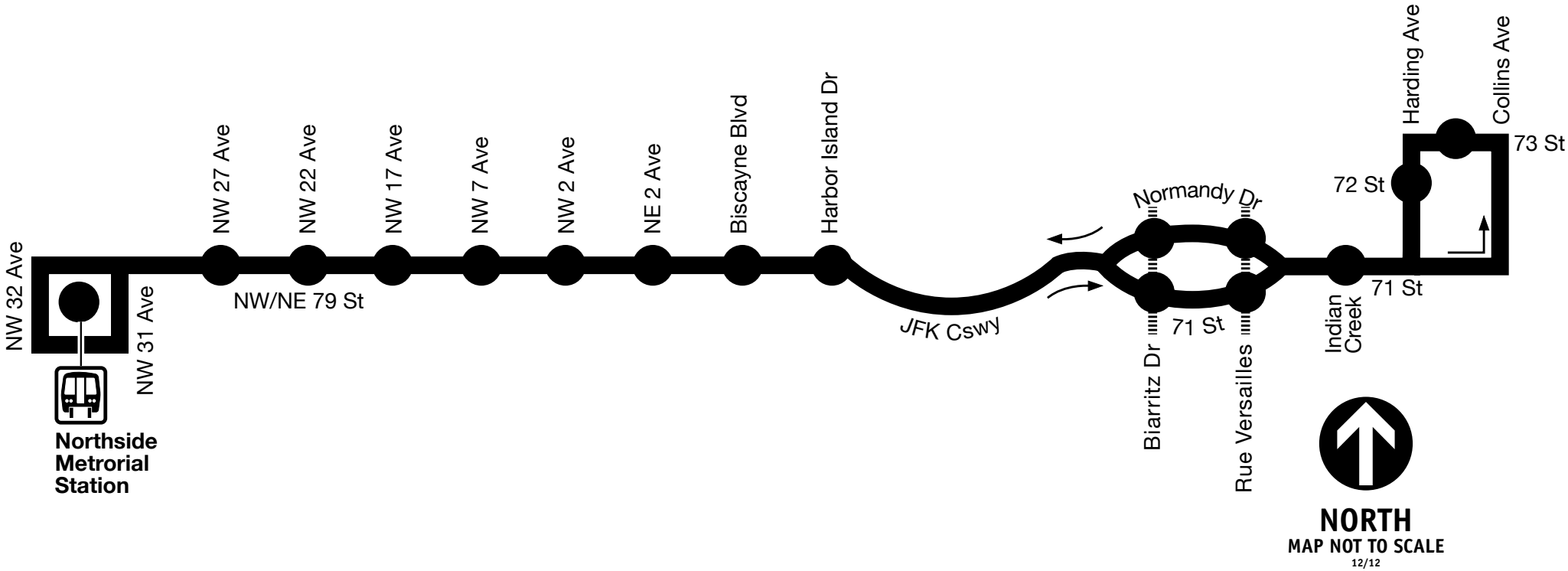
PM Peak Hour Trip Generation and Internalization

7140 Collins Hotel

Shopping Center Land Use 820 18,520 Sq Ft		Hotel Land Use 310 187 Rooms		Midrise Condo Land Use 221 24 Dwelling Units		
In	**Out**	**In**	**Out**	**In**	**Out**	
84	**83**	**58**	**56**	**7**	**4**	292 ITE Trips
UNBALANCED INTERNALIZATION						
	5%	*17%*				
	4	**4**	*10*			
2%			16%			
2		**2**	9			
	26%			*46%*		
	22	**3**		*3*		
10%					42%	
8		**2**			2	
		2%		*0%*		
		1	**0**	*0*		
		12%			3%	
		7	**0**		0	
Shopping Center		**Hotel**		**Midrise Condo**		
In	**Out**	**In**	**Out**	**In**	**Out**	
84	**83**	**58**	**56**	**7**	**4**	292 ITE Trips
BALANCED INTERNALIZATION						
	-4	*-4*				
-2			-2			
	-3			*-3*		
-2					-2	
		0		*0*		
		0			0	
-4	-7	-4	-2	-3	-2	-22 Internal
80	**76**	**54**	**54**	**4**	**2**	**270** External Trips
	6.6%		*5.3%*		*45.5%*	*7.5%* % Internal
-27	*-26*					*-53* -34% Shopping Passby
53	***50***	***54***	***54***	***4***	***2***	***217***
-5	-5	-6	-6	0	0	-22 -10% Transit
48	**45**	**48**	**48**	**4**	**2**	**195 Net New External Trips**

Appendix G
Bus Route Information

Route 79 Street MAX



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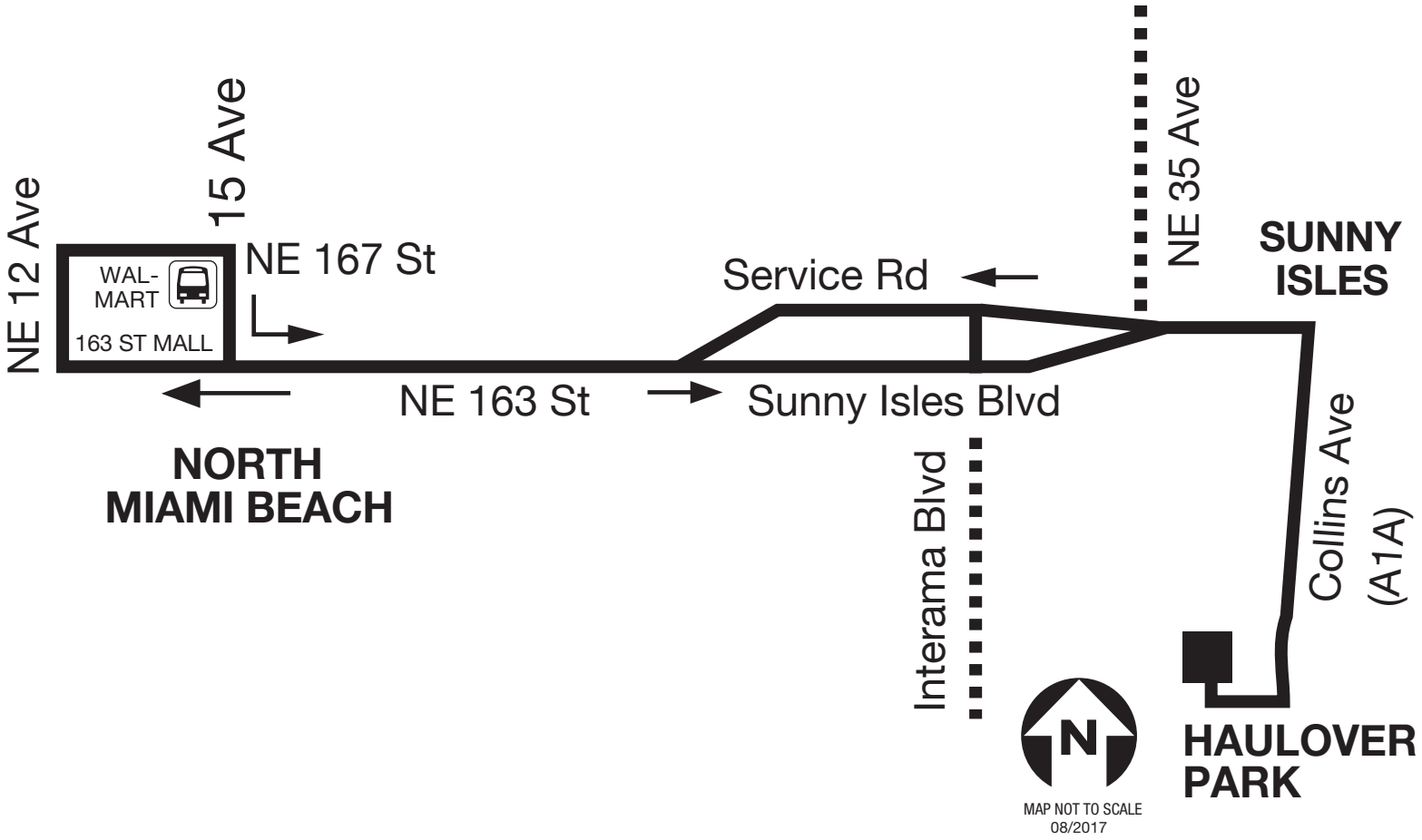
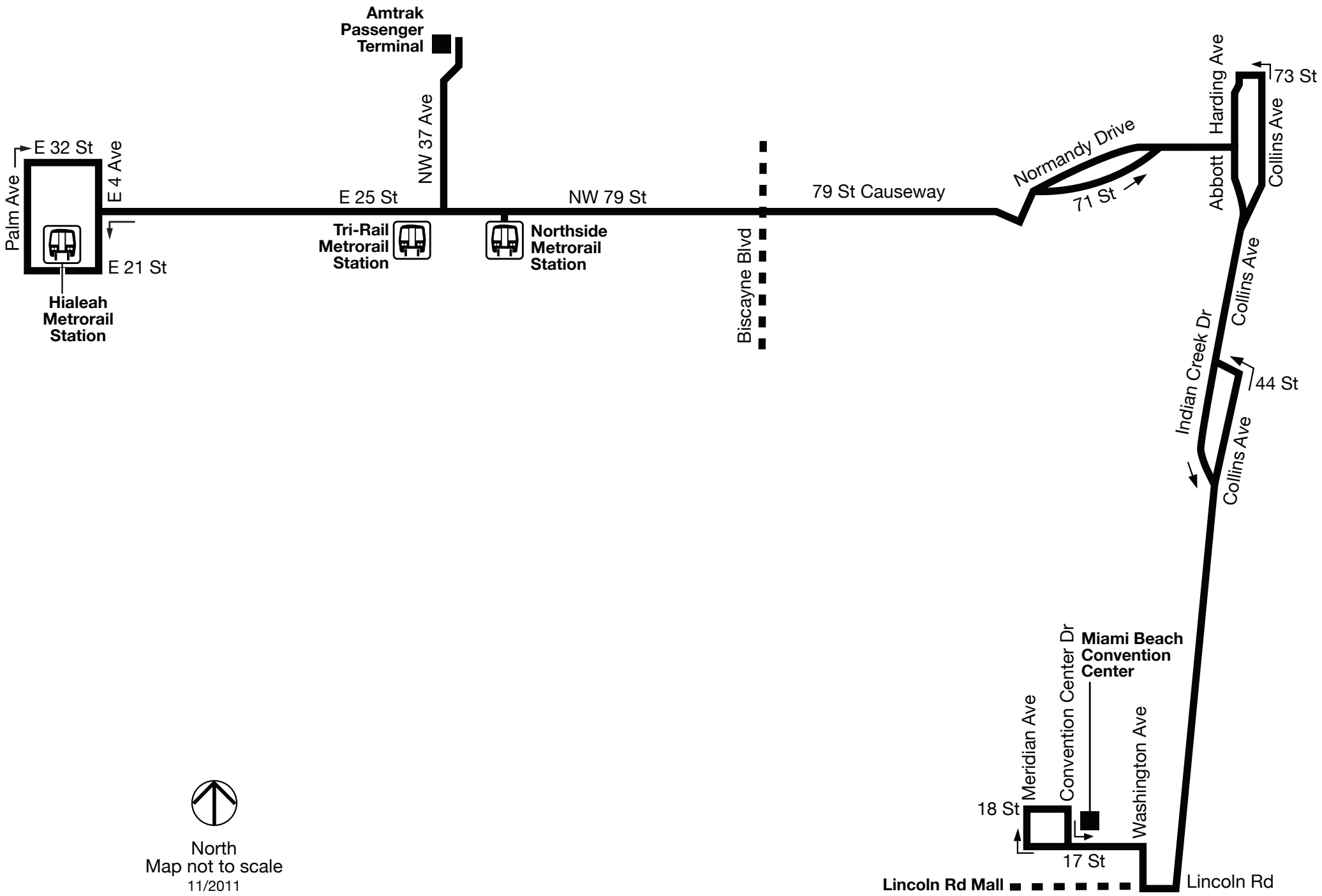
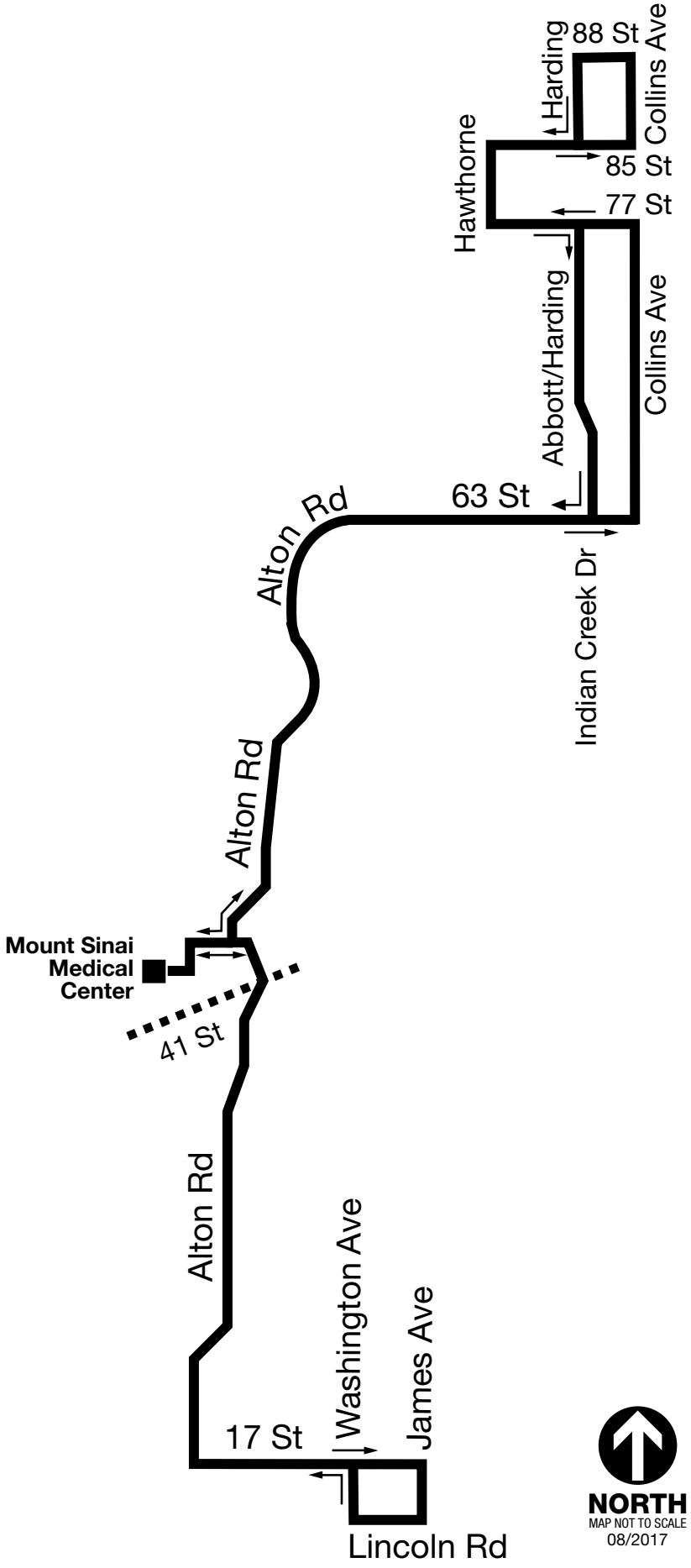

NE 12 Ave
15 Ave
WAL-
MART
163 ST MALL
NE 167 St
Service Rd
NE 35 Ave
SUNNY
ISLES
NE 163 St
Sunny Isles Blvd
NORTH
MIAMI BEACH
Interama Blvd
Collins Ave
(A1A)
N
HAULOVER
PARK
MAP NOT TO SCALE
08/2017

Route L

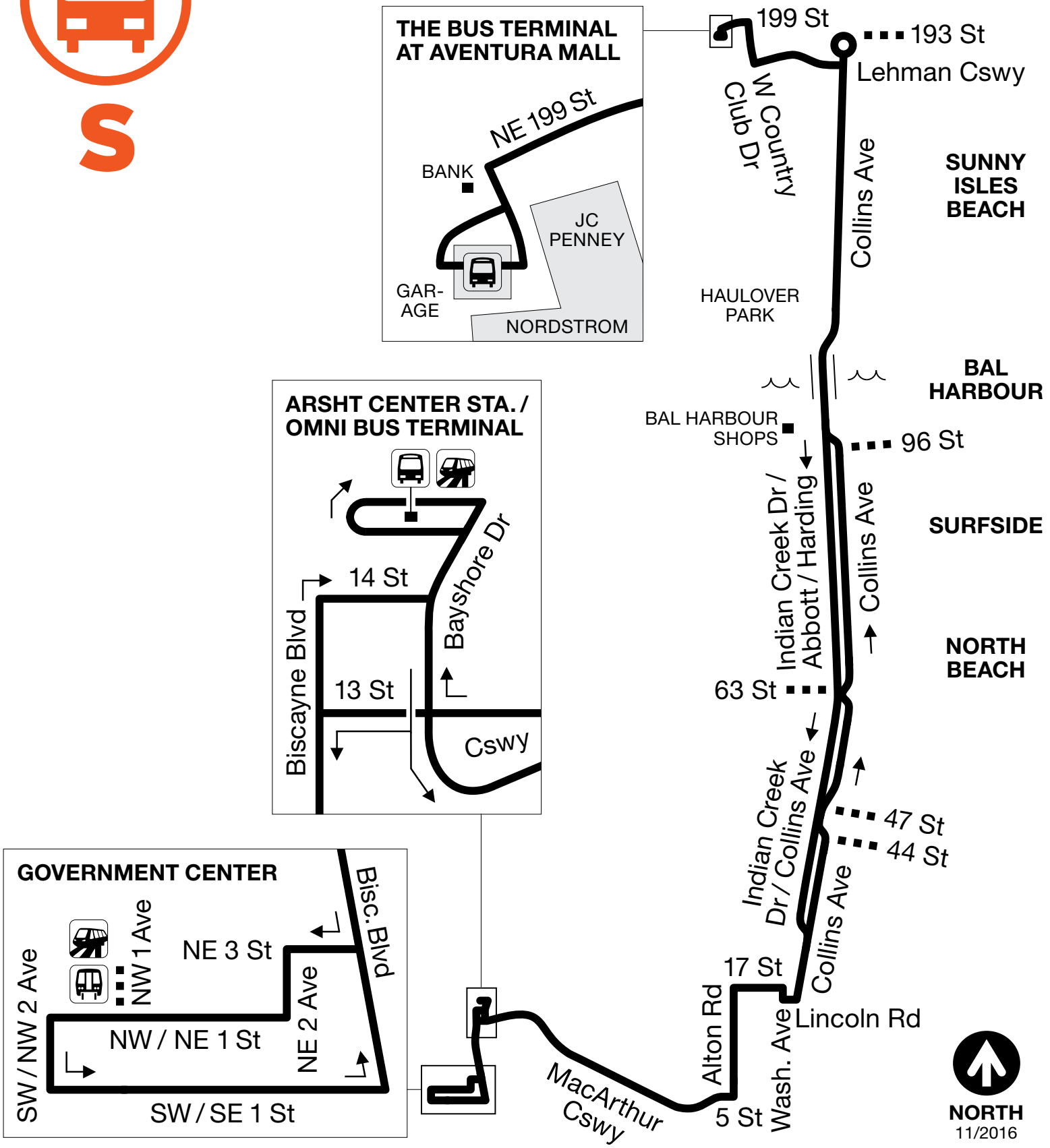

Amtrak Passenger Terminal
NW 37 Ave
E 32 St
E 4 Ave
Palm Ave
E 21 St
Hialeah Metrorail Station
E 25 St
Tri-Rail Metrorail Station
NW 79 St
Northside Metrorail Station
Biscayne Blvd
79 St Causeway
Normandy Drive
71 St
Harding Ave
73 St
Abbott
Collins Ave
Collins Ave
Indian Creek Dr
44 St
Collins Ave
Miami Beach Convention Center
Convention Center Dr
Meridian Ave
Washington Ave
18 St
17 St
Lincoln Rd Mall
Lincoln Rd
North
Map not to scale
11/2011

115

MID-NORTH BEACH CONNECTION



S


THE BUS TERMINAL AT AVENTURA MALL
NE 199 St
BANK
JC PENNEY
GAR-AGE
NORDSTROM
199 St
193 St
Lehman Cswy
W 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
GOVERNMENT CENTER
Bisc. Blvd
NE 3 St
NW 1 Ave
SW / NW 2 Ave
NE 2 Ave
NW / NE 1 St
SW / SE 1 St
17 St
Collins Ave
Alton Rd
Lincoln Rd
Wash. Ave
MacArthur Cswy
5 St
NORTH
11/2016

120 BEACH MAX

NOVEMBER 2017

- DAILY LIMITED-STOP SERVICE FROM AVENTURA THROUGH MIAMI BEACH TO DOWNTOWN MIAMI
- BUS TERMINAL AT AVENTURA MALL
- OMNI BUS TERMINAL / ARSHT CENTER METROMOVER STATION
- GOVERNMENT CENTER METRORAIL & METROMOVER STATION

SOUTHBOUND / RUMBO SUR / DIREKSYON SID — SATURDAY *SABADO/SANMDI*

MORNING *MAÑANA/MATIN* (columns 1–23 up to 11:51 AM at Bus Terminal) · AFTERNOON & EVENING *TARDE Y NOCHE/ APREMIDI, CHAK ASWÈ*

Stop																										
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
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
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	-
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
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
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
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
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
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

Stop																										
BUS TERMINAL AT AVENTURA MALL	-	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	-	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	1:23	-	1:53	-	2:23	-	2:53	-	3:23	-	3:53	-	4:23	-	4:53	-	5:23	-	6:10	-	-	-	-	-	-	-
BAL HARBOUR SHOPS	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	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	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	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	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	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

NORTHBOUND / RUMBO NORTE / DIREKSYON NO — SATURDAY *SABADO/SANMDI*

MORNING *MAÑANA/MATIN* · AFTERNOON & EVENING *TARDE Y NOCHE/ APREMIDI, CHAK ASWÈ*

Stop																												
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
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
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
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
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
COLLINS AV 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
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
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	-
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	-

Stop																												
STEPHEN P CLARK CENTER	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	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	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	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	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 AV 9700 BLOCK	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	-	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	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	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* · AFTERNOON & EVENING *TARDE Y NOCHE/ APREMIDI, CHAK ASWÈ*

Stop																
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
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
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
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
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
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
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
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

Stop																
BUS TERMINAL AT AVENTURA MALL	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	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	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	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	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	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	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	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* · AFTERNOON & EVENING *TARDE Y NOCHE/ APREMIDI, CHAK ASWÈ*

Stop															
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
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
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
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
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
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
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
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

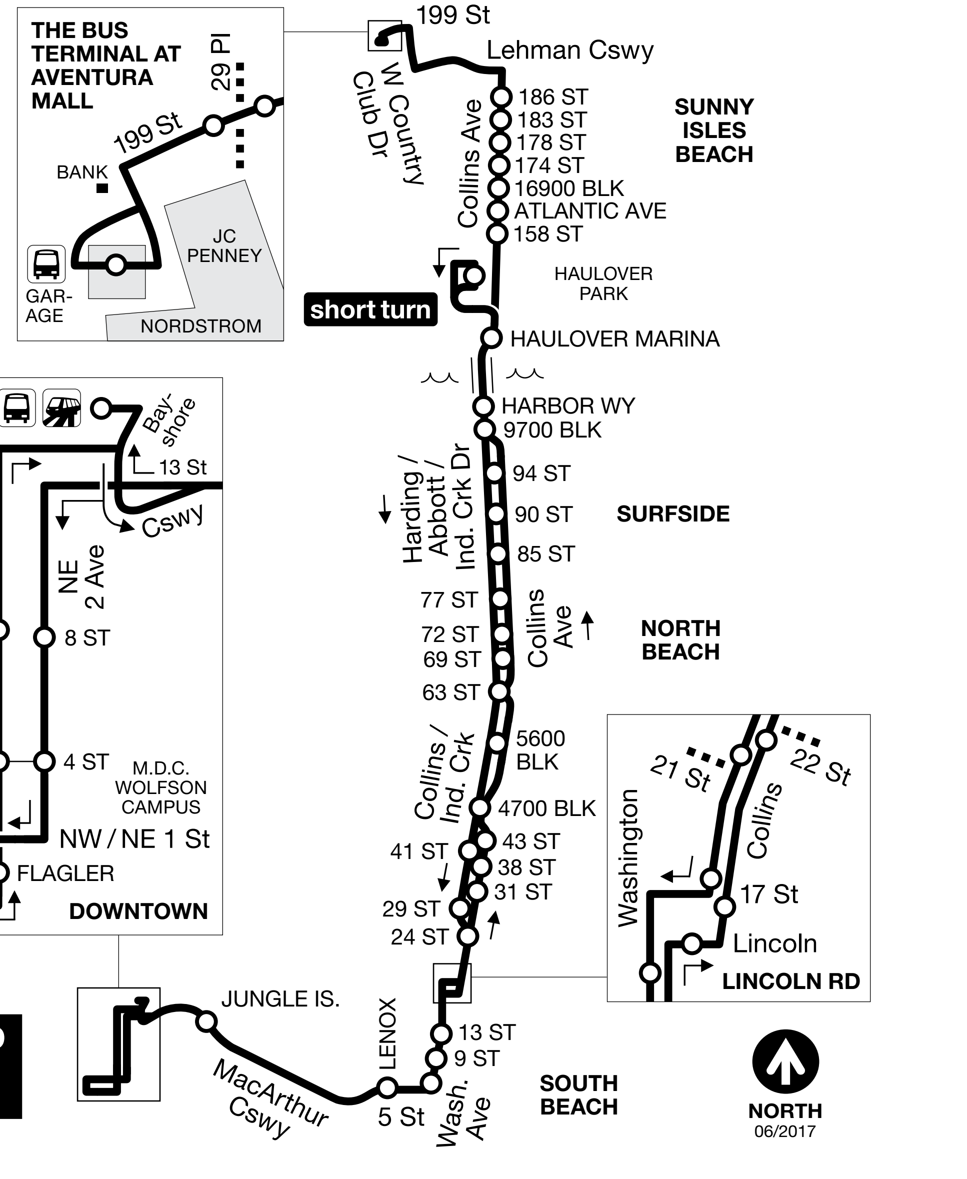
Stop															
STEPHEN P CLARK CENTER	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	9:00
OMNI TERM. ARSHT METROMOVER	1:40	2:10	2:40	3:10	3:40	4:10	4:40	5:10	5:40	6:08	6:38	7:08	7:38	8:06	9:06
LINCOLN RD & JAMES AVE	1:57	2:27	2:57	3:27	3:57	4:27	4:57	5:27	5:57	6:23	6:53	7:23	7:53	8:20	9:20
COLLINS AV & 43 ST	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	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	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	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	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

Scheduled times are approximate. Actual arrival and departure times may vary depending on traffic and road conditions. Las horas publicadas son aproximadas, pues dependen del trafico y otras condiciones de las vias. Ore yo apwoksimatif. Vre le bis yo ap rive oswa deplase ka varye selon kondisyon sikilasyon sou wout yo.

DRIVE LESS. LIVE MORE.

DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

120 BEACH MAX



SOUTHBOUND — RUMBO SUR — DIREKSYON SID

WEEKDAYS *DIAS LABORABLES/LASEMÈN*

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

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	-
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	-
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
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
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
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
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
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
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

BUS TERMINAL AT AVENTURA MALL	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	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	-	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	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	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	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	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	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	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* — AFTERNOON & EVENING *TARDE Y NOCHE/ APREMIDI, CHAK ASWÈ* (AM | PM)

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
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
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
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
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
COLLINS AV 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
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	-
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
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

STEPHEN P CLARK CENTER	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	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	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	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	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 AV 9700 BLOCK	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	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	-	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	-	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	-

Scheduled times are approximate. Actual arrival and departure times may vary depending on traffic and road conditions. Las horas publicadas son aproximadas, pues dependen del trafico y otras condiciones de las vias. Ore yo apwoksimatif. Vre le bis yo ap rive oswa deplase ka varye selon kondisyon sikilasyon sou wout yo.

Language Assistance: Miami-Dade Transit (MDT) is committed to providing information about its transit services to passengers with limited English as part of its non-discrimination program. MDT publishes route information in Spanish and Haitian Creole and offers assistance in both languages at our Call Center at 3-1-1 or 305- 468-5900. For more information, call MDT's Office of Civil Rights & Labor Relations at 786-469-5486.

Miami-Dade County provides equal access and equal opportunity in employment and does not discriminate on the basis of disability in its programs or services. Auxiliary aids and services for communication are available with five days' advance notice. For material in alternate format (audiotape, Braille or computer disk), a signlanguage interpreter or other accommodations, please contact: Miami-Dade Transit, Office of Civil Rights and Labor Relations, 701 NW 1st Court, Suite 1700, Miami, FL 33136. Attention: Marcos Ortega. Telephone: 786-469-5225, Fax: 786-469-5589. E-mail: mo7225@miamidade.gov.

Español: El Departamento de Transporte Público de Miami-Dade (MDT, su sigla en inglés) está dedicado a proveer información sobre sus servicios a los pasajeros que no hablan inglés. MDT publica información sobre sus rutas de autobús en español y creole haitiano y ofrece asistencia en ambos idiomas en nuestro Centro de Llamadas en el 3-1-1 o 305-468-5900. Para más informacion, llame la Ofi cina de Derechos Humanos y Relaciones Laborales de MDT al 786-469-5486.

El Condado de Miami-Dade ofrece igualdad de acceso y de oportunidades en el empleo y no practica la discriminación por discapacidad, en sus programas o servicios. Los dispositivos y servicios de ayuda auditiva para la comunicación están disponibles previa solicitud, con cinco días de anticipación. Para obtener materiales en formato alternativo (cinta de audio, Braille o disco de computadora), para solicitar un intérprete del lenguaje de las señas u otros servicios similares sírvase llamar a: Transporte de Miami-Dade, Ofi cina de Derechos Civiles y Relaciones Laborales, 701 NW 1st Court, Suite 1700, Miami, FL 33136. Atención: Marcos Ortega. Teléfono: 786-469-5225, Fax: 786-469-5589. Correo electrónico: mo7225@miamidade.gov.

Kreyòl Ayisyen: Miami-Dade Transit (MDT) angaje li a bay pasaje ak konesans limite an Anglè yo tout enfòmasyon sou sèvis transpò piblik nan lang pa yo. MDT pibliye enfòmasyon sou trajè otobis yo an Espanyòl ak an Kreyòl Ayisyen epi li bay asistans nan toude lang yo nan Sant Repons nou an 3-1-1 oswa 305-468-5900. Pou plis enfòmasyon, rele Biwo Dwa Sivik ak Relasyon Travay MDT la nan 786-469-5486.

Konte Miami-Dade bay aksè ak opòtinite egal ego nan anplwa epi li pa fè diskriminasyon baze sou enfi mite nan pwogram li yo ak sèvis li yo. Aparèy ak sèvis kominikasyon pou moun ki pa tande/wè byen yo disponib ak yon preyavi senk jou. Pou jwenn dokiman nan lòt fòma (tep odyo, Bray oswa disk konpit), sèvis yon entèprèt ki pale lang siy oswa lòt akomodasyon, tanpri kontakte: Miami-Dade Transit, Biwo Dwa Civil ak Relasyon Travay, 701 NW 1st Court, Suite 1700, Miami, FL 33136. Atansyon: Marcos Ortega. Telefòn: 786-469-5225, Faks: 786-469-5589. Imel: mo7225@miamidade.gov

www.miamidade.gov/transit

INFORMATION : INFORMACION : ENFOMASYON
311 OR 305.468.5900 (TTY:305.468.5402)

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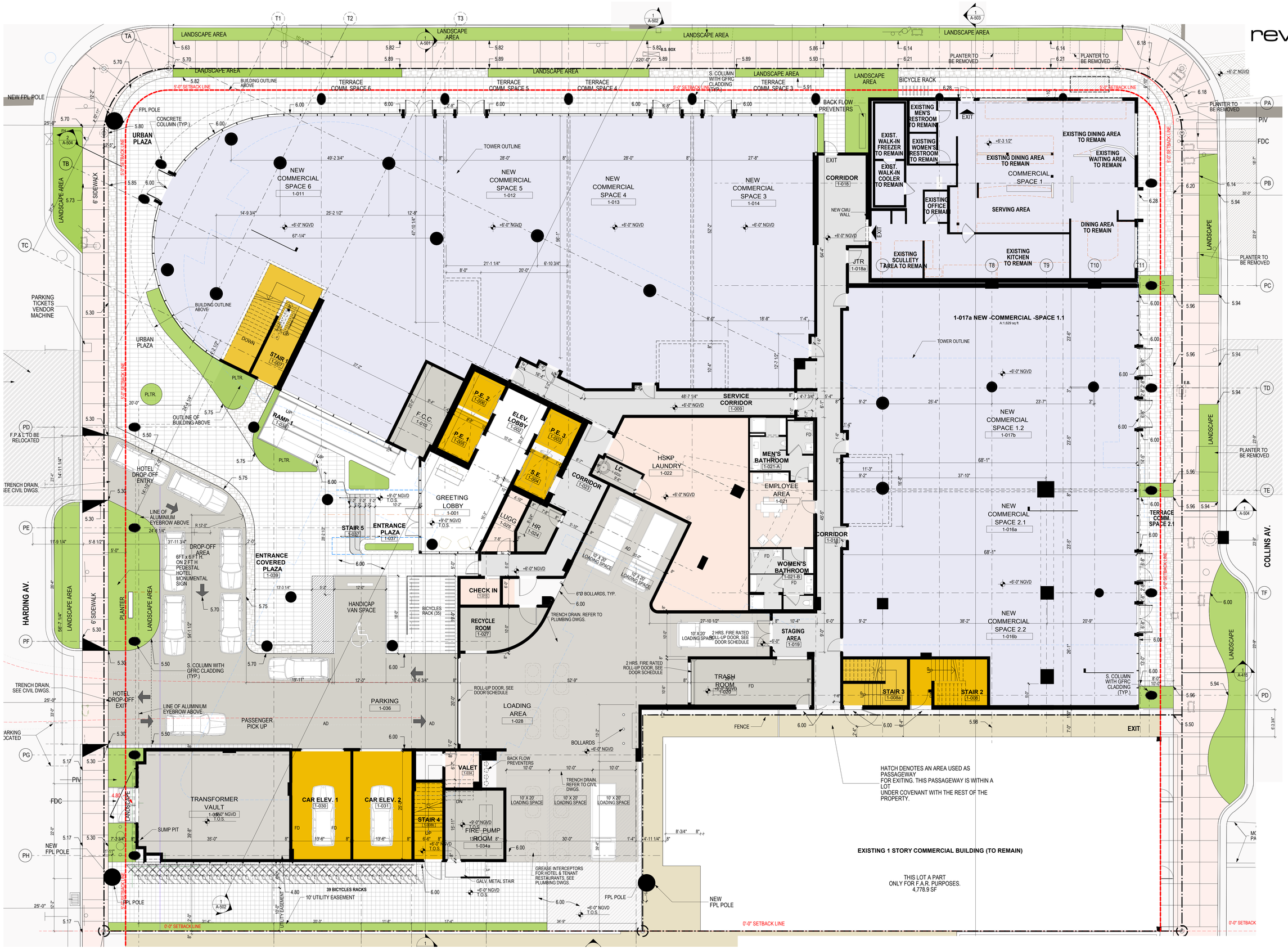
COLLINS EXPRESS

NORTH BEACH LOOP

Appendix H
Queuing Documentation

revuelta
architecture
international



JANUARY 26, 2018

GROUND LEVEL- DROP OFF-LOADING-COMMERCIAL | 1

SCALE: 1/8"=1'-0"

ELEVATION = +6'-0" N.G.V.D.

N

72 + COLLINS HOTEL
MIAMI BEACH

A.09

revuelta
architecture
international

JANUARY 26, 2018

LEVEL 2 - PARKING BOH | 1

SCALE: 1/8"=1'-0"
ELEVATION = +24.00 NGVD

N

72 + COLLINS HOTEL
MIAMI BEACH

A.10

Attachment 2

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

The first vehicle dropping-off children arrived at school at 8:30 AM. Data collection began at this time.

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

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

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:

$$M = \left[\frac{\ln 0.05 - \ln 0.7303}{\ln 0.8956}\right] - 1 = \left[\frac{-2.996 - (-0.314)}{-0.110}\right] - 1$$

$$= 24.38 - 1 = 23.38, \text{ say 23 vehicles.}$$

synergy

Building Supported Performance Series

- Steel, concrete, or other equivalent building construction methods capable of carrying the loads of an elevator system
- Buildings with total floor travel up to 300'-0"
- Elevator capacity up to 5000 lbs.
- Elevator speeds up to 500 fpm
- Standard or Premium cab finishes and flooring

View our 2014 Product Catalog

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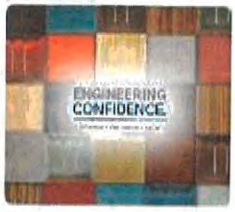

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Available Capacities (by weight)

2100 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5000H

Speed	200	350	500
Clear Overhead	16' - 0"	16' - 4"	17' - 6"
Max Rise	300' - 0"	300' - 0"	300' - 0"
Min Pit Depth	5' - 0"	5' - 0"	6' - 6"

	Front	Front/Rear
Door Type	Single Speed (RH/LH)	Single Speed (RH/LH)
Standard Car Height	7'- 10"	7'- 10"
Clear Inside Width	6' - 8"	6' - 8"
Clear Inside Depth	4' - 3"	4' - 3 1/2"
Door Width	3' - 6"	3' - 6"
Standard Door Height	7' - 0"	7' - 0"
Hoistway Width	8' - 4"	9' - 2"
Hoistway Depth	6' - 8"	6' - 8 3/4"

synergy

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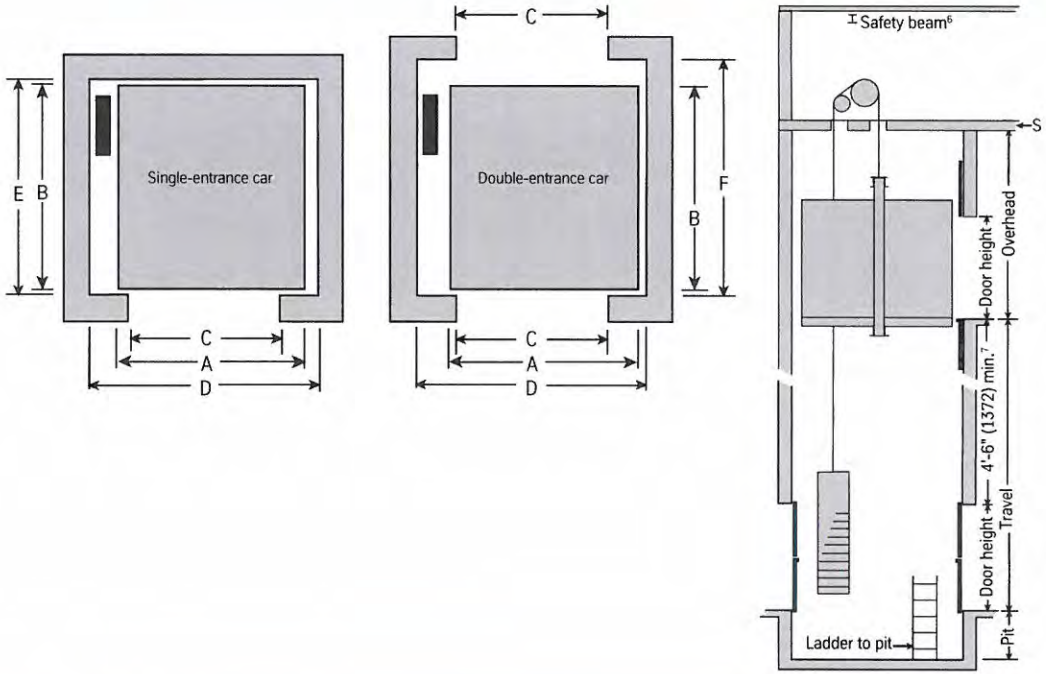
	Front	Front/Rear
Door Type	Single Speed (RH/LH)	Single Speed (RH/LH)
Standard Car Height	7'- 10"	7'- 10"
Clear Inside Width	6' - 8"	6' - 8"
Clear Inside Depth	5' - 5"	5' - 5 1/2"
Door Width	3' - 6"	3' - 6"
Standard Door Height	7' - 0"	7' - 0"
Hoistway Width	8' - 4"	9' - 2"
Hoistway Depth	7' - 10"	7' - 10 3/4"

FREIGHT

Traction Freight Elevators

Rugged, all-steel construction and custom engineering give our freight elevator the strength and power you need to get the job done day after day.



Traction Freight Elevators						
Capacity (lbs / kg)	Platform Width (A)	Platform Depth (B)	Door Width (C)	Hoistway Width (D) [1]	Hoistway Depth (E) [2]	Hoistway Depth (F) [3]
2500 (1134)	5'-4" (1626)	7'-0" (2134)	5'-0" (1524)	7'-10" (2388)[3]	7'-8" (2337)	7'-11" (2413)
4000 (1814)	8'-4" (2540)	10'-0" (3048)	8'-0" (2438)	10'-10" (3302)[3]	10'-8" (3251)	10'-11" (3327)
5000 (2268)	8'-4" (2540)	10'-0" (3048)	8'-0" (2438)	10'-10" (3302)[3]	10'-8" (3251)	10'-11" (3327)
6000 (2722)	8'-4" (2540)	10'-0" (3048)	8'-0" (2438)	10'-10" (3302)[3]	10'-8" (3251)	10'-11" (3327)
8000 (3629)	8'-4" (2540)	12'-0" (3658)	8'-0" (2438)	11'-0" (3353)[4]	12'-8" (3861)	12'-11" (3937)
10000 (4536)	8'-4" (2540)	14'-0" (4267)	8'-0" (2438)	11'-0" (3353)[4]	14'-8" (4470)	14'-11" (4547)

Minimum Pit and Overhead Dimensions		
Speed	Pit	Overhead[5]
100 FPM (0.5 M/S)	5'-6" (1676)	17'-2" (5232)
150 FPM (0.75 M/S)	5'-6" (1676)	17'-2" (5232)
200 FPM (1.0 M/S)	5'-6" (1676)	17'-2" (5232)

NOTE: Hoistway dimensions are based on 1" (25) out of plumb and no occupied space below hoistway. If these conditions cannot be met, then consideration must be given for additional required space.

Dimensions shown are for power operated doors of the regular type with 8'-0" (2438) clear opening height and cab height. Changes required if other than the above.

Temperature range: 50°F (28°C) min, 90°F (50°C) max. 10-90% non-condensing relative humidity.

All dimensions in parentheses are in millimeters unless otherwise indicated. Dimensional data shown here complies with the current ASME A17.1 and CSA B44 Safety Code for Elevators. Local codes may vary from the national codes. Consult your local Vertical Express representative for details.

1 Add $1\frac{3}{4}$" (44) if pass type doors are used.

2 Double entrance car, add $3\frac{1}{2}$" (89) if pass type doors are used.

3 Add 2" (51) for seismic.

4 Add 4" (102) for seismic.

5 Subtract 6" (152) if 7'-0" (2134) clear opening height doors and cab height are used.

6 Safety beam required per OSHA 1926.502, provided and installed by others, as directed by Vertical Express. Clear overhead is shown to the bottom of the safety beam.

7 4'-6" (1372) min. for regular-type door. 1'-0" (305) min. (power) 24" (610) min. spandrel for pass type door.

S Concrete structural support slab by others. Machine room floor to support all elevator machine loads and floor loads per ASME A17.1.

Appendix I

Transportation Demand Management Plan

7140 Collins Hotel
TRANSPORTATION DEMAND MANAGEMENT PLAN

The project's design and location will reduce the project vehicular traffic volumes as follows:

- The project will provide the residents, hotel and retail guest with accessibility to mass transit. This feature will allow residents and employers/employees to use mass transit for their trip to/from work. The project is located one block from a bus stop and six Miami-Dade County bus routes service the area. Additionally the North Beach circulator and Collins Express trolley routes service the project area.

The development will also do the following to further reduce peak hour vehicle trips:

- Encourage employers/employees to sign up and use ride matching services offered through the Hotel. Employers/employees who sign up will receive monetary payment as an incentive.
- Encourage employers/employees to participate in ridesharing programs (such as Uber and Lyft) through South Florida Commuter Services. Employers who participate will be reimbursed for a percentage of the cost of ridesharing services. Available information will be obtained and distributed to all employers/landlords 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/employees to purchase transit passes and make them available to employees at discount through subsidization of the cost of the ticket by employers.
- Employees will have full access to the bike racks located within the parking garage.
- Encourage employers/employees to implement staggered work hours.
- Provide bicycle parking above and beyond the minimum required bicycle parking. Thus reducing the required vehicular parking as afforded by Sec. 130-40.
- The hotel will have its own branded fleet of bicycles that it will offer to guests staying in the hotel as a means of getting around the City in lieu of using an automobile. Also, short term bicycle parking racks are provided throughout the project site near the front doors of the retail businesses.

Implementation of these items will result in a minimum of ten percent (10%) reduction of peak hour vehicle trips. The performance of the plan will be monitored by measuring actual afternoon peak hour volumes at the project driveways and comparing the counts against total project trips based on the Institute of Transportation Engineers (ITE) trip generation rates.