



June 1, 2020

Firat Akcay  
City of Miami Beach  
Transportation Department  
1688 Meridian Avenue, Suite 801  
Miami Beach, Florida 33139

**Re: 1575 Alton Road  
Traffic Assessment  
Miami Beach, Florida**

Dear Mr. Akcay:

Kimley-Horn and Associates, Inc. has performed a traffic assessment for the proposed redevelopment located at 1575 Alton Road in Miami Beach, Florida. The site proposed for redevelopment is currently occupied by a 11,849 square-foot automobile service and tire shop. The proposed redevelopment includes a 102-seat restaurant, 207-seat restaurant, and 770 square-foot bakery. Note the existing automobile service and tire shop is not currently operational and will be demolished as part of the proposed redevelopment. Note that no self-parking will be provided on-site. Therefore, all vehicular traffic with the exception of taxi/rideshare vehicles will be valeted. A project location map and site plan are included in Attachment A-1. The traffic assessment is consistent with the requirements outlined by the City of Miami Beach. Note that a complete traffic study with the remaining required analyses will be prepared as part of the response to City comments. Methodology correspondence is included in Attachment B-1. The traffic assessment includes a trip generation analysis, trip distribution and assignment, multimodal evaluation, site loading operations plan, transportation demand management (TDM) strategies, valet analysis, and capacity analysis. The following sections summarize the analysis.

## **TRIP GENERATION**

Trip generation calculations for the proposed redevelopment were performed using Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10<sup>th</sup> Edition. The trip generation for the proposed redevelopment was determined using ITE LUC 931 (Quality Restaurant) and 939 (Bread/Donut/Bagel Shop without Drive-Through Window).

A multimodal (public transit, bicycle, and pedestrian) factor based on US Census *Means of Transportation to Work* data was reviewed for the census tracts in the vicinity of the site. The US Census data indicated that there is a 50.2 percent (50.2%) multimodal factor within the vicinity of the site. However, to provide a conservative analysis, a multimodal factor of 20.0 percent (20.0%) was applied to the trip generation calculations to account for the urban environment in which the project site is located. It is expected that a portion of employees, guests, and patrons will choose to walk, bike, or use public transit to and from the site. Miami-Dade Transit (MDT) and the City of Miami Beach provide transit service within the vicinity of the proposed redevelopment via the following routes:

- MDT Route 113/M provides transit service along Alton Road within the vicinity of the proposed redevelopment with approximately 60-minute headways during the weekday P.M. peak hour and weekend peak hour.

- MDT Route 119/S provides transit service along Alton Road within the vicinity of the proposed redevelopment with approximately 12-minute headways during the weekday P.M. peak hour and approximately 15-minute headways during the weekend peak hour.
- City of Miami Beach South Beach Loop provides transit service along Alton Road within the vicinity of the proposed redevelopment with approximately 20-minute headways during the weekday P.M. peak hour and weekend peak hour.

Pass-by capture trip rates were determined based on average rates provided in the ITE’s *Trip Generation Handbook*, 3<sup>rd</sup> Edition. The average pass-by rate for the restaurant land use is 44.0 percent (44.0%) during the weekday P.M. peak hour.

The project is expected to generate 48 net new vehicle trips during the A.M. peak hour, 57 net new vehicle trips during the P.M. peak hour, and 112 net new vehicle trips during the weekend (Saturday) peak hour of generator. Detailed trip generation calculations and transit information are included as Attachment C-1.

**TRIP DISTRIBUTION AND ASSIGNMENT**

The trip distribution was based on an interpolated cardinal trip distribution for the project site’s traffic analysis zone (TAZ) obtained from the Miami-Dade Transportation Planning Organization’s (TPO’s) 2045 *Long Range Transportation Plan Directional Trip Distribution Report*. The trip distribution for the anticipated build-out year of 2022 was interpolated from the 2015 and 2045 data. The project is located within TAZ 642. The cardinal distribution is shown in Table 1. The detailed cardinal distribution is provided in Attachment D-1.

Table 1: Cardinal Trip Distribution	
Cardinal Direction	Percentage of Trips
North-Northeast	16.0%
East-Northeast	11.0%
East-Southeast	1.0%
South-Southeast	10.0%
South-Southwest	4.0%
West-Southwest	26.0%
West-Northwest	18.0%
North-Northwest	14.0%
<b>Total</b>	<b>100.0%</b>

**MULTIMODAL EVALUATION**

Existing and programmed bicycle and pedestrian amenities were evaluated along Alton Road between 15<sup>th</sup> Street and Lincoln Road, along 16<sup>th</sup> Street between West Avenue and Lenox Avenue, and at the intersection of Alton Road at 16<sup>th</sup> Street. A detailed evaluation of bicycle and pedestrian amenities is provided below:

### *Alton Road between 15<sup>th</sup> Street and Lincoln Road*

Alton Road between 15<sup>th</sup> Street and Lincoln Road functions as a four-lane, divided roadway with on-street parking located along the east and west sides of the roadway. Sidewalk widths vary from approximately 11 feet to 16 feet along the east side of the roadway and from approximately five (5) feet to 16 feet along the west side of the roadway. Additionally, sharrows are provided in the northbound and southbound directions.

### *16<sup>th</sup> Street between West Avenue and Lenox Avenue*

16<sup>th</sup> Street between West Avenue and Lenox Avenue functions as a two-lane, undivided roadway with on-street parking located along the north and south sides of the roadway. Sidewalk widths vary from approximately five (5) feet to nine (9) feet along the north and south sides of the roadway. Additionally, dedicated bicycle lanes are provided in the eastbound and westbound directions. Note that the dedicated bicycle lanes along the north and south sides of 16<sup>th</sup> Street east of Alton Road are provided with green colored pavement. Further note that based on the *FY 2020 – 2024 Capital Budget and 5-Year Capital Improvement Plan*, protected bicycle lanes will be implemented along 16<sup>th</sup> Street between Washington Avenue and Bay Road as part of the *Flamingo Park Neighborhood Right-of-Way Improvement Project*.

### *Alton Road and 16<sup>th</sup> Street Intersection*

The intersection of Alton Road and 16<sup>th</sup> Street operates under signal control and is located at the northwest corner of the proposed redevelopment. Special emphasis crosswalks and pedestrian signalization is provided at all the intersection approaches. Pedestrian signal push-button detection is provided the north and south leg crosswalks on 16<sup>th</sup> Street. Additionally, pedestrian ramps with truncated domes are provided at all corners of the intersection.

## **SITE LOADING OPERATIONS PLAN**

Loading operations for deliveries and sanitation vehicles will be conducted within the existing one-way, northbound alley located along the east side of the proposed redevelopment. Loading vehicles will enter the alley along 15<sup>th</sup> Street and exit the alley along 16<sup>th</sup> Street. As all loading activities will occur within the alley, loading vehicles will not impact the external roadway network.

## **TRANSPORTATION DEMAND MANAGEMENT STRATEGIES**

Transportation Demand Management (TDM) strategies are proposed to reduce the impacts of the project traffic on the surrounding roadway network. Typical measures promote bicycling and walking, encourage car/vanpooling and offer alternatives to the typical workday hours. The applicant will commit to providing the following incentives including:

- Providing transit information within the site including route schedules and maps
- Providing secure bicycle parking (bicycle racks and lockers)

The applicant intends to make the site bicycle/pedestrian- and transit-friendly.

## **VALET SERVICE AND OPERATIONS ANALYSIS**

The proposed redevelopment will be served by one (1) drop-off/pick-up area for valet operations. A valet operations queuing analysis was prepared for two (2) scenarios: i.) vehicle drop-off/pick-up area

located along the south/eastbound side of 16<sup>th</sup> Street just east of Alton Road and ii.) vehicle drop-off/pick-up area located along the east/northbound side of Alton Road just south of 16<sup>th</sup> Street. All vehicular traffic with the exception of taxi/rideshare vehicles will be valeted. The drop-off/pick-up areas will provide vehicle storage for approximately four (4) vehicles. It was assumed that three (3) spaces will be utilized for valet operations and one (1) space will be utilized for taxi/rideshare drop-off/pick-up. It is anticipated that all valet vehicles will be parked at the proposed 1212 Lincoln Road parking garage.

### *Valet Assumptions*

The queuing analysis used the multiple-channel waiting line model with Poisson arrivals and exponential service times. The queuing analysis is based on the coefficient of utilization,  $\rho$ , which is the ratio of the average vehicle arrival rate over the average service rate multiplied by the number of channels.

If the coefficient of utilization (average service rate/valet attendant service capacity) is greater than one ( $>1$ ), the calculation methodology does not yield a finite queue length. This result indicates overcapacity conditions for the valet area. The valet attendant service capacity is the number of total trips a valet attendant can make in a one-hour period multiplied by the number of valet attendants.

The analysis determined the required queue storage,  $M$ , which is exceeded  $P$  percent of the time. This analysis seeks to ensure that the queue length does not exceed the storage provided at a level of confidence of 95.0 percent (95.0%).

An iterative approach was used to determine the number of valet attendants required to accommodate the proposed redevelopment demand during the analysis hour and ensure that the 95<sup>th</sup> percentile valet queue does not extend beyond the designated valet service area.

The valet queuing operations analysis was performed based on the methodology outlined in ITE's *Transportation and Land Development*, 1988. The analysis was performed to determine if valet operations could accommodate vehicular queues without blocking travel lanes on either 16<sup>th</sup> Street or Alton Road. Valet operations were analyzed for the number of valet attendants and required vehicle stacking for the proposed redevelopment.

The valet analysis was prepared for the weekend (Saturday) peak hour of generator as it is the highest demand condition. The proposed redevelopment is expected to generate 112 vehicle trips during the weekend (Saturday) peak hour of generator. Please note that a 42.6 percent (42.6%) taxi/rideshare factor was applied to the trip generation estimates based on actual field observations from the Cadillac Hotel located at 3925 Collins Avenue to account for taxi/rideshare trips. Therefore, the project is expected to generate 64 valet trips during the weekend (Saturday) peak hour of generator.

### *16<sup>th</sup> Street Drop-off/Pick-up Area Valet Analysis*

Valet drop-off vehicles will exit the valet drop-off/pick-up area, travel eastbound along 16<sup>th</sup> Street, southbound along Lenox Avenue, westbound along 15<sup>th</sup> Street, northbound along Alton Road, westbound along 16<sup>th</sup> Street and enter the 1212 Lincoln Road parking garage. To provide a conservative analysis, valet processing time to the 6<sup>th</sup> level of the parking garage was used. Note that it was assumed that the parking garage occupies levels 3 to 6. Valet pick-up vehicles will exit the

parking garage, travel eastbound along 16<sup>th</sup> Street and enter the valet drop-off/pick-up area. A graphic illustration of the proposed valet routes to and from the parking garage is provided in Attachment G-1.

Valet attendants will be stationed at the on-site valet drop-off/pick-up area. Valet drop-off trip service time was calculated based on the time it would take a valet parking attendant to obtain and park a drop-off vehicle in the 1212 Lincoln Road parking garage and return to the valet station. Valet pick-up trip service time was calculated based on the time it would take a valet parking attendant to bring a parked vehicle back to a patron at the on-site valet drop-off/pick-up area for pick-up. The following summarizes the total valet drop-off and pick-up service times.

The service time for valet drop-off operation corresponds to the following:

- Exchange between valet attendant and driver (0.5 minutes)
- Valet attendant drives vehicle from drop-off/pick-up area to parking garage (4.4 minutes)
- Valet attendant returns to valet station (2.3 minutes)
- Total service rate: 7.2 minutes

The service time for valet pick-off operation corresponds to the following:

- Valet attendant proceeds to the parking garage to retrieve the vehicle (2.3 minutes)
- Valet attendant drives vehicle from parking garage to the drop-off/pick-up area (2.7 minutes)
- Exchange between valet attendant and driver (0.5 minutes)
- Total service rate: 5.5 minutes

The calculated average service time for vehicles valeted from the on-site drop-off/pick-up area is 7.2 minutes for valet drop-off and 5.5 minutes for valet pick-up. Processing times include the time for the exchange between the driver and valet attendants. Detailed travel time calculations are included in Attachment E-1.

Results of the highest demand condition valet operations analysis demonstrate that a maximum of ten (10) valet attendants would be required so that the vehicle drop-off/pick-up storage would not be exceeded. It should be noted that projected vehicular volumes and estimated valet processing times were conservatively assumed in the analysis. If it is determined that valet processing times can be performed more efficiently, and/or actual traffic volumes are lower than projected, a reduced number of valet attendants may be adequate to serve the site. Detailed valet analysis calculation worksheets are provided in Attachment E-1.

### *Alton Road Drop-off/Pick-up Area Valet Analysis*

Valet drop-off vehicles will exit the valet drop-off/pick-up area, travel northbound along Alton Road, eastbound along 16<sup>th</sup> Street, southbound along Lenox Avenue, westbound along 15<sup>th</sup> Street, northbound along Alton Road, westbound along 16<sup>th</sup> Street and enter the 1212 Lincoln Road parking garage. To provide a conservative analysis, valet processing time to the 6<sup>th</sup> level of the parking garage was used. Note that it was assumed that the parking garage occupies levels 3 to 6. Valet pick-up vehicles will exit the parking garage, travel eastbound along 16<sup>th</sup> Street, southbound along Lenox Avenue, westbound along 15<sup>th</sup> Street, northbound along Alton Road, and enter the valet drop-off/pick-up area.

Valet attendants will be stationed at the on-site valet drop-off/pick-up area. Valet drop-off trip service time was calculated based on the time it would take a valet parking attendant to obtain and park a drop-off vehicle in the 1212 Lincoln Road parking garage and return to the valet station. Valet pick-up trip service time was calculated based on the time it would take a valet parking attendant to bring a parked vehicle back to a patron at the on-site valet drop-off/pick-up area for pick-up. The following summarizes the total valet drop-off and pick-up service times.

The service time for valet drop-off operation corresponds to the following:

- Exchange between valet attendant and driver (0.5 minutes)
- Valet attendant drives vehicle from drop-off/pick-up area to parking garage (5.1 minutes)
- Valet attendant returns to valet station (2.7 minutes)
- Total service rate: 8.3 minutes

The service time for valet pick-off operation corresponds to the following:

- Valet attendant proceeds to the parking garage to retrieve the vehicle (2.7 minutes)
- Valet attendant drives vehicle from parking garage to the drop-off/pick-up area (4.3 minutes)
- Exchange between valet attendant and driver (0.5 minutes)
- Total service rate: 7.5 minutes

The calculated average service time for vehicles valeted from the on-site drop-off/pick-up area is 8.3 minutes for valet drop-off and 7.5 minutes for valet pick-up. Processing times include the time for the exchange between the driver and valet attendants. Detailed travel time calculations are included in Attachment E-1.

Results of the highest demand condition valet operations analysis demonstrate that a maximum of 12 valet attendants would be required so that the vehicle drop-off/pick-up storage would not be exceeded. It should be noted that projected vehicular volumes and estimated valet processing times were conservatively assumed in the analysis. If it is determined that valet processing times can be performed more efficiently, and/or actual traffic volumes are lower than projected, a reduced number of valet attendants may be adequate to serve the site. Detailed valet analysis calculation worksheets are provided in Attachment E-1.

## INTERSECTION CAPACITY ANALYSIS

### Existing Traffic

Existing turning movement count data were provided by the City of Miami Beach for the intersection of SR 907/Alton Road at 16<sup>th</sup> Street. Traffic data were collected on Thursday, January 23, 2020 and Saturday, January 25, 2020. Turning movement count data for the weekday P.M. peak period (4:45 P.M. to 6:45 P.M.) and weekend (Saturday) peak period (7:30 P.M. to 9:30 P.M.) were utilized to determine existing conditions. The traffic volumes were collected in 15-minute intervals and the peak hour was determined. Turning movement counts also included pedestrian and bicycle data. Please note that the appropriate Florida Department of Transportation (FDOT) peak season factor of 1.03 was applied to the existing traffic volumes to account for peak season conditions. Existing signal phasing and timing patterns were obtained from Miami-Dade County Department of Transportation and Public

Works – Traffic Signals and Signs Division for the study intersection. The turning movement counts, FDOT peak season factor category report, and signal timing data are included in Attachment F-1.

## Growth Rate Calculations

Future traffic growth on the transportation network was determined based upon (a) historic growth trends at nearby FDOT traffic count stations and (b) traffic volume comparisons from the year 2015 and 2045 Florida Standard Urban Transportation Model Structure (FSUTMS) - Southeast Florida Regional Planning Model (SERPM). FDOT count stations referenced in this analysis include:

- Count Station #2542: SR 907/Alton Road – 200 feet south of Venetian Causeway
- Count Station #8415: West Avenue – 100 feet north of 12<sup>th</sup> Street
- Count Station #8566: 15<sup>th</sup> Street – 200 feet east of Jefferson Avenue
- Count Station #8567: 16<sup>th</sup> Street – 200 feet east of Meridian Avenue

The historic growth rate analysis based on FDOT count stations determined a linear growth rate of negative 3.38 percent (-3.38%) annually over the most recent five (5) years and negative 1.28 percent (-1.28%) annually over the most recent ten (10) years. The exponential growth trend yielded a growth rate of negative 3.97 percent (-3.97%) annually over the most recent five (5) years and negative 1.27 percent (-1.27%) annually over the most recent ten (10) years. The decaying exponential growth trend yielded a growth rate of negative 3.77 percent (-3.77%) annually over the most recent five (5) years and negative 1.75 percent (-1.75%) annually over the most recent ten (10) years. Based on the forecasted volumes obtained from the 2015 and 2045 FSUTMS SERPM, an annual growth rate of 0.61 percent (0.61%) was calculated in the vicinity of the redevelopment.

Therefore, to provide a conservative analysis, the highest growth rate of 0.61 percent (0.61%) was applied to existing traffic volumes to determine future background traffic volumes for the project's expected opening year of 2022. The worksheets used to analyze the historic growth trends and volume development worksheets are included in Attachment G-1.

## Future Traffic Volumes

Future total traffic conditions are defined as the expected traffic conditions in the year 2022 after the opening of the project. Total traffic volumes considered in the analysis for this project are the sum of the background traffic volumes and expected project traffic volumes. Volume development worksheets and figures summarizing the existing volumes, future background volumes, trip distribution, trip assignment, and future total volumes are provided in Attachment H-1.

## Analysis

The operating conditions at the intersection of SR 907/Alton Road and 16<sup>th</sup> Street were analyzed for four (4) scenarios (existing conditions, future background conditions, future total conditions with 16<sup>th</sup> street valet operations, and future total conditions with SR 907/Alton Road valet operations using Trafficware's *SYNCHRO 10* software, which applies methodologies outlined in the Transportation Research Board's (TRB's) *Highway Capacity Manual (HCM)* 6<sup>th</sup> Edition. Synchro worksheets for the study intersections are included in Attachment I-1. A summary of the intersection analysis for the weekday P.M. peak hour and weekend (Saturday) peak hour is presented in Table 2. As indicated in Table 2, the intersection of SR 907/Alton Road and 16<sup>th</sup> Street is expected to operate at LOS D under

existing conditions and at LOS E under future background and future total conditions during the weekday P.M. peak hour. Additionally, the intersection of SR 907/Alton Road and 16<sup>th</sup> Street is expected to operate at LOS D under existing conditions and at LOS F under future background and future total conditions during the weekend peak hour. Note that per the direction of the City of Miami Beach, an exclusive pedestrian phase was included as part of the signal operating plan for the intersection of SR 907/Alton Road and 16<sup>th</sup> Street under future background and future total conditions.

Table 2: Peak Hour Intersection Capacity Analysis						
Intersection	Traffic Control	Overall LOS	Approach LOS			
			EB	WB	NB	SB
<i>Existing Conditions (Future Background Conditions)</i>						
<i>[Future Total Conditions with 16<sup>th</sup> Street Valet] {Future Total Conditions with Alton Road Valet}</i>						
Weekday P.M. Peak Hour						
SR 907/Alton Road and 16 <sup>th</sup> Street	Signalized <sup>(1)(2)</sup>	D	D	F	C	B
		(E)	(D)	(F)	(E)	(D)
		[E]	[E]	[F]	[E]	[E]
		{E}	{E}	{F}	{E}	{E}
Weekend Peak Hour						
SR 907/Alton Road and 16 <sup>th</sup> Street	Signalized <sup>(1)(2)</sup>	D	D	F	C	B
		(F)	(D)	(F)	(D)	(E)
		[F]	[E]	[F]	[F]	[E]
		{F}	{E}	{F}	{F}	{E}

Notes: <sup>(1)</sup>HCM 2000 was utilized as HCM 6<sup>th</sup> Edition cannot analyze signalized intersections with an exclusive pedestrian phase  
<sup>(2)</sup>Signal timings optimized under future background and future total conditions to account for the exclusive pedestrian phase

## CONCLUSION

The project is expected to generate 48 net new vehicle trips during the A.M. peak hour, 57 net new vehicle trips during the P.M. peak hour, and 112 net new vehicle trips during the weekend (Saturday) peak hour of generator.

Based on the multimodal evaluation, sidewalk widths vary from approximately five (5) feet to 16 feet within the vicinity of the proposed redevelopment. Additionally, dedicated bicycle lanes are provided along 16<sup>th</sup> Street and sharrows are provided along Alton Road within the vicinity of the proposed redevelopment. Furthermore, protected bicycle lanes are programmed for implementation along 16<sup>th</sup> Street within the vicinity of the proposed redevelopment.

Transportation Demand Management (TDM) strategies are proposed to reduce the impacts of the project traffic on the surrounding roadway network. Typical measures promote bicycling and walking, encourage car/vanpooling and offer alternatives to the typical workday hours. The applicant will commit to providing the following incentives including:

- Providing transit information within the site including route schedules and maps
- Providing secure bicycle parking (bicycle racks and lockers)

Additionally, a valet operations analysis was conducted to determine the number of valet attendants and vehicle storage area required to accommodate the 95<sup>th</sup> percentile valet queue without extending beyond the valet service area onto 16<sup>th</sup> Street or Alton Road. Based upon the conservative assumptions applied to the highest traffic demand condition (Saturday peak hour of generator), it was estimated that a maximum of ten (10) valet attendants may be required at the 16<sup>th</sup> Street drop-off/pick-up area or a

maximum of 12 valet attendants may be required at the Alton Road drop-off/pick-up area during peak periods. It should be noted that projected vehicular volumes and estimated valet processing times were conservatively assumed in the analysis. If it is determined that valet processing times can be performed more efficiently, and/or actual traffic volumes are lower than projected, a reduced number of valet attendants may be adequate to serve the site.

Based on the intersection capacity analysis, the intersection of SR 907/Alton Road and 16<sup>th</sup> Street is expected to operate at LOS D under existing conditions and at LOS E under future background and future total conditions during the weekday P.M. peak hour. Additionally, the intersection of SR 907/Alton Road and 16<sup>th</sup> Street is expected to operate at LOS D under existing conditions and at LOS F under future background and future total conditions during the weekend peak hour. Note that per the direction of the City of Miami Beach, an exclusive pedestrian phase was included as part of the signal operating plan for the intersection of SR 907/Alton Road and 16<sup>th</sup> Street under future background and future total conditions.

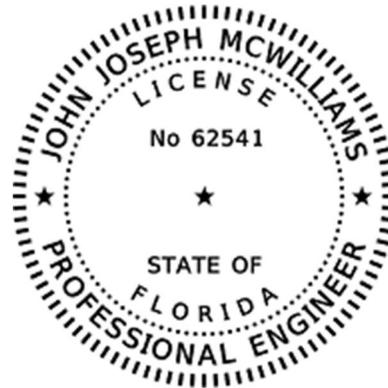
If you have any questions regarding this analysis, please feel free to contact me.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.



John J. McWilliams, P.E.  
Attachments



This document has been digitally signed and sealed by John Joseph McWilliams, P.E. on the date adjacent to the seal.

**John J McWilliams** Digitally signed by John J McWilliams  
Date: 2020.06.01 09:24:34 -04'00'

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

John J. McWilliams, P.E.  
Florida Registration Number 62541  
Kimley-Horn and Associates, Inc.  
600 North Pine Island Road, Suite 450  
Plantation, Florida 33324  
CA # 00000696

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# **Attachment A-1**

Location Map and Site Plan

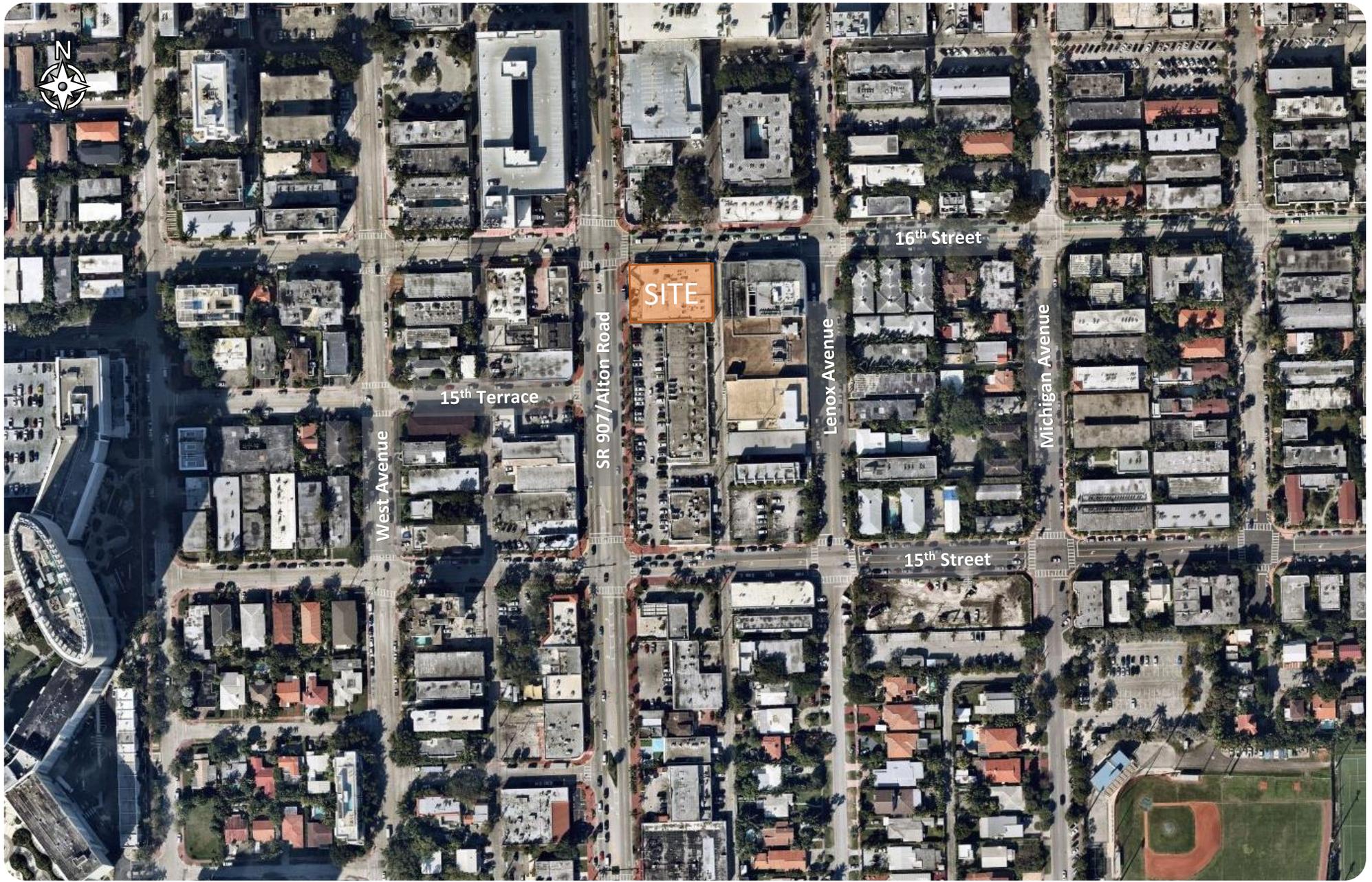
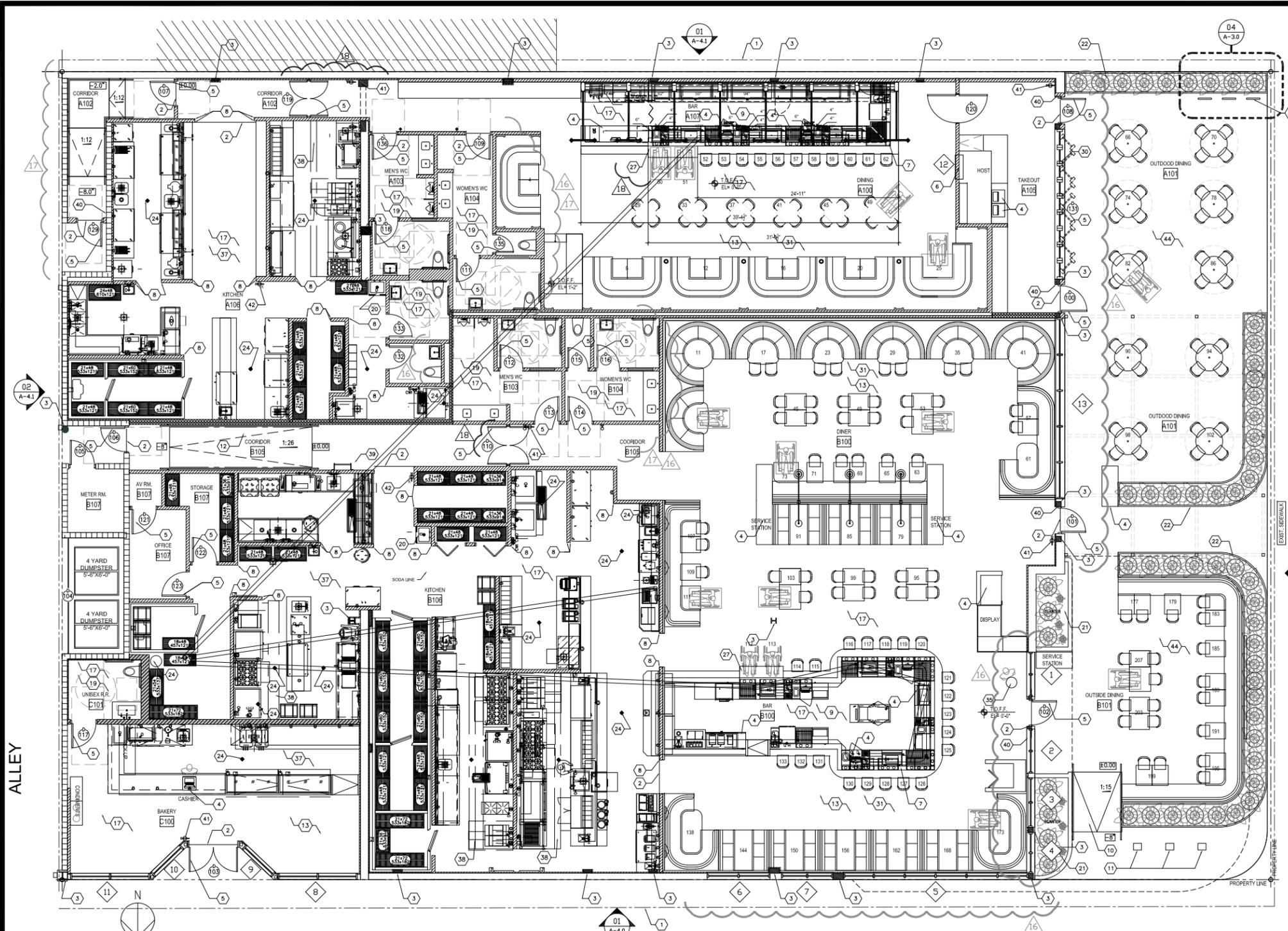


Figure 1  
Project Location Map  
1575 Alton Road  
Miami Beach, Florida





- KEY NOTES:**  
VERIFY ALL NOTES WITH ID DRAWINGS
- AREA OF WORK
  - FLOOR SURFACES SHALL NOT VARY MORE THAN 1/2"
  - EXISTING COLUMNS, SEE ID DWGS FOR FINISHES
  - NEW POS STATION, SEE ID DRAWINGS
  - NEW DOOR, SEE DOOR SCHEDULE FOR DETAIL AND FIRE-RATING
  - PASS-THROUGH OPENING
  - NEW BAR (SEE ID DWGS FOR SPECIFICATIONS)
  - CORNER GUARDS AT ALL EXPOSED CORNERS AT THE KITCHEN AREA, SEE ID DWGS.
  - NEW BAR EQUIPMENT SEE FOOD EQUIPMENT DWG AND SCHEDULE
  - NEW EXTERIOR ADA RAMP
  - LONG TERM BICYCLE LOCKERS, SECURABIKE MINI LOCKER #BLB632, PHONE #734-207-9700
  - INTERIOR RAMP SLOPE 1:26
  - MILLWORK (SEE I.D. FOR DETAILS)
  - NOT USED
  - NOT USED
  - NEW FLOOR (SEE I.D. AND FINISH SCHEDULE FOR DETAILS)
  - NOT USED
  - NEW BATHROOMS FIXTURES (SEE I.D. FOR DETAILS)
  - NEW MOP-SINK (SEE I.D. FOR DETAILS)
  - EXISTING PLANTERS NEW HEIGHT SEE ELEVATIONS
  - NEW OUTDOOR PLANTERS (SEE LANDSCAPE FOR DETAILS)
  - NOT USED
  - FLOOR DRAINAGE
  - NOT USED
  - NOT USED
  - 2'-10" HIGH ADA PORTION COUNTERTOP - 74" WIDE X 29" DEEP WITH CLEAR SPACE - SEE HANDICAP ACCESS NOTES
  - NOT USED
  - NOT USED
  - NEW EUROWALL DOOR
  - NEW BOOTH, SEE ID DWG.
  - THREE (3) BICYCLE RACKS, FOR SIX (6) BICYCLES.
  - NOT USED
  - NOT USED
  - NEW HOST STAND, SEE ID DRAWINGS.
  - NOT USED
  - NEW KITCHEN EQUIPMENT, SEE FOOD SERVICE DWGS AND SCHEDULES FOR SPECS.
  - NEW HOOD SEE FOOD EQUIPMENT DWG AND SCHEDULES FOR SPECS.
  - NEW LADDER TO ABOVE ROOF HATCH.
  - VISIBLE SIGN TO BE POSTED ON THE EGRESS SIDE ADJACENT TO THE DOOR STATING: "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED". SIGN TO COMPLY WITH FBC 1008.1.9.3-2.2
  - NEW FIRE EXTINGUISHER (MODEL 2A10BC) ON FLUSH MOUNTED CABINET. PROVIDE (1) PER 3,000 S.F. MAX TRAVEL DIST. 75' MTD AT 3"-4" A.F.F. (2 PROVIDED). PROVIDE SAMPLE TO OWNER FOR APPROVAL. COORDINATE RECESSED CABINET WITH DESIGNER.
  - NEW "K" CLASS FIRE EXTINGUISHER TO BE MTD AT 3"-4" A.F.F.
  - NOT USED
  - FOR OUTDOOR NEW GRADING SEE CIVIL DRAWINGS.
- ALL OUTLETS MOUNTED ABOVE COUNTERS TO BE 4" ABOVE BACK SPLASH  
-- ALL OUTLETS FOR EQUIPMENT TO BE V.I.F. BY GC. COORDINATE WITH ELECTRICAL DRAWINGS. IF THERE ARE ANY DISCREPANCIES CONTACT THE ARCHITECT/ENGINEER BEFORE COMMENCEMENT OF WORK.  
-- ALL UNFINISHED OR DAMAGED SURFACES AT PERIMETER WALLS TO BE SEALED, WATERTIGHT, AND FINISHED, SEE WALL DETAILS.  
-- PROVIDE DUROCK AND WATERPROOFING UNDER ALL "WET" AREAS. SEE FINISH PLAN FOR GENERAL INSTALLATION METHODS.

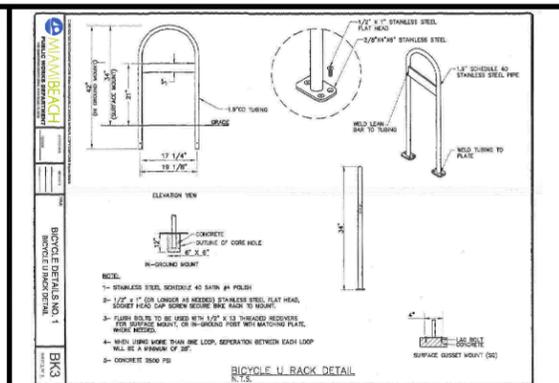
- 02 KEYNOTES**
- HARDWARE NOTES**  
ALL EXITS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE.  
ALL THRESHOLDS SHALL BE A MAXIMUM 1/2" HEIGHT AND BEVELED.  
CENTER OF LEVER TO BE INSTALLED 36" ABOVE FINISH FLOOR.
- WALL TYPES & SYMBOLS**
- NEW CMU/CONCRETE/COLUMN/STUD PLASTER/WALLS
  - NEW STUD WALL
  - WALL TAG. SEE WALL DETAIL PAGE.
  - ROOM
  - 000 AREA TAG
  - DOOR TAG
  - WINDOW TAG
  - ADJACENT STRUCTURE
- NOTES:  
GYP BOARD WALLS TO BE TAPED, SANDED AND HAVE SMOOTH FINISH, UNLESS NOTED
- NOTE: INTERIOR WALL, CEILING, FLOORS, DECORATIONS AND TRIM COMPLY WITH FFC04  
NOTE: ALL INTERIOR FINISHES TO COMPLY WITH FFC 5TH ED. TABLE 6.02.2 FOR ASSEMBLY GREATER THAN 300.  
NOTE: ALL INTERIOR FINISHES TO BE CLASS B PLANE SPC04L 26-75 SMOKE-RESISTANT AS PER SECTION 803 OF THE INTERNATIONAL BUILDING CODE 2015  
NOTE: FLOOR MUST COMPLY WITH FFC 101 714.4. THE WALKING SURFACE OF EACH ELEMENT IN THE MEANS OF EGRESS SHALL BE UNIFORMLY SLIP RESISTANT ALONG THE NATURAL PATH OF TRAVEL.  
NOTE: ALL FINISHES TO BE REVIEWED AND APPROVED BY THE ARCHITECT OF RECORD TO VERIFY COMPLIANCE WITH FFC 5TH EDITION CHAPTER 10  
NOTE: ALL FINISHES OTHER THAN PAINT TO COMPLY WITH FBC 803 & 804  
NOTE: ALL WALLS & PARTITIONS WITHIN 2 FT OF URINALS AND TOILETS SHALL COMPLY WITH FBC 1220  
NOTE: INTERIOR WALL, CEILING, FLOORS, DECORATIONS, AND TRIM SHALL COMPLY WITH FBC CHAPTER 8  
NOTE: VAPOR BARRIER FBC 1907.1 AT NEW SLABS A 6 MIL MINIMUM POLYETHYLENE VAPOR RETARDANT TO BE PLACED BETWEEN THE SUB-GRADE AND THE CONCRETE FLOOR SLAB.  
NOTE: OUTDOOR SPEAKERS ARE NOT PERMITTED.

**01 FLOOR PLAN**  
SCALE: 3/16"=1'-0"

FLOOD MANAGEMENT TABLE	
BASE FLOOR ZONE	AE
BASE FLOOR ELEVATION - (ZONE AD, USE BASE FLOOD DEPTH)	8
DESIGN FLOOD ELEVATIONS - DFE	9.0' NGVD
LOWEST FFE OF HABITABLE SPACE	4.2' NGVD
LOWEST GRADE ELEV. ADJACENT TO BUILDING	3.04 NGVD
LOWEST ELEV. OF EQUIPMENT SERVING THE BLDG	4.2' NGVD
CROWN OF ROAD ELEVATION - ALTON ROAD	4.15 NGVD
CROWN OF ROAD ELEVATION - 16TH ST.	3.34 NGVD
ADJUSTED GRADE ELEVATION	N/A
FIRM MAP NUMBER	12086C 0317

CLASSIFICATION OF STRUCTURE FOR FLOOR RESISTANT DESIGN AND CONSTRUCTION ASCE TABLE 1-1	CATEGORY III
--	--------------



**03 FLOODING DATUM**

**04 BIKE RACKS**

**05 GENERAL NOTES**

**NR architect**

**NORBERTO ROSENSTEIN ARCHITECT, INC.**

126 S. FEDERAL HIGHWAY  
SUITE # 202  
DANIA BEACH, FLORIDA 33004  
PH: (954) 922-6551

EMAIL: [nro@nroarchitect.com](mailto:nro@nroarchitect.com)  
WEB: [www.rosensteinarchitect.com](http://www.rosensteinarchitect.com)

STATE REG. NO. AR0016674  
STATE REG. NO. AA2601896  
NATL. REG. NO. 69178  
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DESIGNED: N.R.  
DRAWN: C.S.  
CHECKED: N.R.

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, COMPLY WITH ALL

DATE	DESCRIPTION
11/18/2019	COORDINATION
10/25/2019	COORDINATION
10/7/2019	COORDINATION
	PERMIT APPROVED
7/29/2019	BLDG. COMMENTS
7/09/2019	BLDG. COMMENTS
5/10/2019	GENERAL REVISIONS
9/21/2017	CORRECTION
7/17/2017	COORDINATION
4/6/2017	CORRECTION NOTICE
2/23/2017	CORRECTION NOTICE
2/7/2017	INTERIOR REVISION
12/5/2016	CORRECTION NOTICE
10/24/2016	CORRECTION NOTICE
9/28/2016	CORRECTION NOTICE

COMPL. DATE  
2018-39 11/20/2018

FIRESTONE MIAMI BEACH

MIAMI BEACH, FLORIDA 33139

FLOOR PLAN

A-3.0 OF 8

## **Attachment B-1**

### Methodology Correspondence

Dorman, Cory

---

From: Akcay, Firat <FiratAkca@miamibeachfl.gov>  
Sent: Wednesday, April 22, 2020 8:22 PM  
To: McWilliams, John; Ferrer, Josiel  
Cc: Mickey Marrero; Dorman, Cory  
Subject: Re: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

Categories: External

John,

Thank you for addressing the comments. We have no further comments. I will forward you the counts as soon as I receive them.

Thank you  
Firat

---

From: McWilliams, John <John.McWilliams@kimley-horn.com>  
Sent: Wednesday, April 22, 2020 6:48:29 PM  
To: Akcay, Firat <FiratAkca@miamibeachfl.gov>; Ferrer, Josiel <JOSIELFERRER@miamibeachfl.gov>  
Cc: Mickey Marrero <MMarrero@brzoninglaw.com>; Dorman, Cory <cory.dorman@kimley-horn.com>  
Subject: RE: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

[ THIS MESSAGE COMES FROM AN EXTERNAL EMAIL - USE CAUTION WHEN REPLYING AND OPENING LINKS OR ATTACHMENTS ]

Firat/Josiel:

Good evening. Per today's call, we have updated our methodology memorandum for your records.

Thanks,

John

**John J. McWilliams, P.E.**

**Kimley-Horn** | Suite 450, 600 North Pine Island Road, Plantation, FL 33324  
Direct: 954-535-5106 | Mobile: 954-873-9407 | [www.kimley-horn.com](http://www.kimley-horn.com)

---

From: Akcay, Firat <FiratAkca@miamibeachfl.gov>  
Sent: Tuesday, April 21, 2020 2:00 PM  
To: McWilliams, John <John.McWilliams@kimley-horn.com>; Ferrer, Josiel <JOSIELFERRER@miamibeachfl.gov>  
Cc: Mickey Marrero <MMarrero@brzoninglaw.com>; Dorman, Cory <cory.dorman@kimley-horn.com>  
Subject: RE: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

John,

Although the checklist may seem extensive, these items are typically addressed in every traffic study. We provide this list as reference. We would be happy to go over it with you. We can setup a call for 1PM tomorrow?  
Thank you



*Firat Akcay*  
*Transportation Analyst*  
*Transportation and Mobility Department*  
*1688 Meridian Avenue, Suite 801, Miami Beach, FL 33139*  
*Tel: 305-673-7000, ext 26839*  
*Mobile: 786-261-4147*

---

From: McWilliams, John <[John.McWilliams@kimley-horn.com](mailto:John.McWilliams@kimley-horn.com)>  
Sent: Tuesday, April 21, 2020 12:59 PM  
To: Akcay, Firat <[FiratAkcay@miamibeachfl.gov](mailto:FiratAkcay@miamibeachfl.gov)>; Ferrer, Josiel <[JOSIELFERRER@miamibeachfl.gov](mailto:JOSIELFERRER@miamibeachfl.gov)>  
Cc: Mickey Marrero <[MMarrero@brzoninglaw.com](mailto:MMarrero@brzoninglaw.com)>; Dorman, Cory <[cory.dorman@kimley-horn.com](mailto:cory.dorman@kimley-horn.com)>  
Subject: RE: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal  
Importance: High

[ THIS MESSAGE COMES FROM AN EXTERNAL EMAIL - USE CAUTION WHEN REPLYING AND OPENING LINKS OR ATTACHMENTS ]

Firat:

Good afternoon. Thank you for providing. We are surprised by the extensive requirements you have outlined given our previous call, the development's size, the current data collection situation, and our timeline. Would it be possible to have a call tomorrow afternoon to discuss the requirements and reach a consensus? Please advise.

Thanks,

John

**John J. McWilliams, P.E.**  
**Kimley-Horn** | Suite 450, 600 North Pine Island Road, Plantation, FL 33324  
Direct: 954-535-5106 | Mobile: 954-873-9407 | [www.kimley-horn.com](http://www.kimley-horn.com)

---

From: Akcay, Firat <[FiratAkcay@miamibeachfl.gov](mailto:FiratAkcay@miamibeachfl.gov)>  
Sent: Tuesday, April 21, 2020 12:10 PM  
To: McWilliams, John <[John.McWilliams@kimley-horn.com](mailto:John.McWilliams@kimley-horn.com)>; Ferrer, Josiel <[JOSIELFERRER@miamibeachfl.gov](mailto:JOSIELFERRER@miamibeachfl.gov)>  
Cc: Mickey Marrero <[MMarrero@brzoninglaw.com](mailto:MMarrero@brzoninglaw.com)>; Dorman, Cory <[cory.dorman@kimley-horn.com](mailto:cory.dorman@kimley-horn.com)>  
Subject: Re: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

Hello John,

Please see comments below:

1. The existing use of the Project hasn't been active for more than 3 years which disqualifies it to be considered as an existing use.
2. Considering a diner/breakfast place has an increased demand during weekend brunch times, we require an analysis period of the weekends to be included in the study.
3. The bicycle and pedestrian modes of transportation must be analyzed while utilizing the local, county and federal LOS criteria. We have recently collected data at the immediate intersection of Alton Road and 16th Street which will be provided to you.
4. Valet analysis must be conducted at the parking spaces on 16th Street as well as on Alton Road in the event the 16th Street parking lane elimination will be necessary as part of the intersection improvements.

Please see attached checklist. We will try to get you the concepts of 16<sup>th</sup> Street as soon as they become available.  
Thank you



*Firat Akcay*  
*Transportation Analyst*  
*Transportation and Mobility Department*  
*1688 Meridian Avenue, Suite 801, Miami Beach, FL 33139*  
*Tel: 305-673-7000, ext 26839*  
*Mobile: 786-261-4147*

---

From: McWilliams, John <[John.McWilliams@kimley-horn.com](mailto:John.McWilliams@kimley-horn.com)>  
Sent: Monday, April 20, 2020 11:27:57 AM  
To: Akcay, Firat <[FiratAkcay@miamibeachfl.gov](mailto:FiratAkcay@miamibeachfl.gov)>; Ferrer, Josiel <[JOSIELFERRER@miamibeachfl.gov](mailto:JOSIELFERRER@miamibeachfl.gov)>  
Cc: Mickey Marrero <[MMarrero@brzoninglaw.com](mailto:MMarrero@brzoninglaw.com)>; Dorman, Cory <[cory.dorman@kimley-horn.com](mailto:cory.dorman@kimley-horn.com)>  
Subject: RE: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

[ THIS MESSAGE COMES FROM AN EXTERNAL EMAIL - USE CAUTION WHEN REPLYING AND OPENING LINKS OR ATTACHMENTS ]

Firat:

Good morning. I just wanted to check in and see if you got an update from your peer review consultant. Please advise.

Thanks,

John

**John J. McWilliams, P.E.**  
**Kimley-Horn** | Suite 450, 600 North Pine Island Road, Plantation, FL 33324  
Direct: 954-535-5106 | Mobile: 954-873-9407 | [www.kimley-horn.com](http://www.kimley-horn.com)

---

From: Akcay, Firat <[FiratAkcay@miamibeachfl.gov](mailto:FiratAkcay@miamibeachfl.gov)>  
Sent: Friday, April 17, 2020 8:45 AM  
To: McWilliams, John <[John.McWilliams@kimley-horn.com](mailto:John.McWilliams@kimley-horn.com)>; Ferrer, Josiel <[JOSIELFERRER@miamibeachfl.gov](mailto:JOSIELFERRER@miamibeachfl.gov)>  
Cc: Mickey Marrero <[MMarrero@brzoninglaw.com](mailto:MMarrero@brzoninglaw.com)>; Dorman, Cory <[cory.dorman@kimley-horn.com](mailto:cory.dorman@kimley-horn.com)>  
Subject: RE: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

Hello John,

I had sent the methodology to our peer review as well and awaiting comments. We will follow up no later than today.  
Thank you



*Firat Akcay*  
*Transportation Analyst*  
*Transportation and Mobility Department*  
*1688 Meridian Avenue, Suite 801, Miami Beach, FL 33139*  
*Tel: 305-673-7000, ext 26839*  
*Mobile: 786-261-4147*

---

From: McWilliams, John <[John.McWilliams@kimley-horn.com](mailto:John.McWilliams@kimley-horn.com)>  
Sent: Friday, April 17, 2020 8:24 AM  
To: Akcay, Firat <[FiratAkcay@miamibeachfl.gov](mailto:FiratAkcay@miamibeachfl.gov)>; Ferrer, Josiel <[JOSIELFERRER@miamibeachfl.gov](mailto:JOSIELFERRER@miamibeachfl.gov)>  
Cc: Mickey Marrero <[MMarrero@brzoninglaw.com](mailto:MMarrero@brzoninglaw.com)>; Dorman, Cory <[cory.dorman@kimley-horn.com](mailto:cory.dorman@kimley-horn.com)>  
Subject: RE: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

[ THIS MESSAGE COMES FROM AN EXTERNAL EMAIL - USE CAUTION WHEN REPLYING AND OPENING LINKS OR ATTACHMENTS ]

Josiel/Firat:

Good morning. My apologies for following up so quickly on this. As you know we are under a deadline to submit the assessment to you by 4/27. Therefore, we are hoping to get some feedback from you on the methodology asap to give us ample time to prepare the work. Please advise on the status of your review.

Thanks,

John

**John J. McWilliams, P.E.**  
**Kimley-Horn** | Suite 450, 600 North Pine Island Road, Plantation, FL 33324  
Direct: 954-535-5106 | Mobile: 954-873-9407 | [www.kimley-horn.com](http://www.kimley-horn.com)

---

From: McWilliams, John  
Sent: Wednesday, April 15, 2020 6:10 PM  
To: Ferrer, Josiel <[JOSIELFERRER@miamibeachfl.gov](mailto:JOSIELFERRER@miamibeachfl.gov)>; Akcay, Firat <[FiratAkcay@miamibeachfl.gov](mailto:FiratAkcay@miamibeachfl.gov)>

Cc: Mickey Marrero <[MMarrero@brzoninglaw.com](mailto:MMarrero@brzoninglaw.com)>; Jonathan Weislow <[jweislow@amicon.us](mailto:jweislow@amicon.us)>; Dorman, Cory <[cory.dorman@kimley-horn.com](mailto:cory.dorman@kimley-horn.com)>; Chris Cuomo <[cuomo@growthq.com](mailto:cuomo@growthq.com)>; [mo@growthq.com](mailto:mo@growthq.com); Tara Osborne <[tosborne@amicon.us](mailto:tosborne@amicon.us)>

Subject: 1575 Alton Road/Firestone - Traffic Assessment Methodology Submittal

Josiel/Firat:

Good afternoon. As a follow up to our call last week, attached is the traffic assessment methodology. Any expedition of your review and comment would be appreciated given our tight submittal schedule. As always, please contact me with any questions.

Thanks,

John

**John J. McWilliams, P.E.**

**Kimley-Horn** | Suite 450, 600 North Pine Island Road, Plantation, FL 33324

Direct: 954-535-5106 | Mobile: 954-873-9407 | [www.kimley-horn.com](http://www.kimley-horn.com)



**Memorandum**

To:     Firat Akcay  
          City of Miami Beach

Cc:     Josiel Ferrer, P.E.  
          City of Miami Beach

From:   John McWilliams, P.E. 

Date:    April 22, 2020

**Subject: 1575 Alton Road Redevelopment  
Traffic Study Methodology**

The purpose of this memorandum is to summarize the traffic study methodology for the proposed redevelopment of the property located at 1575 Alton Road in Miami Beach, Florida as discussed during the April 8, 2020 and April 22 conference calls with City of Miami Beach staff. Currently, the existing site is occupied by a 11,849 square-foot automobile service and tire shop. The proposed redevelopment includes a 102-seat restaurant, 207-seat restaurant, and 770 square-foot bakery. Note the existing automobile service and tire shop is not currently operational and will be demolished as part of the proposed redevelopment. A project location map and site plan are included in Attachment A. The following sections summarize our proposed methodology.

**TRIP GENERATION**

Trip generation calculations for the proposed redevelopment were performed using Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10<sup>th</sup> Edition. The trip generation for the proposed redevelopment was determined using ITE LUC 931 (Quality Restaurant) and 939 (Bread/Donut/Bagel Shop without Drive-Through Window).

A multimodal (public transit, bicycle, and pedestrian) factor based on US Census *Means of Transportation to Work* data was reviewed for the census tracts in the vicinity of the site. The US Census data indicated that there is a 50.2 percent (50.2%) multimodal factor within the vicinity of the site. However, to provide a conservative analysis, a multimodal factor of 20.0 percent (20.0%) was applied to the trip generation calculations to account for the urban environment in which the project site is located. It is expected that a portion of employees, guests, and patrons will choose to walk, bike, or use public transit to and from the site.

Pass-by capture trip rates were determined based on average rates provided in the ITE's *Trip Generation Handbook*, 3<sup>rd</sup> Edition. The pass-by rate for the restaurant land use is 44.0 percent (44.0%) during the P.M. peak hour.

The project is expected to generate 48 net new vehicle trips during the A.M. peak hour, 57 net new vehicle trips during the P.M. peak hour, and 112 net new vehicle trips during the weekend (Saturday) peak hour of generator. Detailed trip generation calculations are included as Attachment B.

## DATA COLLECTION

Peak period turning movement counts will be provided by the City of Miami Beach at the intersection of 16<sup>th</sup> Street and Alton Road. Please note that field observations will not be conducted as traffic data will be provided by the City. The traffic counts will be adjusted to peak season conditions using the appropriate Florida Department of Transportation (FDOT) peak season category factor. All traffic counts will be collected in 15-minute intervals during the peak periods. Turning movement counts will also include pedestrians and bicyclists. Signal timing information will be obtained from Miami-Dade County Department of Transportation and Public Works – Traffic Signals and Signs Division. All traffic data collected will be provided in the Appendix of the traffic study.

## TRIP DISTRIBUTION

Trip distribution will be determined based on the location of the vehicle drop-off/pick-up area location and parking facilities used by the proposed redevelopment. Additionally, the distribution will be based on an interpolated cardinal trip distribution for the project site's traffic analysis zones (TAZs) obtained from the Miami-Dade Transportation Planning Organization's (TPO's) *2045 Long Range Transportation Plan Directional Trip Distribution Report* travel demand model 2015 and 2045 data. The project is located within TAZ 642. Therefore, a cardinal distribution was developed based on this TAZ. The traffic study will include graphics of the project traffic assignment and valet trips at the project's drop-off/pick-up area and off-site valet parking lot. The cardinal distribution is provided in Attachment C.

## BACKGROUND GROWTH RATE

A background growth rate will be calculated based on historic growth trends at nearby FDOT traffic count stations. Additionally, growth rates based on the Florida Standard Urban Transportation Model Structure (FSUTMS) Southeast Regional Planning Model (SERPM) projected 2015 and 2045 model network volumes will be examined. The higher of the two (2) growth rates will be used in the analysis. Documentation will be provided in the Appendix of the traffic study. Please note that the City did not identify any committed developments to be included as part of future conditions.

## CAPACITY ANALYSIS

Intersection capacity analyses will be conducted for the weekday A.M., weekday P.M., and weekend peak hours consistent with the data provided by the City at the study intersection. Intersection capacity analyses will be performed using *Synchro 10* traffic engineering analysis software which applies the Transportation Research Board's (TRB's), *Highway Capacity Manual* (HCM), 2000, 2010, and 6<sup>th</sup> Edition methodologies. Intersection capacity analyses will be conducted for the vehicle, bicycle, and pedestrian modes under three (3) scenarios: existing, future build-out without project (future background conditions), and future build-out with project (future total conditions). A build-out year of 2022 will be used in the analysis.

The following figures will be included for the study intersections:

- Existing conditions
- Future background traffic conditions (with growth rate and committed development traffic)
- Trip distribution
- Trip assignment
- Future total traffic conditions (with project)

## MULTIMODAL EVALUATION

Multimodal facilities including existing and committed bicycle and pedestrian amenities within the vicinity of the proposed redevelopment will be documented in the traffic study.

## SITE LOADING OPERATIONS PLAN

A description of the delivery and sanitary truck loading operations as part of the proposed redevelopment will be documented in the traffic study.

## TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

Transportation Demand Management (TDM) strategies will be developed to reduce the impact of project traffic on the surrounding roadway network and promote trip reduction. Typical measures promote bicycling and walking, encourage car/vanpooling and offer alternatives to the typical workday hours.

## DOCUMENTATION

The results of the traffic study will be summarized in a report. The report will include supporting documents including trip generation calculations and text and graphics necessary to summarize the assumptions and analysis. An electronic copy of the report will be provided as part of the submittal package.

## VALET ANALYSIS

A valet operations queuing analysis will be prepared for two (2) scenarios: i.) vehicle drop-off/pick-up area located along the south side of 16<sup>th</sup> Street just east of Alton Road and ii.) vehicle drop-off/pick-up area located along the east side of Alton Road just south of 16<sup>th</sup> Street. The valet operations analysis will be prepared to ensure that queues do not spill back into public right-of-way. If necessary, the vehicle drop-off/pick-up area for the valet operation will be coordinated with the City of Miami Beach Parking Department.

Trip generation estimates will be utilized to provide for the highest demand scenario. The highest demand scenario will be based on the trip generation estimate for the proposed redevelopment during the weekend (Saturday) peak hour of generator. Note that the project is expected to generate 112 vehicle trips during the weekend (Saturday) peak hour of generator. Please note that a 42.6 percent (42.6%) taxi/rideshare factor was applied to the trip generation estimates based on actual field observation from the Cadillac Hotel located at 3925 Collins Avenue to account for taxi/rideshare trips. Therefore, the project is expected to generate 64 valet trips during the weekend (Saturday) peak hour of generator and will be utilized in the valet analysis. Data related to taxi/rideshare trips is provided in Attachment D.

The valet operations queuing analysis will be conducted consistent with procedures described in ITE's *Transportation and Land Development*, 1988. A traffic circulation figure will be prepared to illustrate the valet routes to and from the vehicle drop-off/pick-up area. The analysis will include the assumptions and results, including the location of the off-site valet parking lot along with the number of on-site parking spaces assigned for valet operations and the required number of valet attendants to service the facility under highest demand conditions.

K:\FTL\_TPTO\143232000-1575 Alton Road (Firestone)\correspondence\memo\1575 Alton Road Traffic Assessment Methodology\_update.docx

## **Attachment A**

# **Project Location Map and Site Plan**

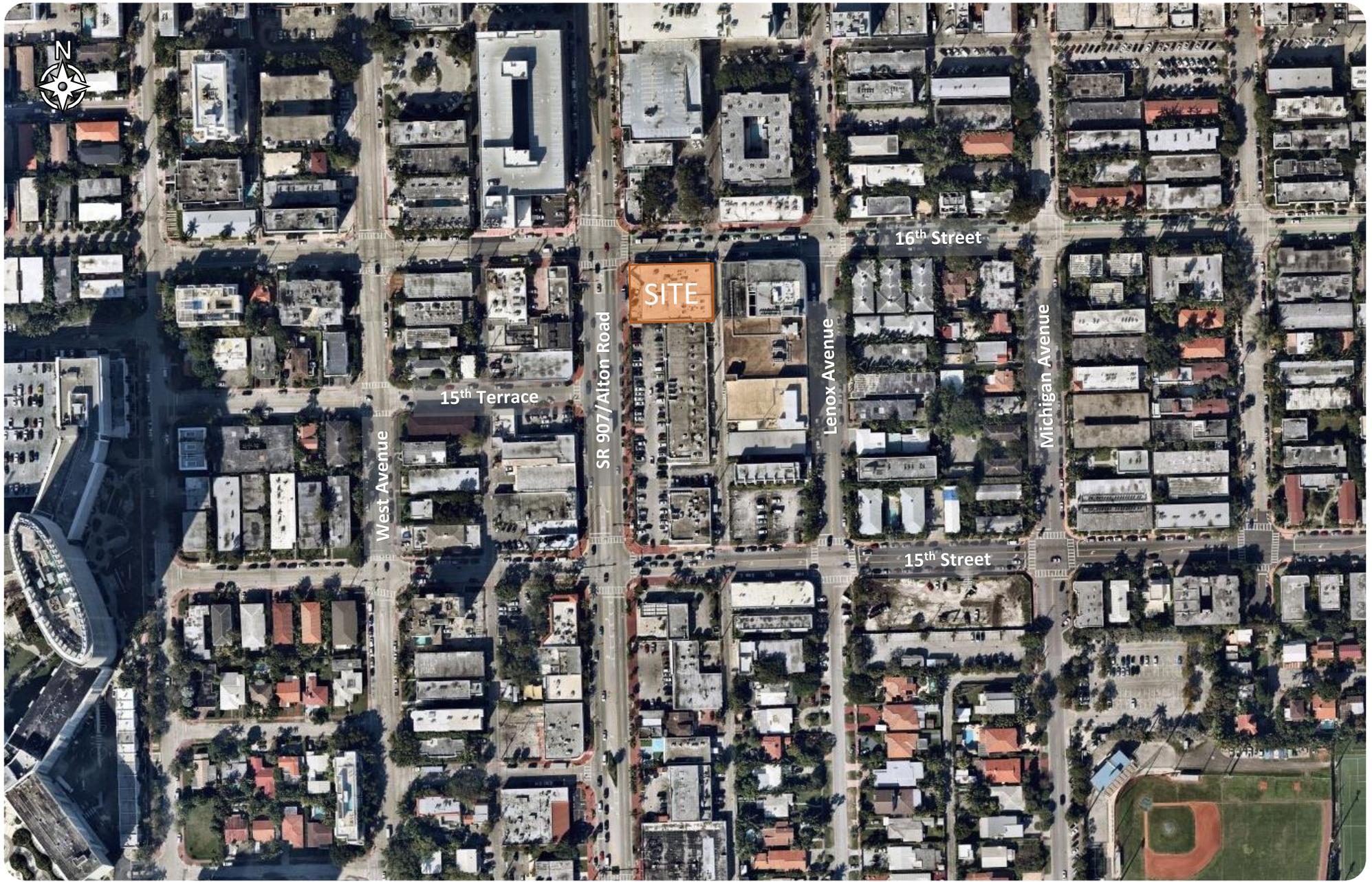
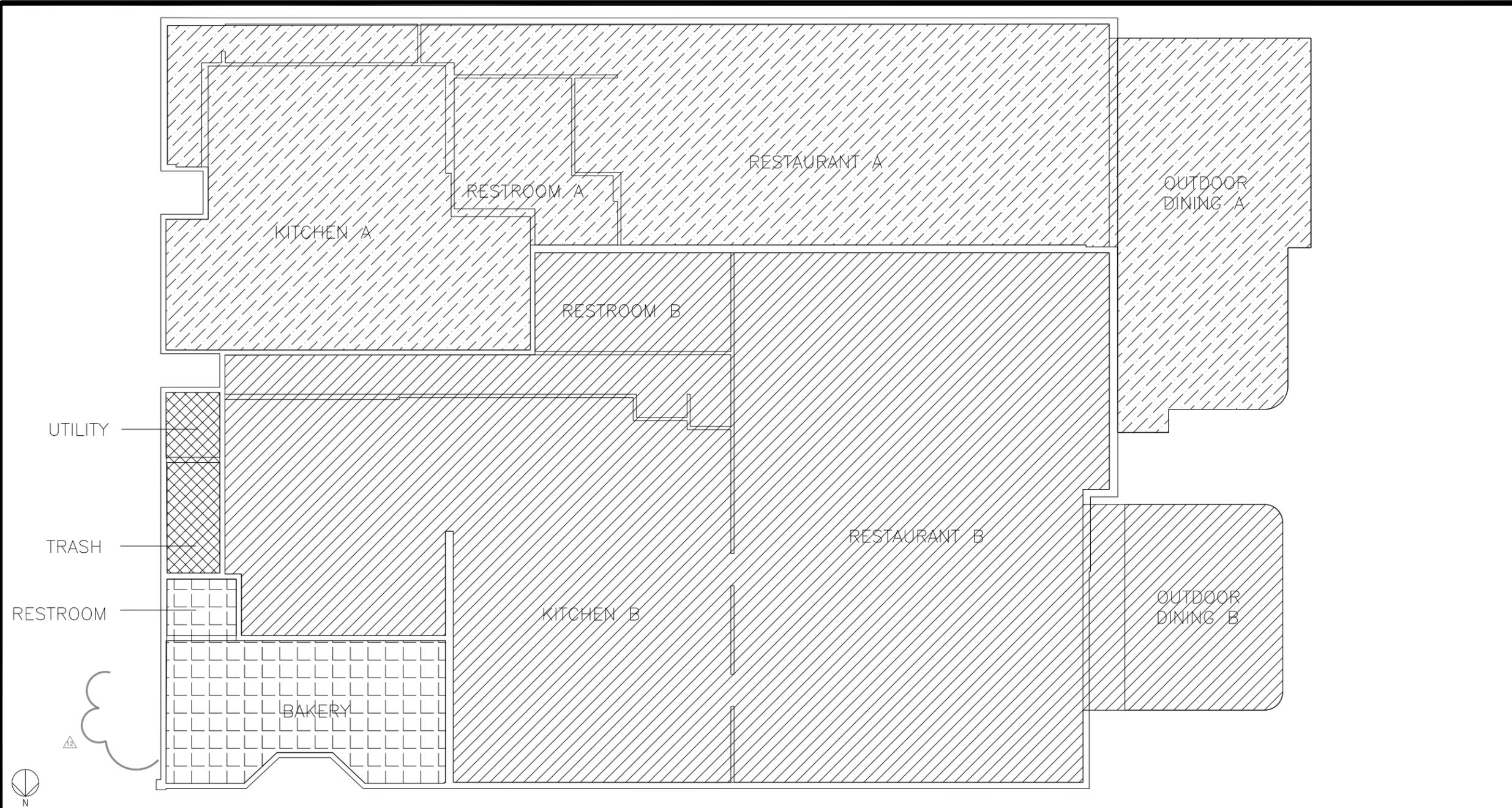


Figure 1  
Project Location Map  
1575 Alton Road  
Miami Beach, Florida

DESIGNED	N.R.
DRAWN	C.S.
CHECKED	N.R.

I HEREBY CERTIFY THAT THESE PLANS  
WERE PREPARED BY ME OR UNDER  
MY SUPERVISION, AND TO THE BEST  
OF MY KNOWLEDGE, COMPLY WITH ALL



01 SEPARATION OF USE DIAGRAM  
SCALE: 3/16" = 1'-0"

<b>SPACE A RESTAURANT : 5513 Sqft</b> USE: A2 ASSEMBLY INTERIOR SEATING AREA: OCCUPANCY SEATS UNCONSTRAINED SEATING AREA 993/15 66 49 TAKEOUT AREA 228/15 16 13 BAR SEATING: (52.21X41)77 18 13 KITCHEN & SERVICE AREAS (1418+66+351)/100 123 62 INTERIOR SUB-TOTAL 123 62 EXTERIOR SEATING AREA: 1397 Sqft UNCONSTRAINED SEATING AREA 1397/15 93 40 OUTDOOR SUB-TOTAL 93 40 <b>GRAND TOTAL</b> OCCUPANCY SEATS 216 102 5 ADA SEATS		
<b>SPACE B RESTAURANT : 7,472 Sqft</b> USE: A2 ASSEMBLY INTERIOR SEATING AREA: OCCUPANCY SEATS UNCONSTRAINED SEATING AREA 2,386/15 156 151 BAR SEATING: (79.75X41)77 49 22 KITCHEN & SERVICE AREAS (2,655+402)/100 31 22 INTERIOR SUB-TOTAL 236 173 EXTERIOR SEATING AREA: 867 Sqft UNCONSTRAINED SEATING AREA 867/15 58 34 OUTDOOR SUB-TOTAL 58 34 <b>GRAND TOTAL</b> OCCUPANCY SEATS 294 207 8 ADA SEATS		

<b>SPACE A RESTROOMS</b> SANITARY FACILITIES AS PER TABLE 403.1 FBC: TOTAL LOAD: 216 PEOPLE					
FEMALE	LAVATORY	1 PER 200	2	1	3
	WC	1 PER 75	2	1	2
MALE	LAVATORY	1 PER 200	2	1	3
	WC	1 PER 75	1	1	1
	URINAL		2	1	2
<b>SPACE B RESTROOMS</b> SANITARY FACILITIES AS PER TABLE 403.1 FBC: TOTAL LOAD: 294 PEOPLE					
FEMALE	LAVATORY	1 PER 200	3	1	4
	WC	1 PER 75	2	1	2
MALE	LAVATORY	1 PER 200	2	1	3
	WC	1 PER 75	1	1	1
	URINAL		2	1	2
UTILITY : 60 Sqft TRASH : 100 Sqft					

<b>SPACE C BAKERY: 770 Sqft</b> USE: MERCHANTILE 359 Sqft/30 = 12 PEOPLE (SERVICE AREA) 267 Sqft/100 = 3 PEOPLE (RESTROOM - NO OCCUPIED) 144 Sqft = 0 PEOPLE (RESTROOM - NO OCCUPIED) <b>TOTAL = 15 PEOPLE</b>		
EXIT ACCESS TRAVEL DISTANCE TABLE 1016.2 FBC: MAX TRAVEL DISTANCE FOR "A"- ASSEMBLY WITH A SPRINKLER SYSTEM: 250' SEE PLAN MAX TRAVEL DISTANCE FOR "B"- BUSINESS WITH A SPRINKLER SYSTEM: 300' SEE PLAN		



03 LEGEND  
NTS

02 OCCUPANCY LOAD  
NTS

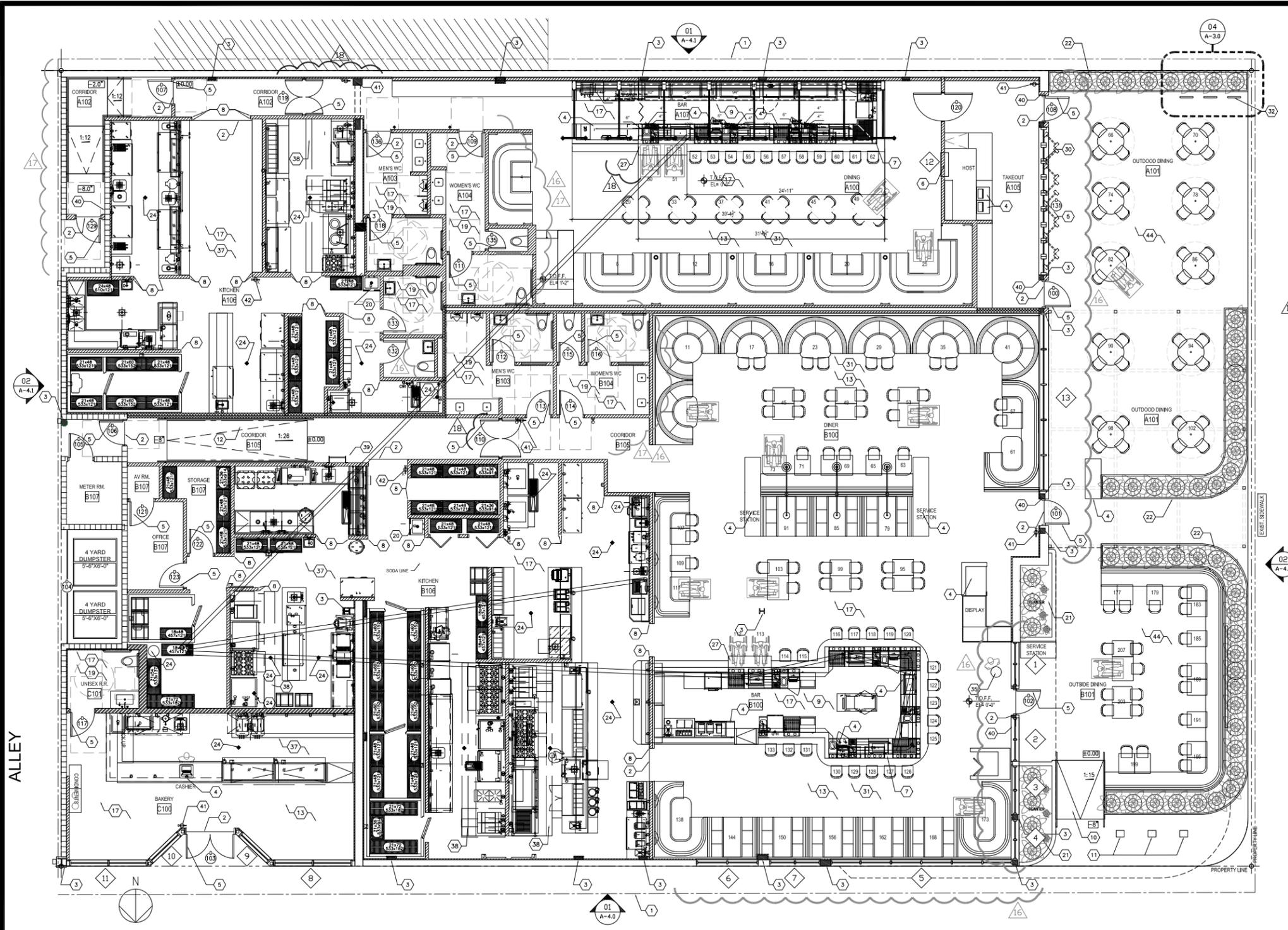
9/5/2019	BLDG. COMMENTS
7/29/2019	BLDG. COMMENTS
5/10/2019	GENERAL REVISION
7/17/2017	COORDINATION
2/23/2017	CORRECTION NOTICE

COMPL.	DATE
-2018-39	11/20/2018

FIRESTONE  
MIAMI BEACH

MIAMI BEACH, FLORIDA  
33139

SEPARATION OF  
USE PLAN



- KEY NOTES:**  
VERIFY ALL NOTES WITH ID DRAWINGS
- AREA OF WORK
  - FLOOR SURFACES SHALL NOT VARY MORE THAN 1/2"
  - EXISTING COLUMNS, SEE ID DWGS FOR FINISHES
  - NEW POS STATION, SEE ID DRAWINGS
  - NEW DOOR, SEE DOOR SCHEDULE FOR DETAIL AND FIRE-RATING
  - PASS-THROUGH OPENING
  - NEW BAR (SEE ID DWGS FOR SPECIFICATIONS)
  - CORNER GUARDS AT ALL EXPOSED CORNERS AT THE KITCHEN AREA, SEE ID DWGS.
  - NEW BAR EQUIPMENT SEE FOOD EQUIPMENT DWG AND SCHEDULE
  - NEW EXTERIOR ADA RAMP
  - LONG TERM BICYCLE LOCKERS, SECURABIKE MINI LOCKER #BLB632, PHONE #734-207-9700
  - INTERIOR RAMP SLOPE 1:26
  - MILLWORK (SEE I.D. FOR DETAILS)
  - NOT USED
  - NOT USED
  - NEW FLOOR (SEE I.D. AND FINISH SCHEDULE FOR DETAILS)
  - NOT USED
  - NEW BATHROOMS FIXTURES (SEE I.D. FOR DETAILS)
  - NEW MOP-SINK (SEE I.D. FOR DETAILS)
  - EXISTING PLANTERS NEW HEIGHT SEE ELEVATIONS
  - NEW OUTDOOR PLANTERS (SEE LANDSCAPE FOR DETAILS)
  - NOT USED
  - FLOOR DRAINAGE
  - NOT USED
  - NOT USED
  - 2'-10" HIGH ADA PORTION COUNTERTOP - 74" WIDE X 29" DEEP WITH CLEAR SPACE - SEE HANDICAP ACCESS NOTES
  - NOT USED
  - NOT USED
  - NEW EUROWALL DOOR
  - NEW BOOTH, SEE ID DWG.
  - THREE (3) BICYCLE RACKS, FOR SIX (6) BICYCLES.
  - NOT USED
  - NOT USED
  - NEW HOST STAND, SEE ID DRAWINGS.
  - NOT USED
  - NEW KITCHEN EQUIPMENT, SEE FOOD SERVICE DWGS AND SCHEDULES FOR SPECS.
  - NEW HOOD SEE FOOD EQUIPMENT DWG AND SCHEDULES FOR SPECS.
  - NEW LADDER TO ABOVE ROOF HATCH.
  - VISIBLE SIGN TO BE POSTED ON THE EGRESS SIDE ADJACENT TO THE DOOR STATING: "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED". SIGN TO COMPLY WITH FBC 1008.1.9.3-2.2
  - NEW FIRE EXTINGUISHER (MODEL 2A10BC) ON FLUSH MOUNTED CABINET. PROVIDE (1) PER 3,000 S.F. MAX TRAVEL DIST. 75' MTD AT 3"-4" A.F.F. (2 PROVIDED). PROVIDE SAMPLE TO OWNER FOR APPROVAL. COORDINATE RECESSED CABINET WITH DESIGNER.
  - NEW "K" CLASS FIRE EXTINGUISHER TO BE MTD AT 3"-4" A.F.F.
  - NOT USED
  - FOR OUTDOOR NEW GRADING SEE CIVIL DRAWINGS.
- ALL OUTLETS MOUNTED ABOVE COUNTERS TO BE 4" ABOVE BACK SPLASH  
-- ALL OUTLETS FOR EQUIPMENT TO BE V.I.F. BY GC. COORDINATE WITH ELECTRICAL DRAWINGS. IF THERE ARE ANY DISCREPANCIES CONTACT THE ARCHITECT/ENGINEER BEFORE COMMENCEMENT OF WORK.  
-- ALL UNFINISHED OR DAMAGED SURFACES AT PERIMETER WALLS TO BE SEALED, WATERTIGHT, AND FINISHED, SEE WALL DETAILS.  
-- PROVIDE DUROCK AND WATERPROOFING UNDER ALL "WET" AREAS. SEE FINISH PLAN FOR GENERAL INSTALLATION METHODS.

- 02 KEYNOTES**
- HARDWARE NOTES**  
ALL EXITS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE.  
ALL THRESHOLDS SHALL BE A MAXIMUM 1/2" HEIGHT AND BEVELED.  
CENTER OF LEVER TO BE INSTALLED 36" ABOVE FINISH FLOOR.
- WALL TYPES & SYMBOLS**
- NEW CMU/CONCRETE/COLUMN/STUD PLASTER/WALLS
  - NEW STUD WALL
  - WALL TAG. SEE WALL DETAIL PAGE.
  - ROOM
  - AREA TAG
  - DOOR TAG
  - WINDOW TAG
  - ADJACENT STRUCTURE
- NOTES:  
GYP BOARD WALLS TO BE TAPED, SANDED AND HAVE SMOOTH FINISH, UNLESS NOTED
- NOTE: INTERIOR WALL, CEILING, FLOORS, DECORATIONS AND TRIM COMPLY WITH FFC04  
NOTE: ALL INTERIOR FINISHES TO COMPLY WITH FFC 5TH ED. TABLE 6.02.2 FOR ASSEMBLY GREATER THAN 300.  
NOTE: ALL INTERIOR FINISHES TO BE CLASS B PLANE SPC04L 26-75 SMOKE-RESISTANT AS PER SECTION 803 OF THE INTERNATIONAL BUILDING CODE 2015  
NOTE: FLOOR MUST COMPLY WITH FFC 101 714.4. THE WALKING SURFACE OF EACH ELEMENT IN THE MEANS OF EGRESS SHALL BE UNIFORMLY SLIP RESISTANT ALONG THE NATURAL PATH OF TRAVEL.  
NOTE: ALL FINISHES TO BE REVIEWED AND APPROVED BY THE ARCHITECT OF RECORD TO VERIFY COMPLIANCE WITH FFC 5TH EDITION CHAPTER 10  
NOTE: ALL FINISHES OTHER THAN PAINT TO COMPLY WITH FBC 803 & 804  
NOTE: ALL WALLS & PARTITIONS WITHIN 2 FT OF URINALS AND TOILETS SHALL COMPLY WITH FBC 1220  
NOTE: INTERIOR WALL, CEILING, FLOORS, & TRIM SHALL COMPLY WITH FBC CHAPTER 8  
NOTE: VAPOR BARRIER (FC 1901) AT NEW SLABS A 6 MIL MINIMUM POLYETHYLENE VAPOR RETARDANT TO BE PLACED BETWEEN THE SUB-GRADE AND THE CONCRETE FLOOR SLAB.  
NOTE: OUTDOOR SPEAKERS ARE NOT PERMITTED.

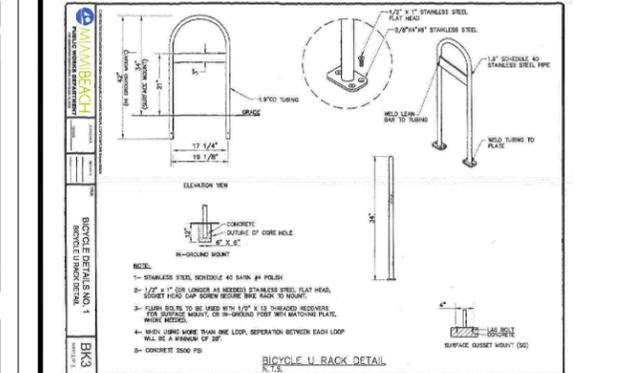
**01 FLOOR PLAN**  
SCALE: 3/16"=1'-0"

FLOOD MANAGEMENT TABLE	
BASE FLOOR ZONE	AE
BASE FLOOR ELEVATION - (ZONE AD, USE BASE FLOOD DEPTH)	8
DESIGN FLOOD ELEVATIONS - DFE	9.0' NGVD
LOWEST FFE OF HABITABLE SPACE	4.2' NGVD
LOWEST GRADE ELEV. ADJACENT TO BUILDING	3.04 NGVD
LOWEST ELEV. OF EQUIPMENT SERVING THE BLDG	4.2' NGVD
CROWN OF ROAD ELEVATION - ALTON ROAD	4.15 NGVD
CROWN OF ROAD ELEVATION - 16TH ST.	3.34 NGVD
ADJUSTED GRADE ELEVATION	N/A
FIRM MAP NUMBER	12086C 0317

CLASSIFICATION OF STRUCTURE FOR FLOOR RESISTANT DESIGN AND CONSTRUCTION ASCE TABLE 1-1	CATEGORY
	III

**03 FLOODING DATUM**



**04 BIKE RACKS**

- 05 GENERAL NOTES**

# NR architect

**NORBERTO ROSENSTEIN ARCHITECT, INC.**

126 S. FEDERAL HIGHWAY  
SUITE # 202  
DANIA BEACH, FLORIDA 33004  
PH: (954) 922-6551

EMAIL: [nro@norbertorosensteinarchitect.com](mailto:nro@norbertorosensteinarchitect.com)  
WEB: [www.rosensteinarchitect.com](http://www.rosensteinarchitect.com)

STATE REG. NO. AR0016674  
STATE REG. NO. AA2601896  
NATL. REG. NO. 69178  
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DESIGNED: N.R.  
DRAWN: C.S.  
CHECKED: N.R.

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED BY ME OR UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, COMPLY WITH ALL

DATE	REVISIONS
11/18/2019	COORDINATION
10/25/2019	COORDINATION
10/7/2019	COORDINATION
	PERMIT APPROVED
7/29/2019	BLDG. COMMENTS
7/09/2019	BLDG. COMMENTS
5/10/2019	GENERAL REVISIONS
9/21/2017	CORRECTION
7/17/2017	COORDINATION
4/6/2017	CORRECTION NOTICE
2/23/2017	CORRECTION NOTICE
2/7/2017	INTERIOR REVISION
12/5/2016	CORRECTION NOTICE
10/24/2016	CORRECTION NOTICE
9/28/2016	CORRECTION NOTICE

CONTRACT NO.	DATE
2018-39	11/20/2018

FIRESTONE  
MIAMI BEACH

MIAMI BEACH, FLORIDA  
33139

FLOOR PLAN

A-3.0 of 8

## **Attachment B**

# **Trip Generation Calculations**

**PROPOSED WEEKDAY AM PEAK HOUR TRIP GENERATION**

G R O U P  1	ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		GROSS VOLUMES			MULTIMODAL REDUCTION		EXTERNAL TRIPS			INTERNAL CAPTURE		NET NEW EXTERNAL TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent		In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
						In	Out																		
1	Quality Restaurant	10	931	309	seat	50%	50%	3	3	6	20.0%	1	3	2	5	0.0%	0	3	2	5	0.0%	0	3	2	5
2	Bread/Donut/Bagel Shop without Drive-Through Wind	10	939	0.77	ksf	47%	53%	25	29	54	20.0%	11	20	23	43	0.0%	0	20	23	43	0.0%	0	20	23	43
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
ITE Land Use Code						Rate or Equation				<b>Total:</b>			28	32	60	20.0%	12	23	25	48	0.0%	0	23	25	48
931						Y=0.02(X)																			
939						Y=70.54(X)																			
																					42.6% Taxi/Rideshare Factor		10	10	20
																					Valet Trips		13	15	28

**PROPOSED WEEKDAY PM PEAK HOUR TRIP GENERATION**

G R O U P  2	ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		GROSS VOLUMES			MULTIMODAL REDUCTION		EXTERNAL TRIPS			INTERNAL CAPTURE		NET NEW EXTERNAL TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent		In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
						In	Out																		
1	Quality Restaurant	10	931	309	seat	67%	33%	58	29	87	20.0%	18	46	23	69	0.0%	0	46	23	69	44.0%	30	26	13	39
2	Bread/Donut/Bagel Shop without Drive-Through Wind	10	939	0.77	ksf	50%	50%	11	11	22	20.0%	4	9	9	18	0.0%	0	9	9	18	0.0%	0	9	9	18
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
ITE Land Use Code						Rate or Equation				<b>Total:</b>			69	40	109	20.0%	22	55	32	87	0.0%	0	55	32	87
931						Y=0.28(X)																			
939						Y=28(X)																			
																					42.6% Taxi/Rideshare Factor		15	9	24
																					Valet Trips		20	13	33

**PROPOSED SATURDAY PEAK HOUR OF GENERATOR TRIP GENERATION**

G R O U P	ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		GROSS VOLUMES			MULTIMODAL REDUCTION		EXTERNAL TRIPS			INTERNAL CAPTURE		NET NEW EXTERNAL TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent		In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
						In	Out																		
1	Quality Restaurant	10	931	309	seat	59%	41%	60	42	102	20.0%	20	48	34	82	0.0%	0	48	34	82	0.0%	0	48	34	82
2	Bread/Donut/Bagel Shop without Drive-Through Wind	10	939	0.77	ksf	52%	48%	20	18	38	20.0%	8	16	14	30	0.0%	0	16	14	30	0.0%	0	16	14	30
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
ITE Land Use Code						Rate or Equation		<b>Total:</b>																	
931						Y=0.33(X)		80	60	140	20.0%	28	64	48	112	0.0%	0	64	48	112	0.0%	0	64	48	112
939						Y=49.09(X)																			
																				<b>42.6% Taxi/Rideshare Factor</b>		27	21	48	
																				<b>Valet Trips</b>		37	27	64	



**Note:** This is a modified view of the original table produced by the U.S. Census Bureau.

**Note:** This download or printed version may have missing information from the original table.

## MEANS OF TRANSPORTATION TO WORK

**Survey/Program:**

American Community Survey

**Universe:**

Workers 16 years and over

**Year:**

2018

**Estimates:**

5-Year

**Table ID:**

B08301

Source: U.S. Census Bureau, 2018 American Community Survey 1-Year Estimates

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

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation ). The effect of nonsampling error is not represented in these tables.

Workers include members of the Armed Forces and civilians who were at work last week.

While the 2018 American Community Survey (ACS) data generally reflect the July 2015 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas, in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineations due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

**Explanation of Symbols:**

An "\*\*\*" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.

An "-" entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution, or the margin of error associated with a median was larger than the median itself.

An "-" following a median estimate means the median falls in the lowest interval of an open-ended distribution.

An "+" following a median estimate means the median falls in the upper interval of an open-ended distribution.

An "\*\*\*" entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.

An "\*\*\*\*\*" entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.

An "N" entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.

An "(X)" means that the estimate is not applicable or not available.

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

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

$$(117+328+336)/1,556 = 50.2\%$$

#### Census Tract 42.04, Miami-Dade County, Florida

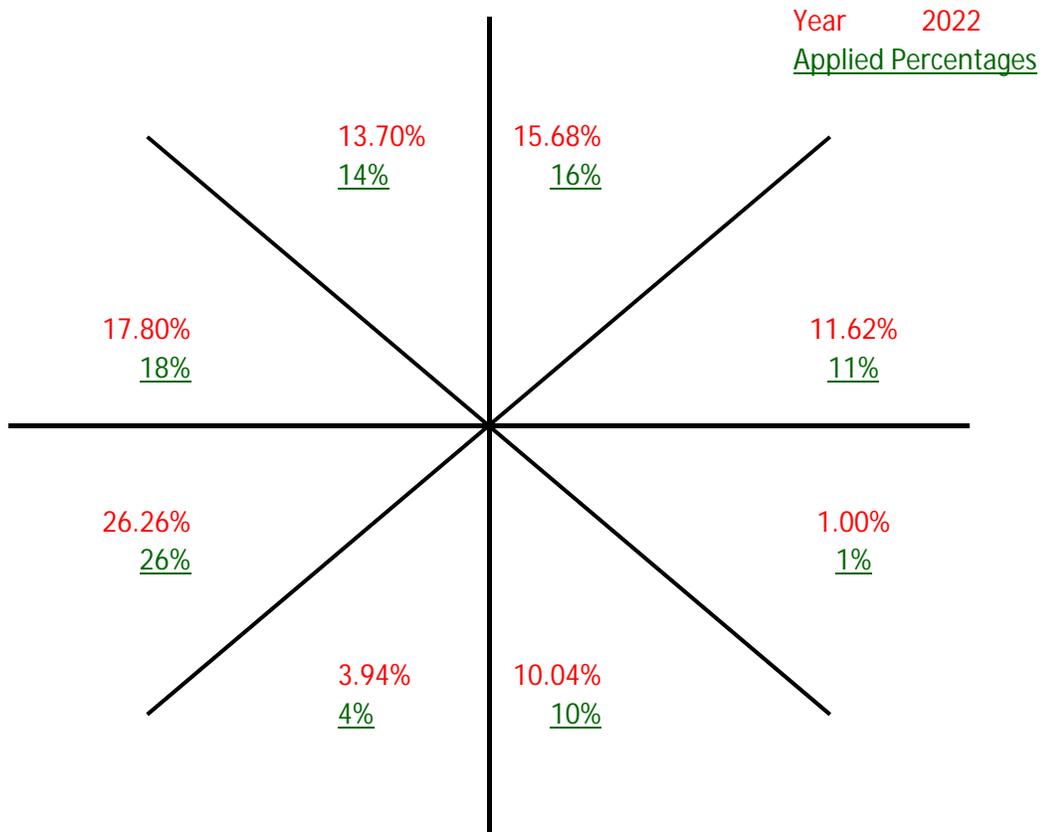
	Estimate	Margin of Error
▼ Total:	1,556	+/-242
▼ Car, truck, or van:	521	+/-163
Drove alone	491	+/-155
▼ Carpooled:	30	+/-37
In 2-person carpool	8	+/-13
In 3-person carpool	22	+/-35
In 4-person carpool	0	+/-13
In 5- or 6-person carpool	0	+/-13
In 7-or-more-person carpool	0	+/-13
▼ Public transportation (excluding taxicab):	117	+/-73
Bus or trolley bus	117	+/-73
Streetcar or trolley car (carro publico in Puerto Rico)	0	+/-13
Subway or elevated	0	+/-13
Railroad	0	+/-13
Ferryboat	0	+/-13
Taxicab	80	+/-66
Motorcycle	10	+/-15
Bicycle	328	+/-169

Walked	336	+/-133
Other means	55	+/-51
Worked at home	109	+/-52

## **Attachment C**

### **Cardinal Trip Distribution**

Cardinal Distribution for TAZ 642



Cardinal Trip Distribution

Cardinal Direction	Percentage of Trips		2022 Interpolated	2022 Rounded
	2015	2045		
North-Northeast	16.4%	14.60%	15.68%	16.00%
East-Northeast	12.5%	10.30%	11.62%	11.00%
East-Southeast	1.0%	1.00%	1.00%	1.00%
South-Southeast	11.2%	8.30%	10.04%	10.00%
South-Southwest	4.1%	3.70%	3.94%	4.00%
West-Southwest	23.9%	29.80%	26.26%	26.00%
West-Northwest	17.4%	18.40%	17.80%	18.00%
North-Northwest	13.5%	14.00%	13.70%	14.00%
Total	100.0%	100.1%	100.04%	100.00%

Miami-Dade 2015 Base Year Direction Trip Distribution Summary											
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW	
625	3525	Trips	610	160	-	557	431	1,317	679	1,035	4,961
625	3525	Percent	12.7	3.3	-	11.6	9.0	27.5	14.2	21.6	
626	3526	Trips	122	-	-	-	2,090	2,277	1,198	2,942	9,399
626	3526	Percent	1.4	-	-	-	24.2	26.4	13.9	34.1	
627	3527	Trips	279	-	-	-	2,051	2,578	845	1,965	8,061
627	3527	Percent	3.6	-	-	-	26.6	33.4	11.0	25.5	
628	3528	Trips	298	-	49	79	984	902	332	679	3,579
628	3528	Percent	9.0	-	1.5	2.4	29.6	27.2	10.0	20.5	
629	3529	Trips	1,374	549	344	1,656	1,708	3,707	1,668	2,101	14,261
629	3529	Percent	10.5	4.2	2.6	12.6	13.0	28.3	12.7	16.0	
630	3530	Trips	952	-	210	347	1,696	2,375	794	1,114	8,135
630	3530	Percent	12.7	-	2.8	4.6	22.7	31.7	10.6	14.9	
631	3531	Trips	255	-	-	-	1,215	1,471	440	1,030	4,651
631	3531	Percent	5.8	-	-	-	27.6	33.4	10.0	23.4	
632	3532	Trips	309	-	-	-	1,242	1,751	750	635	4,880
632	3532	Percent	6.6	-	-	-	26.5	37.4	16.0	13.5	
633	3533	Trips	310	-	-	-	1,181	1,428	750	730	4,590
633	3533	Percent	7.0	-	-	-	26.9	32.5	17.1	16.6	
634	3534	Trips	1,502	112	240	837	1,718	1,928	976	1,727	9,998
634	3534	Percent	16.6	1.2	2.7	9.3	19.0	21.3	10.8	19.1	
635	3535	Trips	779	-	-	-	2,021	1,994	952	1,411	8,010
635	3535	Percent	10.9	-	-	-	28.2	27.9	13.3	19.7	
636	3536	Trips	1,041	-	-	686	1,152	2,072	911	1,071	7,384
636	3536	Percent	15.0	-	-	9.9	16.6	29.9	13.1	15.4	
637	3537	Trips	323	31	87	217	126	601	303	290	1,987
637	3537	Percent	16.4	1.6	4.4	11.0	6.4	30.4	15.3	14.7	
638	3538	Trips	152	35	87	86	114	218	162	126	999
638	3538	Percent	15.5	3.6	8.9	8.7	11.6	22.3	16.5	12.9	
639	3539	Trips	825	281	277	1,089	131	1,364	796	599	5,721
639	3539	Percent	15.4	5.2	5.2	20.3	2.4	25.4	14.9	11.2	
640	3540	Trips	344	247	868	104	43	685	405	274	3,053
640	3540	Percent	11.6	8.3	29.2	3.5	1.5	23.1	13.6	9.2	
641	3541	Trips	1,051	1,714	291	723	309	1,572	1,188	916	8,356
641	3541	Percent	13.5	22.1	3.7	9.3	4.0	20.3	15.3	11.8	
642	3542	Trips	1,849	1,404	115	1,263	457	2,697	1,962	1,518	12,299
642	3542	Percent	16.4	12.5	1.0	11.2	4.1	23.9	17.4	13.5	
643	3543	Trips	1,747	551	-	965	479	2,595	1,554	1,715	10,383
643	3543	Percent	18.2	5.7	-	10.1	5.0	27.0	16.2	17.9	
644	3544	Trips	2,022	-	-	-	2,250	4,141	2,585	2,646	15,224
644	3544	Percent	14.8	-	-	-	16.5	30.4	19.0	19.4	
645	3545	Trips	1,268	-	-	-	907	1,498	1,720	1,351	7,018
645	3545	Percent	18.8	-	-	-	13.5	22.2	25.5	20.0	
646	3546	Trips	986	-	156	520	250	1,081	1,094	1,181	5,470
646	3546	Percent	18.7	-	3.0	9.9	4.7	20.5	20.8	22.4	
647	3547	Trips	350	103	114	165	66	354	359	408	1,979
647	3547	Percent	18.2	5.4	5.9	8.6	3.5	18.5	18.7	21.2	
648	3548	Trips	1,027	434	254	401	48	903	1,001	514	4,747
648	3548	Percent	22.4	9.5	5.5	8.8	1.0	19.7	21.9	11.2	
649	3549	Trips	754	192	184	230	41	612	743	427	3,320
649	3549	Percent	23.7	6.0	5.8	7.2	1.3	19.2	23.3	13.4	
650	3550	Trips	45	80	104	0	14	155	304	133	850
650	3550	Percent	5.4	9.6	12.4	0.0	1.6	18.5	36.5	16.0	

Miami-Dade 2045 Cost Feasible Plan Direction Trip Distribution Summary											
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW	
625	3525	Trips	515	114	-	541	802	1,791	829	1,096	5,972
625	3525	Percent	9.1	2.0	-	9.5	14.1	31.5	14.6	19.3	
626	3526	Trips	66	-	-	-	2,417	3,260	1,417	2,993	11,237
626	3526	Percent	0.7	-	-	-	23.8	32.1	14.0	29.5	
627	3527	Trips	174	-	-	-	2,276	3,212	1,138	1,885	9,055
627	3527	Percent	2.0	-	-	-	26.2	37.0	13.1	21.7	
628	3528	Trips	238	-	23	101	1,053	1,266	390	660	4,028
628	3528	Percent	6.4	-	0.6	2.7	28.2	33.9	10.5	17.7	
629	3529	Trips	1,686	621	373	1,692	1,801	6,032	2,362	2,490	18,425
629	3529	Percent	9.9	3.6	2.2	9.9	10.6	35.4	13.9	14.6	
630	3530	Trips	888	-	326	303	1,717	3,876	1,515	1,553	11,277
630	3530	Percent	8.7	-	3.2	3.0	16.9	38.1	14.9	15.3	
631	3531	Trips	296	-	-	-	1,351	2,360	838	1,324	6,591
631	3531	Percent	4.8	-	-	-	21.9	38.3	13.6	21.5	
632	3532	Trips	343	-	-	-	1,500	2,647	1,390	1,098	7,499
632	3532	Percent	4.9	-	-	-	21.5	37.9	19.9	15.7	
633	3533	Trips	368	-	-	-	1,052	1,986	859	841	5,391
633	3533	Percent	7.2	-	-	-	20.6	38.9	16.8	16.5	
634	3534	Trips	1,404	80	149	773	1,637	2,733	1,332	1,712	10,593
634	3534	Percent	14.3	0.8	1.5	7.9	16.7	27.8	13.6	17.4	
635	3535	Trips	566	-	-	-	1,311	2,266	1,228	1,254	7,246
635	3535	Percent	8.5	-	-	-	19.8	34.2	18.5	18.9	
636	3536	Trips	1,066	-	-	607	978	3,045	1,398	1,193	8,805
636	3536	Percent	12.9	-	-	7.3	11.8	36.8	16.9	14.4	
637	3537	Trips	468	44	144	315	198	868	501	309	2,865
637	3537	Percent	16.5	1.6	5.1	11.1	6.9	30.5	17.6	10.9	
638	3538	Trips	127	33	78	94	79	401	285	185	1,342
638	3538	Percent	9.9	2.6	6.1	7.3	6.2	31.3	22.2	14.5	
639	3539	Trips	944	303	253	1,068	176	2,395	1,085	905	7,569
639	3539	Percent	13.2	4.3	3.6	15.0	2.5	33.6	15.2	12.7	
640	3540	Trips	119	74	216	10	30	177	136	147	1,166
640	3540	Percent	13.1	8.2	23.7	1.1	3.4	19.4	14.9	16.2	
641	3541	Trips	1,145	1,056	206	569	242	2,378	1,724	1,142	9,066
641	3541	Percent	13.5	12.5	2.4	6.7	2.9	28.1	20.4	13.5	
642	3542	Trips	1,701	1,196	113	964	433	3,470	2,140	1,631	12,324
642	3542	Percent	14.6	10.3	1.0	8.3	3.7	29.8	18.4	14.0	
643	3543	Trips	1,884	580	-	1,133	631	3,768	2,190	2,157	13,183
643	3543	Percent	15.3	4.7	-	9.2	5.1	30.5	17.7	17.5	
644	3544	Trips	1,948	-	-	-	2,227	5,534	3,264	3,082	17,780
644	3544	Percent	12.1	-	-	-	13.9	34.5	20.3	19.2	
645	3545	Trips	1,314	-	-	-	844	1,661	2,170	1,703	8,075
645	3545	Percent	17.1	-	-	-	11.0	21.6	28.2	22.1	
646	3546	Trips	1,025	-	125	496	263	1,741	1,656	1,299	6,976
646	3546	Percent	15.5	-	1.9	7.5	4.0	26.4	25.1	19.7	
647	3547	Trips	296	122	96	109	79	582	661	405	2,490
647	3547	Percent	12.6	5.2	4.1	4.6	3.4	24.8	28.1	17.3	
648	3548	Trips	943	278	128	313	73	1,525	1,351	576	5,397
648	3548	Percent	18.2	5.4	2.5	6.0	1.4	29.4	26.0	11.1	
649	3549	Trips	643	120	121	216	43	873	952	508	3,661
649	3549	Percent	18.5	3.4	3.5	6.2	1.3	25.1	27.4	14.6	
650	3550	Trips	60	71	65	8	14	279	312	136	969
650	3550	Percent	6.4	7.5	6.9	0.9	1.5	29.5	33.0	14.4	

## **Attachment D**

### **Taxi/Rideshare Data**

Hotel and Restaurant Valet Drop-off and Pick-up Traffic Data Summary  
Friday October 22, 2010

Hotel Valet Area Observations									
Time	Hotel Pick-up Maximum Queue	Hotel Pick-Up Volume	Hotel Pick-Up Peak Hour Volume	Hotel Drop-off Maximum Queue	Hotel Drop-off Volume	Hotel Drop-Off Peak Hour Volume	Total Hotel Volume		Total Hotel Peak Hour Volume
18:00	0	0		3	18		18		
18:15	2	4		2	3		7		
18:30	2	6		3	7		13		
18:45	4	23	40	4	13	37	36		77
19:00	3	9		1	3		12		
19:15	2	6		2	7		13		
19:30	1	2		3	14		16		
19:45	0	0		2	4		4		
20:00	1	3		2	7		10		
20:15	1	3		1	2		5		
20:30	3	11		2	7		18		
20:45	3	13		2	6		19		

Restaurant Valet Area Observations						
Time	Restaurnt Pick-up Maximum Queue	Restaurant Pick-Up Volume	Restaurant Pick-Up Peak Hour Volume	Restaurant Drop-off Maximum Queue	Restaurant Drop-off Volume	Restaurant Drop-off Peak Hour Volume
18:00	5	17		0	0	
18:15	4	13		2	7	8
18:30	3	9		0	0	
18:45	3	18		0	0	
19:00	4	15		1	1	
19:15	4	14		1	1	
19:30	5	18		1	1	
19:45	6	27		1	2	
20:00	5	18	81	1	1	
20:15	5	15		0	0	
20:30	5	15		0	1	
20:45	6	33		0	0	

Taxi vs Valet Trips									
Time	Valet Pick-up Trips	Valet Drop-off Trips	Total Valet Trips	Taxi Pick-up Trips	Taxi Drop-off Trips	Total Taxi Pick-up Trips	Total Site Pick-up Trips	Total Site Drop-off Trips	Total Site Trips
18:00	1	11	12	16	7	23	17	18	35
18:15	5	6	11	12	4	16	17	10	27
18:30	3	3	6	12	4	16	15	7	22
18:45	32	10	42	9	3	12	41	13	54
19:00	17	1	18	7	3	10	24	4	28
19:15	12	5	17	8	3	11	20	8	28
19:30	12	12	24	8	3	11	20	15	35
19:45	20	4	24	7	2	9	27	6	33
20:00	10	4	14	11	4	15	21	8	29
20:15	3	1	4	15	1	16	18	2	20
20:30	15	4	19	11	4	15	26	8	34
20:45	35	2	37	11	4	15	46	6	52

Taxi Trips Observed 42.6%

## **Attachment C-1**

### Trip Generation and Transit Information

# Trip Generation Calculations

**PROPOSED WEEKDAY AM PEAK HOUR TRIP GENERATION**

G R O U P  1	ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		GROSS VOLUMES			MULTIMODAL REDUCTION		EXTERNAL TRIPS			INTERNAL CAPTURE		NET NEW EXTERNAL TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS						
	Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent		In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total				
						In	Out																						
1	Quality Restaurant	10	931	309	seat	50%	50%	3	3	6	20.0%	1	3	2	5	0.0%	0	3	2	5	0.0%	0	3	2	5				
2	Bread/Donut/Bagel Shop without Drive-Through Wind	10	939	0.77	ksf	47%	53%	25	29	54	20.0%	11	20	23	43	0.0%	0	20	23	43	0.0%	0	20	23	43				
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
ITE Land Use Code						Rate or Equation				<b>Total:</b>	28	32	60	20.0%	12	23	25	48	0.0%	0	23	25	48	0.0%	0	23	25	48	
931						Y=0.02(X)																							
939						Y=70.54(X)																							
																					<b>42.6% Taxi/Rideshare Factor</b>		10	10	20				
																					<b>Valet Trips</b>		13	15	28				

**PROPOSED WEEKDAY PM PEAK HOUR TRIP GENERATION**

G R O U P  2	ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		GROSS VOLUMES			MULTIMODAL REDUCTION		EXTERNAL TRIPS			INTERNAL CAPTURE		NET NEW EXTERNAL TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS						
	Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent		In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total				
						In	Out																						
1	Quality Restaurant	10	931	309	seat	67%	33%	58	29	87	20.0%	18	46	23	69	0.0%	0	46	23	69	44.0%	30	26	13	39				
2	Bread/Donut/Bagel Shop without Drive-Through Wind	10	939	0.77	ksf	50%	50%	11	11	22	20.0%	4	9	9	18	0.0%	0	9	9	18	0.0%	0	9	9	18				
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
ITE Land Use Code						Rate or Equation				<b>Total:</b>	69	40	109	20.0%	22	55	32	87	0.0%	0	55	32	87	34.5%	30	35	22	57	
931						Y=0.28(X)																							
939						Y=28(X)																							
																					<b>42.6% Taxi/Rideshare Factor</b>		15	9	24				
																					<b>Valet Trips</b>		20	13	33				

**PROPOSED SATURDAY PEAK HOUR OF GENERATOR TRIP GENERATION**

G R O U P	ITE TRIP GENERATION CHARACTERISTICS					DIRECTIONAL DISTRIBUTION		GROSS VOLUMES			MULTIMODAL REDUCTION		EXTERNAL TRIPS			INTERNAL CAPTURE		NET NEW EXTERNAL TRIPS			PASS-BY CAPTURE		NET NEW EXTERNAL TRIPS		
	Land Use	ITE Edition	ITE Code	Scale	ITE Units	Percent		In	Out	Total	Percent	MR Trips	In	Out	Total	Percent	IC Trips	In	Out	Total	Percent	PB Trips	In	Out	Total
						In	Out																		
1	Quality Restaurant	10	931	309	seat	59%	41%	60	42	102	20.0%	20	48	34	82	0.0%	0	48	34	82	0.0%	0	48	34	82
2	Bread/Donut/Bagel Shop without Drive-Through Wind	10	939	0.77	ksf	52%	48%	20	18	38	20.0%	8	16	14	30	0.0%	0	16	14	30	0.0%	0	16	14	30
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
ITE Land Use Code						Rate or Equation		<b>Total:</b>																	
931						Y=0.33(X)		80	60	140	20.0%	28	64	48	112	0.0%	0	64	48	112	0.0%	0	64	48	112
939						Y=49.09(X)																			
																				<b>42.6% Taxi/Rideshare Factor</b>		27	21	48	
																				<b>Valet Trips</b>		37	27	64	



**Note:** This is a modified view of the original table produced by the U.S. Census Bureau.

**Note:** This download or printed version may have missing information from the original table.

## MEANS OF TRANSPORTATION TO WORK

**Survey/Program:**

American Community Survey

**Universe:**

Workers 16 years and over

**Year:**

2018

**Estimates:**

5-Year

**Table ID:**

B08301

Source: U.S. Census Bureau, 2018 American Community Survey 1-Year Estimates

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

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see ACS Technical Documentation ). The effect of nonsampling error is not represented in these tables.

Workers include members of the Armed Forces and civilians who were at work last week.

While the 2018 American Community Survey (ACS) data generally reflect the July 2015 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas, in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineations due to differences in the effective dates of the geographic entities.

Estimates of urban and rural populations, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

**Explanation of Symbols:**

An "\*\*\*" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.

An "-" entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution, or the margin of error associated with a median was larger than the median itself.

An "-" following a median estimate means the median falls in the lowest interval of an open-ended distribution.

An "+" following a median estimate means the median falls in the upper interval of an open-ended distribution.

An "\*\*\*" entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.

An "\*\*\*\*\*" entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.

An "N" entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.

An "(X)" means that the estimate is not applicable or not available.

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

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

$$(117+328+336)/1,556 = 50.2\%$$

#### Census Tract 42.04, Miami-Dade County, Florida

	Estimate	Margin of Error
▼ Total:	1,556	+/-242
▼ Car, truck, or van:	521	+/-163
Drove alone	491	+/-155
▼ Carpooled:	30	+/-37
In 2-person carpool	8	+/-13
In 3-person carpool	22	+/-35
In 4-person carpool	0	+/-13
In 5- or 6-person carpool	0	+/-13
In 7-or-more-person carpool	0	+/-13
▼ Public transportation (excluding taxicab):	117	+/-73
Bus or trolley bus	117	+/-73
Streetcar or trolley car (carro publico in Puerto Rico)	0	+/-13
Subway or elevated	0	+/-13
Railroad	0	+/-13
Ferryboat	0	+/-13
Taxicab	80	+/-66
Motorcycle	10	+/-15
Bicycle	328	+/-169

Walked	336	+/-133
Other means	55	+/-51
Worked at home	109	+/-52

Hotel and Restaurant Valet Drop-off and Pick-up Traffic Data Summary  
Friday October 22, 2010

Hotel Valet Area Observations									
Time	Hotel Pick-up Maximum Queue	Hotel Pick-Up Volume	Hotel Pick-Up Peak Hour Volume	Hotel Drop-off Maximum Queue	Hotel Drop-off Volume	Hotel Drop-Off Peak Hour Volume	Total Hotel Volume		Total Hotel Peak Hour Volume
18:00	0	0		3	18		18		
18:15	2	4		2	3		7		
18:30	2	6		3	7		13		
18:45	4	23	40	4	13	37	36		77
19:00	3	9		1	3		12		
19:15	2	6		2	7		13		
19:30	1	2		3	14		16		
19:45	0	0		2	4		4		
20:00	1	3		2	7		10		
20:15	1	3		1	2		5		
20:30	3	11		2	7		18		
20:45	3	13		2	6		19		

Restaurant Valet Area Observations						
Time	Restaurnt Pick-up Maximum Queue	Restaurant Pick-Up Volume	Restaurant Pick-Up Peak Hour Volume	Restaurant Drop-off Maximum Queue	Restaurant Drop-off Volume	Restaurant Drop-off Peak Hour Volume
18:00	5	17		0	0	
18:15	4	13		2	7	8
18:30	3	9		0	0	
18:45	3	18		0	0	
19:00	4	15		1	1	
19:15	4	14		1	1	
19:30	5	18		1	1	
19:45	6	27		1	2	
20:00	5	18	81	1	1	
20:15	5	15		0	0	
20:30	5	15		0	1	
20:45	6	33		0	0	

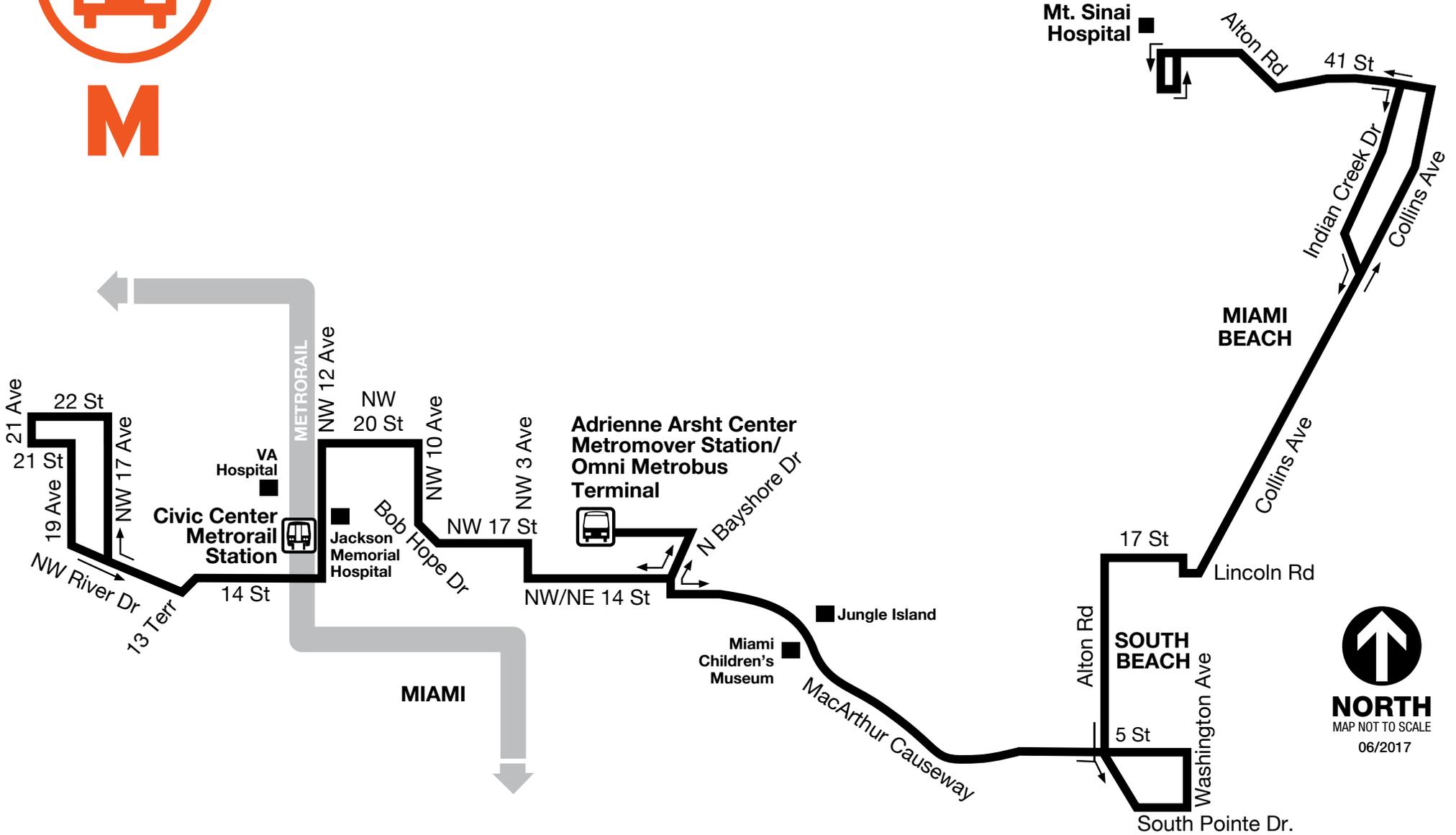
Taxi vs Valet Trips									
Time	Valet Pick-up Trips	Valet Drop-off Trips	Total Valet Trips	Taxi Pick-up Trips	Taxi Drop-off Trips	Total Taxi Pick-up Trips	Total Site Pick-up Trips	Total Site Drop-off Trips	Total Site Trips
18:00	1	11	12	16	7	23	17	18	35
18:15	5	6	11	12	4	16	17	10	27
18:30	3	3	6	12	4	16	15	7	22
18:45	32	10	42	9	3	12	41	13	54
19:00	17	1	18	7	3	10	24	4	28
19:15	12	5	17	8	3	11	20	8	28
19:30	12	12	24	8	3	11	20	15	35
19:45	20	4	24	7	2	9	27	6	33
20:00	10	4	14	11	4	15	21	8	29
20:15	3	1	4	15	1	16	18	2	20
20:30	15	4	19	11	4	15	26	8	34
20:45	35	2	37	11	4	15	46	6	52

Taxi Trips Observed 42.6%

# Transit Route Information



M



**NORTH**  
MAP NOT TO SCALE  
06/2017

[www.miamidade.gov/transit](http://www.miamidade.gov/transit) DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS



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



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We are asking customers to use public transit and STS services for essential trips only. Fares have been suspended for riders who depend on public transportation for essential trips. Transit services and trip frequencies have been adjusted. Some Metrobus express routes have been suspended. Customer Service and STS offices are closed until further notice. Please use our online services and mobile applications to stay connected.

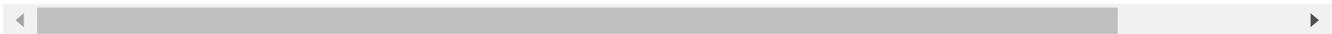
# Metrobus Routes Schedule



## 113 (Eastbound) WEEKDAY

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

11:55AM	12:03PM	12:17PM	12:28PM	12:34PM	12:44PM	12:51PM	01:03PM	01:10PM	01:12PM	01:
12:55PM	01:03PM	01:17PM	01:28PM	01:34PM	01:44PM	01:51PM	02:03PM	02:10PM	02:12PM	02:
01:55PM	02:03PM	02:17PM	02:28PM	02:34PM	02:44PM	02:51PM	03:03PM	03:10PM	03:12PM	03:
02:55PM	03:03PM	03:17PM	03:28PM	03:34PM	03:44PM	03:51PM	04:03PM	04:11PM	04:13PM	04:
03:40PM	03:48PM	04:02PM	04:14PM	04:20PM	04:30PM	04:37PM	04:49PM	04:57PM	04:59PM	05:
04:30PM	04:38PM	04:52PM	05:04PM	05:10PM	05:20PM	05:27PM	05:39PM	05:47PM	05:49PM	05:
05:15PM	05:23PM	05:37PM	05:49PM	05:55PM	06:05PM	06:12PM	06:24PM	06:32PM	06:34PM	06:
06:00PM	06:08PM	06:22PM	06:34PM	06:40PM	06:50PM	06:57PM	07:09PM	07:16PM	07:17PM	07:
06:45PM	06:53PM	07:07PM	07:18PM	07:24PM	07:32PM	07:38PM	07:49PM	07:56PM	07:57PM	07:
07:35PM	07:42PM	07:55PM	08:06PM	08:12PM	08:20PM	08:26PM	08:37PM	08:44PM	08:45PM	08:
08:35PM	08:42PM	08:55PM	09:06PM	09:12PM	09:20PM	09:26PM	09:37PM	09:44PM	09:45PM	09:
09:35PM	09:42PM	09:55PM	10:06PM	10:11PM	10:19PM	10:24PM	10:33PM	10:39PM	10:40PM	10:



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## TRANSPORTATION & PUBLIC WORKS

Alice N. Bravo, P.E., Director

### Overtown Transit Village North

701 NW 1st Court, Suite 1700, Miami, FL 33136

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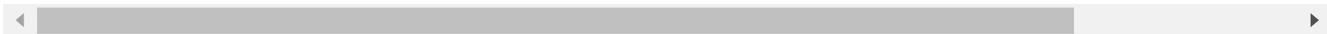
# Metrobus Routes Schedule



## 113 (Westbound) WEEKDAY

ALTON RD & 39 ST	MT SINAI HOSPITAL	41 ST & ALTON RD	41 ST & MERIDIAN AV	INDIAN CREEK DR & 40 ST	LINCOLN RD & WASHINGTON AV	ALTON RD & LINCOLN RD	ALTON RD & 2 ST	5 ST & LENOX AV	OMNI TERMINAL / ARSHT METROMOV
-	05:43AM	05:45AM	05:46AM	05:50AM	05:56AM	06:01AM	06:08AM	06:13AM	06:21AM
-	06:26AM	06:28AM	06:30AM	06:34AM	06:42AM	06:47AM	06:54AM	06:59AM	07:07AM
07:02AM	07:05AM	07:07AM	07:09AM	07:14AM	07:24AM	07:29AM	07:38AM	07:44AM	07:52AM
08:25AM	08:28AM	08:30AM	08:32AM	08:38AM	08:49AM	08:54AM	09:05AM	09:11AM	09:21AM
09:17AM	09:20AM	09:23AM	09:25AM	09:31AM	09:43AM	09:49AM	10:00AM	10:06AM	10:16AM
10:13AM	10:16AM	10:19AM	10:21AM	10:27AM	10:39AM	10:45AM	10:56AM	11:02AM	11:12AM

-	11:16AM	11:19AM	11:21AM	11:27AM	11:39AM	11:45AM	11:56AM	12:02PM	12:12PM	
-	12:16PM	12:19PM	12:21PM	12:27PM	12:39PM	12:45PM	12:56PM	01:02PM	01:12PM	
-	01:16PM	01:19PM	01:21PM	01:27PM	01:39PM	01:45PM	01:56PM	02:02PM	02:12PM	
-	02:06PM	02:09PM	02:11PM	02:17PM	02:29PM	02:35PM	02:46PM	02:52PM	03:02PM	
-	02:56PM	02:59PM	03:01PM	03:07PM	03:19PM	03:25PM	03:36PM	03:42PM	03:52PM	
-	03:46PM	03:49PM	03:51PM	03:57PM	04:09PM	04:15PM	04:26PM	04:32PM	04:42PM	
	04:29PM	04:32PM	04:34PM	04:36PM	04:42PM	04:54PM	05:00PM	05:11PM	05:17PM	05:27PM
	05:14PM	05:17PM	05:19PM	05:21PM	05:27PM	05:39PM	05:45PM	05:56PM	06:02PM	06:12PM
	06:06PM	06:09PM	06:11PM	06:13PM	06:19PM	06:31PM	06:37PM	06:48PM	06:54PM	07:04PM
	07:12PM	07:15PM	07:17PM	07:19PM	07:25PM	07:36PM	07:41PM	07:50PM	07:56PM	08:04PM
	08:12PM	08:15PM	08:17PM	08:19PM	08:25PM	08:36PM	08:41PM	08:50PM	08:56PM	09:04PM
	08:57PM	09:00PM	09:02PM	09:04PM	09:10PM	09:21PM	09:26PM	09:35PM	09:41PM	09:49PM



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Alice N. Bravo, P.E., Director

### Overtown Transit Village North

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# Metrobus Routes Schedule



## 113 (Westbound) SATURDAY

ALTON RD & 39 ST	MT SINAI HOSPITAL	41 ST & ALTON RD	41 ST & MERIDIAN AV	INDIAN CREEK DR & 40 ST	LINCOLN RD & WASHINGTON AV	ALTON RD & LINCOLN RD	ALTON RD & 2 ST	5 ST & LENOX AV	OMNI TERMINAL / ARSHT METROMOV
-	06:10AM	06:12AM	06:13AM	06:17AM	06:24AM	06:29AM	06:36AM	06:41AM	06:48AM
07:07AM	07:10AM	07:12AM	07:14AM	07:19AM	07:28AM	07:33AM	07:41AM	07:47AM	07:55AM
-	08:00AM	08:02AM	08:04AM	08:09AM	08:19AM	08:24AM	08:33AM	08:39AM	08:47AM
08:57AM	09:00AM	09:03AM	09:05AM	09:11AM	09:22AM	09:28AM	09:38AM	09:44AM	09:54AM
09:57AM	10:00AM	10:03AM	10:05AM	10:11AM	10:22AM	10:28AM	10:38AM	10:44AM	10:54AM
10:57AM	11:00AM	11:03AM	11:05AM	11:11AM	11:22AM	11:28AM	11:38AM	11:44AM	11:54AM

11:57AM	12:00PM	12:03PM	12:05PM	12:11PM	12:22PM	12:28PM	12:38PM	12:44PM	12:54PM
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07:57PM	08:00PM	08:02PM	08:04PM	08:10PM	08:20PM	08:25PM	08:34PM	08:40PM	08:48PM
08:57PM	09:00PM	09:02PM	09:04PM	09:10PM	09:20PM	09:25PM	09:34PM	09:40PM	09:48PM



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# Metrobus Routes Schedule



## 113 (Eastbound) SATURDAY

NW 21 AV & 22 ST	NW 12 AV & 15 ST	OMNI TERMINAL / ARSHT METROMOVER	ALTON RD & 2 ST	5 ST & LENOX AV	17 ST & LENOX AV	LINCOLN RD & JAMES AV	INDIAN CREEK DR & 43 ST	41 ST & MERIDIAN AV	41 ST & ALTON RD	MT HC
05:53AM	05:59AM	06:09AM	06:19AM	06:24AM	06:32AM	06:37AM	06:45AM	06:51AM	06:52AM	06:
07:25AM	07:32AM	07:43AM	07:53AM	07:59AM	08:08AM	08:14AM	08:24AM	08:31AM	08:33AM	08:
08:25AM	08:32AM	08:43AM	08:53AM	08:59AM	09:08AM	09:15AM	09:27AM	09:35AM	09:37AM	09:
09:25AM	09:33AM	09:45AM	09:57AM	10:03AM	10:12AM	10:19AM	10:31AM	10:39AM	10:41AM	10:
10:25AM	10:33AM	10:45AM	10:57AM	11:03AM	11:12AM	11:19AM	11:31AM	11:39AM	11:41AM	11:
11:25AM	11:33AM	11:45AM	11:57AM	12:03PM	12:12PM	12:19PM	12:31PM	12:39PM	12:41PM	12:

12:25PM	12:33PM	12:45PM	12:57PM	01:03PM	01:12PM	01:19PM	01:31PM	01:39PM	01:41PM	01:
01:25PM	01:33PM	01:45PM	01:57PM	02:03PM	02:12PM	02:19PM	02:31PM	02:39PM	02:41PM	02:
02:25PM	02:33PM	02:45PM	02:57PM	03:03PM	03:12PM	03:19PM	03:31PM	03:39PM	03:41PM	03:
03:25PM	03:33PM	03:45PM	03:57PM	04:03PM	04:12PM	04:19PM	04:30PM	04:37PM	04:39PM	04:
04:25PM	04:33PM	04:45PM	04:57PM	05:03PM	05:12PM	05:19PM	05:30PM	05:37PM	05:39PM	05:
05:25PM	05:33PM	05:45PM	05:57PM	06:03PM	06:12PM	06:19PM	06:30PM	06:37PM	06:39PM	06:
06:25PM	06:33PM	06:45PM	06:57PM	07:03PM	07:11PM	07:17PM	07:27PM	07:34PM	07:35PM	07:
07:25PM	07:32PM	07:43PM	07:53PM	07:59PM	08:07PM	08:13PM	08:23PM	08:30PM	08:31PM	08:
08:15PM	08:22PM	08:33PM	08:43PM	08:49PM	08:57PM	09:03PM	09:13PM	09:20PM	09:21PM	09:
09:15PM	09:22PM	09:33PM	09:43PM	09:49PM	09:57PM	10:03PM	10:11PM	10:17PM	10:18PM	10:
10:15PM	10:21PM	10:31PM	10:41PM	10:46PM	10:53PM	10:58PM	11:06PM	11:12PM	11:13PM	11:



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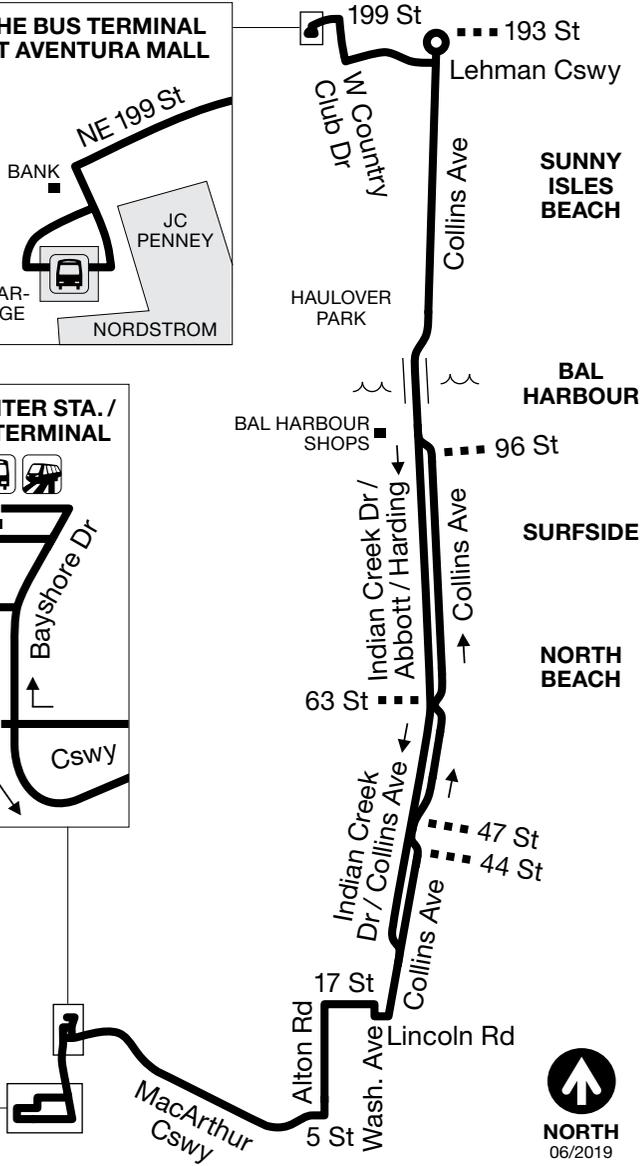
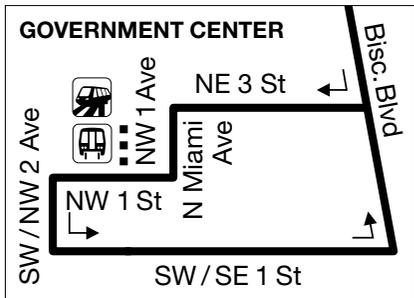
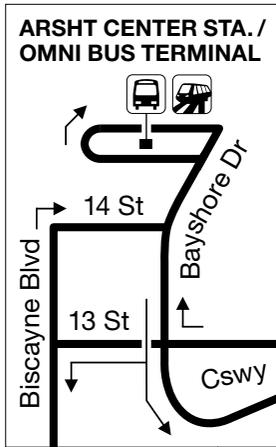
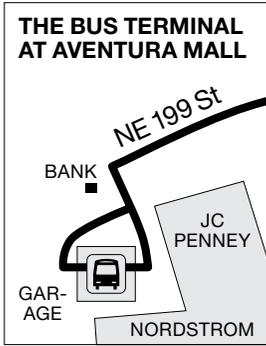
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# Metrobus Routes Schedule



## 119 (Northbound) WEEKDAY

STEPHEN P CLARK CENTER	OMNI TERMINAL / ARSHT METROMOVER	ALTON RD & 6 ST	17 ST & LENOX AV	LINCOLN RD & JAMES AV	COLLINS AV & 43 ST	COLLINS AV & 69 ST	COLLINS AV & 96 ST	COLLINS AV AT 16900 BLK	COLLINS AV & 193 ST
05:00AM	05:09AM	05:16AM	05:22AM	05:27AM	05:33AM	05:41AM	05:49AM	05:55AM	06:03AM
05:24AM	05:33AM	05:40AM	05:46AM	05:51AM	05:57AM	06:08AM	06:18AM	06:26AM	06:34AM
05:36AM	05:45AM	05:52AM	05:58AM	06:04AM	06:12AM	06:23AM	06:33AM	06:41AM	06:49AM
05:48AM	05:57AM	06:05AM	06:12AM	06:18AM	06:26AM	06:37AM	06:47AM	06:55AM	07:05AM
06:00AM	06:12AM	06:20AM	06:27AM	06:33AM	06:41AM	06:52AM	07:03AM	07:12AM	07:22AM
06:15AM	06:27AM	06:35AM	06:42AM	06:48AM	06:56AM	07:09AM	07:20AM	07:29AM	07:39AM

06:30AM	06:42AM	06:50AM	06:57AM	07:03AM	07:11AM	07:24AM	07:35AM	07:44AM	07:54AM
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10:15PM	10:28PM	10:35PM	10:42PM	10:50PM	11:00PM	11:12PM	11:21PM	11:28PM	11:35PM
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11:40PM	11:53PM	12:00AM	12:06AM	12:13AM	12:21AM	12:30AM	12:38AM	12:44AM	12:50AM



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## TRANSPORTATION & PUBLIC WORKS

Alice N. Bravo, P.E., Director

### Overtown Transit Village North

701 NW 1st Court, Suite 1700, Miami, FL 33136

786-469-5675 |

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# Metrobus Routes Schedule



## 119 (Southbound) WEEKDAY

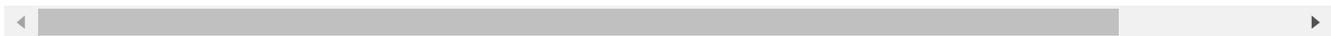
BUS TERMINAL AT AVENTURA MALL	COLLINS AV & 193 ST	COLLINS AV & 163 ST	BAL HARBOUR SHOPS	ABBOTT AV & 69 ST	INDIAN CREEK DR & 40 ST	LINCOLN RD & WASHINGTON AV	ALTON RD & LINCOLN RD	ALTON RD & 6 ST	OMNI TERMINA ARSHT METROM
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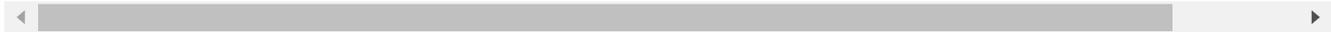
## 119 (Northbound) SATURDAY

STEPHEN P CLARK CENTER	OMNI TERMINAL / ARSHT METROMOVER	ALTON RD & 6 ST	17 ST & LENOX AV	LINCOLN RD & JAMES AV	COLLINS AV & 43 ST	COLLINS AV & 69 ST	COLLINS AV & 96 ST	COLLINS AV AT 16900 BLK	COLLINS AV & 193 ST
05:00AM	05:09AM	05:17AM	05:22AM	05:26AM	05:33AM	05:42AM	05:47AM	05:54AM	06:02AM
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08:45PM	08:58PM	09:08PM	09:18PM	09:24PM	09:35PM	09:47PM	09:56PM	10:04PM	10:11PM
09:05PM	09:18PM	09:28PM	09:38PM	09:44PM	09:55PM	10:07PM	10:14PM	10:21PM	10:28PM
09:25PM	09:38PM	09:48PM	09:58PM	10:04PM	10:13PM	10:24PM	10:31PM	10:38PM	10:45PM
09:45PM	09:58PM	10:08PM	10:16PM	10:20PM	10:29PM	10:40PM	10:47PM	10:54PM	11:01PM
10:05PM	10:15PM	10:25PM	10:33PM	10:37PM	10:46PM	10:57PM	11:04PM	11:11PM	11:18PM
10:25PM	10:35PM	10:45PM	10:53PM	10:57PM	11:06PM	11:17PM	11:24PM	11:31PM	11:38PM
10:45PM	10:55PM	11:05PM	11:13PM	11:17PM	11:26PM	11:37PM	11:44PM	11:51PM	11:58PM
11:10PM	11:20PM	11:30PM	11:38PM	11:42PM	11:51PM	12:02AM	12:07AM	12:14AM	12:21AM
11:40PM	11:50PM	12:00AM	12:06AM	12:10AM	12:17AM	12:26AM	12:31AM	12:38AM	12:45AM



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Miami-Dade County continues to monitor coronavirus (COVID-19). **Get the latest updates.**

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We are asking customers to use public transit and STS services for essential trips only. Fares have been suspended for riders who depend on public transportation for essential trips. Transit services and trip frequencies have been adjusted. Some Metrobus express routes have been suspended. Customer Service and STS offices are closed until further notice. Please use our online services and mobile applications to stay connected.

# Metrobus Routes Schedule



## 119 (Southbound) SATURDAY

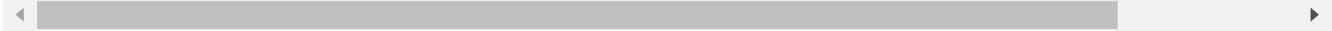
BUS TERMINAL AT AVENTURA MALL	COLLINS AV & 193 ST	COLLINS AV & 163 ST	BAL HARBOUR SHOPS	ABBOTT AV & 69 ST	INDIAN CREEK DR & 40 ST	LINCOLN RD & WASHINGTON AV	ALTON RD & LINCOLN RD	ALTON RD & 6 ST	OMNI TERMINA ARSHT METROM
04:20AM	04:27AM	04:34AM	04:42AM	04:50AM	04:59AM	05:05AM	05:08AM	05:13AM	05:20AM
04:49AM	04:56AM	05:03AM	05:11AM	05:19AM	05:28AM	05:34AM	05:37AM	05:42AM	05:49AM
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05:41AM	05:48AM	05:55AM	06:03AM	06:12AM	06:22AM	06:30AM	06:34AM	06:40AM	06:47AM
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10:35PM	10:44PM	10:52PM	11:00PM	11:09PM	11:19PM	11:28PM	11:31PM	11:36PM	11:43PM
10:54PM	11:03PM	11:11PM	11:19PM	11:28PM	11:38PM	11:45PM	11:48PM	11:53PM	12:00AM

11:19PM	11:28PM	11:36PM	11:44PM	11:52PM	12:01AM	12:08AM	12:11AM	12:16AM	12:23AM
11:45PM	11:52PM	11:59PM	12:07AM	12:15AM	12:24AM	12:31AM	12:34AM	12:39AM	12:46AM



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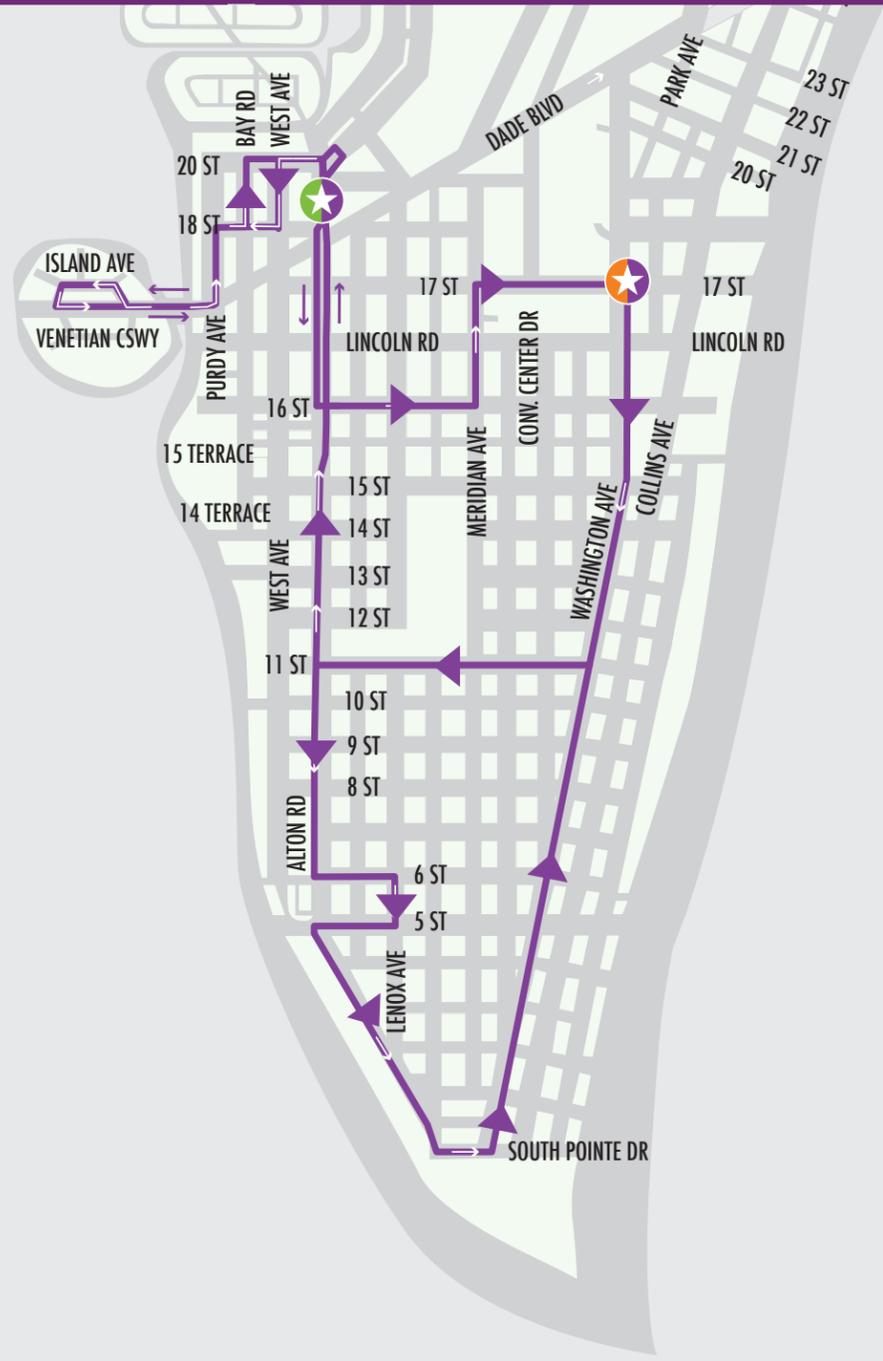
AWARDS OVERALL WINNER 2019



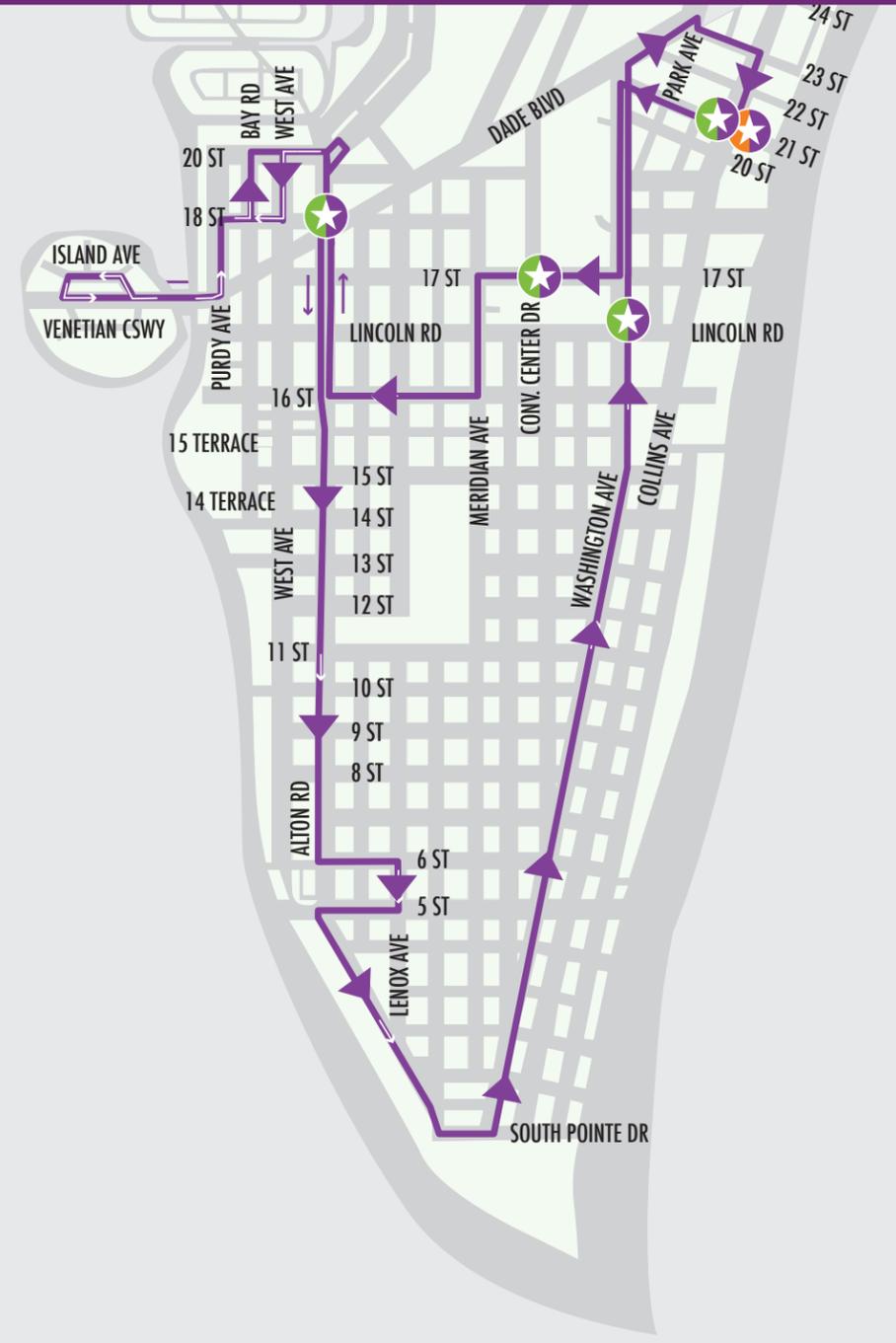
**SOUTH BEACH LOOP - A**  
(Clockwise - Approximately 20 minutes)



**SOUTH BEACH LOOP - VIA 11 ST**  
(Approximately 40 minutes)

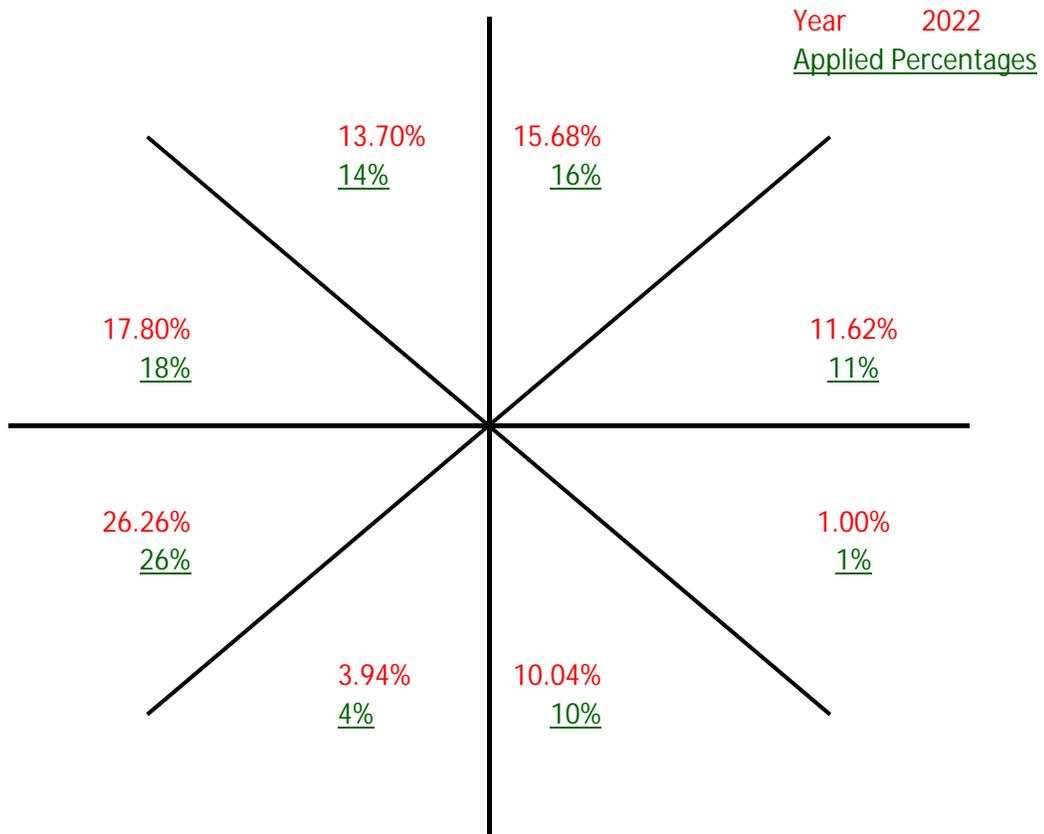


**SOUTH BEACH LOOP - B**  
(Counter Clockwise - Approximately 20 minutes)



**Attachment D-1**  
Cardinal Distribution

Cardinal Distribution for TAZ 642



Cardinal Trip Distribution

Cardinal Direction	Percentage of Trips		2022 Interpolated	2022 Rounded
	2015	2045		
North-Northeast	16.4%	14.60%	15.68%	16.00%
East-Northeast	12.5%	10.30%	11.62%	11.00%
East-Southeast	1.0%	1.00%	1.00%	1.00%
South-Southeast	11.2%	8.30%	10.04%	10.00%
South-Southwest	4.1%	3.70%	3.94%	4.00%
West-Southwest	23.9%	29.80%	26.26%	26.00%
West-Northwest	17.4%	18.40%	17.80%	18.00%
North-Northwest	13.5%	14.00%	13.70%	14.00%
Total	100.0%	100.1%	100.04%	100.00%

Miami-Dade 2015 Base Year Direction Trip Distribution Summary											
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW	
625	3525	Trips	610	160	-	557	431	1,317	679	1,035	4,961
625	3525	Percent	12.7	3.3	-	11.6	9.0	27.5	14.2	21.6	
626	3526	Trips	122	-	-	-	2,090	2,277	1,198	2,942	9,399
626	3526	Percent	1.4	-	-	-	24.2	26.4	13.9	34.1	
627	3527	Trips	279	-	-	-	2,051	2,578	845	1,965	8,061
627	3527	Percent	3.6	-	-	-	26.6	33.4	11.0	25.5	
628	3528	Trips	298	-	49	79	984	902	332	679	3,579
628	3528	Percent	9.0	-	1.5	2.4	29.6	27.2	10.0	20.5	
629	3529	Trips	1,374	549	344	1,656	1,708	3,707	1,668	2,101	14,261
629	3529	Percent	10.5	4.2	2.6	12.6	13.0	28.3	12.7	16.0	
630	3530	Trips	952	-	210	347	1,696	2,375	794	1,114	8,135
630	3530	Percent	12.7	-	2.8	4.6	22.7	31.7	10.6	14.9	
631	3531	Trips	255	-	-	-	1,215	1,471	440	1,030	4,651
631	3531	Percent	5.8	-	-	-	27.6	33.4	10.0	23.4	
632	3532	Trips	309	-	-	-	1,242	1,751	750	635	4,880
632	3532	Percent	6.6	-	-	-	26.5	37.4	16.0	13.5	
633	3533	Trips	310	-	-	-	1,181	1,428	750	730	4,590
633	3533	Percent	7.0	-	-	-	26.9	32.5	17.1	16.6	
634	3534	Trips	1,502	112	240	837	1,718	1,928	976	1,727	9,998
634	3534	Percent	16.6	1.2	2.7	9.3	19.0	21.3	10.8	19.1	
635	3535	Trips	779	-	-	-	2,021	1,994	952	1,411	8,010
635	3535	Percent	10.9	-	-	-	28.2	27.9	13.3	19.7	
636	3536	Trips	1,041	-	-	686	1,152	2,072	911	1,071	7,384
636	3536	Percent	15.0	-	-	9.9	16.6	29.9	13.1	15.4	
637	3537	Trips	323	31	87	217	126	601	303	290	1,987
637	3537	Percent	16.4	1.6	4.4	11.0	6.4	30.4	15.3	14.7	
638	3538	Trips	152	35	87	86	114	218	162	126	999
638	3538	Percent	15.5	3.6	8.9	8.7	11.6	22.3	16.5	12.9	
639	3539	Trips	825	281	277	1,089	131	1,364	796	599	5,721
639	3539	Percent	15.4	5.2	5.2	20.3	2.4	25.4	14.9	11.2	
640	3540	Trips	344	247	868	104	43	685	405	274	3,053
640	3540	Percent	11.6	8.3	29.2	3.5	1.5	23.1	13.6	9.2	
641	3541	Trips	1,051	1,714	291	723	309	1,572	1,188	916	8,356
641	3541	Percent	13.5	22.1	3.7	9.3	4.0	20.3	15.3	11.8	
642	3542	Trips	1,849	1,404	115	1,263	457	2,697	1,962	1,518	12,299
642	3542	Percent	16.4	12.5	1.0	11.2	4.1	23.9	17.4	13.5	
643	3543	Trips	1,747	551	-	965	479	2,595	1,554	1,715	10,383
643	3543	Percent	18.2	5.7	-	10.1	5.0	27.0	16.2	17.9	
644	3544	Trips	2,022	-	-	-	2,250	4,141	2,585	2,646	15,224
644	3544	Percent	14.8	-	-	-	16.5	30.4	19.0	19.4	
645	3545	Trips	1,268	-	-	-	907	1,498	1,720	1,351	7,018
645	3545	Percent	18.8	-	-	-	13.5	22.2	25.5	20.0	
646	3546	Trips	986	-	156	520	250	1,081	1,094	1,181	5,470
646	3546	Percent	18.7	-	3.0	9.9	4.7	20.5	20.8	22.4	
647	3547	Trips	350	103	114	165	66	354	359	408	1,979
647	3547	Percent	18.2	5.4	5.9	8.6	3.5	18.5	18.7	21.2	
648	3548	Trips	1,027	434	254	401	48	903	1,001	514	4,747
648	3548	Percent	22.4	9.5	5.5	8.8	1.0	19.7	21.9	11.2	
649	3549	Trips	754	192	184	230	41	612	743	427	3,320
649	3549	Percent	23.7	6.0	5.8	7.2	1.3	19.2	23.3	13.4	
650	3550	Trips	45	80	104	0	14	155	304	133	850
650	3550	Percent	5.4	9.6	12.4	0.0	1.6	18.5	36.5	16.0	

Miami-Dade 2045 Cost Feasible Plan Direction Trip Distribution Summary											
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW	
625	3525	Trips	515	114	-	541	802	1,791	829	1,096	5,972
625	3525	Percent	9.1	2.0	-	9.5	14.1	31.5	14.6	19.3	
626	3526	Trips	66	-	-	-	2,417	3,260	1,417	2,993	11,237
626	3526	Percent	0.7	-	-	-	23.8	32.1	14.0	29.5	
627	3527	Trips	174	-	-	-	2,276	3,212	1,138	1,885	9,055
627	3527	Percent	2.0	-	-	-	26.2	37.0	13.1	21.7	
628	3528	Trips	238	-	23	101	1,053	1,266	390	660	4,028
628	3528	Percent	6.4	-	0.6	2.7	28.2	33.9	10.5	17.7	
629	3529	Trips	1,686	621	373	1,692	1,801	6,032	2,362	2,490	18,425
629	3529	Percent	9.9	3.6	2.2	9.9	10.6	35.4	13.9	14.6	
630	3530	Trips	888	-	326	303	1,717	3,876	1,515	1,553	11,277
630	3530	Percent	8.7	-	3.2	3.0	16.9	38.1	14.9	15.3	
631	3531	Trips	296	-	-	-	1,351	2,360	838	1,324	6,591
631	3531	Percent	4.8	-	-	-	21.9	38.3	13.6	21.5	
632	3532	Trips	343	-	-	-	1,500	2,647	1,390	1,098	7,499
632	3532	Percent	4.9	-	-	-	21.5	37.9	19.9	15.7	
633	3533	Trips	368	-	-	-	1,052	1,986	859	841	5,391
633	3533	Percent	7.2	-	-	-	20.6	38.9	16.8	16.5	
634	3534	Trips	1,404	80	149	773	1,637	2,733	1,332	1,712	10,593
634	3534	Percent	14.3	0.8	1.5	7.9	16.7	27.8	13.6	17.4	
635	3535	Trips	566	-	-	-	1,311	2,266	1,228	1,254	7,246
635	3535	Percent	8.5	-	-	-	19.8	34.2	18.5	18.9	
636	3536	Trips	1,066	-	-	607	978	3,045	1,398	1,193	8,805
636	3536	Percent	12.9	-	-	7.3	11.8	36.8	16.9	14.4	
637	3537	Trips	468	44	144	315	198	868	501	309	2,865
637	3537	Percent	16.5	1.6	5.1	11.1	6.9	30.5	17.6	10.9	
638	3538	Trips	127	33	78	94	79	401	285	185	1,342
638	3538	Percent	9.9	2.6	6.1	7.3	6.2	31.3	22.2	14.5	
639	3539	Trips	944	303	253	1,068	176	2,395	1,085	905	7,569
639	3539	Percent	13.2	4.3	3.6	15.0	2.5	33.6	15.2	12.7	
640	3540	Trips	119	74	216	10	30	177	136	147	1,166
640	3540	Percent	13.1	8.2	23.7	1.1	3.4	19.4	14.9	16.2	
641	3541	Trips	1,145	1,056	206	569	242	2,378	1,724	1,142	9,066
641	3541	Percent	13.5	12.5	2.4	6.7	2.9	28.1	20.4	13.5	
642	3542	Trips	1,701	1,196	113	964	433	3,470	2,140	1,631	12,324
642	3542	Percent	14.6	10.3	1.0	8.3	3.7	29.8	18.4	14.0	
643	3543	Trips	1,884	580	-	1,133	631	3,768	2,190	2,157	13,183
643	3543	Percent	15.3	4.7	-	9.2	5.1	30.5	17.7	17.5	
644	3544	Trips	1,948	-	-	-	2,227	5,534	3,264	3,082	17,780
644	3544	Percent	12.1	-	-	-	13.9	34.5	20.3	19.2	
645	3545	Trips	1,314	-	-	-	844	1,661	2,170	1,703	8,075
645	3545	Percent	17.1	-	-	-	11.0	21.6	28.2	22.1	
646	3546	Trips	1,025	-	125	496	263	1,741	1,656	1,299	6,976
646	3546	Percent	15.5	-	1.9	7.5	4.0	26.4	25.1	19.7	
647	3547	Trips	296	122	96	109	79	582	661	405	2,490
647	3547	Percent	12.6	5.2	4.1	4.6	3.4	24.8	28.1	17.3	
648	3548	Trips	943	278	128	313	73	1,525	1,351	576	5,397
648	3548	Percent	18.2	5.4	2.5	6.0	1.4	29.4	26.0	11.1	
649	3549	Trips	643	120	121	216	43	873	952	508	3,661
649	3549	Percent	18.5	3.4	3.5	6.2	1.3	25.1	27.4	14.6	
650	3550	Trips	60	71	65	8	14	279	312	136	969
650	3550	Percent	6.4	7.5	6.9	0.9	1.5	29.5	33.0	14.4	

# **Attachment E-1**

## Valet Analysis

16<sup>th</sup> Street Valet

## Valet Processing Time

**Valet Drop-off/Pick-Up Calculated Travel Time**

**Parking Garage Calculated Travel Time**

<b>VALET DROP-OFF</b>			
<b>VEHICLE TRAVEL TIME</b>		<b>VALET ATTENDANT TRAVEL TIME</b>	
Travel Times (Assume <span style="background-color: yellow;">15</span> mph speed)		Travel Times (Assume <span style="background-color: yellow;">5</span> ft/s speed)	
<b>To Valet Garage (In vehicle)</b>		<b>Return from Valet Garage (Walk/Run) to Valet Area</b>	
Distance	Travel Time	Distance	Travel Time
0.85 miles	3.4 minutes	0.129 miles	2.3 minutes
Controlled Delay	1.5 Minutes		
Total Time	7.2 Minutes		

**Parking Garage Calculated Travel Time**

<b>VALET PICK-UP</b>			
<b>VALET ATTENDANT TRAVEL TIME</b>		<b>VEHICLE TRAVEL TIME</b>	
Travel Times (Assume <span style="background-color: yellow;">5</span> ft/s speed)		Travel Times (Assume <span style="background-color: yellow;">15</span> mph speed)	
<b>To Valet Garage (Walk/Run)</b>		<b>Return from Valet Garage (In Vehicle) to Valet Area</b>	
Distance	Travel Time	Distance	Travel Time
0.129 miles	2.3 minutes	0.54 miles	2.2 minutes
Controlled Delay	1.0 Minutes		
Total Time	5.5 Minutes		

# Valet Analysis

## Weekend Peak Hour Parking Garage Valet Drop-Off/Pick-Up Analysis

Arrival Rate	IN	OUT	veh/hr
	37	27	

Service Rate	IN	OUT	mins/veh
	7.20	5.50	

Number of Valet Attendants (N) = 10

Level of Confidence = 0.95

Storage Provided On-Site = 3 vehicles

Total Entering and Exiting Vehicles(q) = 64 veh/hr

Service Capacity per N (60 mins/Service Rate) (Q) = 9.26 veh/hr/pos

Average Service Rate (t) = 6.48 mins/veh

rho (t/Q) = 0.692

Expected (avg.) number of vehicles in the system	E(m)=	0.47	
Expected (avg.) number of vehicles waiting in queue	E(n)=	7.38	
Mean time in the queue	E(w)=	0.44	mins
Mean time in system	E(t)=	6.92	mins

Proportion of customers who wait (P) (E(w) > 0) = 20.90%

Probability of a queue exceeding a length (M) P(x > M) = 5.00%

Queue length which is exceeded 5.00% of the times is equal to 2.9 vehicles

# Alton Road Valet Analysis

## Valet Processing Time

**Valet Drop-off/Pick-Up Calculated Travel Time**

**Parking Garage Calculated Travel Time**

<b>VALET DROP-OFF</b>			
<b>VEHICLE TRAVEL TIME</b>		<b>VALET ATTENDANT TRAVEL TIME</b>	
Travel Times (Assume <span style="background-color: yellow;">15</span> mph speed)		Travel Times (Assume <span style="background-color: yellow;">5</span> ft/s speed)	
<b>To Valet Garage (In vehicle)</b>		<b>Return from Valet Garage (Walk/Run) to Valet Area</b>	
Distance	Travel Time	Distance	Travel Time
0.90 miles	3.6 minutes	0.152 miles	2.7 minutes
Controlled Delay	2.0 Minutes		
Total Time	8.3 Minutes		

**Parking Garage Calculated Travel Time**

<b>VALET PICK-UP</b>			
<b>VALET ATTENDANT TRAVEL TIME</b>		<b>VEHICLE TRAVEL TIME</b>	
Travel Times (Assume <span style="background-color: yellow;">5</span> ft/s speed)		Travel Times (Assume <span style="background-color: yellow;">15</span> mph speed)	
<b>To Valet Garage (Walk/Run)</b>		<b>Return from Valet Garage (In Vehicle) to Valet Area</b>	
Distance	Travel Time	Distance	Travel Time
0.152 miles	2.7 minutes	0.83 miles	3.3 minutes
Controlled Delay	1.5 Minutes		
Total Time	7.5 Minutes		

# Valet Analysis

## Weekend Peak Hour Parking Garage Valet Drop-Off/Pick-Up Analysis

Arrival Rate	IN	OUT	veh/hr
	37	27	

Service Rate	IN	OUT	mins/veh
	8.30	7.50	

Number of Valet Attendants (N) = 12

Level of Confidence = 0.95

Storage Provided On-Site = 3 vehicles

Total Entering and Exiting Vehicles(q) = 64 veh/hr

Service Capacity per N (60 mins/Service Rate) (Q) = 7.54 veh/hr/pos

Average Service Rate (t) = 7.96 mins/veh

rho (t/Q) = 0.708

Expected (avg.) number of vehicles in the system	E(m)=	0.47	
Expected (avg.) number of vehicles waiting in queue	E(n)=	8.97	
Mean time in the queue	E(w)=	0.44	mins
Mean time in system	E(t)=	8.41	mins

Proportion of customers who wait (P) (E(w) > 0) = 19.54%

Probability of a queue exceeding a length (M) P(x > M) = 5.00%

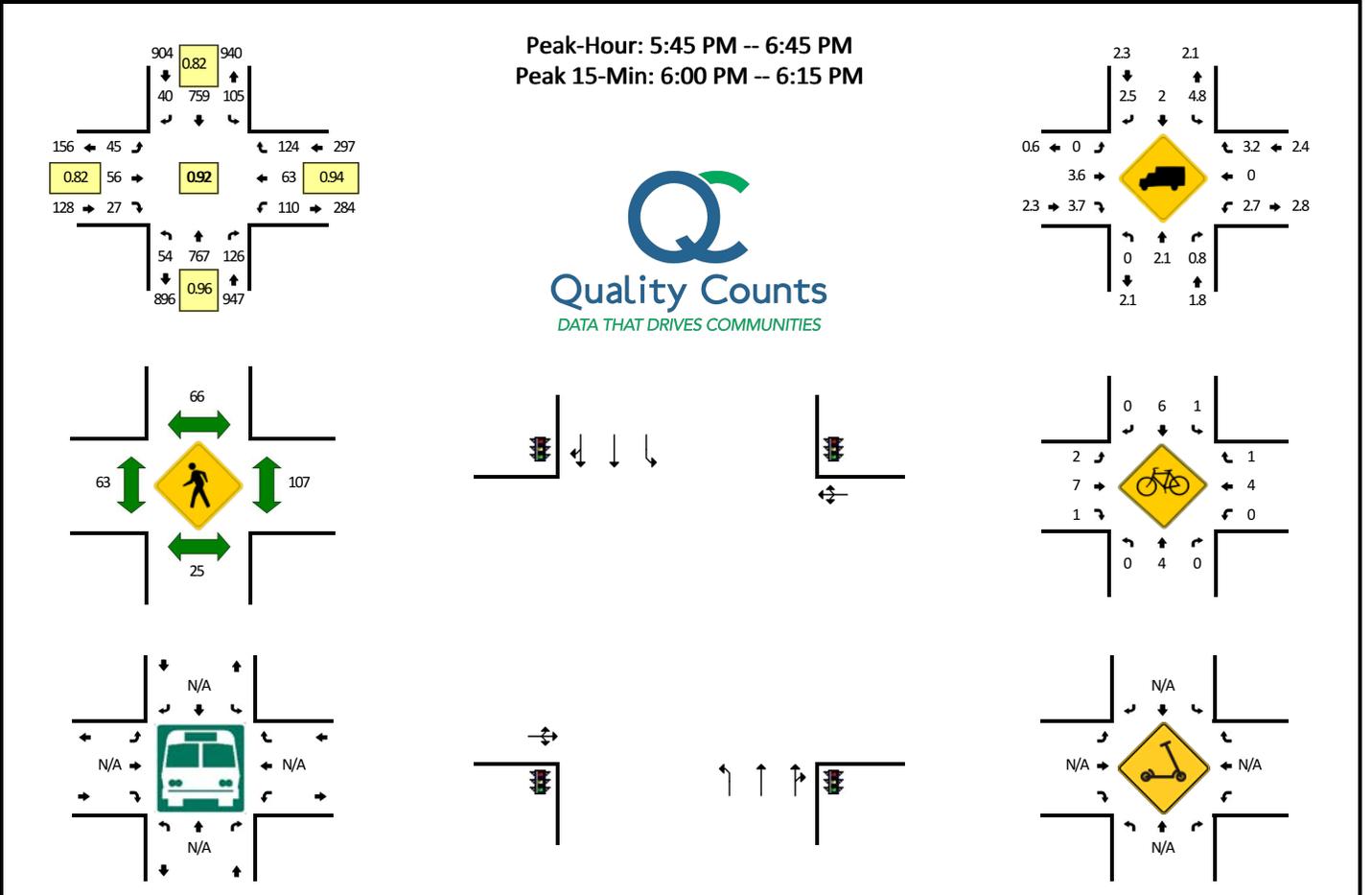
Queue length which is exceeded 5.00% of the times is equal to 2.9 vehicles

**Attachment F-1**  
Traffic Data

## Turning Movement Counts

**LOCATION:** Alton Rd -- 16th St  
**CITY/STATE:** Miami Beach, FL

**QC JOB #:** 15169652  
**DATE:** Thu, Jan 23 2020



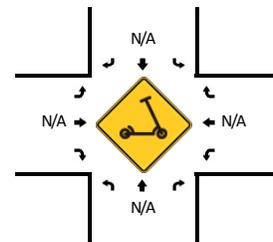
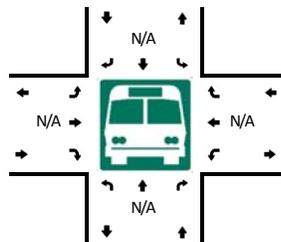
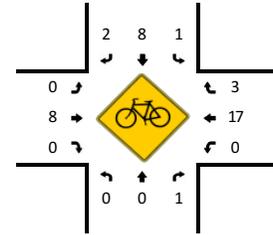
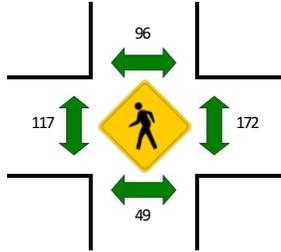
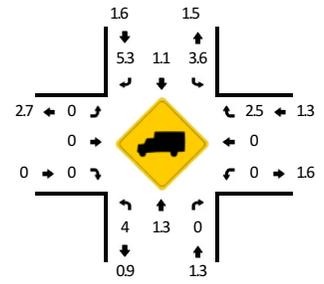
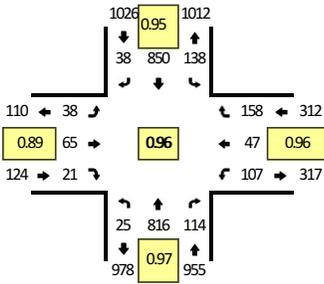
15-Min Count Period Beginning At	Alton Rd (Northbound)				Alton Rd (Southbound)				16th St (Eastbound)				16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:45 PM	19	183	30	0	28	169	6	0	9	20	10	0	23	19	27	0	543	
5:00 PM	4	194	16	0	33	204	8	0	14	16	5	0	25	11	36	0	566	
5:15 PM	19	183	19	0	34	185	7	1	9	17	7	0	19	12	35	0	547	
5:30 PM	13	174	33	0	29	152	5	1	5	15	3	0	21	17	32	0	500	2156
5:45 PM	19	180	35	1	20	144	8	1	8	23	5	0	22	24	24	0	514	2127
6:00 PM	14	184	26	0	31	227	14	2	21	11	7	0	30	16	33	0	616	2177
6:15 PM	11	193	38	0	24	181	7	1	11	14	8	0	26	16	29	0	559	2189
6:30 PM	9	210	27	0	26	207	11	0	5	8	7	0	31	7	38	1	587	2276
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	56	736	104	0	124	908	56	8	84	44	28	0	120	64	132	0	2464	
Heavy Trucks	0	20	0		4	12	0		0	8	0		0	0	8		52	
Buses																		
Pedestrians		44				88				92				136			360	
Bicycles	0	0	0		0	8	0		0	0	0		0	4	0		12	
Scoters																		

*Comments:*

**LOCATION:** Alton Rd -- 16th St  
**CITY/STATE:** Miami Beach, FL

**QC JOB #:** 15169654  
**DATE:** Sat, Jan 25 2020

**Peak-Hour: 7:30 PM -- 8:30 PM**  
**Peak 15-Min: 7:45 PM -- 8:00 PM**



15-Min Count Period Beginning At	Alton Rd (Northbound)				Alton Rd (Southbound)				16th St (Eastbound)				16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:30 PM	5	220	21	0	38	206	8	0	8	14	2	0	23	16	41	0	602	
7:45 PM	8	215	23	0	30	232	8	0	13	17	5	0	25	12	40	0	628	
8:00 PM	5	191	40	0	36	209	15	0	10	17	7	0	27	6	41	0	604	
8:15 PM	7	190	30	0	34	203	7	0	7	17	7	0	32	13	36	0	583	2417
8:30 PM	7	169	29	0	33	212	7	0	6	8	3	0	29	4	34	0	541	2356
8:45 PM	7	166	45	0	35	181	6	3	10	15	7	0	25	12	40	0	552	2280
9:00 PM	7	193	28	0	38	197	6	0	7	9	9	0	35	4	37	0	570	2246
9:15 PM	8	165	33	0	33	166	12	0	7	19	6	0	36	8	44	0	537	2200

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	860	92	0	120	928	32	0	52	68	20	0	100	48	160	0	2512
Heavy Trucks	4	8	0		4	4	0		0	0	0		0	0	4		24
Buses																	
Pedestrians		52				76				108				148			384
Bicycles	0	0	0		0	0	4		0	8	0		0	12	0		24
Scoters																	

Comments:

# FDOT Peak Season Category Factor Report

2019 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL  
 CATEGORY: 8700 MIAMI-DADE NORTH

WEEK	DATES	SF	MOCF: 0.97 PSCF
1	01/01/2019 - 01/05/2019	1.03	1.06
2	01/06/2019 - 01/12/2019	1.02	1.05
3	01/13/2019 - 01/19/2019	1.01	1.04
4	01/20/2019 - 01/26/2019	1.00	1.03
* 5	01/27/2019 - 02/02/2019	0.98	1.01
* 6	02/03/2019 - 02/09/2019	0.97	1.00
* 7	02/10/2019 - 02/16/2019	0.96	0.99
* 8	02/17/2019 - 02/23/2019	0.96	0.99
* 9	02/24/2019 - 03/02/2019	0.96	0.99
*10	03/03/2019 - 03/09/2019	0.96	0.99
*11	03/10/2019 - 03/16/2019	0.97	1.00
*12	03/17/2019 - 03/23/2019	0.97	1.00
*13	03/24/2019 - 03/30/2019	0.97	1.00
*14	03/31/2019 - 04/06/2019	0.97	1.00
*15	04/07/2019 - 04/13/2019	0.98	1.01
*16	04/14/2019 - 04/20/2019	0.98	1.01
*17	04/21/2019 - 04/27/2019	0.98	1.01
18	04/28/2019 - 05/04/2019	0.99	1.02
19	05/05/2019 - 05/11/2019	0.99	1.02
20	05/12/2019 - 05/18/2019	1.00	1.03
21	05/19/2019 - 05/25/2019	1.00	1.03
22	05/26/2019 - 06/01/2019	1.01	1.04
23	06/02/2019 - 06/08/2019	1.01	1.04
24	06/09/2019 - 06/15/2019	1.02	1.05
25	06/16/2019 - 06/22/2019	1.02	1.05
26	06/23/2019 - 06/29/2019	1.02	1.05
27	06/30/2019 - 07/06/2019	1.02	1.05
28	07/07/2019 - 07/13/2019	1.03	1.06
29	07/14/2019 - 07/20/2019	1.03	1.06
30	07/21/2019 - 07/27/2019	1.03	1.06
31	07/28/2019 - 08/03/2019	1.02	1.05
32	08/04/2019 - 08/10/2019	1.02	1.05
33	08/11/2019 - 08/17/2019	1.02	1.05
34	08/18/2019 - 08/24/2019	1.02	1.05
35	08/25/2019 - 08/31/2019	1.02	1.05
36	09/01/2019 - 09/07/2019	1.03	1.06
37	09/08/2019 - 09/14/2019	1.03	1.06
38	09/15/2019 - 09/21/2019	1.03	1.06
39	09/22/2019 - 09/28/2019	1.02	1.05
40	09/29/2019 - 10/05/2019	1.01	1.04
41	10/06/2019 - 10/12/2019	1.00	1.03
42	10/13/2019 - 10/19/2019	0.99	1.02
43	10/20/2019 - 10/26/2019	1.00	1.03
44	10/27/2019 - 11/02/2019	1.00	1.03
45	11/03/2019 - 11/09/2019	1.01	1.04
46	11/10/2019 - 11/16/2019	1.01	1.04
47	11/17/2019 - 11/23/2019	1.02	1.05
48	11/24/2019 - 11/30/2019	1.02	1.05
49	12/01/2019 - 12/07/2019	1.02	1.05
50	12/08/2019 - 12/14/2019	1.03	1.06
51	12/15/2019 - 12/21/2019	1.03	1.06
52	12/22/2019 - 12/28/2019	1.02	1.05
53	12/29/2019 - 12/31/2019	1.01	1.04

\* PEAK SEASON

14-FEB-2020 15:39:30

830UPD

6\_8700\_PKSEASON.TXT

## Signal Timings

**TOD Schedule Report**  
for 2645: Alton Rd&16 St

Print Date:  
9/24/2019

Print Time:  
4:48 PM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2645	Alton Rd&16 St	DOW-3		[10] PRE-PM PEAK	150	130	N/A	1	Max 2

**Splits**

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
NBL	SBT	-	WBT	SBL	NBT	-	EBT
12	84	0	36	12	84	0	36

Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 NBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	15	8	8	4	2
2 SBT	7	7	7	14	14	14	5	5	5	1	1	1	40	40	40	0	0	0	4	2
3 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 WBT	7	7	7	24	24	24	7	7	7	2.5	2.5	2.5	12	12	12	36	29	29	4	2.1
5 SBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	15	8	8	4	2
6 NBT	7	7	7	14	14	14	5	5	5	1	1	1	40	40	40	0	0	0	4	2
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 EBT	7	7	7	24	24	24	7	7	7	2.5	2.5	2.5	12	12	12	36	29	29	4	2.1

Last In Service Date: unknown

<b>Permitted Phases</b>	
	<b>12345678</b>
Default	12-456-8
External Permit 0	12-456-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

**TOD Schedule Report**  
for 2645: Alton Rd&16 St

Print Date:  
9/24/2019

Print Time:  
4:48 PM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 NBL	2 SBT	3 -	4 WBT	5 SBL	6 NBT	7 -	8 EBT		
1		100	7	44	0	31	7	44	0	31	0	0
3		120	7	64	0	31	7	64	0	31	0	100
5		150	13	84	0	35	13	84	0	35	0	70
10		150	12	84	0	36	12	84	0	36	0	130
13		130	12	69	0	31	12	69	0	31	0	38
19		120	10	61	0	31	10	61	0	31	0	30
20		140	12	74	0	36	12	74	0	36	0	98
21		140	9	80	0	33	9	80	0	33	0	70
22		120	13	58	0	31	13	58	0	31	0	15
25		140	6	80	0	36	6	80	0	36	0	56
26		200	6	140	0	36	6	140	0	36	0	164
27		180	6	120	0	36	6	120	0	36	0	84

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

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-----	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 OPERATING PLAN



	Direction	NB		SB		EB		WB		Ped Heads					
Timing Phases	Head No.	1/6	6	5/2	2	8		4		P2	P6	P4	P8	Movements/Display/Actuation	
(1+5) N/SBLT ALTON RD (ACTUATE)	Dwell	<G/R	R	<G/R	R	R		R		DW	DW	DW	DW		
	Clear to	(1+6)	<G/R	R	<Y/R	R	R		R		DW	DW	DW		DW
		(2+5)	<Y/R	R	<G/R	R	R		R		DW	DW	DW		DW
		(2+6)	<Y/R	R	<Y/R	R	R		R		DW	DW	DW		DW
(2+5) NB ALTON RD (ACTUATE)	Dwell	R	R	<G/G	G	R		R		W/F	DW	DW	DW		
	Clear to	(2+6)	R	R	<Y/G	G	R		R		DW	DW	DW		DW
(1+6) SB ALTON RD (RECALL)	Dwell	<G/G	G	R	R	R		R		DW	W/F	DW	DW		
	Clear to	(2+6)	<Y/G	G	R	R	R		R		DW	DW	DW		DW
(2+6) N/SB ALTON RD (RECALL)	Dwell	G	G	G	G	R		R		W/F	W/F	DW	DW		
	Clear to	(4+8)	Y	Y	Y	Y	R		R		DW	DW	DW		DW
(4+8) E/WB 16 ST (ACTUATED)	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
		(1+6)	R	R	R	R	Y		Y		DW	DW	DW		DW
		(2+6)	R	R	R	R	Y		Y		DW	DW	DW		DW
		(2+6)	R	R	R	R	Y		Y		DW	DW	DW		DW

Flashing Operation

FY FY FY FY FR FR

Page 1 of 1

## Miami-Dade County Public Works Department

Drawn WILLIAM RIVERA PAZ	Date 1/6/2015	<b>ALTON RD &amp; 16 ST</b>			
Checked H. PERINSON	Date 1/7/15	Placed in Service	Phasing No.	Asset Number	
		Date 01/16/15 By EEC	4	2645	

**Attachment G-1**  
Growth Rate Calculations

**FDOT Growth Rate Summary**

Station Number	Location	Historic Growth- Linear				Historic Growth- Exponential				Historic Growth- Decaying Exponential			
		5-year	R-squared	10-year	R-squared	5-year	R-squared	10-year	R-squared	5-year	R-squared	10-year	R-squared
2542	SR 907/Alton Road -- 200 feet south of Venetian Causeway	-1.93%	7.56%	-1.28%	12.81%	-1.65%	5.10%	-1.27%	11.70%	-3.28%	21.15%	-1.75%	20.63%
8415	West Avenue -- 100 feet north of 12th Street	-1.27%	75.00%	-	-	-1.29%	75.00%	-	-	-1.07%	60.25%	-	-
8566	15th Street -- 200 feet east of Jefferson Avenue	-1.30%	9.78%	-	-	-1.32%	10.00%	-	-	-1.64%	15.90%	-	-
8567	16th Street -- 200 feet east of Meridian Avenue	-9.02%	76.98%	-	-	-11.62%	72.71%	-	-	-9.07%	58.12%	-	-
<b>Total</b>		<b>-3.38%</b>	<b>42.33%</b>	<b>-1.28%</b>	<b>12.81%</b>	<b>-3.97%</b>	<b>40.70%</b>	<b>-1.27%</b>	<b>11.70%</b>	<b>-3.77%</b>	<b>38.86%</b>	<b>-1.75%</b>	<b>20.63%</b>

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 2542 - SR 907/ALTON RD, 200' S OF VENETIAN CSWY

YEAR	AADT		DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
----	-----		-----	-----	-----	-----	-----
2019	35000	F	N 17500	S 17500	9.00	54.60	3.50
2018	35000	C	N 17500	S 17500	9.00	54.30	3.50
2017	33000	C	N 16500	S 16500	9.00	55.00	2.80
2016	30000	C	N 15000	S 15000	9.00	54.50	5.90
2015	41000	C	N 21000	S 20000	9.00	54.70	1.60
2014	30500	F	N 14000	S 16500	9.00	54.50	7.60
2013	30500	C	N 14000	S 16500	9.00	52.40	7.60
2012	37000	C	N 19000	S 18000	9.00	55.70	7.50
2011	39500	C	N 19000	S 20500	9.00	55.10	1.50
2010	39000	C	N 20000	S 19000	8.98	54.08	1.50
2009	38500	C	N 19000	S 19500	8.99	53.24	6.20
2008	37500	C	N 17500	S 20000	9.09	55.75	4.80
2007	39500	C	N 18500	S 21000	8.01	54.34	5.20
2006	36500	C	N 17500	S 19000	7.97	54.22	1.60
2005	34000	C	N 17000	S 17000	8.80	53.80	9.30
2004	39000	C	N 18500	S 20500	9.00	53.30	9.30

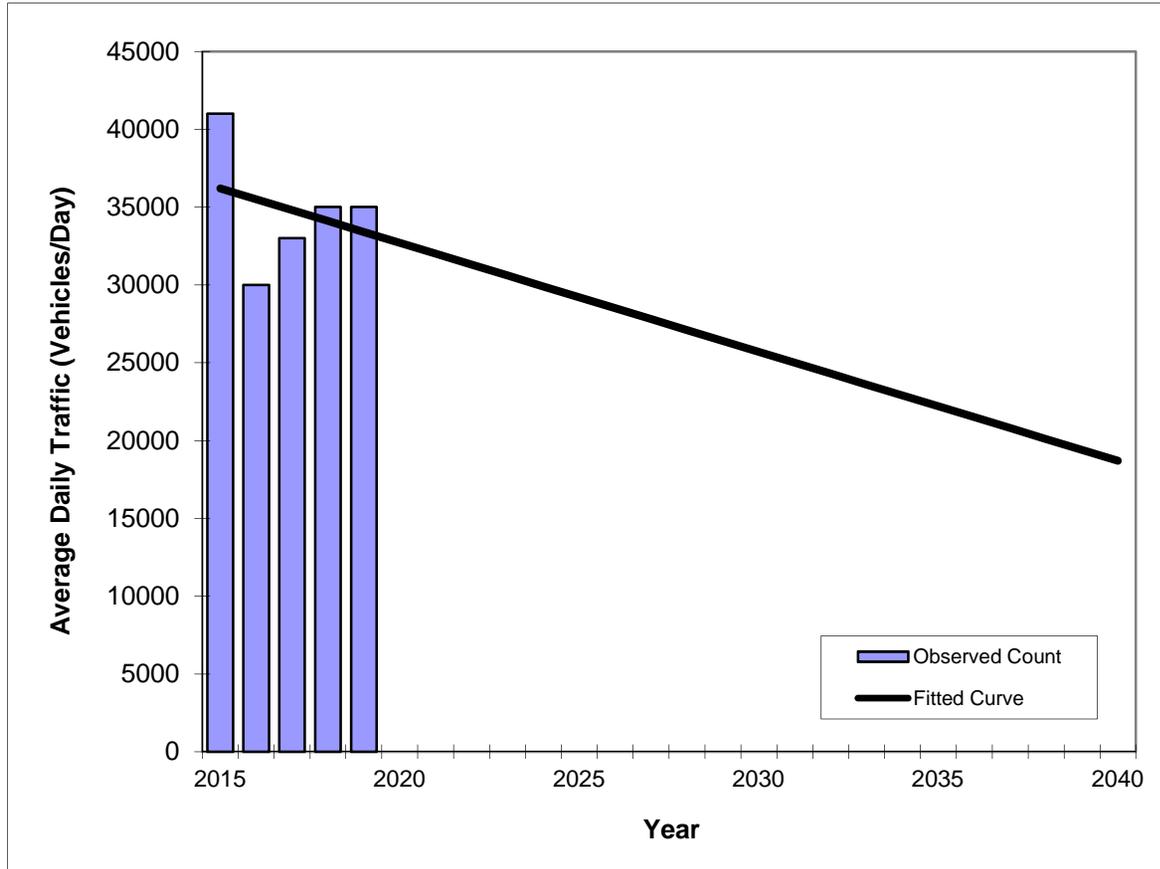
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE  
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

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

## Traffic Trends

**SR 907/Alton Road -- 200 feet south of Venetian Causeway**

<b>County:</b>	Miami (87)
<b>Station #:</b>	2542
<b>Highway:</b>	SR 907/Alton Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	41000	36200
2016	30000	35500
2017	33000	34800
2018	35000	34100
2019	35000	33400

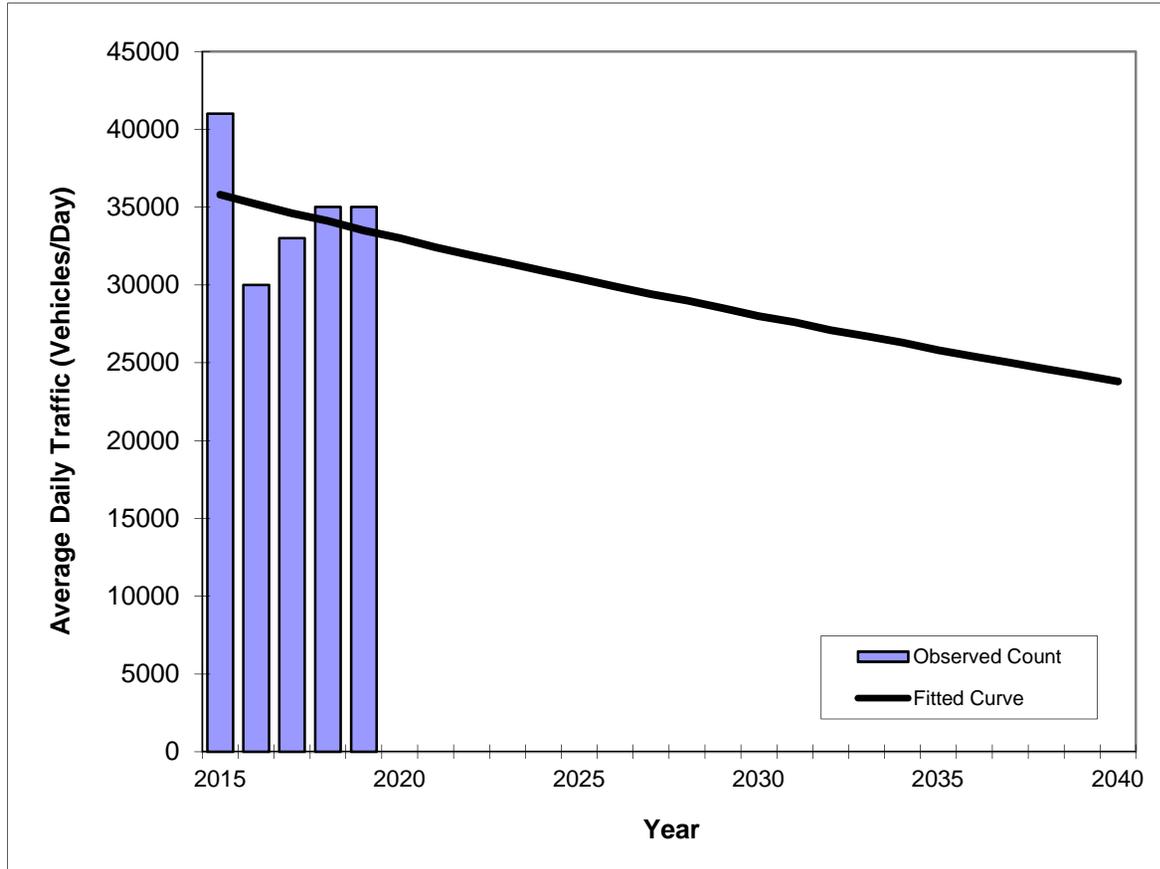
Trend R-squared:	7.56%
Trend Annual Historic Growth Rate:	-1.93%
Printed:	28-May-20
<b>Straight Line Growth Option</b>	

\*Axle-Adjusted

## Traffic Trends

**SR 907/Alton Road -- 200 feet south of Venetian Causeway**

<b>County:</b>	Miami (87)
<b>Station #:</b>	2542
<b>Highway:</b>	SR 907/Alton Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	41000	35800
2016	30000	35200
2017	33000	34600
2018	35000	34100
2019	35000	33500

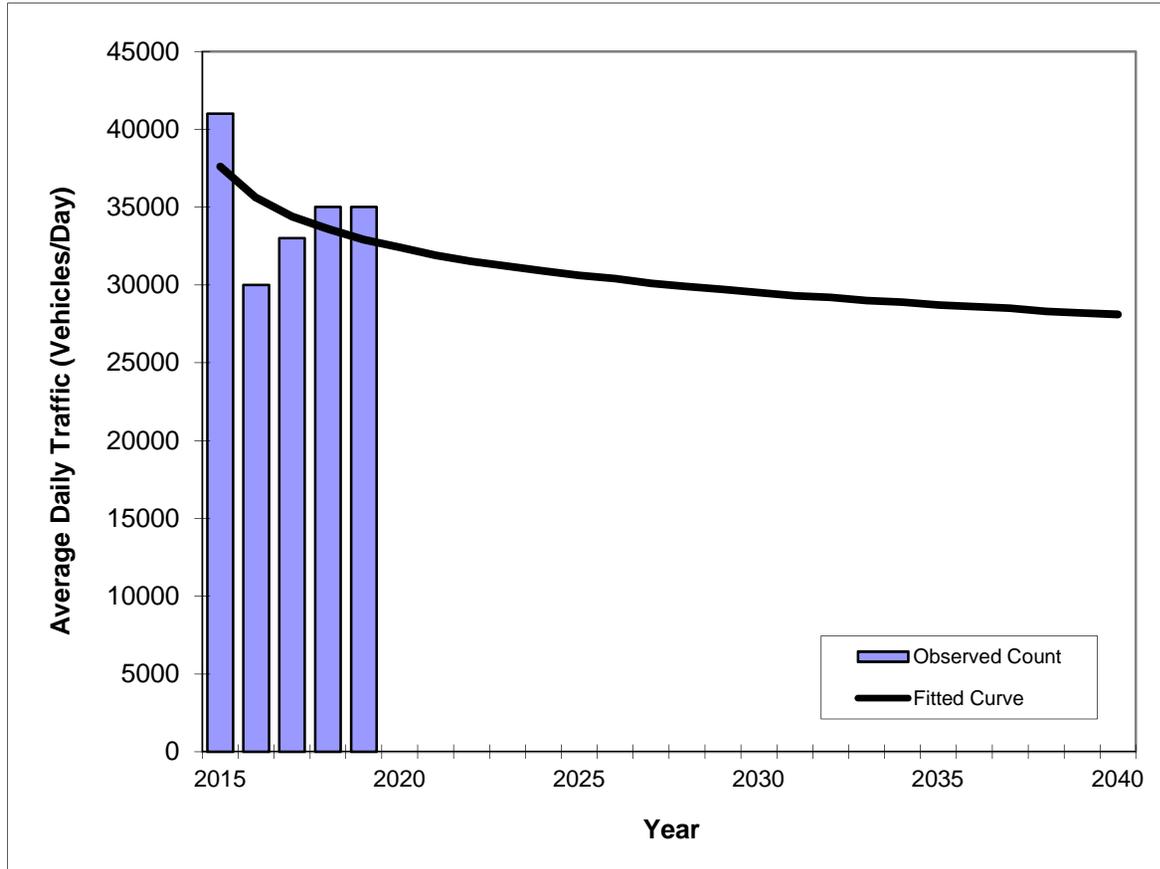
Trend R-squared:	5.10%
Compounded Annual Historic Growth Rate:	-1.65%
Printed:	28-May-20
<b>Exponential Growth Option</b>	

\*Axle-Adjusted

## Traffic Trends

**SR 907/Alton Road -- 200 feet south of Venetian Causeway**

<b>County:</b>	Miami (87)
<b>Station #:</b>	2542
<b>Highway:</b>	SR 907/Alton Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	41000	37600
2016	30000	35600
2017	33000	34400
2018	35000	33600
2019	35000	32900

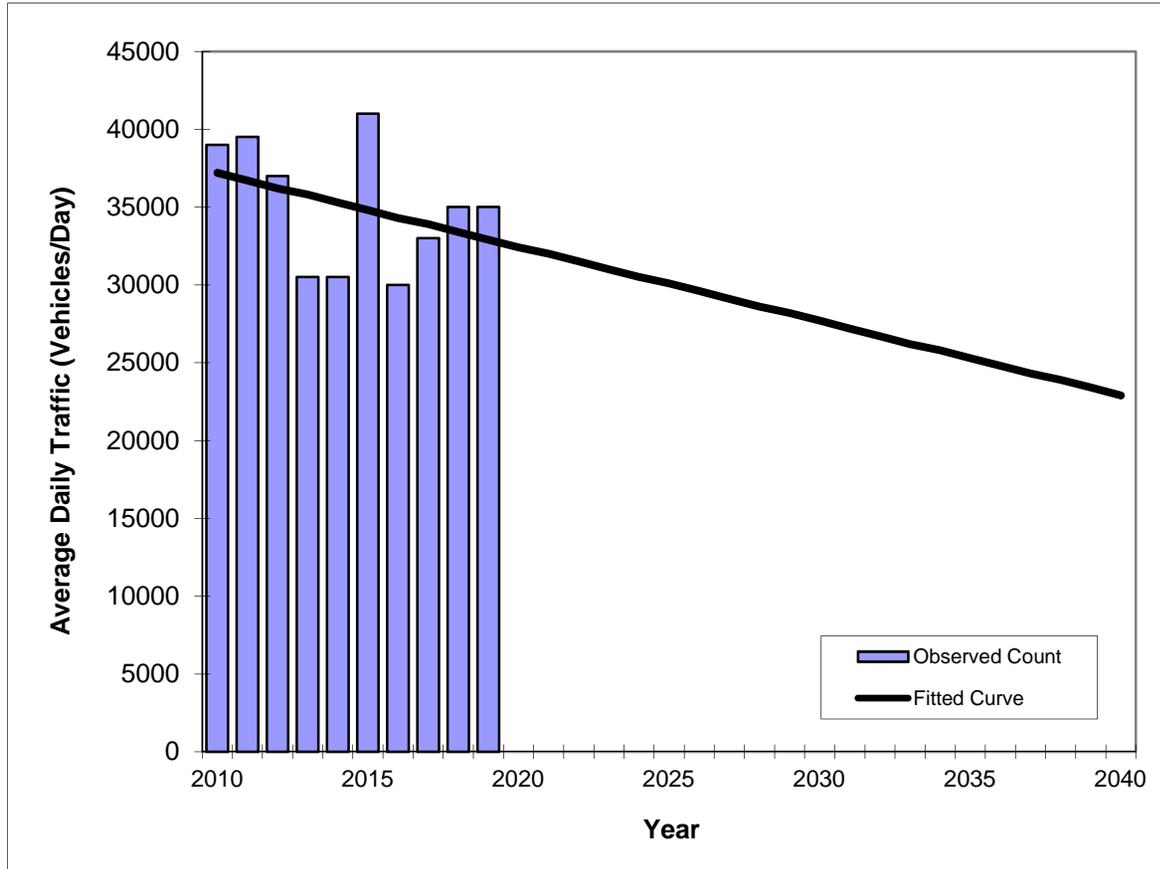
Trend R-squared:	21.15%
Compounded Annual Historic Growth Rate:	-3.28%
Printed:	28-May-20
<b>Decaying Exponential Growth Option</b>	

\*Axle-Adjusted

## Traffic Trends

**SR 907/Alton Road -- 200 feet south of Venetian Causeway**

<b>County:</b>	Miami (87)
<b>Station #:</b>	2542
<b>Highway:</b>	SR 907/Alton Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2010	39000	37200
2011	39500	36700
2012	37000	36200
2013	30500	35800
2014	30500	35300
2015	41000	34800
2016	30000	34300
2017	33000	33900
2018	35000	33400
2019	35000	32900

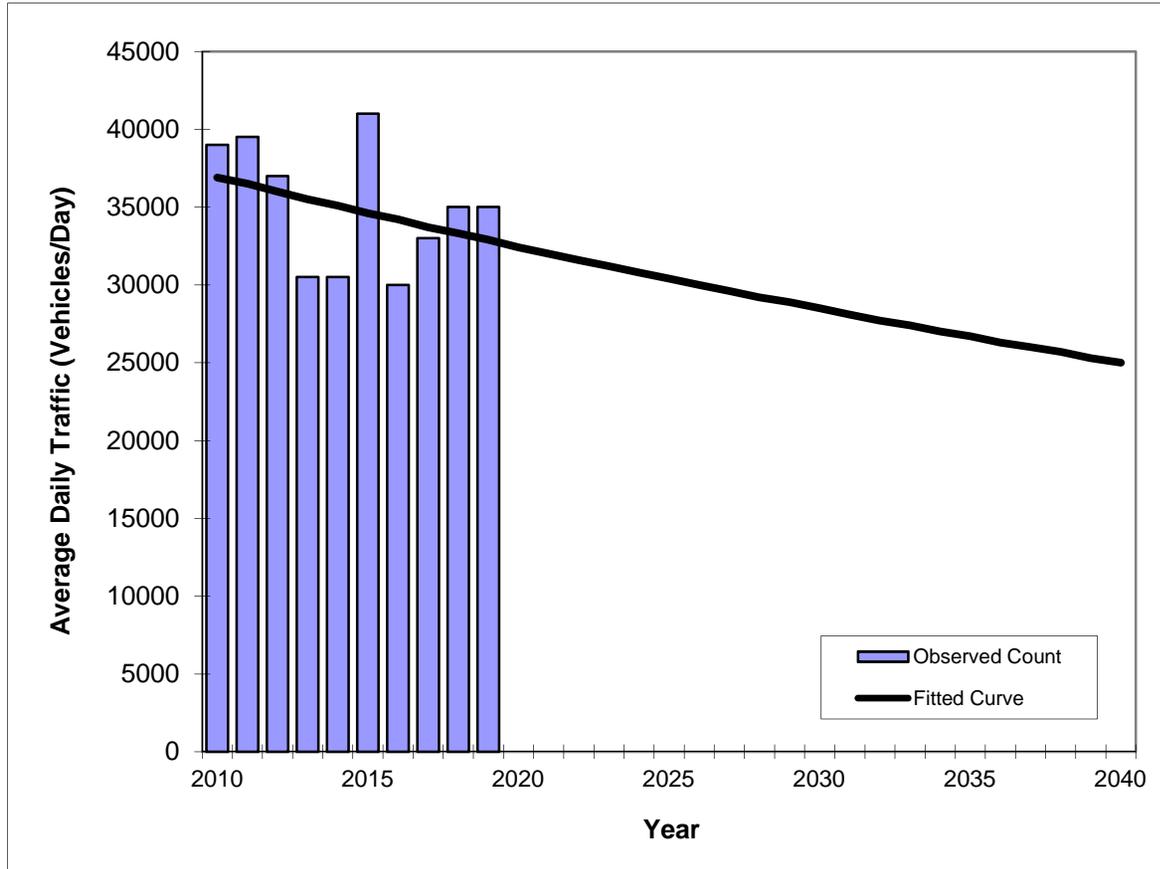
Trend R-squared:	12.81%
Trend Annual Historic Growth Rate:	-1.28%
Printed:	28-May-20
<b>Straight Line Growth Option</b>	

\*Axle-Adjusted

## Traffic Trends

**SR 907/Alton Road -- 200 feet south of Venetian Causeway**

<b>County:</b>	Miami (87)
<b>Station #:</b>	2542
<b>Highway:</b>	SR 907/Alton Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2010	39000	36900
2011	39500	36500
2012	37000	36000
2013	30500	35500
2014	30500	35100
2015	41000	34600
2016	30000	34200
2017	33000	33700
2018	35000	33300
2019	35000	32900

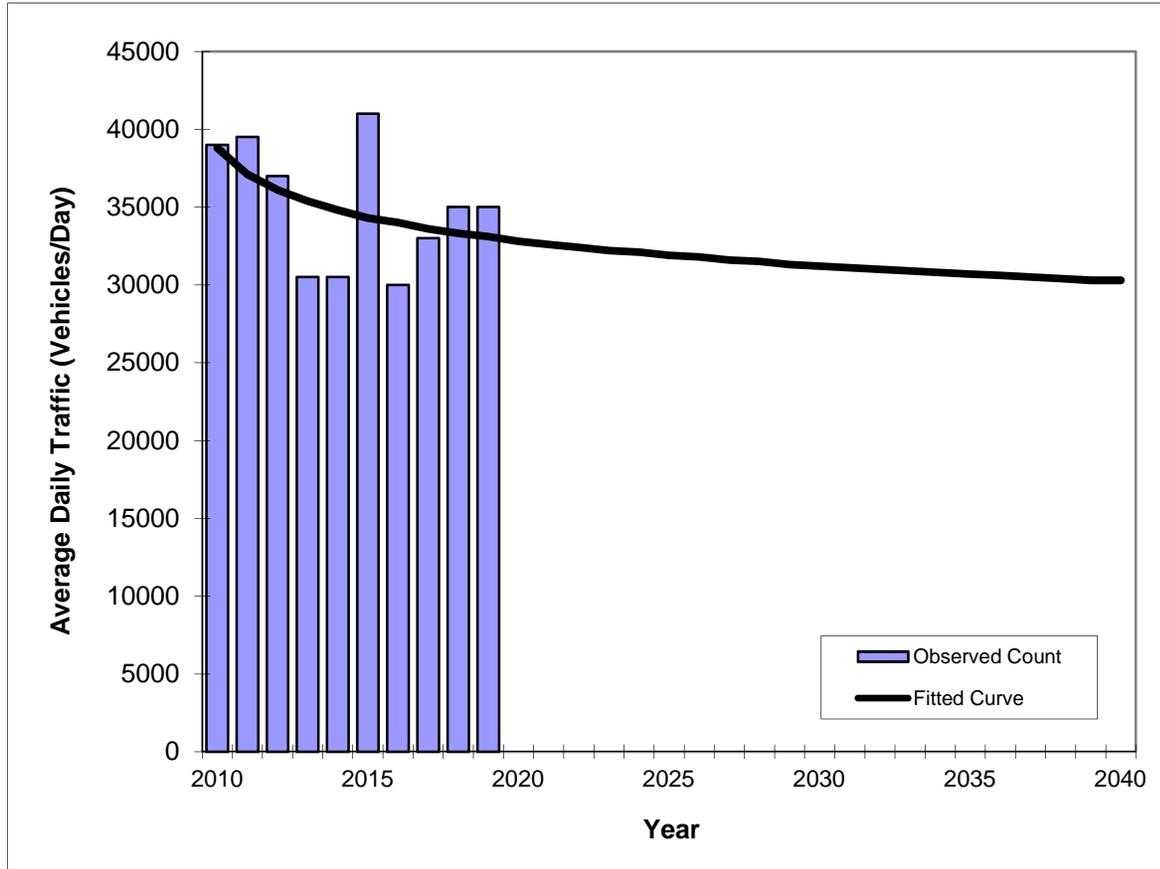
Trend R-squared:	11.70%
Compounded Annual Historic Growth Rate:	-1.27%
Printed:	28-May-20
<b>Exponential Growth Option</b>	

\*Axle-Adjusted

## Traffic Trends

**SR 907/Alton Road -- 200 feet south of Venetian Causeway**

<b>County:</b>	Miami (87)
<b>Station #:</b>	2542
<b>Highway:</b>	SR 907/Alton Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2010	39000	38800
2011	39500	37100
2012	37000	36100
2013	30500	35400
2014	30500	34800
2015	41000	34300
2016	30000	34000
2017	33000	33600
2018	35000	33300
2019	35000	33100

Trend R-squared:	20.63%
Compounded Annual Historic Growth Rate:	-1.75%
Printed:	28-May-20
<b>Decaying Exponential Growth Option</b>	

\*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 8415 - WEST AVE, 100 FT N OF 12TH ST MIAMI BEACH(2011 OFFSYS)

YEAR	AADT		DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2019	22500	F	N 11500	S 11000	9.00	56.00	4.00
2018	22500	C	N 11500	S 11000	9.00	54.30	3.00
2017	23500	T	N 10500	S 13000	9.00	59.30	2.50
2016	23500	S	N 10500	S 13000	9.00	56.10	5.10
2015	23500	F	N 10500	S 13000	9.00	57.40	7.10
2014	23500	C	N 10500	S 13000	9.00	59.30	10.70
2013	15000	F	0	0	9.00	58.90	16.20
2012	15000	C	N 0	S 0	9.00	59.70	16.00

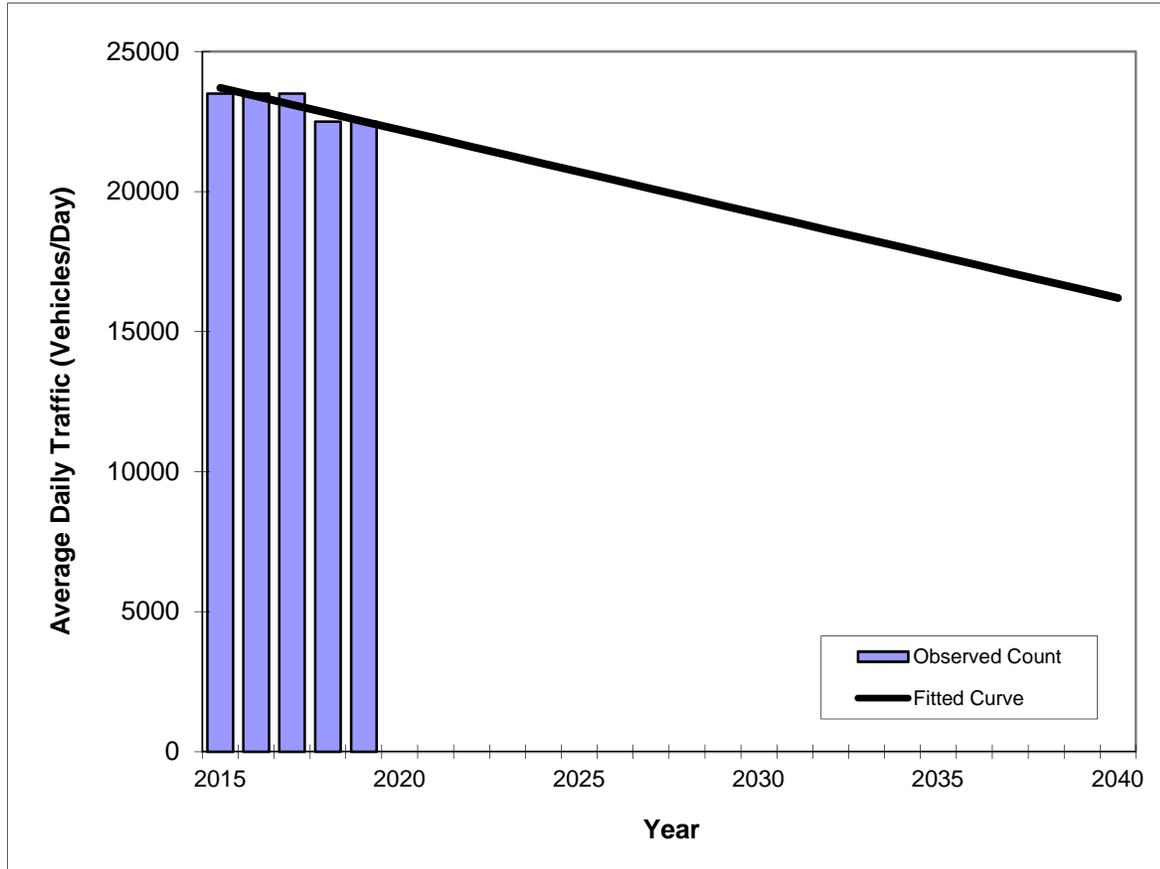
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE  
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

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

## Traffic Trends

West Avenue -- 100 feet north of 12th Street

County:	Miami (87)
Station #:	8415
Highway:	West Avenue



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	23500	23700
2016	23500	23400
2017	23500	23100
2018	22500	22800
2019	22500	22500

Trend R-squared: 75.00%  
 Trend Annual Historic Growth Rate: -1.27%  
 Printed: 28-May-20

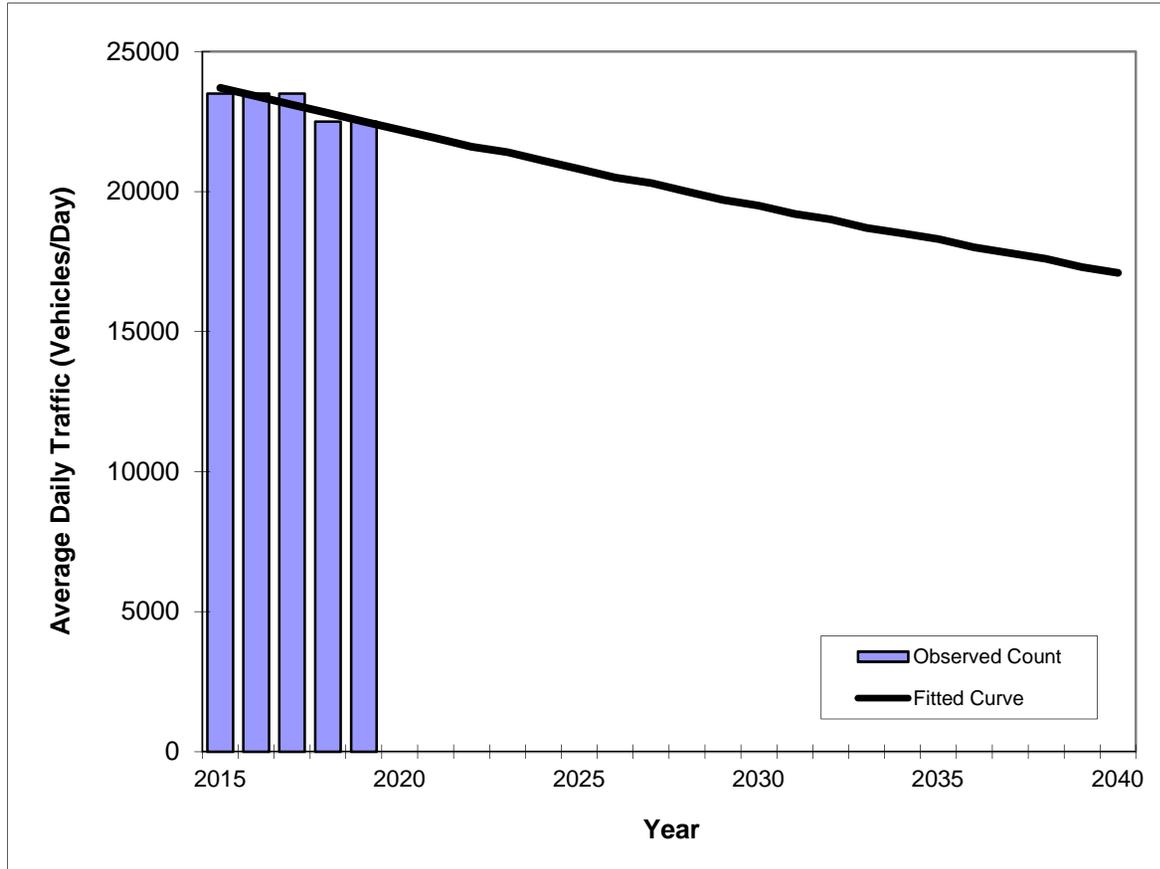
**Straight Line Growth Option**

\*Axle-Adjusted

## Traffic Trends

West Avenue -- 100 feet north of 12th Street

County:	Miami (87)
Station #:	8415
Highway:	West Avenue



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	23500	23700
2016	23500	23400
2017	23500	23100
2018	22500	22800
2019	22500	22500

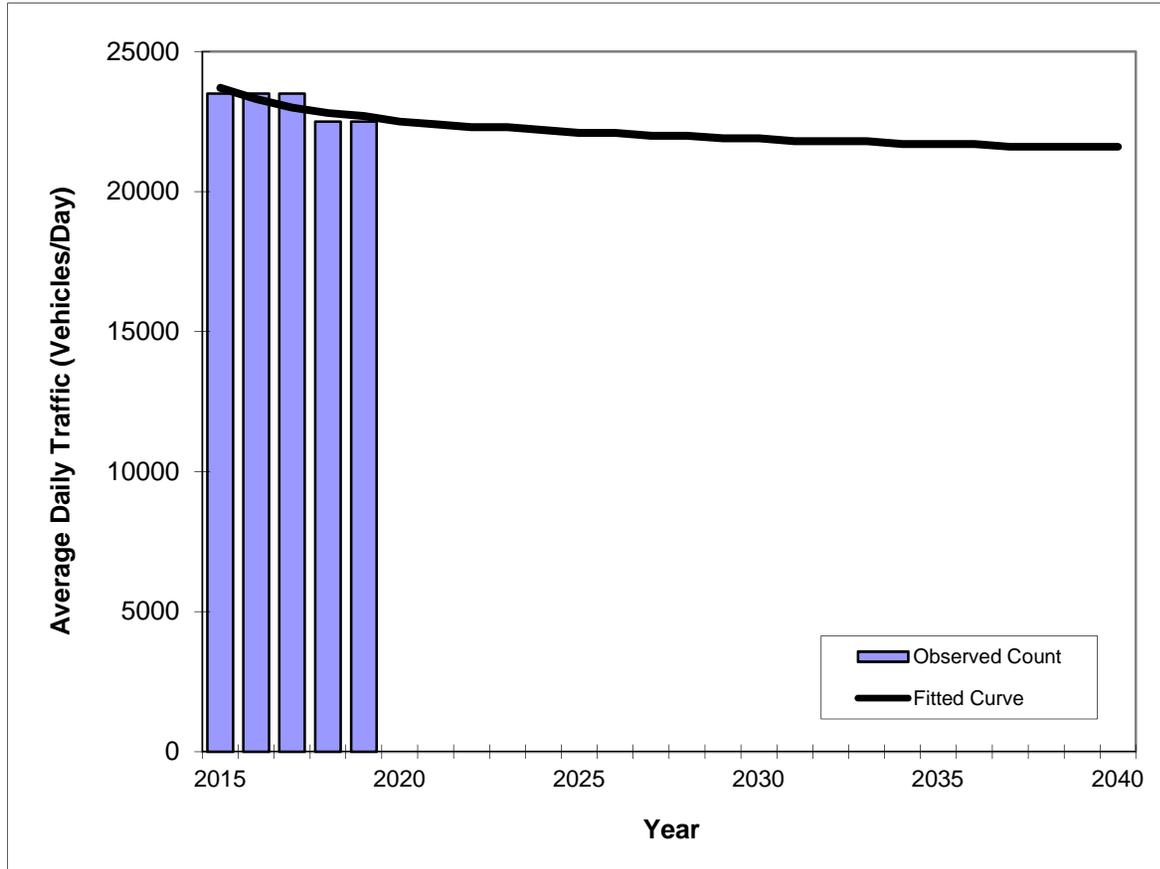
Trend R-squared: 75.00%  
 Compounded Annual Historic Growth Rate: -1.29%  
 Printed: 28-May-20  
**Exponential Growth Option**

\*Axle-Adjusted

## Traffic Trends

West Avenue -- 100 feet north of 12th Street

County:	Miami (87)
Station #:	8415
Highway:	West Avenue



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	23500	23700
2016	23500	23300
2017	23500	23000
2018	22500	22800
2019	22500	22700

Trend R-squared:	60.25%
Compounded Annual Historic Growth Rate:	-1.07%
Printed:	28-May-20
<b>Decaying Exponential Growth Option</b>	

\*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

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

YEAR	AADT		DIRECTION 1		DIRECTION 2		*K FACTOR	D FACTOR	T FACTOR
2019	7800	C	E	3900	W	3900	9.00	56.00	4.00
2018	6700	T	E	4000	W	2700	9.00	54.30	3.00
2017	7500	S	E	4500	W	3000	9.00	59.30	2.50
2016	7600	F	E	4600	W	3000	9.00	56.10	5.10
2015	7800	C	E	4700	W	3100	9.00	57.40	7.10
2014	9100	S					9.00	59.30	10.70
2013	9200	F		0		0	9.00	58.90	16.20
2012	9200	C	E	0	W	0	9.00	59.70	16.00

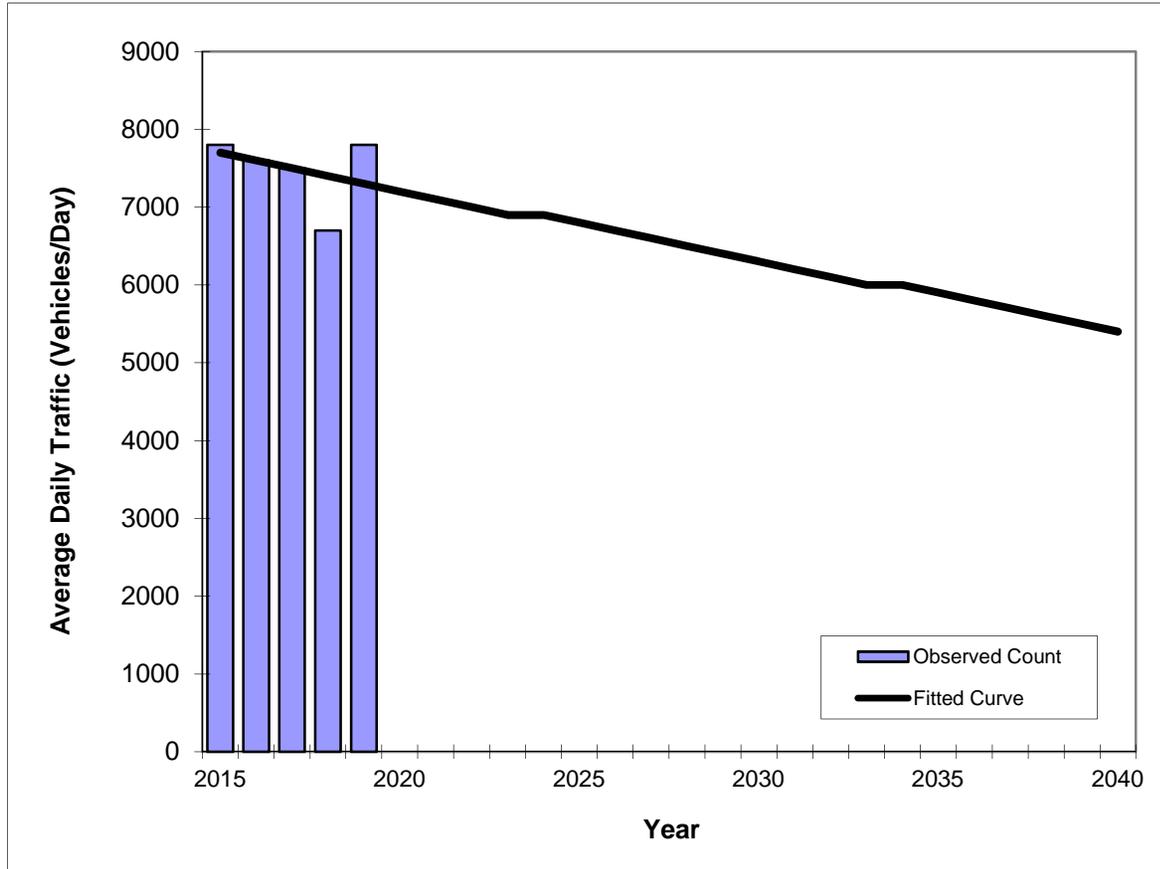
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE  
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

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

## Traffic Trends

15th Street -- 200 feet east of Jefferson Avenue

County:	Miami (87)
Station #:	8566
Highway:	15th Street



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	7800	7700
2016	7600	7600
2017	7500	7500
2018	6700	7400
2019	7800	7300

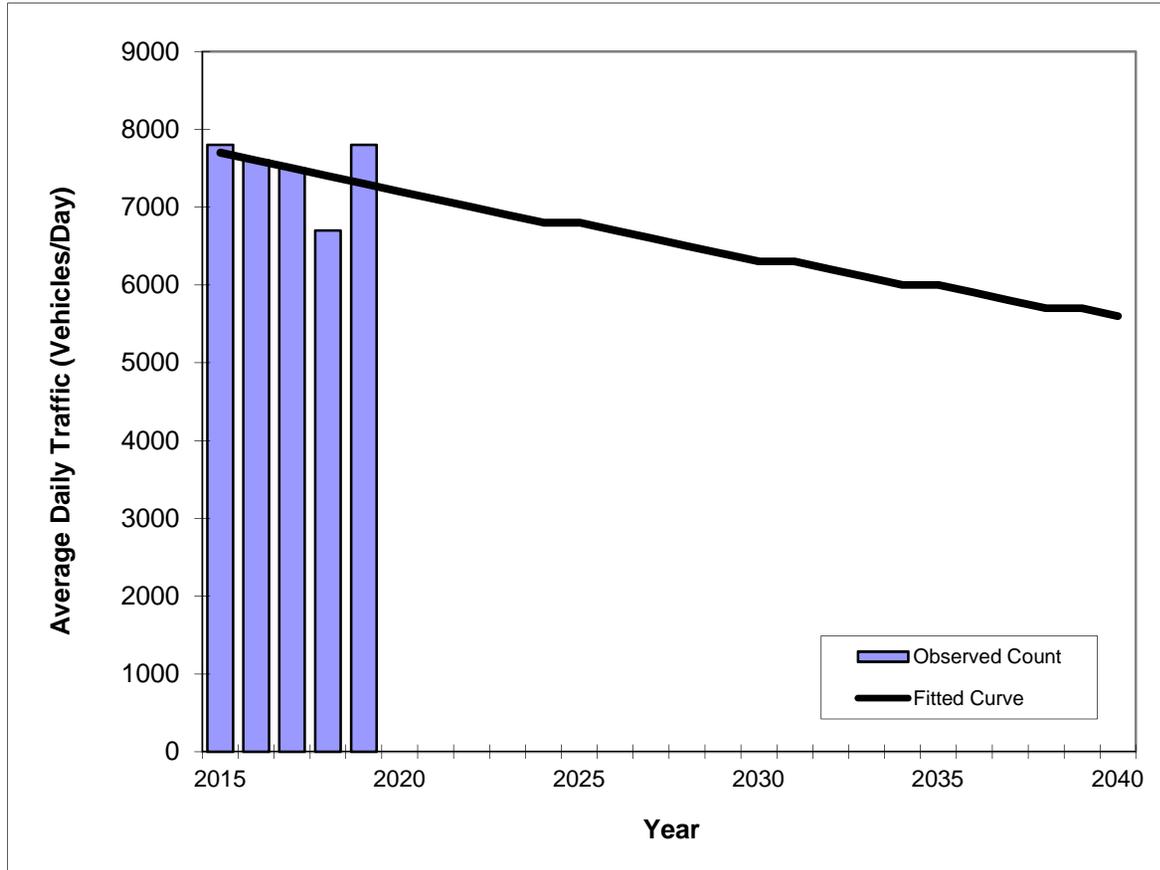
Trend R-squared:	9.78%
Trend Annual Historic Growth Rate:	-1.30%
Printed:	28-May-20
<b>Straight Line Growth Option</b>	

\*Axle-Adjusted

# Traffic Trends

15th Street -- 200 feet east of Jefferson Avenue

County:	Miami (87)
Station #:	8566
Highway:	15th Street



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	7800	7700
2016	7600	7600
2017	7500	7500
2018	6700	7400
2019	7800	7300

Trend R-squared: 10.00%  
 Compounded Annual Historic Growth Rate: -1.32%  
 Printed: 28-May-20

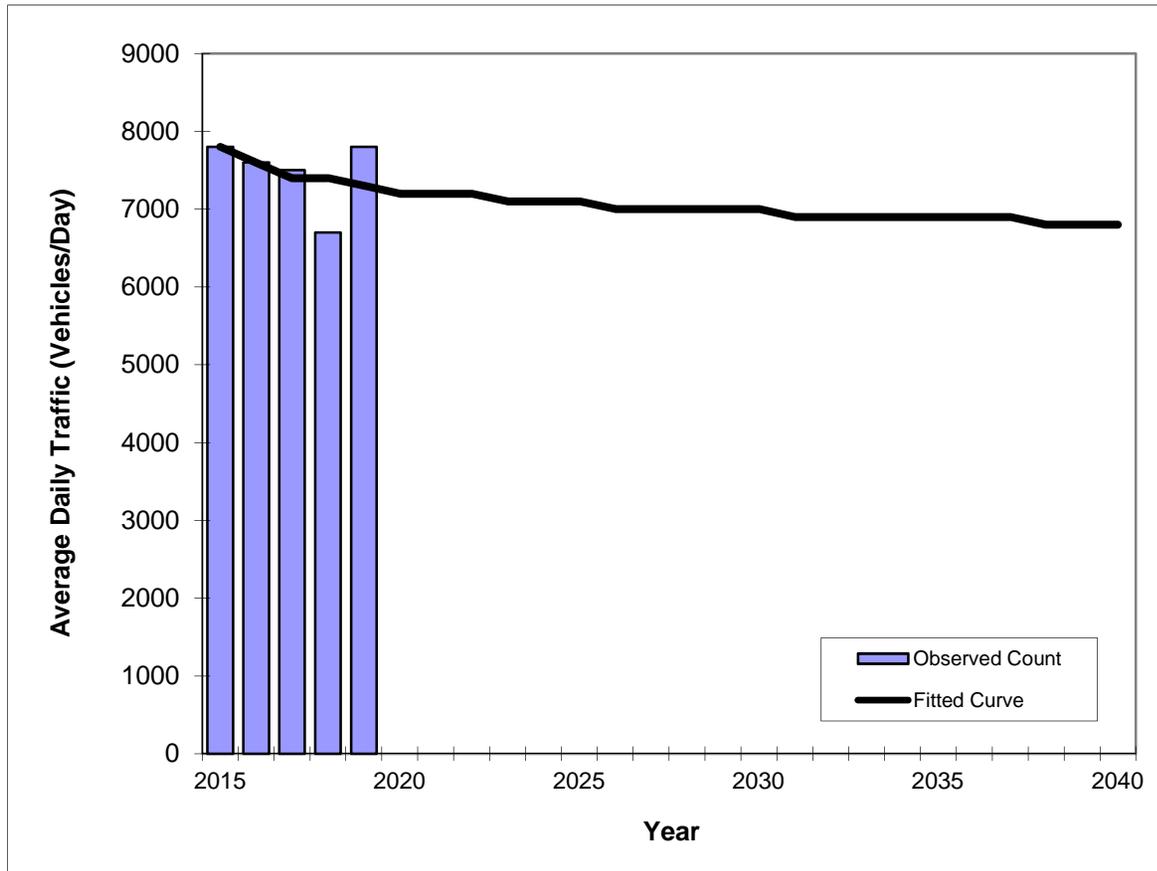
**Exponential Growth Option**

\*Axle-Adjusted

## Traffic Trends

15th Street -- 200 feet east of Jefferson Avenue

County:	Miami (87)
Station #:	8566
Highway:	15th Street



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	7800	7800
2016	7600	7600
2017	7500	7400
2018	6700	7400
2019	7800	7300

Trend R-squared:	15.90%
Compounded Annual Historic Growth Rate:	-1.64%
Printed:	28-May-20
<b>Decaying Exponential Growth Option</b>	

\*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION  
 TRANSPORTATION STATISTICS OFFICE  
 2019 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

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

YEAR	AADT		DIRECTION 1		DIRECTION 2		*K FACTOR	D FACTOR	T FACTOR
2019	5300	C	E	2600	W	2700	9.00	56.00	4.00
2018	7800	T	E	3800	W	4000	9.00	54.30	3.00
2017	8700	S	E	4200	W	4500	9.00	59.30	2.50
2016	8900	F	E	4300	W	4600	9.00	56.10	5.10
2015	9100	C	E	4400	W	4700	9.00	57.40	7.10
2014	9700	S					9.00	59.30	10.70
2013	9800	F		0		0	9.00	58.90	16.20
2012	9900	C	E	0	W	0	9.00	59.70	16.00

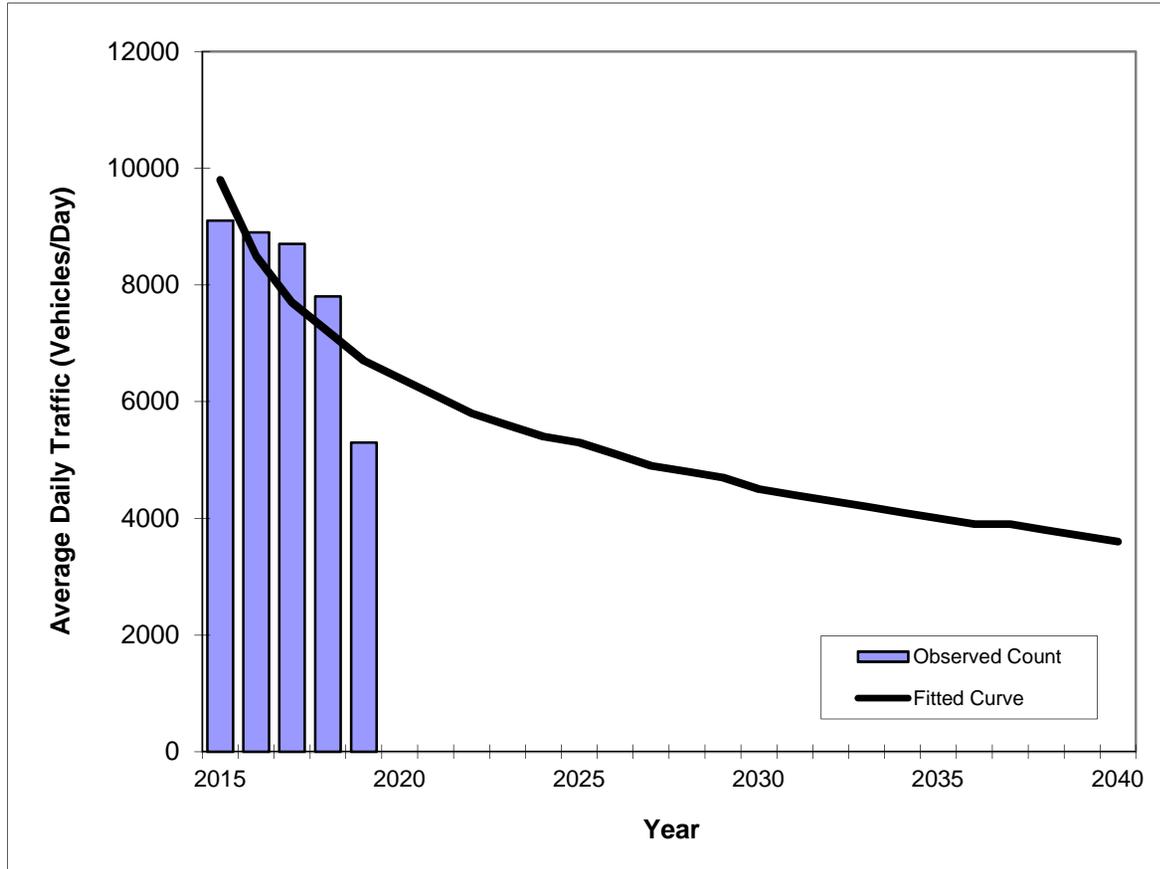
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE  
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE  
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

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

## Traffic Trends

16th Street -- 200 feet east of Meridian Avenue

County:	Miami (87)
Station #:	8567
Highway:	16th Street



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	9100	9800
2016	8900	8500
2017	8700	7700
2018	7800	7200
2019	5300	6700

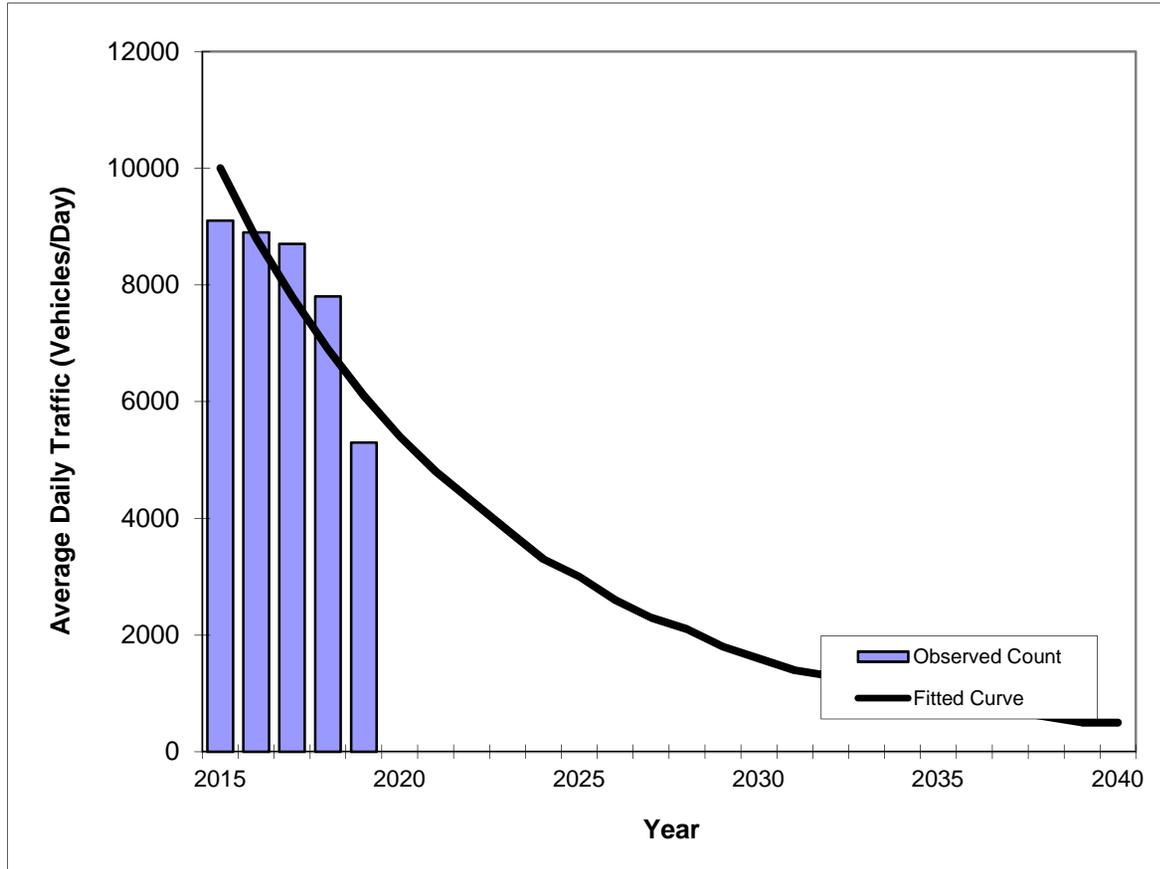
Trend R-squared: 58.12%  
 Compounded Annual Historic Growth Rate: -9.07%  
 Printed: 28-May-20  
**Decaying Exponential Growth Option**

\*Axle-Adjusted

## Traffic Trends

**16th Street -- 200 feet east of Meridian Avenue**

<b>County:</b>	Miami (87)
<b>Station #:</b>	8567
<b>Highway:</b>	16th Street



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	9100	10000
2016	8900	8800
2017	8700	7800
2018	7800	6900
2019	5300	6100

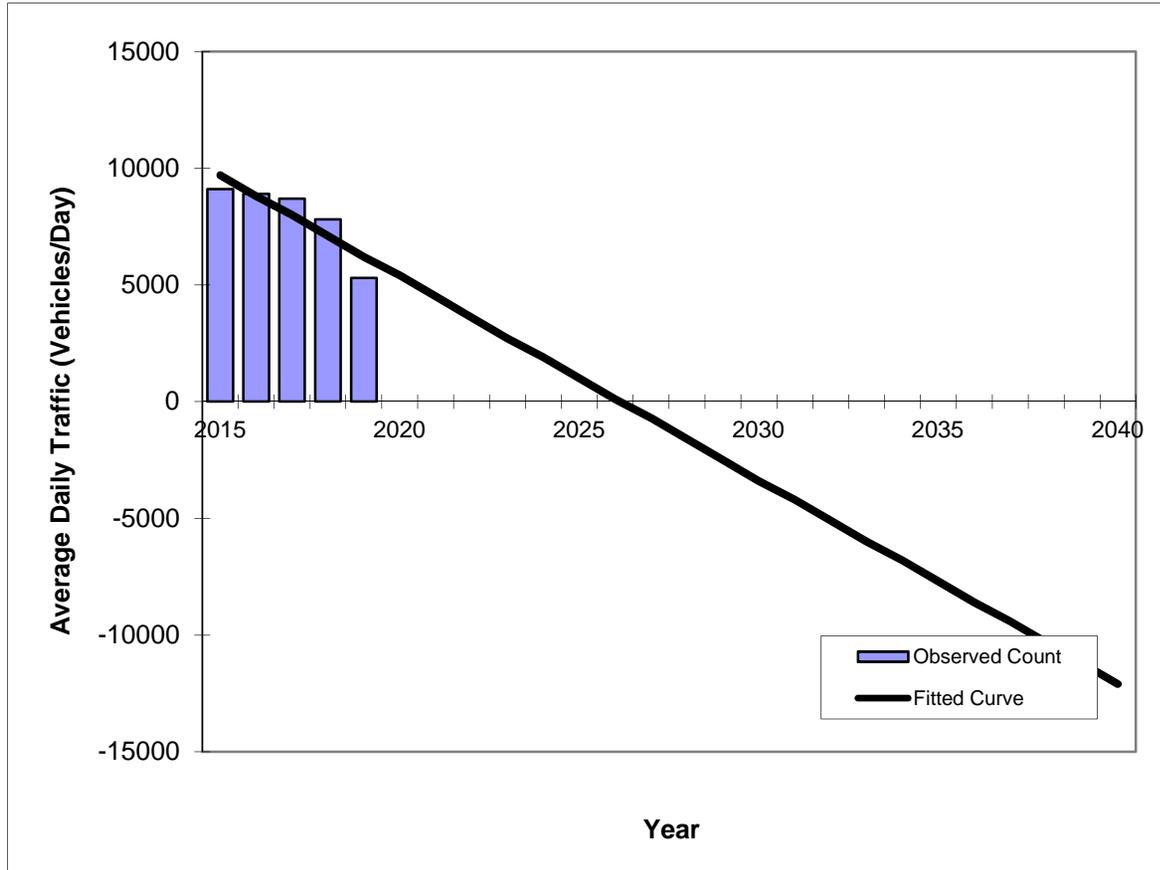
Trend R-squared:	72.71%
Compounded Annual Historic Growth Rate:	-11.62%
Printed:	28-May-20
<b>Exponential Growth Option</b>	

\*Axle-Adjusted

# Traffic Trends

16th Street -- 200 feet east of Meridian Avenue

County:	Miami (87)
Station #:	8567
Highway:	16th Street



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2015	9100	9700
2016	8900	8800
2017	8700	8000
2018	7800	7100
2019	5300	6200

Trend R-squared: 76.98%  
 Trend Annual Historic Growth Rate: -9.02%  
 Printed: 28-May-20

**Straight Line Growth Option**

\*Axle-Adjusted

<b>SERPM Growth Rate Summary</b>					
<b>Street Name</b>	<b>2015</b>	<b>2045</b>	<b>Difference</b>	<b>Growth Rate</b>	<b>Annual Growth Rate</b>
<b>SR-907/Alton Road</b>	38,383	43,976	5,593	14.57%	0.49%
	35,263	39,515	4,252	12.06%	0.40%
	36,200	42,232	6,032	16.66%	0.56%
	38,699	42,948	4,249	10.98%	0.37%
<b>17th Street</b>	18,968	24,328	5,360	28.26%	0.94%
	20,498	25,763	5,265	25.69%	0.86%
<b>15th Street</b>	7,520	10,490	2,970	39.49%	1.32%
	7,717	10,928	3,211	41.61%	1.39%
<b>Total</b>	<b>203,248</b>	<b>240,180</b>	<b>36,932</b>	<b>18.17%</b>	<b>0.61%</b>





## **Attachment H-1**

Volume Development Worksheets and Figures

16<sup>th</sup> Street Valet Drop-off/Pick-up Area

# TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: SR 907/Alton Road and 16th Street  
 COUNT DATE: January 23, 2020  
 PM PEAK HOUR FACTOR: 0.92  
 WEEKEND PEAK HOUR FACTOR: 0.95

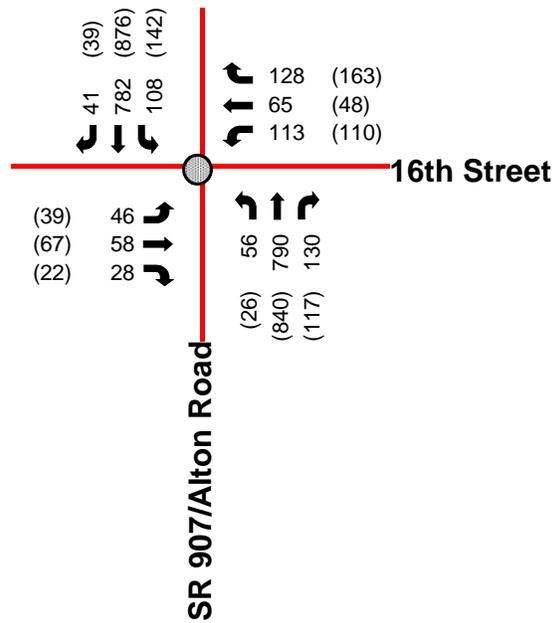
"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
PM Raw Turning Movements			45	56	27		110	63	124		54	767	126		105	759	40		
Peak Season Correction Factor		1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030		
PM EXISTING CONDITIONS			46	58	28		113	65	128		56	790	130		108	782	41		
"WEEKEND EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
Weekend Raw Turning Movements			38	65	21		107	47	158		25	816	114		138	850	38		
Peak Season Correction Factor		1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030		
WEEKEND EXISTING CONDITIONS			39	67	22		110	48	163		26	840	117		142	876	39		
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
TOTAL "VESTED" TRAFFIC			0	0	0		0	0	0		0	0	0		0	0	0		
Years To Buildout		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Yearly Growth Rate		0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%		
PM BACKGROUND TRAFFIC GROWTH			1	1	0		1	1	2		1	10	2		1	10	1		
PM NON-PROJECT TRAFFIC			47	59	28		114	66	130		57	800	132		109	792	42		
"WEEKEND BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR		
TOTAL "VESTED" TRAFFIC			0	0	0		0	0	0		0	0	0		0	0	0		
Years To Buildout		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
Yearly Growth Rate		0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%		
WEEKEND BACKGROUND TRAFFIC GROWTH			0	1	0		1	1	2		0	10	1		2	11	0		
WEEKEND NON-PROJECT TRAFFIC			39	68	22		111	49	165		26	850	118		144	887	39		
"PM PROJECT DISTRIBUTION"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																		
	Exiting																		
Valet Distribution	Entering																		
	Exiting																		
Net New Distribution	Entering			5.0%															
	Exiting																		
"WEEKEND PROJECT DISTRIBUTION"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Pass-By Distribution	Entering																		
	Exiting																		
Valet Distribution	Entering																		
	Exiting																		
Net New Distribution	Entering			5.0%															
	Exiting																		
"PM PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
PM TRAFFIC DIVERSIONS																			
Project Trips	Pass - By																		
	Valet			18															
	Net New			2															
PM TOTAL PROJECT TRAFFIC					0	20	0		0	0	0		33	-10	24		29	-10	0
PM TOTAL TRAFFIC			47	79	28		114	66	130		90	790	156		138	782	42		
"WEEKEND PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
WEEKEND TRAFFIC DIVERSIONS																			
Project Trips	Pass - By																		
	Valet			27															
	Net New			3															
WEEKEND TOTAL PROJECT TRAFFIC					0	30	0		0	0	0		39	0	26		35	0	0
WEEKEND TOTAL TRAFFIC			39	98	22		111	49	165		65	850	144		179	887	39		



NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX P.M. Peak Hour Traffic
- (XX) Weekend Peak Hour Traffic

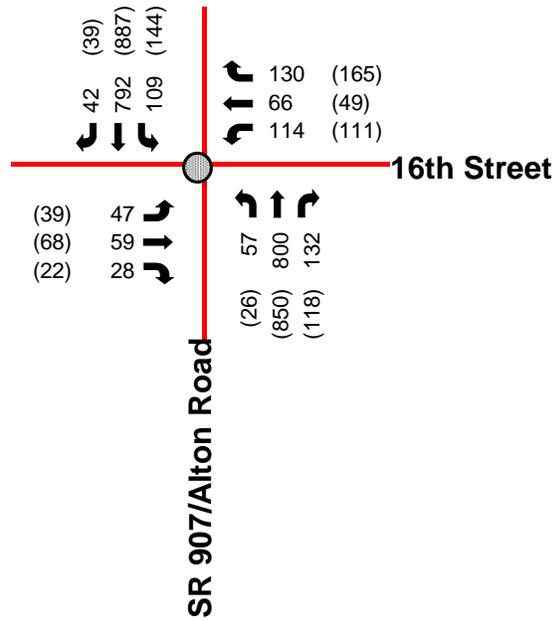




NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX P.M. Peak Hour Traffic
- (XX) Weekend Peak Hour Traffic





NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX% Entering Trip Distribution
- (XX%) Exiting Trip Distribution

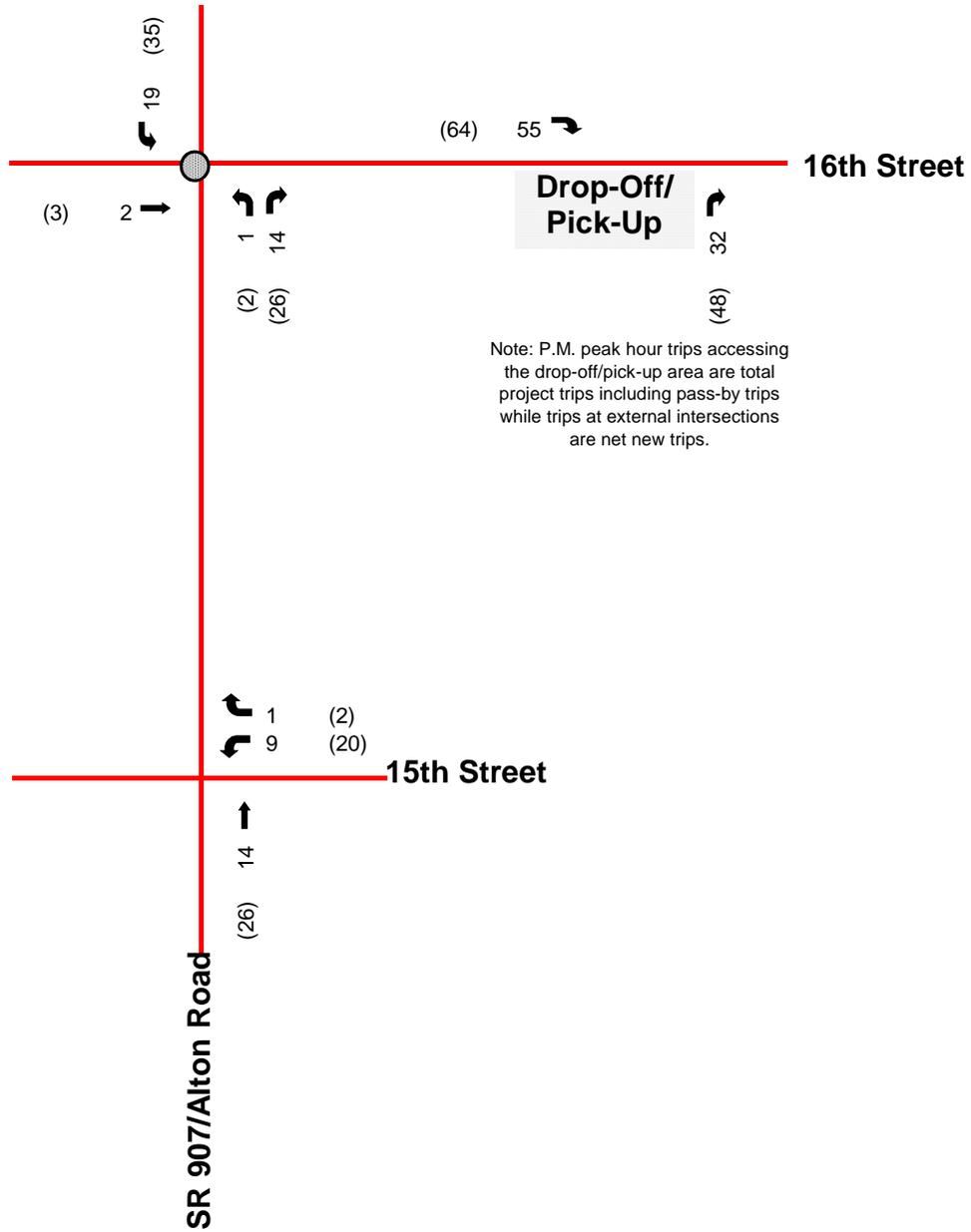




NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX P.M. Peak Hour Trip Assignment
- (XX) Weekend Peak Hour Trip Assignment

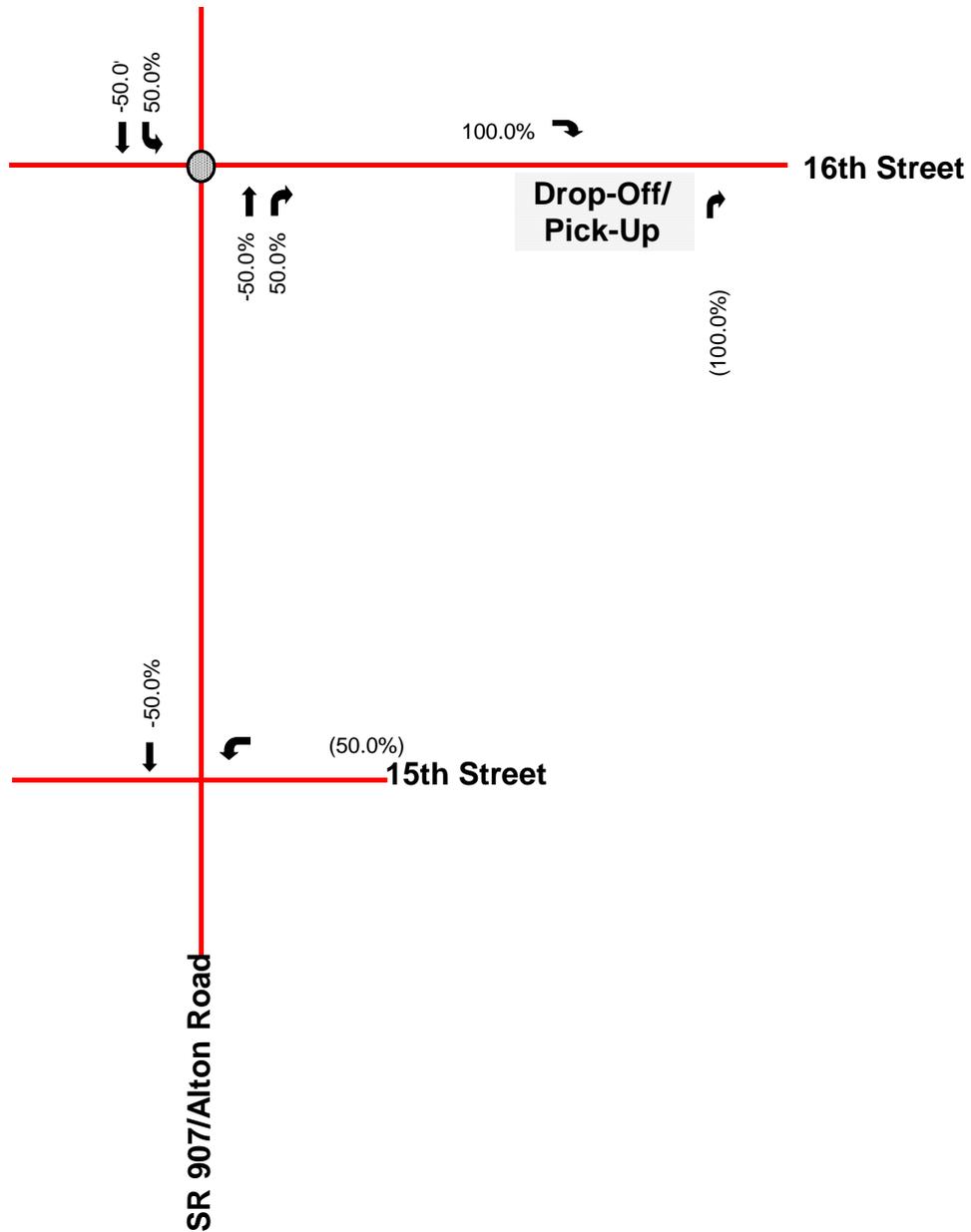




NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX% Entering Pass-By Trip Distribution
- (XX%) Exiting Pass-By Trip Distribution

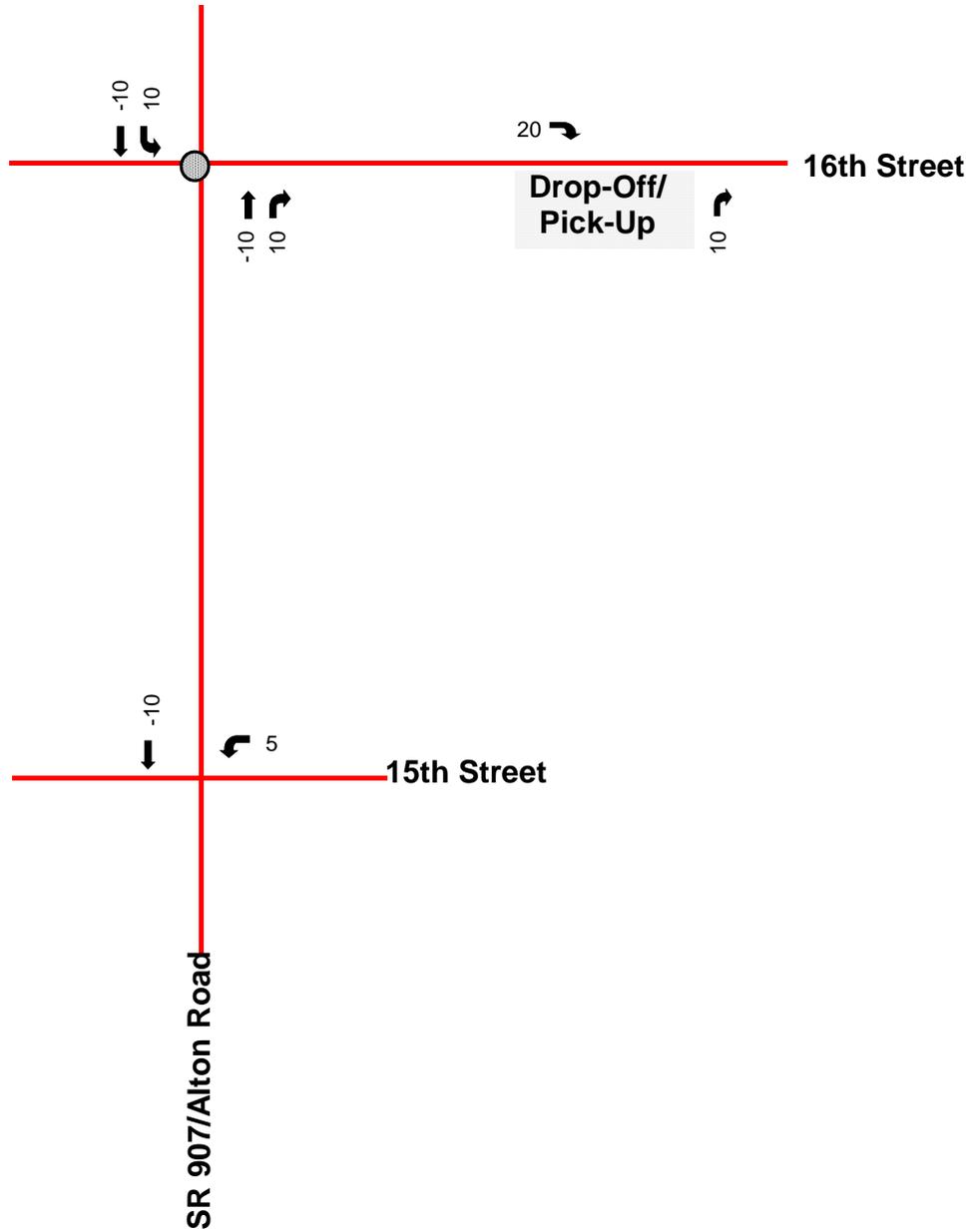


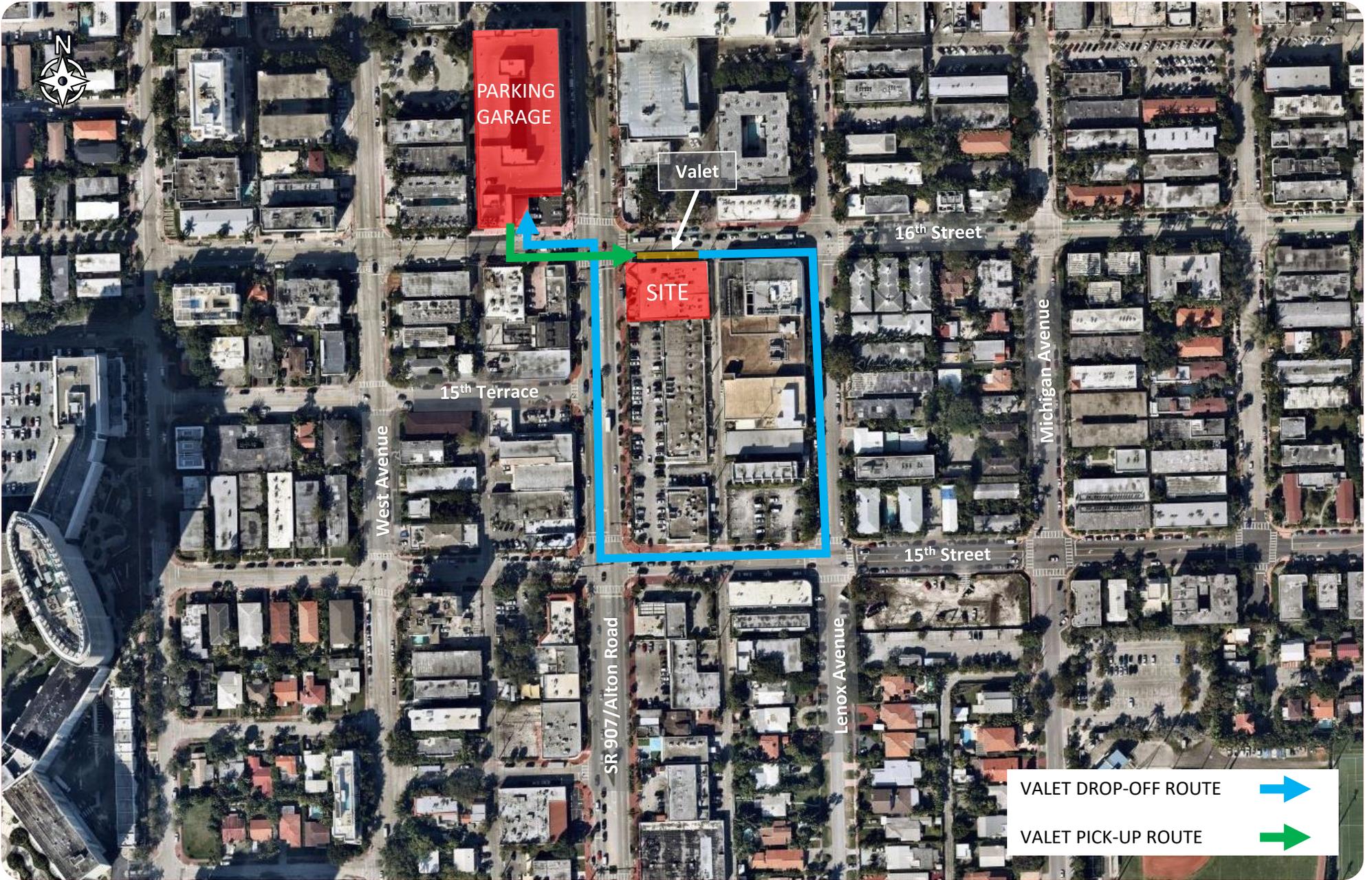


NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX** P.M. Peak Hour Pass-By Trip Assignment



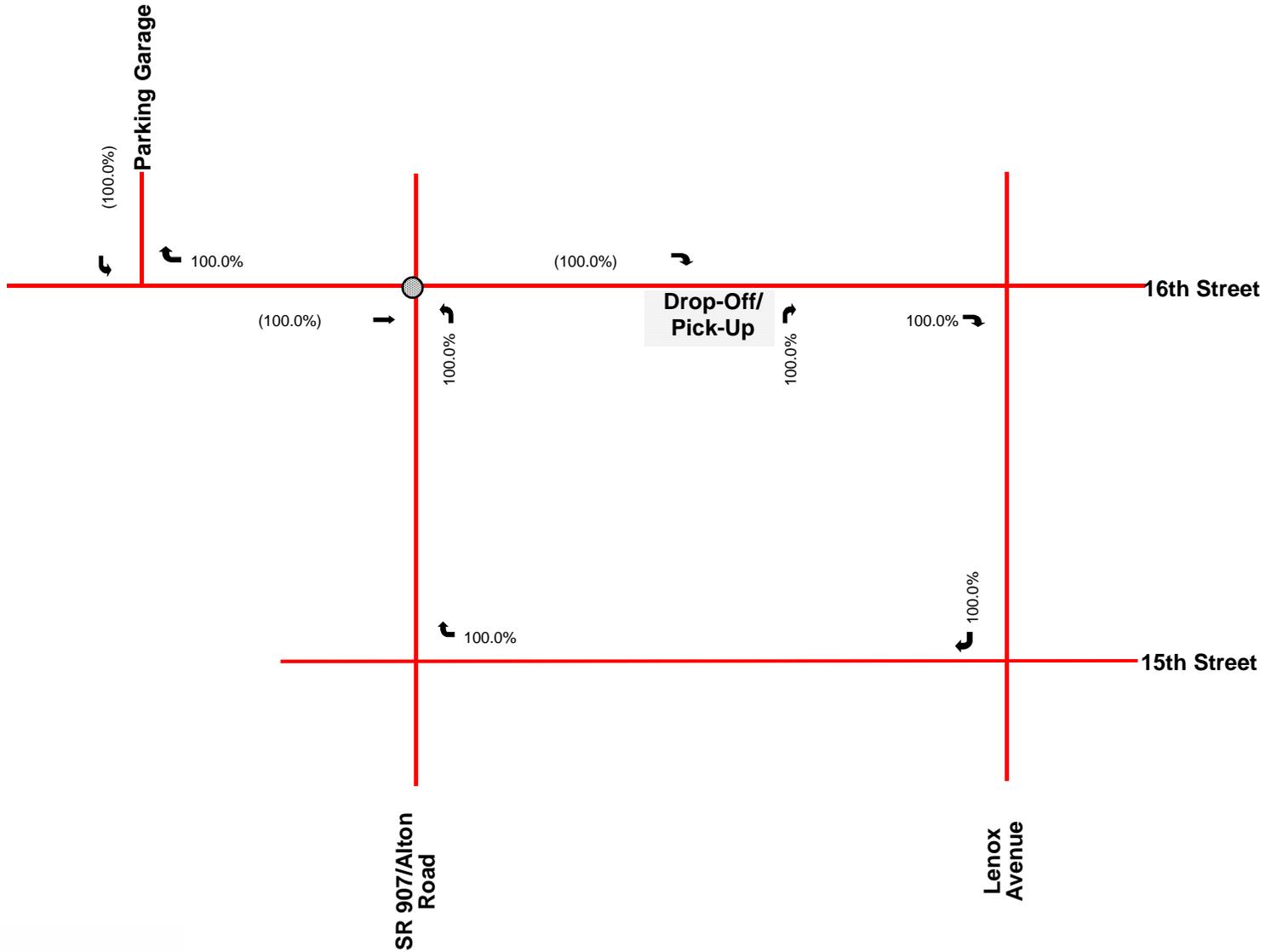




NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX% Entering Valet Trip Distribution
- (XX%) Exiting Valet Trip Distribution

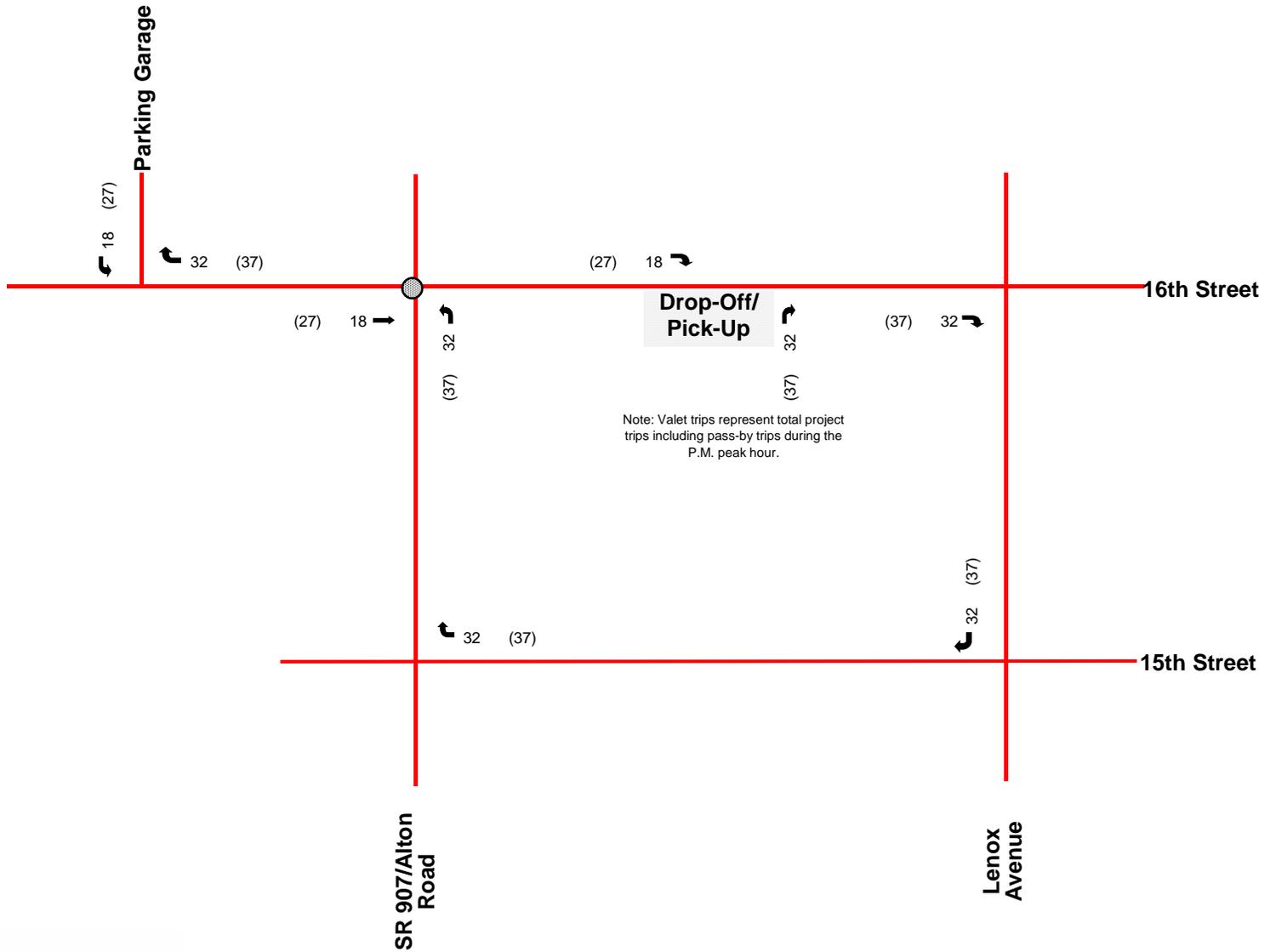




NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
-  P.M. Peak Hour Valet Assignment
-  Weekend Peak Hour Valet Assignment

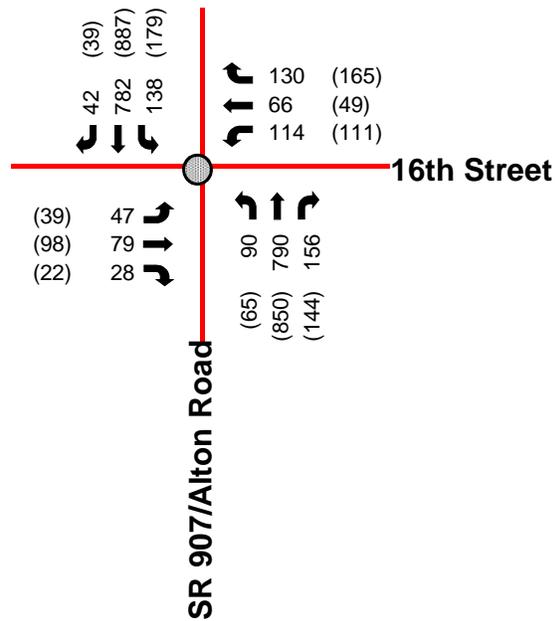




NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX P.M. Peak Hour Traffic
- (XX) Weekend Peak Hour Traffic



Alton Road Valet Drop-off/Pick-up Area

# TRAFFIC VOLUMES AT STUDY INTERSECTIONS

INTERSECTION: SR 907/Alton Road and 16th Street  
 COUNT DATE: January 23, 2020  
 PM PEAK HOUR FACTOR: 0.92  
 WEEKEND PEAK HOUR FACTOR: 0.96

"PM EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
PM Raw Turning Movements		45	56	27		110	63	124		54	767	126		105	759	40				
Peak Season Correction Factor		1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030			
PM EXISTING CONDITIONS		46	58	28		113	65	128		56	790	130		108	782	41				
"WEEKEND EXISTING TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
Weekend Raw Turning Movements		38	65	21		107	47	158		25	816	114		138	850	38				
Peak Season Correction Factor		1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030	1.030			
WEEKEND EXISTING CONDITIONS		39	67	22		110	48	163		26	840	117		142	876	39				
"PM BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
TOTAL "VESTED" TRAFFIC		0	0	0		0	0	0		0	0	0		0	0	0				
Years To Buildout		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
Yearly Growth Rate		0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%			
PM BACKGROUND TRAFFIC GROWTH		1	1	0		1	1	2		1	10	2		1	10	1				
PM NON-PROJECT TRAFFIC		47	59	28		114	66	130		57	800	132		109	792	42				
"WEEKEND BACKGROUND TRAFFIC"		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR			
TOTAL "VESTED" TRAFFIC		0	0	0		0	0	0		0	0	0		0	0	0				
Years To Buildout		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
Yearly Growth Rate		0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%	0.61%			
WEEKEND BACKGROUND TRAFFIC GROWTH		0	1	0		1	1	2		0	10	1		2	11	0				
WEEKEND NON-PROJECT TRAFFIC		39	68	22		111	49	165		26	850	118		144	887	39				
"PM PROJECT DISTRIBUTION"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Pass-By Distribution	Entering																			
	Exiting																		-50.0%	50.0%
Valet Distribution	Entering																			
	Exiting			100.0%									100.0%		100.0%					
Net New Distribution	Entering																			54.0%
	Exiting											5.0%	54.0%	41.0%						
"WEEKEND PROJECT DISTRIBUTION"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Pass-By Distribution	Entering																			
	Exiting																			
Valet Distribution	Entering																			
	Exiting			100.0%									100.0%		100.0%					
Net New Distribution	Entering																			54.0%
	Exiting											5.0%	54.0%	41.0%						
"PM PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
PM TRAFFIC DIVERSIONS																				
Project Trips	Pass - By													-5	5				-10	10
	Valet			18										32	32					
	Net New													1	12	9				19
PM TOTAL PROJECT TRAFFIC				0	18	0		0	0	0		33	7	46		0	-10	29		
PM TOTAL TRAFFIC		47	77	28		114	66	130		90	807	178		109	782	71				
"WEEKEND PROJECT TRAFFIC"		LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
WEEKEND TRAFFIC DIVERSIONS																				
Project Trips	Pass - By																			
	Valet			27										37	37					
	Net New													2	26	20				35
WEEKEND TOTAL PROJECT TRAFFIC				0	27	0		0	0	0		39	26	57		0	0	35		
WEEKEND TOTAL TRAFFIC		39	95	22		111	49	165		65	876	175		144	887	74				



NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX% Entering Trip Distribution
- (XX%) Exiting Trip Distribution

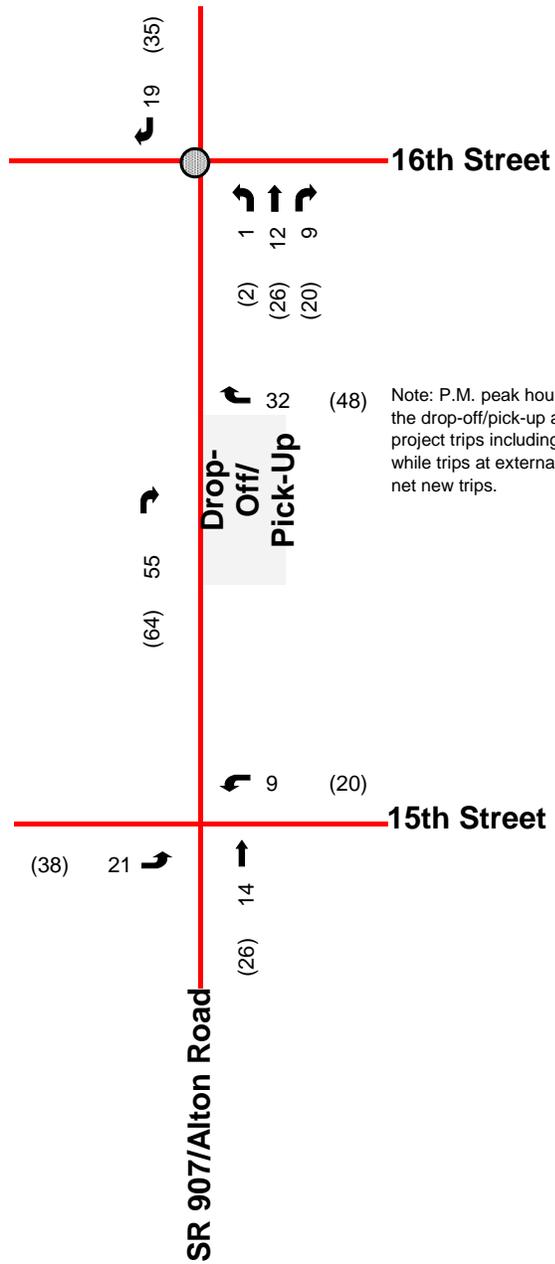




NOT TO SCALE

### Legend

-  Study Roadway
-  Study Intersection
-  P.M. Peak Hour Trip Assignment
-  Weekend Peak Hour Trip Assignment



Note: P.M. peak hour trips accessing the drop-off/pick-up area are total project trips including pass-by trips while trips at external intersections are net new trips.



NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX% Entering Pass-By Trip Distribution
- (XX%) Exiting Pass-By Trip Distribution

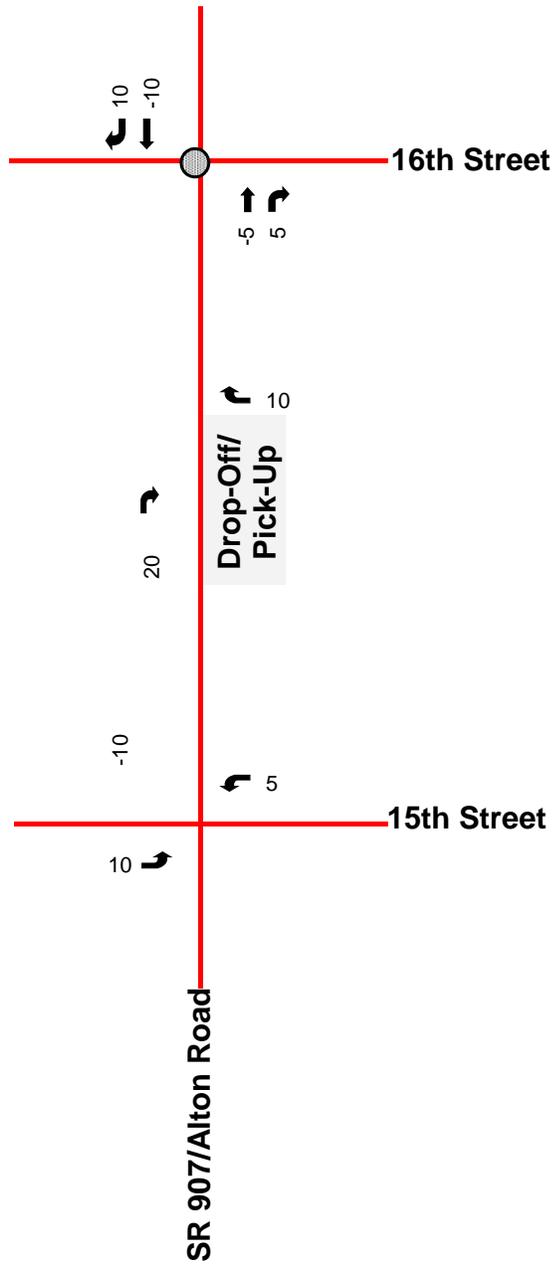


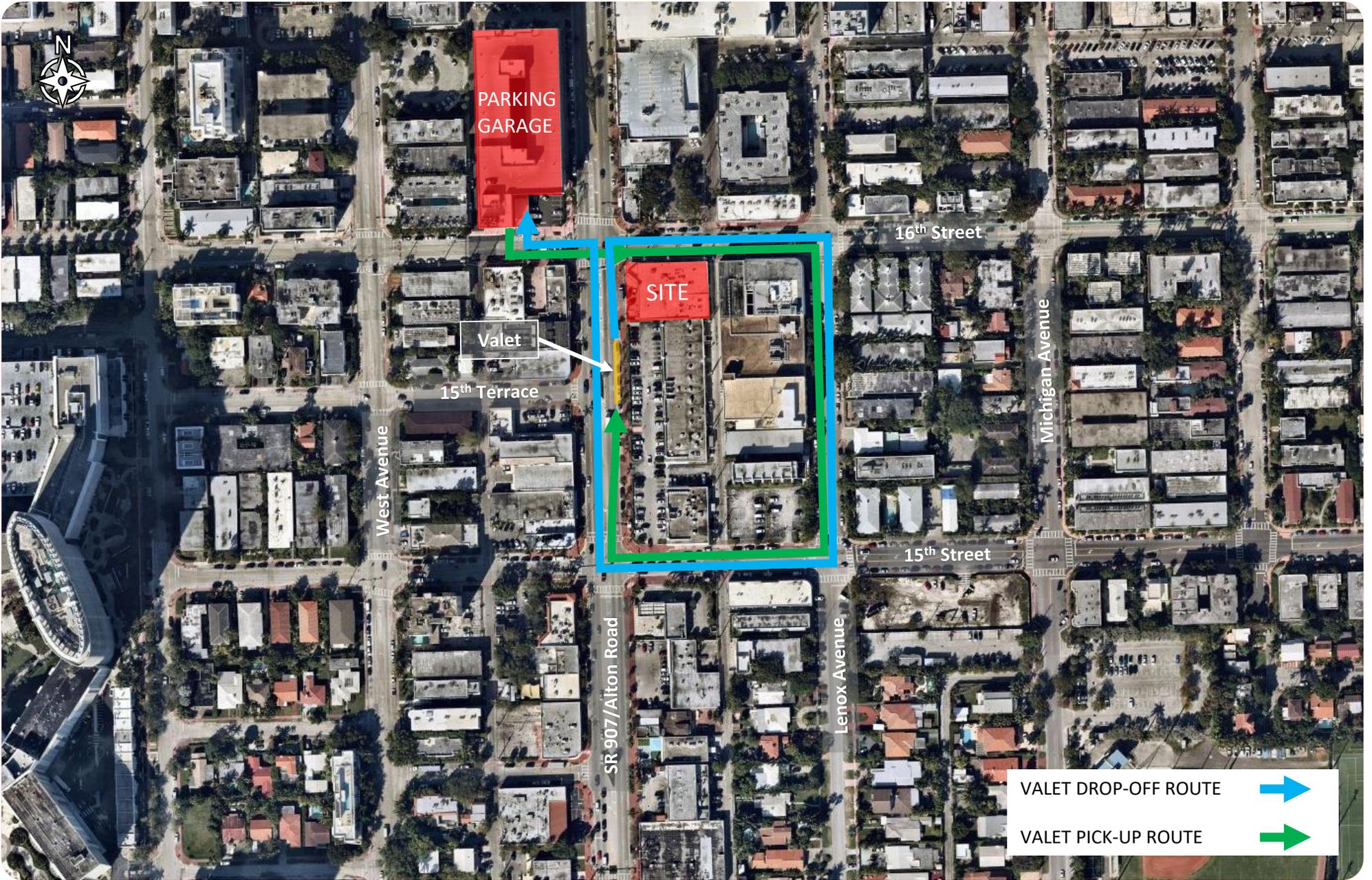


NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
-  P.M. Peak Hour Pass-By Trip Assignment



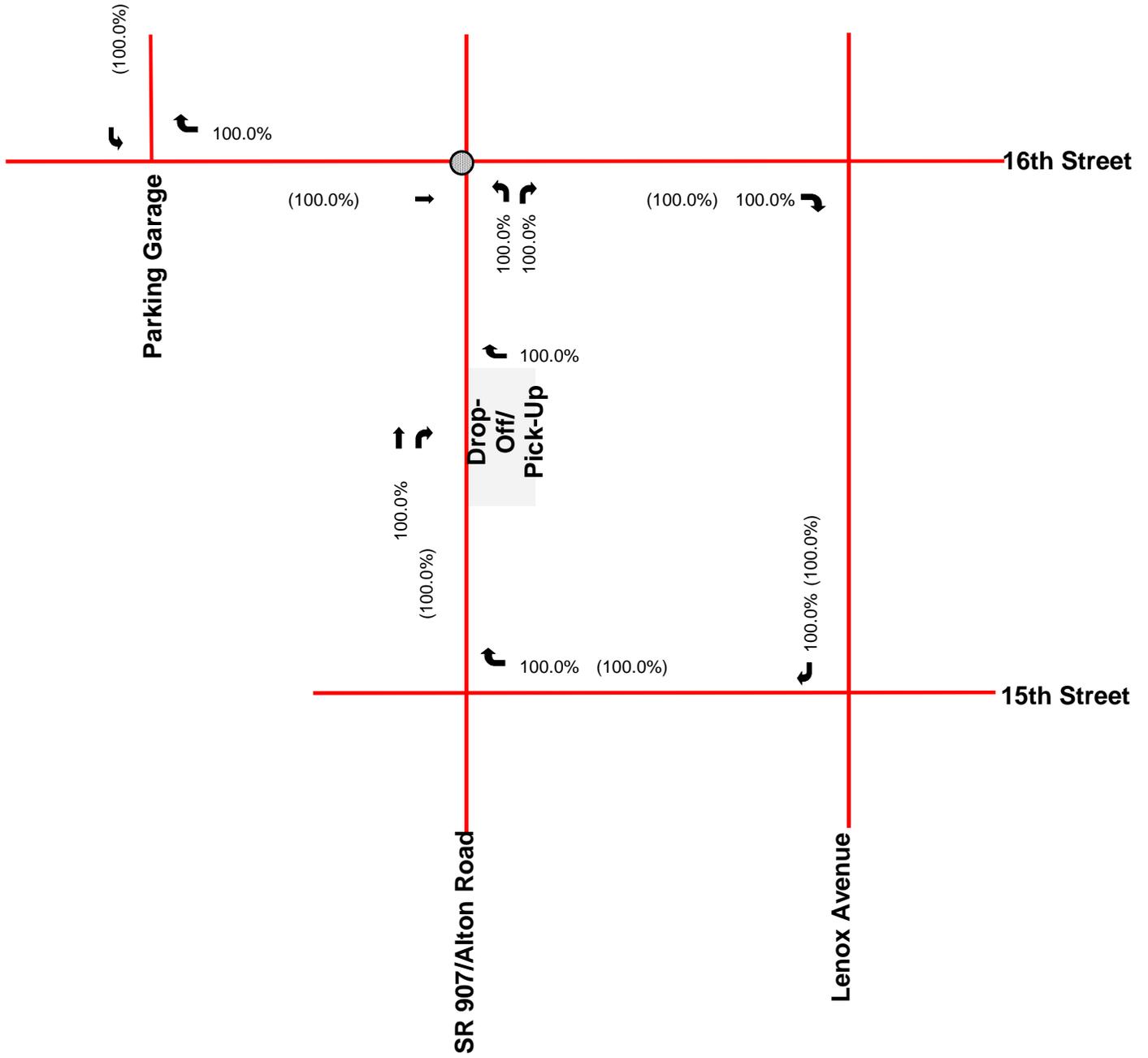




NOT TO SCALE

**Legend**

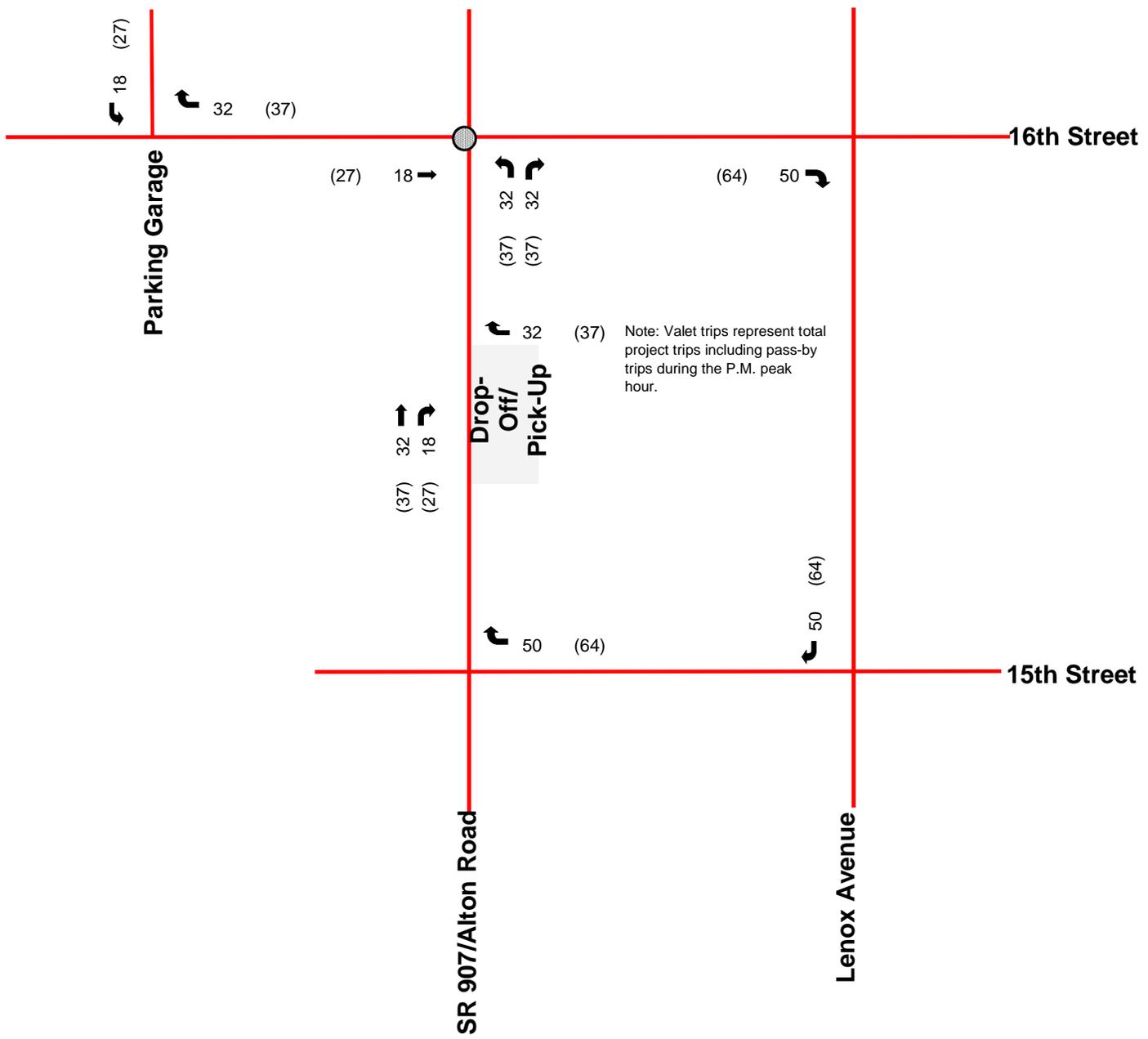
-  Study Roadway
-  Study Intersection
- XX% Entering Valet Trip Distribution
- (XX%) Exiting Valet Trip Distribution





NOT TO SCALE

- Legend**
- Study Roadway
  - Study Intersection
  - XX P.M. Peak Hour Valet Assignment
  - (XX) Weekend Peak Hour Valet Assignment

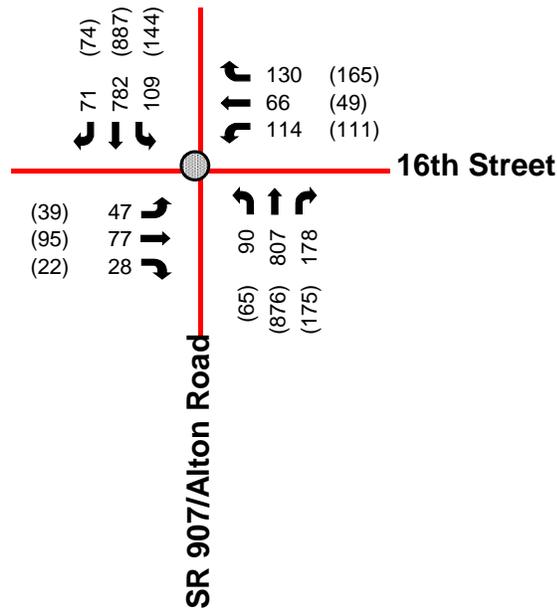




NOT TO SCALE

**Legend**

-  Study Roadway
-  Study Intersection
- XX P.M. Peak Hour Traffic
- (XX) Weekend Peak Hour Traffic



**Attachment I-1**  
Synchro Worksheets

Weekday P.M. Peak Hour

Timings  
1: Alton Road & 16th Street

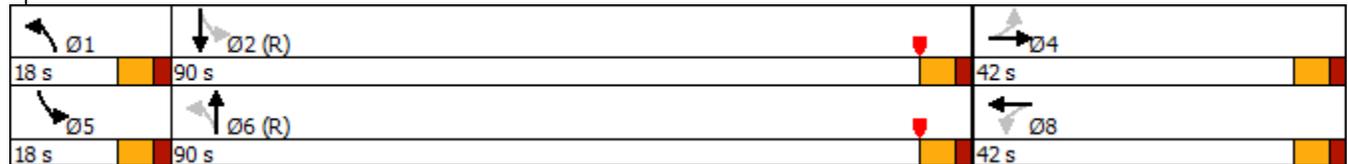
Existing  
P.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	46	58	113	65	56	790	108	782
Future Volume (vph)	46	58	113	65	56	790	108	782
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	37.1	37.1	37.1	37.1	11.0	27.0	11.0	27.0
Total Split (s)	42.0	42.0	42.0	42.0	18.0	90.0	18.0	90.0
Total Split (%)	28.0%	28.0%	28.0%	28.0%	12.0%	60.0%	12.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 130 (87%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 16th Street



# HCM Signalized Intersection Capacity Analysis

## 1: Alton Road & 16th Street

Existing

P.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	58	28	113	65	128	56	790	130	108	782	41
Future Volume (vph)	46	58	28	113	65	128	56	790	130	108	782	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.95		1.00	0.94		1.00	0.99	
Flpb, ped/bikes		0.99			0.99		0.99	1.00		1.00	1.00	
Frt		0.97			0.94		1.00	0.98		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1405			1322		1575	2797		1593	2966	
Flt Permitted		0.71			0.78		0.27	1.00		0.21	1.00	
Satd. Flow (perm)		1018			1053		454	2797		360	2966	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	63	30	123	71	139	61	859	141	117	850	45
RTOR Reduction (vph)	0	6	0	0	17	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	137	0	0	316	0	61	992	0	117	893	0
Confl. Peds. (#/hr)	66		25	25		66	63		107	107		63
Confl. Bikes (#/hr)			7			4			4			6
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		35.9			35.9		93.1	87.7		98.9	90.6	
Effective Green, g (s)		35.9			35.9		93.1	87.7		98.9	90.6	
Actuated g/C Ratio		0.24			0.24		0.62	0.58		0.66	0.60	
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0	
Lane Grp Cap (vph)		243			252		322	1635		305	1791	
v/s Ratio Prot							0.01	c0.35		c0.02	c0.30	
v/s Ratio Perm		0.13			c0.30		0.11			0.23		
v/c Ratio		0.56			1.25		0.19	0.61		0.38	0.50	
Uniform Delay, d1		50.2			57.0		11.8	20.0		11.7	16.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.4			141.8		0.1	1.7		0.3	1.0	
Delay (s)		52.6			198.8		11.9	21.7		11.9	17.8	
Level of Service		D			F		B	C		B	B	
Approach Delay (s)		52.6			198.8			21.2			17.1	
Approach LOS		D			F			C			B	

### Intersection Summary

HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Timings  
1: Alton Road & 16th Street

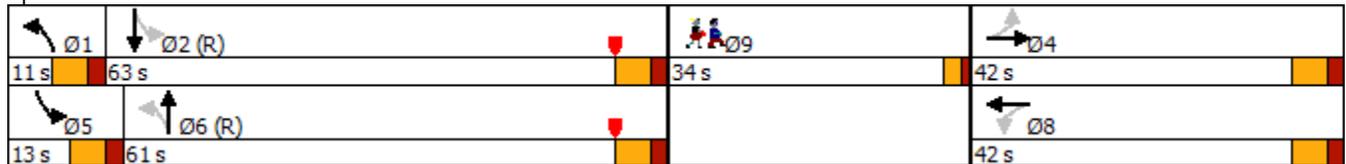
Future Background  
P.M. Peak Hour

										Ø9
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT		
Lane Configurations										
Traffic Volume (vph)	47	59	114	66	57	800	109	792		
Future Volume (vph)	47	59	114	66	57	800	109	792		
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA		
Protected Phases		4		8	1	6	5	2	9	
Permitted Phases	4		8		6		2			
Detector Phase	4	4	8	8	1	6	5	2		
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	37.1	37.1	37.1	37.1	11.0	27.0	11.0	27.0	34.0	
Total Split (s)	42.0	42.0	42.0	42.0	11.0	61.0	13.0	63.0	34.0	
Total Split (%)	28.0%	28.0%	28.0%	28.0%	7.3%	40.7%	8.7%	42.0%	23%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0		
Lead/Lag					Lead	Lag	Lead	Lag		
Lead-Lag Optimize?					Yes	Yes	Yes	Yes		
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None	

Intersection Summary

Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 130 (87%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 16th Street



# HCM Signalized Intersection Capacity Analysis

Future Background

## 1: Alton Road & 16th Street

P.M. Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	47	59	28	114	66	130	57	800	132	109	792	42	
Future Volume (vph)	47	59	28	114	66	130	57	800	132	109	792	42	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95		
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00		
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00		
Frt		0.97			0.94		1.00	0.98		1.00	0.99		
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1436			1389		1593	2952		1593	2999		
Flt Permitted		0.71			0.78		0.18	1.00		0.10	1.00		
Satd. Flow (perm)		1033			1105		295	2952		172	2999		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	51	64	30	124	72	141	62	870	143	118	861	46	
RTOR Reduction (vph)	0	6	0	0	17	0	0	9	0	0	2	0	
Lane Group Flow (vph)	0	139	0	0	320	0	62	1004	0	118	905	0	
Confl. Bikes (#/hr)			7			4			4			6	
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA		
Protected Phases		4			8		1	6		5	2		
Permitted Phases	4			8			6			2			
Actuated Green, G (s)		35.9			35.9		59.0	55.0		65.0	58.0		
Effective Green, g (s)		35.9			35.9		59.0	55.0		65.0	58.0		
Actuated g/C Ratio		0.24			0.24		0.39	0.37		0.43	0.39		
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0		
Lane Grp Cap (vph)		247			264		150	1082		140	1159		
v/s Ratio Prot							0.01	c0.34		c0.04	0.30		
v/s Ratio Perm		0.13			c0.29		0.15			c0.32			
v/c Ratio		0.56			1.21		0.41	0.93		0.84	0.78		
Uniform Delay, d1		50.1			57.0		30.9	45.6		32.1	40.4		
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		2.4			124.4		0.7	14.7		33.4	5.2		
Delay (s)		52.5			181.5		31.6	60.3		65.4	45.6		
Level of Service		D			F		C	E		E	D		
Approach Delay (s)		52.5			181.5			58.7			47.9		
Approach LOS		D			F			E			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			70.1									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.78										
Actuated Cycle Length (s)			150.0									Sum of lost time (s)	21.1
Intersection Capacity Utilization			77.3%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Timings  
1: Alton Road & 16th Street

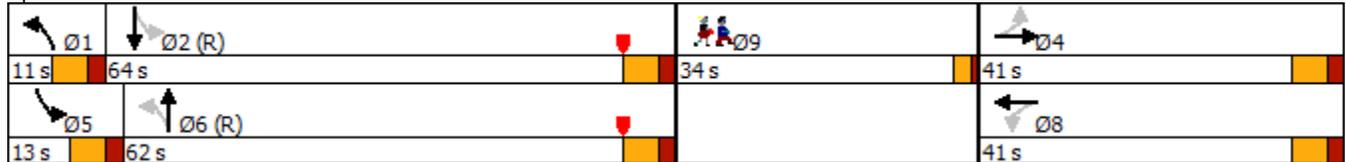
Future Total  
P.M. Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	47	79	114	66	90	790	138	782	
Future Volume (vph)	47	79	114	66	90	790	138	782	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	
Protected Phases		4		8	1	6	5	2	9
Permitted Phases	4		8		6		2		
Detector Phase	4	4	8	8	1	6	5	2	
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	37.1	37.1	37.1	37.1	11.0	27.0	11.0	27.0	34.0
Total Split (s)	41.0	41.0	41.0	41.0	11.0	62.0	13.0	64.0	34.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	7.3%	41.3%	8.7%	42.7%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0	
Lead/Lag					Lead	Lag	Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None

Intersection Summary

Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 130 (87%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 16th Street



# HCM Signalized Intersection Capacity Analysis

## 1: Alton Road & 16th Street

Future Total

P.M. Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	47	79	28	114	66	130	90	790	156	138	782	42	
Future Volume (vph)	47	79	28	114	66	130	90	790	156	138	782	42	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95		
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00		
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00		
Frt		0.98			0.94		1.00	0.98		1.00	0.99		
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1445			1389		1593	2939		1593	2999		
Flt Permitted		0.73			0.75		0.18	1.00		0.10	1.00		
Satd. Flow (perm)		1070			1060		298	2939		173	2999		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	51	86	30	124	72	141	98	859	170	150	850	46	
RTOR Reduction (vph)	0	5	0	0	18	0	0	11	0	0	2	0	
Lane Group Flow (vph)	0	162	0	0	319	0	98	1018	0	150	894	0	
Confl. Bikes (#/hr)			7			4			4			6	
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA		
Protected Phases		4			8		1	6		5	2		
Permitted Phases	4			8			6			2			
Actuated Green, G (s)		34.9			34.9		61.0	56.0		65.0	58.0		
Effective Green, g (s)		34.9			34.9		61.0	56.0		65.0	58.0		
Actuated g/C Ratio		0.23			0.23		0.41	0.37		0.43	0.39		
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0		
Lane Grp Cap (vph)		248			246		164	1097		141	1159		
v/s Ratio Prot							0.02	0.35		c0.05	0.30		
v/s Ratio Perm		0.15			c0.30		0.22			c0.41			
v/c Ratio		0.65			1.30		0.60	0.93		1.06	0.77		
Uniform Delay, d1		52.1			57.6		33.3	45.1		37.5	40.2		
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		5.4			160.8		3.9	14.6		93.8	5.0		
Delay (s)		57.4			218.3		37.1	59.6		131.3	45.2		
Level of Service		E			F		D	E		F	D		
Approach Delay (s)		57.4			218.3			57.7			57.5		
Approach LOS		E			F			E			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			77.8									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.89										
Actuated Cycle Length (s)			150.0									Sum of lost time (s)	21.1
Intersection Capacity Utilization			79.7%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Timings  
1: Alton Road & 16th Street

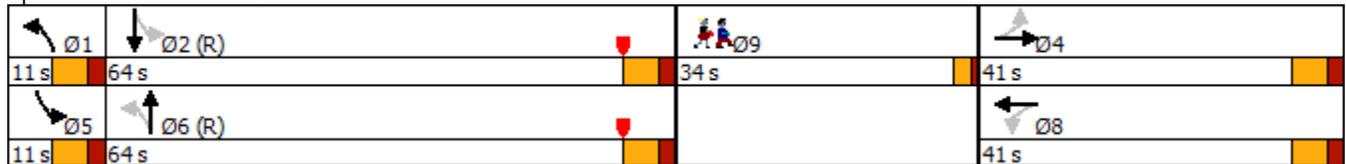
Future Total - Alternative  
P.M. Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	47	77	114	66	90	807	109	782	
Future Volume (vph)	47	77	114	66	90	807	109	782	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	
Protected Phases		4		8	1	6	5	2	9
Permitted Phases	4		8		6		2		
Detector Phase	4	4	8	8	1	6	5	2	
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	37.1	37.1	37.1	37.1	11.0	27.0	11.0	27.0	34.0
Total Split (s)	41.0	41.0	41.0	41.0	11.0	64.0	11.0	64.0	34.0
Total Split (%)	27.3%	27.3%	27.3%	27.3%	7.3%	42.7%	7.3%	42.7%	23%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0	
Lead/Lag					Lead	Lag	Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None

Intersection Summary

Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 130 (87%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 16th Street



HCM Signalized Intersection Capacity Analysis  
1: Alton Road & 16th Street

Future Total - Alternative  
P.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	77	28	114	66	130	90	807	178	109	782	71
Future Volume (vph)	47	77	28	114	66	130	90	807	178	109	782	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.97		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1444			1389		1593	2932		1593	2982	
Flt Permitted		0.73			0.75		0.16	1.00		0.10	1.00	
Satd. Flow (perm)		1066			1063		265	2932		171	2982	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	84	30	124	72	141	98	877	193	118	850	77
RTOR Reduction (vph)	0	5	0	0	18	0	0	12	0	0	4	0
Lane Group Flow (vph)	0	160	0	0	319	0	98	1058	0	118	923	0
Confl. Bikes (#/hr)			7			4			4			6
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		34.9			34.9		63.0	58.0		63.0	58.0	
Effective Green, g (s)		34.9			34.9		63.0	58.0		63.0	58.0	
Actuated g/C Ratio		0.23			0.23		0.42	0.39		0.42	0.39	
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0	
Lane Grp Cap (vph)		248			247		155	1133		119	1153	
v/s Ratio Prot							0.02	0.36		c0.03	0.31	
v/s Ratio Perm		0.15			c0.30		0.24			c0.38		
v/c Ratio		0.64			1.29		0.63	0.93		0.99	0.80	
Uniform Delay, d1		51.9			57.6		32.7	44.2		41.6	40.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.0			158.6		6.0	14.9		79.5	5.9	
Delay (s)		56.9			216.1		38.8	59.1		121.1	46.7	
Level of Service		E			F		D	E		F	D	
Approach Delay (s)		56.9			216.1			57.3			55.1	
Approach LOS		E			F			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			76.2				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			150.0				Sum of lost time (s)			21.1		
Intersection Capacity Utilization			79.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Weekend Peak Hour

# Timings

## 1: Alton Road & 16th Street

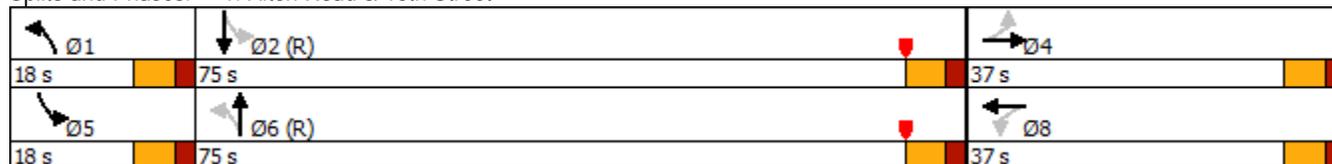
Existing  
Weekend Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	39	67	110	48	26	840	142	876
Future Volume (vph)	39	67	110	48	26	840	142	876
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0
Minimum Split (s)	37.1	37.1	37.1	37.1	11.0	27.0	11.0	27.0
Total Split (s)	37.0	37.0	37.0	37.0	18.0	75.0	18.0	75.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	13.8%	57.7%	13.8%	57.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max

### Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 38 (29%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated

### Splits and Phases: 1: Alton Road & 16th Street



# HCM Signalized Intersection Capacity Analysis

## 1: Alton Road & 16th Street

Existing  
Weekend Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	67	22	110	48	163	26	840	117	142	876	39
Future Volume (vph)	39	67	22	110	48	163	26	840	117	142	876	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		0.99			0.93		1.00	0.94		1.00	0.98	
Flpb, ped/bikes		0.98			0.98		0.98	1.00		1.00	1.00	
Frt		0.98			0.93		1.00	0.98		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1409			1261		1565	2783		1593	2958	
Flt Permitted		0.75			0.81		0.26	1.00		0.20	1.00	
Satd. Flow (perm)		1067			1035		434	2783		337	2958	
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)	41	70	23	115	50	170	27	875	122	148	912	41
RTOR Reduction (vph)	0	6	0	0	28	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	128	0	0	307	0	27	989	0	148	952	0
Confl. Peds. (#/hr)	96		49	49		96	117		172	172		117
Confl. Bikes (#/hr)			8			17						8
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		30.9			30.9		75.5	72.1		86.5	77.6	
Effective Green, g (s)		30.9			30.9		75.5	72.1		86.5	77.6	
Actuated g/C Ratio		0.24			0.24		0.58	0.55		0.67	0.60	
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0	
Lane Grp Cap (vph)		253			246		281	1543		310	1765	
v/s Ratio Prot							0.00	c0.36		c0.03	c0.32	
v/s Ratio Perm		0.12			c0.30		0.05			0.28		
v/c Ratio		0.51			1.25		0.10	0.64		0.48	0.54	
Uniform Delay, d1		42.9			49.6		11.9	20.0		11.0	15.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2			140.4		0.1	2.1		0.4	1.2	
Delay (s)		44.1			190.0		12.0	22.1		11.5	16.8	
Level of Service		D			F		B	C		B	B	
Approach Delay (s)		44.1			190.0			21.8			16.1	
Approach LOS		D			F			C			B	

### Intersection Summary

HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Timings  
1: Alton Road & 16th Street

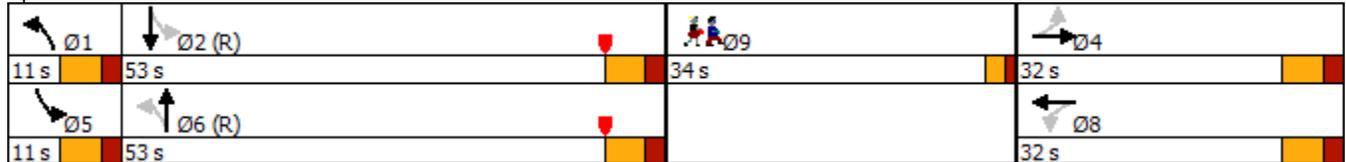
Future Background  
Weekend Peak Hour

									Ø9
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	39	68	111	49	26	850	144	887	
Future Volume (vph)	39	68	111	49	26	850	144	887	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	
Protected Phases		4		8	1	6	5	2	9
Permitted Phases	4		8		6		2		
Detector Phase	4	4	8	8	1	6	5	2	
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	13.1	13.1	13.1	13.1	11.0	27.0	11.0	27.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	11.0	53.0	11.0	53.0	34.0
Total Split (%)	24.6%	24.6%	24.6%	24.6%	8.5%	40.8%	8.5%	40.8%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0	
Lead/Lag					Lead	Lag	Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None

Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 38 (29%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 16th Street



# HCM Signalized Intersection Capacity Analysis

Future Background

## 1: Alton Road & 16th Street

Weekend Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	39	68	22	111	49	165	26	850	118	144	887	39	
Future Volume (vph)	39	68	22	111	49	165	26	850	118	144	887	39	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95		
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00		
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00		
Frt		0.98			0.93		1.00	0.98		1.00	0.99		
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1447			1360		1593	2971		1593	3003		
Flt Permitted		0.70			0.79		0.15	1.00		0.11	1.00		
Satd. Flow (perm)		1035			1096		245	2971		178	3003		
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)	41	71	23	116	51	172	27	885	123	150	924	41	
RTOR Reduction (vph)	0	6	0	0	29	0	0	8	0	0	2	0	
Lane Group Flow (vph)	0	129	0	0	310	0	27	1000	0	150	963	0	
Confl. Bikes (#/hr)			8			17						8	
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA		
Protected Phases		4			8		1	6		5	2		
Permitted Phases	4			8			6			2			
Actuated Green, G (s)		25.9			25.9		50.0	47.0		54.0	49.0		
Effective Green, g (s)		25.9			25.9		50.0	47.0		54.0	49.0		
Actuated g/C Ratio		0.20			0.20		0.38	0.36		0.42	0.38		
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0		
Lane Grp Cap (vph)		206			218		125	1074		128	1131		
v/s Ratio Prot							0.00	0.34		c0.04	0.32		
v/s Ratio Perm		0.13			c0.28		0.08			c0.44			
v/c Ratio		0.63			1.42		0.22	0.93		1.17	0.85		
Uniform Delay, d1		47.6			52.0		27.4	39.9		35.6	37.2		
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		5.1			214.9		0.3	15.2		133.1	8.1		
Delay (s)		52.7			266.9		27.7	55.1		168.6	45.3		
Level of Service		D			F		C	E		F	D		
Approach Delay (s)		52.7			266.9			54.4			61.9		
Approach LOS		D			F			D			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			84.9									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			0.92										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	21.1
Intersection Capacity Utilization			81.8%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Timings  
1: Alton Road & 16th Street

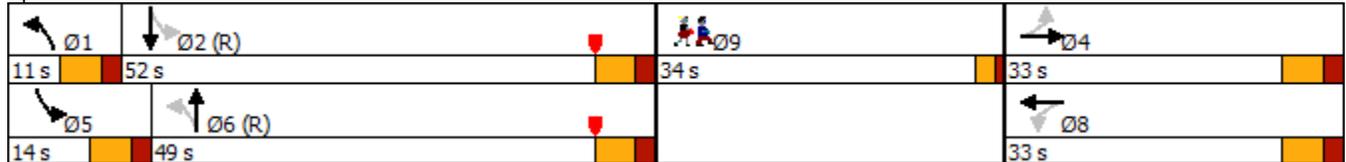
Future Total  
Weekend Peak Hour

										Ø9
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT		
Lane Configurations										
Traffic Volume (vph)	39	98	111	49	65	850	179	887		
Future Volume (vph)	39	98	111	49	65	850	179	887		
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA		
Protected Phases		4		8	1	6	5	2	9	
Permitted Phases	4		8		6		2			
Detector Phase	4	4	8	8	1	6	5	2		
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	13.1	13.1	13.1	13.1	11.0	11.0	11.0	11.0	34.0	
Total Split (s)	33.0	33.0	33.0	33.0	11.0	49.0	14.0	52.0	34.0	
Total Split (%)	25.4%	25.4%	25.4%	25.4%	8.5%	37.7%	10.8%	40.0%	26%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0		
Lead/Lag					Lead	Lag	Lead	Lag		
Lead-Lag Optimize?					Yes	Yes	Yes	Yes		
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None	

Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 38 (29%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 16th Street



# HCM Signalized Intersection Capacity Analysis

## 1: Alton Road & 16th Street

Future Total

Weekend Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	98	22	111	49	165	65	850	144	179	887	39
Future Volume (vph)	39	98	22	111	49	165	65	850	144	179	887	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.93		1.00	0.98		1.00	0.99	
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1458			1361		1593	2960		1593	3003	
Flt Permitted		0.75			0.75		0.14	1.00		0.09	1.00	
Satd. Flow (perm)		1110			1034		236	2960		143	3003	
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)	41	102	23	116	51	172	68	885	150	186	924	41
RTOR Reduction (vph)	0	5	0	0	29	0	0	11	0	0	3	0
Lane Group Flow (vph)	0	161	0	0	310	0	68	1024	0	186	962	0
Confl. Bikes (#/hr)			8			17						8
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4			8			6			2		
Actuated Green, G (s)		26.9			26.9		47.0	43.0		55.0	47.0	
Effective Green, g (s)		26.9			26.9		47.0	43.0		55.0	47.0	
Actuated g/C Ratio		0.21			0.21		0.36	0.33		0.42	0.36	
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0	
Lane Grp Cap (vph)		229			213		127	979		149	1085	
v/s Ratio Prot							0.02	0.35		c0.08	c0.32	
v/s Ratio Perm		0.15			c0.30		0.18			c0.45		
v/c Ratio		0.70			1.46		0.54	1.05		1.25	0.89	
Uniform Delay, d1		47.9			51.5		30.0	43.5		31.7	39.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.8			230.0		2.2	41.6		155.4	10.8	
Delay (s)		56.6			281.5		32.1	85.1		187.1	49.8	
Level of Service		E			F		C	F		F	D	
Approach Delay (s)		56.6			281.5			81.9			72.0	
Approach LOS		E			F			F			E	

### Intersection Summary

HCM 2000 Control Delay	100.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.1
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Timings  
1: Alton Road & 16th Street

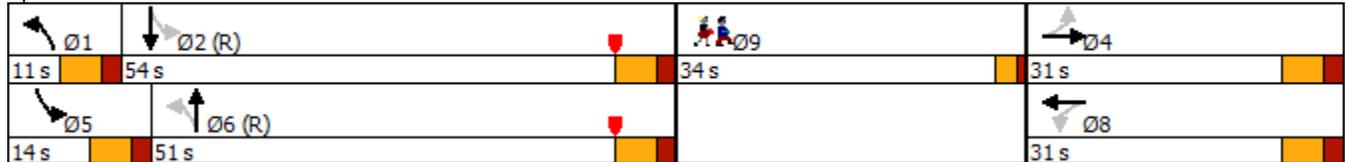
Future Total - Alternative  
Weekend Peak Hour

									Ø9
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9
Lane Configurations									
Traffic Volume (vph)	39	95	111	49	65	876	144	887	
Future Volume (vph)	39	95	111	49	65	876	144	887	
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA	
Protected Phases		4		8	1	6	5	2	9
Permitted Phases	4		8		6		2		
Detector Phase	4	4	8	8	1	6	5	2	
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	13.1	13.1	13.1	13.1	11.0	27.0	11.0	27.0	34.0
Total Split (s)	31.0	31.0	31.0	31.0	11.0	51.0	14.0	54.0	34.0
Total Split (%)	23.8%	23.8%	23.8%	23.8%	8.5%	39.2%	10.8%	41.5%	26%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0	
Lead/Lag					Lead	Lag	Lead	Lag	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	None	C-Max	None

Intersection Summary

Cycle Length: 130  
 Actuated Cycle Length: 130  
 Offset: 38 (29%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 16th Street



HCM Signalized Intersection Capacity Analysis  
1: Alton Road & 16th Street

Future Total - Alternative  
Weekend Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	39	95	22	111	49	165	65	876	175	144	887	74	
Future Volume (vph)	39	95	22	111	49	165	65	876	175	144	887	74	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95		
Frbp, ped/bikes		1.00			0.98		1.00	1.00		1.00	1.00		
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00		
Frt		0.98			0.93		1.00	0.98		1.00	0.99		
Flt Protected		0.99			0.98		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1457			1360		1593	2951		1593	2985		
Flt Permitted		0.73			0.74		0.14	1.00		0.08	1.00		
Satd. Flow (perm)		1079			1026		229	2951		137	2985		
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)	41	99	23	116	51	172	68	912	182	150	924	77	
RTOR Reduction (vph)	0	5	0	0	28	0	0	13	0	0	5	0	
Lane Group Flow (vph)	0	158	0	0	311	0	68	1082	0	150	996	0	
Confl. Bikes (#/hr)			8			17						8	
Parking (#/hr)	0	0	0	0	0	0		0	0		0	0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA		
Protected Phases		4			8		1	6		5	2		
Permitted Phases	4			8			6			2			
Actuated Green, G (s)		24.9			24.9		49.0	45.0		57.0	49.0		
Effective Green, g (s)		24.9			24.9		49.0	45.0		57.0	49.0		
Actuated g/C Ratio		0.19			0.19		0.38	0.35		0.44	0.38		
Clearance Time (s)		6.1			6.1		6.0	6.0		6.0	6.0		
Vehicle Extension (s)		2.5			2.5		2.0	1.0		2.0	1.0		
Lane Grp Cap (vph)		206			196		128	1021		149	1125		
v/s Ratio Prot							0.02	c0.37		c0.06	c0.33		
v/s Ratio Perm		0.15			c0.30		0.18			0.38			
v/c Ratio		0.77			1.59		0.53	1.06		1.01	0.89		
Uniform Delay, d1		49.8			52.5		28.8	42.5		32.4	37.9		
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		15.0			286.2		2.1	45.4		75.5	10.3		
Delay (s)		64.9			338.8		31.0	87.9		107.9	48.2		
Level of Service		E			F		C	F		F	D		
Approach Delay (s)		64.9			338.8			84.5			56.0		
Approach LOS		E			F			F			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			102.3									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			0.88										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	21.1
Intersection Capacity Utilization			84.7%									ICU Level of Service	E
Analysis Period (min)			15										
c	Critical Lane Group												