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NO. LTC # *412-2014*

LETTER TO COMMISSION

TO: Mayor Philip Levine and Members of the City Commission

FROM: Jimmy L. Morales, City Manager

DATE: December 12, 2014

SUBJECT: **MIAMI BEACH CONVENTION CENTER TRAFFIC IMPACT AND MITIGATION STUDY AND MIAMI BEACH CONVENTION CENTER HEADQUARTER HOTEL TRAFFIC IMPACT STUDY**

The purpose of this Letter to Commission (LTC) is to provide information on the recently completed Miami Beach Convention Center (MBCC) Traffic Impact and Mitigation Study and the MBCC Headquarter Hotel Traffic Impact Study. These two reports were prepared by two different consultants; however there was close coordination with the City Administration.

Convention Center Traffic Impact and Mitigation Study

The report (Executive Summary attached as Exhibit A) was prepared by The Corradino Group for Fentress Architects (MBCC designer) to evaluate the traffic impacts of the proposed MBCC renovation and expansion on the current network. Typically, projects of this magnitude are anticipated to affect traffic conditions on the adjacent roadway network, thus a traffic study is conducted to identify anticipated impacts and develop a strategy to mitigate the impacts.

The first step in developing a traffic impact/mitigation analysis is to quantify the number of trips generated by the event and distribute these trips on the adjacent roadway network. To accurately predict the estimated number of peak-hour trips, a methodology was developed based on existing MBCC annual attendance figures. For the purpose of remaining conservative in the analysis, the consultant selected one of the events with the highest attendance. The event selected was Art Basel and the 2013 attendance was 140,000 persons (as provided by Global Spectrum). Following extensive calculations to convert the attendance figures to vehicle trips, it was determined that peak-hour gross trips generated by an event of this magnitude is 2,100 trips.

The trip methodology was developed by the traffic engineering consultant in coordination with the City as it represents conditions closest to event days. The methodology utilized was also found to be more conservative than the typical Institute of Transportation Engineers (ITE) Trip Generation methodology.

Based on the trip generation figures obtained and traffic counts collected prior to the current Florida Department of Transportation (FDOT) construction projects on Alton Road and Collins Avenue, a traffic model was created to measure level of service at 12 critical intersections within the study area. The intersections studied were the following:

1. Alton Road and 17th Street
2. Alton Road and 5th Street
3. Alton Road and North Michigan Avenue
4. Alton Road and Dade Boulevard

5. Michigan Avenue and Dade Boulevard
6. 17th Street and Meridian Avenue
7. 17th Street and Washington Avenue
8. Dade Boulevard and Washington Avenue
9. Convention Center Drive and Dade Boulevard
10. Alton Road and Chase Avenue
11. 17th Street and Michigan Avenue
12. Convention Center Drive and 17th Street

Through the development of an existing and future conditions traffic model, it was found that most of the above intersections operate adequately and will continue to operate adequately in 2017 (anticipated MBCC Opening Day). While some intersections were found to have individual approaches or movements failing in future years, in most cases the approach failing is not the movement with the most demand. As part of the mitigation effort undertaken in this study, the consultant proposed the optimization of traffic signal timing for seven (7) intersections. The optimization of these signals will improve failing conditions and will be included as part of the City's special event traffic monitoring and management effort.

MBCC Headquarter Hotel Traffic Impact Study

As per the direction from the City Commission, the City engaged AECOM to evaluate the impacts of a proposed Convention Center Headquarter Hotel on the City's traffic network. (Executive Summary attached as Exhibit B)The consultant was tasked with analyzing the impact of the following occupancy scenarios:

- 400 Room Hotel
- 600 Room Hotel
- 800 Room Hotel
- 1,000 Room Hotel
- 1,200 Room Hotel

Based on researched national industry averages for Convention Center Headquarter Hotels, the consultant assumed 75% hotel occupancy in the trip generation calculations for each scenario. In addition, the report provides a detailed analysis on the type of guest that visit convention center headquarter hotels. National yearly averages show that 38% of Convention Center Headquarter Hotels guests are transient guests, 34% are in-house guests, and 28% are convention guests. For transient hotel guests, the consultant applied two (2) trip reductions that are commonly used on all hotel traffic studies:

- Multimodal Trip Adjustment Factor (intended to capture guests who will be using public transit, shuttles, or walking)
- Person-Trip Adjustment Factor (intended to capture the average vehicle occupancy ratio).

The reduction factors assumed were 15% (Multimodal Trip Adjustment Factor) and 1.4 Persons per Vehicle. The total PM peak-hour trip generation calculated for the MBCC Hotel is shown in the table below:

Hotel Occupancy Scenarios	Hotel traffic in vehicles per hour (during PM Peak)				% Increase in Area Trips
	Transient	In House Group	Citywide Conventions	Total	
400 Room Hotel	59	71	59	130	1.40%
600 Room Hotel	89	107	88	196	2.10%
800 Room Hotel	118	143	118	261	2.80%
1,000 Room Hotel	148	179	147	326	3.50%
1,200 Room Hotel	177	214	176	391	4.20%

As shown in the preceding table, peak hour trip generation for the five (5) occupancy scenarios studied ranges between 130 vehicle trips to 391 vehicle trips. One of the key figures shown in the table is the percentage increase of area trips. This percentage was calculated to show the percentage increase of area traffic as a result of the new vehicle trips created by the hotel.

Based on these trip generation results, the consultant created a traffic model to calculate the Level of Service (LOS) at the intersections for the existing traffic conditions (before the Alton Road and Collins Avenue roadway projects), MBCC Event (140,000 Attendees) traffic conditions, and MBCC Event with the different hotel occupancy scenarios. LOS criteria is used to measure performance of intersections and roadway segments. LOS does not reflect safety of the intersection. It is worth noting that the City's adopted Level of Service standard is D (2025 City of Miami Beach Comprehensive Plan). The results of the analysis are depicted in the table below:

INTERSECTIONS	2014 Traffic		2017 w/ 140,000 Attended Consumer Show **		2017 w/ 140,000 Attended Consumer Show AND Hotel **									
					400 ROOMS		600 ROOMS		800 ROOMS		1000 ROOMS		1200 ROOMS	
	LOS	DELAY (Sec)	LOS	DELAY (Sec)	LOS	DELAY (Sec)	LOS	DELAY (Sec)	LOS	DELAY (Sec)	LOS	DELAY (Sec)	LOS	DELAY (Sec)
Alton Rd & 17th Street *	D	53.6	E	65.7	E	0.6	E	1.1	E	1.1	E	2	E	2.5
Alton Rd & N. Michigan Ave *	B	14.8	C	33.8	C	0.8	D	1.3	D	1.9	D	2.5	D	3.2
17th Street & Meridian Ave*	D	38.5	E	65.9	E	1.5	E	3.2	E	3.4	E	4.6	E	5.1
Alton Rd & 5th Street *	C	30.4	D	46.2	D	0.9	D	1.4	D	2	D	2.4	D	2.9
Alton Rd & Dade Blvd	D		C		C		C		C		C		C	
Dade Blvd & N. Michigan Ave	B		C		C		C		C		C		C	
17th Street & Michigan Ave	A		A		A		A		A		A		A	
17th Street & Convention Center Dr*	B		B		C		C		C		C		C	
17th Street & Washington Ave	C		C		C		C		C		C		C	
Dade Blvd & Washington Ave	B		C		C		C		C		C		C	
Dade Blvd & Convention Center Dr*	B		C		C		C		C		C		C	
Dade Blvd & Meridian Ave*	C		C		C		C		C		C		C	
Alton Rd & Chase Ave	A		B		B		B		B		B		B	

As shown in the table above, the impact of the hotel to the traffic at the intersections is minimal and has little to no effect in the Level of Service at the study intersections.

As part of the study, the Consultant was tasked with analyzing the effects of certain proposed roadway improvements. The improvements related to signal timing will be coordinated with the County immediately. Some of the geometric improvements will be implemented as part of upcoming FDOT projects while others will be implemented at different stages by the City. The implementation of these improvements, in addition to mass transit, Intelligent Transportation Systems, and Parking

Management Systems, will result in reduced delays and improved LOS during events and during normal days. The result of these improvements is shown in the attached executive summary (Attachment B).

Impact of Event Mix

One of the very important aspects of this study was the comparison of the impacts of the event mix. (Refer to Sheet 13 in Exhibit C attached), the MBCC hosted 55 consumer shows and 5 conventions. This event breakdown is in significant contrast with typical nationwide averages. Prior to proposing a change in the event mix, it was important for the Administration to understand the impact of each type of event on the transportation network.

In 2014, the MBCC hosted 547,500 attendees over 89 days or an average of 6,152 attendees per event day. Most of the consumer shows in the MBCC are frequented by South Florida locals who drive to the center through our causeways and arterials. For the purpose of this analysis, a vehicle occupancy ratio of two (2) persons per vehicle was assumed; however, since each trip is composed of two parts, entering and exiting, the vehicle impact was counted double. These calculations yielded a daily average additional vehicle figure to the MBCC district of 6,152 vehicles.

For conventions, the calculations were done based on current convention attendance averages. The daily average for convention attendance is 4,800 conventioners. The particular aspect of conventions is that Day 1 and Day 4 traffic differs from Day 2 and Day 3 traffic. Day 1 and Day 4 calculations accounts for arrival and departure traffic. These calculations assumed conventional industry reductions, such as a 1.4 person per vehicle and a 15% multimodal reduction. For Days 2 and 3, two (2) different permutations were created to determine the vehicle impact on the local roadways. Taking into account the proposed hotel and based on the proximity (less than ¼ mile) to the Collins Avenue Hotels, a 40% internal capture rate was assumed to account for the pedestrian reductions. In addition a 15% multimodal (shuttles and transit) and 1.4 person per vehicle were assumed. Based on these calculations the average daily trips for current MBCC conventions is 2,913 vehicles. When compared to consumer shows, this results in a reduction of 3,239 vehicle trips.

The second scenario analyzed for Days 2 and 3, was based on coordination with Strategic Advisory Group (Industry Experts) and Global Spectrum (MBCC Management / Operator). According to these two sources, conventions typically provide shuttles to provide transportation services to the hotels hosting conventioners. In addition, the growing trolley system in the City can also assist with providing mobility for conferences and conventions. Based on this coordination, the calculations included a shuttle and transit reduction of 50%. In addition, the character and walkability of the City were taken into account by adding a 25% pedestrian reduction. These calculations resulted in 2,247 trips. When compared to the average consumer show traffic, these figures represent a 3,905 vehicle reduction.

Also attached is a draft copy of the PowerPoint Presentation for the December 18, 2014 Special Commission meeting (Exhibit C).

Please feel free to contact me if you have any questions.

Attachments:

Exhibit A: Convention Center Traffic Impact and Study Executive Summary

Exhibit B: Headquarter Hotel Traffic Impact Study

Exhibit C: Draft Traffic Study Presentation

KGB/JRG/JFD

F:\TRAN\ALL\Transportation\MBCC\LTC-Traffic Impact and Mitigation Study (MBCC and Hotel)

EXHIBIT A

EXECUTIVE SUMMARY – CONVENTION CENTER

This report was prepared to evaluate the traffic impacts for the proposed Miami Beach Convention Center (MBCC) project located at Convention Center Drive with Washington Avenue to the East, Convention Center Drive to the West, 17th Street to the South and Dade Blvd to the North in the City of Miami Beach, Florida. This project is a proposed renovation and expansion of the existing convention center facility. The expansion of the Miami Beach Convention Center (MBCC) is anticipated to affect traffic conditions on the adjacent roadway network. To measure the extent of the impacts, a traffic analysis was conducted to evaluate the existing conditions of the surrounding intersections and how the traffic generated by the project will affect them.

The trip generation for the proposed project was based on the vehicle trips generated by the convention center annual events attendance. For the purpose of a conservative analysis the event with maximum number of attendees was selected for estimating PM Peak Hour trips. PM Peak Hour was selected for analysis because most of the event based activity occurs in the evening. Art Basel event was selected for this purpose which generates 140,000 attendees in four (4) days. As a result the gross trips anticipated to be generated by the proposed project consists of approximately 2,100 trips during the Weekday PM peak hour (840 inbound and 1,260 outbound).

The gross peak hour trips were distributed to the intersections within the study area and project driveways. The traffic distribution and assignment was performed consistent with the subject project Traffic Analysis Zone (TAZ) 620 as assigned by the Metropolitan Planning Organization's (MPO) on the Miami-Dade Transportation Plan (to the Year 2035) Directional Trips Distribution Report, October 2009.

Due to on-going construction effort on Alton Road the traffic currently moves one-way northbound. Consequently turning movement counts on many of the study intersections do not reflect the regular traffic patterns. Therefore turning movement counts (year 2013) were obtained from previously completed traffic studies for the following intersections:

- Alton Road and 17th Street
- Alton Road and 5th Street
- Alton Road and North Michigan Avenue
- Alton Road and Dade Boulevard
- Michigan Avenue and Dade Boulevard

EXECUTIVE SUMMARY – CONVENTION CENTER

- 17th Street and Meridian Avenue
- 17th Street and Washington Avenue
- Dade Blvd and Washington Avenue
- Convention Center Drive and Dade Boulevard

The above 2013 counts were adjusted for year 2014 by applying a conservative growth rate of 0.5% and FDOT's Peak Season Conversion Factor (PSCF). The following remaining study intersection counts were collected on Wednesday, June 4, 2014 between 7:30 AM and 9:30 AM and 4:30 PM and 6:30 PM:

- Alton Road and Chase Avenue
- 17th Street and Michigan Avenue
- Convention Center Drive and 17th Street

Intersection capacity/level of service analyses were conducted for all the study intersections. The analyses were undertaken by using Synchro 8 software which follows the capacity/level of service procedures outlined in the Highway Capacity Manual 2010 (HCS). All study intersections currently operate adequately and will continue to operate at an acceptable level of service in the year 2017 with the proposed project in place. Some intersections showed failing individual approaches for the year 2017 analysis and their signal timings were optimized to achieve an acceptable overall level of service. The signal timings for the following intersections were optimized,

- Alton Road and 17th Street
- Alton Road and 5th Street
- Alton Road and North Michigan Avenue
- Alton Road and Chase Avenue
- Alton Road and Dade Boulevard
- 17th Street and Meridian Avenue
- Dade Blvd and Washington Avenue

As per request from the City the level of service for a roundabout at the intersection of Michigan Avenue and Dade Boulevard was also analyzed. The Synchro result show that the roundabout will have a level of service D (delay 30.7 seconds) at the intersection of Michigan Avenue and Dade Boulevard for the future 2017 total traffic scenario.

EXHIBIT B

EXECUTIVE SUMMARY – HEADQUARTER HOTEL

This study was performed to evaluate the traffic impacts associated with the proposed Miami Beach Convention Center (MBCC) Hotel. The project site is surrounded by Convention Center Drive on the west, Washington Avenue on the east, 17th Street on the south and Dade Boulevard on the north. The proposed MBCC project includes two components – i) the renovation and expansion of the existing convention center facility and ii) the MBCC Hotel. The expansion of the MBCC as well as the construction of the Hotel is expected to impact traffic conditions along the adjacent roadway network. To measure the extent of the impacts, a total of 12 surrounding intersections were analyzed (see below for a list of intersections). Traffic analysis was conducted (using SYNCHRO software) to evaluate the intersection performance (average delay experienced motorists) under conditions and potential impacts due to traffic generated by the project.

1. Alton Road and 17th Street
2. Alton Road and N. Michigan Avenue
3. Alton Road and Dade Boulevard
4. Alton Road and Chase Avenue
5. Alton Road and 5th Street
6. N. Michigan Avenue and Dade Boulevard
7. Dade Boulevard and Meridian Avenue
8. 17th Street and Washington Avenue
9. 17th Street and Meridian Avenue
10. 17th Street and Michigan Avenue
11. Convention Center Drive and 17th Street
12. Convention Center Drive and Dade Boulevard

Five different Hotel scenarios (400 rooms, 600 rooms, 800 rooms, 1000 rooms and 1200 rooms) were analyzed. The trip generation for the proposed Hotel was performed as per the guidelines provided by the City of Miami Beach, and using the Institute of Transportation Engineers (ITE) Trip Generation Manual (Land Use Code 310). The Weekday PM Peak Hour trips were estimated.

Based on the guidance from the City of Miami Beach, several assumptions were made during trip generation calculations. Three different guest types were identified: transient, in-house and convention type. The study assumed 75% hotel occupancy for all five hotel scenarios. Among



EXECUTIVE SUMMARY – HEADQUARTER HOTEL

the occupied rooms, transient type guests were assumed to occupy 38% of rooms, followed by in-house guests 34% and convention guests 28%. Moreover, the study assumed each occupied room will generate one vehicle trip. The gross trips were adjusted to account for different trip reduction factors and then net trips were calculated. The trip reduction factors used in this study include: multimodal trip adjustment (-10%) and vehicle occupancy adjustment (-16%). This study also assumes that the convention center guests would be accommodated as the background traffic. Therefore, the convention center would not generate any additional trips if the proposed Hotel is constructed. Based on this assumption, the total number of trips generated by the Hotel was calculated by adding the trips related to transient guests and in-house guests. A summary of the estimated trips generated during a typical weekday PM peak hour for all five Hotel scenarios (i.e. various Hotel room capacities) is provided below:

Hotel Size (no. of rooms)	Estimated Trips (no. of vehicles/hour) During PM Peak Hour
400	130
600	196
800	261
1000	326
1200	391

These peak hour trips (related to Hotel) were distributed to the 12 study intersections. The traffic distribution and assignment was performed in accordance with the project Traffic Analysis Zone (TAZ) 620 as assigned by the Miami-Dade Metropolitan Planning Organization's (MPO) Transportation Plan (Year 2035) Directional Trip Distribution Report dated October 2009. The 8-cardinal percentage values were simplified into four major directions, as follows:

- To/From **NORTH** (via Julia Tuttle Causeway) = **30%**
- To/From **SOUTH** (via MacArthur Causeway) = **27%**
- To/From **EAST** (via Collins Avenue and Washington Avenue) = **33%**.
- To/From **WEST** (via Dade Blvd/Venetian Causeway) = **10%**.

It should be noted that the traffic that will be generated by the remodeled Convention Center (around 2,100 trips during the PM peak hour) was included in the background traffic for the year 2017 (Hotel opening year). The distributed traffic volumes were extracted from the MBCC Traffic Impact Study prepared for the City of Miami Beach by The Corradino Group (dated December

EXECUTIVE SUMMARY – HEADQUARTER HOTEL

2014). The existing traffic data for all study intersections were extracted from the Corradino study.

Intersection capacity/level of service (LOS) analysis was conducted for all the study intersections for Weekday PM Peak Hour for the following three scenarios:

1. Year 2014 - Existing Traffic
2. Year 2017 - Background Traffic (traffic generated by MBCC + growth in traffic, 1.5% per year from 2014 to 2017)
3. Year 2017 (Hotel opening year) – Background traffic + traffic generated by the Hotel

LOS analysis was conducted using Synchro 8 software, which follows the capacity/level of service procedures outlined in the Highway Capacity Manual. LOS analysis for the year 2017 traffic conditions (which include the additional traffic generated by the Convention Center and Hotel) indicates that all the study intersections, with the exception of Alton Road/17th Street, Alton Road/5th Street, and Meridian Avenue/17th Street, are likely to operate at overall LOS D or better. Signal timing and/or minor roadway improvements are expected to improve overall LOS for these three intersections. The following roadway improvements are suggested to help improve overall intersection LOS to acceptable level. A further review is need to evaluate the feasibility of these improvements from right-of-way, utility conflicts, impacts to on-street parking, and access management standpoint.

Alton Road/17th Street:

- Convert northbound shared through/right lane to an exclusive right turn lane,
- Add an exclusive southbound right turn lane,
- Add an additional southbound left turn lane to provide dual left turn lanes

Meridian Avenue/17th Street:

- Restore original lane configuration on the east and west legs (no shared through/left-turn lanes)
- Restore east/west concurrent phasing (remove east/west split phase)

Alton Road/N. Michigan Avenue:

- Improve westbound right turn radius (free flow lane)

Alton Road/5th Street:

- Add an additional southbound right turn lane to provide dual right turn lanes

The results of the LOS analysis also indicate that some critical movements at the following intersections may experience (in 2017) LOS E or F due to heavy volumes. As such, they may

EXECUTIVE SUMMARY – HEADQUARTER HOTEL

need additional (roadway) improvements in addition to signal timing improvements:

- Alton Road/17th Street,
- Alton Road/5th Street,
- Meridian Avenue/17th Street,
- Alton Road/Dade Boulevard, and
- Dade Boulevard/Convention Center Drive.

The study also suggests that the City of Miami Beach consider installation of traffic/demand management type improvements to mitigate traffic issues during major events. These recommendations include:

- Real-time traffic monitoring and signal timing optimization,
- Adaptive signal control systems along critical corridors,
- Dynamic lane assignment signs and traveler information signs at critical locations,
- Travel information kiosk at Hotel,
- Off-site parking facility with shuttle service,
- Parking management systems (such as real-time parking information, variable parking rates, dynamic parking capacity),
- Mini traffic management center, and
- Flexible work hours/carpooling.



Event Mix Impact

As per the guidance from the City, this study has conducted a research on the impacts of the event mix/programming on traffic conditions and level of service. The ridership data shows that Miami Beach has a higher number of Multi-Modal Balance compared to Miami-Dade County in general. Therefore, based on Modal Splits Captured in the 2014 Miami Beach Citizen Satisfaction Survey, the analysis results indicates that containing and internalizing trips generated by the Miami Beach Convention Center is beneficial for the traffic network. Two analysis scenarios in event management/programming were evaluated. They are:

EXECUTIVE SUMMARY – HEADQUARTER HOTEL

- *Consumer/Trade Shows:* These types of shows are typically open to the public. Most of the attendees are locals who drive to the MBCC and park in the area. The City of Miami Beach Convention Center currently books 28 consumer/trade shows every year. The total number of attendees for a period of 89 days is about 547,500 people with an average of 6,152 people per day. The study assumes that each vehicle would carry approximately 2 persons assuming that fact that consumer shows are predominantly family oriented and encourage local visitors. Therefore, the total of 3,076 'entering' and 3,076 'exiting' trips would be added to the roadway network. The statistical data shows that the trade shows typically last for four days and therefore a total of 24,608 vehicles would be added to the roadway network.

- *Conventions:* These types of events are typically organized by invitation only. Therefore, a significant percentage of the attendees are visitors who stay in hotels within the City or County and may walk, drive, take a shuttle, or take a taxi into the MBCC. The City of Miami Beach Convention Center currently books five conventions every year. The convention statistics shows that a total of about 24,185 people attended those events with an average of 4,800 people per event. The events last for an average of four days. This study assumed that majority of the traffic would be experienced on Day 1 (opening of the event) and Day 4 (closing of the event). Different types of assumptions were made while calculating the vehicular trips during the event period. They are provided as follows:
 - Day 1 and Day 4: The study assumed that about 97.2% of the convention attendees would stay overnight in the Miami Beach Hotels, which equates to about 4,661 guests. The City of Miami Beach person trip adjustment factor of 1.4 persons/vehicle was applied to calculate. This results in 3,329 vehicles. Afterwards, a multimodal reduction factor of 15% was applied to account for the availability of the transit and other public transportation modes. So, a total of about 2,830 'entering' and 2,830 'exiting' vehicles (combined total of 5,660 vehicles) would be added to the roadway network on both Day 1 and Day 4.

 - Day 2 and 3: Two different scenarios were assumed to calculate the vehicle numbers.
 - In the first scenario, a 40% internal capture reduction, 15% multimodal reduction factor and 1.4 person trip reduction factor was assumed due to the proximity of the local Hotels, availability of the public transit. After applying these reduction factors, a total of about 1,498 'entering' and 1,498 'exiting' vehicles will be added

EXECUTIVE SUMMARY – HEADQUARTER HOTEL

to the roadway network on both Day 2 and Day 3 (combined total of 5,992 vehicles). Therefore, in the first scenario, a total of 11,652 vehicles (5,660 and 5,992) would be added to the roadway network during the period of four days with a daily average of 2,913 vehicles.

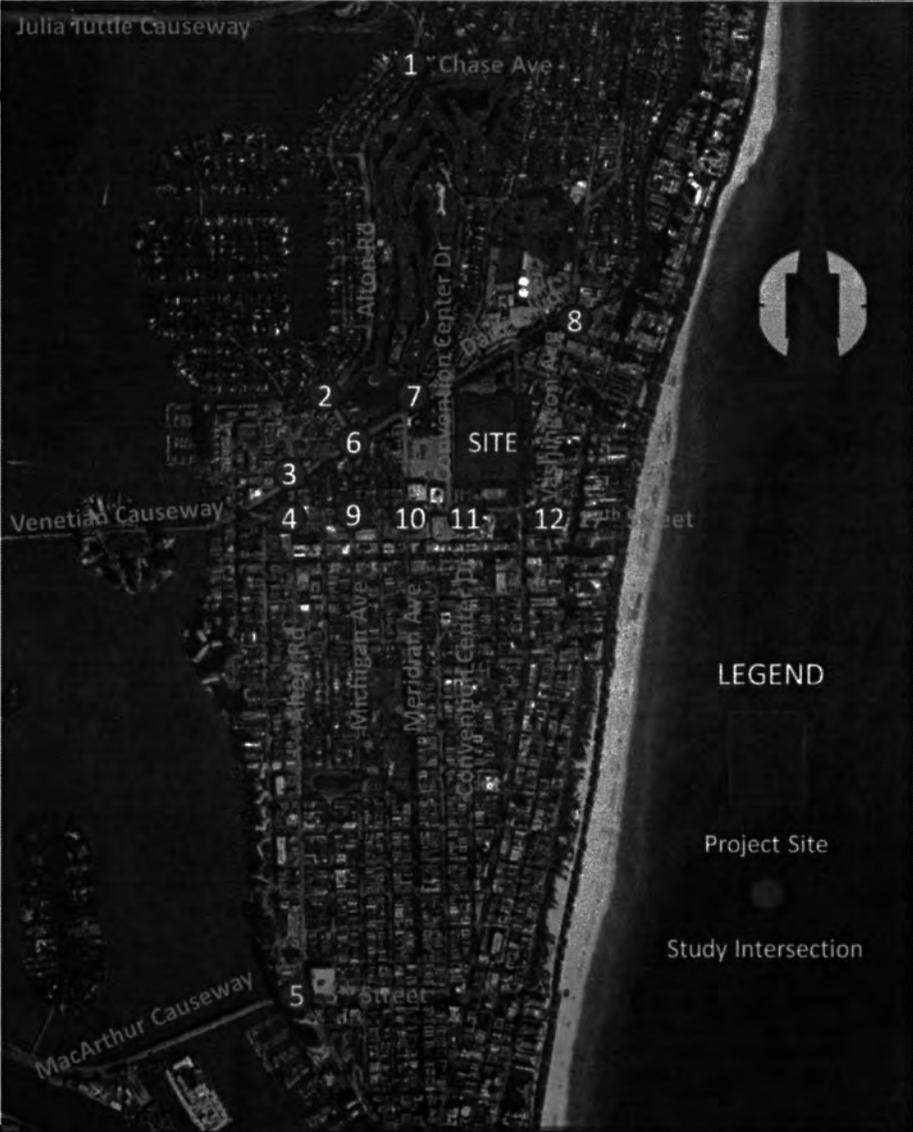
- The second scenario was developed based on the coordination with other Convention events. A reduction factor of 50% for transit and shuttle service and 25% reduction factor for pedestrian traffic was applied. The analysis results show a net value of 832 'entering' and 832 'exiting' vehicles (combined total 3,328 vehicles) during both Day 2 and Day 3. Therefore, in the second scenario, a total of 8,988 vehicles (5,660 and 3,328) would be added to the roadway network during the period of four days with a daily average of 2,247 vehicles.

Overall, this study concludes that the Convention event would generate less site traffic compared to the consumer/trade show event. So, the surrounding roadway network would experience less traffic volume during the convention event compared to consumer/trade show event periods. The analysis results show a net reduction of 3,239 vehicles/day (first scenario) or 3,905 vehicles/day (second scenario) for conventions as compared to consumer/trade shows. In addition to the calculated improvement; the attendees typically arrive and depart the conferences/conventions or the meeting site during off-peak hours. This will be an improvement over most consumer shows with operating hours between 10:00 AM and 6:00 PM.

EXHIBIT C

Traffic Study
DRAFT

STUDY AREA



STUDY APPROACH

TWO AREAS OF STUDY by AECOM

- Impact of Hotel Size
- Impact of Change in MBCC Event Mix

HOTEL IMPACT

TRIP GENERATION METHODOLOGY

- Five Hotel occupancy scenarios (400, 600, 800, 1,000 and 1,200 rooms) analyzed
- Three types of guests assumed: Transient, In-house Group and Citywide Convention
- Assumed 75% occupancy
 - 38% Transient
 - 34% In-house Group
 - 28% Citywide Conventions
- Assumed each occupied room will generate one vehicle trip

HOTEL IMPACT TRIP GENERATION METHODOLOGY

- Estimated weekday PM peak hour 'gross trips' by using the Institute of Transportation Engineers (ITE) Manual equation
 - Hotel Land Use Code (310) was used to estimate the trips
- Applied adjustment factors to gross trips to calculate net vehicle trips.
 - The factors are: multimodal trip adjustment (-10%), vehicle occupancy adjustment (-16%)
- The trips generated from Citywide Convention guests were considered under background traffic/internal capture

ESTIMATED TRIPS

	Hotel traffic in vehicles per hour (during PM Peak)				% Increase in Area Trips
	Transient	In House Group	Citywide Conventions	Total	
400 Room Hotel	59	71	59	130	1.4%
600 Room Hotel	89	107	88	196	2.1%
800 Room Hotel	118	143	118	261	2.8%
1,000 Room Hotel	148	179	147	326	3.5%
1,200 Room Hotel	177	214	176	391	4.2%

TRIP DISTRIBUTION

Direction of Travel (To/From)	Hotel Trips by Direction	Existing Peak Hour Volume	Traffic Generated by Hotel									
			400 Room Hotel		600 Room Hotel		800 Room Hotel		1,000 Room Hotel		1,200 Room Hotel	
			Trips generated	% increase	Trips generated	% increase	Trips generated	% increase	Trips generated	% increase	Trips generated	% increase
NORTH (via Julia Tuttle Causeway & Alton Rd)	30%	4,275	39	0.9%	59	1.4%	78	1.8%	98	2.3%	117	2.7%
SOUTH (via McArthur Causeway & Alton Rd)	27%	2,745	35	1.3%	53	1.9%	70	2.6%	88	3.2%	106	3.9%
EAST (via Collins Ave & Washington Ave)	33%	3,434	43	1.3%	65	1.9%	86	2.5%	108	3.1%	129	3.8%
WEST (via Dade Blvd/Venetian Causeway)	10%	459	13	2.8%	20	4.3%	26	5.7%	33	7.1%	39	8.5%
Total Trips (vehicles per hour)			130		196		261		326		391	

INTERSECTION PERFORMANCE ASSESSMENT

- Level of Service (LOS): Criteria used to measure performance of intersections and roadway segments. LOS does not reflect safety of the intersection
- LOS is determined based on estimated average delay to motorists

LEVEL OF SERVICE	AVERAGE DELAY (Seconds/Vehicle)
A	≤ 10
B	$> 10-20$
C	$> 20-35$
D	$> 35-55$
E	$> 55-80$
F	> 80

- Acceptable LOS: A, B, C or D. The Transportation Element of the City's Comprehensive Plan establishes LOS D as the target LOS.

GENERAL RECOMMENDATIONS

INTERSECTION	NETWORK RECOMMENDATIONS
Along the Study Corridors	<ul style="list-style-type: none"> • Optimize Network Offset, Splits, Cycle Lengths

Broader (non-hotel related) improvements to be considered:

Transit	<ul style="list-style-type: none"> • Bus Rapid Transit (BRT) • Urban Enhanced Route (UER)
Alton Rd & 17th Street	<ul style="list-style-type: none"> • Convert NB Shared Through/Right To Exclusive Right Turn Lane • Add Exclusive SB Right Turn Lane • Add An Additional Left Turn Lane To Provide SB Dual Left Turn Lanes
Alton Rd & N. Michigan Ave	<ul style="list-style-type: none"> • Improve WB Right Turn Radius (Free Flow Lane) • Implementation of SB Double Left Turn (FDOT Project)
Alton Rd & 5th Street	<ul style="list-style-type: none"> • Add an Additional SB Right Turn Lane To Provide Dual Right Turn Lanes

STRATEGIES FOR TRAFFIC/PARKING MANAGEMENT

- Off-Site Parking With Shuttle Service
- Parking Management (Variable Parking Rates, Dynamic Parking Reservation, Real-Time Parking Information, Dynamic Parking Capacity)
- Dynamic Lane Assignment (Electronic Signs)
- DMS Signs (with Travel Information) at Critical Locations
- Mini-Traffic Management Center (City Hall/Convention Center)
- Travel Information Kiosk at Hotel/Predictive Traveler Information
- Real-time Traffic Monitoring and Signal Timing Optimization
- Adaptive Signal Control System
- Flexible Work Schedule, Telework, Carpooling



IMPACTS FROM MBCC EVENT MIX

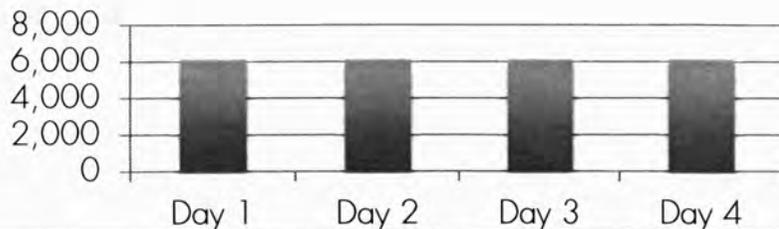
Qualitative assessment of traffic impacts related to consumer shows and conventions:

- Consumer Shows
 - Open to general public
 - Most of the attendees are locals who drive to the MBCC and park in the area
 - Parking impacts every day of event
- High-End Trade Shows and Conventions
 - Events open only by invitation
 - Attendees arrive by bus, rental car or taxi
 - Highest traffic impacts on Event Start and Event End days
 - Lesser traffic impact on interim days
- In 2014 MBCC Booked
 - 55 consumer/trade shows
 - 5 conventions

EVENT MIX IMPACTS

Consumer Shows

- 547,500 attendees over 89 days
- 6,152 per day on average
- Assumptions
 - 2 Persons per Car
- Average Daily Trips: 6,152 Vehicles
(Counting Daily Entering and Exiting Traffic Vehicles as 2 Trips to the Transportation Network)
- **24,608 Vehicles Over 4 Days**



Conventions

- 24,185 attendees over 5 events
- 4,800 average attendees
- Assumptions For Day 1 and Day 4
 - 15% Multi-Modal Reduction
 - 1.4 Persons Per Vehicle
- Assumptions for Day 2 and Day 3⁽¹⁾
 - 40% Internal Capture Reduction
 - 15% Multi-Modal Reduction
 - 1.4 Persons Per Vehicle
- Assumptions for Day 2 and Day 3⁽²⁾
 - 50% Transit and Shuttle Service Reduction
 - 25% Pedestrian Reduction
- Average Daily Trips: 2,713⁽¹⁾/2,247⁽²⁾ Vehicles
(Counting Daily Entering and Exiting Vehicles as 2 Trips to the Transportation Network)
- **10,452⁽¹⁾/6,656⁽²⁾ Vehicles over 4 days**
 - Net Daily Reduction: 3,439⁽¹⁾/3,905⁽²⁾ Vehicles

