

# MIAMI BEACH

OFFICE OF THE CITY MANAGER

NO. LTC # **386-2016**

LETTER TO COMMISSION

TO: Mayor Philip Levine and Members of the City Commission

FROM: Jimmy L. Morales, City Manager

DATE: September 20, 2016

SUBJECT: **TRAFFIC IMPACT STUDY FOR ISLAND GARDENS DEVELOPMENT ON WATSON ISLAND**

In 2015, the City of Miami Beach Commission directed the Administration to conduct an independent traffic impact study for the Island Gardens development in Watson Island. The direction from the City Commission was specific in using a consultant from outside the South Florida area. As per the direction from City Commission, the City engaged a traffic engineering firm based in City of Orlando. Following the completion of the study and based on some concerns with the data collection, the City engaged a local firm to peer review and conduct a second study. Both studies had a total cost of \$206,000.

The Island Gardens Development is a proposed mixed use development located on Watson Island. Watson Island is within the City of Miami. Watson Island is bisected by the MacArthur Causeway and can only be accessed via ramps from the causeway in the eastbound and westbound directions. The initial project, consisting of 50 mega yacht marina slips, two hotel buildings (500 rooms and 105 timeshare units), and a total of 232,774 retail square feet (SF), was approved by the City of Miami and the South Florida Regional Planning Council in 2004. The City did not officially oppose or comment on the 2004 approval. The 50 mega yacht marina slips have been constructed.

In 2015, the Island Gardens development requested approval for an additional 140,000 SF of retail. It is worth highlighting that the traffic impacts of both the 2004 approved development and 2015 requested approval were analyzed; however only the additional 140,000 SF of retail is open for comment.

Traffic counts were collected in March 2016, which according to historical data is the highest month of the year in measures of traffic volume. The analysis included the weekday and weekend peak hour analysis for existing conditions (2016), future conditions (including the 2004 approval), and future build-out conditions (including additional 140,000 SF of retail space). According to the traffic distribution analysis, 85% of all traffic generated by the site will be between the mainland and Watson Island, while 15% of the trips generated will be coming from Miami Beach. In addition, and consistent with the Institute of Transportation Engineers (ITE) standards, it was assumed that 20% of the development's generated trips will be "passer-by capture" which are vehicles already traveling along MacArthur Causeway between Miami and Miami Beach.

For purposes of the analysis, the consultant built a micro-simulation model which was later calibrated and validated based on field conditions and observations. This model was also forecasted taking into account yearly traffic growth and committed developments in the area. Once the model was calibrated to match day-to-day traffic conditions, the vehicle trips generated by the 2004 approved development and 2015 requested approval were loaded into the model to gauge the future impacts generated by the site. Based on the results of the analysis, it was concluded that the 2004 approved development has significantly more impact on travel time and speed along the MacArthur Causeway than the proposed additional 140,000 SF of retail proposed in 2015. For weekday peak hours (4:00 PM to 8:00 PM), it was determined that the travel times will increase a maximum of approximately 6 minutes and 30 seconds in the eastbound direction and approximately 3 minutes in the westbound direction as a result of the 2004 approved development. Following the same methodology, it was determined that the additional 140,000

SF of retail proposed in 2015 would increase travel times by a maximum of 42 seconds in the eastbound direction and 1 minute and 30 seconds in the westbound direction.

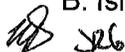
The analysis also took into account weekend traffic conditions. The weekend analysis revealed more congestion along the MacArthur Causeway; however, upon analyzing the simulation results, it was found that the congestion level forecasted in 2020 is a result of growth in traffic demand in Miami Beach which affects the traffic conditions and level of congestion along the MacArthur Causeway. The ramps into the proposed development do not show significant congestion or queueing.

The Traffic Impact Study concluded that the increase in trips caused by the developments will not have a significantly adverse impact on MacArthur Causeway. The congestion observed in the model cannot be attributed to the proposed development. Attached herein are the Executive Summary (Attachment A) and the Final Report (Attachment B) of the Island Gardens Development Traffic Impact Study.

Attachments:

A: Island Gardens Development Traffic Impact Study Executive Summary

B: Island Gardens Development Traffic Impact Study Final Report

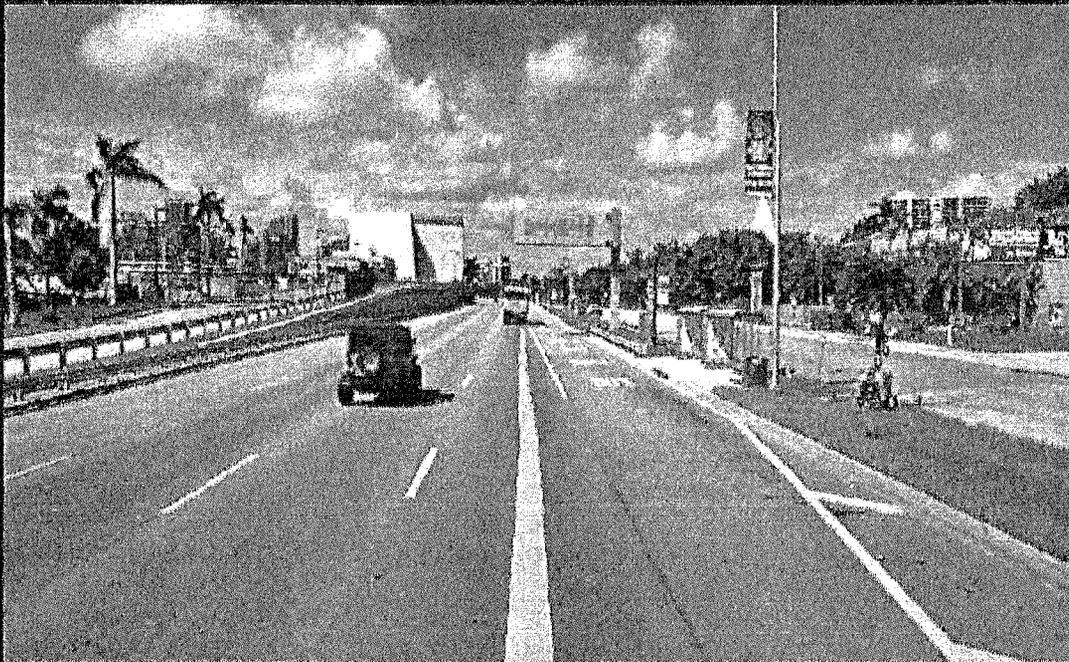
  
JLM/KGB/JRG/JFD

# ISLAND GARDENS DEVELOPMENT TRAFFIC IMPACT STUDY

## EXECUTIVE SUMMARY

Prepared for:

**CITY OF MIAMI BEACH, FLORIDA**



Prepared By:

FTE  
8750 NW 36 Street, Suite 670  
Miami, FL 33178

Revised  
August 2016

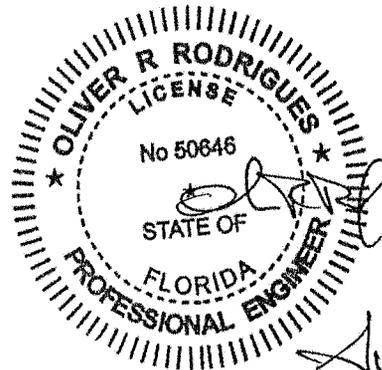


### PROFESSIONAL ENGINEER CERTIFICATE

Pursuant to Florida Administrative Code Rule 61G15.18.011, I hereby certify that I am a licensed Professional Engineer in the State of Florida practicing with Florida Transportation Engineering, Inc. (FTE), a Florida Corporation, authorized to operate as an engineering business, CA #7924, by the Florida Board of Professional Engineers.

I have prepared or approved under my responsible charge the evaluations, findings, opinions, conclusions, and technical advice made herein. I acknowledge that the procedures and references used to develop the results contained in this report are true and correct to the best of my knowledge and ability and standard to the professional practice of civil / transportation engineering as applied through education, experience, and professional judgment.

PROJECT: Island Gardens Development  
Traffic Impact Study  
LOCATION: City of Miami Beach  
Miami Dade County, Florida



*August 31, 2016*

Oliver R. Rodrigues, P.E., PTOE  
State of Florida Board of Professional Engineers  
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## EXECUTIVE SUMMARY

Island Gardens is a proposed mixed use development located on Watson Island in the City of Miami, Florida. Watson Island is bisected by the MacArthur Causeway and can only be accessed via ramps from the causeway in the eastbound and westbound directions.

### Background

The proposed project was initially approved in 2004 by the City of Miami. The development intensity consisted of 50 mega yacht marina slips, two hotel buildings (500 rooms and 105 timeshare units), and a total of 232,774 retail square feet (sq.ft.). The 50 mega yacht marina slips have been constructed.

In 2015, the Island Gardens development requested approval for an additional 140,000 sq.ft. of retail. Given the intensity and size of the proposed development, the City of Miami Beach had express concerns with the additional traffic that the proposed development will attract onto the MacArthur Causeway, a corridor that serves as one of the most important access thoroughfares to the City.

Approximately 20% of the development's trips will be from passer-by capture trips already traveling on the MacArthur Causeway between I-395 / downtown Miami and Miami Beach. Existing trips to the Children's Museum and Jungle Island were accounted for in the Island Gardens internal capture.

The new project trips for the Island Gardens development will primarily travel between I-395 / downtown Miami and Watson Island. The cardinal distribution from the Miami-Dade MPO provided this generalized distribution percentage of new project trips between Watson Island (TAZ 524) and other parts of Miami-Dade County. Approximately 85% of new trips will be from / to I-395 / downtown Miami and 15% of new trips will be from /to Miami Beach.

**The objective of this study was to evaluate the impacts of the proposed additional 140,000 sq.ft. retail development on the current traffic conditions along the MacArthur Causeway and the previously approved development on Watson Island.** The analysis in this report included existing 2016 conditions, a future 2020 build out condition with the development intensity previously approved in 2004, and also a future 2020 build out condition with the additional proposed 140,000 sq.ft. of retail. A comparison is made between these scenarios.

### Data Collection

Traffic counts were collected in March 2016, which according to historical data is the highest month of the year. This data was used for the analysis of the existing conditions and forecasted to the future build out conditions in 2020.

The 2016 traffic counts were compared to the FDOT traffic counts published for the previous year. The 2016 traffic counts along the causeway were lower than the FDOT counts due to the Venetian Causeway being reopened and traffic shifting away from the MacArthur Causeway.

There was an increase in traffic in 2016 on the ramps to and from Watson Island from the mainland. Traffic on the eastbound off ramp to Watson Island and westbound on ramp from Watson Island was higher than the previous year. This is an indication that development is occurring on the island. Additionally, there was an increase in traffic to and from the Port of Miami Tunnel (POMT) as well as on Biscayne Boulevard in the City of Miami.

### Level of Service Thresholds

Level of service (LOS) is a quantitative stratification of quality of service. The FHWA, Highway Capacity manual (HCM) classified highway quality of service into six letter grades, A through F, with A being the best and F being the worst. With the A through F LOS scheme, traffic operation is more easily explained to the general public. Although it is true that A is best and F is worst, this is strictly from a traveler perspective.

Travel time and travel speed along the corridor was used as the primary measures of effectiveness for this study. The average travel speeds from the simulation results were compared to speed thresholds from the Transportation Research Board, NCHRP Report No. 599, *Default Values for Highway Capacity and Level of Service Analyses*.

The segment of MacArthur Causeway from the Biscayne Boulevard ramps to Terminal Isle is an Urban Street Class I based on its speed characteristics. The segment of MacArthur Causeway and 5th Street from Terminal Isle to east of Meridian Avenue is an Urban Street Class II based on its speed characteristics.

### Travel Speed Level of Service Thresholds

Urban Street LOS By Class				
Urban Street Class	I	II	III	IV
Range of Free-Flow Speeds (FFS)	55 to 45 mi/h	45 to 35 mi/h	35 to 30 mi/h	35 to 25 mi/h
Typical FFS	55 mi/h	40 mi/h	35 mi/h	30 mi/h
LOS	Average Travel Speed (mi/h)			
A	> 42	> 35	> 30	> 25
B	> 34-42	> 28-35	> 24-30	> 19-25
C	> 27-34	> 22-28	> 18-24	> 13-19
D	> 21-27	> 17-22	> 14-18	> 9-13
E	> 16-21	> 13-17	> 10-14	> 7-9
F	≤ 16	≤ 13	≤ 10	≤ 7

## Results of Weekday Evaluation

Simulation of the traffic operations was performed using Vissim, a microscopic time step and behavior based simulation model developed to model urban conditions. The purpose of this simulation model was to more effectively evaluate a multi-hour analysis period.

For the purpose of simulating traffic operations, it was necessary to replicate the existing roadway infrastructure. Signal timing information obtained from the Miami-Dade County Department of Transportation and Public Works, was coded by time of day in the Vissim model. In addition to traffic counts, auto travel time and speeds were collected over multiple days and used to calibrate the model to replicate existing conditions. The results of the simulation were summarized by travel time along the corridor as well as by travel speed.

### 2016 Existing Weekday Conditions

The average weekday travel time between 4:00pm and 8:00pm from the simulation analysis, along the study route between the Biscayne Boulevard ramps and east of Meridian Avenue on 5<sup>th</sup> Street, ranged between 6 and 7 minutes in the eastbound direction. The average travel time ranged between 5 and 8 minutes in the westbound direction for the same period.

Similarly, the average weekday travel speed ranged between 44 and 45 mph in the eastbound and westbound directions along the study route between the Biscayne Boulevard ramps and Watson Island. This segment (1.1 miles) does not have any traffic signals and the flow is uninterrupted.

The average weekday travel speeds between Watson Island and Alton Road ranged between 21 and 44 mph in the eastbound direction, and ranged between 33 and 43 mph in the westbound direction. This segment (2.1 miles) has three traffic signals and the flow is therefore interrupted. A slowdown in speed occurs in the vicinity of Terminal Isle due to this traffic signal servicing the ferry traffic from Fisher Island.

The average weekday travel speeds on 5<sup>th</sup> Street between Alton Road and east of Meridian Avenue ranged between 18 and 21 mph in the eastbound direction, and ranged between 10 and 17 mph in the westbound direction. This segment (0.36 miles) has four traffic signals and the flow is interrupted.

### 2020 Future Weekday Conditions with 2004 Approved Development

The average weekday travel time between 4:00pm and 8:00pm from the simulation analysis, along the study route between the Biscayne Boulevard ramps and east of Meridian Avenue on 5<sup>th</sup> Street, ranged between 7 and 13 minutes in the eastbound direction. The average travel time ranged between 7 and 8 minutes in the westbound direction for the same period.

Similarly, the average weekday travel speed ranged between 22 and 44 mph in the eastbound direction along the study route between the Biscayne Boulevard ramps and Watson Island. A noticeable decrease in the average travel speed of up to 21.5 mph occurred on the causeway due in part to the future approved development trips slowing down to exit onto Watson Island. The average travel speed ranged between 14 and 41 mph in the westbound direction. A

significant decrease in average travel speed of up to 21.3 mph occurred on this segment (1.1 miles) of the causeway due in part to the future approved development trips merging from Watson Island and weaving with through traffic and POMT traffic exiting onto Biscayne Boulevard.

The average weekday travel speeds between Watson Island and Alton Road ranged between 40 and 10 mph in the eastbound direction, and ranged between 43 and 33 mph in the westbound direction. A slowdown in travel speed of up to 32.9 mph occurs in the vicinity of Terminal Isle due to this traffic signal. Additionally, the future condition included growth in background traffic as well as committed developments in Miami Beach. These include primarily the developments at 500 Alton Road and the Baptist Health Urgent Center on Alton Road.

The weekday travel speeds on 5<sup>th</sup> Street between Alton Road and east of Meridian Avenue ranged between 20 and 18 mph in the eastbound direction, and ranged between 18 and 10 mph in the westbound direction. Again, the future condition included growth in background traffic as well as committed developments in Miami Beach. There was minimal decrease in average travel speed eastbound and westbound.

2020 Future Weekday Conditions with Proposed Development (140,000 sq.ft.)

The weekday travel time between 4:00pm and 8:00pm from the simulation analysis, along the study route between the Biscayne Boulevard ramps and east of Meridian Avenue on 5<sup>th</sup> Street, ranged between 7 and 14 minutes in the eastbound direction. The travel time ranged between 7 and 9 minutes in the westbound direction for the same period.

Similarly, the average weekday travel speed ranged between 20 and 44 mph in the eastbound direction along the study route between the Biscayne Boulevard ramps and Watson Island. An additional decrease in the average travel speed of up to 8 mph occurred on the causeway due to the future proposed development trips slowing down to exit onto Watson Island. The average travel speed ranged between 10 and 41 mph in the westbound direction. An additional decrease in average travel speed of up to 13.6 mph occurred on this segment (1.1 miles) of the causeway due to the future proposed development trips merging from Watson Island and weaving with through traffic and POMT traffic exiting onto Biscayne Boulevard.

The average weekday travel speeds between Watson Island and Alton Road ranged between 10 and 41 mph in the eastbound direction, and ranged between 33 and 43 mph in the westbound direction. An additional slowdown in speed of up to 2.6 mph occurs in the vicinity of Terminal Isle due to this traffic signal.

The weekday travel speeds on 5<sup>th</sup> Street between Alton Road and east of Meridian Avenue ranged between 18 and 20 mph in the eastbound direction, and ranged between 10 and 17 mph in the westbound direction. There was minimal decrease in average travel speed eastbound and westbound.

### Average Weekday Travel Time (minutes:seconds)

Segment	2016 Existing Conditions Average Travel Time (min:sec)				2020 Future Conditions with 2004 Approved Development Average Travel Time (min:sec)				2020 Future Conditions with Proposed Development Average Travel Time (min:sec)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	0:51	0:51	0:51	0:51	0:52	0:52	0:52	0:52	0:52	0:52	0:52	0:52
Watson Island Off Ramp to Watson Island On Ramp	0:34	0:34	0:34	0:34	0:36	0:37	1:06	0:41	0:35	0:54	1:13	0:53
Watson Island On Ramp to W of Fountain Street	0:35	0:35	0:35	0:35	0:38	0:55	2:22	1:26	0:38	0:54	2:26	1:41
W of Fountain Street to W of Terminal Isle	1:57	2:27	2:12	1:36	2:05	4:12	5:56	5:28	2:06	4:15	5:58	5:10
W of Terminal Isle to Alton Road	1:41	1:43	1:46	1:44	2:11	1:58	2:18	3:20	2:21	2:20	2:22	2:46
Alton Road / 5th Street to E of Meridian Avenue	0:59	1:06	1:05	1:03	1:01	1:06	1:06	1:05	1:00	1:07	1:07	1:03
<b>Eastbound Average Travel Time</b>	<b>6:37</b>	<b>7:16</b>	<b>7:03</b>	<b>6:23</b>	<b>7:23</b>	<b>9:40</b>	<b>13:40</b>	<b>12:52</b>	<b>7:32</b>	<b>10:22</b>	<b>13:58</b>	<b>12:25</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	1:11	1:13	1:11	2:01	1:16	1:13	1:08	1:57	1:14	1:14	1:10	1:59
Alton Road to W of Terminal Isle	0:55	0:57	0:56	0:59	0:59	1:00	0:59	1:03	0:59	1:00	1:00	1:03
W of Terminal Isle to W of Fountain Street	1:53	1:49	1:50	1:56	1:56	1:49	1:48	1:55	1:55	1:48	1:50	1:54
W of Fountain Street to Watson Off Ramp	0:37	0:37	0:36	0:36	0:37	0:37	0:36	0:36	0:37	0:36	0:36	0:36
Watson Island Off Ramp to Watson Island On Ramp	0:35	0:35	0:34	0:35	0:36	0:36	0:35	0:36	0:37	0:47	0:53	0:35
Watson Island on Ramp to Biscayne Blvd Off Ramp	1:04	0:07	1:40	1:46	1:46	2:47	1:56	1:03	1:53	3:55	2:56	1:13
<b>Westbound Average Travel Time</b>	<b>6:15</b>	<b>5:18</b>	<b>6:47</b>	<b>7:53</b>	<b>7:10</b>	<b>8:02</b>	<b>7:02</b>	<b>7:10</b>	<b>7:15</b>	<b>9:20</b>	<b>8:25</b>	<b>7:20</b>

### Increase in Average Weekday Travel Time (minutes:seconds)

Segment	2016 Existing Conditions Average Travel Time (min:sec)				2020 Future Conditions with 2004 Approved Development Increase Travel Time (min:sec)				2020 Future Conditions with Proposed Development Increase Travel Time (min:sec)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	0:51	0:51	0:51	0:51	0:01	0:01	0:01	0:01	0:00	0:00	0:00	0:00
Watson Island Off Ramp to Watson Island On Ramp	0:34	0:34	0:34	0:34	0:02	0:03	0:32	0:07	0:0:01	0:17	0:07	0:12
Watson Island On Ramp to W of Fountain Street	0:35	0:35	0:35	0:35	0:03	0:20	1:47	0:51	0:00	0:0:01	0:04	0:15
W of Fountain Street to W of Terminal Isle	1:57	2:27	2:12	1:36	0:08	1:45	3:44	3:52	0:01	0:03	0:02	0:0:18
W of Terminal Isle to Alton Road	1:41	1:43	1:46	1:44	0:30	0:15	0:32	1:36	0:10	0:22	0:04	0:0:24
Alton Road / 5th Street to E of Meridian Avenue	0:59	1:06	1:05	1:03	0:02	0:00	0:01	0:02	0:0:01	0:01	0:01	0:0:02
<b>EB Average Travel Time</b>	<b>6:37</b>	<b>7:16</b>	<b>7:03</b>	<b>6:23</b>	<b>0:46</b>	<b>2:24</b>	<b>6:37</b>	<b>6:29</b>	<b>0:09</b>	<b>0:42</b>	<b>0:18</b>	<b>0:0:27</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	1:11	1:13	1:11	2:01	0:05	0:00	0:0:02	0:0:04	0:0:02	0:01	0:02	0:02
Alton Road to W of Terminal Isle	0:55	0:57	0:56	0:59	0:04	0:03	0:03	0:04	0:00	0:00	0:01	0:00
W of Terminal Isle to W of Fountain Street	1:53	1:49	1:50	1:56	0:03	0:00	0:0:02	0:0:01	0:0:02	0:0:01	0:02	0:0:01
W of Fountain Street to Watson Off Ramp	0:37	0:37	0:36	0:36	0:00	0:00	0:00	0:00	0:00	0:0:01	0:00	0:00
Watson Island Off Ramp to Watson Island On Ramp	0:35	0:35	0:34	0:35	0:01	0:01	0:01	0:01	0:01	0:11	0:18	0:0:01
Watson Island on Ramp to Biscayne Blvd Off Ramp	1:04	0:07	1:40	1:46	0:42	2:40	0:16	0:0:43	0:07	1:08	1:00	0:10
<b>WB Average Travel Time</b>	<b>6:15</b>	<b>5:18</b>	<b>6:47</b>	<b>7:53</b>	<b>0:55</b>	<b>2:44</b>	<b>0:15</b>	<b>0:0:43</b>	<b>0:05</b>	<b>1:18</b>	<b>1:23</b>	<b>0:10</b>

### Average Weekday Travel Speed (mph)

Segments	2016 Existing Conditions Average Travel Speed (mph)				2020 Future Conditions with 2004 Approved Development Average Travel Speed (mph)				2020 Future Conditions with Proposed Development Average Travel Speed (mph)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	44.6	44.5	44.5	44.7	44.2	44.1	44.2	44.3	44.2	44.0	43.7	44.3
Watson Island Off Ramp to Watson Island On Ramp	44.5	44.4	44.4	44.6	42.6	40.5	22.9	36.6	42.6	39.4	19.9	28.3
Watson Island On Ramp to W of Fountain Street	44.1	43.9	43.8	44.2	40.5	28.1	10.9	18.0	40.5	28.5	10.6	15.3
W of Fountain Street to W of Terminal Isle	32.5	25.8	28.8	39.6	30.3	15.0	10.7	11.6	30.2	14.9	10.6	12.3
W of Terminal Isle to Alton Road	22.1	21.6	21.1	21.5	17.0	18.8	16.1	11.2	18.4	18.5	15.8	13.4
Alton Road / 5th Street to E of Meridian Avenue	21.0	18.8	18.8	19.5	20.3	18.6	18.6	18.9	20.5	18.4	18.3	19.6
<b>Eastbound Average Travel Speed</b>	<b>34.8</b>	<b>33.2</b>	<b>33.6</b>	<b>35.7</b>	<b>32.5</b>	<b>27.5</b>	<b>20.5</b>	<b>23.4</b>	<b>32.7</b>	<b>27.3</b>	<b>19.8</b>	<b>22.2</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	17.1	16.9	17.4	10.1	16.0	16.7	17.9	10.4	16.5	16.6	17.5	10.3
Alton Road to W of Terminal Isle	40.2	39.4	39.7	37.7	37.9	36.9	37.5	35.6	37.8	37.1	37.4	35.2
W of Terminal Isle to W of Fountain Street	33.6	34.9	34.3	32.7	32.8	34.6	35.0	32.8	33.0	34.9	34.5	33.0
W of Fountain Street to Watson Off Ramp	41.8	42.1	42.7	42.6	41.7	42.1	42.7	42.5	41.7	42.2	42.6	42.6
Watson Island Off Ramp to Watson Island On Ramp	41.3	41.6	42.4	42.3	40.0	40.2	41.4	40.8	39.8	31.3	27.7	41.2
Watson Island on Ramp to Biscayne Blvd Off Ramp	37.5	35.6	23.9	22.5	22.6	14.4	20.7	38.3	21.2	10.2	13.6	32.9
<b>Westbound Average Travel Speed</b>	<b>35.2</b>	<b>35.1</b>	<b>33.4</b>	<b>31.3</b>	<b>31.8</b>	<b>30.8</b>	<b>32.5</b>	<b>33.4</b>	<b>31.7</b>	<b>28.7</b>	<b>28.9</b>	<b>32.5</b>

### Decrease in Average Weekday Travel Speed (mph)

Segments	2016 Existing Conditions Average Travel Speed (mph)				2020 Future Conditions with 2004 Approved Development Decrease Travel Speed (mph)				2020 Future Conditions with Proposed Development Decrease Travel Speed (mph)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	44.6	44.5	44.5	44.7	-0.5	-0.5	-0.3	-0.4	0.0	-0.1	-0.4	0.0
Watson Island Off Ramp to Watson Island On Ramp	44.5	44.4	44.4	44.6	-2.0	-4.0	-21.5	-7.9	0.1	-1.0	-3.0	-8.3
Watson Island On Ramp to W of Fountain Street	44.1	43.9	43.8	44.2	-3.6	-15.8	-32.9	-26.3	-0.1	0.4	-0.3	-2.6
W of Fountain Street to W of Terminal Isle	32.5	25.8	28.8	39.6	-2.2	-10.7	-18.1	-28.0	-0.1	-0.2	0.0	0.7
W of Terminal Isle to Alton Road	22.1	21.6	21.1	21.5	-5.1	-2.8	-5.0	-10.3	1.4	-0.3	-0.4	2.3
Alton Road / 5th Street to E of Meridian Avenue	21.0	18.8	18.8	19.5	-0.7	-0.2	-0.2	-0.6	0.2	-0.2	-0.3	0.7
<b>Eastbound Average Travel Speed</b>	<b>34.8</b>	<b>33.2</b>	<b>33.6</b>	<b>35.7</b>	<b>-2.3</b>	<b>-5.6</b>	<b>-13.0</b>	<b>-12.3</b>	<b>0.3</b>	<b>-0.2</b>	<b>-0.7</b>	<b>-1.2</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	17.1	16.9	17.4	10.1	-1.1	-0.2	0.6	0.3	0.5	-0.2	-0.5	-0.1
Alton Road to W of Terminal Isle	40.2	39.4	39.7	37.7	-2.3	-2.5	-2.2	-2.1	-0.1	0.2	-0.1	-0.4
W of Terminal Isle to W of Fountain Street	33.6	34.9	34.3	32.7	-0.9	-0.3	0.7	0.1	0.3	0.3	-0.4	0.2
W of Fountain Street to Watson Off Ramp	41.8	42.1	42.7	42.6	-0.1	0.0	0.0	-0.1	-0.1	0.2	-0.1	0.1
Watson Island Off Ramp to Watson Island On Ramp	41.3	41.6	42.4	42.3	-1.3	-1.4	-1.1	-1.4	-0.2	-8.9	-13.6	0.3
Watson Island on Ramp to Biscayne Blvd Off Ramp	37.5	35.6	23.9	22.5	-14.8	-21.3	-3.2	15.8	-1.5	-4.1	-7.1	-5.5
<b>Westbound Average Travel Speed</b>	<b>35.2</b>	<b>35.1</b>	<b>33.4</b>	<b>31.3</b>	<b>-3.4</b>	<b>-4.3</b>	<b>-0.9</b>	<b>2.1</b>	<b>-0.2</b>	<b>-2.1</b>	<b>-3.6</b>	<b>-0.9</b>

### Weekday Travel Speed Level of Service

Segments	2016 Existing Conditions Average Travel Speed LOS				2020 Future Conditions with 2004 Approved Development Average Travel Speed LOS				2020 Future Conditions with Proposed Development Average Travel Speed LOS			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island West Side	A	A	A	A	A	A	A	A	A	A	A	A
Watson Island West Side to Watson Island East Side	A	A	A	A	A	A	D	B	A	B	E	C
Watson Island East Side to W of Fountain Street	A	A	A	A	A	C	F	E	A	C	F	F
W of Fountain Street to W of Terminal Isle	C	D	C	B	C	F	F	F	C	F	F	F
W of Terminal Isle to Alton Road	C	D	D	D	D	D	E	F	D	D	E	E
Alton Road / 5th Street to E of Meridian Avenue	D	D	D	D	D	D	E	D	D	D	D	D
<b>Eastbound Average Travel Speed LOS</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>C</b>	<b>E</b>	<b>D</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	D	E	D	F	E	E	D	F	E	E	D	F
Alton Road to W of Terminal Isle	A	A	A	A	A	A	A	A	A	A	A	A
W of Terminal Isle to W of Fountain Street	C	B	B	C	C	B	B	C	C	B	B	C
W of Fountain Street to Watson East Side	B	A	A	A	B	A	A	A	B	A	A	A
Watson Island East Side to Watson Island West Side	B	A	A	A	B	B	B	B	B	C	C	B
Watson Island West Side to Biscayne Blvd Off Ramp	B	B	D	D	D	F	E	B	D	F	F	C
<b>Westbound Average Travel Speed LOS</b>	<b>B</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>

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### Weekday Intersection Operational Analysis

The simulation analyses provide weekday vehicle delay at the signalized intersections. The delay was compared for the proposed additional development for the multi-hour analyses period.

The HCM thresholds for intersection control delay were applied to the vehicle delay results from the simulation. The thresholds from Table 1 of the HCM are provided below.

**Table 1. Level of Service Criteria for Signalized Intersections**

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

The change in intersection weekday delay between the approved development and the proposed development was not significant.

### Intersection Weekday Delay and LOS

Intersection	2020 Future Conditions with 2004 Approved Development Average Delay (sec) / LOS								2020 Future Conditions with Proposed Development Average Delay (sec) / LOS							
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	8:00p-9:00p	9:00p-10:00p	10:00p-11:00p	11:00p-12:00a	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	8:00p-9:00p	9:00p-10:00p	10:00p-11:00p	11:00p-12:00a
Bayshore Dr & 14th Street	35.4	D	34.9	D	35.6	D	9.2	A	36.0	D	35.6	D	38.0	D	9.2	A
Bayshore Dr & 13th Street	68.7	E	205.4	F	203.9	F	32.1	C	90.4	E	229.2	F	238.2	F	29.3	C
Biscayne Blvd & 14th Street	38.7	D	41.4	D	39.4	C	46.0	D	36.6	D	39.3	D	36.4	D	42.8	D
Biscayne Blvd & 11th Terrace	19.4	B	20.7	C	19.0	B	17.5	B	17.6	B	17.4	B	18.9	B	16.6	B
Biscayne Blvd & 11th Street	23.3	C	25.7	C	24.3	C	20.9	C	27.5	C	25.2	C	28.5	C	21.9	C
MacArthur Cswy & Fountain Street	47.6	D	73.9	E	78.4	E	41.1	D	48.1	D	59.3	E	63.8	E	36.3	D
MacArthur Cswy & Bridge Road	29.8	C	39.9	D	59.1	E	67.9	E	36.2	D	43.0	D	67.6	E	35.2	D
MacArthur Cswy & Terminal Isle	56.3	D	55.2	E	56.8	E	61.0	E	54.6	D	52.7	D	60.2	E	61.4	E
5th Street & Alton Road	45.7	D	40.2	D	44.2	D	71.6	E	41.9	D	39.6	D	49.3	D	59.2	E
5th Street & Lenox Avenue	25.6	C	21.3	C	20.5	C	29.2	C	29.8	C	20.3	C	19.7	B	24.6	C
5th Street & Michigan Avenue	39.6	D	26.3	C	29.2	C	36.8	D	33.2	C	22.4	C	30.0	C	32.5	C
5th Street & Jefferson Avenue	25.6	C	24.0	C	23.2	C	23.9	C	25.2	C	23.1	C	20.9	C	25.1	C
5th Street & Meridian Avenue	26.0	C	19.8	B	18.0	B	24.0	C	23.4	C	18.9	B	20.5	C	27.8	C
5th Street & Washington Avenue	44.6	D	36.2	D	38.8	D	49.1	D	47.3	D	38.9	D	35.4	D	44.9	D
Alton Road & 8th Street	32.0	C	33.0	C	30.5	C	30.9	C	30.5	C	32.3	C	30.6	C	29.9	C

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## Results of Weekend Evaluation

In addition to traffic counts collected on a Saturday, auto travel time and speeds were collected on a Saturday and used to calibrate the model to replicate existing weekend conditions. Miami-Dade County uses one signal timing pattern for the weekend, while multiple signal timing patterns are used for the weekday patterns. Additionally, the weekend net new development trips are expected to be 29% higher than the weekday development trips. The results of the simulation were summarized by travel time along the corridor as well as by travel speed.

### 2016 Existing Weekend Conditions

The weekend average travel time between 4:00pm and 8:00pm from the simulation analysis, along the study route between the Biscayne Boulevard ramps and east of Meridian Avenue on 5<sup>th</sup> Street, ranged between 8 and 11 minutes in the eastbound direction. The average travel time ranged between 7 and 8 minutes in the westbound direction for the same period. Overall, the weekend average travel time was similar to the weekday travel time.

Similarly, the weekend average travel speed ranged between 40 and 45 mph in the eastbound and westbound directions along this uninterrupted study route between the Biscayne Boulevard ramps and Watson Island.

The weekend average travel speeds between Watson Island and Alton Road ranged between 11 and 42 mph in the eastbound direction, and ranged between 35 and 43 mph in the westbound direction. This segment (2.1 miles) has three traffic signals and the flow is therefore interrupted. A slowdown in speed occurs in the vicinity of Terminal Isle due to this traffic signal servicing the ferry traffic from Fisher Island.

The weekend average travel speeds on 5<sup>th</sup> Street between Alton Road and east of Meridian Avenue ranged between 19 and 20 mph in the eastbound direction, and ranged between 9 and 13 mph in the westbound direction. This segment (0.36 miles) has four traffic signals and the flow is interrupted. Overall, the weekend average travel speed was similar to the weekday travel speed.

### 2020 Future Weekend Conditions with 2004 Approved Development

The average travel time between 4:00pm and 8:00pm from the simulation analysis, along the study route between the Biscayne Boulevard ramps and east of Meridian Avenue on 5<sup>th</sup> Street, ranged between 12 and 17 minutes in the eastbound direction. The average travel time ranged between 7 and 9 minutes in the westbound direction for the same period.

Similarly, the average travel speed ranged between 14 and 44 mph in the eastbound direction along the study route between the Biscayne Boulevard ramps and Watson Island. A noticeable decrease in the average travel speed of up to 28.5 mph occurred on the causeway due in part to the future approved development trips slowing down to exit onto Watson Island. The average travel speed ranged between 37 and 41 mph in the westbound direction. On this segment (1.1 miles) of the causeway during the analysis period, there was less traffic leaving from the POMT.

The average travel speeds between Watson Island and Alton Road ranged between 8 and 29 mph in the eastbound direction, and ranged between 34 and 43 mph in the westbound direction. A slowdown in travel speed eastbound of up to 33.6 mph occurs in the vicinity of Terminal Isle due to this traffic signal. Additionally, the future condition included growth in background traffic as well as committed developments in Miami Beach. These include primarily the developments at 500 Alton Road and the Baptist Health Urgent Center on Alton Road.

The travel speeds on 5<sup>th</sup> Street between Alton Road and east of Meridian Avenue ranged between 18 and 20 mph in the eastbound direction, and ranged between 8 and 13 mph in the westbound direction. Again, the future condition included growth in background traffic as well as committed developments in Miami Beach. There was some decrease in average travel speed eastbound and westbound.

2020 Future Weekend Conditions with Proposed Development (140,000 sq.ft.)

The travel time between 4:00pm and 8:00pm from the simulation analysis, along the study route between the Biscayne Boulevard ramps and east of Meridian Avenue on 5<sup>th</sup> Street, ranged between 12 and 19 minutes in the eastbound direction. The travel time ranged between 7 and 9 minutes in the westbound direction for the same period.

Similarly, the average travel speed ranged between 9 and 44 mph in the eastbound direction along the study route between the Biscayne Boulevard ramps and Watson Island. A noticeable decrease in the average travel speed of up to 25.8 mph occurred on the causeway due to the future proposed development trips slowing down to exit onto Watson Island. The average travel speed ranged between 36 and 41 mph in the westbound direction. On this segment (1.1 miles) of the causeway during the analysis period, there was less traffic leaving from the POMT.

The average travel speeds between Watson Island and Alton Road ranged between 8 and 28 mph in the eastbound direction, and ranged between 35 and 42 mph in the westbound direction. A slowdown in travel speed eastbound of up to 8.9 mph occurs in the vicinity of Terminal Isle due to this traffic signal.

The travel speeds on 5<sup>th</sup> Street between Alton Road and east of Meridian Avenue ranged between 19 and 20 mph in the eastbound direction, and ranged between 6 and 13 mph in the westbound direction. There was some change in average travel speed eastbound and westbound.

### Average Weekend Travel Time (minutes:seconds)

Segment	2016 Existing Conditions Average Travel Time (min:sec)				2020 Future Conditions with 2004 Approved Development Average Travel Time (min:sec)				2020 Future Conditions with Proposed Development Average Travel Time (min:sec)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	0:52	0:52	0:51	0:52	0:52	0:52	0:52	0:52	0:52	0:53	1:16	1:30
Watson Island Off Ramp to Watson Island On Ramp	0:36	0:35	0:35	0:35	0:35	1:39	1:44	0:41	0:36	1:53	2:50	1:54
Watson Island On Ramp to W of Fountain Street	0:37	0:37	0:38	0:37	0:53	3:16	3:10	1:30	0:53	3:17	3:56	3:06
W of Fountain Street to W of Terminal Isle	2:47	4:47	4:08	1:55	5:09	6:48	6:01	5:00	5:11	6:49	6:31	6:38
W of Terminal Isle to Alton Road	3:05	3:21	3:17	2:42	3:40	3:24	2:50	2:53	3:30	3:20	3:07	3:31
Alton Road / 5th Street to E of Meridian Avenue	1:01	1:04	1:04	0:59	1:07	1:03	1:08	1:08	1:01	1:06	1:03	1:03
<b>Eastbound Average Travel Time</b>	<b>8:58</b>	<b>11:16</b>	<b>10:33</b>	<b>7:40</b>	<b>12:16</b>	<b>17:02</b>	<b>15:45</b>	<b>12:04</b>	<b>12:03</b>	<b>17:18</b>	<b>18:43</b>	<b>17:42</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	1:36	1:53	1:50	2:12	1:37	1:58	2:39	3:49	1:38	2:01	2:50	3:37
Alton Road to W of Terminal Isle	0:58	0:59	0:58	0:59	0:58	0:59	0:58	0:58	0:58	0:59	0:59	0:58
W of Terminal Isle to W of Fountain Street	1:45	1:49	1:49	1:50	1:44	1:50	1:47	1:48	1:44	1:49	1:47	1:49
W of Fountain Street to Watson Island Off Ramp	0:37	0:37	0:37	0:36	0:37	0:37	0:34	0:37	0:37	0:37	0:36	0:36
Watson Island Off Ramp to Watson Island On Ramp	1:35	0:36	0:36	0:35	0:36	0:37	0:36	0:36	0:37	0:37	0:36	0:36
Watson Island Off Ramp to Biscayne Blvd Off Ramp	0:58	1:00	0:58	0:58	1:03	1:05	1:02	1:02	1:04	1:06	1:04	1:03
<b>Westbound Average Travel Time</b>	<b>7:29</b>	<b>6:54</b>	<b>6:48</b>	<b>7:10</b>	<b>6:35</b>	<b>7:06</b>	<b>7:36</b>	<b>8:50</b>	<b>6:38</b>	<b>7:09</b>	<b>7:52</b>	<b>8:39</b>

### Increase in Average Weekend Travel Time (minutes:seconds)

Segment	2016 Existing Conditions Average Travel Time (min:sec)				2020 Future Conditions with 2004 Approved Development Increase Travel Time (min:sec)				2020 Future Conditions with Proposed Development Increase Travel Time (min:sec)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	0:52	0:52	0:51	0:52	0:00	0:00	0:01	0:00	0:00	0:01	0:24	0:38
Watson Island Off Ramp to Watson Island On Ramp	0:36	0:35	0:35	0:35	0:0:01	1:04	1:09	0:06	0:01	0:14	1:06	1:13
Watson Island On Ramp to W of Fountain Street	0:37	0:37	0:38	0:37	0:16	2:39	2:32	0:53	0:00	0:01	0:46	1:36
W of Fountain Street to W of Terminal Isle	2:47	4:47	4:08	1:55	2:22	2:01	1:53	3:05	0:02	0:01	0:30	0:0:18
W of Terminal Isle to Alton Road	3:05	3:21	3:17	2:42	0:35	0:03	0:0:27	0:11	0:0:10	0:0:04	0:17	0:0:24
Alton Road / 5th Street to E of Meridian Avenue	1:01	1:04	1:04	0:59	0:06	0:0:01	0:04	0:09	0:0:06	0:03	0:0:05	0:0:05
<b>Eastbound Average Travel Time</b>	<b>8:58</b>	<b>11:16</b>	<b>10:33</b>	<b>7:40</b>	<b>3:18</b>	<b>5:46</b>	<b>5:12</b>	<b>4:24</b>	<b>0:0:13</b>	<b>0:16</b>	<b>2:58</b>	<b>5:38</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	1:36	1:53	1:50	2:12	0:01	0:05	0:49	1:37	0:01	0:03	0:11	0:0:12
Alton Road to W of Terminal Isle	0:58	0:59	0:58	0:59	0:00	0:00	0:00	0:0:01	0:00	0:00	0:01	0:00
W of Terminal Isle to W of Fountain Street	1:45	1:49	1:49	1:50	0:0:01	0:01	0:0:02	0:0:02	0:00	0:0:01	0:00	0:01
W of Fountain Street to Watson Island Off Ramp	0:37	0:37	0:37	0:36	0:00	0:00	0:0:03	0:01	0:00	0:00	0:02	0:0:01
Watson Island Off Ramp to Watson Island On Ramp	1:35	0:36	0:36	0:35	0:0:59	0:01	0:00	0:01	0:01	0:00	0:00	0:00
Watson Island Off Ramp to Biscayne Blvd Off Ramp	0:58	1:00	0:58	0:58	0:05	0:05	0:04	0:04	0:01	0:01	0:02	0:01
<b>Westbound Average Travel Time</b>	<b>7:29</b>	<b>6:54</b>	<b>6:48</b>	<b>7:10</b>	<b>0:0:54</b>	<b>0:12</b>	<b>0:48</b>	<b>1:40</b>	<b>0:03</b>	<b>0:03</b>	<b>0:16</b>	<b>0:0:11</b>

### Average Weekend Travel Speed (mph)

Segments	2016 Existing Conditions Average Travel Speed (mph)				2020 Future Conditions with 2004 Approved Development Average Travel Speed (mph)				2020 Future Conditions with Proposed Development Average Travel Speed (mph)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	44.3	44.4	44.4	44.5	44.1	44.1	43.9	44.3	44.1	43.0	30.1	25.5
Watson Island Off Ramp to Watson Island On Ramp	42.6	42.8	42.8	43.0	42.5	15.1	14.4	36.1	42.2	13.0	8.8	10.3
Watson Island On Ramp to W of Fountain Street	41.5	41.5	41.1	42.2	29.4	7.9	8.2	17.2	29.3	7.9	6.5	8.3
W of Fountain Street to W of Terminal Isle	22.7	13.2	15.3	33.1	12.3	9.3	10.4	12.6	12.2	9.3	9.7	9.5
W of Terminal Isle to Alton Road	12.1	11.1	11.3	13.8	10.1	10.9	13.2	12.6	10.6	11.2	11.9	10.1
Alton Road / 5th Street to E of Meridian Avenue	20.0	19.1	19.3	20.6	20.2	19.4	18.0	17.9	20.3	18.9	19.5	19.5
<b>Eastbound Average Travel Speed</b>	<b>30.5</b>	<b>28.7</b>	<b>29.0</b>	<b>32.9</b>	<b>26.4</b>	<b>17.8</b>	<b>18.0</b>	<b>23.5</b>	<b>26.4</b>	<b>17.2</b>	<b>14.4</b>	<b>13.9</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	12.7	10.8	11.1	9.3	12.6	10.3	7.7	5.3	12.5	10.2	7.2	5.6
Alton Road to W of Terminal Isle	38.5	37.8	38.2	37.6	38.5	37.5	38.1	38.1	38.5	37.7	38.2	38.5
W of Terminal Isle to W of Fountain Street	35.8	34.8	34.7	34.4	36.4	34.2	35.3	35.0	36.4	34.5	35.2	34.5
W of Fountain Street to Watson Island Off Ramp	42.4	42.3	42.3	42.8	41.6	41.5	41.8	41.9	41.4	41.4	41.9	42.2
Watson Island Off Ramp to Watson Island On Ramp	41.8	41.2	41.7	42.2	40.0	39.6	40.5	40.9	39.8	39.2	40.5	41.1
Watson Island Off Ramp to Biscayne Blvd Off Ramp	40.8	40.0	41.0	41.8	38.0	37.2	38.5	38.9	37.4	36.0	37.3	38.5
<b>Westbound Average Travel Speed</b>	<b>35.3</b>	<b>34.5</b>	<b>34.8</b>	<b>34.7</b>	<b>34.5</b>	<b>33.4</b>	<b>33.6</b>	<b>33.4</b>	<b>34.3</b>	<b>33.2</b>	<b>33.4</b>	<b>33.4</b>

### Decrease in Average Weekend Travel Speed (mph)

Segments	2016 Existing Conditions Average Travel Speed (mph)				2020 Future Conditions with 2004 Approved Development Decrease Travel Speed (mph)				2020 Future Conditions with Proposed Development Decrease Travel Speed (mph)			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island Exit	44.3	44.4	44.4	44.5	-0.2	-0.3	-0.5	-0.2	0.0	-1.0	-13.8	-18.8
Watson Island Off Ramp to Watson Island On Ramp	42.6	42.8	42.8	43.0	-0.1	-27.7	-28.5	-6.8	-0.2	-2.1	-5.6	-25.8
Watson Island On Ramp to W of Fountain Street	41.5	41.5	41.1	42.2	-12.1	-33.6	-32.9	-25.0	-0.1	-0.1	-1.6	-8.9
W of Fountain Street to W of Terminal Isle	22.7	13.2	15.3	33.1	-10.4	-3.9	-4.9	-20.4	-0.1	0.0	-0.7	-3.1
W of Terminal Isle to Alton Road	12.1	11.1	11.3	13.8	-2.0	-0.1	1.8	-1.1	0.5	0.2	-1.3	-2.5
Alton Road / 5th Street to E of Meridian Avenue	20.0	19.1	19.3	20.6	0.3	0.3	-1.3	-2.7	0.1	-0.5	1.5	1.6
<b>Eastbound Average Travel Speed</b>	<b>30.5</b>	<b>28.7</b>	<b>29.0</b>	<b>32.9</b>	<b>-4.1</b>	<b>-10.9</b>	<b>-11.0</b>	<b>-9.4</b>	<b>0.0</b>	<b>-0.6</b>	<b>-3.6</b>	<b>-9.6</b>
<b>West-bound</b>												
Alton Road / 5th Street to E of Meridian Avenue	12.7	10.8	11.1	9.3	-0.1	-0.5	-3.4	-3.9	-0.1	-0.2	-0.5	0.3
W of Terminal Isle to Alton Road	38.5	37.8	38.2	37.6	0.0	-0.2	-0.1	0.5	0.0	0.1	0.2	0.4
W of Fountain Street to W of Terminal Isle	35.8	34.8	34.7	34.4	0.6	-0.6	0.6	0.6	0.0	0.2	-0.1	-0.6
Watson WB Exit to W of Fountain Street	42.4	42.3	42.3	42.8	-0.8	-0.8	-0.5	-0.9	-0.2	-0.1	0.1	0.3
Watson Island EB Exit to Watson Island WB Exit	41.8	41.2	41.7	42.2	-1.8	-1.6	-1.2	-1.4	-0.3	-0.4	0.0	0.2
Watson Island Exit to Biscayne Off Ramp	40.8	40.0	41.0	41.8	-2.7	-2.9	-2.6	-2.9	-0.7	-1.1	-1.1	-0.4
<b>Westbound Average Travel Speed</b>	<b>35.3</b>	<b>34.5</b>	<b>34.8</b>	<b>34.7</b>	<b>-0.8</b>	<b>-1.1</b>	<b>-1.2</b>	<b>-1.3</b>	<b>-0.2</b>	<b>-0.2</b>	<b>-0.2</b>	<b>0.0</b>

### Weekend Travel Speed Level of Service

Segments	2016 Existing Conditions Average Travel Speed LOS				2020 Future Conditions with 2004 Approved Development Average Travel Speed LOS				2020 Future Conditions with Proposed Development Average Travel Speed LOS			
	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p	4:00p-5:00p	5:00p-6:00p	6:00p-7:00p	7:00p-8:00p
	<b>East-bound</b>											
Biscayne Blvd On Ramp to Watson Island West Side	A	A	A	A	A	A	A	A	A	A	C	D
Watson Island West Side to Watson Island East Side	A	A	A	A	A	F	F	B	A	F	F	F
Watson Island East Side to W of Fountain Street	A	A	B	A	C	F	F	E	C	F	F	F
W of Fountain Street to W of Terminal Isle	D	F	F	C	F	F	F	F	F	F	F	F
W of Terminal Isle to Alton Road	F	F	F	C	F	F	E	F	F	F	F	F
Alton Road / 5th Street to E of Meridian Avenue	D	D	D	D	D	D	D	D	D	D	D	D
<b>Eastbound Average Travel Speed LOS</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>D</b>	<b>D</b>	<b>E</b>	<b>D</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>F</b>
<b>West-bound</b>												
E of Meridian Avenue to Alton Road / 5th Street	F	F	F	F	F	F	F	F	F	F	F	F
Alton Road to W of Terminal Isle	A	A	A	A	A	A	A	A	A	A	A	A
W of Terminal Isle to W of Fountain Street	B	B	B	B	B	B	B	B	B	B	B	B
W of Fountain Street to Watson East Side	A	A	A	A	B	B	B	B	B	B	B	A
Watson Island East Side to Watson Island West Side	B	B	B	A	B	B	B	B	B	B	B	B
Watson Island West Side to Biscayne Blvd Off Ramp	B	B	B	B	B	B	B	B	B	B	B	B
<b>Westbound Average Travel Speed LOS</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>C</b>

### Weekend Intersection Operational Analysis

The simulation analyses provide weekend vehicle delay at the signalized intersections. The delay was compared for the proposed additional development for the multi-hour analyses period. The HCM thresholds for intersection control delay were applied to the vehicle delay results from the simulation.

The change in intersection weekend delay between the approved development and the proposed development was not significant.

### Intersection Weekend Delay and LOS

Intersection	2020 Future Conditions with 2004 Approved Development Average Delay (sec) / LOS								2020 Future Conditions with Proposed Development Average Delay (sec) / LOS							
	4:00p-5:00p		5:00p-6:00p		6:00p-7:00p		7:00p-8:00p		4:00p-5:00p		5:00p-6:00p		6:00p-7:00p		7:00p-8:00p	
	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS	Avg Delay	LOS
Bayshore Dr & 14th Street	18.9	B	17.9	B	21.0	C	23.0	C	19.1	B	19.4	B	21.0	C	21.5	C
Bayshore Dr & 13th Street	47.4	D	51.3	D	29.3	C	34.9	C	59.0	E	50.8	D	34.6	C	41.4	D
Biscayne Blvd & 14th Street	41.9	D	40.7	D	36.9	D	38.8	D	45.6	D	48.7	D	39.0	D	41.5	D
Biscayne Blvd & 11th Terrace	15.4	B	15.4	B	12.6	B	18.1	B	15.7	B	15.6	B	14.9	B	18.5	B
Biscayne Blvd & 11th Street	23.8	C	24.6	C	22.9	C	19.8	B	23.5	C	38.4	D	37.6	D	21.0	C
MacArthur Cswy & Fountain Street	70.1	E	85.4	F	74.5	E	53.1	D	69.6	E	94.3	F	91.0	F	79.0	E
MacArthur Cswy & Bridge Road	76.9	E	63.9	E	63.7	E	52.0	D	76.9	E	70.8	E	70.4	E	73.0	E
MacArthur Cswy & Terminal Isle	57.9	E	56.2	E	57.9	E	55.9	E	58.1	E	57.0	E	57.1	E	55.0	D
5th Street & Alton Road	84.7	F	60.4	E	59.0	E	63.8	E	82.3	F	63.0	E	75.8	E	102.7	F
5th Street & Lenox Avenue	34.3	C	36.0	D	26.0	C	28.2	C	35.1	D	35.3	D	26.5	C	30.0	C
5th Street & Michigan Avenue	40.1	D	37.1	D	39.3	D	27.8	C	39.8	D	36.7	D	36.7	D	36.4	D
5th Street & Jefferson Avenue	33.1	C	34.6	C	44.8	D	33.4	C	32.8	C	34.5	C	31.1	C	25.7	C
5th Street & Meridian Avenue	29.0	C	29.8	C	72.4	E	69.4	E	27.6	C	30.1	C	62.7	E	57.5	E
5th Street & Washington Avenue	46.9	D	44.1	D	106.2	F	187.4	F	47.0	D	43.5	D	77.8	E	137.9	F
Alton Road & 8th Street	33.1	C	30.7	C	30.3	C	28.9	C	33.1	C	30.8	C	30.4	C	36.1	D

## Conclusion

The objective of this study was to evaluate the impacts of the proposed additional 140,000 sq.ft. retail development on the current traffic conditions along the MacArthur Causeway and select intersections in Miami Beach.

Approximately 20% of the development's trips will be from passer-by capture trips already traveling on the MacArthur Causeway between I-395 / downtown Miami and Miami Beach. The new project trips for the Island Gardens development will primarily travel between I-395 / downtown Miami and Watson Island.

Notably from the weekday simulation analysis, an additional decrease in the eastbound average travel speed occurred on the causeway due to the future proposed development trips slowing down to exit onto Watson Island. An additional decrease in westbound average travel speed occurred on the causeway due to the future proposed development trips merging from Watson Island and weaving with through traffic from Miami Beach, traffic from POMT, and traffic exiting onto Biscayne Boulevard. There was minimal decrease in average travel speed eastbound and westbound along the remainder of the corridor.

Notably from the weekend simulation analysis, an additional decrease in the eastbound average travel speed occurred on the causeway due to the future proposed development trips slowing down to exit onto Watson Island. In the westbound direction on this segment of the causeway during the analysis period, there was less traffic leaving from the POMT and weaving with the development traffic. A slowdown in travel speed eastbound occurs in the vicinity of Fountain Street and Alton Road due to these traffic signals.

The simulation analyses provide vehicle delay at the signalized intersections. The delay at the signalized intersections was compared between the future approved development and the proposed development with an additional 140,000 sq.ft. of retail. The intersection delay for the proposed development was higher than the intersection delay for the approved development.

The increase in development trips is not anticipated to have an adverse impact on the causeway and on 5<sup>th</sup> Street. It is recommended that a comprehensive traffic signal retiming effort be conducted to better manage the flow of traffic on the causeway and through the intersection of Alton Road and 5<sup>th</sup> Street.

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