

April 25, 2019

Mr. Benjamin Restrepo, P.E.
City of Fort Lauderdale, Transportation Division
290 NE 3rd Avenue, 2nd Floor
Fort Lauderdale, Florida 33301

**Re: Las Olas Marina
200 Las Olas Circle
Fort Lauderdale, Florida
Trip Generation Analysis**

Dear Mr. Restrepo:

Kimley-Horn and Associates, Inc. has performed a trip generation analysis for the proposed Las Olas Marina located at 200 Las Olas Circle in Fort Lauderdale, Florida. Currently, the site proposed for redevelopment is occupied by an existing 60-berth marina and the existing Las Olas Intracoastal surface parking lot. The proposed redevelopment consists of a 68-berth marina (eight [8] additional berths), two (2) restaurants with a total of 375 seats, 12,414 square feet of office space, and 14,493 square feet of marina services. Please note that the 14,493 square feet of marina services are considered ancillary to the marina land use and were not included in the trip generation calculations as they are not expected to generate additional external site traffic. A site plan is provided in Attachment A.

TRIP GENERATION ANALYSIS

The trip generation analysis was conducted using the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10th Edition for the proposed redevelopment plan. The analysis utilized ITE Land Use Code (LUC) 420 (Marina), 931 (Quality Restaurant), and 710 (General Office Building) for the proposed redevelopment.

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 redevelopment. The US Census data indicated that there is a 12.3 percent (12.3%) multimodal factor within the vicinity of the redevelopment and 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, patrons, and visitors will choose to walk, bike, or use public transit to and from the proposed redevelopment.

A portion of trips generated by the redevelopment will be captured internally on the site. Internal capture trips were determined based upon values contained in ITE's *Trip Generation Handbook*, 3rd Edition. The expected internal capture rate for the proposed redevelopment is 9.4 percent (9.4%) for the daily trip generation, 16.7 percent (16.7%) for the A.M. peak hour trip generation, and 8.5 percent (8.5%) for the P.M. peak hour trip generation.

Pass-by capture trip rates were determined based on average rates provided in the ITE's *Trip Generation Handbook*, 3rd Edition. The pass-by rate for LUC 931 is 44.0 percent (44.0%) for the P.M. peak hour trip generation.

kimley-horn.com

600 North Pine Island Road, Suite 450, Plantation, FL 33324

954 535 5100

As Table 1 indicates, the proposed redevelopment is expected to generate 889 net new daily trips, 17 net new A.M. peak hour trips and 59 net new P.M. peak hour trips. The percentage of daily traffic occurring during the peak hours is less than 10.0 percent (10.0%) for both peak periods. Detailed trip generation calculations are included in Attachment B.

Table 1: Net New Trip Generation Summary					
Development Plan	Net New Daily Trip Generation	Net New A.M. Peak Hour Trip Generation	Percentage of Daily Traffic during the A.M. Peak Hour ⁽¹⁾	Net New P.M. Peak Hour Trip Generation	Percentage of Daily Traffic during the P.M. Peak Hour ⁽¹⁾
Las Olas Marina Redevelopment	889	17	2.0%	59	6.9%

Note: ⁽¹⁾ Based on proposed redevelopment total daily and peak hour trip generation values.

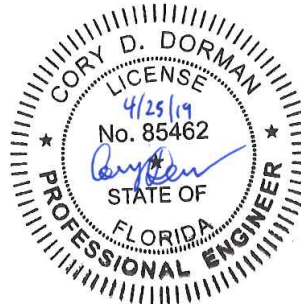
The proposed development does not warrant further study as it generates less than 1,000 net new daily trips and as less than 20.0 percent (20.0%) of the net new daily traffic is generated during the peak hours which is below the City of Fort Lauderdale traffic study requirements.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.



Cory D. Dorman, P.E., PTOE
Attachments



Cory D. Dorman, P.E., PTOE
Florida Registration Number 85462
Kimley-Horn and Associates, Inc.
600 North Pine Island Road, Suite 450
Plantation, Florida 33324
CA # 00000696

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Attachment A

Attachment B

DAILY TRIP GENERATION COMPARISON

EXISTING DAILY TRIP GENERATION

		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																		
GROUP 1	1	Marina	10	420	60	brth	50%	50%	73	72	145	12.3%	18	64	63	127	0.0%	0	64	63	127	0.0%	0	64	63	127
	2																									
	3																									
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	10																									
	11																									
	12																									
	13																									
	14																									
	15																									
		ITE Land Use Code	Rate or Equation				Total:		73	72	145	12.3%	18	64	63	127	0.0%	0	64	63	127	0.0%	0	64	63	127
		420	Y=2.41(X)																							

PROPOSED DAILY TRIP GENERATION

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																			
GROUP 2	1	Marina	10	420	68	brth	50%	50%	82	82	164	12.3%	20	72	72	144	13.2%	19	60	65	125	0.0%	0	60	65	125
	2	Quality Restaurant	10	931	375	seat	50%	50%	488	487	975	12.3%	120	428	427	855	6.1%	52	402	401	803	0.0%	0	402	401	803
	3	General Office Building	10	710	12,414	ksf	50%	50%	70	70	140	12.3%	17	62	61	123	28.5%	35	47	41	88	0.0%	0	47	41	88
	4																									
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	12																									
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	14																									
	15																									
ITE Land Use Code		Rate or Equation				Total:		640	639	1,279	12.3%	157	562	560	1,122	9.4%	106	509	507	1,016	0.0%	0	509	507	1,016	
420		Y=2.41(X)																								
931		Y=2.6(X)																								
710		LN(Y) = 0.97*LN(X)+2.5																								
																						NET NEW TRIPS		445	444	889

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AM PEAK HOUR TRIP GENERATION COMPARISON

EXISTING WEEKDAY AM PEAK HOUR TRIP GENERATION

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																			
GROUP 1	1	Marina	10	420	60	brth	33%	67%	1	3	4	12.3%	1	1	2	3	0.0%	0	1	2	3	0.0%	0	1	2	3
	2																									
	3																									
	4																									
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	9																									
	10																									
	11																									
	12																									
	13																									
	14																									
	15																									
ITE Land Use Code		Rate or Equation				Total:		1	3	4	12.3%	1	1	2	3	0.0%	0	1	2	3	0.0%	0	1	2	3	
420		Y=0.07(X)																								

PROPOSED WEEKDAY AM PEAK HOUR TRIP GENERATION

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																					
GROUP 2	1	Marina	10	420	68	brth	33%	67%	2	3	5	12.3%	0	2	3	5	0.0%	0	2	3	5	0.0%	0	2	3	5		
	2	Quality Restaurant	10	931	375	seat	50%	50%	4	4	8	12.3%	1	4	3	7	28.6%	2	3	2	5	0.0%	0	3	2	5		
	3	General Office Building	10	710	12,414	ksf	86%	14%	12	2	14	12.3%	2	10	2	12	16.7%	2	9	1	10	0.0%	0	9	1	10		
	4																											
	5																											
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	10																											
	11																											
	12																											
	13																											
	14																											
	15																											
ITE Land Use Code						Rate or Equation		Total:			18	9	27	12.3%	3	16	8	24	16.7%	4	14	6	20	0.0%	0	14	6	20
420						Y=0.07(X)																						
931						Y=0.02(X)																						
710						Y=1.16(X)																						
																						NET NEW TRIPS		IN	OUT	TOTAL		
																						13	4	17				

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PM PEAK HOUR TRIP GENERATION COMPARISON

EXISTING WEEKDAY PM PEAK HOUR TRIP GENERATION

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 Marina	10	420	60	brth	60%	40%	8	5	13	12.3%	2	7	4	11	0.0%	0	7	4	11	0.0%	0	7	4	11			
2																											
3																											
4																											
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8																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											
ITE Land Use Code					Rate or Equation		Total:			8	5	13	12.3%	2	7	4	11	0.0%	0	7	4	11	0.0%	0	7	4	11
420					Y=0.21(X)																						

PROPOSED WEEKDAY PM PEAK HOUR TRIP GENERATION

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 Marina	10	420	68	brth	60%	40%	8	6	14	12.3%	2	7	5	12	33.3%	4	5	3	8	0.0%	0	5	3	8			
2 Quality Restaurant	10	931	375	seat	67%	33%	70	35	105	12.3%	13	61	31	92	5.4%	5	59	28	87	44.0%	38	33	16	49			
3 General Office Building	10	710	12,414	ksf	16%	84%	3	13	16	12.3%	2	3	11	14	7.1%	1	2	11	13	0.0%	0	2	11	13			
4																											
5																											
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10																											
11																											
12																											
13																											
14																											
15																											
ITE Land Use Code					Rate or Equation		Total:			81	54	135	12.3%	17	71	47	118	8.5%	10	66	42	108	35.2%	38	40	30	70
420					Y=0.21(X)																						
931					Y=0.28(X)																						
710					LN(Y) = 0.95*LN(X)+0.36																						
																					NET NEW TRIPS		IN	OUT	TOTAL		
																							33	26	59		

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Internal Capture Reduction Calculations

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook*, 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY (PROPOSED)

GROSS TRIP GENERATION							
INPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	62	61	10	2	3	11
	Retail	0	0	0	0	0	0
	Restaurant	428	427	4	3	61	31
	Cinema/Entertainment	72	72	2	3	7	5
	Residential	0	0	0	0	0	0
	Hotel	0	0	0	0	0	0
		562	560	16	8	71	47
INTERNAL TRIPS							
OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	15	20	1	1	1	0
	Retail	0	0	0	0	0	0
	Restaurant	26	26	1	1	2	3
	Cinema/Entertainment	12	7	0	0	2	2
	Residential	0	0	0	0	0	0
	Hotel	0	0	0	0	0	0
		53	53	2	2	5	5
OUTPUT	Total % Reduction	9.4%		16.7%		8.5%	
	Office	28.5%		16.7%		7.1%	
	Retail						
	Restaurant	6.1%		28.6%		5.4%	
	Cinema/Entertainment	13.2%		0.0%		33.3%	
	Residential						
	Hotel						
EXTERNAL TRIPS							
OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	47	41	9	1	2	11
	Retail	0	0	0	0	0	0
	Restaurant	402	401	3	2	59	28
	Cinema/Entertainment	60	65	2	3	5	3
	Residential	0	0	0	0	0	0
	Hotel	0	0	0	0	0	0
		509	507	14	6	66	42



B08301

MEANS OF TRANSPORTATION TO WORK

Universe: Workers 16 years and over

2013-2017 American Community Survey 5-Year Estimates

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

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

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

$$(34+27+61)/(989) = 12.3\%$$

	Census Tract 421, Broward County, Florida	
	Estimate	Margin of Error
Total:	989	+/-181
Car, truck, or van:	715	+/-160
Drove alone	686	+/-157
Carpooled:	29	+/-35
In 2-person carpool	29	+/-35
In 3-person carpool	0	+/-13
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):	34	+/-43
Bus or trolley bus	34	+/-43
Streetcar or trolley car (carro publico in Puerto Rico)	0	+/-13
Subway or elevated	0	+/-13
Railroad	0	+/-13
Ferryboat	0	+/-13
Taxicab	0	+/-13
Motorcycle	11	+/-17
Bicycle	27	+/-45
Walked	61	+/-43
Other means	9	+/-15
Worked at home	132	+/-94

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 Accuracy of the Data). 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 2013-2017 American Community Survey (ACS) data generally reflect the February 2013 Office of Management and Budget (OMB) definitions 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 definitions due to differences in the effective dates of the geographic

April 25, 2019

Mr. Benjamin Restrepo, P.E.
City of Fort Lauderdale, Transportation and Mobility Department
290 NE 3rd Avenue, 2nd Floor
Fort Lauderdale, Florida 33301

**Re: Las Olas Marina
Shared Parking Analysis
Fort Lauderdale, Florida**

Dear Mr. Restrepo:

Kimley-Horn and Associates, Inc. has prepared the shared parking analysis for the Las Olas Marina redevelopment located at 200 Las Olas Circle in Fort Lauderdale, Florida. The shared parking analysis was prepared in accordance with Section 47-20-3.G.1.a of the City of Fort Lauderdale's *Unified Land Development Code*. This section of the code allows for parking spaces to be shared between different land uses that have peak hour parking demands occurring at different hours during the day. A site plan is provided in Attachment A. The following sections summarize the shared parking analysis.

REDEVELOPMENT PROGRAM

The site proposed for redevelopment is currently occupied by a 60-slip marina. The proposed Las Olas Marina redevelopment will consist of the following:

- 68-slip marina (eight [8] additional slips)
- 19,678 square feet (375 seats) of quality restaurant
- 12,414 square feet of office space
- 14,493 square feet of marina services

Required Parking Spaces

Based upon the land uses and development intensities associated with the project, the criteria outlined within the City of Fort Lauderdale's *Unified Land Development Code* specifies that 232 parking spaces are required to provide adequate parking accommodations for the proposed redevelopment. The required amount of parking spaces assumes that the land uses are standalone developments with no opportunity for shared parking. Table 1 provides the parking accommodation required for each land use. Please note that the 14,493 square feet of marina services is considered ancillary to the marina and does not have a parking requirement as per the City's latest parking requirements. Additionally, any parking requirement for the marina services land use is expected to be included within the marina parking requirement.

Table 1 – City of Fort Lauderdale Parking Code Requirements			
Land Use Description	City of Fort Lauderdale Parking Requirement	Proposed Intensity	Required Parking
Marina	1 space per 2 slips	68 slips	34
Quality Restaurant	1 space per 114 square feet	19,678 square feet	173
General Office Building	1 space per 500 square feet	12,414 square feet	25
Total Parking Required			232

SHARED PARKING METHODOLOGY

The Urban Land Institute (ULI) has developed a shared use parking methodology. The rationalization of this methodology is to identify primary independent variables affecting parking demand, identify the relative effects and universality of those variables, and develop a standard methodology for analyzing shared parking.

Shared parking is defined as a parking space that can be used to serve two (2) or more individual land uses without conflict or encroachment. The opportunity to implement shared parking is generated by the following:

- Variations in the peak accumulation of parked vehicles as the result of different activity patterns of adjacent or nearby land uses (by hour, by day, by season).
- Relationships among land use activities that result in peoples' attraction to two or more land uses on a single vehicular trip to a given area or development.

The City of Fort Lauderdale's *Unified Land Development Code* provides peak parking ratios for major classifications of land uses but does not account for the impact of shared/combined parking which can be significantly less than the sum of individual land uses. Peak parking accumulations for individual land uses in a mixed-land use development can occur at different times during the day. This is also true for weekdays versus weekends and seasonal variations.

The ULI has developed hourly parking demand distributions for a consortium of land uses. These distributions are presented in a table format and provide a percent of the required parking ratio on an hourly basis throughout the course of a day, which is denoted as hourly percent required. Each individual land use parking demand is summated to estimate the overall shared parking demand for the project. Attachment B contains the specific calculations for this redevelopment project.

Explained further, when the hourly percent requirement equals 100 percent (100%), all of the City's specified parking spaces for that particular land use are required to be available.

Please note that for the marina 100 percent (100%) of the parking requirement was used for all analysis hours as no shared parking data is provided for this land use.

Multimodal Reduction

A multimodal (public transit, bicycle, and pedestrian) factor of 12.3 percent (12.3%) during weekdays and weekends was identified based on US Census *Means of Transportation to Work* data for the

census tract containing the proposed redevelopment. It is expected that a portion of patrons, employees, and guests will choose to walk, bike, or use public transit to and from the proposed redevelopment. As a result, a reduction of the amount of parking required is expected. This factor was applied to the shared parking analysis for both the weekday and weekend. US Census data is included in Attachment C.

Captive Market

As this site will consist of multiple uses all accessible to one another, there exists a high potential that trip interaction will occur between the various land uses. This interaction is commonly referred to as internal capture for vehicular trip calculations and captive market adjustment for parking calculations.

The influence that the internal capture effect has on this project was calculated utilizing the Institute of Transportation Engineer's (ITE) methodology for the site. Based on the ITE methodology, internal capture for the site for the weekday A.M. peak hour was calculated to be 16.70 percent (16.70%), 8.50 percent (8.50%) during the weekday P.M. peak hour, and 4.90 percent (4.90%) during the weekend. Captive market is half of internal capture as vehicles are parked at one (1) of the land uses. To provide a conservative analysis and apply the internal capture calculations appropriately, a captive market rate of 4.25 percent (4.25%) was utilized for the weekday analysis and a captive market rate of 2.45 percent (2.45%) was utilized for the weekend analysis. Internal capture calculations are contained in Attachment C.

Shared Use Parking Analysis Results

Based on the ULI distributions and the City of Fort Lauderdale's *Unified Land Development Code* parking requirements, the weekday peak season, peak hour shared-use parking analysis determined that 177 parking spaces are required from 7:00 P.M. to 8:00 P.M. The shared parking analysis corresponds to a 23.7 percent (23.7%) reduction of the 232 parking spaces required by the City of Fort Lauderdale's parking code or 55 fewer parking spaces.

The weekend peak season, peak hour shared-use parking analysis determined that 178 parking spaces are required from 8:00 P.M. to 9:00 P.M. The shared parking analysis corresponds to a 23.3 percent (23.3%) reduction of the 232 parking spaces required by the City of Fort Lauderdale's parking code or 54 fewer parking spaces. Detailed shared parking calculations are included in Attachment D.

CONCLUSION

Based on the City of Fort Lauderdale Land Development Code, evaluating each land use independent of one another, will require 228 parking spaces to be provided. However, evaluating the site based upon the parking demand distributions and characteristics contained within the ULI's *Shared Parking*, 2nd Edition, the highest peak-season, peak-hour parking demand was calculated to be 178 parking spaces. The shared parking analysis corresponds to a 23.3 percent (23.3%) reduction from the City of Fort Lauderdale parking requirement of 232 parking spaces.



Mr. Benjamin Restrepo, P.E., April 25, 2019, Page 4

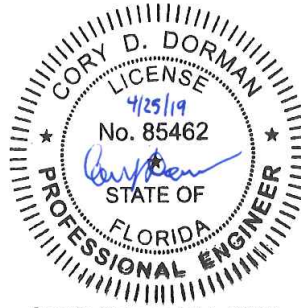
If you have any questions regarding this analysis, please feel free to contact me.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Cory D. Dorman, P.E., PTOE

Attachments



Cory D. Dorman, P.E., PTOE
Florida Registration Number 85462
Kimley-Horn and Associates, Inc.
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kimley-horn.com

600 North Pine Island Road, Suite 450, Plantation, FL 33324

954 535 5100

Attachment A

Attachment B

Parking Requirement Calculations

Land Use on Site Plan		Classification	Scale	Unit	Parking Requirement			Required Parking
					Intensity		space(s) per unit	
					Code	Equivalence		
Proposed Mixed Use	Marina	Marina	68	berths	1 space per 2 berths	0.5000	space(s) per unit	34
	Quality Restaurant	Quality Restaurant	19,678	sf	1 space per 114 sf	0.0088	space(s) per unit	173
	Broker's Offices	General Office Building	12,414	sf	1 space per 500 sf	0.0020	space(s) per unit	25
	Proposed Sum							232
Total								232

Attachment C

AM PEAK HOUR TRIP GENERATION COMPARISON

EXISTING WEEKDAY AM PEAK HOUR TRIP GENERATION

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																			
GROUP 1	1	Marina	10	420	60	brth	33%	67%	1	3	4	12.3%	1	1	2	3	0.0%	0	1	2	3	0.0%	0	1	2	3
	2																									
	3																									
	4																									
	5																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13																									
	14																									
	15																									
ITE Land Use Code		Rate or Equation			Total:		1	3	4	12.3%	1	1	2	3	0.0%	0	1	2	3	0.0%	0	1	2	3		
420		Y=0.07(X)																								

PROPOSED WEEKDAY AM PEAK HOUR TRIP GENERATION

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 Marina	10	420	68	brth	33%	67%	2	3	5	12.3%	0	2	3	5	0.0%	0	2	3	5	0.0%	0	2	3	5			
2 Quality Restaurant	10	931	375	seat	50%	50%	4	4	8	12.3%	1	4	3	7	28.6%	2	3	2	5	0.0%	0	3	2	5			
3 General Office Building	10	710	12.414	ksf	86%	14%	12	2	14	12.3%	2	10	2	12	16.7%	2	9	1	10	0.0%	0	9	1	10			
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											
ITE Land Use Code					Rate or Equation		Total:			18	9	27	12.3%	3	16	8	24	16.7%	4	14	6	20	0.0%	0	14	6	20
420					Y=0.07(X)																						
931					Y=0.02(X)																						
710					Y=1.16(X)																						
																						NET NEW TRIPS		IN	OUT	TOTAL	
																						13	4	17			

K:\FTL_TPT0\140458000-Las Olas Marina\calcs\trip gen\TRIP GEN 10_Redevelopment_04 10 19.xlsx: PRINT-AM PEAK HOUR
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PM PEAK HOUR TRIP GENERATION COMPARISON

EXISTING WEEKDAY PM PEAK HOUR TRIP GENERATION

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																				
GROUP 1	1	Marina	10	420	60	brth	60%	40%	8	5	13	12.3%	2	7	4	11	0.0%	0	7	4	11	0.0%	0	7	4	11
	2																									
	3																									
	4																									
	5																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13																									
	14																									
	15																									
ITE Land Use Code		Rate or Equation		Total:		8	5	13	12.3%	2	7	4	11	0.0%	0	7	4	11	0.0%	0	7	4	11			
420		Y=0.21(X)																								

PROPOSED WEEKDAY PM PEAK HOUR TRIP GENERATION

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																					
GROUP 2	1	Marina	10	420	68	brth	60%	40%	8	6	14	12.3%	2	7	5	12	33.3%	4	5	3	8	0.0%	0	5	3	8	
	2	Quality Restaurant	10	931	375	seat	67%	33%	70	35	105	12.3%	13	61	31	92	5.4%	5	59	28	87	44.0%	38	33	16	49	
	3	General Office Building	10	710	12.414	ksf	16%	84%	3	13	16	12.3%	2	3	11	14	7.1%	1	2	11	13	0.0%	0	2	11	13	
	4																										
	5																										
	6																										
	7																										
	8																										
	9																										
	10																										
	11																										
	12																										
	13																										
	14																										
	15																										
ITE Land Use Code					Rate or Equation		Total:			81	54	135	12.3%	17	71	47	118	8.5%	10	66	42	108	35.2%	38	40	30	70
420					Y=0.21(X)																						
931					Y=0.28(X)																						
710					LN(Y) = 0.95*LN(X)+0.36																						

Internal Capture Reduction Calculations

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook*, 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY (PROPOSED)

GROSS TRIP GENERATION							
INPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	62	61	10	2	3	11
	Retail	0	0	0	0	0	0
	Restaurant	428	427	4	3	61	31
	Cinema/Entertainment	72	72	2	3	7	5
	Residential	0	0	0	0	0	0
	Hotel	0	0	0	0	0	0
		562	560	16	8	71	47
INTERNAL TRIPS							
OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	15	20	1	1	1	0
	Retail	0	0	0	0	0	0
	Restaurant	26	26	1	1	2	3
	Cinema/Entertainment	12	7	0	0	2	2
	Residential	0	0	0	0	0	0
	Hotel	0	0	0	0	0	0
		53	53	2	2	5	5
OUTPUT	Total % Reduction	9.4%		16.7%		8.5%	
	Office	28.5%		16.7%		7.1%	
	Retail						
	Restaurant	6.1%		28.6%		5.4%	
	Cinema/Entertainment	13.2%		0.0%		33.3%	
	Residential						
	Hotel						
EXTERNAL TRIPS							
OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	47	41	9	1	2	11
	Retail	0	0	0	0	0	0
	Restaurant	402	401	3	2	59	28
	Cinema/Entertainment	60	65	2	3	5	3
	Residential	0	0	0	0	0	0
	Hotel	0	0	0	0	0	0
		509	507	14	6	66	42

WEEKEND TRIP GENERATION COMPARISON

EXISTING WEEKEND TRIP GENERATION

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																			
GROUP 1	1	Marina	10	420	60	brth	50%	50%	79	78	157	12.3%	19	69	69	138	0.0%	0	69	69	138	0.0%	0	69	69	138
	2																									
	3																									
	4																									
	5																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13																									
	14																									
	15																									
ITE Land Use Code		Rate or Equation				Total:		79	78	157	12.3%	19	69	69	138	0.0%	0	69	69	138	0.0%	0	69	69	138	
420		Y=2.61(X)																								

PROPOSED WEEKEND TRIP GENERATION

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																			
GROUP 2	1	Marina	10	420	68	brth	50%	50%	88	89	177	12.3%	22	77	78	155	11.6%	18	65	72	137	0.0%	0	65	72	137
	2	Quality Restaurant	10	931	375	seat	50%	50%	482	482	964	12.3%	119	422	423	845	3.0%	25	412	408	820	0.0%	0	412	408	820
	3	General Office Building	10	710	12,414	ksf	50%	50%	14	13	27	12.3%	3	13	11	24	29.2%	7	10	7	17	0.0%	0	10	7	17
	4																									
	5																									
	6																									
	7																									
	8																									
	9																									
	10																									
	11																									
	12																									
	13																									
	14																									
	15																									
ITE Land Use Code				Rate or Equation				Total:	584	584	1,168	12.3%	144	512	512	1,024	4.9%	50	487	487	974	0.0%	0	487	487	974
		420			Y=2.61(X)																					
		931			Y=2.57(X)																					
		710			Y=2.21(X)																					
																						NET NEW TRIPS		IN	OUT	TOTAL
																						418	418	836		

	IN	OUT	TOTAL
NET NEW TRIPS	418	418	836

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Internal Capture Reduction Calculations

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook*, 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY (PROPOSED)

GROSS TRIP GENERATION

INPUT	Land Use	Weekend Daily	
		Enter	Exit
	Office	13	11
	Retail	0	0
	Restaurant	422	423
	Cinema/Entertainment	77	78
	Residential	0	0
	Hotel	0	0
		512	512

INTERNAL TRIPS

OUTPUT	Land Use	Daily	
		Enter	Exit
	Office	3	4
	Retail	0	0
	Restaurant	10	15
	Cinema/Entertainment	12	6
	Residential	0	0
	Hotel	0	0
		25	25

OUTPUT	<i>Total % Reduction</i>	4.9%
	Office	29.2%
	Retail	
	Restaurant	3.0%
	Cinema/Entertainment	11.6%
	Residential	
	Hotel	

EXTERNAL TRIPS

OUTPUT	Land Use	Daily	
		Enter	Exit
	Office	10	7
	Retail	0	0
	Restaurant	412	408
	Cinema/Entertainment	65	72
	Residential	0	0
	Hotel	0	0
		487	487



B08301

MEANS OF TRANSPORTATION TO WORK

Universe: Workers 16 years and over

2013-2017 American Community Survey 5-Year Estimates

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

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

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

$$(34+27+61)/(989) = 12.3\%$$

	Census Tract 421, Broward County, Florida	
	Estimate	Margin of Error
Total:	989	+/-181
Car, truck, or van:	715	+/-160
Drove alone	686	+/-157
Carpooled:	29	+/-35
In 2-person carpool	29	+/-35
In 3-person carpool	0	+/-13
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):	34	+/-43
Bus or trolley bus	34	+/-43
Streetcar or trolley car (carro publico in Puerto Rico)	0	+/-13
Subway or elevated	0	+/-13
Railroad	0	+/-13
Ferryboat	0	+/-13
Taxicab	0	+/-13
Motorcycle	11	+/-17
Bicycle	27	+/-45
Walked	61	+/-43
Other means	9	+/-15
Worked at home	132	+/-94

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 Accuracy of the Data). 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 2013-2017 American Community Survey (ACS) data generally reflect the February 2013 Office of Management and Budget (OMB) definitions 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 definitions due to differences in the effective dates of the geographic

Attachment D

SHARED PARKING ANALYSIS - WEEKDAY

Land Use		Marina		Restaurant					Office					Total Site				
Unadjusted Total No. of Spaces ⁽¹⁾		34		173 Spaces Total					25 Spaces Total					232 Spaces Total				
Component Breakdown		No Shared Parking		Customer	ULI Customer	Employee	ULI Employee		Visitor	ULI Visitor	Employee	ULI Employee		Sub Total Number of Parking Spaces	Multimodal Reduction	Sub Total	Captive Market (Internal Capture)	Total Spaces Required with Shared Parking During the Weekday
User Split Ratio ⁽²⁾				85%	-	15%	-		8%	-	92%	-						
User Split Total No. of Spaces				147	-	26	-		2	-	23	-						
ULI Shared Parking Analysis		Total		Adj. Total	Adj. Rate	Adj. Total	Adj. Rate		Adj. Total	Adj. Rate	Adj. Total	Adj. Rate			12.30%		4.25%	
Time of Day																		
6 a.m.		34		0	-	0	-		0	-	1	3%		35	12.3%	31	4.25%	30
7 a.m.		34		0	-	6	20%		0	1%	7	30%		47	12.3%	41	4.25%	40
8 a.m.		34		0	-	13	50%		0	20%	18	75%		65	12.3%	57	4.25%	55
9 a.m.		34		0	-	20	75%		1	60%	22	95%		77	12.3%	68	4.25%	65
10 a.m.		34		23	15%	24	90%		2	100%	23	100%		106	12.3%	93	4.25%	90
11 a.m.		34		59	40%	24	90%		1	45%	23	100%		141	12.3%	124	4.25%	119
12 p.m.		34		111	75%	24	90%		0	15%	21	90%		190	12.3%	167	4.25%	160
1 p.m.		34		111	75%	24	90%		1	45%	21	90%		191	12.3%	167	4.25%	161
2 p.m.		34		96	65%	24	90%		2	100%	23	100%		179	12.3%	157	4.25%	151
3 p.m.		34		59	40%	20	75%		1	45%	23	100%		137	12.3%	120	4.25%	115
4 p.m.		34		74	50%	20	75%		0	15%	21	90%		149	12.3%	131	4.25%	126
5 p.m.		34		111	75%	3	10%		0	10%	12	50%		160	12.3%	140	4.25%	135
6 p.m.		34		140	95%	26	100%		0	5%	6	25%		206	12.3%	181	4.25%	174
7 p.m.		34		147	100%	26	100%		0	2%	3	10%		210	12.3%	184	4.25%	177
8 p.m.		34		147	100%	26	100%		0	1%	2	7%		209	12.3%	183	4.25%	176
9 p.m.		34		147	100%	26	100%		0	-	1	3%		208	12.3%	182	4.25%	175
10 p.m.		34		140	95%	26	100%		0	-	1	1%		201	12.3%	176	4.25%	169
11 p.m.		34		111	75%	23	85%		0	-	0	-		168	12.3%	147	4.25%	142
12 a.m.		34		37	25%	10	35%		0	-	0	-		81	12.3%	71	4.25%	69

¹ Number of parking spaces required per the City of Fort Lauderdale's Unified Land Development Code

² Derived from the Source table below

Source: Table 2-2: Summary of Recommended Base Parking Ratios - *Shared Parking*, 2nd Edition - Urban Land Institute

Land Use	WEEKDAY					
	Base Parking Space Ratios		Calculated Parking Space Ratio		Parking Space Ratio To Use For Analysis	
	Visitor/Customer	Employee	Visitor	Employee	Visitor	Employee
Marina	N/A	N/A	N/A	N/A	N/A	N/A
Restaurant (Quality)	15.25	2.75	85%	15%	85%	15%
Office	0.3	3.5	8%	92%	8%	92%

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SHARED PARKING ANALYSIS - WEEKEND

Land Use		Marina		Restaurant					Office					Total Site				
Unadjusted Total No. of Spaces ⁽¹⁾		34		173 Spaces Total					25 Spaces Total					232 Spaces Total				
Component Breakdown		No Shared Parking		Customer	ULI Customer	Employee	ULI Employee		Visitor	ULI Visitor	Employee	ULI Employee		Sub Total Number of Parking Spaces	Multimodal Reduction	Sub Total	Captive Market (Internal Capture)	Total Spaces Required with Shared Parking During the Weekend
User Split Ratio ⁽²⁾				85%	-	15%	-		8%	-	92%	-						
User Split Total No. of Spaces				147	-	26	-		2	-	23	-						
ULI Shared Parking Analysis		Total		Adj. Total	Adj. Rate	Adj. Total	Adj. Rate		Adj. Total	Adj. Rate	Adj. Total	Adj. Rate			12.30%		2.45%	
Time of Day																		
6 a.m.		34		0	-	0	-		0	-	0	-		34	12.3%	30	2.45%	30
7 a.m.		34		0	-	6	20%		0	20%	5	20%		45	12.3%	40	2.45%	39
8 a.m.		34		0	-	8	30%		1	60%	14	60%		57	12.3%	50	2.45%	49
9 a.m.		34		0	-	16	60%		2	80%	19	80%		71	12.3%	62	2.45%	61
10 a.m.		34		0	-	20	75%		2	90%	21	90%		77	12.3%	67	2.45%	66
11 a.m.		34		23	15%	20	75%		2	100%	23	100%		102	12.3%	89	2.45%	88
12 p.m.		34		74	50%	20	75%		2	90%	21	90%		151	12.3%	132	2.45%	130
1 p.m.		34		81	55%	20	75%		2	80%	19	80%		156	12.3%	136	2.45%	134
2 p.m.		34		67	45%	20	75%		1	60%	14	60%		136	12.3%	119	2.45%	117
3 p.m.		34		67	45%	20	75%		1	40%	10	40%		132	12.3%	116	2.45%	113
4 p.m.		34		67	45%	20	75%		0	20%	5	20%		126	12.3%	111	2.45%	109
5 p.m.		34		89	60%	26	100%		0	10%	3	10%		152	12.3%	133	2.45%	131
6 p.m.		34		133	90%	26	100%		0	5%	2	5%		195	12.3%	171	2.45%	167
7 p.m.		34		140	95%	26	100%		0	-	0	-		200	12.3%	175	2.45%	172
8 p.m.		34		147	100%	26	100%		0	-	0	-		207	12.3%	182	2.45%	178
9 p.m.		34		133	90%	26	100%		0	-	0	-		193	12.3%	169	2.45%	166
10 p.m.		34		133	90%	26	100%		0	-	0	-		193	12.3%	169	2.45%	166
11 p.m.		34		133	90%	23	85%		0	-	0	-		190	12.3%	167	2.45%	163
12 a.m.		34		74	50%	13	50%		0	-	0	-		121	12.3%	106	2.45%	104

¹ Number of parking spaces required per the City of Fort Lauderdale's Unified Land Development Code

² Derived from the Source table below

Source: Table 2-2: Summary of Recommended Base Parking Ratios - *Shared Parking* , 2nd Edition - Urban Land Institute

Land Use	WEEKEND					
	Base Parking Space Ratios		Calculated Parking Space Ratio		Parking Space Ratio To Use For Analysis	
	Visitor/Customer	Employee	Visitor	Employee	Visitor	Employee
Marina	N/A	N/A	N/A	N/A	N/A	N/A
Restaurant (Quality)	17	3	85%	15%	85%	15%
Office	0.03	0.35	8%	92%	8%	92%