

Memorandum

To: Mr. Benjamin Restrepo, P.E.
City of Fort Lauderdale, Transportation & Mobility
290 NE 3rd Avenue
Fort Lauderdale, FL 33301

From: J. Suzanne Daniels, P.E.

Date: October 7, 2019

Re: **Residence Inn - Fort Lauderdale, FL
Traffic Statement**

As requested, Daniels Consulting Engineers, Inc. has prepared a traffic statement specific to the proposed 150-room Residence Inn to be constructed along the west side of Seabreeze Boulevard (southbound SR A1A) generally between SE 5 Street (Hall of Fame Drive) and East Las Olas Boulevard within municipal limits of the City of Fort Lauderdale. If minimum trip thresholds established by the City of Fort Lauderdale are exceeded, it is understood that a comprehensive traffic impact study may be required. In addition to the trip generation estimate, a valet analysis examining the potential for entering vehicles to queue onto Seabreeze Boulevard (southbound SR A1A) has been requested by City staff.

TRAFFIC ANALYSIS

The project site is occupied by a surface parking area currently serving as overflow parking for the Courtyard by Marriott hotel across the street. The proposed redevelopment will consist of 150 hotel rooms. A location map and a current site plan are included as Attachment A. Vehicular access to the site will be provided by two (2) driveways along Seabreeze Boulevard (southbound SR A1A): one (1) service driveway near the north property line and one (1), two (2) lane two (2) way access drive for guests accessing the property further south along the SR A1A frontage.

Trip Generation

A trip generation analysis has been completed for the proposed hotel. The analysis was performed using rates and formulae published in the Institute of Transportation Engineer's (ITE) report *Trip Generation* (10th Edition). The trip generation analysis was undertaken for daily, AM peak hour, and PM peak hour conditions. According to the ITE report, the most appropriate land use category and corresponding rates for the proposed land uses are as follows:

Resort Hotel - ITE Land Use #330

Daily Trips: Not Available¹ (50% inbound and 50% outbound)
where T = number of trips and X = rooms

AM Peak Hour Trips $T = 0.38(X) - 28.58$ (72% inbound and 28% outbound)

PM Peak Hour Trips $T = 0.52(X) - 55.42$ (43% inbound and 57% outbound)

The results of this effort are documented in Table 1 included as Attachment B. As shown in Table 1, the proposed hotel is expected to produce 339 vehicle trips per day with 28 trips occurring during the AM peak hour (20 entering and 8 exiting) and 23 trips during the PM peak hour (10 entering and 13 exiting).

¹ Daily rate developed by applying peak to daily ratio specific to LUC 310 (Hotel) to PM peak hour trips noted in Table 1.

Valet Analysis

The trip generation analysis for this site indicates that peak inbound traffic will occur during the weekday AM peak hour with 20 vehicles. According to the current site plan, the proposed development will have one (1) access point for guest vehicles entering the project site. The site plan requires that all entering vehicles utilize the onsite valet service. Upon entering the property, a valet attendant will accept each vehicle and proceed into the garage where the first three (3) levels provide surface parking spaces and the fourth level provides triple stacked lifts.

The length of queue anticipated on site and the number of valet runners were determined using information contained in ITE's *Transportation and Land Development*, Chapter 8 – Drive-In Facilities (equation 8-9b and Table 8-11). For this analysis, the following input variables were used:

- **Demand Rate:** Based on ITE's *Trip Generation* (10th Edition), the maximum inbound vehicular traffic flow anticipated at the proposed Residence Inn is approximately 20 vehicles.
- **Service Rate:** It was assumed that the average time to park/unpark a vehicle by a valet runner is approximately 225 seconds per vehicle (first three (3) levels of surface parking spaces) and 400 seconds per vehicle (fourth level of parking spaces with triple stacked lifts). Drop off/retrieval periods are dependent upon several factors including ticket processing time, vehicle travel time to parking space, mechanical lift speed and attendant return speed. An analysis was conducted for each parking scenario as follows: Third level of parking with surface spaces and fourth level of parking with mechanical lifts. Assumptions are shown in the queuing analysis contained in Attachment C.

With a 98% confidence level, it is projected that with four (4) parking attendants vehicles approaching the Residence Inn valet stand will not be required to queue when the first three (3) levels of parking are used exclusively. With four (4) parking attendants and use of the fourth level of parking (and the mechanical lifts), a queue of four (4) vehicles can be expected at any one time during a typical AM peak hour. Appendix C includes queue analysis worksheets.

Conclusion

Based upon the foregoing analysis, the proposed project should not require a comprehensive traffic impact study for the following reasons:

- Unified Land Development Regulations (ULDR's) specific to the City of Fort Lauderdale stipulate that when a proposed project produces more than 1,000 net new vehicle trips per day, a comprehensive traffic study is required. The subject project is expected to produce 339 net new vehicle trips per day as shown in Table 1.
- And, if the net new vehicle trips are less than 1,000 vehicle trips per day and more than 20 percent of the daily trips are anticipated to arrive or depart, or both, within one-half hour, a comprehensive traffic study is required. As shown in Table 1, 20 percent of daily trips are not expected to arrive or depart (or both) within one-half hour.

With a 98% confidence level, it is projected that with four (4) parking attendants vehicles approaching the Residence Inn valet stand will not be required to queue when the first three (3) levels of parking are used exclusively. With four (4) parking attendants and use of the fourth level of parking (and the mechanical lifts), a queue of four (4) vehicles can be expected at any one time during a typical AM peak hour.

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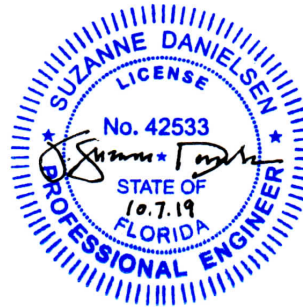
Of course, please do not hesitate to contact me directly with any questions you may have.

Sincerely,

DC ENGINEERS, INC.

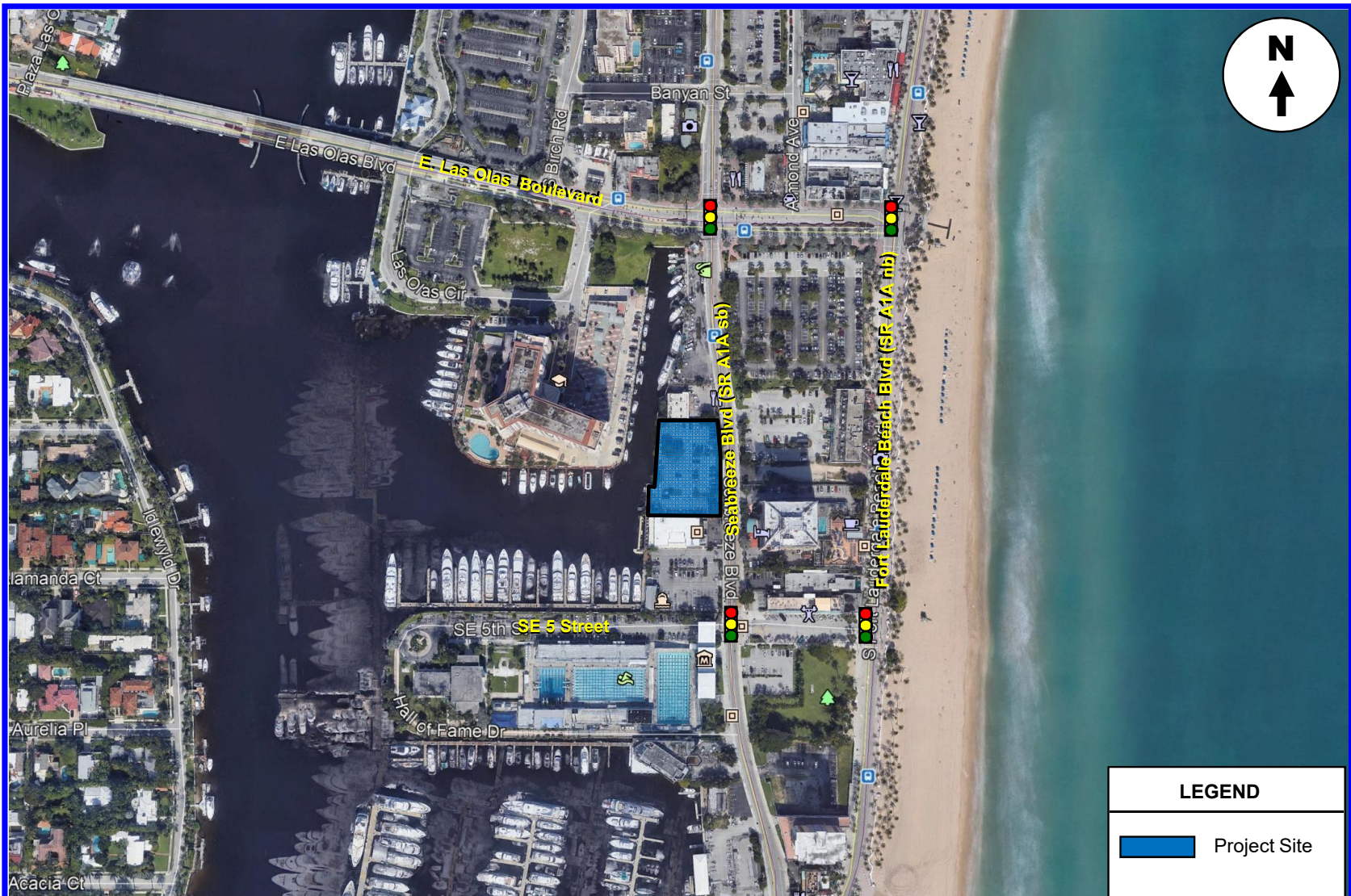


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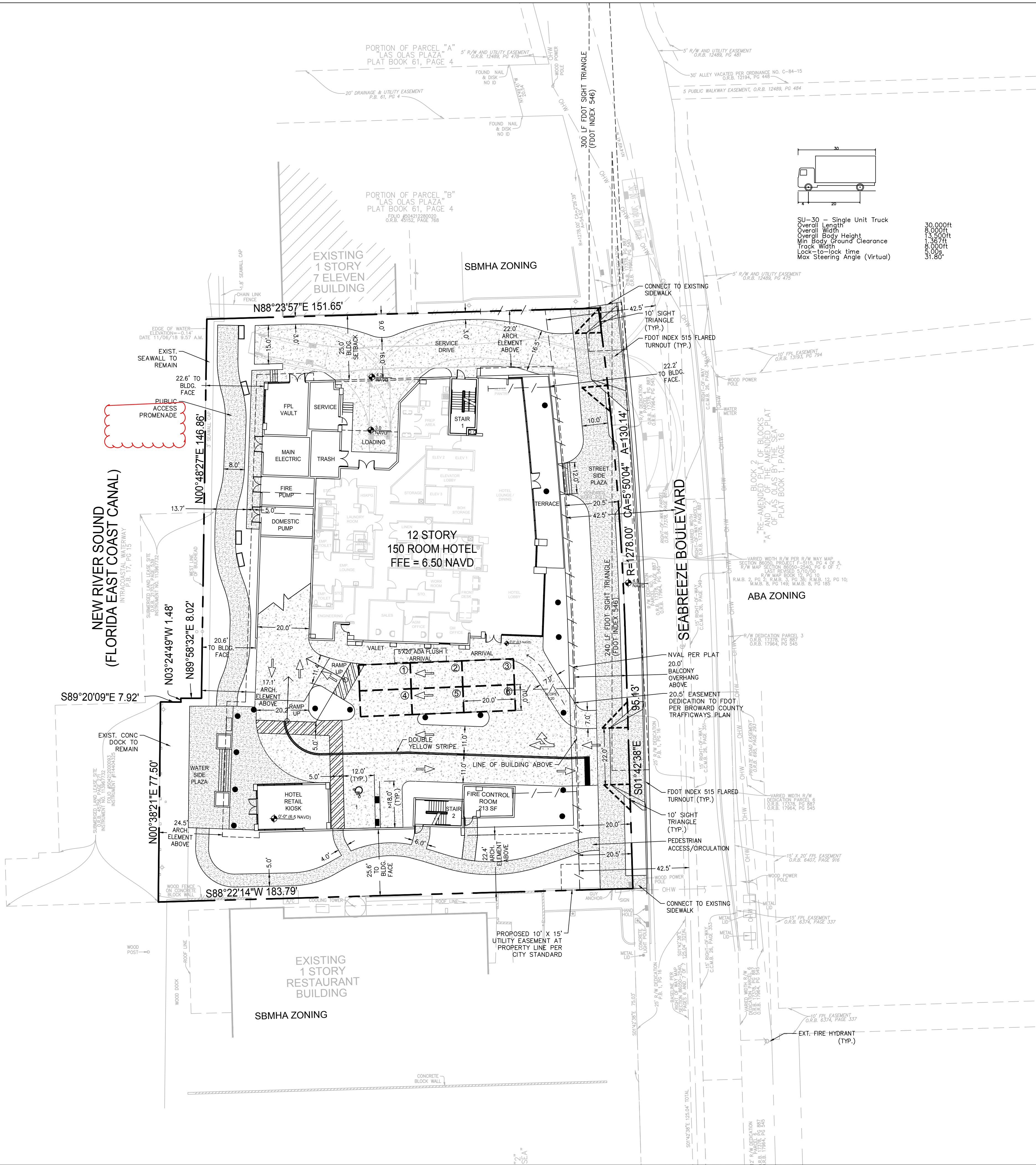
Attachment A
Location Map and Site Plan



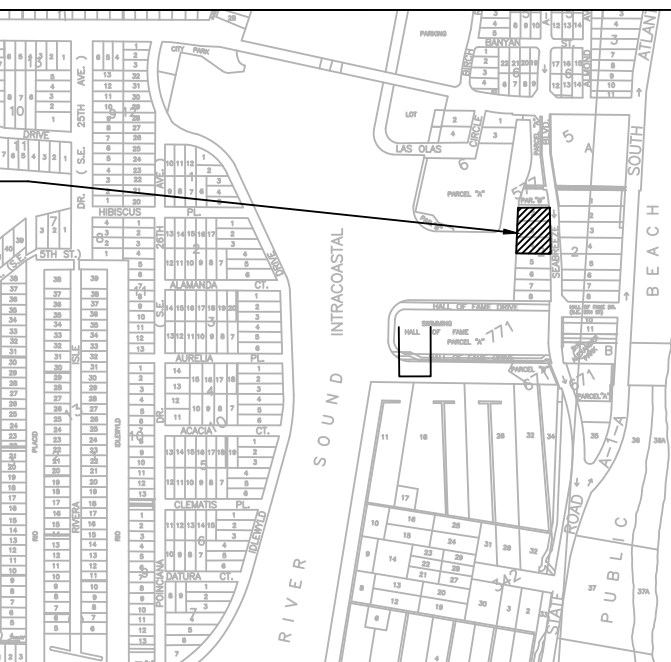
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Project Location Map

FIGURE 1
Residence Inn
Fort Lauderdale, Florida



PROJECT SITE



LAND DESCRIPTION:

PARCEL 2

PORTIONS OF LOTS 2, 3 AND 4, IN BLOCK 2, LAS OLAS BY THE SEA, A SUBDIVISION OF PART OF LOT 1 OF SECTION 12, TOWNSHIP 50 SOUTH, RANGE 42 EAST AND A PART OF LOT 1 OF SECTION 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST, ACCORDING TO THE RE-AMENDED PLAT THEREOF, RECORDED IN PLAT BOOK 1, PAGE 16, OF THE PUBLIC RECORDS OF BROWARD COUNTY, FLORIDA, LYING WEST OF THE EXISTING WESTERLY RIGHT OF WAY LINE OF SEABREEZE BOULEVARD.

PARCEL 3

PARCEL OF LAND LYING WEST OF LOTS 2, 3 AND 4, IN BLOCK 2, LAS OLAS BY THE SEA, A SUBDIVISION OF PART OF LOT 1 OF SECTION 12, TOWNSHIP 50 SOUTH, RANGE 42 EAST AND A PART OF LOT 1 OF SECTION 7, TOWNSHIP 50 SOUTH, RANGE 43 EAST, ACCORDING TO THE RE-AMENDED PLAT THEREOF, RECORDED IN PLAT BOOK 1, PAGE 16, OF THE PUBLIC RECORDS OF BROWARD COUNTY, FLORIDA, UP TO THE EXISTING BULKHEAD OF NEW RIVER SOUND AND LYING BETWEEN THE NORTH LINE OF SAID LOT 2, IN BLOCK 2 OF SAID PLAT, EXTENDED TO SAID BULKHEAD AND THE SOUTH LINE OF SAID LOT 4 IN BLOCK 2 OF SAID PLAT, EXTENDED TO SAID BULKHEAD.

SAID LANDS SITUATE IN THE CITY OF FT. LAUDERDALE, BROWARD COUNTY, FLORIDA AND CONTAINING 36,267 SQUARE FEET MORE OR LESS.

SITE PLAN INFORMATION

CURRENT USE OF PROPERTY	SURFACE PARKING LOT	
PROPOSED USE OF PROPERTY	HOTEL	
CURRENT LAND USE DESIGNATION	CENTRAL REGIONAL ACTIVITY CENTER	
PROPOSED LAND USE DESIGNATION	CENTRAL REGIONAL ACTIVITY CENTER	
CURRENT ZONING DESIGNATION	SBMHA (SOUTH BEACH MARINA & HOTEL AREA)	
PROPOSED ZONING DESIGNATION	SBMHA (SOUTH BEACH MARINA & HOTEL AREA)	
ADJACENT ZONING DESIGNATION	ABA	
WATER/WASTE WATER SERV. PROVIDER	CITY OF FORT LAUDERDALE	
TOTAL SITE AREA-NET	0.8649 ACRES TOTAL/ 36,676 S.F.	
TOTAL PERVIOUS EXISTING (LANDSCAPE)	7,840 S.F. (21.6%)	
TOTAL PERVIOUS PROPOSED (LANDSCAPE)	7,068 S.F. (19.3%)	
TOTAL IMPERVIOUS EXISTING	28,427 S.F. (78.4%)	
TOTAL IMPERVIOUS PROPOSED	29,608 S.F. (80.7%)	
TOTAL BUILDING FOOT PRINT EXISTING	N/A	
TOTAL BUILDING FOOT PRINT PROPOSED	21,181 S.F. (58.4%)	
PARKING DATA:	UNITS	RATIO
	SPACES PROVIDED WITH LIFTS	REQUIRED
PROPOSED RESIDENCE INN	150	.67/ROOM
	101 PER ULDR	PROVIDED
TOTAL OFF-SITE PARKING PROVIDED FOR COURTYARD MARRIOTT PARKING AGREEMENT	101 PER ULDR	181
	**104	**104
TOTAL ADA PARKING INCL. LOADING ZONE	6	6
	N/A	N/A
TOTAL BUILDING SQUARE FOOTAGE (GROSS)	6	6
	100% VALET VRS	6
FLOOR AREA RATIO (F.A.R.)	172,833 S.F.	
BUILDING HEIGHT	4.71	
NUMBER OF STORIES	120'	
BUILDING WIDTH & LENGTH	12	
LOT WIDTH	175' X 125'	
LOT COVERAGE	224.4' X 173.9'	
OPEN SPACE	21,181 S.F.	
LANDSCAPE AREA	12,561 S.F.	
VEHICULAR USE AREA (VUA)	7,068 S.F.	
	2,934 S.F.	

**104 SPACES ARE ALLOCATED TO SATISFY AMENDED PARKING AGREEMENT WITH COURTYARD MARRIOTT (FOUO # 5042 12 01 0120) PER THE AMENDED SHARED PARKING STUDY DATED AUGUST 2019.

SETBACKS

REQUIRED PER (14-12.4) SBMHA	MIN REQUIRED	HEIGHT	PROVIDED
FRONT (EAST)	20'	60'	22' ** 20' TO BUILDING STRUCTURE AT 16'-6" ABOVE FFE (6.5 NAVD)
BACK (WEST)	20'	60'	20.1' ** 17'-1" TO ARCHITECTURAL ELEMENT AT HEIGHT OF 10' ABOVE FFE (6.5 NAVD)
SIDE (NORTH)	10'	60'	25' ** 22' TO ARCHITECTURAL ELEMENT AT HEIGHT OF 13'-2" ABOVE FFE (6.5 NAVD)
SIDE (SOUTH)	10'	60'	25' ** 22' TO ARCHITECTURAL ELEMENT AT HEIGHT OF 10'-8" ABOVE FFE (6.5 NAVD)

** DEVELOPMENT OF SIGNIFICANT IMPACT.

NOTES:

PROJECT COMPLIES WITH ULDR 47-12.5.F.5



Attachment B

Table 1 - Trip Generation Summary Proposed Uses

Table 1: Trip Generation Summary Proposed Uses

Land Use	Scale	Units	AM Peak Hour			PM Peak Hour			Daily		
			Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound	Total Trips	Inbound	Outbound
Resort Hotel LUC 330	150	rooms	28	20	8	23	10	13	339	170	169
Subtotal			28	20	8	23	10	13	339	170	169
Internal (0%)											
Subtotal			28	20	8	23	10	13	339	170	169
Pass-by (0%)											
Total			28	20	8	23	10	13	339	170	169

Source: ITE Trip Generation Manual (10th Edition)

* Daily rate developed by applying peak to daily ratio specific to LUC 310 to PM peak hour trips noted above.

NA	50% in, 50% out	Daily
$T = 0.38(x) - 28.58$	72% in, 28% out	AM Peak
$T = 0.52(x) - 55.42$	43% in, 57% out	PM Peak

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Attachment C

Queuing Analysis

Residence Inn – Valet Operations
Queuing Analysis based on ITE Procedures

$q = 20$ veh/hr (demand rate)

$Q = 16$ veh/hr (service rate @ 225 sec/veh)

$$p = \frac{q}{NQ} = 0.3125 \text{ (**N = 4 valet attendants**)}$$

$$Q_M = 0.0437 \text{ (for } N = 4)$$

Using Acceptable Probability of 2% (98% Confidence Level)

$$M = \left(\frac{\ln(x > M) - \ln(Q_M)}{\ln(p)} \right) - 1$$

$$M = \left(\frac{\ln(0.02) - \ln(0.0437)}{\ln(0.3125)} \right) - 1$$

$$M = \left(\frac{-3.912 - (-3.1304)}{-1.1632} \right) - 1$$

$$M = 0.6720 - 1 = -0.3280 \text{ vehicles}$$

or, 0 vehicles

- (1) Ticket processing time = **60 sec.** + vehicle travel time to 4th parking level = **115 sec.** + attendant return = **50 sec.** for a total of **225 seconds.**
- (2) Ticket processing time = **60 sec.** + vehicle travel time to 5th parking level = **150 sec.** + mechanical move to 3rd level parking = **120 sec.** + attendant return = **50 sec.** for a total of **380 seconds.**

Used 225 seconds.

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Residence Inn – Valet Operations
Queuing Analysis based on ITE Procedures

$q = 20$ veh/hr (demand rate)

$Q = 9$ veh/hr (service rate @ 400 sec/veh)

$$p = \frac{q}{NQ} = 0.5556 \text{ (**N = 4 valet attendants**)}$$

$$Q_M = 0.2368 \text{ (for } N = 4)$$

Using Acceptable Probability of 2% (98% Confidence Level)

$$M = \left(\frac{\ln(x > M) - \ln(Q_M)}{\ln(p)} \right) - 1$$

$$M = \left(\frac{\ln(0.02) - \ln(-1.4405)}{\ln(0.5556)} \right) - 1$$

$$M = \left(\frac{-3.912 - (-3.1304)}{-1.1632} \right) - 1$$

$$M = 4.2053 - 1 = 3.2053 \text{ vehicles}$$

or, 4 vehicles

- (1) Ticket processing time = **60 sec.** + vehicle travel time to 4th parking level = **115 sec.** + attendant return = **50 sec.** for a total of **225 seconds.**
- (2) Ticket processing time = **60 sec.** + vehicle travel time to 5th parking level = **150 sec.** + mechanical move to 3rd level parking = **120 sec.** + attendant return = **50 sec.** for a total of **380 seconds.**

Used 400 seconds.

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