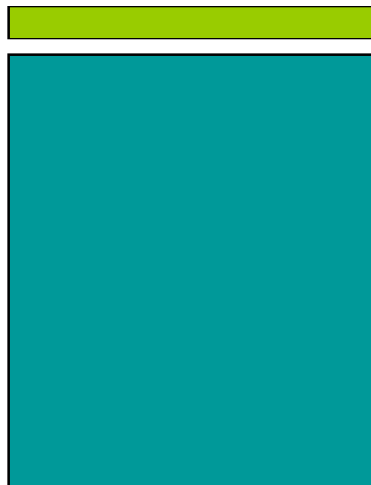


EXECUTIVE SUMMARY

NE 2nd Street Residential

traffic study



prepared for:
Ellis Diversified, Inc.

Traf Tech
ENGINEERING, INC.

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EXECUTIVE SUMMARY

The NE 2nd Street Residential project is a proposed residential development with a small retail/office component planned to be located between NE 2nd Street and NE 3rd Street just to the west of Federal Highway / US 1 in the City of Fort Lauderdale, Broward County, Florida. Figure 1 on the following page shows the location of the project site as well as the transportation network located in the immediate vicinity of the project site.

Traf Tech Engineering, Inc. has been retained by Ellis Diversified, Inc. to conduct a traffic study in connection with the subject project. The study addresses trip generation, access to the site, the traffic impacts on the nearby transportation network, and potential roadway improvements intended to mitigate the new trips generated by the project, if any.

Existing Land Use

The project site is currently vacant with a portion of the site containing a paved parking area.

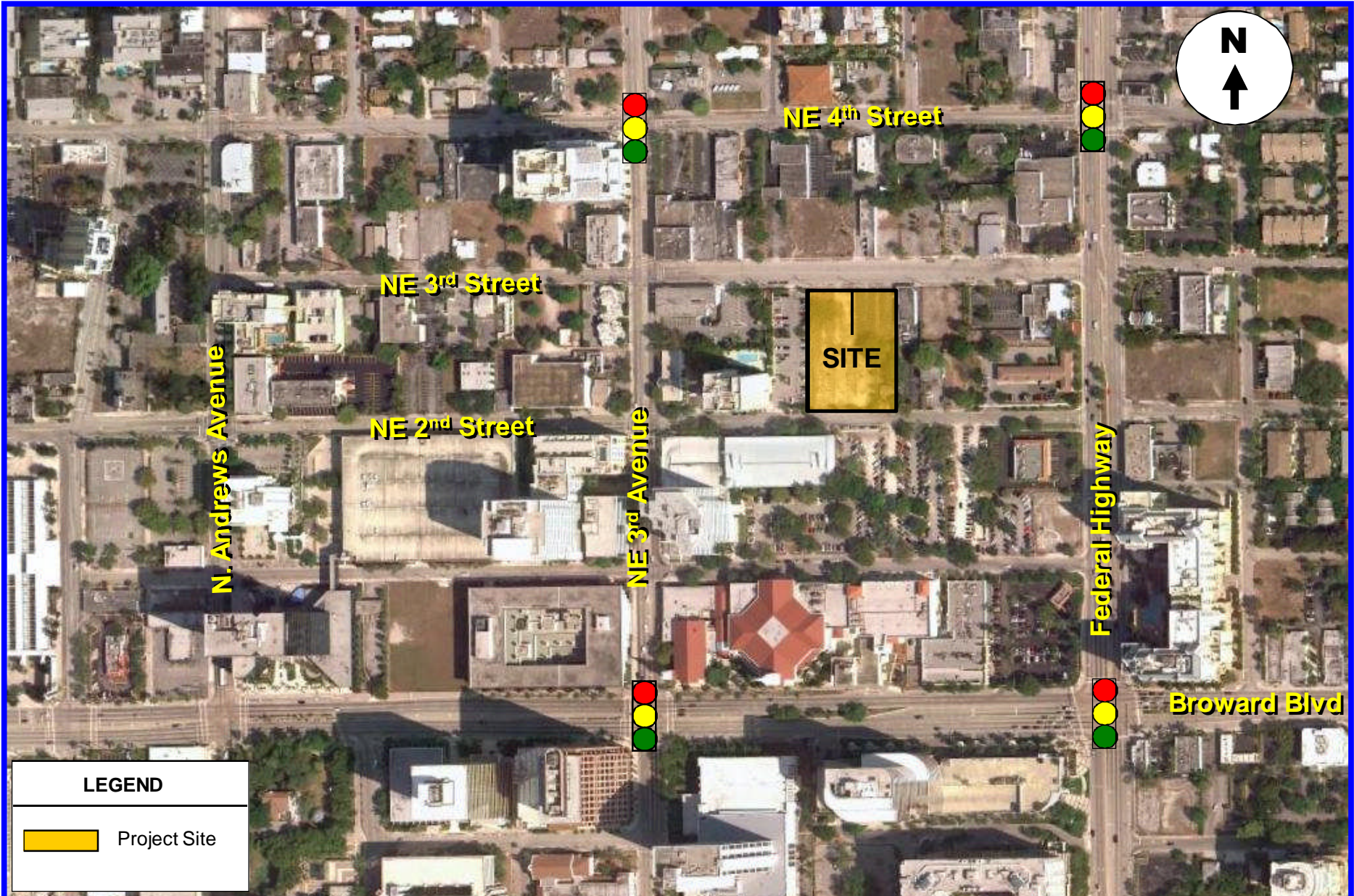
Proposed Land Uses and Access

Proposed for the site is a 398-unit residential development and 2,300 square feet of retail/office use. The primary access to the site will be provided via two (2) driveways on NE 3rd Street. One (1) service driveway will be provided on NE 2nd Street.

For purposes of this traffic study, the project is anticipated to be built and occupied by the year 2014.

Roadway System

The transportation network located in the vicinity of the project site includes two minor arterial roadways, two collector streets, and two major arterials. The two minor arterial roadways include North Andrews Avenue and NE 3rd Avenue, both north-south roadways that provide two through lanes in each direction. The two collector streets include NE 2nd Street and NE 3rd Street (both are two-lane roadways oriented in the east-west direction). The two major arterials include Broward Boulevard (east-west) and Federal Highway / US 1 (north-south). Both arterial roadways are six-lane facilities near the project site.



Trip Generation

The trip generation for the proposed NE 2nd Street Residential development was based on information contained in the Institute of Transportation Engineer's (ITE) *Trip Generation* manual (9th Edition). According to the subject ITE manual, the most appropriate "land use" categories for the subject project are ITE's Land Use 232 – High Rise Residential Condominium/Townhouse and ITE's Land Use 826 – Specialty Retail Center. (In order to assess impacts with a conservative approach, the non-residential use was assumed to be retail for purposes of this traffic study since it generates more trips than the office land use).

Table 1 documents the trips generation associated with the NE 2nd Street project.

TABLE 1			
Trip Generation Summary			
NE 2nd Street Residential – Fort Lauderdale, FL			
PROPOSED DEVELOPMENT (398 Residential Units and 2,300 SF of Retail/Office)			
Land Use	Daily Trips	AM Peak Trips	PM Peak Trips
Retail (2,300 SF)	102	16	6
Residential (398 units)	1,724	144	151
External Trips =	1,826	160	157

SOURCE: ITE Trip Generation Manual (9th Edition)

As indicated in Table 1, the new trips consist of approximately 1,826 daily trips, approximately 160 AM peak hour trips (35 inbound and 125 outbound), and approximately 157 PM peak hour trips (97 inbound and 60 outbound).

Trip Distribution

The trip distribution assumed for the NE 2nd Street Residential project is summarized below:

- 10% to and from the north via NE 3rd Avenue
- 25% to and from the north via Federal Highway / US 1
- 10% to and from the south via SE 3rd Avenue
- 15% to and from the south via Federal Highway / US 1
- 30% to and from the west via Broward Boulevard
- 10% to and from the east via Broward Boulevard

Level of Service Analyses

Intersection capacity analyses were performed for the six study intersections. The analyses were undertaken following the capacity/level of service procedures outlined in the Highway Capacity Manual through the use of SYNCHRO. The results of the intersection analyses are summarized in Tables 2 through 7.

TABLE 2			
Intersection Level of Service – NE 4th Street and NE 3rd Avenue			
NE 2nd Street Residential – Fort Lauderdale, FL			
Intersection	2012 Existing	Future Traffic Conditions	
		2014 Without Project	2014 With Project
NE 4th St & NE 3rd Ave	11.3/B (12.2/B)	12.7/B (13.3/B)	12.5/B (13.3/B)
- EB Left	21.9/C (22.2/C)	22.6/C (23.3/C)	22.6/C (23.3/C)
- EB Thru/Right	18.9/B (20.2/C)	22.6/C (22.5/C)	22.6/C (22.5/C)
- WB Left	24.4/C (22.5/C)	26.9/C (23.4/C)	26.9/C (23.4/C)
- WB Thru/Right	18.7/B (24.6/C)	21.1/C (27.0/C)	21.1/C (27.0/C)
- NB Left	7.5/A (8.9/A)	7.9/A (9.6/A)	7.9/A (9.7/A)
- NB Thru/Right	6.1/A (9.7/A)	6.7/A (10.3/B)	5.3/A (10.4/B)
- SB Left	7.3/A (8.1/A)	7.4/A (9.0/A)	7.5/A (9.1/A)
- SB Thru/Right	8.4/A (6.4/A)	9.2/A (7.0/A)	9.2/A (7.1/A)

Source: Highway Capacity Manual. LEGEND: AM Peak (PM Peak)

TABLE 3			
Intersection Level of Service – NE 4th Street and Federal Highway			
NE 2nd Street Residential – Fort Lauderdale, FL			
Intersection	2012 Existing	Future Traffic Conditions	
		2014 Without Project	2014 With Project
NE 4th St & Federal Hwy	21.2/C (20.5/C)	22.5/C (21.4/C)	22.9/C (21.7/C)
- EB Left	53.3/D (56.0/E)	54.5/D (57.7/E)	57.5/E (59.5/E)
- EB Thru/Right	47.9/D (43.9/D)	50.2/D (45.1/D)	50.2/D (45.1/D)
- WB Left	61.6/E (55.4/D)	66.4/E (56.4/E)	66.4/E (56.4/E)
- WB Thru/Right	40.5/D (45.1/D)	43.7/D (47.7/D)	43.7/D (47.7/D)
- NB Left	9.0/A (8.0/A)	10.5/A (9.4/A)	10.8/B (9.5/A)
- NB Thru/Right	15.4/B (18.6/B)	16.0/B (19.4/B)	16.0/B (19.4/B)
- SB Left	7.7/A (9.3/A)	8.1/A (10.3/B)	8.1/A (10.3/B)
- SB Thru/Right	19.3/B (16.4/B)	20.4/C (17.2/B)	20.5/C (17.4/B)

Source: Highway Capacity Manual. LEGEND: AM Peak (PM Peak)

TABLE 4			
Intersection Level of Service – NE 3rd Street and NE 3rd Avenue NE 2nd Street Residential – Fort Lauderdale, FL			
Intersection	2012 Existing	Future Traffic Conditions	
		2014 Without Project	2014 With Project
NE 3rd St & NE 3rd Ave	9.7/A (10.4/B)	10.7/B (11.5/B)	10.9/B (12.0/B)
- EB Approach	13.2/B (17.2/B)	12.9/B (17.1/B)	12.9/B (17.1/B)
- WB Left	21.9/C (21.7/C)	22.0/C (21.8/C)	24.0/C (22.7/C)
- WB Thru/Right	12.4/B (9.7/A)	12.2/B (13.1/B)	8.7/A (14.7/B)
- NB Left	7.5/A (7.4/A)	8.0/A (7.6/A)	8.0/A (7.7/A)
- NB Thru/Right	7.4/A (11.1/B)	7.8/A (12.4/B)	7.7/A (12.8/B)
- SB Left	7.2/A (7.5/A)	7.3/A (8.0/A)	7.4/A (9.9/A)
- SB Thru/Right	9.9/A (8.1/A)	11.4/B (8.6/A)	11.4/B (8.6/A)

Source: Highway Capacity Manual. LEGEND: AM Peak (PM Peak)

TABLE 5			
Intersection Level of Service – Broward Boulevard and 3rd Avenue NE 2nd Street Residential – Fort Lauderdale, FL			
Intersection	2012 Existing	Future Traffic Conditions	
		2014 Without Project	2014 With Project
Broward & NE 3rd Ave	49.4/D (49.5/D)	57.7/E (65.3/E)	61.8/E (68.6/E)
- EB Left	29.9/C (50.4/D)	32.5/C (67.6/E)	33.5/C (92.5/F)
- EB Thru/Right	48.6/D (43.0/D)	50.7/D (45.1/D)	50.7/D (45.1/D)
- WB Left	58.9/E (37.3/D)	76.6/E (53.7/D)	76.6/E (53.7/D)
- WB Thru/Right	47.0/D (40.0/D)	48.7/D (40.9/D)	48.7/D (40.9/D)
- NB Left	31.2/C (51.3/D)	41.0/C (113.0/F)	41.0/C (123.6/F)
- NB Thru/Right	36.5/D (67.5/E)	40.3/D (95.0/F)	40.3/D (97.7/F)
- SB Left	25.3/C (49.9/D)	25.9/C (61.9/E)	25.9/C (61.9/E)
- SB Thru/Right	66.8/E (43.2/D)	91.2/F (51.7/D)	106.9/F (52.0/D)

Source: Highway Capacity Manual. LEGEND: AM Peak (PM Peak)

TABLE 6			
Intersection Level of Service – Broward Boulevard and Federal Highway NE 2nd Street Residential – Fort Lauderdale, FL			
Intersection	2012 Existing	Future Traffic Conditions	
		2014 Without Project	2014 With Project
Broward & Federal Hwy	88.4/F (97.6/F)	119.0/F (119.6/F)	121.3/F (121.5/F)
- EB Left	59.1/E (82.2/F)	60.4/E (101.7/F)	60.4/E (101.7/F)
- EB Through	51.7/D (54.1/D)	52.9/D (56.8/E)	52.9/D (56.8/E)
- EB Right	17.7/B (11.3/B)	21.4/C (14.9/B)	21.4/C (14.9/B)
- WB Left	182.5/F (202.2/F)	227.0/F (252.3/F)	227.0/F (252.3/F)
- WB Thru/Right	130.8/F (182.8/F)	202.7/F (238.3/F)	204.8/F (244.0/F)
- NB Left	137.0/F (95.4/F)	169.5/F (111.2/F)	169.5/F (111.2/F)
- NB Through	55.3/E (65.5/E)	59.1/E (87.2/F)	59.2/E (89.9/F)
- NB Right	7.3/A (14.0/B)	9.5/A (19.2/B)	9.7/A (19.5/B)
- SB Left	110.4/F (175.7/F)	131.2/F (217.8/F)	143.4/F (224.9/F)
- SB Through	81.7/F (50.7/D)	130.2/F (56.1/E)	135.4/F (56.4/E)
- SB Right	17.9/B (10.7/B)	21.5/C (13.7/B)	21.7/C (13.7/B)

Source: Highway Capacity Manual. LEGEND: AM Peak (PM Peak)

TABLE 7			
Intersection Level of Service – NE 3rd Street and Federal Highway NE 2nd Street Residential – Fort Lauderdale, FL			
Intersection	2012 Existing	Future Traffic Conditions	
		2014 Without Project	2014 With Project
NE 3rd St & Federal Hwy	0.9/A (1.1/A)	1.1/A (1.3/A)	1.4/A (1.6/A)
- EB Right	15.1/C (12.5/B)	17.1/C (13.72/B)	18.7/C (14.2/B)
- WB Right	10.4/B (13.1/B)	11.0/B (14.5/B)	11.0/B (14.5/B)
- NB Left	1.7/A (1.4/A)	2.2/A (1.6/A)	2.6/A (2.3/A)

Source: Highway Capacity Manual. LEGEND: AM Peak (PM Peak)

With the exception of the two (2) intersections on Broward Boulevard (Broward Boulevard / Federal Highway and Broward Boulevard / NE 3rd Avenue), the study intersections are projected to operate adequately, as a whole, in the future with the proposed project in place. These two deficient intersections are non-City facilities and therefore, the traffic mitigation has been accounted for in Broward County's Transit-Oriented Concurrency System.

Additionally, all intersection lane groups on the City-maintained streets are projected to operate adequately with one exception: the eastbound approach of NE 4th Street and Federal Highway / US 1. However, with signal timing modifications and optimization, the subject deficient approach is forecast to operate adequately.

Main Project Driveway

Additionally, the main project driveways on NE 3rd Street were evaluated following the capacity/level of service procedures of the Highway Capacity Manual through the use of SYNCHRO. (To be conservative, these intersections were analyzed as one driveway location.) The results of this effort indicate that the main project driveway is projected to function very well as proposed (no improvements on NE 3rd Street and one (1) ingress lane and one (1) egress lane at the driveways). Moreover, queuing (in both the inbound and outbound directions) is projected to be minimal.

Link Evaluation

A roadway link analysis was conducted for the study area. The subject segment evaluation is presented in Tables 2 and 3. As indicated in the subject tables, all roadway segments are currently operating at an acceptable level of service and will continue to operate adequately with the proposed project in place with one exception. The exception is the segment of Broward Boulevard east of Federal Highway. This subject deficient segment of Broward Boulevard is currently operating deficiently and will continue to operate at a poor level of service with the proposed project in place. However, this segment is under the jurisdiction of Broward County and therefore, this deficient roadway segment was address as part of Broward county's transit oriented concurrency system (mitigation has already been addressed at the County level).

TABLE 2
Link Evaluation - Marina Loft
AM Peak Hour Analysis

Roadway Segment	Lanes	Capacity	Year 2012		Year 2014		Year 2014	
			Existing Traffic Volume	LOS	Without Project Volume	LOS	With Project Volume	LOS
<u>NE 4th Street</u>								
- NE 3rd Ave to US 1	2	962	350	ok	447	ok	478	ok
<u>NE 3th Street</u>								
- NE 3rd Ave to US 1	2	962	113	ok	123	ok	236	ok
<u>Broward Boulevard</u>								
- West of NE 3rd Ave	6	4240	2035	ok	2262	ok	2330	ok
- NE 3rd Ave to US 1	6	4240	1798	ok	1990	ok	1990	ok
- East of US 1	4	2898	2451	NO	2748	NO	2763	NO
<u>NE 3rd Avenue</u>								
- North of NE 4th St	<u>4</u>	2739	828	ok	1072	ok	1089	ok
- NE 3rd St to NE 4th St	<u>4</u>	2730	927	ok	1190	ok	1238	ok
- Broward to NE 3rd St	<u>4</u>	2730	1317	ok	1616	ok	1680	ok
- South of Broward	<u>4</u>	2730	1626	ok	1960	ok	1976	ok
<u>Federal Highway (US 1)</u>								
- North of NE 4th St	<u>6</u>	4240	2744	ok	3191	ok	3200	ok
- NE 3rd St to NE 4th St	<u>6</u>	4240	2843	ok	3299	ok	3338	ok
- Broward to NE 3rd St	<u>6</u>	4240	2813	ok	3266	ok	3305	ok
- South of Broward	6	4880	3635	ok	4115	ok	4139	ok

Traffic volumes taken from Figures 3, 5, and 6 of the updated traffic study

Capacity Source: Broward County MPO (Roadway Capacity and Level of Service Analysis)

TABLE 3
Link Evaluation - Marina Loft
PM Peak Hour Analysis

Roadway Segment	Lanes	Capacity	Year 2012		Year 2014		Year 2014	
			Existing Traffic	LOS	Without Project	LOS	With Project	LOS
			Volume		Volume		Volume	
<u>NE 4th Street</u>								
- NE 3rd Ave to US 1	2	962	443	ok	563	ok	578	ok
<u>NE 3th Street</u>								
- NE 3rd Ave to US 1	2	962	149	ok	163	ok	257	ok
<u>Broward Boulevard</u>								
- West of NE 3rd Ave	6	4240	2614	ok	2891	ok	2938	ok
- NE 3rd Ave to US 1	6	4240	2168	ok	2344	ok	2344	ok
- East of US 1	4	2898	2918	NO	3246	NO	3262	NO
<u>NE 3rd Avenue</u>								
- North of NE 4th St	<u>4</u>	2739	1064	ok	1267	ok	1283	ok
- NE 3rd St to NE 4th St	<u>4</u>	2730	1229	ok	1454	ok	1485	ok
- Broward to NE 3rd St	<u>4</u>	2730	1706	ok	2008	ok	2071	ok
- South of Broward	<u>4</u>	2730	2020	ok	2391	ok	2407	ok
<u>Federal Highway (US 1)</u>								
- North of NE 4th St	<u>6</u>	4240	2855	ok	3324	ok	3348	ok
- NE 3rd St to NE 4th St	<u>6</u>	4240	2993	ok	3475	ok	3514	ok
- Broward to NE 3rd St	<u>6</u>	4240	3176	ok	3675	ok	3714	ok
- South of Broward	6	4880	3576	ok	4081	ok	4104	ok

Traffic volumes taken from Figures 3, 5, and 6 of the updated traffic study

Capacity Source: Broward County MPO (Roadway Capacity and Level of Service Analysis)

Proposed Mitigation Plan

The proposed mitigation associated with the NE 2nd Street Residential project is summarized below:

- Once the project is completed, the developer will coordinate with Broward County Traffic Engineering Division in order to request that the signal timing at the intersection of Federal Highway and NE 4th Street be reviewed and optimized by the Broward County.
- Provide 7 to 10-foot-wide sidewalks on NE 2nd Street and 7 to 15-foot-wide sidewalks on NE 3rd Street, within the limits of the project site.
- Provide an area within the project to accommodate a B-cycle station.
- Provide bike storage room/racks for at least 10% of the total number of residential units.
- Provide an area to display information for the tenants of the project regarding B-cycle, public transportation, etc. in the lobby of the project.