*Draft Final Report*

# LeJeune Road Corridor Traffic Impact Study Miami Springs, Florida

Prepared for:
City of Miami Springs, FL


4121T.01

Kimley-Horn
and Associates, Inc.
*Engineering, Planning, and Environmental Consultants*

Kimley-Horn
and Associates, Inc.

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*Planning*
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July 24, 1996

Mr. Steve Johnson
City Planner
City of Miami Springs
201 Westward Drive
Miami Springs, FL 33166

Re: LeJeune Road Corridor Traffic Impact Study

Dear Steve:

Enclosed is the Draft Final version for the above referenced study. If no comments are forwarded to us within 30 days, we will print five (5) copies of the Final Report and provide them to you. Your cooperation and assistance in the performance of this study are appreciated.

Very truly yours,

KIMLEY-HORN AND

B. Douglas Coomer, P.E.
Vice President

BDC:klb

Enclosures

cc: Oscar Camejo, Metro-Dade MPO
Karl Peterson, Kimley-Horn

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# LeJeune Road Corridor
# Traffic Impact Study
# Miami Springs, Florida

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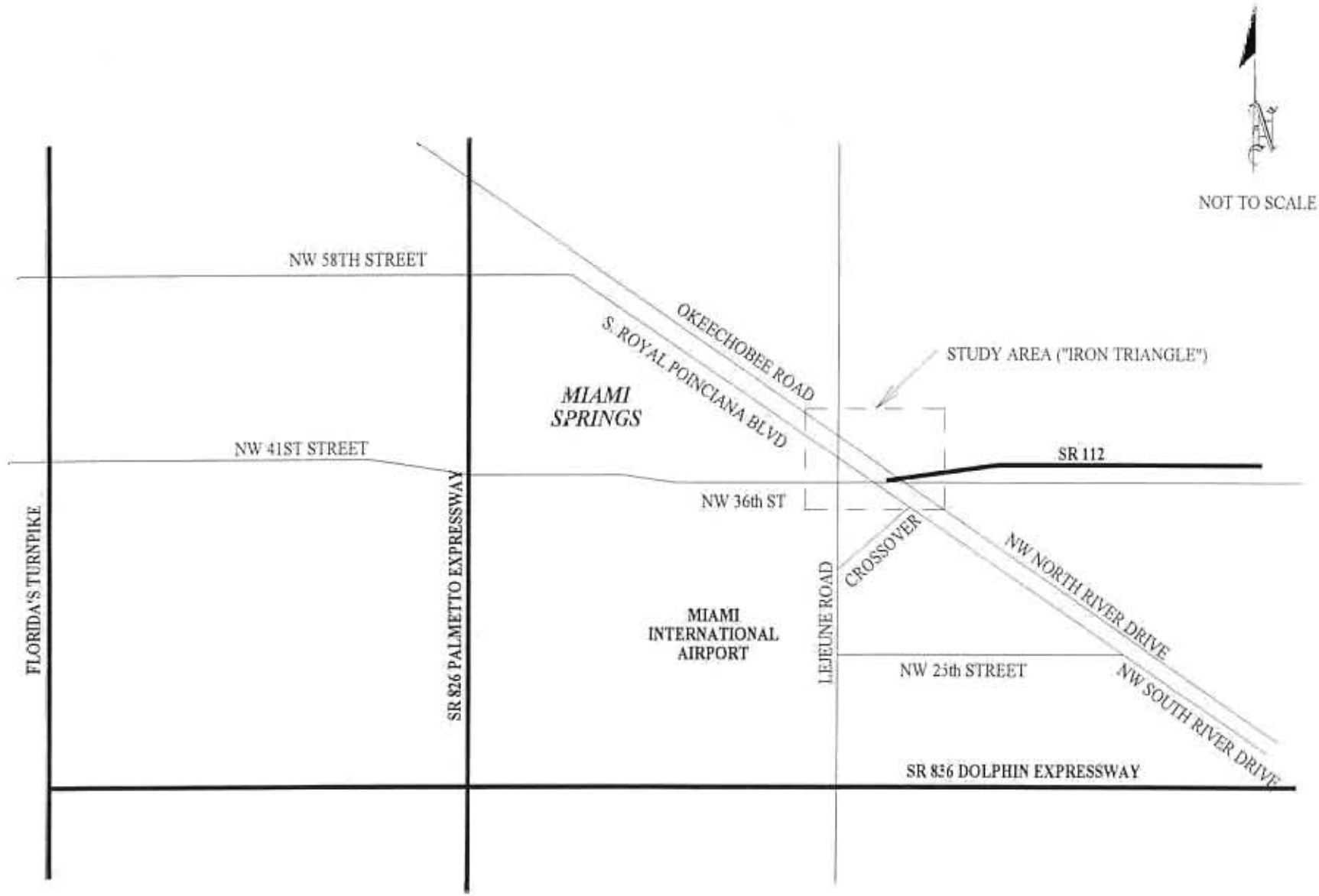
# INTRODUCTION

The purpose of this transportation study is to identify and evaluate potential low-cost transportation improvements for the general area defined by LeJeune Road, South Royal Poinciana Boulevard, and NW 36th Street (See Figure 1). This area, known as the "Iron Triangle", is characterized by frequent periods of traffic congestion caused by high traffic volumes, intense commercial, office and industrial developments, and conflicting traffic patterns. Due to the existing roadway facilities and land uses, substantial transportation improvements in the area would be very costly. Currently, major roadway improvement projects, are planned on Okeechobee Road and leading to Miami Intermodal Center, which addresses these issues on a much larger scale. The focus on this study is on cost-effective improvements designed to ease the congestion in this area that can be implemented in the short term, while the other projects are being designed and constructed.

The data used in this analysis was collected by both the City of Miami Springs and Kimley-Horn and Associates, Inc. and was supplemented by information provided by the Metro-Dade County Metropolitan Planning Organization (MPO) and the Florida Department of Transportation (FDOT). Much of this analysis was performed using TRAF-NETSIM and Highway Capacity Software traffic models. The models were used to study existing and future traffic conditions for the existing roadway network and to measure the benefits of various proposed improvements. The methodology and analysis criteria used in this study are discussed throughout the report. Those improvements which have been determined to produce the greatest benefits are presented in the Conclusions & Recommendations section of this report.




MIAMI SPRINGS

LEJEUNE ROAD

Study Area

FIGURE 1

Kimley-Horn and Associates, Inc.

KHA Project # 4121T.01

## DATA COLLECTION

To establish a data base from which the analysis was performed, traffic data was collected. This data includes:

- Intersection turning movement counts for the AM and PM peak periods collected at 10 intersections within the study area. See Appendix A for actual turning movement counts. These intersections are:

  - NW 36th Street and East Drive.
  - NW 36th Street and LeJeune Road.
  - NW 36th Street and South Royal Poinciana Boulevard.
  - NW 36th Street and Okeechobee Road.
  - LeJeune Road and NW 25th Street.
  - LeJeune Road and South Royal Poinciana Boulevard.
  - LeJeune Road and Okeechobee.
  - South Royal Poinciana Boulevard and East Drive.
  - South Royal Poinciana Boulevard and Crossover Road.
  - Okeechobee Road and SW 8th Court.

- Signal timing and phasing data for each of the signalized intersections including system timing patterns and coordination data.

- Roadway geometry and intersection turn lane configurations.

# METHODOLOGY

The magnitude of traffic volumes, the complexity of conflicting traffic patterns, and the intricate geometry of the study area network required a sophisticated approach to evaluating the existing operations, as well as testing the effectiveness of various improvement alternatives. The methodology used in this study applies a stochastic microscopic modeling approach that simulates operational characteristics observed in the field. The tool which makes this comprehensive analytical approach possible is a computerized model called TRAF-NETSIM. The seven intersections in the immediate area of the Iron Triangle were modeled with TRAF-NETSIM, and the other three isolated intersections - LeJeune Road and NW 25th Street, NW 36th Street and East Drive, and South Royal Poinciana Boulevard and East Drive - were evaluated using the Highway Capacity Software (HCS).

TRAF-NETSIM is a powerful computer program that performs a detailed simulation of traffic flow on urban and suburban street systems. In addition to numerical outputs of various Measures of Effectiveness (MOE's), the program provides an animated presentation of the movement of each vehicle, once every second, as it moves through the transportation system. As a result, the program provides detailed estimates of actual traffic performance measures for the conditions being simulated.

## *TRAF-NETSIM INPUT DATA*

The TRAF-NETSIM model uses a data entry process by which traffic engineering characteristics and data are incorporated into the model. These inputs are summarized in Table 1 and include those related to the geometry, traffic operations, traffic characteristics, and intersection traffic control.

**TABLE 1**

**SUMMARY OF TRAF-NETSIM INPUT DATA REQUIREMENTS**

**Geometric Variables**

- Number of lanes
- Length of full-width lanes
- Number of left and right-turn pockets
- Length of turning bays
- Lane channelization (closed, buses only, right turns only, etc.)
- Level of pedestrian volume
- Presence or absence of Right-Turn-On-Red
- Location of parking zones (to simulate impedance of parking vehicles)
- Location of bus stations, station size, routes serviced

**Traffic Operations Variables**

- Mean queue discharge headway
- Free-flow speed
- Mean start-up loss time for first vehicle in queue
- Average duration of parking maneuvers, average number of maneuvers/hour
- Turning and through movement volumes discharging at intersection

**Traffic Characteristics**

- Traffic volumes (vehicles per hour) at network entry points
- Mid-street traffic generation (net change +/- in volume)
- Traffic mix (cars, trucks, taxis)
- Mean headway of transit vehicles

**Intersection Traffic Control Variables**

- Type of control (STOP, YIELD, Uncontrolled, Fixed Time, Actuated)
- For signal controlled intersections:
  - Traffic movements permitted during each signal interval
  - Number of intervals (up to 12) permitted
  - Duration of each interval
  - Signal offset
  - Force-off times, detector locations, etc., for actuated controlled intersections

Source: ITE Journal, July 1994

## *TRAF-NETSIM OUTPUT DATA*

The results of the TRAF-NETSIM analysis are provided by means of detailed outputs for each roadway section such as average speed, number of stops, average delay per vehicle, vehicle queue-lengths by lane movement, fuel consumption, and vehicle emissions (see Table 2). The program can be used to evaluate a wide range of traffic operation strategies involving either individual intersections, arterials or large grid networks. The TRAF-NETSIM animated presentation program is a valuable tool allowing the transportation planner the ability to visually evaluate complex situations.

## *SELECTED MEASURES OF EFFECTIVENESS (MOE)*

Delay is the most common MOE used by traffic engineers. TRAF-NETSIM calculates delay and defines it as queued delay. The TRAF-NETSIM queued delay is equivalent to the stopped delay used by the *1994 Highway Capacity Manual* (HCM) to determine intersection levels of service (LOS). Queued delay was translated into Level-of-Service in accordance to Table 9-3 in the 1994 HCM (see Table 3). The HCM considers cycle length, ratio of effective green time to cycle length, volume-to-capacity ratio, and various other factors in the estimation of stopped delay. It is calculated for each lane group, then aggregated for each approach and for the entire intersection.

TRAF-NETSIM yields another MOE, phase failure, which occurs when the standing queue does not clear through the intersection during the allowable green time for that movement. These two TRAF-NETSIM outputs, delay and phase failure, were used to evaluate the existing conditions and the benefits of proposed improvements alternatives.

**TABLE 2**
**EVALUATION MEASURES OF EFFECTIVENESS**

| MOE | Description |
|---|---|
| **Vehicle-Trips** | The total number of vehicle trips serviced by the network. |
| **Delay (Total)** | The total delay, in vehicle-hours, experienced by all vehicles traversing the network. Delay is defined as the excess time vehicles spend on the network due to operation of speeds below the vehicles assigned free-flow speed. |
| **Moving/Total Time** | A measure of efficiency, expressed as percent. The ratio of time spent moving to the total time spent on the network. |
| **Delay (Vehicular)** | The average per vehicle delay, expressed as minutes/trip. |
| **Average Speed** | The average speed, miles per hour, of all vehicles traversing the network. |
| **Storage** | The average percentage of available space on the network occupied by vehicles. |
| **Phase Failures** | The number of times vehicles in queue at a signalized intersection could not clear the intersection during the next "go" phase. |
| **Auto & Truck Fuel** | The number of gallons per 1,000 vehicles used by vehicles while on the network. |
| **HC Emissions** | Hydrocarbon emissions in kilograms per mile per hour per 1,000 trips. |
| **NOX Emissions** | Oxides of nitrogen emissions in kilograms per mile per hour per 1,000 trips. |
| **Percent Demand Serviced** | The percent of demand volume service by the network during the simulation. |
| **CO Emissions** | Carbon monoxide emissions in kilograms per mile per hour per 1,000 trips. |

Source: ITE Journal. July 1994

**TABLE 3**
**RELATIONSHIP BETWEEN DELAY AND LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS**

| Level of Service | Definition | Stopped Delay per Vehicle (seconds) |
|---|---|---|
| A | Operations of low delay, favorable progression, and most vehicles do not stop. Short cycle lengths may contribute. | < 5.0 |
| B | Operations of good progression and / or short cycle lengths with few stops. | 5.1 to 15.0 |
| C | Operations with higher delays as a result of fair progression and / or longer cycle lengths. Individual cycle failures appear. A significant number of vehicles stop even though many still pass through without stopping. | 15.1 to 25.0 |
| D | Operations with noticeable congestion. Longer delays may result from some combination of unfavorable congestion, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop and the number of cycle failures are noticeable. | 25.1 to 40.0 |
| E | Considered to be the limit of acceptable delay. High delays may result from poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are noticeable. | 40.1 to 60.0 |
| F | This is considered to be unacceptable to most drivers and occurs with over saturation. | > 60.0 |

Source: 1994 Highway Capacity Manual

# *EXISTING CONDITIONS*

The existing traffic volumes, geometry and signal timing plans were input into the TRAF-NETSIM simulation model to evaluate the existing operating conditions of the study area. Traffic volumes collected in the data collection phase were balanced to accommodate any variations in data from one intersection to the next. Various field reviews were conducted to calibrate TRAF-NETSIM model outputs to existing field conditions.

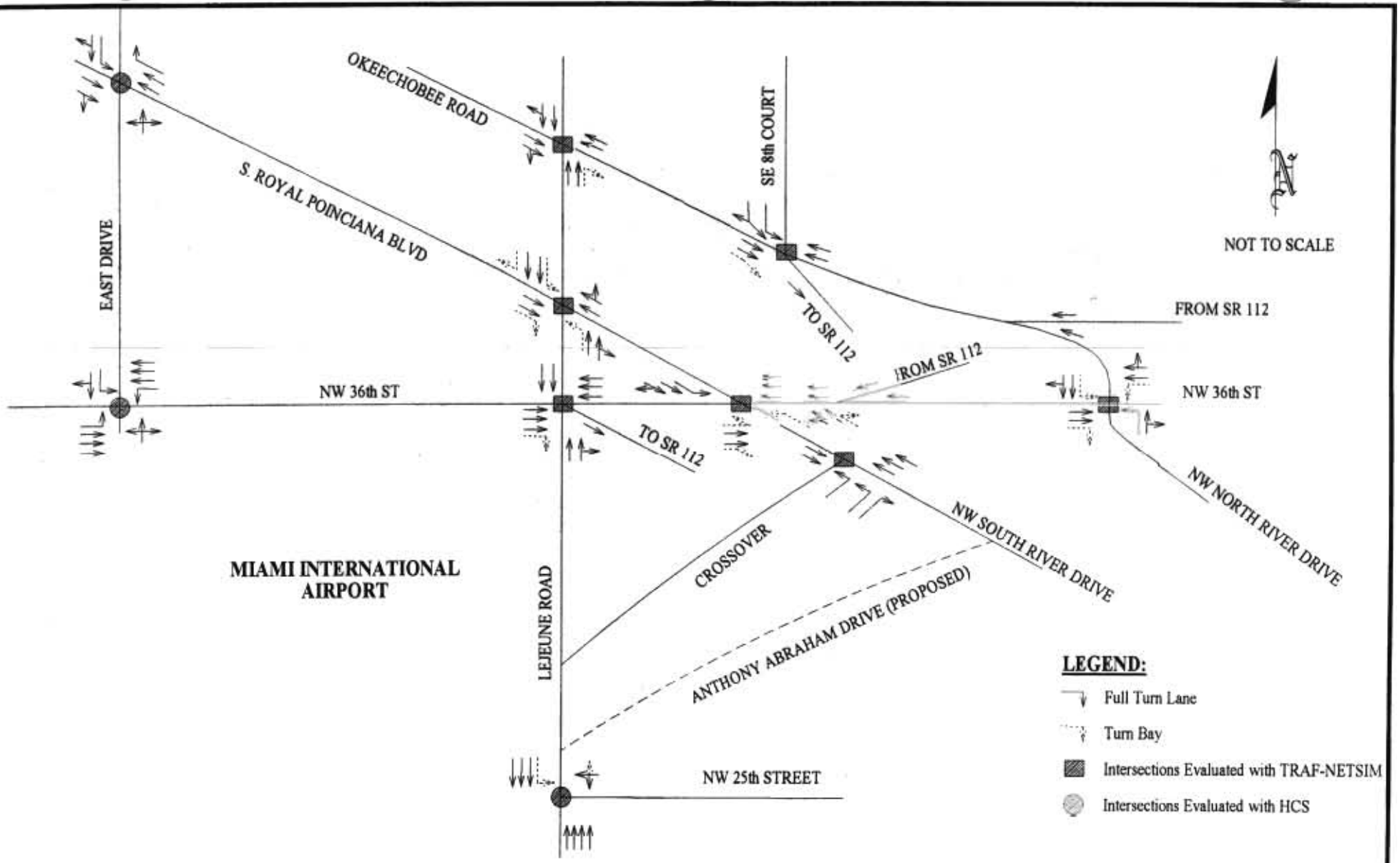
Figure 2 depicts the ten intersections within the study area network to be analyzed along with their existing lane configurations. This figure also identifies the intersections that were modeled with TRAF-NETSIM and those modeled with HCS.

## EXISTING TRAFFIC VOLUMES

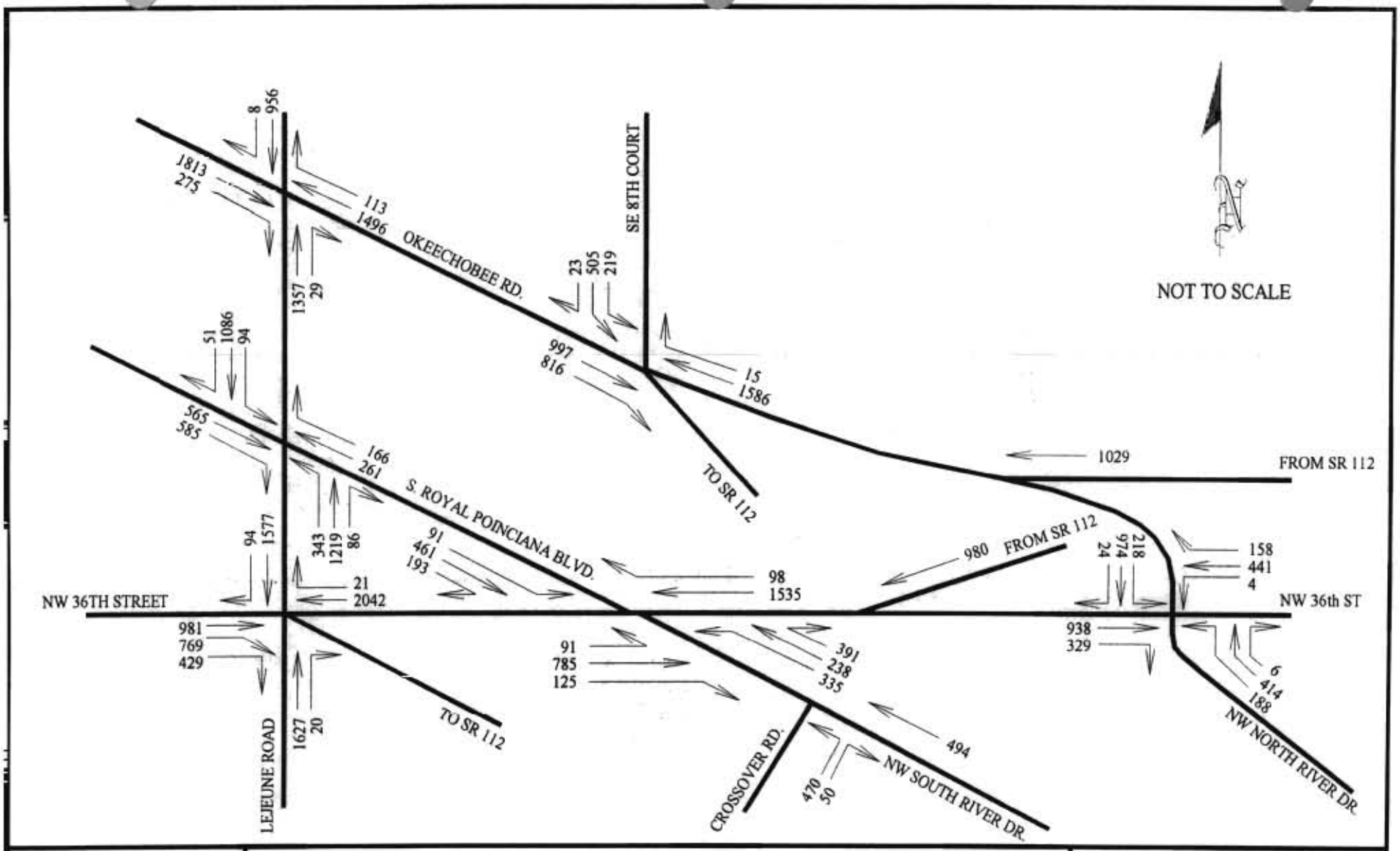
Figures 3 and 4 contain the existing volumes for the morning peak hour (8:00 am to 9:00 am) and the afternoon peak hour (4:30 pm to 5:30 pm) for intersections modeled with TRAF-NETSIM. Both these figures illustrate the heavy flow patterns on all approaches to the triangle formed by LeJeune Road, NW 36th Street, and South Royal Poinciana Boulevard.

Complete TRAF-NETSIM outputs for the morning peak hour and afternoon peak hour are found in Appendix B.

Figures 5, 6, and 7 contain the morning and afternoon peak hours for South Royal Poinciana Boulevard and East Drive, NW 36th Street and East Drive, and LeJeune Road and NW 25th Street; respectively, which were analyzed using the HCS. Outputs from the HCS analysis are found in Appendix C.




| | | |
|---|---|---|
| MIAMI SPRINGS<br>LEJEUNE ROAD | Roadway Network of Study Area | FIGURE 2<br>Kimley-Horn and Associates, Inc.<br>KHA Project # 4121T.01 |

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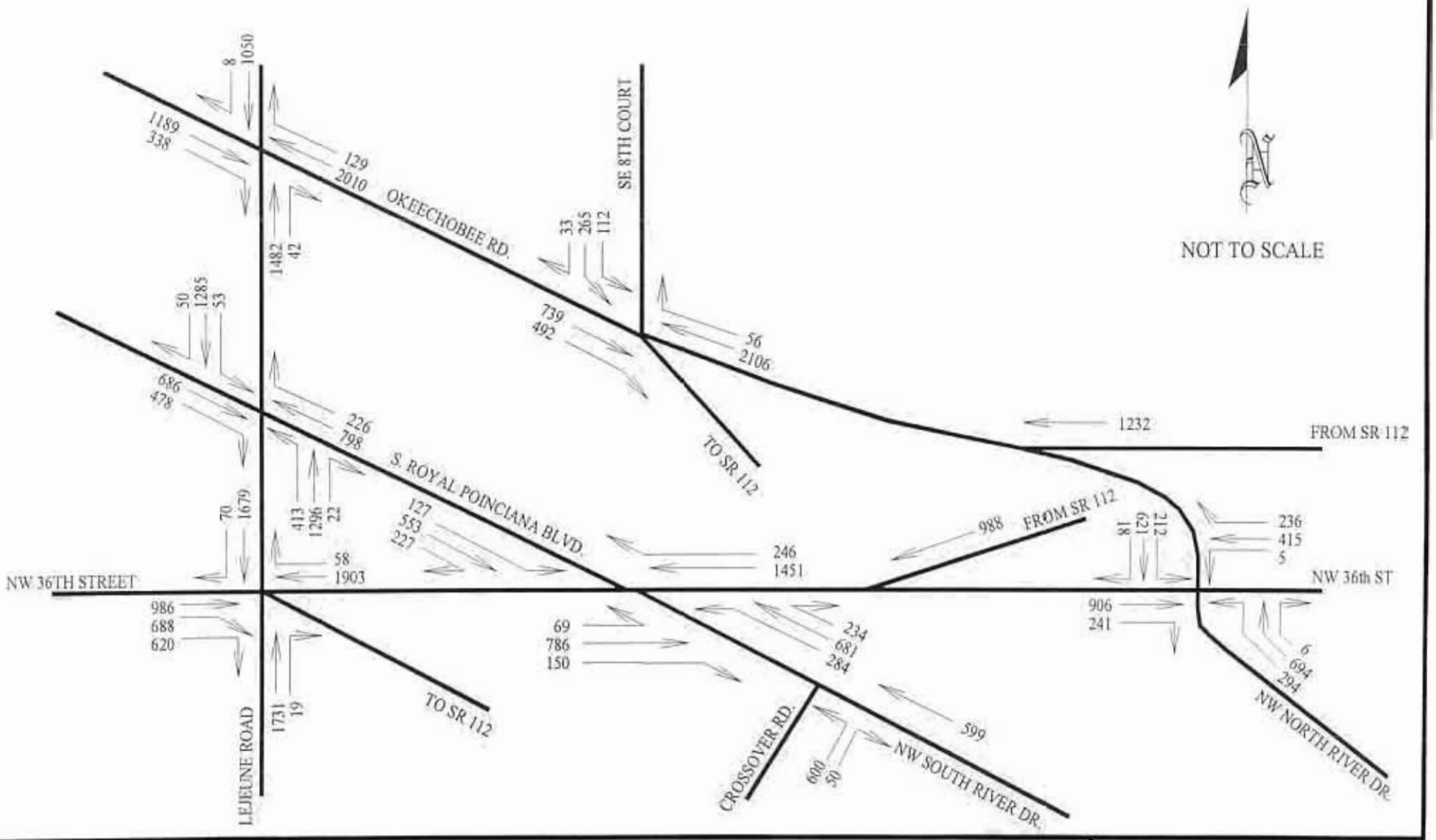
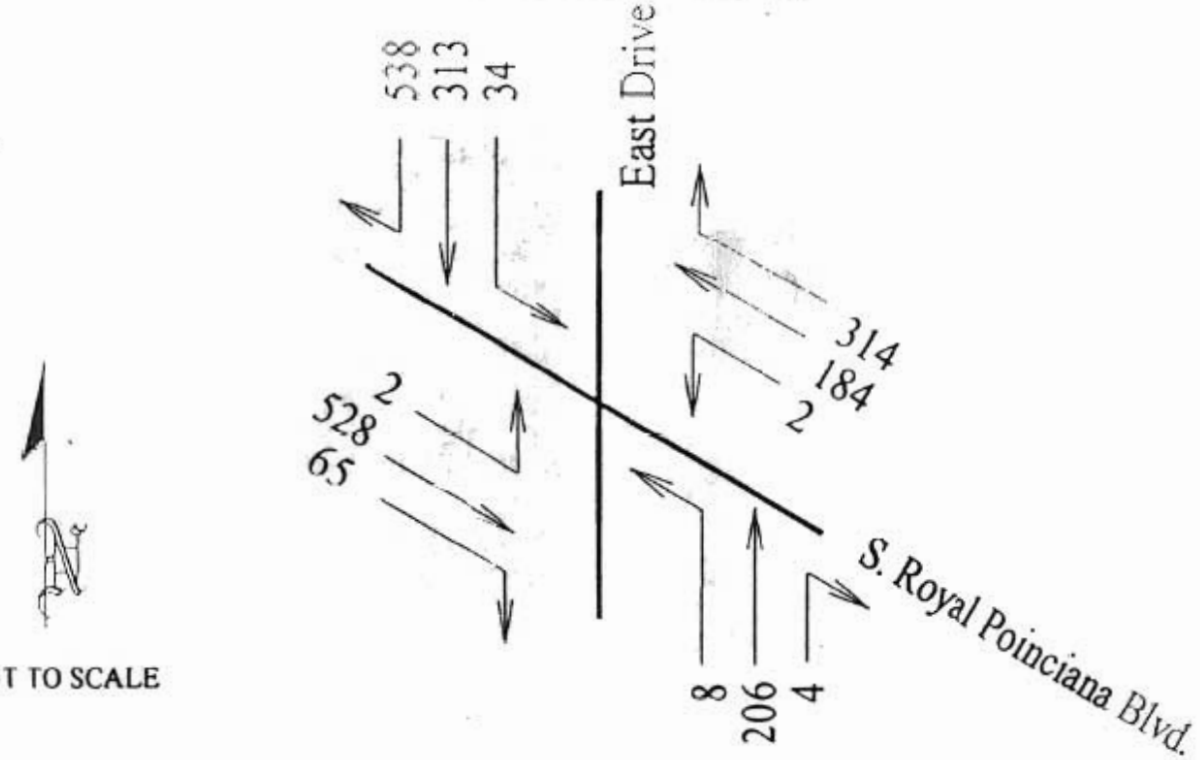
|---|---|---|
| MIAMI SPRINGS<br>LEJEUNE ROAD | Existing AM Peak Hour Volumes<br>(7:30 am - 8:30 am) | FIGURE 3<br>Kimley-Horn and Associates, Inc.<br>KHA Project # 4121T.01 |




| | | |
|---|---|---|
| MIAMI SPRINGS<br>LEJEUNE ROAD | Existing PM Peak Hour Volumes<br>(4:30 pm - 5:30 pm) | FIGURE 4<br>Kimley-Horn and Associates, Inc.<br>KHA Project # 4121T.01 |

## AM Peak Hour

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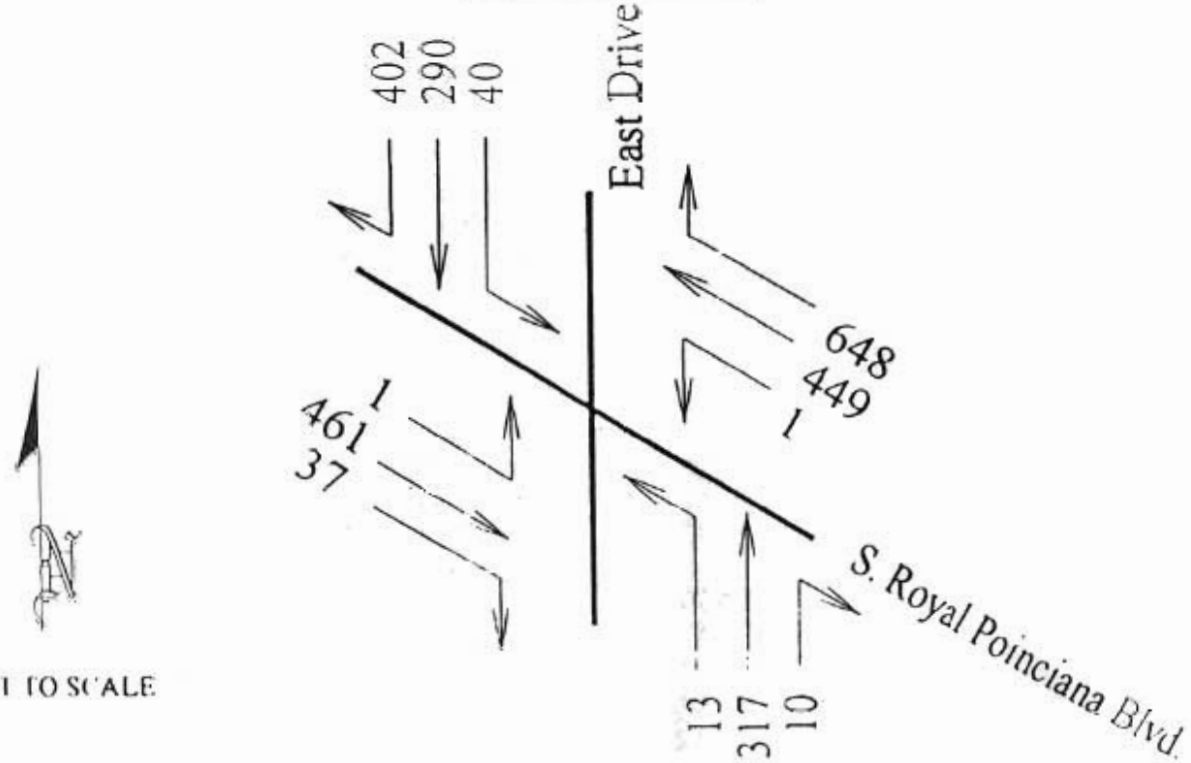
## PM Peak Hour

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LEJEUNE ROAD

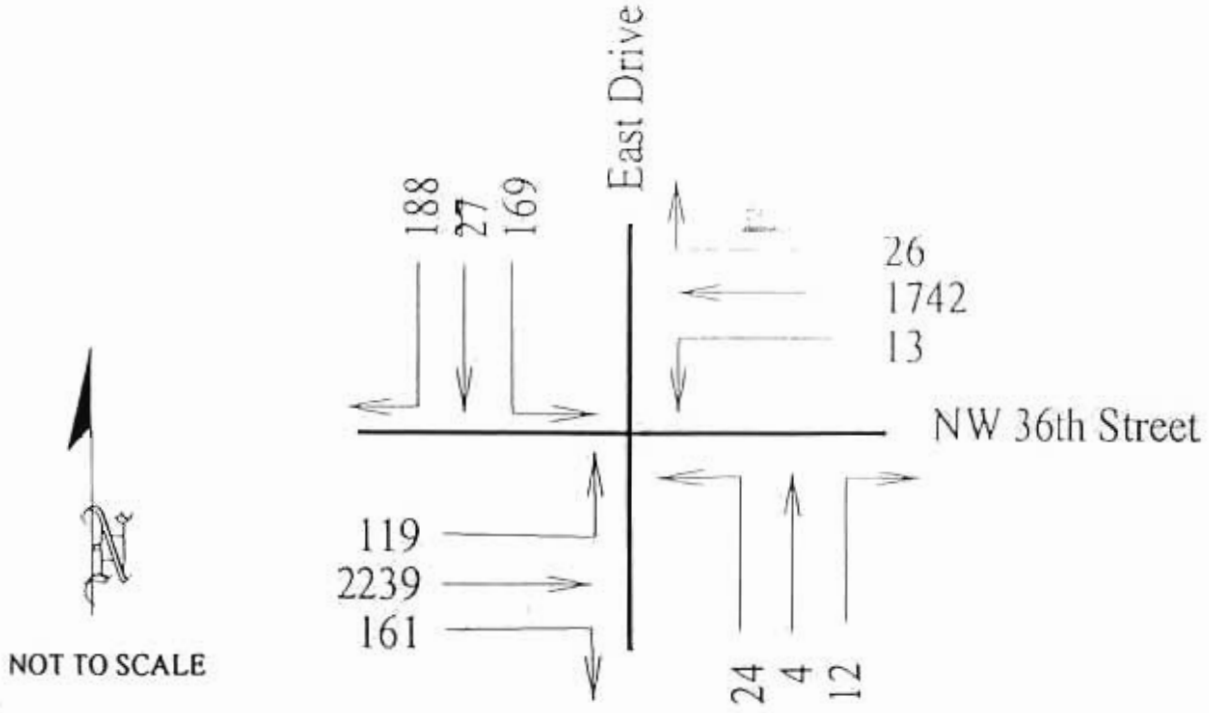
Existing AM and PM Peak Hour Volumes for S. Royal Poinciana Blvd. and East Drive

FIGURE 5

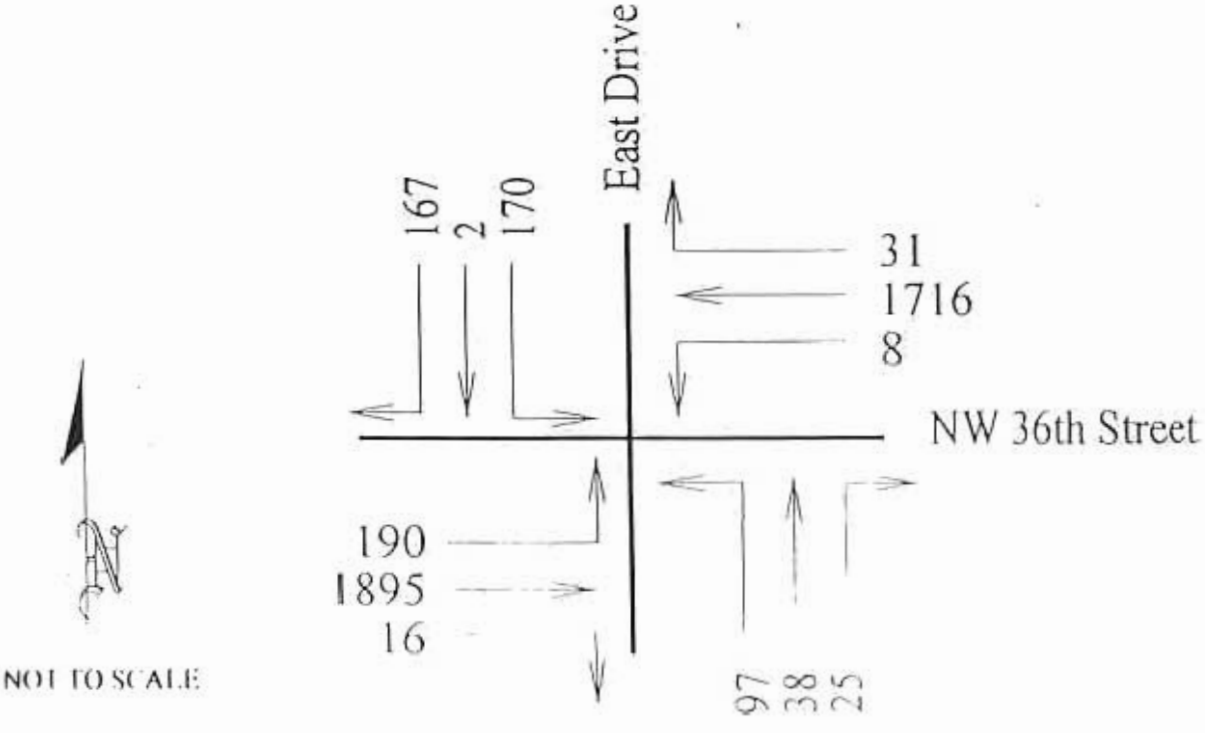
Kimley-Horn and Associates, Inc.

KHA Project # 041211 01

## AM Peak Hour




## PM Peak Hour




MIAMI SPRINGS

LEJEUNE ROAD

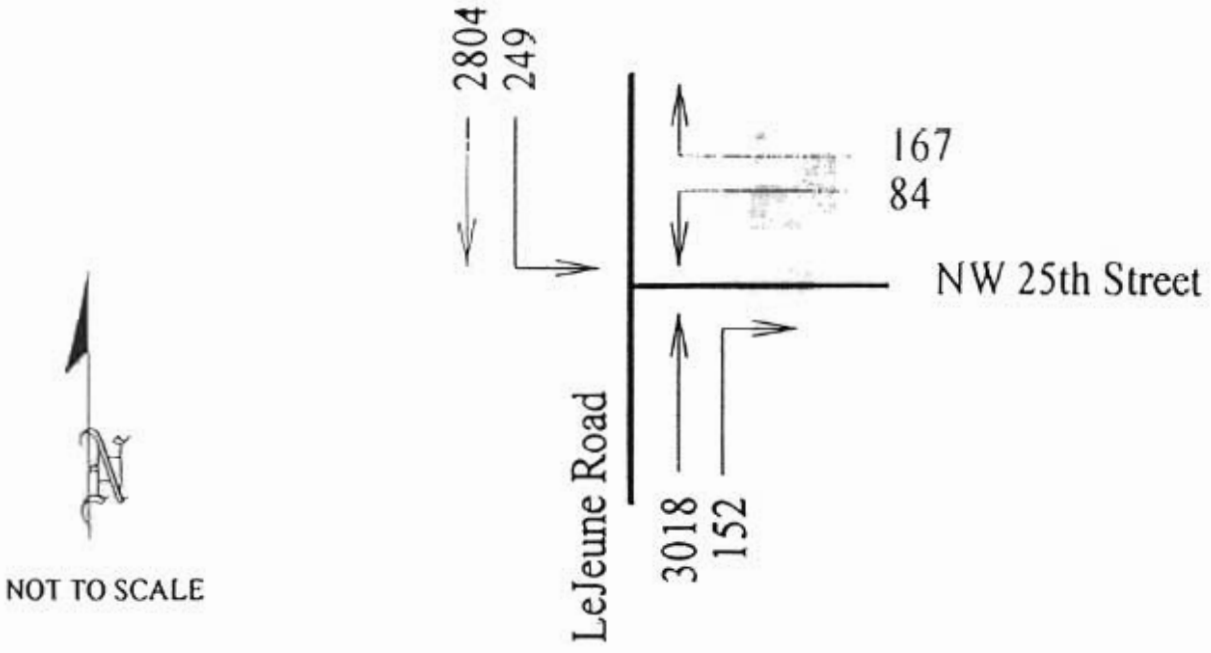
Existing AM and PM Peak Hour Volumes for NW 36th Street and East Drive

FIGURE 6

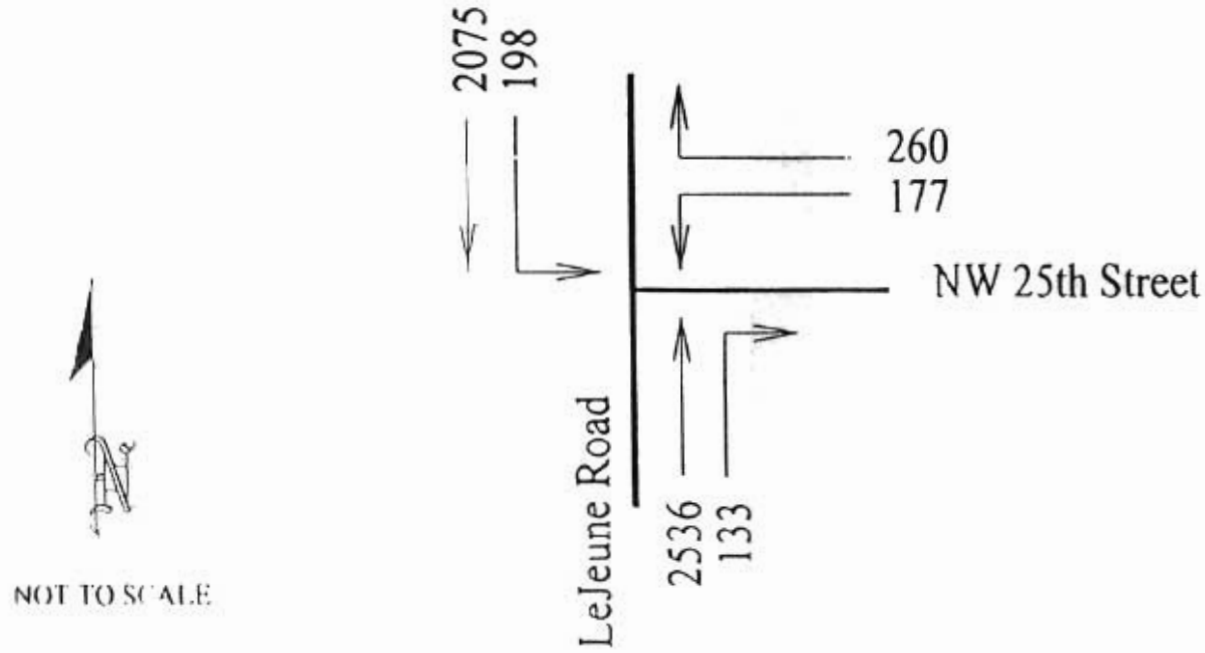
Kimley-Horn and Associates, Inc.

KHA Project # 41211 01

## AM Peak Hour




## PM Peak Hour




| | | |
|---|---|---|
| MIAMI SPRINGS<br>LEJEUNE ROAD | Existing AM and PM Peak Hour Volumes for LeJeune Road and NW 25th Street | FIGURE 7<br>KHA Project # 4121 001 |

*ANALYSIS OF EXISTING CONDITIONS*

Figure 8 presents a summary of the TRAF-NETSIM and HCS output expressed in terms of Level-of-Service, by approach. Both the morning and the afternoon peak hour results are shown.

Table 4 presents existing morning and afternoon peak hour conditions on each of the intersection approaches within the study area. As indicated in the table there are more delays and failed approaches during the afternoon peak hour than in the morning peak hour.

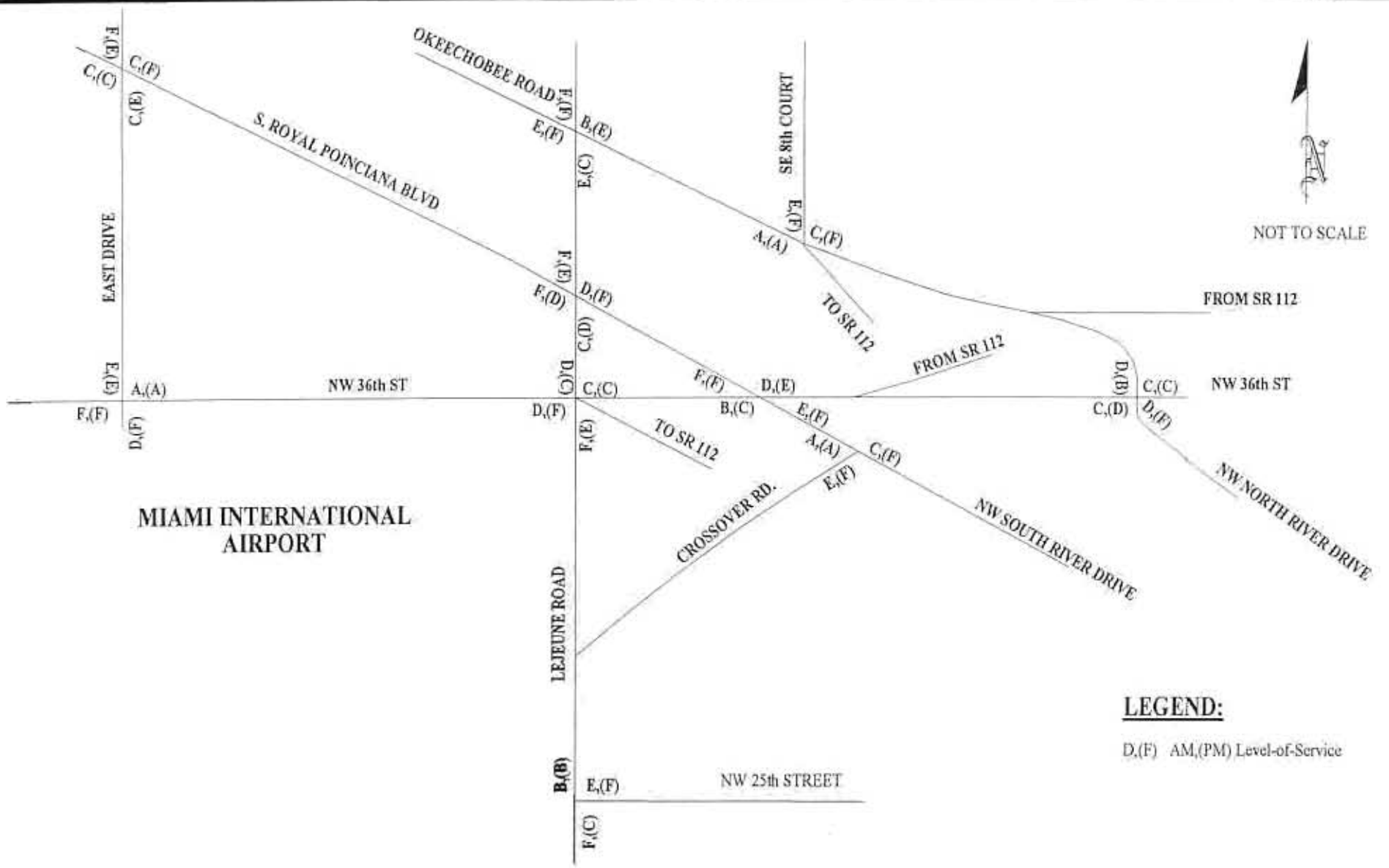
A comparison of the level-of-service and phase failure columns in Table 4 suggests problem areas in at least the following locations:

- Eastbound NW 36th Street at LeJeune Road, caused by the congested on-ramp to SR 112.

- Northbound and southbound on South Royal Poinciana Boulevard at NW 36th Street caused mainly by signal timing preference given to the eastbound and westbound movements.

- Eastbound and westbound on South Royal Poinciana Boulevard at LeJeune Road caused by the predominate need for northbound left turn movements.

Generally, these problems are created by high traffic volumes and the complexity of the intersection and the multitude of conflicting movements.




| | | |
|---|---|---|
| MIAMI SPRINGS<br>LEJEUNE ROAD | Level-of-Service for Existing Conditions by Approach | FIGURE 8<br>Kimley-Horn and Associates, Inc.<br>KHA Project # 4121T.01 |

**TABLE 4**
**EXISTING AM AND PM PEAK HOUR CONDITIONS**

| Intersection | Approach | Level of Service | | Number of Phase Failures | |
|---|---|---|---|---|---|
| | | AM | PM | AM | PM |
| NW 36th Street and East Drive | EB | F | F | N/A | N/A |
| | WB | A | A | N/A | N/A |
| | NB | D | F | N/A | N/A |
| | SB | E | E | N/A | N/A |
| NW 36th Street and LeJeune Road | EB | D | F | 7 | 20 |
| | WB | C | C | 0 | 0 |
| | NB | F | E | 2 | 0 |
| | SB | D | C | 0 | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | B | C | 0 | 0 |
| | WB | D | E | 0 | 8 |
| | NB | E | F | 22 | 26 |
| | SB | F | F | 17 | 21 |
| NW 36th Street and Okeechobee Road | EB | C | D | 0 | 0 |
| | WB | C | C | 0 | 0 |
| | NB | D | F | 0 | 19 |
| | SB | D | B | 0 | 0 |
| LeJeune Road and NW 25th Street | WB | E | F | N/A | N/A |
| | NB | F | C | N/A | N/A |
| | SB | B | B | N/A | N/A |
| LeJeune Road and South Royal Poinciana Blvd. | EB | F | D | 25 | 2 |
| | WB | D | F | 0 | 28 |
| | NB | D | D | 0 | 0 |
| | SB | F | E | 0 | 3 |
| LeJeune Road and Okeechobee Road | EB | E | F | 1 | 11 |
| | WB | B | E | 0 | 0 |
| | NB | E | C | 0 | 0 |
| | SB | F | F | 11 | 1 |
| South Royal Poinciana Blvd. and East Drive | EB | C | C | N/A | N/A |
| | WB | C | F | N/A | N/A |
| | NB | C | E | N/A | N/A |
| | SB | F | E | N/A | N/A |
| South Royal Poinciana Blvd. and Crossover | S-EB | A | A | 0 | 0 |
| | N-WB | C | F | 0 | 2 |
| | N-EB | E | F | 3 | 17 |
| Okeechobee Road and SW 8th Court | EB | A | A | 0 | 0 |
| | WB | C | F | 0 | 6 |
| | SB | E | F | 0 | 28 |

Historical growth rates and planned roadway improvements were reviewed to develop future traffic volumes for the design year 2000. These future traffic volumes, planned roadway improvements, and existing signal timing plans were input into the TRAF-NETSIM simulation model and the Highway Capacity Software to evaluate the future operating conditions of the study area.

## DEVELOPMENT OF FUTURE TRAFFIC VOLUMES

Annual traffic count data was obtained from the FDOT District 6 for the years 1990 through 1994 for the purposes of developing year 2000 volumes. This data was analyzed to determine an average annual growth rate for the study area. The analysis included the seven count stations in the study area that are shown in Table 5 and the average annual growth rate was 0.82 percent. To be conservative, this annual growth rate was rounded up to one percent (1%). This growth rate was then applied to the 1994 turning movement counts to develop design year 2000 turning movement counts.

Besides the major improvements to Okeechobee Road and those associated with the Miami Intermodal Center, only one new roadway is proposed within the study area boundaries. This road is Anthony Abraham Drive which is located south of Crossover Road and extends from LeJeune Road to NW South River Drive (refer to Figure 2). The effects on travel patterns associated with this new roadway were accounted for in the future conditions analysis. In summary, the traffic impacts of the proposed road include reducing the north-eastbound right-turn volume at Crossover Road and NW South River Drive intersection by fifty percent (50%).

Future traffic volumes are shown in Figures 9 and 10 for intersections analyzed using TRAF-NETSIM and Figures 11, 12, and 13 for intersections analyzed using HCS.

## TABLE 5. AVERAGE ANNUAL GROWTH RATE

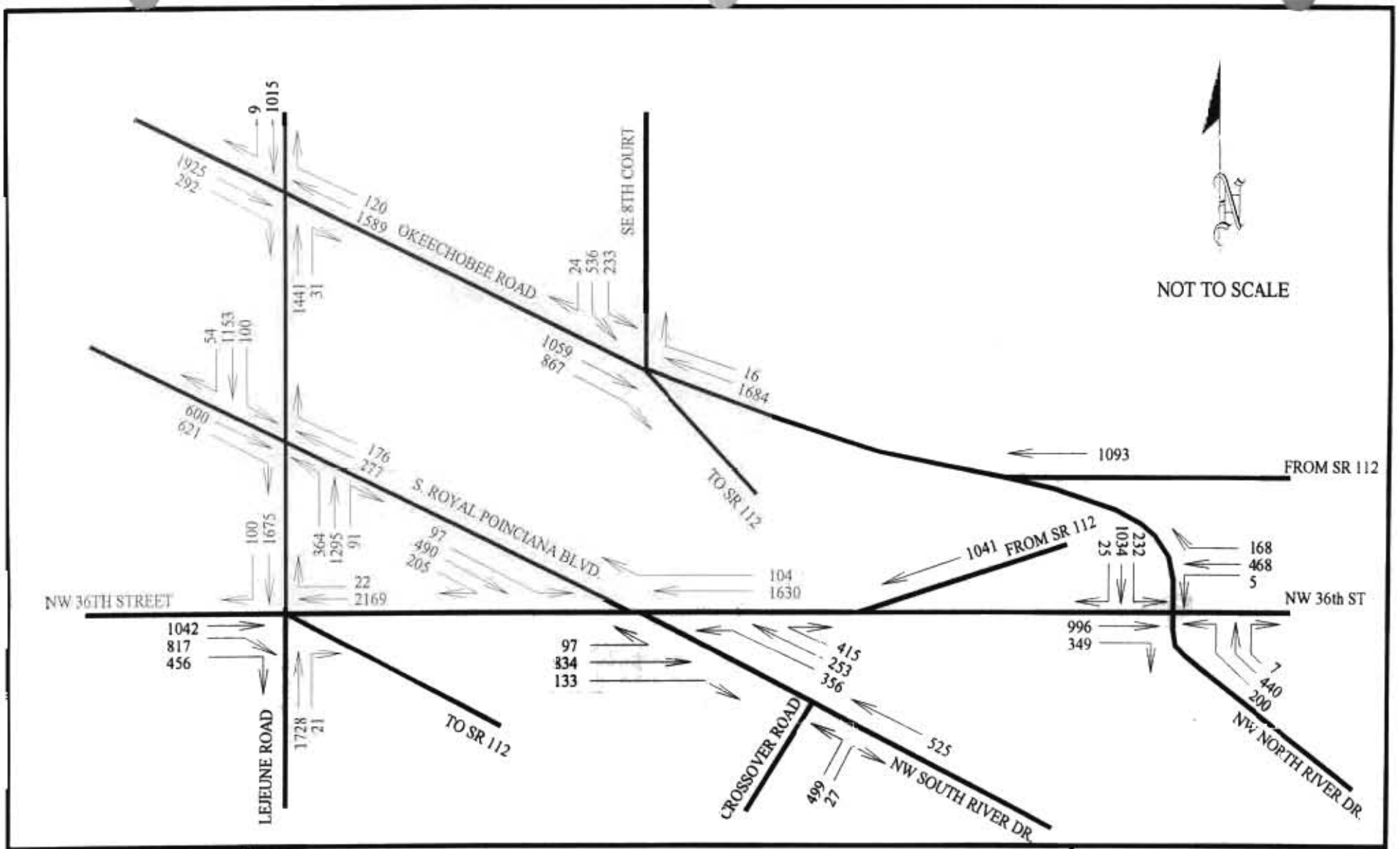
| FACILITIES | COUNT STA. No. | FDOT TRAFFIC COUNTS | | | | | ANNUAL GROWTH RATE | | | | AVERAGE ANNUAL GROWTH RATE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1990 | 1991 | 1992 | 1993 | 1994 | 1991 | 1992 | 1993 | 1994 | |
| LEJEUNE | #1179 | 28,449 | 31,892 | 32,000 | 38,000 | 39,000 | 12.10% | 0.34% | 18.75% | 2.63% | 8.46% |
| LEJEUNE | #558 | 40,635 | 38,274 | 35,500 | 39,500 | 41,500 | -5.81% | -7.25% | 11.27% | 5.06% | 0.82% |
| LEJEUNE | #28 | 93,722 | 72,941 | N/A | 69,500 | 72,000 | -22.17% | N/A | N/A | 3.60% | -9.29% |
| NW 36 ST. | #102 | 48,770 | 46,662 | 55,000 | 51,000 | 53,500 | -4.32% | 17.87% | -7.27% | 4.90% | 2.79% |
| NW 36 ST. | #107 | 21,055 | 13,366 | 25,000 | 26,500 | 28,500 | N/U | N/U | 6.00% | 7.55% | 6.77% |
| SR 112 | #2065 | 37,941 | 40,110 | 120,000 | 96,500 | 89,500 | 5.72% | N/U | -19.58% | -7.25% | -7.04% |
| US 27 | #200 | 37,884 | 21,114 | N/A | 46,500 | 48,000 | N/U | N/A | N/A | 3.23% | 3.23% |
| | | | | | | | | | | 5-YEAR AVG. ANNUAL GROWTH RATE = | 0.82% |

**Source: Florida Department of Transportation District 6**

NOTE
N/A - NOT AVAILABLE
N/U - NOT USED

DESCRIPTION OF TRAFFIC COUNT STATION LOCATIONS:

#1179 - LeJeune Road S/O E 11th Place
#558 - LeJeune Road S/O Miami River Canal
#28 - LeJeune Road N/O NW 25th Street
#102 - NW 36th Street W/O NW 42nd Avenue
#107 - NW 36th Street W/O NW 37th Avenue
#2065 - SR 112 W/O NW 32nd Avenue Bridge
#200 - US 27/OKEECHOBEE SE/O NW 54th Street




MIAMI SPRINGS

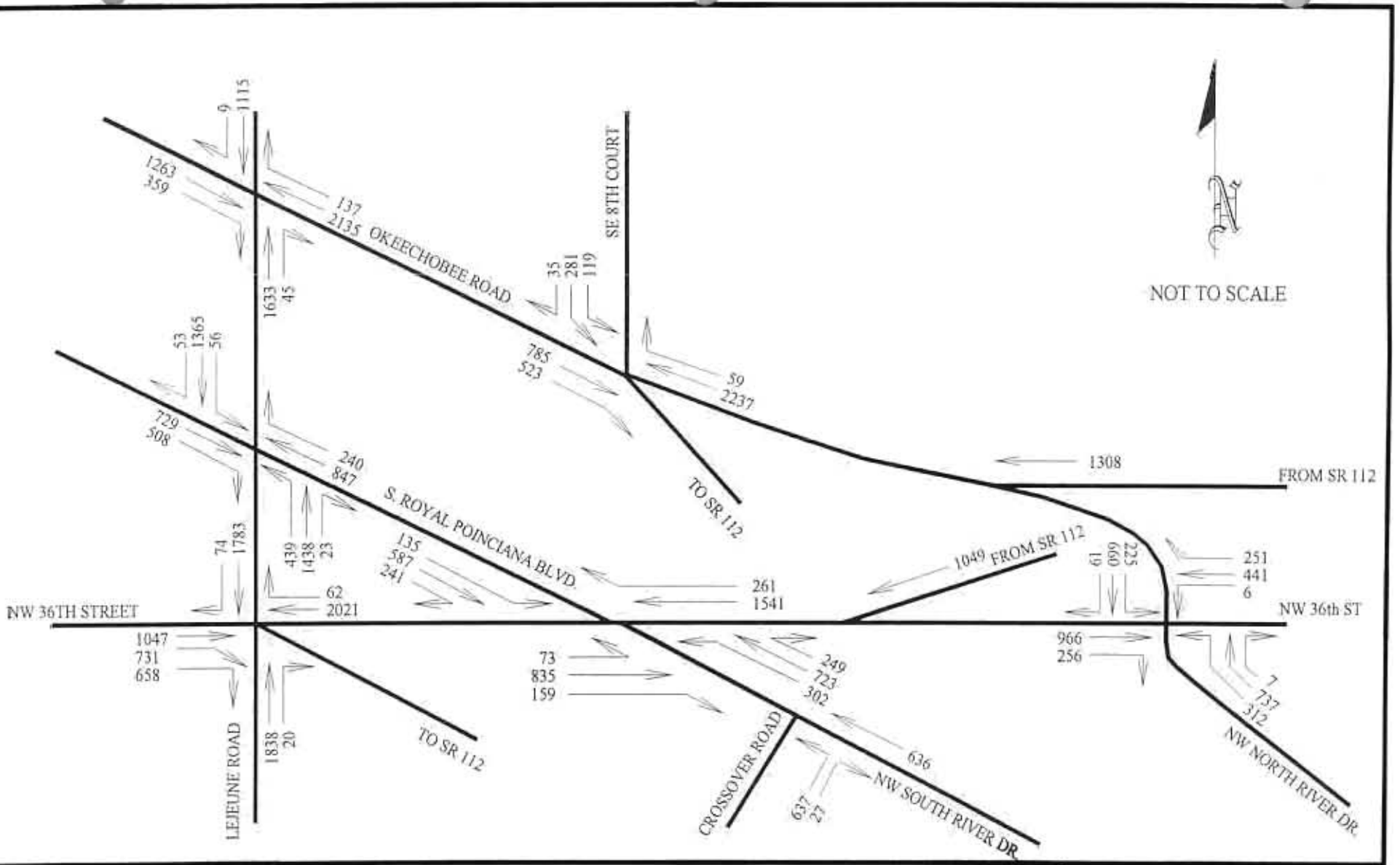
LEJEUNE ROAD

Future AM Peak Hour Volumes
for TRAF-NETSIM Network

FIGURE 9

Kimley-Horn and Associates, Inc.

KHA Project # 4121T.01




MIAMI SPRINGS

LEJEUNE ROAD

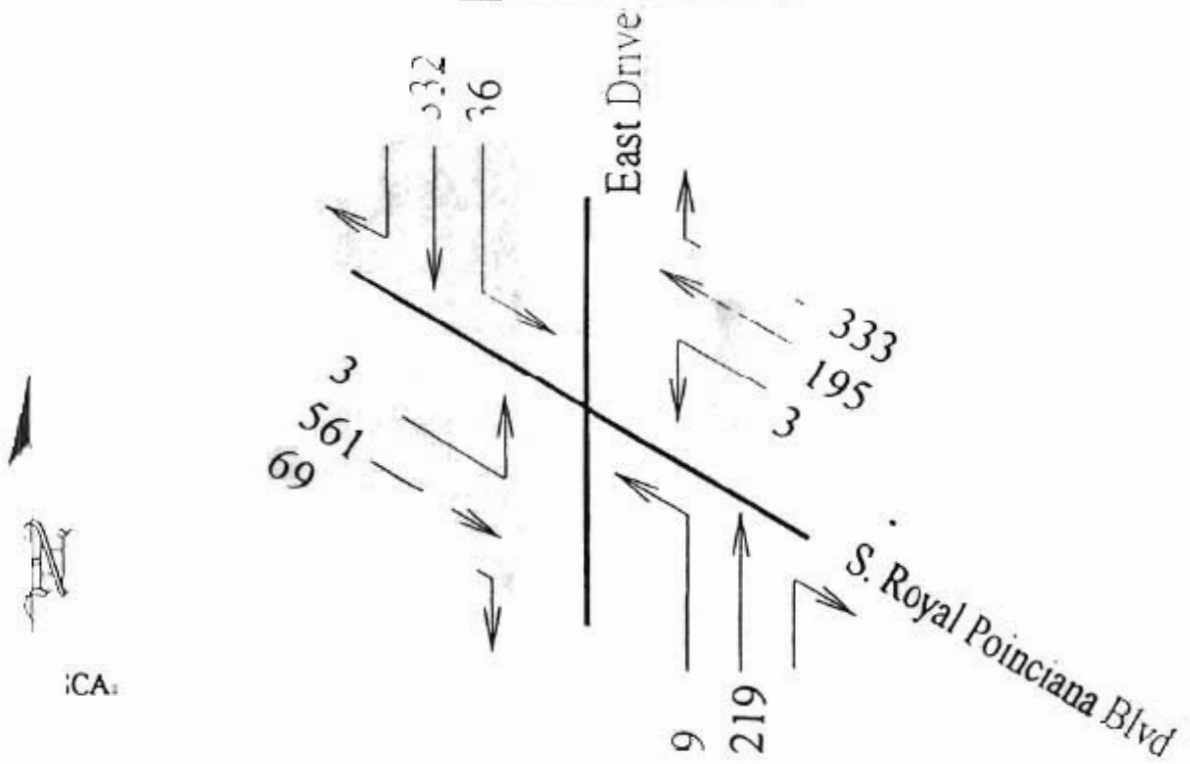
Future PM Peak Hour Volumes
for TRAF-NETSIM Network

FIGURE 10

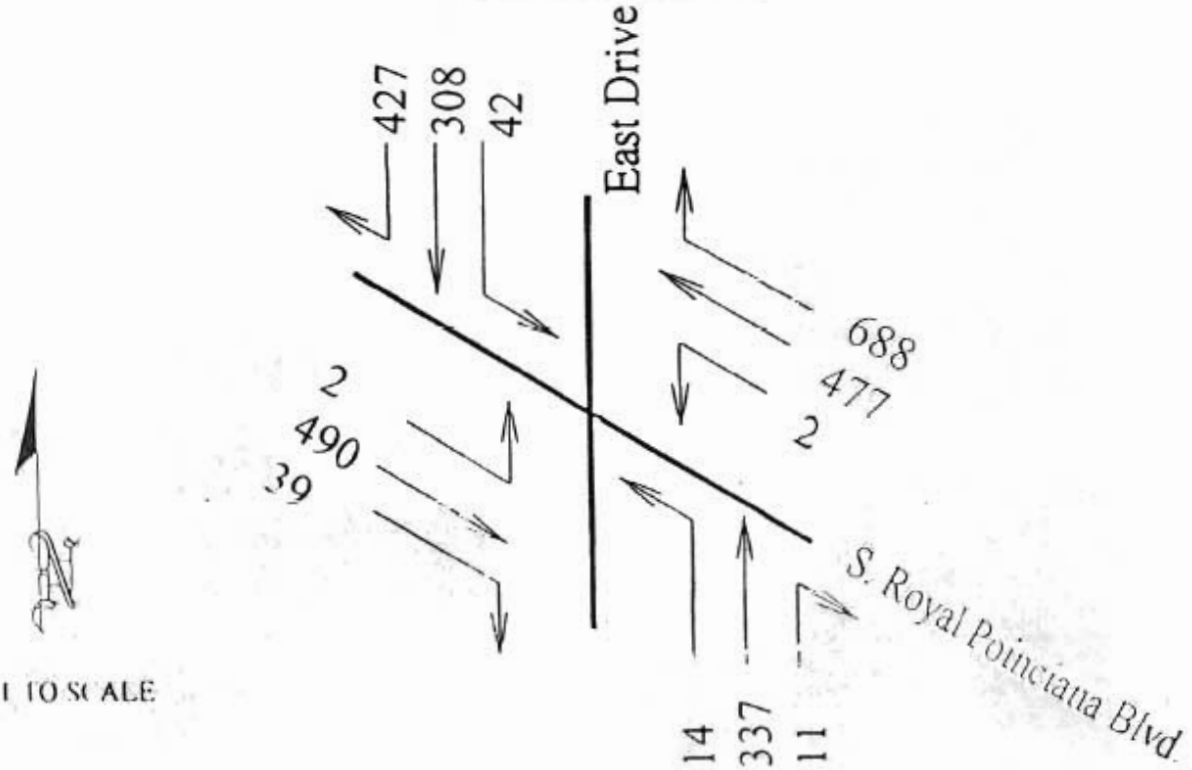
Kimley-Horn and Associates, Inc.

KHA Project # 4121T.01

## AM Peak Hour




## PM Peak Hour




NOT TO SCALE

MIAMI SPRINGS

TELEPHONE ROAD

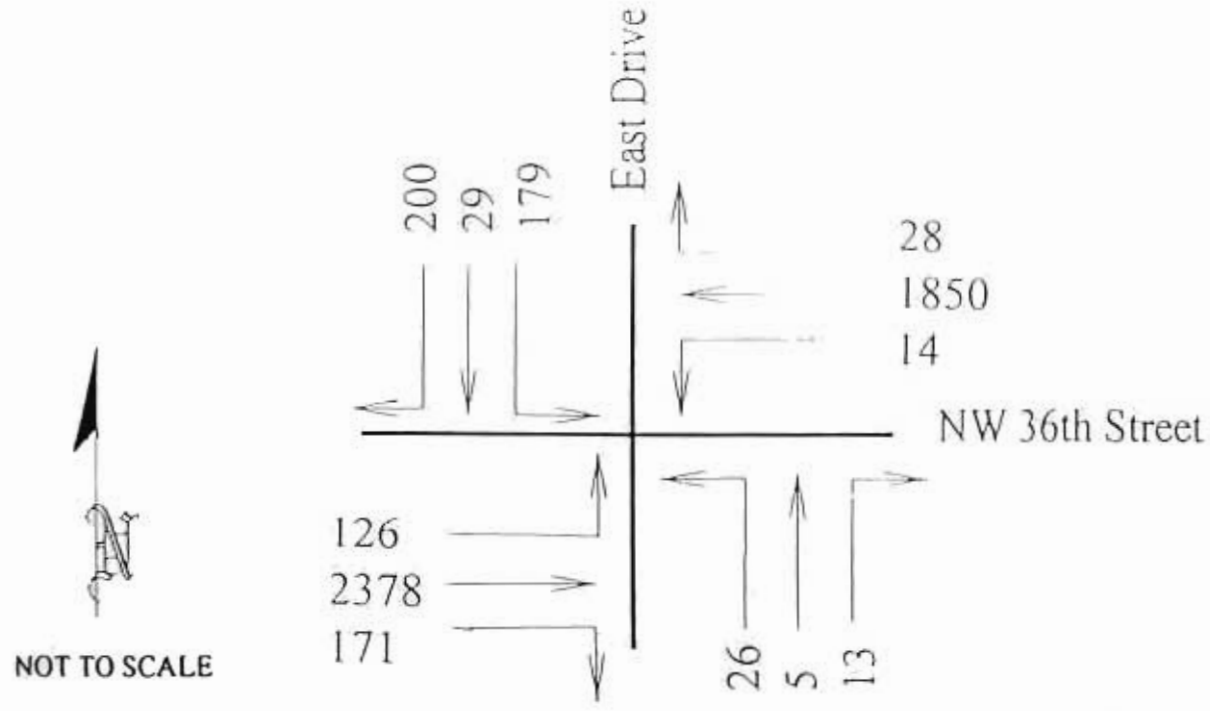
Future 2000 AM and PM Peak Hour Volumes for S. Royal Poinciana Blvd. and East Drive

FIGURE 11

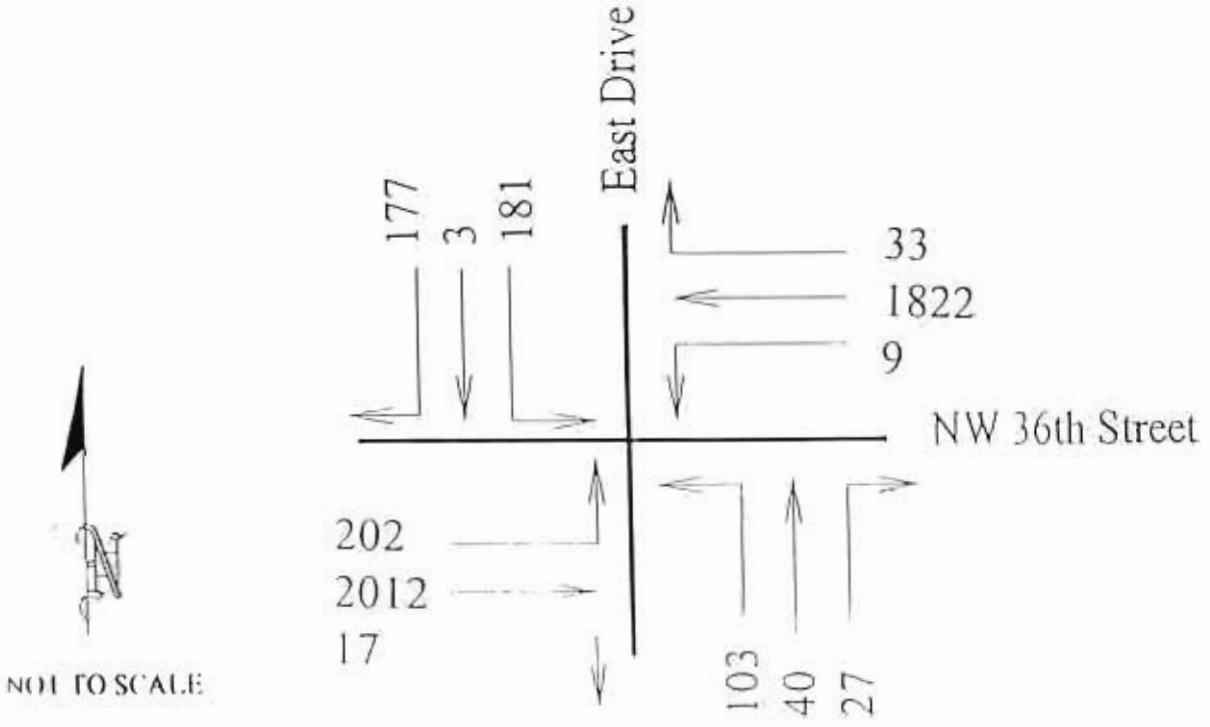
Kimley-Horn and Associates, Inc.

KHA Project # 041211 01

## AM Peak Hour

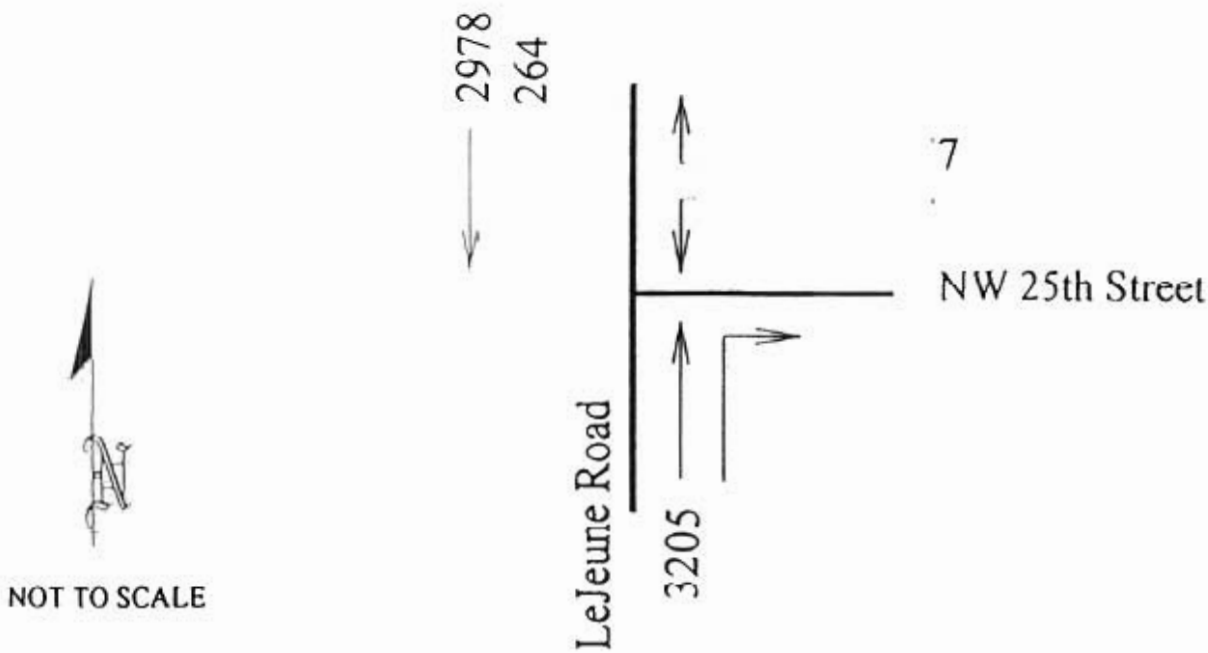



## PM Peak Hour

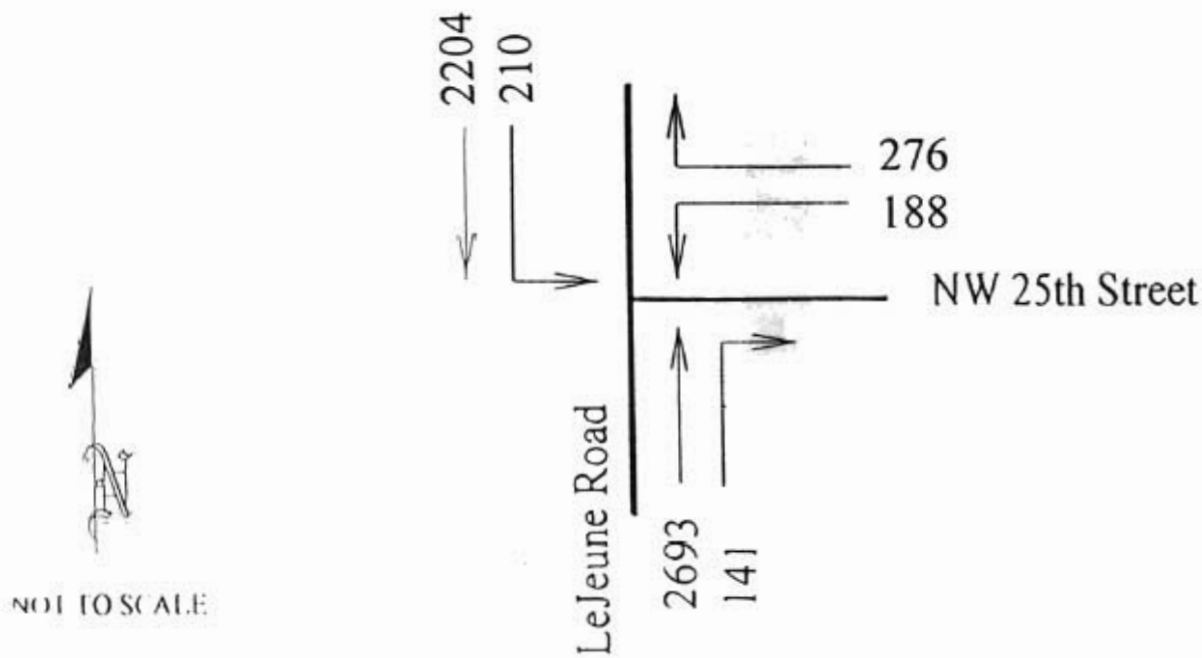



| | | |
|---|---|---|
| MIAMI SPRINGS<br>DEERING ROAD | Future 2000 AM and PM Peak Hour Volumes for NW 36th Street and East Drive | FIGURE 12<br>Kimley-Horn and Associates, Inc.<br>KHA Project # 41211 01 |

## AM Peak Hour




## PM Peak Hour




MIAMI SPRINGS

LEJEUNE ROAD

Future 2000 AM and PM Peak Hour Volumes for LeJeune Road and NW 25th Street

FIGURE 13

KHA Project # 41211 01

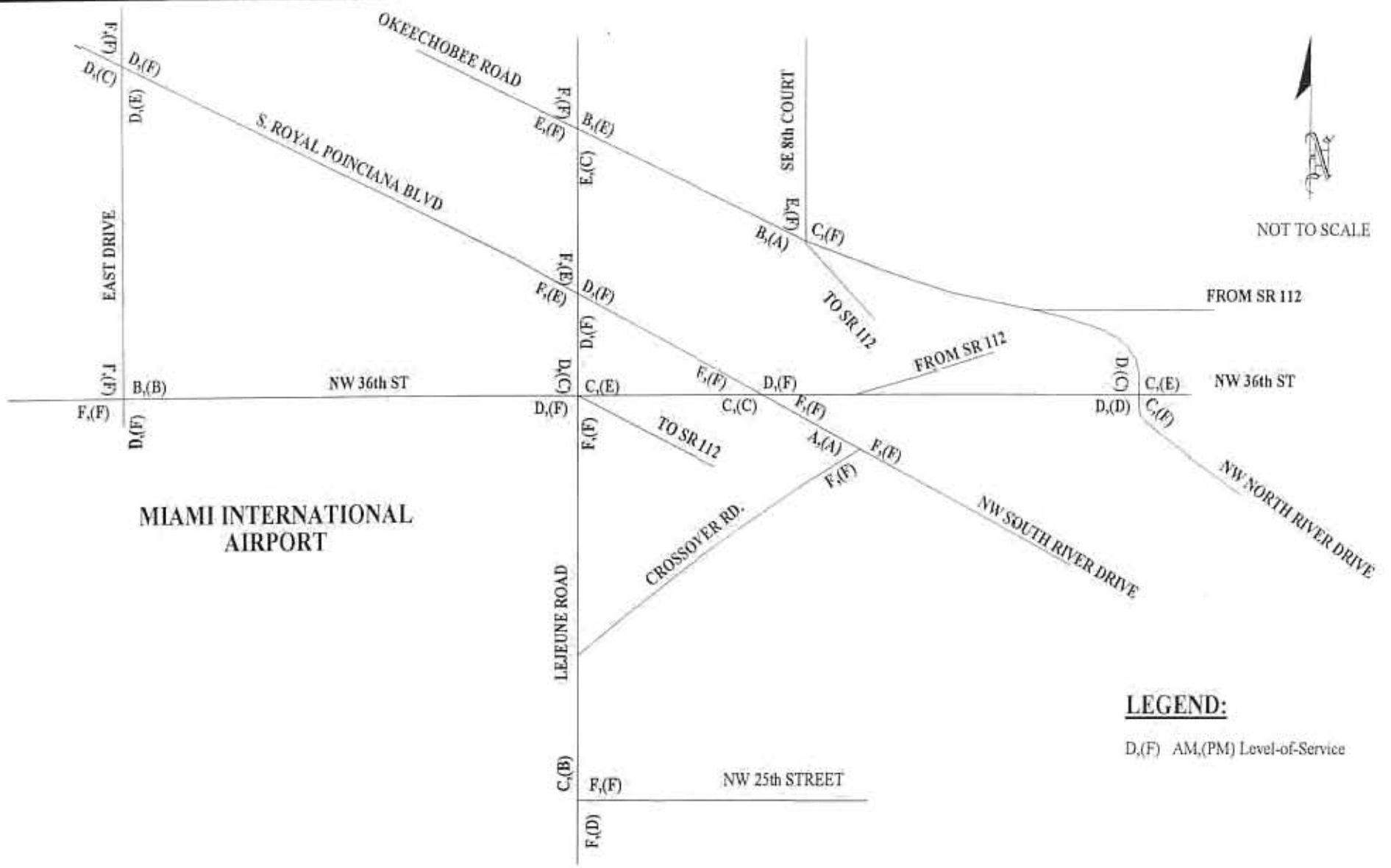
## *ANALYSIS OF FUTURE CONDITIONS*

The future traffic volumes, Anthony Abrahams Road improvements, and existing signal timing plans were input into the TRAF-NETSIM simulation model and the Highway Capacity Software to evaluate the future operating conditions of the study area. Complete TRAF-NETSIM and HCS outputs for the morning peak hour and afternoon peak hour are found in Appendices D and E respectively.

Figure 14 presents a summary of the TRAF-NETSIM and HCS output expressed in terms of Level-of-Service, by approach. A comparison of the level of service and phase failure columns in Table 6 suggests problem areas similar to those which presently exist. These areas are:

- Eastbound NW 36th Street at LeJeune Road.
- Northbound and southbound on South Royal Poinciana Boulevard at NW 36th Street.
- Eastbound and westbound on South Royal Poinciana Boulevard at LeJeune Road.

Tables 7, 8, 9, and 10 presents a comparison between the existing and future morning peak hour conditions, and the existing and future afternoon peak hour conditions on each of the intersection approaches within the study area. As indicated in the table there are a total of thirteen (13) approaches that deteriorate in Level-of-Service in the morning peak hour. Of these thirteen (13) approaches, six (6) go to a Level-of-Service "F". A total of eleven (11) approaches deteriorated in Level-of-Service in the afternoon peak hour, of which five (5) go to a Level-of-Service "F".




| | | |
|---|---|---|
| MIAMI SPRINGS<br>LEJEUNE ROAD | Level-of-Service for Future Conditions by Approach | FIGURE 14<br>Kimley-Horn and Associates, Inc.<br>KHA Project # 4121T.01 |

**TABLE 6**
**FUTURE AM AND PM PEAK HOUR CONDITIONS**

| Intersection | Approach | Level-of-Service | | Number of Phase Failures | |
|---|---|---|---|---|---|
| | | AM | PM | AM | PM |
| NW 36th Street and East Drive | EB | F | F | N/A | N/A |
| | WB | B | B | N/A | N/A |
| | NB | D | F | N/A | N/A |
| | SB | F | F | N/A | N/A |
| NW 36th Street and LeJeune Road | EB | D | F | 8 | 19 |
| | WB | C | E | 0 | 0 |
| | NB | F | F | 4 | 1 |
| | SB | D | C | 0 | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | C | C | 0 | 0 |
| | WB | D | F | 0 | 11 |
| | NB | F | F | 25 | 28 |
| | SB | F | F | 15 | 26 |
| NW 36th Street and Okeechobee Road | EB | D | D | 0 | 0 |
| | WB | C | E | 0 | 0 |
| | NB | D | F | 0 | 22 |
| | SB | D | C | 0 | 0 |
| LeJeune Road and NW 25th Street | WB | F | F | N/A | N/A |
| | NB | F | D | N/A | N/A |
| | SB | C | B | N/A | N/A |
| LeJeune Road and South Royal Poinciana Blvd. | EB | F | E | 24 | 14 |
| | WB | D | F | 0 | 28 |
| | NB | D | F | 0 | 0 |
| | SB | F | E | 0 | 0 |
| LeJeune Road and Okeechobee Road | EB | E | F | 1 | 13 |
| | WB | B | E | 0 | 0 |
| | NB | E | C | 1 | 1 |
| | SB | F | F | 12 | 1 |
| South Royal Poinciana Blvd. and East Drive | EB | D | C | N/A | N/A |
| | WB | D | F | N/A | N/A |
| | NB | D | E | N/A | N/A |
| | SB | F | F | N/A | N/A |
| South Royal Poinciana Blvd. and Crossover | S-EB | A | A | 0 | 0 |
| | N-WB | F | F | 0 | 10 |
| | N-EB | F | F | 3 | 24 |
| Okeechobee Road and SW 8th Court | EB | B | A | 0 | 0 |
| | WB | C | F | 0 | 7 |
| | SB | E | F | 0 | 28 |

**TABLE 7**
**COMPARISON OF EXISTING AND FUTURE LEVEL-OF-SERVICE FOR AM PEAK HOUR**

| Intersection | Approach | Existing LOS | Future LOS | Change in LOS |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | F | F | 0 |
| | WB | A | B | 1 |
| | NB | D | D | 0 |
| | SB | E | F | 1 |
| NW 36th Street and LeJeune Road | EB | D | D | 0 |
| | WB | C | C | 0 |
| | NB | F | F | 0 |
| | SB | D | D | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | B | C | 1 |
| | WB | D | D | 0 |
| | NB | E | F | 1 |
| | SB | F | F | 0 |
| NW 36th Street and Okeechobee Road | EB | C | D | 1 |
| | WB | C | C | 0 |
| | NB | D | D | 0 |
| | SB | D | D | 0 |
| LeJeune Road and NW 25th Street | WB | E | F | 1 |
| | NB | F | F | 0 |
| | SB | B | C | 1 |
| LeJeune Road and South Royal Poinciana Blvd. | EB | F | F | 0 |
| | WB | D | D | 0 |
| | NB | D | D | 0 |
| | SB | F | F | 0 |
| LeJeune Road and Okeechobee Road | EB | E | E | 0 |
| | WB | B | B | 0 |
| | NB | E | E | 0 |
| | SB | F | F | 0 |
| South Royal Poinciana Blvd. and East Drive | EB | C | D | 1 |
| | WB | C | D | 1 |
| | NB | C | D | 1 |
| | SB | F | F | 0 |
| South Royal Poinciana Blvd. and Crossover | S-EB | A | A | 0 |
| | N-WB | C | F | 3 |
| | N-EB | E | F | 1 |
| Okeechobee Road and SW 8th Court | EB | A | B | 1 |
| | WB | C | C | 0 |
| | SB | E | E | 0 |
| **TOTAL CHANGE IN LEVEL OF SERVICE** | | | | **15** |

**TABLE 8**
**COMPARISON OF EXISTING AND FUTURE LEVEL-OF-SERVICE FOR PM PEAK HOUR**

| Intersection | Approach | Existing LOS | Future LOS | Change in LOS |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | F | F | 0 |
| | WB | A | B | 1 |
| | NB | F | F | 0 |
| | SB | E | F | 1 |
| NW 36th Street and LeJeune Road | EB | F | F | 0 |
| | WB | C | E | 2 |
| | NB | E | F | 1 |
| | SB | C | C | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | C | C | 0 |
| | WB | E | F | 1 |
| | NB | F | F | 0 |
| | SB | F | F | 0 |
| NW 36th Street and Okeechobee Road | EB | D | D | 0 |
| | WB | C | E | 2 |
| | NB | F | F | 0 |
| | SB | B | C | 1 |
| LeJeune Road and NW 25th Street | WB | F | F | 0 |
| | NB | C | D | 1 |
| | SB | B | B | 0 |
| LeJeune Road and South Royal Poinciana Blvd. | EB | D | E | 1 |
| | WB | F | F | 0 |
| | NB | D | F | 2 |
| | SB | E | E | 0 |
| LeJeune Road and Okeechobee Road | EB | F | F | 0 |
| | WB | E | E | 0 |
| | NB | C | C | 0 |
| | SB | F | F | 0 |
| South Royal Poinciana Blvd. and East Drive | EB | C | C | 0 |
| | WB | F | F | 0 |
| | NB | E | E | 0 |
| | SB | E | F | 1 |
| South Royal Poinciana Blvd. and Crossover | S-EB | A | A | 0 |
| | N-WB | F | F | 0 |
| | N-EB | F | F | 0 |
| Okeechobee Road and SW 8th Court | EB | A | A | 0 |
| | WB | F | F | 0 |
| | SB | F | F | 0 |
| **TOTAL CHANGE IN LEVEL OF SERVICE** | | | | **14** |

**TABLE 9**
**COMPARISON OF EXISTING AND FUTURE PHASE FAILURES FOR AM PEAK HOUR**

| Intersection | Approach | Existing Phase Failures | Future Phase Failures | Change in Phase Failures |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| NW 36th Street and LeJeune Road | EB | 7 | 8 | 1 |
| | WB | 0 | 0 | 0 |
| | NB | 2 | 4 | 2 |
| | SB | 0 | 0 | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | 0 | 0 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 22 | 25 | 3 |
| | SB | 17 | 15 | -2 |
| NW 36th Street and Okeechobee Road | EB | 0 | 0 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 0 | 0 | 0 |
| | SB | 0 | 0 | 0 |
| LeJeune Road and NW 25th Street | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| LeJeune Road and South Royal Poinciana Blvd. | EB | 25 | 24 | -1 |
| | WB | 0 | 0 | 0 |
| | NB | 0 | 0 | 0 |
| | SB | 0 | 0 | 0 |
| LeJeune Road and Okeechobee Road | EB | 1 | 1 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 0 | 1 | 1 |
| | SB | 11 | 12 | 1 |
| South Royal Poinciana Blvd. and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| South Royal Poinciana Blvd. and Crossover | S-EB | 0 | 0 | 0 |
| | N-WB | 0 | 0 | 0 |
| | N-EB | 3 | 3 | 0 |
| Okeechobee Road and SW 8th Court | EB | 0 | 0 | 0 |
| | WB | 0 | 0 | 0 |
| | SB | 0 | 0 | 0 |
| **TOTAL CHANGE IN PHASE FAILURES** | | | | 5 |

**TABLE 10**
**COMPARISON OF EXISTING AND FUTURE PHASE FAILURES FOR PM PEAK HOUR**

| Intersection | Approach | Existing Phase Failures | Future Phase Failures | Change in Phase Failures |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| NW 36th Street and LeJeune Road | EB | 20 | 19 | -1 |
| | WB | 0 | 0 | 0 |
| | NB | 0 | 1 | 1 |
| | SB | 0 | 0 | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | 0 | 0 | 0 |
| | WB | 8 | 11 | 3 |
| | NB | 26 | 28 | 2 |
| | SB | 21 | 26 | 5 |
| NW 36th Street and Okeechobee Road | EB | 0 | 0 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 19 | 22 | 3 |
| | SB | 0 | 0 | 0 |
| LeJeune Road and NW 25th Street | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| LeJeune Road and South Royal Poinciana Blvd. | EB | 2 | 14 | 12 |
| | WB | 28 | 28 | 0 |
| | NB | 0 | 0 | 0 |
| | SB | 3 | 1 | -2 |
| LeJeune Road and Okeechobee Road | EB | 11 | 13 | 2 |
| | WB | 0 | 0 | 0 |
| | NB | 0 | 1 | 1 |
| | SB | 1 | 1 | 0 |
| South Royal Poinciana Blvd. and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| South Royal Poinciana Blvd. and Crossover | S-EB | 0 | 0 | 0 |
| | N-WB | 2 | 10 | 8 |
| | N-EB | 17 | 24 | 7 |
| Okeechobee Road and SW 8th Court | EB | 0 | 0 | 0 |
| | WB | 6 | 7 | 1 |
| | SB | 28 | 28 | 0 |
| **TOTAL CHANGE IN PHASE FAILURES** | | | | **42** |

# DEVELOPMENT OF ALTERNATIVES

The nature of this traffic analysis is to develop low-cost improvements that can be implemented immediately. Alternatives were developed using strategies listed below since they provided the most substantial benefits at the lowest cost.

- Adding through lanes
- Signal timing strategies
- Lane re-striping
- Eliminating conflicting movements.

The following preliminary alternatives were developed:

- Alternative 1 involves signal retiming without other changes.

- Alternative 2 involves lane restriping and eliminating some conflicting movements along with appropriate timing changes.

- Alternative 3 involves changes to the intersection of NW 36th Street and East Drive.

Each of these alternatives are discussed in greater detail. Notice that Alternative 3 can be implement independent of other changes.

***ALTERNATIVE 1***

Timing of traffic signals significantly affects traffic flow through complex networks, especially in the case of the Iron Triangle where queue storage is limited. A review of the current signal timing plans showed that good coordination between traffic signals exists. However, after analyzing the output from the future conditions it was determined that additional benefits can be obtained through re-timing the traffic

signals. Therefore, intersection signal timing was developed at the four critical intersections which make up the "Iron Triangle";

- LeJeune Road and Okeechobee Boulevard
- LeJeune Road and South Royal Poinciana Boulevard
- LeJeune Road and NW 36th Street
- NW 36th Street and South Royal Poinciana Boulevard

Cycle length and splits were calculated based on Webster's Formula and the critical lane group volumes. The arterial progression within this tight network was prioritize based on potential benefits. Re-timing the traffic signals to favor progression northbound along LeJeune Road would yield the most benefits because of the high through volume and the low turning volume. Progression was prioritized as follows;

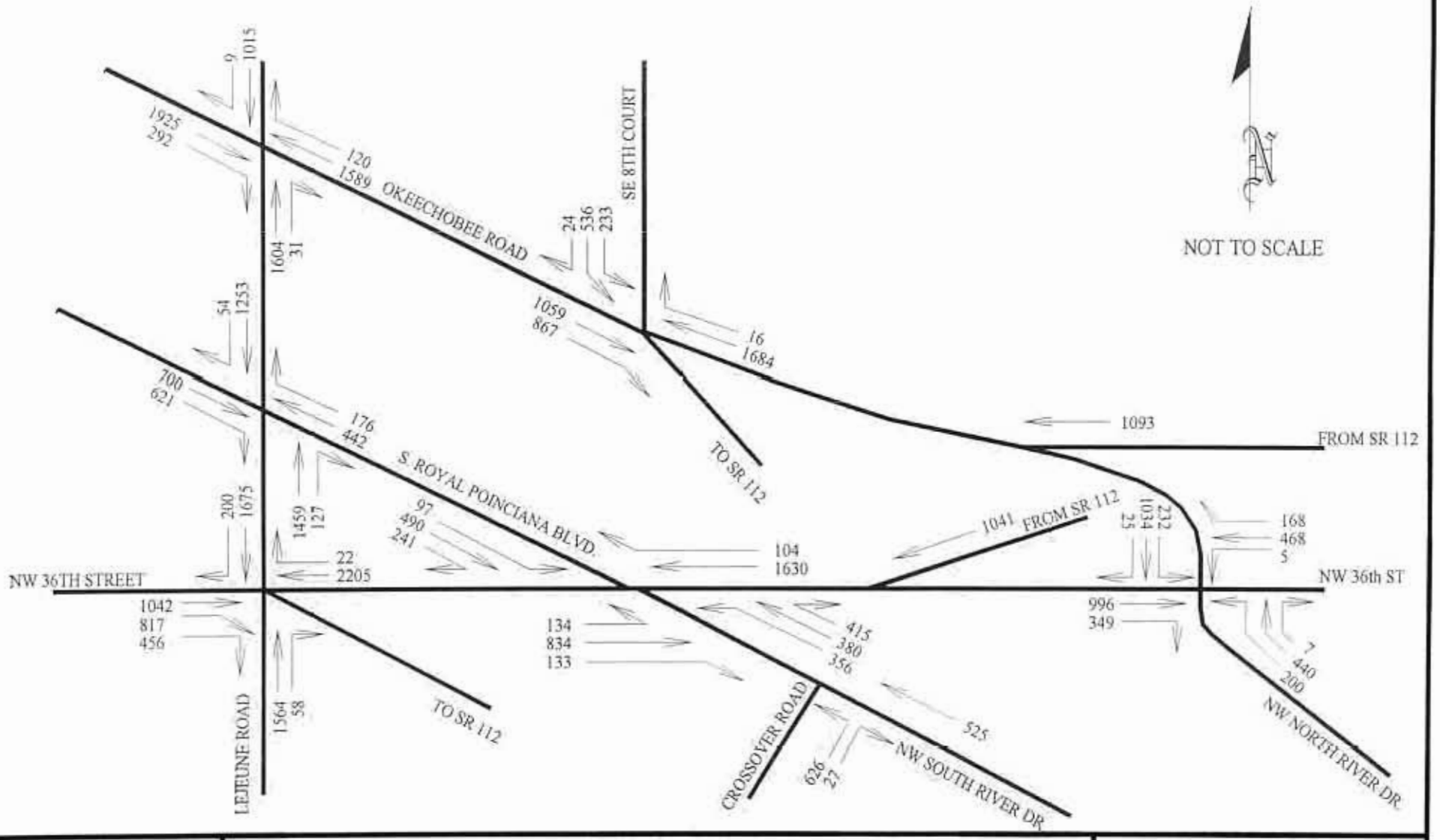
- Northbound and southbound along LeJeune Road
- Eastbound and westbound along NW 36th Street
- North-westbound and south-eastbound along South Royal Poinciana Boulevard

*Splits and offsets were then calculated for each of the surrounding intersections.*

***ALTERNATIVE 2***

Alternative 2 focuses on the intersection of LeJeune Road and South Royal Poinciana Boulevard. Turning movements are eliminated and the intersection operation readdressed accordingly. The following improvements were evaluated as part of this alternative.

- Eliminate the northbound and southbound left-turn movement at LeJeune Road and South Royal Poinciana Boulevard. These movements were re-routed through the study area based on existing traffic patterns. The rerouted AM and PM peak hour volumes are shown in Figures 15 and 16, respectively.




MIAMI SPRINGS

LEJEUNE ROAD

Rerouted Future AM Peak Hour Volumes
for TRAF-NETSIM Network

FIGURE 15

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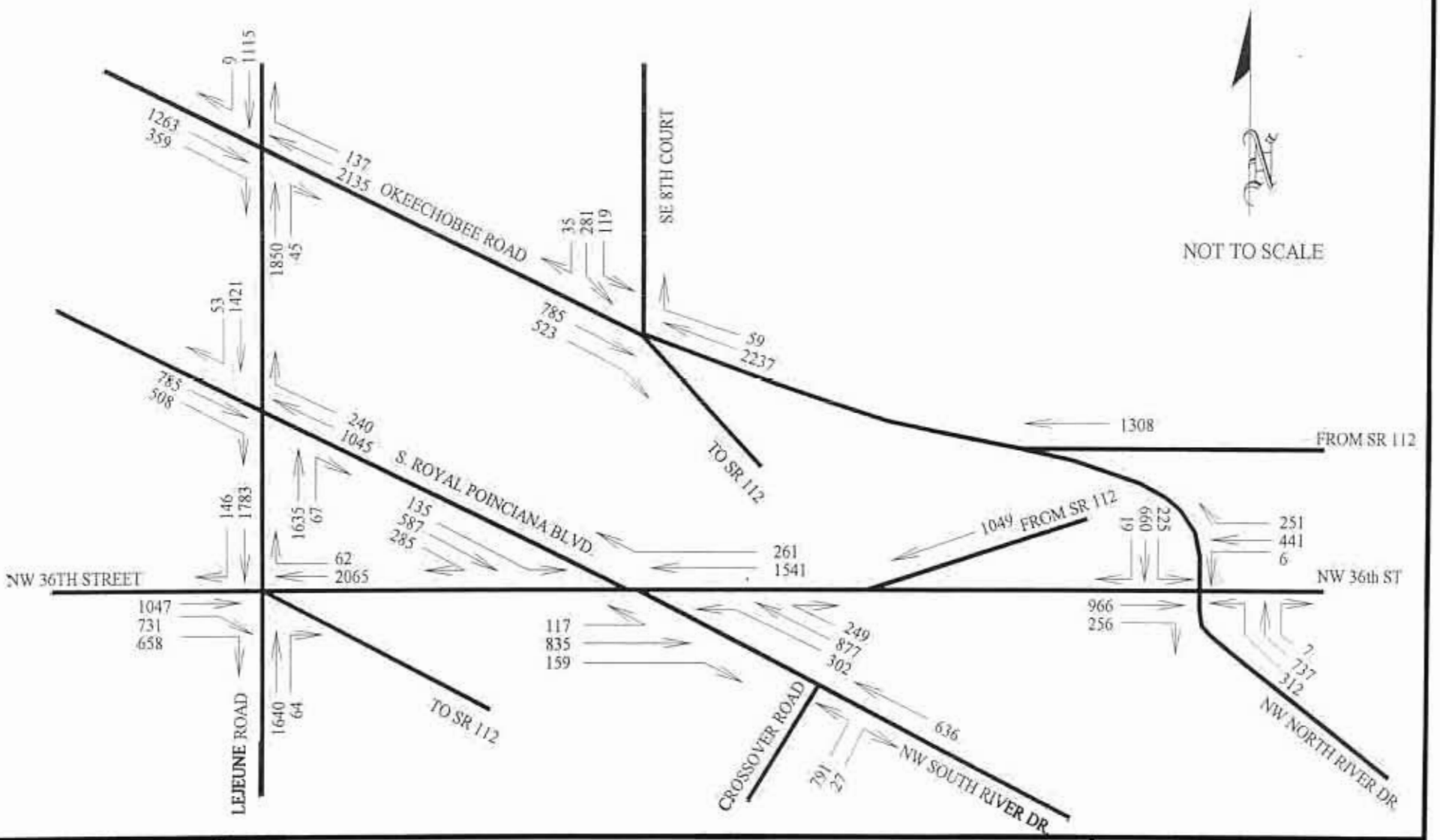
KHA Project # 4121T.01




MIAMI SPRINGS

LEJEUNE ROAD

Rerouted Future PM Peak Hour Volumes
for TRAF-NETSIM Network

FIGURE 16

Kimley-Horn and Associates, Inc.

KHA Project # 4121T.01

- Re-stripe LeJeune Road to three southbound through lanes and two northbound through lanes from Hiawatha Road (just north of Okeechobee Road) to south of NW 36th Street. Additionally, transition LeJeune Road from three through lanes to two through lanes between NW 36th Street and the SR 112 off-Ramp to the south.

- Re-stripe the northbound approach at NW 36th Street and South Royal Poinciana Boulevard to provide one left-turn lane, two through lanes, and a right turn lane.

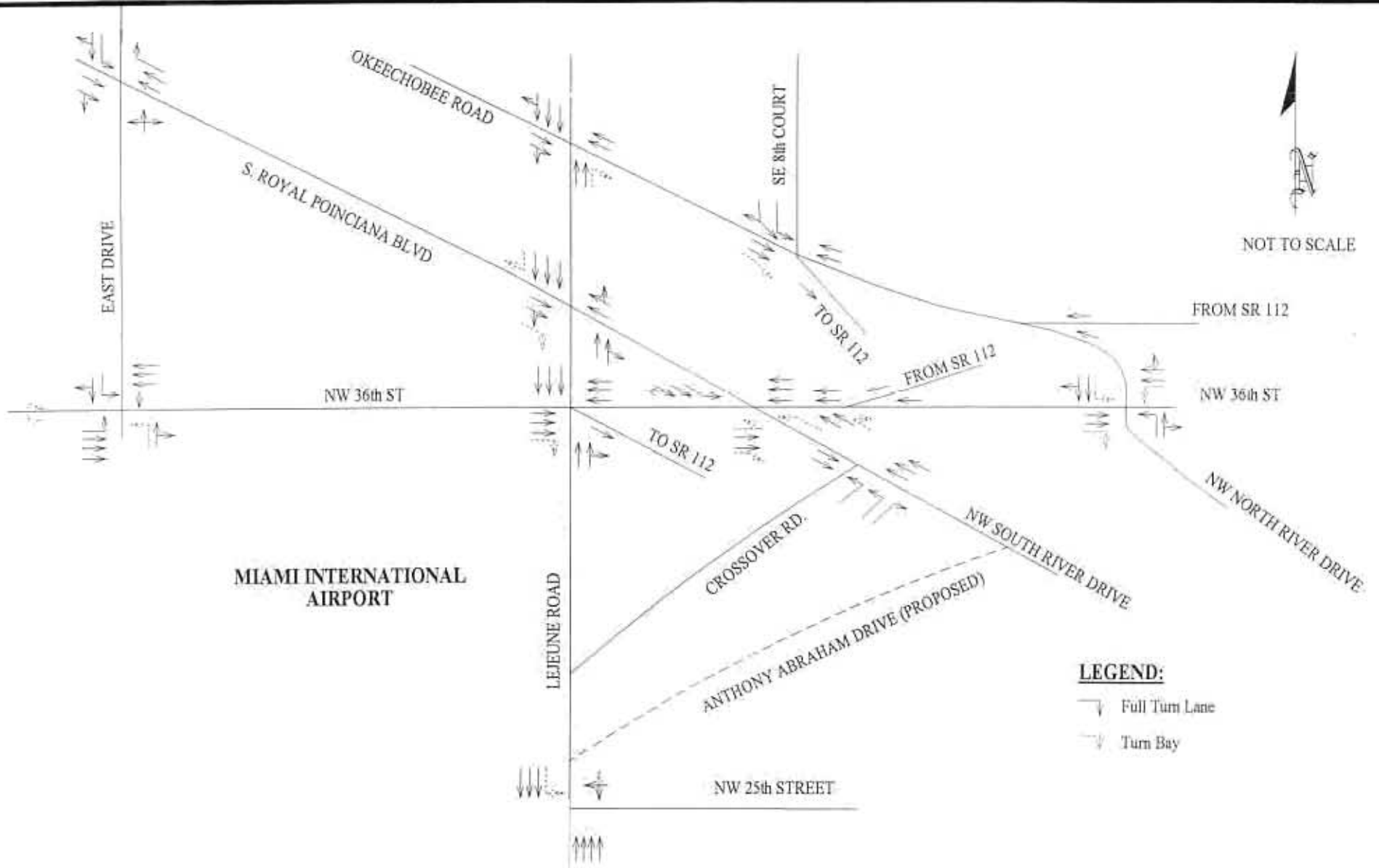
- Re-stripe the eastbound approach at LeJeune Road and South Royal Poinciana Boulevard to provide a right turn lane, shared right-through lane and a through lane.

- Re-time the traffic signals to accommodate the demands created with re-routing traffic.

Figure 17 shows the proposed lane configurations for Alternative 2.

***ALTERNATIVE 3***

The improvements considered for Alternative 3 include re-timing the traffic signal, along with re-striping the northbound approach at NW 36th Street and East Drive. It's recommended that the northbound approach, which currently is striped for a shared left-through-right lane, be improved to provide a left turn lane and a shared through-right lane.




MIAMI SPRINGS

LEJEUNE ROAD

Proposed Roadway Improvements

FIGURE 17

Kimley-Horn and Associates, Inc.

KHA Project # 4121T.01

Significant improvements are realized by implementing any of the three alternatives as shown on the foregoing tables. Alternative 1, Signal Retiming, and Alternative 3, Improvements to NW 36th Street and East Drive, are inexpensive and involve no interruption to mainline traffic. The improvements associated with Alternative 2, changes to LeJeune Road and South Royal Poinciana Boulevard, have the potential to be disruptive during implementation. Therefore, the benefits need to be significant.

Tables 11, 12, 13, and 14 compare Level-of-Service and phase failures between the future conditions analysis without improvements and without Alternative 2. Alternative 2 significantly improves the Level-of-Service and reduces the number of phase failures for both morning and afternoon hours, especially at the following intersections:

- NW 36th Street and LeJeune Road
- LeJeune Road and South Royal Poinciana Boulevard
- LeJeune Road and Okeechobee Road
- NW 36th Street and South Royal Poinciana Boulevard

Alternative 3 includes improvements to only the intersection of NW 36th Street and East Drive. HCS analyses for this improvement are presented in Appendix G.

**TABLE 11**
**LEVEL-OF-SERVICE COMPARISON BETWEEN FUTURE CONDITIONS AND ALTERNATIVE 2 FOR AM PEAK HOUR**

| Intersection | Approach | Future LOS | Alternative 2 LOS | Change in LOS |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | F | B | -4 |
| | WB | B | B | 0 |
| | NB | D | C | -1 |
| | SB | F | D | -3 |
| NW 36th Street and LeJeune Road | EB | D | E | 1 |
| | WB | C | C | 0 |
| | NB | F | E | -1 |
| | SB | D | C | -1 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | C | E | 2 |
| | WB | D | B | -2 |
| | NB | F | D | -2 |
| | SB | F | E | -1 |
| NW 36th Street and Okeechobee Road | EB | D | C | -1 |
| | WB | C | C | 0 |
| | NB | D | D | 0 |
| | SB | D | D | 0 |
| LeJeune Road and NW 25th Street | WB | F | E | -1 |
| | NB | F | E | -1 |
| | SB | C | C | 0 |
| LeJeune Road and South Royal Poinciana Blvd. | EB | F | C | -3 |
| | WB | D | D | 0 |
| | NB | D | C | -1 |
| | SB | F | B | -4 |
| LeJeune Road and Okeechobee Road | EB | E | F | 1 |
| | WB | B | B | 0 |
| | NB | E | D | -1 |
| | SB | F | C | -3 |
| South Royal Poinciana Blvd. and East Drive | EB | D | D | 0 |
| | WB | D | C | -1 |
| | NB | D | C | -1 |
| | SB | F | E | -1 |
| South Royal Poinciana Blvd. and Crossover | S-EB | A | A | 0 |
| | N-WB | F | B | -4 |
| | N-EB | F | B | -4 |
| Okeechobee Road and SW 8th Court | EB | B | B | 0 |
| | WB | C | E | 2 |
| | SB | E | E | 0 |

**TABLE 12**
**LEVEL-OF-SERVICE COMPARISON BETWEEN FUTURE CONDITIONS AND ALTERNATIVE 2 FOR PM PEAK HOUR**

| Intersection | Approach | Future LOS | Alternative 2 LOS | Change in LOS |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | F | B | -4 |
| | WB | B | B | 0 |
| | NB | F | D | -2 |
| | SB | F | D | -2 |
| NW 36th Street and LeJeune Road | EB | F | E | -1 |
| | WB | E | D | -1 |
| | NB | F | E | -1 |
| | SB | C | C | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | C | B | -1 |
| | WB | F | E | -1 |
| | NB | F | F | 0 |
| | SB | F | E | -1 |
| NW 36th Street and Okeechobee Road | EB | D | C | -1 |
| | WB | E | D | -1 |
| | NB | F | F | 0 |
| | SB | C | D | 1 |
| LeJeune Road and NW 25th Street | WB | F | F | 0 |
| | NB | D | E | 1 |
| | SB | B | C | 1 |
| LeJeune Road and South Royal Poinciana Blvd. | EB | E | D | -1 |
| | WB | F | D | -2 |
| | NB | F | C | -3 |
| | SB | E | B | -3 |
| LeJeune Road and Okeechobee Road | EB | F | F | 0 |
| | WB | E | B | -3 |
| | NB | C | D | 1 |
| | SB | F | C | -3 |
| South Royal Poinciana Blvd. and East Drive | EB | C | C | 0 |
| | WB | F | D | -2 |
| | NB | E | D | -1 |
| | SB | F | E | -1 |
| South Royal Poinciana Blvd. and Crossover | S-EB | A | C | 2 |
| | N-WB | F | F | 0 |
| | N-EB | F | F | 0 |
| Okeechobee Road and SW 8th Court | EB | A | B | 1 |
| | WB | F | F | 0 |
| | SB | F | D | -2 |

**TABLE 13**
**PHASE FAILURE COMPARISON BETWEEN FUTURE CONDITIONS AND ALTERNATIVE 2 FOR AM PEAK HOUR**

| Intersection | Approach | Future Phase Failures | Alternative 2 Phase Failures | Change in Phase Failures |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| NW 36th Street and LeJeune Road | EB | 8 | 1 | -7 |
| | WB | 0 | 0 | 0 |
| | NB | 4 | 1 | -3 |
| | SB | 0 | 0 | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | 0 | 0 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 25 | 0 | -25 |
| | SB | 15 | 11 | -4 |
| NW 36th Street and Okeechobee Road | EB | 0 | 0 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 0 | 0 | 0 |
| | SB | 0 | 0 | 0 |
| LeJeune Road and NW 25th Street | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| LeJeune Road and South Royal Poinciana Blvd. | EB | 24 | 0 | -24 |
| | WB | 0 | 0 | 0 |
| | NB | 0 | 0 | 0 |
| | SB | 0 | 0 | 0 |
| LeJeune Road and Okeechobee Road | EB | 1 | 1 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 1 | 0 | -1 |
| | SB | 12 | 0 | -12 |
| South Royal Poinciana Blvd. and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| South Royal Poinciana Blvd. and Crossover | S-EB | 0 | 0 | 0 |
| | N-WB | 0 | 0 | 0 |
| | N-EB | 3 | 0 | -3 |
| Okeechobee Road and SW 8th Court | EB | 0 | 0 | 0 |
| | WB | 0 | 5 | 5 |
| | SB | 0 | 0 | 0 |

**TABLE 14**
**PHASE FAILURE COMPARISON BETWEEN FUTURE CONDITIONS AND ALTERNATIVE 2 FOR PM PEAK HOUR**

| Intersection | Approach | Future Phase Failures | Alternative 2 Phase Failures | Change in Phase Failures |
|---|---|---|---|---|
| NW 36th Street and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| NW 36th Street and LeJeune Road | EB | 19 | 0 | -19 |
| | WB | 0 | 0 | 0 |
| | NB | 1 | 0 | -1 |
| | SB | 0 | 0 | 0 |
| NW 36th Street and South Royal Poinciana Blvd. | EB | 0 | 0 | 0 |
| | WB | 11 | 0 | -11 |
| | NB | 28 | 22 | -6 |
| | SB | 26 | 0 | -26 |
| NW 36th Street and Okeechobee Road | EB | 0 | 0 | 0 |
| | WB | 0 | 0 | 0 |
| | NB | 22 | 2 | -20 |
| | SB | 0 | 0 | 0 |
| LeJeune Road and NW 25th Street | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| LeJeune Road and South Royal Poinciana Blvd. | EB | 14 | 0 | -14 |
| | WB | 28 | 0 | -28 |
| | NB | 0 | 0 | 0 |
| | SB | 1 | 0 | -1 |
| LeJeune Road and Okeechobee Road | EB | 13 | 1 | -12 |
| | WB | 0 | 0 | 0 |
| | NB | 1 | 0 | -1 |
| | SB | 1 | 0 | -1 |
| South Royal Poinciana Blvd. and East Drive | EB | N/A | N/A | N/A |
| | WB | N/A | N/A | N/A |
| | NB | N/A | N/A | N/A |
| | SB | N/A | N/A | N/A |
| South Royal Poinciana Blvd. and Crossover | S-EB | 0 | 0 | 0 |
| | N-WB | 10 | 21 | 11 |
| | N-EB | 24 | 32 | 8 |
| Okeechobee Road and SW 8th Court | EB | 0 | 0 | 0 |
| | WB | 7 | 24 | 17 |
| | SB | 28 | 0 | -28 |

## ADDITIONAL CAPACITY

Additional traffic volume was added, beyond the future traffic levels on the entry links in increments of fifty (50) vehicles. This incremental volume increase was used to identify the capacity increases associated with the improvements identified in Alternative 2. Alternative 2 increased the capacity by:

- 950 vehicles per hour for traffic traveling south on LeJeune Road in both AM and PM peak hours.

- 200 vehicles per hour for traffic traveling northwest on South River Drive onto South Royal Poinciana Boulevard in the AM peak hour, and 150 vehicles per hour in the PM peak hour.

- 150 vehicles per hour for traffic traveling southeast on South Royal Poinciana Boulevard in the AM peak hour, and 200 vehicles per hour in the PM peak hour.

This amount of additional traffic can be accommodated on each approach without degrading to beyond the future traffic conditions without improvements.

# MAJOR IMPROVEMENT PROJECTS

There are three major roadway improvement projects that will significantly impact the traffic operations within the "Iron Triangle" study area. These projects include; the Okeechobee Road Project, the Miami Intermodal Center (MIC) Project, and the SR112 Extension.

***Okeechobee Road Project***

The Okeechobee Road Project identifies many roadway improvements to the Iron Triangle. These improvements will increase capacity through the Iron Triangle along Okeechobee Road, LeJeune Road, and NW 36th Street. The improvements are described below.

- LeJeune Road Flyover, which will provide an elevated ramp for northbound to westbound movement at LeJeune Road and Okeechobee Road. This improvement will eliminate the east-west movements, except right turns, at LeJeune Road and South Royal Poinciana Boulevard.

- Additional improvements to LeJeune Road between NW 36th Street and Okeechobee Road include: changing the northbound approach at NW 36th Street and LeJeune Road to two left-turn lanes, three through-lanes and a right-turn lane; north of NW 36th Street, LeJeune Road will be three through-lanes in the north and southbound directions; an additional lane for eastbound Okeechobee Road traffic turning right (south) on LeJeune Road then right (west) onto NW 36th Street. The existing right-turn for southbound to westbound traffic will be maintained at LeJeune Road and South Royal Poinciana Boulevard.

- Improvements on Okeechobee Road between SE 8th Court and SE 6th Avenue will match the six-lane configuration proposed for the Project. These improvements include: a right-turn lane from eastbound Okeechobee Road to

southbound LeJeune Road; two left-turn lanes from southbound LeJeune Road to eastbound Okeechobee Road; and a right-turn lane from westbound Okeechobee Road to northbound LeJeune Road.

- An elevated single-lane ramp that will flyover LeJeune Road directly connecting eastbound NW 36th Street to eastbound SR 112. This improvement is coordinated with the proposed improvement to grade separate LeJeune Road and NW 36th Street in the MIC Project.

These improvements will significantly reduce delays and increase capacity in the study area. Currently, the northbound left-turn movement from LeJeune Road to Okeechobee Road is prohibited. Those vehicles wishing to do so are making the left-turn at LeJeune Road and South Royal Poinciana Boulevard and cutting through the neighborhood over to Okeechobee Road. The LeJeune Road Flyover would permit the northbound left-turn movement Okeechobee Road, therefore significantly reduce traffic using South Royal Poinciana Boulevard.

*Miami Intermodal Center (MIC)*

MIC Project proposes construction of an Intermodal transportation facility that will become an extension of the Miami International Airport and serve as a central transfer point for various modes of transportation. Local roadway improvements have been identified as part of this Project. These improvements are coordinated with those identified in the Okeechobee Road Project and will significantly improve traffic operations through the Iron Triangle. The proposed local roadway improvements include:

- NW 21st Street will be widened to six-lanes
- NW 25th Street will be widened to four-lanes
- NW 39th Avenue will be widened to four-lanes
- NW 37th Avenue will be widened to four-lanes
- NW South River Drive will be widened to three-lanes

- LeJeune Road will be widened to eight-lanes between SR 836 and SR 112
- Total grade separation at LeJeune Road and NW 36th Street
- Re-locate the SR 112 westbound off-ramp from east of LeJeune Road to west of LeJeune Road

Currently LeJeune Road acts a connector between SR 836 and SR 112. The MIC Project proposes to construct a separate connector that will remove some traffic from LeJeune Road. Additional improvements identified in the MIC will also impact traffic patterns in the area as they will encourage people to use transit facilities instead of single occupancy vehicle for transportation.

***SR 112 Extension Project***

Florida's Turnpike is directing the SR 112 Project and determining the feasibility of extending SR 112 terminus out to the Florida's's Turnpike Extension (HEFT). Currently, the SR 112 Extension Project has been reduced to a Smart Street concept and the roadway improvements that would impact the Iron Triangle were previously identified in the Okeechobee Road and MIC projects.

# CONCLUSIONS & RECOMMENDATIONS

Based upon the analyses described herein and the evaluation of alternatives, the following modifications are recommended to improve traffic flow in the LeJeune Road corridor:

- Eliminate the northbound and southbound left-turn movement at LeJeune Road and South Royal Poinciana Boulevard.

- Re-stripe LeJeune Road to three southbound through lanes and two northbound through lanes from Hiawatha Road (just north of Okeechobee Road) to south of NW 36th Street. Additionally, transition LeJeune Road from three through lanes to two through lanes between NW 36th Street and the SR 112 off-Ramp to the south.

- Re-stripe the northbound approach on South Royal Poinciana Boulevard at NW 36th Street to provide one left-turn lane, two through lanes, and a right turn lane.

- Re-stripe the south-eastbound approach on South Royal Poinciana Boulevard at LeJeune Road to provide a separate right turn lane, a shared right-through lane and a separate through lane.

- Improve and re-stripe the northbound approach on East Drive at NW 36th Street to provide a left-turn lane and a shared through-right lane.

- Re-time the traffic signals to accommodate the changes in traffic patterns created by re-routing traffic.

These modifications provide available capacity benefits as quantified below:

- 950 vehicles per hour for traffic traveling south on LeJeune Road in both AM and PM peak hours.

- 200 vehicles per hour for traffic traveling northwest on South River Drive onto South Royal Poinciana Boulevard in the AM peak hour, and 150 vehicles per hour in the PM peak hour.

- 150 vehicles per hour for traffic traveling southeast on South Royal Poinciana Boulevard in the AM peak hour, and 200 vehicles per hour in the PM peak hour.

*Technical Appendices*

# Traffic Engineering Analysis
# LeJeune Road
# Miami Springs, Florida

Prepared for:
City of Miami Springs, FL


4121T.01

# TABLE OF CONTENTS

# INTRODUCTION

This is a supplemental document to the Existing Conditions report entitled *Traffic Engineering Analysis LeJeune Road Miami Springs, Florida* which summarizes initial progress on a traffic engineering analysis addressing the circulation and geometric constraints surrounding the area of LeJeune Road, South Royal Poinciana Boulevard, and NW 36th Street. It contains the traffic volume data collected, and the outputs from the TRAF-NETSIM and HCS computer runs.