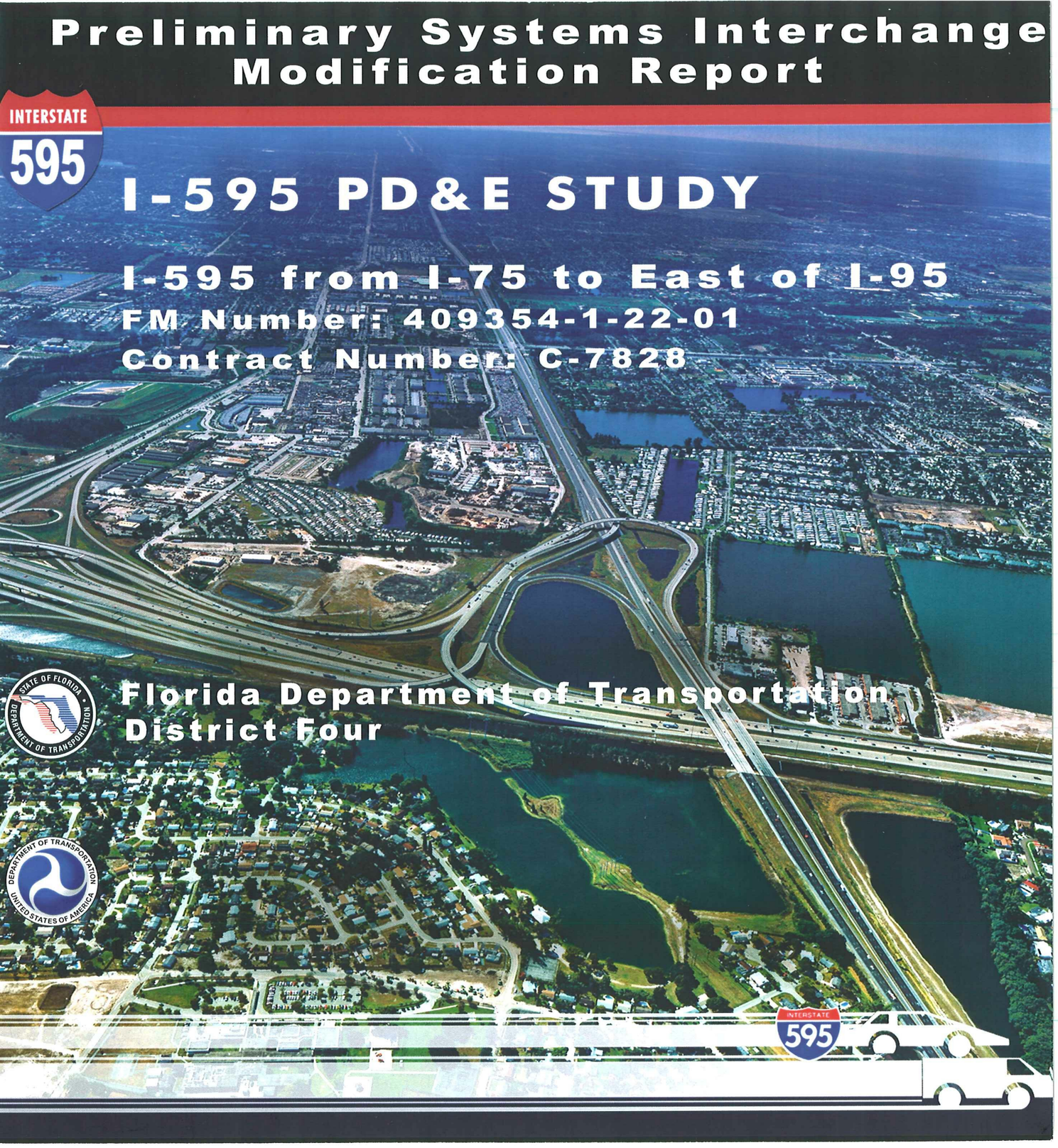
Preliminary Systems Interchange Modification Report



PRELIMINARY SYSTEMS INTERCHANGE MODIFICATION REPORT
I-595

From East of I-75 to I-95

F.M Number: 405226-1-12-01
Contract Number: C-7828

Prepared for

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT FOUR

For submittal to

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

December 2004

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1.0 INTRODUCTION

1.1 Background

Urbanized Southeast Florida is among the most densely populated areas in the State. Increases in population of the region, which is comprised of Miami-Dade, Broward and Palm Beach Counties, have consistently exceeded statewide growth percentages for each of the past three decades. The region's transportation system has been a critical factor in sustaining the area's growth and economic competitiveness. I-595 (SR 862) serves as the major east-west link in Broward County providing a direct connection between the region's major expressways, I-95, Florida's Turnpike and I-75. These connections link Southeast Florida's urban areas with central and north Florida as well as the Gulf Coast. I-595 also provides local connections to primary north-south arterials such as SR 7 (US-441) and University Drive (SR-817).

Since the mainline opening in 1989, I-595 has maintained a steady increase in traffic volume that has lead to congestion in several areas throughout the corridor. In an effort to ensure the availability of sufficient capacity within the transportation network to support and sustain the region's growth, the Florida Department of Transportation (FDOT) constantly evaluates feasible improvements to relieve congestion along the I-595 corridor. The latest effort was the I-95/I-595 Master Plan that led to the development of the Locally Preferred Alternative (LPA) that was approved by the Broward County Metropolitan Planning Organization (MPO) in 2001 and has received favorable reviews from the Central Office and the Federal Highway Administration (FHWA).

The I-95/I-595 Master Plan LPA recommended intermediate (Phase I) and long-term (Phase II) improvements along I-595 at the interchanges with I-95 and Florida's Turnpike.

1.2 Purpose

The Systems Interchange Modification Report (SIMR) evaluates modification alternatives consistent with the I-95/I-595 Master Plan. As part of this SIMR, a No Build Alternative with planned and programmed improvements consistent with the Cost Feasible Plan for Broward County, and a Build Alternative are analyzed. This SIMR is prepared in accordance with Department procedures for and as needed to obtain FHWA acceptance of the proposed I-595 Master Plan Phase I improvements. This includes consideration of all requirements by the FHWA and/or the Department's Interchange Handbook. The SIMR is also consistent with the recently approved Interchange Operational Analysis Report (IOAR) for the interchange of I-95 and I-595. The Methodology Letter of Understanding (MLOU) defined the criteria, assumptions, analysis process and documentation requirements agreed upon at the methodology meeting during the fall of 2003

held at FDOT District 4 offices. The MLOU established the basis for the majority of the data and analysis in this SIMR is the data and analyses of the I-95/I-595 Master Plan study.

1.3 Project Location

This project is located on I-595 in southern Broward County. Figure 1-1 shows the project location map and illustrates the study limits for the project. The study area limits extend from the east of I-75 to east of I-95.

1.4 Applicant Information

This I-595 Systems Interchange Modification Report has been prepared for the Florida Department of Transportation, District 4, by Reynolds, Smith & Hills, Inc. (RS&H). For information on the I-595 interchange modification project and the report, please contact the Project Manager at the following address:

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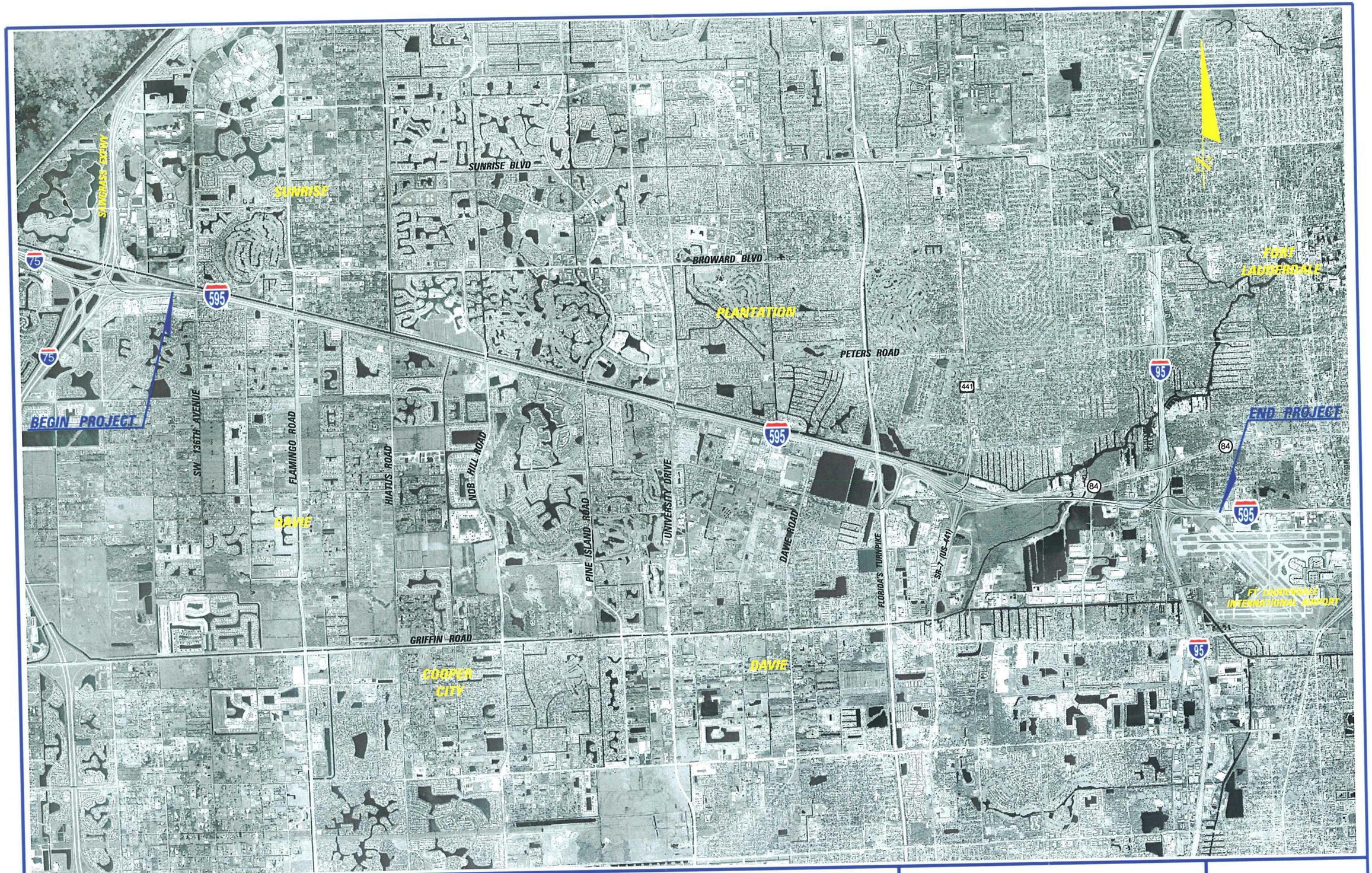


RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS IMTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	PROJECT LOCATION MAP	FIGURE 1–1

2.0 METHODOLOGY

2.1 Overview

A pre-application meeting was conducted on September 4, 2002 to discuss the preliminary evaluation and pertinent information concerning assumptions and methodology to be used in preparing the SIMR. Sufficient need for the interchange modifications have been established with the I-95/I-595 Master Plan and therefore, the District and Central Office concur that proceeding with the SIMR is warranted. A Methodology Letter of Understanding (MLOU) that documents the agreements reached on the element of the analysis for the SIMR has been prepared and approved by the FDOT Central Office and FHWA during the pre-application process. The signed MLOU is included in Appendix A. The following summarizes the critical elements of the MLOU.

2.2 Analysis Years

The analysis years for this project are as follows:

- Existing Year: 2002
- Opening Year: 2014
- Interim Year: 2024
- Design Year: 2034

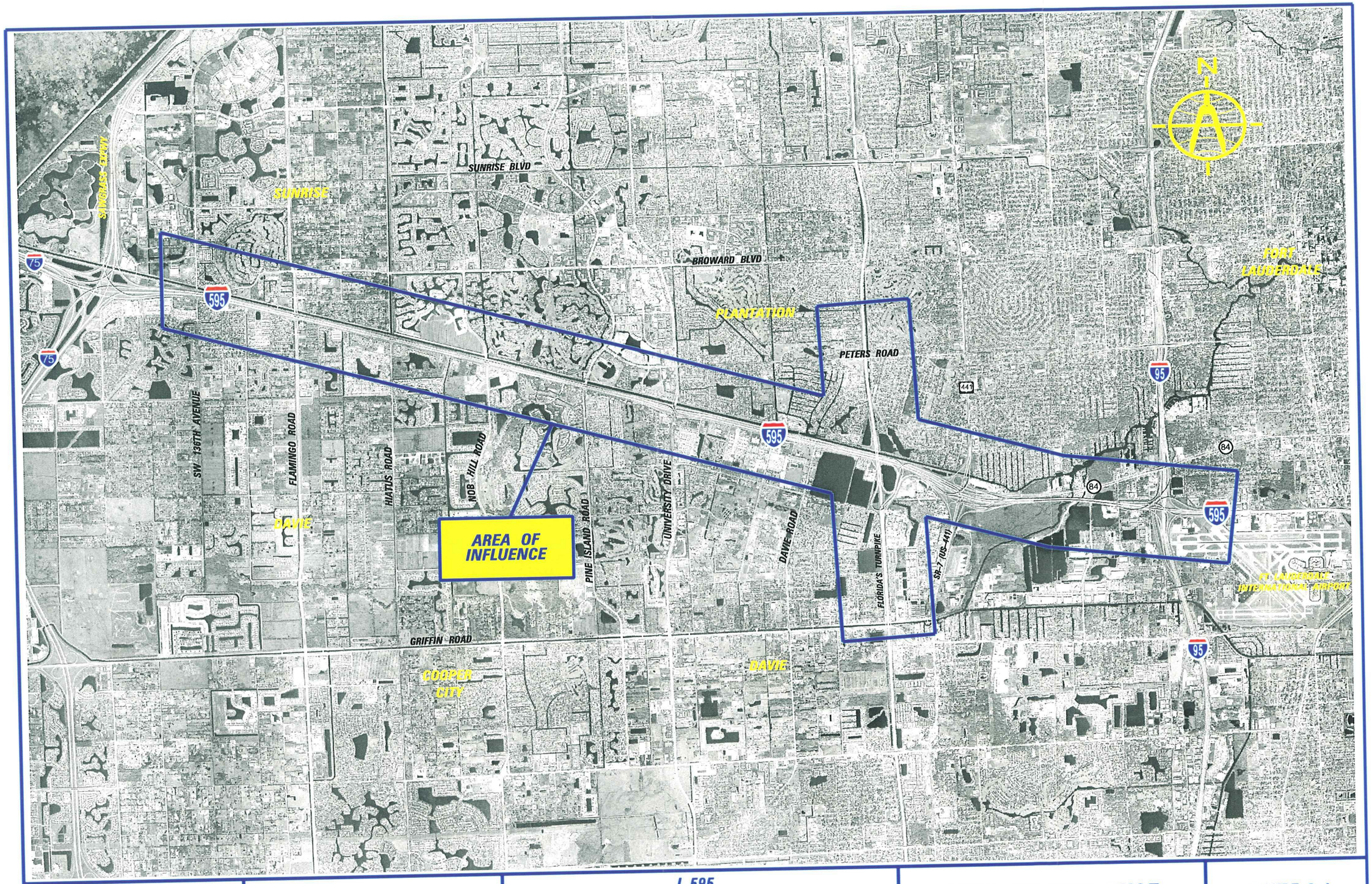
2.3 Area of Influence

The area of influence for this project includes the I-595 mainline from the east of I-75 to east of I-95 .The area of influence includes the interchanges at SW 136th Avenue, Flamingo Road, Hiatus Road, Nob Hill Road, Pine Island Road, University Drive, Davie Road, the Turnpike, SR 7 and I-95. In addition, the area of influence includes the Turnpike mainline from Griffin Road to the Peters Road overpass including the interchange ramps north of Griffin Road.

The following intersections at the interchange will also be considered:

- SW 136th Avenue/I-595 eastbound and westbound ramps
- Flamingo Road /I-595 eastbound and westbound ramp
- Hiatus Road/I-595 eastbound and westbound ramps
- Nob Hill Road/I-595 eastbound and westbound ramps
- Pine Island Road/I-595 eastbound and westbound ramps
- University Drive /I-595 eastbound and westbound ramps
- Davie Road/I-595 eastbound westbound ramps

The area of influence is shown in Figure 2-1.



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	AREA OF INFLUENCE	FIGURE 2–1

2.4 Base Traffic Data

The directional design hour volumes (DDHV) developed for the I-95/I-595 IOAR were used for consistency. The 2001 mainline AADT along I-595 were obtained from the FDOT Transportation Statistics CD Rom. A growth factor of 2.1% was applied to obtain the 2002 AADT. This rate was based on the I-95/595 Master Plan and consultation with the FDOT Planning Office. The existing (2002) AADT volumes resulting from these calculations are summarized in Table 2.1.

Table 2.1
2002 Traffic Volumes
I-595 Mainline

Location	AADT
East of SW 136th Avenue	135,280
East of Flamingo Road	152,640
East of Hiatus Road	143,960
East of Nob Hill Road	166,930
East of Pine Island Road	175,610
Between SR 7 and I-95	188,885
East of I-95	100,050

The 2001 AADT volumes for I-595 ramps were provided by the District. The 2001 ramps ADDT were adjusted to obtain 2002 AADT by applying a growth factor of 2.1%. Table 2.2 summarized the 2002 AADT ramp volumes.

Turnpike volumes used in the analysis were obtained from the Florida Turnpike Enterprise.

Table 2.2
2002 Traffic Volumes
I-595 Ramps

Eastbound

Location	AADT
SW136th Avenue On-Ramp	16,850
Flamingo Road Off-Ramp	5,510
Flamingo Road On-Ramp	14,800
Hiatus Road Off-Ramp	1,940
Hiatus Road On-Ramp	5,000
Nob Hill Road Off-Ramp	5,610
Nob Hill Road On-Ramp	11,230
Pine Island Road Off-Ramp	8,980
Pine Island Road On-Ramp	12,250
University Drive Off-Ramp	20,420
University Drive On-Ramp	25,420
Davie Road Off-Ramp	5,300
Davie Road On-Ramp	18,890
Turnpike Off-Ramp	18,380
SR-7 Off-Ramp	9,190
SR-84 Off-Ramp	8,890
Turnpike On-Ramp	13,780
SR 7 On-Ramp	8,680
I-95 NB Off-Ramp	31,650
I-95 SB Off-Ramp	32,670
I-95 NB On-Ramp	12,760
I-95 SB Off-Ramp	11,230

Table 2.2
2002 Traffic Volumes
I-595 Ramps

Westbound

Location	AADT
I-95 SB Off-Ramp	12,250
I-95 NB Off-Ramp	12,250
I-95 NB On-Ramp	26,040
I-95 SB On-Ramp	43,400
Turnpike/SR-7 Off-Ramp	19,910
SR-84 On-Ramp	9,900
SR-7 SB On-Ramp	8,580
SR-7 NB On-Ramp	6,840
Turnpike On-Ramp	19,400
Davie Road Off-Ramp	18,890
University Drive Off-Ramp	20,930
SR-84 On-Ramp	9,090
University Drive On-Ramp	9,290
Pine Island Road Off-Ramp	14,290
Pine Island Road On-Ramp	14,290
Nob Hill Road Off-Ramp	11,740
Nob Hill Road On-Ramp	5,920
Hiatus Road Off-Ramp	4,700
Hiatus Road On-Ramp	2,040
Flamingo Road Off-Ramp	15,310
Flamingo Road On-Ramp	5,410
SW136th Ave Off-Ramp	17,340

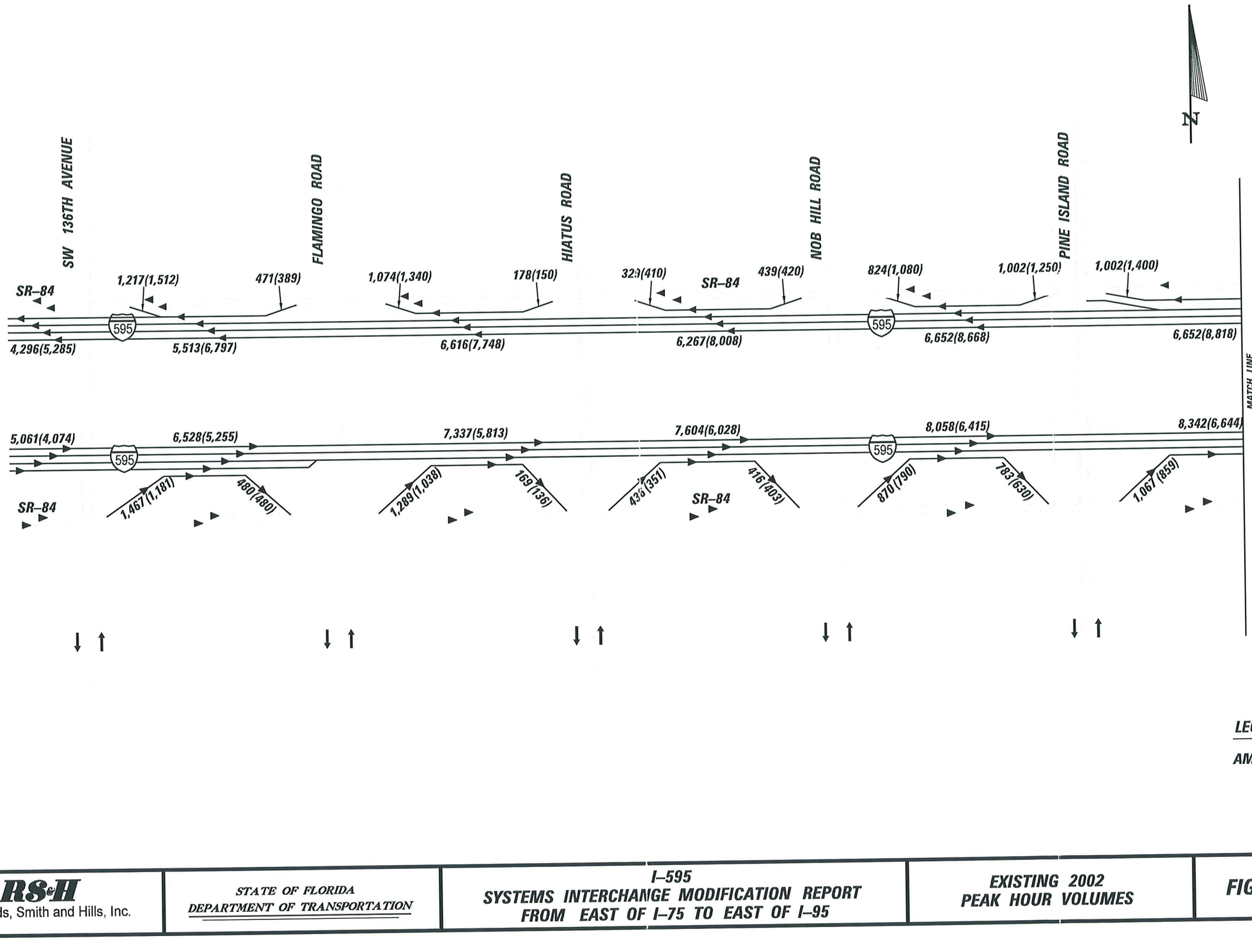
2.5 Development of Existing Peak Hour Volumes

To determine existing peak period traffic conditions, it was necessary to designate the appropriate design traffic factors. After reviewing all the data, the results indicated that the peak periods occurred from 7:30 AM to 8:30 AM and from 5:00 PM to 6:00 PM. The K and D factors are discussed in Section 3.2.2. In order to estimate the 2002 peak volumes the following methodology was used:

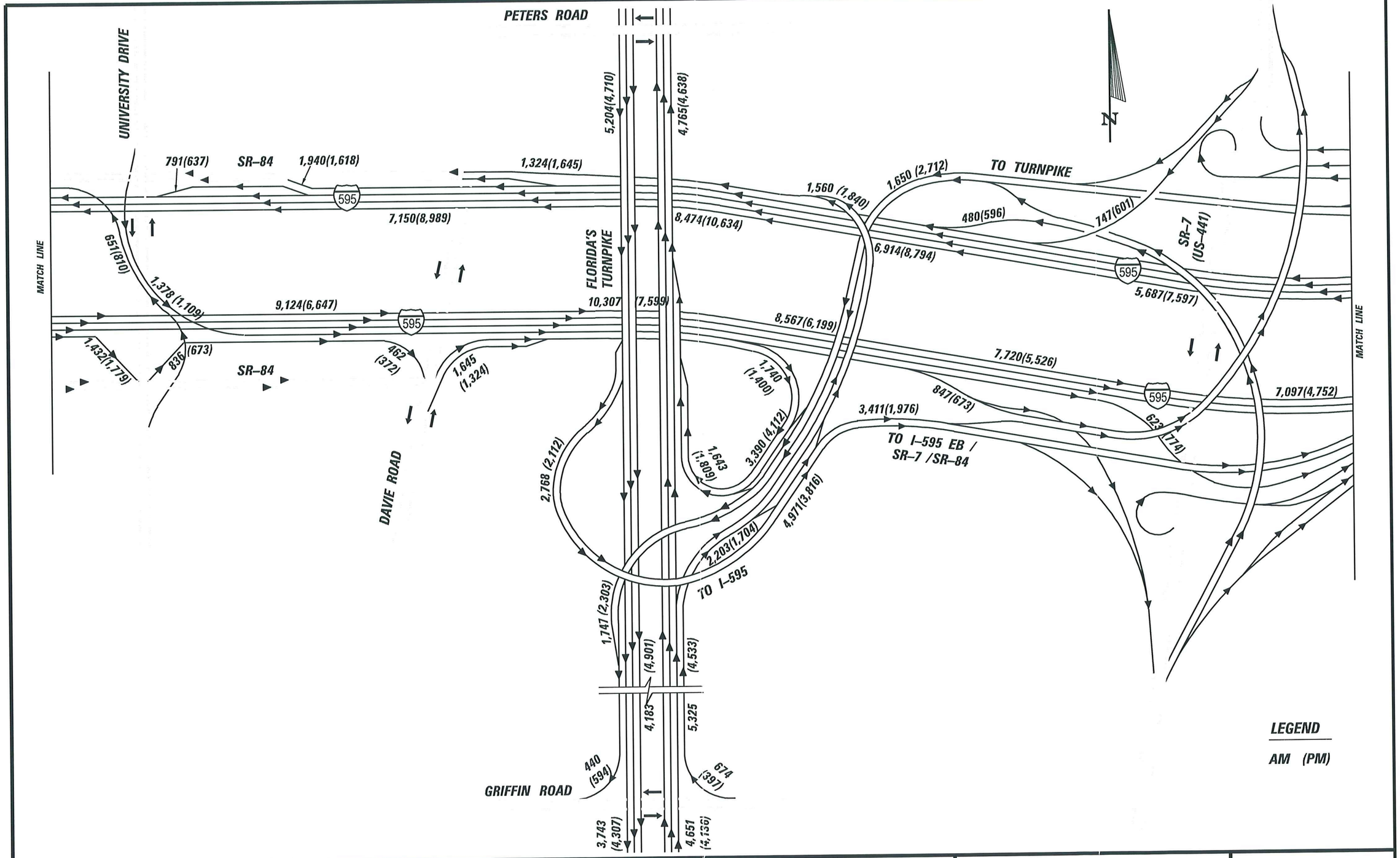
1. The 2001 AADT were obtained from FDOT as well as the K and D factor for all the mainline counts stations and the ramps along I-595.
2. The 2002 AADT were calculated by applying a growth rate of 2.1% to the 2001 AADT volumes.
3. The DDHV were obtained by multiplying the AADT*K*D. It was assumed that the DDHV was the peak direction. The off peak volumes were calculated by multiplying the AADT*K*(1-D)
4. To balance the volumes control points were established. The control points that were assumed were the FDOT Count Station east of SW 136th Avenue (Station 2800), the station between Nob Hill Road and Pine Island Road (Station 2803) and the station east of I-95 (Station 2807). After carefully reviewing the volumes the system was balanced. The objective was to be as close to the actual volumes at the FDOT count stations as possible.
5. The peak hour volumes from these time periods were balanced and were checked for reasonableness.

Figure 2-2 illustrates the 2002 AM and PM peak hour volumes along the I-595 corridor within the area of Influence.

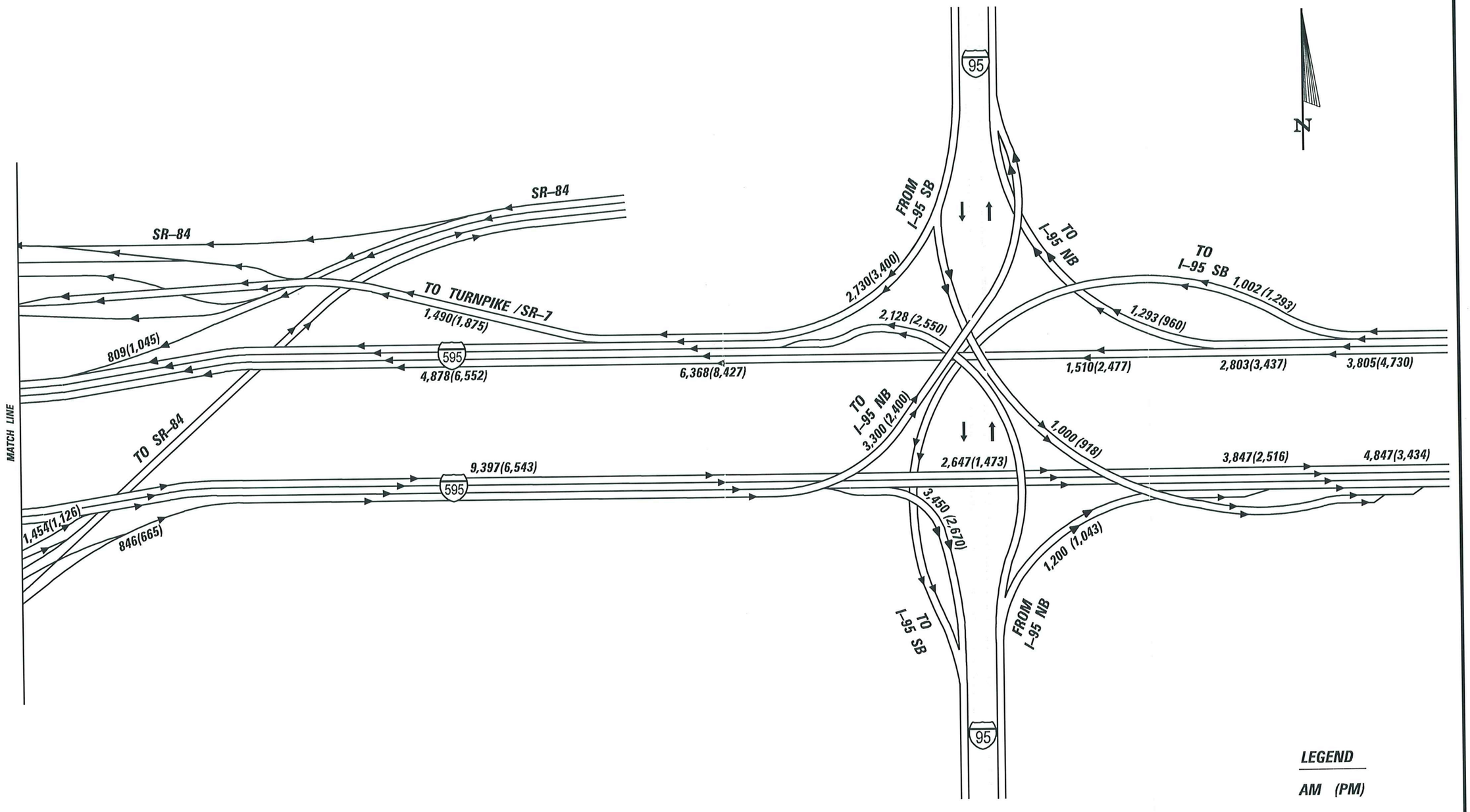
Figures 2-3 illustrates the Existing Intersection Peak Hour Volumes. Peak hour volumes were derived from historical year data and applied a growth factor to obtain 2002 volumes. After applying a growth rate, the volumes were checked for reasonableness and were adjusted accordingly.



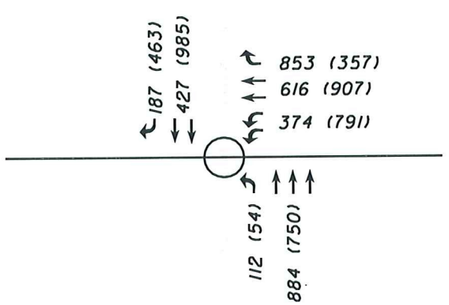
RS&H Reynolds, Smith and Hills, Inc.	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING 2002 PEAK HOUR VOLUMES	FIGURE 2–2 1 OF 3

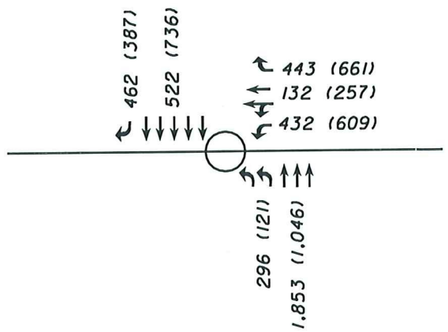


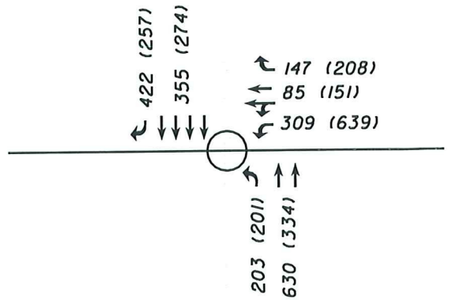
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING 2002 PEAK HOUR VOLUMES	FIGURE 2–2 2 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING 2002 PEAK HOUR VOLUMES	FIGURE 2–2 3 OF 3



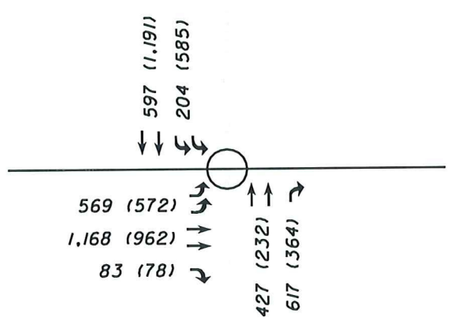


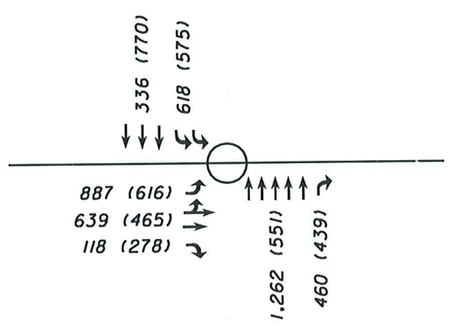


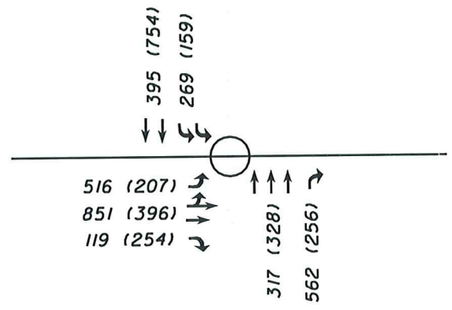
I–595

I–595

I–595







SW 136TH AVENUE

FLAMINGO ROAD

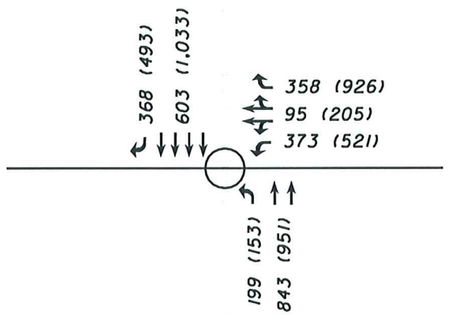
HIATUS ROAD

LEGEND

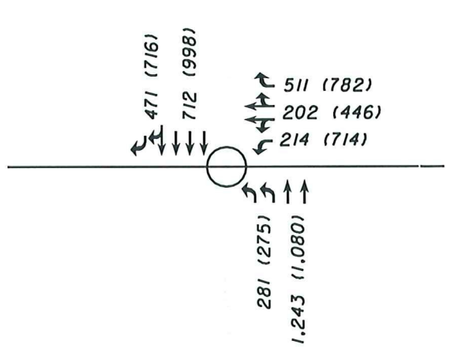
SIGNALIZED INTERSECTION

675 (1,557) AM (PM) PEAK HOUR VOLUME

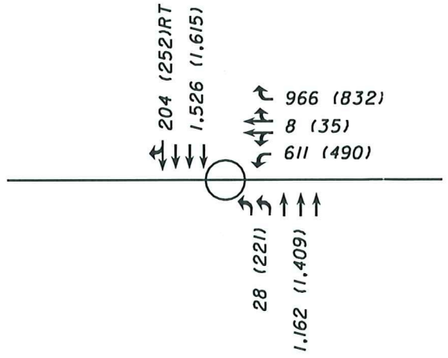
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING 2002 INTERSECTION PEAK HOUR VOLUMES	FIGURE 2–3 1 OF 3



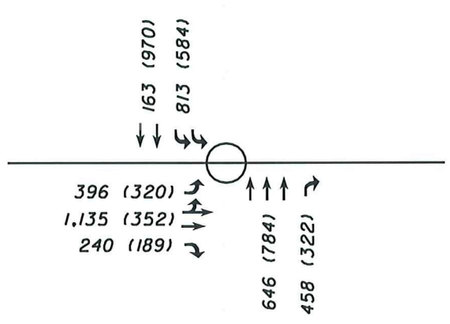
I–595



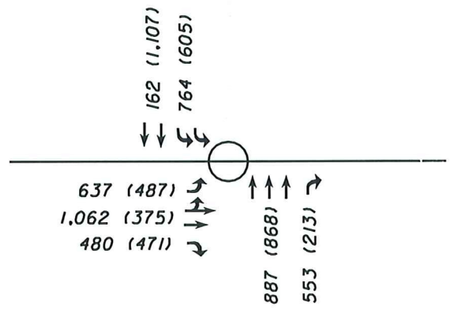
I–595



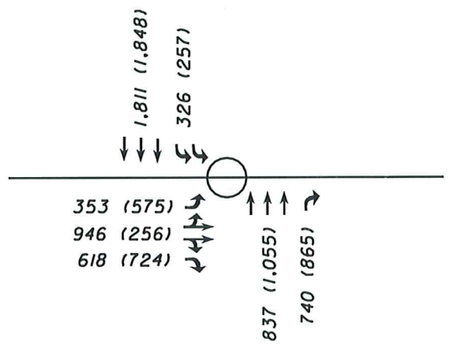
I–595



NOB HILL ROAD



PINE ISLAND ROAD



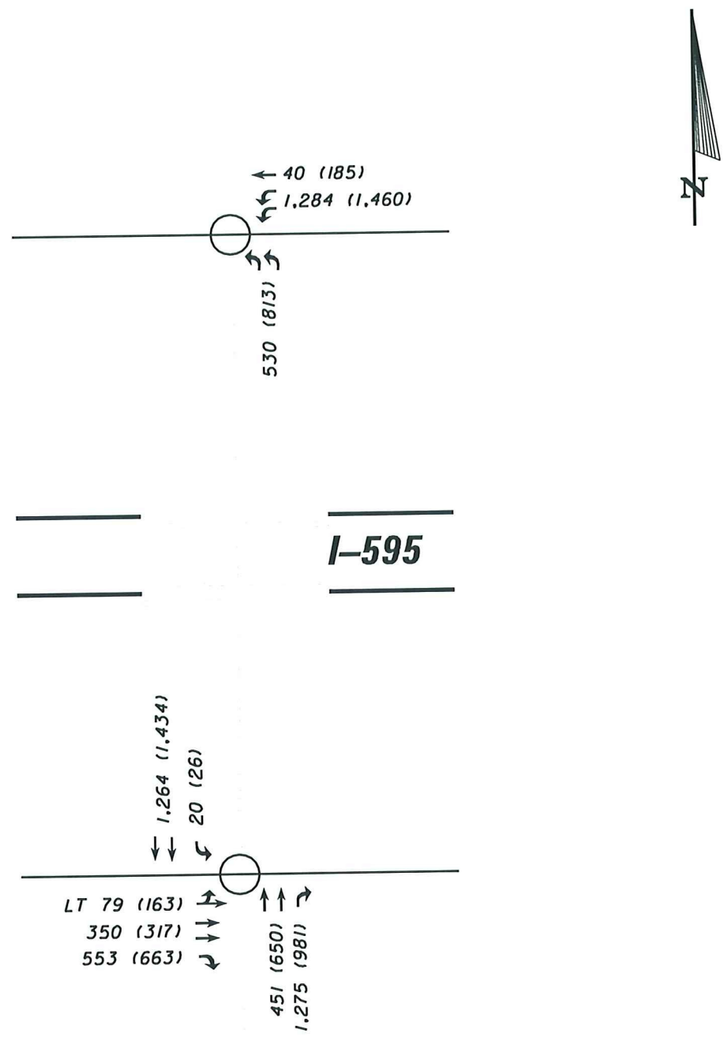
UNIVERSITY DRIVE

LEGEND

○ SIGNALIZED INTERSECTION

675 (1,557) AM (PM) PEAK HOUR VOLUME

RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING 2002 INTERSECTION PEAK HOUR VOLUMES	FIGURE 2–3 2 OF 3



LEGEND

SIGNALIZED INTERSECTION

675 (1,557) AM (PM) PEAK HOUR VOLUME

RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING 2002 INTERSECTION PEAK HOUR VOLUMES	FIGURE 2–3 3 OF 3

3.0 EXISTING CONDITIONS

This section summarizes the existing I-595 mainline geometry, transportation network and traffic characteristics (volumes and operations) associated with the I-595 SIMR.

3.1 Existing Land Use

The existing land use within the area of influence is a mix of commercial and residential uses. Figure 3-1 illustrates the existing land use for the region surrounding the I-595 SIMR study area.

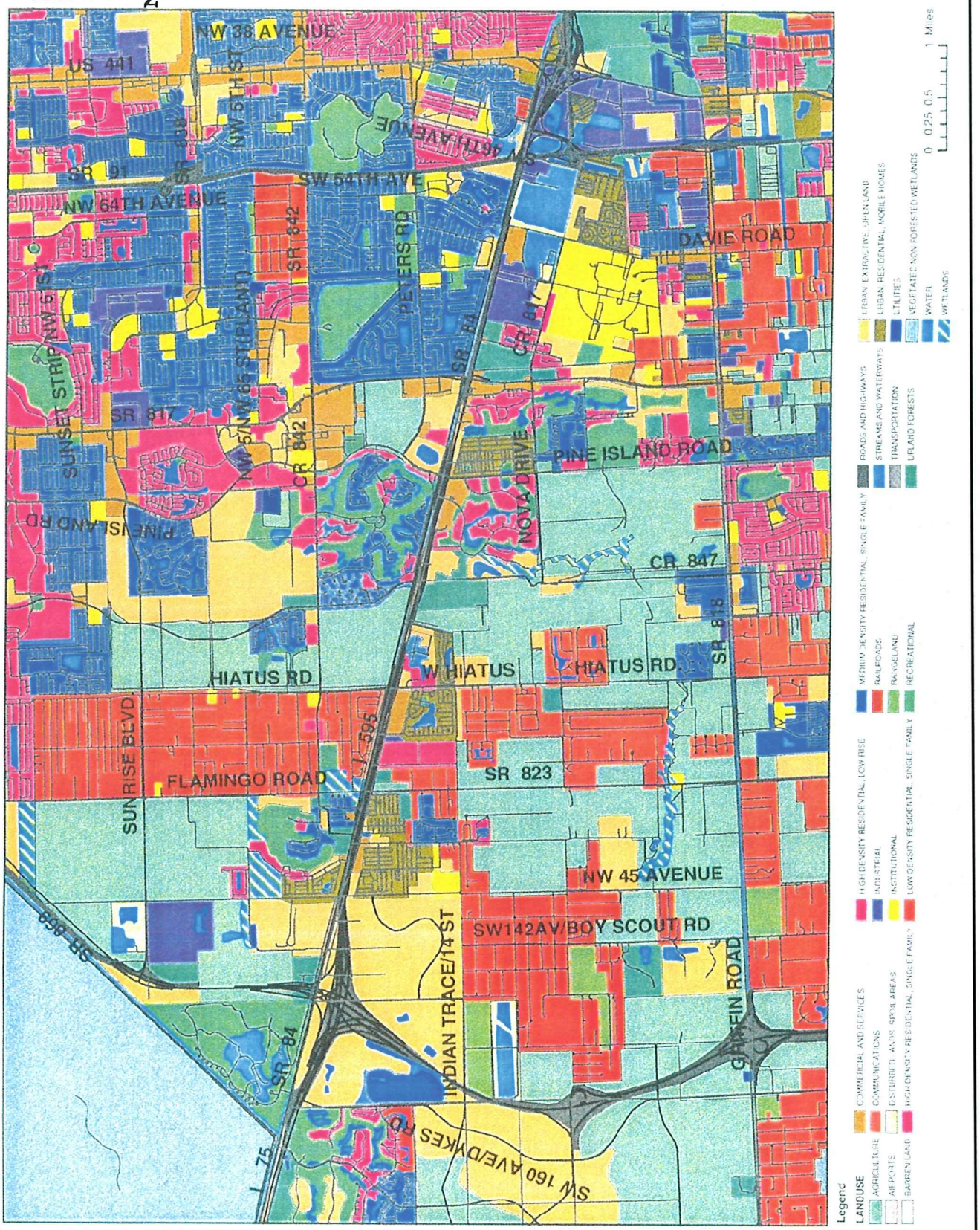
The figure shows that the majority of the area is fully developed. The land use west of I-95 along the eastbound SR-84 is generally strip commercial mixed with multi-family and single family residential development nearby. The C-15 canal parallels the northern side of the westbound SR-84 between SW 136th Avenue and SR-7 in the study area. Beyond the canal, much of the land use is residential with some commercial clustered near interchanges. East of I-95, the Fort Lauderdale/Hollywood International Airport borders the southern side of I-595 and a mixture of residential and industrial border the route to the north.

3.2 Existing Transportation Network

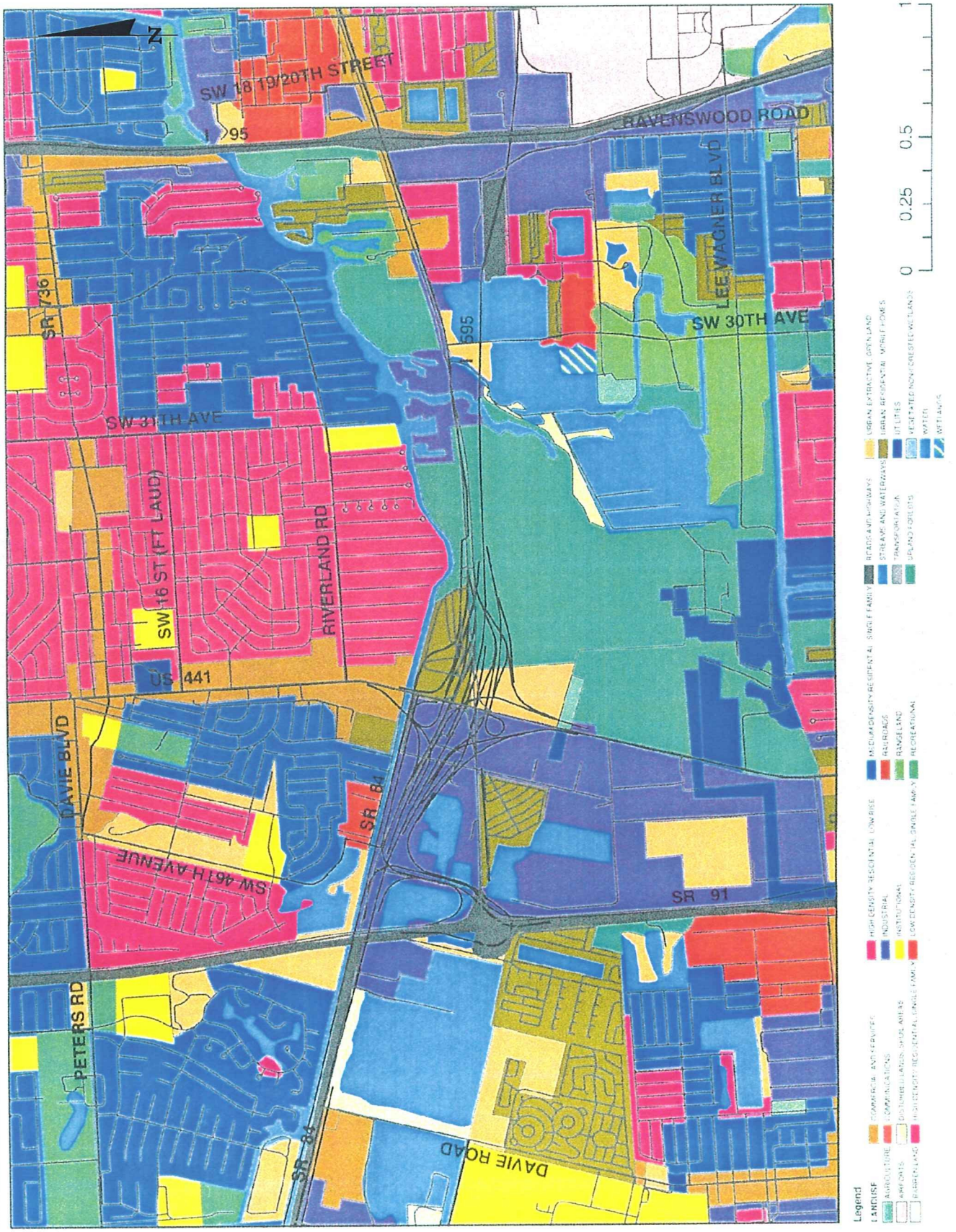
3.2.1 Existing Roadway Network

I-595 is a limited access facility that runs in an east-west direction. It is an integral part of the Florida Intrastate Highway System (FIHS) and its functional classification is interstate/expressway. In the study area, I-595 is currently a minimum of six lanes divided highway with three 12-foot lanes in each direction. It widens to four lanes in each direction east of Davie Road.

I-595 begins to the east of I-75/I-595-Sawgrass Expressway interchange. Due to the complexity of the interchange, there is no “typical section” for the segment of the I-595 corridor west of SW 136th Avenue. The eastbound lanes at the west end of I-595 are formed by two directional lane ramps from each of three approaches, I-75 southbound, I-75 northbound and the Sawgrass Expressway. These six lanes narrow to five lanes west of SW 136th Avenue. Between SW 136th Avenue and Flamingo Road, these five lanes narrow further to four, dropping one lane at the eastbound exit to Flamingo Road. The fourth lane is dropped after the exit ramp such that only three lanes actually overpass Flamingo Road. Traveling westbound from Flamingo Road three GP lanes are provided.



RS+H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I-595 SYSTEMS INTERCHANGE MODIFICATION REPORT (FROM I-75 TO DAVIE ROAD)	EXISTING LAND USE	FIGURE 3-1 1 OF 2



RS+H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I-595 SYSTEMS INTERCHANGE MODIFICATION REPORT (FROM DAVIE ROAD TO I-95)	EXISTING LAND USE	FIGURE 3-1 2 OF 2

The typical section between Flamingo Road and University Drive access ramp varies by location. Auxiliary lanes have been added at a number of locations in the I-595 corridor. Between Davie Road and I-95, the mainline typical section has four through lanes per direction. Auxiliary lanes are provided to improve flow to and from Florida's Turnpike and I-95 through the interchange areas. There are no frontage roads in this area. These auxiliary lanes are between each upstream on-ramp/downstream off-ramp pair, both eastbound and westbound.

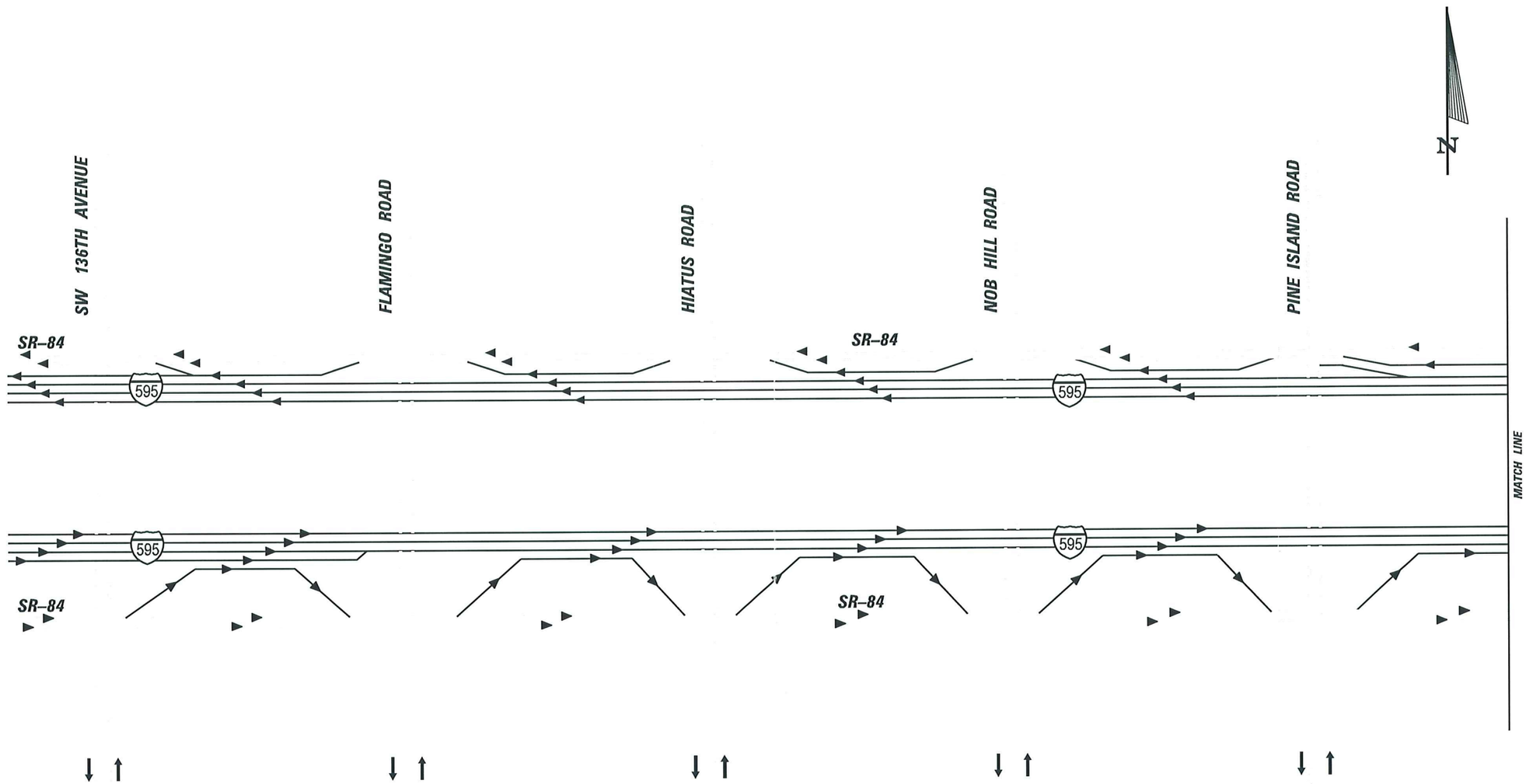
This facility has a frontage road system (SR-84) on the north and south along most of its length. This frontage road exists on the north and south of I-595 between SW 136th Avenue and Davie Road only. Between Davie Road and US Route 441/State Road 7 (SR-7) the frontage road is discontinued and resumes in its original alignment on the north side of I-595 east of US441/SR-7. The SR 84 frontage roads paralleling the I-595 corridor west of Davie Road are two-lane, one-way operations, which act as a collector/distributor roads to I-595. When the I-595 was planned, the right-of-way from existing SR-84 served as the original working alignment for the new interstate connector. At that time, SR-84 was an at-grade facility providing direct access to the surrounding roadway network. To retain some of this direct access to the corridor while creating the needed capacity a limited access facility provides, SR-84 was preserved as the frontage road system on the north and south sides of the freeway.

The I-595 and its adjacent frontage roads lie within a 324-foot right-of-way between SW 136th Avenue and Pine Island Road. East of Pine Island Road to Davie Road, where the frontage road terminates, the right-of-way varies in width up to 500 feet. Between Davie Road and the I-95 interchange, the I-595 right-of-way widens as much as 1,800 feet in the vicinity of the SR 7 interchange and then narrows to 360 feet west of I-95. East of the I-95 interchange, the I-595 right-of-way narrows considerably to as little as 155 feet.

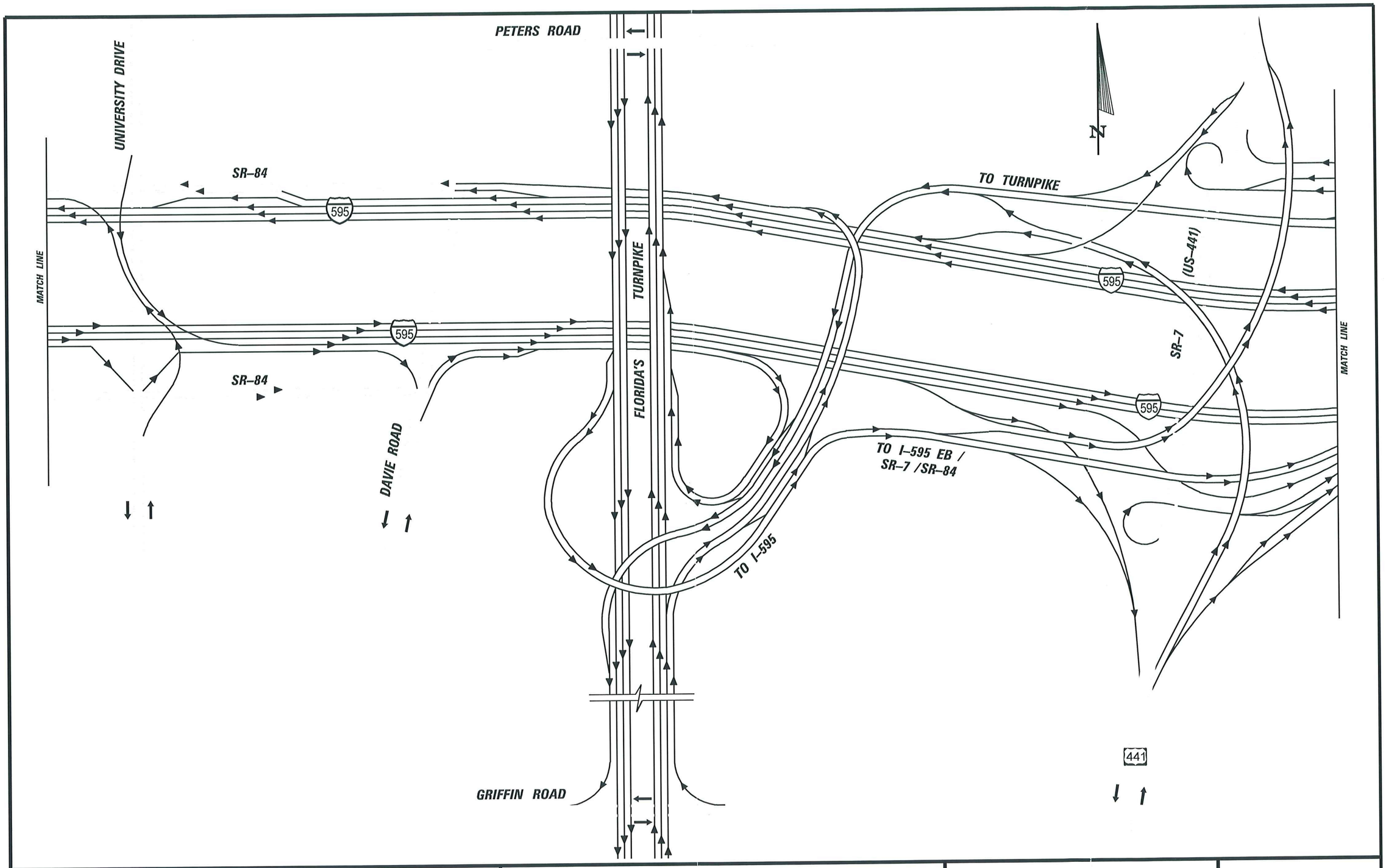
Figure 3-2 illustrates the lane configuration for the existing conditions. Site visits were performed to verify existing traffic characteristics such as travel speeds and lane distribution.

3.2.2 Existing Traffic Characteristics

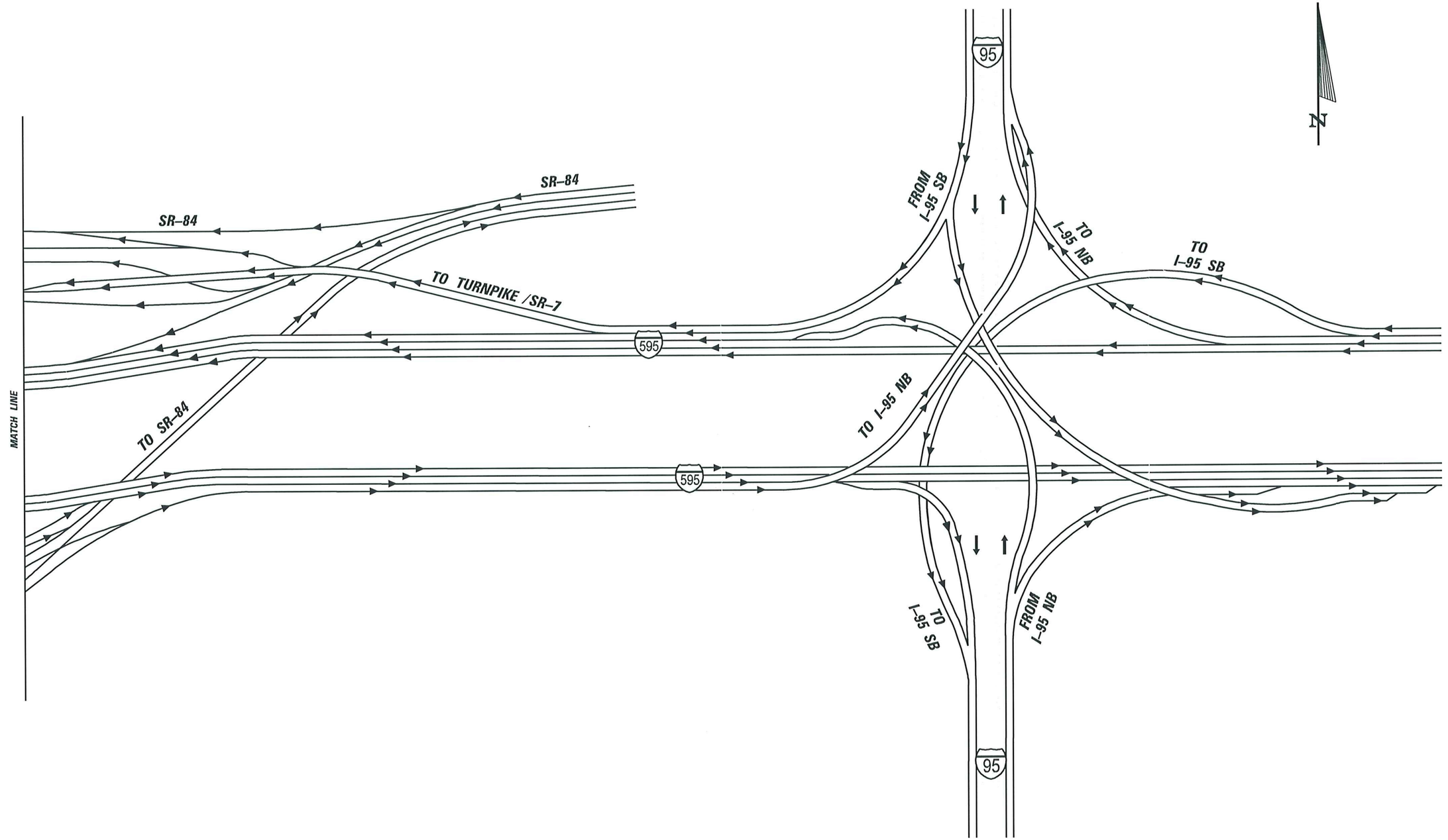
The traffic factors used in the I-95/I-595 Master Plan were reviewed for consistency with current conditions. It was determined that the traffic factors used in that study are still applicable. Therefore, the traffic factors used in this report will be the same factors that were used in the I-95/I-595 Master Plan Study and are shown in Table 3.1



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING CONDITIONS LINE DIAGRAM	FIGURE 3–2 1 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING CONDITIONS LINE DIAGRAM	FIGURE 3–2 2 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	EXISTING CONDITIONS LINE DIAGRAM	FIGURE 3–2 3 OF 3

Table 3.1
I-95/I-595 Master Plan Traffic Characteristics

Facility	K_{30} (%)	D_{30} (%)
I-595	8.75	56
I-95	7.8	51
SR-84	8.75	56

Source: I-95/I-595 Master Plan

The K factor is applied to the AADT to estimate the Design Hour Volumes (DHV). The D factor is the directional distribution. D is defined as the percentage of total two-way peak hour traffic, which occurs in the peak direction. D_{30} is the proportion of traffic in the 30th highest hour of the design traveling in the peak direction.

3.3 Existing Data Collection

3.3.1 Traffic

Data for mainline segments and ramps were collected from the Transportation Statistics Data Office. Twenty-four counts were obtained from Automatic Traffic Recording (ATR) devices installed in the mainline and ramps on I-595.

3.3.2 Crash Data

Existing crash data were obtained from the District for the 5-year period of 1997, 1998, 1999, 2000 and 2001 along the I-595 mainline within the area of influence.

3.4 Operational Analysis

3.4.1 Existing Traffic Operations

Existing levels of service for the I-595 mainline, ramp junctions, ramp roadways, and weaving sections were determined using the peak hour traffic volumes depicted in Figure 2-2(p.10-12) and analyzed with Version 4.1c of the 2000 Highway Capacity Manual Software (HCS). The analysis is consistent with the Methodology Letter of Understanding (MLOU) approved as part of the SIMR.

As specified in MLOU a driver population of 1.0 and Peak Hour factor of 0.95 were used in the analysis. Straight-line diagrams and field measurements were used to determine the distances between ramps as necessary for the analysis.

According to the minimum level of service criteria in *the 2002 Level of Service Handbook,* the minimum acceptable level of service for urban freeway facilities is Level of Service (LOS) D.

3.4.1.1 Freeway Segment Analysis

The I-595 mainline segments were analyzed using the "Basic Freeway Segments" module of HCS. The AM and PM peak period volumes detailed in Section 2.4 were used to analyze each direction. Factors that were critical in the level of service evaluation include number of lanes; interchange density, truck percentage, and free-flow speed (mph).

In the AM peak period, the eastbound segment between SR-7 and I-95 (viaduct) operates at a LOS F. During the PM peak, all segments on I-595 eastbound operate at LOS D or better.

In both peak periods, all segments on I-595 operate at a level of service D or better for the westbound direction.

The HCS results are summarized in Table 3.2. The computer worksheets are provided in Appendix B.

3.4.1.2 Ramp Merge/Diverge Analysis

The 2000 Highway Capacity Software was used to analyze nine merge and eight diverge areas within the I-595 study area. All the ramps in the study area were analyzed using HCS with the exception of the ramps to/from I-95, the eastbound SR-84 eastbound off-ramp, the SR-7 eastbound on-ramp, the westbound off-ramp to SR7/Turnpike, and the westbound off-ramp to University Drive on the I-595 mainline. On the Turnpike with the exception of the northbound off-ramp to I-595, the southbound on-ramp from I-595, the northbound on-ramp from Griffin Road, and the southbound off-ramp to Griffin Road, which are either add/drop lanes or classified as major merge/diverge areas.

Major diverge and merge areas are those where multiple lanes enter or exit the system without the presence of a clear ramp or acceleration/deceleration lanes. Therefore, these areas are beyond the capabilities of HCS. The appropriate methods of manual calculations detailed in the 2000 Highway Capacity Manual (HCM) were used to analyze these ramps. The HCM analysis for the major merge is limited to checking capacities on approaching legs and the departing freeway. The capacity of each entering leg and the departing freeway is computed using Exhibit 25-3(p.25-4) and Exhibit 25-7 (p.25-8). The major diverge analysis is computed using the LOS criteria's in Exhibit 25-4 (p.25-5) and Equation 25-12 (p25-17) in the HCM 2000.

Table 3.2
Existing Freeway Segment Analysis

I-595 Mainline

Location	Direction	LOS	
		AM	PM
West of SW 136th Avenue	EB	C	B
	WB	B	C
Viaduct (Between I-95 and SR-7/TPK)	EB	**F**	D
	WB	C	D
East of I-95	EB	C	B
	WB	B	C

All system merge or diverge movements analyzed operate at or above the minimum level of service standards, with the exception of the SR-7 off-ramp, Turnpike on-ramp and SR-7 on-ramp to I-595 eastbound during the AM peak period and, the SR-7 northbound on-ramp, the SR-84/Davie Rd on-ramp to I-595 westbound during the PM peak period. The computer worksheets are contained in Appendix B.

Table 3.3 summarizes the ramp analysis.

3.4.1.3 Ramp Roadway Analysis

The capacities of the ramp roadway were analyzed using the HCM Methodology. According to the HCS, the ramp capacity is 2,100 passenger cars per hour for a single lane ramp, and 4,100 passenger cars per hour for a two-lane ramp. Failure occurs when traffic exceeds capacity (v/c over 1.0). Tables 3.4 and 3.5 summarize the ramp hourly volumes and capacity analysis for the I-595 and Turnpike corridors. The analyses indicate that the demand does not exceed capacity on any ramp roadway.

3.4.1.4 Freeway Weaving Analysis

In the HCM weaving analysis, the capacity of a section is very much affected by the type of weaving. According to the 2000 HCM, there are three types namely: Type A, B and C weaving. The type of weaving analysis to be used is governed by the configuration of the weaving segment. In a Type A weaving configuration, all the weaving vehicles must make a one-lane change to complete their maneuver successfully and all lane changes occurs across a lane line that connects from the entrance gore area directly to the exit gore area. In a Type B weaving, one weaving movement may be made without making a lane change and the other weaving movement requires only one lane change. In a Type C configuration, one weaving movement may be made without making a lane change, and the other weaving movement requires two or more lane changes.

There are seven weaving segments in the I-595 eastbound direction, six weaving segments in the I-595 westbound direction and two weaving areas at the interchange of I-595 and the Turnpike. In the eastbound direction the weaving areas are located between the SW 136th Ave On-Ramp and Turnpike Off-Ramp. In the westbound direction the weaving areas are located between the Turnpike On-ramp and the SW 136th Ave Off-Ramp.

The two weaving sections at the interchange of I-595 and the Turnpike are I-595 ramps to Turnpike and Turnpike ramps to I-595. The fifteen weaving segments in the study area were analyzed using the 2000 Highway Capacity Software.

Table 3.3
Existing Ramp Merge/Diverge Level of Service

I-595

Location Eastbound		LOS	
		AM Peak	PM Peak
SR 7	Off	**F**	D
SR 84	Off (3)	D	C
Turnpike	On	**F**	D
SR 7	On (3)	**F**	D
I-95	To Northbound Off (2)	C	B
	To Southbound Off (2)	C	B
	From Northbound On (1)	UC	UC
	From Southbound On	A	A

Location Westbound		LOS	
		AM Peak	PM Peak
I-95	To Southbound Off (2)	B	B
	To Northbound Off (2)	B	B
	From Northbound On (1)	UC	UC
	From Southbound On (1)	UC	UC
SR 7/ TURNPIKE	Off (2)	B	B
SR 84	On	B	C
SR 7	From Southbound On	B	C
	From Northbound On	B	**F**
University Drive	Off (2)	C	C
SR 84 / Davie Road	On (From CD Rd)	**E**	**F**

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.
UC = Unconstrained CO = Constrained
(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-12 or Eq.25-10.
(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 3.3
Existing Ramp Merge/Diverge Level of Service

Turnpike

Location NB/SB		LOS	
		AM Peak	PM Peak
Griffin Road	Northbound On[3]	C	C
	Southbound Off [3]	B	C
I-595	Northbound Off [2]	B	B
	Northbound On	C	C
	Southbound Off[2]	C	B
	Southbound On [1]	UC	UC

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.
UC = Unconstrained CO = Constrained
(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-12 or Eq.25-10.
(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 3.4
Existing Ramp Roadway Capacity AM Conditions

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
SW 136th Ave	On	1	1,467	2,100	No
Flamingo Road	Off	1	480	2,100	No
Flamingo Road	On	1	1,289	2,100	No
Hiatus Road	Off	1	169	2,100	No
Hiatus Road	On	1	436	2,100	No
Nob Hill Road	Off	1	416	2,100	No
Nob Hill Road	On	1	870	2,100	No
Pine Island Road	Off	1	783	2,100	No
Pine Island Road	On	1	1,067	2,100	No
University Drive	Off	1	1,432	2,100	No
University Drive	On	2	2,214	4,100	No
Davie Road	Off	1	462	2,100	No
Davie Road	On	2	1,645	4,100	No
Turnpike	Off	2	1,740	4,100	No
SR 7	Off	1	847	2,100	No
SR 84	Off	1	623	2,100	No
Turnpike	On	1	1,454	2,100	No
SR 7	On	1	846	2,100	No
I-95 NB	Off	2	3,300	4,100	No
I-95 SB	Off	2	3,450	4,100	No
I-95 SB	On	2	1,200	4,100	No
I-95 NB	On	2	1,000	4,100	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-95 SB	Off	2	1,002	4,100	No
I-95 NB	Off	2	1,293	4,100	No
I-95 NB	On	2	2,128	4,100	No
I-95 SB	On	2	2,730	4,100	No
SR 7/Turnpike	Off	2	1,490	4,100	No
SR 84	On	1	809	2,100	No
SR 7 SB	On	1	747	2,100	No
SR 7 NB	On	1	480	2,100	No
Turnpike	On	2	1,560	4,100	No
Davie Road	Off	2	1,324	4,100	No
University Drive	Off	2	1,940	4,100	No
SR 84	On	1	791	2,100	No
University Drive	On	1	651	2,100	No
Pine Island Road	Off	2	1,002	4,100	No
Pine Island Road	On	1	1,002	2,100	No
Nob Hill Road	Off	1	824	2,100	No
Nob Hill Road	On	1	439	2,100	No
Hiatus Road	Off	1	329	2,100	No
Hiatus Road	On	1	178	2,100	No
Flamingo Road	Off	1	1,074	2,100	No
Flamingo Road	On	1	471	2,100	No
SW 136th Ave	Off	1	1,217	2,100	No

Table 3.4
Existing Ramp Roadway Capacity AM Conditions

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Road	On	1	674	2,100	No
I-595	Off	2	2,203	4,100	No
I-595	On	2	1,643	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	2,768	4,100	No
I-595	On	2	1,747	4,100	No
Griffin Road	Off	1	440	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 3.5
Existing Ramp Roadway Capacity PM Conditions

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity [1]	Over Capacity
SW 136th Ave	On	1	1,181	2,100	No
Flamingo Road	Off	1	480	2,100	No
Flamingo Road	On	1	1,038	2,100	No
Hiatus Road	Off	1	136	2,100	No
Hiatus Road	On	1	351	2,100	No
Nob Hill Road	Off	1	403	2,100	No
Nob Hill Road	On	1	790	2,100	No
Pine Island Road	Off	1	630	2,100	No
Pine Island Road	On	1	859	2,100	No
University Drive	Off	1	1,779	2,100	No
University Drive	On	2	1,782	4,100	No
Davie Road	Off	1	372	2,100	No
Davie Road	On	2	1,324	4,100	No
Turnpike	Off	2	1,400	4,100	No
SR 7	Off	1	673	2,100	No
SR 84	Off	1	774	2,100	No
Turnpike	On	1	1,126	2,100	No
SR 7	On	1	665	2,100	No
I-95 NB	Off	2	2,400	4,100	No
I-95 SB	Off	2	2,670	4,100	No
I-95 SB	On	2	1,043	4,100	No
I-95 NB	On	2	918	4,100	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity [1]	Over Capacity
I-95 SB	Off	2	1,293	4,100	No
I-95 NB	Off	2	960	4,100	No
I-95 NB	On	2	2,550	4,100	No
I-95 SB	On	2	3,400	4,100	No
SR 7/Turnpike	Off	2	1,875	4,100	No
SR 84	On	1	1,045	2,100	No
SR 7 SB	On	1	601	2,100	No
SR 7 NB	On	1	596	2,100	No
Turnpike	On	2	1,840	4,100	No
Davie Road	Off	2	1,645	4,100	No
University Drive	Off	2	1,618	4,100	No
SR 84	On	1	637	2,100	No
University Drive	On	1	810	2,100	No
Pine Island Road	Off	2	1,400	4,100	No
Pine Island Road	On	1	1,250	2,100	No
Nob Hill Road	Off	1	1,080	2,100	No
Nob Hill Road	On	1	420	2,100	No
Hiatus Road	Off	1	410	2,100	No
Hiatus Road	On	1	150	2,100	No
Flamingo Road	Off	1	1,340	2,100	No
Flamingo Road	On	1	389	2,100	No
SW 136th Ave	Off	1	1,512	2,100	No

Table 3.5
Existing Ramp Roadway Capacity PM Conditions

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Road	On	1	397	2,100	No
I-595	Off	2	1,704	4,100	No
I-595	On	2	1,809	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	2,112	4,100	No
I-595	On	2	2,303	4,100	No
Griffin Road	Off	1	594	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Based on the analysis, all the weaving segments in the eastbound direction operate at unacceptable LOS during the AM peak period. During the PM peak period, two weaving areas operate at unacceptable level of service in the eastbound direction. These areas are between Nob Hill Road and Pine Island Road and between Pine Island Road and University Drive

In the westbound direction 5 of the 6 weaving segments operate at an unacceptable LOS during the AM Peak period. In the PM peak period all the weaving segments fail.

At the interchange of I-595/Turnpike the analysis shows that the I-595 ramps to Turnpike operate at LOS D in the AM peak hour and LOS E in the PM peak hour and the Turnpike off-ramps to I-595 operate at LOS F in the AM peak period and LOS E in the PM Peak period. Table 3.6 summarizes the weaving analysis.

The HCS output worksheets are contained in Appendix B. The level of service for the system during the AM peak period and the PM peak period are depicted in Figure 3.3.

3.4.1.5 Intersection Analysis

The intersection capacity analyses results shown in Table 3.7 indicate that during the AM peak hour Nob Hill Road, Pine Island Road, University Drive and Davie Road all have ramp termini intersections operating at a LOS E or lower in the eastbound direction. The following intersections with interchange ramp termini are operating at a LOS F:

- Nob Hill Road/I-595 eastbound ramps (AM)
- Pine Island Road/I-595 eastbound ramps (AM)

During the PM peak period, the intersection of Pine Island Road/I-595 westbound ramp operates at a LOS F, the intersection of Davie Road/I-595 westbound ramp operates at a LOS E and the intersection of SW 136th Avenue/I-595 westbound ramps operates at a LOS E.

The HCS computer worksheets are contained in Appendix B.

Table 3.6
Existing Freeway Weaving Level of Service

I-595

Eastbound

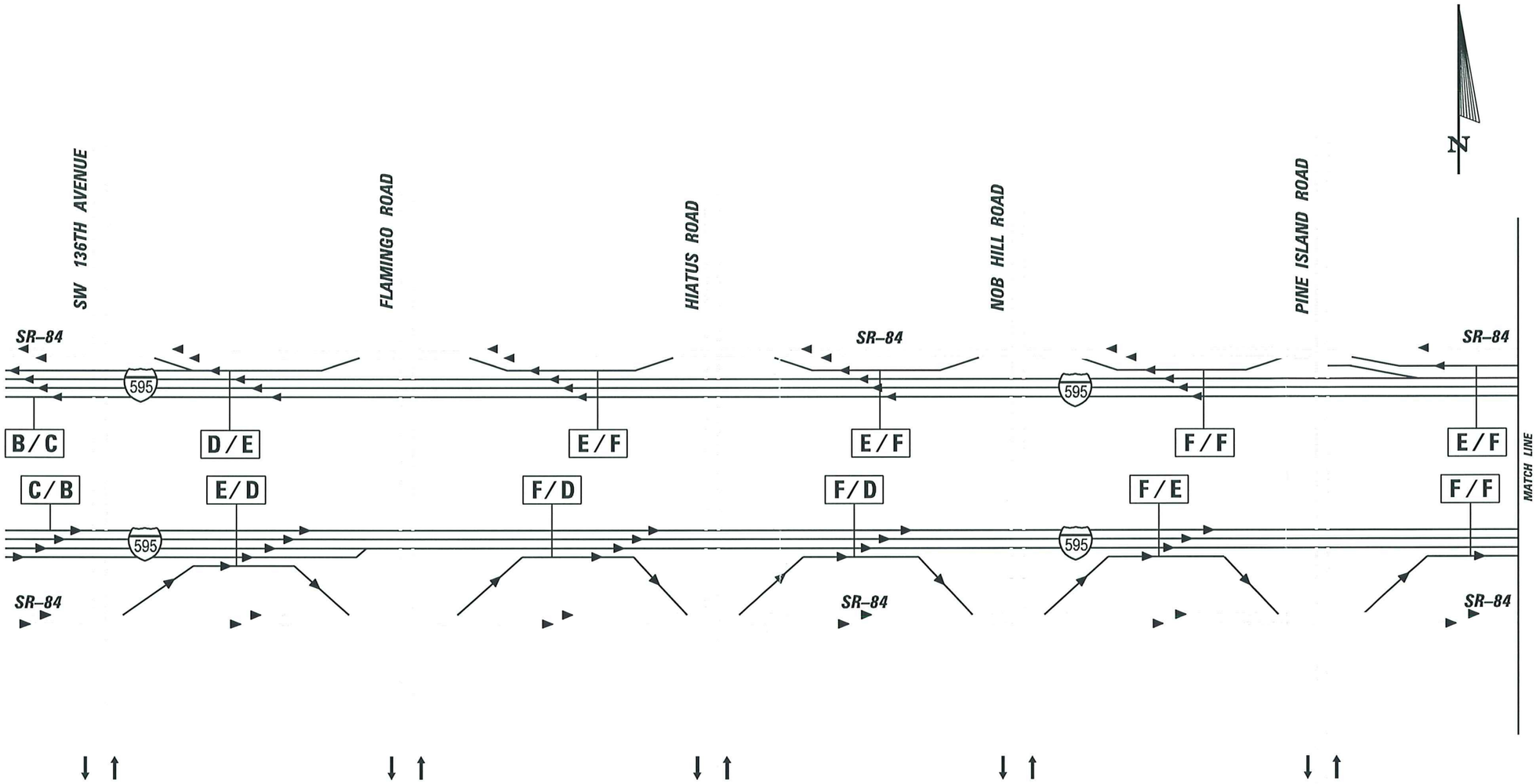
Location	LOS	
	AM Peak	PM Peak
Between SW 136th Ave and Flamingo Road	**E**	D
Between Flamingo Road and Hiatus Road	**F**	D
Between Hiatus Road and Nob Hill Road	**F**	D
Between Nob Hill Road and Pine Island Road	**F**	**E**
Between Pine Island Road and University Drive	**F**	**F**
Between University Drive and Davie Road	**E**	C
Between Davie Road and Turnpike	**F**	D

Westbound

Location	LOS	
	AM Peak	PM Peak
Between Turnpike and Davie Road	**E**	**F**
Between University Drive and Pine Island Road	**E**	**F**
Between Pine Island Road and Nob Hill Road	**F**	**F**
Between Nob Hill Road and Hiatus Road	**E**	**F**
Between Hiatus Road and Flamingo Road	**E**	**F**
Between Flamingo Road and SW 136th Ave	D	**E**

Turnpike

Location	LOS	
	AM Peak	PM Peak
I-595 to Turnpike	D	**E**
Turnpike to I-595	**F**	**E**



LEGEND

E/D	LOS AM/PM
UC	UNCONSTRAINED

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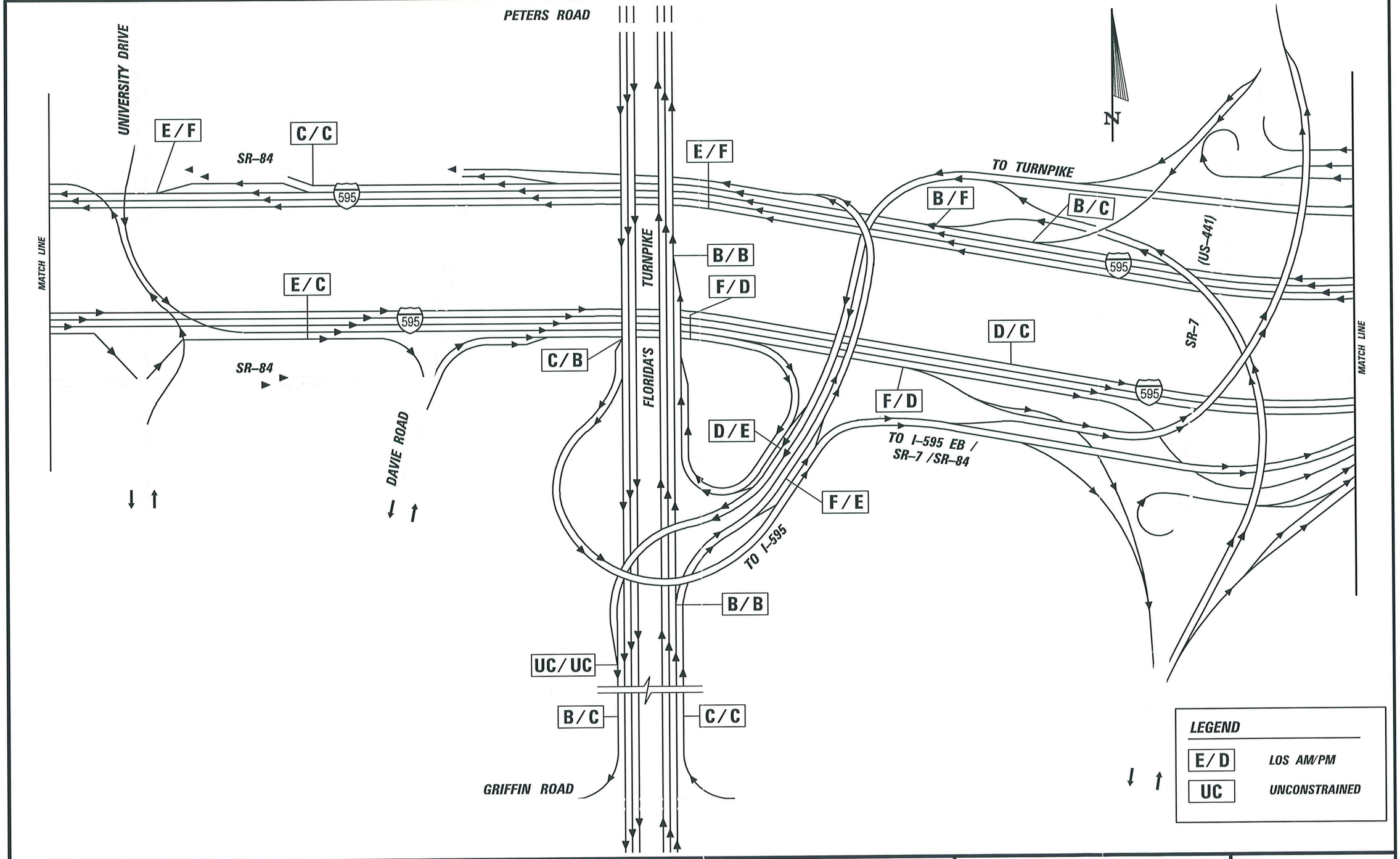

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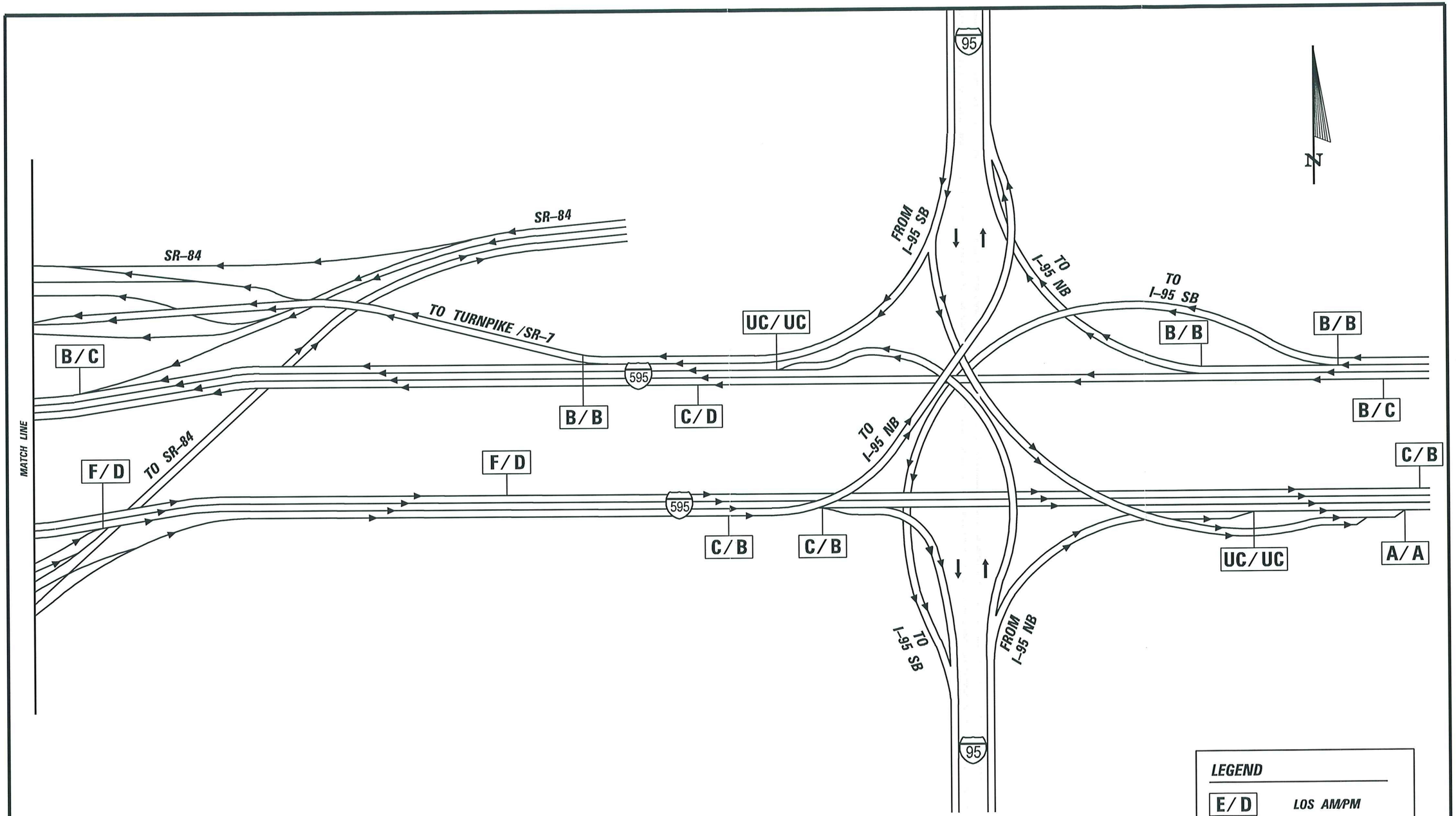

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Table 3.7
Existing Intersection Level of Service

SR 84 EB

Location	LOS		Delay	
	AM	PM	AM	PM
SW 136th Avenue	C	C	33.4	32.9
Flamingo Road	D	C	41.0	21.9
Hiatus Road	D	C	36.1	20.9
Nob Hill Road	**F**	C	**146.1**	30.6
Pine Island Road	**F**	C	**92.5**	33.3
University Drive	**E**	C	**69.1**	29.4
Davie Road	**E**	D	**61.5**	53.1

SR 84 WB

Location	LOS		Delay	
	AM	PM	AM	PM
SW 136th Avenue	B	**E**	18.5	**67.8**
Flamingo Road	B	B	16.4	16.9
Hiatus Road	C	C	20.0	26.5
Nob Hill Road	C	C	27.9	32.3
Pine Island Road	C	**F**	26.1	**98.8**
University Drive	C	C	27.4	29.2
Davie Road	D	**E**	40.2	**55.1**

3.4.2 Existing Accident Data

A crash analysis was performed for the I-595 mainline using crash data obtained from FDOT for 1997 through 2001. For purposes of the crash analysis, the project was divided into six segments: SW 136th Ave to Hiatus Road, Hiatus Road to Nob Hill Road, Nob Hill Road to University Drive, University Drive to Davie Road, Davie Road to SR-7 and SR-7 to I-95. Segmental safety ratio analyses, based on the FDOT Highway Safety Improvement Program Guideline Topic No.500-000-100-c were completed for each year of data in order to determine if the roadway is a high accident segment.). The safety ratio is an indicator of whether a section of roadway is a high crash segment. The safety ratio is determined by dividing the actual crash rate by the critical crash rate. The critical crash rate is based on national crash rates for particular types of roadway. If the safety ratio exceeds 1.0, then the segment is considered a high crash location.

There were a total of 1,530 crashes recorded between January 1997 and December 2001. These crashes resulted in 1,319 injuries and 19 fatalities. Table 3.8 summarizes the total crashes by type that occurred along the segment from 1997 to 2001. Table 3.9 indicates that this segment of I-595 had “Safety Ratios” less than 1.0 for the five consecutive years (1997-2001).

The highest year was 1998 with 354 crashes and the lowest year was 1997 with 259 crashes recorded. The most common type of crash was rear-end collision which accounted for 41.6% of all crashes recorded. The number and type of these accidents can be attributed to traffic conditions associated with the peak period traffic volumes, the ramp lane reductions and the merge conditions.

Table 3.10 through 3.21 summarizes the segment crash data analysis for I-595 mainlines within the project area and are contained in Appendix A. The segment in which most crash occurred was between Davie Road and SR-7. In this segment the interchange with Turnpike and the interchange with SR-7 are present creating changes in lanes. The complexity of the geometry along this area can be attributed to these crashes.

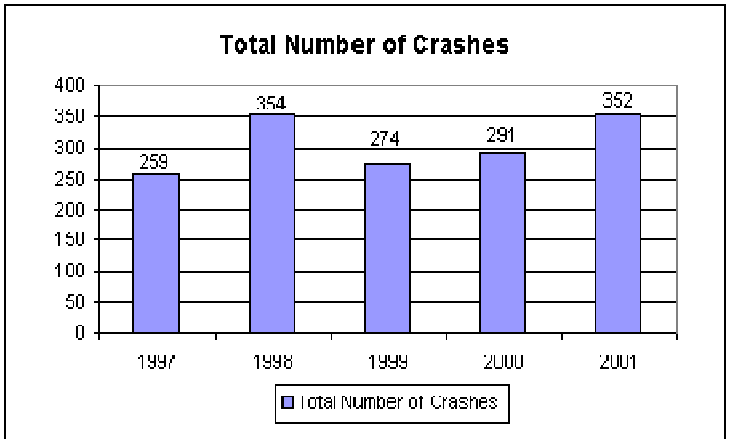
The most frequent type of crash was rear-end collision which is often indicative of careless driving, high travel speeds, lane changes and high levels or congestions.

Table 3.8
Crash Summary
I-595, From I-75 to East of I-95

	Number of Crashes per Harmful Event	1997	1998	1999	2000	2001	Total	Percentage	Average
1	Collision Rear-End	100	145	108	137	147	637	41.6%	127.4
2	Collision Head-On	3	3		1	3	10	0.7%	2.0
3	Collision Angle	24	35	27	25	42	153	10.0%	30.6
4	Collision Left Turn		1				1	0.1%	0.2
5	Collision Right Turn						–	–	
6	Collision Sideswipe	38	46	45	43	44	216	14.1%	43.2
7	Collision Backed Into					1	1	0.1%	0.2
8	Collision Parked Car	6		1	3	2	12	0.8%	2.4
9	Collision with Moving Vehicle in other road	1					1	0.1%	0.2
10	Collision with Pedestrian		1	1	1		3	0.2%	0.6
11	Collision with Bicycle			1			1	0.1%	0.2
12	Collision with Bicycle in bike lane						–	–	
13	Collision with Moped						–	–	
14	Collision with Train						–	–	
15	Collision with Animal		1				1	0.1%	0.2
16	Moving Vehicle head on with Sign/Sign Post	4	3	6	2	2	17	1.1%	3.4
17	Moving Vehicle head on with Utility Pole/Light Pole	1		1			2	0.1%	0.4
18	Moving Vehicle head on with Guardrail	8	18	15	11	11	63	4.1%	12.6
19	Moving Vehicle head on with Fence	1	3	2	2	4	12	0.8%	2.4
20	Moving Vehicle head on with Concrete Barrier Wall	25	42	24	22	43	156	10.2%	31.2
21	Moving Vehicle head on with Bridge/Pier/Abutment	4	3			1	8	0.5%	1.6
22	Moving Vehicle head on with Tree/Shrub		2				2	0.1%	0.4
23	Collision with Construction Barricade/Sign						–	–	
24	Collision with Traffic Gate						–	–	
25	Collision with Crash Attenuators	1					1	0.1%	0.2
26	Collision with Fixed Object above Road			1			1	0.1%	0.2
27	Moving Vehicle head on with Other Fixed Object	1	1	1			3	0.2%	0.6
28	Collision with Moveable Object on Road	6	17	11	11	13	58	3.8%	11.6
29	Moving Vehicle ran into Ditch/Culvert	5	6	3	4	4	22	1.4%	4.4
30	Ran off Road into Water	2	2	2	1		7	0.5%	1.4
31	Overturned	8	10	11	9	20	58	3.8%	11.6
32	Occupant fell from Vehicle		1				1	0.1%	0.2
33	Tractor/Trailer Jackknifed	1	2		1		4	0.3%	0.8
34	Fire						–	–	
35	Explosion						–	–	
77	Other	18	10	13	13	15	69	4.5%	13.8
88	Unknown	2	2	1	5		10	0.7%	2.0
	Total	259	354	274	291	352	1530	100.0%	**306.0**

Table 3.9
Safety Ratio Analysis
I-595, From I-75 to East of I-95

Year	Total Number of Crashes	ADT (vpd)	Segment Length (mi)	Actual Crash Rate	Average Crash Rate	Ave. Veh. Exposure (million veh mi.)	K	Critical Crash Rate	Safety Ratio	Total # of Injuries	Total # of Fatalities	Property Damage Crashes	Total Economic Loss
1997	259	135,700	11.200	0.467	1.282	554.74	3.291	1.439	0.324	214	0	114	$ 21,652,400
1998	354	149,100	11.200	0.581	1.282	609.52	3.291	1.432	0.406	289	6	152	$ 29,594,400
1999	274	140,400	11.200	0.477	1.282	573.96	3.291	1.437	0.332	240	5	119	$ 22,906,400
2000	291	143,000	11.200	0.498	1.282	584.58	3.291	1.435	0.347	264	5	128	$ 24,327,600
2001	352	170,700	11.200	0.504	1.282	697.82	3.291	1.422	0.355	312	3	145	$ 29,427,200
Average:	306	147780		0.505		604.12		1.433	0.353	264	4	131	$ 25,581,600



4.0 FUTURE YEARS CONDITIONS

This section documents the future conditions within the area of influence. The discussion encompasses development of traffic forecasts and analysis of future traffic operations on the existing committed transportation system. The Locally Preferred Alternative (LPA) was developed during the I-95/I-595 Master plan. Under this SIMR the LPA is revised to accommodate future traffic. The analysis years considered in the SIMR are Opening Year 2014, Interim Year 2024 and Design Year 2034. The Interim Year (2024) was the first year I-595, within the study area fell below an adequate level of service.

4.1 Future Land Use

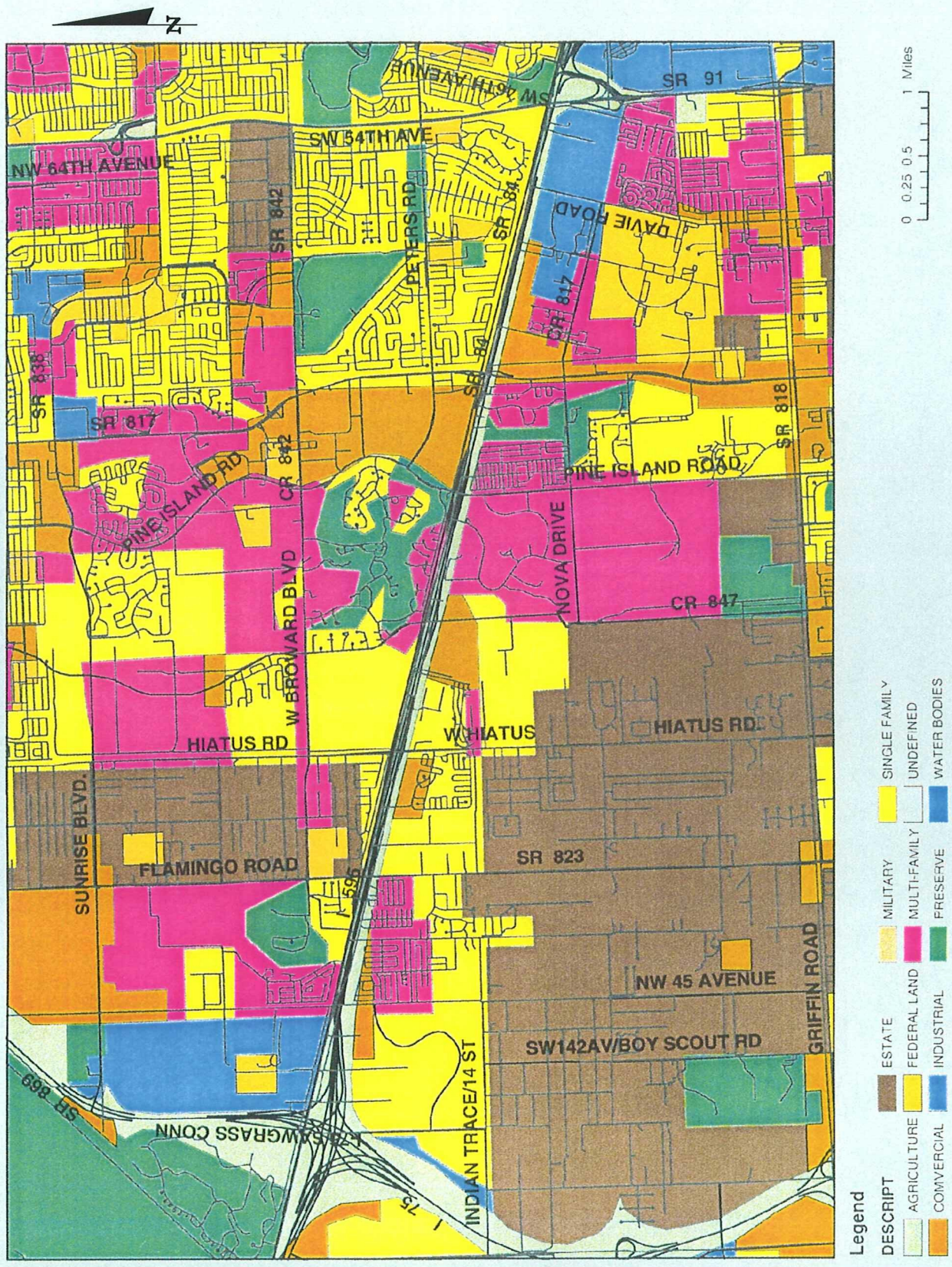
Within the study area of influence, the Broward County Metropolitan Planning Organization data reflect continued mixed-use development. These changes were considered as part of the future traffic development through the transportation modeling process. Figure 4-1 illustrates the future land use within the area of influence.

4.2 Future Roadway Network

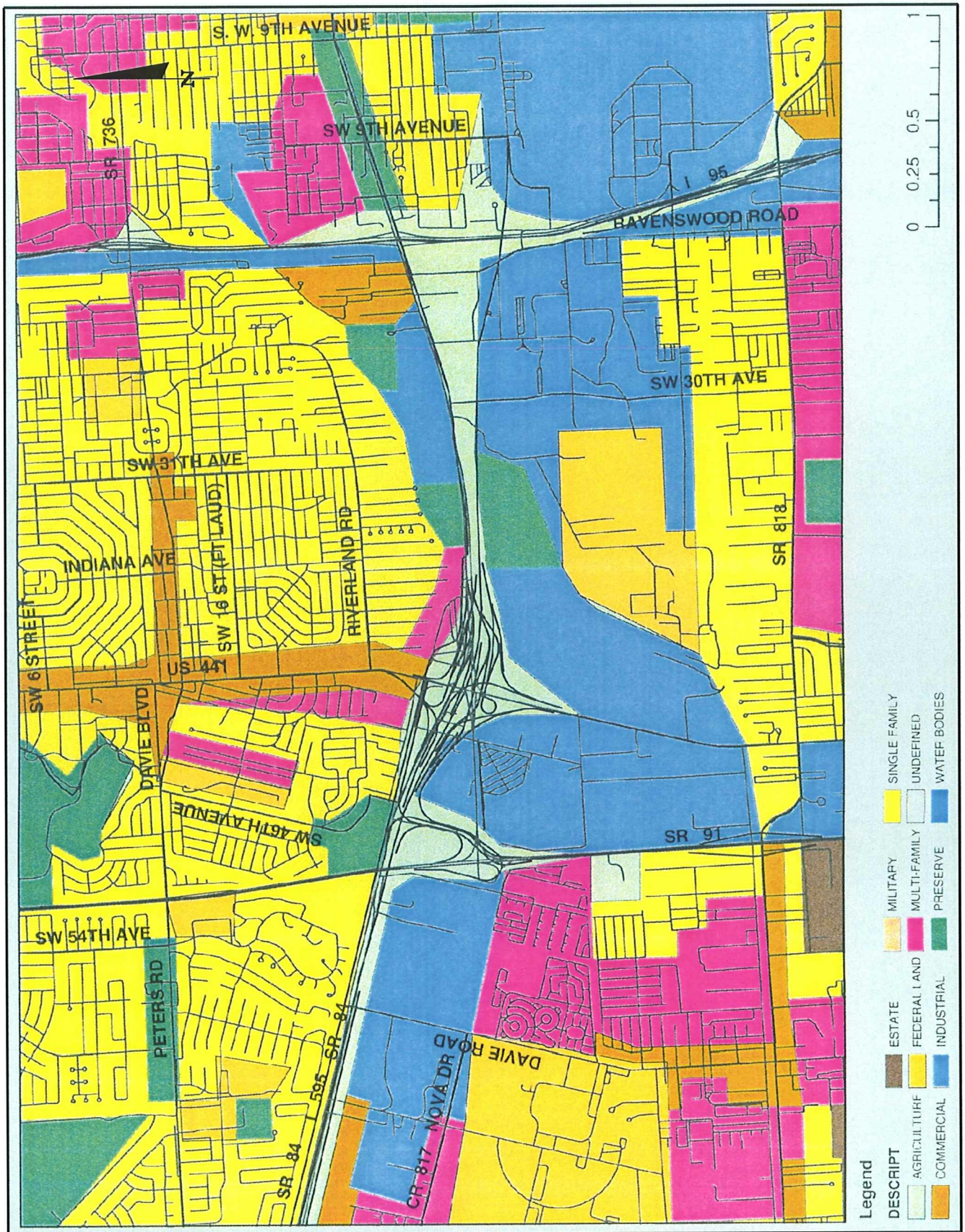
The future roadway network in this SIMR is consistent with the 10-year FIHS Cost Feasible Plan and the 2020 Long Range Transportation Plan. These improvements were considered as part of the Southeast Regional Planning Model modeling.

The No Build Alternative describes the conditions that will exist in the opening year (2014) if no improvements are considered. The conditions that must be described include, at a minimum, the operating conditions along the mainline and at ramp terminals and within the Area of Influence. Since the modification for any interchange proposal is based on a comparison of the No Build and Build Alternatives, identification of the network that is considered in the No Build Alternative in each analysis year is required.

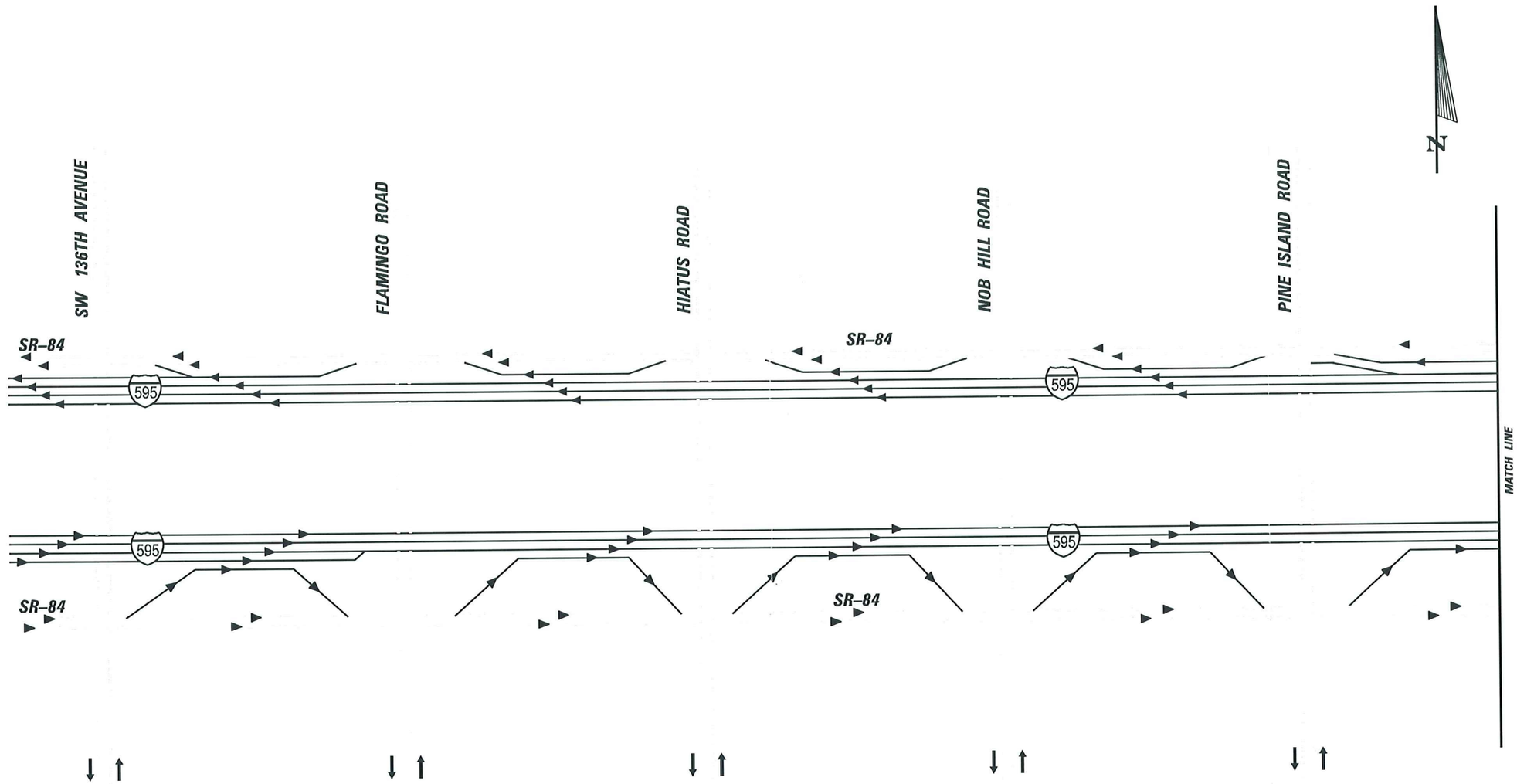
The No Build Alternative must contain the existing transportation network and any funded planned or programmed improvements open to traffic in the analysis year. The No Build Alternative will include only those improvements that are elements of the MPO Transportation Improvement Program, the MPO Long Range Transportation Plan (LRTP), the Department's Adopted Five Year Work Program, local government comprehensive plans, or development mitigation improvement projects that are elements of approved development orders. The I-595 causeway and SB to WB and NB to WB ramp improvements are in the LRTP and the District Four 5-year work program. Figure 4-2 presents the lane configuration in the study area for the No Build Alternative.



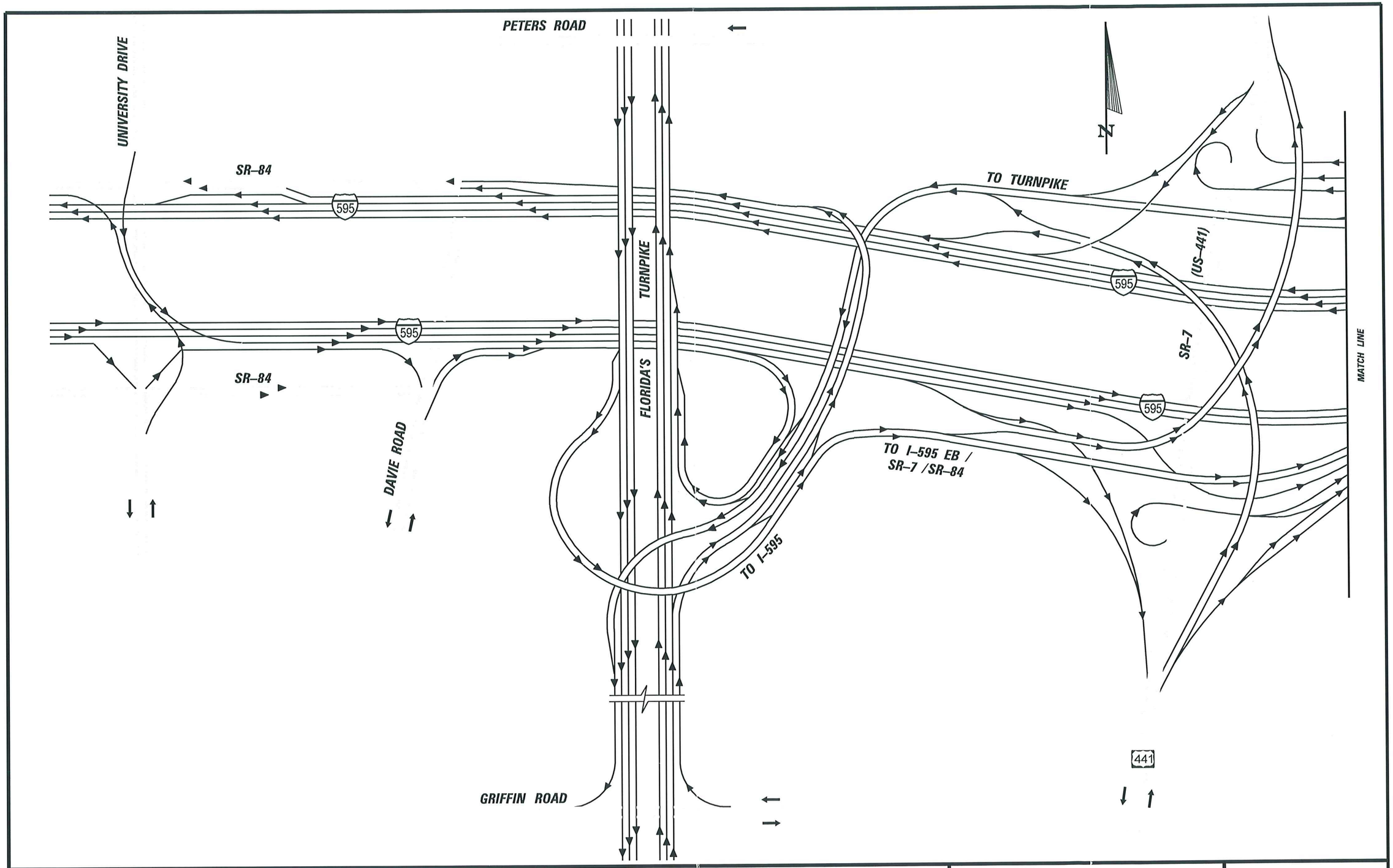
RS+H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I-595 SYSTEMS INTERCHANGE MODIFICATION REPORT (FROM I-75 TO DAVIE ROAD)	FUTURE LAND USE	FIGURE 4-1 1 OF 2



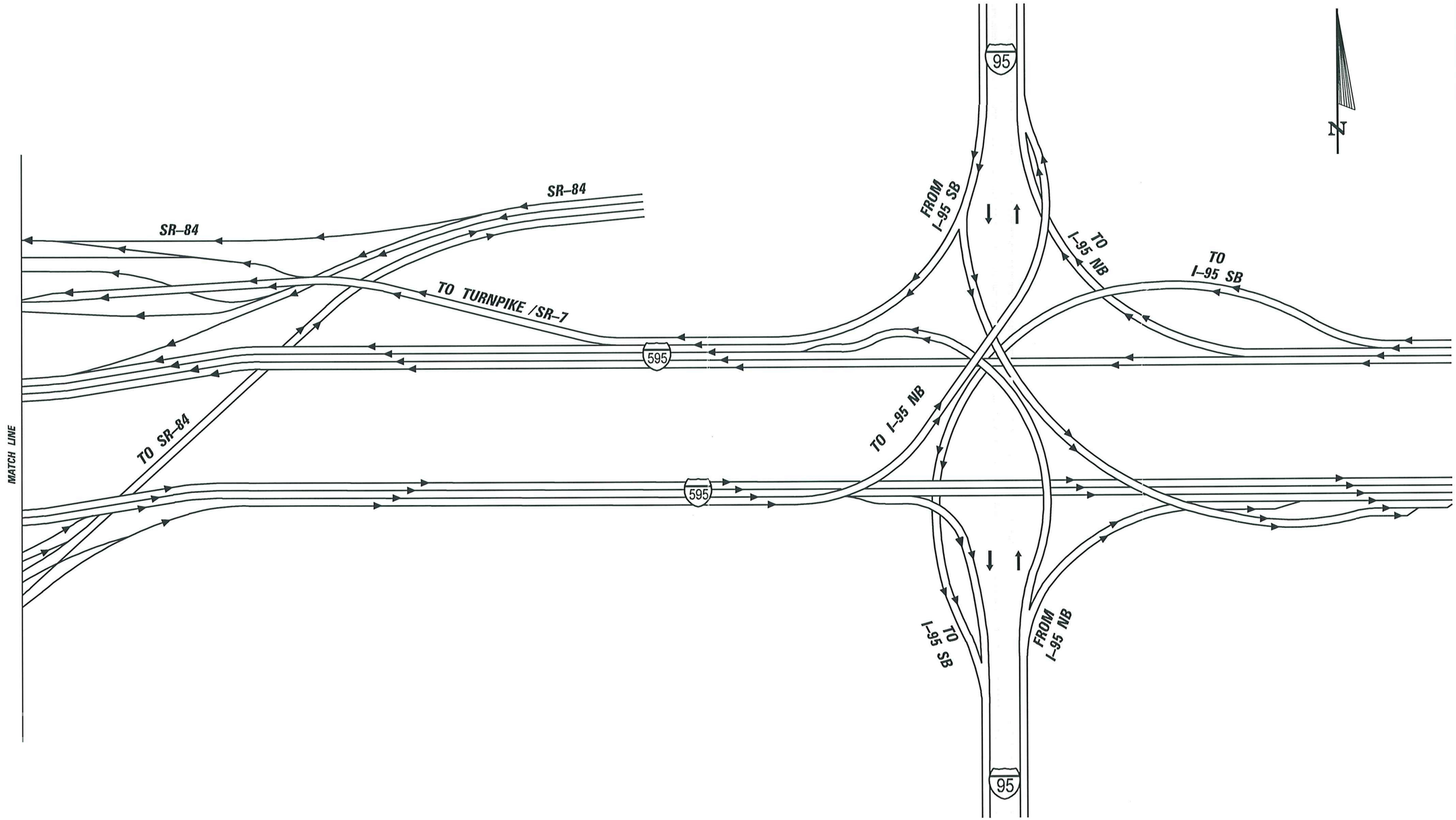
RS+H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I-595 SYSTEMS INTERCHANGE MODIFICATION REPORT (FROM DAVIE ROAD TO I-95)	FUTURE LAND USE	FIGURE 4-1 2 OF 2



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEM INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD LINE DIAGRAM	FIGURE 4–2 1 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD LINE DIAGRAM	FIGURE 4–2 2 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD LINE DIAGRAM	FIGURE 4–2 3 OF 3

4.3 Network Model

The Southeast Regional Planning Model, Version 4 (SERPM-4) was used as the base model for the I-95/I-595 Master Plan. 2020 DDHV for No-Build and As-Planned scenarios, as well as 2020 AM and PM peak hour volumes for the LPA were developed from the model.

SERPM is a derivative of the Florida Statewide Urban Transportation Modeling System (FSUTMS), which serves as the standard set of programs for modeling urban areas with the State of Florida. FSUTMS follows the standard four-step travel forecasting procedure consisting of trip generation, trip distribution, modal split and travel assignment. This model is the approved, validated model provided by the Department.

The 2002 and 2020 As-Planned forecasts were used to interpolate for 2014 Build conditions. In order to determine when the LPA should begin implementation, an interim year analysis was conducted to identify the year that the Phase I improvements are expected to fail. This will be when the mainline level of service (LOS) falls below LOS D.

4.4 Future Year Traffic Forecasts Methodology

4.4.1 I-595 Mainline and Ramps

The Southeast Regional Planning Model (SERPM) was used during the Master Plan to develop 2020 DDHV for No Build and As-Planned scenarios, as well as 2020 AM and PM peak hour volumes for the LPA. It is important that the forecasting for the SIMR be based on the Master Plan forecasts in order to maintain consistency with the forecasted traffic that the Master Plan recommendations have been based on.

The 2002 and 2020 No Build volumes were used to interpolate for opening year (2014) No Build conditions. The 2002 and 2020 As-Planned volumes were used to interpolate for opening year (2014) Build conditions. The design year 2034 volumes were developed by projecting the 2020 LPA forecasts outward applying a 1.5% compounded annually growth rate to 2024 and 1.0% compounded annually to 2034. These factors were approved by the Department. A 1.5% growth rate was consistent with historical data from I-95 north of Oakland Park Boulevard. A 1.0% growth rate beyond system failure (LOS E) is the standard in-house percentage used for facilities of this type. The travel demand forecast for this report is in accordance with the Interchange Handbook.

4.4.1.1 2014 No Build Volumes

1. The 2014 AADT were obtained by interpolating the 2002 AADT and the 2020 No Build AADT from the Master Plan.
2. The mainline segments were obtained by interpolating the 2020 No Build Alternative (DDHV) from the Master Plan.
3. The DDHV for the ramps were not available from the Master Plan. Therefore, the 2020 As-Planned DHV for selected ramps were used to obtain the No Build scenario.
4. The ramp volumes were obtained by interpolating the 2002 with the 2020 As-Planed DHV for the west section up to Nob Hill Road, and to the east of I-95.
5. The control points were set to be the segment between SW 136th Avenue and Flamingo Road to the west and the segment east of I-95.
6. The volumes were balanced and checked for any inconsistency with the existing 2002 volumes.

A projection of the weaving movements at I-595 to and from Davie Road and at the Turnpike to and from I-595 was developed for the 2014 No Build Alternative using the 2002 data as a base. The opening year 2014 volumes for the AM and PM peak hours are shown in Figure 4-3.

4.4.1.2 2014 Build Volumes

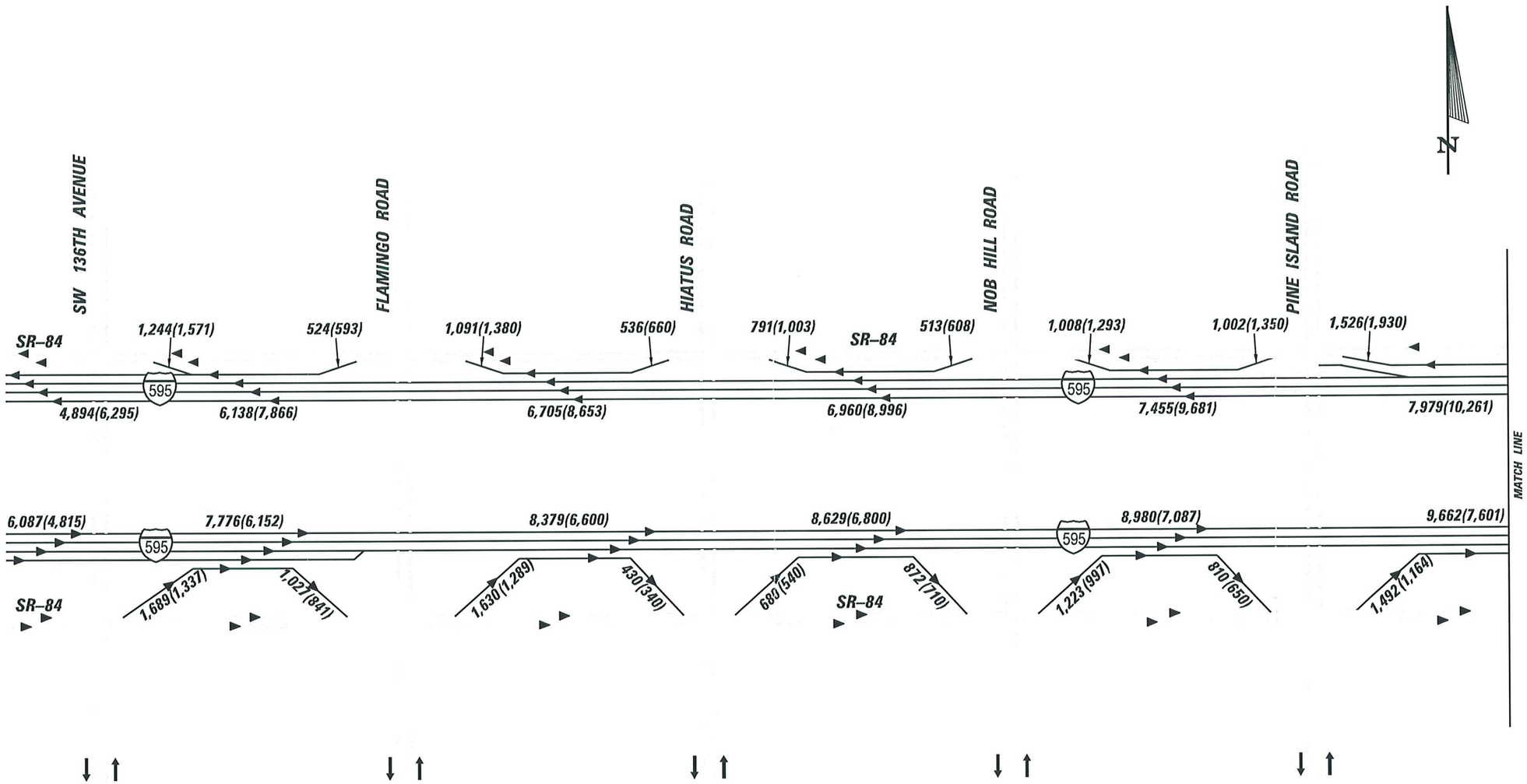
1. The 2014 AADT were obtained by interpolating the 2002 AADT with the 2020 AADT for the As-Planned Alternative.
2. The ramp and mainline segments DDHV were obtained by interpolating the 2002 with the 2020 As-Planned Alternative.
3. The control points were assumed to be the mainline segment west of SW 136th Avenue and to the east of I-95.
4. At the proposed improvements, the volumes were checked for reasonableness and compared with the No Build and existing scenario.
5. All volumes were checked for reasonableness and balanced for the operational analysis

The use of interpolation to estimate 2014 volumes assumes that all future roadway improvements are open to traffic by the year 2014 and traffic increases linearly over the entire time period. The 2014 Build Peak volumes were calculated by interpolating the existing 2002 and 2020 As-Planned volumes. Figure 4-4 illustrates the AM and PM Peak volumes for the 2014 Build Alternative.

4.4.1.3 2034 Design Volumes

The AADT were calculated by applying two growth factors to the 2020 LPA AADT from the Master Plan. The growth rates were as follows:

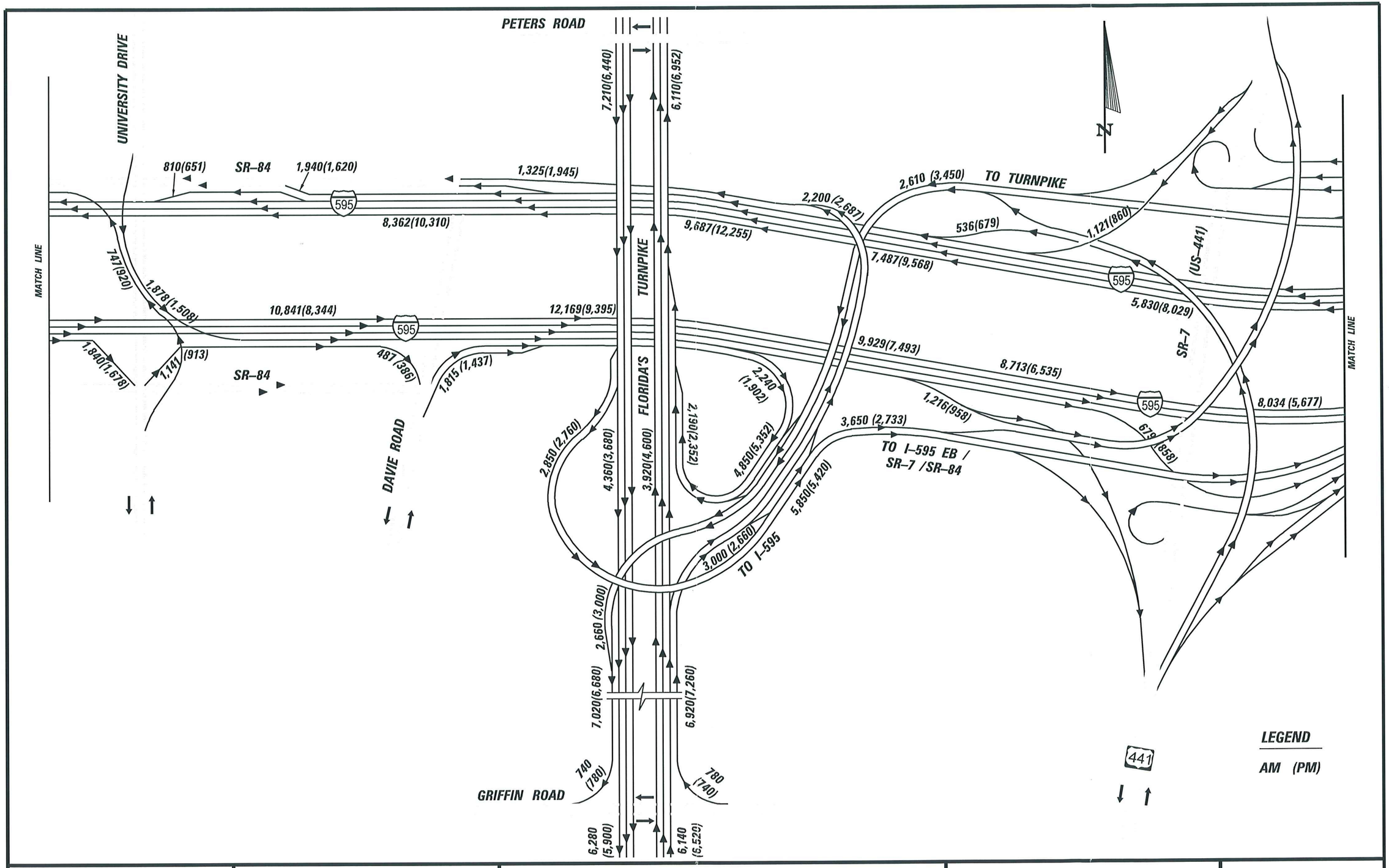
1. From 2020-2024: 1.5%
2. From 2024-2034: 1.0%



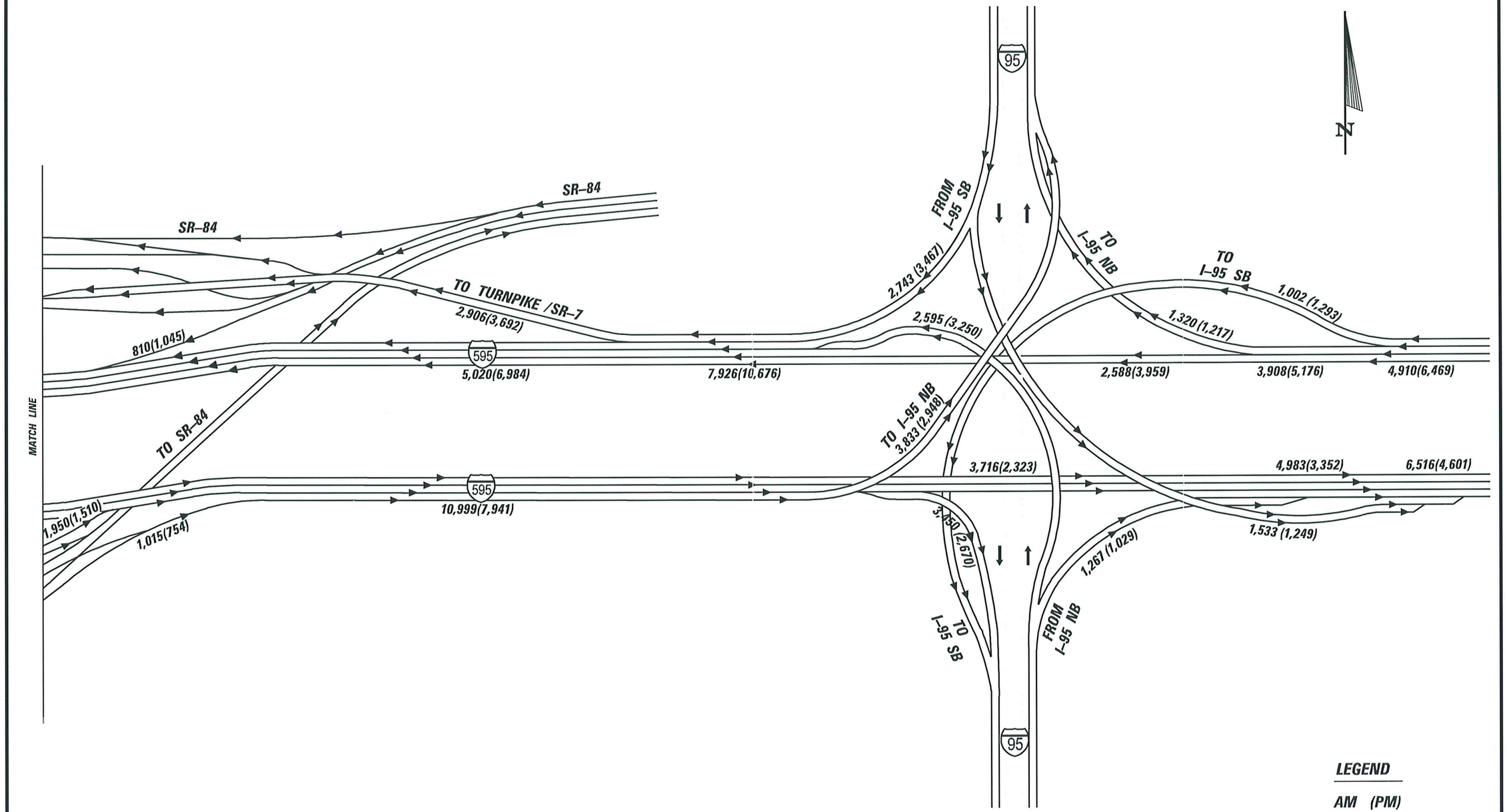
LEGEND

AM (PM)

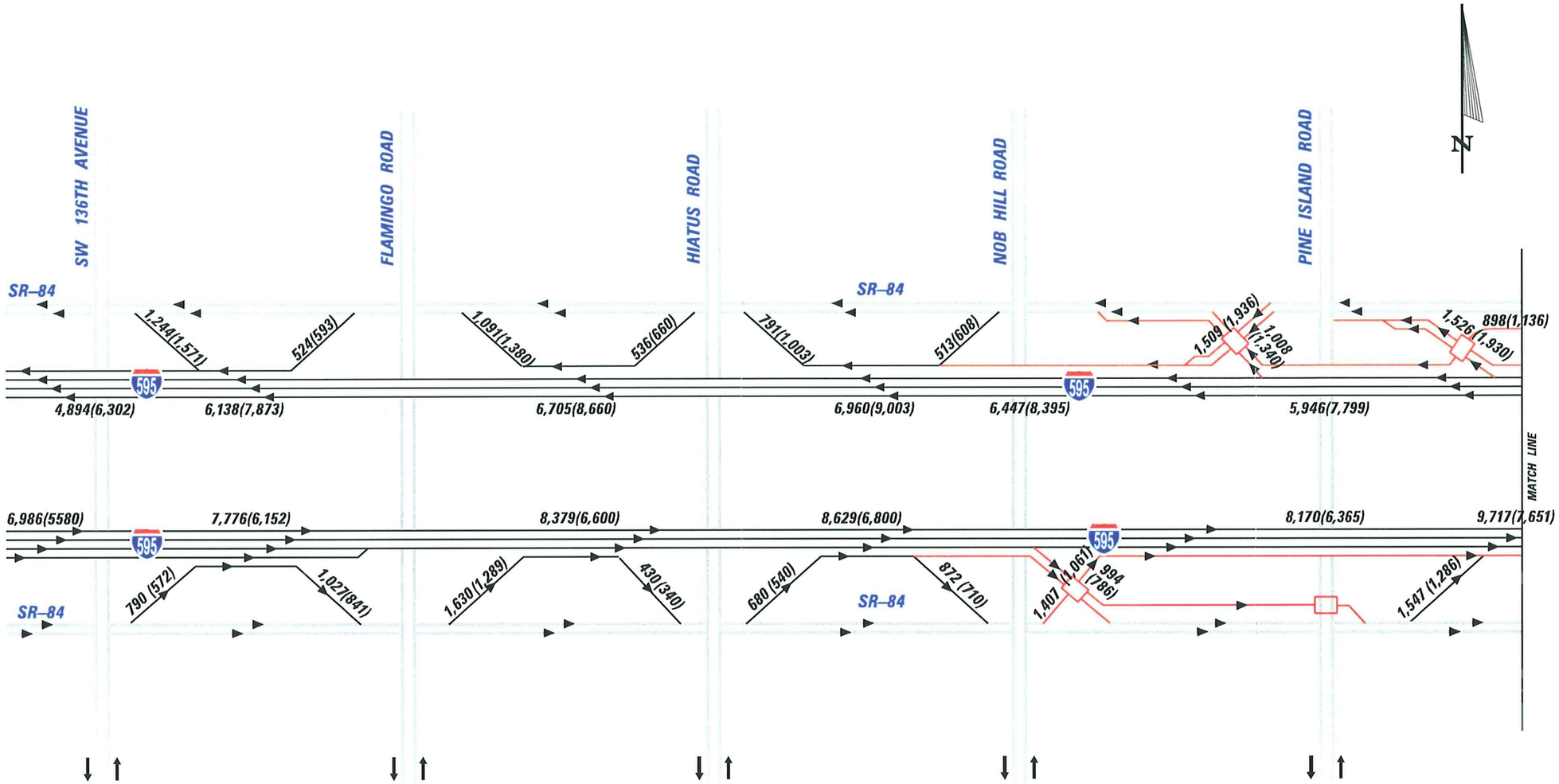
RS&H Reynolds, Smith and Hills, Inc.	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD VOLUMES	FIGURE 4–3 1 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD VOLUMES	FIGURE 4–3 2 OF 3



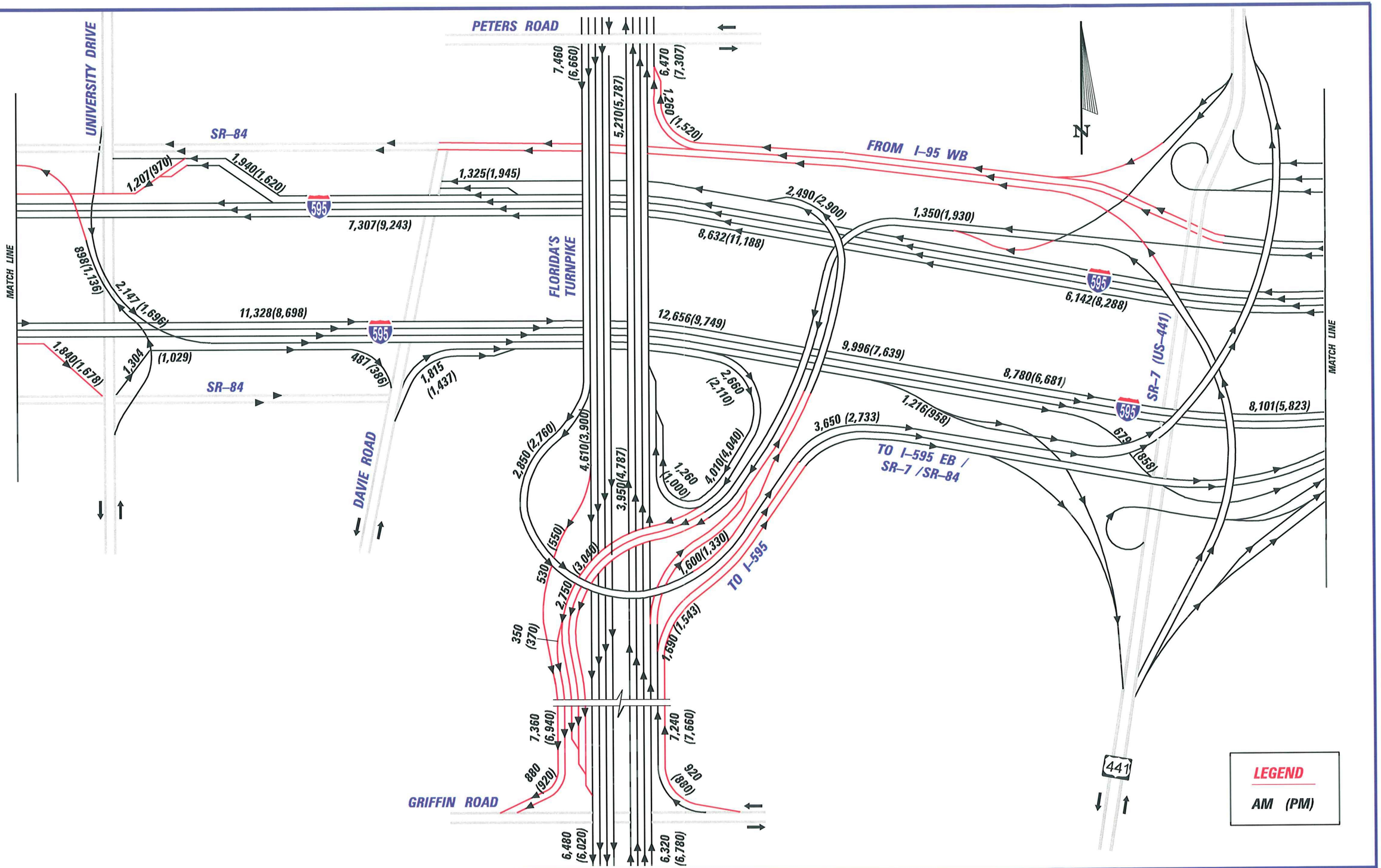
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD VOLUMES	FIGURE 4–3 3 OF 3



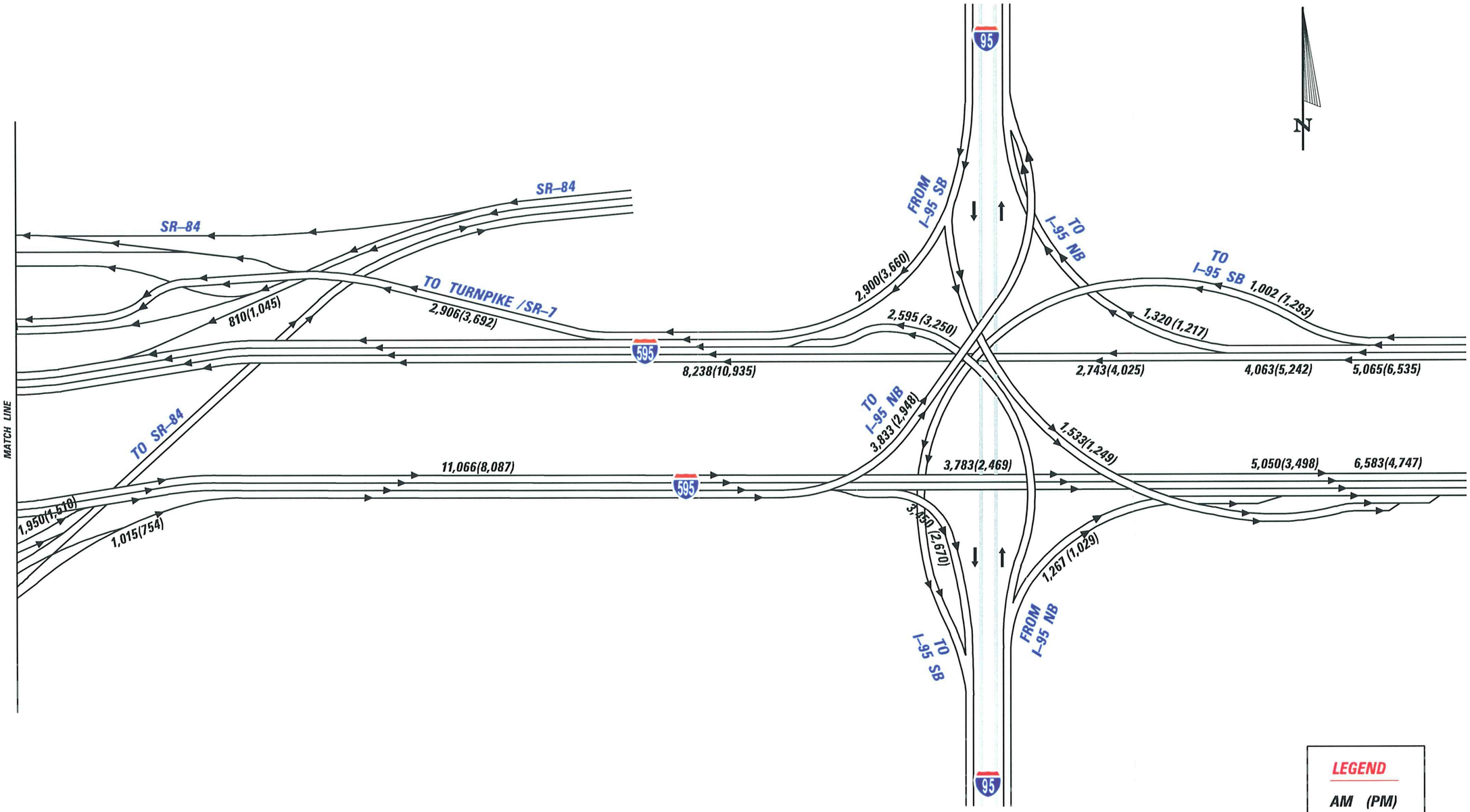
LEGEND

AM (PM)

R S&H Reynolds, Smith and Hills, Inc.	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 BUILD VOLUMES	FIGURE 4–4 1 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 BUILD VOLUMES	FIGURE 4–4 2 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 BUILD VOLUMES	FIGURE 4–4 3 OF 3

The design year AADT volumes are shown in Figure 4-5. The revised LPA design year 2034 volumes for the AM peak hours are shown in Figure 4-6 and the PM peak volumes in Figure 4-7.

4.4.1.4 Reversible Lane

The reversible lane traffic demand was calculated to year 2034 by using a growth rate of 1.5% to year 2024 and a 1.0% to year 2034. This same method was used to obtain the mainline and ramp volumes on I-595.

The reversible lane volumes exiting at the interchange locations were developed using the select link analysis data from the Master Plan. The percentages for traffic were as follows:

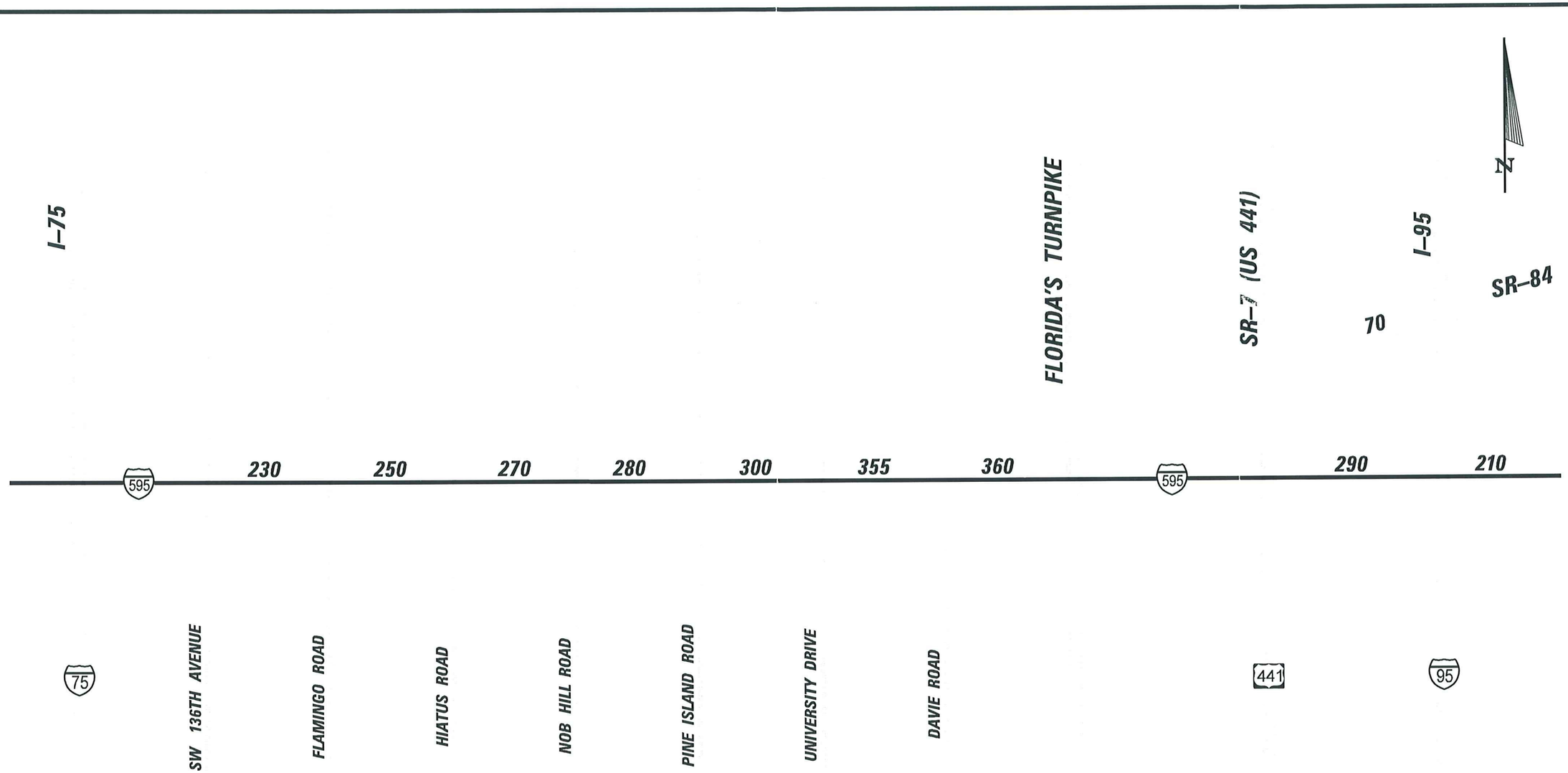
	PM-Westbound
Nob Hill Road	13%
Hiatus Road	5%
Flamingo Road	4%
SW 136th Avenue	14%
I-75	38%

The volume at I-75 was calculated by subtracting off the interchange percentages shown above. It was estimated that this volume would be 3,413 veh/hr; therefore the western terminus of the reversible lanes should be at SW 136th Avenue. The exiting volumes at each interchange were calculated and are shown on the following table.

Year 2020	Year 2024	Year 2034
4,550	4,829	**5,334**

Reversible Lanes	Nob Hill Road	Hiatus Road	Flamingo Road	SW 136th Avenue	I-75
5,334	693	267	214	747	2,027

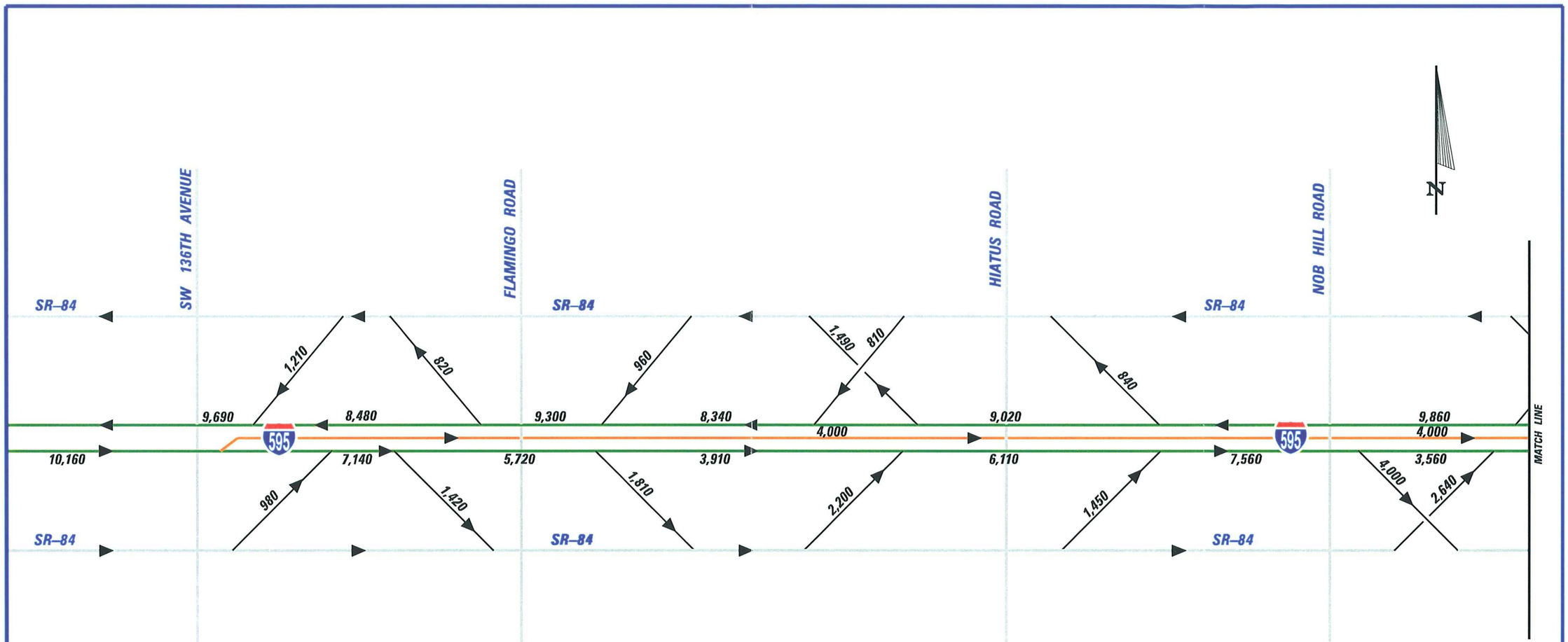
It was concluded that the reversible lanes should continue to SW 136th Avenue. This is a refinement from the Master Plan. The capacity of the reversible lane was assumed to be 2,000 (vehicle/hour/lane). The demand volume was equal to the capacity of the reversible lanes. The volume used was 4,000 veh/hr. There will be two reversible lanes.



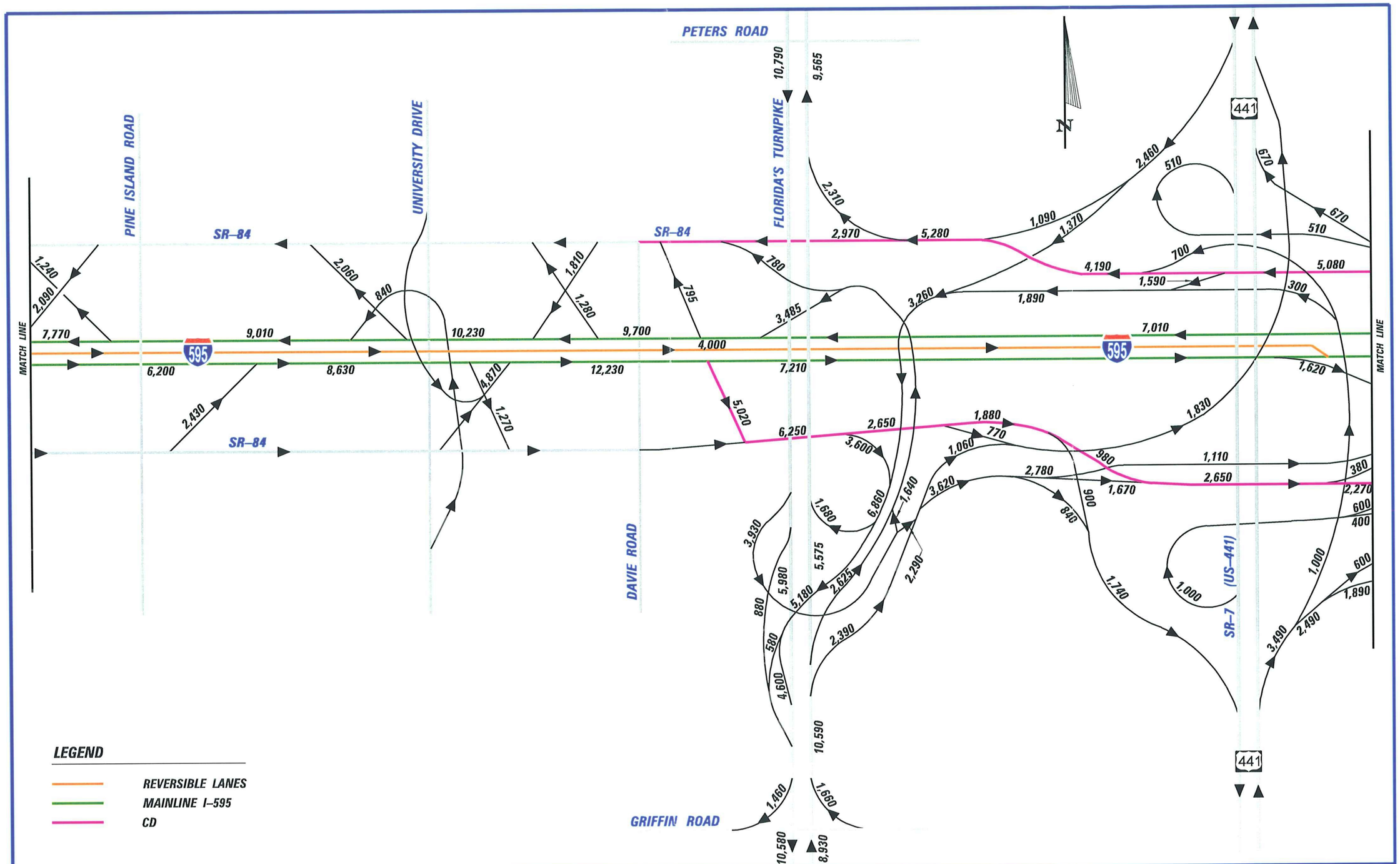
LEGEND

247	2034 ANNUAL AVERAGE DAILY TRAFFIC (AADT) IN THOUSANDS. VOLUMES ARE BASED ON GROWING THE 2020 LPA TO DESIGN YEAR 2034.

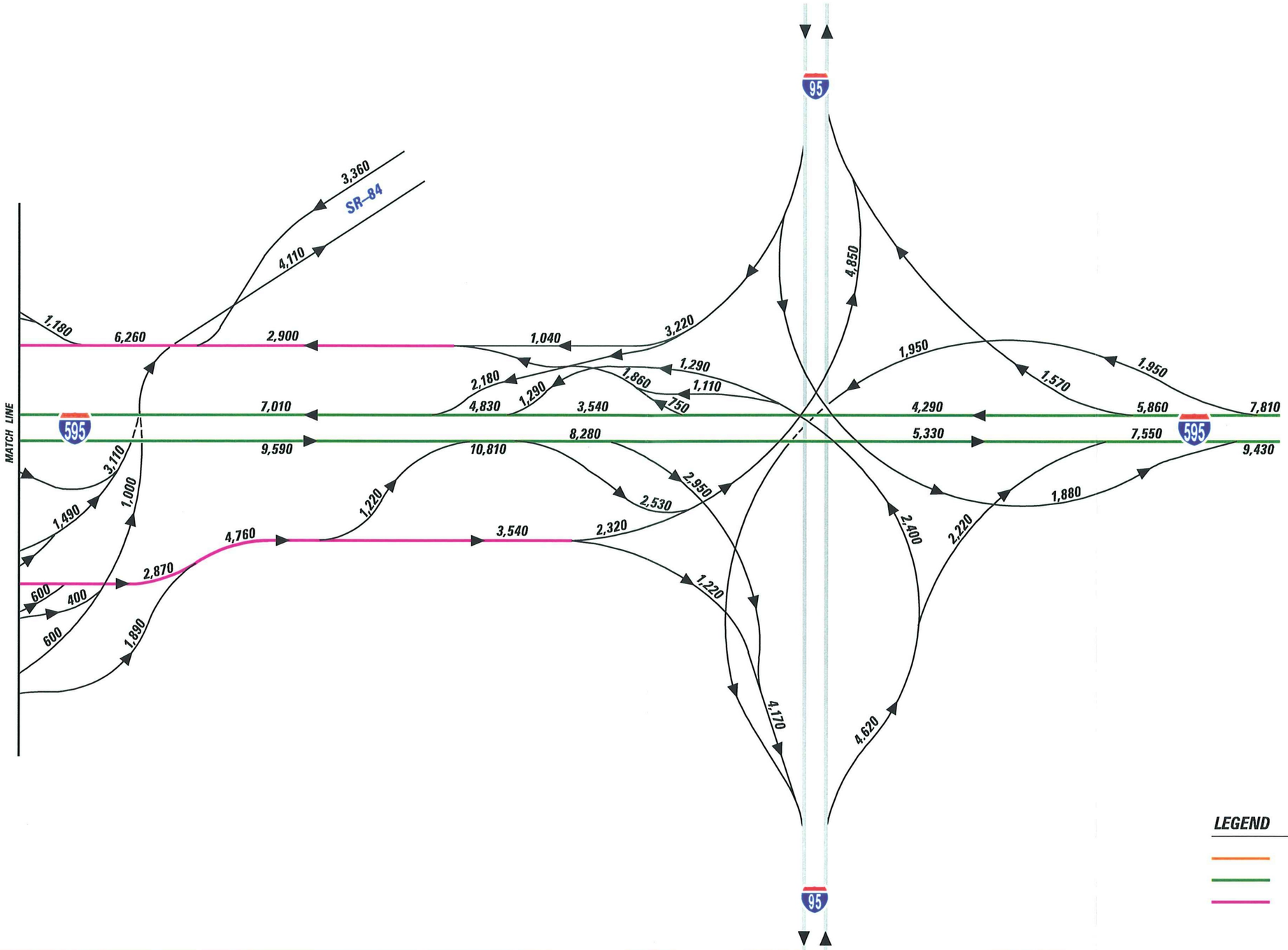
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 ADDT	FIGURE 4–5



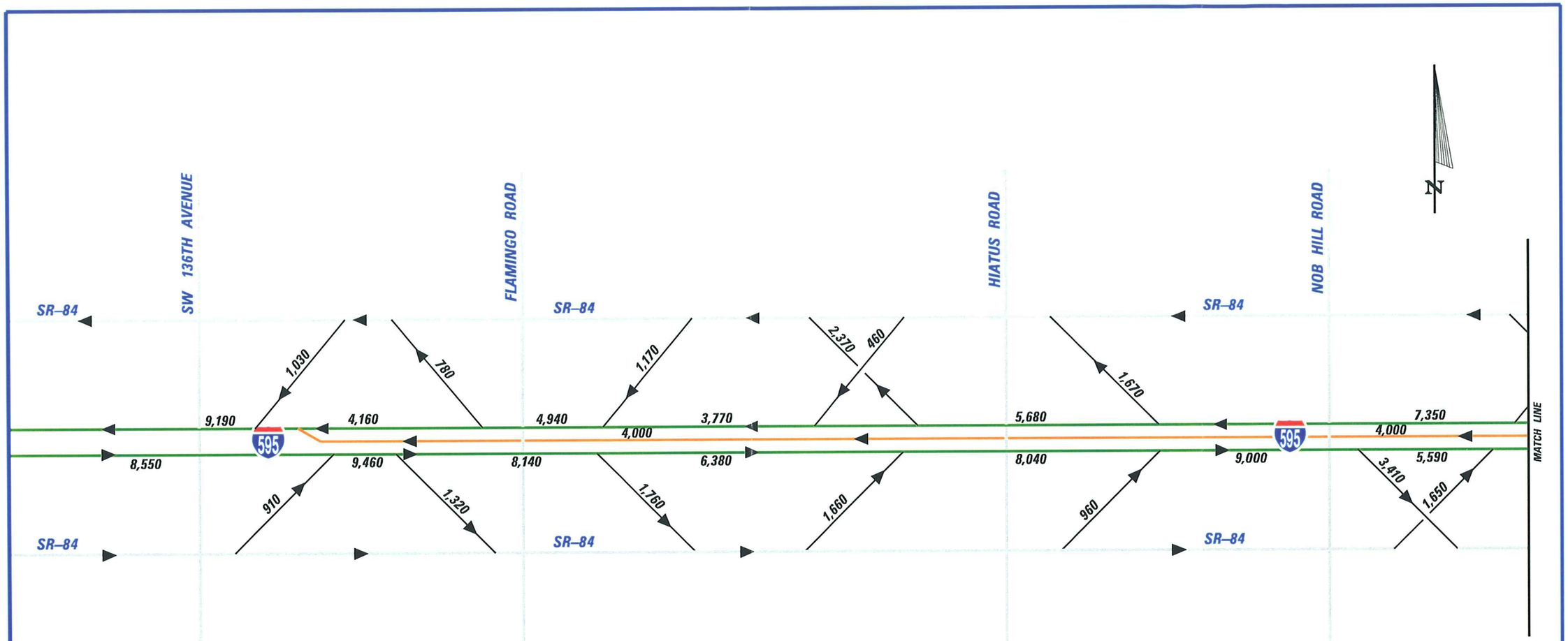
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD AM PEAK VOLUMES	FIGURE 4–6 1 OF 3



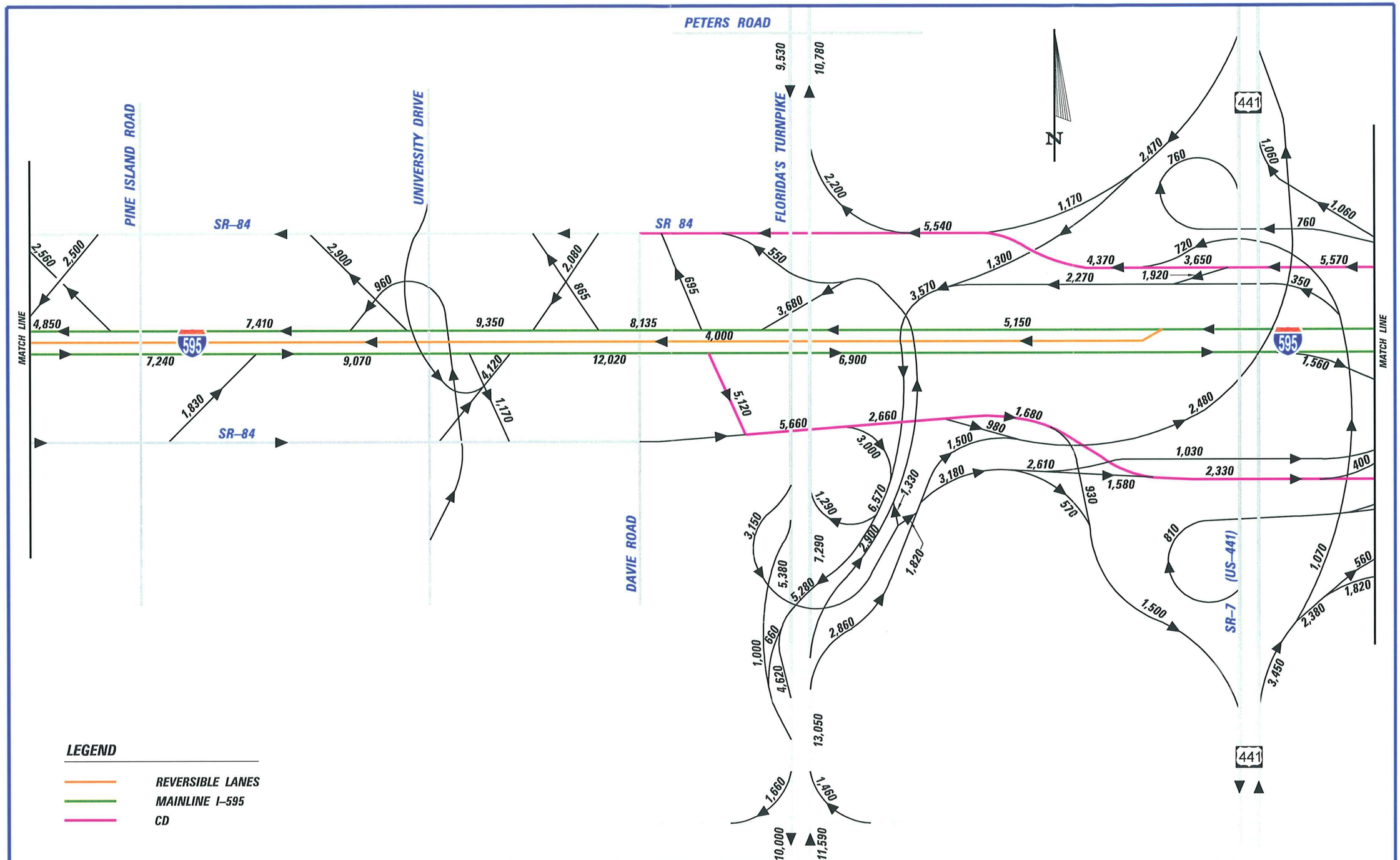
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD AM PEAK VOLUMES	FIGURE 4–6 2 OF 3



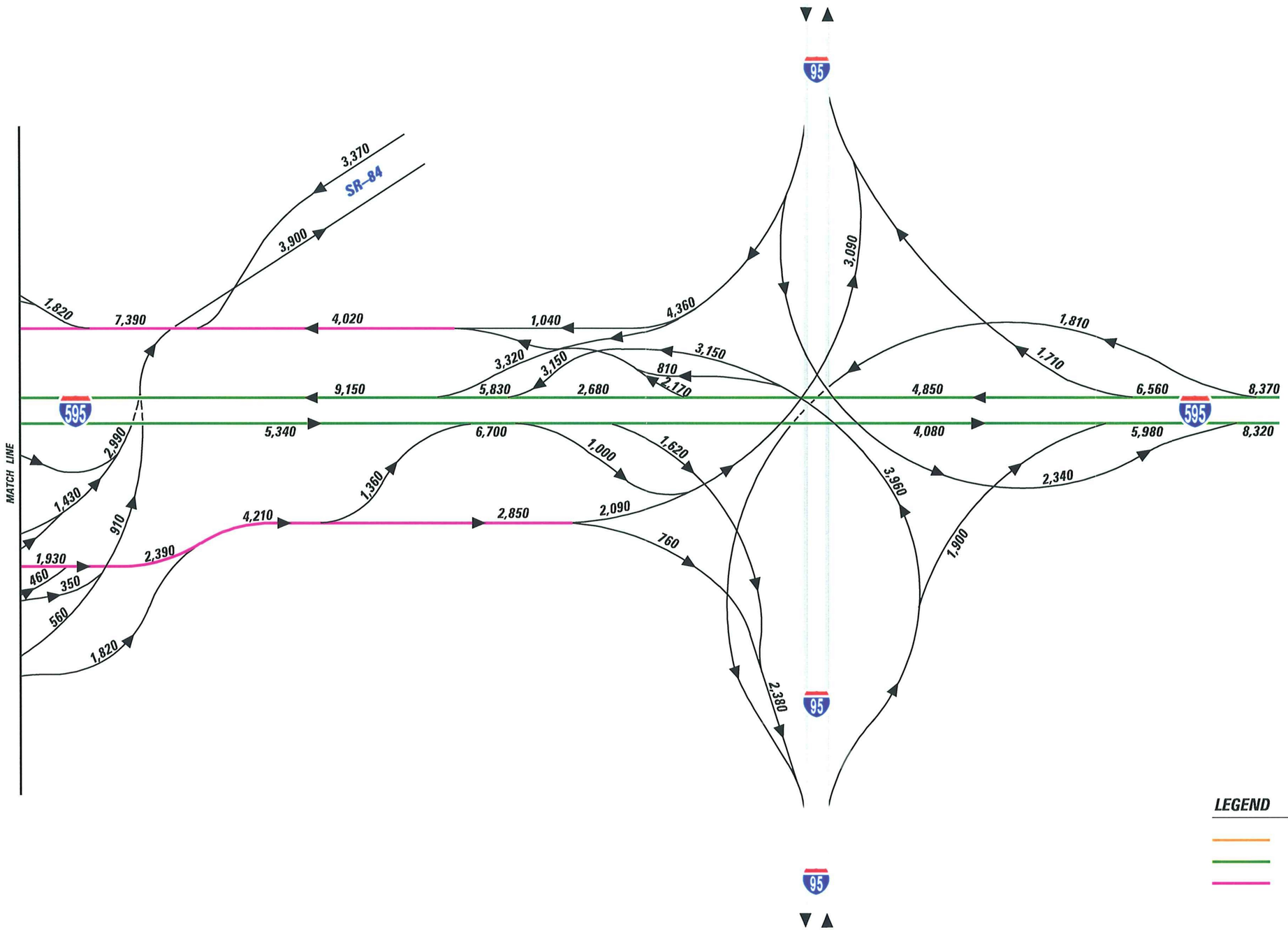
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD AM PEAK VOLUMES	FIGURE 4–6 3 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD PM PEAK VOLUMES	FIGURE 4–7 1 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD PM PEAK VOLUMES	FIGURE 4–7 2 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD PM PEAK VOLUMES	FIGURE 4–7 3 OF 3

4.4.1.5 Intersection Turning Volumes

4.4.1.5.1 Opening Year 2014

The left and right turn movements (SR-84 EB and WB) were obtained by interpolating between 2002 and 2020 LPA. The southbound left-turns and northbound left-turns at the interchanges were interpolated as well.

The thru EB and WB volumes were obtained by applying a growth factor. The growth factor was estimated by adding the existing right and left turn movements in the EB and WB direction and compared with the 2020 LPA volumes. The estimated growth factor was then applied to the EB/WB Thru volumes along SR 84. The side streets volumes were estimated by interpolating the existing 2002 and 2020 LPA. The existing turning percentage on the side street was applied to the new volumes.

The 2014 volumes for the Build and No Build conditions were assumed to be the same, except at SW 136th Avenue where the EB Thru volumes will decrease in the Build Conditions since there will be a new access ramp west of SW 136th Avenue to I-595. The new EB slip ramp will be built by 2005. For the analysis it will be assumed that the cycle length will be optimized for 2014 conditions. The lane configurations at the intersection were the same between the No Build and Build conditions. The future intersection turning movement volumes are depicted in Figure 4-8 (No Build) and Figure 4-9 (Build).

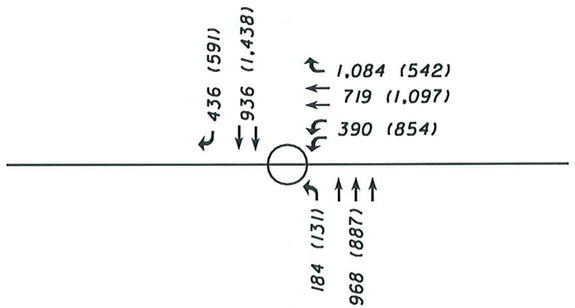
4.4.1.5.2 Design Year 2034

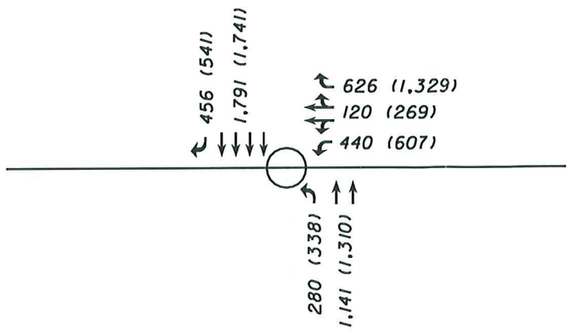
The 2020 LPA volumes were projected outward by applying a 1.5% compounded annually growth rate to 2024 and 1.0% compounded annually to 2034. The future intersection turning movement volumes are depicted in Figure 4-10.

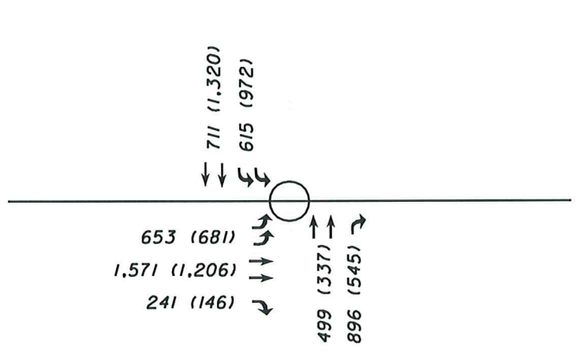
4.5 Future Year Operations

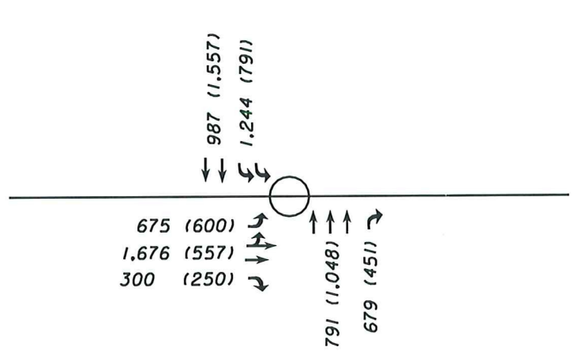
4.5.1 Opening Year 2014 No Build Analysis

A level of service (LOS) analysis was conducted for the I-595 mainline, ramp junctions, ramp roadways, and weaving sections using the design year traffic volumes. The ***No Build*** conditions reflect the existing roadway geometry with future traffic demand. According to the minimum level of service criteria in *the 2002 Level of Service Handbook,* the minimum acceptable level of service for urban freeway facilities is LOS D for 2014 ***No Build.***







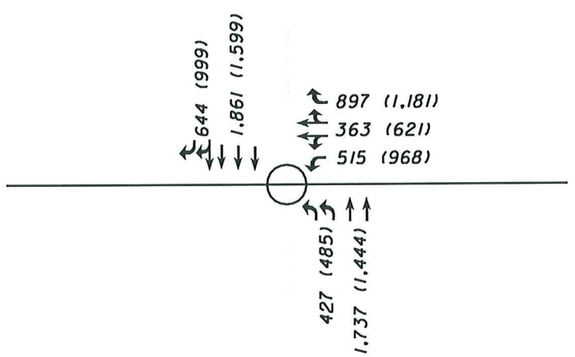


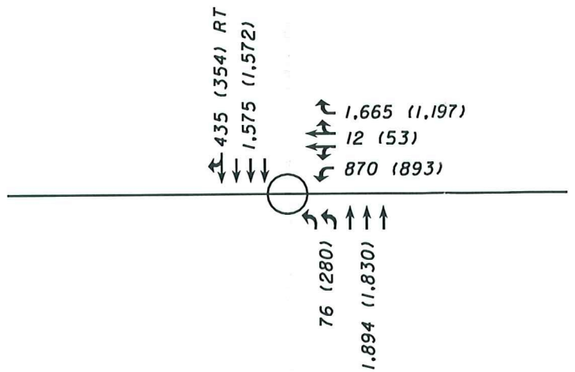
LEGEND

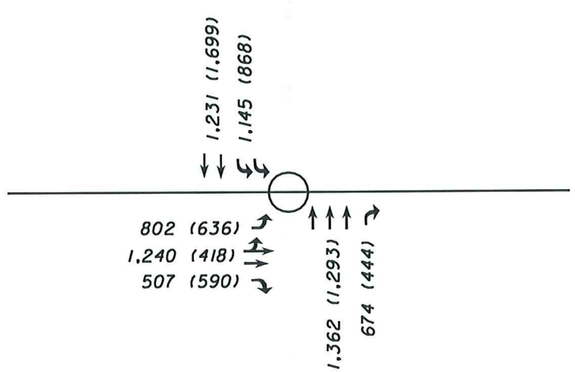
○ SIGNALIZED INTERSECTION

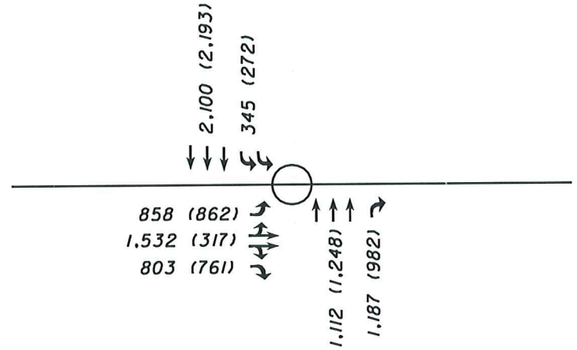
675 (1,557) AM (PM) PEAK HOUR VOLUME

RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD INTERSECTION PEAK HOUR VOLUMES	FIGURE 4–8 1 OF 2









I–595

I–595

PINE ISLAND ROAD

UNIVERSITY DRIVE

LEGEND

○ SIGNALIZED INTERSECTION

675 (1,557) AM (PM) PEAK HOUR VOLUME

RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 NO BUILD INTERSECTION PEAK HOUR VOLUMES	FIGURE 4–8 2 OF 2

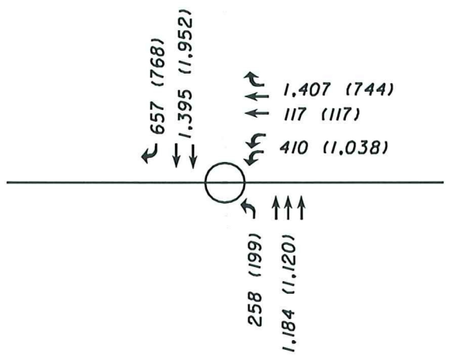
RS&H
Reynolds, Smith and Hills, Inc.
Architecture, Engineering and Planning

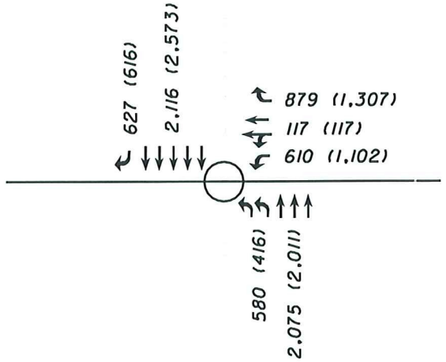
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

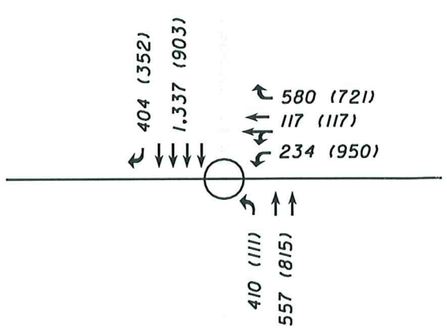
I–595
SYSTEMS INTERCHANGE MODIFICATION REPORT
FROM EAST OF I–75 TO EAST OF I–95

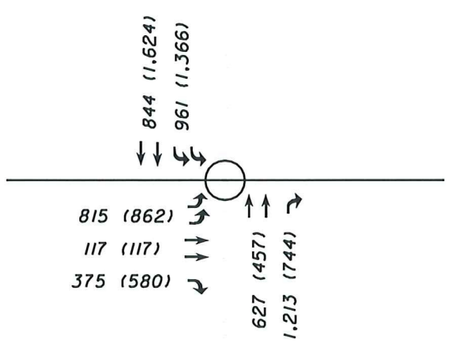
YEAR 2014 BUILD
INTERSECTION PEAK HOUR VOLUMES

FIGURE 4–9

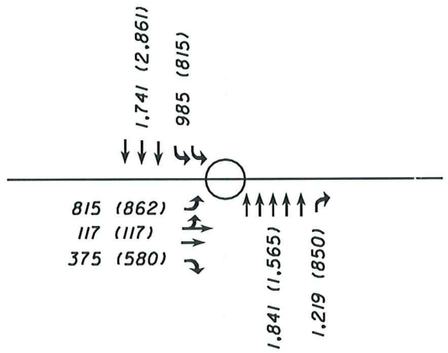




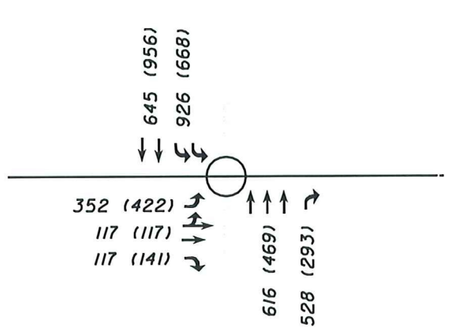




SW 136TH AVENUE



FLAMINGO ROAD



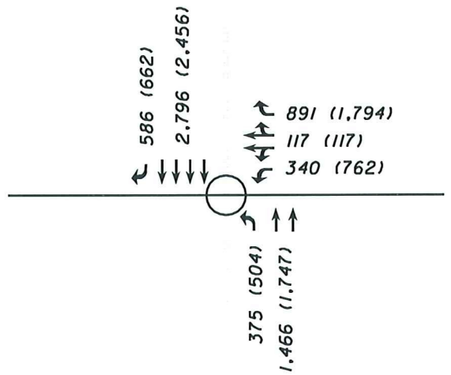
HIATUS ROAD

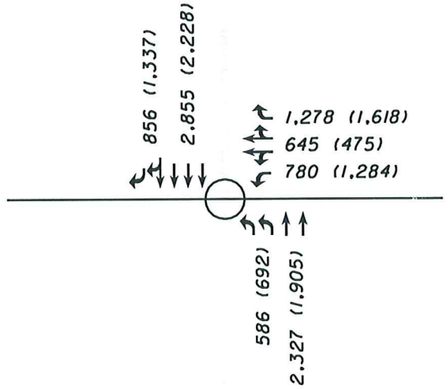
LEGEND

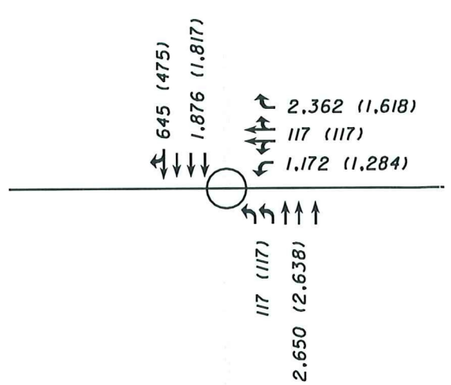
○ SIGNALIZED INTERSECTION

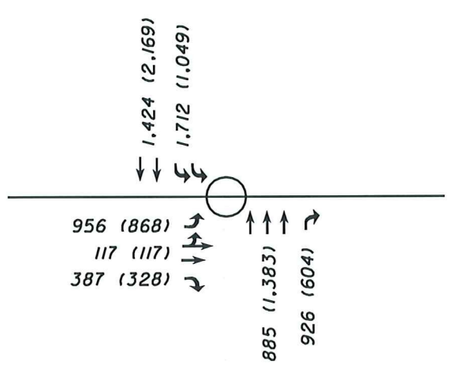
675 (1,557) AM (PM) PEAK HOUR VOLUME

RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD INTERSECTION PEAK HOUR VOLUMES	FIGURE 4–10 1 OF 3

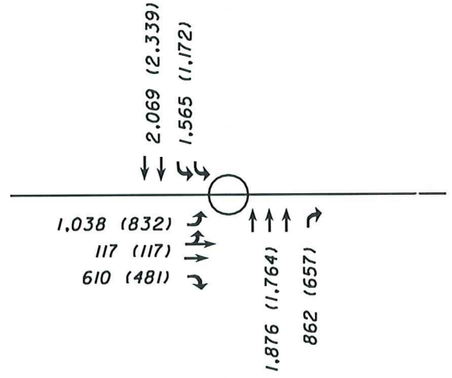




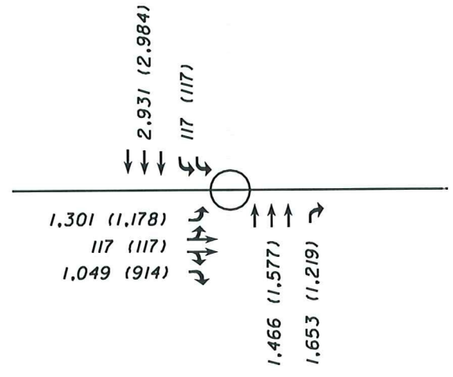




NOB HILL ROAD



PINE ISLAND ROAD



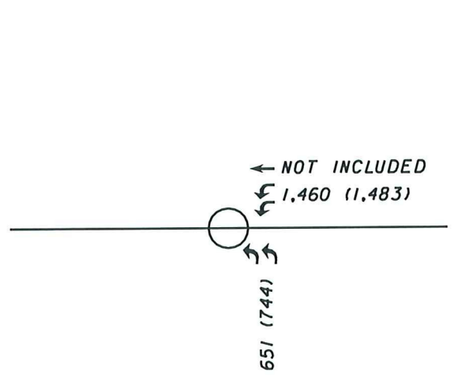
UNIVERSITY DRIVE

LEGEND

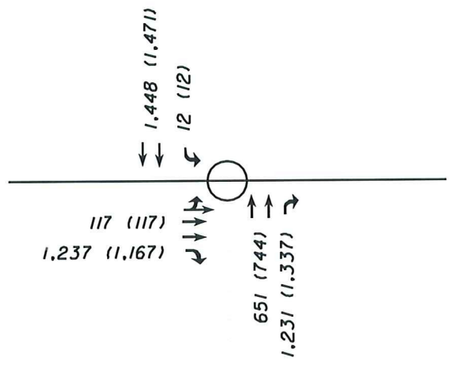
○ SIGNALIZED INTERSECTION

675 (1,557) AM (PM) PEAK HOUR VOLUME

RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD INTERSECTION PEAK HOUR VOLUMES	FIGURE 4–10 2 OF 3



I–595



DAVIE ROAD

LEGEND

SIGNALIZED INTERSECTION

675 (1,557) AM (PM) PEAK HOUR VOLUME

RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 BUILD INTERSECTION PEAK HOUR VOLUMES	FIGURE 4–10 3 OF 3

4.5.1.1 Freeway Segment Analysis

A level of service analysis was conducted for the I-595 mainline for each study segments. The results of the analysis are shown in Table 4.1.

Table 4.1
Year 2014 No Build
Freeway Segment Analysis

Location	Direction	AM	PM
		2014 No Build	
West of SW 136th Avenue	EB	C	C
	WB	C	C
Viaduct (Between I-95 and SR7/Tpke)	EB	**F**	**E**
	WB	D	**E**
East of I-95	EB	D	C
	WB	C	D

4.5.1.2 Ramp Merge/Diverge Analysis

The Highway Capacity Software was used to analyze the same ramps for the No Build conditions as for the existing conditions. Likewise, the appropriate methods of manual calculations detailed in the 2000 Highway Capacity Manual (HCM) were used to analyze major merge/diverge ramps. The No Build design traffic forecasts served as the basis for the ramp capacity analysis. All geometric conditions were assumed to be the same as the 2002 existing conditions. The results of the analysis are shown in Tables 4.2.

4.5.1.3 Ramp Roadway Analysis

The capacities of the ramp roadway were analyzed using the HCM Methodology. According to the HCS, the ramp capacity is 2,100 passenger cars per hour for a single lane ramp, and 4,100 passenger cars per hour for a two-lane ramp. If traffic exceeds capacity (v/c over 1.0) then improvements are needed. Table 4.3 (a & b) summarizes the ramp hourly volumes and capacity analyzes for the I-595 and Turnpike corridors.

4.5.1.4 Freeway Weaving Analysis

Consistent with the existing analysis, a LOS analysis was conducted for each study weaving sections following the methodology of 2000 HCM. The results of the analysis are summarized in Tables 4.4.

Table 4.2
Year 2014 No Build
Ramp Merge/Diverge Level of Service

I-595

Location Eastbound		LOS AM Peak	LOS PM Peak
SR 7	Off	**F**	**E**
SR 84	Off [3]	**E**	D
Turnpike	On	**F**	**F**
SR 7	On [3]	**F**	**E**
I-95	To Southbound Off [2]	D	C
	To Northbound Off [2]	D	B
	From Northbound On [1]	UC	UC
	From Southbound On	A	A

Location Westbound		LOS AM Peak	LOS PM Peak
I-95	To Southbound Off [2]	B	B
	To Northbound Off [2]	B	C
	From Northbound On[1]	UC	**CO**
	From Southbound On[1]	UC	UC
SR 7/ TURNPIKE	Off [2]	B	C
SR 84	On	B	C
SR 7	From Southbound On	B	**F**
	From Northbound On	C	**F**
University Drive	Off [2]	C	D
SR 84/Davie Road	On (From CD Rd)	**F**	**F**

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.

UC = Unconstrained CO = Constrained

(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-1. or Eq.25-10

(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 4.2
Year 2014 No Build
Ramp Merge/Diverge Level of Service

Turnpike

Location		LOS	
		AM Peak	PM Peak
Griffin Road	Northbound On[3]	D	D
	Southbound Off [3]	D	D
I-595	Northbound Off [2]	C	C
	Northbound On	**F**	**F**
	Southbound Off[2]	D	C
	Southbound On [1]	UC	UC

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.

UC = Unconstrained CO = Constrained

(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-12. or Eq.25-10

(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 4.3(a)
Year 2014 No Build
Ramp Roadway Capacity AM

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
SW 136th Ave	On	1	1,689	2,100	No
Flamingo Road	Off	1	1,027	2,100	No
Flamingo Road	On	1	1,630	2,100	No
Hiatus Road	Off	1	430	2,100	No
Hiatus Road	On	1	680	2,100	No
Nob Hill Road	Off	1	872	2,100	No
Nob Hill Road	On	1	1,223	2,100	No
Pine Island Road	Off	1	810	2,100	No
Pine Island Road	On	1	1,492	2,100	No
University Drive	Off	1	1,840	2,100	No
University Drive	On	2	3,019	4,100	No
Davie Rd	Off	1	487	2,100	No
Davie Rd	On	2	1,815	4,100	No
Turnpike	Off	2	2,240	4,100	No
SR 7	Off	1	1,216	2,000	No
SR 84	Off	1	679	2,000	No
Turnpike	On	1	1,950	2,100	No
SR 7	On	1	1,015	2,100	No
I-95 NB	Off	2	3,833	4,100	No
I-95 SB	Off	2	3,450	4,100	No
I-95 SB	On	2	1,267	4,100	No
I-95 NB	On	2	1,533	4,100	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-95 SB	Off	2	1,002	4,100	No
I-95 NB	Off	2	1,320	4,100	No
I-95 NB	On	2	2,595	4,100	No
I-95 SB	On	2	2,743	4,100	No
SR 7/Turnpike	Off	2	2,906	4,100	No
SR 84	On	1	810	2,000	No
SR 7 SB	On	1	1,121	2,000	No
SR 7 NB	On	1	536	2,000	No
Turnpike	On	2	2,200	4,100	No
Davie Rd	Off	2	1,325	4,100	No
University Drive	Off	2	1,940	4,100	No
SR 84	On	1	810	2,000	No
University Drive	On	1	747	2,100	No
Pine Island Road	Off	2	1,526	4,100	No
Pine Island Road	On	1	1,002	2,100	No
Nob Hill Road	Off	1	1,008	2,100	No
Nob Hill Road	On	1	513	2,100	No
Hiatus Road	Off	1	791	2,100	No
Hiatus Road	On	1	536	2,100	No
Flamingo Road	Off	1	1,091	2,100	No
Flamingo Road	On	1	524	2,100	No
SW 136th Ave	Off	1	1,244	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 4.3(a)
Year 2014 No Build
Ramp Roadway Capacity AM

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Rd	On	1	780	2,100	No
I-595	Off	2	3,000	4,100	No
I-595	On	2	2,190	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	2,850	4,100	No
I-595	On	2	2,660	4,100	No
Griffin Rd	Off	1	740	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 4.3(b)
Year 2014 No Build
Ramp Roadway Capacity PM

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
SW 136th Ave	On	1	1,337	2,100	No
Flamingo Road	Off	1	841	2,100	No
Flamingo Road	On	1	1,289	2,100	No
Hiatus Road	Off	1	340	2,100	No
Hiatus Road	On	1	540	2,100	No
Nob Hill Road	Off	1	710	2,100	No
Nob Hill Road	On	1	997	2,100	No
Pine Island Road	Off	1	650	2,100	No
Pine Island Road	On	1	1,164	2,100	No
University Drive	Off	1	1,678	2,100	No
University Drive	On	2	2,421	4,100	No
Davie Rd	Off	1	386	2,100	No
Davie Rd	On	2	1,437	4,100	No
Turnpike	Off	2	1,902	4,100	No
SR 7	Off	1	958	2,000	No
SR 84	Off	1	858	2,000	No
Turnpike	On	1	1,510	2,100	No
SR 7	On	1	754	2,100	No
I-95 NB	Off	2	2,948	4,100	No
I-95 SB	Off	2	2,670	4,100	No
I-95 SB	On	2	1,029	4,100	No
I-95 NB	On	2	1,249	4,100	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-95 SB	Off	2	1,293	4,100	No
I-95 NB	Off	2	1,217	4,100	No
I-95 NB	On	2	3,250	4,100	No
I-95 SB	On	2	3,467	4,100	No
SR 7/Turnpike	Off	2	3,692	4,100	No
SR 84	On	1	1,045	2,000	No
SR 7 SB	On	1	860	2,000	No
SR 7 NB	On	1	679	2,000	No
Turnpike	On	2	2,687	4,100	No
Davie Rd	Off	2	1,945	4,100	No
University Drive	Off	2	1,620	4,100	No
SR 84	On	1	651	2,000	No
University Drive	On	1	920	2,100	No
Pine Island Road	Off	2	1,930	4,100	No
Pine Island Road	On	1	1,350	2,100	No
Nob Hill Road	Off	1	1,293	2,100	No
Nob Hill Road	On	1	608	2,100	No
Hiatus Road	Off	1	1,003	2,100	No
Hiatus Road	On	1	660	2,100	No
Flamingo Road	Off	1	1,380	2,100	No
Flamingo Road	On	1	593	2,100	No
SW 136th Ave	Off	1	1,571	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 4.3(b)
Year 2014 No Build
Ramp Roadway Capacity PM

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Rd	On	1	740	2,100	No
I-595	Off	2	2,660	4,100	No
I-595	On	2	2,352	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	2,760	4,100	No
I-595	On	2	3,000	4,100	No
Griffin Rd	Off	1	780	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 4.4
Year 2014 No Build
Freeway Weaving Level of Service

I-595
Eastbound

Location	LOS	
	AM Peak	PM Peak
Between SW 136th Ave and Flamingo Road	F	E
Between Flamingo Road and Hiatus Road	F	E
Between Hiatus Road and Nob Hill Road	F	E
Between Nob Hill Road and Pine Island Road	F	F
Between Pine Island Road and University Drive	F	F
Between University Drive and Davie Road	F	E
Between Davie Road and Turnpike	F	E

Westbound

Location	LOS	
	AM Peak	PM Peak
Between Turnpike and Davie Road	F	F
Between University Drive and Pine Island Road	F	F
Between Pine Island Road and Nob Hill Road	F	F
Between Nob Hill Road and Hiatus Road	F	F
Between Hiatus Road and Flamingo Road	F	F
Between Flamingo Road and SW 136th Ave	D	F

Turnpike

Location	LOS	
	AM Peak	PM Peak
I-595 to Turnpike	F	F
Turnpike to I-595	F	F

4.5.1.5 Intersection Analysis

The existing signal timings were optimized in the analysis. The intersection capacity analyses results shown in Table 4.5 indicate that during the AM peak hour Nob Hill Road, Pine Island Road and University Drive all have ramp termini intersections operating at a LOS F.

In the westbound direction the intersection of Pine Island Rd/I-595 westbound ramps operated at a LOS E during the morning peak and at a LOS F during the evening peak. The intersection of SW 136th Ave /I-595 westbound ramps operates at a LOS F during the PM peak hour.

The HCS computer worksheets are contained in Appendix C.

4.5.2 Interim Year 2024 Analysis

The interim year is defined as the year when the I-595 mainline fails to meet the minimum acceptable performance standard. In order to determine the year of the mainline failure, the peak hour peak directional traffic was compared to the anticipated capacity of a 4-lane roadway segment. The maximum service flow rate for a level of service E is 8,720 vehicles per hour. All the mainline segments from the 2020 LPA Master Plan were looked and it was found that the segment west of Flamingo Road would fail by year 2024 in the eastbound direction.

Table 4.6
Interim Year 2024 Traffic Growth Results

	Peak	Direction	Peak	Hour	Volumes
Segment	**Year 2020**	**Year 2021**	**Year 2022**	**Year 2023**	**Year 2024**
West of Flamingo Road	8,290	8,414	8,540	8,669	8,779

The volumes were calculated using a yearly growth factor of 1.5%. The I-595 mainline segment is forecasted to operate with 8,779 vehicles during the AM peak hour in 2024. This volume causes the I-595 mainline to operate at a level of service F.

Table 4.5
Year 2014 No Build
Signalized Intersections Level of Service

SR 84 EB

Location	LOS		Delay	
	AM	PM	AM	PM
SW 136th Avenue	D	D	49.6	50.8
Nob Hill Road	**F**	D	**122.7**	39.7
Pine Island Road	**F**	D	**130.1**	37.3
University Drive	**F**	C	**120.2**	33.9

SR 84 WB

Location	LOS		Delay	
	AM	PM	AM	PM
SW 136th Avenue	D	**F**	36.9	**127.9**
Nob Hill Road	D	D	42.2	47.1
Pine Island Road	D	**F**	53.9	**99.0**
University Drive	C	D	33.7	35.1

4.5.3 Design 2034 No Build Traffic Analysis

An analysis of 2034 No Build Alternative traffic flow conditions in the I-595 corridor indicates that congestion will worsen if nothing is done to improve area travel conditions. On I-595 traffic demand will exceed FDOT level of service standards for its entire length between Flamingo Road and I-95. Table 4.7 summarizes the design hour volumes and the mainline capacity analysis for the 2020 No Build Alternative and the Design Year 2034. The 2020 volumes were obtained from the I-595/95 Master Plan. The 2034 volumes were developed by applying a 1.5% growth rate from 2020 to 2024 and 1 % growth thereafter.

Table 4.7
Design Year 2034 No Build
Design Hour Volumes
Mainline Level of Service

I-595
Eastbound

Location	No. Lanes	2020 Volume	Capacity(1)	Level Of Service	2034 Volume	Capacity(2)	Level Of Service
I-75/Sawgrass Expressway	5	7,900	10,690	D	9,260	10,900	D
SW 136th Avenue	4	8,400	8,550	E	9,850	8,720	F
Flamingo Road	3	8,900	6,270	F	10,440	6,540	F
Hiatus Road	3	9,500	6,270	F	11,140	6,540	F
Nob Hill Road	3	10,000	6,270	F	11,730	6,540	F
Pine Island Road	3	11,000	6,270	F	12,900	6,540	F
University Drive	4	13,000	8,550	F	15,250	8,720	F
Davie Road	4	13,100	8,550	F	15,360	8,720	F
Florida's Turnpike	4	13,800	8,550	F	16,180	8,720	F
SR-7	4	11,800	8,550	F	13,840	8,720	F
I-95	4	6,900	8,550	D	8,090	8,720	E
US1							

Westbound

Location	No. Lanes	2020 Volume	Capacity(1)	Level Of Service	2034 Volume	Capacity(2)	Level Of Service
I-75/Sawgrass Expressway	4	7,900	8,550	D	9,260	8,720	F
SW 136th Avenue	4	8,400	8,550	E	9,850	8,720	F
Flamingo Road	3	8,900	6,270	F	10,440	6,540	F
Hiatus Road	3	9,500	6,270	F	11,140	6,540	F
Nob Hill Road	3	10,000	6,270	F	11,730	6,540	F
Pine Island Road	3	11,000	6,270	F	12,900	6,540	F
University Drive	3	13,000	6,270	F	15,250	6,540	F
Davie Road	4	13,100	8,550	F	15,360	8,720	F
Florida's Turnpike	4	13,800	8,550	F	16,180	8,720	F
SR-7	4	11,800	8,550	F	13,840	8,720	F
I-95	4	6,900	8,550	D	8,090	8,720	E
US1							

(1) 1998 Level of Service Handbook(Master Plan) (2) 2002 Level of Service Handbook

5. NEED FOR PROJECT

The I-595 systems interchange modification project will improve the capacity, operation and safety of the interchanges associated with the I-595 corridor. As documented in the I-95/I-595 Master Plan (section 5) the I-595 interchange areas have several design deficiencies based on the current FDOT standards. These are summarized below:

- 29 substandard vertical curves – 15 eastbound and 14 westbound- with respect to the length of the vertical
- Three areas had substandard superelevation with respect to the length of the vertical curve and design speed of the facility
- Fifteen of the 54 structures along I-595 have substandard clearances

On I-595 traffic demand on the mainline exceeds FDOT minimum level of service standards between SW 136th Avenue and I-95 in both directions of travel. Under the No Build conditions, the forecasted traffic volumes would be significantly over capacity for the area roadways. The operational performance of the No Build conditions in Section 4 shows that I–595 mainline and some of the merge and diverge locations will operate at a LOS F in design year 2034.

An analysis of crash data from year 1997 to 2001 reveals that there were a total of 1,530 crashes between I-95 and SW 136th Avenue interchanges during this five-year period. The segment in which most crashes occurred was between Davie Road and SR 7. In this segment the interchange with Turnpike and the interchange with SR 7 are present creating changing in lanes. The complexity of the geometry along this area can be attributed to these crashes.

The above-mentioned safety and capacity issues make it necessary to modify the existing interchanges by braiding ramps. The modification will ensure the integrity of the I-595 limited access freeway as an integral part of the Florida Intrastate Highway System (FIHS) that provides for high speed and high volume traffic movements within the State.

The proposed design will remedy a number of deficiencies, which have been identified with the corridor. These deficiencies include such areas as level of service and weaving segments within the interchanges. These improvements will improve the safety of this study corridor and are consistent with the Long Range Transportation Plans, which has been developed for this area.

6.0 BUILD ALTERNATIVES

The Build Alternative is based on a comprehensive evaluation of alternatives in the Master Plan. Two phases for the Build Alternative will be considered. The opening year (2014) includes the proposed Phase I improvements along I-595 at the interchanges with I-95 and the Florida Turnpike. The design year (2034) includes Phase II that is the ultimate Build-out of the Master Plan Locally Preferred Alternative (LPA). The LPA includes no new access connections to I-595 or I-95.

6.1 Opening Year 2014 (Phase I)

The Phase I improvements include the following:

WB NB Turnpike Improvements
- Provide direct WB to NB ramp to Turnpike in ultimate location including a SR 84 continuous connection

NB EB Turnpike Improvements
- Provide exclusive NB to EB Turnpike ramp that is physically separated
- Auxiliary lane from Griffin Road

SB Turnpike Ramp
- Provide three lane ramp and auxiliary lane to Griffin Road

I-595 EB to Turnpike
Improved traffic flow patterns

Pine Island Road
- Two lanes eastbound off-ramp
- Two lanes westbound on-ramp

Nob Hill Road
- Two lanes westbound off-ramp

SW 136th Avenue
- Provide direct access from SR84 eastbound to I-595 eastbound east from Weston Road. This involves redirect a significant volume of traffic originating from the west that currently utilizes the SW136th Avenue intersection to gain access to eastbound I-595.

Braiding ramps (i.e. crossing over of on-ramps/off-ramps) between interchanges on I-595 will be developed. The interchanges that will be affected are Pine Island Road and Nob Hill Road.

Figure 6-1 presents the lane configuration for the 2014 Build Scenario.

6.2 Design Year 2034 (Phase II)

The LPA includes the following elements:

- Addition of a two-lane reversible roadway in the median of I-595 extending from approximately SW 136th Avenue to approximately SR-7, including the implementation of a reversible lane control system. Traffic will be allowed to enter/exit the facility only at the two terminal ends.

- Ramp widening, ramp resequencing, and ramp braids west of Florida's Turnpike as follows:

    a. Replacing the eastbound on- and off-ramps between Flamingo Road and Hiatus Road with new one-lane braided ramps.

    b. A new eastbound one-lane SR-84 overpass over Hiatus Road.

    c. Elimination of the eastbound off-ramp to Nob Hill Road. Extension of the continuous auxiliary lane from the new eastbound on-ramp from Hiatus Road over Nob Hill Road to the new off-ramp to Pine Island Road.

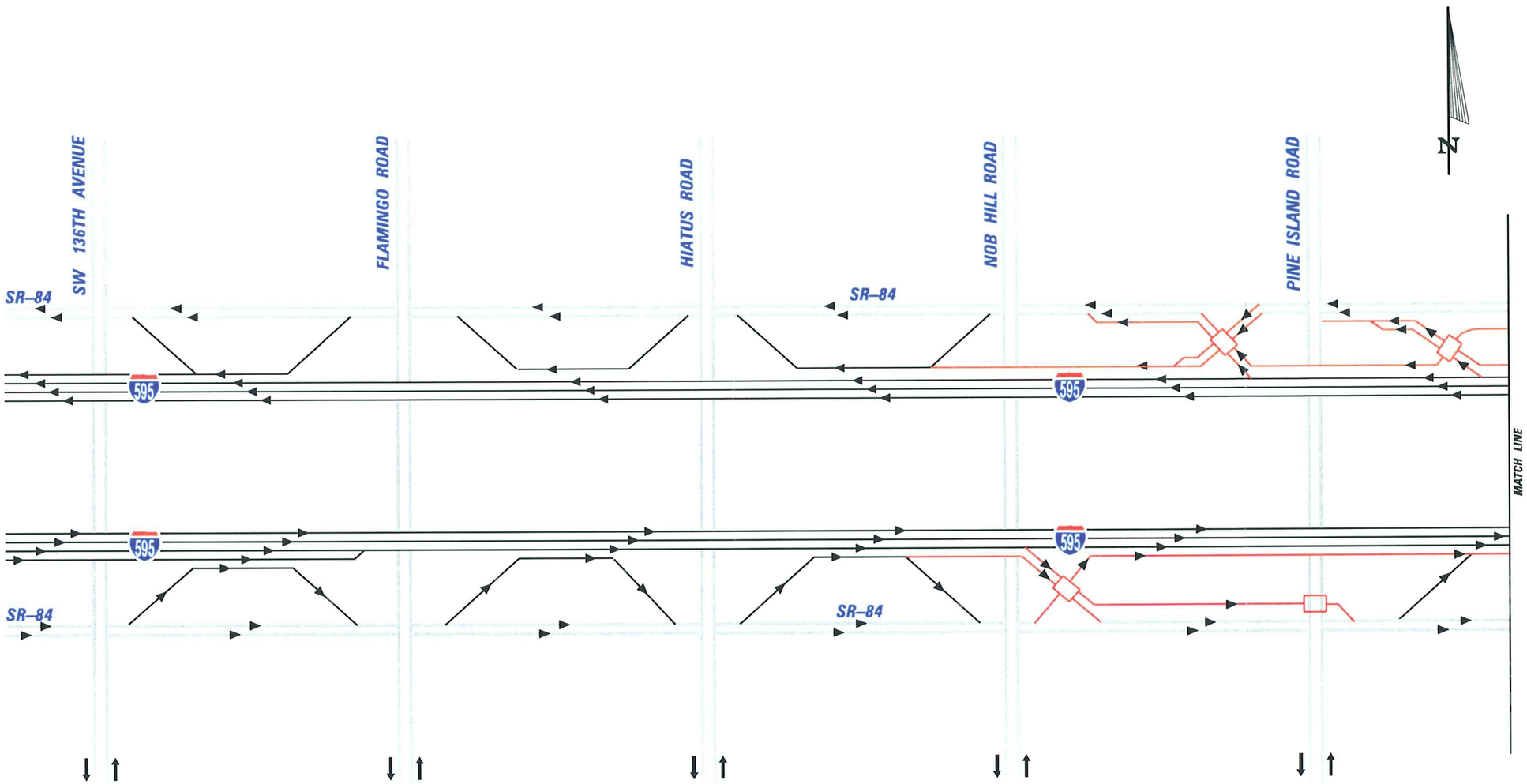
    d. Replacing the eastbound on- and off-ramps between Nob Hill Road and Pine Island Road with braided on/off ramps (two lanes off, One lane on).

    e. A new eastbound one-lane SR-84 overpass over Pine Island Road.

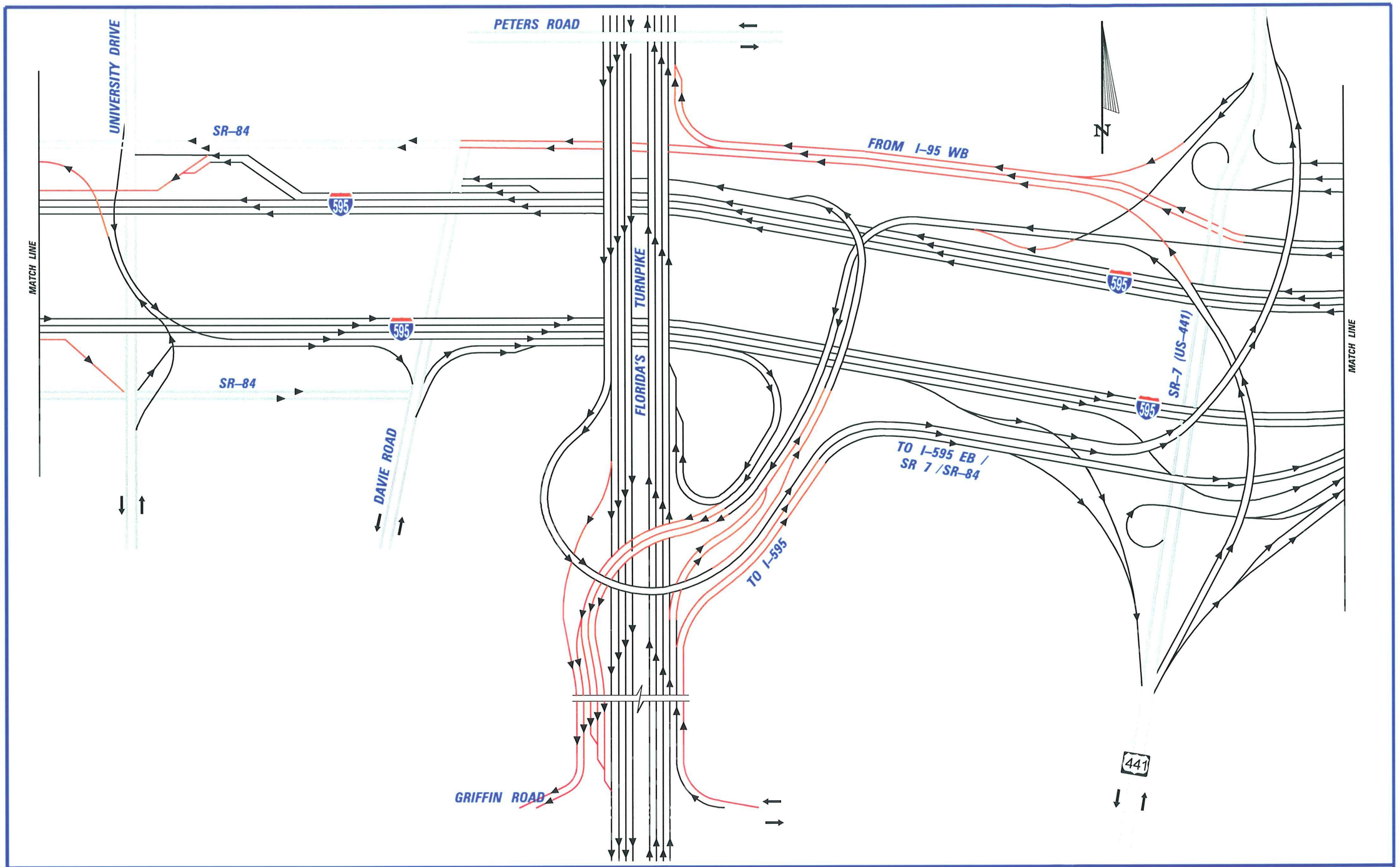
    f. Elimination of the eastbound off-ramp to University Drive.

    g. Replacement of the University Drive flyover ramps in kind.

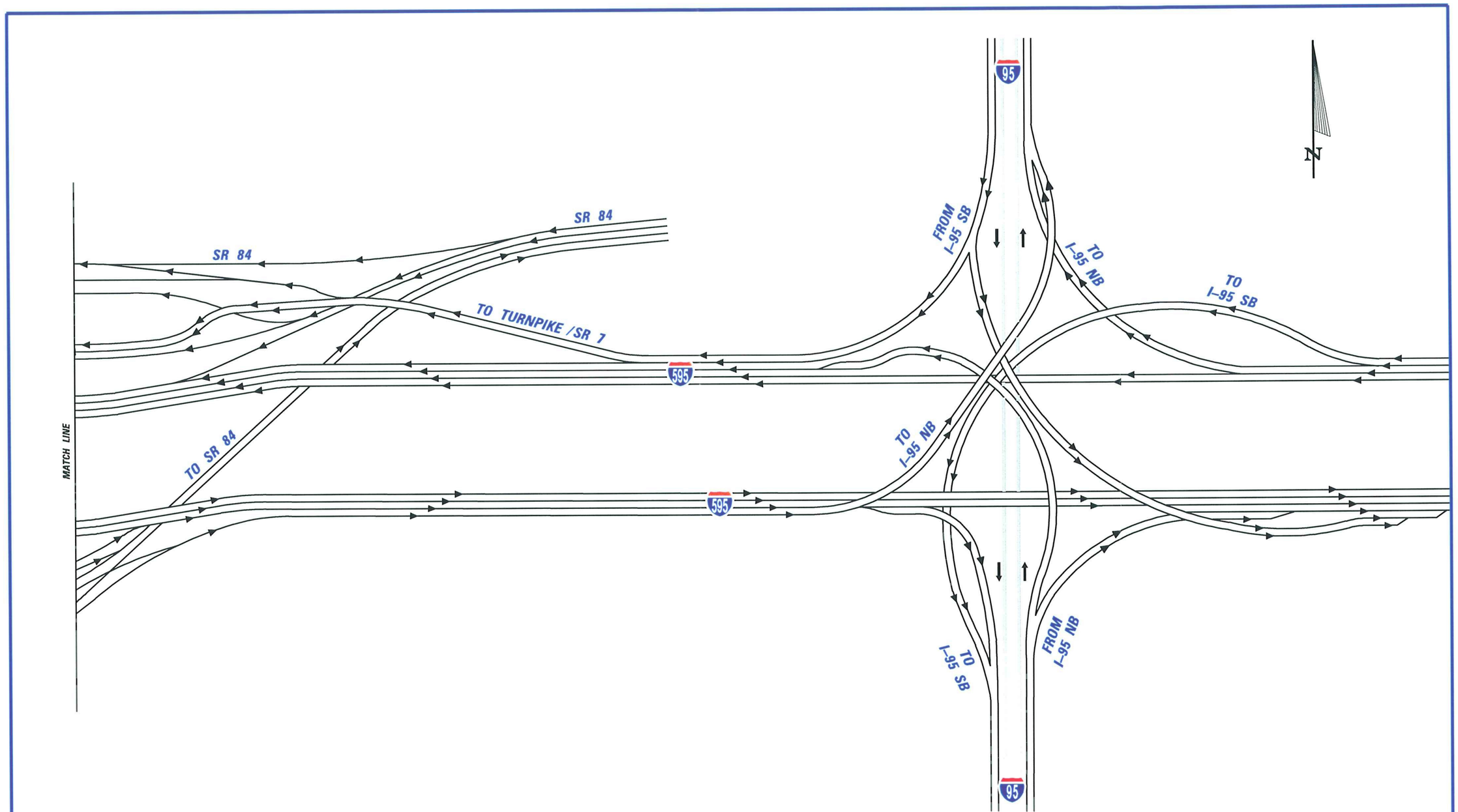
    h. New one-lane continuous westbound auxiliary lane between the Turnpike and existing University Drive off-ramp.



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 BUILD LINE DIAGRAM	FIGURE 6–1 1 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 BUILD LINE DIAGRAM	FIGURE 6–1 2 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2014 BUILD LINE DIAGRAM	FIGURE 6–1 3 OF 3

i. One-lane westbound on-ramp from Davie Road extension will braid over a new westbound two lane-off-ramp to University Drive

j. Replacing the existing westbound ramps between University Drive and Pine Island Road with braided ramps. A one-lane NB-to-WB flyover and on-ramp from University Drive will braid over a new westbound two-lane off-ramp to Pine Island Road

k. A one-lane continuous auxiliary lane from the replaced NB-to-WB University Drive flyover will extend to the new westbound off-ramp to Nob Hill Road.

l. Replacing the existing westbound ramps between Pine Island Road and Nob Hill Road with two-lane braided ramps.

m. Eliminate the westbound on-ramp from Nob Hill Road

n. A new westbound one-lane SR-84 overpass over Hiatus Road

o. Replacing the existing westbound ramps between Hiatus Road and Flamingo Road with two one-lane on-ramps, one braiding over SR-84 from the Hiatus Road overpass, and two-lane off-ramp braiding over one of the on-ramps. New westbound off-ramp to SR-84 located west of SW 136th Avenue coming of the I-595-to-Sawgrass WB-to-NB.

) Modification to the I-95, SR-7/SR-84, and Turnpike interchanges to eliminate connection to I-595 to interconnect with a new collector-distributor (C-D) road system including:

a. Construction of two-lane and three-lane eastbound collector-distributor (C-D) roadway between Davie Road Extension and I-95 using existing roadway structures to the extent feasible. The C-D road will utilize the eastbound causeway bridge, connect to the southbound and northbound I-95 ramps and will effect bridges. In addition, an eastbound one-lane on-ramp from the C-D roadway to the mainline will be provided at the western end of the causeway.

b. Eliminating the weave section on the southbound roadway, which carries traffic to the Turnpike

I-95/I-595 Interchange Improvements

- Two lane SB-WB I-95 Ramp in ultimate location
- Construct NB-WB I-95 Ramp in ultimate location
- Widen causeway to meet current design standards

The revised LPA includes:

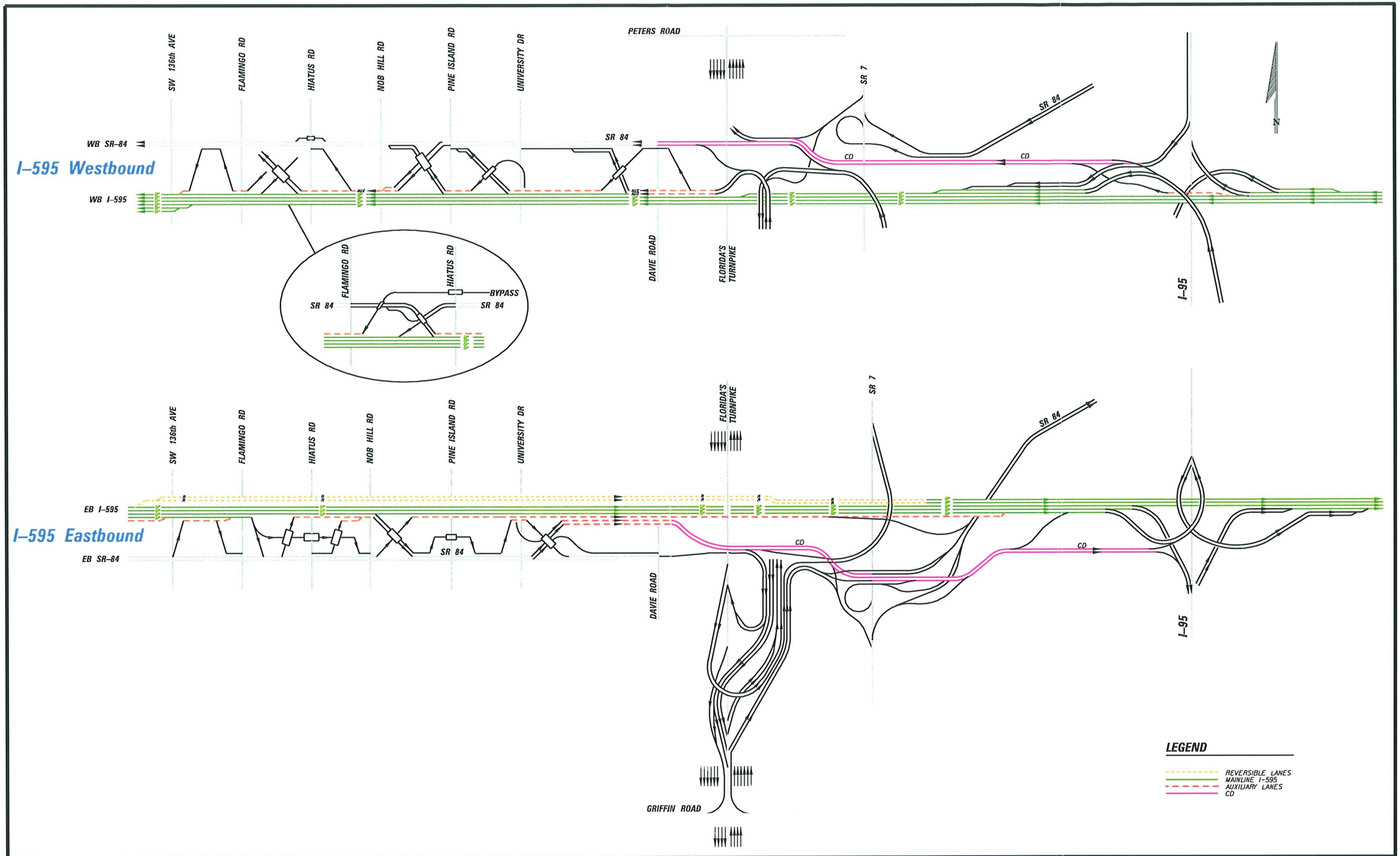
) Extending the reversible lane from approximately SW 136th Avenue to approximately SR-7.

) Ramp widening, ramp resequencing, and ramp braids west of Florida's Turnpike as follows:

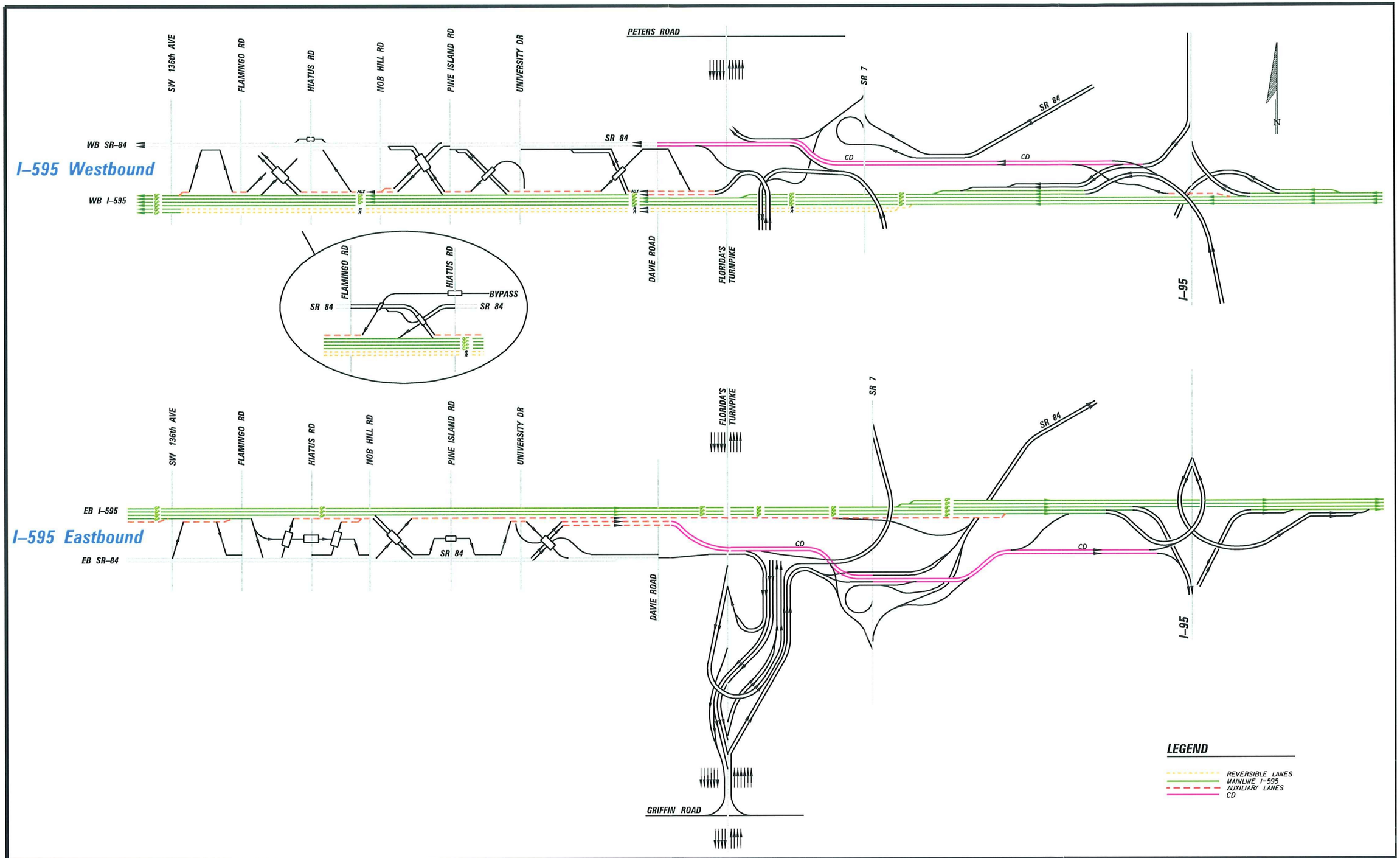
a. New continuous auxiliary lane from new eastbound on-ramp from Nob Hill Road to eastbound viaduct

b. A new westbound continuous auxiliary lane from Flamingo on-ramp to the SW 136th Avenue off-ramp

Figure 6-2 presents the lane configuration for the revised LPA during the AM Peak period and Figure 6-3 represents revised LPA lane configuration during the PM Peak period.



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 REVISED LPA AM LINE DIAGRAM	FIGURE 6–2



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 REVISED LPA PM LINE DIAGRAM	FIGURE 6–3

7.0 LOCALLY PREFERRED ALTERNATIVE LPA

7.1 Phased Implementation

The recommended Build Alternative improvements are recommended to occur in two phases between Year 2014 and Design Year 2034. Phase I and Phase II address the improvements completed by 2014 and 2034 respectively.

- Phase I includes the improvements ay the Florida's Turnpike interchange and braided ramps (i.e. crossing over of on-ramps/off ramps) at the interchanges of Nob Hill and Pine Island Roads. Also the construction of a new SR 84 slip ramp to provide direct access to I-595 eastbound west of SW 136th Avenue.

- Phase II included adding C-D roads from I-95 to Davie Road. Ultimate interchange improvements at I-95 interchange. Reversible lanes along I-595 between SW 136th Avenue and SR 7 interchanges.

7.2 CONFORMANCE WITH MASTER PLAN

The I-95/595 Master Plan evaluated multi-modal transportation improvements. This SIMR will serve as an update to the I-95/595 Master Plan.

FDOT is currently looking at a Project Development and Environmental (PD&E) study for mainline I-595 from East of I-95 to East of I-75 in Broward County. The revised locally preferred alternative (LPA) was analyzed as the design improvements for this SIMR.

7.3 COMPLIANCE WITH FHWA

The revised LPA described above (section) complies with all FHWA geometric design criteria and requirements. The proposed modified interchanges will operate at adequate levels of service for Design Year 2034.

7.4 OPERATIONAL ANALYSIS

A level of service (LOS) analysis was conducted for the I-595 mainline, ramp junctions, ramp roadways, and weaving sections using the design year traffic volumes for the design year ***Build*** condition. The ***Build*** conditions include the Phase I improvements for 2014 and the Locally Preferred Alternative recommendation from the *Master Plan* for year 2034. According to the minimum level of service criteria in *the 2002 Level of Service Handbook,* the minimum acceptable level of service for urban freeway facilities is LOS D for 2014 ***Build*** conditions. When exclusive through lanes exist as for year 2034, the level of

service standard for the I-595 corridor is LOS E according to the Florida's LOS standards. The computer worksheets are provided in Appendix B.

7.4.1 Freeway Segment Analysis

A level of service analysis was conducted for the I-595 mainline for each study segments. The analysis was performed for 2014 and 2034 peak traffic conditions. The results of the analysis are shown in Table 7.1.

7.4.2 Ramp Merge/Diverge Analysis

All the ramps in the study area were analyzed using HCS with the exception of the off-ramps to I-95, the on-ramps from I-95, the eastbound SR-84 off-ramp, the SR-7 eastbound on-ramp, the westbound off-ramp to SR7/Turnpike, and the westbound off-ramp to University Drive on the I-595 mainline. On the Turnpike with the exception of the northbound off-ramp to I-595, the southbound on-ramp from I-595, the northbound on-ramp from Griffin Road, and the southbound off-ramp to Griffin Road, which are either add/drop lanes or classified as major merge/diverge areas.

Major diverge and merge areas are those where multiple lanes enter or exit the system without the presence of a clear ramp or acceleration/deceleration lanes. Therefore, these areas are beyond the capabilities of HCS.

The appropriate methods of manual calculations detailed in the 2000 Highway Capacity Manual (HCM) were used to analyze these ramps. The results of the analysis are shown in Tables 7.2 and 7.2(a).

7.4.3 Ramp Roadway Analysis

The capacities of the ramp roadway were analyzed using the HCM Methodology. According to the HCS, the ramp capacity is 2,100 passenger cars per hour for a single lane ramp, and 4,100 passenger cars per hour for a two-lane ramp.

If traffic exceeds capacity (v/c over 1.0) then improvements are needed. Table 7.3 (a thru d), summarize the ramp hourly volumes and capacity analyzes for the I-595 and Turnpike corridors.

7.4.4 Freeway Weaving Analysis

Consistent with the existing analysis, a LOS analysis was conducted for each study weaving sections following the methodology of 2000 HCM. The results of the analysis are summarized in Tables 7.4 and 7.4(a).

Table 7.1
Future Freeway Segment Analysis

I-595 Mainline

Location	Direction	AM	PM	AM	PM
		2014 Build		2034 Rev. LPA	
West of SW 136th Avenue	EB	D	C	C	E
	WB	C	C	C	C
Viaduct (Between I-95 and SR7/Tpke)	EB	**F**	**E**	E	C
	WB	D	**E**	D	D

Table 7.2
Year 2014 Build
Ramp Merge/Diverge Level of Service

I-595

Location Eastbound		LOS AM Peak	LOS PM Peak
Pine Island Road	Off (2)	C	B
Nob Hill Road	On (3)	**E**	D
SR 7	Off	**F**	**E**
SR 84	Off (3)	**F**	D
Turnpike	On	**F**	**F**
SR 7	On (3)	**F**	**E**
I-95	To Southbound Off (2)	D	C
	To Northbound Off (2)	D	C
	From Northbound On(1)	UC	UC
	From Southbound On	A	A

Location Westbound		LOS AM Peak	LOS PM Peak
I-95	To Southbound Off (2)	B	B
	To Northbound Off (2)	B	C
	From Northbound On(1)	UC	**CO**
	From Southbound On(1)	UC	UC
SR 84	On	B	C
University Drive	Off (2)	C	C
SR 84 / Davie Road	On (3)	D	**E**
Pine Island Road	Off (2)	B	C
University Drive	On (3)	C	D
Nob Hill Rd	Off (2)	B	C
Pine Island Road	On (3)	D	**E**

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.
UC = Unconstrained CO = Constrained
(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-12.
(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 7.2
Year 2014 Build
Ramp Merge/Diverge Level of Service

Turnpike

Location		LOS	
		AM Peak	PM Peak
Griffin Rd	Northbound On[1]	UC	UC
	Southbound Off	C	C
I-595	Northbound Off [2] (EB)	B	B
	Northbound Off [2] (WB)	B	B
	Northbound On (EB)	B	C
	Northbound On[3] (WB)	C	C
	Southbound Off [2]	B	B
	Southbound On[1]	UC	UC

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.
UC = Unconstrained CO = Constrained
(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-12.
(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 7.2(a)
Year 2034 Build
Ramp Merge/Diverge Level of Service

I-595

Location Eastbound		LOS AM Peak	LOS PM Peak
Hiatus/Nob Hill Roads	Off (3)	C	E
Flamingo Road	On(3)	C	E
Hiatus	On	C	**F**
Pine Island Road/University Drive	Off(2)	C	C
Nob Hill Road	On(3)	C	D
Pine Island Road	On(3)	D	D
Davie Off	Off(3)	D	D
University Drive	On(1)	**CO**	UC
CD	Off(2)	C	C
SR 84	Off	E	E
CD/Turnpike	On	E	D
I-95	To Southbound Off (2)	C	B
	To Northbound Off(2)	C	B
	From Northbound On(1)	UC	UC

Location Westbound		LOS AM Peak	LOS PM Peak
I-95	To Southbound Off (2)	C	C
	To Northbound Off (2)	B	B
CD	Off	B	**F**
I-95 NB	On(1)	UC	UC
I-95 SB	On	B	C
University	Off (2)	C	B
Davie Rd	On(3)	E	D
Pine Island Road	Off (2)	C	C
Pine Island Road	On(1)	UC	UC
Hiatus Road	Off	E	D
Flamingo Road	Off (2)	C	B
Hiatus Road	On	C	B
Flamingo Road	On	C	C

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.
UC = Unconstrained CO = Constrained
(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-12.
(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 7.2(a)
Year 2034 Build
Ramp Merge/Diverge Level of Service

Turnpike

Location		LOS	
		AM Peak	PM Peak
Griffin Rd	Northbound On[1]	UC	UC
	Southbound Off	**E**	D
I-595	Northbound Off [2] (EB)	C	C
	Northbound Off [2](WB)	B	C
	Northbound On (EB)	C	C
	Northbound On[3] (WB)	D	**E**
	Southbound Off[2]	C	C
	Southbound On[1]	UC	UC

(1) HCM Methodology suggests analysis on major merge areas to be limited to capacity checks.
UC = Unconstrained CO = Constrained
(2) HCM Methodology analysis for major diverge areas uses calculation based on upstream volumes and number of lanes on the upstream segment and calculate density and determine level of service in Eq.25-12.
(3) HCM Methodology suggest analyzing upstream and downstream basic freeway segments when there is an add/drop lane design on the ramp.

Table 7.3(a)
Year 2014 Build
Ramp Roadway Capacity AM

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
SW 136th Ave	On	1	1,689	2,100	No
Flamingo Road	Off	1	1,027	2,100	No
Flamingo Road	On	1	1,630	2,100	No
Hiatus Road	Off	1	430	2,100	No
Hiatus Road	On	1	680	2,100	No
Nob Hill Road	Off	1	872	2,100	No
Pine Island Road	Off	2	994	4,100	No
Nob Hill Road	On	1	1,407	2,100	No
Pine Island Road	On	1	1,547	2,100	No
University Drive	Off	1	1,840	2,100	No
University Drive	On	2	3,451	4,100	No
Davie Rd	Off	1	487	2,100	No
Davie Rd	On	2	1,815	4,100	No
Turnpike	Off	2	2,660	4,100	No
SR 7	Off	1	1,216	2,000	No
SR 84	Off	1	679	2,000	No
Turnpike	On	1	1,950	2,100	No
SR 7	On	1	1,015	2,100	No
I-95 NB	Off	2	3,833	4,100	No
I-95 SB	Off	2	3,450	4,100	No
I-95 SB	On	2	1,267	4,100	No
I-95 NB	On	2	1,533	4,100	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-95 SB	Off	2	1,002	4,100	No
I-95 NB	Off	2	1,320	4,100	No
I-95 NB	On	2	2,595	4,100	No
I-95 SB	On	2	2,900	4,100	No
SR 7/Turnpike	Off	2	2,906	4,100	No
SR 84	On	1	810	2,000	No
Turnpike	On	2	2,490	4,100	No
Davie Rd	Off	2	1,325	4,100	No
University Drive	Off	2	1,940	4,100	No
Davie/SR 84	On	1	1,207	2,000	No
Pine Island Road	Off	2	1,526	4,100	No
University Drive	On	1	898	2,100	No
Nob Hill Road	Off	2	1,008	4,100	No
Pine Island Road	On	2	1,509	4,100	No
Nob Hill Road	On	1	513	2,100	No
Hiatus Road	Off	1	791	2,100	No
Hiatus Road	On	1	536	2,100	No
Flamingo Road	Off	1	1,091	2,100	No
Flamingo Road	On	1	524	2,100	No
SW 136th Ave	Off	1	1,244	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.3(a)
Year 2014 Build
Ramp Roadway Capacity AM

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Rd	On	2	920	4,100	No
To I-595 EB	Off	2	1,690	4,400	No
To I-595 WB	Off	2	1,600	4,400	No
From I-595 EB	On	1	1,260	2,100	No
From I-595 WB	On	2	1,260	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	2,850	4,100	No
Griffin Rd	Off	1	530	2,100	No
I-595	On	3	2,400	6,300	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.3(b)
Year 2014 Build
Ramp Roadway Capacity PM

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
SW 136th Ave	On	1	1,337	2,100	No
Flamingo Road	Off	1	841	2,100	No
Flamingo Road	On	1	1,289	2,100	No
Hiatus Road	Off	1	340	2,100	No
Hiatus Road	On	1	540	2,100	No
Nob Hill Road	Off	1	710	2,100	No
Pine Island Road	Off	2	786	4,100	No
Nob Hill Road	On	1	1,061	2,100	No
Pine Island Road	On	1	1,286	2,100	No
University Drive	Off	1	1,678	2,100	No
University Drive	On	2	2,725	4,100	No
Davie Rd	Off	1	386	2,100	No
Davie Rd	On	2	1,437	4,100	No
Turnpike	Off	2	2,110	4,100	No
SR 7	Off	1	958	2,000	No
SR 84	Off	1	858	2,000	No
Turnpike	On	1	1,510	2,100	No
SR 7	On	1	754	2,100	No
I-95 NB	Off	2	2,948	4,100	No
I-95 SB	Off	2	2,670	4,100	No
I-95 SB	On	2	1,029	4,100	No
I-95 NB	On	2	1,249	4,100	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-95 SB	Off	2	1,293	4,100	No
I-95 NB	Off	2	1,217	4,100	No
I-95 NB	On	2	3,250	4,100	No
I-95 SB	On	2	3,660	4,100	No
SR 7/Turnpike	Off	2	3,692	4,100	No
SR 84	On	1	1,045	2,000	No
Turnpike	On	2	2,900	4,100	No
Davie Rd	Off	2	1,945	4,100	No
University Drive	Off	2	1,620	4,100	No
Davie/SR 84	On	1	970	2,000	No
Pine Island Road	Off	2	1,930	4,100	No
University Drive	On	1	1,136	2,100	No
Nob Hill Road	Off	2	1,340	4,100	No
Pine Island Road	On	2	1,936	4,100	No
Nob Hill Road	On	1	608	2,100	No
Hiatus Road	Off	1	1,003	2,100	No
Hiatus Road	On	1	660	2,100	No
Flamingo Road	Off	1	1,380	2,100	No
Flamingo Road	On	1	593	2,100	No
SW 136th Ave	Off	1	1,571	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.3(b)
Year 2014 Build
Ramp Roadway Capacity PM

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Rd	On	2	880	4,100	No
To I-595 EB	Off	2	1,543	4,400	No
To I-595 WB	Off	2	1,330	4,400	No
From I-595 EB	On	1	1,000	2,100	No
From I-595 WB	On	2	1,520	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	2,760	4,100	No
Griffin Rd	Off	1	550	2,100	No
I-595	On	3	2,670	6,300	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.3(c)
Year 2034 Build
Ramp Roadway Capacity AM

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
SW 136th Ave	On	1	980	2,100	No
Flamingo Road	Off	1	1,420	2,100	No
Hiatus/Nob Hill Road	Off	1	1,810	2,100	No
Flamingo Road	On	1	2,200	2,100	Yes
Hiatus Road	On	1	1,450	2,100	No
Pine Island/University	Off	2	4,000	4,100	No
Nob Hill Road	On	1	2,640	2,100	Yes
Pine Island Road	On	1	2,430	2,100	Yes
Davie Rd	Off	1	1,270	2,100	No
University Drive	On	2	4,870	4,100	Yes
CD/Turnpike	Off	2	5,020	4,400	Yes
SR 84	Off	1	1,620	2,100	No
CD/Turnpike	On	1	1,220	2,100	No
I-95 NB	Off	2	2,530	4,400	No
I-95 SB	Off	2	2,950	4,400	No
I-95 SB	On	2	2,220	4,400	No
I-95 NB	On	2	1,880	4,400	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-95 SB	Off	2	1,950	4,100	No
I-95 NB	Off	2	1,570	4,100	No
CD	Off	1	750	2,100	No
I-95 NB	On	2	1,290	4,400	No
I-95 SB	On	2	2,180	4,400	No
Turnpike	On	2	3,485	4,100	Yes
Davie/SR 84	Off	1	795	2,100	No
University Drive	Off	2	1,280	4,100	No
Davie/SR 84	On	1	1,810	2,100	No
Pine Island Road	Off	2	2,060	4,100	No
University Drive	On	1	840	2,100	No
Nob Hill Road	Off	2	1,240	4,100	No
Pine Island Road	On	2	2,090	4,100	No
Hiatus Road	Off	1	840	2,100	No
Flamingo Road	Off	2	1,490	4,100	No
Hiatus Road	On	1	960	2,100	No
Nob Hill Road (By-Pass)	On	1	810	2,100	No
SW 136th Avenue	Off	1	820	2,100	No
Flamingo Road	On	1	1,210	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.3(c)
Year 2034 Build
Ramp Roadway Capacity AM

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Rd	On	2	1,660	4,100	No
To I-595 EB	Off	2	2,390	4,400	No
To I-595 WB	Off	2	2,625	4,400	No
From I-595 EB	On	1	1,680	2,100	No
From I-595 WB	On	2	2,310	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	3,930	4,100	No
Griffin Rd	Off	1	880	2,100	No
I-595	On	3	4,600	6,300	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.3(d)
Year 2034 Build
Ramp Roadway Capacity PM

I-595

Eastbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
SW 136th Ave	On	1	910	2,100	No
Flamingo Road	Off	1	1,320	2,100	No
Hiatus/Nob Hill Road	Off	1	1,760	2,100	No
Flamingo Road	On	1	1,660	2,100	No
Hiatus Road	On	1	960	2,100	No
Pine Island/University	Off	2	3,410	4,100	No
Nob Hill Road	On	1	1,650	2,100	No
Pine Island Road	On	1	1,830	2,100	No
Davie Rd	Off	1	1,170	2,100	No
University Drive	On	2	4,120	4,100	Yes
CD/Turnpike	Off	2	5,120	4,400	Yes
SR 84	Off	1	1,560	2,100	No
CD/Turnpike	On	1	1,360	2,100	No
I-95 NB	Off	2	1,000	4,400	No
I-95 SB	Off	2	1,620	4,400	No
I-95 SB	On	2	1,900	4,400	No
I-95 NB	On	2	3,560	4,400	No

Westbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-95 SB	Off	2	1,810	4,100	No
I-95 NB	Off	2	1,710	4,100	No
CD	Off	1	2,170	2,100	Yes
I-95 NB	On	2	3,150	4,400	No
I-95 SB	On	2	3,320	4,400	Yes
Turnpike	On	2	3,680	4,100	No
Davie/SR 84	Off	1	695	2,100	No
University Drive	Off	2	865	4,100	No
Davie/SR 84	On	1	2,080	2,100	No
Pine Island Road	Off	2	2,900	4,100	No
University Drive	On	1	960	2,100	No
Nob Hill Road	Off	2	2,560	4,100	No
Pine Island Road	On	2	2,500	4,100	No
Hiatus Road	Off	1	1,670	2,100	No
Flamingo Road	Off	2	2,370	4,100	No
Hiatus Road	On	1	1,170	2,100	No
Nob Hill Road (By-Pass)	On	1	460	2,100	No
SW 136th Ave	Off	1	1,780	2,100	No
Flamingo Road	On	1	1,030	2,100	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.3(d)
Year 2034 Build
Ramp Roadway Capacity PM

Turnpike

Northbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
Griffin Rd	On	2	1,460	4,100	No
To I-595 EB	Off	2	2,860	4,400	No
To I-595 WB	Off	2	2,900	4,400	No
From I-595 EB	On	1	1,290	2,100	No
From I-595 WB	On	2	2,200	4,100	No

Southbound Location	Ramp	No. of Lanes	Volume (vph)	Capacity (1)	Over Capacity
I-595	Off	2	3,150	4,100	No
Griffin Rd	Off	1	1,000	2,100	No
I-595	On	3	4,620	6,300	No

Note:
(1) According to HCM Methodology Exhibit 25-3

Table 7.4
Year 2014 Build
Freeway Weaving Level of Service

I-595

Eastbound

Location	LOS	
	AM Peak	PM Peak
Between SW 136th Ave and Flamingo Road	F	E
Between Flamingo Road and Hiatus Road	F	E
Between Hiatus Road and Nob Hill Road	F	E
Between Pine Island Road and University Drive	F	F
Between University Drive and Davie Road	F	E
Between Davie Road and Turnpike	F	F

Westbound

Location	LOS	
	AM Peak	PM Peak
Between Turnpike and Davie Road	E	F
Between Nob Hill Road and Hiatus Road	E	F
Between Hiatus Road and Flamingo Road	F	F
Between Flamingo Road and SW 136th Ave	D	F

Table 7.4(a)
Year 2034 Build
Freeway Weaving Level of Service

I-595

Eastbound

Location	LOS	
	AM Peak	PM Peak
Between SW 136th Ave On and Flamingo Rd Off	D	E

Westbound

Location	LOS	
	AM Peak	PM Peak
Between Turnpike and Davie Road	E	D
Between University and Nob Hill	D	D
Between Nob Hill By Pass and SW 136th Ave	E	C

The level of service for the opening year 2014 Build condition is shown in Figure 7-1. The level of service for the system during the AM peak period and the PM peak period are depicted in Figure 7-2and Figure 7-3 for design year 2034.

7.4.5 Intersection Analysis

The intersection capacity analyses results are shown in Table 7.5 and Table 7.6. For the opening year 2014 Build conditions, the only intersection that will be different from the 2014 No Build will be the intersection with SW 136th Avenue and SR 84. The analysis shows that SW 136th Avenue/SR 84 westbound will fail during the PM peak period.

Table 7.6 (Design Year 2034) indicates that during the AM peak hour, Nob Hill Road, Pine Island Road, and Davie Road all have ramp termini intersections operating at a LOS F in the eastbound direction. During the PM peak the intersection of Davie Road will operate at a level of service F.

The analysis indicates that for Design Year 2034 during the AM peak period, the intersection of University Drive/I-595 westbound ramps, Pine Island Road/I-595 westbound ramp and SW 136th Avenue/I-595 westbound ramps operate at a LOS F. During the PM peak period the intersections of University Drive, Pine Island Road, Nob Hill Road, Flamingo Road and SW 136th Avenue with SR 84 westbound operate a LOS F.

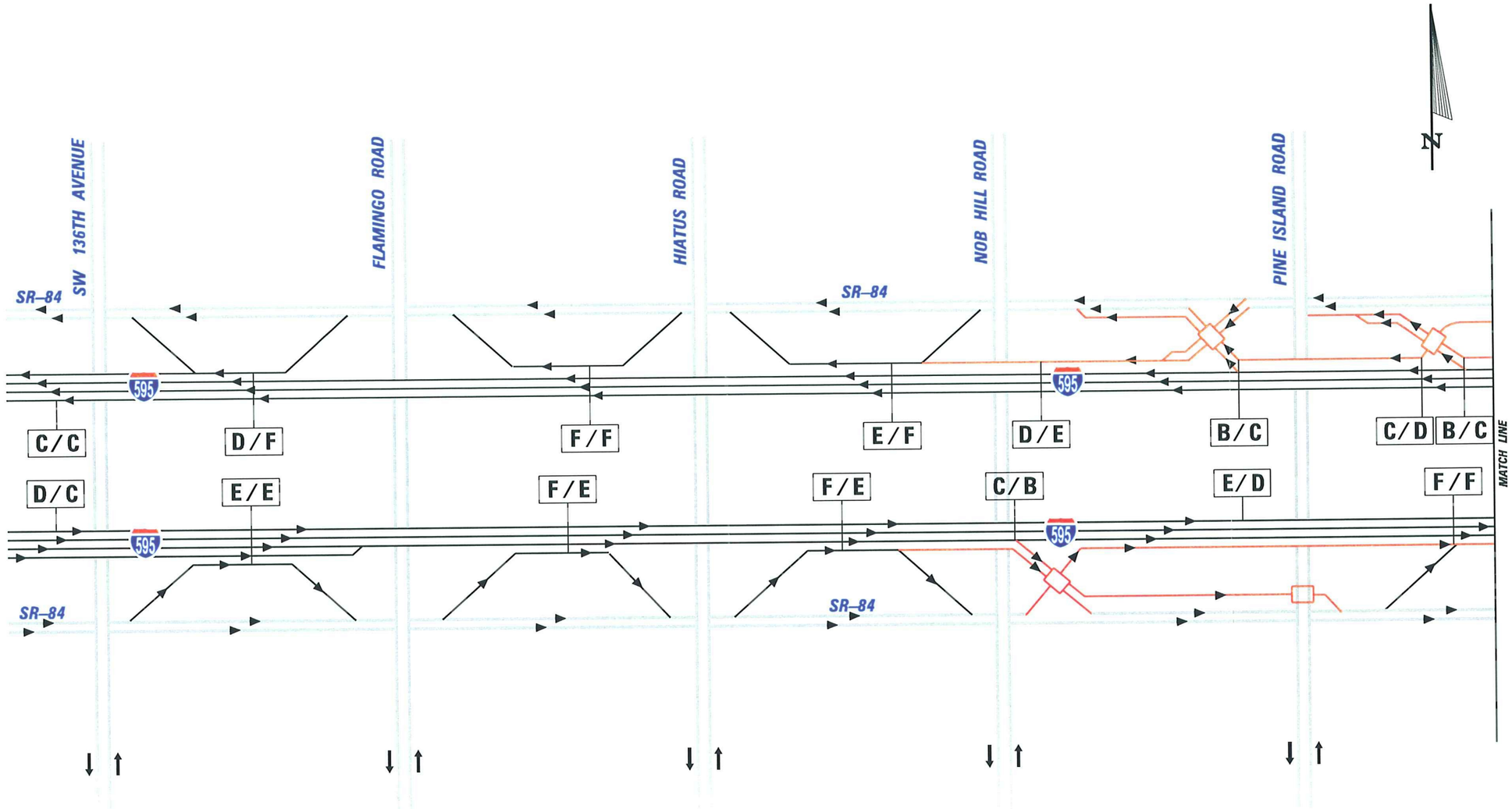
The HCS computer worksheets are contained in Appendix C.

7.5 CONCLUSIONS AND RECOMMENDATIONS

This SIMR is based on criteria and guidelines developed by FHWA and FDOT. The analyses were completed to the detail required to determine that a feasible interchange concept can be implemented within acceptable engineering, economic, social and environmental limits. The study limits for this SIMR begin east of I-75 and end east of I-95.

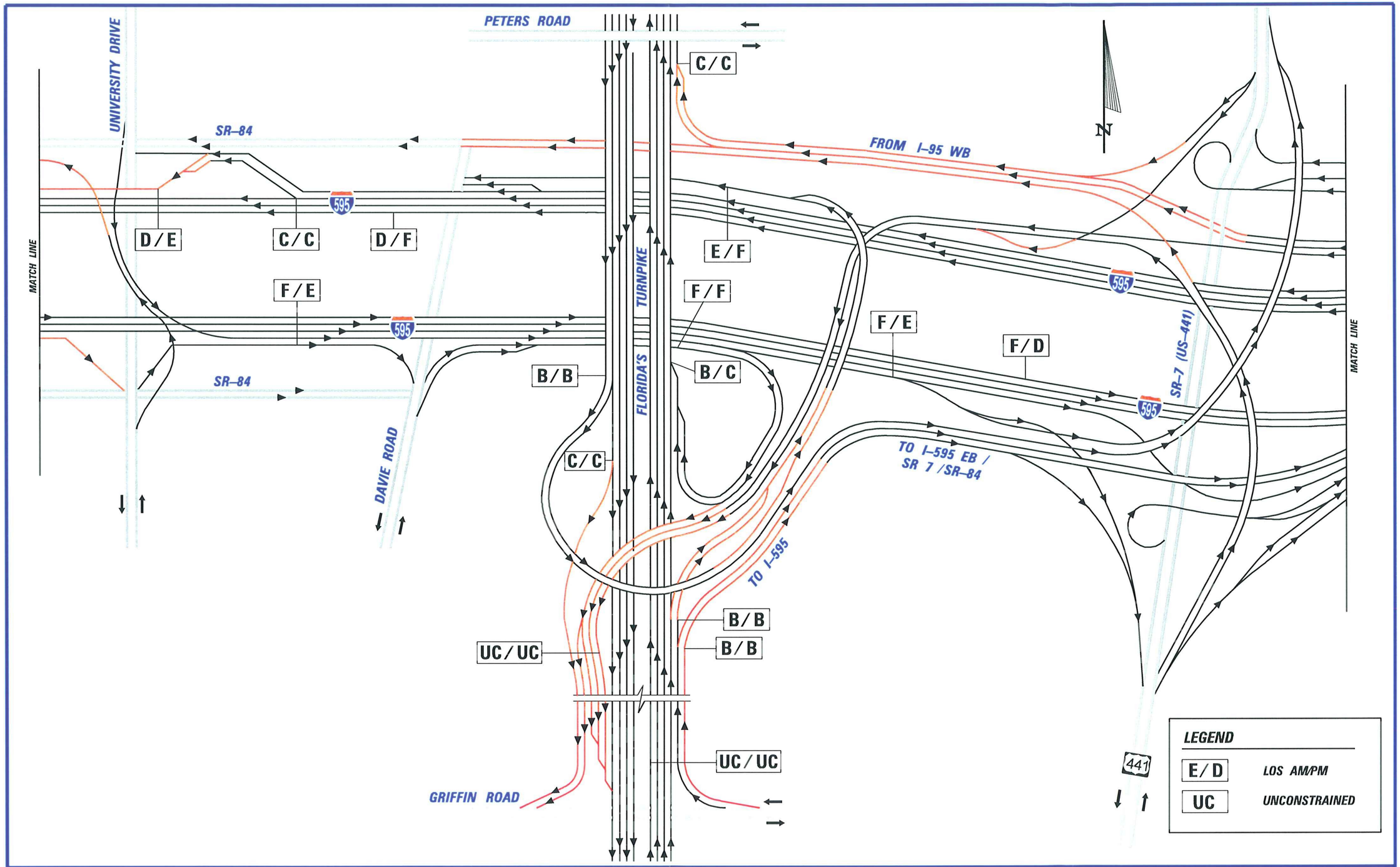
This SIMR serves as an update to the alternatives considered in the I-95/I-595 Master Plan.

The recommended SIMR interchange improvements together with the addition of a collector distributor (CD) roadway between Davie Road and I-95 interchanges are necessary to enable the interstate mainline and interchange to operate at acceptable levels of service. The proposed improvements such as reversible lanes and interchange improvements would increase capacity on the I-595 corridor to meet projected traffic demand.

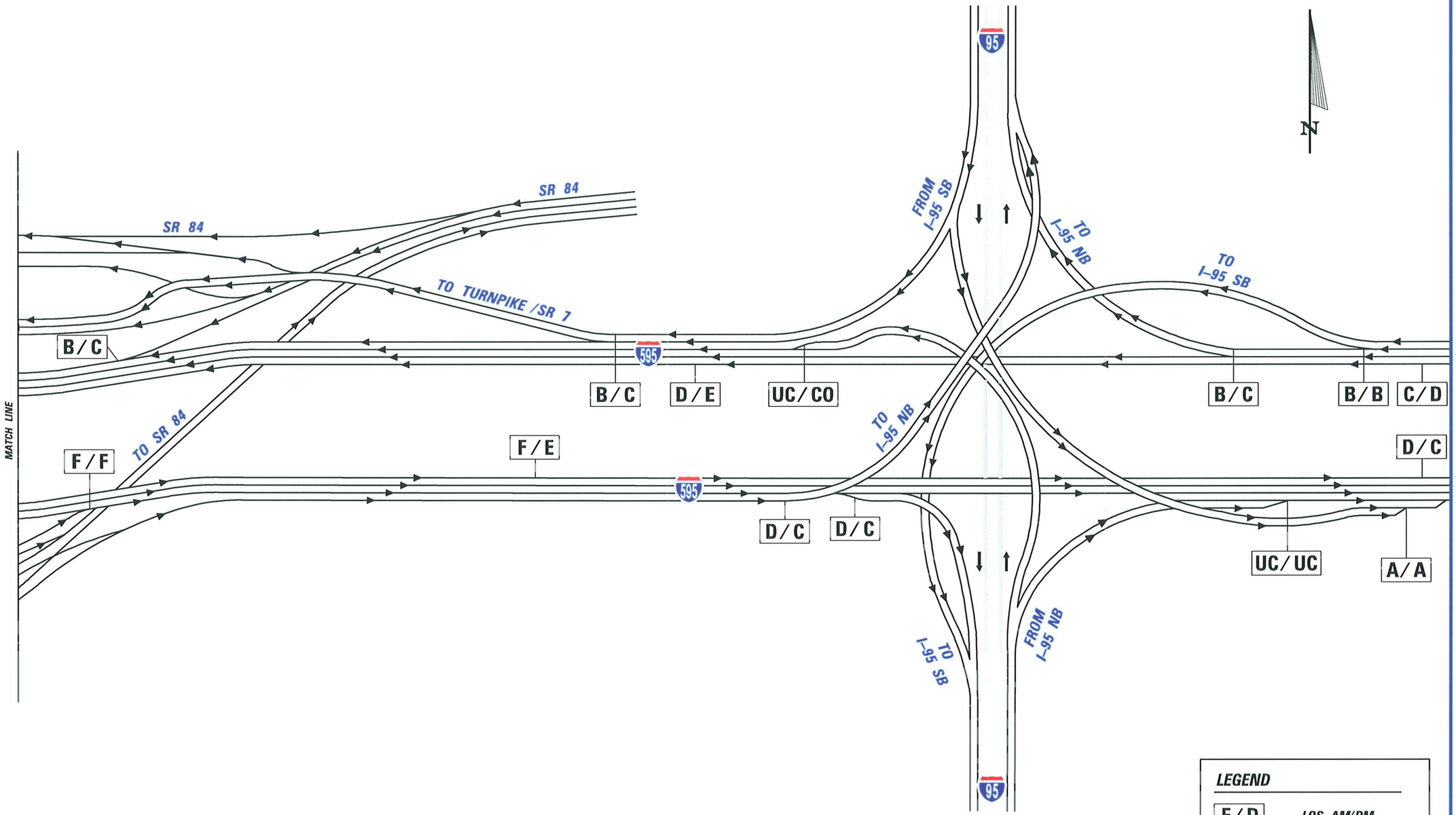


LEGEND	
E/D	LOS AM/PM
UC	UNCONSTRAINED

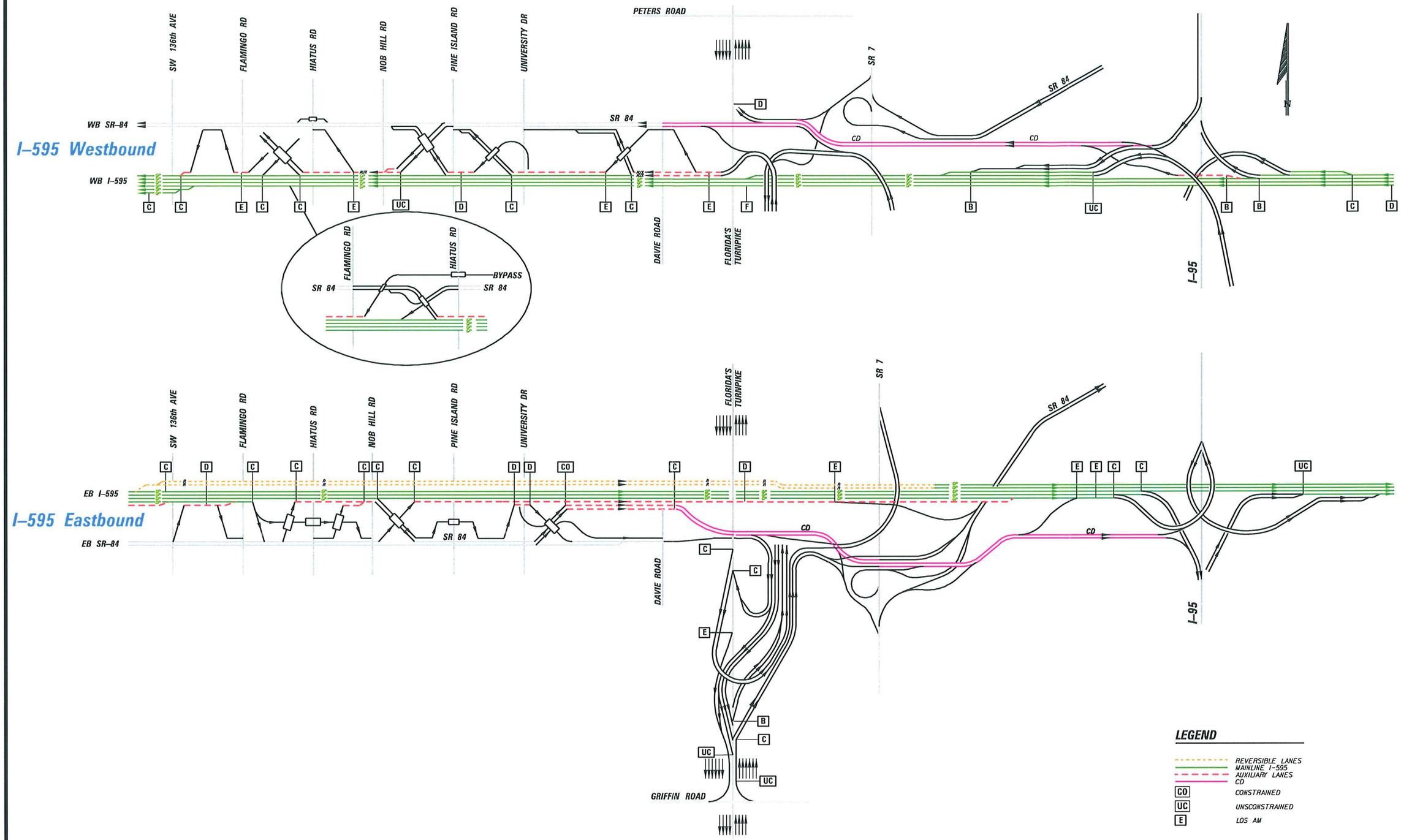
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM I–75 TO EAST OF I–95	YEAR 2014 BUILD LEVEL OF SERVICE	FIGURE 7–1 1 OF 3



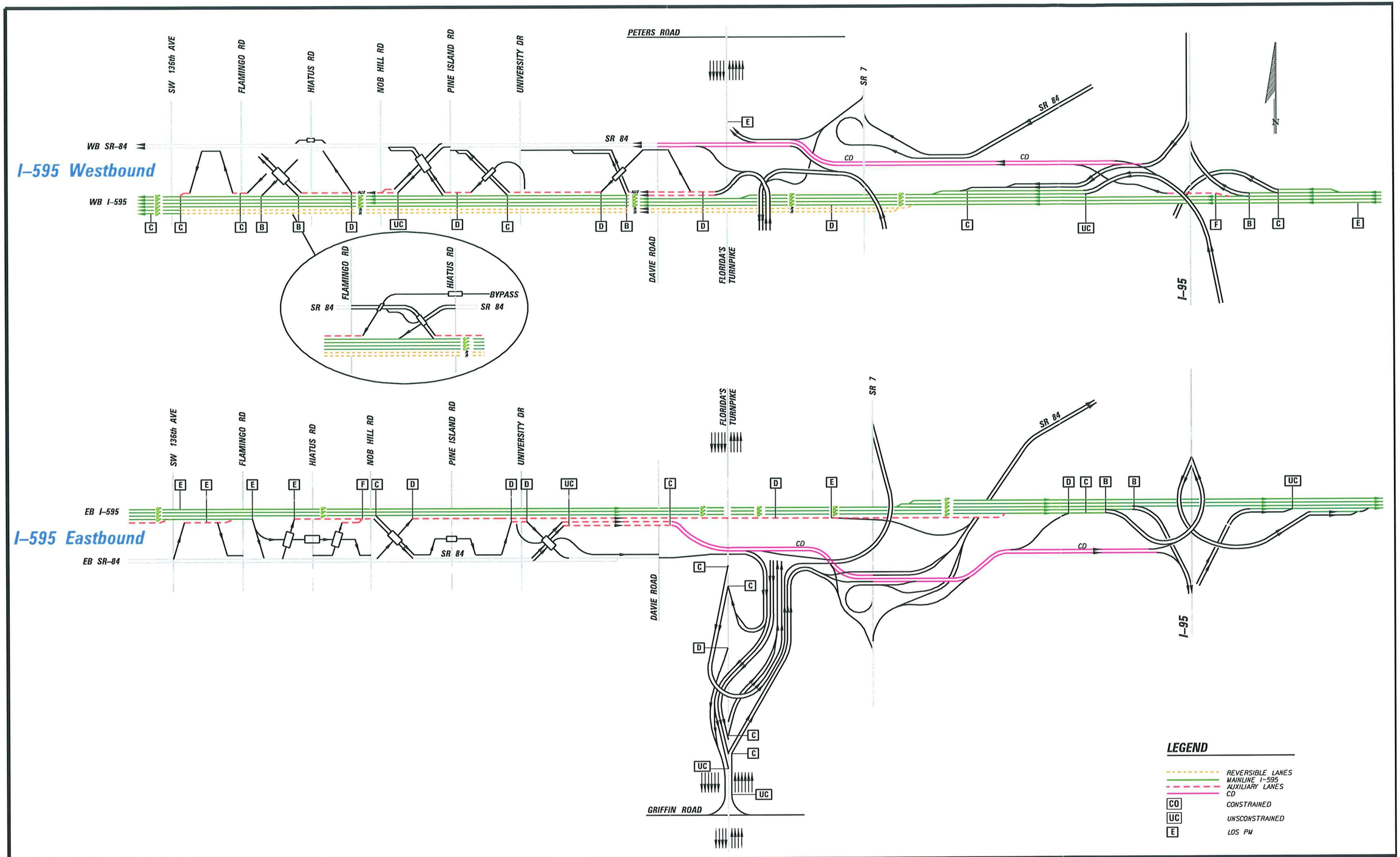
RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM I–75 TO EAST OF I–95	YEAR 2014 BUILD LEVEL OF SERVICE	FIGURE 7–1 2 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM UNIVERSITY DRIVE TO I–95	YEAR 2014 BUILD LEVEL OF SERVICE	FIGURE 7–1 3 OF 3



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 REVISED LPA AM LEVEL OF SERVICE	FIGURE 7–2



RS&H Reynolds, Smith and Hills, Inc. Architecture, Engineering and Planning	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	I–595 SYSTEMS INTERCHANGE MODIFICATION REPORT FROM EAST OF I–75 TO EAST OF I–95	YEAR 2034 REVISED LPA PM LEVEL OF SERVICE	FIGURE 7–3

Table 7.5
Year 2014 Build
Signalized Intersections Level of Service

Location		LOS		Delay	
		AM	PM	AM	PM
SW 136th Avenue	EB	D	D	41.2	41.2
	WB	D	**F**	36.9	**127.9**

Table 7.6
Year 2034
Signalized Intersections Level of Service

SR 84 EB

Location	LOS		Delay	
	AM	PM	AM	PM
SW 136th Avenue	E	D	69.7	53.9
Flamingo Road	E	D	65.3	50.4
Hiatus Road	D	C	48.6	27.5
Nob Hill Road	**F**	D	**90.0**	50.5
Pine Island Road	**F**	E	**124.6**	78.0
University Drive	E	E	79.6	66.0
Davie Road	**F**	**F**	**104.2**	**90.8**

SR 84 WB

Location	LOS		Delay	
	AM	PM	AM	PM
SW 136th Avenue	**F**	**F**	**203.0**	**108.5**
Flamingo Road	E	**F**	62.1	**114.9**
Hiatus Road	D	D	53.2	38.2
Nob Hill Road	E	**F**	67.9	**169.1**
Pine Island Road	**F**	**F**	**155.9**	**234.6**
University Drive	**F**	**F**	**185.6**	**113.4**
Davie Road	B	C	19.2	21.6

The proposed improvements would satisfy 2034 travel demand for the corridor except at the following locations:

- The westbound travel lanes between I-95 on-ramp and Turnpike on-ramp

The ramp and ramp junctions investigate outside lane to determine if merging, diverging or weaving traffic would affect traffic flow. The proposed ramp configurations are adequate to serve travel needs in this corridor with the following exception:

- The eastbound Hiatus Road entrance ramp (merge failed)

It is recommended that the eastbound mainline segment from SR7/Turnpike to I-95 be widened to five lanes. This could be implemented as soon as possible by restriping the viaduct with a design exception alternative. This improvement, which is similar to the westbound improvement, would alleviate congestion in the eastbound direction.

8. JUSTIFICATION FOR PROJECT

8.1 Compliance with FHWA's General Requirements

The following requirements serve as the primary decision criteria used in approval of SIMR. Responses of each of the eight points are provided to show that the proposal is viable based on the conceptual analysis performed to date.

8.1.1 Existing system is incapable of accommodation the traffic……..

The existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access nor be improved to satisfactorily accommodate the design year traffic demands while at the same time providing the access untended by the proposal.

The I-595 SIMR is approximately 12 miles in length and includes the following interchanges:

- I-95
- SR7/US 441
- Turnpike
- Davie Road
- University Drive
- Pine Island Road
- Nob Hill Road
- Hiatus Road
- Flamingo Road
- SW 136th Avenue

All the interchanges within the SIMR study area between I-95 and SW136th Avenue have been subject of previous studies. Approximately two years ago, the I-95/I-595 Master Plan identified the need to modify the interchanges. Since then traffic along the I-595 mainline has increased and the design year was projected 14 year from the Master Plan study year.

The SIMR analyzed the interchanges and mainline from I-95 to SW 136th Avenue on a system basis. Given the future traffic demand and previously programmed improvements, the analysis of opening year 2014 and design year 2034 traffic conditions found that improvements are no longer sufficient to handle future projected interstate mainline traffic or interchanges access needs.

The recommended SIMR interchanges improvements are a refinement of the 2020 Master plan improvements.

8.1.2 All reasonable alternatives to a new interchange have been considered…

All reasonable alternatives for design options, location and transportation system management type improvements such as ramp metering, mass transit and High Occupancy Vehicle (HOV) facilities have been assessed and provided for if currently justified or provisions are included for accommodating such facilities if a futures need is identified.

This SIMR serves an update to the alternative considered in the I-95/I-595 Mater Plan. The Master Plan evaluated multimodal transportation improvements including local transit, express bus service via I-595 and park and ride facilities. All the alternatives consistent with the Mobility 2000 Expansion have been evaluated as part of this SIMR.

Alternatives considered include TSM actions, such as FDOT's Incident Management Plan and ITS Master Plan, and TDM measures, such as traditional ridesharing or alternate work hours. The net impacts of these alternatives are insufficient to meet the need fro improved interchange access.

8.1.3 Proposal does not adversely impact operational safety of the existing freeway….

The proposed access point does not have a significant adverse impact on the safety and operation of the interstate facility based on an analysis of current and future traffic. The optional analysis for existing conditions shall particularly in urbanized areas, include an analysis of section of interstate to and including at least the first adjacent existing or proposed interchange on either side. Crossroads and other roads and streets shall be include in the analysis to the extent necessary to assure their ability to collect and distribute traffic to and form the interchange with new or revised access point.

The operational analysis for opening year 2014, interim year 2024 and design year 2034 were conducted to confirm that the proposed interchange modifications do not adversely impact the operations of the freeway general uses lanes, interchange ramps and crossroad ramp terminal intersections.

The construction of the recommended interchanges improvements, the reversible lane and the C-D road system between SW 136th Avenue an dI-95 will cause a significantly redistribution of traffic form the interstate to the reversible lane and C-D road system when compared to the No Build scenario. This redistribution enables the I-595 general use lanes and interchange ramps to operate at acceptable levels of services for the design year 2034 when compared to the No Build condition.

8.1.4 A full interchange with all traffic movements at a public road is provided….

The proposed access connects to public road only and will provide for all traffic improvements. Less than "full interchanges" for special purpose access for transit vehicles for HOVs or into park and rode lots may be considered on a case-by-case basis. The proposed access will be designed to meet or exceed current standards for federal-aid projects on the interstate system.

Each of he I-595 interchanges in the SIMR provides full access to the local street system and accommodate traffic movement in all directions. The proposed C-D road system to SR 84 will provide access to I-95 and SR7intechanges. The access provided by the proposed interchange modifications, reversible lanes and C-D road system meets or exceed AASHTO standards minimum ramp terminal spacing. Also improvements at the Turnpike are considered as part of this SIMR.

8.1.5 The proposal is consistent with local and regional plans…

The proposal considers and is consistent with local and regional land use and transportation plans. Prior to final approval, all requests for new or revised access must be consistent with the metropolitan and/or statewide transportation plan, as appropriate, the applicable provisions of 23 CFR parts 450 and the transportation conformity of 40 CFR parts 51 and 93.

The future year traffic forecasts were developed during the I-95/I-595 Master plan study. The Florida Department of Transportation (FDOT) Southeast Regional Planning Model, Version 4 (SERPM-4) was used. SERPM is a derivative of the Florida Statewide Urban Transportation Modeling System (FSTUMS), which serves as the standards set of programs for modeling urban areas with the state of Florida

8.1.6 Consistency with State Highway Master Plans……..

In areas where the potential exist for future multiple interchange additions, all requests for new or revised interchanges are supported by a comprehensive Interstate network study with recommendations that address all proposed and desired interchanges within the context of a long-term plan.

The proposed interchange modifications are consistent with the I-95/I-595 Master Plan thus maintaining integrity of the overall system.

8.1.7 Coordinated with the area's development……

The request for a new or revised access generated by new or expanded development demonstrates appropriate coordination between the development and transportation system improvements.

The need for interchange modifications was identified as part of the transportation planning process. As part of the planning process various alternatives development and transportation system improvements were tested in a regional context.

8.1.8 Request needs to consider planning and environmental constraints…

The request for new or revised interchange contains information relative to the planning requirements and the status of the environmental processing of the proposal.

Environmental, land use, and right-of-way considerations were an important source of information for this SIMR. A more detailed investigation is being performed in the I-595 PD&E Study authorized by FDOT.

No fatal flaws from a planning and environmental perspective have been identified at this time. Modification of the interchanges will have minimal environmental impacts. Those impacts that do occur can be mitigated.

9. CONCEPTUAL FUNDING PLAN/CONSTRUCTION SCHEDULE

The interchanges included in this SIMR report are in the Department's FIHS 2025 Cost Feasible Plan.

The FDOT District 4 work program will include many of the proposed I-595 improvements over the next 10 years. The Phase I improvements will be implemented first and open to traffic by 2014. Funding for the proposed improvements at the I-595/Turnpike interchange will be shared between FDOT and Florida's Turnpike Enterprise. These improvements will be the first projects implemented along the I-595 corridor. The identified funding sources, as well as the implementation phasing strategies will be finalized as the PD&E Study progresses.