METROPOLITAN DADE COUNTY, FLORIDA

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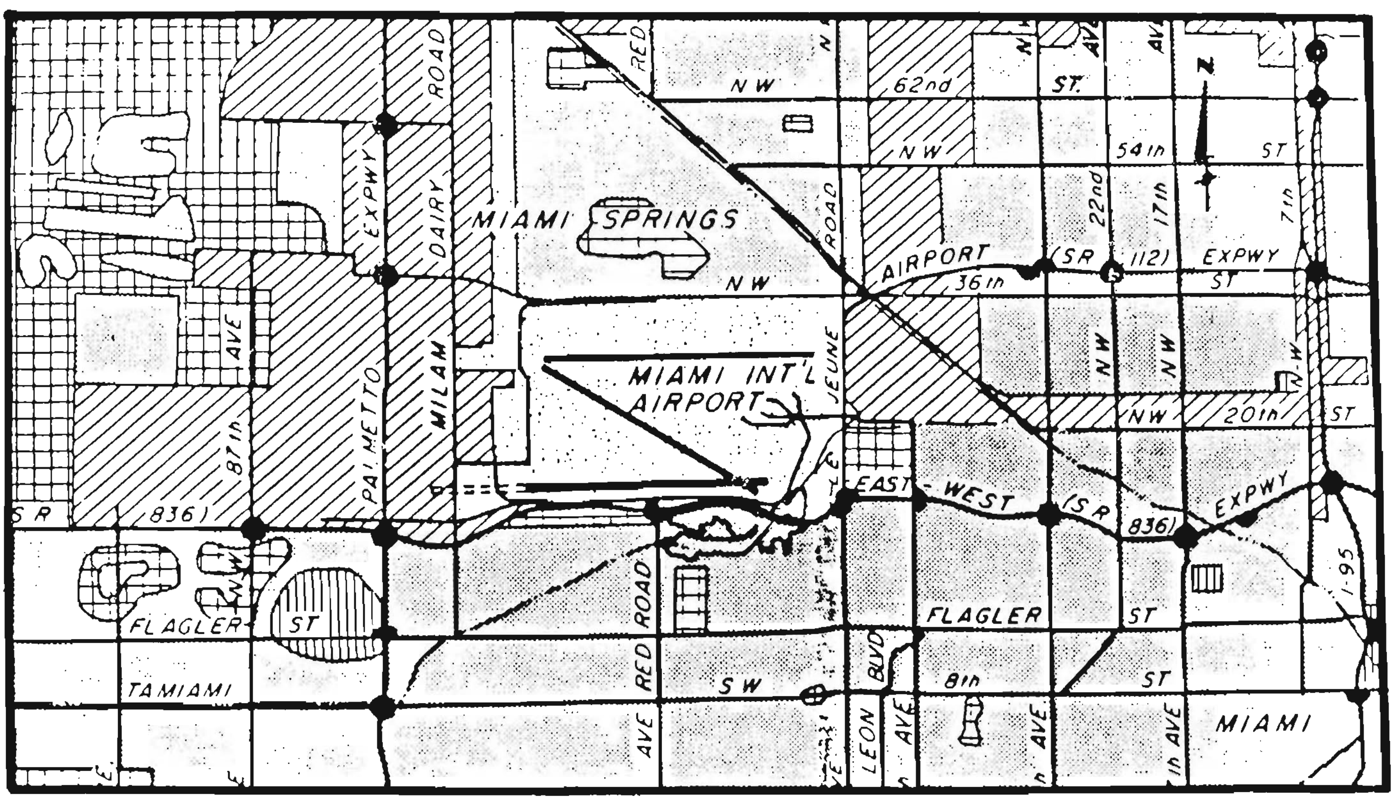
METRO-DADE COUNTY
METROPOLITAN PLANNING ORGANIZATION

TECHNICAL MEMORANDUM 2: FUTURE CONDITIONS



HARRIS
Frederic R. Harris, Inc.

MIAMI INTERNATIONAL AIRPORT TRANSPORTATION STUDY

TECHNICAL MEMORANDUM 2: FUTURE CONDITIONS

Prepared for the
Following Organizations:

Metro-Dade Transit Agency
Metro-Dade Aviation Department
Florida Department of Transportation

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April 1988

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I. INTRODUCTION

This technical memorandum presents the results and analysis of projections for 1992 and 2010 travel demand in the Miami International Airport (MIA) area. These projections are built upon the existing conditions as documented in Technical Memorandum 1: Existing Conditions, and take into account the anticipated growth of Dade County, planned and programmed roadway construction, and assumptions concerning transit service improvements.

The draft versin of this document was presented to the Steering Committee for review. Comments resulting from this review were incorporated into this final version.

The results of the analyses contained herein substantiate that the MIA area is and will continue to be a major focus of travel. Approximately 11 million vehicle-miles of travel a day are projected to occur in the area in the year 2010, an increase of almost 30 percent over today's travel.

Significant transportation improvements, in addition to those already programmed and planned for, will be required to improve travel conditions in the MIA over those experienced today. In a sense, the analyses also indicate that planned and programmed improvements will essentially maintain the same levels of travel service as are provided today.

The next section presents the methodology used and assumptions made to project travel in the MIA area. This is followed by the results of the computer forecasts and their analysis. The last section presents summary conclusions of projected transportation needs in the MIA study area.

II. FORECAST METHODOLOGY

This section presents the assumptions and methodologies followed in performing the future year forecasts for travel demand in the Miami International Airport (MIA) area. The process utilized 1986 travel conditions as a starting point upon which computer forecasts for the years 1990/1992 and 2010 were overlain. Highway and transit computer networks, maintained by the Metro-Dade Transit Agency (MDTA), were updated to reflect the latest construction programs and transportation plans. Computer programs supporting the current Miami Urban Area Long-Range Transportation Plan were used to make the future year simulations.

MODELING APPROACH

The travel demand models used for making the future year forecasts consisted of those supporting the MUATS Long-Range Transportation Plan. The MUATS models were developed in 1981 and used in 1983 and 1984 in preparing the 1984 MUATS Long-Range Transportation Plan update. This model set was selected for the following reasons:

- The Metro-Dade MPO was in the process of converting its entire modeling system from the MUATS system to the Florida Standard Urban Transportation Modeling System (FSUTMS). This process was not completed in time for use in this study.

- Required input data was readily available.

- The MUATS modeling system would facilitate timely completion of the study.

The MUATS models were used to provide computer simulations for three scenerios; 1986, 1990/1992, and 2010. The 1986 simulation was made using the following input data elements:

- 1985 land use data with revisions in the downtown Miami, the MIA and West Airport areas to account for 1986 development patterns in these two areas.

- 1986 highway network as contained on the FDOT mainframe.

- 1986 transit network as contained on the FDOT mainframe and which represents Network '86 service adjustments.

The 1990/1992 computer simulation utilized the following data elements:

- 1990 land use data.

- 1990 highway network updated to reflect all completed road construction contained in the Metro-Dade 1988-1992 Transportation Improvement Program.

- 1986 transit network as contained on the FDOT mainframe and which was used for the 1986 simulation.

Input to the year 2010 simulation consisted of the following data elements:

- o 2005 land use data.
- o Year 2000 highway network updated to reflect the urban area's Long-Range Plan as revised in July 1987.
- o Year 2000 transit network as contained on the FDOT mainframe, reflecting the existing Metrorail System, the proposed Metromover extensions, and the same bus service as contained in the 1986 transit network.

The data contained in the Y2KA4 data set on the FDOT mainframe was the same as used in the Metromover Extension EIS effort.

The first step in the modeling process consisted of making a 1986 forecast. This forecast was needed so as to relate model results to actual conditions. Computer models do not always provide results which accurately reflect actual conditions. Since it would be useful to compare future conditions to the present ones, the 1986 forecasts and 1986 observed conditions were used to produce factors to be applied to the future year forecasts. The data collected in Task 1 of the study was used to provide the basis for this "rationalization" of the computer model results. This part of the effort provided link-by-link conversion factors which could be used on alternative year forecasts. These factors provided a common basis for drawing realistic conclusions from the computer simulations.

The next step in the process was to perform forecasts for 1992 and 2010. These forecasts were then "rationalized" using the factors discussed above. The results of this effort are link volumes and volume capacity ratios which can be directly compared to existing travel conditions.

MODEL INPUT PREPARATION

Input data to the modeling process consisted of land use data, highway network descriptions and transit network descriptions. The preparation of these data is presented in the following sections.

Land Use Data

Three land use data sets used in the forecasting represented the years 1986, 1990, and 2010. These were developed specifically for this study and were derived from existing data sets. Sources for these data included

- o the existing MUATS land use data sets for 1985 and 1990.
- o the Y2KA4 land use data set representing the year 2000 and specifically developed for the MetroMover EIS work.
- o data sets provided by Metro-Dade Planning Department who updated employment in the study area to represent the years 1986, 1990, and 2005.

Different methodologies were used to develop each of the three land use data sets. Generally, the process consisted of selecting an existing data set, incorporating updated data item values within the study area, and using the existing data set values outside the study area. Figure II-1 presents the study area with subareas by which the land use is reported in this report. Figure II-1 also shows the MUATS traffic analysis zones which are contained in each subarea.

The 1986 land use data were required so as to relate the computer simulations to actual travel. For these data, a MUATS data set was used as the starting point. This data set was provided by the Metro-Dade Transit Agency and was originally developed for areawide DRI work for Downtown Miami and the West Airport area. This data set was derived from the 1985 MUATS data set with the Downtown and West Airport areas updated to 1986. To this was incorporated data developed specifically for this study by Metro-Dade Planning representing 1986 land use in the entire MIA Study Area.

The 1990 MUATS data set provided by the MDTA was used to prepare the 1992 forecasts. Special MIA Study Area land use was developed by Metro-Dade Planning and was incorporated into the 1990 MUATS data set provided by the MDTA. This special information represented 1990 employment.

For the year 2010, an existing 2000 MUATS data set provided by the MDTA was used. This data set was used in preparing the EIS for the MetroMover extensions by MDTA staff. MIA Study Area employment data representing 2010 estimates and developed specifically for this study by Metro-Dade Planning was then added. These data represented 2010 land use in the MIA Study Area. This data set was finally adjusted to reflect anticipated year 2010 conditions. The adjustment consisted of reducing the total county-wide population and employment by 4 percent with the total reduction occurring outside the study area. The reason for this final adjustment is that the population and employment growth assumed in developing the 2000 data originally was higher than what is now expected. This year 2000 data set was developed at the time that explosive growth was occurring in Southeast Florida.

All of the above data sets were in the MUATS format which was important so as to maintain compatibility with the MUATS model stream.

Tables II-1 and II-2 present summaries of the MIA Study Area land use data used in preparing the baseline forecasts for 1992 and 2010. As can be seen, the travel forecasts assumed that study area employment would increase by 38 percent by 1992 and 64 percent by 2010 over 1986. The forecasts also assumed that study area population would increase by 27 percent by 1992 and 58 percent by 2010 over 1986. This suggests that future traffic in the area will increase significantly over today's levels. Further, a dominant direction of travel may be less apparent in the future than today. Population in the SR 826 West and the Southwest subareas is anticipated to increase by 200 percent by 2010. Employment is anticipated to increase by 125 percent in these subareas by 2010. Employment west of SR 826 will be significantly larger in 2010 than what is expected at the Airport itself.

Special Generators

The data sets referred to in the previous section each contained special generator data. These data were reviewed for those zones contained in the study area. These data were updated to maintain consistency with a recent evaluation of special generators performed by the MDTA staff. Table II-3 presents the original and updated special generator data for zones within the MIA study area.

Highway Networks

Three highway networks were used for making the travel projections. The 1986 network contained in the FDOT mainframe computer and provided by the MDTA was used to make a forecast of current conditions. Since travel demand models cannot be expected to precisely replicate real-world conditions, this network would provide a baseline condition against the future forecasts could be judged.

The 1990 highway network was used to develop the 1992 highway network used to make the year 1992 travel projections. The 1990 network was updated to include all road projects expected to be completed by 1992 as contained in the 1988-1992 Dade County Transportation Improvement Program (TIP). This amounted to $94 million of roadway improvements. Figure II-2 shows those links in the road network with programmed improvements. Tables II-4 and II-5 list the projects contained in the TIP and incorporated into the 1992 highway network. All projects contained in a window area defined by NW 79 Street, I-95, Kendall Drive, and the Homestead Extension were added to the 1990 network. Major road projects occurring outside the window area were also added to the 1990 highway network. Projects outside the window area were added if it was thought that they could influence the route of travel of traffic entering the MIA area.

The year 2000 highway network contained in the FDOT computer and used for the Metromover EIS work was revised to reflect the current LongRange Transportation Plan as revised in July 1987. This network was called the 2010 network for this study. Figure II-4 shows improvements contained in the Long-Range Plan. These improvements represent over $3 billion of road construction.

Transit Networks

The three transit networks used in the forecasting contained the same level of bus service as contained in the 1986 transit network. This level of service is reasonably close to the actual AM service provided by the MDTA system in 1986 and reflects service changes resulting from the Network '86 program.

The only real difference between the networks was that the year 2010 network contained the Omni and Brickell extensions to the Metromover system. No additional Metrorail service was contained in the year 2010 transit network.

TABLE II-1. STUDY AREA EMPLOYMENT SUMMARY

STUDY SUB-AREA	COMMERCIAL	RETAIL	TOTAL
	1986		
1. EAST	2,844	1,128	7,003
2. AIRPORT	5,603	833	37,104
3. MIAMI SPRINGS	2,710	1,094	5,670
4. NW 72 AVENUE	3,271	820	16,798
5. SR 826 WEST	9,004	1,160	21,256
6. SOUTHWEST	1,826	1,359	6,889
7. SOUTH	2,820	1,105	5,900
8. SOUTHEAST	2,056	1,215	3,544
TOTAL	30,134	8,714	104,164
	1992		
1. EAST	3,071	1,164	7,500
2. AIRPORT	5,841	868	38,985
3. MIAMI SPRINGS	2,714	1,100	5,703
4. NW 72 AVENUE	10,282	1,757	25,167
5. SR 826 WEST	21,488	3,906	41,950
6. SOUTHWEST	5,920	1,508	8,030
7. SOUTH	7,677	1,266	12,805
8. SOUTHEAST	1,967	1,224	3,525
TOTAL	58,960	12,793	143,665
	2010		
1. EAST	3,331	1,164	8,690
2. AIRPORT	7,022	1,016	47,705
3. MIAMI SPRINGS	2,794	1,100	5,793
4. NW 72 AVENUE	11,216	1,807	26,760
5. SR 826 WEST	25,106	4,429	53,179
6. SOUTHWEST	5,920	1,883	10,130
7. SOUTH	8,677	1,276	14,650
8. SOUTHEAST	2,150	1,224	3,850
TOTAL	66,216	13,899	170,757

TABLE II-2. STUDY AREA PRODUCTION DATA SUMMARY

STUDY SUB-AREA	POPULATION	DWELLING UNITS	AUTOS	HOTEL/ MOTEL
	1986			
1. EAST	6,108	2,209	3,142	707
2. AIRPORT	978	474	563	805
3. MIAMI SPRINGS	15,016	6,342	9,297	970
4. NW 72 AVENUE	0	0	0	223
5. SR 826 WEST	4,280	2,437	3,197	676
6. SOUTHWEST	17,148	9,564	12,818	0
7. SOUTH	28,359	12,035	14,535	552
8. SOUTHEAST	13,205	4,901	6,568	502
TOTAL	**85,094**	**37,962**	**50,120**	**4,435**
	1992			
1. EAST	6,235	2,320	3,101	836
2. AIRPORT	1,490	758	733	805
3. MIAMI SPRINGS	15,634	6,760	10,224	970
4. NW 72 AVENUE	0	0	0	223
5. SR 826 WEST	5,098	2,956	4,110	1,154
6. SOUTHWEST	35,678	18,269	24,884	0
7. SOUTH	30,464	13,040	16,319	1,924
8. SOUTHEAST	13,743	5,217	6,560	502
TOTAL	**108,342**	**49,320**	**65,931**	**6,414**
	2010			
1. EAST	6,225	2,336	3,123	829
2. AIRPORT	1,740	891	851	805
3. MIAMI SPRINGS	16,168	7,008	10,583	970
4. NW 72 AVENUE	0	0	0	223
5. SR 826 WEST	11,873	6,129	8,823	1,154
6. SOUTHWEST	51,518	25,482	34,937	0
7. SOUTH	32,774	14,191	17,663	1,924
8. SOUTHEAST	13,753	5,273	6,631	499
TOTAL	**134,051**	**61,310**	**82,611**	**6,404**

Table II-3. Special Generator Data

Zone	Trip Purpose	Flag	Original 1986	Original 1990	Original 2010	Update 1986	Update 1990	Update 2010
161	S/R	A	0	2550	2550	0	2550	3019
572	W	R	23968	30481	36690	23968	30481	36690
573	W	R	557	709	853	0	0	0
574	S/R	R	76000	95000	112480	683	869	1046
	W	R	2274	2892	3481	0	0	0
575	S/R	R	0	0	0	87400	98300	167886
	W	R	28394	36111	43467	28394	36111	43467
586	SH	R	0	10350	11000	31625	31625	33611
593	SH	A	48000	55200	64320	33200	38180	44488
681	S/R	R	7000	9000	11000	8200	10542	12885
682	SH	A	11000	12650	12650	12300	14145	14145

Note:
S/R = Home-based social-recreation
W = Home-based work
Shop = Home-based shop
R = Replace trip generation model attractions
A = Add to trip generation model attractions

Table II-4. 5-Year Primary Roadway Systems Improvements

FDOT WPI No.	PROJECT	LIMITS	TYPE OF WORK	PHASE	COST (thousands)	FISCAL YEAR
6112975	SR 112 Airport Expressway	Miami Int. Airport NW 36th St.	New road const. (southbound)	CST CEI	8,106 811	1987-88 1987-88
6113090	SR 112 Airport Expressway	Miami Int. Airport NW 36th St.	New road const. (northbound)	CST CEI	8,179 818	1987-88 1987-88
6113289	SR 826 Palmetto Expressway	2000' south of NW 25th St. 2000' north of NW 25th St.	Interchange	PE ROW ROW CST CEI	300 1,000 3,000 7,642 764	1987-88 1987-88 1988-89 1989-90 1989-90
6113750	SR 826 Palmetto Expressway	SR 836 South of NW 25th St.	Multilane Reconstruction	PE ROW	750 3,252	1988-89 1989-90
6113826	SR 826 Palmetto Expressway	From SW 16th St. SR 836	Road construction	PE	750	1991-92
6113829	SR 826 Palmetto Expressway	NW 62nd St. North of FEC RR	Road construction	PE	1,750	1991-92
6113601	SR 836 Dolphin Expressway East-west Expressway	SR 821/Turnpike SR 9A/I-95	Add lanes and resurface	PE PE PE	1,000 300 1,000	1987-88 1988-89 1989-90
6113173	SR 9 NW 27th Ave.	NW 27th Ave. Bridge No. 870097	Replace movable span bridge	CST CEI	5,266 527	1988-89 1988-89
6113230	SR 9 NW 27th Ave.	NW 11th St. NW 42nd St.	Add lanes and reconstruct	ROW R/R CST CEI	2,220 160 5,692 569	1987-88 1988-89 1988-89 1988-89
6113235	SR 948 NW 36th St.	SR 826 Palmetto Expressway NW 57th Ave.	Road construction	ROW CST CEI	2,183 4,524 452	1987-88 1988-89 1988-89
6113681	SR 25, Okeechobee Rd. US 27/NW 36 St.	SR 826 Palmetto Expressway SR 112 Airport Expressway	Road reconstruction	PE ROW	150 3,200	1987-88 1989-90
6113700	SR 969 NW 72nd Ave. (except section from NW 7th to NW 12th Sts.)	SR 968/Flagler St. NW 74th St.	Add thru lanes	PE PE ROW	200 500 4,300	1987-88 1988-89 1990-91
6151837	HEFT	at NW 41 St.	Interchange	ROW CST CEI	90 10,428 1,042	1987-88 1988-89 1988-89
6151849	HEFT	Tamiami Tr. SR 836	Widen to 6 lanes	PE CST CEI	250 2,311 231	1987-88 1988-89 1988-89

Legend: PE = Preliminary Engineering, ROW = Right-of-Way, R/R = Railroad
CST = Construction, CEI = Construction-Engineering-Inspection

Table II-5. 5-Year Secondary Roadway System Improvements

				TENTATIVE FOUR-YEAR PROGRAM				
Project No.	Project Description	MI.	Type of Work	Proposed 1987-88	1988-89	1989-90	1990-91	1991-92
	NW 7th St.	0.4	PE	75				
	NW 60 Ct. to NW 57 Ave		4 Lanes				500	
662190	NW 25 St.	3.5						
	NW 107 Ave. to NW 72 Ave.		4 Lanes		4,500			
662255	NW 46 St.	0.3	PE	50				
	Okeechobee Rd. to NW 42 Ave.		Add Turn Lane		250			
662090	SW 67 Ave.	2.5						
	SW 40 St. to W. Flagler St.		R/W	Bal 300				
			4 Lanes	3,000				
662007	NW 72 Ave.	0.6			Construction			
	NW 7 St. to NW 12 St.		Eng. Inspection	Bal 250	reimbursed with			
			6 Lanes and Bridge		State funds.			
	NW South River Drive		PE	400				
	Tamiami Canal Swing Bridge							
	West Flagler St.	3.0						
	West 72 Avenue to West 42 Ave.		R/W	Bal 50				
662214	NW 12 St.	1.0	Add 2 lanes and	800				
	NW 97 Ave. to NW 87 Ave.		RR grade crossing					

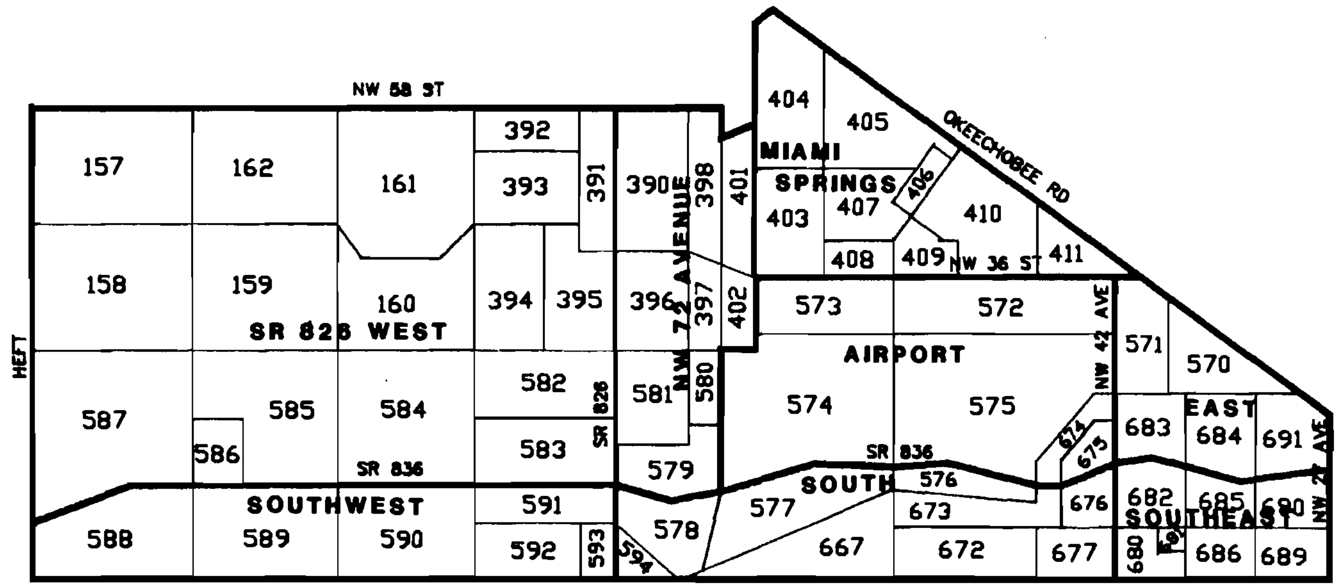

Figure II-1. MIA Study Area with Subareas and TAZ's

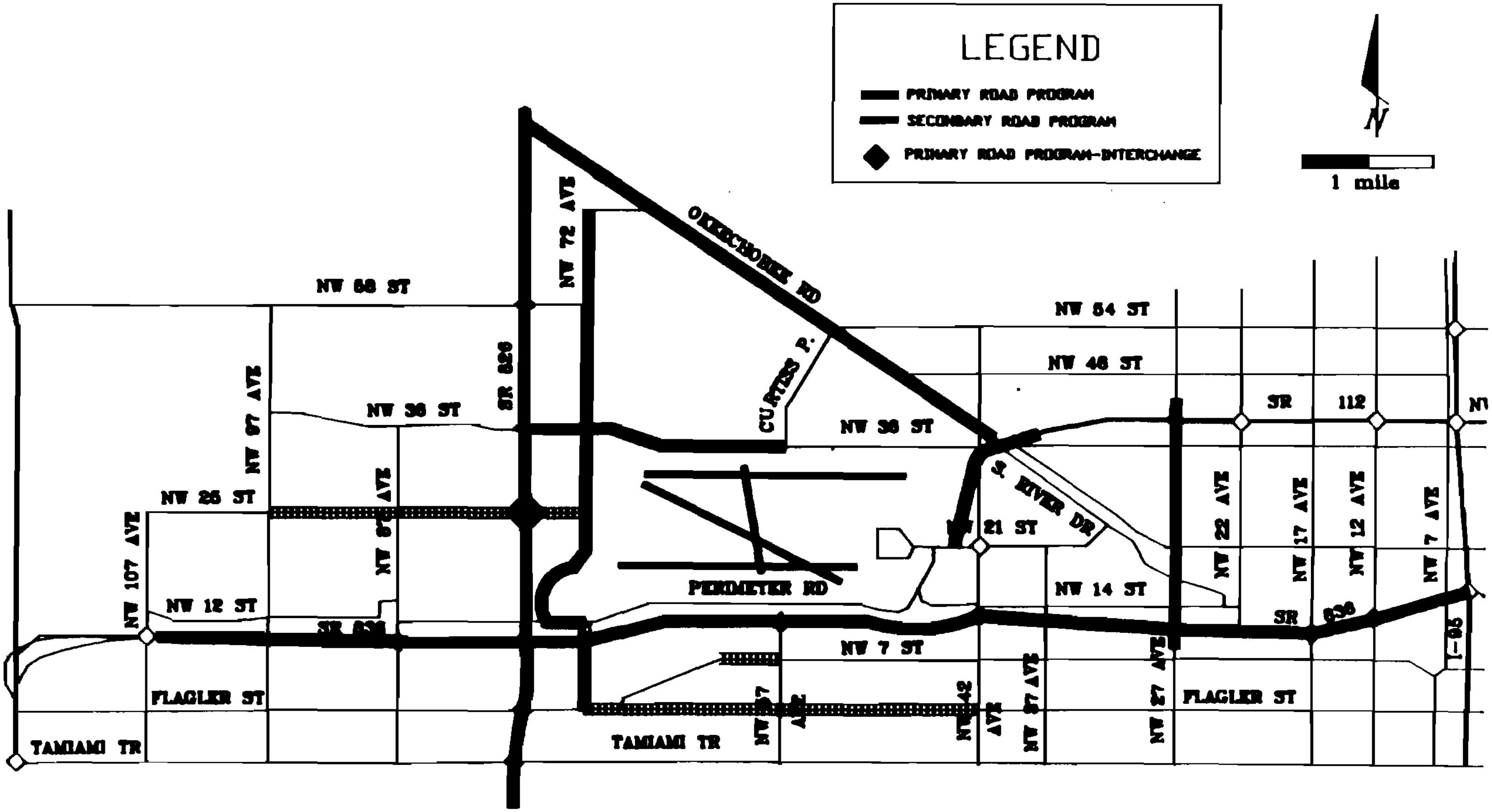

Figure II-2. 5-Year Transportation Improvement Program

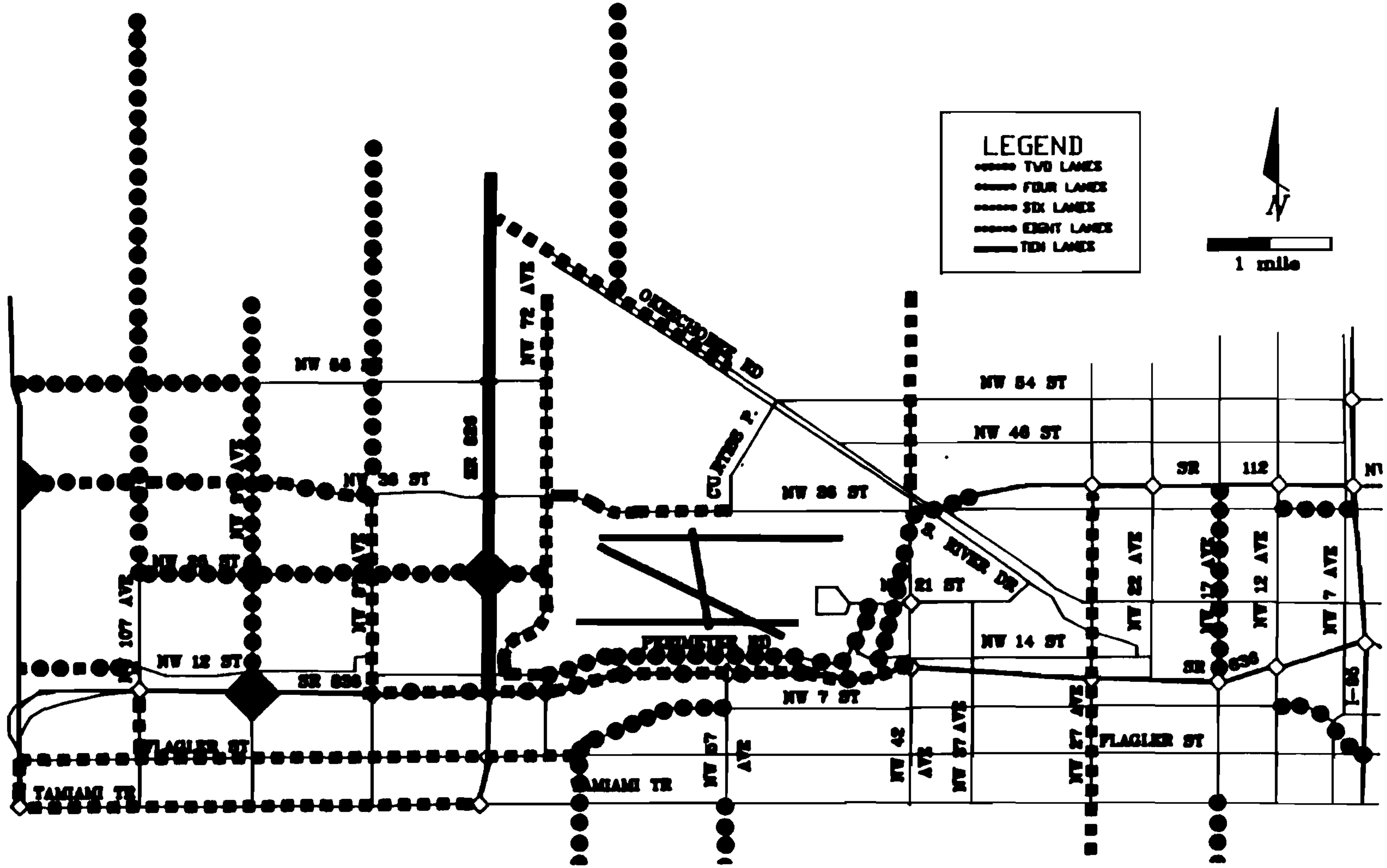

Figure II-3. Long-Range Plan Roadway Improvements

III. FORECAST RESULTS AND EVALUATION

This section presents the results of the computer simulations and the evaluation of these results. Simulations were made for both highway and transit and are presented below.

HIGHWAY FORECASTS

Figure III-1 presents the 1986 daily traffic and levels of service in the MIA area. As can be seen, most of the road facilities in the MIA area operate at levels of service at or above capacity based on 24 hour simulation.

Figure III-2 shows the traffic volumes and levels of service for 1992. Like the 1986 conditions, most of the MIA area facilities are shown to operate at or above capacity. Due to programmed improvements, some facilities operate better than in the 1986 simulation. LeJeune Road, between SR 112 and Central Boulevard, still operates over capacity but to a lower degree than in 1986. This is due to the construction of the direct ramps between the MIA and SR 112. SR 112 and LeJeune Road both north and south of the MIA are shown to operate at higher volume/capacity ratios then in 1986. The level of service on NW 36 Street, between NW 72 Avenue and Curtiss Parkway (Red Road), is shown to improve in 1992 over 1986 but remains at an over capacity condition.

Figure III-3 shows the traffic volumes and levels of service for 2010. Most facilities are shown to operate at over capacity conditions based on the 24-hour simulation. The connector ramps between SR 836 and SR 112 are seen to carry traffic at almost double the capacity. LeJeune Road carries traffic comparible to the 1992 condition and less than in the 1986 simulation for the section between SR 112 and Central Boulevard. SR 836 operates at double capacity even with the additional laneage.

Table III-1 presents a comparison of summary highway statistics for 1986, 1992, and 2010. These statistics are indicative of the anticipated growth in land use in the MIA area. All indicators in Table III-1 increase from 1986 through 1992 to 2010. Daily vehicle-miles of travel (VMT) is shown to grow 17 percent by 1992 and 45 percent by 2010 as compared to 1986. Road improvements in the MIA area will not keep pace with this growth in VMT with lane-miles of roadway increasing by 13 percent in 1992 and 30 percent in 2010.

Two indicators of traffic congestion shown in Table III-1 are vehicle-hours of congestion delay and the ratio of congested average vehicle speed to freeflow average vehicle. Congestion delay is shown to increase by 44 percent in 1992 and 123 percent in 2010 over 1986. This is most significant when compared with the growth in VMT and lane-miles of road improvements. This situation can occur due to the fact that VMT would be expected to grow relatively uniformly through out the study area while road improvements are focused on particular corridors. This suggests that additional transportation improvements will be needed over what is now planned and programmed. The congested-to-free flow speed ratio supports the congestion delay statistics. Congested speeds are shown to degrade over time, suggesting the need for additional roadway improvements.

Figure III-4 presents graphs comparing the lane-miles operating at various levels of service (LOS) for each of the forecast years. Comparisons for freeways, arterials and the total system within the MIA area are provided. These graphs show the general worsening of traffic operating conditions over time. The graphs show that the percentage of all facilities operating at better than LOS C conditions is projected to increase between 1986 and 1992 and to decrease between 1986 and 2010. The percentage of all facilities operating at LOS F is shown to increase. Over 80 percent of freeway lane-miles and over 60 percent of arterial lane-miles are projected to operate at LOS F.

Table III-1. MIA Area Traffic Forecast Summary

	FORECAST YEAR		
INDICATOR	1986	1992	2010
Lane Miles	1,216	1,375	1,584
Vehicle Miles of Travel (millions)	11.8	13.9	17.1
Vehicle Hours of Travel (thousands)	574	725	1,127
Congested Delay (thousands of hours)	239	344	656
Congested/Freeflow Speed Ratio	0.65	0.60	0.48
Total Accidents	142	165	203
Injuries	23	26	32
Fatalities	0.3	0.4	0.4
Emissions (tons)	222	261	327
Fuel Consumption (thousands of gallons)	967	1,138	1,400

Note: Values represent daily quantities.
The statistics presented are produced by computer simulation and should be used for comparison purposes only.

TRANSIT FORECASTS

Transit ridership forecasts were made for 1986, 1992 and 2010. The results of these forecasts can provide useful information related to the attractiveness of transit as an alternative to auto travel. However, these forecasts cannot be used for detailed operations analysis. This is due primarily to the fact that transit ridership estimates tend to be less than the accuracy of the models producing them.

1986, 1992, and 2010 AM peak hour transit ridership forecasts are presented in Figures III-4, III-5 and III-6, respectively. These should be viewed in a comparative manner to understand the change in ridership due to service changes and traffic conditions. As can be seen, transit ridership is not markedly different between the three years' forecasts. Significant increases in transit ridership occur in 1992 along LeJeune Road and Flagler Avenue. This can be explained by the nature of the road improvements in these two corridors. The road improvements will tend in improve vehicle operating speeds which would attract more transit patronage.

Table III-2 presents forecasted AM peak hour boardings and alightings. This table shows a significant increase in transit activity in 1992 over 1986. The table also indicates that 2010 transit activity in the vicinity of the MIA could be at the same levels it is today.

Table III-2. MIA Area Forecast Transit Activity

YEAR	ON	OFF
1986	260	4,070
1992	360	4,735
2010	550	4,195

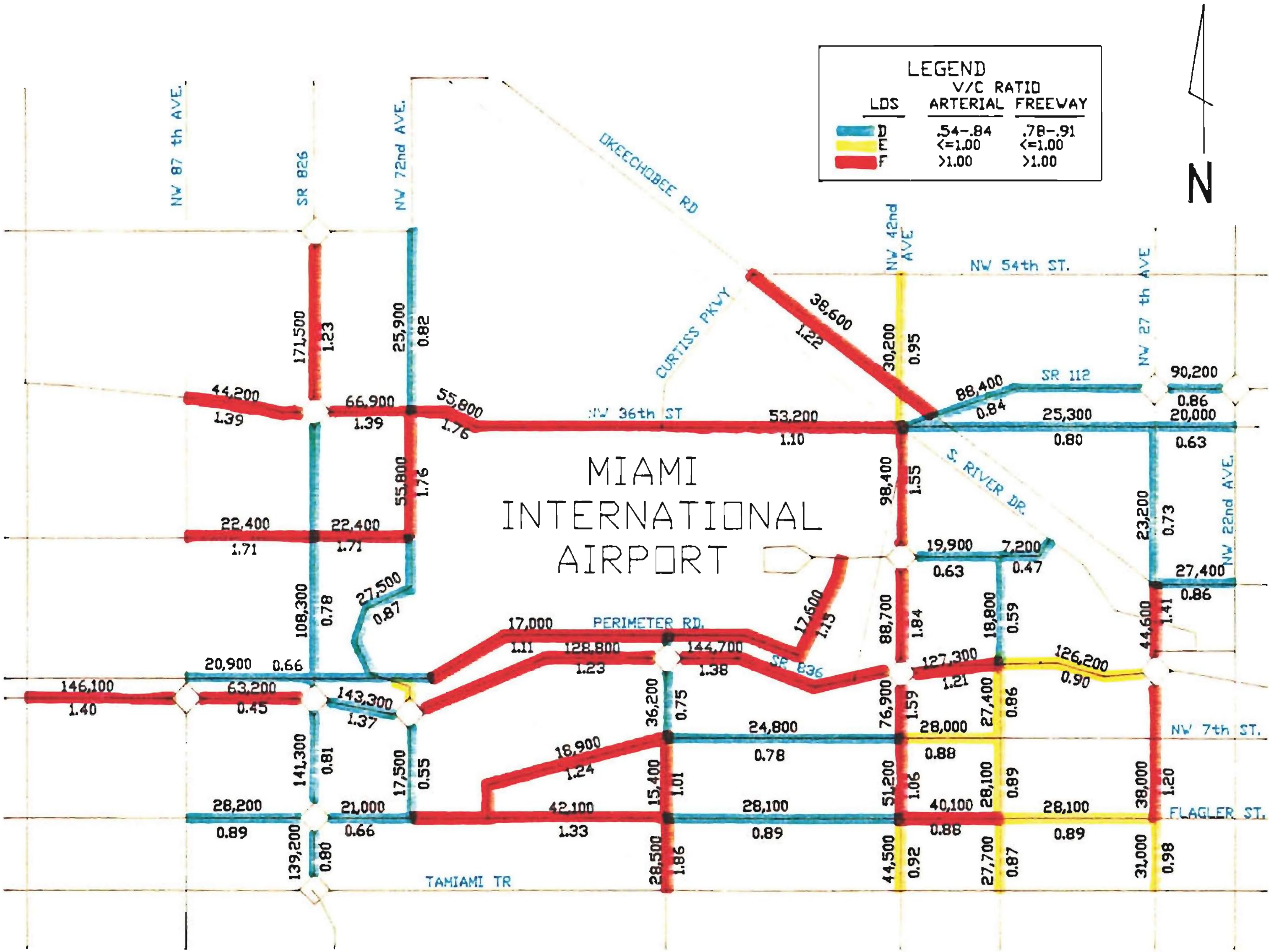

Figure III-1. 1986 Average Daily Traffic

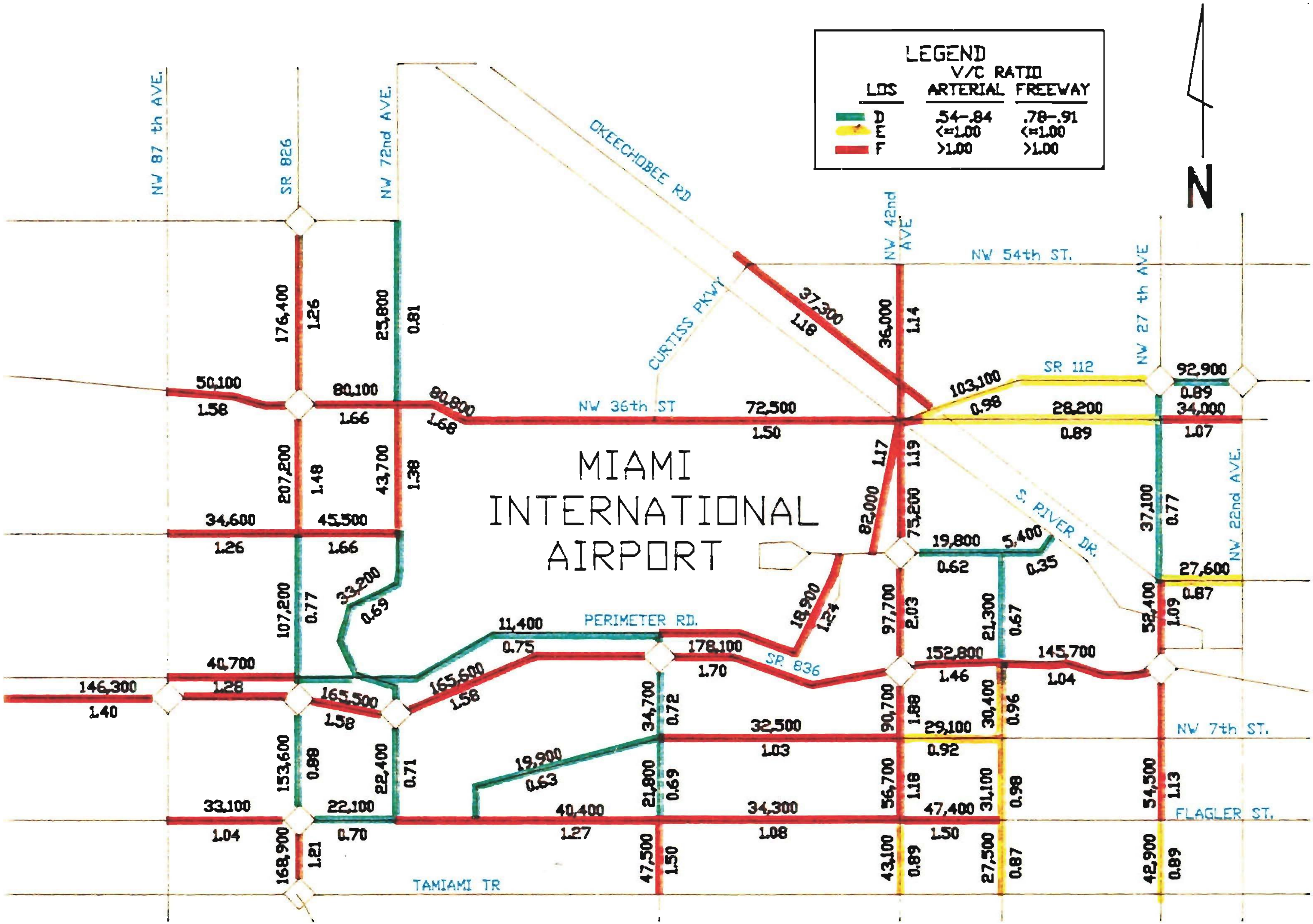

Figure III-2. 1992 Daily Traffic Forecast

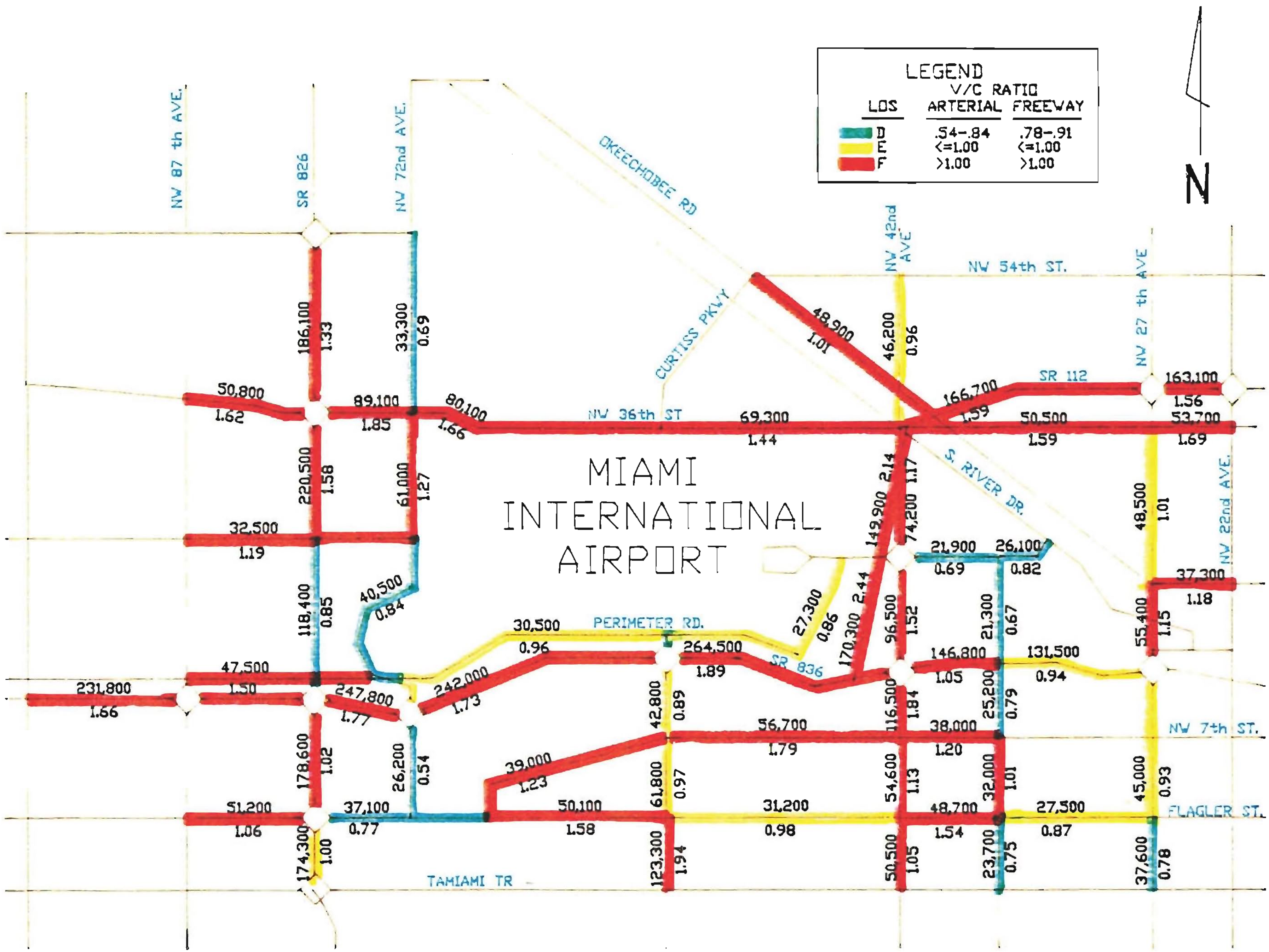

Figure III-3. 2010 Daily Traffic Forecast

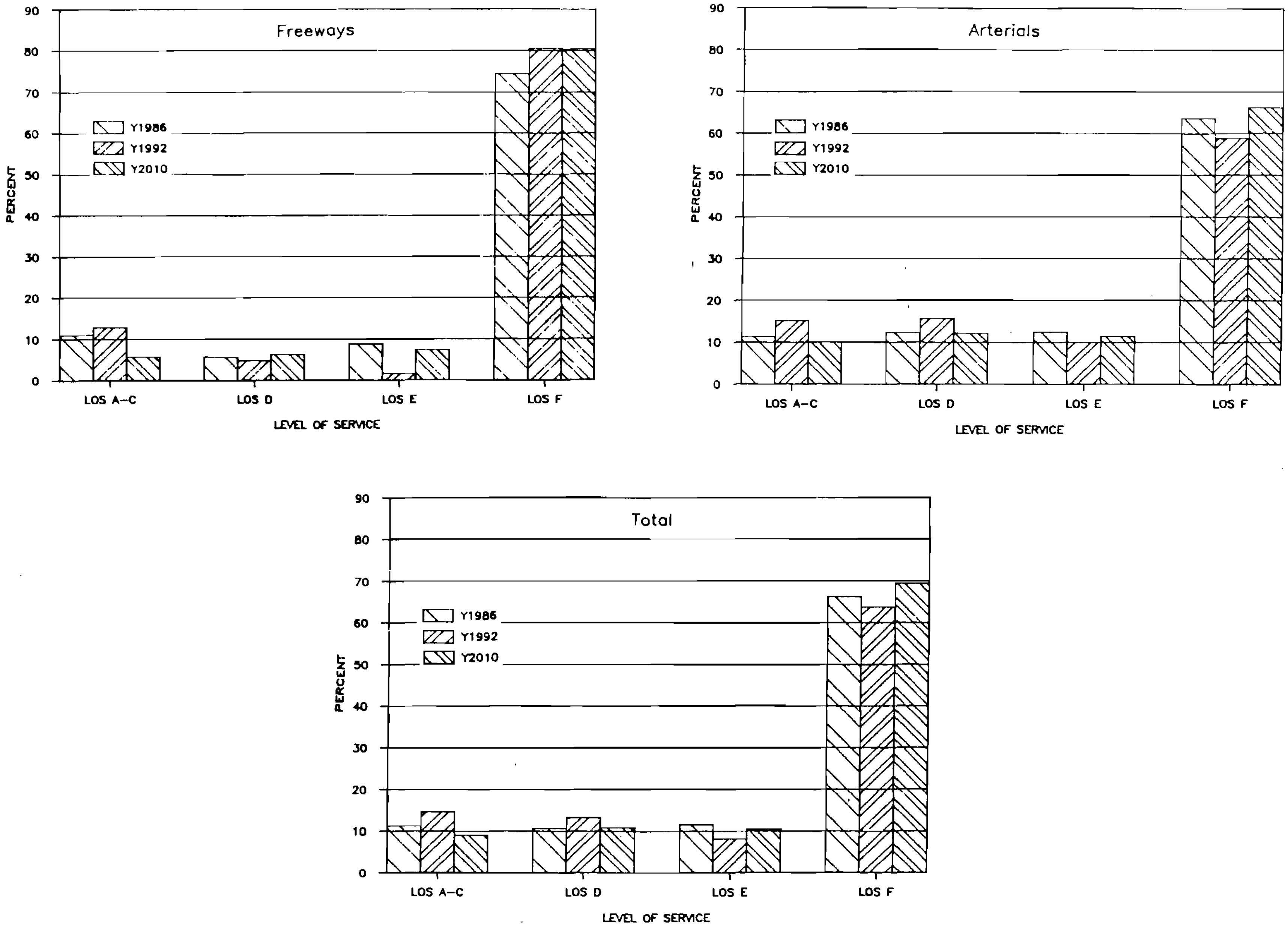

Figure III-4. Comparison of Facility Miles by Forecasted Operating Level of Service

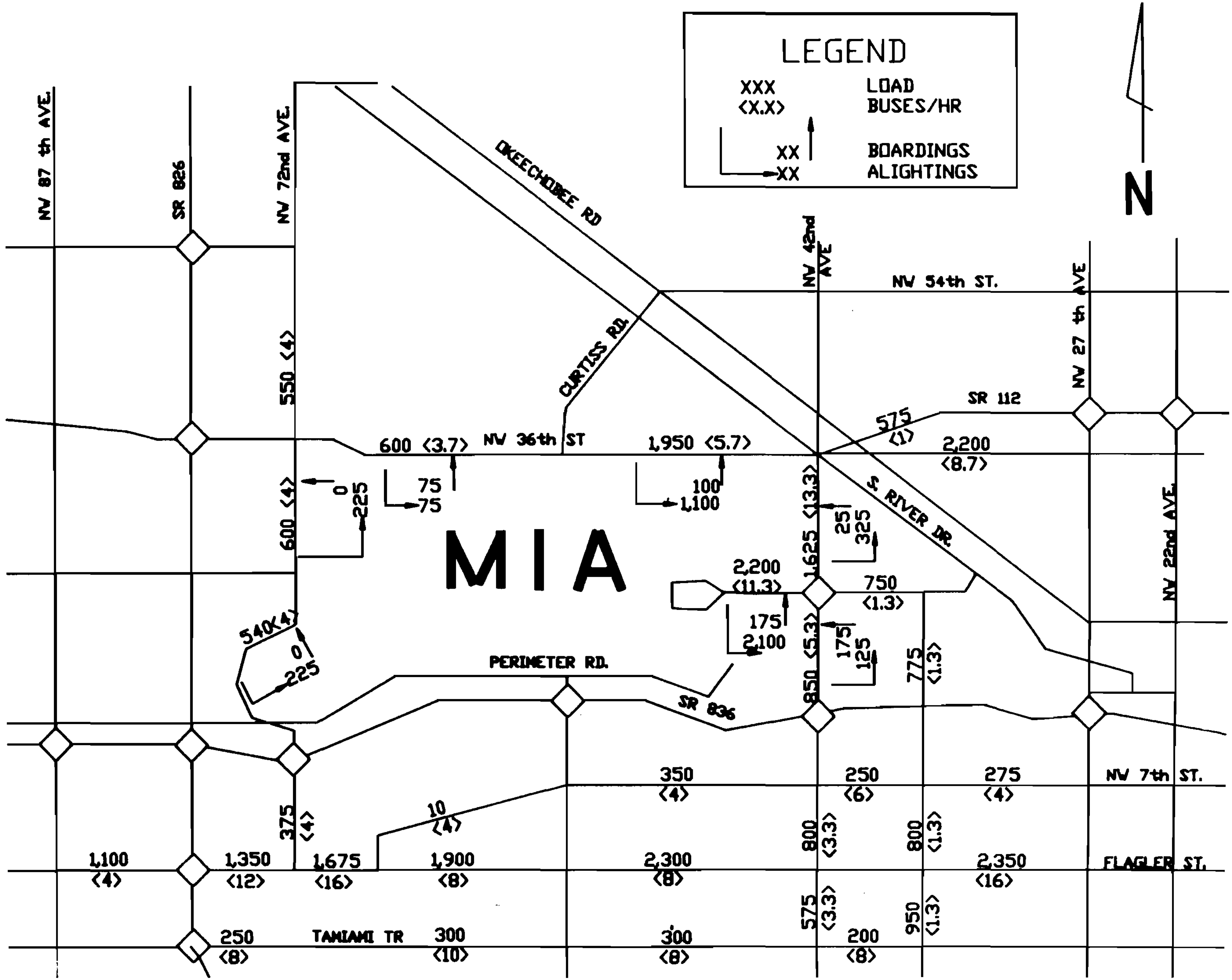

Figure III-5. 1986 Forecast AM Peak Hour Transit Activity

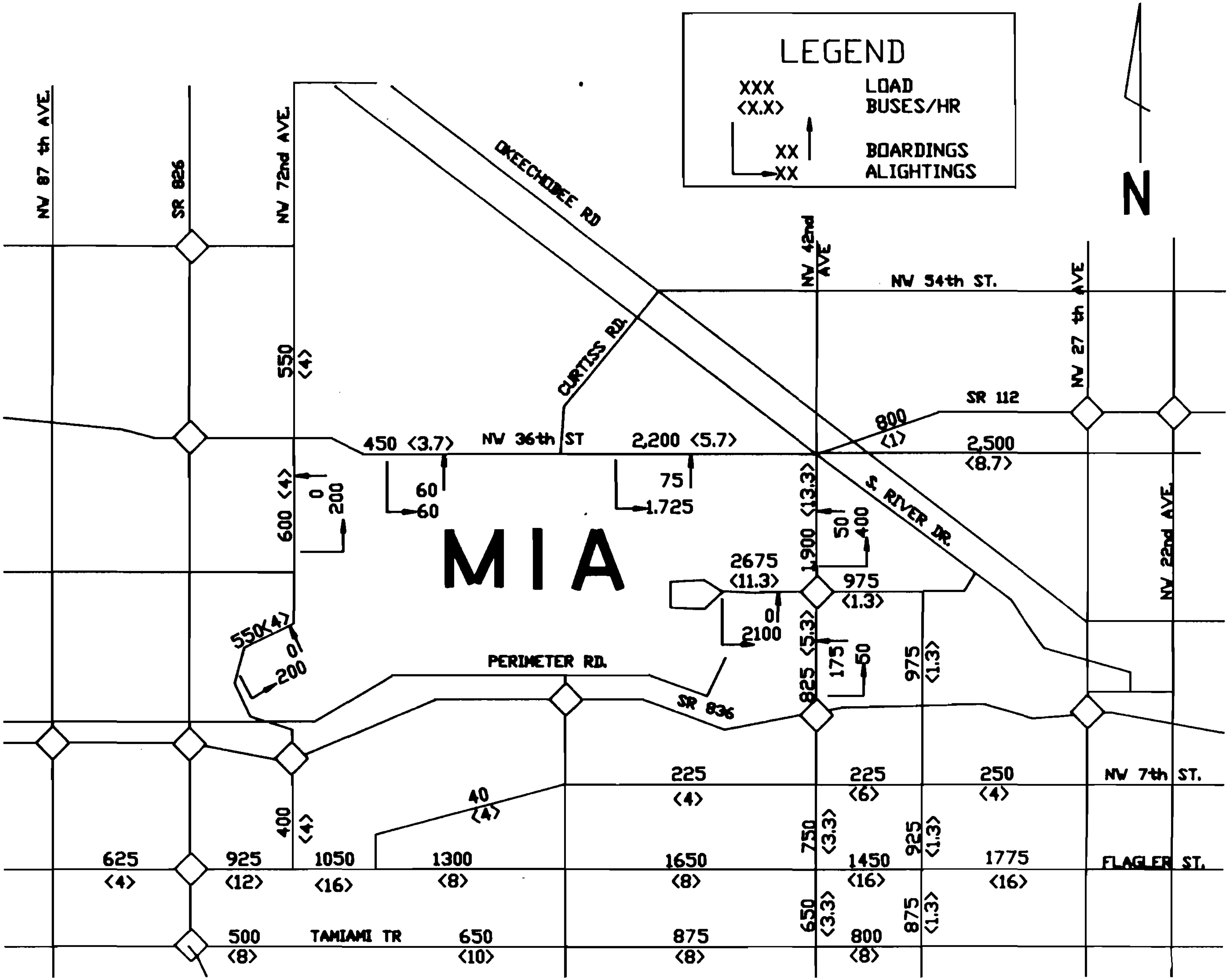

Figure III-6. 1992 Forecast AM Peak Hour Transit Activity

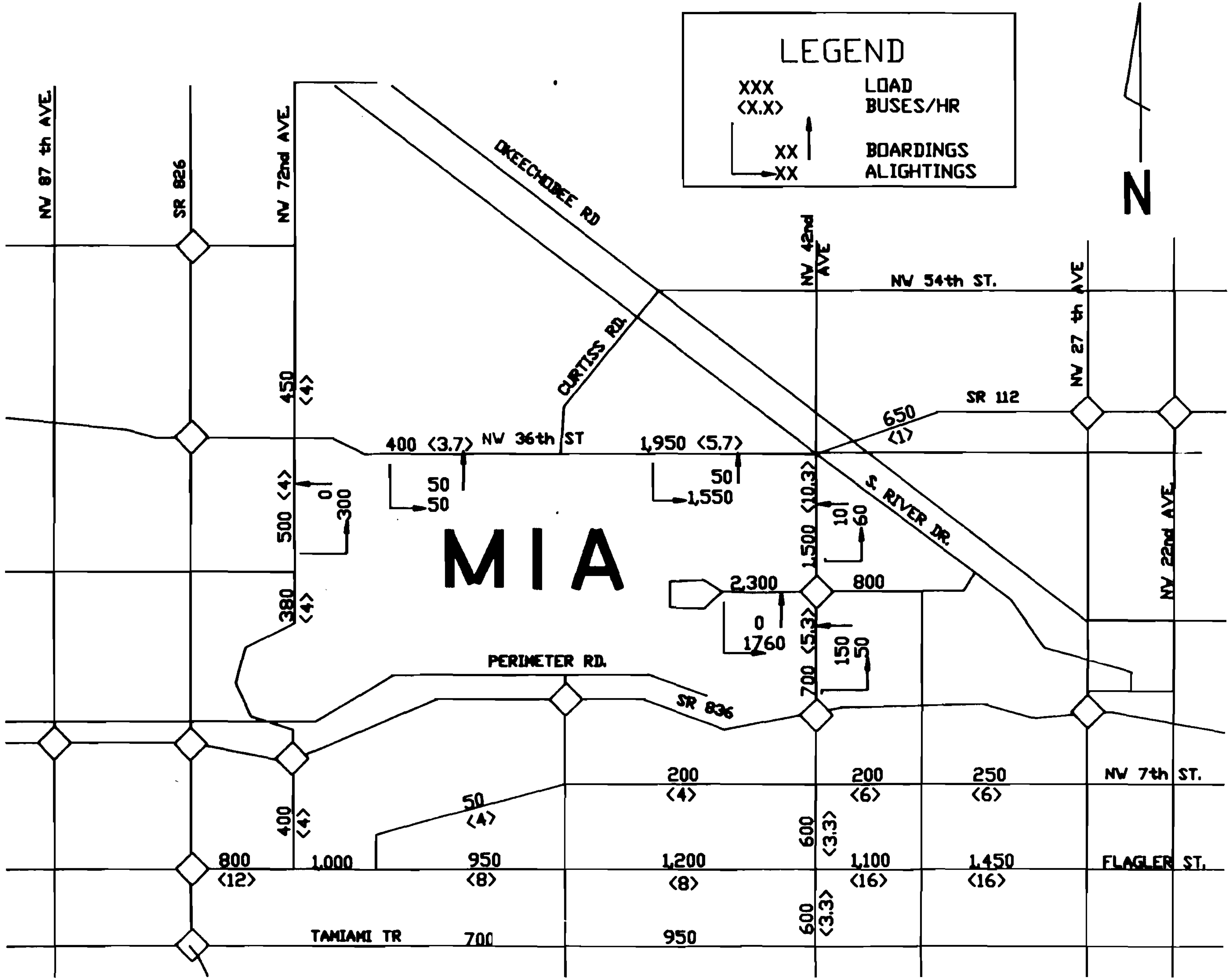

Figure III-7. 2010 Forecast AM Peak Hour Transit Activity

IV. PRELIMINARY NEEDS ANALYSIS

This section presents a preliminary analysis of transportation improvement needs in the MIA area beyond those already programmed and planned for. This analysis consisted of determining additional laneage required to meet level of service D (LOS d) and level of service E (LOS E) highway operating conditions. Level of service standards indicate the traffic operating conditions. LOS E represents traffic flows at capacity levels. LOS D represents better operating conditions then for LOS E. LOS D represents the highway operating conditions for which federal and local transportation planners attempt to achieve within a 20-year time horizon.

The analysis did not take into account feasibility of implementing the additional improvements. Construction constraints due to utilities, right-of-way, glide slope restrictions, cost and other factors were not taken into account. The purpose of the analysis was to provide a preliminary estimate of the scope of improvements required in the MIA area to accomodate traffic.

Table IV-1 presents the laneage requirements and preliminary estimate of implementation costs for achieving LOS D and LOS E by the year 2010. The table shows those facilities expected to operate at LOS E or worse conditions by the year 2010. For these facilities, additional laneage required to bring operations to LOS D and E were determined. Based on these laneage requirements, cost estimates were made. Unit cost assumptions which were used are as follows:

Facility Type	Preliminary Engineering Right-of-Way	Engineering Inspection Construction
Arterials	\$1.1 million/mile	\$4.0 million/mile
Freeways	\$1.2 million/lane-mile	\$4.5 million/lane-mile

These unit costs were derived from the following programmed improvement projects in the MIA area:

- o NW 36 Street reconstruction and widening
- o SR 112/MIA connector ramps
- o Palmetto Expressway widening and reconstruction

As can be seen in Table IV-1, approximately 60 additional lane-miles of improvements will be required beyond those already planned for in order to maintain LOS E operating conditions. This amount of improvements was estimated to cost over \$200 million. To maintain LOS D operating conditions, approximately 90 lane-miles of additional improvements will be required at a cost of almost \$330 million. A visual depiction of those facilites included in the analysis can be found in Figure III-3. Those facilities shown as operating at LOS E were the ones included in the analysis.

Table IV-1. Y2010 Additional Highway Laneage Needs

FACILITY	LIMITS	LENGTH (mi)	Y2010 VOLUME	Y2010 V/C	Y2010 LANES	ADDITIONAL LANES LOS D	ADDITIONAL LANES LOS E	ADDITIONAL LANE-MILES LOS D	ADDITIONAL LANE-MILES LOS E
NW 36 ST	NW 87 AVE-SR 826	1.0	50,800	1.60	4	4	4	4.0	4.0
	SR 826-NW 72 AVE	1.0	89,100	1.85	6	6	6	6.0	6.0
	NW 72 AVE-NW 57 AVE	1.0	80,100	1.66	6	6	4	6.0	4.0
	NW 57 AVE-LeJEUNE	1.5	69,300	1.44	6	4	4	6.0	6.0
OKEECHOBEE	RED RD-LeJEUNE	1.3	48,900	1.01	6	2	0	2.6	
NW 72 AVE	NW 36 ST-NW 25 ST	0.7	61,000	1.27	6	4	2	2.8	1.4
LeJEUNE	NW 36 ST-AIRPORT BL	0.9	74,200	1.17	8	4	2	3.6	
	AIRPORT BL-SR 836	0.6	96,500	1.52	8	6	4	3.6	2.4
	SR 836-NW 7 ST	0.5	116,500	1.84	8	8	6	4.0	3.0
	NW 7 ST-FLAGLER	0.5	54,600	1.13	6	2	2	1.0	1.0
NW 27 AVE	NW 7 ST-NW 20 ST	1.0	55,400	1.15	6	2	2	2.0	2.0
NW 7 ST	NW 37 AVE-LeJEUNE	0.5	38,000	1.20	4	2	2	1.0	
	LeJEUNE-NW 57 AVE	1.0	56,700	1.79	4	4	4	4.0	
	NW 57 AVE-FLAGLER	1.0	39,000	1.43	4	2	2	2.0	
SR 112	NW 27 AVE-LeJEUNE	1.0	166,700	1.59	6	4	4	4.0	4.0
SR 112 RAMPS	SR 112-MIA	1.2	149,900	2.14	4	6	4	7.2	4.8
	MIA-SR 836	1.1	170,300	2.44	4	6	6	6.6	6.6
SR 826	NW 36 ST-NW 25 ST	0.7	220,500	1.58	8	6	6	4.2	4.2
SR 836	NW 72 AVE-NW 57 AVE	1.5	242,000	1.73	8	6	4	9.0	6.0
	NW 57 AVE-LeJEUNE	1.5	264,500	1.89	8	6	4	9.0	6.0
	LeJEUNE-NW 37 AVE	0.5	146,800	1.05	8	2	0	1.0	
TOTAL		20.0						89.6	61.4
FREEWAY		7.5						41	31.6
ARTERIAL		12.5						52.6	29.8

	LOS D	LOS E
APPROXIMATE TOTAL COST	$329,650,000	$206,690,000
APPROXIMATE FREEWAY COST	$266,700,000	$158,100,000
APPROXIMATE ARTERIAL COST	$62,950,000	$48,590,000