Metropolitan Planning Organization
DADE COUNTY

Mobility Management Process/ Congestion Management System

TRANSPORTATION IMPROVEMENT PROGRAM

LONG RANGE PLAN

FINAL REPORT

dpa

Metropolitan Planning Organization

DADE COUNTY
MOBILITY MANAGEMENT PROCESS/
CONGESTION MANAGEMENT SYSTEM

FINAL REPORT
1996

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MPO METRO-DADE
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I. INTRODUCTION

In 1991 major revisions to the federal laws that provide guidelines for planning, programming and funding of transportation projects were made. They resulted in the enactment of the Intermodal Surface Transportation Efficiency Act (ISTEA). ISTEA reflects a new thrust towards connectivity between varying modes of transport and improved safety and mobility. As part of these changes federal regulations required the development and implementation of six management systems and a data monitoring system. These are:

1. Pavement Management System (PMS)
2. Bridge Management System (BMS)
3. Safety Management System (SMS)
4. Congestion Management System (CMS)
5. Public Transportation Management System (PTMS)
6. Intermodal Management System (IMS)
7. Traffic Monitoring System for Highways (TMS/H)

This study specifically addresses the initially required CMS. In the Miami Urbanized Area (MUA) the responsibility for development of this system rests with the Metropolitan Planning Organization (MPO). During the study, however, the scope of the CMS was expanded to address a more comprehensive concept of mobility, as also recommended by the Florida Department of Transportation (FDOT) CMS Statewide Task Force. As a result of an increased scope, this study is focused on *mobility* rather than congestion and is concerned with the development of a Mobility Management Process (MMP) that encompasses the requirements for CMS. For the purpose of the study, this process will be referred to as the Dade County Mobility Management Process/Congestion Management System (DCMMP/CMS).

A. PURPOSE OF THE REPORT

This report documents the research, analysis and recommendations for the development of the DCMMP/CMS. It is understood that mobility and management of the DCMMP/CMS is a process that will evolve over time. One of the main objectives of this study is to develop a management system that will rely on already available data. This objective has been accomplished somewhat, however, the report points out that better measures of mobility are needed and that additional necessary data must be obtained in the future. Technical Memorandum 2: Monitoring and Evaluation Manual (MEM), included in Appendix C, outlines recommendations for future consideration.

The requirements for Congestion Management Systems evolved with time. Even though the federal regulations were labeled "Interim Final Rule", major changes were not contemplated until after the required review/comments period. Additionally, the development of the Florida State

CMS is still evolving to improve the recommended process. Certain procedures that are mentioned in the Plan are still under evaluation. As this report went into final production, there was substantial revision of the applicable Federal regulations (23 CFR 500). Although the management systems have not been completely eliminated, the CMS has become an optional element for the state transportation planning process.

FDOT has made the MMP/CMS a required planning element for all MPOs in Florida even though the federal requirement has been rescinded. Therefore, this report discusses both the original and current requirements, and provides the background information that motivated the development of the MMP/CMS in Dade County.

Other documents to be developed as part of this study are:

1. Technical Memorandum 1: Institutional Issues

2. Technical Memorandum 2: Monitoring And Evaluation Manual

3. DCMMP/CMS Brochure

II. SYSTEM REQUIREMENTS

Federal requirements for the development of CMSs are detailed in the Technical Memorandum 1: Institutional Issues, submitted as a separate document. However, some of the main aspects of this regulation are discussed in this chapter, along with relevant State and local requirements established for Florida.

A. WHAT IS A CONGESTION MANAGEMENT SYSTEM?

The definition for CMS contained in 23 Code of Federal Regulations (CFR) Part 500, Management and Monitoring Systems, Interim Final Rule, Subpart E - Traffic Congestion Management System part 500.503 is as follows:

> *The Congestion Management System (CMS) is a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods. A CMS includes methods to monitor and evaluate performance, identify alternative actions, assess and implement cost-effective actions, and evaluate the effectiveness of implemented actions.*

The CMS is a systematic process that is a decision-making tool for local entities that will analyze and summarize information used in the selection and implementation of cost effective programs and strategies. In Dade County, the MPO developed the CMS, while the other management systems are being developed by the FDOT District 6.

At the state level a task force was formed to serve as a forum for congestion management, establish consensus, and provide guidance for the implementation of CMSs throughout Florida. The statewide task force renamed the effort *Mobility Management Process* (MMP) to better reflect the intent of ISTEA.

It is very important to recognize that the ***CMS IS NOT***:

- A detailed operation plan
- A project
- A massive data collection effort
- A database management system
- A parallel process to the established planning process
- Will not eliminate all congestion
- Something to be done just to meet Federal requirements
- A system to prevent capacity expansion projects from being implemented

Both federal and state laws suggest that planning of transportation facilities should be, primarily, a local responsibility led by MPOs. Therefore, consistent with the recommendations of federal and

state regulations as well as the Florida Task Force, the MPO took the lead in developing the CMS within Dade County. The only roads within Dade County not included are those roads that have been designated as part of the Florida Intrastate Highway System (FIHS). Although responsibility for FIHS roads lie with the FDOT, CMS efforts for both the MPO and the State will be coordinated.

B. WHAT ARE THE CMS FEDERAL REQUIREMENTS?

There are two areas of the original Federal requirements that refer to the development of the CMS. These are as follows:

1. Management and Monitoring System: Interim Final Rule

23 CFR Part 500, and specifically Subpart E describe requirements for developing a CMS. Applicable portions of the federal regulations are as follows:

a. General Requirements

- Each State shall develop, establish and implement, on a continuing basis, a CMS that identifies and implements strategies to maximize the use of the existing and future transportation facilities.
- Corridors or facilities with existing or potential recurring congestion shall be identified.
- The development of the CMSs shall be coordinated with the PTMSs and IMSs.
- The CMS shall be part of the metropolitan planning process.

b. CMS Components

The components of the CMS are:

- A set of performance measures will be defined to measure the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods.
- A continuous data collection and system monitoring shall be established to evaluate the effectiveness of the implemented actions.
- A set of strategies shall be identified to alleviate or manage congestion along the congested corridors or facilities. The regulations provide a list of recommended strategies grouped in twelve categories.
- For each congested corridor or facility a set of strategies shall be proposed for implementation, agencies' responsibilities shall be established and possible funding implementation sources shall be identified.
- A process for periodic evaluation of the strategies implemented by congested corridor or facility shall be implemented.

c. CMS Compliance Schedule

The original regulations established that by October 1, 1996, the CMSs shall be fully operational for all air quality attainment areas. Recent charges in federal regulations and subsequent FDOT directives have postponed the implementation deadline to October 1, 1997 for all MPO's in Florida.

2. **Metropolitan Planning Rule**

These rules are contained in 23 CFR Part 450. Some of the sections in this rule relate to the development of CMSs as follows:

a. General Requirements

- Urban areas with a population over 200,000 must comply with the requirements of the CMS.
- The CMS shall be developed as part of the metropolitan planning process.
- The fifteen planning factors listed in this regulation shall be considered in developing the CMS.
- The effectiveness of the CMS shall be evaluated as part of the metropolitan planning process.

b. Phase-In Requirements

- Attainment Areas are to comply with the Phase-In requirements, to the maximum extent possible, by December 18, 1994.
- Congested corridors and facilities shall be identified.
- Failure to comply with these requirements may result in a reduction of federal funding for transportation projects.
- Recent federal regulation, however, have made CMS optional. State requirements still require CMS but implementation deadlines have changed.

C. WHAT ARE THE STATE OF FLORIDA REQUIREMENTS FOR THE DEVELOPMENT OF CMSs?

ISTEA originally mandated the development of the management systems to all states, and Florida was no exception. Regarding the development of the CMS Federal requirements are Transportation Management Areas (TMAs), urbanized areas over 200,000 population. However, Florida's Legislature took an additional step, CMSs for *all* urbanized areas. This means that Florida will have MMP/CMS in 25 MPOs instead of the 11 originally required by ISTEA.

This action taken by the Legislature is very positive because:

- Florida is looking ahead to solve a real problem, if we consider that Florida is one of the fastest growing states in the nation.
- Florida's approach relates both congestion and mobility as major concerns in all metropolitan areas.
- Florida recognizes that CMSs can best be handled at the local level. This action essentially forces local officials to become more active in addressing congestion/mobility problems.

Florida's Statutes 1993, Chapter 339 Sections 155, 175 and 177 provides all State requirements for developing transportation plans in the metropolitan areas. Some of the most relevant aspects of the State's Legislation are:

1. **Section 339.155: Transportation Planning**

The Florida Transportation Plan shall be developed and annually updated by FDOT. In developing the Plan, the department shall consider among other things, the following:

- The results of the management systems as required by ISTEA.
- Strategies for incorporating bicycles and pedestrian facilities where appropriate.
- Consistency with the comprehensive regional policy plans, MPO's plans, and approved local government comprehensive plans.
- Strategies to make the most efficient use of existing transportation facilities.
- Methods to reduce traffic congestion and expand transit services.
- Identify transportation needs through the use of the management systems as required by ISTEA.

These are the aspects mentioned in the Legislation that are most related to the development of the management systems. This section also provides for the requirements of the State Transportation Improvement Program (STIP) and the procedures for public participation in the transportation planning process.

2. **Section 339.175: Metropolitan Planning Organization**

This section includes the following sub-sections:

- MPO Designation
- Voting Membership
- Apportionment
- Authority and Responsibility
- Powers, Duties and Responsibilities

Paragraph (a) of this section requires the MPOs to develop the LRTP, TIP and UPWP.

Paragraph (b) requires that the fifteen planning factors established in ISTEA must be considered as a minimum in developing the LRTP and the TIP. Paragraph (c) requests that each MPO prepare a CMS for the metropolitan area and cooperate with FDOT in the development of the other management systems as required by state or federal law.

- Long Range Plan (LRTP)
- Transportation Improvement Program (TIP)
- Unified Planning Work Program (UPWP)
- Agreements
- Metropolitan Planning Organization Advisory Council (MPOAC)
- Application of Federal Law

3. Section 339.177: Transportation Management Programs

The most important aspects of this section are:

- The Statutes specifically require the development of the six management systems, as established by ISTEA.
- The MPOs must develop and implement the traffic congestion management system.
- The State CMS shall be coordinated with the MPOs, so that the state system is reflective of the individual systems developed by the MPOs.
- Each system must use appropriate data to define problems, identify needs, analyze alternatives and measure effectiveness.

D. FLORIDA MMP/CMS TASK FORCE GUIDELINES

The State of Florida formed a statewide task team to better reflect the CMS process and meet the intent of ISTEA. This task force included 33 representatives of State, County and local officials, as well as, 15 ex-officio members representing Federal agencies and universities. As a result of this effort, approximately 50 transportation issues were identified and addressed by the task team and its five subcommittees.

1. Guidelines In Developing The CMS:

- Florida's CMS is known as Florida's Mobility Management Process (MMP) to better reflect the intent of ISTEA.
- Emphasis shall be placed on multimodal and low cost alternatives to alleviate congestion.
- Performance measures should be developed to provide a feedback on the effectiveness of programs, policies and plans.
- Role of Federal, State and local agencies should be redefined to achieve better decisions at the local level.

- Public involvement is strongly recommended at earlier stages of the CMSs.
- The CMSs should be focused on project results, improving the mobility of Florida's residents.
- In urbanized areas, the MPOs will take the leadership role for the MMP/CMS.
- FDOT shall annually certify that MMP/CMSs are fully operational.

The Florida MMP/CMS Task Force recognizes these requirements and recommends additional items that should be incorporated into the MMP/CMSs, according to local conditions.

2. Basic Elements of the MMP/CMS

The basic elements established in the Florida MMP/CMS are:

- Each MMP/CMS shall be developed in accordance with federal regulations.
- Projects from a MMP shall be considered for inclusion in the TIP.
- MMP/CMSs shall analyze and recommend strategies for reducing SOV travel and improve transportation system efficiency.
- All transportation network congested corridors shall be identified.
- The MMP/CMS shall be part of the metropolitan planning process.
- In nonattainment areas, the MMP/CMS shall include special analysis of travel demand reduction and operational management strategies for corridors contemplating SOV additions.
- Performance measures are to be developed cooperatively between the MPO and the FDOT to provide a measure of the extent of congestion and the evaluation of congestion reduction and mobility enhancement strategies.
- A continuous program of data collection and system monitoring should be established.
- Existing data should be used to the extent possible.
- Traditional and non-traditional strategies for transportation efficiency shall be established.

3. Typical MMP/CMS Content

The following are recommendations of the Florida MMP/CMS regarding the contents of the report:

- Identification of performance measures and standards
- Definition of the network
- Preparation of the data collection and database
- Performance evaluation and system monitoring
- Identification and evaluation of mobility management strategies
- Implementation of the mobility management strategies
- Evaluation of the effectiveness of the implemented strategies

E. DADE COUNTY CMS

The MPO Governing Board approved the Dade County Congestion Management Plan under Resolution MPO #33-93, on July 15, 1993. Then, on July 11, 1994 the Transportation Planning Council (TPC) approved the creation of the Congestion Management System Steering Committee under Resolution TPC #26-94. The Steering Committee is a sub-committee of the Transportation Plan Technical Advisory Committee (TPTAC) that includes representatives of the following agencies:

- Dade County Planning Department
- Dade County Developmental Impact Committee
- Dade County Public Works Department
- Metro-Dade Transit Agency
- Florida DOT
  - Planning Division
  - Public Transit Office
- Regional Commuter Assistance Program (RCAP)
- Department of Environmental Resources Management (DERM)
- MPO
  - Pedestrian Bicycle Coordinator
  - Congestion Management Coordinator

Additionally, three other members were added to the committee representing the Citizens Transportation Advisory Committee (CTAC), the City of Miami and the general public.

Both federal regulations and the statewide task force on congestion management suggest that available data be used to the maximum extent possible. The ultimate data needs are dictated by the format of the DCMMP/CMS. This section identifies the principal sources of transportation data. The list was developed from several sources, including a survey of available data distributed to the members of the Steering Committee. While some municipalities have potentially useful information, this listing concentrates on the most extensive and easily available data. The data was obtained from State and County agencies. A list of these sources is provided below.

A. STATE AVAILABLE DATA

The main sources of data from the State are:

1. **Florida Department of Transportation (FDOT)**

   a. State Highway System (SHS) Map

   The SHS map, as shown in Figure 1, is prepared and maintained by the FDOT District 6 Planning Office. The map provides an official, up to date record of the roads on the SHS in Dade County.

   b. Florida Intrastate Highway System (FIHS)

   The FIHS is a group of roadways designated by the FDOT to provide high speed and high volume service. The main objective is to ensure that traffic can travel trough the state at reasonable speeds and levels of service. The minimum level of service standards for FIHS roads are higher than the standards on other roads.

   State law requires that local LOS standards for FIHS roads be consistent with FIHS LOS standards. The official map of the FIHS in Dade County is also produced and maintained by the FDOT District 6 Planing Office. Figure 2 shows the FIHS Map for Dade County.

   c. Federal Functional Classification Map

   The official Federal Functional Classification Map for Dade County is produced and maintained by the FDOT District 6 Planning Office, as shown in Figure 3. The information is included in diagram-like worksheets in the District Office.

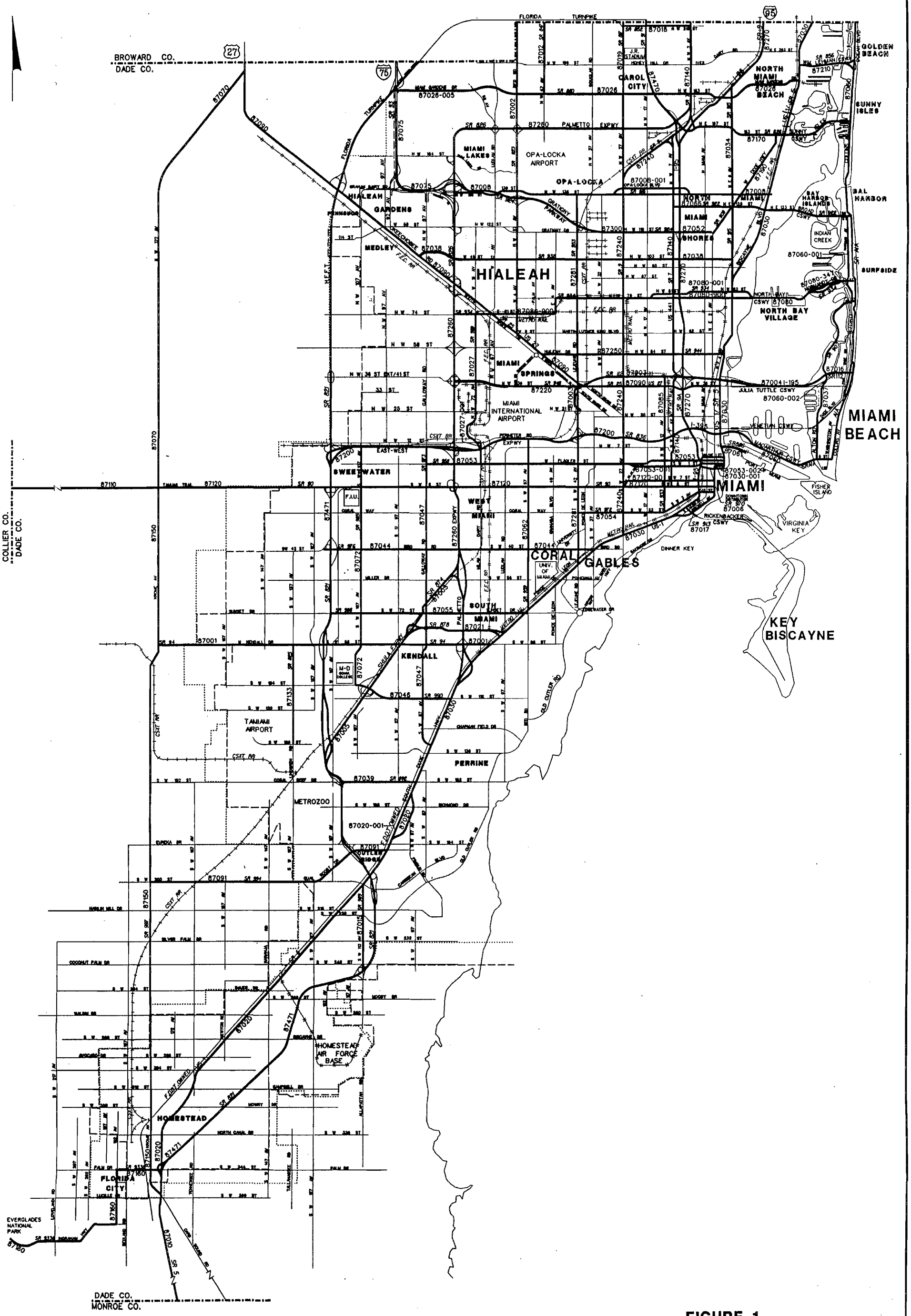


FIGURE 1

STATE HIGHWAY SYSTEM IN DADE COUNTY

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SIX
DIVISION OF PLANNING AND PROGRAMS

SHSDC1

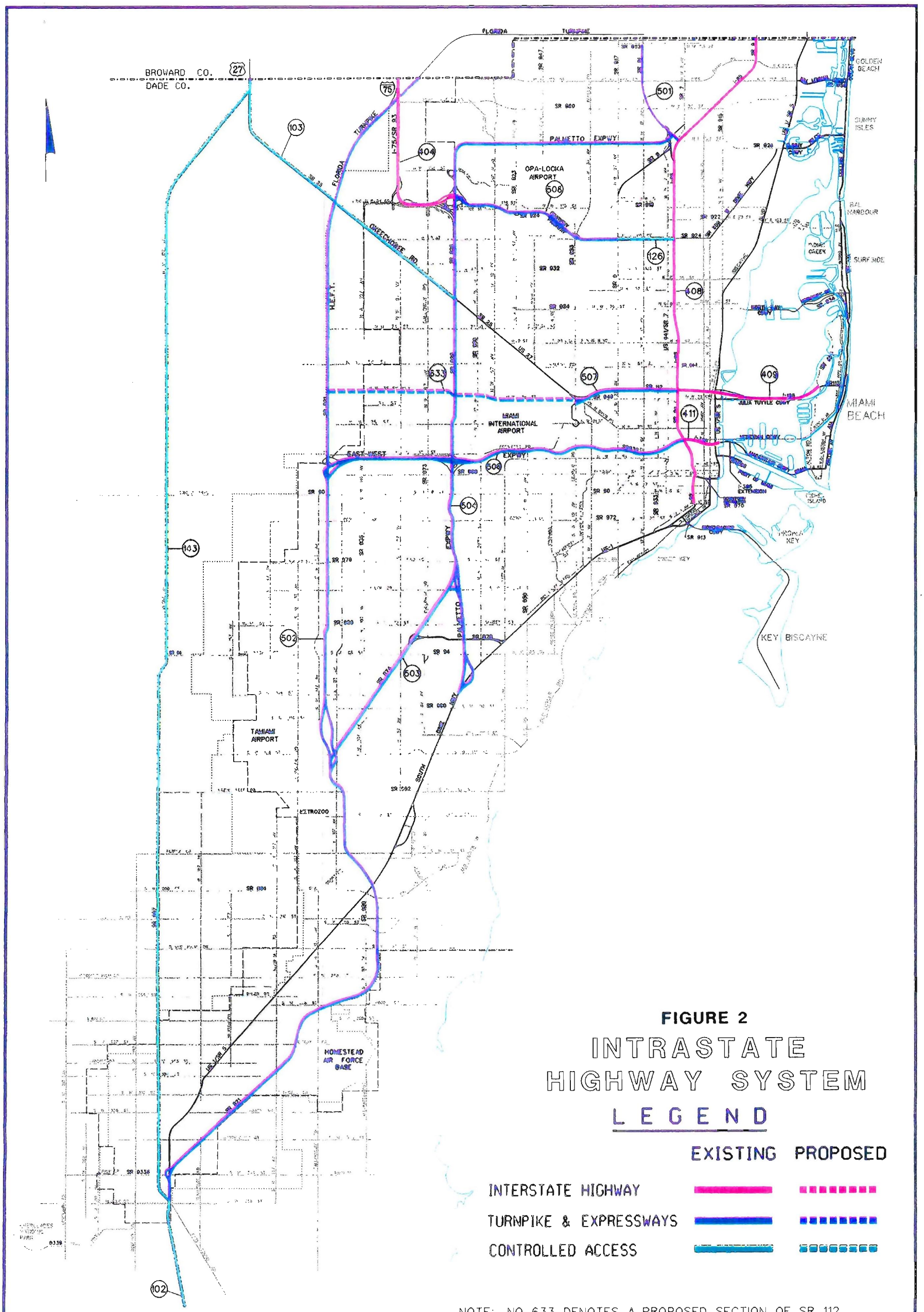


FIGURE 2

INTRASTATE HIGHWAY SYSTEM

LEGEND

	EXISTING	PROPOSED
INTERSTATE HIGHWAY	▬▬	▬ ▬ ▬
TURNPIKE & EXPRESSWAYS	▬▬	▬ ▬ ▬
CONTROLLED ACCESS	▬▬	▬ ▬ ▬

NOTE: NO. 633 DENOTES A PROPOSED SECTION OF SR 112, WHICH WILL BE DESIGNATED AS 507 WHEN BUILT.

URBAN BOUNDARY (AS APPROVED BY FEDERAL, STATE & LOCAL AGENCIES)

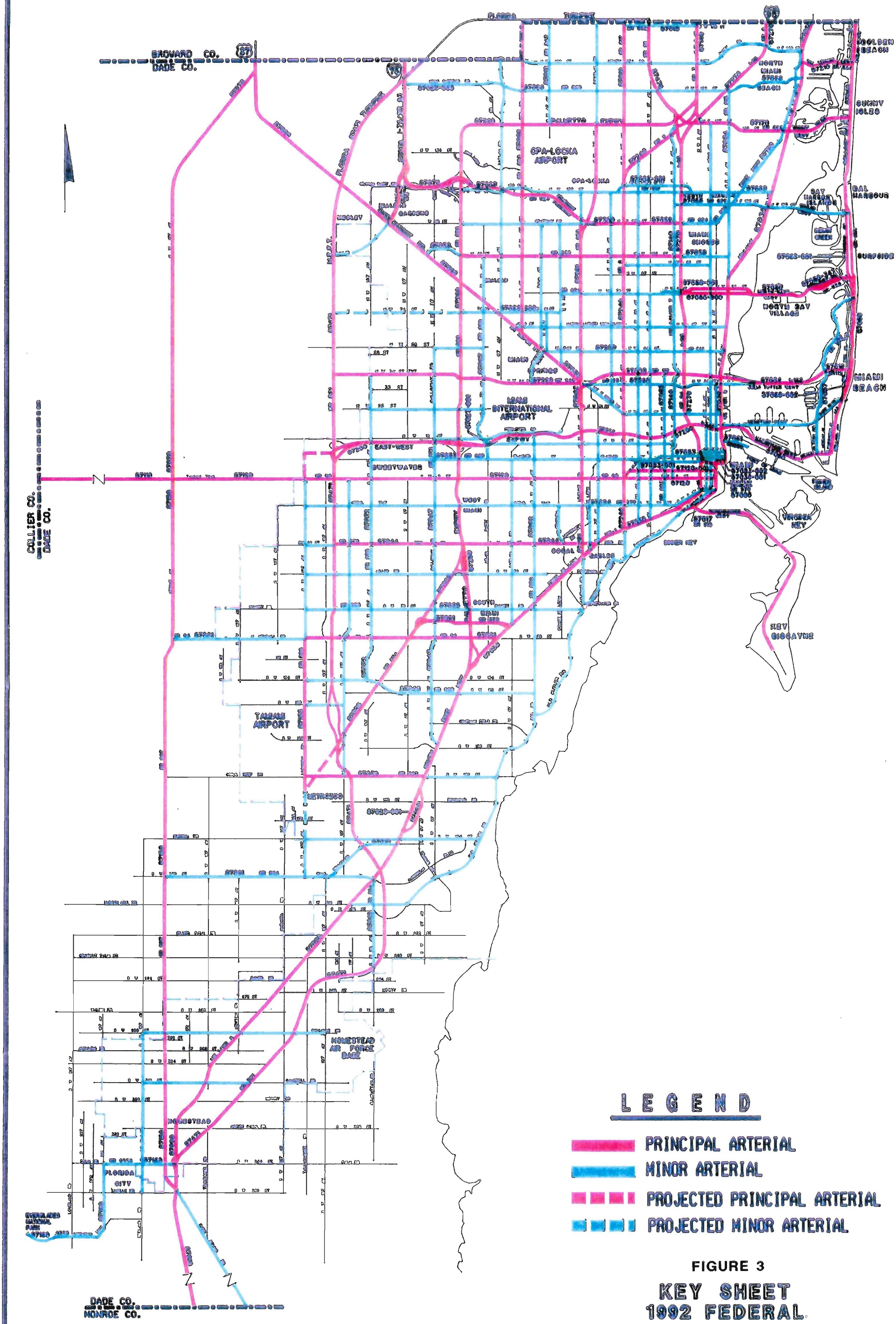
DADE COUNTY YR. 2000 URBAN DEVELOPMENT BOUNDARY (AS OF 4/91)

L. RIOS

FEBRUARY 2, 1994

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SIX
DIVISION OF PLANNING AND PROGRAMS

PIHS1



LEGEND

- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- PROJECTED PRINCIPAL ARTERIAL
- PROJECTED MINOR ARTERIAL

FIGURE 3

KEY SHEET
1992 FEDERAL FUNCTIONAL CLASSIFICATION

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SIX
DIVISION OF PLANNING AND PROGRAMS

OCTOBER, 1992

L. RIOS

d. Access Management

Section 14-97 of the Florida Administrative Code (FAC), requires FDOT to assign an access management classification to each road in the SHS. The access management class is then used to regulate access onto state highways. The intent of the rule is to protect the integrity of the SHS relative to the primary purpose of the system: to move vehicular traffic safely and efficiently.

The access management system recognizes that certain types of state roads are designed, almost exclusively, to move large volumes of traffic at high speeds. At the other end of the spectrum, other roads must provide access to private property, while also moving traffic. For this reason, the access management rule provides for classifying roads into several categories, based on their access function.

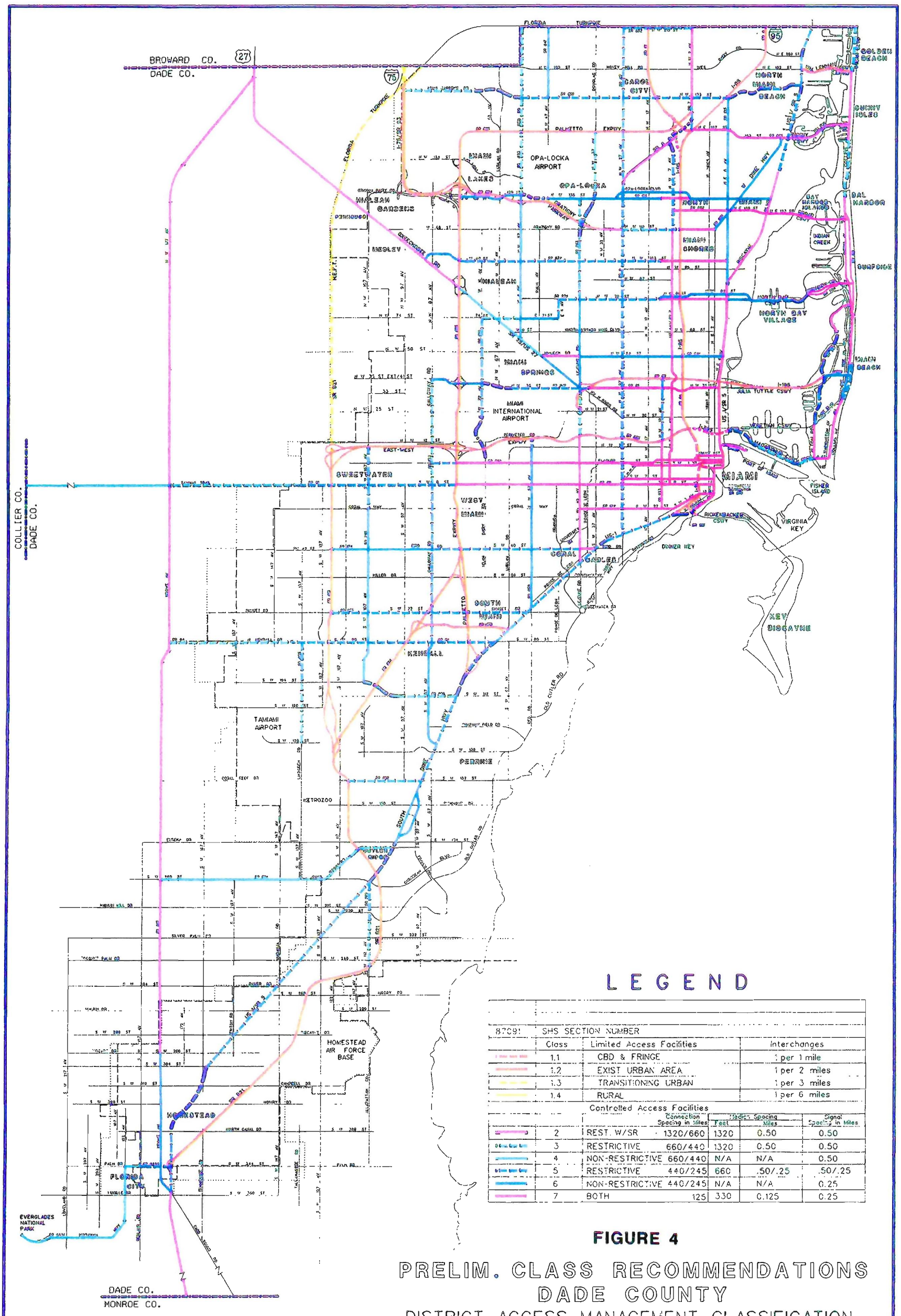
Each access management class has minimum criteria that should be met by the road. These criteria deal with characteristics such as type of area and development trends, type of median, driveway spacing, median opening spacing and type, signal spacing, type of access control, and design speed.

In FDOT District 6, which includes Dade and Monroe Counties, the access management database contains all the items listed above. Additionally, the Access Management Classification is part of this database. All the data is contained in spreadsheets in the District Office.

The access management database was developed in the early 1990s for roads in the State Highway System within the District. The data was gathered to perform an assessment of existing roadway characteristics relative to access management issues. This information was then used to establish the access management class for each road. The data base is updated from time to time as needed. The characteristics of each road, however, do not change drastically unless the road is reconstructed and/or the road is located in a rapidly developing area.

The access management database, therefore, contains general information about the physical characteristics of state roads. In developing the DCMMP/CMS, the data can be used during the evaluation of alternative mobility strategies at the corridor level. Also, the data can be used as a tool for the continued analysis, reclassification and enforcement of access management regulations. Access management, itself, is considered a mobility strategy in as much as effective access management can significantly increase the capacity and efficiency of roadways when compared to uncontrolled facilities. In fact, access management provides a mechanism to actually reduce the number of median openings, driveways and signals, as well as constructing restrictive (raised or swale) medians. These design changes help improve traffic operations at the affected facilities.

Figure 4 shows the preliminary *District Access Management Classification System and Standards* for Dade County.



LEGEND

87091 SHS SECTION NUMBER

Class	Limited Access Facilities	Interchanges
1.1	CBD & FRINGE	1 per 1 mile
1.2	EXIST URBAN AREA	1 per 2 miles
1.3	TRANSITIONING URBAN	1 per 3 miles
1.4	RURAL	1 per 6 miles

Controlled Access Facilities

		Connection Spacing in Miles	Median Spacing Feet	Median Spacing Miles	Signal Spacing in Miles
	2	REST. W/SR 1320/660	1320	0.50	0.50
	3	RESTRICTIVE 660/440	1320	0.50	0.50
	4	NON-RESTRICTIVE 660/440	N/A	N/A	0.50
	5	RESTRICTIVE 440/245	660	.50/.25	.50/.25
	6	NON-RESTRICTIVE 440/245	N/A	N/A	0.25
	7	BOTH 125	330	0.125	0.25

FIGURE 4

PRELIM. CLASS RECOMMENDATIONS DADE COUNTY

DISTRICT ACCESS MANAGEMENT CLASSIFICATION SYSTEM AND STANDARDS

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SIX
DIVISION OF PLANNING AND PROGRAMS

MARCH, 1993

DADEMAP1

e. Traffic Counts

FDOT District 6 has an annual traffic counting program that provides excellent coverage of the SHS in Dade County. While some raw or unadjusted traffic count data are available from the counting program, FDOT calculates Annual Average Daily Traffic (AADT) for each station. The AADT represents the total of all the daily traffic volumes in an entire year, divided by 365 days. For most count stations this average is calculated using a one-day sample and statistical relationships. Three types of counts are obtained using automatic equipment: continuous traffic counts, 24 hour traffic counts and vehicle classification counts.

There are 11 permanent continuous traffic count stations in Dade County. These stations have special equipment with loops embedded in the pavement of the road. The loops count vehicles continuously, data is summarized every 60 minutes and stored throughout the day. Once a day the daily data are automatically sent, via modem, to a mainframe computer at the FDOT Central Office in Tallahassee. The central computer stores the data, provides statistical analysis and makes the data available statewide. A summary report is produced on an annual basis for each count station in the district. Historical records are also maintained for each station.

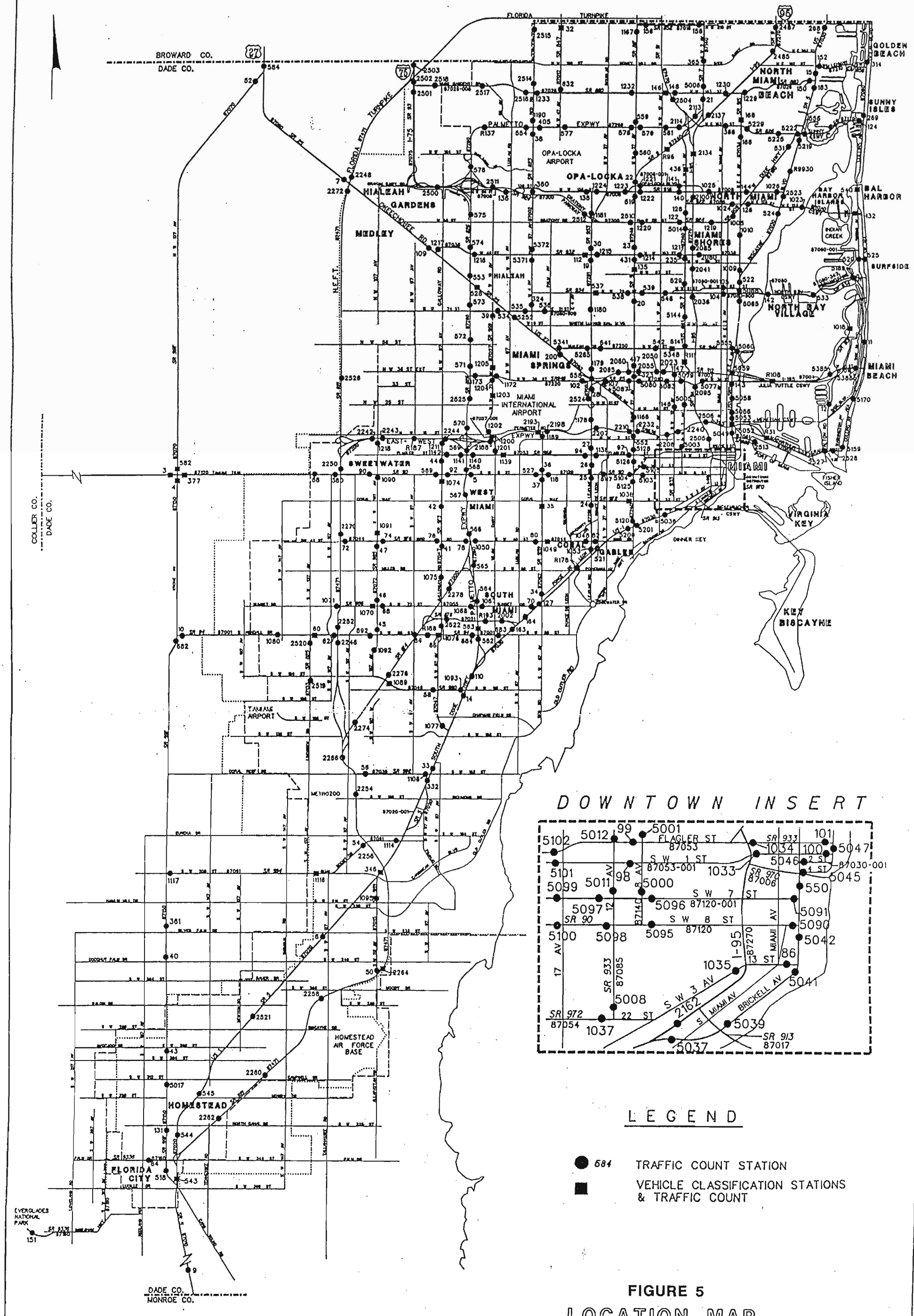
Twenty-four hour traffic counts are gathered every year at 385 count station locations throughout the county. The counts are obtained by installing portable traffic counting equipment (Automatic Vehicle Recorders - AVR) for a period of 24 hours once every year. The gathered data, that is recorded at 15 minute intervals, are entered into the FDOT central mainframe computer. The data is contained in the Traffic Characteristics Inventory database described below. This method of storage provides easy access, statistical analysis, and historical trends.

Classification counts are also obtained once a year at 40 preselected locations. Portable classification count equipment is used for this effort. The data include, for a 24 hour period (subdivided in 15 minute intervals), the number of vehicles traversing the count station, for 15 standard pre-established vehicle types. The total vehicle count data are used for the centralized count database. The classification count data are stored in the same database as the 24 hour counts. FDOT has recently developed software that allows conversion of different types of counts from different equipment manufacturers into a standard format that can be directly input into the FDOT mainframe computer.

Figure 5 shows the location of all State traffic count stations in Dade County.

f. Existing Level of Service

The purpose of the LOS database is to monitor existing LOS and to estimate future LOS conditions on the SHS. Several planning-level capacity calculation programs are used to estimate LOS from road specific data. The database, summarized in spreadsheets, includes the following items: section, milepost, state road number, road, length, road



L. RIOS

MARCH 27, 1995

FIGURE 5

LOCATION MAP
TRAFFIC COUNT STATION NUMBERS

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DISTRICT SIX
DIVISION OF PLANNING AND PROGRAMS

type, capacity classification, number of signals, K and D factors, design speed, peak hour factor, no passing zones (percent), saturation flow rate, arrival type, green time to cycle length ratio, signal controller type, AADT, LOS standard, volume to capacity ratio, and level of service. The programs mentioned above are detailed in Section VI. The result of these analyses is the State LOS Map for Dade County as shown in Figure 6.

g. Highway Performance Monitoring System (HPMS)

The HPMS is a standardized data gathering and storage system required by the Federal Government. This information is gathered to monitor facility design and performance. The database is actually part of the Roadway Characteristics Inventory system described below and resides in the FDOT mainframe computer in the Central Office in Tallahassee. The following data items, among others, are part of this database: section, begin/end milepost, state road number, local name, number of lanes, road width, shoulder type and width, median type and width, speed limit, AADT.

h. Roadway Characteristics Inventory (RCI)

The RCI is a standardized data gathering and storage system. The emphasis of this system is the physical characteristics of the roads. The database is in the FDOT central computer. The data include items such as: number of lanes, shoulders, and median type, among others. Table 1 shows in detail some of the features and characteristics of the State RCI data stored in this system.

The RCI is coupled with a graphical component known as the Straight-Line Diagram (SLD). The SLD is a simplified representation of the physical characteristics of the road. These characteristics are recorded along a straight line that represents the road. Symbols, notations and legends portray the road information using mileposts as the location mechanism. The SLD are stored in Intergraph MicroStation CADD format. Typically, SLD sheets are printed on 11 x 17 inch sheets.

i. Traffic Characteristics Inventory (TCI)

The Traffic Characteristics Inventory (TCI) is a database on mainframe computer at the FDOT Central Office in Tallahassee. The data is actually a summary of the District's raw and processed traffic counts gathered every year. The data include: count station number, milepost, location, count date, raw count by direction, seasonal adjustment factor, directional and total AADT.

The traffic count data is used by FDOT to monitor trends and levels of service on state roads. The classification data is used to establish the percent of trucks using selected roads. This in an important factor in capacity analysis (percent of trucks), planning and design of roads (T Factor), and design of bridges (axle loadings).

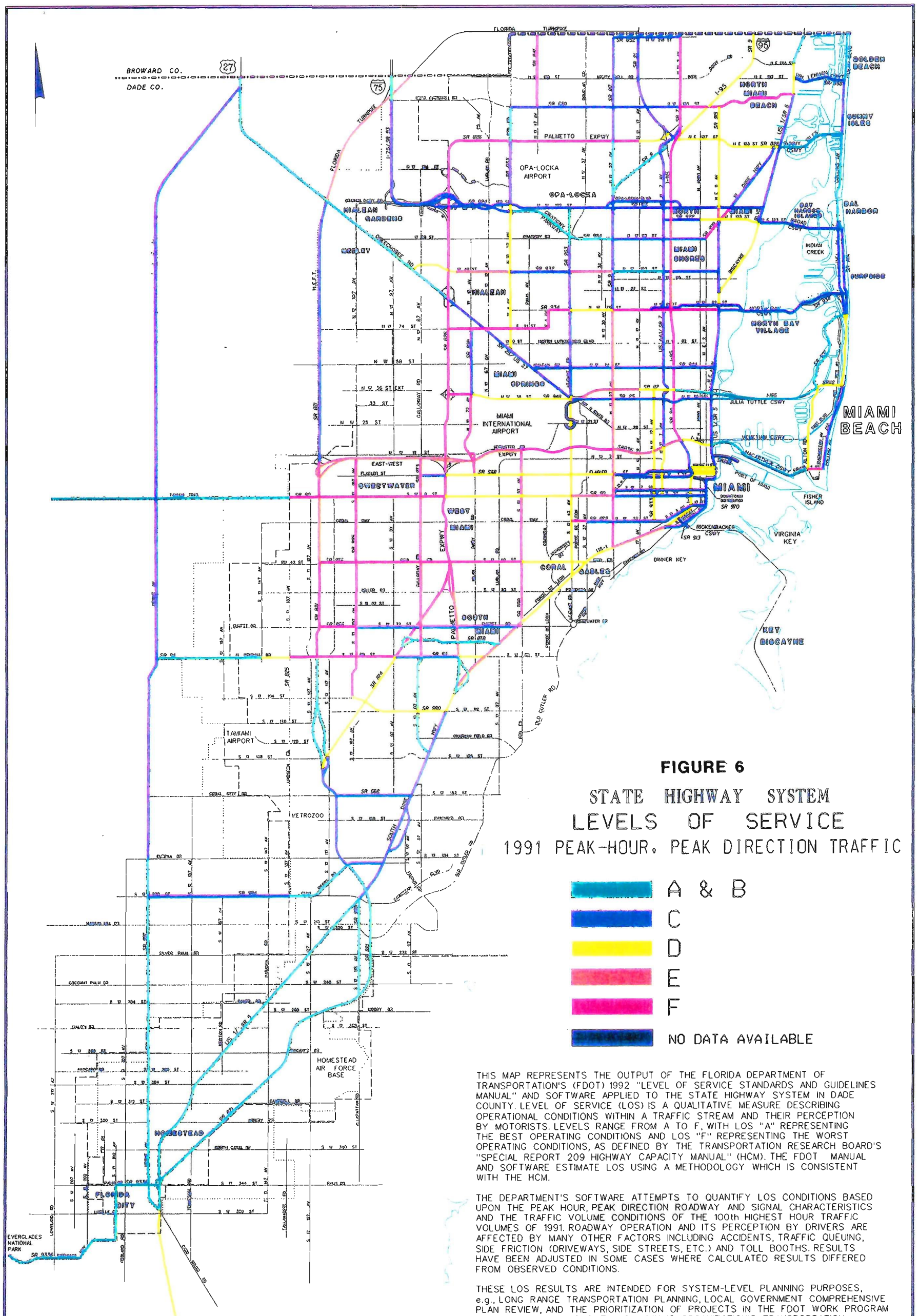

FIGURE 6

STATE HIGHWAY SYSTEM

LEVELS OF SERVICE

1991 PEAK-HOUR, PEAK DIRECTION TRAFFIC

- A & B
- C
- D
- E
- F
- NO DATA AVAILABLE

THIS MAP REPRESENTS THE OUTPUT OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S (FDOT) 1992 "LEVEL OF SERVICE STANDARDS AND GUIDELINES MANUAL" AND SOFTWARE APPLIED TO THE STATE HIGHWAY SYSTEM IN DADE COUNTY. LEVEL OF SERVICE (LOS) IS A QUALITATIVE MEASURE DESCRIBING OPERATIONAL CONDITIONS WITHIN A TRAFFIC STREAM AND THEIR PERCEPTION BY MOTORISTS. LEVELS RANGE FROM A TO F, WITH LOS "A" REPRESENTING THE BEST OPERATING CONDITIONS AND LOS "F" REPRESENTING THE WORST OPERATING CONDITIONS, AS DEFINED BY THE TRANSPORTATION RESEARCH BOARD'S "SPECIAL REPORT 209 HIGHWAY CAPACITY MANUAL" (HCM). THE FDOT MANUAL AND SOFTWARE ESTIMATE LOS USING A METHODOLOGY WHICH IS CONSISTENT WITH THE HCM.

THE DEPARTMENT'S SOFTWARE ATTEMPTS TO QUANTIFY LOS CONDITIONS BASED UPON THE PEAK HOUR, PEAK DIRECTION ROADWAY AND SIGNAL CHARACTERISTICS AND THE TRAFFIC VOLUME CONDITIONS OF THE 100th HIGHEST HOUR TRAFFIC VOLUMES OF 1991. ROADWAY OPERATION AND ITS PERCEPTION BY DRIVERS ARE AFFECTED BY MANY OTHER FACTORS INCLUDING ACCIDENTS, TRAFFIC QUEUING, SIDE FRICTION (DRIVEWAYS, SIDE STREETS, ETC.) AND TOLL BOOTHS. RESULTS HAVE BEEN ADJUSTED IN SOME CASES WHERE CALCULATED RESULTS DIFFERED FROM OBSERVED CONDITIONS.

THESE LOS RESULTS ARE INTENDED FOR SYSTEM-LEVEL PLANNING PURPOSES, e.g., LONG RANGE TRANSPORTATION PLANNING, LOCAL GOVERNMENT COMPREHENSIVE PLAN REVIEW, AND THE PRIORITIZATION OF PROJECTS IN THE FDOT WORK PROGRAM AND THE MIAMI METROPOLITAN PLANNNING ORGANIZATION'S TRANSPORTATION IMPROVEMENT PROGRAM (TIP). MORE DETAILED LOS ANALYSES MAY BE APPROPRIATE FOR OTHER APPLICATIONS, SUCH AS CONCURRENCY MANAGEMENT, ROADWAY PROJECT DEVELOPMENT, ROADWAY DESIGN, SIGNAL OPTIMIZATION, TRAFFIC OPERATIONS, AND TRAFFIC IMPACT STUDIES.

- URBAN BOUNDARY (AS APPROVED BY FEDERAL, STATE & LOCAL AGENCIES)
- DADE COUNTY YR. 2000 URBAN DEVELOPMENT BOUNDARY (AS OF 4/91)

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SIX
DIVISION OF PLANNING AND PROGRAMS

LOSMAP3

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Table 1	
STATE ROADWAY CHARACTERISTICS INVENTORY (RCI): Features and Characteristics	
1	**ROAD NUMBERING SYSTEM** a. State Road Number b. AASHTO (US Route)
2	**FEDERAL SYSTEM** a. AASHTO (US Route)
3	**STATE AND FEDERAL FUNCTIONAL CLASSIFICATION** a. Functional Classification
4	**DESCRIPTIVE CHARACTERISTICS OF THE ROADWAY** a. Local Name b. Legislative Districts c. Type Road d. Road Access e. Urban Classification f. Roadway Realignment g. Old Alignment h. Section Status Exception i. Stationing Exceptions j. Associated Stationing Exception k. Speed Zone l. Traffic Flow Breaks
5	**PHYSICAL CHARACTERISTICS OF THE ROADWAY** a. Thru Lanes b. Outside Shoulders c. Highway Median Type d. Inside Shoulders e. Non-Curve Intersection f. Horizontal Curve g. Surface Description h. Surface Layers i. Crossdrains j. Intersections k. Interchanges l. Railroads m. Structures n. Parking

j. Five Year Work Program Capacity Improvements Map

The map of capacity improvements in the five year work program for Dade County is prepared by FDOT for the MPO and included in the TIP every year. This is shown as Figure 7.

k. Constrained Corridor Inventory

A constrained roadway is defined by FDOT (in their LOS Manual) as: one in which adding two or more lanes is not possible because of physical or policy barriers. The constrained corridors inventory is maintained and updated in a spreadsheet by the FDOT District 6. Most of these data come from the District's Corridor Master Plan. This database includes: section, road segment, length, number of lanes, right of way, proposed right of way and type of project.

l. South Florida Intelligent Corridor Study Project (ICS)

FDOT has recently completed a study of Intelligent Transportation Systems (ITS) applications in South Florida. The study is a comprehensive review of available technology including Advanced Public Transportation Systems (APTS). Potential locations and system-wide concepts were considered and recommended for staged implementation.

In fact, portions of the plan are already being implemented in the form of surveillance cameras at the Golden Glades interchange. This equipment, being monitored from the Freeway Operations Center at FDOT District 6 offices, allows detection of incidents. The system permits the agencies to respond, and possibly correct problems faster than relying on external sources for the same information. A complementary system of changeable message signs greatly enhances the ability to relay useful information to motorists. The data obtained though ICS will be very useful in implementing strategies to relieve traffic congestion.

2. Gold Coast Commuter Services (GCCS)

FDOT has established the Regional Commuter Assistance Program (RCAP) which promotes and encourages people and employers to develop transportation demand management (TDM) strategies to relieve traffic congestion. In Districts 4 and 6, GCCS is responsible to provide these services in Dade, Broward and West Palm Beach counties.

GCCS offers numerous free services to area commuters, some of which include computer generated match list for carpool and vanpool formation; information about all South Florida public transportation services; I-95 construction activities; TDM planning, including employee and student transportation surveys; and TMA development, support and evaluation.

As indicated, GCCS is an organization funded by the FDOT with the purpose of providing support services and information to the commuting public in Dade, Broward and Palm Beach

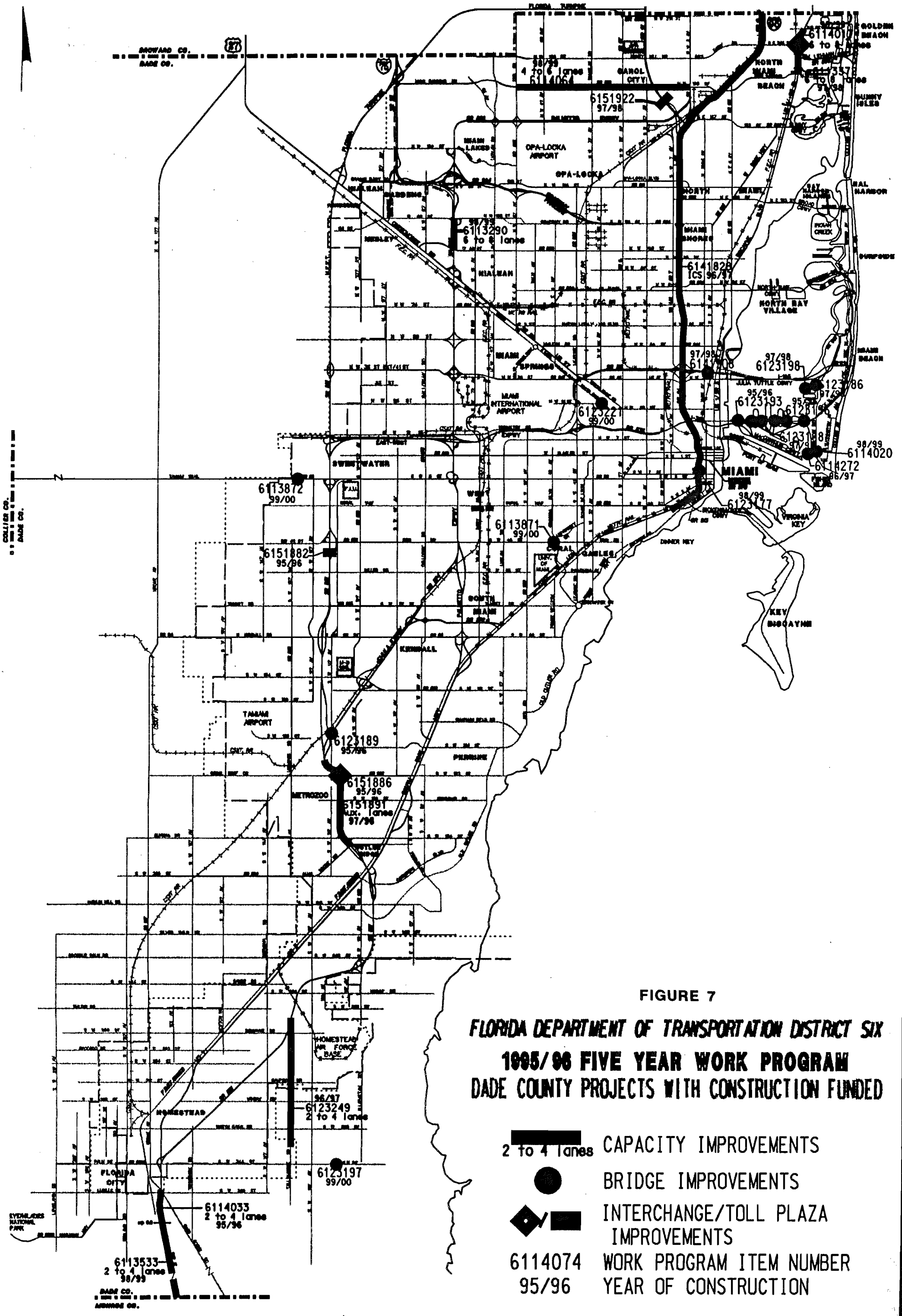


FIGURE 7

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT SIX

1995/96 FIVE YEAR WORK PROGRAM

DADE COUNTY PROJECTS WITH CONSTRUCTION FUNDED

2 to 4 lanes	CAPACITY IMPROVEMENTS
●	BRIDGE IMPROVEMENTS
◆	INTERCHANGE/TOLL PLAZA IMPROVEMENTS
6114074	WORK PROGRAM ITEM NUMBER
95/96	YEAR OF CONSTRUCTION

APRIL, 1995

counties. One of the principal services provided is carpool/vanpool computer matching using a Regional Ridesharing Computer Matching System.

a. Carpools/Vanpools

This software operates on a PC-based network residing at the GCCS offices in Fort Lauderdale. Persons interested in ridesharing complete a questionnaire that is then added to the database. The information needed includes user name/address, place of employment/work address, work hours, present mode of transportation, riding/driving preference, carpool/vanpool preference, etc. This information, however, is protected by privacy laws and is not available for purposes other than ridesharing requests among members of the database.

The matching process involves the automatic generation of a list of five names of people interested in ridesharing. This list is then provided, free of charge, to the new member. This person is responsible for contacting the persons on the list and reaching a voluntary agreement to rideshare among themselves.

b. Transportation Management Associations (TMAs)

Transportation Management Associations (TMAs) are private, non-profit groups formed to facilitate private sector involvement in addressing transportation issues. The mission of TMAs generally focus on:

- Providing the private citizen's voice in the transportation planning process.
- Encouraging the development of TDM strategies to alleviate traffic congestion.
- Providing transportation services where appropriate.
- Promoting their service areas as readily accessible to potential tenants, clients and employees.

The structure of TMAs varies with business and community priorities. Most of them are formed on a voluntary basis, while others are initiated from local ordinances. In all cases, a variety of funding sources, including public sector grants, membership assessments and services fee, are used to finance activities.

FDOT provides financial support for the first three years to form TMAs within Dade County, two TMAs are already incorporated. These are:

i. Civic Center Transportation Management Organization (CCTMO)
In June 1992, the Board of County Commissioners approved the establishment of the CCTMO (Resolution # R-668-92). The boundaries of the CCTMO are:

- NW 21st Street on the north

- Miami River on the south
- I-95 on the east
- NW 17th Avenue on the west

Some of the members of the CCTMO are: Jackson Memorial Hospital, University of Miami, Dade County, Miami Dade Community College, Lindsey Hopkins, Miami Dade Community College, Cedars Medical Center, and the City of Miami among others.

The CCTMO is located in a high density area with more than 25,000 employees. This, basically set the purposes and objectives of the organization to be oriented toward big employers. GCCS and the MPO had provided technical assistance by conducting employee/student surveys supporting a "Pedestrian Amenities and Safety Study for the CCTMO". The objectives of this study were focused on: Improving pedestrian mobility and accessibility, promoting the use of public transit services, enhancing personal security and minimizing pedestrian/vehicular conflicts.

The work plan adopted by the CCTMO includes: Identification of the needs of the area; Develop a public awareness information program; Implement TDM programs to relieve congestion; and promote the use of public transit.

ii. Miami Beach Transportation Management Association (MBTMA)

Originally know as the South Beach TMA, the MBTMA was formed based on the initiative of the private sector. The target area for the MBTMA includes the portion of Miami Beach lying south of Forty Ninth Street. Different from the CCTMO, the MBTMA is located in a tourist area with many small businesses. Due to the size and the characteristics of the MBTMA, the objectives and programs are more areawide oriented.

GCCS has conducted different employees surveys, while the MPO also provided technical support by developing a "South Beach Bicycle and Pedestrian Study". The objectives of this study were to evaluate potential recreational bicycle corridors and make short and long term recommendations regarding bicycle and pedestrian improvements.

Some of the projects included in the workplan adopted by MBTMA are: Establish an electric tram that serves as the South Beach circulator; Establish an airport shuttle; Develop appropriate TDM strategies for the area; Develop a Tourist Mobility Plan and comprehensive Neighborhood Transportation and Parking Plan studies.

c. Employee and Student Origin-Destination Data

GCCS coordinates data collection efforts in TMAs. The organization uses a database program to code, analyze, and summarize the survey information. The type of information

obtained from the surveys includes: trip origin location (zip code and nearest intersection), mode of travel to work, travel time, parking location, parking availability, parking cost, linked trip data, commuting cost, degree of congestion, degree of stress, importance of commuting factors, alternative modes, incentives to change modes, reason for not using transit, work hours/flexibility, type of work, personal statistics, etc. The information from these surveys is kept in the database. Also, results of the surveys are usually published in a summary report. The questionnaires are anonymous and the level of detail of the information is general enough that, when aggregated for analysis purposes, there is no infringement on the privacy of the survey participants.

3. **Department of Environmental Protection (DEP)**

a. Air Quality Conditions Analysis Baseline

The 1990 Area Inventory represents the upper limit of emissions for sources. The 1990 emission levels were identified by the State of Florida to the United States Environmental Protection Agency (USEPA) as the baseline emission data and is being utilized to represent the worst case scenario. A base year inventory for Dade County for the year 1990 was submitted to USEPA as part of a revision to the Florida's State Implementation Plan (SIP). The SIP is a series of documents maintained by the Florida Department of Environmental Protection (FDEP) which details the actions to be taken by the State agencies and local government to achieve, maintain and enforce the National Ambient Air Quality Standards (NAAQS)

To assist the states in meeting the requirements for emission inventory development, the USEPA prepared a five-volume series that describes in detail many of the technical aspects of the inventory process, these are:

- Volume I: **Emission Inventory Fundamentals** is a guide to the managerial and technical aspects of the emission inventory.
- Volume II: **Point Sources** which assist the user in the identification of point sources, collection of data, calculation of emissions and data presentation.
- Volume III: **Area Sources** that outlines the methods of collecting and handling emission data from sources too small and/or to numerous to be surveyed individually.
- Volume IV: **Mobile Sources** that focus on the technical aspects of inventorying emissions from mobile sources. This volume presents an overview of the mobile sources category as a whole and identifies specific methods that can be used to identify and inventory sources, estimate emissions, and establish and maintain a mobile source inventory file.
- Volume V: **Bibliography** which presents an extensive listing of reference material currently available in the literature.

Several computer models currently exist to analyze air quality. Choosing the correct model depends on several factors including the level of analysis, facility geometry, the availability of input data, pollutant and sources characteristics, averaging time and

transport and diffusion characteristics. The following models are recommended to evaluate the air quality impacts associated with indirect sources.

CALINE3 - Line source application

MOBILE (series) - Current version of USEPA's fleet-average emission factor model

CAL3/QHC Version 2 - Used to model intersections and free flow link

While most of these programs require traffic related data, the information is usually coded for air quality analysis receptors throughout the county. Therefore, the information available is scattered and does not provide a comprehensive database for traffic evaluation purposes.

B. DADE COUNTY AVAILABLE DATA

1. Planning Department

- Land Use

The Dade County Planning Department is responsible for inventorying existing land uses using the census data as the principal source for these inventories. The department is also responsible for developing forecasts of future land uses. These forecasts are based on current trends, the study of factors affecting the trends, and policy decisions changing land use patterns.

Land use information (at the Traffic Analysis Zone level) used in the Dade County transportation model is developed by the Planning Department. There are two major categories of data:

- The population type data, which include: number of single family or multi-family dwelling units (including number of vacant and transient units), single family or multi-family group quarters or total population, under 16 (years of age) labor force and elderly population, school enrollment, number of hotel and motel rooms, occupied hotel and motel rooms, hotel and motel residents, dwelling units with 0, 1, and 2+ autos (single and multi-family), and zone income code.
- Employment type data, which include: commercial employment, service employment, industrial employment, and total employment.

- Dade County Comprehensive Development Master Plan (CDMP)

Metropolitan Dade County has an adopted local comprehensive plan called the Dade County Comprehensive Development Master Plan (CDMP). This plan is comprised of 11 different plan elements, and each element contains adopted goals, objectives and policies

that guide the physical development of the County. These elements are:

- Land Use
- Traffic Circulation
- Mass Transit
- Port & Aviation
- Housing
- Conservation
- Water, Sewer & Solid Waste
- Recreation & Open Space
- Coastal Management
- Intergovernmental Coordination
- Capital Improvements

Some of the elements in the plan relate closely to the issues addressed by the DCMMP/CMS. These elements include traffic, mass transit and land use. The ground transportation component of the airport and the seaport are indirectly related to the DCMMP/CMS but more directly related to the Intermodal Management System being developed by FDOT.

As part of the plan policies, Metropolitan Dade County has adopted minimum level of service standards for both traffic circulation and the county-wide transit system. Municipalities have adopted standards for traffic circulation also but those standards may differ from the county standards and apply only within their own jurisdictional boundaries. For consistency, the plan should mention the DCMMP/CMS as a part of the comprehensive planning process. The level of service standards in the plan should also be used, as appropriate, as the guide in identifying congested locations.

2. Department of Public Works

a. Traffic Counts

The Dade County Department of Public Works has an extensive traffic counting program. Twenty-four hour traffic counts are collected using automatic equipment deployed once a year at approximately 661 count stations. The stations are located on county roads regardless of location within municipalities. Generally, state roads are excluded because FDOT has their own traffic counting program.

The counts are recorded every 15 minutes. All the data are coded and maintained in the department's database. A summary of the counts, showing the weekday traffic volume is available to the public along with a key map showing the location of the count stations.

The data is also included in the Dade County Concurrency Management System. Peak period volumes from the data base are extracted for the concurrency analysis. The traffic data then becomes part of the GIS-based database. Additionally, the Concurrency

Management Office maintains a Lotus-based summary of traffic concurrency information. Among other items, this database includes peak period volumes at all count stations in the county. Figure 8 shows the location of the County traffic count stations.

b. Traffic Signals

Metropolitan Dade County has one of the largest (2700 signals) computerized signal systems in the US. Since the system has a high level of automation, an extensive amount of information is easily available for the system as well as individual signals. Perhaps one of the best summaries of available information is the listing of signals that is updated and published by the traffic control center four times a year.

The listing contains the following information: signal number, location, year, type of controller, pedestrian features, signs, coordination, phasing features, late night flashing, jurisdiction, maintenance zone, and signal timing zone, among others. The traffic control center computer can be accessed, via modem. Certain information is easily and readily available to users with the proper authorization.

c. Road Maintenance Responsibility

Separate lists of the roads maintained by Dade County and FDOT have been compiled and are updated by the Dade County Public Works Department. These lists include the following information: road/street name and segment, length, classification, municipality, state road number, federal road system number, and section.

3. **Developmental Impact Committee (DIC)**

a. Dade County Concurrency Management System

Metropolitan Dade County and all incorporated areas (municipalities) must, pursuant to state law, have and enforce a Concurrency Management System. While concurrency is applicable to several types of public infrastructure and services, this report considers those items most directly related to the DCMMP/CMS (e.g. roads and transit). In general, concurrency requires that new development be prohibited unless and until there is sufficient infrastructure to accommodate the development. Local governments are also required to adopt minimum level of service standards. The determination of whether there is sufficient capacity is based on those local standards.

The Concurrency Management System in Dade County includes an extensive database of the existing roadway network within most of the county area. All arterial and collector roads in unincorporated Dade County, regardless of maintenance responsibility, are included.

Federal regulations allow MPOs to use qualified existing systems/processes in lieu of a CMS. The Dade County Concurrency Management System provides a mechanism to

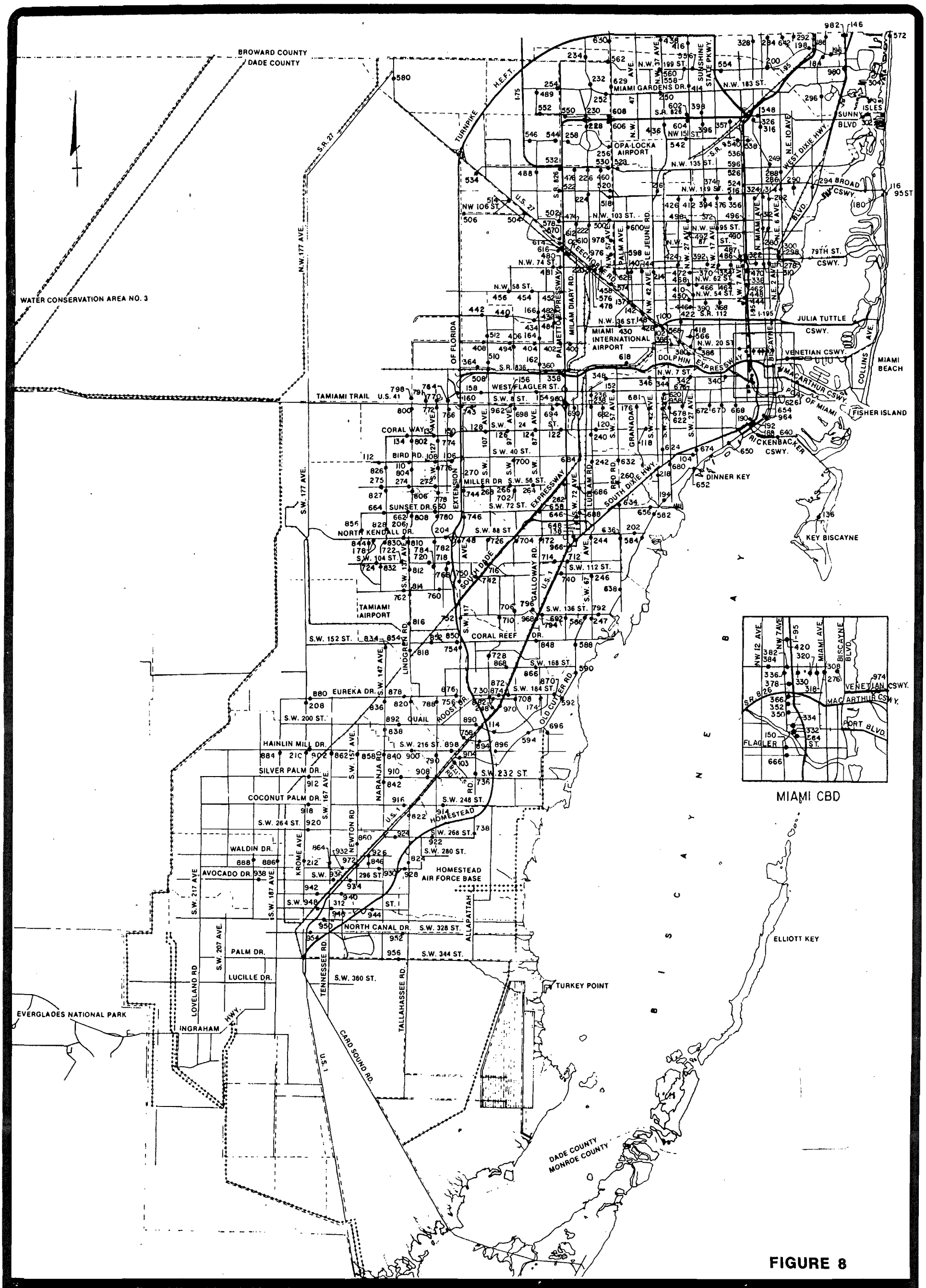


FIGURE 8

TRAFFIC COUNT STATION MAP

For Metro-Dade County maintained traffic count stations

METRO-DADE

REV. JULY 1995 HLB
REV. JUN 1993 HLB
JAN 1991 HLB

control or manage traffic congestion by stopping development in areas that are already saturated with traffic.

b. Road Concurrency Level of Service

The Concurrency Information Office maintains a Lotus-based database summarizing concurrency data for all traffic count stations in Unincorporated Dade County. The database includes the existing peak period count, the number of approved-reserved trips, the maximum volume allowed on that road and the number of available trips.

4. **Metro-Dade Transit Agency**

a. Section 15 Data

These data are contained in the county mainframe computer. The data are required by federal regulations. It is updated on a regular basis using samples. The following items are part of the database: passenger trips, passenger miles, vehicle miles, revenue miles, route miles, average speed, average fare, as well as several composite statistics derived from these data items.

5. **Metropolitan Planning Organization**

a. Transportation Model

The MPO is responsible for the continued updating of the Dade County Transportation Model. The model is the primary tool for the updating of the Long Range Transportation Plan (LRTP). Validation (1990) and future year (2015) data are available. Socio-economic zonal (Z) data and roadway network information are critical inputs to the model.

The Z-data includes all the items described under the land use data produced by the Planning Department. The road network segments (link) data include: area type, facility type, number of lanes, and direction of traffic flow. Existing daily traffic volumes (1990) are attached to a selected number of road segments. This count data is used to validate the model.

The data is contained in ASCII format computer files. Zonal data is organized by Traffic Analysis Zone (TAZ) number. Roadway link data is organized by link. Each link is defined by the number of the two nodes describing the end points of the link.

b. Long Range Transportation Plan (LRTP)

The Dade County MPO prepares a LRTP as part of the federally mandated planning activities. This plan is updated on a regular basis every 5 years. The purpose of that study is to update land use projections and formulate revised travel demand estimates on the

county transportation network. These forecasts are then utilized to identify deficiencies and test alternative transportation improvements. That technical analysis, combined with input from citizen and policy groups, forms the basis for recommending and adopting a comprehensive plan for transportation improvements to address needs for the following 20 year planning period.

The process also establishes priorities for the improvements. Finally, the plan is verified against available funding to ensure that it is financially feasible.

Definitely, the DCMMP/CMS is the logical short range complement to the LRTP. The DCMMP/CMS is the component through the planning process which serves as the connection between the LRTP and the TIP. The DCMMP/CMS analyzes the projects resulting from the data and recommendations of the LRTP and incorporates them into the implementation plan developed in the TIP.

Currently the MPO is updating the LRTP. Following the process mentioned above, five areas of analysis were evaluated, representing North, Northwest, West, Central and South Dade. These are shown in Figure 9. After this evaluation, a recommended needs plan was developed as shown in Figure 10. Finally, as a result of this process, the recommended cost feasible plan is included as Figure 11.

c. Transportation Improvement Program (TIP)

The MPO prepares a consolidated summary of all transportation improvement plans for the following five year period in the TIP on an annual basis. It lists both funded and unfunded projects. Improvement plans include roads, transit, airports and seaports. This document serves as the implementation vehicle for the LRTP.

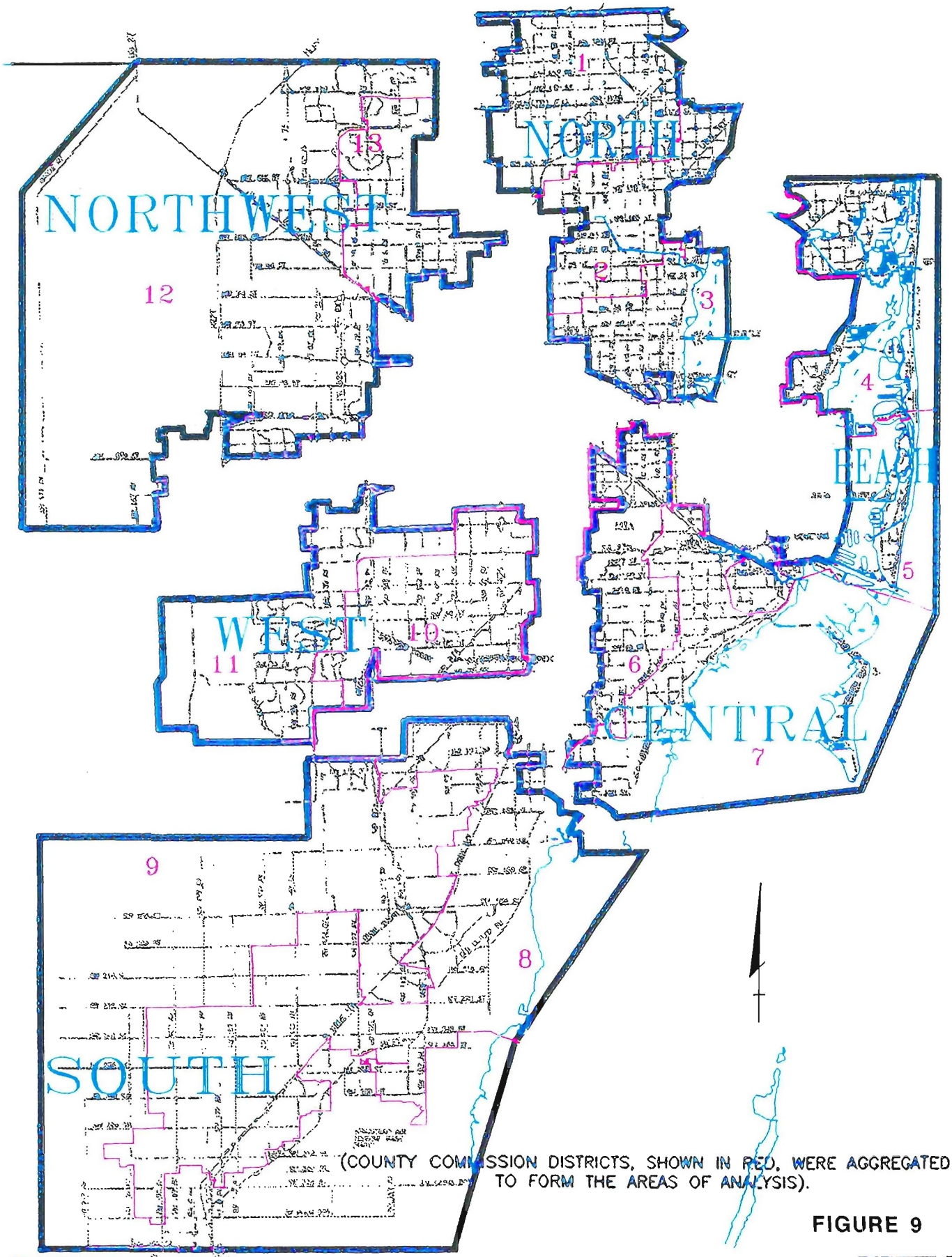
The TIP lists the activities and funding sources for the first three years. It also lists unfunded projects that are needed within the subject five year window. Each year the report is updated by deleting completed projects, rescheduling projects that have not been completed and adding funded projects to the new (third) year of the plan. The document, however, is also used as a coordination and information tool.

d. Bicycle Facilities

The MPO has recently completed a study of the bicycle facilities in Dade County. The study report *Metro-Dade Bicycle Facilities Plan* contains an inventory of existing and planned bicycle facilities. This information helps to evaluate the locations for new facilities and those that require upgrading. Figures 12 and 13 show the "Existing and Planned Bicycle Facilities", and the "Proposed Bicycle Network" for Dade County, respectively.

An assessment of the condition of these facilities is also included. Additionally, a Roadway Condition Index for Bicycling was calculated for all routes, including arterials

YEAR 2015 TRANSPORTATION PLAN
AREAS OF ANALYSIS



(COUNTY COMMISSION DISTRICTS, SHOWN IN RED, WERE AGGREGATED TO FORM THE AREAS OF ANALYSIS).

FIGURE 9

Metro-Dade Transportation Plan: Long Range Element to the Year 2015

RECOMMENDED NEEDS PLAN

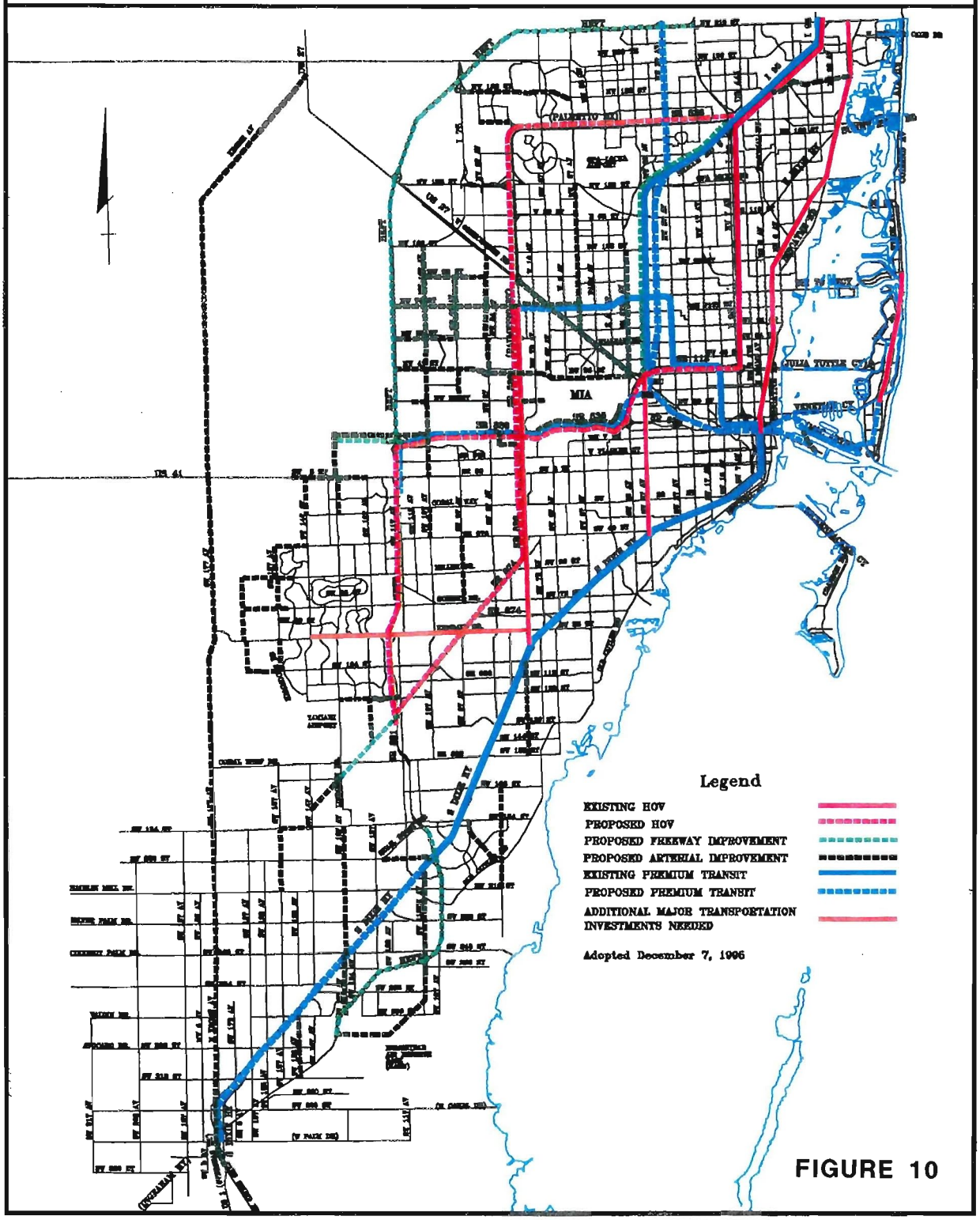


FIGURE 10

Metro-Dade Transportation Plan: Long Range Element to the Year 2015

RECOMMENDED COST FEASIBLE PLAN

(Projects shown are in addition to the 5-year TIP)

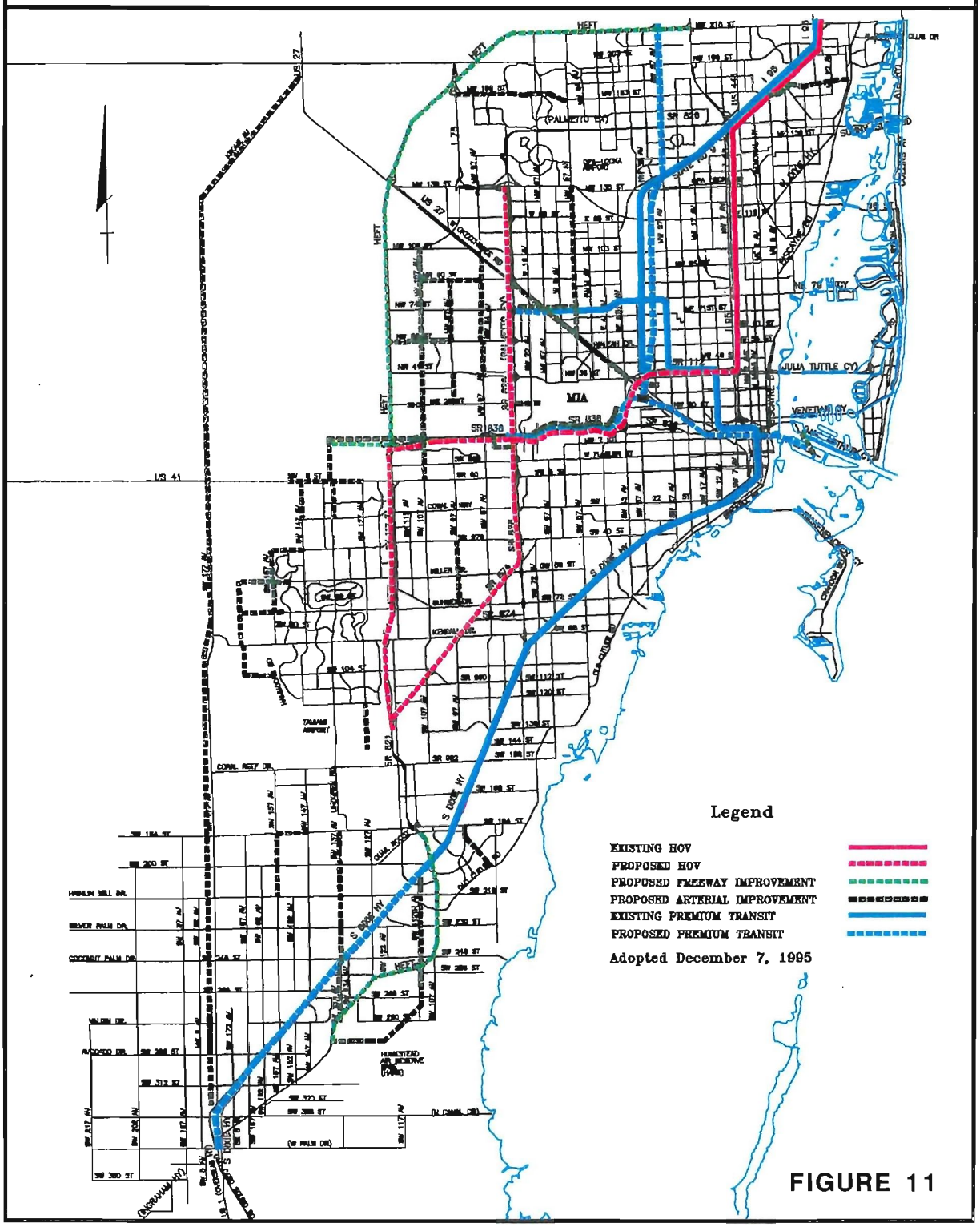


FIGURE 11

Existing and Planned Bicycle Facilities

(See Figure 13 for Bicycle Facility Plan Recommendations)

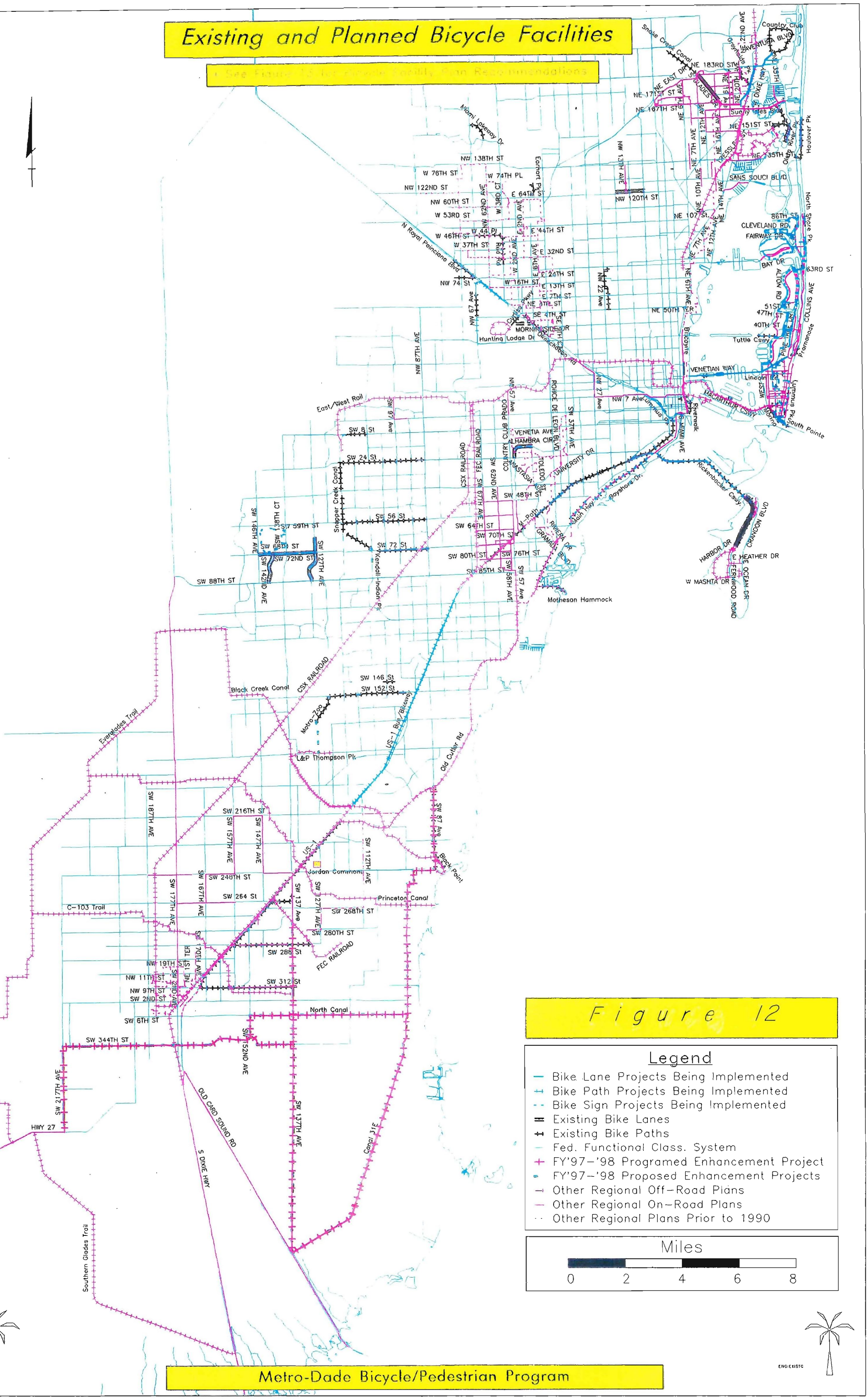


Figure 12

Legend

- Bike Lane Projects Being Implemented
- Bike Path Projects Being Implemented
- Bike Sign Projects Being Implemented
- Existing Bike Lanes
- Existing Bike Paths
- Fed. Functional Class. System
- FY'97–'98 Programed Enhancement Project
- FY'97–'98 Proposed Enhancement Projects
- Other Regional Off–Road Plans
- Other Regional On–Road Plans
- Other Regional Plans Prior to 1990

Miles

0 2 4 6 8

ENG:EXISTG

Metro-Dade Bicycle/Pedestrian Program

Bicycle Facilities Plan - Proposed Network

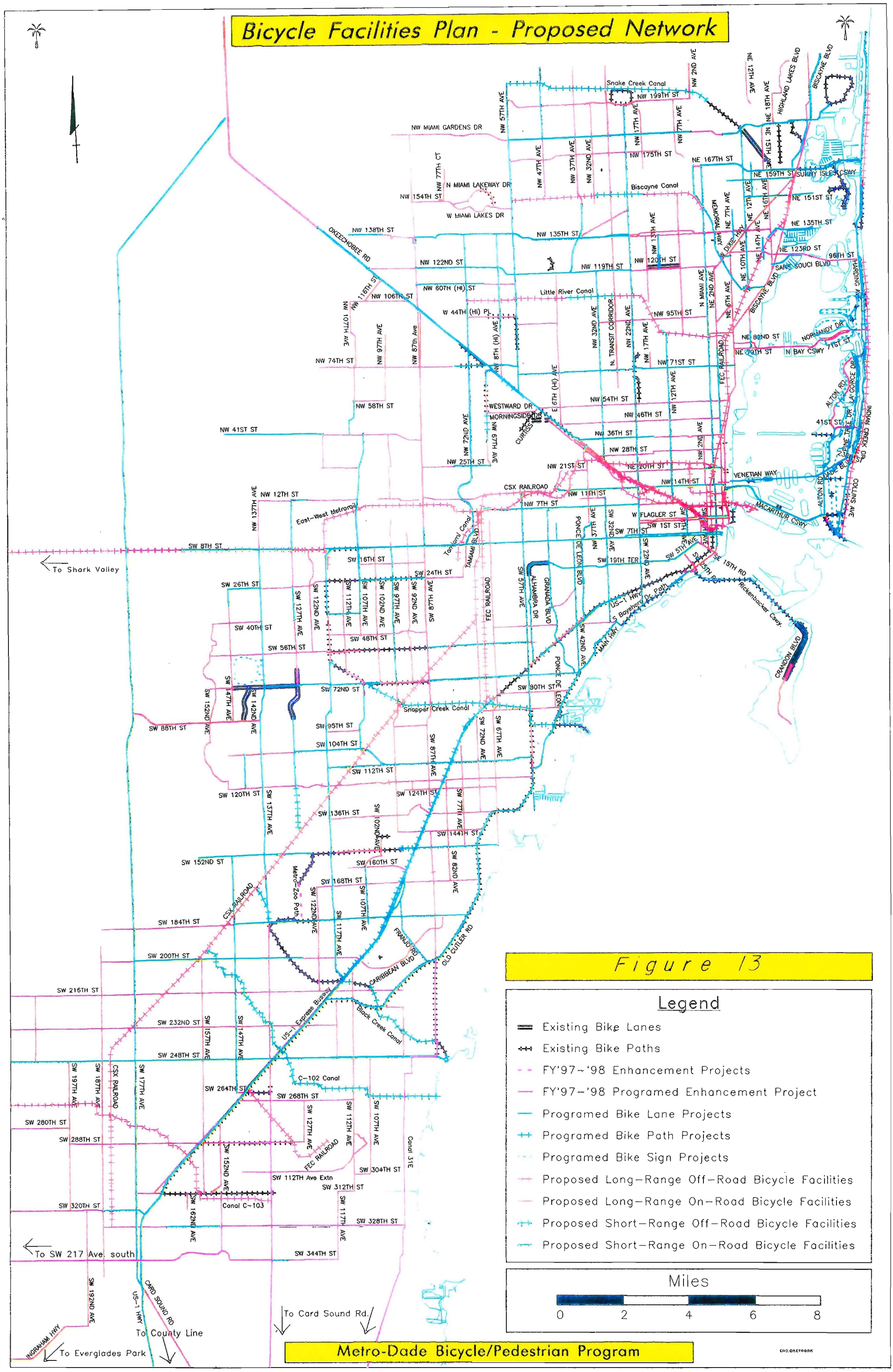


Figure 13

Legend

- Existing Bike Lanes
- Existing Bike Paths
- FY'97-'98 Enhancement Projects
- FY'97-'98 Programed Enhancement Project
- Programed Bike Lane Projects
- Programed Bike Path Projects
- Programed Bike Sign Projects
- Proposed Long-Range Off-Road Bicycle Facilities
- Proposed Long-Range On-Road Bicycle Facilities
- Proposed Short-Range Off-Road Bicycle Facilities
- Proposed Short-Range On-Road Bicycle Facilities

Miles

0 2 4 6 8

Metro-Dade Bicycle/Pedestrian Program

ENGINEERING

and collectors. The rating is an indication of how feasible the route would be for bicycle use. The data resides in a spreadsheet as well as maps. The database contains data such as: road segment, AADT, number of lanes, speed limit, width of outside lane, pavement surface quality index, sight distance index, on-street parking, paved shoulder/curb and gutter, and land use. This information was plotted in a map showing the roadway condition index (RCI) for bicycling. The result is shown in Figure 14 for the arterial roadway system.

6. Information Technology Department (ITD)

a. Geographic Information System

The Dade County ITD owns and maintains a GIS database that covers the entire county. The system uses the GIS software package ArcInfo. The base layer of the database is the street network file. This layer contains an extensive inventory of public facilities and geographical features. A list of data related to the DCMMP/CMS and available in GIS platform is included in Table 2.

C. DATA AVAILABLE AT MUNICIPAL LEVEL

1. City of Miami

a. Average Travel Speed

In 1994 the City of Miami sponsored a field operational test of Automatic Vehicle Location (AVL) technology to measure average travel speeds in major corridors throughout the city. The test consisted of monitoring the travel of volunteers driving their own vehicles on their normal travel routes. The information collected was based on real time data during the morning and afternoon peak periods. Location of the vehicles was recorded at regular intervals using data generated by special equipment installed in each vehicle. All the equipment was provided by a company that offers a variety of AVL services, primarily for commercial vehicle monitoring. The test was successful and resulted in a large amount of travel speed data.

The equipment used included transmitters in test cars, a receiving network and station, a computer and proprietary software connected to the receiving station via modem. Time and location (coordinates) were recorded into a computer file for each test vehicle every 30 seconds. Additional software was developed to analyze the data and calculate average speeds.

Data was extracted from the database to allow the analysis of 17 corridors within the city limits. Results of the analysis are available in the study report. A large amount of data remains ready to be analyzed. At this time the city has no plans to process and analyze

Existing Roadway Conditions

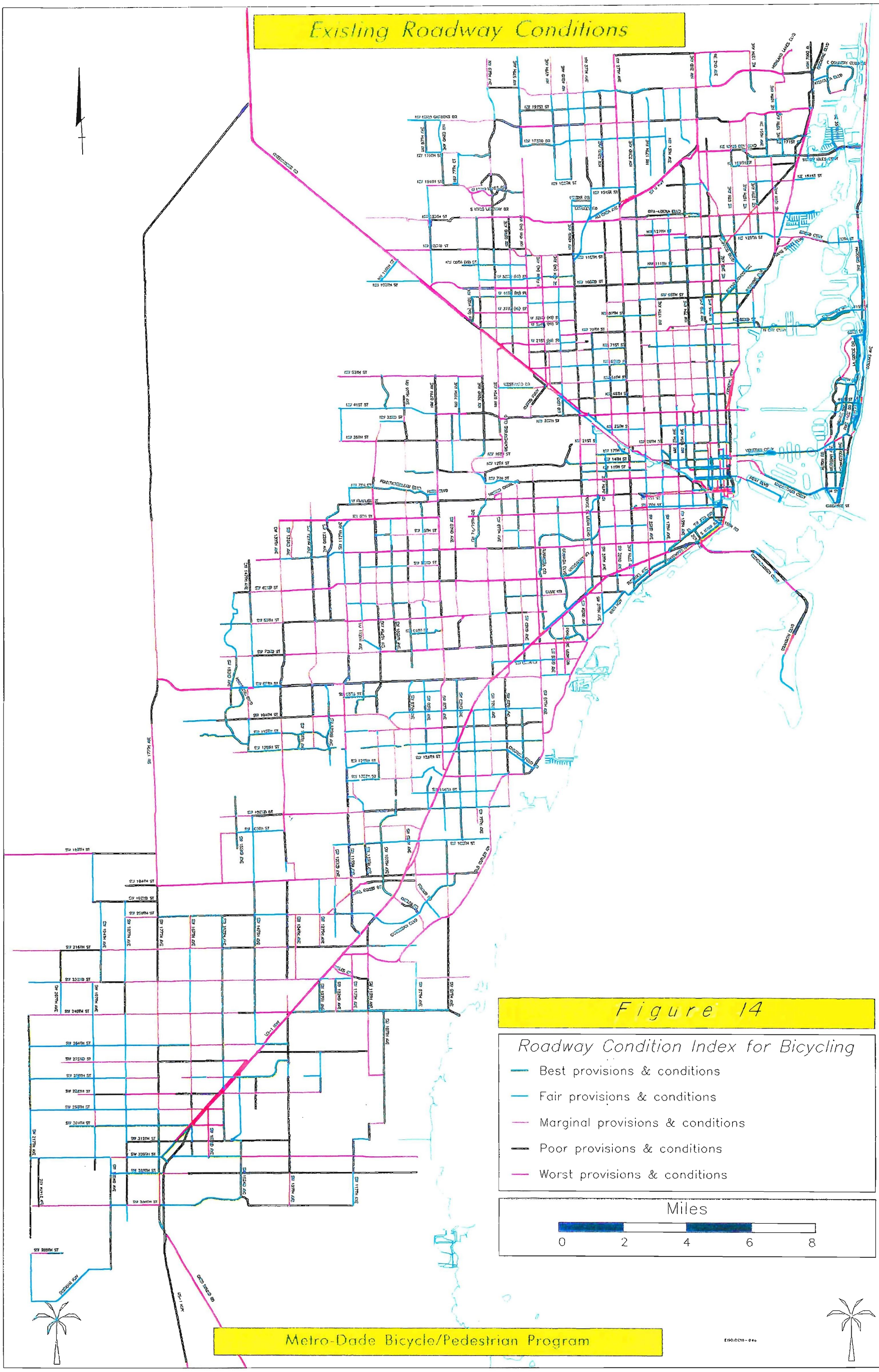


Figure 14

Metro-Dade Bicycle/Pedestrian Program

Table 2	
GIS INFORMATION AVAILABLE	
GIS Coverage	
1	**General Information** a. Municipal Boundaries b. Large Buildings c. Small Buildings d. Hurricane Evacuation Zones e. Hurricane Shelters f. Colleges g. Hospitals h. Parks i. Schools
2	**Highway Information** a. Main Highways b. Major Streets c. All Roads
3	**Transit Information** a. Bus Routes b. Bus Stops c. Metromover Alignment d. Metromover Stations e. Metrorail Alignment f. Metrorail Stations
4	**Land Use Information** a. Land Use Map - 1990 b. Land Use Map - CDMP c. Land Use Zoning Boundaries d. Capacity of Development e. Roadways with Concurrency Deficiencies f. Traffic Zones
5	**Non-Traditional Modes Information** a. Bicycle Routes

that data. The city, however, will make the information available for analysis to any bonafide interested party.

These data are suitable for numerous applications such as evaluating the performance of the existing network for concurrency and congestion management purposes. The information can also be useful to validate the regional travel models and level of service software. This type of emerging technology has potential for advanced data collection applications. The cost effectiveness of using this data base, and possibly expanding this program should be investigated.

b. Geographic Information System

The City of Miami has developed a GIS system with a large amount of information. The base layer of information is the base street network. This layer was obtained from the Dade County Information Technology Department, therefore, the information in this layer is identical to the information already available from ITD. The only relevant, comprehensive, information added by the city is existing congested speed estimates from the Dade County Transportation Model.

D. SUMMARY OF AVAILABLE DATA

The data mentioned previously can be useful for the development of the CMS. Both Federal regulations and the Statewide Task Force emphasize the efficient use of existing data. However, other data sources and techniques should be evaluated, to address mobility and congestion. Ideally, a set of performance measures should be developed to measure the effectiveness of each strategy without considering any particular transportation mode.

Table 3 provides a summary of the principal sources of existing data that can be used in the Dade County MMP/CMS. The data is classified in matrix format against type. These categories are: physical, operational, performance, standards, improvements, jurisdiction, land use, demand reduction and policy.

Table 3
EXISTING DATA SUMMARY

94153
DATASUM

08/16/96
11:16:10

	PHYSICAL	OPER	PERFORM	STDS	IMPROV	JURISD	LAND USE	DEMAND REDUCT	POLICY
FDOT									
Access Management	X			X					
Traffic Counts			X						
Existing Road LOS		X	X						
HPMS	X								
RCI	X								
TCI	X								
SHS Map						X			
FIHS Map				X		X			
Fed.Func. Classif.Map						X			
Work Prog.Cap.Impr.Map					X				
Constrained Corridors	X					X			X
GOLD COAST COMMUTER SERVICE									
Carpools/Vanpools								X	
TMAs								X	
Employee/Student O/D								X	
FDEP									
Air Quality Baseline			X						
DC PLANNING DEPT.									
Land Use							X		
DC PUBLIC WORKS									
Traffic Counts			X						
Traffic Signals	X	X	X						
Maint. Responsibility						X			
DC CONC.INF.OFFICE									
Road Conc. LOS		X	X						
MDTA									
Section 15 Data	X	X	X						
MUA MPO									
Transportation Model	X	X	X				X		X
Bicycle Facilities	X		X		X				
CD ITD									
GIS Database	X		X			X	X		
CITY OF MIAMI									
Ave. Travel Speed		X	X						
GIS Database	X								

DEFINITIONS	
FDOT	Florida Department of Transportation
LOS	Level of Service
HPMS	Highway Performance Monitoring System
RCI	Roadway Characteristics Inventory
TCI	Traffic Characteristics Inventory
SHS	State Highwat System
FIHS	Florida Intrastarte Highway System
O/D	Origin and Destination

DEFINITIONS	
FDEP	Florida Department of Environmental Protection
DC	Dade County
MDTA	Metro-Dade Transit Agency
TMA	Transportation Management Association
MUA	Miami Urbanized Area
MPO	Metropoloitan Planning Organization
ITD	Information Technology Department
GIS	Geographic Information System

IV. MEASURING CONGESTION

A. DEFINING CONGESTION

Federal regulations (23 CFR 500.503) define congestion as:

> *'... the level of traffic interference at which the transportation system performance is no longer acceptable. The level of acceptable system performance may vary by type of transportation facility, geographic location (metropolitan, suburban or rural) and time of day.'*

The State Task Force agrees with this definition. It should be noted, however, that no attempt is made to set specific thresholds to define acceptable operation. In essence, local conditions, preferences, standards and quality of life decisions dictate what is acceptable in different areas. This is a key concept in developing a MMP/CMS because it means that congestion is relative to a number of factors. This issue will be discussed in Section VI of the report, explaining in detail how congestion is defined in Dade County.

The above referred definition for congestion applies to situations that occurs on a regular, daily basis. This definition is based on the concept of congestion caused by traffic interference without external factors that affect traffic flow. Therefore, this general definition of congestion is also the definition for recurring congestion.

On the other hand, incident (non-recurring) congestion, refers to congestion caused by conditions external to the traffic stream. These are generally unusual incidents that are only temporary in nature. In this case incident congestion may be classified as:

- **Scheduled**, which refers to the incident congestion caused for external factors that can be programmed, for example: maintenance of the roadway, planned detours and special activities to enforce traffic regulations.
- **Non-Scheduled**, which refers to the incident congestion caused for external factors out of the control of the traffic authorities, for example: accidents, disabled vehicles and lane blockage.

B. PERFORMANCE MEASURES

This section reviews performance measures requirements and alternatives considered or used in other areas. Recommendations are presented for the most appropriate performance measures for Dade County. The aim of the performance measures and standards are:

- √ To provide a tool to evaluate the transportation system performance and identify system deficiencies based on an accepted standard of operation.
- √ To provide the means to identify the roadway system congestion at a level that facilitates the development of congestion mitigation strategies.
- √ To support the evaluation of transit and non-traditional modes of transportation as a means of reducing roadway congestion.
- √ To use the minimum resources necessary to properly identify transportation system deficiencies.

1. Federal Requirements

According 23 CFR 500.103: Management and Monitoring Systems - Definitions:

"Performance measures means operational characteristics, physical condition, or other appropriate parameters used as a benchmark to evaluate the adequacy of the transportation facilities and estimate needed improvements."

Additionally, Sections 500.105j and 500.507 mandate the use of performance measures as a vital component of the management systems, specifically, the CMS.

The Federal regulations strongly recommend that performance measures shall be developed for the highway and transit side of the CMS. Emphasis is also placed on regulations encouraging States and MPOs to look for innovative performance measures in evaluating non-traditional modes.

2. Florida Mobility Management Process Task Force

Recommendations on performance measures are included in the document entitled "Florida's Mobility Management Process/Congestion Management Process Work Plan, December 1994".

Regarding highway performance measures, FDOT recommends the use of LOS standards as widely accepted throughout the State. Each urbanized area may choose its own highway performance measures; however, for statewide reporting purposes the following should be determined annually and reported to FDOT:

- Percentage of congested SHS lane miles for the area
- Percentage of congested SHS lane miles by facility type
- Duration of congestion period on congested corridors
- Average vehicle occupancy on congested SHS corridors
- Average vehicle occupancy for areas of the urbanized area

Specific transit performance measures are not mentioned in the above referred plan, but FDOT suggested that appropriate measures should be considered for transit modes including carpools and vanpools. Conventional transit and commuter assistance programs can be treated as strategies to address congestion while also providing increased opportunities for mobility.

In addition, FDOT encourages consideration of other performance measures for non-traditional modes, such as availability of bicycle and pedestrian facilities.

Two prototypes were developed for the State of Florida that made specific recommendations for performance measures, these are:

a. Broward County

The urbanized area will use a two tier analysis of congestion performance measures. These measures are described in the report Broward County CMS, Performance Measures and Standards, June 1995, as follows:

Mode	Performance Measure	Standards
Highway		
o Tier 1	LOS from Generalized Tables	LOS D
o Tier 2	LOS from ART_PLAN	LOS E in CBD
	Intersection LOS	LOS C (rural areas)
Transit		
o Tier 1	Peak Load Factor	1.0
o Tier 2	Travel rate and speed	Two times auto travel rate and speed
	On-time performance.	5 minutes late

b. Gainesville

The Gainesville Metropolitan Area has prepared a Draft Mobility Plan. The document, dated September 2, 1994, outlines performance measures in their technical Appendix. A summary of those measures follows:

For highways, the recommended performance measure is the Arterial LOS, as described in the 1985 Highway Capacity Manual.

For transit, the recommended performance measures a level of service (LOS) designation that will be assigned to each of the following three aspects of transit service:

- o Existing transit LOS is rated based on the type of service available in the analysis area or corridor.
- o Peak period headways are rated based on transit headways compared to travel time by auto.
- o Mass transit amenities are rated based on the level of amenities provided.

The bicycle performance measures are contained in an evaluation method that was created to assess the adequacy of bicycle facilities. The method uses a point system to grade the physical characteristics of the facility and the immediate surroundings. The system generates a score that is representative of how adequate the facility is for bicycle use. The higher the score (up to 21 points) the better for bicycles. The point system is then used to assign a LOS grade (from A to F) similar to highway level of service.

The pedestrian performance measures are contained in an evaluation of the system similar to the bicycle performance measures as described above.

3. Other Congestion Management Systems

As part of the literature review, many documents were analyzed. But two of them showed a different approach in developing the CMS. These plans are:

- Tucson, Arizona

The Pima Association of Governments (the organization responsible for transportation planning in the Tucson metro area) describes measures of effectiveness published in their Mobility Management Plan (December 1993) as follows:

Highway: Daily volume to capacity (V/C) ratio (screening) LOS for detailed analysis

Transit: In-vehicle travel time per mile Passenger per seat at the maximum load point Headway

- Anchorage, Alaska

The municipality of Anchorage policy on congestion suggests that one of the best measures of effectiveness of a program is public acceptance. For that reason Anchorage's performance measure (of congestion management strategies) is a combination of technical and physical measurements, as well as, public opinion surveys. The Anchorage Congestion Management Program (October 1993) describes the following:

- LOS
- Pubic Opinion Surveys (strategy acceptance)
- Vehicle-miles traveled

C. ACCEPTABLE LEVELS OF SERVICE

The MPO is responsible for the long range transportation planning process within Dade County including incorporated and unincorporated areas. This process is a Federal mandate, as it is established in the 23 CFR Part 450: Metropolitan Planning Rule. Traditionally, this process has used a transportation model for travel demand forecasting for a 20 year horizon. The result of this

plan is a set of highway and transit projects recommended to satisfy the future demand for transportation services. However, if major improvements are not implemented, many roads will operate with very high Volume to Capacity ratios (V/C).

Due to the 20 year horizon, other factors, such as: social, economical and environmental factors, could change the plan. Therefore, every five years the plan is updated according to the changes in socio-economic characteristics for that period. These conditions are reviewed at Federal, State and local levels. Nevertheless, the official and ultimate criteria to determine acceptable operation is the level of service standards of Metropolitan Dade County. Even though all transportation needs can not realistically be fulfilled, the results of the LRTP shall be consistent with the Dade County level of service standards.

County level of service standards will soon be modified to reflect a new set of criteria for FIHS roads. These standards are included in Section II of the CDMP. In order for the MMP/CMS to remain consistent with the CDMP, this study uses the Dade County and FIHS level of service standards to define the acceptable level of roadway performance, as shown in Table 4. This exhibit shows the many factors that determine the level of acceptable performance on roadways.

These factors include:

For the Traffic Element of the CDMP for Metro-Dade County:

- Location:
  - inside the Urban Infill Area (UIA) or a Special Transportation Area (STA)
  - outside the Urban Development Boundary (UDB)
  - between UIA and UDB

- Transit Service:
  - no transit service
  - 20 minute headways or better
  - extraordinary transit service (rail or express bus services)

And for the Florida Department of Transportation:

- Type of Road:
  - Intrastate (limited and controlled access highway)
  - other State roads (multilane) State Minor Arterial

- Location:
  - rural areas
  - transitioning urbanized areas
  - urbanized areas under 500,000
  - urbanized areas over 500,000
  - roadways parallel to exclusive transit facilities

Table 4

ROADWAY MINIMUM LEVEL OF SERVICE (LOS) STANDARDS

I. METRO-DADE COUNTY: TRAFFIC CIRCULATION LOS STANDARD

LOCATION	TRANSIT AVAILABILITY		
	No Transit Service	20 min. Headway Transit Service within 1/2 Mile	Extraordinary Transit Service (Commuter Rail or Express Bus)
Outside UDB	LOS D - State Minor Arterial* LOS C - County Roads and State Freeways and Principal Arterials*		
Between UIA and UDB	LOS D (90% of Capacity) or LOS E on SUMAs (100% Capacity)	LOS E 100% of Capacity	120% of Capacity
Inside UIAs or STAs	LOS E 100% of Capacity	120% of Capacity	150% of Capacity

UIA = Urban Infill Area - Area East of, and including NW/SW 77th Ave and SR 826
UDB = Urban Development Boundary
STA = Special Transportation Area
SUMA = State Urban Minor Arterial
* Peak-period means the average of the two highest consecutive hours of traffic volume during a weekday

II. FDOT STATEWIDE MINIMUM LOS STANDARD

Roadway	Rural Areas	Trans. Urb. Areas, Urban Areas or Comm.	Urbanized Areas under 500,000	Urbanized Areas over 500,000
INTRASTATE				
Limited Access Hwy. (Freeway)	B	C	C(D)*	D(E)*
Controlled Access Highway	C	C	C	D
OTHER STATE ROADS				
Multilane	B	C	D	D
Two-Lane	C	C	D	D

	Roadways Parallel to Exclusive Transit Facilities	Inside Transp. Conc. Manage. Areas	Constrained and Backlogged Roadways
INTRASTATE			
Limited Access Hwy. (Freeway)	D(E)*	D(E)	Maintain
Controlled Access Highway	E	E	Maintain
OTHER STATE ROADS			
Multilane	E	**	Maintain
Two-Lane	E	**	Maintain

* LOS Standards inside of parentheses apply to general use lanes only when exclusive through lanes exist
** LOS Standard will be set in a transportation mobility element that meets the requirements of Rule 9J-5.0057

- inside transportation concurrency management area
- constrained and backlogged areas

It is very important to clarify that these levels of acceptable performance (except for FIHS roads) are definitely very different than standards in other areas of the state.

The reasons for these unique minimum LOS standards on non-FIHS roads were established to allow higher development in areas already densely developed, supporting the planning concept of compact development and minimizing urban sprawl. This would allow a lower level of service in facilities that have supporting mass transit service as an alternative travel mode.

Major research documents like the 1985 Highway Capacity Manual (updated in 1995, Transportation Research Board) defines LOS as:

> "A qualitative measure describing operational conditions within a traffic stream; generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety."

This document provides definitions and procedures for measuring levels of service. However, different types of road are evaluated differently and no attempt is made to set standard limits of acceptable performance. The Manual recognizes that acceptable operational thresholds are relative and should not be the same everywhere.

Therefore, the only uniform, comprehensive, official, local criteria addressing road level of service are the levels of service standards in the CDMP. These were chosen as the threshold for defining acceptable "non-congested" or unacceptable "congested" conditions.

D. TRANSIT PERFORMANCE

Transit performance criteria are a required element of the MMP/CMS. This element is needed to measure how well the transit system performs and whether there is a need for improvement. The criteria also allows testing of improvement strategies and monitoring to ensure that improvements are effective when implemented.

In Dade County, transit level of service standards is a function of frequency of service (headway) for areas with a certain level of population and/or employment density. Certain areas, like Broward County, have suggested the use of load factors that it is defined as the ratio of transit riders to seats, to measure transit performance. This definition is consistent with the Highway Capacity Manual. Other factors considered in this study included travel speed, travel time, number of trips, mode share, headways, on-time performance, type of service and amenities.

E. PERFORMANCE OF NON-TRADITIONAL MODES

The principal non-traditional modes considered by the State MMP task force are pedestrians and bicycles. The group, however, recommended that performance should be measured in terms of whether these types of facilities are present or not. The main reason for this broad measurement is that these facilities seldom experience capacity limitations and/or congestion. Nevertheless, they constitute a part of the transportation network and can provide an alternative mode for some users.

The MPO has recently undertaken a comprehensive analysis of existing bicycle facilities and needs in Dade County. While that study suggests specific methods to evaluate facility performance, it is important to keep in mind that the objective of the MMP/CMS in the Dade County is to alleviate congestion and enhance mobility. Given the limited impact of bicycles on the overall capacity of the transportation system considering only the presence of such facility seems appropriate.

F. INVENTORY OF EXISTING CONDITIONS

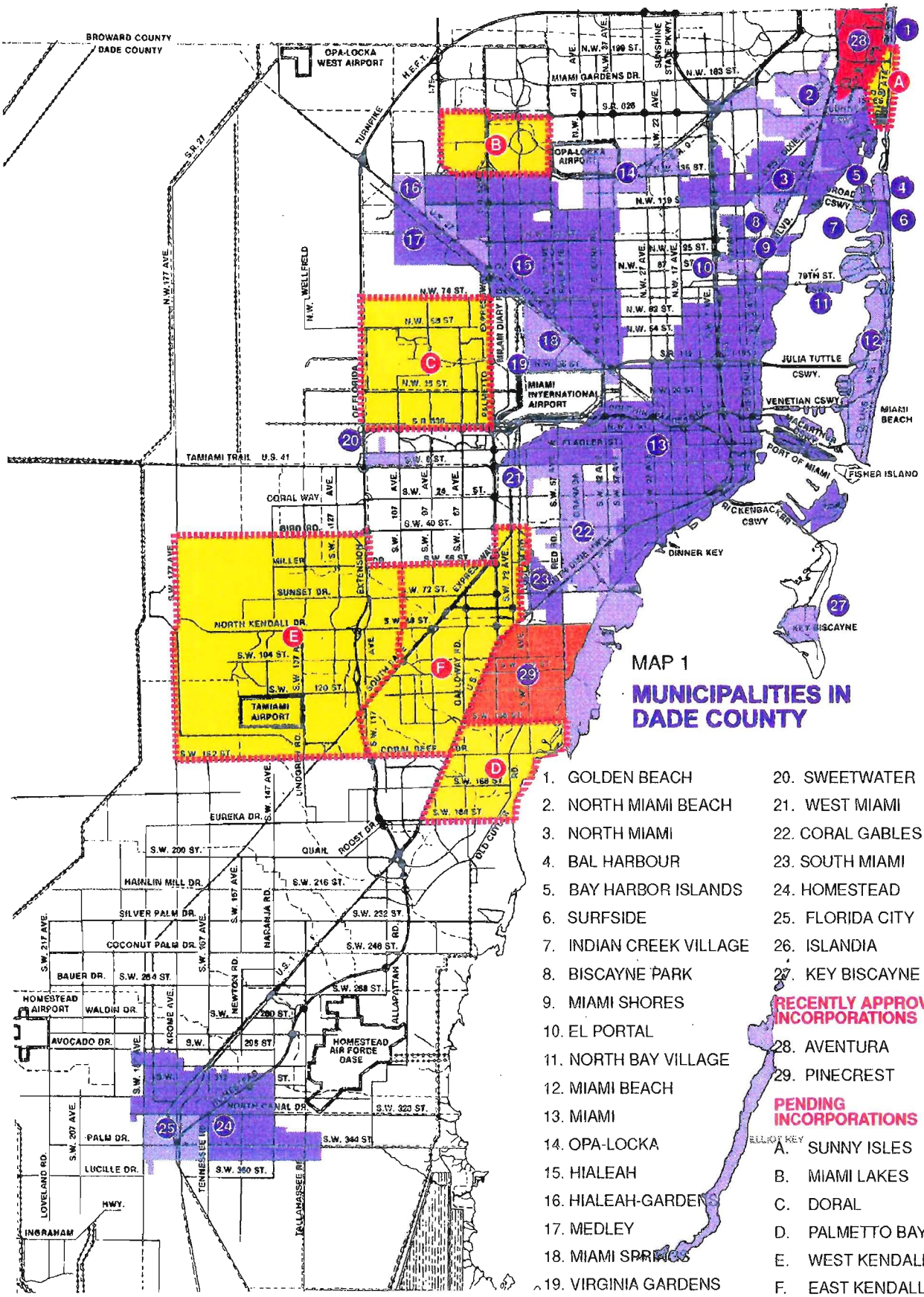
Metropolitan Dade County has 27 municipalities within its boundaries. Each of these municipalities have their own Mayor and City Commission. Over this organization, the Board of County Commissioners (BCC) rules the entire county. These municipalities are shown and listed in Figure 15. The major activity center is downtown Miami, which is also the center of the main transportation and government services. For the past 20 years metropolitan Dade County has grown at an incredible rate in the areas of population, density, employment, labor force, tourism, education, residential, industrial and commercial activities, and of course in the number of automobile using the roadway system. Due to the large Hispanic population living in Dade County, today the metropolitan area of Miami is considered a main activity center for Central and South Americans.

This condition, together with the growth experienced in the later years, has brought solid economic progress to Dade County. As a matter of fact, Dade County has experienced a rapid population growth. Between 1960 and 1990 the county's population has grown by 80%. This growth in population, has created a need for improving the county's transportation system. These changes put the private car as the principal mode of transportation in Dade county, consequently the use of public transportation has declined during these past years. As a result of this situation, the county is considered among the five most congested areas in the nation.

Unfortunately, this is not the end, the population and employment trend for year 2000 in Dade County will continue growing as shown in Figures 16 and 17, respectively. According to the LRTP, for year 2015, Dade county will have the following projection:

	1990	2015	%
Population	1.94M	2.69M	+38.7
Employment	1.11M	1.34M	+20.7
Vehicles	1.36M	2.23M	+64.0
Person Trips	6.63M	8.92M	+34.5

RECENTLY APPROVED AND PENDING INCORPORATION



MAP 1

MUNICIPALITIES IN DADE COUNTY

1. GOLDEN BEACH
2. NORTH MIAMI BEACH
3. NORTH MIAMI
4. BAL HARBOUR
5. BAY HARBOR ISLANDS
6. SURFSIDE
7. INDIAN CREEK VILLAGE
8. BISCAYNE PARK
9. MIAMI SHORES
10. EL PORTAL
11. NORTH BAY VILLAGE
12. MIAMI BEACH
13. MIAMI
14. OPA-LOCKA
15. HIALEAH
16. HIALEAH-GARDENS
17. MEDLEY
18. MIAMI SPRINGS
19. VIRGINIA GARDENS
20. SWEETWATER
21. WEST MIAMI
22. CORAL GABLES
23. SOUTH MIAMI
24. HOMESTEAD
25. FLORIDA CITY
26. ISLANDIA
27. KEY BISCAYNE

RECENTLY APPROVED INCORPORATIONS

28. AVENTURA
29. PINECREST

PENDING INCORPORATIONS

A. SUNNY ISLES
B. MIAMI LAKES
C. DORAL
D. PALMETTO BAY
E. WEST KENDALL
F. EAST KENDALL

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Metro-Dade MPO
Long Range Transportation Plan Update
Change in Population

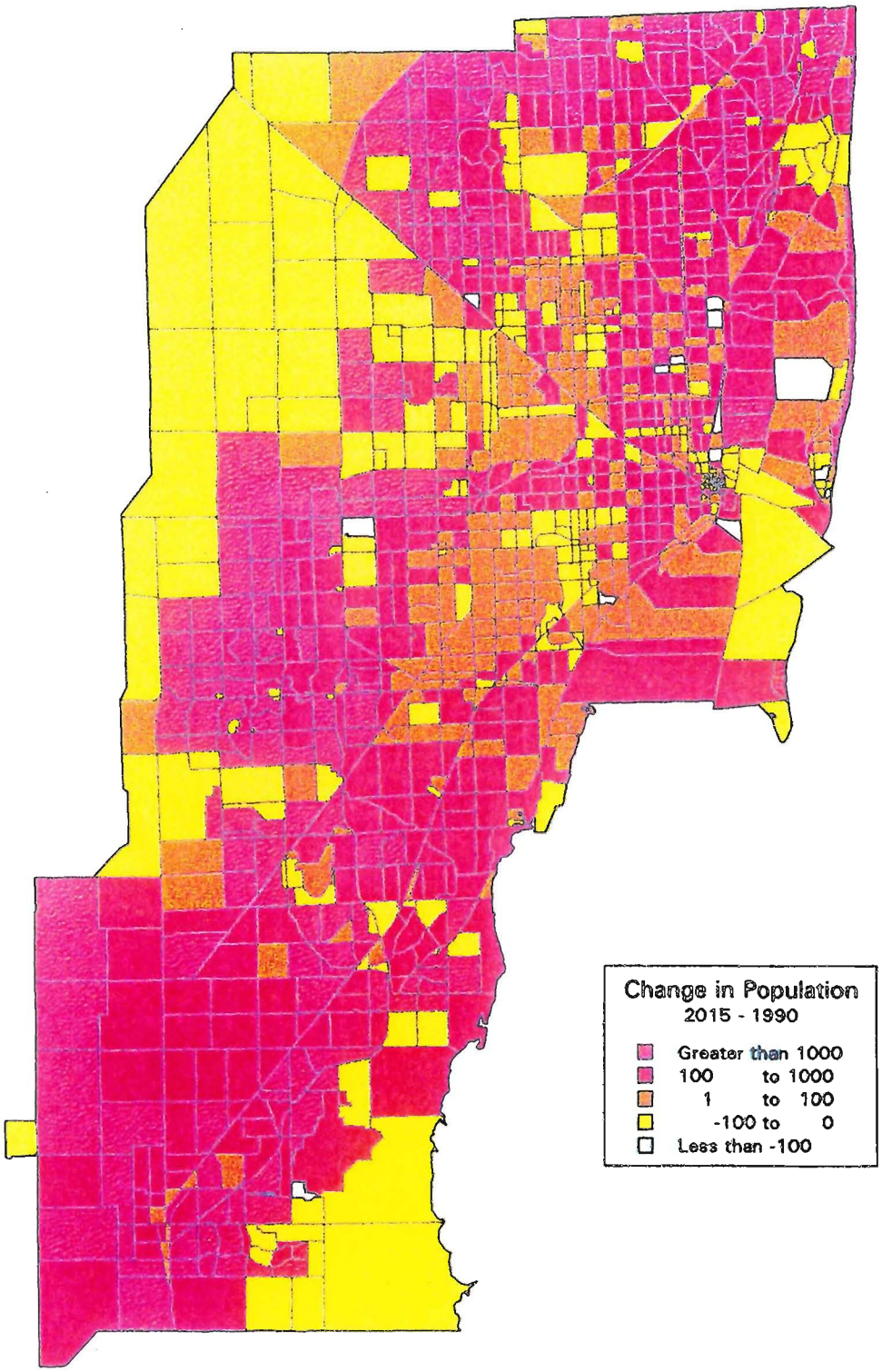


FIGURE 16

Metro-Dade MPO
Long Range Transportation Plan Update
Change in Employment

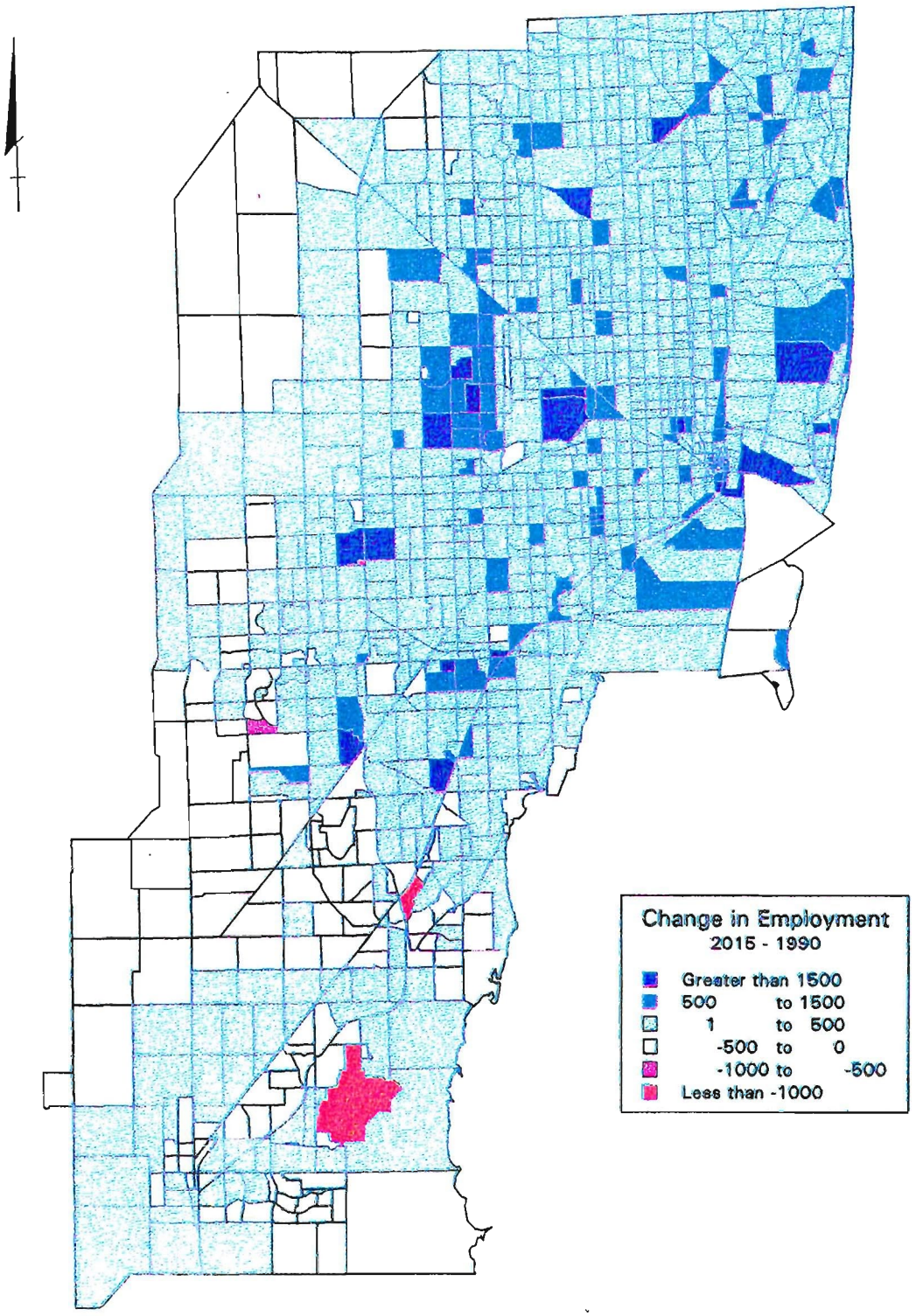


FIGURE 17

Based on these projections, definitively, additional efforts should be made to improve the quality of life in Dade County.

But, How is the county fighting traffic congestion?

1. The County and Mobility

As above mentioned, in Dade County population has grown at an incredible rate. But population is not the only element that has experienced this growth. For example; while the County's population will grow over 35% for year 2015, its job growth will be increased by 20%. Another factor to consider, is that in the 70's and 80's the construction, real estate and wholesale activities dominated the business composition, today service and trade sectors resulted in a substantial increase in the share of new employment.

This means that development of office building and residential areas are substituting the development of industrial areas. Another factor that influenced the increase of traffic congestion in Dade County, is the decentralization of population and employment experienced in the last 20 years. In 1970, 75% of the population lived in an area bounded by the Palmetto Expressway on the North and the West, and Sunset Dr. on the South. In 1990, only 60% of the population are accounted for within this area. Something similar happened in the employment sector. By 1990, the labor force in downtown Miami declined to 40% in comparison to 1970. New development in outlying suburban areas has contributed to this condition in the downtown area.

As a result, population and employment shifts and growth have led to a substantial increase in the number of commuters travelling to and from the suburbs, hence the corresponding increase in auto travel.

Figure 18 shows some of the socio-economic changes in Dade county. Consequently, in order to control this situation, Dade County has adopted a "Comprehensive Development Master Plan". This was discussed in detail in Section III.B.1.b of this report.

2. Highway System

There are a total of 2,932 lane-miles of state roadways and 738 centerline miles of county roadways in Dade. The total number of private vehicles in the county is over 1.2 million cars. This figure represents a current ratio of about 2.60 cars per household. To have an idea of the severity of the situation, travel by private cars accounts for more than 95 % of the total urban travel in the county.

Additionally, the expected number of vehicles in Dade County will increase by more than 60% by the year 2015. To remedy this situation, the LRTP is proposing a total of $3.1 billion in projects within the 20 years horizon.

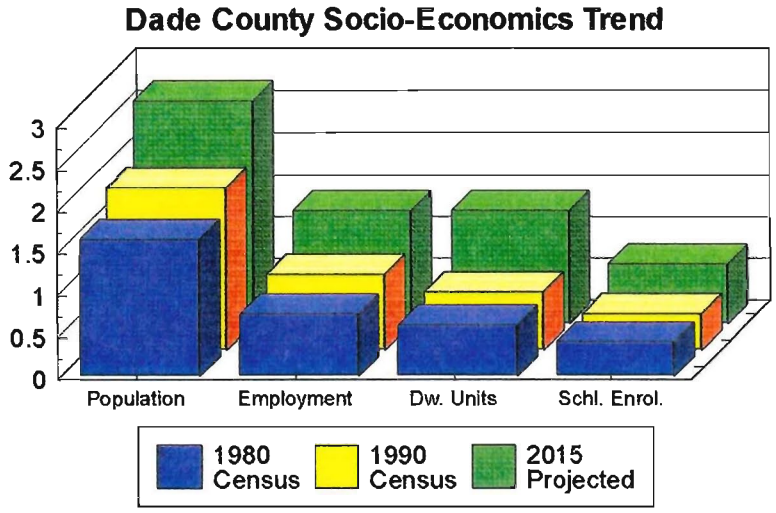


Figure # 18

3. Transit System

Public mass transportation is provided by the Metro-Dade Transit Agency (MDTA). This is a government agency that serves over 268,000 passengers per day. The MDTA system includes the following four main components:

a. Metrorail

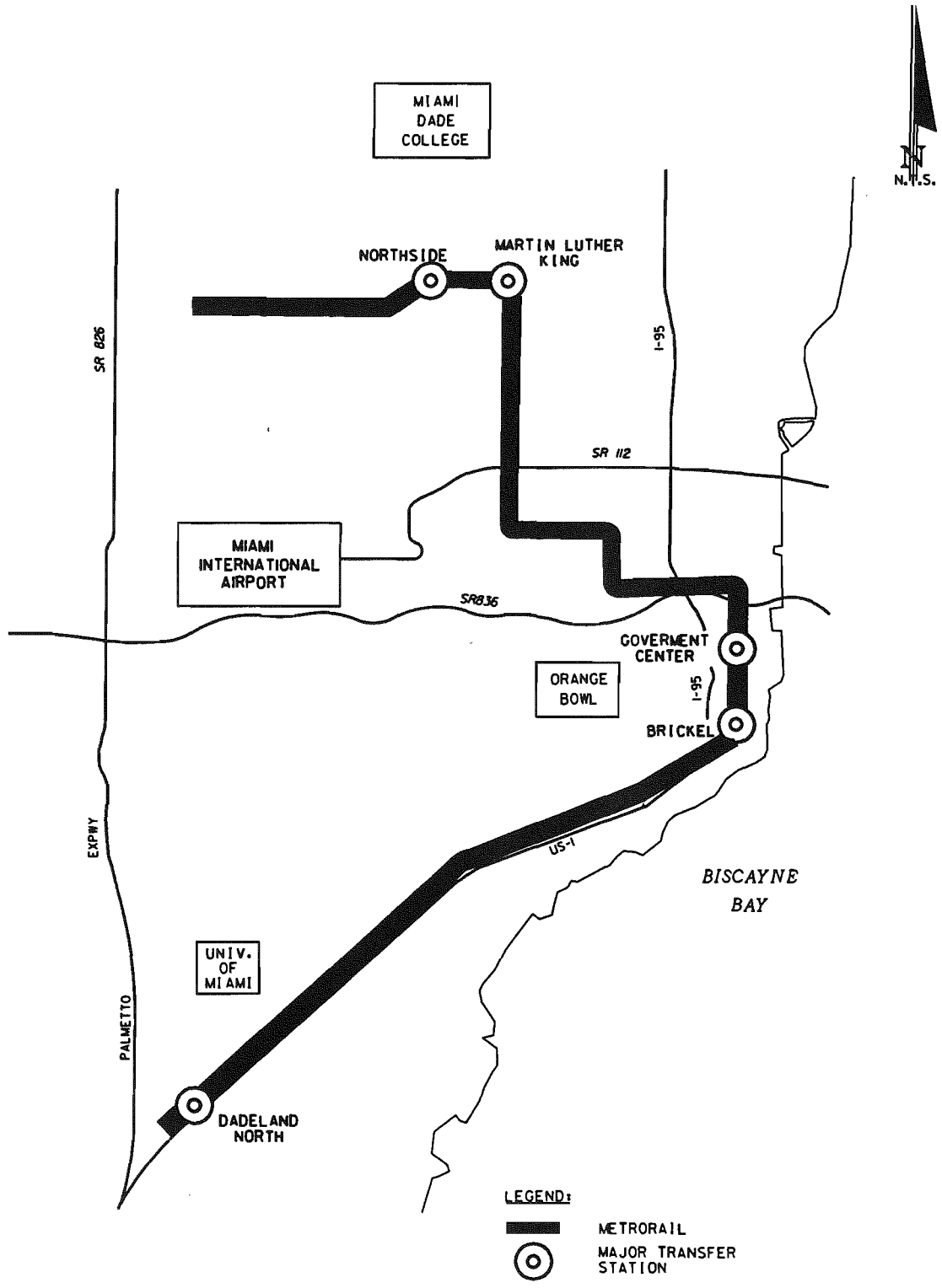
This is a 21.1 mile rapid transit system with a 136 car fleet and 21 stations, as shown in Figure 19. Metrorail provides an integrated transit service with the commuter rail system known as Tri-Rail on NW 79th Street Station. Tri-Rail operates in Broward, West Palm Beach, and Dade counties.

Table 5 shows characteristics of Metrorail, based on the May 1995 Monthly Report and Figure 20 shows the average weekday boardings by station.

b. Metromover

The metromover is a 4.4 mile long fully automated component of Metrorail. There are two loops with a fleet size of 29 cars that provide service in the downtown area. The inner loop is 1.9 mile long and serves 8 stations, while the outer loop is 2.5 mile long and serves 20 stations. Figure 21, shows the systems two one-way loops; a clockwise inner loop, and an anti-clockwise outer loop. The maintenance facility is also located in downtown Miami. Except for one station, all stations are served by the outer loop.

The Brickell and Government Center Stations are transfer points for the Metromover and Metrorail service. Table 6 shows some service characteristics of the system.



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DADE COUNTY MOBILITY MANAGEMENT PROCESS

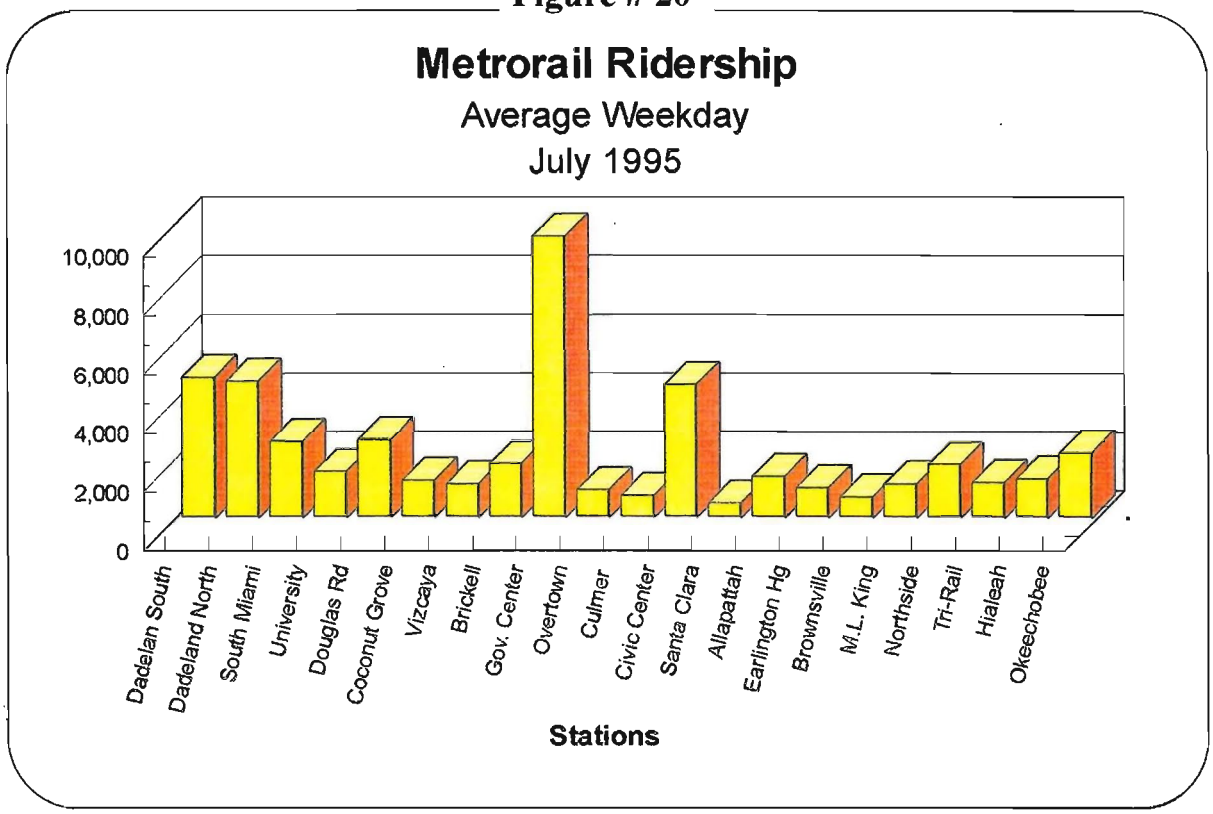
METRORAIL SYSTEM MAP

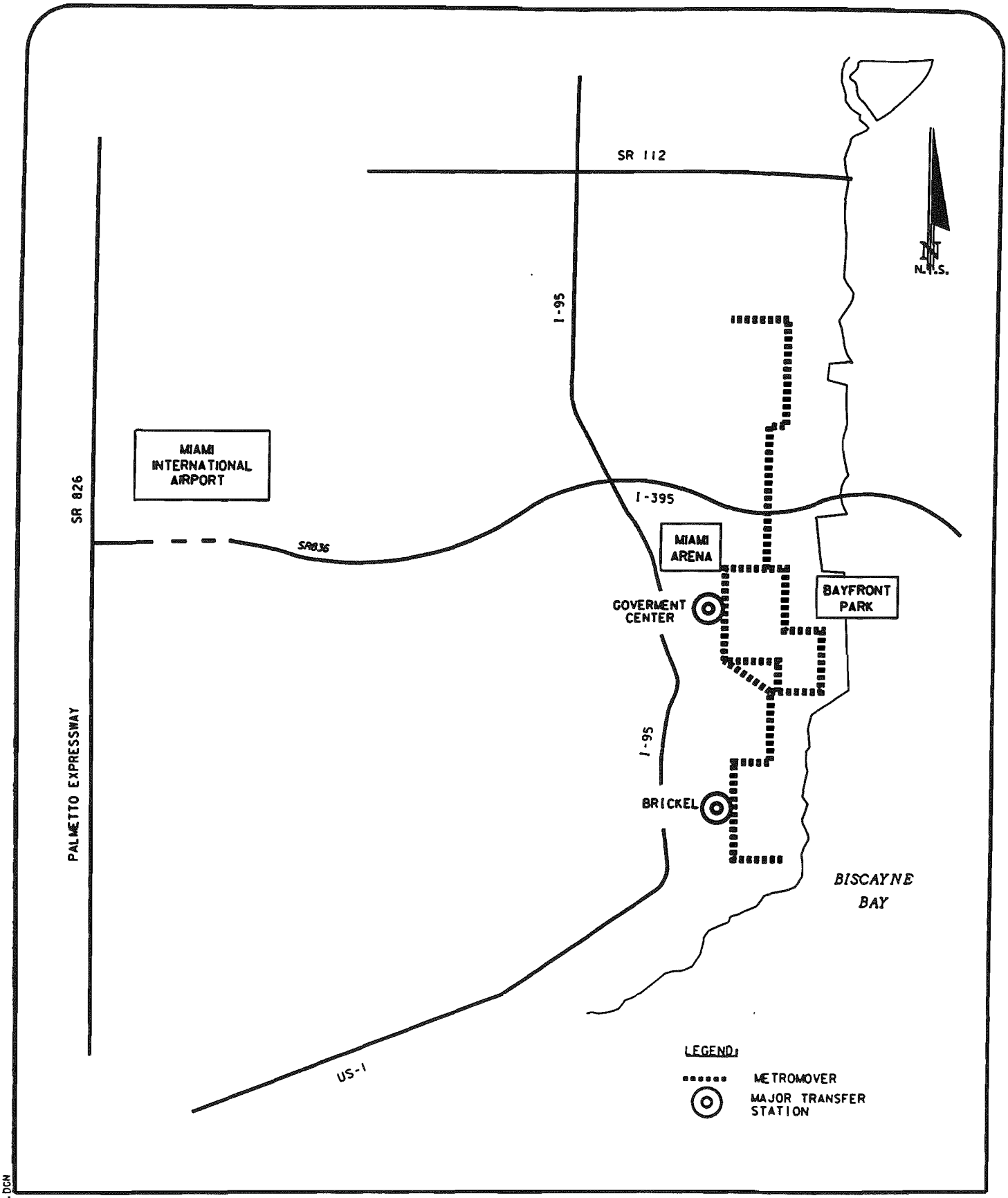
FIGURE 19

Table 5 METRORAIL SERVICE CHARACTERISTICS		
SERVICE	**WEEKDAY**	**WEEKEND**
Daily Service	5:30 am - 12:45 am	
Headways:		
Morning	20 mins	
Peak Period	7.5 mins	20 mins
Midday	15 mins	20 mins
Evening	15 mins	20 mins
Night	20 mins	
Avg. Ridership *	49,683 pass.	38,379 pass.
Fare	$1.25	

* Based on May 1995

Figure # 20





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DADE COUNTY
MOBILITY MANAGEMENT
PROCESS

METROMOVER
SYSTEM MAP

FIGURE 21

Table 6 METROMOVER SERVICE CHARACTERISTICS		
SERVICE	WEEKDAY	WEEKEND
Daily Service	5:30 am - 12:30 am	
Headways:		
Peak Period	1.5 mins	5.0 mins
Off-Peak	3.5 mins	5.0 mins
Avg. Ridership *	12,746 pass.	11,557 pass.
Fare	$0.25	

* Based on May 1995

The Metromover carries over 12,000 passengers per day. The average weekday boardings in the Metromover by station are shown in Figure 22.

c. Metrobus

Metrobus, the Dade county bus system is a 24-hour operation offering services Monday through Saturday between 4:30 am to 2:30 am the following day. The fleet has 618 buses that cover 73 daily fixed routes which start at three different garages. MDTA 's service area is shown in Figure 23. Some of the service characteristics of MDTA's bus routes are shown in Appendix B.

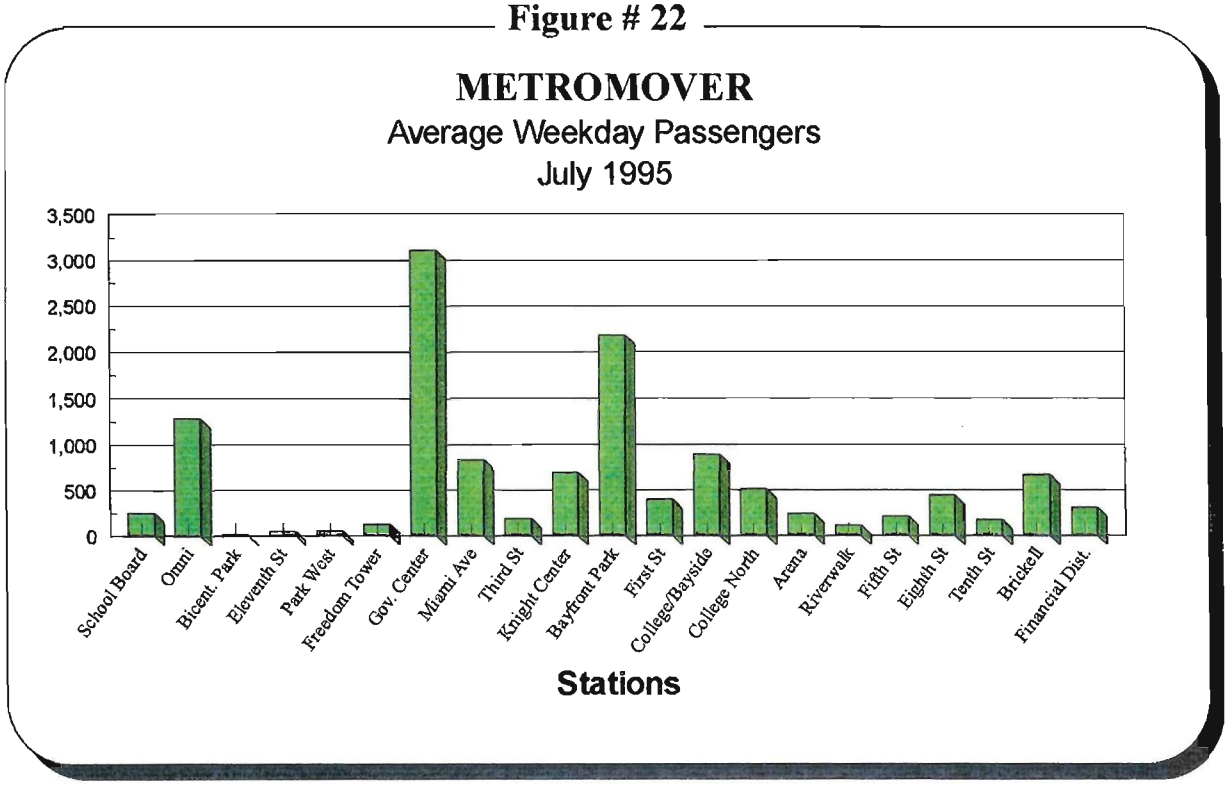
Additionally, Figure 24 shows the average daily ridership by route of the system.

d. Special Transportation Services (STS)

The STS is a shared-ride curb-to-curb transportation service for the disabled and mobility impaired not served by the fixed-route public transit system. Service is provided by sedans and lift-equipped vehicles, seven days a week between 4:30 am and 2:30 am. The fare is $2.00 per one-way trip, regardless of distance traveled. Reservations are accepted as much as fourteen days in advance of the expected travel date. Over 15,000 persons are enrolled in the STS program.

The combined annual MDTA ridership is shown in Figure 25. This figure includes total passengers carried by Metrorail, Metromover and Metrobus since 1986, when the Metromover initiated its operation, to 1994. Based on this figures, the Metrobus system is by far, the major transit mode carrying almost 80 % of the total ridership as shown in Figure 26.

Figure # 22


METROMOVER
Average Weekday Passengers
July 1995
3,500
3,000
2,500
2,000
1,500
1,000
500
0
School Board
Omni
Bicent. Park
Eleventh St
Park West
Freedom Tower
Gov. Center
Miami Ave
Third St
Knight Center
Bayfront Park
First St
College/Bayside
College North
Arena
Riverwalk
Fifth St
Eighth St
Tenth St
Brickell
Financial Dist.
Stations

METROBUS SYSTEM MAP

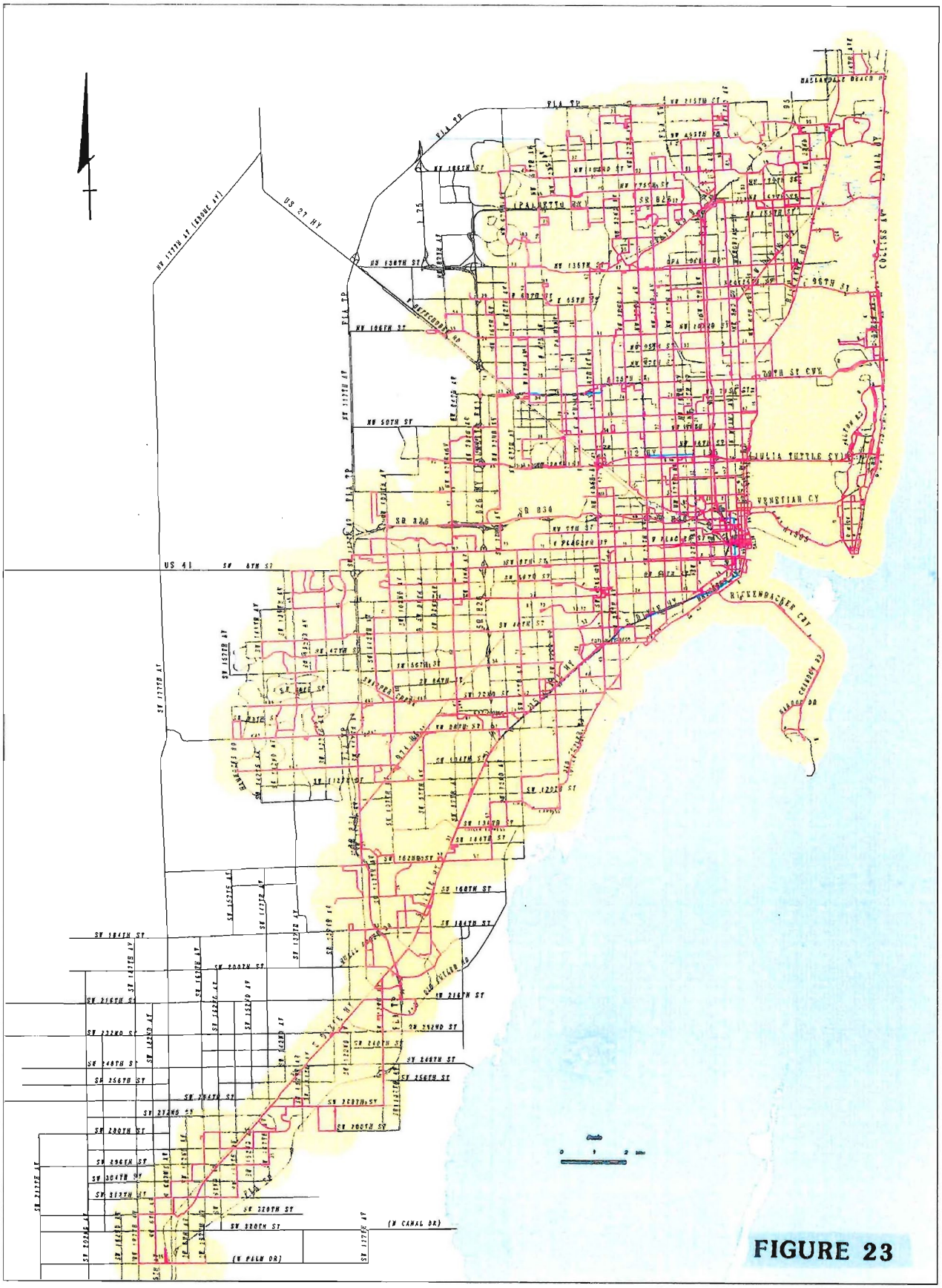


FIGURE 23

Figure # 24

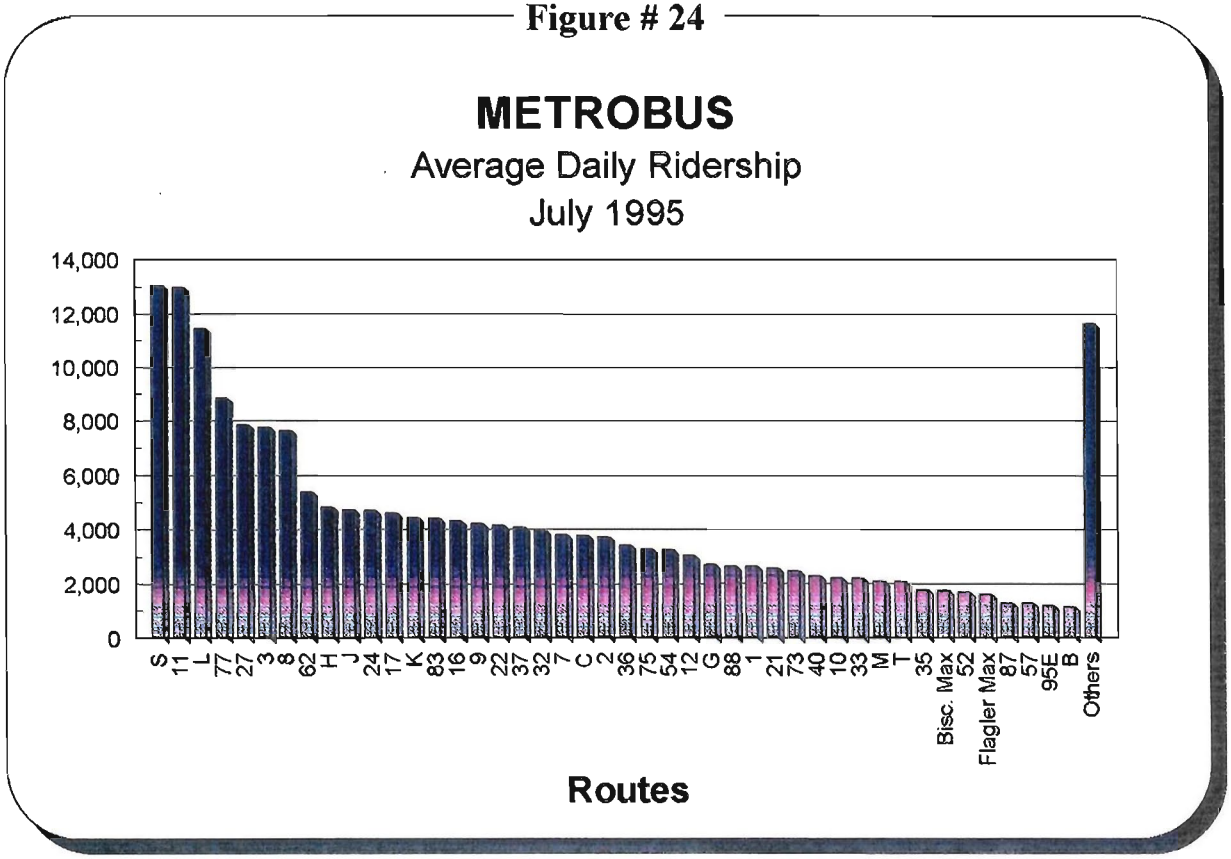

METROBUS
Average Daily Ridership
July 1995
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
S
11
L
77
27
3
8
62
H
J
24
17
K
83
16
9
22
37
32
7
C
2
36
75
54
12
G
88
1
21
73
40
10
33
M
T
35
Bisc. Max
52
Flagler Max
87
57
95E
B
Others
Routes

Figure # 25

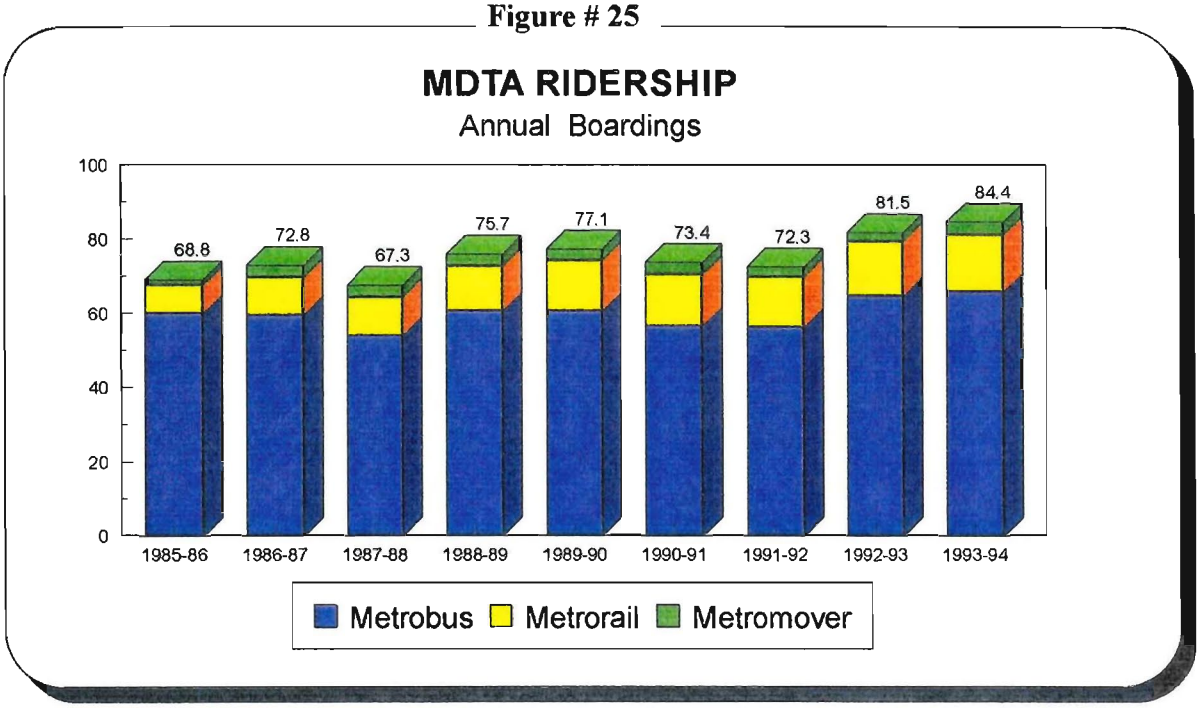
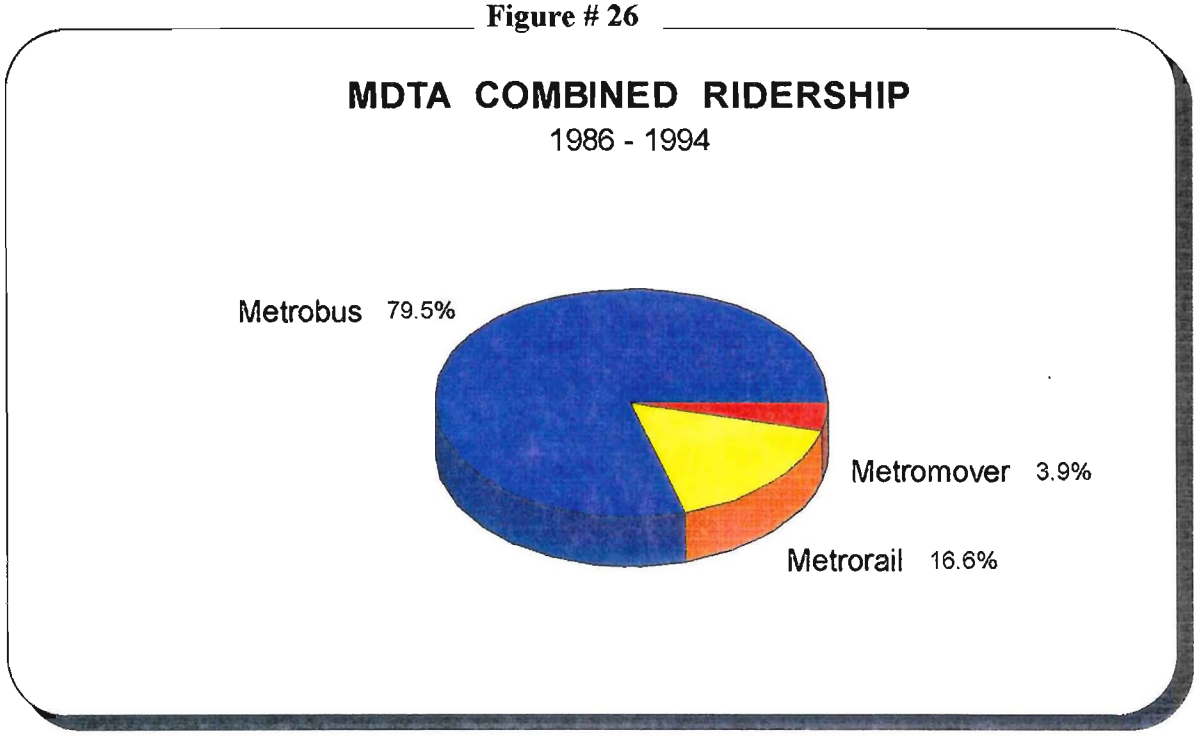


Figure # 26



4. Other Transportation Plans in Dade County

The MPO, in conjunction with FDOT and other transportation related agencies in Dade county, is in a continuous process with respect to searching out alternatives to alleviate traffic congestion. Some of these projects and plans are briefly described below:

a. Dade County Public Involvement Program

The MPO prepared an in-house document to address the main issues concerning the development of the public involvement process. It complies with 23 CFR Part 450.316 of the FHWA: Metropolitan Planning Rules and follows the guidelines established in the MPO: Public Involvement Process (PIP), as adopted by MPO Resolution #8-95.

b. Implementation of the Dade County Vanpool Demonstration Program

The MPO, FDOT and GCCS are working on the development of a Vanpool Program. A Request for Proposal (RFP) is being prepared and the program is scheduled to be implemented by the second quarter of 1996.

c. Development of TMAs/TMOs

GCCS in coordination with the MPO, has formed two TMAs in Dade county: the Civic Center Transportation Management Organization (CCTMO) and the Miami Beach Transportation Management Association (MBTMA).

As previously mentioned, TMAs/TMOs are private, non-profit groups formed by major employers, governmental organizations, community groups, civic organizations, and other interested parties to address transportation issues and mobility needs within a specific geographical area. TMAs/TMOs implement TDM strategies in an effort to alleviate traffic congestion and to improve mobility, energy efficiency and air quality.

Both TMAs receive FDOT TMA Grant Program matching funds and the MPO has provided technical assistance by conducting the following studies:

CCTMO: Pedestrian Amenities and Safety Study,
SoBeTMA: Bicycle and Pedestrian Study,
Investigation of Alternative TMAs, and
Evaluation Methodology for TDM Pgms. Implemented by TMAs

d. Unified Planning Work Program (UPWP) Studies

The UPWP contains the planning studies conducted by Dade county on a yearly basis. In addition to the DCMMP, other technical studies are being conducted and others are programmed for next year, to manage congestion in Dade County. Among these studies are:

Long Range Transportation Plan (LRTP): This is a major project in the MPO, which determines the transportation projects to be implemented in Dade county for the next 20 years.

Road Pricing Study: The purpose of this study was to investigate different scenarios where Dade County may develop road pricing strategies to mitigate peak period highway congestion.

Countywide Parking Policy Study: The objective of this task is to prepare a comprehensive parking study, and parking policies complementary to the adopted CDMP. Also, strategies to relieve and manage congestion will be recommended.

Transportation Program Financial Analyses and Assessments: The purpose of this effort is to prepare a critical assessment of the current direction of the urban transportation program for immediate, short term and long term perspectives as related to planned investments and available and future resources.

Dade County Bicycle Plan: The goal of this study is to increase the use of non-motorized ground transportation modes such as bicycling and pedestrian activities, and to improve the existing physical facilities.

Freight Movement Study: This study is oriented to improve truck traffic projections in the MPO travel demand model by evaluating actual regulations and practices of the freight industry.

Development of the Dade County Integrated Management System: The objective of this study is to develop a software program that integrates the work done by FDOT and Dade county regarding the implementation of the management systems, as required by ISTEA.

Continuing Development of TMAs: The purpose of this program is to provide funds to TMAs for promoting strategies toward improved mobility.

DCMMP Update: This study is dedicated to continue with the yearly updates of the DCMMP, as requires by federal regulations.

Preparation of Dade County Intelligent Transportation System (ITS) Plan: The objective of this element is to prepare an ITS Plan that coordinates and integrates the activities conducted by state and local agencies in this area.

Development of a Public Information Program: The purpose of this element is to prepare materials and conduct activities to meet the MPO Public Involvement Program requirements.

Development of a Superarterial Network: This study focuses on develop an arterial

network, parallel to the freeway system, able to alleviate traffic congestion by providing TSM treatments.

North Dade Greenways Plan: The objective of this plan is to prepare a plan for the development of a system of greenways in central and North Dade county.

Alternatives for Intermodal Improvements in Dade County: This study will identify locations and prepare plans for intermodal facilities at local neighborhoods, to improve transfer conditions between transportation modes.

South Beach Busway System: The city of Miami Beach will conduct this study to evaluate the feasibility of implementing a busway in the South Beach area.

e. **Transportation Improvement Program (TIP) Projects**

Figure 27 illustrates those projects developed or under construction that were included in the TIP from 1991 to 1996.

f. **Other Actions or Projects**

In addition, the following projects have been sponsored by the MPO:

Formation of the Expressway Authority: The Dade County Expressway Authority was created based on a recommendation of the Road Pricing Study.

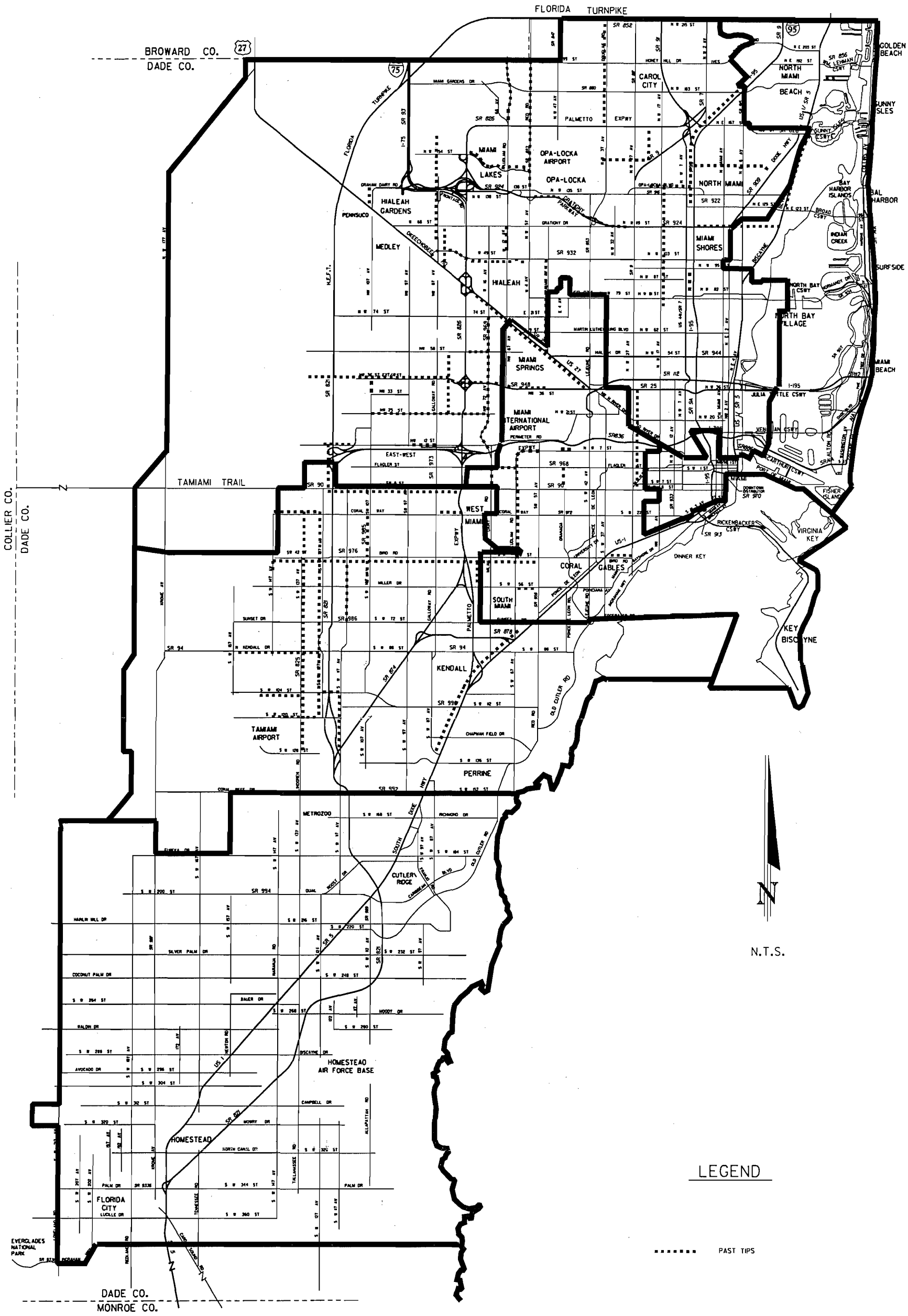
East-West Corridor: This is a major project to be developed in the county. Actually, alternatives are being considered to provide rail service between Florida International University (FIU), Downtown Miami and Miami Beach.

Airport: Miami International Airport (MIA) is developing a new strategic plan to meet the existing and future needs of the area.

Seaport: The Miami Seaport is also working on projects directed to improve the movement of persons and goods within its facilities. This includes the construction of a tunnel to facilitate freight movement.

Miami Intermodal Center (MIC): This study is considering the location of a multimodal transportation center that integrates different transportation modes, such as: Tri-Rail, Amtrak, Metrorail, Metrobus, jitneys, taxis, private cars and the proposed high speed rail, in the same facility. This project will also serve as an activity center for MIA and the seaport.

Major Investment Studies (MISs): Consistent with ISTEA, the MPO and FDOT are working together in the development of MISs.



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DADE COUNTY MOBILITY MANAGEMENT PROCESS

1991-1996 TIP PROJECTS

FIGURE 27

Arterial Investment Studies (AISs): FDOT is requesting all Districts to develop pilot AISs for congested corridors within the arterial system. FDOT will conduct the first AIS in Dade county on the 107th Ave Corridor between the Dolphin Expressway and Bird Road.

G. PERFORMANCE MEASURES FOR DADE COUNTY MMP/CMS

The selection of the performance measures was based on: available literature; requirements established in the federal regulations; guidelines developed by the MMP Statewide Task Force; and existing data in Dade County. Once a set of performance measures was determined the Steering Committee approved them to be included in the MMP/CMS.

The approach in establishing the performance measures in Dade county differs from other locations. The rationale to determine performance measures is based on the following:

- CMSs are focused on identifying strategies directed to relieve traffic congestion in congested corridors.
- Performance measures are used to determine the effectiveness of services or strategies already in place.
- Traffic congestion basically refers to the conditions of a segment of road regarding its ability to move vehicles.
- CMSs are concentrated in congested corridors.
- Highway and not transit is the main component of the transportation system that generates traffic congestion.
- Transit is a potential solution to alleviate traffic congestion.
- Non-traditional modes, as well as TDM and TSM strategies are also other alternatives that may relieve traffic congestion.

It is therefore concluded that the performance measures for highways will be used to determine when a corridor is congested, however, the performance measures developed for the other modes will be used to measure the particular effectiveness of these strategies in alleviating traffic congestion. It should be duly noted that this is a continuous and cyclical process that will require on-going evaluations.

The performance measures recommended for Dade County MMP/CMS are based on a systemwide evaluation, followed by a more detailed corridor-by-corridor analysis. These are as follows:

1. Performance Measures for Highway

Tier 1: Systemwide

a. LOS calculated using Volume to Capacity Ratio (V/C)
b. Relative Congestion Ratio (RCR) as defined and calculated in Chapter 4.

Tier 2: Corridor

a. Intersection LOS
b. Corridor LOS
c. Travel Speed
d. Travel Time

2. **Performance Measures for Transit**

a. Load Factor
b. Headway
c. Travel Time
d. Travel Speed

3. **Performance Measures for Non-Traditional Modes**

For bicycles and pedestrians the recommended performance measures are based on the availability of facilities along the congested corridors. For TDM and TSM strategies performance measures will be developed as appropriate.

A flowchart illustrates this process in detail on Chapter V. Also, additional recommendations regarding performance measures are included in Chapter XI.

A. METRO-DADE MOBILITY MANAGEMENT PROCESS

In Dade County, the CMS Steering Committee discussed the guidelines recommended by the Statewide Task Force and decided to change the name of the local process to Dade County Mobility Management Process (DCMMP). Basically, two reasons contributed to this change: first, according to regulations, the CMS is a continuous process, and second, to take a proactive approach to the CMS, a more positive concept would address mobility rather than congestion. Therefore, DCCMS will be equivalent to DCMMP.

B. STUDY GOALS AND OBJECTIVES

Goals and objectives were developed for this study with very active participation of the Steering Committee. The discussion about the goals and objectives was, in fact, the catalyst for renaming and refocusing the process towards mobility. The study Goals and Objectives are listed in Figure 28.

C. THE CONCEPT OF MOBILITY

Mobility is a very desirable, yet abstract concept. In a document prepared for the Federal Highway Administration (FHWA), mobility refers to *"the ease and speed with which individuals can move about, considering both the movement within any individual mode and the availability of modal options. A mobile population is one that has the ability to travel freely because the time and cost of travel are moderate and the travel options are numerous. Mobility is the ability to move people and goods quickly to where they are destined".*

Additionally, the Statewide Task Force defined mobility as the ability to complete desired trips. Six factors were considered as part of the definition. These are:

- ☐ People movement
- ☐ Accessibility
- ☐ Modal choice
- ☐ Reasonable speeds or travel time
- ☐ Reasonable cost to society
- ☐ Making or satisfying the trip objective

Although this is a more comprehensive definition, it does not discuss in detail the six factors mentioned above. The DCMMP/CMS will use this definition, and incorporate the following changes:

Figure 28

DCMMP GOALS AND OBJECTIVES

GOAL 1: Improve the mobility goods within and throughout Dade County.

- *Identify existing and potential congestion and implement actions to reduce them.*
- *Provide a variety of transportation options by enhancing both traditional and non-traditional transportation modes.*
- *Promote the use of non-motorised transportation modes.*

GOAL 2: Comply with Federal regulations.

- *Establish a mobility management process/congestion management system.*
- *Establish a process to monitor congestion.*
- *Coordinate with other management and monitoring systems.*

GOAL 3: Improve the efficiency of the transportation system.

- *Maximize the utilization of existing transportation facilities and modes.*
- *Discourage the use innovative technology to measure the effectiveness of the transportation system.*
- *Reduce air-quality and environmental impacts of transportation projects.*

GOAL 4: Make DCCMS an integral part of the land use transportation planning.

- *Modify the transportation planning process to make congestion management an integral part of the process.*
- *Coordinate transportation improvements regardless of jurisdiction, location and/or mode.*
- *Involve the public in the early planning of transportation facilities and policy transportation options.*
- *Utilize land use planning as a tool to reduce travel demand.*

First, these factors must be defined to reflect the intent of ISTEA. In this case, the definition should include elements that can be quantified.

Second, the sixth factor regarding the ability of people to make or satisfy the trip objective is substituted for "Ease of Implementation". This factor can be measured or quantified for the purpose of this process.

Third, two elements which are very closely related to mobility, connectivity and accessibility, were incorporated to the definition.

The elements of mobility, then, are: Modal Choice, Accessibility, People Movement, Speed, Cost and Ease of Implementation. These will be discussed later in Section VIII.

D. MOBILITY MANAGEMENT PROCESS STRUCTURE

Two alternative concepts for the creation and operation of the Dade County MMP/CMS were developed and reviewed as follows:

1. Fully Integrated Concept
2. Stand-alone Concept

A description of each concept is presented below.

1. Fully Integrated DCMMP/CMS Concept

The fully integrated concept is based on maximizing the use of existing processes and data. In this case, the DCMMP/CMS becomes an additional step in the normal transportation planning process. This concept, illustrated in Figure 29, would use input from the local Concurrency Management System and the long range transportation planning process.

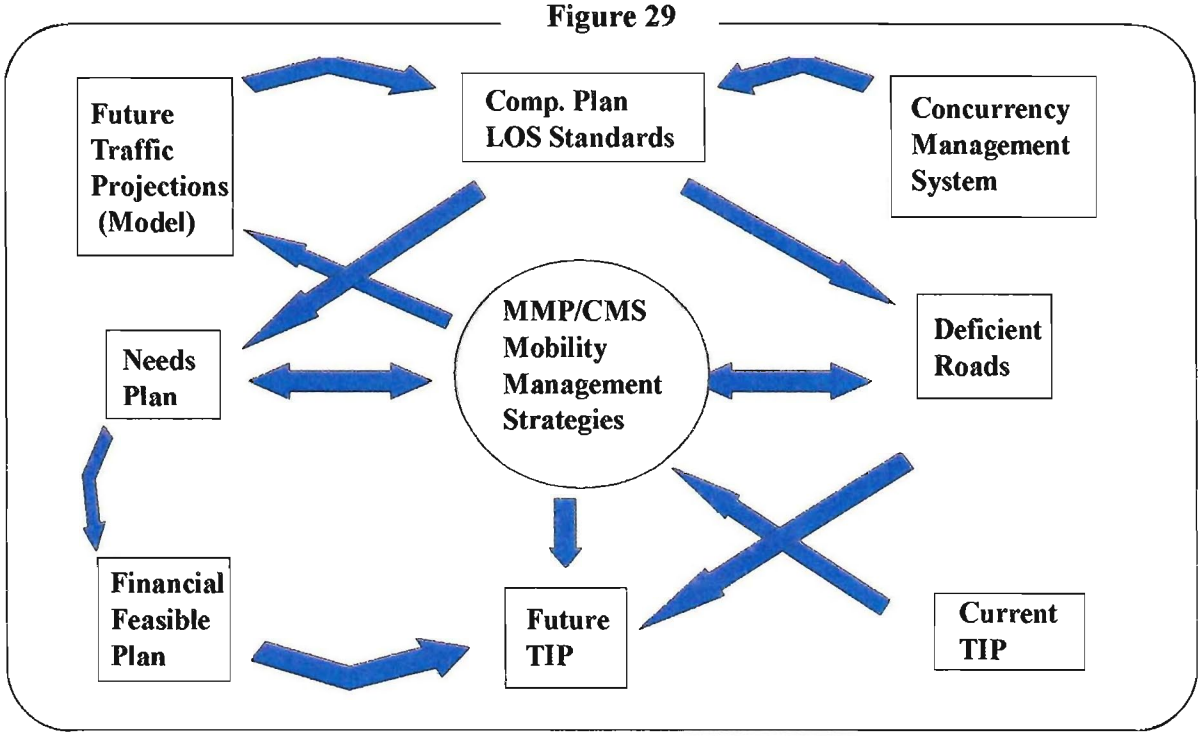
Both existing processes use Dade County level of service standards to identify existing and future roadway deficiencies. The long range planning process is currently performed by the MPO. As such, the long range process is countywide in coverage and includes the participation of Federal, State and local officials, as well as municipalities and the general public. Through this participation, conflicts with local long range plans are avoided.

Use of the concurrency management system data would be helpful in verifying congestion locations with recent, up-to-date information. The Dade County concurrency information provides data on roadways in unincorporated Dade County only. Another information source is the Florida DOT.

Identification of congested locations normally would generate a list of potential transportation projects. Inasmuch as the congestion is usually detected on existing roads, the typical approach is to fix the problem by improving the deficient roads. Although, some consideration is given

alternate modes, the majority of the proposed solutions are projects involving the addition of general use lanes. This process does not discourage the Single Occupant Vehicle (SOV) mode as required by ISTEA.

Figure 29



The fully integrated concept would receive a list of congested locations as input. The DCMMP/CMS would then subject each project proposal to an alternatives analysis to determine which congestion management strategies could be used to fully or partially address the transportation need and whether adding lanes is absolutely necessary

The analysis must include alternatives at all levels including: countywide, activity center, corridor and facility level. Evaluation of effectiveness, therefore, requires different levels of analysis. The DCMMP/CMS will provide sufficient guidance on which strategies should be analyzed at what level. It will also provide sufficient technical evaluation information to guide the analysis at various levels. The analysis process will require a feedback loop. This is needed because many strategies will cause changes in conditions on more than one facility.

The objective is to identify replacement or supplemental congestion management strategies to improve mobility both at the countywide and the corridor levels. The strategies then will modify the original improvement proposals and will be incorporated either to the LRTP or the next TIP.

2. Stand-Alone MMP/CMS Concept

The stand-alone concept is based on the development of a tool that will help conduct a complete evaluation of congested facilities and alternative congestion management strategies. The tool could take advantage of existing information. However, as a self-sufficient tool, it could duplicate

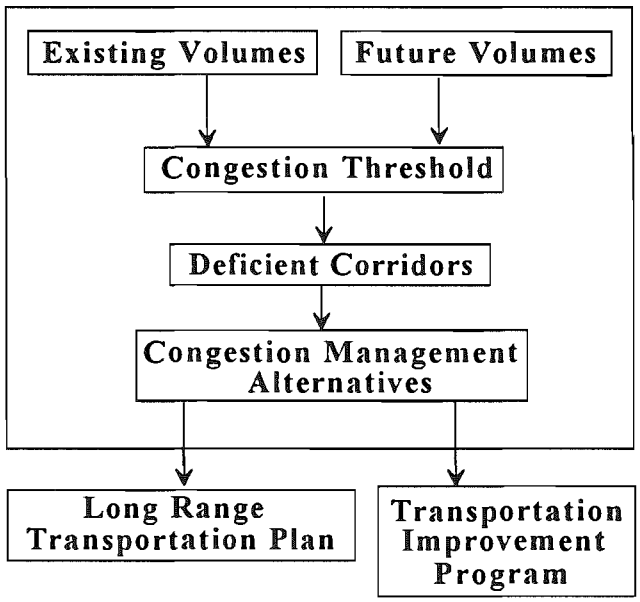
The tool could take advantage of existing information. However, as a self-sufficient tool, it could duplicate other processes already in place. The advantage, though, is that this concept provides for all inclusive analysis. Figure 30 shows an outline of the stand-alone process.

This concept could very easily be implemented as part of the GIS database/Decision Support System being developed by FDOT District 6. An advantage of this arrangement is that integration with other management systems would be easier because the IMS and the PTMS would be part of the FDOT database.

Coordination with other incorporated areas could be part of the process at key points. An alternative would be to obtain acceptance of the system by the incorporated areas.

The stand-alone concept would include data suitable to evaluate the degree of congestion on the highway system. Most congested locations would be identified using either local LOS standards or another suitable criterion. This process would also have a built-in evaluation module to allow testing of a pre-established list of congestion management strategies. The most effective strategies would be identified to allow the analyst to select the most appropriate group of actions. Overall performance of the selected set of strategies would also be possible. The GIS component of the system would allow mapping and other types of data display.

Figure 30: Stand Alone Concept MMP/CMS

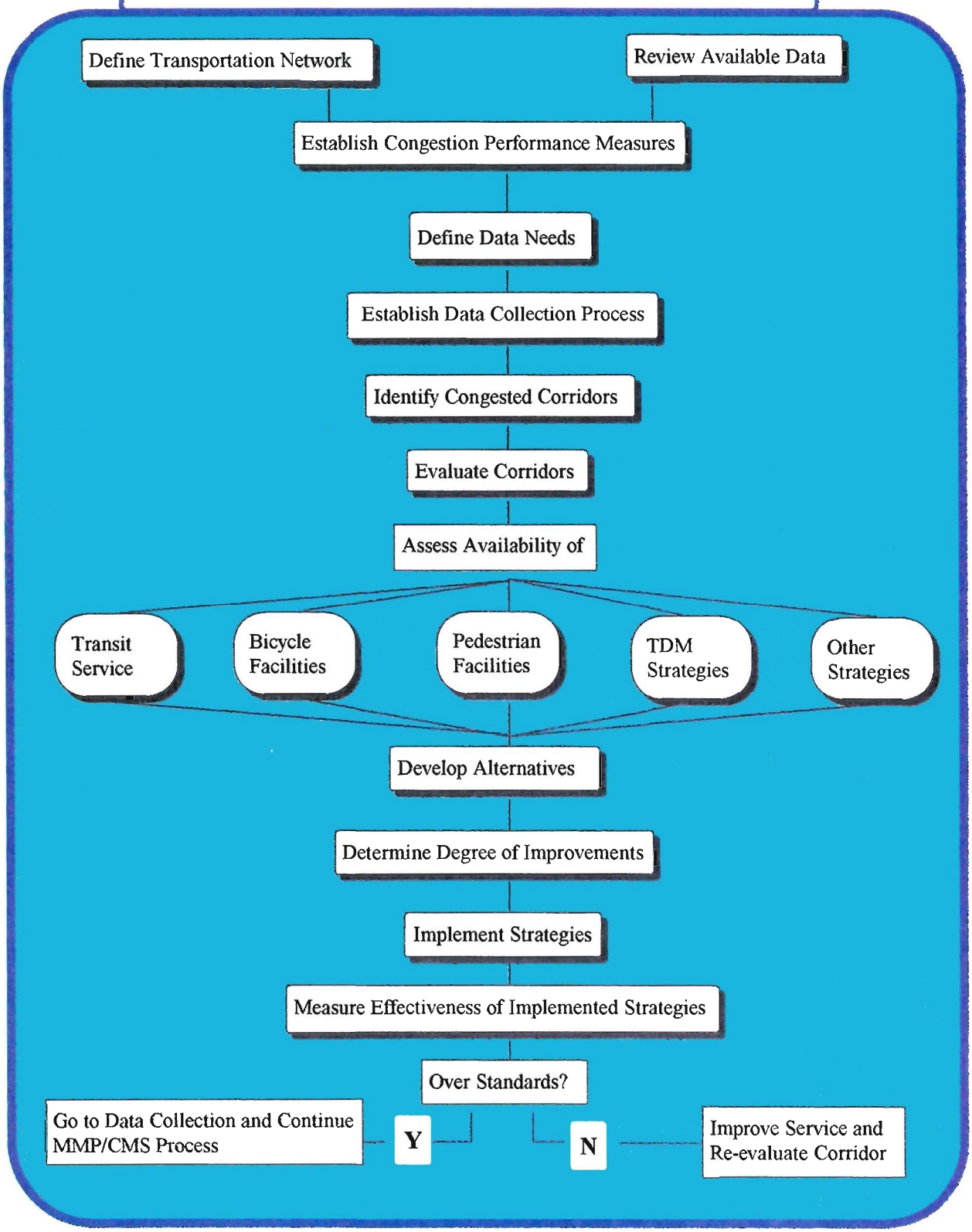


Recommendations from the stand-alone DCMMP/CMS concept would replace those from the LRTP and the TIP and, therefore, have the potential for conflicts if conclusions are different, as a result of using a parallel or different methodology for establishing deficient locations.

3. Recommended Structure

Based on the advantages and disadvantages of both alternatives discussed above, the Steering Committee recommended the Fully Integrated Concept as the base for development of the DCMMP/CMS. This concept, then will be used to establish the overall structure of the process. This structure is shown in Figure 31. The flowchart describes how information from the existing process is combined and supplemented to address both congestion and mobility as part of the overall transportation planning process.

Figure # 31: ***Metropolitan Planning Organization (MPO)***
DADE COUNTY MOBILITY MANAGEMENT PROCESS



E. COORDINATING THE DEVELOPMENT OF THE DCMMP/CMS

This section outlines the coordination process for the development and implementation of the system. The goal of this process was twofold:

- ☐ To ensure that the goals and objectives of the study are achieved; and,
- ☐ To provide for representation of various agencies that could be interested in and/or affected by the study.

Coordination was effected in two levels. The first level is the Study Steering Committee. The second level is the various standing committees that form part of the normal MPO operations.

The Steering Committee was created as a working group to provide technical support and continuous direction throughout the duration of the study. As indicated in Section II.E., this group was created under Resolution TPC #26-94. Members of the Committee provide representation from the agencies most directly affected by the creation, implementation and operation of the CMS. The Steering Committee is chaired by the MPO Project Manager for the study and has regular meetings to review the materials prepared by the consultant. The group works as a team in conjunction with the consultant in developing the DCMMP/CMS.

The Steering Committee, upon endorsement of the study, will recommend approval to the MPO's Transportation Planning Council.

The second level of coordination will be achieved by taking key products of the study to the appropriate standing committees of the MPO. The purpose of this coordination is to provide these groups the opportunity to review the technical and policy proposals suggested by the study reports. These concepts form the basis for creation and implementation of the DCMMP/CMS.

This second level of coordination includes presentation to the following MPO's structural organizational elements:

1. **Transportation Planning Council (TPC)** which is responsible for the overall technical adequacy of the MPO planning program and advises the Governing Board on the proposed program actions. In addition, the TPC establishes inter-agency task forces and special committees to ensure coordination of important projects. The TPC members and Chairperson are appointed by the County Manager and it comprises Directors from the following agencies:

Planning Department
Public Works Department
Seaport Department
Aviation Department
Developmental Impact Committee
Department of Environmental Resources Management
Metro-Dade Transit Agency (continues on Page 76)

Tri-County Commuter Rail Authority
FDOT - District 6
Florida Department of Environmental Protection
League of Cities
School Board, as well as,
Two non-voting members who represent the MPO Secretariat and the South Florida Regional Planning Council

2. **Transportation Plan Technical Advisory Committee (TPTAC)** which is a standing committee of the TPC responsible for providing technical advise to the TPC.

3. **Citizens Transportation Advisory Committee (CTAC)** which provides a forum for citizens to evaluate the recommendations developed through the MPO transportation planning and programming process. The members of the CTAC are appointed by the MPO Governing Board from both the general public and from civic organizations.

This second level of review ensures that all possible agency perspectives are considered during the development of the DCMMP/CMS. These committees review, comment and endorse the study products for adoption by the MPO Governing Board. A coordination matrix for the study is provided in Table 7.

F. INTEGRATION WITH EXISTING PROCESSES

The DCMMP/CMS is a process that must be integrated, as per state regulations, with the existing metropolitan planning process. Although the development of the process/system has been coordinated with all the concerned agencies, implementation and continued operation has to be seamlessly woven into specific processes. The following are the major efforts that will require changes to effect this coordination.

1. Comprehensive Development Master Plan

The current CDMP should recognize the DCMMP/CMS as an integral part of the planning process. The CDMP does include both transportation and land use elements that are affected by the DCMMP/CMS. At the same time, the CDMP includes policy statements, goals and objectives that can support, encourage or require implementation of the process, its programs and specific transportation system improvement projects.

The next update of the CDMP should include a recognition of the DCMMP/CMS as an important short range element of the metropolitan planning process as required by ISTEA. Over time, the CDMP should consider implementation of land use policies that will support TDM strategies, improve transit access, reduce SOV travel and create job/housing balance. Most of these policies can be evaluated by the Planning Department. However, funding of this research and the implementation of any programs should be coordinated through the DCMMP/CMS Steering Committee as created by the TPC.

Table 7					
DCMMP COORDINATION MATRIX					
FIRST COORDINATION LEVEL		**SECOND COORDINATION LEVEL**			
Agency or Organization	**Study Steering Committee**	**TPTAC**	**CTAC**	**TPC**	**MPO**
DC Planning					
DC Public Works				X	
DERM				X	
DIC				X	
FDOT				X	
MDTA				X	
RCAP				X	
MPO					
DC Aviation Dept.				X	
Citizens	X	X		X	
City Manager	X	X			
DC League of	X	X		X	
Cities	X			X	
FDEP	X	X		X	
DC Public Schools	X	X		X	
DC Seaport Dept.	X		X	X	
Elected Officials	X	X	X		X

2. Long Range Transportation Plan

It is generally agreed that the Mobility Management Process/Congestion Management System (MMP/CMS) is intended to maximize the capacity of existing facilities before embarking on major projects to substantially expand existing facilities or construct new ones. Therefore, many improvement proposals generated by this process will be short range and low cost in nature.

Currently, significant changes in the long range planning process, are not needed, and the Long Range Transportation Plan (LRTP) should continue as it exists today. However, a regular exchange of information is needed to ensure proper coordination, thereby preventing conflicts in the conclusions of these processes. As a result the recommendation is to incorporate the DCMMP/CMS Coordinator as part of the LRTP Steering Committee.

In fact, recommendations in the LRTP should be considered supplemental information for the DCMMP/CMS. Information such as the list of recommended transportation projects and the priority listing will help verify the conclusions of the DCMMP/CMS analysis, particularly the location and degree of congestion.

The DCMMP/CMS analysis and recommendations, in turn, must be considered during the update of the LRTP. More specifically, recommended, approved and completed projects resulting from the DCMMP/CMS must be included in the existing plus committed transportation network. Careful consideration should be given to the improvement of capacity and travel demand reduction caused by the implementation of DCMMP/CMS strategies. Only then, will the impacts of the DCMMP/CMS be accurately and properly considered. The end result should be a reduction and/or delay in the number of major transportation projects.

Finally, including these recommendations in the LRTP process, will assist Dade County in establishing compliance with 23 CFR Section 450.312(g) that requires the development of the CMS as part of the metropolitan planning process.

3. Transportation Improvement Program (TIP)

The TIP is the centralized funding coordination vehicle for design and construction of transportation related studies, as well as for major detailed feasibility and preliminary studies applied to main corridors, Major Investment Studies (MIS) and Project Development and Environmental (PD&E) Studies. Projects requiring this type of funding must follow the established process.

New projects resulting from the DCMMP/CMS are starting at the beginning of these processes and must go through each step before final implementation. The Federal regulations mandate that all projects to be implemented within a congested corridor which provide additional capacity to the roadway, must go through the DCMMP/CMS process. The type of improvements considered are those that add a lane to the facility or for widening the road. In this case, it is the purpose of the DCMMP/CMS to evaluate other transportation strategies that

may relieve traffic congestion without adding new lanes. It is hoped that the type of projects and proposals originated in the DCMMP/CMS will be of the type that are easy to implement and can gather sufficient support to achieve a high priority, therefore ensuring expedited implementation. As recommended in the LRTP, the DCMMP/CMS Coordinator must actively participate in the TIP Steering Committee.

4. Unified Planning Work Program

The bottom line of the DCMMP/CMS is the implementation of projects that will improve the efficiency of the transportation system. Projects, however, can take different forms. The three major categories of DCMMP/CMS projects are: policy, operations and construction. Each of these categories are implemented via different processes.

Policy projects are typically initiated and supported through planning and feasibility studies. Recommendations are approved by the MPO and, when needed, ordinances or administrative procedures are developed and approved by the appropriate government body, such as the Board of County Commission (BCC). Implementation is then relegated to specific agencies or departments of the governmental body. Funding for the implementation of policies is usually absorbed into the existing functions and budget of the subject agencies. When needed, additional funding from general revenues is secured or user fees are created or increased to cover the additional costs.

Operational improvements typically begin with a planning or a feasibility study. When needed, initial studies confirming feasibility are followed by detailed studies to precisely estimate the cost and effectiveness of operational changes. Sometimes an implementation plan is developed as well. While the subject agency could very well fund all studies, at a minimum the operating agency should fund the final, detailed evaluation study. The cost of the study should be considered a normal expenditure by the agency to ensure that their services are as efficient as possible. The cost of the study can also be viewed as an investment to reduce operating expenses and/or to improve service, potentially increasing revenues. Funding of the final studies by the operating agency also ensures that results will be acceptable to the agency.

Construction projects can be subdivided in two groups based on size and ease of implementation: small and moderate/large. While an absolute breakpoint is not easy to establish, we will use $50,000 in planning, design and construction cost to define small versus moderate/large projects. In essence, many agencies have funds designated for miscellaneous projects every year. These funds may include miscellaneous budgets and perhaps budgets for planning/design consultants. Some agencies also have "push button" contractors on stand-by for small construction projects. Additionally, the agencies usually have in-house staff capable of the needed planning studies or design services.

The Unified Planning Work Program (UPWP) is the centralized funding mechanism for planning studies. Therefore, DCMMP/CMS recommendations requiring planning studies must be included in the UPWP, following the procedures established by the MPO.

5. Local Zoning Codes

Many mobility strategies can be implemented, over time, through zoning codes and land development regulations. Some of the more sweeping strategies are those dealing with land uses that promote alternative transportation modes and less travel. Development regulations could deal with detailed micro-scale level strategies, such as requiring bicycle racks to promote bicycle usage. Still another level of a development rule is the use of incentives to develop in a desirable manner or provide additional transportation amenities. These incentives should be supported by the appropriate policy direction. Some potential incentives are as follows:

- ☐ Density bonuses for providing a certain desirable mix of land uses.
- ☐ Reduced parking requirements for projects near transit service.
- ☐ Exceeding of height restrictions in exchange for vanpool and/or shuttle service.

While these concepts have a lot of potential, substantial work is required to implement similar strategies. It is also important to understand that the impact of these strategies is definitely long term in nature. This, however should not be a deterrent. On the contrary, the sooner strategies like these are implemented, the sooner results will begin to accrue.

G. INTEGRATION WITH OTHER MANAGEMENT SYSTEMS

The Federal regulations require that the development of the IMS and the PTMS be coordinated with the CMS. Following this mandate, the Statewide Task Force expressed their support and recommended that the state DOT be responsible for the PTMS and the IMS, while the MPOs in urban areas be responsible for the CMS. In Dade County, the FDOT District 6 office has begun this task.

FDOT District 6 has developed, in consultation with the MPO, a concept called Decision Support System whereby the data for these three management systems and the Traffic Monitoring System for Highways (TMS/H) will be incorporated into a GIS environment to be developed by the District. This database will reside with and be maintained by FDOT. The MPO will have direct and unlimited access to the data in order to carry-out the responsibility of operating the CMS and implementing strategies as required by the regulations. Other interested agencies may also have access to the data either for information purposes, for special analyses or for carrying-out their respective functions supporting the transportation planning process and other agency responsibilities.

The MPO envisions that it is necessary to have full access to the Decision Support System, therefore, a study was included in the 1996 UPWP to develop an Integrated Network Management System. The purpose of this study is to integrate the work done by the State and the County under similar systems. The final objective in this process is to have the management systems accessible to all involved parties.

VI. LOCATING CONGESTION

Identifying congestion is the first major step in the DCMMP/CMS. This chapter outlines the preliminary process of defining the CMS networks, identifying congested areas, and determining the extent and duration of congestion. The last section of this chapter discusses general points to consider for planning strategies to alleviate congestion. From congested locations the process quickly moves into strategies to improve mobility.

A. DEFINING THE NETWORK

In keeping with Federal CMS and State of Florida MMP guidelines, the CMS roadway network should (1) include the entire metropolitan area under the MPO's jurisdiction and (2) be improved in such a way as to be coordinated with outlying jurisdictions. Integration of the state's highway network can only be achieved through effective transportation planning aimed at maximizing the efficiency of the system.

The Florida MMP Task Force has suggested that the highway network be either used for the Florida model or the Concurrency Management Network. Both networks rely on available data from existing sources, negating the need for new databases. In Dade County, the model network covers the entire county. This coverage is consistent with the jurisdiction of the MPO and includes all arterial and collector roadways. Therefore, the National Highway System is part of this network. The Concurrency Management Network is very similar to the model network. It is a regularly updated database that includes current traffic volume data, as well as detailed route specific capacities. This valuable information can be put to very good use as part of the monitoring system for the roadway system. The network can also be used as a secondary source of information to verify conclusions from the model network.

Therefore, consistent with the Federal mandate and the State guidelines, the model network is the basis for the Dade County MMP/CMS.

B. IDENTIFYING CONGESTION

Federal regulations require the implementation of congestion management strategies where congestion is occurring or is expected to occur. The MPO already performs planning functions that allow identification of congested locations. The LRTP process regularly updates the Dade County transportation model. The updates include replicating existing conditions using a validation process and forecasting future conditions. The results from the model are then used to define existing or future transportation demand. Having roadway capacity information, the model is helpful in determining volume to capacity (V/C) ratios for the entire highway network.

Determining and identifying where congested locations are in Dade County may appear simple, quite the contrary Dade County has a unique condition that requires further investigation. As indicated in Chapter IV, the methodology to obtain and process the data to determine the LOS may vary by location and policy.

1. FDOT's LOS Methodology

According to the classification of the roadway to be analyzed, the State of Florida uses different methods to determine LOS within the State roadway system. Some of these are:

a. Generalized LOS Tables

FDOT's generalized LOS tables were developed based on the definitions and methodology of the 1985 HCM. These are considered some of the most thoroughly researched and state of the art generalized LOS tables in the nation. Three groups of tables were developed: Urbanized Areas, Transitioning Areas (population over 5,000) and Rural Undeveloped Areas (population less than 5,000).

b. ART_PLAN (Arterial Planning) Computer Model

This is a computer software based on Lotus 1-2-3 for traffic analysis in interrupted flow facilities. It is considered an excellent tool to analyze arterials in urbanized areas. The program has a capacity to analyze an arterial with up to 20 intersections.

c. ART_TAB (Arterial Table) Computer Model

Like ART_PLAN, this is a computer software used to analyze arterials in urbanized areas. The two major differences between ART_TAB and ART_PLAN are:

- Traffic volumes are given for ART_PLAN and LOS is calculated, while in ART_TAB, LOS is given and service volumes are calculated.

- ART_TAB assumes that all signalized intersections have the same characteristics, while ART_PLAN allows more flexibility to treat each intersection differently.

d. FREE_TAB (Freeway Table) Computer Model

This is another computer software that produces generalized tables for freeways.

Other software programs that produce generalized tables for traffic analysis are:

- RMUL_TAB for rural uninterrupted multilane highways,

- UMUL_TAB for uninterrupted multilane highways in urban areas,

- R2LN_TAB for uninterrupted 2-lane highways in rural areas,
- U2LN_TAB for urban 2-lane uninterrupted highways, and
- SIG_TAB for signalized intersections.

For further detailed information, please refer to Florida's LOS Standards and Guidelines Manual for Planning.

2. Dade County LOS Methodology

For the State roadway system, FDOT District 6 uses the above referenced methodologies. However, the county roadway system falls under the jurisdiction of the adopted Comprehensive Development Master Plan (CDMP), which is also a State requirement. In Dade County the CDMP establishes a set of standards that must be considered in determining the LOS for the roadway system within the County, as indicated later in this Chapter, Part C. The CDMP calls for one level of service standard for the FIHS roadway system and another standard for the non-FIHS roadway system.

Other differences were found during the development of this study: FDOT uses the Annual Average Daily Traffic (AADT) to calculate the LOS, while the county uses the Average Week Day Traffic (AWDT). This makes it a little more difficult to decide which methodology should be used by Dade County in determining LOS standards for the development of the DCMMP/ CMS.

It is recommended that a consistent methodology be developed to measure LOS on both roadway systems.

3. Relative Congestion Ratio

Since congestion is a relative term, a new term was created for the purpose of this study. Relative Congestion Ratio (RCR) complies with both State and local standards and is defined as the existing V/C ratio obtained from the travel demand model divided by the maximum V/C ratio allowed in the CDMP according to local conditions. The formula used for determining RCR is as follows:

$$\text{Relative Congestion Ratio (RCR)} = \frac{\text{Existing V/C Ratio}}{\text{Maximum V/C Ratio Allowed}}$$

where:
Existing V/C Ratio is obtained from the model network,and
Maximum V/C Ratio Allowed is established in the Dade County CDMP or the FIHS Standards as appropriate.

The first screening of congested locations was performed using the outputs from the Dade County Transportation Model. The V/C ratios from the model were obtained for the 1990 validation (existing) network. This information was displayed in map form. The maximum V/C ratios allowed

in the CDMP and the FIHS were color coded, by link, into the same map as follows.

LOS B
LOS C
LOS D
Up to 1.00 (LOS E)
Up to 1.20 (LOS F)
Up to 1.50 (LOS F)

The existing V/C ratio was then compared to the LOS standards (maximum V/C ratios allowed). Every road segment exceeding or near the allowed V/C ratio was then identified and the Relative Congestion Ratio calculated.

C. CONGESTED LOCATIONS

Results from the Dade County Model validation network were combined with additional analysis from the concurrency management system and the FDOT (District 6) Level of Service Analysis (see Monitoring and Evaluation Manual (MEM) in Appendix C). In each case where data was available from various sources for the same road segment, the most specific data replaced less specific analysis. In general, FDOT analysis was used for the State roadway system superseding the model results, and concurrency analysis for the county roadway system also supersedes model results.

An additional step was needed to "standardize" the data. Since the DCMMP/CMS relies on available data and they originate from different sources, both the degree of reliability and the calculation methodology is different. The principal adjustments required are generally described below. A listing of the resulting factors is included in the Monitoring and Evaluation Manual.

The threshold for congestion is based on two different criteria depending on the type of road as follows:

- **FIHS Roads**. Traffic operating conditions for the 100th highest volume hour of the year in the predominant traffic flow direction. This volume approximates the typical peak hour during the peak season.

- **Non-FIHS Roads (State and Non- State)**. Traffic operating conditions during the peak period. The Peak Period means the average of the two highest consecutive hours of traffic volume during a (typical) day.

The following adjustments were made to the data for consistency of LOS results with the appropriate LOS criteria:

- FDOT Data, FIHS Roads (FIHS LOS Standards)
  Adjusted from 1991 to 1995

- FDOT Data, Non-FIHS State Roads (CDMP LOS Standards)
  Adjusted from 1991 to 1995
  Adjusted from peak hour to peak period

- Concurrency Data, State Roads (NA)
  Superseded by FDOT Data

- Concurrency Data, Non-State Roads (CDMP LOS Standards)
  Adjusted from 1993 to 1995

- Model Data, State Roads (NA)
  Superseded by FDOT Data

- Model Data, Non-State Roads (CDMP LOS Standards)
  Adjusted from peak season to average day
  Adjusted from 1990 to 1995
  Adjusted from peak hour to peak period

Road segments with Relative Congestion Ratio of 0.9 or greater were identified using the method described above. A reasonableness test was then conducted by reviewing the daily traffic volumes in order to reduce the number of locations where model validation results may be inaccurate. Additionally, changes in the model validation network due to improvements completed since 1990 were considered. A list of improvements programmed between 1990 and 1995 was compiled from previous TIP documents, as shown in Figure 27. The following categories of Relative Congestion were established in order to describe the severity of the traffic conditions relative to the policy level of service standards.

Nearly Congested	0.90 < RCR <= 1.00
Moderately Congested	1.00 < RCR <= 1.20
Highly Congested	RCR > 1.20

This system recognizes locations experiencing relative congestion today as well as segments likely to experience potential congestion in the future.

For example, in a given area where the maximum allowable V/C ratio is 1.2, for a road with 1.1 existing V/C ratio, Relative Congestion Ratio would be 0.92. An existing V/C ratio of 1.3 would result in a Relative Congestion Ratio of 1.08. The first road segment is not exceeding the standard, while the second one is. The Congestion Ratio allows immediate identification of roadways exceeding the LOS standard (congested) and those that are not. The ratio also allows easy ranking of congested locations from very congested (i.e., high Relative Congestion Ratios) to less congested.

Following the identification of congested segments, congested corridors were established. The Steering Committee approved the criteria that a corridor should be at least 2 miles in length. Short, *free and clear* segments were aggregated with congested segments in some cases in order to ensure

continuity of corridors. For ease of display, the most common or prevalent degrees of congestion were selected as the representative level(s) of each corridor.

The two mile length criteria, although not consistent with the State Task Force recommendations, seemed appropriate to represent the most important congested corridors in Dade County. The Steering Committee and a subcommittee reviewed the list of congested corridors and adjusted it based on the available information. Using the RCR methodology, the list shown in Table 8 indicates that there are 33 congested corridors and two nearly congested corridors in Dade County. A map of these corridors is shown as Figure 32.

Also, road segments that were short and isolated from congested corridors were designated as congested spots (less than two miles). These spots were classified using the same criteria established for the congested corridors, as a result, the analysis determined 41 congested spots and 36 nearly congested spots, that are shown separately in Table 9 and Figure 33.

D. DEGREE OF CONGESTION

The DCMMP/CMS database developed for this study contains the most precise information about congested segments because it reflects actual (as opposed to average) congestion levels along the congested corridors and it accounts for all congested spots. The following is a summary of the degree of congestion in Dade county.

Nearly Congested	45 miles
Moderately Congested	141 miles
Highly Congested	54 miles
Total	240 miles

This represents 15-20% of the arterial and collector system in Dade county. While this summary provides a good initial measurement of the existing degree of congestion, it is recommended that future updates consider measuring both road miles and lane miles of congestion. The second method will give more weight to multi-lane facilities. These carry a very large portion of the traffic in the county. The percentage of congested lane-miles, therefore, is likely to be higher than 15-20%.

E. DURATION OF CONGESTION

FDOT District 6 is considering a method to calculate congestion duration on state roads. That method basically requires comparing hourly volumes (in 15 minute increments) against hourly capacity or maximum allowed service volumes. This method, used with 24 hour counts available for State facilities, would establish how many hours of the day that particular road exceeded

TABLE 8

CONGESTED CORRIDORS IN DADE COUNTY (1)

CORRIDOR	FROM	TO
HIGHLY CONGESTED: RCR GREATER THAN 1.20 (2)		
NW 25 Street	H.E.F.T.	NW 72 Avenue
NW 20 Street	NW 27 Avenue	NW 7 Avenue
SR 826 (Palmetto Expressway)	US 1 (South Dixie Highway)	Golden Glades Interchange
SW 67 Avenue (Ludlam Road)	SW 136 Street	SW 8 Street
W 27 Avenue	US 1 (South Dixie Highway)	NW 79 Street
NW 7 Avenue	I-95	SR 826 (Palmetto Expressway)
I-95	Broward County Line	US 1 (South Dixie Highway)
SW 88 Street (Kendall Drive)	SW 137 Avenue	SR 874
SR 874	SW 88 Street (Kendall Drive)	Snapper Creek Expressway
Snapper Creek Expressway	SR 874	US 1 (South Dixie Highway)
US 1 (South Dixie Highway)	SW 112 Street	I-95
NW 103 Street	SR 826 (Palmetto Expressway)	NW 7 Avenue
SR 836	SR 826 (Palmetto Expressway)	I-95
MODERATELY CONGESTED: RCR BETWEEN 1.01 - 1.20		
Florida Turnpike	SW 88 Street (Kendall Drive)	NW 17 Avenue
SW 117 Avenue	SW 200 Street	SW 152 Street (Coral Reef Drive)
W 107 Avenue	SR 874	SR 836
W 87 Avenue	SW 88 Street (Kendall Drive)	SR 836
NW 72 Avenue	SW 72 Street (Sunset Drive)	NW 36 Street
SW 57 Avenue (Red Road)	Old Cutler Road	SR 836
Ingraham/Main Highway	SW 72 Street	Grand Avenue
McFarlane/Bayshore Drive	Grand Avenue	SW 12 Avenue
Old Cutler Road	SW 200 Street	SW 72 Street
W Dixie Highway	NE 125 Street	NE 215 Street
NE 125 Street	I-95	West Dixie Highway
Miami Gardens Drive	NW 2 Avenue	US 1 (Biscayne Boulevard)
Okeechobee Road	SR 826 (Palmetto Expressway)	SR 112
N 74/79 Street	SR 826 (Palmetto Expressway)	US 1 (Biscayne Boulevard)
SR 112	Okeechobee Road	NW 7 Avenue
SR 836	H.E.F.T.	SR 826 (Palmetto Expressway)
I-395	I-95	Collins Avenue
SW 40 Street (Bird Road)	SW 147 Avenue	SW 57 Avenue (Red Road)
SW 56 Street (Miller Drive)	SW 137 Avenue	SW 57 Avenue (Red Road)
Quail Roost/Caribean Boulevard	SW 137 Avenue	Old Cutler Road (Via 184 Street)
NEARLY CONGESTED: RCR BETWEEN 0.91 - 1.00		
SR 91 (Turnpike Connection)	Golden Glades	Florida Turnpike
SW 127 Avenue	SW 88 Street (Kendall Drive)	SW 40 Street (Bird Road)

NOTES:

(1) Corridors experiencing relative congestion are those presently below (worse than) or near the Level of Service (LOS) standard in the Dade County Comprehensive Development Master Plan or the Florida Intrastate Highway System, as appropriate. These policy documents require relatively high Levels of Service (LOS B-D) in less developed, outlying areas and Intrastate Roads. Lower Levels of Service (E-F) are allowed in densely developed areas and where transit service is provided. A corridor is defined as a nearly continuous segment of at least 2 miles in length. The congestion category has been generalized based on the prevailing level of congestion.

(2) The Relative Congestion Ratio (RCR) indicates whether a road is operating below (worse than) the allowed Level of Service. The ratio is calculated as the existing volume to capacity ratio (V/C) divided by the maximum allowed V/C ratio. The higher the RCR, the worse the congestion, relative to the minimum standards.

DADE COUNTY MOBILITY MANAGEMENT PROCESS

(DCMMP /CMS)

CONGESTED CORRIDORS 1995

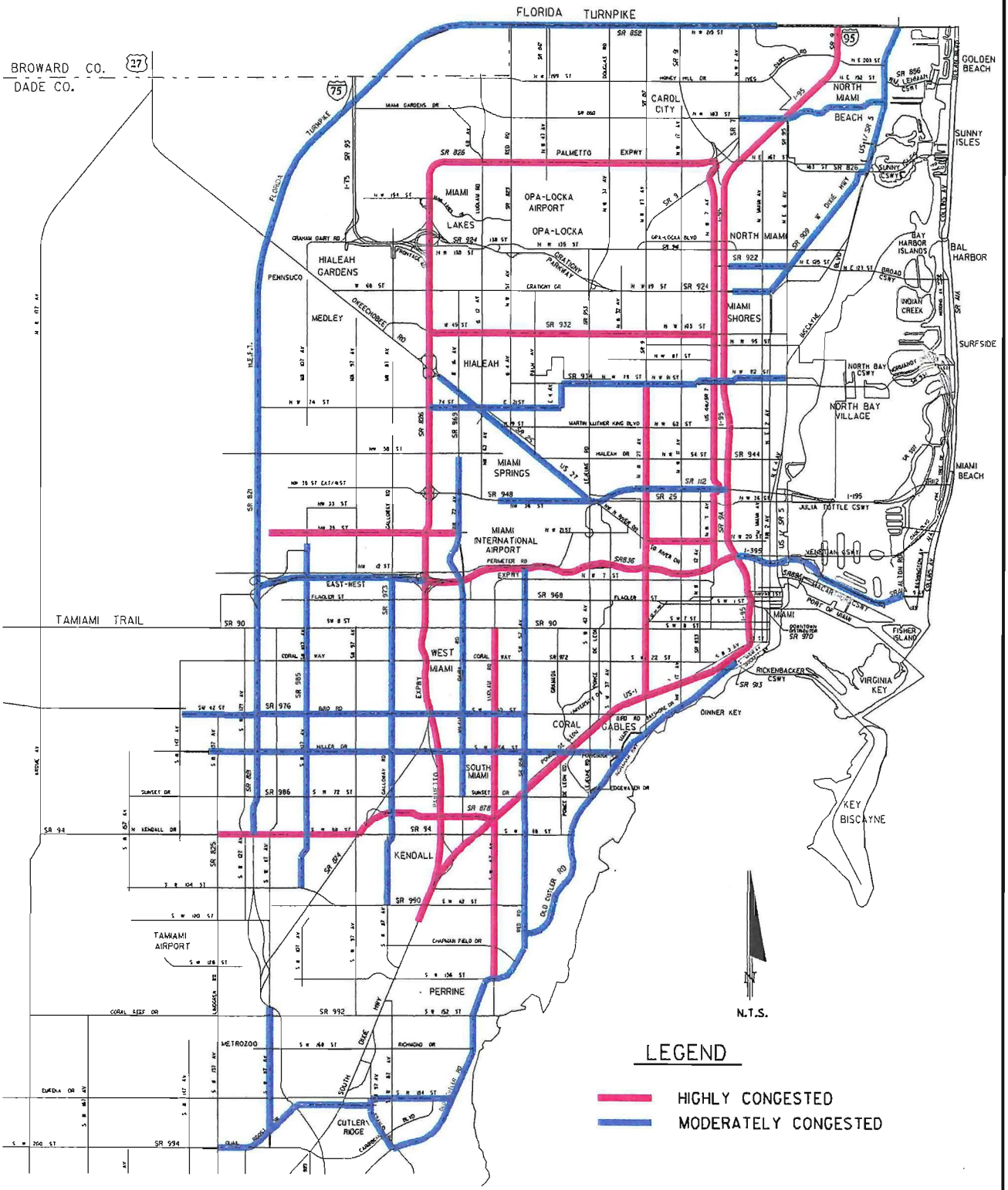


FIGURE 32

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TABLE 9

CONGESTED SPOTS (1)

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CONGSPOT 13:16:09

HIGHLY CONGESTED
RCR GREATER THAN 1.20 (2)

Miami International Airport Entrance
SW 168 Street east of US 1
Curtiss Parkway North of NW 36 Street
NW 79 Avenue North of NW 25 Street
South Perimeter Road east of NW 72 Avenue
NW 17 Street west of NW 27 AVE
SW 117 Avenue south of SW 72 Street
SW 97 Avenue south of US 1
NW 199 Street west of NW 27 Avenue
NW 62 Avenue south of Gratigny Parkway
SW 1 Street west of SW 17 Avenue
SW 48 Street east of SW 67 AVE

MODERATELY CONGESTED
RCR BETWEEN 1.01 - 1.20

NW 37 Avenue south of NW 135 ST
NW 122 Street east of SR 826
Harding Avenue south of SW 92 ST
NW 74 Street west of Okeechobee Road
E 4 Avenue south of NW 79 Street
NW 62 Street west of NW 7 AVE
NW 62 Street west of Miami Avenue
NW 26 Street west of NW 27 Avenue
NW 14 Street east of NW 27 Avenue
W 63 Street west of Collins Avenue
Alton Road south of Arthur Godfrey Road
NW 7 Avenue south of NW 7 ST
Alhambra south of SW 40 Street
SW 24 Street west of HEFT
SW 24 Street east of HEFT
SW 97 Avenue north of SW 8 Street
SW 97 Avenue south of SW 8 Street
SW 22 Street East of 42 Avenue
SW 27 Avenue south of US 1
SW 72 Street west of Ponce de Leon Boulevard
SW 104 Street west of SW 127 Avenue
SW 104 Street east of SW 127 Avenue
SW 104 Street west of SW 67 Avenue
SW 104 Street east of SW 67 Avenue
SW 77 Avenue south of SW 104 Street
SW 112 Street east of SW 117 Avenue
SW 122 Avenue south of SW 104 Street
SW 107 Avenue south of SW 184 Street
SW 152 Avenue south of SW 288 ST

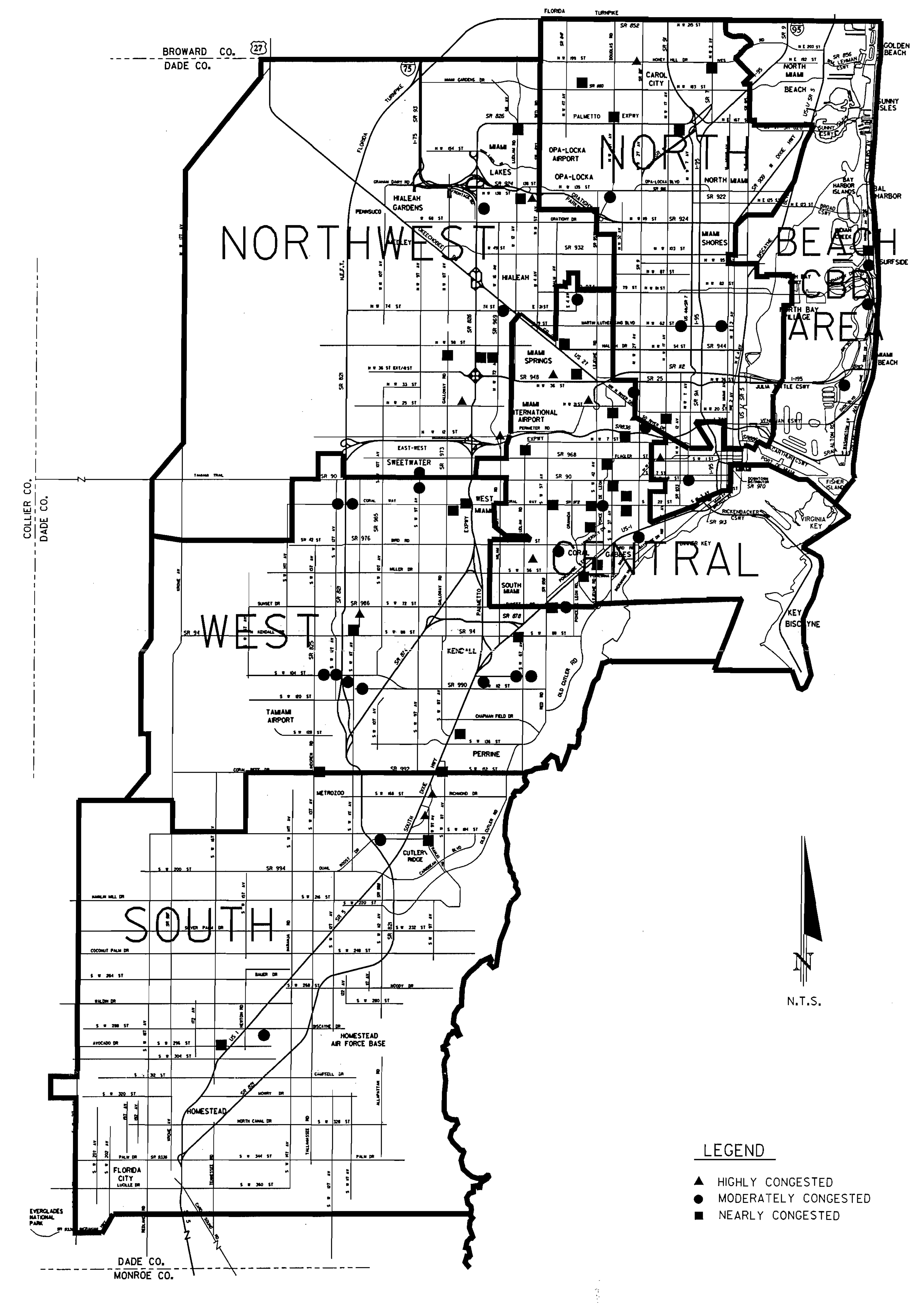
NEARLY CONGESTED
RCR BETWEEN 0.91 - 1.00

NW 42 Avenue north of NW 183 Street
NW 2 Avenue south of NW 199 Street
NW 67 Avenue south of SR 826
NW 37 Avenue north of SR 826
NW 12 Avenue south of SR 826
NW 62 Avenue south of Gratigny Parkway
Harding Avenue south of 96 ST
East Drive south of Okeechobee Road
NW 54 Street east of Okeechobee Road
NW 87 Avenue north of NW 41 Street
NW 41 Street east of HEFT
NW 87 Avenue north of 41 Street
NW 37 Avenue south of 21 Street
NW 17 Avenue south of NW 20 Street
NW 32 Avenue south of SR 836
NW 67 Avenue north of Flagler Street
SW 37 Avenue south of Flagler Street
SW 37 Avenue south of SW 8 Street
SW 24 Street west of SR 826
SW 82 Avenue south of SW 24 Street
SW 22 Street east of SW 57 Avenue
SW 22 Street west of SW 42 Avenue
Madrid Avenue east of SW 57 Avenue
University Drive west of SW 42 Avenue
SW 32 Avenue north of SW 22 Street
SW 32 Avenue south of SW 22 Street
Grand Avenue east of US 1
SW 42 Avenue south of US 1
SW 72 Street east of SW 57 Avenue
SW 117 Avenue north of SW 88 Street
SW 88 Street east of US 1
SW 77 Avenue north of SW 128 Street
SW 152 Street east of SW 137 Avenue
SW 152 Street east of US 1
SW 97 Avenue south of SW 184 Street
SW 296 Street west of US 1

NOTES:

(1) Corridors experiencing relative congestion are those presently below (worse than) or near the Level of Service (LOS) standard in the Dade County Comprehensive Development Master Plan or the Florida Intrastate Highway System, as appropriate. These policy documents require relatively high Levels of Service (LOS B-D) in less developed, outlying areas and Intrastate Roads. Lower Levels of Service (E-F) are allowed in densely developed areas and where transit service is provided. A congested spot is defined as a nearly continuous segment of at least 2 miles in length. The congestion category has been generalized based on the prevailing level of congestion.

(2) The Relative Congestion Ratio (RCR) indicates whether a road is operating below (worse than) the allowed Level of Service. The ratio is calculated as the existing volume to capacity ratio (V/C) divided by the maximum allowed V/C ratio. The higher the RCR, the worse the congestion, relative to the minimum standards.



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dpa

DADE COUNTY
MOBILITY MANAGEMENT PROCESS

CONGESTED SPOTS

FIGURE 33

the maximum allowed volume. Such a figure would represent duration of congestion for that road.

Presently, there in no data quantifying congestion duration for any facility within Dade county. The FDOT method is both data and effort intensive. This study has developed a method to estimate congestion duration from readily available data. Analysis of a sample of congested locations, using the FDOT method, allowed development of a statistical relationship (see MEM: Appendix C). In essence, the larger the V/C ratio, the longer the congested period. The relationship, however, establishes a specific formula that allows estimation of the duration of congestion if the V/C ratio is known.

In order to develop the above referenced formula, regression analysis was used for establishing the relationship between V/C ratio and congestion duration. As indicated before, the objective was to utilize the V/C data available from the DCMMP/CMS database to estimate congestion duration. This method avoids the more tedious and time consuming process of calculating congestion duration from hourly traffic count data for each roadway segment individually. The resulting relationship is shown in Figure 34.

It is important to explain that the congestion duration obtained through this method is the total for a particular roadway during all day. That does not mean that a person will be in a traffic congestion for "x" number of hours. The total congestion duration in this case, means that "x" number of hours of congestion will be observed during the entire day (including different times and both directions). The relationship expressed in Figure 34 is an initial method until a more detailed process is developed. Further analysis is recommended.

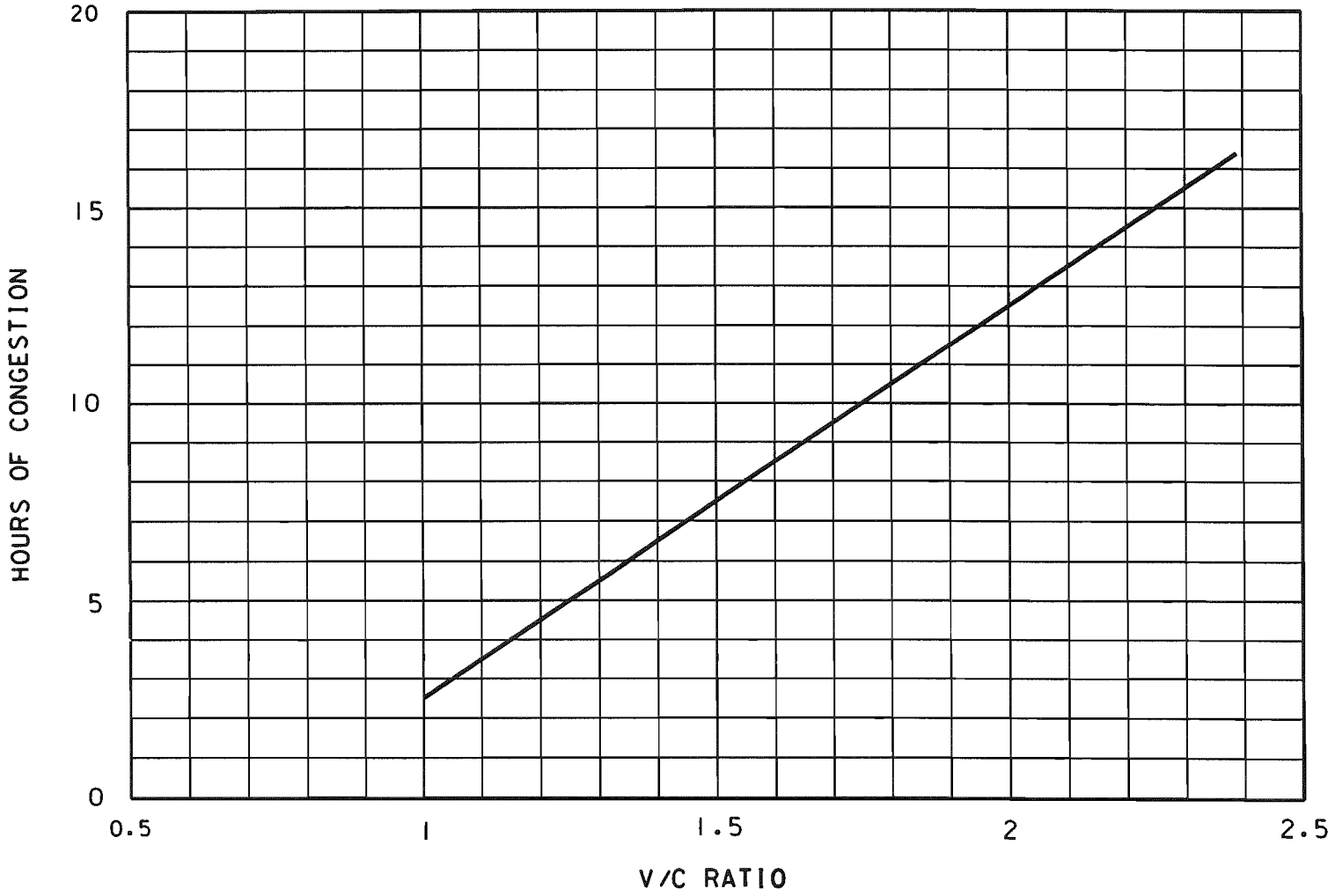
The process used to develop this relationship follows, in part, a methodology which has been considered by FDOT. In general, congestion duration is calculated by establishing the maximum service volume allowed on a road segment. This is a function of the level of service standards. Traffic counts, in 15 minute intervals, are inspected to determine how many hours of congestion are experienced at that location over the course of one day. This is done by adding up all the time periods when volumes exceed the maximum service volume. Once the number of hours of congestion is established, then the peak period V/C ratio is calculated. This process establishes the relationship for a particular road segment.

A sample of congested locations throughout Dade County was selected. The process described above was followed. A regression analysis was run using V/C ratio as the independent variable and congestion duration (in hours) as the dependent variable. A simple straight-line model was used. The data, as expected, was found to correlate well. The resulting statistical relationship is a reasonably reliable way to estimate congestion duration. The DCMMP/CMS does have V/C ratios for all congested or nearly congested segments within the county. Therefore, duration of congestion was estimated for each of these facilities.

This study has estimated that presently, Dade county experiences nearly 2,350,000 vehicle-mile-hours of congestion on a typical weekday. Congested road segments experience, on the average, 3.9 hours of congestion every weekday.

CONGESTION DURATION

DADE COUNTY MMP/CMS



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dpa	DADE COUNTY MOBILITY MANAGEMENT PROCESS	CONGESTION DURATION	FIGURE 34

The composite congestion delay parameter presented above accounts for the number of hours that facilities experience congestion. The parameter also accounts for the distance affected by congestion conditions, as well as the number of vehicles subjected to congestion. The information in the DCMMP/CMS database was used to estimate the total congestion duration and delay figures above. The process involved calculating the congestion duration for each road segment with a RCR of 0.90 or greater. Congestion duration as a function of V/C is estimated using the following equation:

Congestion Duration (in hours) = (10.05 * V/C Ratio) - 7.66

The number of vehicles was established by estimating peak hour volumes as a percentage of the daily traffic, which is typically around 7%. Road segment distance, in miles, was measured from a map. Congestion duration for each road segment, then, was calculated as the product of three items: vehicles during peak hour, road segment length in miles, and congestion duration in hours.

For example: Given a road segment of 0.5 miles in length
15,000 ADT
V/C Ratio = 1.5

Then: Peak Hour vehicles = 15,000 x 0.07 = 1,050 vehicles/hour
Congestion Duration = (1.5 x 10.05) - 7.66 = 7.41 hours
Congestion Delay = 1,050 x 0.5 x 7.41 = 3,890 veh-mi-hrs

Total daily congestion delay is calculated by adding together the congestion delay on all the congested road segments.

F. WHAT SHOULD BE DONE TO ERADICATE CONGESTION AND WHERE?

For some people, congestion is a symptom of deteriorating quality of life in their community. But for others, this is just one of the results that a community has to face due to the economic prosperity within their area. In any case, solutions have to be found in order to relieve, alleviate or manage congestion. Before considering any strategy to face congestion, it is very important to recognize that:

- Traffic congestion is a more difficult problem that just cars traveling on a roadway.
- Approving land developments without providing adequate traffic flow capacity and other transportation alternatives is not allowed by concurrency laws and will result in congested, unsafe and environmentally damaging conditions.
- There is not a simple solution to traffic congestion. Different alternatives have to be developed and implemented to alleviate, relieve or manage traffic congestion.
- Alternatives for solving traffic congestion should be cost effective and realistic in its approach.
- All sectors of the community have to get involved in the decision-making process.
- A strong commitment and efforts are required by all parties working together to solve this problem.

The experience in Dade County and most other large metropolitan areas is that total elimination of traffic congestion is unrealistic. Therefore, the goal of DCMMP/CMS is to reduce or control its growth rate over time.

The DCMMP/CMS provides a process for the analysis of alternatives to alleviate congestion and improve mobility. This process, however, requires the diligent and coordinated effort of all agencies and transportation providers. There are several levels at which the DCMMP/CMS alternatives must be considered and implemented. The MPO will be the agency leading this effort within Dade county with FDOT having the lead responsibility for FIHS roads. However, all efforts, regardless of jurisdiction or mode, should be coordinated by the MPO. Strategies and implementation areas are listed in Chapters VIII and IX.

Extensive research to compile a comprehensive list of mobility strategies was conducted. These strategies were further organized into a menu of options which are presented here along with suggestions for their applicability and how the strategies are considered at the corridor level.

A. LIST OF POTENTIAL STRATEGIES

A comprehensive literature review was undertaken on the topic of congestion and mobility management in general, congestion mitigation and mobility strategies, and implementation of CMSs. References reviewed appear in the Bibliography. Federal regulations mention 12 major categories of strategies. For consistency, the list of strategies developed for the DCMMP/CMS were grouped into the same categories as in the federal regulation.

Appendix D shows a complete listing of these potential strategies with their corresponding description. More than 65 individual strategies are included in the list. The methodology and rationale behind choosing the corridor strategies are outlined below:

- Physical and traffic characteristics of the corridor, is available or obtainable
- Available data could be supplemented as needed.
- Mobility strategies could be reviewed relative to applicability to the subject corridor.
- Applicable strategies could be checked against feasibility.
- Appropriate strategies could be further tested and analyzed.
- Strategies could be prioritized based on mobility objectives.
- Potential inclusion in TIP/Design/Funding/Implementation.

B. APPLICABILITY OF STRATEGIES

The range of available strategies is quite wide and each are applicable in different cases. While some strategies have flexibility, the degree of effectiveness in some areas or under certain conditions varies widely. Appendix E provides a guide of which strategies are applicable in certain areas. The general categories of potential areas for application are:

Area-wide: countywide, TMAs geographical area and municipalities.
Activity Center: hospitals, universities, shopping centers and industrial areas, among others.
Corridor: congested corridors as defined in the study.
Spot: These strategies are suitable for intersections and corridors less than 2.0 miles long.

This listing should be used as the first screening to determine if a particular strategy should be considered for a specific area.

C. COUNTYWIDE STRATEGIES

This study has invested a great deal of effort in identifying congested corridors and developing a process to analyze and recommend alternative mobility strategies. The Statewide Task Force on mobility management has emphasized corridor analysis as a principal component of the Mobility Management Process. Pilot studies in the city of Gainesville and in Broward County have also given special attention to corridor improvements.

Direct study of congested locations is an effective way of implementing mobility strategies that can potentially eliminate the need for more expensive improvements, such as road widening. Corridor level strategies can also maximize the *'people carrying'* capacity of existing facilities and encourage high occupancy vehicle (HOV) travel.

The impact of areawide strategies should not be under estimated. Implementation of multiple strategies has cumulative impacts that can result in significant improvements in areawide mobility. A secondary effect of areawide strategies is that they reinforce policy decisions that in turn make the general public aware of mobility as a desirable community goal. Hopefully, this awareness will result in increased public acceptance and support of mobility programs over time.

Any areawide strategy should be carefully considered and evaluated before implementation. This will ensure that the program will be acceptable to the public and to all agencies involved, as well as effective, and cost feasible. This study has inventoried a series of existing programs and/or studies that address or have the potential to address mobility issues as shown in Table 10. In general, existing programs should be continued and/or enhanced. New programs that have been studied and deemed to be effective should be implemented. Programs or strategies now under study or pending should be implemented if found to be effective.

The key to significant mobility improvement, however, is that all these programs shall be coordinated to ensure that they supplement instead of compete or weaken each other. This can be accomplished by having an overseeing organization. The Dade County MPO is the most appropriate entity to coordinate all these areawide efforts.

In 1993, the MPO published a report entitled Dade County Travel Demand Management and Congestion Mitigation Study. As a result, a series of recommendations made in the study were adopted by the MPO Governing Board. Some of these recommendations included the appointment of a Congestion Management Coordinator, under the MPO, and the creation of a Congestion Management Coordinating Committee.

Together with the adoption of the Dade County MMP/CMS new visions and roles of the different parties involved in facing the problem must be developed. Traffic congestion can not be eliminated, but it can be alleviated and managed to improve mobility.

The coordinator and the committee should work as a unit to study and recommend mobility strategies, secure funding and implement those programs to be approved by the MPO Governing Board. The committee will also oversee the mobility program, review technical findings, recommend policy decisions about which programs to implement, and endorse specific funding sources. This process, however, will be integrated with the normal transportation planning and programming functions of the MPO and other participating agencies.

Table 10
Countywide Programs and Studies

	PROGRAMS/STUDIES	In-Place, Continue	In-Place, Modified as #6	New, Implement	Add to Data Collection Program
1.	Concurrency Management System	X			
2.	Long Range Transportation Plan	X			
3.	Comprehensive Dev. Master Plan		X		
4.	Land Use Programs		X		
5.	Air Quality Programs	X			
6.	DCMMP/CMS			X	
7.	Congestion Mitigation Study			X	
8.	TMAs	X			
9.	Vehicle Leasing Study			X	
10.	Road Pricing Study			X	
11.	Bicycle Facilities Plan			X	
12.	Transportation Improv. Program		X		
13.	Access Management	X			
14.	FIHS			X	
15.	Regional Commuter Assistance Pgm.	X			
16.	South Florida Intelligent Corridor System			X	
17.	Transportation Control Measures (1)	X			
18.	Automatic Vehicle Location (1)				X
19.	Park and Ride Lots	X			
20.	Parking Policy Study			X	
21.	ITS Plan			X	
22.	Freight Movement Study			X	
23.	Integrated Network Manag. System			X	
24.	Superaterial Study			X	
25.	Alt. for Intermodal Improv. Study			X	

(1) City of Miami

VIII. EVALUATION OF CORRIDORS AND STRATEGIES

This section presents an overview of available evaluation tools and the evaluation process recommended for the selected corridors.

A. EXISTING EVALUATION TOOLS

No single tool is appropriate to evaluate all the available mobility strategies. The best tool will vary depending on factors, such as: type of strategy, geographic coverage, degree of precision and justification desired, available data, as well as time and budget constraints, among others. Still, some of the newer or less common strategies may have to be assessed somewhat subjectively because there is insufficient published information to complete an analytical evaluation.

The major categories of available analysis tools are as follows:

- Regional Transportation Models
- Sketch Planning Techniques
- System Simulation Software
- System/Component Optimization Software
- Component Analysis Software
- TDM Model
- Generalized Effectiveness Ratios

The MEM shows which tools are appropriate for analysis of the various available mobility strategies. It should be noted that some of these tools may have the capability to evaluate a large number of strategies, however, today those capabilities have not been fully explored or developed. One example is the Dade County Transportation Model. This model although intended for regional transportation analysis has the potential to test many areawide and policy options related to mobility. These capabilities are likely to be developed only through the continued effort to consider and test a wide range of strategies.

One tool available for the first level of analysis is the Generalized Effectiveness Ratios. This tool was developed during this study and is based, largely, on available information from the major references reviewed during the study. The ratios are based on the improvement in volume to capacity ratio within the immediate influence area. The data represents typical impact when the subject strategy has been successfully implemented. In many cases the measure of effectiveness in the research material was not expressed in terms of volume to capacity ratio and had to be converted to this standard measurement. In other cases the impact was not quantified numerically and the information was converted to numerical values based on logical ranges for various levels of

mobility improvements. The Generalized Effectiveness Ratios are listed in the MEM, along with the corresponding mobility strategies.

B. CORRIDOR EVALUATION PROCEDURE

Significant improvements in mobility are possible at the corridor level. Implementation of effective mobility strategies can increase the capacity of corridors and improve mobility with a resultant savings in time, travel cost and possibly fewer numbers of accidents, including a reduction in property damage cost, injury and deaths. Improved mobility has the potential for delaying the need for expensive improvements. Social benefits derived from mobility strategies include possible lower cost to the taxpayer and the facility user, and minimization of impacts to environmental aspects such as:

Social: Land use, cultural features, socio-economic aspects, right-of-way acquisition and relocations, archaeological and historic resources, parks and public lands, visual and aesthetic value, and farmlands among others.

Natural: Hydrologic and natural features, wetlands, wildlife habitat, and surface water quality among others.

Physical: Air quality, noise, contamination, water quality, floodplains, coastal barriers, energy, and construction among others.

This general evaluation process is described in Figure 35. However, congested corridors have to be prioritized to determine the relative importance among them. In Section VI, a process was established to identify the congested corridors by using the RCR method and these categories were defined. As a result, 35 corridors are listed in Table 8 as Highly, Moderately and Nearly congested in Dade County.

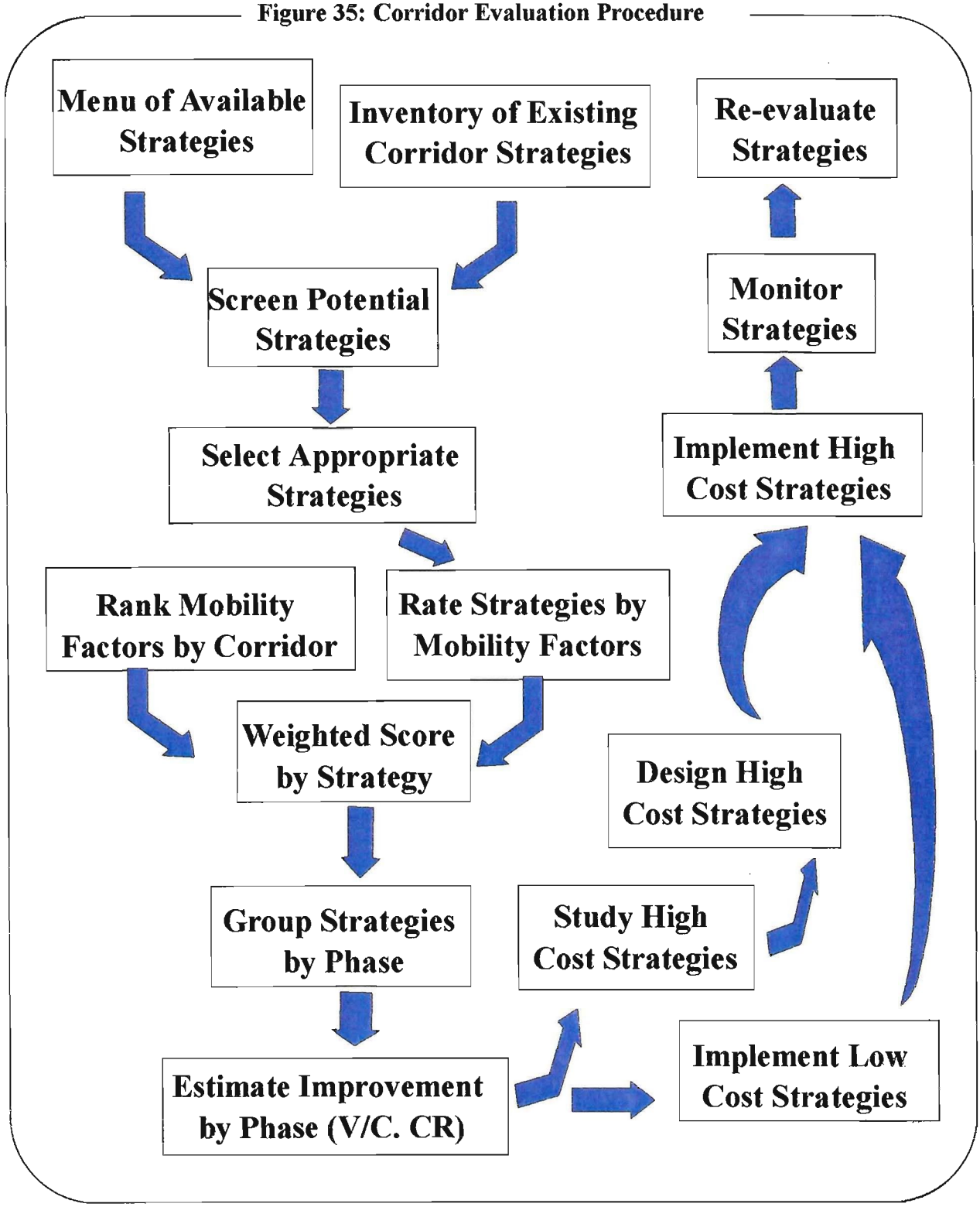
C. RANKING THE CORRIDORS

As indicated before, it is necessary to evaluate and rank these corridors in terms of priorities. But, what criteria must be used to prioritize these corridors? Section 450.316 of the CFR listed 15 planning factors that must be considered as part of the transportation planning process. Additionally, ISTEA requires that these planning factors should be considered during the development of the management systems, because they are part of the transportation planning process. Finally, Federal and State agencies are focusing to address these factors in the development of the referenced systems.

Therefore, after considering different alternatives, the fifteen transportation planning factors provide the best criteria to rank the congested corridors. Each corridor will be evaluated according to the requirements of each factor and a value will be assigned depending on its compliance with each of

the fifteen factors. A scale from 1 to 5 will be used to rank each factor, where 1 is the lowest value and 5 the highest value in terms of meeting such requirements.

Figure 35: Corridor Evaluation Procedure



The table below contains the description of these factor and the criteria to be used to rank the congested corridors.

CORRIDOR RANKING CRITERIA

Factor #	Description	Comments	
		Lowest Value (1)	Highest Value (5)
1	Efficient use of existing transportation facilities	No existing transportation facilities nearby	Strategies will maximize efficiency along the corridor
2	Consistency with energy conservation programs	No strategies related to conservation programs	Strategies will include energy efficient alternatives
3	Relieve/prevent congestion	No actions taken to relieve congestion	Projects implemented to relieve congestion
3a	Mobility of people and goods	RCR Ratio greater than 1.5	RCR Ratio lower than 0.9
3b	TDM and operational strategies	No strategies in place	More than 3 strategies in place
4	Balancing transportation and land use	Promotes segregation of land use	Promotes integration of land use
5	Programming of transportation enhancements facilities	No enhancement projects in program for that corridor	Programming of enhancement expenditures are included in the TIP
6	Project's cost effectiveness	Small benefits in projects implemented along the corridor	Large benefits obtained in projects implemented along the corridor
7	Intermodal facilities	No intermodal facilities nearby the corridor	Existing or future intermodal facilities nearby the corridor
8	Connectivity between areas	Corridor does not connect important locations	Corridor serves as a connector for different important locations
9	Relation to LRTP and TIP	Corridor not considered in the LRTP nor the TIP	Corridor evaluated in the LRTP and the TIP
10	Preservation of ROW	No ROW available for future projects or expansions	ROW available for future projects
11	Efficient movement of freight	Corridor not used for freight movement	Corridor highly used for freight movement
12	Use of life-cycle costs	No cost analysis	Life Cycle Cost analysis used in project evaluation
13	Overall social, economic, energy and environmental effects	Corridor urgently need projects to improve social, economic, energy or environmental impacts	No social, economic, energy or environmental impacts affect the corridor
14	Increased use of transit services	No transit service available	Transit services available
15	Capital investment	High investment in developing projects	Low investment in developing projects

Using the criteria described previously, the congested corridors will be prioritized by each committee member. The following table shows an example of the ranking process:

Corr. #	Planning Factors																	Total Points	Rank
	1	2	3	3a	3b	4	5	6	7	8	9	10	11	12	13	14	15		
A	2	2	3	1	4	2	1	3	1	4	1	1	4	1	2	1	1	34	1
B	3	1	1	5	2	2	1	5	2	2	1	2	1	5	4	1	2	40	4
C	1	4	4	2	1	1	3	1	4	1	3	2	5	2	1	2	4	41	6
D	1	3	2	1	2	3	1	2	5	1	1	3	2	1	2	1	5	36	2
E	4	1	1	3	3	1	2	3	2	3	4	1	4	2	1	3	1	39	3
F	2	2	1	4	1	2	2	4	1	5	5	1	3	1	3	1	2	40	4

The corridors with lower scores are the ones that require more emphasis. Therefore, these will be ranked with the higher priority, as indicated in the above table.

D. RANKING THE STRATEGIES

This study considers that it is important to have a criterion to determine the priorities of the congestion mitigation strategies recommended by corridor. After considering several options, mobility was selected as the best approach to rank strategies, and additionally, it is based on the statements made in Section V.C which places the focus of this study on mobility rather than congestion.

According to the Florida Statewide Mobility Management Process Task Force, **MOBILITY** has been defined as the ability of people to complete desired trips. This concept includes six elements in its definition, that have not been explained in detail. In order to use these factors as a mechanism or tool to rank the strategies, the following is a more comprehensive description of the referenced factors:

1. **People Movement:** This element refers to the ability of strategy "X" to move people. According to the characteristics of each corridor, some strategies may or may not carry more persons than others.

2. **Modal Choice:** People must have the opportunity to select the best available mode to complete the desired trip, under their particular conditions. In this case, a person may : walk, bike, use his/her personal car, use public transit (rail, bus, jitney or taxi), carpool, vanpool or use any other alternatives such as telecommuting to complete his/her trip. In this case, each strategy should be evaluated according its ability to provide access to other modes.

3. **Accessibility:** People must have ease of access for their travel objectives. For this purpose, accessibility means the number of paths that a person has available to complete a trip from "A" to "B" regardless of time constraints. Each strategy should be evaluated according to its relative connectivity to other corridors.

4. **Reasonable Speed:** This element reflects a comparison of travel to primary destination between the average travel speed by using a personal vehicle versus any other mode. In some strategies, this should be evaluated as a potential solution to increase the speed along the corridor.

5. **Moderate Cost:** Availability of funds is an important factor when considering the implementation of some strategies. Therefore, this element evaluates capital, operating, maintenance and other out of pocket costs necessary to develop and implement the selected strategies.

6. **Ease of Implementation:** This factor will substitute the *"Satisfy Trip Objective"* that was included in the Florida Statewide Mobility Management Process. This factor will evaluate elements other than costs, to be considered for implementation. This may include social and environmental impacts, as well as the implementation time needed for each particular strategy.

E. EVALUATING THE STRATEGIES

The DCMMP/CMS has developed a list of more than 60 strategies grouped in 12 different classifications as potential solutions for improving mobility and/or alleviating traffic flow in congested corridors. Due to this broad range of options, a process is established to select and rank the appropriate strategies for each particular corridor.

Following the same process established for the corridors, a scale from 1 to 5 will be used to evaluate the mobility factors, where 1 is the lowest preferred strategy and 5 the highest preferred strategy for each one. Based on the information available for the corridor, the potential effectiveness of the strategies and personal preference, each committee member will then evaluate each strategy by considering the aforementioned six mobility factors.

The proposed method of evaluation makes a comparison of the strategies for each mobility factor. The grid below shows an example of the evaluation process. The strategy that best represents the factor under evaluation gets a five, and then, the other strategies are compared considering this highest value. A five should be assigned to the best strategy for that factor. Regardless of the score value, this strategy should have the highest value among them. For example, when evaluating mobility factor 2 "Modal Choice", none of the strategies meet the perception of John Doe in providing options to select different transportation modes for the corridor under consideration. On the other hand, when evaluating mobility factor 3 "Accessibility", the development of a Network Surveillance System provides people with different alternatives to go from "A" to "B". Then the other strategies are compared against this one.

Committee Member: John Doe								
CORRIDOR A								
Strategy	Mobility Factors						Total Points	Rank #
	1	2	3	4	5	6		
Improve Bus Service	5	4	3	4	3	2	21	1
Intersection Improvements	4	2	4	5	2	3	20	3
Improve Pedestrian Facilities	1	3	2	2	3	3	14	11
Additional Lanes	5	3	4	5	1	1	19	4
Network Surveillance System	3	2	5	4	1	1	16	10
Develop HOV Lanes	4	2	3	5	2	2	18	8
Carpooling	3	2	3	4	4	3	19	4
Alternate Work Hours	3	3	2	2	5	4	19	4
Express Bus Service	4	4	2	5	3	3	21	1
Develop Bike Paths and Lanes	2	2	2	2	3	3	14	11
Vanpooling	3	2	2	4	3	3	17	9
Marketing & Educational Pgm	1	4	3	1	5	5	19	4

Once the strategies are evaluated, a table is prepared including short term and long term recommendations. The following Chapter gives a detailed explanation.

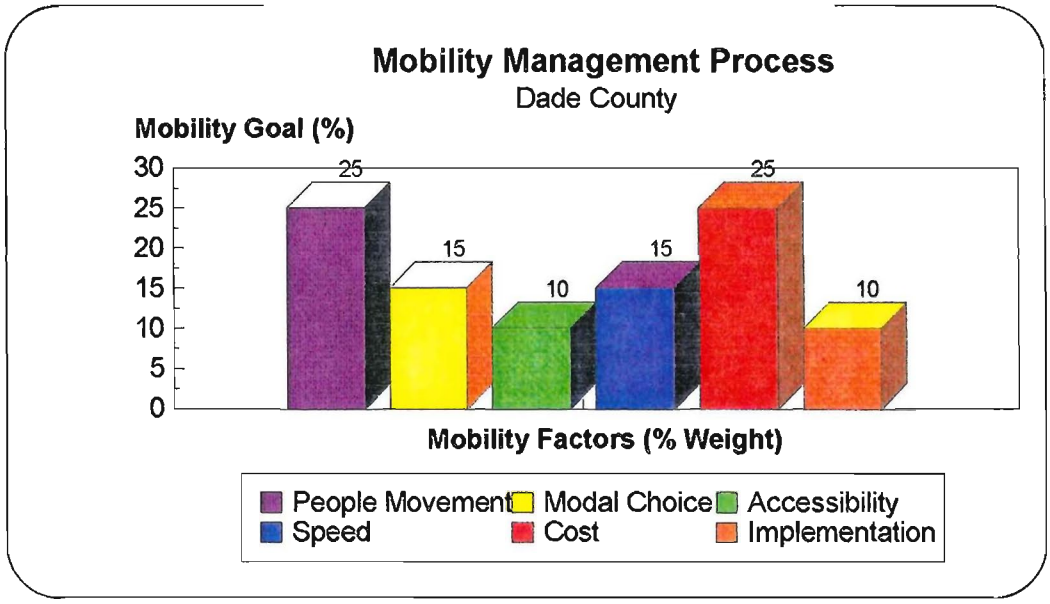
RECOMMENDED STRATEGIES		
Priority	SHORT TERM	LONG TERM
1	Improve Bus Service	Additional Lanes
2	Express Bus Service	Develop HOV Lanes
3	Intersection Improvements	Network Surveillance System
4	Carpooling	
5	Alternate Work Hours	
6	Marketing & Educational Pgms	
7	Vanpooling	
8	Improve Pedestrian Facilities	
9	Develop Bikepaths & Lanes	

F. OTHER CONSIDERATIONS

Development and implementation of the ranking and rating method detailed previously was recommended for evaluating corridors and congestion mitigation strategies relative to the six mobility factors listed above. This process could be improved by establishing weights to the fifteen planning factors and to the six mobility factors as appropriate. The DCMMP/CMS Steering Committee would be the ideal vehicle for establishing weights for these factors. If needed, these weights should be determined and assigned by corridor or area, and it may change the importance or desirability of each planning or mobility factor.

Congested corridors located in sub-urban areas may be focused on improving travel speed, while in high density areas cost could be the primary objective to consider in developing strategies. Figure 36 shows an example of how these mobility factors could be weighted to provide a better approach for each corridor.

Figure # 36: Weighted Mobility Factors



IX. EVALUATION OF SELECTED CORRIDORS

A. INTRODUCTION

The current practice of recommending road widening on congested corridors without first looking at an extensive menu of alternative strategies, policies and improvements will change as a result of the DCMMP/CMS. More consideration will be given to such things as vanpooling, bikeways, pedestrian improvements, shuttle buses, express buses, and access management, in order to combine these improvements into a single, coordinated, transportation system.

As part of the development of the DCMMP/CMS two congested corridors were selected for analysis and evaluation. These will serve as a pilot project for the DCMMP/CMS. The analysis is based on readily available data and abbreviated data collection efforts. This is a simplified version of the analysis that will be used to evaluate congested corridors in the future. This variation was needed to take full advantage of readily available data, while minimizing the collection of new data. This section presents the analysis and recommendations for these selected congested corridors:

B. SELECTED CORRIDORS

Following the identification of the congested corridors, the DCMMP/CMS Steering Committee selected two corridors for analysis. The corridors were then analyzed using the information and procedures developed in this study. The selected corridors were:

- SW 40 Street (Bird Road) from SW 87 Avenue to SW 57 Avenue
- SW 97 Avenue from Eureka Drive to US 1

These corridors were recommended based on other considerations rather than the fifteen planning factors. Due to the fact that this is the first time a corridor would be evaluated using this process, the following aspects were considered for this selection:

1. A congested corridor and a congested spot were selected for evaluation.
2. Corridors are located in areas with different land uses. In this case, the Bird Road Corridor is in a high density area, mostly commercial, while 97th Avenue Corridor is located in a sub-urban area, mainly residential. Existing transportation characteristics for both corridors are presented in Table 11.
3. Bird Road Corridor does not allow construction of additional lanes, while 97th Avenue Corridor has room for potential improvements.
4. No improvements are included in the TIP for Bird Road.

Table 11		
EXISTING TRANSP. CONDITIONS FOR SELECTED CORRIDORS		
DESCRIPTION	**BIRD ROAD**	**97TH AVE.**
From	57th Ave.	SW 200th St.
To	87th Ave.	US 1
Corridor Length (miles)	3.0	1.0
Transit Service		
Routes	40	1
Description	University Lakes, Coral Gables	Kendall , Cutler Ridge
Route Length (round trip)	29.1 miles	25.4 miles
Headways: Peak / Off-peak	15 min / 30 min	15 min / 30 min
Bus Stops (Totals)	W 16 - 18 E	N 3 - 3 S
Bench	9 - 9	3 - 3
Shelter	1 - 2	-
Travel Speed	-	-
Load Factor	-	-
Ridership (daily avg.)	2,384	2,495
Average Pass/Mile	81.9	98.2
Bicycle Facilities		
Bicycle Lanes	None	None
Signage	N/A	N/A
Pedestrian Facilities		
Sidewalks	Both sides	East-side
Lighting	Good	Poor
Signage	Poor	None
Traffic Conditions		
Number of Lanes	3 - 3	1 - 1
Number of Signals	12	2
V/C Ratio	1.05	1.27
RCR Ratio	0.8	1.26
Travel Speed (mph) *	7.3	16.2
Auto Occupancy (per/veh) *	1.26	1.30
Percent Autos	97.1 %	98.0 %
* Peak Period		

Table 11, continued.	
Programmed and Planned Improvements	
BIRD ROAD	
1. FDOT has a project to improve Bird Rd. from 87th Ave. to 117th Ave. The improvements include new pavement, new drainage system, new curb & gutter, sidewalks, lighting, signing and pavement markings.	
2. Public Works conducted a study in the warehouse district between 72nd Ave. and the Palmetto Expressway. Attached please find copy of the study's recommendations.	
3. Public Works has programmed improvements to 72nd Ave. from Bird Rd. to Miller Rd. for FY-96/97. It includes widening the existing road from 2 to 3 and 4 lanes.	
4. Another improvement by Public Works is programmed for 74th Ct. from 41st St. to Bird Rd. An additional lane is provided in the northbound direction.	
97TH AVENUE	
1. Public Works programmed the widening of 97th Ave. to 3 lanes, from 184th St. to US 1. This project is scheduled for 1996-97.	

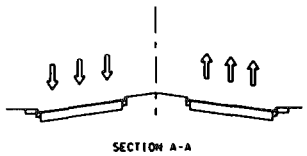
C. CORRIDOR DESCRIPTION

1. Bird Road Corridor

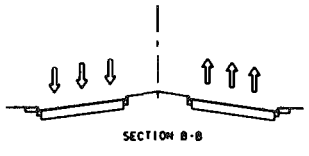
This is a six-lane divided principal arterial providing access throughout several municipalities in Dade County. The corridor under consideration as shown in Figure 37 consists of three miles between SW 57th Avenue (Red Road) and SW 87th Avenue (Galloway Road). The corridor has been broken into three (3) segments. The first segment is bounded by Red Road on the East and SW 67th Avenue on the West. The land uses in the general vicinity are primarily residential with low intensity (strip) commercial along Bird Road. Three signalized intersections were identified: Red Road, SW 62nd Avenue and SW 67th Avenue. Access to the North, through cross streets, is limited by the Coral Gables Canal. Only Red Road and SW 67th Avenue provide crossings across the canal.

The second segment is bounded by SW 67th Avenue on the East and SR 826 (Palmetto Expressway) on the West. Land uses to the North are primarily residential including a regional park (A.D. Barnes Park) located on the Northeast corner of Bird Road/SW 72nd Avenue. Again, direct access to the North is limited by the Coral Gables Canal and limited to SW 72nd Avenue and the Palmetto Expressway. The land uses South of Bird Road are primarily commercial and industrial. Access to the South is available through SW 67th Avenue, SW 72nd Avenue and SR 826 (Palmetto Expressway). Four (4) traffic signals presently exist along this segment; SW 67th Avenue, SW 72nd Avenue, SW 74th Court and SR 826 East ramp.

The last segment is bounded by SR 826 (Palmetto Expressway) on the East and SW 87th Avenue



TYPICAL SECTION
(WEST OF PALMETTO EXPWY)



TYPICAL SECTION
(EAST OF PALMETTO EXPWY)

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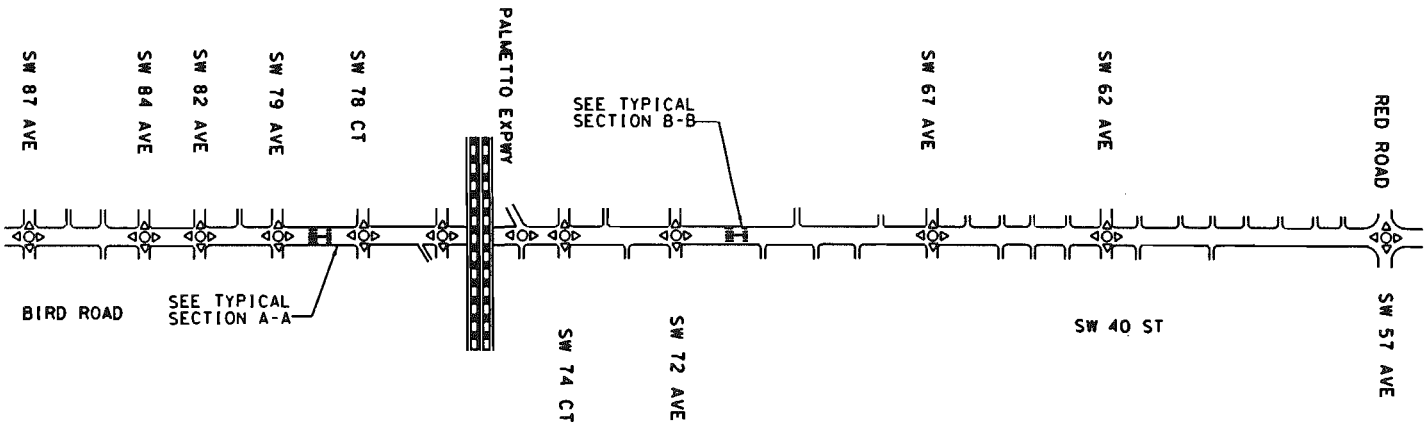

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PROJECT:

DADE COUNTY
MOBILITY MANAGEMENT PROCESS

TITLE:

BIRD ROAD CORRIDOR
(SW 87th AVENUE TO 57th AVENUE)
EXISTING CONDITIONS

FIGURE 37

on the West. The area is primarily residential with higher intensity commercial along Bird Road. A major county-wide attraction is Tropical Park, which is located South of Bird Road between SR 826 and SW 82nd Avenue providing numerous amenities including boating facilities on various lakes, bike paths, tennis, picnic areas and exposition facilities. Six (6) signalized intersections were identified in this segment: SR 826 West ramp, 7800 block, SW 79th Avenue, SW 82nd Avenue, SW 84th Avenue and SW 87th Avenue (currently under construction).

A survey of programmed and planned roadway improvements was conducted for the vicinity of the Bird Road corridor. The main source of roadway improvements information for Dade County is the Transportation Improvement Program (TIP) for Fiscal Year 1996-2000, prepared by the MPO, and adopted May 4, 1995. Improvements in the area surrounding the Bird Road corridor are shown in Figure 38 and listed in Table 12 below:

Table 12

BIRD ROAD CORRIDOR: PROGRAMMED ROADWAY IMPROVEMENTS

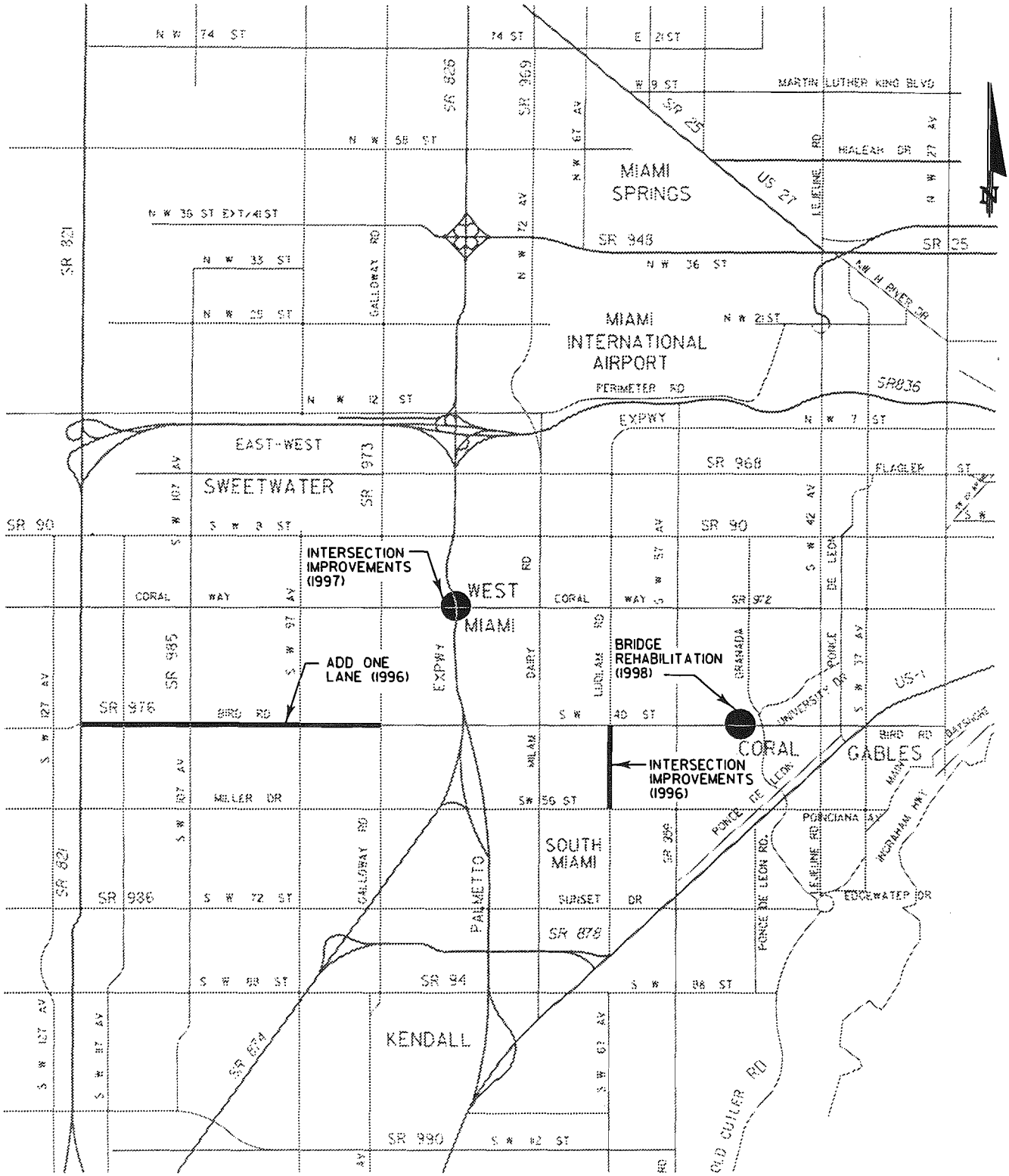
#	LOCATION	DESCRIPTION	YEAR	COST ($)
1	SW 67th Avenue, from SW 40th Street to SW 56th Street	Intersection Improvements and Drainage	1995-1996	500,000
2	SW 40th Street (Bird Road), from HEFT to SW 87th Avenue	Add One Lane to Existing Four Lanes	Under Construction	7,266,000
3	SW 40th Street (Bird Road)	At Coral Gables Canal Bridge Rehabilitation	1995-1996 1997-1998 1999-2000	125,000 150,000 242,844
4	Palmetto Expressway at Coral Way	Interchange Improvements	1996-1997	1,596,000

2. SW 97th Avenue Corridor

Southwest 97th Avenue is a two-lane undivided roadway as shown in Figure 39. Land uses along its area of influence are primarily residential with commercial fronting along US 1. Two signals were identified at each boundary: US 1 and SW 184th Street (Eureka Drive). The improvements in the area surrounding this corridor are shown in Figure 40. These are also listed in Table 13.

D. DATA COLLECTION AND ANALYSIS

Traffic counts, and bus headway data on the corridors were obtained mostly from available data sources. Abbreviated data collection efforts were conducted by David Plummer and Associates (DPA) and included travel time and delay studies, vehicle occupancy, and travel pattern surveys.



dpa	DADE COUNTY MOBILITY MANAGEMENT PROCESS	BIRD ROAD CORRIDOR PROGRAMMED ROAD IMPROVEMENTS	FIGURE 38

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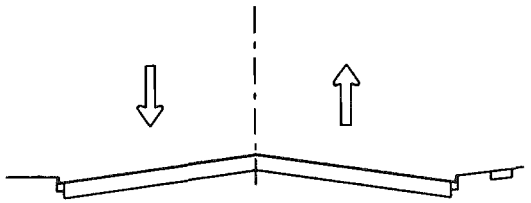

SECTION A-A

TYPICAL SECTION

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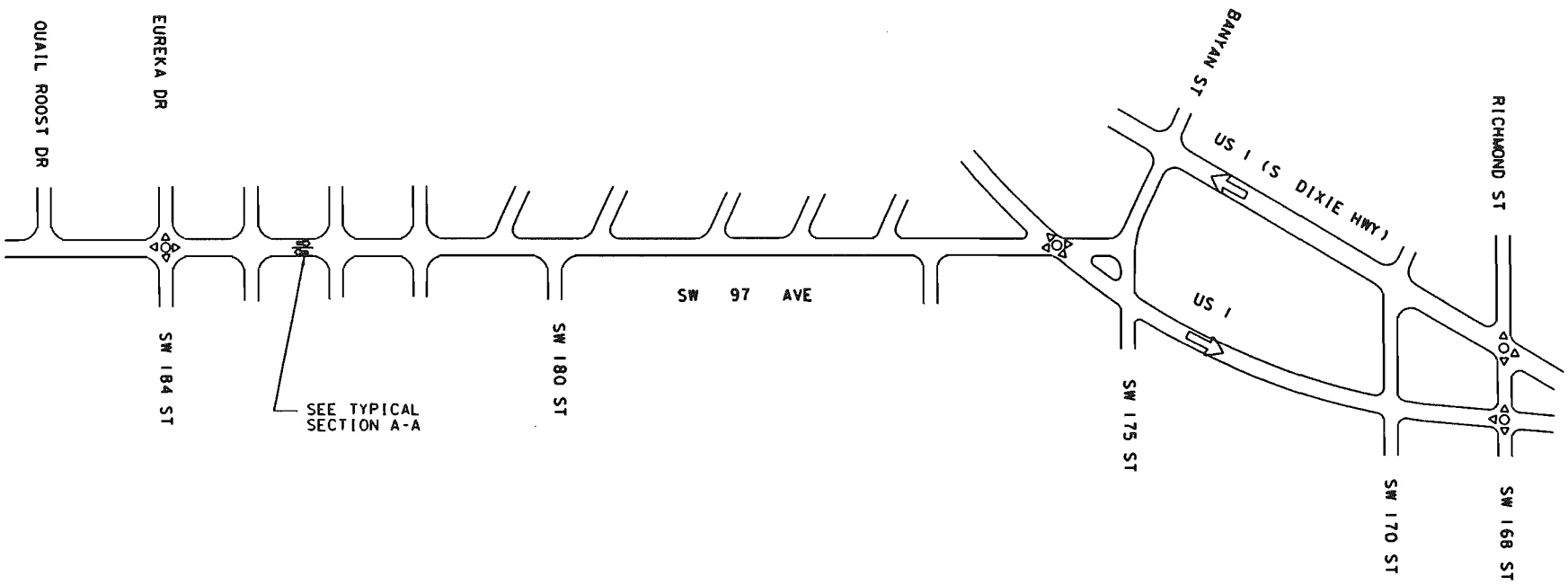

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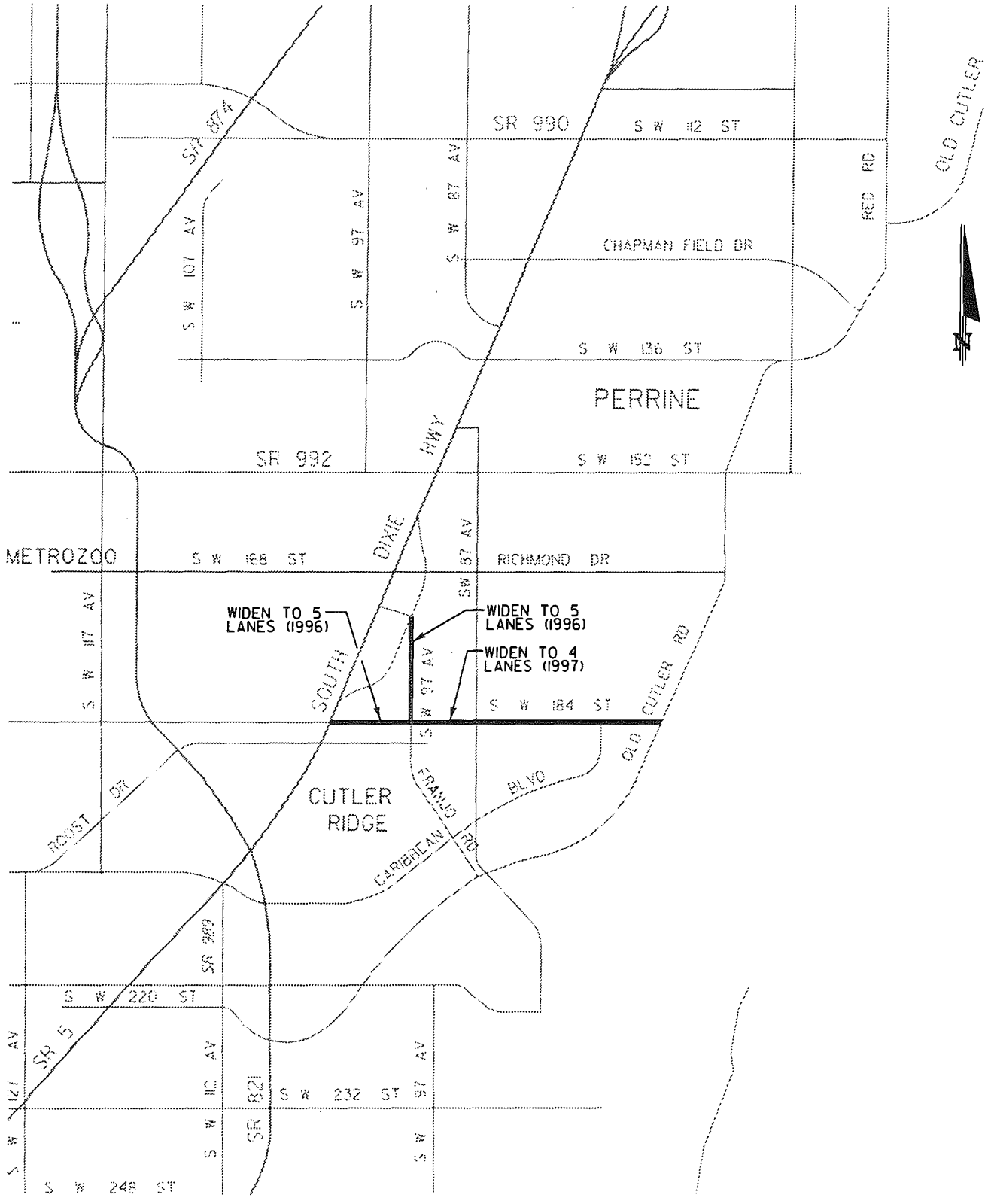
PROJECT:

DADE COUNTY
MOBILITY MANAGEMENT PROCESS

TITLE:

SW 97th AVENUE CORRIDOR
(QUAIL ROOST DR. TO US 1)
EXISTING CONDITIONS

FIGURE 39



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dpa

DADE COUNTY
MOBILITY MANAGEMENT
PROCESS

SW 97th AVENUE
PROGRAMMED ROAD
IMPROVEMENTS

FIGURE 40

Table 13				
SW 97th AVE. CORRIDOR: PROGRAMMED ROADWAY IMPROVEMENTS				
#	**LOCATION**	**DESCRIPTION**	**YEAR**	**COST ($)**
1	SW 97th Avenue (Franjo Road), from SW 184th Street to US 1	Widen to 5 Lanes	1994-1995	300,000
2	SW 184th Street (Eureka Drive), from US 1 to Franjo Road	Widen to 5 Lanes	1995-1996	600,000
3	SW 184th Street (Eureka Drive), from Franjo Road to Old Cutler Road	Widen to 4 Lanes	1996-1997	4,900,000

Additionally, more detailed data were obtained and supplied by FDOT including turning movement counts, improvement costs, vehicle occupancy surveys and travel time and delay studies.

1. **Signalized Intersection Analysis**

Turning movement counts were provided by the Florida Department of Transportation (FDOT) at all signalized intersections along each corridor, as summarized in Appendix "F". Signal timing plans were obtained from Dade County Traffic Signal Control. Intersection Capacity Analysis was performed using the Highway Capacity Manual Methodology. Worksheets are provided in Appendix "G". Table 14 summarizes resulting LOS from this analysis.

2. **Roadway Analysis**

In March 1992, FDOT adopted statewide minimum Level of Service Standards for the State Highway System to be used for planning application. As a result, FDOT developed generalized level of service tables and planning computer models based on the 1985 Highway Capacity Manual. Dade County, through their Concurrency Management Program, has adopted this software (ART_TAB and ART_Plan) as their basis to determine roadway capacity. Capacity was calculated by Dade County at existing traffic count stations and compared to the existing counts. Data for all stations along the two corridors was obtained from the Dade County Office of Concurrency Management. Appendix "C" of Tech Memo 2 includes these calculations. Levels of Service for these stations are shown in Table 15.

3. **Vehicle Occupancy**

A vehicle occupancy survey was provided by FDOT for each corridor under study. The survey

Table 14		
INTERSECTION CAPACITY ANALYSIS		
BIRD ROAD CORRIDOR		
#	**Intersection**	**Existing LOS**
1	Bird Road/Red Road	F
2	Bird Road/SW 62nd Ave.	B
3	Bird Road/SW 67th Ave.	F
4	Bird Road/SW 72nd Ave.	C
5	Bird Road/SW 74th Ct.	B
6	Bird Road/SR 826 East Ramp	F
7	Bird Road/SR 826 West Ramp	F
8	Bird Road/SW 7800 Block	C
9	Bird Road/SW 79th Ave.	B
10	Bird Road/SW 82nd Ave.	C
11	Bird Road/SW 84th Ave.	F
12	Bird Road/ SW 87th Ave.	*D

* With improvements currently under construction

SW 97TH AVENUE CORRIDOR		
#	**Intersection**	**Existing LOS**
1	SW 97 Ave/Eureka Drive	C*
2	SW 97 Ave/US 1	C*

* Concurrency data showed the road segment operating deficiently

Table 15			
LOS ANALYSIS BY ROADWAY SEGMENT			
#	**Station #**	**Location**	**Existing LOS**
BIRD ROAD CORRIDOR			
1	78	200' East of SW 78th Ct.	D
2	80	200' West of Red Rd.	D
3	1,050	200' East of SW 74th Ave.	E
97th AVENUE CORRIDOR			
1	708	SW 97th Avenue Between US 1 and Old Cutler Rd.	F

forms are provided in Appendix "D" of Tech Memo 2. Table 16 below shows the results of these surveys.

Table 16

VEHICLE OCCUPANCY SURVEY RESULTS

Period	Day 1	Day 2	Weighted Avg.
Bird Road: West of SR 826			
AM Peak	1.23	1.21	1.22
PM Peak	1.37	1.28	1.32
SW 97th Ave.: South of US 1			
AM Peak	1.24	1.16	1.24
PM Peak	1.4	1.32	1.37

4. Travel Time and Delay Studies

Travel Time and Delay studies were conducted by FDOT at both corridors. A summary of the data is shown in Appendix E, of Tech Memo 2. The results are summarized in Table 17.

5. Transit

Bird Road Corridor

Route 40 serves Bird Road between SW 37th Avenue (Douglas Road) and SW 147th Avenue. On weekday peak hours, buses are approximately fifteen minutes (headway) apart. According to MDTA data the average speed for Route 40 is 15.5 miles per hour (MPH). MDTA also provided Route/Run Summary reports showing daily passenger. These were converted to peak hour using a 10% peak hour conversion factor, consistent with methodology used by MDTA, and it was then compared to the hourly seating capacity. A resulting load factor of 91% was obtained for Route 40. The 1985 Highway Capacity Manual provides a table where load factor is compared to Level of Service. Level of service C is obtained for this route.

SW 97th Avenue Corridor

Franjo Road (SW 97th Avenue) East of US 1 is serviced by Route 1. During weekday peak hours of operation, buses are approximately fifteen minutes apart. Average running speed of this route, as measured by MDTA, is 17.2 MPH. Route/Run Summary reports provided by MDTA, provided daily ridership. There were converted to peak hour using a 10% peak hour conversion factor, consistent with methodology used by MDTA. These were then compared to the bus capacity and a

Table 17

SUMMARY OF TRAVEL TIME AND DELAY STUDIES FOR THE SELECTED CORRIDORS

Description	AM Peak		PM Peak	
	Eastbound	Westbound	Eastbound	Westbound
Bird Road Corridor: SW 57th Avenue to SW 87th Avenue				
Trip Length	3.099 MI.	3.091 MI.	3.099 MI.	3.091 MI.
Delay	3.283 Sec.	9.033 Sec.	5.817 Sec.	10.883 Sec.
Travel Time	33.65 Sec.	42.15 Sec.	37.92 Sec.	49.1 Sec.
Running Time	30.37 Sec.	33.12 Sec.	32. 1 Sec.	38.22 Sec.
Travel Speed	27.84 MPH	24.1 MPH	24.24 MPH	23.85 MPH
Running Speed	30.34 MPH	30.05 MPH	27.46 MPH	27.48 MPH
SW 97th Avenue Corridor: US 1 to Eureka Drive				
Trip Length	0.69 MI.	0.72 MI.	0.69 MI.	0.72 MI.
Delay	12.389 Sec.	3.556 Sec.	14 Sec.	4.889 Sec.
Travel Time	42.72 Sec.	36. 5 Sec.	44.22 Sec.	37.11 Sec.
Running Time	30.33 Sec.	32.94 Sec.	30.22 Sec.	32.22 Sec.
Travel Speed	19.89 MPH	25.71 MPH	19.04 MPH	24.37 MPH
Running Speed	27.19 MPH	27.15 MPH	27.56 MPH	26.79 MPH

load factor is obtained. The Highway Capacity Manual provides a table comparing load factor to Level of Service resulting in LOS C for this route.

6. **Rideshare Matching Services**

Gold Coast Commuter Services (GCCS) has established a data base of people interested in carpooling. However, this database is regional in scope and is not location specific, with the exception of several "closed databases" developed individually for TMAs and/or major employers, colleges and universities.

7. **Employers**

Following are the results of the research conducted by GCCS on the selected corridors to determine the activity centers and employers within the influence area of such corridors.

Bird Road Corridor

- Luria's Mall
- Sunshine Mall
- Tropical Park Plaza
- Ocean Bank
- Preferred Medical Plans
- Braman Honda
- Bird Ludlam Mall
- Red Bird Mall
- Service Merchandise

SW 97th Avenue Corridor

- Cutler Bay Insurance
- Neighbors Mall
- Suburban Medical Center
- The Franjo Building

8. **Bicycle**

Bird Road Corridor

Common bicycle destinations in the general vicinity of this corridor include Tropical Park and A.D. Barnes Park. Bicycle access to Tropical Park is limited to Bird Road and Miller Drive. Access to A.D. Barnes Park is through Bird Road and SW 72nd Avenue. The Metro-Dade Bicycle Facilities Plan was reviewed showing no existing or planned bicycle facilities along Bird Road. A proposed long range facility is planned along the railroad track on SW 72nd Avenue. According to this document, a sample of 1992-94 bicycle-auto crashes resulted in one non-incapacitating injury accident in the Red Road Area.

SW 97th Avenue Corridor

The Metro-Dade Bicycle Facilities Plan shows no existing or planned bicycle facilities in this area.

9. **Pedestrian**

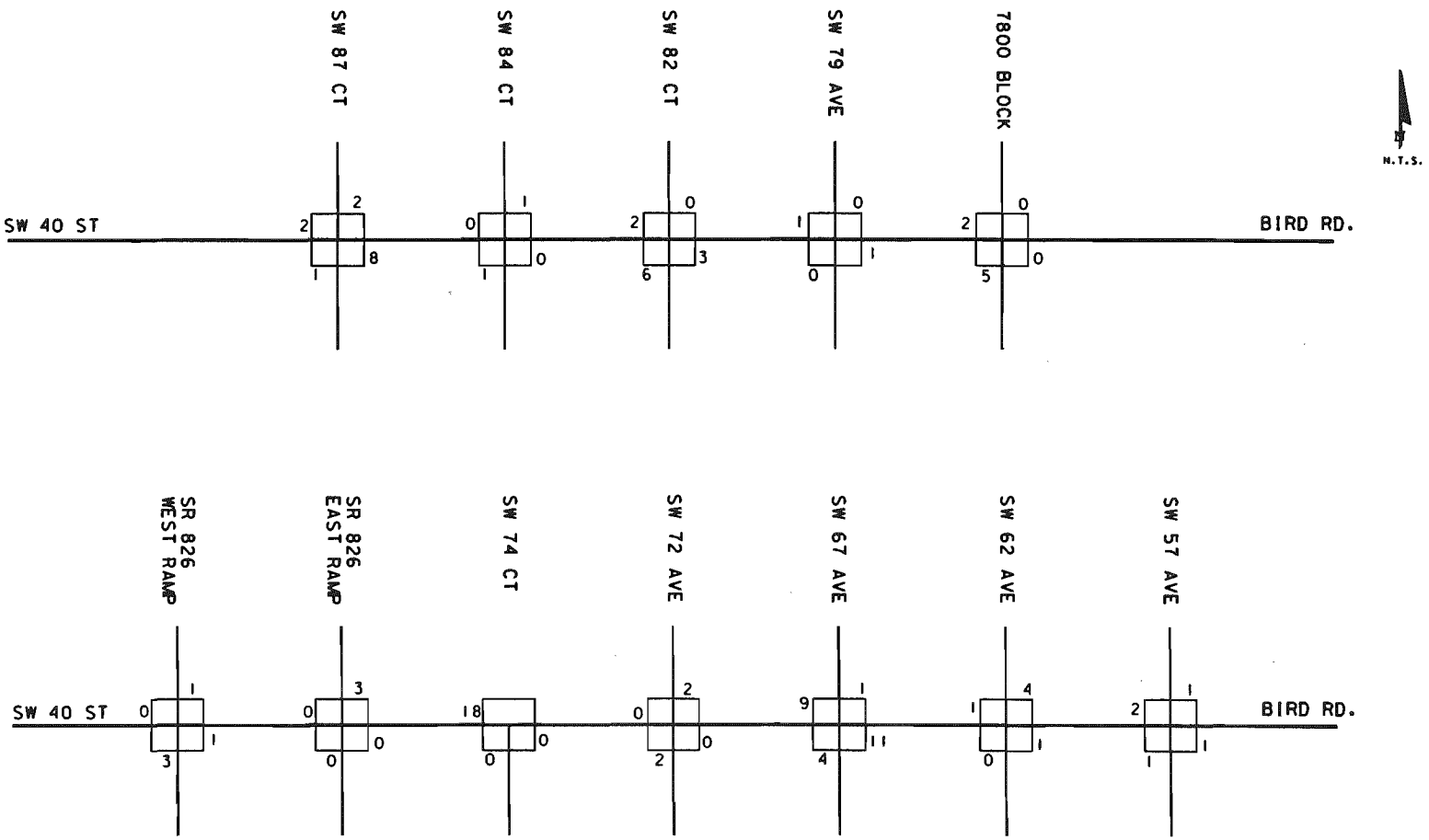
Pedestrian counts were provided by FDOT at all signalized intersection along both corridors, as shown in Appendix F of Technical Memorandum 2.

Bird Road Corridor

Sidewalks are provided on both sides of Bird Road along the entire segment under study. Typically, the crossing width along Bird Road is approximately 100'. Pedestrian crossing buttons and signals are provided at all signals in this corridor. Bird Road is a major thoroughfare with high vehicular volumes. Pedestrian volumes, as seen on Figure 41, are very low providing a small potential for conflicts.

SW 97th Avenue Corridor

Sidewalks in this roadway segment are generally in fair to poor condition. Missing sidewalks are common. Franjo Road is a relatively low traffic volume road with occasionally higher volumes, as indicated in Figure 42. Pedestrian traffic is generally low during the peak hours. However, because



PROJECT:

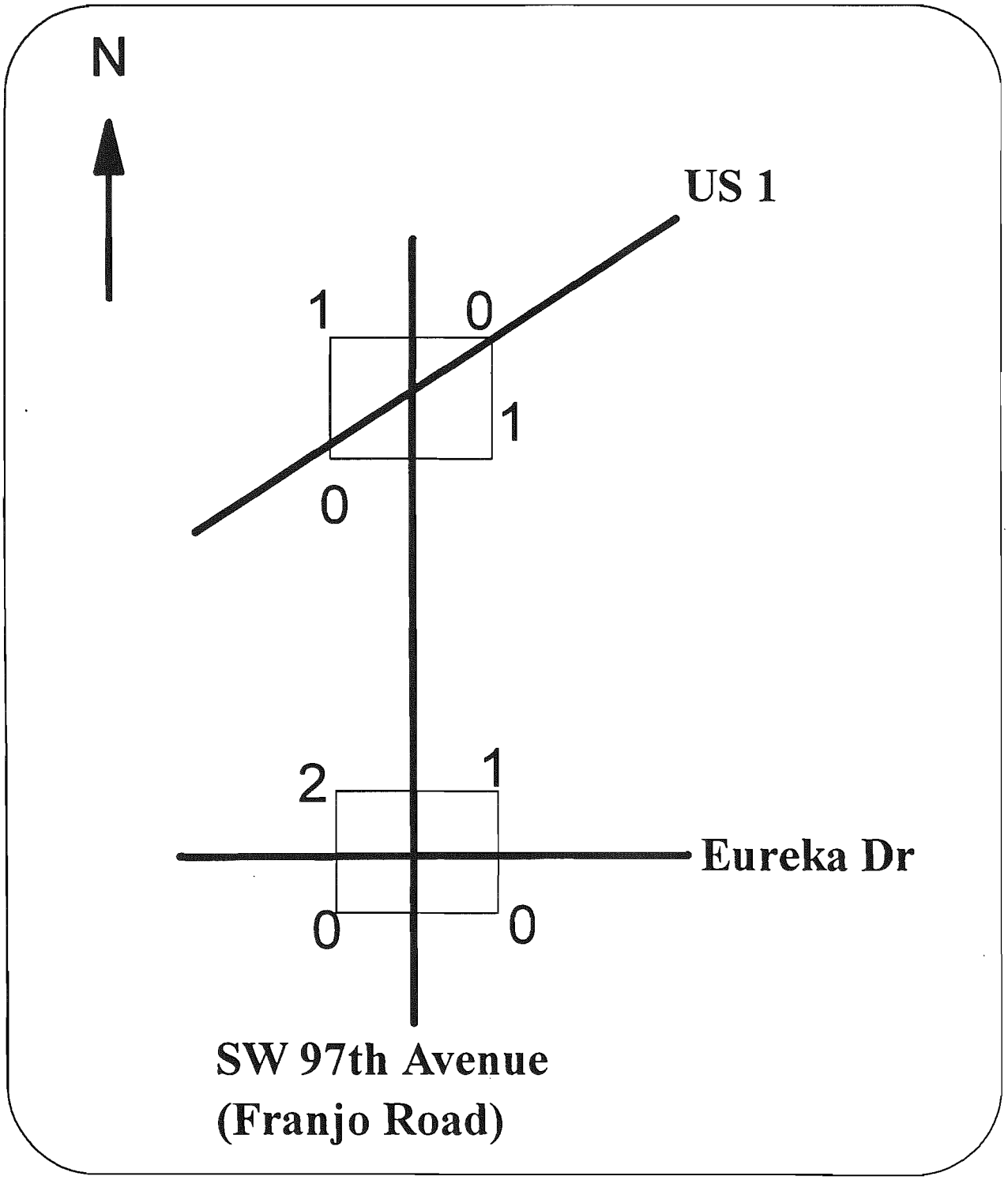
DADE COUNTY
MOBILITY MANAGEMENT PROCESS

TITLE:

BIRD ROAD CORRIDOR
PEDESTRIAN VOLUMES

FIGURE 41

Figure 42: SW 97th Ave. Corridor
Pedestrian Volumes



of the land uses in this area (schools, churches, etc.) there is potential for significant pedestrian volumes at other times of the day. Functional sidewalks would, therefore, be appropriate for this area.

E. SELECTION OF STRATEGIES

A preliminary list of over 65 mobility strategies was developed as shown in Appendix "D". The recommendations for each of the two selected corridors were developed from this initial list. Also, Appendix "E" considers the effectiveness of these strategies and the preferred location for application. The selected strategies for each corridor were obtained by evaluating the information included in these two Appendices. Additionally, the methodology and rationale behind choosing the corridor strategies considered the following:

- √ Available data on corridor physical and traffic characteristics.
- √ Available data supplemented as needed.
- √ Applicability of mobility strategies to the subject corridor.
- √ Strategies were feasibility (order of magnitude cost).
- √ Additional strategies analysis.
- √ Strategies priorities based on mobility objectives.
- √ Projects included in the TIP.

The consultant prepared a list of potential strategies for both corridors. Based on this process, the DCMMP/CMS Steering Committee reviewed the list prepared by the consultant and submitted a set of strategies for each particular corridor.

These strategies meet the needs of the corridor under consideration and are ranked in the next section. The result of this evaluation will be recommended to the TIP Committee for implementation.

F. RANKING OF THE RECOMMENDED STRATEGIES

Using the process established in Section VIII.D and E, eleven members of the DCMMP/CMS Steering Committee, ranked the strategies for each corridor.

The result of this process is shown in Table 18. Additional strategies were added individually by some members of the steering committee. As it can be observed, some of them are similar or are included in others, like: one way street is one of the components of the traffic improvements, and promotion of bicycle programs is part of the marketing transportation programs.

These strategies are grouped in three categories; Short, Medium and Long Term according to its feasibility of implementation. Those strategies that do not require design and construction are within the short-term group and could be implemented in the next two years. Those which require low capital cost or a more elaborated plan are within the medium-term group and could be implemented in a 3-4 years period. Finally, those that require design and high capital cost are within the long-term group and will take more than four years for implementation.

Table 18

RANKING OF STRATEGIES BY CORRIDOR

STRATEGIES	CORRIDORS			
	BIRD ROAD		97th AVENUE	
	Total Points	Rank #	Total Points	Rank #
Shuttle Service	36	28	-	-
Formation of TMAs	136	8	22	15
Relocate Signals	146	5	-	-
Intersection Improvements	184	2	186	2
Bus Turnout Bays	122	9	46	13
Park & Ride Lot	44	27	142	6
Express Bus Service	60	21	-	-
Improved Transit Operations	202	1	187	1
Bicycle Lanes/Routes/Paths	120	10	172	3
Showers, Lockers for Bikers	86	16	52	12
Bike Connection to Transit	51	26	-	-
Sidewalk/Walkway Facilities	151	4	167	4
Freeway Ramp Improvements	159	3	-	-
Arterial Surveillance Inf.	139	6	35	14
Employer Transp. Coordinator	70	19	-	-
Carpool/Vanpool	107	13	-	-
Marketing Inf. Programs	76	17	-	-
Alternative Work Hours	138	7	-	-
Operational Signal Imp.	113	12	124	7
Restriction on Turning Movements	102	15	-	-
Alternative Accesses	118	11	-	-
Monitoring of Services	66	20	71	9
Transit Passes	103	14	-	-
Sidewalks Amenities	54	22	-	-
Road Widening	53	25	19	16
New Roadways	73	18	152	5
Movement of Goods	54	22	-	-
Improve Loading Zones	54	22	-	-
Access Management	14	29	-	-
One-Way Streets	14	29	-	-
Exclusive Transit ROW	-	-	19	16
Feeder Bus System	-	-	59	11
Promote Bicycle Programs	-	-	70	10
Integrate Pedestrian to Transit	-	-	79	8
Pedestrian Amenities	-	-	15	18

Following is a list of all strategies, as recommended by the DCMMP/CMS Steering Committee, by group and by corridor:

1. **Bird Road Corridor**

Short Term Strategies (1 - 2 years)		
Priority	**Description**	**Ranking**
1	➢Improve Transit Operations	1
2	➢Traffic Operation Improvements	2
3	➢Relocate Signals	5
4	➢Implement an Alternate Work Hours Program	7
5	➢Evaluate Alternative Accesses to the Corridor	11
6	➢Improve Signal Operations	12
7	➢Establish Carpool/Vanpool Programs	13
8	➢Promote Transit Passes	14
9	➢Restrict Left Turns	15
10	➢Install Bicycle Facilities	16
11	➢Develop a Marketing Information Program	17
12	➢Establish Employer Transportation Coordinators	19
13	➢Establish a Monitoring System	20
14	➢Establish an Express Bus Service	21
15	➢Provide Sidewalk Amenities	22
16	➢Provide Bike Connection to Transit	26
17		

Medium Term Strategies (3 - 4 years)		
Priority	**Description**	**Ranking**
1	➢Construction of Sidewalks	4
2	➢Form a TMA or a Similar Organization	8
3	➢Construction of Bus Turnout Bays	9
4	➢Develop Bicycle Lanes/Routes/Paths	10
5	➢Evaluate Improvements for Freight Movement	22
6	➢Improve Loading Zones	22
7	➢Road Widening	25
8	➢Establish a Shuttle Service	28
9	➢Evaluate One-Way Streets	29

Long Term Strategies (5 + years)		
Priority	**Description**	**Ranking**
1	➢Improve Ramps at Palmetto Expressway	3
2	➢Establish an Arterial Surveillance Program	6
3	➢New Roadway	18
4	➢Develop a Park & Ride Lot	27
5	➢Access management	29

2. 97th Avenue Corridor

Short Term Strategies (1 - 2 years)		
Priority	**Description**	**Ranking**
1	➢Improve Transit Operations	1
2	➢Improve Intersections	2
3	➢Improve Signals	7
4	➢Integrate Pedestrian to Transit	8
5	➢Establish a Monitoring Program	9
6	➢Promote Bicycle and Pedestrian Activities	10
7	➢Provide Bicycle Facilities	12
8	➢Provide Pedestrian Amenities	18

Medium Term Strategies (3 - 4 years)		
Priority	**Description**	**Ranking**
1	➢Develop Bicycle Lanes/Routes/Paths	3
2	➢Construction of Sidewalks	4
3	➢Construction of Bus Turnout Bays	13
4	➢Form a TMA	15
5	➢Road Widening	16

Long Term Strategies (5 + years)		
Priority	**Description**	**Ranking**
1	➢Construction of a New Roadway	5
2	➢Develop a Park & Ride Lot	6
3	➢Evaluate a Feeder Bus System	11
4	➢Arterial Surveillance Information System	14
5	➢Exclusive Transit ROW	16

Based on the experience observed during this process, for further evaluations another step could be taken to reduce the number of strategies. A criterion could be established to limit the number of strategies for implementation to those with a minimum number of points. As an example, a strategy could get a maximum of 30 points per member's evaluation. Then, based on 10 committee members, a strategy could get up to 300 points. In this ideal case, a criterion could be established by eliminating those strategies with less than 75 points for implementation.

The following section specifically recommends some of these strategies for development and implementation.

G. DESCRIPTION OF IMPROVEMENTS FOR BIRD ROAD CORRIDOR

1. Improve Transit Operations

Transit service should be improved along Bird Road. Route 1, which serves 97th Avenue, has more ridership than route 40. Hence mobility along route 40 could be further improved. In that regard, the following recommendations shall be considered:

a. Improve service frequency.
b. Relocate bus stops at 400m intervals to reduce number of stops per route, and possibly, increase travel time.
c. Provide shelter and benches, as well as service information at bus stops where appropriate.
d. Relocate bus stops from near corner to midblock to prevent accidents, to avoid blocking the intersections and to protect passengers from other vehicles.
e. Bus stops could be located to allow transferring passengers from/to routes 72, 73 and 87, respectively.

Recommended Actions:

1. Request MDTA to evaluate routes 40, 72, 73 and 87.
2. Analyze results to improve service and relocate bus stops.
3. Submit project to the TIP, if needed and required.

2. Traffic Operation Improvements

The traffic data obtained apparently indicates that the main cause of congestion along the corridor is the sector between 72nd Ave. and the Palmetto Expressway. FDOT is actually working to improve Bird Road West from 87th Ave., and Public Works has programmed a project to improve the traffic flow in the warehouse district and 72nd Ave., but nothing is apparently considered for this section of Bird Road. Based on that, considerations should be given to the following recommendations:

a. A detailed study must be done to improve traffic flow in this sector.

b. Based on field inspections and the available data, Figure 43 shows the recommended improvements for this section. The following list contains a description of some of these improvements:

i. In the Eastbound direction, add turning lanes to provide access to Palmetto South and to Palmetto North. These lanes will help to eliminate conflicts with the through traffic.
ii. In the Westbound direction, add a turning lane to provide access to Palmetto North.
iii. In the exit from the Palmetto South to Bird Road, lanes should be added. Two lanes to exit Bird Road East and two lanes (merge) to Bird Road West as shown in Figure 43. For improvements 1 through 3, the ROW is apparently available.
iv. Eliminate median from 74th Ave. to Palmetto Expressway, and provide a lane for left turn to the Palmetto South.
v. Eliminate traffic signals at 74th Court and 75th Ave.
vi. Install traffic signal at 74th Ave.
vii. At 74th Ave. from SW 41st St. to Bird Road change traffic direction from two-way to one-way North.
viii. At 73rd Ave. install traffic signal to allow left turn from Bird Road.
ix. At 73rd Ave. from SW 41st St. to Bird Road change traffic direction from two-way to one-way South.
x. At 72nd Ave. add a lane to provide 2 lanes in each direction.
xi. Westbound Bird at 74th Ave., a barrier should be located to provide two through traffic lanes.
xii. At 72nd Ave. make improvements as programmed by the Department of Public Works. These improvements should also consider; improvements at the railroad crossings at 41st, 42nd and proposed connector streets; traffic signals should be located; and widening of the streets should also be considered. The improvements should be viewed not just as a local project for 72nd Ave., it should be considered as a mini-areawide project.
xiii. Provide additional space for left turns at 72nd and 73rd Aves.

Recommended Actions:

1. Submit recommendations on Figure 43 to Public Works and FDOT for their comments and considerations.
2. Prepare letter to Public Works requesting to initiate process for final design and construction of recommended project.
3. If required, incorporate project in the TIP.

Comments:

FDOT and Dade County Public Works concurred that the recommendations included in Figure 43 are potential solutions to alleviate traffic congestion in the area. If FDOT approves this project, Public Works could initiate the construction of these improvements by 1996.

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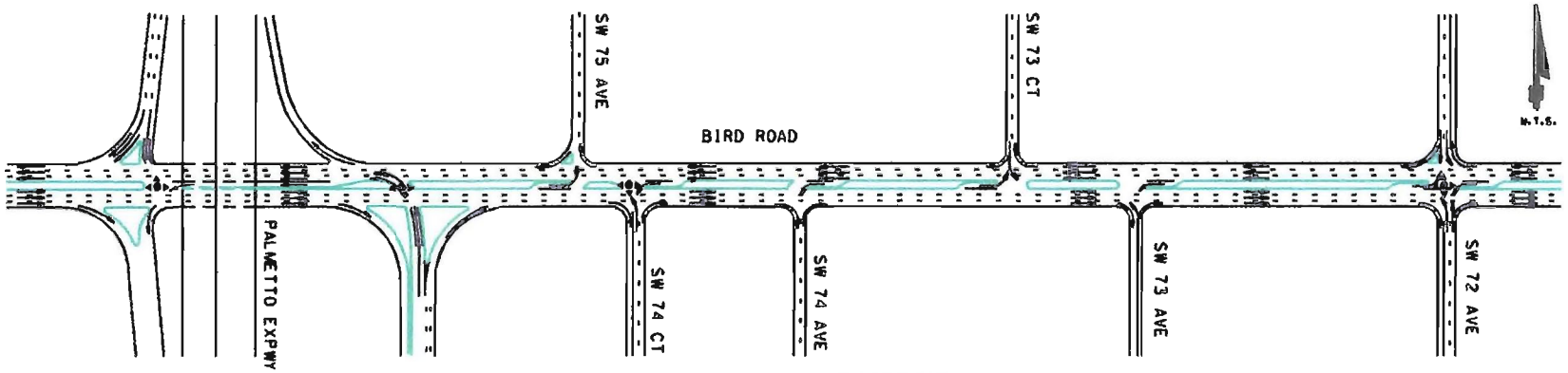

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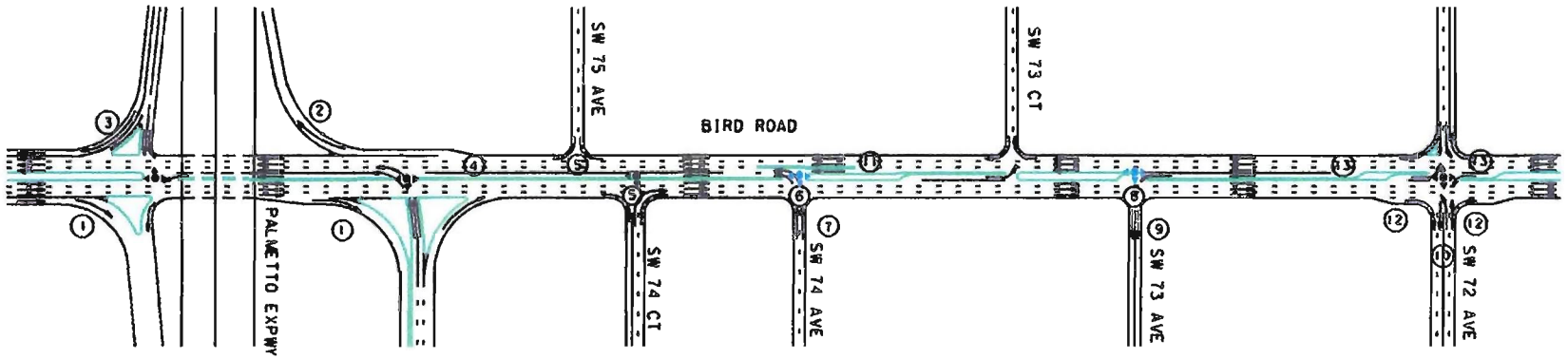


PROPOSED IMPROVEMENTS

dpa	PROJECT: DADE COUNTY MOBILITY MANAGEMENT PROCESS	TITLE: BIRD ROAD CORRIDOR (PALMETTO EXPRESSWAY TO SW 72nd AVENUE) RECOMMENDED TRAFFIC IMPROVEMENTS	FIGURE 43

3. **Freeway Ramp Improvements**

Left turn movements from/to the Palmetto Expressway should be improved. FDOT is considering long range alternatives to provide better accessibility to/from Bird Road to the Palmetto. New plans are considered for this intersection and design is scheduled by 1996. ROW acquisition is a major concern in the development of this intersection.

Comments:

Due to the existing conditions, this is a long range project and no action is required. However, notification should be sent to FDOT if the improvements proposed in Figure 43 are approved.

4. **Sidewalk/Walkways Facilities**

There are sidewalks on both sides of the corridor. However, it is recommended to provide the construction of sidewalks within the warehouse district. This recommendation should be evaluated and programmed in the TIP.

Recommended Actions:

1. A study is recommended to evaluate other aspects within the warehouse district that were not included in the traffic study previously conducted for the same area.
2. This study could be included in the 1997 UPWP or requested to Dade County Public Works Department.
3. The approved plan should be submitted to the TIP committee for incorporation in the construction program.

5. **Relocate Traffic Signals**

A recommendation is made to evaluate the number of traffic signals between 67th Ave. and the Palmetto Expressway. Also, the distance between each signal should be evaluated. If possible, eliminate signals to increase speed as appropriate.

Comments:

These recommendations are included in Figure 43 mentioned in Section G.1.b.

6. **Arterial Surveillance Information**

This is another long range project that will improve the traffic flow along the corridor. Actually, Dade County Public Works Department is working in the implementation of an Automatic Traffic Monitoring System (ATMS).

Surveillance cameras are recommended to monitor both the Palmetto Expressway and Bird Road.

The cameras would be mounted on the expressway bridge over Bird Road. Changeable message boards would be positioned one mile East and one mile West of the Palmetto Expressway on Bird Road. The FDOT could also make these changeable messages boards part of their Intelligent Corridor System (ICS) project, currently under development.

Recommended Actions:

1. Submit recommendation to Public Works Department for consideration in the ATMS project.

7. Alternative Work Hours

This strategy is mainly recommended for the warehouse /industrial area. Alternate work hour programs such as: compressed work week, flex time and staggered work hours should be developed. This recommendation should be implemented through a Transportation Management Association (TMA). GCCS has already identified major employers along the corridor that should be contacted for implementing these programs.

Recommended Actions:

1. Coordinate with GCCS the potential development of these programs within the warehouse district.
2. Expand these programs to those companies mentioned in Section D.7.

8. Transportation Management Associations (TMA)

A Transportation Management Association (TMA) is recommended for the industrial area South of Bird Road between the Palmetto Expressway and SW 67th Avenue. According to the 1990 Census, this area contains approximately seventy-three hundred (7,300) employees. Twenty-two percent (22%) of the employees are in service related work, forty percent (40%) of the employees are in industrial related work, and thirty-eight percent (38%) of the employees are in commercial related work.

Although, this area does not have a high concentration of employers, like the CCTMO, GCCS could initiate the establishment of a TDM Demonstration Project within this area in an effort to advance the future formation of any TMA or another similar organization.

Comments:

Recommendation is made to dedicate the efforts in working with the existing CCTMO and MBTMA. Results obtained from these TMAs can be used to encourage the warehouse district area to form a TMA in the future.

9. **Bus Turnout Bays**

Bus turnout bays should be considered to avoid interference with regular traffic flow. The location of these bays is recommended where the passenger volume is high enough to justify this action and where bus stops could create delays in the regular traffic flow. Of course, ROW must be available for this improvement.

Recommended Actions:

1. Coordinate the recommendations made in this strategy with the proposed study mentioned in Section G.1.a.

10. **Bicycle Lanes/Routes/Paths**

A wide curb lane (right-lane) was considered for bicycle use on both sides of Bird Road. However, right-of-way on Bird Road is limited. A bike path is recommended under the Palmetto Expressway, continuing via SW 74th Court, through the neighborhood just North of Bird Road and East of the Palmetto Expressway, so that bikers can access the A.D. Barnes Park on SW 72nd Avenue North of Bird Road. The Metro-Dade Bike Plan indicates a bike trail on the railroad right-of-way that runs along SR 874, through the industrial area of the proposed TMA, and North on SW 72nd Avenue. Also, shown on the Bike Plan is a bike path on the canal shoreline of the Coral Gables Canal. Entrances to Tropical Park along SW 82nd Avenue currently blocked off by a chain link fences should be open to bicycle users.

Also, the Dade County Bike Plan recommends a bikelane along the CSX railroad ROW, SW 24th St. (Coral Way Road) and SW 56th St. (Miller Road). In this case, a recommendation is made to provide a connection of these bikelanes to the warehouse/industrial area.

Recommended Actions:

1. Submit recommendations to the Bicycle/Pedestrian Coordinator for evaluation and inclusion in the County Bikeway Plan.
2. Coordinate with the Bicycle/Pedestrian Coordinator the recommendations made for Tropical Park.

11. **Evaluation of Alternative Accesses**

The recommendation for alternative accesses is closely related to strategy II.8: "Development of a Superarterial Network", of the main menu as listed in Appendix "E". An alternative parallel to the Palmetto Expressway should be considered. In this aspect, 72nd Ave. seems to be a good candidate. This corridor runs parallel to the Palmetto, connecting SW 88th St. (Kendall Dr.) up to SW 24th St. (Coral Way). This recommendation will focus in the evaluation of this strategy not in the implementation phase.

Recommended Actions:

1. Coordinate with the project manager for the Development of a Superarterial Network, to include this recommendation in the study.

12. Operational Signal Improvements

Signal improvements should be made to maximize traffic flow, specially between 72nd Ave. and the Palmetto Expressway. There are 4 traffic signals and a railroad crossing in this sector, that definitively reduce the capacity of the roadway. These signals must be coordinated and integrated as a unit to provide better flow in the area.

Comments:

These recommendations are included in Section G.1.b

13. Promote Carpool/Vanpool Programs

This recommendation is also oriented to the warehouse/industrial area. The streets within this area are narrow and the parking facilities are neither adequate or sufficient. A carpool/ vanpool program specific to the area could be initiated by GCCS as an element of the proposed TDM efforts mentioned in Section 7 before. This strategy will help to reduce the number of cars within the area. Also, the County is implementing a Vanpool Demonstration Program that could be promoted in the area.

Recommended Actions:

1. Coordinate this recommendation with the Vanpool Demonstration Project, currently in progress.
2. Coordinate with GCCS for evaluating potential candidates within the corridor.

14. Promote Transit Passes

An aggressive program should be initiated to promote transit passes along the corridor. Employers already identified by GCCS, shall be contacted to encourage employees to participate in this program.

Recommended Actions:

1. Coordinate with MDTA and GCCS the development of a promotional campaign to encourage people to use transit passes.
2. Contact employers and general public to promote the program.

15. Restriction on Turning Movements

As mentioned in section 2 above and shown in Figure 43, left turn movements at some intersections should be prohibited.

Recommended Actions:

1. A detailed study is recommended along the corridor to evaluate the impact of left turns at the intersections.
2. This study could be an extension of the studies recommended in Sections G.4 and G.11.

16. Lockers and Showers for Bikers

Bicycle facilities are recommended in Tropical Park, west of the Palmetto Expressway. Bike lockers can be used in conjunction with a Park and Ride Lot. Bike riders can use the Park and Ride Lot to transfer from their bicycles to buses and visa versa. Showers are recommended at this location. Showers would be a convenient amenity for both bikers and commuters that might also use Tropical Park to exercise before or after their work trip.

Although this corridor is mainly commercial, it is surrounded by a residential area. Site evaluations are recommended to install bike facilities (racks) at shopping centers and within the warehouse district.

Recommended Actions:

1. Coordinate with the Bicycle/Pedestrian Coordinator the feasibility and convenience of this recommendation.
2. Contact the Park and Recreation Department to develop a plan to implement this recommendation.
3. If needed, submit a project for consideration to the TIP Committee.

17. Development of Marketing Information Programs

As an element of the proposed TDM efforts, a specific marketing information program could be developed to promote and encourage the use of other transportation services along the corridor. Special attention should be given to bicycle and pedestrian activities.

Recommended Actions:

1. This element is under the responsibilities of the FDOT's RCAP Program. Therefore, coordination should be established with GCCS to create and implement a marketing program specific for this area.
2. A general study is also recommended to prepare a program to inform the general public about the existing transportation modes operating in Dade county other than SOV, to

encourage people to use public transit, and to create awareness about the effectiveness, benefits and costs related to traveling during peak periods.

3. Submit the proposed study to the UPWP Committee for further consideration.

18. Construction of New Roadway

This recommendation refers to the connector between 74th Ct. and 72nd Ave., as proposed in the Warehouse District Study. This connector will provide a direct access to 72nd Ave. which will alleviate the congestion along Bird Road. As mentioned in Section I.2 above, additional consideration should be given to this recommendation to improve the existing railroad crossing at this intersection.

Recommended Actions:

1. Submit a letter to Public Works Department and FDOT requesting additional considerations to the potential conflicts between the railroad track and the intersections at Bird Road, 41st Street, 42nd Street and the proposed Connector.
2. List improvements to these intersections to minimize this potential conflict.
3. If needed, a detailed study should be considered.

19. Establishment of Employee Transportation Coordinators (ETCs)

This strategy is mainly recommended for the warehouse/industrial area. A group of employer transportation coordinators (ETCs) could provide the support and communication among the different companies within the area to promote transportation alternatives to alleviate congestion in the area. This recommendation is considered as part of the TDM efforts proposed in section G.7, to advance TDM concepts in the area.

Comments:

Contacts could be made with employers to investigate the possibility of developing TDM programs within their facilities.

20. Monitoring of Services

A monitoring program is recommended to measure the needs of the corridor regarding transportation services and the effectiveness of the implemented strategies.

Recommended Actions:

1. Using the MEM, prepare a plan to monitor the effectiveness of the implemented strategies, before and after their implementation.

21. Establish an Express Bus Service

An express bus is recommended to service long distance trips to and from the area of Bird Road West of the Palmetto Expressway. An express bus would provide connectivity between Bird Road, West of the Palmetto Expressway and Miami International Airport (MIA), Metrorail and Tri-Rail. Highly effective service could be achieved by using direct access ramps from the Palmetto Expressway to Perimeter Road (South of MIA), and direct access ramps to the future Metrorail terminus Park and Ride Lot at NW 74th Street and the Palmetto Expressway.

On Perimeter Road, a single reversible bus lane could be constructed to provide direct access into the airport. Right-of-way is available on Perimeter Road for a single fourteen (14) feet bus lane. An express bus into the future Metrorail station at NW 74th Street and the Palmetto Expressway would provide service to long distance commuters on Bird Road who take the Tri-Rail commuter train.

Recommended Actions:

1. A detailed study is recommended to support this recommendation.
2. Due to the proposed schedule and connection to the new Metrorail Station west of the Palmetto Expressway, no immediate consideration should be given to this recommendation.

22. Sidewalk Amenities

This recommendation is mainly for the warehouse district, but detailed evaluation should be made along the corridor to expand these amenities where needed. Factors such as: comfort, convenience, safety, security and economy must be considered to encourage people to walk. Some of the these amenities are: shelters, lighting, traffic control devices, sidewalk ramps, pathway directness, landscaping, directional signings, directory maps and crosswalks, among others.

On SW 74th Avenue, a shaded pedestrian walkway would provide connectivity between businesses in the industrial area and the shuttle bus service on Bird Road. Right-of-way on SW 74th Avenue is limited, however, and many of the businesses have angle parking up to the roadway's edge. Pedestrian conflicts with parking areas would have to be reduced or eliminated.

Recommended Actions:

1. Include these considerations in the proposed study mentioned in section G.4.

23. Movement of Goods

This strategy focuses on establishing better access for freight vehicles within the warehouse district. Operational improvements in this area should also be considered. It is strongly recommended that a detailed study should be conducted concerning freight movement in this area.

Recommended Actions:

1. Consider the possibility of expanding the scope of work of the study mentioned in G.4 to consider the impacts of freight movement within the warehouse district.
2. Submit information to the project manager of the "Freight Movement Study", currently conducted by a consultant, regarding the concerns of freight activities within the area.

24. Improve Loading Zones

Due to the large number of companies within the warehouse district and the narrow streets within the area, loading zones should be improved to alleviate traffic congestion produced during the loading and unloading of freight vehicles. These improvements should be considered in the study recommended in the section above.

Recommended Actions:

1. Same as section G.23.

25. Road Widening

This strategy is recommended for those local streets within the warehouse district.

Recommended Actions:

1. Consider the possibility of expanding the scope of work of the study mentioned in G.4 to consider the feasibility of widening the roads within the warehouse district.

26. Promote Bike Connection to Transit

This recommendation is addressed to encourage the promotion of the Bike on Bus and Bike on Rail Programs, already in place.

Recommended Actions:

1. Coordinate special activities with the Bicycle /Pedestrian Coordinator to promote these programs along the corridor.
2. Contact MDTA, Tri-Rail, DERM and other related agencies to encourage active participation in the promotion of these programs.

27. Develop a Park and Ride Lot

Further considerations should be given to establish a Park and Ride facility at Tropical Park, west of the Palmetto Expressway.

Recommended Actions:

1. This recommendation requires further evaluation. Therefore, an analysis is proposed to determine feasibility and effectiveness of this recommendation.
2. Identify potential route changes, express or shuttle services require to establish the park and ride facility.
3. Using FSUTMS or any other available technique, simulate the implementation of this park and ride lot to determine potential use.

28. **Establish a Shuttle Service**

A shuttle bus is recommended to operate along the Bird Road corridor, stopping at all major shopping centers and residential developments. The shuttle bus could be extended to run between Bird Road and Miracle Mile. The recently opened shopping center, on the site of the old Tropical Flea Market (West of SR 826), will be one of the major destinations of the shuttle bus service on Bird Road.

Comments:

1. The study recommendation made in section G.1 could be expanded to evaluate the implementation of this strategy.

29. **Establish One-Way Streets**

This strategy is considered in section G.2, regarding traffic operation improvements. This would entail changing the existing two-way direction on 74th and 73rd Avenues, from 41st Street to Bird Road, to a one-way direction.

Comments:

This strategy is included in section G.2 and listed in Figure 43.

30. **Develop an Access Management Program**

Consistent with FDOT's Access Management Guidelines, consideration was given to relocating the existing traffic signal at SW 74th Court to SW 74th Avenue. The signal could be installed with a "green lane" configuration, where at least some Westbound traffic lanes would flow freely at all times. This improvement requires further consideration, however, because a potential weaving conflict could occur as Northbound left-turns from SW 74th Avenue attempt to access the Northbound on-ramp of the Palmetto Expressway by crossing three-lanes of non-stop Westbound traffic on Bird Road. Also, a four-lane section should be built on the South leg of SW 74th Avenue to accommodate concurrent Eastbound right-turns and Westbound left-turns, as well as a separate Northbound left-turn lane and right-turn lane. However, right-of-way is not currently available to construct a four-lane section.

Recommended Actions:

1. Submit letter to FDOT to consider and evaluate this recommendation.

31. Coral Way Bypass

A Coral Way bypass is recommended to run just North of and parallel to the Coral Gables Canal. It would run West of SW 72nd Avenue then North to Coral Way via SW 74th Avenue. This route could be used for Northbound PM peak hour traffic. Traffic could use the Coral Way bypass to access the Palmetto Expressway, thus providing an alternative to congestion on Bird Road.

Recommended Actions:

1. Submit letter to FDOT and Dade County Public Works Department to consider and evaluate this recommendation.

H. DESCRIPTION OF IMPROVEMENTS FOR SW 97th AVENUE CORRIDOR

1. Improve Transit Operations

Route 1 is the only one which provides transit service in the area. Based on this, the following transit improvements are recommended for this corridor:

a. Reduce stops from three to two and relocate them as appropriate. A minimum distance of 400 meters is recommended.
b. Provide benches, light and route information at the bus stops.
c. Sidewalks should provide access to the bus stops.
d. Bus stops should not be located near the corner.
e. Ridership by bus stops should be evaluated to determine possible headway improvements.

Recommended Actions:

1. Request MDTA to evaluate route 1.
2. Analyze results to improve service and relocate bus stops.
3. Submit project to the TIP, if needed and required.

2. Intersection Improvements

Improvement at the intersection with US 1 may be the re-timing the signal of SW 97th Avenue/US 1 and the designation of a northbound right-turn lane. This has been identified as a major movement during the morning peak hour on SW 97th Avenue. Signal re-timing and the addition of turning lanes is also recommended for the intersection with Eureka Drive.

As indicated in Figure 40, a widening of this corridor is proposed in the TIP for 1996-97. These recommendations should be considered as part of this project.

Recommended Actions:

1. Submit to Public Works Department recommendations referenced above, for consideration along with improvements on the 97th Avenue project.

3. Develop Bicycles Lanes/Routes/Paths

SW 97th Avenue is identified in the Metro-Dade Bike Plan as a suitable roadway for biking. A striped bike lane is recommended on the West side of the corridor and Franjo Road to connect the heavily used bike path on Old Cutler Road with the bike path proposed in the right-of-way of the South Dade Busway.

Recommended Actions:

1. Submit to Public Works Department recommendations made in this aspect, for consideration along with improvements on the 97th Avenue project.
2. Coordinate recommendation with the Bicycle/Pedestrian Coordinator.

4. Provide Sidewalk Facilities

Sidewalks should be reconstructed along both sides of the road. ADA requirements must be considered.

Recommended Actions:

1. Submit to Public Works Department recommendations referenced above, for consideration along with improvements on the 97th Avenue project.

5. Roadway Widening

This recommendation is based on the programmed project in the 1996-97 TIP, to widen this corridor to 3-lanes from 184th St. to US 1.

Comments:

No immediate action is recommended.

6. Develop a Park and Ride Lot

Location of a Park and Ride Lot should be considered in the near future, if transit service shows a ridership increase in the coming years. A bus bay and Park and Ride Lot could be located in the

shopping center on the Southeast corner of US 1 and Quail Roost Drive. The park and ride lot can be used not only for bus operations directly on US 1, but also for the South Dade Busway.

Recommended Actions:

1. Evaluate the feasibility to develop a park and ride lot, as recommended.
2. Coordinate recommendations with MDTA, Public Works and FDOT.

7. **Operational Signal Improvement**

Signal operation at the intersection of Eureka Drive and 97th Avenue should be evaluated to optimize traffic flow along the corridor. Special attention shall be given to the congestion caused by the traffic volume generated at the school close to that intersection.

Recommended Actions:

1. Submit letter to Public Works Department requesting an evaluation of that intersection.

8. **Integrate Pedestrian to Transit**

Accessibility to bus stops should be evaluated along the corridor.

Recommended Actions:

1. Prepare a plan to encourage people to use public transit.
2. Coordinate with the Bicycle and Pedestrian Coordinator and MDTA.

9. **Establish a Monitoring Program**

In order to determine the needs and effectiveness of the recommended transit strategies, a monitoring program must be established to measure the service before, during and after the implementation of these strategies.

Recommended Actions:

1. Using the MEM, prepare a plan to monitor the effectiveness of the recommended strategies, before and after their implementation.

10. **Promote Bicycle and Pedestrian Activities**

A marketing program should be developed to promote bicycle and pedestrian activities along the corridor. There is a private school that could sponsor this type of activity, in conjunction with the MPO Bicycle and Pedestrian Coordinator.

Comments:

Refer to section H.8 above.

11. **Develop a Feeder Bus System**

This is a residential area close to the proposed busway along US 1 where a feeder bus system, using smaller vehicles or jitneys, should be established to move people to and from Metrorail stations.

Recommended Actions:

1. A study should be included in the UPWP to evaluate the development of a "Feeder Bus System" within Dade County.

12. **Provide Bicycle Facilities**

Bicycle racks could be installed at the bus stops and within the school facilities, to promote the use of bicycles along the corridor.

Recommended Actions:

1. Coordinate with the Bicycle/Pedestrian Coordinator the installation of some bicycle racks in the area, as a demonstration project.

13. **Bus Turnout Bays**

If ridership and traffic flow require, the construction of bus turnout bays is recommended.

Recommended Actions:

1. Evaluate ridership along the corridor to justify this recommendation.
2. Submit this recommendation to Public Works for evaluation and inclusion in the 97th Avenue project, if needed.

14. **Arterial Information System**

As mentioned in the Bird Road Corridor Recommendations, this is a long range project that will improve the traffic flow along the corridor. The Dade County Public Works Department is actually working in the implementation of an Automatic Traffic Monitoring System (ATMS). This corridor should be included as part of said project.

Recommended Actions:

1. Submit recommendation to Public Works Department for consideration in the ATMS project.

15. **Transportation Management Associations (TMAs)**

A TMA could be considered for businesses on the US 1 corridor approximately one mile North and one mile South of the congested section of SW 97th Avenue. The concept would be to make US 1 attractive to commuter traffic and divert traffic away from SW 97th Avenue.

Comments:

Due to the fact, that TMAs are designed for implementation in an area primarily residential in nature, no immediate actions are recommended in this aspect.

16. **Exclusive Transit ROW**

Considerations should be given to evaluate future ROW acquisition for exclusive transit service.

Comments:

No immediate actions are recommended.

17. **Provide Pedestrian Amenities**

This recommendation focuses on improving the safety and security of the area. Lighting should be improved and crosswalks must be painted. Additionally, traffic control devices should be installed at intersections.

Recommended Actions:

1. Submit this recommendation to Public Works for evaluation and inclusion in the widening of 97th Avenue project, if needed.

18. **Shuttle Bus**

The South Dade busway is planned for the US 1 corridor, and would provide a logical terminus for a shuttle bus service which could operate directly on or parallel to SW 97th Avenue. The shuttle bus could follow Franjo Road and Caribbean Boulevard to the Cutler Ridge Mall, stopping along the way at shopping centers and residential neighborhoods.

Recommended Actions:

1. Submit letter to MDTA for evaluation of this recommendation.

19. **Access Management**

Strip shopping centers along US 1 have lead to many closely spaced driveways. Turning maneuvers to and from these driveways significantly reduce the capacity of US 1. In accordance with FDOT's Access Management Guidelines, driveway consolidation is recommended wherever possible. Cross-easement access between businesses on US 1 should be provided so that trips between businesses can then be made without having to actually travel on US 1.

Recommended Actions:

1. Submit letter to FDOT for evaluation of this recommendation.

I. RECOMMENDED PLAN TO IMPLEMENT STRATEGIES

Although sections G and H, explain in detail each of the proposed strategies recommended by the DCMMP/CMS Steering Committee, there are some that require additional analysis and will not be recommended for immediate consideration. Additionally, there are other steps and actions that must be taken to develop the recommended strategies. Appendices "H" and "I" show an implementation plan for the recommended strategies for each selected corridor.

The schedule illustrated in the implementation plan is subject to change according to other factors that will affect the development of the strategies, such as: budget availability, timing, and implementation costs.

J. ESTIMATED COST

Tables 19 and 20 present preliminary cost estimates for the improvements in each corridor. Final design, however, will establish the ultimate specific configuration and cost of each strategy. These exhibits include capital, operational and administrative costs related to recommended strategies.

Table 19

ESTIMATED COSTS FOR BIRD ROAD CORRIDOR RECOMMENDATIONS

#	RECOMMENDATION	ESTIMATED COSTS ($ in thousands)					
		1996-7	1997-8	1998-9	1999-0	2000-1	Total
1	Improve Transit Operation (a)						0
2	Traffic Operation Improvements	450					450
3	Alternate Work Hour Programs	10	5				15
4	Evaluation of Alternative Accesses	10	10				20
5	Promote Carpool/Vanpool Programs	10	5	5			20
6	Promote Transit Passes	5					5
7	Install Bicycle Facilities	10			10		20
8	Development of a Marketing Information Program	15		10			25
9	Express Bus Service (a)						0
10	Monitoring of Services	10	10	10	10	10	50
11	Provide Bike Connection to Transit	10		10			20
12	Provide Sidewalk Amenities	15					15
13	Construction of Sidewalks		50	50			100
14	Formation of a TMA		100	75	50		225
15	Bus Turnout Bays		30				30
16	Bycicle Lanes/Routes/Paths						0
17	Freight Movement (b)						0
18	Improve Loading Zones (b)						0
19	Road Widening					1,600	1,600
20	Establish a Shuttle Service (a)						0
21	Freeway Ramp Improvements					8,000	8,000
22	Establish an Arterial Surveillance Program					2,000	2,000
23	Construction of New Roadway						0
24	Develop a Park & Ride Lot (b)						0
25	Access Management (b)						0
26	Coral Way Bypass						0
	Total	545	210	160	70	11,610	12,595

(a) To be determined according to service requirements.

(b) Required further evaluation.

Table 20

ESTIMATED COSTS FOR SW 97th AVE. CORRIDOR RECOMMENDATIONS

#	RECOMMENDATION	ESTIMATED COSTS ($ in thousands)					
		1996-7	1997-8	1998-9	1999-0	2000-1	Total
1	Improve Transit Operation (a)						0
2	Traffic Oper. Improvements (b)						0
3	Integrate Pedestrian to Transit	5					5
4	Monitoring of Services	10	10	10	10	10	50
5	Promote Bicycle /Pedestrian Act.	10	5				15
6	Install Bicycle Facilities		10				10
7	Pedestrian Amenities	15	15				30
8	Bicycle Lanes/Routes/Paths			40			40
9	Construction of Sidewalks	50	50				100
10	Bus Turnout Bays		40				40
11	Formation of a TMA			100	75	50	225
12	Road Widening (b)						0
13	Construction of New Roadway (b)						0
14	Develop a Park & Ride Lot (b)						0
15	Feeder Bus System			100			100
16	Arterial Surveillance Program					1,000	1,000
17	Exclusive Transit ROW (b)						0
	Total	90	130	250	85	1,060	1,615

Comments:

(a) To be determined according to service evaluation

(b) Required further evaluation

A. TRANSPORTATION FUNDING

Funding is one of the most important elements to consider when implementing a transportation improvement project or a congestion management strategy. Given the fact that there is a limited budget for developing and implementing candidate projects, there is a need to determine on a comparative basis, which transportation improvements are more cost effective and should receive higher priority over other projects. Such a process is in place and has been defined in previous chapters. This chapter highlights the various sources of funds for project implementation.

Funds for transportation projects come from a variety of sources that include governmental coffers as well as private enterprise. In general, public projects are funded by Federal, State and local governments. Participation of the private enterprise is limited, unless projects result in profit over the long term.

B. REQUIREMENTS

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 provides one billion dollars per year in funding for congestion management and air quality programs. The flexibility of funds for use in multimodal projects is an important feature of ISTEA. Federal legislation defines intermodalism as:

> *"The National Intermodal Transportation System shall consist of all forms of transportation in a unified, interconnected manner, including the transportation systems of the future, to reduce energy consumption and air pollution while promoting economic development and supporting the Nation's preeminent position in international commerce".*

Most transportation improvements are intended to alleviate congestion and improve traffic flow which on a more personal level translates to reduced travel time and energy consumption. To qualify for ISTEA funding, different aspects of each project are evaluated, in particular, the legislation's fifteen planning factors. These are listed in Figure 10 in this report.

C. PROGRAMS

Candidate projects for transportation improvements are recommended for funding by Dade County in conjunction with FDOT District 6. These projects are compiled in the Transportation Improvement Program (TIP). Basically, the process is defined in the Metropolitan Planning Rules under the TIP section for transportation. The final document is later approved and adopted by the MPO Governing Board and the TIP is then funded through several sources.

The FHWA Surface Transportation Program (STP) provides block grant type funding that can be used for any type of highway or transit capital project. The Federal Transit Administration (FTA) Section 9 funds may be used for transit projects that meet certain requirements. The National Highway System (NHS) program also provides flexible funding for candidate transportation projects.

Congestion Mitigation and Air Quality programs (CMAQ) are available for capital improvement projects such as demand management and high occupancy vehicle programs that can show improvements in meeting targeted air quality standards. The TIP and the LRTP are the vehicles used to obtain any federal funding for capital projects. The CMS or DCMMP/CMS (as it is known in Dade County), must be an integral part of the overall planning process.

ISTEA expanded the responsibilities for the Metropolitan Planning Organization (MPO). One requirement of ISTEA is the development of a National Highway System (NHS) that will require input from the MPO and the State of Florida to ensure that established principles are followed in the implementation of a Congestion Management System. While a Congestion Management System (CMS) should be designed to address congestion on a metropolitan area or statewide basis, the nature of the problem may dictate that resources be focused on managing congestion in a subarea, a corridor, or on a specific transportation network.

Dade County's Unified Planning Work Program For Transportation (UPWP) and TIP would be the mechanisms to implement DCMMP/CMS recommended transportation improvements for fund allocation.

D. REVENUE SOURCES

Currently, money to fund transportation improvements in Dade County is derived from the following five basic sources (Federal, State, Local, Dedicated Revenues and User Fees):

1. **Federal Funds**

a. **Federal Transit Administration (FTA) Funds**

Section 9

These funds are available for transit system improvements, maintenance and operations (capital and operating funds). These funds are distributed on a statutory formula to all urbanized areas. The federal share is 80% with 20% typically coming from state matching funds.

Section 3

Section 3 funding is a discretionary program and is available for a variety of capital improvement transit projects. This funding is split as follows: 40% for new project, 40% for rail upgrades, and 20% for bus and other capital projects.

b. **Federal Highway Administration (FHWA) Funds**

NHS

National Highway System funds are used for principal arterial and interstate highway improvements and maintenance. These are based on a 80% federal and 20% state local matching funds.

FHWA Projects

These funds are discretionary and are used for federal demonstration projects, such as, modernization of large bridges, congestion relief, high priority national highway corridors, subsidizing rural and urban access projects, multimodal transportation projects, and innovative projects using advanced technologies and unique financing techniques.

STP

Surface Transportation Program funds provide flexible funding for improvements to both highway and transit systems (80% federal - 20% state).

CMAQ

Congestion Mitigation Air Quality funds are available for both highway and transit improvements. These funds are designated for projects that reduce vehicle emissions and other forms of air pollution to meet targeted air quality standards.

Bridge Rehabilitation

Bridge Rehabilitation/ Replacement program funds are used for *any* bridge on a public road (80% federal - 20% state)

c. **Other Federal Funds**

Federal Aviation Administration (FAA) Grant Programs
These funds are used for airport and aviation improvements, usually 50% federal, 25% state and 25% local.

2. **State Funds**

a. FIHS, Interstate and Non-Interstate Program
These funds are used for improvements on primary, interstate and intrastate highways and roadways. These funds are 100% state funds.

b. Bridge Rehabilitation
Bridge Rehabilitation/Replacement program (100% state) funds are for any bridge on a public road.

c. Intermodal/Rail Program
These funds are mainly for the Tri-Rail program.

d. Bond Sales
General Obligation, Special Assessment, Revenue bonds can be for a variety of transportation improvements or for specific transportation projects to be paid by future revenues from taxes or user fees.

3. **Local Funds**

a. Bond Sales

General Obligation, Special Assessment, Revenue and Municipal bonds can be used for a variety of transportation improvements or specific transportation projects to be paid by future revenues from taxes or user fees.

b. State Gas Tax

The State of Florida has 3 state fuel and one county gas tax, as follows:

1. The State Fuel Tax is distributed by formula to counties based on collection and population. This is $0.69 per gallon.

2. The State Comprehensive Enhanced Transportation System Tax is distributed based on the funds generated. These are $0.43 per gallon of gas and $0.22 per gallon of diesel.

3. The State Constitutional Gas Tax is distributed to the counties for debt services (80%) and to each county for transportation improvements (20%). If the 80% is not enough to meet bond debt, then more than the 80% is used for this purpose. The tax is $0.02 per gallon.

4. The County Gas Tax is collected by the state and distributed to the counties for debt service (10%). The tax is $0.01 per gallon.

c. Real-Estate Property Taxes

These funds come from a general fund and special revenue fund, and a portion of them are distributed for transportation and transit projects and maintenance.

4. Dedicated Revenue Funds

a. Motor Vehicle Fuel Taxes

The Local Option Gas Tax is imposed by counties and shared with the municipalities within the county. There are two local option gas levies in Dade County, they are $0.06 and $0.05 per gallon. These funds are used for transportation operations and improvements.

"*Ninth Cents Gas Tax*" (actually, $0.01) goes directly to the county to generate these funds.

b. Special Assessments

This is an assessment, tax, levy or fee where the funds are targeted for a specific transportation project. The costs are incurred by affected property owners in return for benefits that accrue to their property as a result of nearby transportation improvements.

5. User Fee Funds

a. Highway/Bridge Tolls

These fees typically support the highway or bridge that they are collect on. For example, the toll revenues obtained on SR 836 are used for maintenance and improvements on that facility.

b. Transit Fees

The income obtained from the different transportation modes are used to support these systems. These funds do not cover the cost for operating the system, therefore they have to be subsidized by other revenue sources.

c. Rental Car Taxes

A daily $2.00 surcharge on rentals, these funds go to the state's education fund and transportation fund for future distribution to each district based on state formulas.

d. Motor Vehicle License Fees

These are fees for registration of vehicles in the State of Florida. They are based on vehicle weight and are typically $24.00 for cars, $30.00 for trucks and $16.00 for miscellaneous vehicles. Thirty percent (30%) goes to education and seventy percent (70%) goes to a Transportation Trust Fund.

e. Road Impact Fee

These fees are set on a per unit or square foot basis for all new developments. The fees vary depending on the type of and use and the funds are to be used for roadway capacity improvements or new roads.

Identifying the sources of transportation funding is crucial for the planning process. Fuel taxes and vehicle license fees bring in the lions share of revenue for transportation improvements. Attaching the fee to the user seems a more acceptable method of generating revenue. Figure 44 shows the distribution of Florida's state wide transportation funds sources.

E. PLANNING AND PROGRAMMING FOR FUNDING

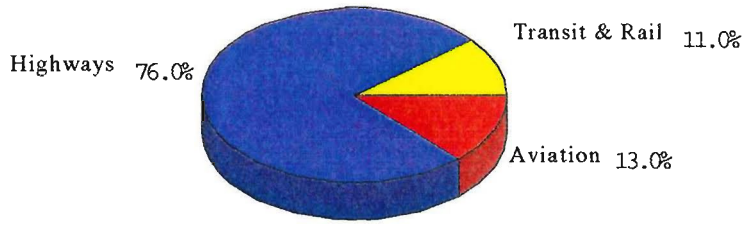
The matching of candidate projects with available funds to accomplish short and long term goals are essential for the DCMMP/CMS. The TIP and the LRTP have projected funds encumbered with projected transportation improvements. Table 21 shows federal funds for Dade County.

The process of modifying the TIP is an ongoing process and formally updated on an annual basis. The programming process for integrating new projects is a time consuming activity and involves the meshing of policies, regulations, transportation projects and available funds.

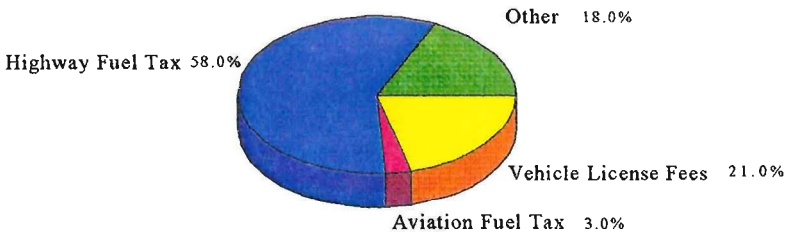
The Mobility Management Process addresses both short and long term needs of congested corridors in Dade County. Available funds may be restricted to specific categories; State funds are dedicated to state roads, Federal funds can be used for almost any project and local

FIGURE 44
FLORIDA'S TRANSPORTATION TAX REVENUE SOURCES
Based on 1993/94 Estimated Proceeds

Sources of Federal Funds



Sources of State Funds



Sources of Local Funds

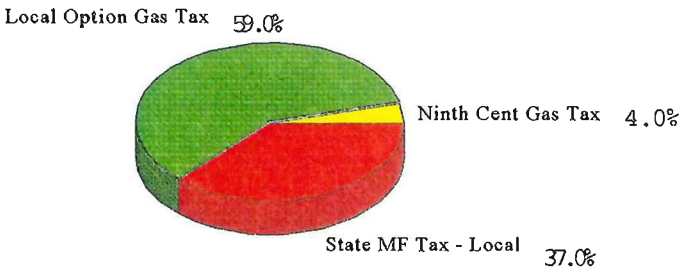


TABLE 21 Federal Funds Available in Dade County ($ in thousands)				
	1993/94	1994/95	1995/96	
National Highway System	100	1,150	50	
Bridge Replacement	3,900	353	13,768	
Interstate Maintenance	50			
STP	59,250	44,020	12,165	
CMAQ	20,260	11,589	6,240	
Other Federal Funds	8,360	15,973	79,322	
TOTALS	91,920	73,085	111,545	

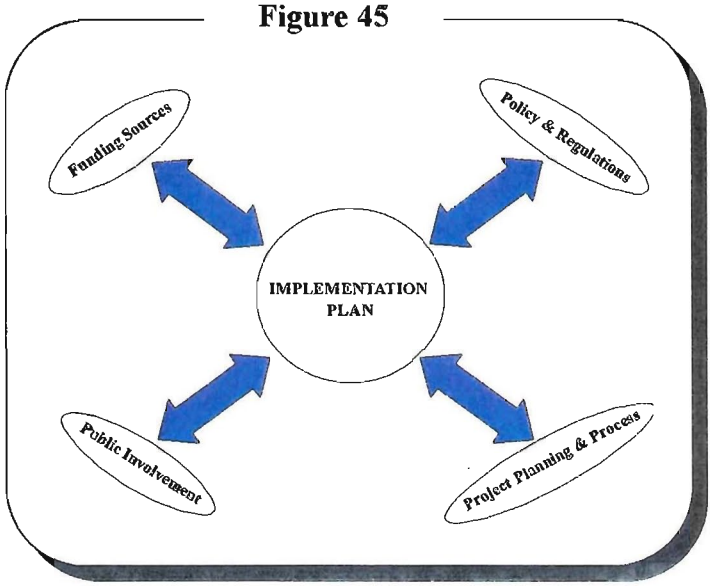
Source: Transportation Improvement Program, 1994

funds are discretionary. For example, SW 97th Avenue is a county road and state funds cannot be used for transportation improvements. Bird Road is a state road west of US 1 and a local road East of US1.

F. IMPLEMENTATION PLAN

Figure 45 shows the interactive external forces that shape the overall implementation plan.

Figure 45



These forces are defined as:

Funding Sources: All federal, state and local funding sources change as to fund levels, types or funds available and increases or decreases in fees and assessments. The changes in these levels of funding directly affect the implementation plan since there are more transportation projects than funds available.

Public Involvement: This is an integral part of the transportation implementation process. This awareness program can persuade the public to approve a new tax for funding or for the development of new transit or highway facilities.

Policy and Regulations: Federal, state and local regulations, policies and laws help in shaping the Financial Implementation Plan. These rules can be effective or destructive to the planning process. If used correctly, a fully integrated plan can be accomplished for implementing transportation improvements projects.

Project Planning and Processes: The internal planning process for improvements whether it is done at the state or local levels, can reduce or increase the time it takes to complete a transportation project. An effective and efficient process can save time and money.

Following is an outline of the process to be followed during the implementation plan:

1. **Project Identification**
   - Review the corridor for acceptable levels of service (LOS).
   - Identify real solutions for Multi-modal Transportation Demands.
   - Develop short and long term solutions for transportation alternatives.
   - Evaluate alternatives through the "Effectiveness Table".

2. **Project Prioritization**
   - Identify and prioritize transportation improvements.
   - Categorize these projects to determine the most effective way to plan and construct, or purchase necessary capital improvements.

3. **Fund Analysis and Appropriation**
   - Examine how funds are allocated by area and mode of transportation.
   - Analyze the relationship between various funding sources and develop a matrix with these relationships.
   - Analyze the relationship between various recommended transportation improvements to best allocate the funding sources.
   - Identify funding shortfalls for these needed projects.
   - Utilize supplemental and unidentified programmed County Wide Funds already in the TIP.
   - Reprogram excess funds from lower priority projects in the TIP.
   - Develop new funding strategies.

4. **Plan Update**
   - Include in the TIP and UPWP (update and program) these identified projects.
   - Develop a step by step process for implementing short term transportation improvements.

5. **Plan Approval**
   - Evaluate the administrative process for identifying, coordinating and efficiently implementing needed short term transportation improvements.
   - Reduce as many administrative steps as possible to achieve needed goals.
   - Identify regulatory hurdles in advance to minimize delay.

6. **Project Scheduling**
   - Determine which projects coincide and can efficiently and best use County, State and Federal resources.
   - Utilize a local governmental agency to complete the project themselves. A project using a contractor must go through the FDOT Local Agency Program.

7. **Project Control and Feedback**
   - Check the actual progress of each project in a monitoring program to assure the transportation improvements are on schedule.
   - Reprogram projects as needed.

The implementation of future financial strategies and funding sources need to consider the Financial, Political, Legal and Regulatory, and Administrative requirements and criteria for pursuing these new plans. The new "Property Rights" law may affect land management and zoning changes implemented to mitigate traffic congestion. Property owners require compensation. Even though the law excludes government efforts such as; building a new road, preventing public nuisance it will create a lengthy process for overall land management planning. It is recommended that further study of the cost/benefit effect on changes in zoning and the master plan for future development be conducted.

In order to illustrate the effect of this law, lets say:

Supposing the MPO or the local governing planning board decided to pass a new regulation that changes the current zoning law, such that the number of residential units per acre on an existing parcel is restricted or reduced. If said regulation resulted in a change in value or vested right to specific use, the property owner must be compensated for the loss. The property owner would have 12 months after the new regulation was passed to present a written claim to the government in order to be compensated for the drop in property value.

Once a claim has been submitted, the government has a six month grace period to settle the claim with the property owner, or eliminate the new regulation. If a settlement is not reached and the government does not rescind the regulation, the property owner may pursue the case in court for final resolution. Once the case is heard and a jury decides on the settlement amount, one of the following two outcomes may occur:

1. The government pays restitution to the property owner, or
2. If the jury verdict amount matches or is less than the government previous settlement offer (see step fourth) and the property owner declined the offer, he/she may be liable for government attorney and other related court fees.

To avoid this lengthy process, government agencies may want to evaluate the cost/benefit associated with regulatory or zoning changes when reviewing master development plan.

G. AVAILABLE FUNDING

There are over $2 billion in programmed improvements and over $3 billion in unfunded projects in Dade County. There are a number of programmed County Wide Supplements in the 1996 TIP that can be utilized for most transportation improvements. The amounts and fund categories shown in Figure 44 include all phases of development from ROW and preliminary engineering through the construction and post-design stages.

H. ADDITIONAL SOURCES OF FUNDING

1. Public/Private Partnerships

This type of venture would be useful for large scale projects and specific revenue generating projects. A private company would plan, construct and even manage the facility for a pre-determined amount. This would transfer the cost and revenue risk to the private sector. These ventures would be determined on a case by case basis. This type of business opportunity would use private funds or a combination of public and private funds. This type of venture may be eligible for specific depreciation and investment tax credits.

2. Joint Development

Real state developers would for example construct transit facilities and pay rent to the government. This approach would benefit the property owner through increased property value and traffic to a development. An increase in land value would also benefit the government through increased tax revenue. This typically involves the sale or lease of undeveloped land and can generate site-specific long term revenues.

3. Use of Property Rights to Fund Specific Transportation Projects

A favorable zoning or regulatory change to a parcel, such as, increasing the capacity to build on a site in exchange for the developer to absorb the costs of needed transportation facilities or to construct the facility.

4. **Specific Debt Issues for Projects**

The issuance of general obligation and service contract bonds would allocate funds to a specific project or group of projects. There would have to be either a revenue generator or additional tax associated with the project to pay the debt. This would need a voter referendum to pass. This type of funding is appropriate for capital intensive projects.

5. **New Dedicated Taxes**

A dedicated tax for a specific project would require a voter referendum. The funds may or may not be project specific. An additional tax on gasoline would tax users of road facilities. A hotel or rental car tax would export the tax. An increase in property tax would allocate the tax to every property owner.

6. **Tax Increment Financing (TIF)**

Also known as tax allocation financing, this type of funding designates revenues from taxes on personal and real property based on increases above a fixed base. These above base revenues would be attributable to a transportation improvement. These are authorized by the state and used by jurisdictions with an ad valorem taxing authority. These funds can secure bond financing.

7. **Assess Current Impact Fees for Overall Effectiveness and Application**

The road impact fees need to be reviewed annually to determine if the fees are adequate to cover the cost of transportation improvement. The amount of the fee and the basis for application of the fee vary for each type of new development. This type of fee is typically part of a condition for obtaining site plan approval or building permits.

8. **Special Assessment**

This type of tax fund would charge directly a property owner that benefits from a transportation improvement. The tax or fee may be based on square footage, value or a combination of factors.

XI. RECOMMENDATIONS

A. MMP/CMS IMPLEMENTATION PROCESS

Many programs already exist at the state and local level to address traffic congestion and mobility. The key to a successful and efficient congestion management system is not reinventing the wheel but instead having a program that will consider all options, and other alternatives in a systematic manner. Some of the existing programs have associated data collection efforts. Use of those data should be maximized in order to reduce new data collection efforts. Based on the results of this study, the following recommendations are hereby presented.

RECOMMENDATIONS

The study has resulted in the following recommendations:

1. Incorporate the Dade County DCMMP/CMS into the long and short range transportation planning process. This will require amending the CDMP and the process for developing the LRTP and the TIP.

2. Incorporate procedures developed in the final report regarding the DCMMP/CMS structure, how to identify congested corridors and further evaluate strategies in the transportation planning process.

3. Implement the proposed improvements made for the Bird Road and SW 97th Avenue Corridors.

4. Use data from existing sources and ongoing programs in the DCMMP/CMS.

5. Automatic Vehicle Location (AVL) is an emerging technology capable of monitoring vehicular speeds. A detailed evaluation of the results obtained during the AVL pilot project conducted by the City of Miami should be done. Cost effectiveness of this program should also be investigated.

   In this regard, MDTA is implementing an AVL project that could be used to monitor service conditions, as well as collect transit data.

6. A Decision Support System based on a GIS is being developed by FDOT District 6. It will be in electronic format and will include management systems for intermodal public transportation, congestion and traffic monitoring. Although the system will reside and be maintained by FDOT District 6, it should be made fully accessible to the MPO. The MPO on the other hand has established performance measures, evaluation criteria and the overall process and should develop a separate GIS system capable of interacting with that of FDOT.

7. FDOT will proceed with the implementation of the CMS despite the November, 1995 decision made by Congress to make it optional. Therefore, Dade County should develop element 2.04 of the 1996 UPWP entitled *Development of an Integrated Network Management System.* The objectives of this study are to develop management systems at the county level along with a software package that integrates the different procedures for each system.

8. The MPO and FDOT must work together in developing these management systems, more specifically, the DCMMP/CMS. Close coordination is also required in applying the process to FIHS roads as well as intermodal and transit facilities.

9. The evaluation of DCMMP/CMS strategies should be based on a range of tools that allow analysis at the appropriate level of detail. These may include regional transportation models, area-wide evaluation software, corridor level techniques, and project specific analysis. Techniques for evaluation should be customized for the particular DCMMP/CMS strategy in place.

10. MDTA should establish minimum standards for transit performance measures. This will help to compare the effectiveness of the service among routes and of the system in general.

11. A vehicle occupancy study is recommended to be included in the UPWP. This is important, and infrequently collected, data needed for the evaluation of strategies. This study should also include a task to investigate and analyze state-of-the-art techniques in this aspect, that may reduce labor costs and obtain accurate data.

12. Adopted LOS standards should be used as the guide for identifying congested locations. The policy documents specifying these standards are the Dade County Comprehensive Development Master Plan (CDMP) and the Florida Intrastate Highway Systems (FIHS) standards.

13. Long and short range land use programs, such as the CDMP, zoning regulations and ordinances, should be coordinated with congestion management activities.

14. The following guidelines are suggested for projects already in the TIP that provide for increasing roadway capacity:
    a. Projects with construction and/or ROW acquisition on or before FY 96-97: No reevaluation.
    b. Projects with design starting on or before FY 96-97: Reevaluation to add complimentary mobility strategies.
    c. Projects with PD&E/ corridor studies starting on or before FY 96-97. Complete evaluation including mobility strategies.

15. It is recommended that a new low cost improvement program be established to identify, streamline and implement effective improvements on a timely basis. In that regard, the CDMMP/CMS coordinator should be a member of both the LRTP and TIP Steering Committees in order to facilitate consistency in the process.

Such a program would focus on expediting improvements that are low cost ($200,000 - $500,000) require no ROW, have local acceptance, do not adversely impact the environment and can be completed within a year.

B. STRATEGIES/PROJECT IMPLEMENTATION

Each congested corridor, spot and mobility policy is different. Attempting to prescribe how to implement solutions, in general, would not be very effective. This study, however, has selected two congested corridors and subjected them to a preliminary analysis similar to the process recommended for the evaluation of congested locations and alternative mobility strategies. Chapter IX of this report, describes in detail the process. The general recommendations for these corridors are summarized in Pages 123 and 124 of this report. Technical Memorandum 2: Monitoring and Evaluation Manual (MEM) also provides detailed information regarding the evaluation of these corridors.

Through the members of the DCMMP/CMS Study Steering Committee, the recommended improvements shall be considered by the appropriate agencies for implementation using miscellaneous CONTRACTS (planning, design and construction) within the control of each agency either with in-house efforts or pre-selected consultants and/or contractors. Improvements that can not be implemented using these mechanisms should then be packaged by the DCMMP/CMS Coordinator for inclusion in the UPWP and/or the TIP as appropriate.

C. RESPONSIBLE AGENCIES

Federal regulations provide for the MPO to be the lead agency regarding MMP/CMS matters. Cooperation among the agencies, of course is needed for the process to work efficiently. Additionally, individual agencies will have responsibility for portions of the data collection effort, and the analysis of certain components of the transportation system. Also, individual agencies will be responsible for the ultimate implementation of certain policies, strategies and improvements. A summary of the major areas of responsibility is provided below.

AREA OF RESPONSIBILITY	MPO	DCPD	FDOT	DPW	SERVICE PROVIDERS
MMP/CMS Lead Role/Coordination	X				
Data Collection			X	X	X
Policy Strategies Implementation		X			
Analysis of FIHS Roads			X		
Analysis of Other System Comp.	X				
Implementation of Strategies		X	X	X	X
Funding Implementation		X	X	X	X

Completion of this and previous phases of the DCMMP/CMS studies is a good example of how well intergovernmental coordination can work. At the completion of this study all participating agencies continue to be committed to a successful implementation of the Miami Urbanized Area Mobility Management Process/Congestion Management System.

D. FUTURE CONSIDERATIONS

To be meaningful the term *'mobility'* requires definition. Although the Task Force endorsed the concept of multiple measures of effectiveness, one of the more encompassing definitions was ***PERSONS X SPEED***. An explicit indicator of *"people movement"* and *"reasonable speeds or travel time,"* the measure can also be viewed as a partial indicator of "reasonable travel cost to society." Essentially, high speeds denote short travel times, therefore its usefulness as a unit of measure to travelers as well.

It is noted however that the term accounts for some but not all the elements that define mobility. Elements not addressed include: accessibility; modal choice; out-of-pocket, operation or capital costs; and making or satisfying the trip objective.

Although this measure would require additional data collection, it presents an interesting effectiveness criteria that can be used across all modes of transportation. Therefore, PERSONS X SPEED deserves further consideration, particularly if the data collection can be automated and retrieved from other data monitoring systems such as the proposed Advanced Traffic Management System.

1. Alternative Performance Measures

Previous versions of the State Work Plan explained:

"While no performance measure is ideal to cut across all modes, one possible overall mobility indicator is PERSONS X SPEED. That mobility indicator features major aspects of the term mobility. Emphasis is placed on persons, not vehicles. The more persons are served, the better, regardless of mode. Speed (time or travel rate) indicates a measure of travel quality. As Florida grows, speeds will likely decrease (congestion will increase), but because more people are being served the indicator of mobility may increase."

Summary: PERSONS X SPEED should be considered as an alternative performance measure if the needed data can be easily obtained in the future.

2. Arterial Investment Studies

FDOT has recently introduced the concept of Arterial Investment Studies (AIS). These studies are parallel to the now required Major Investment Studies (MIS), but are less comprehensive in scope. A preliminary scope of services has been developed. FDOT Districts are coordinating with Local MPOs to provide funding for pilot studies. The success of the pilot studies will help

determine if AISs will be standard requirements and part of the required CMS. A Draft Scope of Services for AIS is included in the MEM. The MUA MPO should follow the draft scope and track the pilot studies before adopting a specific scope of services for corridor analysis as part of the DCMMP/CMS.

There are many advantages in using a tested scope of services, especially consistency from corridor to corridor and area to area. It should be understood, however, that before starting any new study, the standard scope should be carefully reviewed as to applicability to a specific corridor. Elements that do not apply should be deleted and the study area should be carefully defined to ensure that secondary impacts are properly considered.

XII. LIST OF ACRONYMS

AADT	Annual Average Daily Traffic
APT	Advanced Public Transportation System
AVL	Automatic Vehicle Location
CADD	Computer Aided Design and Drafting
CBD	Central Business District
CCC	Continuing, Cooperative and Comprehensive
CCTMO	Civic Center Transportation Management Organization
CDMP	Comprehensive Development Master Plan
CFR	Code of Federal Regulations
CIO	Concurrency Information Office
CIP	Capital Improvement Program
CMAQ	Congestion Mitigation Air Quality
CMS	Congestion Management System
CTAC	Citizen's Transportation Advisory Committee
DC	Dade County
DCAD	Dade County Aviation Department
DCDPW	Dade County Department of Public Works
DCLC	Dade County League of Cities
DCPD	Dade County Planning Department
DCPS	Dade County Public Schools
DCMMP/CMS	Dade County Mobility Management Process/Congestion Management System
DCSD	Dade County Seaport Department
DEP	Department of Environmental Protection
DERM	Department of Environmental Resources Management
DIC	Dade County Developmental Impact Committee
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FIHS	Florida Intrastate Highway System
FSUTMS	Florida State Urban Transportation Modeling Structure
FTA	Federal Transit Administration
FY	Fiscal Year
GCCS	Gold Coast Commuter Services
GIS	Geographical Information System

HCM	Highway Capacity Manual
HOV	High Occupancy Vehicle
HPMS	Highway Performance Monitoring System
ICS	Intelligent Corridor Study
IMS	Intermodal Management System
ISTEA	Intermodal Surface Transportation Efficiency Act
ITD	Information Technology Department
ITE	Institute of Transportation Engineers
ITS	Intelligent Transportation System
IVHS	Intelligent Vehicle Highway System
LOS	Level of Service
LRTP	Long Range Transportation Plan
MTMA	Miami Transportation Management Association
MDC	Metropolitan Dade County
MDTA	Metro-Dade Transit Agency
MIC	Miami Intermodal Center
MIS	Major Investment Study
MMP	Mobility Management Process
MPO	Metropolitan Planning Organization
MTIA	Major Transportation Investment Analysis
MUA	Miami Urbanized Area
NEPA	National Environmental Policy Act
NHS	National Highway System
O/D	Origin and Destination
PD&E	Project Development & Environmental
PHF	Peak Hour Factor
PTMS	Public Transportation (Facilities and Equipment) Management System
RCAP	Regional Commuter Assistance Program
RCI	Roadway Characteristics Inventory
RCR	Relative Congestion Ratio
RFP	Request For Proposals
ROW	Right of Way
SHS	State Highway System
SIP	State Implementation Plan
SOV	Single Occupant Vehicles
STA	Special Transportation Area
STIP	State Transportation Improvement Program
SUMA	State Urban Minor Arterial
TCI	Traffic Characteristics Inventory
TCM	Transportation Control Measures

TDM	Transportation Demand Management
TIP	Transportation Improvement Program
TMA	Transportation Management Association
TMO	Transportation Management Organization
TND	Traditional Neighborhood Development
TPC	Transportation Planning Council
TSM	Transportation System Management
UDB	Urban Development Boundary
UIA	Urban Infill Area
V/C	Volume to Capacity Ratio
VMT	Vehicles Miles Traveled

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APPENDIX A

TECHNICAL MEMORANDUM 1: INSTITUTIONAL ISSUES

APPENDIX A
DADE COUNTY
MOBILITY MANAGEMENT PROCESS/
CONGESTION MANAGEMENT SYSTEM

TECHNICAL MEMO #1
INSTITUTIONAL ISSUES

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August, 1996

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EXECUTIVE SUMMARY

The Miami Urbanized Area is required, by federal regulations, to establish a Congestion Management System (CMS). This system is intended to investigate, evaluate and implement strategies to increase the efficiency of the transportation system and to minimize construction of new single occupant (or general use) lanes. A menu of the major categories of strategies available for the CMS is presented in the federal requirements.

This technical memorandum reviews the requirements for the CMS, as well as existing programs and recent studies that address traffic congestion (directly or indirectly) in Dade County. The report also provides an overview of current transportation data collection efforts which may be useful for the CMS. Finally, technical, legal and institutional issues are discussed.

The report describes more than a dozen documents and programs that already deal with traffic congestion. These, for the most part, can be integrated into the CMS. The majority of the data collection programs can also be used in the implementation of the CMS.

A number of technical issues were identified. Some of the issues already have suggested approaches that were reviewed and accepted by the Study Steering Committee. Other issues will require consideration of additional factors later during the study. The Committee has already agreed that the traffic levels of service in the Dade County Comprehensive Plan should be used to identify congested locations. The group also decided to address mobility instead of limiting the CMS to congestion only. The network to be analyzed will be the one in the Dade County transportation model. They also recognize that a single evaluation tool may not be feasible and the CMS will most likely require use of several models and/or evaluation techniques to properly consider the various types of strategies, implementation areas, etc. The performance of non-traditional modes and transit will require more study once the performance measures for the CMS are established. From the legal standpoint, the existing laws and ordinances will not require significant changes.

Institutional issues were also reviewed. First, the CMS is recognized as the primary responsibility of the Metropolitan Planning Organization (MPO). This responsibility extends beyond jurisdictional lines (except for roads that are part of the Florida Intrastate Highway System - FIHS). Coordination of the CMS is being accomplished through the creation of a multi-agency study steering committee. Presentations to various other committees of the MPO are also part of the coordination plan. Several planning documents and processes will require some modification. Impact on these documents, however, should be minor. Consideration of the needs of municipalities will be consistent with the process now followed in developing the Long Range Transportation Plan and the Transportation Improvement Program. The same level of service criteria and coordination process will be generally followed. FDOT will take the lead in addressing congestion management on FIHS roads as well as developing the Intermodal Management System and the Public Transportation Management System. The MPO and FDOT

are coordinating the development of these management systems. Finally, FDOT will assist the MPO by developing the Interim CMS that will be in place until October 1, 1995.

The main recommendations from the review of information in this memorandum are included below.

(a) The Dade County Congestion Management System/Mobility Management Process (CMS/MMP) should be incorporated into the long and short range transportation planning process. This will require amending the CDMP and the process for developing the LRTP and the TIP.

(b) The data to be used in the CMS/MMP should be, primarily, from existing sources and ongoing programs that update the data on a regular basis.

(c) The data for the CMS/MMP should be, to the maximum extent possible, in electronic format. Furthermore, these data should be easily translated into the format most useful to the CMS/MMP.

(d) Automatic Vehicle Location (AVL) is an emerging technology capable of monitoring vehicular speeds. The cost effectiveness of using existing AVL data bases and expanding this data collection program should be investigated.

(e) Existing programs and previous studies under implementation should be included in the list of CMS/MMP strategies to be considered.

(f) The CMS/MMP could be based on a GIS and reside/be maintained by FDOT District 6. However, the system should be fully accessible to the MPO. This will require that the MPO develops their own GIS system capable of interacting with FDOT. Also, the performance measures, evaluation criteria and overall process should be established by the MPO.

(g) The MPO and FDOT should work cooperatively in the development of the CMS/MMP. Close coordination is also required in applying the process to FIHS roads as well as intermodal and transit facilities.

(h) The evaluation of CMS/MMP strategies should be based on a series of tools that will allow analysis at the appropriate level of detail. These may include regional transportation models, areawide evaluation software, corridor level techniques, and project specific analysis.

(i) Adopted level of service standards should be used as the guide for identifying congested locations. The policy documents specifying these standards are the Dade County Comprehensive Development Master Plan and the Florida Department of Transportation Intrastate Highway Systems standards.

(j) Long range and short range land use programs, such as the Dade County Comprehensive Development Master Plan, zoning regulations and ordinances, should be coordinated with congestion management activities.

TECHNICAL REPORT

1. INTRODUCTION

In 1991 the federal government approved a major revision to the laws that provide guidelines for planning, programming and funding of transportation projects. A new law was created in 1991, it is known as the Intermodal Surface Transportation Efficiency Act (ISTEA). As part of these changes federal regulations now require the development and implementation of the following six "management systems" and a data monitoring system. These are:

1. Pavement Management System
2. Bridge Management System
3. Safety Management System
4. Congestion Management System
5. Public Transportation Management System
6. Intermodal Management System
7. Monitoring System for Highways

This study addresses, specifically, the required Congestion Management System (CMS). In the Miami Urbanized Area (MUA) the responsibility for development of this system rests with the Metropolitan Planning Organization (MPO).

2. PURPOSE OF THE REPORT

The purpose of this report is to document the research, analysis and recommendations of Task 3 of this study. That task, "Institutional Infrastructure", reviews the legal, structural, operational and other aspects related to establishing a CMS in the Miami Urbanized Area. The overall objective of this task is to determine whether a CMS would be consistent with existing efforts at the local and state levels. Inconsistencies shall be identified and recommendations for necessary changes will be made.

3. WHAT IS A CONGESTION MANAGEMENT SYSTEM ?

Details for CMS implementation are contained in 23 CFR Part 500 Subpart "E", Management and Monitoring Systems, Interim Final Rule. According to this document: "Congestion Management System (CMS) means a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods. A CMS includes methods to monitor and evaluate performance, identify alternative actions, assess and implement cost-effective actions, and evaluate the effectiveness of implemented actions."

At the state level a task force was formed to serve as a forum for congestion management, establish consensus and provide guidance for the implementation of CMSs throughout Florida. The statewide task force has recommended that CMS efforts be renamed "Mobility Management Process" (MMP). Both federal and state laws suggest that planning of transportation facilities should be, primarily, a local responsibility. (In this case local governments are represented by the MPO). Therefore, consistent with the recommendations of the Task Force, the MPO will take the lead in development of the CMS for all roads within the area. The only exception is those roads that have been designated as part of the Florida Intrastate Highway System (FIHS). Responsibility for the later roads is with the Florida Department of Transportation (FDOT). The CMS efforts for both the MPO and the State, however, will be coordinated.

4. CONGESTION MANAGEMENT SYSTEM REQUIREMENTS

Federal regulations establish minimum requirements and compliance schedules for developing CMSs. Also, 23 CFR Part 450.336 regarding Metropolitan Planning Rules make provisions for a Phase-In period (Interim CMS). The Florida CMS/MMP Task Force recognizes these minimum requirements and suggest additional items that should be incorporated into the MPO CMS. Failure to comply with these requirements may result in a reduction of federal funding for transportation projects. Applicable portions of the federal regulations are included in Attachment A-A.

4.1 Minimum Federal Requirements

The minimum Federal requirements are described in 23 CFR Part 500, Subpart "E", Sections 505.507 and 509:

4.1.1. Section 500.505: General Requirements

(a) Congestion management strategies should be implemented to provide for the most efficient use of existing and future transportation facilities where congestion is occurring or is expected to occur.

(b) Consideration shall be given to strategies that reduce single-occupant vehicle (SOV) travel, and improve existing transportation system efficiency.

(c) Coverage of facilities and activities shall be sufficient to reflect the effects of the implementation of physical improvements and/or area-wide transportation policy decisions.

(d) The CMS shall be part of the metropolitan planning process.

(e) For non-attainment areas for carbon monoxide and/or ozone, the CMS shall provide an appropriate analysis of all reasonable TDM and TSM strategies for corridors where a proposed project will result in a significant increase in capacity for SOVs. The analyzed strategies that reduce SOV will be incorporated into the project for implementation.

(f) The CMS shall be coordinated with the State Implementation Plan for air quality, the Public Transportation Management System (PTMS) and t he Intermodal Management System.

4.1.2. Section 500.507: CMS Components:

(a) Performance Measures: A set of parameters will be defined to measure the extent of congestion and the effectiveness of the implemented strategies.

(b) Data Collection and System Monitoring: A continuous data collection program and monitoring system shall be established to determine and monitor the duration and magnitude of the congestion.

(c) Identification and Evaluation of Proposed Strategies: Strategies shall be identified and evaluation to improve mobility and alleviate traffic congestion. These include, but are not limited to:

(1) Transportation demand management.
(2) Traffic operational improvements.
(3) Measures to encourage high occupancy vehicle (HOV) use.
(4) Public transit capital improvements.
(5) Public transit operational improvements.
(6) Measures to encourage the use of nontraditional modes such as bicycle facilities, pedestrian facilities, and ferry service.
(7) Congestion pricing.
(8) Growth management and activity center strategies.
(9) Access management techniques.
(10) Incident management.
(11) Intelligent Vehicle-Highway System (IVHS) and Advanced Public Transportation System (APTS) Technology;
(12) The addition of general purpose lanes.

(d) Implementation of Strategies: For each strategy proposed for implementation, a time schedule, responsibility and funding sources shall be identified.

(e) Evaluation of the Effectiveness of Implemented Strategies: An evaluation process shall be established to provide decision-makers with guidance on selection of effective strategies for future implementation.

4.1.3. Section 500.509: CMS Compliance Schedule :

Regulations require that by October 1, 1994, the State must develop a work plan that identifies major activities and responsibilities and includes a schedule that demonstrates full operation and use of the CMS in transportation management areas that are non-attainment for ozone and/or carbon monoxide by October 1, 1995, the most critical areas shall be identified and data collection activities shall be initiated. The MUA is presently classified as a Non-Attainment Area but is expected to be reclassified as a "Maintenance Area" in the near future. Regardless, the implementation schedule would be the same. The FDOT has already prepared and submitted the required work plan to the Federal Highway Administration (FHWA).

By October 1, 1995 the CMS shall be fully operational and shall provide projects and programs for consideration in developing metropolitan and statewide transportation plans and improvement programs. However, until the CMS is fully operational the interim (Phase-in) CMS requirements shall be met.

4.2. Phase-In Requirements

The Phase-In requirements are contained in 23 CFR Part 450 (Statewide Planning, Metropolitan Planning Rule). The principal Applicable portions, from section 450.336, are listed below:

(a) Where time does not permit a quantitative analysis of certain factors, a qualitative analysis of those factors will be acceptable.

(b1) The MPO in cooperation with the state, the public transit operators, and other operators of major modes of transportation shall identify the location of the most serious congestion problems in the metropolitan area and proceed with the development of actions to address these problems.

(b2) In Non-Attainment Areas. The interim CMS shall include a process to analyze reasonably available (including multimodal) travel demand reduction and operational management strategies for projects that increase SOV (single occupant vehicle) capacity. This analysis must demonstrate how far such strategies can go in eliminating the need for additional SOV capacity in the corridor. If the analysis demonstrates that additional SOV capacity is warranted, then all reasonable strategies to manage the facility effectively (or to facilitate its management in the future) shall be incorporated into the proposed facility. Other travel demand reduction and operational management strategies appropriate for the corridor, but

not appropriate for incorporation into the SOV facility itself must be committed to by the State and the MPO for implementation in a timely manner. If the area does not already have a traffic management and carpool/vanpool program, the establishment of such programs must be a part of the commitment.

(b3) In Non-Attainment Areas. Agencies may not advance a project utilizing Federal funds that provides capacity increase for SOVs beyond the NEPA process unless an Interim CMS is in place that meets the criteria in paragraphs (b1) and (b2) of this section and the project results from the Interim CMS.

(b4) Projects that are part of or consistent with a State mandated congestion management system/plan are not subject to the requirements in paragraphs (b1) and (b2).

(b5) Projects advanced beyond the NEPA process as of April 6, 1992 and which are being implemented, e.g., right of way acquisition has been approved, will be deemed to be programmed and not subject to this requirement.

(b6) At such time as a final CMS is fully operational the provisions of section 450.320(b) apply. This section establishes that in non-attainment areas, Federal funds may not be programmed for any project that significantly increases capacity for SOV, unless the project results from a CMS process as required by 23 CFR Part 500 Subpart "E".

4.3. Florida CMS/MMP Task Force Recommendations

The work of the Task Force is largely based on the Federal regulation. The Florida CMS/MMP Task Force recommendations, however, are summarized below for completeness.

4.3.1. Interim Period (Interim CMS) - A Work Plan identifying CMS activities and responsibilities is to be developed and agreed upon by 10/1/94. 23 CFR Part 500.509(a). Interim period (before full adoption of CMS in a TMA) requirements are given in 23 CFR Part 450.336 and generally require the following:

4.3.1.1. Expected Accomplishments by 12/18/94.

a. Locate most serious congested locations.

b. Proceed with development of actions to address problems.

c. For a major general purpose lane project using federal or state funds no new PD&E study may begin after 12/18/94 without:

(1) Travel demand reduction and operational management strategies.

(2) A document (approximately 10-25 pages in length) analyzing the strategies for the corridor.

(3) An air quality conformity analysis.

d. For a major general purpose lane, no new project in the TIP should begin after 12/18/94 without travel demand reduction and operational management strategies for the corridor to be conducted by the local government - this item is not required.

e. A major general purpose lane project using federal funds, which has advanced past the NEPA process as of April 6, 1992, and which is being implemented shall be deemed to be programmed.

f. A traffic management and carpool/vanpool program must be in place.

g. Brief documentation in long range plan update, environmental documents, TIP and SITP must indicate that interim CMS processes are in place.

4.3.2. Fully Operational Period - The full CMS shall be operational by 10/1/95 for non-attainment/maintenance TMAs. 23 CFR Part 500.509(c). The CMS shall provide "strategies that provide the most efficient use of transportation... reduce single occupant vehicle travel and improve existing transportation system efficiency." 23 CFR Part 500.505.(a-b). The following is generally required:

4.3.2.1. Expected and Minimum Accomplishments by 10/1/95.

a. Expected interim period accomplishments of 12/18/94 (from a2 above) plus the following.

b. Documentation:

(1) Certification by MPO and FDOT District that the CMS is fully operational.

(2) Approximately 10-25 page document describing CMS process.

c. Identification of roles and responsibilities of (1) MPO, (2) FDOT, (3) Transit operator, (4) Operators of other major modes, (5) Others (e.g., Transportation Management Organizations, bicycle/pedestrian interests).

d. Identification of proposed network.

(1) MPO planning boundary.

(2) Significant roadways approximating one of the following (a) Long range planning (transportation modeling) network, (b) Roadways identified for concurrency.

e. Performance measures.

(1) Recommendations of the Florida Mobility Management Process (a) Highway LOS standards and measurement techniques applied to defined network, (b) Transit performance measures, (c) Accommodation of bicyclists, (d) Accommodation of pedestrians, (e) Support for traffic management measures, (f) Support for carpool/vanpool program, (g) Support for transportation disadvantaged program.

f. Data collection and system monitoring.

(1) AADTs (a) Annually on State Highway System (more frequently if possible), (b) Annually on all other network roads.

(2) Data base containing AADTs.

g. Identification of proposed strategies.

(1) ITE "A Toolbox for Alleviating Traffic Congestion.

(2) Other.

h. Implementation of specific MPO transportation/CMS projects.

(1) Implementation schedule.

(2) Implementation responsibility.

(3) Possible funding sources.

i. Evaluation of effectiveness of implemented strategies.

(1) Process developed for periodic assessment of effectiveness of implemented strategies.

4.3.2.2. Schedule for Implementation

October 1, 1994

(1) FDOT is to have submitted the work plan to FHWA/FTA.

(2) All MPOs should have begun collecting data on most congested facilities.

December 18, 1994

(1) MPOs in Transportation Management Areas must provide brief documentation in the long range plan updates for the "interim period" identifying the most serious congestion problems in the metropolitan area and proceeding with the development of actions to address those problems.

(2) MPOs in non-attainment/maintenance areas must have a process that results in an appropriate analysis of all reasonably available travel demand reduction and operational management strategies for the corridor in which a project that will result in increase in single occupant vehicle capacity is proposed. The areas must have a traffic management carpool/vanpool program.

January 1, 1995

FDOT provides FHWA Division Administrator certification statement.

October 1, 1995

(1) In Florida's non-attainment/maintenance areas, each of the MPOs CMAs must be fully operational; the processes take effect that date. The applicable MPOs provide certification statements.

(2) All other MPOs...

(3) In all areas...

(4) FDOT intends to have an updated MMP work plan and adopted procedure on MMP.

January 1, 1996

FDOT provides FHWA division Administrator certification statement.

5. RELATED DOCUMENTS AND PROGRAMS

Several local and state level documents/programs already address congestion management or certain aspects of congestion. Consideration of these documents and programs is essential to ensure that the CMS is coordinated with other existing processes. This review is also aimed at avoiding duplication of effort.

5.1. Dade County Concurrency Management System.

Metropolitan Dade County and all incorporated areas (municipalities) must, pursuant to state law, have and enforce a Concurrency Management System. While concurrency is applicable to several types of public infrastructure and services, this report considers those items most directly related to the CMS (e.g. roads and transit). In general, concurrency requires that new development be prohibited unless and until there is sufficient infrastructure to accommodate the development. Local governments are also required to adopt minimum level of service standards. The determination of whether there is sufficient capacity is based on those local standards.

The Concurrency Management System in Dade County includes an extensive database of the existing roadway network within most of the county area. All arterial and collector roads, regardless of maintenance responsibility, are included. Individual municipalities have their own Concurrency Management Systems. The level of information in those systems, however, varies greatly.

Federal regulations allow MPOs to use qualified existing systems/processes in lieu of a CMS. The Dade County Concurrency Management System provides a mechanism to control (or manage) traffic congestion by stopping development in areas that are already saturated with traffic (congested). However, the concurrency system fails to comply with all the requirements set out in the federal regulations. Area coverage, for example, is a concern because this system only addresses unincorporated areas of Dade County. A central Concurrency Management System does not exist for the municipalities in Dade County. Therefore, the Dade County Concurrency Management System will not qualify and should not be used in lieu of the mandated CMS. It should be noted, however, that the data available from the system can be very valuable and should be used by the CMS.

5.2. Long Range Transportation Plan (LRTP)

The MUA MPO prepares a LRTP as part of the federally mandated planning activities. This plan is updated on a regular basis of every 5 years. The purpose of that study is to update land use projections and formulate revised travel demand estimates on the county transportation network. These forecasts are then utilized to identify deficiencies and test alternative transportation improvements. That technical analysis, combined with input from citizen and policy groups, forms the basis for recommending and adopting a comprehensive plan for transportation improvements to address needs for the following 20 year planning period. The process also establishes priorities for the improvements. Finally, the plan is verified against available funding to ensure that it is financially feasible.

Presently, the LRTP and the supporting model are a regional transportation analysis tool. As such, analysis of specific congestion management strategies is deferred to later stages of the project planning and design process. Traditionally, corridor analysis are undertaken only occasionally and consideration of alternative modes is cursory in nature. The final configuration of federally funded projects is usually established during the Project Development and Environment (PD&E) study. In it's current form the LRTP does not meet the requirements of the CMS as defined by FHWA. The LRTP does ensure proper consideration of all the congestion management strategies listed in the Code of Federal Regulations because it is, primarily a long range transportation planning tool. A CMS, however, would be a logical short range complement to the LRTP.

5.3. Dade County Comprehensive Development Master Plan (CDMP)

Metropolitan Dade County has an adopted local comprehensive plan called the Dade County Comprehensive Development Master Plan (CDMP). This plan is comprised of 11 different plan elements, and each element contains adopted goals, objectives and policies that guide the physical development of the County. Some of the elements in the plan relate closely to the issues addressed by the CMS. These elements include traffic, mass transit and land use. The ground transportation component of the airport and the seaport are indirectly related to the CMS but more directly related to the Intermodal Management System being developed by FDOT.

As part of the plan policies Metropolitan Dade County has adopted minimum level of service standards for both traffic circulation and the county-wide transit system. (Municipalities have adopted standards for traffic circulation also but those standards may differ from the county standards and apply only within their own jurisdictional boundaries). For consistency, the plan should mention the CMS as a part of the comprehensive planning process. The level of service standards in the plan should also be used, as appropriate, as the guide in identifying congested locations.

In 1993, the Florida legislature adopted numerous revisions to the State's Growth Management Act (Chapter 163, Part II, F.S.) impacting local governments comprehensive plans. As local

governments are scheduled to prepare and update their local plans through the mandatory evaluation and appraisal report (EAR) process, the 1993 growth management revisions will have to be addressed. A new transportation element (s.163.3177(6)(j), F.S.) is required for most local governments which fall within the jurisdiction of a Metropolitan Planning Organization. This new element calls for expanded data and analysis requirements to be met. Several of these previous elements including the traffic, transit, and port and aviation will be combined. The update of the comprehensive plan, therefore should be coordinated with the development of the CMS to ensure that the document properly reflects the congestion management process. The data requirements for both efforts should be coordinated to avoid duplication.

5.4. Land Use Programs

Federal regulations suggest land use management as one of the alternative congestion management strategies that must be considered as part of the CMS. Dade County and the incorporated areas all have various forms of land use management. Most of these (like zoning regulations, for example) are driven by overall community planning and quality of life goals.

Land use management, in the context of congestion management, relates to strategies such as: balancing land uses to reduce travel demand, increase densities in areas with mass transit, control densities in areas where road facilities are inadequate or undesirable, etc.

One possible exception is the Traditional Neighborhood Development (TND) zoning district in Dade County. Traditional neighborhood developments are a concept whereby land uses are mixed to provide residents of the area with easy access (walk, bike or short drive) to destinations such as shops, places of employment, schools, parks, etc. A number of design elements are utilized to effect this accessibility. The ordinance provides for exceptions to zoning and subdivision regulations in areas designed as a planned TND district. The ordinance, however, only allows this type of neighborhood to be created. It does not promote or encourage that approach in a systematic manner. In other words, there is no concerted effort to reduce transportation demand by use of this concept.

In summary, land use programs are not specifically geared toward congestion management. These activities and regulations, however, must be coordinated with congestion management activities.

5.5. Air Quality Programs

Dade County is presently classified as an air quality non-attainment area. This classification, however, is due to exceedances in the acceptable levels of ozone. Traffic congestion is a significant indirect contributor because vehicle exhaust emissions, combined with air in the atmosphere, creates ozone. Dade County does not have any specific programs or ordinances to address air quality problems resulting from traffic congestion. The Dade County Department of

Environmental Resources Management, however, has a public information program that among other things encourage people to drive less (see Attachment A-B).

At the state level, the Florida Department of Environmental Protection (DEP) is responsible for implementation and enforcement of the federally mandated State Implementation Plan (SIP). That plan, however, does not provide for any specific measures or programs to reduce traffic related congestion as a mean to improve air quality.

The federal government, through provisions in ISTEA, establishes funding for programs aimed at improving air quality. These funds, available to non-attainment areas, are known as Congestion Mitigation Air Quality (CMAQ) Improvement Program. Dade County is taking advantage of this funding source for specific congestion reduction projects. The MPO and FDOT are working cooperatively in requesting funding for a series of projects that include transit improvements/extensions (in various forms) and signal system improvements. Examples of these projects are the East-West Multimodal Corridor Study and the Miami Intermodal Center (MIC).

Other types of projects such as Transportation Management Associations, Travel Demand Management, etc. may also qualify for these funds.

5.6. Congestion Mitigation Study

The Dade County MPO commissioned a congestion mitigation study in 1993. The study reviewed congestion mitigation strategies and made recommendations for implementation. The report suggested creation of a multi-agency committee to guide the process.

One of the major changes recommended in the report was the development and adoption of a trip reduction ordinance. A trip reduction ordinance requires major employers to develop, implement and enforce a plan to reduce the number of peak hour automobile trips generated by their place of employment. This concept, a state law in California, was brought about by air quality problems. In Miami the non-attainment status could potentially benefit from such an ordinance. Although the study was approved by the county, the ordinance has not been implemented yet. Additionally, the study recommended a series of short and long term travel demand strategies and programs including a CMS.

5.7. Transportation Management Associations

Transportation Management Associations or Organizations (TMAs or TMOs) are private, non-profit groups formed to facilitate private sector involvement in addressing transportation issues within a specific geographical area. In Florida the FDOT provides start-up matching funds to emerging TMAs through the TMA Grant Program on a four year sliding scale basis. The funding provides 75%, 60% and 40% matching funds during the first three years of operation.

In Dade County two TMA's are incorporated and applied for FDOT funds. These are the Civic Center Transportation Management Organization (CCTMO) and the South Beach Transportation Management Association (SoBeTMA). These two TMA's were organized by Gold Coast Commuter Services (GCCS) under the Regional Commuter Assistance Program sponsored by FDOT. In addition, the MPO provides funds to support TMA activities by implementing TDM programs and conducting transportation-related studies.

5.8. Vehicle Leasing Study

The MUA MPO completed a study of the feasibility of a vehicle leasing program in Dade County. The objective of such a program is to make vans available to organizations and/or groups of individuals that do not use the existing public transit system or desire to vanpool. The goal is to reduce use of low or single occupant vehicle use.

The study recommended a specific plan to obtain the vehicles. It also suggested several ways to handle maintenance. The report leaves the MPO with the decision on how to deploy the vehicles to achieve to overall program goals. A copy of the Executive Summary Report is included as Attachment A-C.

5.9. Road Pricing Study

The MPO conducted a study of road pricing in Dade County. Road pricing is a travel management technique where monetary incentives and disincentives are used to encourage or discourage travel. In general, congestion pricing can be applied in specific areas (including parking surcharges, access licenses, etc. in areas such as downtown), facility charges (tolls), peak hour charges (differential tolls), mode incentives (discounts for transit, HOV, etc.) and many other variations.

5.10. Bicycle Facilities Plan

The MPO is presently finalizing a Bicycle Plan for Metropolitan Dade County. The plan is a comprehensive review of existing bicycle facilities and needs. Recommendations are provided for additional facilities and improvements to existing facilities. The study, however, recognizes that a large portion of the bicycle use in Dade County is related to recreational activities. While bicycle facilities can provide an alternative travel mode, they have a limited role in meeting regional transportation needs.

5.11. Transportation Improvement Program (TIP)

The MPO prepares the TIP on an annual basis. This document is a consolidated summary of all transportation improvement plans for the following five year period. Projects, funded and unfunded, by all agencies are listed. Improvements include roads, transit, airports and seaports. This document is, in essence, the implementation vehicle for the LRTP.

The document lists the activities and funding sources in the first three years. It also lists unfunded projects that are needed within the subject five year window. Each year the report is updated by deleting completed projects, rescheduling projects that have not been completed and adding funded projects to the new (third) year of the plan. This process is required by federal regulations. The document, however, is also used as a coordination and information tool. For example, road projects funded using road impact fees collected from new development projects are also included. Developer commitments as a result of the development review process (Development Impact Committee - DIC, Developments of Regional Impact - DRIs, etc.) are also part of the report.

5.12. Access Management

The FDOT controls access to state roads through the use of regulations contained in Florida Statutes 335.18 and Florida Administrative Code 14-96 and 14-97. In essence all state routes have been assigned an access management classification. Each classification has specific criteria for minimum spacing of driveways, median openings and signal spacing. The purpose of access management is to protect the integrity of the State Highway System (SHS) by controlling the number and location of friction points. At the same time the regulations recognize that the SHS, in many cases performs a dual function of access to land uses along the road and mobility of longer trips to, from and through all areas of the state.

5.13. Florida Intrastate Highway System (FIHS)

The FIHS is a group of roadways designated by the FDOT to provide high speed and high volume service. The main objective is to ensure that traffic can travel trough the state at reasonable speeds and levels of service. The minimum level of service standards for FIHS roads in Dade County are higher that the standards on other roads. FDOT is in the process of developing a plan to bring FIHS roads into compliance with the standards over a period of 20 years.

5.14. Gold Coast Commuter Services (GCCS)

Gold Coast Commuter Services (GCCS) is a Florida Department of Transportation Regional Commuter Assistance Program (RCAP) serving Dade, Broward and Palm Beach counties. GCCS offers numerous free services to area commuters, some of which include computer generated match list for carpool and vanpool formation; information about all South Florida public transportation services (Metrorail, Metromover, Metro-Dade Transit Agency, Broward County Transit, CoTran, and TriRail); I-95 construction activities; TDM planning, including employee and student transportation surveys; and TMA development, support and evaluation.

5.15. South East Florida Intelligent Corridor Study (ICS)

The FDOT is undertaking a study of Intelligent Vehicle-Highway System (IVHS) applications in the MUA. The study is a comprehensive review of available technology including Advanced Public Transportation Systems - APTS. Potential application locations and system-wide concepts

are considered and recommended for staged implementation. In fact, portions of the plan are already being implemented in the form of surveillance cameras at the Golden Glades interchange. This equipment, being monitored from the Freeway Operations Center at FDOT District 6 offices, allows detection of incidents. This system permits the agencies to respond and possibly correct problems. A complementary system of changeable message signs greatly enhances the ability to relay useful information to motorists. This is just one example of how technology can be used to increase the efficiency of existing facilities. IVHS is one of the congestion management strategies that will be considered as part of the CMS.

5.16. Transportation Control Measures (TCM) Ordinance

The City of Miami requires significant new developments downtown to comply with an ordinance mandating actions to reduce traffic and air quality impacts. New projects must prepare a plan to reduce automobile volumes by ten percent. The ordinance also requires monitoring of the plan by reporting performance against objectives. The plan, if necessary, must be adjusted based on the results of the annual monitoring. The traffic control components have two major categories: transportation control measures and controlled parking supply. The transportation control measures include encouraging carpooling/vanpooling and mass transit use, staggered work hours, etc. The parking control measures include maximum (instead of minimum) parking limits and crediting of off-site parking towards site parking totals. Off-site parking can be provided near transit routes or by providing funding for construction of additional parking by the city. Air quality requirements ask for analysis of projected conditions and contribution towards improvements to mitigate air quality exceedances. A copy of the ordinance is included as Attachment A-D.

5.17. Automatic Vehicle Location

In 1994 the City of Miami sponsored a field operational test of Automatic Vehicle Location (AVL) technology to measure average travel speeds in major corridors throughout the city. The test consisted of monitoring the travel of volunteers driving their own vehicles on their normal travel routes. Location of the vehicles was recorded at regular intervals using data generated by special equipment installed in each vehicle. All the equipment was provided by a company that offers a variety of AVL services, primarily for commercial vehicle monitoring. The test was successful and resulted in a large amount of travel speed data.

These data are suitable for numerous applications such as evaluating the performance of the existing network for concurrency and congestion management purposes. The information can also be useful to validate the regional travel models and level of service software. Budget limitations allowed the city to analyze only a small portion of the data. There are no immediate plans to analyze the balance of the information. The city, however, has indicated they are willing to share the data with any group that may find it useful. This type of emerging technology has potential for advanced data collection applications. The cost effectiveness of using this data base, and possibly expanding this program should be investigated.

5.18. Comparison of Documents and Programs

Traffic congestion in the MUA is a serious concern. Prior to ISTEA, however, the most common approach to congestion was to add new lanes.

The FDOT and the county have been proactive in exploring alternatives to improve traffic flow. Numerous studies have been recently completed or are being completed now. Most of these studies have been coordinated or reviewed by the MPO as part of their role in the continuing, cooperative and comprehensive (CCC) planning process. The required CMS is providing the catalyst for integrating all these studies and programs into a process to systematically consider increasing the efficiency of existing facilities before new lanes are proposed.

The existing documents and programs described above consider (directly or indirectly) congestion management techniques and strategies. Exhibit A-1 presents a matrix comparison of these programs against the major congestion management strategy categories listed in the federal regulations. No program or study is comprehensive enough to be used in lieu of the required

CMS. However, all of them can have a role in providing data and/or a mechanism for implementation of the CMS recommendations.

EXHIBIT A-1

EXHIBIT A-1
EXISTING DOCUMENTS AND PROGRAMS
RELATIONSHIP TO MMP/CMS STRATEGIES

CMS STRATEGIES	CONC MANAG. SYSTEM	LONG RANGE TRANSP PLAN	COMP DEV MASTER PLAN	LAND USE PROGRAM	AIR QUALITY	CONG MITIG STUDY	TRANSP MANAG ASSOC	VEH. LEASING STUDY	ROAD PRICING STUDY	BICYCLE FACILITIES PLAN	TRANSP IMPR PROGR	ACCESS MANAG	FLORIDA INTRAST HWY SYSTEM	GOLD COAST COMM SERV	SE FL INTELLIG CORRIDOR STUDY	MIAMI TRANSP CONTROL MEASURE	MIAMI AUTOM VEH LOC
TRANSP. DEMAND MANAGEMENT	I	I	D		I	D	D	D	I	I				I	I	D	I
TRAFFIC OPER. IMPROVEMENTS	I		D		D		D				D	I	I		I	I	I
HIGH OCCUPANCY VEH. LANES		D	I		D	I		I	D		D		I	I	D		
PUBLIC TRANSIT CAP. IMPR.		D	I		D						D				I		
PUBLIC TRANSIT OPER. IMPR.	I	I	I		I	I	I	I	I		I			I	D		
NON-TRADITIONAL MODES			I		D	I	D			D	D						
CONGESTION PRICING		D			I	I			D		I	I				I	
GROWTH MANAGEMENT	D	I	D	D													
ACTIVITY CENTER STRATEGIES	I		D	D		D	D				I			I		D	
ACCESS MANAGEMENT		I	I								I	D	I				
INCIDENT MANAGEMENT			I								I		I		D		I
IVHS/APTS		D	I		I				D		D		D		D		
GENERAL PURPOSE LANES	I	D	D		D				D		D	I	D		I		
OTHER								D								D	

D = DIRECT IMPACT

I = INDIRECT IMPACT

6. EXISTING DATA COLLECTION SOURCES

Both federal regulations and the statewide task force on congestion management suggest that available data be used to the maximum extent possible. The ultimate data needs will be dictated by the final format of the CMS. This section identifies the principal sources of transportation data. While some municipalities have potentially useful information, this listing concentrates on the most extensive and easily available data. These data are usually obtained from state and county agencies. A list of these sources is provided below.

6.1. State

6.1.1. Florida Department of Transportation

Access Management

Traffic Counts

Existing Level of Service

Highway Performance Monitoring System (HPMS)

Roadway Characteristics Inventory (RCI)

Traffic Characteristics Inventory (TCI)

State Highway System (SHS) Map

Florida Intrastate Highway System (FIHS)

Federal Functional Classification Map

Five Year Work Program Capacity Improvements Map

Constrained Corridor Inventory

6.1.2. Gold Coast Commuter Services

Carpools/Vanpools

Transportation Management Associations (TMAs)

Employee and Student Origin-Destination Data

6.1.3. Department of Environmental Protection (DEP)

Air Quality Conditions Analysis Baseline

6.2. Dade County

6.2.1. Planning Department

Land Use

6.2.2. Department of Public Works

Traffic Counts

Traffic Signals

Road Maintenance Responsibility

6.2.3. (DIC) Concurrency Information Office

Road Concurrency Level of Service

6.2.4. Metro-Dade Transit Agency

6.2.4.1 Section 15 Data

6.2.5. Metropolitan Planning Organization

6.2.5.1 Transportation Model

6.2.5.2 Bicycle Facilities

6.2.6 Metropolitan Planning Organization

6.2.6.1 Transportation Model

6.2.6.2 Bicycle Facilities

6.2.7. Information Technology Department (ITD)

6.2.7.1 Geographic Information System

6.3. Municipalities

6.3.1. City of Miami

Average Travel Speed

Geographic Information System

6.4. Summary of Available Data

Metro-Dade County and the State of Florida have a multitude of existing data sources for transportation planning purposes. Many of these can be useful for the CMS required in the MUA. Both federal regulations and the state task force emphasize that a CMS is a process and it should not be a massive data collection effort. Reusing data is not only efficient, it is away to ensure that planning activities are coordinated.

Exhibit A-2 provides a summary of the principal sources of existing data that can be used in the MUA CMS. The data is cross-classified in matrix format against type. The data categories (types) are: physical, operational, performance, standards, improvements, jurisdiction, land use, demand reduction and policy.

According to the task force recommendations some of the factors that must be reviewed and/or reported include:

Percentage of congested lane miles by area and facility type.

Duration of congestion for congested and non-congested corridors.

Vehicle occupancies for congested and non-congested corridors.

EXHIBIT A-2
EXISTING DATA SUMMARY

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DATASUM

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	PHYSICAL	OPER	PERFORM	STDS	IMPROV	JURISD	LAND USE	DEMAND REDUCT	POLICY
FDOT									
Access Management	X			X					
Traffic Counts			X						
Existing Road LOS		X	X						
HPMS	X								
RCI	X								
TCI	X								
SHS Map						X			
FIHS Map				X		X			
Fed.Func. Classif.Map						X			
Work Prog.Cap.Impr.Map					X				
Constrained Corridors	X					X			X
GOLD COAST COMMUTER SERVICE									
Carpools/Vanpools								X	
TMAs								X	
Employee/Student O/D								X	
FDEP									
Air Quality Baseline			X						
DC PLANNING DEPT.									
Land Use							X		
DC PUBLIC WORKS									
Traffic Counts			X						
Traffic Signals	X	X	X						
Maint. Responsibility						X			
DC CONC.INF.OFFICE									
Road Conc. LOS		X	X						
MDTA									
Section 15 Data	X	X	X						
MUA MPO									
Transportation Model	X	X	X				X		X
Bicycle Facilities	X		X		X				
CD ITD									
GIS Database	X		X			X	X		
CITY OF MIAMI									
Ave. Travel Speed		X	X						
GIS Database	X								

	DEFINITIONS
FDOT	Florida Department of Transportation
LOS	Level of Service
HPMS	Highway Performance Monitoring System
RCI	Roadway Characteristics Inventory
TCI	Traffic Characteristics Inventory
SHS	State Highwat System
FIHS	Florida Intrastarte Highway System
O/D	Origin and Destination

	DEFINITIONS
FDEP	Florida Department of Environmental Protection
DC	Dade County
MDTA	Metro-Dade Transit Agency
TMA	Transportation Management Association
MUA	Miami Urbanized Area
MPO	Metropoloitan Planning Organization
ITD	Information Technology Department
GIS	Geographic Information System

The CMS will maximize use of the available data. Nevertheless additional information will be needed. The specific type, format and extent of these data will be defined in the next technical report.

7. TECHNICAL ISSUES

Implementation of federal mandates requires careful consideration of the minimum requirements weighed against intent, local resources, existing processes and other possible applications. Often, these requirements are expressed in general terms. This allows flexibility to the local governments for their own interpretation. On the other hand, insufficient guidance is provided to ensure that the outcome of the process complies with the regulations. Fortunately, FDOT took the initiative to create the Mobility Management Process Task Force. This group has provided an excellent forum to reach consensus on many of the areas that were not clear in the federal regulations. Also the group has considered the process in the context of planning activities in the State of Florida.

Nevertheless, the Miami Urbanized Area has conditions and processes unique to this area. Therefore special technical issues are emerging. Some of these have been discussed with the steering committee and conceptual direction has been provided. Others are presented here along with proposed approaches.

7.1. Level of Service Standards

The MUA MPO is responsible for long range transportation planning for the MPO area (Dade County including incorporated and unincorporated areas). Traditionally, this process has used a transportation model for travel demand forecasting. While overcapacity facilities are easy to identify, the ultimate criteria to determine acceptable operation is the level of service standards of Metropolitan Dade County. Development of the plan is subject to public input and municipalities are encouraged to participate during the process. Additional consideration is given to needs, alternatives, and detailed project configuration during later stages of the process. County level of service standards will soon be modified to reflect new criteria for FIHS roads. This study recommends that the same level of service standard be use as performance criteria.

7.2. Congestion Versus Mobility

The statewide task force has renamed the CMS process "Mobility Management Process" (MMP). This name reflects a growing trend towards a more positive and proactive approach that promotes mobility and accessibility instead of the implied reactive nature of congestion management. The study Steering Committee agreed with this concept and asked that the study be refocused toward mobility.

7.3. Transit Performance

Transit performance criteria is a required element of the CMS. This element is needed to measure how well the transit system performs and whether there is a need for improvement. These criteria also allow testing of improvement strategies and monitoring to ensure that improvements are effective when implemented. In Dade County transit level of service standards are a function of frequency of service (headway) for areas with a certain level of population and/or employment density. The statewide MMP task force has suggested the use of load factors (the ratio of transit riders to seats, consistent with the Highway Capacity Manual) to measure transit performance. An appropriate scale of load factors (considering type of service, type of area, etc.) may be appropriate. This issue will be addressed in detail in the final report.

7.4. Performance of Non-Traditional Modes

The principal non-traditional modes considered by the state MMP task force are pedestrians and bicycles. The group, however, recommended that performance should be measured in terms of whether these types of facilities are present or not. The main reason for this broad measurement is that seldom these facilities experience capacity limitations and/of congestion. Nevertheless they constitute a part of the transportation network and can provide an alternative mode for some users.

The MPO has recently undertaken a comprehensive analysis of existing bicycle facilities and needs in Dade County. While that study suggests specific methods to evaluate facility performance, it is important to keep in mind that the objective of the CMS in the MUA is to alleviate congestion and enhance mobility. Given the limited impact of bicycles on the overall capacity of the transportation system the task force recommendation seems appropriate.

7.5. Analysis Tools

Consideration of congestion management/mobility strategies is best accomplished by undertaking technical analysis. Federal regulations require that the impact of alternative strategies be evaluated so that systemwide impacts can be established. Dade County does not have any tool that can comprehensively evaluate CMS techniques. Development of this tool is needed as part of this study.

Conceptually, a tiered analysis process will be needed. Once a congestion/mobility need is identified in a corridor (or area) all alternative strategies should be screened to eliminate those that do not apply. The next step would provide preliminary, order of magnitude effectiveness measures. This step should also consider cost effectiveness. The most effective alternatives or combination of alternatives should then be subjected to more detailed analysis. This last step

should consider expected benefits, feasibility, cost, implementation difficulties, staging and secondary/overall impacts on the area as well as the balance of the transportation network.

It is anticipated that this process will combine automated and manual (analytical) steps. Automated steps may include use of the transportation model (refined to consider certain systemwide strategies), the Dade County GIS database, the GIS database to be created by FDOT District 6, the TDM Model developed by FHWA and custom spreadsheet templates developed for the Dade County CMS. Manual analysis will be, to the greatest extent possible, well documented and organized with the aid of checklists, worksheets, procedural manuals, etc. This approach will simplify the analysis and ensure consistency.

7.6. CMS Network

The MMP task force has recommended that the coverage of the CMS be the same as the coverage of the transportation model or the concurrency network. This study will use the most recent validation network in the Dade County transportation model as the primary source for congestion evaluation/assessment. The concurrency network, however, provides a large source of recent, peak hour/peak period traffic volume, capacity (route specific) and level of service information.

Therefore, this later network should be used as a secondary source of information to supplement the analysis.

8. LEGAL ISSUES

Development and implementation of the MUA CMS is mandated and authorized by federal regulations. Local or state laws/ordinances need not be modified to accommodate the system. Implementation of most congestion management strategies is possible within the purview of existing laws/ordinances/regulations and/or the existing authority of the agencies responsible for effecting the transportation planning process. A few strategies, however, are not explicitly covered by existing laws. Those strategies, if implemented on a voluntary basis, are likely to have little or no impact on congestion and/or mobility. The effectiveness of these strategies will depend on the coverage and implementation approach. Typically, however, strategies that require mandatory observance would be carefully analyzed and considered by policy makers before implementation. The steering committee will provide input into strategies that should not be considered for the CMS. The decision as to whether some of the strategies should be mandatory is usually made during the implementation phase.

9. INSTITUTIONAL STRUCTURE

9.1. Development, Implementation and Use of CMS

Federal regulations and the state-wide task force recognize that the responsibility for the CMS is with the MPO. This is the approach being followed by the MUA.

9.2. Coordination

Coordination of the CMS study involves a three tier coordination effort.

Tier 1: Study Steering Committee

Tier 2: General Public

Tier 3: MPO Committees

Development of the CMS is being coordinated with a multi-agency Steering Committee. Representation of the agencies and groups most affected by the proposed CMS ensures that development is consistent with the operations and goals of these groups. This approach will facilitate implementation of the system upon completion.

The MPO has developed a new Public Involvement Process. The new approach is consistent with the guidelines established in ISTEA. The CMS will be one of the first studies to be conducted under the new program.

MPO Committees will review the study recommendations and provide guidance throughout the project. These committees include the Transportation Plan Technical Advisory Committee (TPTAC), the Citizens Transportation Advisory Committee (CTAC), the Transportation Planning Council (TPC) and the MPO Board. Attachment A-E provides a list of the members of these committees.

9.3. Existing Planning Processes

The existing transportation planning process is directed by the MPO in cooperation with numerous government agencies and interested groups. Implementation of the CMS, as required by federal regulations, will necessitate adjusting the process. Changes are anticipated in the documents such as the Dade County CDMP. The process for developing the LRTP and the TIP will also be adjusted to reflect input to/from the CMS.

9.4. Municipalities

The network in the CMS will be the transportation model network. These facilities represent the main arterials, collectors and transit facilities in the MUA. This is the same coverage used for the LRTP. Federal regulations require that federal-aid facilities be considered in the CMS. The state-wide task force has recommended that the coverage in the MPO transportation model be added for consistency. Local streets represent a limited portion of the regional traffic and are not been considered in the CMS. Municipalities are represented in the steering committee by the City of Miami and will be consulted during the study. Municipalities are welcome to provide input and available data into the process.

9.5. Florida Intrastate Highway System (FIHS)

The FIHS is a group of roadways designated by the FDOT to provide high speed, high volume service. The main objective is to ensure that traffic can move thorough the state at reasonable speeds and level of service. Recent state laws provide for the protection of these facilities by requiring that local governments recognize the FIHS level of service standards.

The state-wide task force has recommended that congestion management for FIHS roads remain under the direction of FDOT. The CMS in the MUA will follow that recommendation.

9.6. Public Transportation Management System(PTMS)/Intermodal Management System(IMS)

The state-wide task force recommendations suggest that the PTMS and the IMS be the responsibility of FDOT. In the MUA, the FDOT District 6 office has begun this task. Federal regulations require that these systems be coordinated with the CMS. District 6 has developed a concept, in consultation with the MPO, whereby the data for these three management systems will be incorporated into a GIS environment to be developed by the District. The concept envisions that the database will reside and be maintained by FDOT. The MPO will have direct and unlimited access to the data in order to carry-out the responsibility of operating the system and implementing strategies as required by the regulations. Other interested agencies may also have access to the data either for information purposes, for special analyses or for carrying-out their respective functions supporting the transportation planning process and other agency responsibilities.

9.7. Interim CMS

Federal regulations allow non-attainment areas to develop an Interim CMS in lieu of a complete CMS. A fully operational CMS, however must be in place by October 1, 1995. The MUA MPO has reached a verbal agreement with FDOT whereby the District 6 office, as part of their ongoing

work, would develop the Interim CMS for this area. The MPO will work closely with FDOT to ensure that the Interim CMS is consistent with the ultimate CMS as well as the goals of the MPO.

10. SUMMARY OF RECOMMENDATIONS

Many programs already exist at the state and local level to address traffic congestion and mobility. The key to a successful and efficient congestion management system is not reinventing the wheel but instead having a program that will consider all these, and other alternatives in a systematic manner. Some of these programs (and previous studies) have associated data collection programs. Use of those data should be maximized in order to reduce new data collection efforts. The following recommendations are hereby presented.

(a) The Dade County Congestion Management System/Mobility Management Process (CMS/MMP) should be incorporated into the long and short range transportation planning process. This will require amending the CDMP and the process for developing the LRTP and the TIP.

(b) The data to be used in the CMS/MMP should be, primarily, from existing sources and ongoing programs that update the data on a regular basis.

(c) The data for the CMS/MMP should be, to the maximum extent possible, in electronic format. Furthermore, these data should be easily translated into the format most useful to the CMS/MMP.

(d) Automatic Vehicle Location (AVL) is an emerging technology capable of monitoring vehicular speeds. The cost effectiveness of using existing AVL data bases and expanding this data collection program should be investigated.

(e) Existing programs and previous studies under implementation should be included in the list of CMS/MMP strategies to be considered.

(f) The CMS/MMP could be based on a GIS and reside/be maintained by FDOT District 6. However, the system should be fully accessible to the MPO. This will require that the MPO develops their own GIS system capable of interacting with FDOT. Also, the performance measures, evaluation criteria and overall process should be established by the MPO.

(g) The MPO and FDOT should work cooperatively in the development of the CMS/MMP. Close coordination is also required in applying the process to FIHS roads as well as intermodal and transit facilities.

(h) The evaluation of CMS/MMP strategies should be based on a series of tools that will allow analysis at the appropriate level of detail. These may include regional transportation models, areawide evaluation software, corridor level techniques, and project specific analysis.

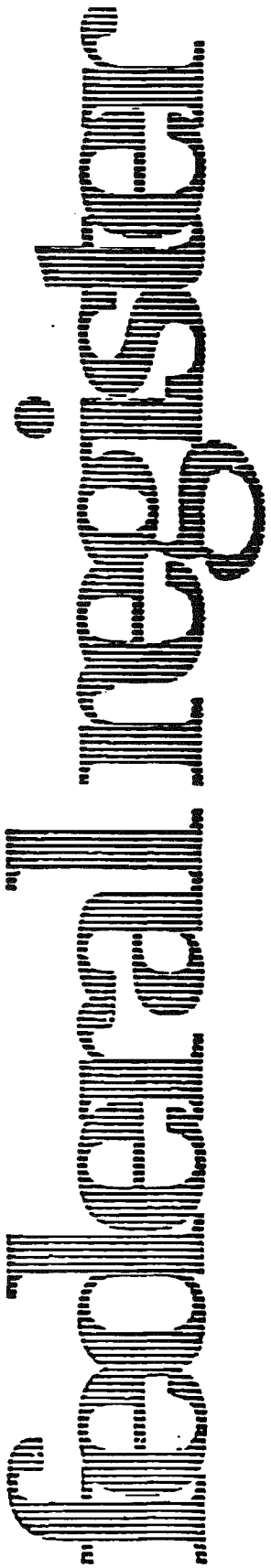
(i) Adopted level of service standards should be used as the guide for identifying congested locations. The policy documents specifying these standards are the Dade County Comprehensive Development Master Plan and the Florida Department of Transportation Intrastate Highway Systems standards.

(j) Long range and short range land use programs, such as the Dade County Comprehensive Development Master Plan, zoning regulations and ordinances, should be coordinated with congestion management activities.

ATTACHMENTS

List of Attachments

ATTACHMENT A-A
FEDERAL REGULATIONS
CONGESTION MANAGEMENT



Wednesday
December 1, 1993

Part II

Department of Transportation

Federal Highway Administration

23 CFR Parts 500 and 626

Federal Transit Administration

49 CFR Part 614

Management and Monitoring Systems; Interim Final Rule

information is required to be reported under this regulation. However, additional data may need to be collected by some States and other involved agencies for some of the management and monitoring systems. The FHWA and the FTA estimate that the burden for this additional data may range up to a maximum of 500,000 hours per year. After issuance of this interim final rule, the FHWA and the FTA will obtain additional information to better estimate this burden and will submit an amended request to the OMB for approval of any additional information collection.

National Environmental Policy Act

The FHWA and the FTA have analyzed this action for the purpose of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and have determined that this action would not have any effect on the quality of the environment.

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects

23 CFR Part 500

Bridges, Grant programs—transportation, Highway traffic safety, Highways and roads, Mass transportation, Reporting and recordkeeping requirements.

23 CFR Part 626

Design standards, Grant programs—transportation, Highways and roads.

49 CFR Part 614

Grant programs—transportation, Mass transportation.

Issued on: November 22, 1993.

Rodney E. Slater,

Federal Highway Administrator.

Gordon J. Linton,

Federal Transit Administration.

In consideration of the foregoing, Chapter I of title 23, Code of Federal Regulations and Chapter VI of 49 CFR are amended as set forth below.

23 CFR CHAPTER I

1. The heading of subchapter F of 23 CFR Chapter I is revised and a new part 500 is added to subchapter F to read as follows:

SUBCHAPTER F—TRANSPORTATION INFRASTRUCTURE MANAGEMENT

PART 500—MANAGEMENT AND MONITORING SYSTEMS

Subpart A—General

Sec.

Authority: 23 U.S.C. 134, 135, 303 and 315; 49 U.S.C. app. 1607; 23 CFR 1.32; and 49 CFR 1.48 and 1.51.

Subpart A—General

§ 500.101 Purpose.

The purpose of this part is to implement the requirements of 23 U.S.C. 303, Management Systems, which requires State development, establishment, and implementation of systems for managing highway pavement of Federal-aid highways (PMS), bridges on and off Federal-aid highways (BMS), highway safety (SMS), traffic congestion (CMS), public transportation facilities and equipment (PTMS), and intermodal transportation facilities and systems (IMS). Section 303 also requires State development, establishment, and implementation of a traffic monitoring system for highways and public transportation facilities and equipment. This subpart includes definitions and general requirements that are applicable to all of these systems. Additional requirements applicable to a specific system are included in subparts B through H of this part.

§ 500.103 Definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) are applicable to this part. As used in this part:

Certifying official(s) means the position(s) designated by the Governor of a State or the Commonwealth of Puerto Rico or the Mayor of the District of Columbia to certify that the management system(s) is/are being implemented in the State.

Cooperation means working together to achieve a common goal or objective.

Federal agency(ies) means for the PMS and BMS, the Federal Highway Administration (FHWA); for the SMS, the FHWA and the National Highway Traffic Safety Administration; for the CMS, PTMS, and IMS, the FHWA and the Federal Transit Administration (FTA).

Federal-aid highways means those highways eligible for assistance under title 23, U.S.C., except those functionally classified as local or rural minor collectors.

Highway Performance Monitoring System (HPMS) means the State/Federal system used by the FHWA to provide information on the extent and physical condition of the nation's highway system, its use, performance, and needs. The system includes an inventory of the nation's highways including traffic volumes.

Life-cycle cost analysis means a procedure for evaluating the economic worth of one or more projects or investments by discounting future costs

over the life of the project or investment.

Management system means a systematic process, designed to assist decisionmakers in selecting cost-effective strategies/actions to improve the efficiency and safety of, and protect the investment in, the nation's transportation infrastructure. A management system includes: Identification of performance measures; data collection and analysis; determination of needs; evaluation and selection of appropriate strategies/actions to address the needs; and evaluation of the effectiveness of the implemented strategies/actions.

Metropolitan planning area means the geographic area in which the metropolitan transportation planning process required by 23 U.S.C. 134 and section 8 of the Federal Transit Act (49 U.S.C. app. 1607) must be carried out.

Metropolitan planning organization (MPO) means the forum for cooperative transportation decisionmaking for a metropolitan planning area.

National highway system (NHS) means the system of highways designated and approved in accordance with the provisions of 23 U.S.C. 103(b).

Performance measures means operational characteristic, physical condition, or other appropriate parameters used as a benchmark to evaluate the adequacy of transportation facilities and estimate needed improvements.

State means any one of the fifty States, the District of Columbia, or Puerto Rico.

Transportation Management Area (TMA) means an urbanized area with a population over 200,000 (as determined by the latest decennial census) or other area when TMA designation is requested by the Governor and the MPO (or affected local officials), and officially designated by the Administrators of the FHWA and the FTA. The TMA designation applies to the entire metropolitan planning area(s).

Work plan means a written description of major activities necessary to develop, establish, and implement a management or monitoring system, including identification of responsibilities, resources, and target dates for completion of the major activities.

§ 500.105 Development, establishment, and implementation of the systems.

(a) Each State shall develop, establish, and implement the systems identified in § 500.101. Each State shall tailor the systems to meet State, regional, or local goals, policies, and resources, but the systems must meet the requirements as specified in subparts B through H of this part. Documentation that describes each management system shall be maintained by the States for the Federal agencies to determine, on a periodic basis, whether the systems meet the requirements in this subpart and subparts B through H of this part, as applicable.

(b) Each State shall have procedures, within the State's organization, for coordination of the development, establishment, implementation and operation of the management systems. The procedures must include:

(1) An oversight process to assure that adequate resources are available for implementation and that target dates in the work plan(s) are met;

(2) The use of data bases with a common or coordinated reference systems and methods for data sharing; and

(3) A mechanism to address issues related to the purposes of more than one management system.

(c) In developing and implementing each management system, the State shall cooperate with MPOs in metropolitan areas, local officials in non-metropolitan areas, affected agencies receiving assistance under the Federal Transit Act and other agencies (including private owners and operators) that have responsibility for operation of the affected transportation systems or facilities.

(d) In accordance with the provisions of 23 U.S.C. 134(i)(3) and 49 U.S.C. app. 1607(i)(3) and the requirements of 23 CFR part 450, the CMS shall be part of the metropolitan planning process in TMAs.

(e) Within metropolitan planning areas, the CMS, PTMS, and IMS shall, to the extent appropriate, be part of the metropolitan transportation planning process required under the provisions of 23 U.S.C. 134 and 49 U.S.C. app. 1607.

(f) In metropolitan planning areas that have more than one MPO and/or that include more than one State, the establishment, development, and implementation of the CMS, PTMS, and IMS shall be coordinated among the State(s) and MPO(s) to ensure compatibility of the systems and their results.

(g) The results (e.g., policies, programs, projects, etc.) of the individual management systems shall be considered in the development of metropolitan and statewide transportation plans and improvement programs and in making project selection decisions under title 23, U.S.C., and under the Federal Transit Act.

(h) The roles and responsibilities of the State, MPO(s), recipients of assistance under the Federal Transit Act, and other agencies involved in the development, establishment, and implementation of each system shall be mutually determined by the parties involved. A State may enter into agreements with local governments, regional agencies (such as MPOs), recipients of funds under the Federal Transit Act, or other entities to develop, establish, and implement appropriate parts of any or all of the systems, but the State shall be responsible for overseeing and coordinating such activities.

(i) Section 204(a) of title 23, U.S.C., requires the Secretary in cooperation with the Secretaries of the Interior and Agriculture to develop the safety, bridge and pavement management systems for Federal lands highways, as defined in 23 U.S.C. 101(a). To avoid duplication of effort, the management systems required under this part should be used to the extent appropriate to fulfill the requirement in 23 U.S.C. 204(a) regarding establishment and implementation of pavement, bridge, and safety management systems for Federal lands highways. The State, the Federal agencies, and the agencies that own the roads shall cooperatively determine responsibility for coverage of Federal lands highways under their respective jurisdictional control and shall ensure that the results of the PMS, BMS, and SMS for Federal lands highways are available, as appropriate, for consideration in developing metropolitan and statewide transportation plans and improvement programs and are provided to the FHWA for use in developing Federal lands highway programs.

(j) Each management system must include appropriate means to evaluate the effectiveness of implemented actions developed through use of that system. The effectiveness of the management systems in enhancing transportation investment decisions and improving the overall efficiency of the State's transportation systems and facilities shall be evaluated periodically, preferably as part of the metropolitan and statewide planning processes.

§ 500.107 Compliance.

(a) States must be implementing the management systems specified in subparts B through G of this part beginning in Federal fiscal year 1995 (October 1, 1994 to September 30, 1995) and must certify annually to the Secretary of Transportation that they are implementing each of the management systems. A State shall be considered to be implementing a management system if the system is under development or in use in accordance with the

compliance schedule for that system as specified in subparts B through G of this part.

(b) The Governor of the State or the Commonwealth of Puerto Rico or the Mayor of the District of Columbia shall notify the FHWA Division Administrator in writing by September 30, 1994, of the title(s) of the certifying official(s) for each management system. If there is a change in designated position(s), the State shall provide documentation of the revised designation with, or prior to, the next annual certification. In those States where responsibility for all of the management systems is within a single agency (e.g., State DOT), designation of one certifying official for all of the management systems is recommended.

(c) The certification statement(s) shall be submitted by the certifying official(s) to the FHWA Division Administrator by January 1 of each year, beginning January 1, 1995. To the extent possible, one certification statement should cover all six management systems. If more than one certification statement will be submitted by a State, the statements should be coordinated at the State level and submitted simultaneously. The first certification statement shall include a copy of the workplan(s), required in accordance with the compliance schedule for each management system, and a summary of the status of implementation of the management system(s). Subsequent certification statement(s) shall include a summary of the status of implementation of each management system and a discussion of planned corrective actions for any management system(s) or subsystem(s) that are not under development or fully operational in accordance with the compliance schedule and work plan for the management system.

(d) The FHWA Division Administrator will provide copies of the certification statement(s) and any relevant supporting documentation and correspondence to other Federal agencies identified for the specific system(s) in § 500.103. Within 90 days of receipt, the Federal agencies will review the certification and the FHWA Division Administrator will notify the State whether the certification is acceptable or if sanctions may be imposed in accordance with the provisions of § 500.109.

(e) A State shall be considered to be implementing the traffic monitoring system for highways (TMS/H), specified in subpart H of this part, if the system is under development or in use in accordance with the compliance schedule in § 500.809. The State shall submit the work plan for the TMS/H to the FHWA Division Administrator by January 1, 1995.

(The information collection requirements in paragraphs (c) and (e) of § 500.107 have been approved by the Office of Management and Budget under control number 2125-0555.)

§ 500.109 Sanctions.

(a) Beginning January 1, 1995, if a State fails to certify annually as required by this regulation, or if the Federal agencies determine that any management system or subsystem, specified in subparts B through G of this part, is not being adequately implemented, notwithstanding the State's certification(s), the Secretary may withhold up to 10 percent of the funds apportioned to the State under title 23, U.S.C., and to any recipient of assistance under the Federal Transit Act for any fiscal year beginning after September 30, 1995. Sanctions may be imposed on a statewide basis, on a subarea of a State, for specific categories of funds or types of projects, or for specific recipients or subrecipients of funds under title 23, U.S.C., or under the Federal Transit Act depending on the adequacy of implementation of the management systems.

(b) While a State may enter into agreements with local governments or other agencies to develop, establish, and implement all or parts of the management systems, in accordance with § 500.105(g), the State shall be responsible for ensuring that the systems are being implemented statewide and for taking any necessary corrective action, including implementing the systems at the regional and local levels if necessary.

(c) Prior to imposing a sanction, a State will be notified in writing by the FHWA of the sanction(s) to be imposed, the reasons for the sanctions, and the actions necessary to correct the deficiencies. After 60 days from the date of notification to the State, the Federal agencies will consider any corrective actions proposed by the State and the FHWA will notify the State if such actions are acceptable or if sanctions are to be applied.

(d) In instances where a State, or responsible sub-unit of a State or recipient of funds under the Federal Transit Act, has not fully implemented all of the management systems, consideration shall be given by the Federal agencies to efforts underway or planned to make the systems fully operational within a reasonable time period.

(e) To the extent that they have not lapsed, funds withheld pursuant to this subpart shall be made available to the State or recipient under the Federal Transit Act upon a determination by the Federal agencies that the management systems are being adequately implemented.

§ 500.111 Funds for development, establishment, and implementation of the systems.

(a) The following categories of funds may be used for development, establishment, and implementation of any of the management and monitoring systems: National Highway System, Surface Transportation Program, FHWA State planning and research and metropolitan planning funds (including the optional use of minimum allocation funds authorized under 23 U.S.C. 157(c) for carrying out the provisions of 23 U.S.C. 307(c)(1) and 23 U.S.C. 134(a)), Federal Transit Act Section 8 (49 U.S.C. app. 1607), Federal Transit Act Section 9 (49 U.S.C. app. 1607a), Federal Transit Act Section 26(a)(2) (49 U.S.C. app. 1622(a)(2)), and Federal Transit Act Section 26(b)(1) (49 U.S.C. app. 1626(b)(1)). Congestion Mitigation and Air Quality Improvement Program funds (23 U.S.C. 104(b)(2)) may be used for those management systems that can be shown to contribute to the attainment of a national ambient air quality standard. Apportioned bridge funds (23 U.S.C. 144(e)) may be used for development and establishment of the bridge management system.

(b) Federal funds identified in paragraph (a) of this section used for development, establishment, or implementation of the management and monitoring systems shall be administered in accordance with the procedures and requirements applicable to the category of funds.

§ 500.113 Acceptance of existing management systems.

(a) Existing State laws, rules, or procedures that the Federal agencies determine fulfill the purposes of a management system, or portion thereof, as specified in this part may be accepted by the Federal agencies in lieu of development and implementation of a new system.

(b) If a State has existing laws, rules, or procedures that it wants to use to meet the requirements of this part, it shall submit a written request to the FHWA Division Administrator that the Federal agencies accept the existing management system in lieu of development of a new system. The request shall include a discussion, and any necessary supporting documentation, that shows how the existing system meets the requirements of this part. The documentation shall reflect the views of the MPOs, transit

operators, and other affected agencies, as appropriate, and the actions to be taken to assure that the cooperation required under § 500.105(c) is established.

(c) Upon receipt of a request, the FHWA Division Administrator will coordinate review of the request with the other Federal agencies specified in § 500.103 and with appropriate FHWA offices. Within 90 days of receipt of the State's request, the FHWA will notify the State that the existing system is either fully acceptable, acceptable subject to specific modifications, or unacceptable and that a new system must be developed.

(d) To meet the compliance schedule for a system, the State must submit any requests under paragraph (a) of this section no later than June 1, 1994.

Subpart B—Pavement Management System

§ 500.201 Purpose.

The purpose of this subpart is to set forth requirements for development, establishment, implementation, and continued operation of a pavement management system (PMS) for Federal-aid highways in each State in accordance with the provisions of 23 U.S.C. 303 and subpart A of this part.

§ 500.203 PMS definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) and § 500.103 are applicable to this subpart. As used in this part:

Pavement design means a project level activity where detailed engineering and economic considerations are given to alternative combinations of subbase, base, and surface materials which will provide adequate load carrying capacity. Factors which are considered include: materials, traffic, climate, maintenance, drainage, and life-cycle costs.

Pavement management system (PMS) means a systematic process that provides, analyzes, and summarizes pavement information for use in selecting and implementing cost-effective pavement construction, rehabilitation, and maintenance programs.

§ 500.205 PMS general requirements.

(a) Each State shall have a PMS for Federal-aid highways that meets the requirements of § 500.207 of this subpart.

(b) The State is responsible for assuring that all Federal-aid highways in the State, except those that are federally owned, are covered by a PMS. Coverage of federally owned public roads shall be determined cooperatively by the State, the FHWA, and the agencies that own the roads.

(c) PMSs should be based on the concepts described in the "AASHTO Guidelines for Pavement Management Systems."[1]

(d) Pavements shall be designed to accommodate current and predicted traffic needs in a safe, durable, and cost-effective manner.

§ 500.207 PMS components.

(a) The PMS for the National Highway System (NHS) shall, as a minimum, consist of the following components:

(1) Data collection and management.

(i) An inventory of physical pavement features including the number of lanes, length, width, surface type, functional classification, and shoulder information.

(ii) A history of project dates and types of construction, reconstruction, rehabilitation, and preventive maintenance.

(iii) Condition surveys that include ride, distress, rutting, and surface friction.

(iv) Traffic information including volumes, classification, and load data.

(v) A data base that links all data files related to the PMS. The data base shall be the source of pavement related information reported to the FHWA for the HPMS in accordance with the HPMS Field Manual.[2]

(2) Analyses, at a frequency established by the State consistent with its PMS objectives.

(i) A pavement condition analysis that includes ride, distress, rutting, and surface friction.

(ii) A pavement performance analysis that includes an estimate of present and predicted performance of specific pavement types and an estimate of the remaining service life of all pavements on the network.

(iii) An investment analysis that includes:

(A) A network-level analysis that estimates total costs for present and projected conditions across the network.

(B) A project level analysis that determines investment strategies including a prioritized list of recommended candidate projects with recommended preservation treatments that span single-year and multi-year periods using life-cycle cost analysis.

(C) Appropriate horizons, as determined by the State, for these investment analyses.

(iv) For appropriate sections, an engineering analysis that includes the evaluation of design, construction, rehabilitation, materials, mix designs, and preventive maintenance as they relate to the performance of pavements.

(3) Update. The PMS shall be evaluated annually, based on the agency's current policies, engineering criteria, practices, and experience, and updated as necessary.

(b) The PMS for Federal-aid highways that are not on the NHS shall be modeled on the components described in paragraph (a) of this section, but may be tailored to meet State and local needs. These components shall incorporate the use of the international roughness index or the pavement serviceability rating data as specified in Chapter IV of the HPMS Field Manual.

§ 500.209 PMS compliance schedule.

(a) By October 1, 1994, the State shall develop a work plan that identifies major activities and responsibilities and includes a schedule that demonstrates full operation and use of the PMS on the NHS by October 1, 1995, and on non-NHS Federal-aid highways by October 1, 1997.

(b) By October 1, 1995:

(1) The PMS for the NHS shall be fully operational and shall provide projects and programs for consideration in developing metropolitan and statewide transportation plans and improvement programs; and

(2) PMS design for non-NHS Federal-aid highways shall be completed or underway in accordance with the State's work plan.

(c) By October 1, 1997, the PMS for non-NHS Federal-aid highways shall be fully operational and shall provide projects and programs for consideration in developing metropolitan and statewide transportation plans and improvement programs.

Subpart C—Bridge Management System

§ 500.301 Purpose.

The purpose of this subpart is to set forth requirements for the development, establishment, implementation, and continued operation of a management system for bridges (BMS) on and off Federal-aid highways in each State in accordance with the provisions of 23 U.S.C. 303 and subpart A of this part.

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[1] AASHTO Guidelines for Pavement Management Systems, July 1990, can be purchased from the American Association of State Highway and Transportation Officials, 444 N. Capitol Street, NW., suite 225, Washington, DC 20001. Available for inspection as prescribed in 49 CFR part 7, appendix D.

[2] Highway Performance Monitoring System (HPMS) Field Manual for the Continuing Analytical and Statistical Data Base, DOT/FHWA, August 30, 1993, (FHWA Order M5600.1B). Available for inspection and copying as prescribed in 49 CFR part 7, appendix D.

§ 500.303 BMS definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) and § 500.103 are applicable to this subpart. As used in this part:

Bridge management system (BMS) means a decision support tool that supplies analyses and summaries of data, uses mathematical models to make predictions and recommendations, and provides the means by which alternative policies and programs may be efficiently considered. A BMS includes formal procedures for collecting, processing, and updating data, predicting deterioration, identifying alternative actions, predicting costs, determining optimal policies, performing short- and long-term budget forecasting, and recommending programs and schedules for implementation within policy and budget constraints.

Elements means the components of a bridge important from a structural, user, or cost standpoint. Examples are decks, joints, bearings, girders, abutments, and piers.

Multiperiod optimization means a procedure that optimally allocates limited funds among alternative actions over a planning horizon (both short and longterm) using an optimization procedure such as minimizing life-cycle and user costs. The modeling procedure accounts for traffic growth and deterioration, and facilitates analyses of the effects of alternative policies, budgets, and operational practices on the future conditions and long-term serviceability of the bridge inventory.

Network level analysis means an analysis pertaining to policy, system planning, programmatic, or budgeting issues for the whole bridge inventory on a roadway network or a subset thereof.

Serviceability means the degree to which a bridge provides satisfactory service from the users' point of view.

User costs means costs borne by bridge users, traveling on or beneath the structure and excess costs to those who cannot use the bridge due to load or clearance restrictions. It includes travel time, motor vehicle operating, and accident costs that are measured on site or estimated using models.

§ 500.305 BMS general requirements.

Each State shall have a BMS for bridges on and off Federal-aid highways that includes the components identified in § 500.307 of this subpart. Except for federally owned bridges, all bridges required to be inventoried and inspected under 23 CFR part 650, subpart C—National Bridge Inspection Standards, shall be included. Each State shall maintain a centralized data base that contains the BMS data for bridges on and off Federal-aid highways, except those that are federally owned. The State shall implement network analysis procedures that are capable of analyzing data for all bridges in the inventory or in any subset including inventories within any MPO jurisdiction or within a local agency jurisdiction. Local bridge owners may supplement the State BMS with a locally operated system that is tailored to their particular needs. Coverage of federally owned bridges on public roads shall be determined cooperatively by the State, the FHWA, and the agencies that own the bridges.

§ 500.307 BMS components.

(a) A State BMS shall include, as a minimum, the components identified in paragraphs (b) and (c) of this section.

(b) A data base and an ongoing program for the collection and maintenance of the inventory, inspection, cost, and supplemental data needed to support the BMS.

(c) A rational and systematic procedure for applying network level analysis and optimization to the bridge inventory. The procedure shall have the ability to:

(1) Predict the deterioration of bridge elements with and without intervening actions.

(2) Identify feasible actions to improve bridge condition, safety, and serviceability.

(3) Estimate the cost of actions.

(4) Estimate expected user cost savings for safety and serviceability improvements.

(5) Determine least-cost maintenance, repair, and rehabilitation strategies for bridge elements using life-cycle cost analysis or a comparable procedure.

(6) Perform multiperiod optimization.

(7) Use feedback from actions taken to update prediction and cost models.

(8) Generate summaries and reports as needed for the planning and programming processes.

§ 500.309 BMS compliance schedule.

(a) By October 1, 1994, the State shall have formalized its BMS objectives and developed a work plan that identifies major activities and responsibilities for BMS development and implementation. The work plan shall include a schedule that demonstrates full operation and use of the BMS by October 1, 1998.

(b) By October 1, 1995, the design of the BMS shall be completed or underway in accordance with the State's work plan and full-scale data collection shall be underway.

(c) By October 1, 1998, the BMS shall be fully operational and shall result in the identification of bridge needs for consideration in developing metropolitan and statewide transportation plans and improvement programs.

Subpart D—Highway Safety Management System

§ 500.401 Purpose.

The purpose of this subpart is to set forth requirements for the development, establishment, implementation, and continued operation of a highway safety management system (SMS) in each State in accordance with the provisions of 23 U.S.C. 303 and subpart A of this part.

§ 500.403 SMS definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) and § 500.103 are applicable to this subpart. As used in this part:

Highway safety means the reduction of traffic crashes, and deaths, injuries, and property damage resulting therefrom, on public roads.

Highway safety management system (SMS) means a systematic process that has the goal of reducing the number and severity of traffic crashes by ensuring that all opportunities to improve highway safety are identified, considered, implemented as appropriate, and evaluated in all phases of highway planning, design, construction, maintenance, and operation and by providing information for selecting and implementing effective highway safety strategies and projects.

Operations means activities associated with managing, controlling, and regulating highway traffic.

§ 500.405 SMS general requirements.

(a) Each State shall develop, establish, and implement, on a continuing basis, an SMS for all public roads, except federally owned public roads. Coverage of federally owned public roads shall be determined cooperatively by the State, the federal agencies, and the agencies that own the roads.

(b) The SMS shall incorporate the roadway, human, and vehicle safety elements. Formalized and interactive communication, coordination, and cooperation shall be established among the organizations responsible for these major safety elements including: enforcement, emergency medical services, emergency response, motor carrier safety, motor vehicle administration, State highway safety agencies, the public health community, State and local transportation/highway agencies, and State and local railroad and/or trucking regulatory agencies. State agencies shall also coordinate, as appropriate, with Local Technical Assistance Program centers to develop

and expand the SMS expertise of local transportation agencies.

(c) The State shall consider and include, where appropriate, projects and programs identified by use of the SMS in its Highway Safety Plan (HSP) (23 CFR 1204.4, Supp. B) and Motor Carrier Safety Assistance Program State Enforcement Plan (SEP) (49 CFR part 350). In addition the results of the SMS shall be considered in developing metropolitan and statewide transportation plans and improvement programs.

(d) Each State shall assign a focal point for coordination of the development, establishment, and implementation of the SMS among the agencies responsible for the roadway, human, and vehicle safety elements.

(e) While the SMS applies to all public roads, in addition to tailoring the system to meet State, regional and local goals, policies, and resources, the extent of system requirements (e.g., data collection, analyses, and standards) for rural minor collectors and local roads may be further tailored to be consistent with the functional classification of the road. However, adequate detail must be included for each functional classification to provide for effective safety decisions in the administration of highway transportation by State and local agencies.

§ 500.407 SMS components.

(a) Plans, processes, procedures, and practices shall be established to implement, coordinate, and evaluate programs, projects, and activities of the five major areas identified in paragraph (b) of this section. These plans, processes, procedures, and practices, shall incorporate, as appropriate:

(1) Establishment of short- and long-term highway safety goals to address both existing and anticipated safety problems as well as substandard highway locations, designs, and features, and to allocate resources;

(2) Establishment of accountability by identifying and defining the safety responsibilities of units and positions;

(3) Recognition of institutional and organizational initiatives through identification of disciplines involved in highway safety at the State and local level, assessment of multi-agency responsibilities and accountability, and establishment of coordination, cooperation, and communication mechanisms;

(4) Collection, maintenance, and dissemination of data necessary for identifying problems and determining improvement needs. Data bases and data sharing shall be integrated as necessary to achieve maximum utilization of existing and new data within and among the agencies responsible for the roadway, human, and vehicle safety elements. These records, as a minimum, shall consist of information pertaining to: crashes, traffic (including number of trains at highway-rail crossings), pedestrians, enforcement activities, vehicles, bicyclists, drivers, highways, and medical services;

(5) Analysis of available data, multi-disciplinary and operational investigations, and comparisons of existing conditions and current standards to assess highway safety needs, select countermeasures, and set priorities;

(6) Evaluation of the effectiveness of activities that relate to highway safety performance to guide future decisions;

(7) Development and implementation of public information and education activities to educate and inform the public on safety needs, programs, and countermeasures that affect safety on the nation's highways; and

(8) Identification of skills, resources, and current and future training needs to implement the State's activities and programs affecting highway safety, development of a program to carry out necessary training, and development of methods for monitoring and disseminating new technology and incorporating effective results.

(b) Five major areas shall be addressed in structuring the SMS:

(1) Coordinating and integrating broad base safety programs (such as motor carrier, corridor, and community based traffic safety activities) into a comprehensive management approach for highway safety;

(2) Identifying and investigating hazardous or potentially hazardous highway safety problems, roadway locations and features (including railroad-highway grade crossings) and establishing countermeasures and priorities to correct the identified hazards or potential hazards;

(3) Ensuring early consideration of safety in all highway transportation programs and projects;

(4) Identifying safety needs of special user groups (such as older drivers, pedestrians, bicyclists, motorcyclists, commercial motor carriers, and hazardous material carriers) in the planning, design, construction, and operation of the highway system; and

(5) Routinely maintaining and upgrading safety hardware (including highway-rail crossing warning devices), highway elements, and operational features.

§ 500.409 SMS compliance schedule.

(a) By October 1, 1994, the State shall develop a work plan that identifies major activities and responsibilities and includes a schedule that demonstrates full operation and use of the SMS by October 1, 1996.

(b) By October 1, 1995, the SMS shall be complete or underway in accordance with the State's work plan.

(c) By October 1, 1996, the SMS shall be fully operational and shall provide highway safety strategies, actions, projects, or programs for consideration in the development of the HSP, the SEP and metropolitan and statewide and transportation plans and improvement programs, and for coordination and implementation in the operational activities of the State and local agencies.

Subpart E—Traffic Congestion Management System

§ 500.501 Purpose.

The purpose of this subpart is to set forth requirements for development, establishment, implementation, and continued operation of a system for managing traffic congestion (CMS) in each State in accordance with the provisions of 23 U.S.C. 303 and subpart A of this part. The requirement in 23 U.S.C. 134 that the transportation planning process in a transportation management area (TMA) include a congestion management system is also covered by this subpart and by 23 CFR part 450.

§ 500.503 CMS definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) and § 500.103 are applicable to this subpart. As used in this part:

Congestion means the level at which transportation system performance is no longer acceptable due to traffic interference. The level of acceptable system performance may vary by type of transportation facility, geographic location (metropolitan area or subarea, rural area) and/or time of day.

Congestion management system (CMS) means a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods. A CMS includes methods to monitor and evaluate performance, identify alternative actions, assess and implement cost-effective actions, and evaluate the effectiveness of implemented actions.

§ 500.505 CMS general requirements.

(a) Each State shall develop, establish, and implement, on a continuing basis,

a CMS that results in the identification and implementation of strategies that provide the most efficient use of existing and future transportation facilities in all areas of a State, including metropolitan and non-metropolitan areas, where congestion is occurring or is expected to occur. The State, the Federal agencies, and the agencies that own the facilities shall cooperate to manage congestion on federally owned facilities.

(b) In both metropolitan and non-metropolitan areas, consideration shall be given to strategies that reduce single-occupant-vehicle (SOV) travel and improve existing transportation system efficiency. Where the addition of general purpose lanes is determined to be an appropriate strategy, explicit consideration shall be given to the incorporation of appropriate features into the SOV project to facilitate future demand management and operational improvement strategies to maintain the functional integrity of those lanes.

(c) All transportation corridors or facilities with existing or potential recurring congestion shall be identified and an assessment of the level of the current or potential congestion shall be made on a continuing basis. Based on this assessment, the geographical area to be covered and the transportation facilities to be included in the CMS shall be established, except that the entire metropolitan planning area shall be included in TMAs that are nonattainment for carbon monoxide and/or ozone. Coverage of facilities and activities shall be sufficient to accurately reflect any cumulative effects that the implementation of a combination of physical improvements and/or areawide transportation policy decisions may have on transportation system performance.

(d) In all TMAs, the CMS shall be part of the metropolitan planning process in accordance with 23 CFR 450.120(b).

(e) In addition to the other requirements of this subpart, in a TMA designated as nonattainment for carbon monoxide and/or ozone, the CMS shall provide an appropriate analysis of all reasonable (including multimodal) travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in capacity for SOVs (adding general purpose lanes to an existing highway or constructing a new highway) is proposed. If the analysis demonstrates that travel demand reduction and operational management strategies cannot fully satisfy the need for additional capacity in the corridor and additional SOV capacity is warranted, then the CMS shall identify all reasonable strategies to manage the SOV facility effectively (or to facilitate its management in the future). Other travel demand reduction and operational management strategies appropriate for the corridor, but not appropriate for incorporation into the SOV facility itself shall also be identified through the CMS. As required by 23 CFR 450.320(b), all identified reasonable travel demand reduction and operational management strategies shall be incorporated into the SOV project or committed to by the State and MPO for implementation.

(f) In areas that are nonattainment for transportation related pollutants, the strategies developed as part of the CMS shall be coordinated with the process for the development of the transportation control measures of the State implementation plan for air quality required under the provisions of the Clean Air Act.

(g) Because of their interrelationship, the development, establishment, and implementation of the CMS shall be coordinated with the development, establishment, and implementation of the public transportation management system and the intermodal management system described in subparts F and G, respectively, of this part.

§ 500.507 CMS components.

(a) *Performance measures.* Parameters shall be defined that will provide a measure of the extent of congestion and permit the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods. Since acceptable system performance may vary among local communities, performance measures shall be established cooperatively by the State and affected MPO(s) or local officials in consultation with the operators of major modes of transportation in the coverage area.

(b) *Data collection and system monitoring.* A continuous program of data collection and system monitoring shall be established to determine and monitor the duration and magnitude of congestion and to evaluate the effectiveness of implemented actions. To the extent possible, existing data sources, such as, the HPMS and FTA Section 15 data, should be used.

(c) *Identification and evaluation of proposed strategies.* The anticipated performance and expected benefits of traditional and nontraditional strategies that will contribute to the more efficient use of existing and future transportation systems shall be identified and evaluated based on the established performance measures. Strategies, or combinations of strategies, to be appropriately considered include, but are not limited to:

(1) Transportation demand management measures, such as, carpooling, vanpooling, alternative work hours, telecommuting, and parking management;

(2) Traffic operational improvements, such as, intersection and roadway widening, channelization, traffic surveillance and control systems, motorist information systems, ramp metering, traffic control centers, and computerized signal systems;

(3) Measures to encourage high occupancy vehicle (HOV) use, such as, HOV lanes, HOV ramp bypass lanes, guaranteed ride home programs, and employer trip reduction ordinances;

(4) Public transit capital improvements, such as, exclusive rights-of-way (rail, busways, bus lanes), bus bypass ramps, park and ride and mode change facilities, and paratransit services;

(5) Public transit operational improvements, such as, service enhancement or expansion, traffic signal preemption, fare reductions, and transit information systems;

(6) Measures to encourage the use of nontraditional modes such as bicycle facilities, pedestrian facilities, and ferry service;

(7) Congestion pricing;

(8) Growth management and activity center strategies;

(9) Access management techniques;

(10) Incident management;

(11) Intelligent vehicle-highway system and advanced public transportation system technology; and

(12) The addition of general purpose lanes.

(d) *Implementation of strategies.* For each strategy (or combination of strategies) proposed for implementation, an implementation schedule, implementation responsibilities, and possible funding sources shall be identified.

(e) *Evaluation of the effectiveness of implemented strategies.* A process for periodic assessment of the effectiveness of implemented strategies, in terms of the area's established performance measures, shall be implemented. The results of this evaluation shall be provided to decisionmakers to provide guidance on selection of effective strategies for future implementation.

§ 500.509 CMS compliance schedule.

(a) By October 1, 1994, the State shall develop a work plan that identifies major activities and responsibilities and includes a schedule that demonstrates full operation and use of the CMS in

different modes of transportation and serves intrastate, interstate, and international movement of people and goods. Intermodal facilities include, but are not limited to, highway elements providing terminal access, coastal, inland and Great Lakes ports, canals, pipeline farms, airports, marine and/or rail terminals, major truck terminals, transit terminals including park and ride facilities, intercity bus terminals.

Intermodal management system (IMS) means a systematic process of identifying key linkages between one or more modes of transportation, where the performance or use of one mode will affect another, defining strategies for improving the effectiveness of these modal interactions, and evaluation and implementation of these strategies to enhance the overall performance of the transportation system.

Intermodal system means a transportation network consisting of public and private infrastructure for moving people and goods using various combinations of transportation modes.

§ 500.705 IMS general requirements.

(a) Each State shall develop, establish, and implement, on a continuing basis, an IMS that provides efficient, safe, and convenient movement of people and goods through integration of transportation facilities and systems and that improves the coordination in planning, and implementation of air, water, and the various land-based transportation facilities and systems.

(b) The IMS shall address intermodal transportation needs by a process that considers the following issues:

(1) *Connections.* The convenient, rapid, efficient, and safe transfers of people and goods among modes that characterize comprehensive and economic transportation service.

(2) *Choices.* Opportunities afforded by modal systems that allow transportation users to select their preferred means of conveyance.

(3) *Coordination and cooperation.* Collaborative efforts of planners, users, and transportation providers to resolve travel demands by investing in dependable, high-quality transportation service either by a single mode or by two or more modes in combination.

(c) The IMS shall consider the movement of both people and goods, alternatives for meeting transportation demands involving combinations of modes, and provide timely and appropriate information for intermodal transportation decisions for site-specific intermodal facilities, as well as the systems necessary to achieve the most efficient transportation movement.

(d) Because of their interrelationship, the development, establishment, and implementation of the IMS shall be coordinated with the development, establishment, and implementation of the congestion management system and the public transportation management system described in subparts E and F, respectively, of this part.

(e) In metropolitan planning areas that have more than one MPO and/or include more than one State, the development, establishment, and implementation of the IMS shall be coordinated to ensure consistency in the development of intermodal facilities, systems, plans, and programs.

§ 500.707 IMS components.

(a) *Identification of intermodal facilities.* The IMS shall identify intermodal facilities and intermodal transportation systems and establish the demands placed upon them to accommodate intrastate, interstate, and/or international movements of people and goods.

(b) *Identification of performance measures.* Parameters shall be identified that are suitable to measure and evaluate the efficiency of intermodal facilities and systems in moving people and goods from origin to destination. Parameters may include the total travel time, cost, and volumes for moving cargo and passengers, origins and destinations, capacity, accidents, ease of access, perceived quality, and the average time to transfer people or freight from one mode to another. Since the expectations and measurements of transportation quality of service vary between communities and industries, performance measures shall be established cooperatively at the State and local levels with private sector coordination, as appropriate.

(c) *Data collection and system monitoring.* The IMS shall include a continuing data collection and system monitoring program that is coordinated with data collection and system monitoring programs for the congestion management, public transportation management, and traffic monitoring systems. It shall include a base year inventory consisting of physical and operational characteristics of intermodal facilities and systems, and surveys of the operational and physical characteristics of intermodal facilities and systems based on performance measures established by State and local transportation agencies. Operational characteristics may include time, cost, capacity, and usage. This information should be obtained, to the extent possible, from the ongoing metropolitan and statewide planning processes. States shall coordinate their data collection programs with programs of the U.S. DOT.

(d) *System and facility efficiency evaluation.* Data collection and system monitoring shall be used by the States and local agencies to evaluate the performance of intermodal facilities and systems to determine the efficiency of the movement of people and goods.

(e) *Strategy and action identification and evaluation.* Statewide and local strategies and actions that improve the intermodal efficiency for the movement of people and goods shall be developed and evaluated. Methods for increasing productivity and the use of advanced technologies (such as, high speed rail) and innovative marketing techniques (such as, just-in-time delivery) shall be evaluated where appropriate. The evaluation program shall determine what project or combination of projects and actions would most effectively improve the intermodal productivity of transportation systems, in terms of the established performance measures, for both the short and long term.

§ 500.709 IMS compliance schedule.

(a) By October 1, 1994, the State shall develop a work plan that identifies major activities and responsibilities and includes a schedule that demonstrates full operation and use of the IMS by October 1, 1996. Intermodal facilities shall be inventoried and data collection activities shall be initiated.

(b) By October 1, 1995, performance measures and standards shall be established, system design shall be completed or underway in accordance with the State's work plan, and full-scale data collection shall be underway.

(c) By October 1, 1996, the IMS shall be fully operational and shall provide projects and programs for consideration in developing metropolitan and statewide transportation plans and improvement programs.

Subpart H—Traffic Monitoring System for Highways

§ 500.801 Purpose.

The purpose of this subpart is to set forth requirements for development, establishment, implementation, and continued operation of a traffic monitoring system for highways (TMS/H) in each State in accordance with the provisions of 23 U.S.C. 303 and subpart A of this part. Requirements for traffic monitoring for non-highway public transportation facilities and equipment is included in subpart F of this part.

§ 500.803 TMS/H definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a)

TMAs that are nonattainment for ozone and/or carbon monoxide by October 1, 1995, and in all other areas by October 1, 1996. The most critical areas requiring analysis shall be identified and data collection activities shall be initiated.

(b) By October 1, 1995:

(1) In TMAs that are nonattainment for ozone and/or carbon monoxide, the CMS shall be fully operational and shall provide projects and programs for consideration in developing metropolitan and statewide transportation plans and improvement programs. Until the CMS in a TMA that is nonattainment for carbon monoxide and/or ozone is fully operational in accordance with the requirements of this subpart, the interim CMS requirements in 23 CFR 450.336(b) regarding the programming of Federal funds for a highway or transit project that significantly increases capacity for SOVs shall be met; and

(2) In all other areas, system design shall be completed or underway in accordance with the State's work plan and full-scale data collection shall be underway.

(c) By October 1, 1996, the CMS shall be fully operational in all areas and shall provide projects and programs for consideration in developing of metropolitan and statewide transportation plans and improvement programs.

Subpart F—Public Transportation Facilities and Equipment Management System

§ 500.601 Purpose.

The purpose of this subpart is to set forth requirements for development, establishment, implementation, and continued operation of a system for managing public transportation facilities and equipment (PTMS) in each State in accordance with the provisions of 23 U.S.C. 303 and subpart A of this part.

§ 500.603 PTMS definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) and § 500.103 are applicable to this subpart. As used in this part:

Public transportation facilities and equipment management system (PTMS) means a systematic process that collects and analyzes information on the condition and cost of transit assets on a continual basis. It identifies needs as inputs to the metropolitan and statewide planning processes enabling decisionmakers to select cost-effective strategies for providing and maintaining assets in a serviceable condition.

Transit assets means public transportation facilities (e.g., maintenance facilities, stations, terminals, transit related structures), equipment, and rolling stock.

§ 500.605 PTMS general requirements.

(a) Each State shall develop, establish, and implement on a continuing basis a PTMS that covers urban and rural area public transportation systems operated by the State, local jurisdictions, public transportation agencies and authorities, and private (for profit and non-profit) transit operators receiving funds under Federal Transit Act sections 3, 9 (capital and operating), 16, or 18 (49 U.S.C. app. 1602, 1607a, 1612, or 1614) and public transportation systems operated by contracted service providers with capital equipment funded under Federal Transit Act sections 3, 9, 16 or 18.

(b) The PTMS shall be developed, established, and implemented in cooperation with recipients and subrecipients of funds under Federal Transit Act sections 3, 9, 16, or 18.

(c) Transit assets shall be designed to accommodate current and predicted use or ridership in a safe and cost effective manner.

(d) Because of their interrelationship, the development, establishment, and implementation of the PTMS shall be coordinated with the development, establishment, and implementation of the congestion management system and the intermodal management system described in subparts E and G, respectively, of this part.

§ 500.607 PTMS components.

(a) *Identification of condition measures.* Measures and standards suitable for evaluating the condition of the transit assets shall be developed. The measures and standards shall reflect State, metropolitan planning organization, and local transit operator goals and objectives for safety, efficiency, and reliability. The standards shall reflect the necessity to maintain transit assets in a good state of repair.

(b) *Data collection and system monitoring.* Data collection and system monitoring for the PTMS shall be coordinated with data for the congestion management, intermodal management, and traffic monitoring systems and shall include, as a minimum:

(1) Base year comprehensive inventory of the transit assets. For each type of asset in the inventory, information collected should include age, condition, remaining useful life, and replacement cost. Transit asset data shall be collected in cooperation with metropolitan planning organizations and transit operators at a frequency and level of detail appropriate to the type of capital stock of the transit system.

(2) Number of vehicles and ridership data for dedicated transit rights-of-way (e.g., rail and busways), at the maximum load points for the peak period in the peak direction and for the daily time period. Data related to highway transit vehicles and ridership will be collected as part of the highway traffic monitoring system as specified in subpart H of this part.

(c) *Identification and evaluation of proposed strategies and projects.* Information provided by data collection and system monitoring activities shall be used to determine the condition of all transit assets previously inventoried, needs and schedules for major maintenance or replacement, and the estimated replacement costs.

(d) *Implementation of strategies and projects.* The costs, potential funding sources, and priorities of proposed strategies and projects shall be identified. The strategies and projects shall be evaluated for potential inclusion in metropolitan and statewide transportation plans and improvement programs.

§ 500.609 PTMS compliance schedule.

(a) By October 1, 1994, the State shall develop a work plan that identifies major activities and responsibilities and includes a schedule that demonstrates full operation and use of the PTMS by October 1, 1996.

(b) By October 1, 1995, condition measures and data system structure shall be established and data collection shall be underway.

(c) By October 1, 1996, the PTMS shall be fully operational and shall provide projects and programs for consideration in developing metropolitan and statewide transportation plans and improvement programs.

Subpart G—Intermodal Facilities and Systems Management System

§ 500.701 Purpose.

The purpose of this subpart is to set forth requirements for development, establishment, implementation, and continued operation of a system for managing intermodal facilities and systems (IMS) in each State in accordance with the provisions of 23 U.S.C. 303 and subpart A of this part.

§ 500.703 IMS definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) and § 500.103 are applicable to this subpart. As used in this part:

Intermodal facility means a transportation element that accommodates and interconnects

and § 500.103 are applicable to this subpart. As used in this part:

Highway traffic data means data used to develop estimates of the amount of person or vehicular travel, vehicle usage or vehicle characteristics associated with a system of highways or with a particular location on a highway. These types of data support the estimation of the number of vehicles traversing a section of highway or system of highways during a prescribed time period (traffic volume), the portion of such vehicles that may be of a particular type (vehicle classification), the weights of such vehicles including the weight of each axle and associated distances between axles on a vehicle (vehicle weight), or the average number of persons being transported in a vehicle (vehicle occupancy).

Traffic monitoring system for highways means a systematic process for the collection, analysis, summary, and retention of highway related person and vehicular traffic data, including public transportation on public highways and streets.

§ 500.805 TMS/H general requirements.

(a) Each State shall develop, establish, and implement, on a continuing basis, a TMS/H to be used by Federal departments and agencies, States, local governments, other public agencies, or private agencies when:

(1) The data are supplied to the U.S. Department of Transportation (U.S. DOT);

(2) The data are used in support of the management systems required under 23 U.S.C. 303;

(3) The data are used in support of studies or systems which are the responsibility of the U.S. DOT;

(4) The collection of the data is supported by the use of Federal funds provided from programs of the U.S. DOT;

(5) The data are used in the apportionment or allocation of Federal funds;

(6) The data are used in the design or construction of a Federal-aid project; or

(7) The data are required as part of a federally mandated program.

(b) The TMS/H should be based on the concepts described in the American Association of State Highway and Transportation Officials (AASHTO) "AASHTO Guidelines for Traffic Data Programs"[1] and the FHWA "Traffic Monitoring Guide,"[2] and shall be consistent with the HPMS Field Manual.[3]

(c) The TMS/H shall cover all public roads except those functionally classified as local or rural minor collector or those that are federally owned. Coverage of federally owned public roads shall be determined cooperatively by the State, the FHWA, and the agencies that own the roads.

(d) The State's TMS/H shall apply to the activities of local governments and other public or private non-State government entities collecting data within the State if the collected data are to be used for any of the purposes enumerated in § 500.805(a) of this subpart.

(e) Procedures other than those referenced in this subpart may be used if the alternative procedures are documented by the State to furnish the precision levels as defined for the various purposes enumerated in § 500.805(a) of this subpart and are found acceptable by the FHWA.

(f) Nothing in this subpart shall prohibit the collection of additional traffic data if such data are needed in the administration or management of a highway activity or are needed in the design of a highway project.

§ 500.807 TMS/H components.

(a) *General.* Each State's TMS/H, including those using alternative procedures, shall affirmatively address the components in paragraphs (b) through (h) of this section.

(b) *Precision of reported data.* Traffic data supplied for the purposes identified in § 500.805(a) of this subpart shall be to the statistical precision applicable at the time of the data's collection as specified by the data users at various levels of government. A State's TMS/H shall meet the statistical precisions established by FHWA for the HPMS.

(c) *Continuous counter operations.* Within each State, there shall be sufficient continuous counters of traffic volumes, vehicle classification, and vehicle weight to provide estimates of changes in highway travel patterns and to provide for the development of day-of-week, seasonal, axle correction, growth factors or other comparable factors approved by the FHWA that support the development of traffic estimates to meet the statistical precision requirements of the data uses identified in § 500.805(a) of this subpart. As appropriate, sufficient continuous counts of vehicle classification and vehicle weight should be available to address traffic data program needs.

(d) *Short term traffic monitoring.* (1) Count data for traffic volumes collected in the field shall be adjusted to reflect annual average conditions. The estimation of annual average daily traffic will be through the appropriate application of only the following: Seasonal factors, day-of-week factors and when necessary, axle correction and growth factors or other comparable factors approved by the FHWA. Count data that have not been adjusted to represent annual average conditions will be noted as being unadjusted when they are reported. The duration and frequency of such monitoring shall comply to the data needs identified in § 500.805(a) of this subpart.

(2) Vehicle classification activities on the National Highway System (NHS), shall be sufficient to assure that, on a cycle of no greater than three years, every major system segment (defined as between interchanges or intersections of principal arterials of the NHS with other principal arterials of the NHS) will be monitored to provide information on the numbers of single-trailer combination trucks, multiple-trailer combination trucks, two-axle four-tire vehicles, buses and the total number of vehicles operating on an average day. If it is determined that two or more continuous major system segments have both similar traffic volumes and distributions of the vehicle types identified above, a single monitoring session will be sufficient to monitor these segments. Until the NHS is approved by the Congress, these procedures shall apply to the principal arterial system in each State.

(e) *Vehicle occupancy monitoring.* As deemed appropriate to support the data uses identified in § 500.805(a) of this subpart, data will be collected on the average number of persons per automobile, light two-axle truck, and bus. The duration, geographic extent and level of detail shall be consistent with the intended use of the data, as cooperatively agreed to by the organizations that will use and the organizations that will collect the data. Such vehicle occupancy data shall be reviewed at a minimum of every three years and updated as necessary. Acceptable data collection methods include roadside monitoring, traveler surveys, the use of administrative records, such as, accident reports,

[1] *AASHTO Guidelines for Traffic Data Programs*, 1992, ISBN 1-56051-054-4, can be purchased from the American Association of State Highway and Transportation Officials, 444 N. Capitol Street, NW., suite 225, Washington, DC 20001. Available for inspection as prescribed in 49 CFR part 7, appendix D.

[2] *Traffic Monitoring Guide*, DOT/FHWA, publication No. FHWA-PL-92-017, October 1992. Available for inspection and copying as prescribed in 49 CFR part 7, appendix D.

[3] *Highway Performance Monitoring System (HPMS) Field Manual for the Continuing Analytical and Statistical Data Base*, DOT/FHWA, August 30, 1993 (FHWA Order M5600.1B). Available for inspection and copying as prescribed in 49 CFR part 7, appendix D.

reports developed in support of public transportation programs or any other method mutually acceptable to the responsible organizations and the FHWA.

(f) *Field operations.* (1) Each State's TMS/H shall include the testing of equipment used in the collection of highway traffic data. This testing shall be based on documented procedures developed by the State. This documentation will describe the test procedure as well as the frequency of testing. Standards of the American Society for Testing and Materials or guidance from the AASHTO may be used. Only equipment passing the test procedures will be used for the collection of data for the purposes identified in § 500.805(a) of this subpart.

(2) Documentation of field operations shall include the number of counts, the period of monitoring, the cycle of monitoring, and the spatial and temporal distribution of count sites. Copies of the State's documentation shall be provided to the FHWA when it is initially developed and after each revision.

(g) *Source data retention.* For estimates of traffic or travel, the value or values collected during a monitoring session, as well as information on the date(s) and hour(s) of monitoring, will remain available until the traffic or travel estimates based on the count session are updated. Data shall be available in formats that conform to those in the version of the TMG current at the time of data collection or as then amended by the FHWA.

(h) *Office factoring procedures.* (1) Factors to adjust data from short term monitoring sessions to estimates of average daily conditions shall be used to adjust for month, day of week, axle correction, and growth or other comparable factors approved by the FHWA. These factors will be reviewed annually and updated at least every three years.

(2) The procedures used by a State to edit and adjust highway traffic data collected from short term counts at field locations to estimates of average traffic volume shall be documented. The documentation shall include the factors discussed in paragraph (h)(1) of this section. The documentation shall remain available for the same duration as the traffic or travel estimates discussed in paragraph (g) of this section remain current. Copies of the State's documentation shall be provided to the FHWA when it is initially developed and after each revision.

§ 500.809 TMS/H compliance schedule.

(a) By October 1, 1994, the State shall develop a work plan that identifies major activities and responsibilities and includes a schedule that demonstrates full operation and use of the TMS/H for the NHS (or the principal arterial system until the NHS is approved by the Congress) by October 1, 1995, and on all other public highways, other than those functionally classified as local or rural minor collector, by October 1, 1996.

(b) By October 1, 1995, the TMS/H for the NHS shall be fully operational and in use (or the principal arterial system until the NHS is approved by the Congress) and the TMS/H for all other public highways, other than those functionally classified as local or rural minor collector, shall be in operation or under development in accordance with the State's work plan.

(c) By October 1, 1996, the TMS/H shall be fully operational and in use for all public highways, other than those functionally classified as local or rural minor collector.

PART 626—[REMOVED]

2. Part 626 is removed.

49 CFR CHAPTER VI

3. Part 614 is added to 49 CFR Chapter VI to read as follows:

PART 614—TRANSPORTATION INFRASTRUCTURE MANAGEMENT

Sec.

614.101 Cross-reference to management systems.

Authority: 23 U.S.C. 303; 49 U.S.C. app. 1607; and 49 CFR 1.48 and 1.51.

§ 614.101 Cross-reference to management systems.

The regulations in 23 CFR part 500, subparts A, E, F, and G, shall be followed in complying with the requirements of this part. 23 CFR part 500, subparts A, E, F, and G, implement 23 U.S.C. 303 for State development, establishment, and implementation of systems for managing traffic congestion (CMS), public transportation facilities and equipment (PTMS), and intermodal transportation facilities and systems (IMS).

[FR Doc. 93-29096 Filed 11-30-93; 8:45 am]

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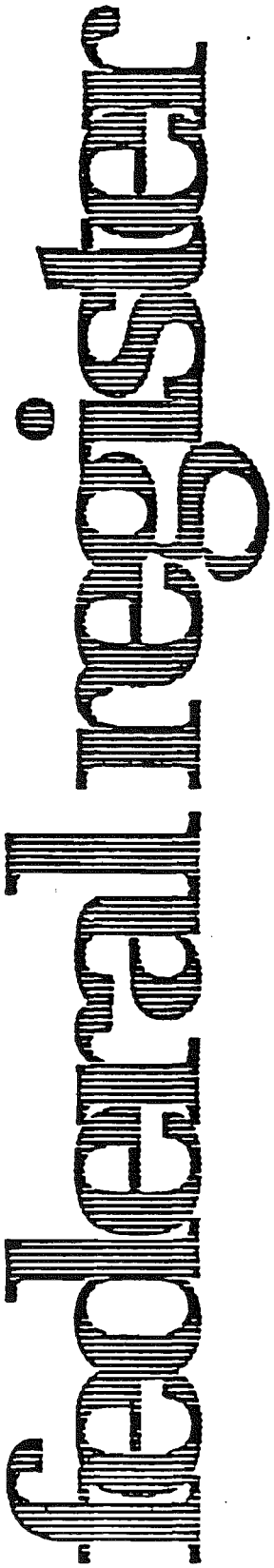


Thursday
October 28, 1993

Part II

Department of Transportation

Federal Highway Administration
Federal Transit Administration

23 CFR Part 450
49 CFR Part 613
Statewide Planning; Metropolitan Planning; Rule

the FTA, all funds withheld will be restored to the metropolitan area, unless they have lapsed.

§ 450.336 Phase-in of new requirements.

(a) Except for reflecting the consideration given the results of the management systems, the planning process and plans in nonattainment areas requiring TCMs shall comply, to the extent possible, with the requirements of this subpart by October 1, 1994. All other metropolitan areas shall comply to the extent possible with the requirements of this subpart by December 18, 1994. Where time does not permit a quantitative analysis of certain factors, a qualitative analysis of those factors will be acceptable. If a forecast period of less than twenty years is acceptable for SIP development and air quality conformity purposes, that same time period will be acceptable for transportation planning. The initial plan update shall be financially feasible, taking into account capital costs and the funds reasonably available for capital improvements, as well as addressing to the extent possible the costs of and revenues available for operating and maintenance of the transportation system. Where TCMs are required, the plan update process shall be coordinated with the process for developing TCMs. The planning process for subsequent updates of the plan and the updated plans shall comply with the requirements of this subpart. Plan updates performed in all areas must consider the results of the management systems (specified in 23 CFR Part 500) as they become available. The plan shall reflect this consideration.

(b) (1) During the period prior to the full implementation of the CMS in a TMA, the MPO in cooperation with the State, the public transit operators, and other operators of major modes of transportation shall identify the location of the most serious congestion problems in the metropolitan area and proceed with the development of actions to address these problems.

(2) Prior to the full implementation of a CMS, an adequate interim CMS in a TMA designated as nonattainment for carbon monoxide and/or ozone shall, as a minimum, include a process that results in an appropriate analysis of all reasonably available (including multimodal) travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in SOV capacity is proposed. This analysis must demonstrate how far such strategies can go in eliminating the need for additional SOV capacity in the corridor. If the analysis demonstrates that additional SOV capacity is warranted, then all reasonable strategies to manage the facility effectively (or to facilitate its management in the future) shall be incorporated into the proposed facility. Other travel demand reduction and operational management strategies appropriate for the corridor, but not appropriate for incorporation into the SOV facility itself must be committed to by the

State and the MPO for implementation in a timely manner but no later than completion of construction of the SOV facility. If the area does not already have a traffic management and carpool/vanpool program, the establishment of such programs must be a part of the commitment.

(3) In TMAs that are nonattainment for carbon monoxide and/or ozone, the MPO, a State and/or transit operator may not advance a project utilizing Federal funds that provides a significant capacity increase for SOVs (adding general purpose lanes, with the exception of safety improvements or the elimination of bottlenecks, or a new highway on a new location) beyond the NEPA process unless an interim CMS is in place that meets the criteria in paragraphs (b)(1) and (b)(2) of this section and the project results from this interim CMS.

(4) Projects that are part of or consistent with a State mandated congestion management system/plan are not subject to the requirements in paragraphs (b)(1) and (b)(2) of this section.

(5) Projects advanced beyond the NEPA process as of April 6, 1992 and which are being implemented, e.g., right-of-way acquisition has been approved, will be deemed to be programmed and not subject to this requirement.

(6) At such time as a final CMS is fully operational the provisions of § 450.320(b) apply.

ATTACHMENT A-B

DADE COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT

AIR QUALITY PUBLIC INFORMATION PROGRAM

Dade County's

URBAN CO_2 REDUCTION PROGRAM

GLOBAL WARMING

Global warming represents one of the most serious environmental threats to our world and could have grave effects on Dade County's environment, economy and way of living. Global warming is an increase in average global temperatures caused by a build-up of carbon dioxide (CO_2) and other "greenhouse" gases that trap heat in the earth's atmosphere.

Carbon dioxide (CO_2) is a colorless and odorless gas formed during respiration, combustion and organic decomposition. Burning fossil fuels and deforestation, both human activities, release large amounts of CO_2 into the atmosphere. CO_2 levels have increased by 25 percent since the Industrial Revolution in the 1860s.

Dade County, a coastal community, is particularly vulnerable to the impacts of global warming. Scientists believe that by the early part of the next century temperatures could rise an average of seven degrees. Under these conditions Dade County could experience a half year of temperatures above 90 degrees and an additional two months of temperatures above 95 degrees. Sea levels could rise by one to two feet, causing a loss of 200 to 800 feet of beach. The Everglades and coral reef ecosystems could be irreparably harmed. Violent hurricanes accompanied by storm surges and tidal waves could become more common. Salt water could contaminate the region's freshwater drinking supply, and commercial fisheries could decline. Additionally, changes in weather patterns could lead to frequent droughts.

URBAN CO_2 REDUCTION PROJECT

Metro-Dade is taking the lead in fighting global warming. The County is one of 12 international urban cities/counties selected to participate in the Urban CO_2 Reduction Project sponsored by the International Council For Local Environmental Initiatives (ICLEI). The purpose of this worldwide project is to significantly reduce CO_2 emissions over a 10 year period through the implementation of local actions. The project will focus on energy production, transportation, land use and solid waste.

The plan will be developed under the guidance of a steering committee chaired by Commissioner Harvey Ruvin and including representatives of Florida Power and Light Company, City Gas Company, Florida International University (Environmental Studies Program), Greater Miami Chamber of Commerce, Citizens For A Better South Florida, Sierra Club and the Tropical Audubon Society. Dade County's staff support is provided by Metro-Dade Solid Waste, Transportation, Planning, and Building and Zoning. The project is administered by the Department of Environmental Resources Management.

Dade County is the only subtropical urban area included in the project and will serve as potential model for other coastal metropolitan areas around the nation and the world. Other participating cities include Portland, Oregon; San Jose, California; Minneapolis, Minnesota; Denver, Colorado; Toronto, Canada; Hannover, Germany; Saarbrucken, Germany; Ankara, Turkey; Copenhagen, Denmark; Helsinki, Finland; and Bologna, [illegible]

Dade County is building on substantial experience in each of the functional areas to be included in this project. Dade has an energy code which was developed in the 1970s and a mass transit system constructed in the early 80's which is now being expanded. Dade County operates the largest curbside solid waste recycling program in the nation and for several years has operated the largest waste-to-energy plant in the nation. The County has been a national leader in environmental programming, including the State's first mobile source air pollution control program and a recently enacted requirement for recapture and recycling of chlorofluorocarbons. Dade's landscape code is currently being revised to incorporate both water conservation and energy efficiency elements, and an ordinance is in place to encourage traditional town developments which utilize mixed use planning to decrease the number of automobile trips. While these programs have been put in place for a variety of reasons, they each have an impact on CO_2 emissions.

YOU CAN MAKE A DIFFERENCE

The overall success of this project is dependent on individuals making changes to their lifestyle. The following is a check list of simple things you can do to slow global warming.

- Drive your car less. For every one gallon of gasoline burned, twenty-two pounds of CO_2 is emitted into the atmosphere. Instead of driving the car to the store or to work, walk, ride a bike or take Metrorail. If these options aren't practical try car-pooling with a friend.

- Have a free energy audit conducted by Florida Power and Light to determine cost-effective and energy-efficient measures for your home. Changes may include: *ceiling, wall, and hot-water [illegible]ater insulation; [illegible]aking and weather-stripping [illegible]d windows and doors; [illegible]pgrading old appliances with [illegible]nd money saving [illegible]ppliances.*

- Re[illegible] [illegible]cent light bulbs with compact [illegible]t bulbs which require one-quar[illegible]ctricity.

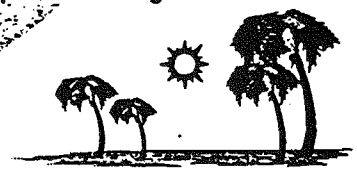
- Turn off [illegible]r conditioners when not in the [illegible]

- Re-use [illegible] glass, aluminum, newspapers [illegible]er materials.

- Install a low-flow showerhead.

- Plant native shade trees around the house to keep the house cool in summer. Trees also recycle CO_2.

Dade County is participating in an historic effort. This project is the first of its kind to address global environmental problems through local actions.



If you have any questions relating to this project, please call 375-DERM or write to:

Department of Environmental Resources Management
Urban CO_2 Project Coordinator
111 NW First Street, Suite 1310
Miami, FL 33128

ATTACHMENT A-C

VEHICLE LEASING STUDY
EXECUTIVE SUMMARY

DRAFT

Executive Summary

CONGESTION MITIGATION:

PUBLIC-PRIVATE PARTNERSHIPS STUDY

Prepared by:

The Corradino Group

Carr Smith Associates

Study Purpose

The objective of the "Congestion Mitigation: Public-Private Partnerships Study" is to assess the feasibility of making minibuses, vans, and other vehicles available to interested parties to create alternative transportation opportunities and reduce single-occupant vehicle activity (Figure 1).

Vanpool programs have been in place since the early 1970's with both private and public sponsors. Seattle currently has a 500 van fleet in service while PACE in Chicago's western suburbs operates nearly 100 vans. Publicly sponsored programs in Florida include Orlando and Brevard County. In addition, Tri-Rail is in the process of implementing a program.

The overall program concept envisioned for Dade County is van-leasing, which includes all forms of vanpooling and related activities. The concept of vanpooling is one of the long-term transportation demand management actions of the County's Congestion Management Plan. Establishment of this program would represent implementation of one element of the adopted Dade County Congestion Management Plan.

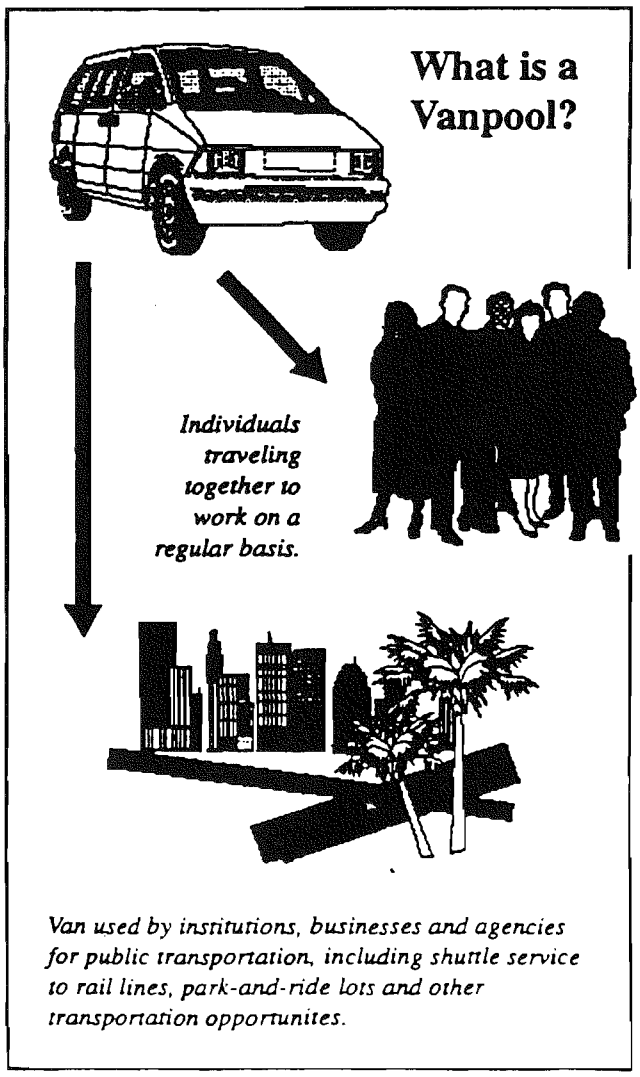


Figure 1

VANPOOL PROGRAMS HAVE BEEN IN PLACE SINCE THE EARLY 1970'S WITH BOTH PRIVATE AND PUBLIC SPONSORS.

Potential for Establishment of Van-Leasing Program in Dade County

This project involved analysis to determine the potential of establishing a successful van-leasing program in Dade County. This assessment was tempered by the realization that a prior effort to establish vanpool operations in Dade County did not succeed. Surveys conducted as part of earlier work for this project have indicated interest on the part of incorporated commu-

Dade County Major Generator Surveys to Determine Interest in Van/Minibus Program

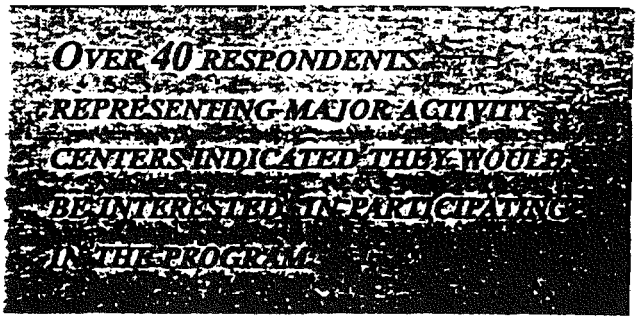
TARGETS
Cities, Educational, Condominiums, Medical, Hotels, Business, Government, Major Employers

RESULTS	
[illegible]	
Educational	- 2 Responses - Both Would Participate
[illegible]	
Medical	- 7 of 19 Responded - 7 Would Participate in Program
Hotel	[illegible]
Business & Inductrial Parks	- 4 of 10 Responded - 3 Would Participate in Program
Government Centers	[illegible]
Transportation Management Organization	- Developing Local TMO/TMA's have indicated need for Vans & Would Participate in Program

Figure 2

nities, employers, and condominium associations (Figure 2). Over 40 respondents representing major activity centers indicated they would be interested in participating in the program.

In addition, an estimate was developed of the number of Dade County employees considered likely candidates for a traditional



vanpool (wherein a group of employees who live in the same general area drive to work in a van, park the van, and then return home at the end of the day).

While research has identified characteristics that generally must exist for the successful formation of vanpools, there appears to be no statistical database that could be used as the basis for an accurate estimate of future vanpoolers. Information available concerning employment, travel time, and major generators was reviewed and with the application of professional judgment a macroscopic approach to estimating the number of potential vanpoolers was developed (Figure 3). The result is an estimate of traditional vanpool participants of up to 5,000 individuals. This process indicates that there is potential for a program to create a substantial number of traditional vanpools. Given the above, it is concluded that a van leasing program could sponsor a substantial number of vans.

Estimate of Traditional Vanpool Participants

Dade County employees (live & work in Dade County) with work trips greater than 45 minutes - 135,000 (16% of total)

Broward/Palm Beach County employees traveling to Dade with work trips greater than 45 minutes - 64,000 (75% of total)

Total regional work trips with commute greater than 45 minutes - 199,000

ASSUMPTIONS:

- **10% work for large employers or high density locations**
- **50% arrive to and leave from work within an acceptable common window for ridesharing**
- **50% live within a reasonable distance of 9 or more fellow employees**
- **70% travel during peak periods**

199,000 x 10% x 50% x 50% x 70% = 4,950 Traditional Vanpool Candidates

Figure 3

Cost

A major premise of a publicly sponsored vanpool program is that the vans are used for public transportation purposes and are eligible for acquisition using federal transportation funds such as Surface Transportation Program (STP), or Section 9 transit funds. Review of programs across the country revealed a wide range of organizational, fare, and maintenance/insurance structures. Programs were organized to best fit the needs and resources of a particular area. A ten-year cost pro-forma for a conceptual program indicated that a vanpool program with fares structured relative to actual maintenance, insurance, and administrative costs could be operated within a fare range proven to be successful in other areas. Other programs reported that they recover 100% of maintenance and insurance costs and 80% of administrative costs through van leases and sales. A significant variable

A MAJOR PREMISE OF A PUBLICLY SPONSORED VANPOOL PROGRAM IS THAT THE VANS ARE USED FOR TRANSPORTATION PURPOSES AND ARE ELIGIBLE FOR FEDERAL TRANSPORTATION FUNDS.

affecting the operational cost of the program is insurance. Traditional vanpool activities are typically insured at a lower rate than non-traditional activities which would be an element of the Dade County program. A start-up program of 20 vans (18 regular and 2 lift equipped) would have a vehicle procurement cost of $456,000. Maintenance, insurance and some administrative/marketing costs would be built into the fare, which based on similar programs and adjusted for Dade County could range from $450 to $650. The rates for traditional versus non-traditional uses would be varied to account for insurance costs differents.

Vanpool activities can be reported under

Section 15 of the Federal Transit Act. To that end, they have the ability to generate additional eligibility for Section 9 funds for Dade County. The revenue miles operated and passenger miles carried are used in the formula of the Federal Transit Administration along with urbanized area population to allocate Section 9 funds to various urbanized areas. Florida Department of Transportation transit block grant funds are allocated on the basis of passengers carried and revenue miles operated as disclosed in the Section 15 report. While vanpools typically represent a small increment of a transit system's total revenue miles and passengers carried, the results can add to significant sums. For example in 1990, Brevard County's 55 van operation resulted in federal and state assistance totalling almost $500,000.

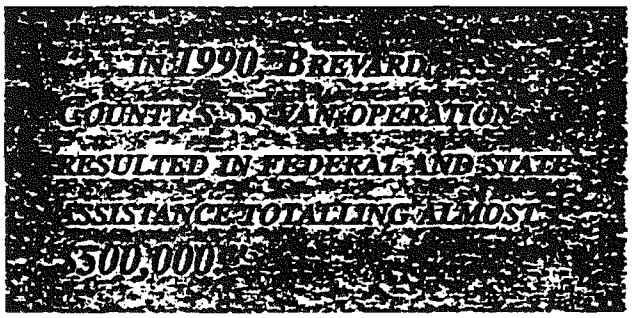
Operations

A key premise for this project was that Dade County would purchase vans and place them into the community as a way to keep the cost of the vehicle low enough that they could be put into service. Most successful and long-standing vanpool programs have some kind of subsidy, whether public or private. The program operated in Dade County in the mid-1980's had limited subsidy and marketing, and was discontinued. The second premise is that because the vans are operated by those in the vanpool and the maintenance, insurance, and fuel costs are covered by the lessee, there is no operating cost for having the van in service. Therefore, only capital funds are needed to establish the service.

Gold Coast Commuter Services would play a key role in the successful implementation of a van-leasing program. As the Regional Commuter Assistance program, Gold Coast is responsible for marketing transportation alternatives and trip reduction efforts throughout the region. Working with the State, Dade County would request that Gold Coast market the van-leasing program relative to its other responsibilities for Dade County.

Throughout this project, various administrative/operating scenarios for operation of vanpools have been discussed. The following three scenarios have been considered most appropriate for implementation of a van-leasing program in Dade County.

Under one scenario , the County would assign a staff person to be responsible for the program, work with the County Congestion Management Coordinator, and supple-



ment the marketing efforts of Gold Coast Commuter Services. A third party vendor would be retained to administer the program and provide maintenance and insurance.

Under a second scenario , two staff people are assigned from the outset of the program. These individuals would be responsible for all administration, in-house marketing, coordination with Gold Coast Commuter Services, and enforcement and reporting requirements. Maintenance would be provided by the County through the General Services Administration or a private

contractor and insurance would be provided by a private sector insurer or by the County if possible under the County's general coverage.

Finally, a third scenario calls for the County assigning one staff person to the project, handling maintenance and insurance as defined in the second scenario , and contracting with an outside entity to provide administrative support in conducting the program.

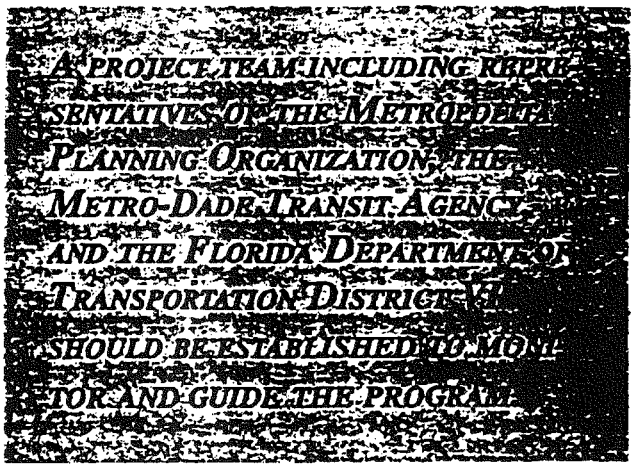
Recommendations

The primary objective of the "Congestion Mitigation: Public-Private Partnerships Study" is to reduce vehicle volumes on increasingly congested urban roads, by exploring alternatives to single-occupant vehicle commuting. Based on the work conducted in the study, the following recommendations are presented.

1. Primary Recommendation: The County should implement a vehicle leasing program that is based on the premise that capital funds are used to acquire vehicles and program operating costs are derived through the user.

2 Responsible Office: The demonstration phase of the program should be implemented under the direction of the County's Congestion Management Coordinator operating under policies established by the Dade County Congestion Management Committee. A project team including representatives of the Metropolitan Planning Organi zation, the Metro-Dade Transit Agency, and the Florida Department of Transportation District VI should be established to monitor and guide the program. Once the program is determined to be viable, determination of the long-term operation of the program within the County should be made.

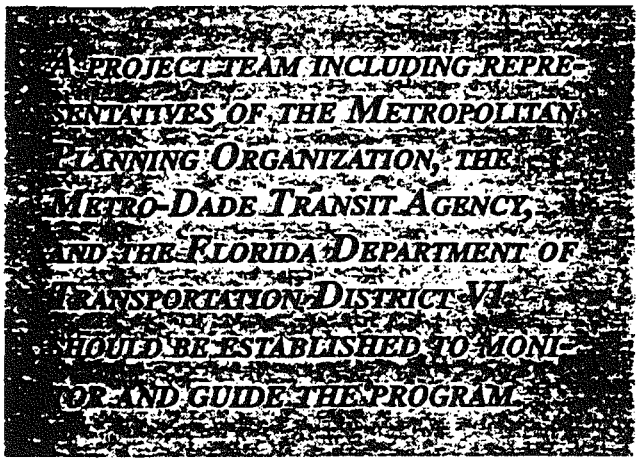
3. Operating Scenario: The County should consider assigning one County staff person would be assigned to the project full-time. The County would contract with an established third-party vanpool program to provide



support services during the pilot phase of the program. Because of the proposed focus of the program on both traditional vanpool and shuttle/circulator type services, the County may need to contract with an insurance company for vehicle insurance unless coverage can be provided by the third party vendor or the County. Maintenance would be provided through the third-party vendor or the Dade County General Services Administration. Fares would be structured to cover maintenance, insurance, and administrative costs. The County would work with the State Department of Transportation District Office to

request marketing services from Gold Coast Commuter Services in implementing the program.

4. Procurement of Vans: Vans should be procured with either Surface Transportation Program or Section 9 funds. Both of these funds can be used for purchase of vans for vehicle leasing activities. The source of the local share would be dependent on the federal source of monies and the involvement of the State. It is recommended that 20



vans be purchased with the first allotment. Two of these vans would be lift equipped to meet ADA requirements. It is recommended that vans be purchased through outright purchase. The total initial funding requirement is estimated to be $456,000. The Dade County General Services Administration could handle the purchase of the vans for the County and arrange for storage until they are placed into service.

5. Participant Guidelines: Trips served must have one end within or pass through Dade County. Vans should be used for public transportation purposes only. Lease agreements will define specific, allowable uses that comply with all applicable local, state, and federal guidelines. Vans cannot be used in a service that competes with an existing public or private transportation service. Lessees must be approved by an established van participant approval committee.

6. Coordination with Tri-Rail: A vanpool program is being established at Tri-Rail. An agreement should be explored for coordination between the two programs which could include activities such as shared spare vehicles, guaranteed rides home, and other activities to enhance the regional element of this service. In addition, the question of including access to other transit services in the area through participation in a van-leasing program should be explored with MDTA and Tri-Rail. This would stimulate use of the program for vehicles to link with existing transit services in the region.

7. Implementation Schedule: This report recommends that Dade County establish a van-leasing program as part of its overall Congestion Management Plan. The following actions must occur for program implementation.

a. Program placed on Transportation Improvement Program (TIP) for Dade County.

b. Funding source identified and appropriate applications for start-up funds submitted.

c. Operating scenario refined.

d. County staff person assigned as van-leasing program coordinator.

e. RFP's for third party assistance,maintenance, and insurance as applicable prepared and published. Proposals are accepted and award is made.

f. Arrangements are made with General Services Administration for procurement and maintenance, as appropriate.

g. Funding approval received and procurement of vehicles by GSA initiated.

h. Gold Coast begins marketing program based on State directive.

i. Van-leasing program starts up.

METRO-DADE

SUMMARY

The proposed program can be one part of realization of the goals of the Congestion Management Plan. It also can allow the County to provide transportation opportunities to the public with low operating expense in areas and to individuals not readily serviced by existing transit services.

Once the program is established, there will be potential for coordination with social service programming to provide employment linkages. The program can provide tools for the Transportation Management Associations being developed with the support of the Florida Department of Transportation. Finally, the program has the potential to be a key, relatively low cost element of the Dade County transportation network.

ATTACHMENT A-D
CITY OF MIAMI
TRANSPORTATION CONTROL MEASURES ORDINANCE

first one (1) inch of runoff from a five-year storm event.

(4) All drainage structures, including wells, shall include pollutant retardant devices approved by DERM pursuant to the South Florida Water Management District rules. Such pollutant retardant devices shall be maintained in efficient operating condition, including periodic removal of accumulated contents.

(5) Net new development shall reduce pollutants entering groundwater and/or surface waters by limiting application of pesticides and fertilizers in vegetated stormwater retention areas to once per year for preventive maintenance and to emergencies, such as uncontrolled insect infestation.

(6) Net new development shall reduce pollutants entering groundwater and/or surface waters by vacuum sweeping all parking lots of eleven (11) or more vehicle spaces and private roadways serving the parking lots at least once per week.

(7) All development is subject to section 24-35.1 of the Dade County Code.

(8) Prior to construction on any site, all invasive exotic plants shall be removed, specifically *Melaleuca*, *Casuarina*, and Brazilian pepper. Net new development shall use only those species included in the official list of recommended plant species prepared by the South Florida Regional Planning Council, as may be amended from time to time; provided, however, that additional species may be used if written approval is supplied by the executive director of the South Florida Regional Planning Council. Said official list is on file with the planning department. (Ord. No. 10543, § 1, 1-26-89)

Sec. 14-71. Transportation control measures.

(A) *General requirements.* The following requirements shall apply to all development except renovation of existing structures or land improvements; change of use or intensity of use of an existing structure or land improvement; when such change generates a net increase of less than fifty (50) peak-hour vehicle trips over the vehicle trip generation of the previous use or intensity; new structures or additions to existing structures of less than ten thousand (10,000) square feet; excavation; demolition; or deposit of fill. Development not excluded above shall:

(1) Actively encourage all employees within the development to participate in carpools or vanpools by establishing or participating in an information and referral program, and shall maintain a current list (updated annually) of all employees interested in participating in a carpool or vanpool. At least once each calendar year, carpool, vanpool, and ridesharing information packages and questionnaires shall be obtained from Metropolitan Dade County and distributed to all tenants and employees.

(2) Establish and maintain current Metropolitan Dade County Transportation Agency mass transit route and schedule information in locations throughout the development that are visible and accessible to existing and potential transit users. Mass transit route and schedule information shall be displayed in a prominent public area of the building such as the lobby or near pedestrian access points to parking garages or lots. At no less than six-month intervals, route and schedule information maintained on the premises shall be verified as to current status and replaced if obsolete.

(3) Encourage mass transit use by the provision of bus shelters, bus turnout lanes, or other physical improvements intended to improve the safety, comfort, or convenience of transit ridership, where such transit amenities are needed as determined by the planning director.

(4) Encourage mass transit use through the purchase of transit passes from Metropolitan Dade County, and making them available to building tenants and/or employees at a discounted price or at no charge, or in lieu of employer-subsidized employee parking.

(5) Reduce peak-hour trip generation through scheduling, where practical, staggered work hours for employees.

(B) *Parking requirements.* The following parking requirements shall apply to all development except: renovation of existing structures or land improvements; change in use or intensity of use of an existing structure or land improvement; when such change generates a net increase of less than fifty (50) peak-hour vehicle trips over the vehicle trip generation of the previous use or intensity; new structures or additions to existing structures of less than ten thousand (10,000) square feet; excavation; demolition; or deposit of fill. Development not excluded above shall comply as follows:

(1) Parking shall be provided by the development in accordance with the applicable provisions of the city's zoning regulations, but in no case shall parking be provided in excess of the following amounts:

MAXIMUM PARKING SPACES PERMITTED BY TYPE OF USE

Use	*Maximum Parking*
Residential	2 spaces per dwelling unit
Retail	1 space per 300 sq. ft. GFA
Hotel/motel	1.5 spaces per room
Restaurant	1 space per 100 sq. ft. GFA
Office/other	1 space per 600 sq. ft. GFA in the CBD-1 zoning district and 1 space per 400 sq. ft. GFA elsewhere

(2) Of the total parking provided, the number of spaces that can be placed on-site may be constrained by the city due to street capacity and/or air quality requirements.

(3) The minimum number of required parking spaces shall be in accordance with the applicable provisions of the city's zoning regulations. For office uses only, there shall be no minimum number of spaces required to be on-site; all parking may be located off-site in a location approved by the city. If less than the minimum number of required spaces is permitted to be located on-site, then:

(a) The developer shall execute a permanent agreement to purchase transit passes in lieu of providing parking spaces, in an amount equal to two (2) transit passes per each required parking space that is not provided; or

(b) The developer shall make a one-time payment equal to the current "gap-financing" cost for each space as established by the city's department of off-street parking and enter into an agreement with the department of off-street parking to lease the spaces once built; or

(c) The developer shall own or lease the off-site spaces elsewhere in a location approved by the city. "Elsewhere" is defined as being one (1) or a combination of the following locations:

1. A peripheral downtown location near expressway and/or arterial street entrance to downtown and within a maximum of six hundred (600) feet walking distance to a Metrorail or Metromover station or, if more than six hundred (600) feet walking distance from a Metrorail or Metromover station, connected by a parking shuttle system approved by the city.
2. Any outlying location within a maximum of one thousand two hundred (1,200) feet walking distance to a Metrorail station or a designated Metrobus park/ride facility approved by the city.

(C) *Air quality requirements.* The following air quality requirements shall apply to all development except: renovation of existing structures or land improvements; change in use or intensity of use of an existing structure or land improvement when such change generates a net increase of less than fifty (50) peak-hour vehicle trips over the vehicle trip generation of the previous use or intensity; new structures or additions to existing structures of less than ten thousand (10,000) square feet; excavation; demolition; or deposit of

fill. Development not excluded above shall comply as follows:

(1) Air quality modeling for carbon monoxide (CO) concentrations may be required by the city at any intersection projected to operate at Level of Service (LOS) E or F. If required, the CO modeling shall be conducted according to Dade County Department of Environmental Resources Management (DERM) standards and submitted in a report that includes an assessment of transportation control measures required to maintain CO concentrations below eighty (80) percent of the State of Florida's 8-hour standard of 10 micrograms per cubic meter, during the year following occupancy of the development. The development shall be responsible for its fair share of any transportation improvement deemed by the city to be necessary to protect against future violations of the CO standard.

(D) *Large scale development requirements.* In addition to the requirements of paragraphs (a) through (c) above, any development that requires a major use special permit pursuant to the provisions of the city's zoning regulations shall comply with these additional requirements:

(1) Submit a transportation control measures (TCM) plan as a part of the application for a major use special permit. Such TMC plan shall outline and describe the transportation control measures proposed to be undertaken by the development in order to achieve a reduction of at least ten (10) percent in peak hour vehicle trips. The plan shall describe a reporting procedure that will measure actual performance against the TMC plan's objectives.

(2) Each year following issuance of a certificate of occupancy, the development shall submit an annual report describing actual performance against the TCM plan objectives, an evaluation of such performance, and recommendations for modification to the TCM plan, if any.

(E) *Special provisions.*

(1) For special uses possessing unique characteristics that affect parking requirements, such as convention center, sports arena, stadium, auditorium, museum, theatre, major league ballpark, and the like, parking requirements shall be calculated for each such use based on its special characteristics, hours and days of peak operation, location with respect to Metrorail, Metromover, and Metrobus services, peripheral and other existing parking, and similar unique characteristics that affect the quantity and location of necessary parking.

(2) Parking as a principal permitted use may be permitted in such quantities and locations as determined by the city to be necessary to satisfy a measurable deficiency between the need for, and supply of, parking spaces that cannot be reduced through rigorous application and enforcement of the transportation control measures contained herein. (Ord. No. 10543, § 1, 1-26-89; Ord. No. 10675, § 1, 11-30-89)

DIVISION 4. ENFORCEMENT

Sec. 14-72. Penalty; procedures.

A violation of this article shall be prosecuted in the same manner as misdemeanors are prosecuted and upon conviction the violator shall be punishable according to law; however, in addition to, or in lieu of any criminal prosecution, the city shall have the power to sue in civil court and to enforce the provisions of this article before its code enforcement board. Further, the planning director, zoning administrator or building official are hereby empowered to temporarily revoke any building permit or certificate of occupancy for development evidencing violation of this article pending a recision determination by the planning director. (Ord. No. 10543, § 1, 1-26-89; Ord. No. 10675, § 1, 11-30-89)

ATTACHMENT A-E
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APPENDIX B

METROBUS SERVICE CHARACTERISTICS

Dade County
Metropolitan Planning Organization

MOBILITY MANAGEMENT PROCESS

MDTA BUS SERVICE CHARACTERISTICS

Route #	Length (miles)	Headway (mins)		Average Daily Ridership
		Peak	Off-Peak	
1	24.1	7.5	30	2,616
2	28.7	15	15	3,728
3	47.3	20	20	7,741
6	31.8	60	60	196
7	22.9	20	20	3,806
8	28.5	7.5	15	7,624
9	38.1	10	40	4,210
10	28.3	40	40	2,195
11	28.9	6	15	12,984
12	27.3	30	30	3,043
16	27.6	20	20	4,317
17	41.9	15	30	4,598
21	28.5	30	30	2,547
22	44.4	20	30	4,145
24	27.6	15	15	4,691
27	40.5	15	15	7,844
28	28.1	60	60	640
29	26.3	70	70	344
32	46.9	20	30	3,957
33	26.5	30	45	2,188
35	58.9	60	60	1,753
36	23.6	20	30	3,433
37	43.1	30	30	4,068

Route #	Length (miles)	Headway (mins)		Average Daily Ridership
		Peak	Off-Peak	
38E	29.1	20	---	266
40	29.1	15	30	2,256
42	38.1	60	60	980
48	29.3	60	60	539
52	53.6	30	60	1,673
54	29.1	20	30	3,259
56	29.4	60	60	864
57	19.2	60	---	1,257
62	19.9	10	30	5,387
65E	19.3	70	---	119
70	52.4	60	60	---
71	22.8	60	60	702
72	34.3	30	60	---
73	41.7	30	60	2,461
75	41.7	30	30	3,280
77	31.9	10	15	8,854
80	---	7.5	---	---
83	37.2	20	30	4,407
87	34.9	60	60	1,269
88	18.8	15	30	2,620
91	22.9	60	60	893
95E	---	5	---	1,174
104	---	60	60	732
A	10.6	30	30	384
B	22.9	20	40	1,121
C	19.4	20	20	3,765
E	34.9	60	60	803
F	18.7	30	40	---
G	35.6	15	30	2,697
H	44.4	20	20	4,819
J	41.3	20	30	4,719
K	31.1	20	20	4,446

Route #	Length (miles)	Headway (mins)		Average Daily Ridership
		Peak	Off-Peak	
L	28.5	7.5	20	11,445
M	23.1	30	30	2,079
R	24.7	60	60	301
S	42.5	10	10	13,035
T	27.9	20	30	2,060
V	38.3	---	60	132
W	5.2	24	24	565
Brickell Shuttle	---	7.5	---	31
Omni Shuttle	---	---	---	37
Zoobus	---	60	60	46
KAT 72	---	10	60	811
KAT 88	---	15	---	735
KAT 104	---	7.5	---	468
Bisc Max	---	15	---	1,748
27 Ave Max	---	15	---	515
Flagler Max	---	15	---	1,599
TR - 36 St	---	---	---	57
TR - MIA	---	---	---	473
FIU Shuttle	---	60	60	---

Source:

Mileage: Long Range Transportation Plan
Headways: Transportation Development Program, MDTA 1994
Ridership: MDTA Ridership Technical Report, July 1995

APPENDIX C

TECHNICAL MEMORANDUM 2: MONITORING AND EVALUATION MANUAL (MEM)

APPENDIX C
DADE COUNTY
MOBILITY MANAGEMENT PROCESS/
CONGESTION MANAGEMENT SYSTEM

MONITORING AND EVALUATION MANUAL
-(MEM)-

Project No. #94153
PROG.APP

August 1996

Prepared by:
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TABLE OF CONTENTS

EXHIBITS

ATTACHMENTS

1. INTRODUCTION

Federal regulations originally required the development and implementation of a Congestion Management System (CMS) in Urbanized Areas. Today in Florida, the Florida Department of Transportation (FDOT) requires implementation of a CMS in all Urbanized Areas.

A statewide task force has suggested that the concept of congestion management be expanded to address mobility as well. The Steering Committee for this study has adopted the concept of mobility. Thus, a Mobility Management Process/Congestion Management System (MMP/CMS) has been developed and adopted for the Dade County Urbanized Area (MUA). A complete description of the MMP/CMS is provided in the final report for this study.

The same regulations that require development of a CMS also require, as a component of the system, that the effectiveness of congestion/mobility strategies be monitored. A description of the development of the monitoring system is included in the study final report.

2. PURPOSE OF THIS REPORT

This report, the Monitoring and Evaluation Manual (MEM), explains the process, methods and procedures used for monitoring and evaluating strategies. This manual will enable the MPO to continue monitoring of the MMP/CMS in the future. Monitoring of the transportation system over time, to establish changes in congestion and mobility, is an integral part of the MMP/CMS.

This manual comprises a part of the final documentation for the MMP/CMS. The main thrust of this initial system is to use readily available data and procedures. This system is intended to be expanded, refined and adjusted as needed and as funding allows in the future. The last section of the manual suggests several recommended future refinements.

3. DATA COLLECTION

Use of available data is one of the primary objectives of this initial MEM. This objective has been realized. Readily available data, in the form of volume to capacity ratios, are used for the initial system evaluation and identification of congested corridors and spots. Other available data are used for the initial screening of mobility strategies for congested corridors. Additional data re required for the full evaluation of strategies. The gathered data, however, can be added to the monitoring system to expand the data base and facilitate evaluation of performance over time. A summary of the available and needed data is included in Exhibit C-1.

EXHIBIT C-1

DATA COLLECTION PROGRAM

MEASURES OF EFFECTIVENESS	DATA	FREQUENCY			SOURCE	AGENCY/ DEPARTMENT
		ANNUAL	EXISTING INVENTORY	DEVELOP OVER TIME (1)		
Congestion Extent	V/C Ratio		X		Model	MPO
		X			Concurrency Data Base	DC Conc. Mang. Off.
		X			State Road Level of Service	FDOT
Congestion Duration	Congestion Duration	X			State Road Congestion Duration	FDOT
		X			Derive from V/C Ratio	MPO
Load Factor	Passenger Counts, Capacity	X			Section 15 Data	MDTA
Transit Travel Time	Schedule Travel Time		X		Transit Route Schedule	MDTA
Transit Travel Speed	Travel Time, Distance		X		Schedule, Route Maps	MDTA
Pedestrian Facilities	Facilities Presence		X		Road Plans	FDOT, DCDPW
Bicycle Facilities	Facilities Presence		X		Bicycle Facilities Inventory	MPO
Persons X Speed	Classification Counts	X		X	Machine Counts	FDOT
				X	Manual Samples	DCDPW
	Vehicle Occupancy			X	Field Observations	FDOT, MPO
		X			Section 15	MDTA
	Traffic Speed		X		Automatic Vehicle Location	City of Miami
			X	X	Speed/Delay Studies	FDOT
				X	Field Observation	MPO

NOTES

(1) These databases can be developed over time either as new, continuous data collection efforts and/or by compiling data from corridor studies as they are completed.

4. SELECTION OF CONGESTED CORRIDORS AND SPOTS

Volume to capacity data can be easily calculated or is readily and directly available from various sources:

Dade County Concurrency Management System
FDOT District 6 Level of Service (LOS) Calculations
Dade County Transportation Model (Validation Run)

Attachment C-A provides a description of the data available from each of these sources. In as much as the purpose of each data base is different, the calculation procedures and results are not identical. The appendix, therefore, also describes the adjustments necessary to normalize all the data sources so that the resulting information is consistent and properly applied for the MMP/CMS.

The definition of congestion is based upon the concept of the Relative Congestion Ratio (RCR). (A detailed explanation of the RCR is contained in the Final Report and summarized in Attachment C-B. The most extensive congestion data coverage for the area is contained in the transportation model for the MUA. In this case, the daily volume to capacity ratios is obtained from the 1990 validation network. More detailed volume and capacity data, where available, replaces model data. The principal sources of additional data are: (1) The 1991 peak hour LOS analysis prepared by the FDOT District 6 office for State Roads (see Attachment C-C), and 2) the peak period LOS analysis prepared by the Dade County Department of Public Works for the Concurrency Management System (Attachment C-D).

The following process is followed to update the V/C database:

1. The Dade County Model validation network is updated to the current year by adding another year of growth (presently estimated to be one percent per year) to the V/C ratio. The V/C ratio is normalized as appropriate.

2. All segments in the data-base are compared to maximum allowed V/C ratios based on current standards and specific conditions (type of road, location, frequency of transit service, capacity, etc).

3. Updated RCR is calculated.

4. Road segments with RCR greater than 0.90 are kept in the database, others are dropped.

5. The latest FDOT LOS calculations are obtained and used to update model results for State roads. If a new LOS calculation is not available, the previous results are updated using the same growth factor above. The FDOT V/C ratio is normalized as appropriate. If the detailed FDOT calculation results in an RCR

less than 0.90, the segment is dropped. If the FDOT data shows RCR greater than 0.90 then the segment is retained or added as needed.

6. The latest Dade County Concurrency database is used to update the model results as appropriate (see Step 5 above).

In general, an RCR is calculated for each road segment within ten percent or over the maximum allowed V/C ratio. Congestion severity is defined by four categories as follows:

Congestion Category	RCR Range
Nearly Congested	$0.9 < RCR \leq 1.00$
Moderately Congested	$1.00 < RCR \leq 1.20$
Highly Congested	$RCR > 1.20$

4.1 Corridors

For ease of review and analysis, congested segments are plotted on a map indicating congestion severity in different colors. Congested corridors are identified by reviewing the color coded maps. A congested corridor is defined as a nearly continuous road segment of at least two miles in length. As such, small gaps in a long sequence of congested segments are included as congested. For simplicity, the prevailing level of congestion over the entire corridor is used to represent the overall congestion in the area. If appropriate, a long congested corridor can be broken up into two or three degrees of congestion.

Identification of congested corridors also considers continuity. In some cases, the length of congested corridors should be extended to ensure logical termini. The MMP/CMS Committee should be given the opportunity to review and comment on the list of congested corridors.

4.2 Spots

Congested spots are identified at all the other congested locations that are less than two miles in length. The same congestion categories are used for both congested corridors and spots.

5. EVALUATION PROCESS

The overall evaluation process is shown in Exhibit C-2. Once the congested corridors are identified, the priority for analysis and implementation of strategies is established. A congested corridor is reviewed in terms of strategies with high potential effectiveness. The strategies are then analyzed in detail to estimate specific impact, identify implementation difficulties, calculate cost, confirm cost effectiveness and develop a detailed implementation plan.

5.1 Corridor Priority

Corridor priority is established by comparing congested corridor against the 15 ISTEA Planning Factors. The goal is to measure how well specific corridors are fulfilling the objectives of the Planning Factors. Corridors that today are not fulfilling the planning objectives get scores that would give them a high ranking, and therefore, a high priority for consideration and implementation of mobility strategies (see sample priority evaluation in Exhibit C-3). The form used for conducting the corridor priority evaluation is included in Attachment C-E. While certain data is readily available to help evaluate corridors for priority, general knowledge of the corridors and aerial photography is helpful. The priority evaluation should be done by the Mobility Management Committee or a subcommittee of that group.

5.2 Screening of Strategies

Once a corridor has been selected for analysis, the first step is to use the available corridor data and area characteristics to screen all the available mobility strategies and select those that seem more appropriate and/or effective for the corridor. This is accomplished by inspecting the applicability columns in the mast table of mobility strategies (Exhibit C-4). While strategies that are applicable for corridors and spots would generally work well at the corridor level, the corridor may be near an activity center or be directly or indirectly affected by area-wide strategies. The column indicating improvement in V/C ratio can also be used as a general measure of potential effectiveness.

From this master list a short list of potential mobility strategies is selected for more detailed analysis. The short listing, however, should view mobility objectives as a primary consideration.

EXHIBIT C-2
Corridor Evaluation Procedure

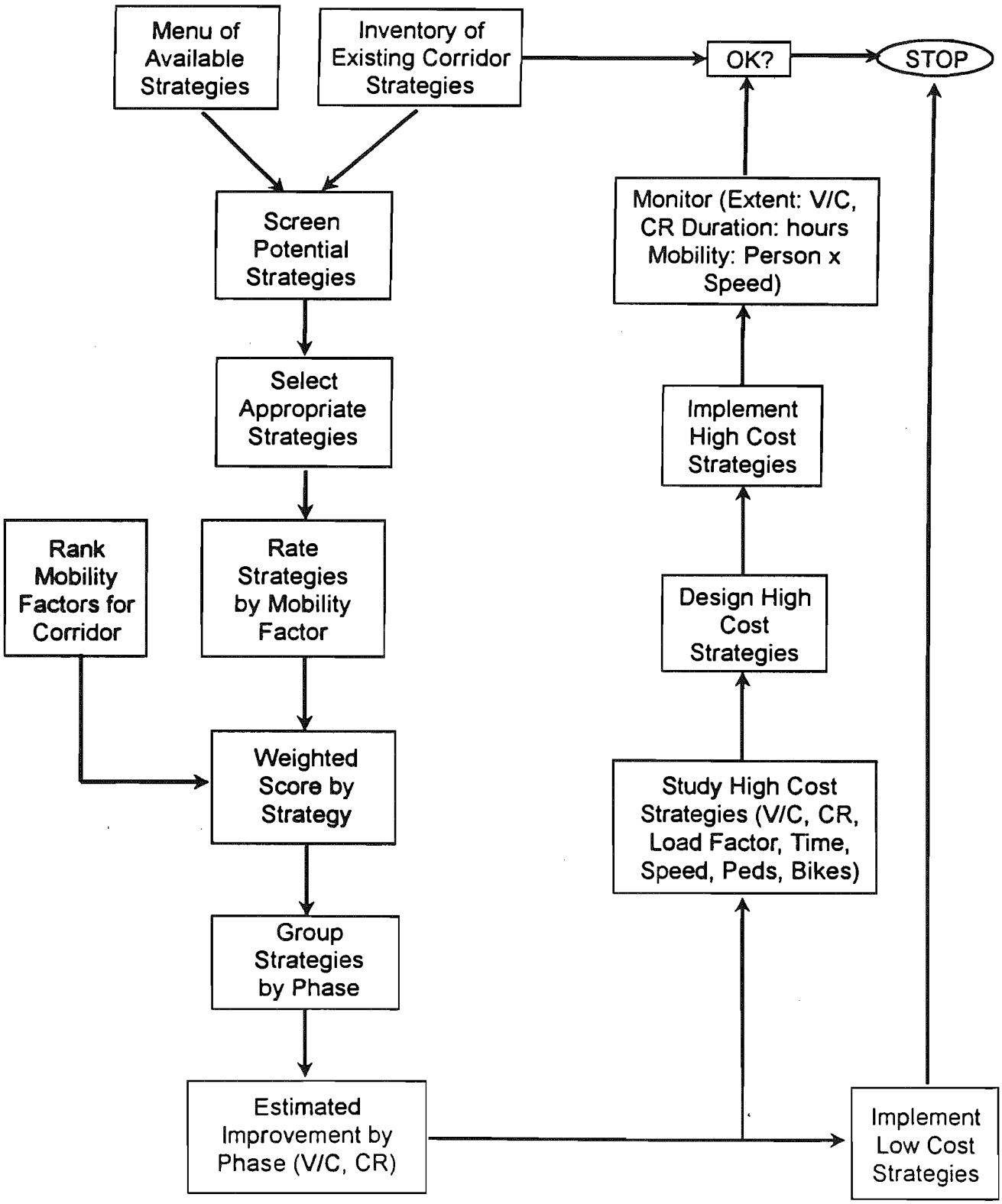

EXHIBIT C-3
Corridor Priority

A. ISTEA Factors

Factor #	Description	Comments	
		Lowest Value (1)	Highest Value (5)
1	Efficient uses of existing transportation facilities	No existing transportation facilities nearby	Strategies will maximize efficiency along corridor
2	Consistency with energy conservation programs	No strategies related to conservation programs	Strategies will include energy efficient alternatives
3	Relieve / prevent congestion	No action taken to relieve congestion	Projects implemented to relieve congestion
3a	Mobility of people and goods	RCR Ratio greater than 1.2	RCR Ratio lower than 0.9
3b	TDM and operational strategies	No strategies in place	More than 3 strategies in place
4	Balancing transportation and land use	Promotes segregation of land use	Promotes integration of land use
5	Programming of transportation enhancement facilities	No enhancement projects in program for that corridor	Programming fo enhancement expenditures are included in the TIP
6	Projects cost effectiveness	Small benefits in projects implemented along corridor	Large benefits obtained in projects implemented along the corridor
7	Intermodal facilities	No intermodal facilities nearby the corridor	Existing of future intermodal nearby the corridor
8	Connectivity between areas	Corridor does not connect important locations	Corridor serve as a connector for different important locations
9	Relation to LRTP and TIP	Corridor not considered in the LRTP nor the TIP	Corridor evaluated in the LRTP and the TIP
10	Preservation of ROW	No ROW available for future projects or expansions	ROW available for future projects
11	Efficient movement of freight	Corridor not used for freight movement	Corridor highly used for freight movement
12	Use of life-cycle costs	No cost analysis	Life cycle cost analysis used in project evaluation
13	Overall social, economic, energy and environmental effects	Corridor urgently need projects to improve social, economic, energy or environmental impacts	No social, economic, energy or environmental impacts affect the corridor
14	Increased use of transit services	No transit service available	Transit services available
15	Capital investment	High investment in developing projects	Low investment in developing projects

B. Sample Evaluation

Corr	Planning Factors																	Total	Rank
#	1	2	3	3a	3b	4	5	6	7	8	9	10	11	12	13	14	15	Points	#
A	2	2	3	1	4	2	1	3	1	4	1	1	4	1	2	1	1	34	1
B	3	1	1	5	2	2	1	5	2	2	1	2	1	5	4	1	2	40	4
C	1	4	4	2	1	1	3	1	4	1	3	2	5	2	1	2	4	41	6
D	1	3	2	1	2	3	1	2	5	1	1	3	2	1	2	1	5	36	2
E	4	1	1	3	3	1	2	3	2	3	4	1	4	2	1	3	1	39	3
F	2	2	1	4	1	2	2	4	1	5	5	1	3	1	3	1	2	40	4
G	2	2	2	1	5	1	4	1	3	2	1	4	1	3	3	4	2	41	6

EXHIBIT C-4
Mobility Strategies

MAIN MENU: EFFECTIVENESS TABLE

Item #	Strategy	Imp. % V/C Ratio	Applicability			
			Spot	Corr.	Act. Cent.	Area wide
I	**Transportation Demand Management**					
1	Trip Reduction Ordinances (TRO)	0.80		X	X	X
2	Employer Transportation Coordinator	1.00	X		X	
3	Shuttle Services	1.00	X	X	X	
4	Ridesharing	-	-	-	-	-
	a. Carpool	5.00	X		X	X
	b. Vanpool	5.00	X		X	X
	c. Buspool	1.00	X		X	X
5	Marketing Information Program	0.05		X	X	X
6	Preferential Parking	NA	X	X	X	X
7	Emergency Ride Home Program	1.00	X		X	
8	Employer Subsidized Transit Use	1.00	X		X	
9	Employee Transportation Allowance	0.80	X		X	X
10	Parking Management	1.00	X	X	X	X
11	Alternative Work Hours	-	-	-	-	-
	a. Staggered Work Hours	5.00	X		X	X
	b. Flex-Time	1.00	X		X	X
	c. Compressed Work Week	1.00	X		X	X
12	Telecommuting	NA	X		X	X
13	Areawide Commute Management Assoc.	10.00		X	X	X
14	Transportation Management Associations (TMAs)	1.00			X	X
15	Tax Incentive and Subsidy Programs	5.00	X		X	X
II	**Traffic Operational Improvemts**					
1	Operational Signal Improvements	5.00		X	X	X
2	Equipment Replacement	5.00	X	X	X	
3	Elimination/Relocation of traffic Signals	5.00	X	X		X
4	One-Way Streets	35.00		X	X	
5	Intersection Improvements	5.00	X	X		
6	Restriction of Turning Movements	10.00	X	X		
7	Enforcement and Educational Programs	NA	X	X	X	X
8	Development of Superarterial Network	15.00		X		
III	**HOV Lanes**					
1	Development of HOV Lanes	2.00		X		
2	Development of HOV Parking Facilities	1.00	X	X	X	

EXHIBIT C-4
Mobility Strategies

MAIN MENU: EFFECTIVENESS TABLE

Item #	Strategy	Imp. % V/C Ratio	Applicability			
			Spot	Corr.	Act. Cent.	Area wide
IV	**Public Transit Capital Improvements**					
1	Fixed Guideway Transit	10.00		X		
2	Bus Traffic Signal Preemption	0.50	X	X	X	X
3	Roadway Improvements for Transit	0.05	X	X	X	
4	Park & Ride Facilities	1.00	X	X	X	
5	Exclusive Bus Lane	NA		X	X	
6	Acquisition of Vehicles	NA		X		X
V	**Public Transit Operational Improvements**					
1	Express Bus Service	0.50		X	X	
2	Feeder Bus System	NA		X		X
3	Improvements to Bus Routes	1.00		X	X	X
4	Monitoring Services	NA	X	X	X	X
5	Transit Fare Structure	0.25		X	X	X
6	Transit Passes	0.25		X	X	X
7	Other Transportation Modes	NA		X		X
VI	**Bicycles**					
1	Bicycle Routes, Paths and Lanes	0.50	X	X	X	X
2	Promote Bicycle Programs	0.05	X		X	X
3	Bicycle Facilities	0.05	X		X	X
4	Integrate Bicyclists to Transit	0.05	X	X	X	X
5	Bicycle Ordinances and Codes	0.05	X	X	X	X
VII	**Pedestrian**					
1	Sidewalk and Walkway Facilities	0.05	X	X	X	
2	Promote Pedestrian Programs	0.05	X	X	X	X
3	Sidewalk Amenities	0.05	X	X	X	X
4	Integrate Pedestrian to Transit	0.05	X	X	X	X
VIII	**Congestion Pricing**					
1	Parking Pricing	5.00	X		X	X
2	Auto Restricted Zones	10.00			X	
3	Road Pricing	10.00		X		X
VIII	**Growth Management**					
1	Change Zoning Codes	5.00		X	X	X

EXHIBIT C-4
Mobility Strategies

MAIN MENU: EFFECTIVENESS TABLE

Item #	Strategy	Imp. % V/C Ratio	Applicability			
			Spot	Corr.	Act. Cent.	Area wide
2	Land Use Policies	10.00		X	X	X
3	Growth Management	5.00		X	X	X
X	**Access Management**					
1	Access Management	5.00		X		
XI	**Intelligent Transportation Systems**					
1	Ramp Metering	12.00	X	X		
2	Incident Management	30.00	X	X		
3	Roadway Network Surveillance Systems	30.00		X		
4	Motorist Information Systems	5.00	X	X	X	
5	Automatic Electronic Toll Facilities	NA		X		
XII	**General Purpose Lanes**					
1	Roadway Widening	5.00	X	X		
2	Additional Lanes	30.00	X	X		
XIII	**Other Strategies**					
	Movement of Goods	5.00	X	X		
	Improvements to Loading Zones	1.00	X	X	X	

More specifically, the following mobility objectives are to be rated for each of the strategies been considered.

1. People Movement
2. Modal Choice
3. Accessibility
4. Reasonable Speed
5. Moderate Cost
6. Ease of Implementation

Exhibit C-5 shows the definitions for these mobility factors. Exhibit C-6 shows an example of the evaluation process. Strategies with a low ranking, may (at the discretion of the evaluator), be dropped from further consideration.

The following available data can be used to do the initial screening of mobility strategies:

V/C Ratio
RCR

The form for conducting the strategies evaluation is included in Attachment C-F.

5.3 Arterial Investment Study

The process described above should be used to establish the initial list of mobility strategies to be evaluated. A more detailed analysis, however, would typically be required before funding and implementing improvements.

The following available data can be used to start the detailed evaluation of congested corridors and spots:

Congestion Duration
Transit Load Factor
Transit Travel Time
Transit Travel Speed
Pedestrian Facilities Presence
Bicycle Facilities Presence

Additional data, however, is needed to complete a full evaluation of the effectiveness, impacts and costs of individual as well as groups of mobility strategies. The Arterial Investment Study Scope developed by the FDOT should be used as a general guide for the type of analysis to be performed. It is important to note, however, that each corridor is different. Therefore, the level of analysis may vary from location to location depending on factors such as the range of alternatives, cost, potential implementation mechanisms, etc.

EXHIBIT C-5
MOBILITY FACTORS

1. People Movement: This element refers to the ability of a particular strategy to move people. According to the characteristics of each corridor, some strategies may or not carry more persons than others.

2. Modal Choice: People must have the opportunity to select the best available mode to complete the desired trip, under their particular conditions. In this case, a person may have the option to: walk, bike, use his/her personal car, use public transit (rail, bus, jitney or taxi), carpool, vanpool or any other possible alternative such as Telecommuting to complete his/her trip. In this case each strategy should be evaluated according its characteristics to provide access to other modes.

3. Accessibility: People must have ease of access for travel objectives. For this purpose, accessibility means the number of paths that a person has to complete a trip from point "A" to point "B" regardless time limits. Each strategy should be evaluated according to its relative connectivity to other corridors.

4. Reasonable Speed: This element reflects a comparison of travel to primary destinations between the average travel speed by using a personal vehicle versus any other mode. In some strategies, this should be evaluated as a potential solution to increase the speed along the corridor.

5. Moderate Cost: Availability of funds is an important factor when considering the implementation of some strategies. Therefore, this element evaluates capital, operating, maintenance and other out of pocket costs necessary to develop and implement the selected strategies.

6. Ease of Implementation: This factor will substitute the "Satisfy Trip Objective" that was included in the Florida Statewide Mobility Management Process. This factor will evaluate other elements rather than costs, to be considered for implementation. This may include social and environmental impacts, as well as the implementation time for each particular strategy.

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EXHIBIT 6

Mobility Strategies Ranking
(Sample)

Committee Member: John Doe								
CORRIDOR "A"								
Strategy	Mobility Factors						Total Points	Rank #
	1	2	3	4	5	6		
Improve Bus service	3	5	5	4	5	5	27	1
Intersection Improvements	3	5	5	4	4	4	25	2
Improve Pedestrian Facilities	2	3	5	1	5	4	20	4
Additional Lanes	3	2	2	3	3	3	16	11
Network Surveillance System	3	2	2	3	2	3	15	12
Develop HOV Lanes	4	2	4	5	1	2	18	7
Carpooling	2	2	3	3	3	5	18	7
Alternate Work Hours	5	3	4	5	3	3	23	3
Express Bus Service	1	4	5	1	4	5	20	4
Motorist Information System	3	4	5	3	1	1	17	10
Develop Bike Paths and Lanes	1	1	2	2	3	3	12	13
Vanpooling	4	3	4	5	1	1	18	7
Marketing & Educational Pgm	5	3	4	4	1	2	19	6

6. MONITORING

The following available data items should be used to continuously monitor the performance of the transportation system in general, and specifically, the performance of implemented mobility strategies.

V/C Ratio
RCR
Congestion Duration

System performance monitoring is needed to reevaluate the need to study specific corridors and to determine the overall effectiveness of mobility policies and strategies as well as traditional transportation improvements. Of particular interest is the change in system wide mobility over time. This measurement quantifies the degree of progress.

Corridor level mobility monitoring is needed to track the actual effectiveness of specific individual (or groups of) mobility strategies implemented both prior to and after the MMP/CMS is established. This tracking will allow intensification, fine tuning, continuation, or even abandonment of strategies based on a comparison of expected versus actual results, costs, etc.

6.1 Monitoring Database

The mobility monitoring database has been started as part of this initial work effort. The database is in Lotus 123 format and includes all road segments with an RCR of 0.9 or greater. Presently, volume to capacity (V/C) data is part of the database. Additional data has been included to allow calculation of vehicle-mile-hours of congestion. A printout of the database is included in Attachment C-G. A tabulation of the information now included, as well as terms to be added in the future, is shown in Exhibit C-7.

Extent of Congestion, a basic measurement of system-wide congestion, is monitored by adding the miles of congested facilities (by congestion severity category) directly from the more accurate and detailed congestion data-base. Mapping of the congested corridors, although somewhat generalized, also provides a visual image of the degree of system-wide congestion.

Congestion duration, another system-wide measurement, is also directly estimated from the database. A mathematical model (relationships, see Attachment C-H) allows estimation of the duration of congestion (in hours) given a known V/C ratio on each congested segment on the network.

EXHIBIT C-7
MMP/CMS Database Items

Data Item	Units	Source	Presently In Database	Present If Available	Future
Road Name	NA	Model	X		
From Limit	NA	Model	X		
To Limit	NA	Model	X		
Maximum V/C Allowed	NA	CDMP/FDOT	X		
Minimum LOS Allowed	NA	CDMP/FDOT	X		
1990 V/C (Model)	NA	Model	X		
1991 V/C (FDOT)	NA	FDOT		X	
1993 V/C (Concurrency)	NA	Dade County		X	
Relative Congestion Ratio	NA	Calculated	X		
1995 V/C Used	NA	Calculated	X		
Distance	miles	Map	X		
Average Daily Traffic	veh/day	DPW/FDOT	X		
Peak Hour Count	veh/hr	Estimated	X		
Congestion Flag	NA	Calculated	X		
Congested Distance	miles	Calculated	X		
Improvements (1990-1995)	NA	TIP	X		
Congestion Duration	hours	Estimated	X		
Congestion Hour-Miles	hr-miles	Calculated	X		
Congestion Veh.-Hr.-Miles	veh-hr-miles	Calculated	X		
Transit Passenger Counts	pass/hr	MDTA			X
Transit Route Capacity	pass/hr	MDTA			X
Load Factor	NA	Calculated			X
Transit Travel Time	minutes	MDTA			X
Transit Travel Speed	miles/hr	MDTA			X
Ped.Facility Presence	yes/no	DPW/FDOT			X
Bicycle Facility Presence	yes/no	MPO			X
Vehicle Classification	% veh.by type	FDOT/Studies			X
Vehicle Occupancy	per/veh	FDOT/Studies			X
Traffic Speed	miles/hr	FDOT/Studies			X

Future phases of the MMP/CMS will adapt the database for GIS application and will automate the data transfer process. The concept is to create software interface that will allow automatic transfer of the appropriate data from various sources.

6.2 Monitoring Frequency

Monitoring should be a continuous process. From the practical standpoint, however, annual cycles are recommended. The reason for the annual cycle is that some of the traditional data collection efforts are annual. Since monitoring has been combined with evaluation, the monitoring/evaluation cycle should start immediately upon adoption of the TIP. In many cases the evaluation cycle can be completed by the time that input is needed into the next TIP. To ensure timeliness, the goal should be to consider MMP/CMS recommendations no later than the second TIP following the start of analysis for specific congested corridors.

6.3 Monitoring Process

A general flow chart of the evaluation/monitoring process is shown in Exhibit C-8. Updating the V/C database starts another cycle of analysis. New congested segments are added. Non-congested segments may be dropped, etc.

The agency responsible for coordinating the monitoring process will be MPO. More specifically, the Mobility Coordinator will direct the effort. The Coordinator will work closely with the Mobility Management Committee and will ensure that funding is secured, deadlines are met and recommendations are followed-through until completion.

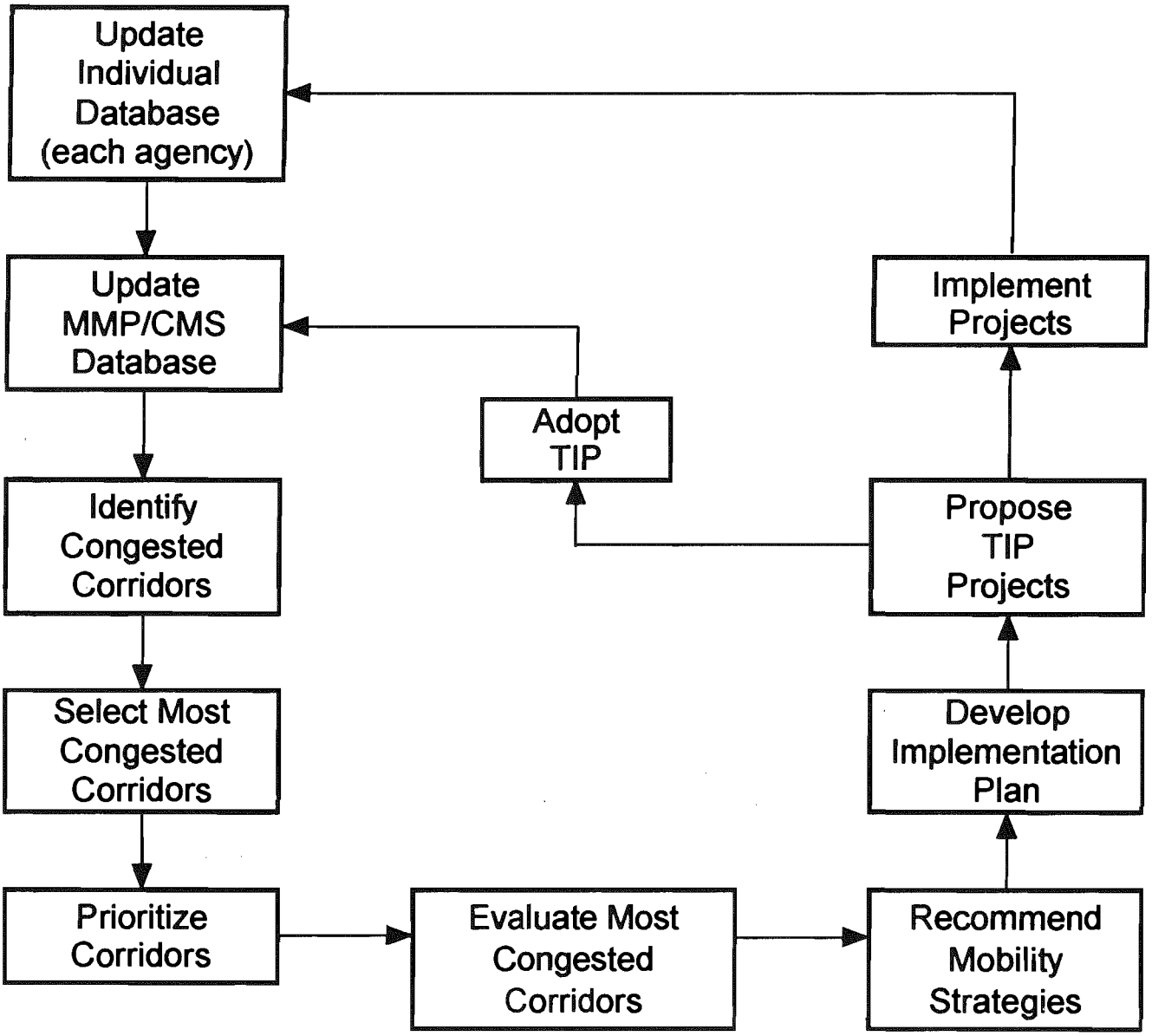
7. FUTURE ENHANCEMENTS

This initial MMP/CMS has set the basis for identifying and measuring congestion, as well as evaluating the impact of mobility strategies. The effort is based on available data. Therefore, enhancements have been recommended to provide for simplifying the analysis, facilitating the monitoring process and better addressing the concept of mobility.

7.1 Persons x Speed

Measurement of PERSONS x SPEED will address the main principles of mobility: the ability to move large numbers of persons (supply side), and the desire of the traveler to complete the trip quickly (even instantaneously, like in the case of telcommuting). The PERSON x SPEED concept, however, is new and difficult to understand. While a term that is easier to understand is desirable, and options should be considered, there is no question that both people throughout and speeds are factors that should be measured and monitored to ensure that mobility strategies are properly considered and implemented.

EXHIBIT C-8
Evaluation / Monitoring Cycle



7.2 Geographic Information System

Development of a Geographic Information System will enhance the MMP/VMS in three major areas: 1) centralization of database, 2) ease of data analysis, and 3) coordination of MMP/CMS with other management systems. Development of a GIS database should begin, as soon as possible.

7.3 Remote Sensing

Remote sensing is a term that includes a multitude of technologies used to gather information from a distance. The range of technologies can vary from satellite photography (or data relay) to traffic counting using loops under the pavement and sending the data to a central location for storage and/or processing.

As the MUA MMP/CMP is refined in the future, the need for use of these technologies will become more evident. Certainly, the upgrading of the computer signal system and the implementation of ITS will deploy a large infrastructure that will have the capability of gathering large amunts of transportation data that can be very useful in monitoring mobility. Wise use of those technologies will ensure that efforts are not duplicated, conflicts are minimized and opportunities are not lost. The key to ensure that use of these technologies is maximized, is by coordinating the efforts of all agencies involved. In this regard the MMP/CMS Committee will play a vital coordination role.

ATTACHMENTS

List of Attachments

ATTACHMENT C-A
DATA SOURCES AND ADJUSTMENT FACTORS

A. Dade County Transportation Model

The Miami Urbanized Area MPO is the lead agency in the development, updating and use of the Dade County Transportation Model. The model is part of the continuous planning process and the main tool used in the development of the Long Range Transportation Plan. This process, repeated approximately every five years, is overseen by a multi-agency steering committee.

The model provides the most extensive coverage of the Dade County Transportation Network. It includes both road and transit components. The roadway element includes all freeways, arterials and collectors in the County regardless of municipal jurisdiction (location) or ownership/maintenance responsibility (mostly State or County). The transit component includes all transit modes, again, regardless of location, ownership or maintenance responsibility.

The model has been recently validated using 1990 census (socio-economic) and traffic count data. The validation network, thus, replicates 1990 travel patterns. This Florida Standard Urban Transportation Modeling Structure (FSUTMS)-based model forecasts daily traffic volumes on the road network and passenger volumes on the transit network. The model replicates an average peak season day.

The model also calculates V/C ratios for all road segments. The V/C calculation is based on the assumption that peak hour volumes are 10 percent of the daily volumes (across the board for all road segments). Therefore, hourly capacities are converted to daily capacities using the same conversion factor (10%) before the V/C ratios are calculated.

An adjustment factor is needed to convert peak season 1990 model V/C data to 1995 typical day peak period V/C. A peak period V/C is required to calculate the RCR for non-FIHS roads because the maximum allowed V/C ratio in the Dade County CDMP is based on peak period analysis.

The daily and the peak hour V/C ratios are the same because both the volume and the capaicty are converted from daily values to peak hour values using a 10% conversion factor. Therefore, no conversion is needed from daily to peak hour.

The next conversion is from peak hour to peak period. The typical peak period to a daily ratio in Dade County is 7.9% (Planning Department data). Since the model data is based on an assumption of 10% peak hour volumes, then to convert peak hour volumes to peak period volumes the following factor is calculated: 7.9/10.0 = 0.79.

Next is the seasonal adjustment from a peak season to a typical (average annual)day. The Dade County Model validation study has established that peak season day volumes are 5% higher than the typical day.

The last adjustment is needed to account for volume increases over time (from 1990 to 1995). Analysis of the model socio-economic data established that the average annual traffic growth factor is approximately 1%.

Therefore, the conversion factor for V/C data from the model (for non-FIHS roads) is:

F= (V/C (model) x 0.79 x (1.01^5) / 1.05 = 0.791

The V/C calculation for FIHS roads will rely, primarily, on FDOT data instead of model data.

B. Florida Department of Transportation LOS Calculations

The FDOT calculates, approximately every two years, the current LOS on roads in the SHS. In the Miami area, updating these calculations is the responsibility of the FDOT District 6 Planning Section. These calculations, therefore, cover only a portion of the road system in the MUA.

The purpose of the FDOT analysis is to establish the existing and future (short terms) operating conditions on the SHS, for planning purposes. The LOS analysis is used to monitor congestion severity and to support preliminary engineering and roadway design efforts.

This study used the most recent, available, LOS data (1991). The FDOT is presently in the process of completing a LOS recalculation using 1993 volumes. The traffic volume data used is obtained from the agency's annual traffic counting program.

The FDOT LOS calculations are based on their LOS Manual. Planning-level capacities and maximum service volumes are established for each road segment and are then compared to peak hour volumes in order to establish a peak hour LOS. The calculations are done for the planning peak hour (the 100th highest volume of the year). This is approximately the same as the peak hour during a typical peak season day. Results of the LOS analysis are summarized in a color coded map.

FDOT LOS data is used for two major categories of state roads: FIHS and Non-FIHS. The RCR for FIHS roads is based on state LOS standards (based on peak hour conditions). The RCR for non-FIHS roads is based on the LOS standards in the Dade County CDMP (peak period).

First, the peak hour levels of service from the map were converted to V/C ratio by using the midpoint of the LOS range in the FDOT LOS Manual (i.e., if the V/C range for LOS E is 0.94 to 1.0; then the mid-point, and representative V/C ratio is 0.97). Since the FDOT data is for 1991, four years of growth (at 1% per year) need to be reflected in the adjustment.

The adjustment factor for FDOT LOS data for FIHS roads is as follows:

Factor = V/C (FDOT) x (1.01) ^4 = 1.041

The adjustment factor for non-FIHS roads involves an additional parameter. FDOT peak hour V/C ratios need to be converted to peak period V/C ratios. Review of the FDOT LOS Manual shows that the typical peak hour to daily ratio for state roads is 90%. Since the peak period to daily ratio has already been established at 7.9%, then, this component of the adjustment factor is 7.9/9.0= 0.88.

The adjustment factor for FDOT data for non-FIHS roads is as follows:

Factor = V/C (FDOT) x (1.01) ^4 x 0.88 = 0.916

C. Dade County Concurrency Management System Data

The Dade County Concurrency Management Office is responsible for the coordination and administration of data for all public services subject to concurrency (a State law implemented by local ordinance). Traffic concurrency information, specifically, is generated by the Dade County Public Works Department.

While traffic count data is generally available for all state and county roads within the limits of Metropolitan (unincorporated) Dade County, capacities and records about future traffic generated by approved development, are not formally kept for incoporated areas (other municipalities). Each municipality has their own concurrency management system. Consequently, the Dade County concurrency database does not provide complete coverage of the MUA.

Planning level hourly capacities and maximum service volumes are calculated by DPW and the county Planning Department for county roads. FDOT provides capacities and service volumes for state roads. Traffic volumes are obtained from the FDOT and County annual traffic counting programs. The majority of the concurrency data available for this study was 1993 data.

Inasmuch as traffic concurrency is driven by the peak period LOS standards in the CDMP (and the Concurrency Ordinance), traffic volumes are also for the peak period of the day. Peak Period traffic is defined as the average of the two highest consecutive hours of traffic of the (typical) day. Upon adoption of the new CDMP in late 1995, local governments (including unincorporated Dade County) will recognize the FDOT LOS standards for FIHS roads. In this study, only the existing peak period volumes and capacities were used. Traffic volumes reserved by approved developments were not included in the analysis of congested locations.

Since the majority of the concurrency data is based on 1993 count information, two years of traffic growth need to be added to the V/C ratios. Additional adjustments to these data are not needed for non-FIHS roads because the data are peak period and the standards are also peak period. Analysis of FIHS roads relies on FDOT LOS data.

The adjustment factor for concurrency data for non-FIHS roads is as follows:

Factor = V/C (Concurrency) x (1.01)^2 = 1.02

However, if FDOT data are available for non-FIHS state roads, then the state data are used instead of the concurrency data.

ATTACHMENT C-B

RELATIVE CONGESTION RATIO

DEFINING CONGESTION

Relative Congestion Ratio
(Initial Screening)

Non- FIHS Roads

$$\text{RCR} = \frac{\text{Existing V/C Ratio}}{\text{CDMP Max V/C Ratio Allowed}}$$

FIHS Roads

$$\text{RCR} = \frac{\text{Existing V/C Ratio}}{\text{FIHS Max V/C Ratio Allowed}}$$

EXHIBIT C-B (2)

ROADWAY MINIMUM LEVEL OF SERVICE STANDARDS

A. METRO-DADE COUNTY
TRAFFIC CIRCULATION LEVEL OF SERVICE STANDARD

JOB #: 95153

LOCATION	Transit Availability		
	No Transit Service	20 min Headway Transit Service Within 1/2 Mile	Extraordinary Transit Service (Commuter Rail or Express Bus)
Outside UDB	LOS D - State Minor Arterial* LOS C - County Roads and State Freeways and Principal Arterials*		
Between UIA and UDB	LOS D (90% of Capacity); or LOS E on SUMAs (100% of Capacity)	LOS E (100% of Capacity)	120% of Capacity
Inside UIAs or STAs	LOS E (100% of Capacity)	120% of Capacity	150% of Capacity

UIA = Urban Infill Area - Area east of, and including NW/SW 77 Avenue and SR 826 (Palmetto Expressway)
UDB = Urban Development Boundary
STA = Special Transportation Area
SUMA = State Urban Minor Arterial
* Peak-period means the average of the two highest consecutive hours of traffic volume during a weekday

B. FLORIDA DEPARTMENT OF TRANSPORTATION
STATEWIDE MINIMUM LEVEL OF SERVICE STANDARDS

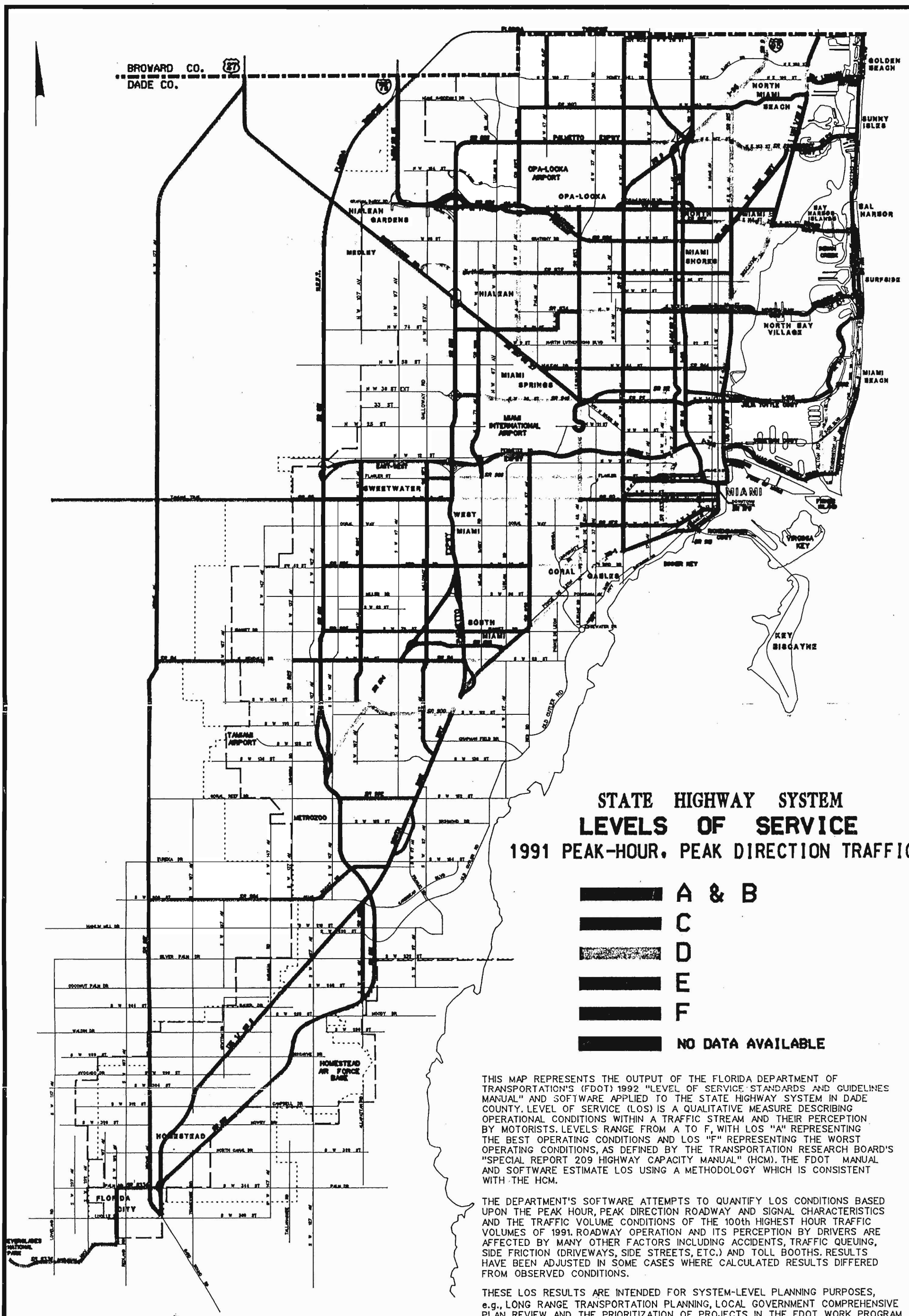
	Rural Areas	Transitioning Urbanized Areas, Urban Areas or Communities	Urbanized Areas under 500,000	Urbanized Areas over 500,000
INTRASTATE				
Limited Access Highway (Freeway)	B	C	C (D) *	D (E) *
Controlled Access Highway	C	C	C	D
OTHER STATE ROADS				
Multilane	B	C	D	D
Two-Lane	C	C	D	D

	Roadways Parallel to Exclusive Transit Facilities	Inside Transportation Concurrency Management Areas	Constrained and Backlogged Roadways
INTRASTATE			
Limited Access Highway (Freeway)	D (E) *	D (E)	Maintain
Controlled Access Highway	E	E	Maintain
OTHER STATE ROADS			
Multilane	E	**	Maintain
Two-Lane	E	**	Maintain

* Level of Service standards inside of parentheses apply to general use lanes only when exclusive through lanes exist.
** Level of Service standard will be set in a transportation mobility element that meets the requirements of Rule 9J-5.0057.

ATTACHMENT C-C

FDOT LOS MAP



THIS MAP REPRESENTS THE OUTPUT OF THE FLORIDA DEPARTMENT OF TRANSPORTATION'S (FDOT) 1992 "LEVEL OF SERVICE STANDARDS AND GUIDELINES MANUAL" AND SOFTWARE APPLIED TO THE STATE HIGHWAY SYSTEM IN DADE COUNTY. LEVEL OF SERVICE (LOS) IS A QUALITATIVE MEASURE DESCRIBING OPERATIONAL CONDITIONS WITHIN A TRAFFIC STREAM AND THEIR PERCEPTION BY MOTORISTS. LEVELS RANGE FROM A TO F, WITH LOS "A" REPRESENTING THE BEST OPERATING CONDITIONS AND LOS "F" REPRESENTING THE WORST OPERATING CONDITIONS, AS DEFINED BY THE TRANSPORTATION RESEARCH BOARD'S "SPECIAL REPORT 209 HIGHWAY CAPACITY MANUAL" (HCM). THE FDOT MANUAL AND SOFTWARE ESTIMATE LOS USING A METHODOLOGY WHICH IS CONSISTENT WITH THE HCM.

THE DEPARTMENT'S SOFTWARE ATTEMPTS TO QUANTIFY LOS CONDITIONS BASED UPON THE PEAK HOUR, PEAK DIRECTION ROADWAY AND SIGNAL CHARACTERISTICS AND THE TRAFFIC VOLUME CONDITIONS OF THE 100th HIGHEST HOUR TRAFFIC VOLUMES OF 1991. ROADWAY OPERATION AND ITS PERCEPTION BY DRIVERS ARE AFFECTED BY MANY OTHER FACTORS INCLUDING ACCIDENTS, TRAFFIC QUEUING, SIDE FRICTION (DRIVEWAYS, SIDE STREETS, ETC.) AND TOLL BOOTHS. RESULTS HAVE BEEN ADJUSTED IN SOME CASES WHERE CALCULATED RESULTS DIFFERED FROM OBSERVED CONDITIONS.

THESE LOS RESULTS ARE INTENDED FOR SYSTEM-LEVEL PLANNING PURPOSES, e.g., LONG RANGE TRANSPORTATION PLANNING, LOCAL GOVERNMENT COMPREHENSIVE PLAN REVIEW, AND THE PRIORITIZATION OF PROJECTS IN THE FDOT WORK PROGRAM AND THE MIAMI METROPOLITAN PLANNNING ORGANIZATION'S TRANSPORTATION IMPROVEMENT PROGRAM (TIP). MORE DETAILED LOS ANALYSES MAY BE APPROPRIATE FOR OTHER APPLICATIONS, SUCH AS CONCURRENCY MANAGEMENT, ROADWAY PROJECT DEVELOPMENT, ROADWAY DESIGN, SIGNAL OPTIMIZATION, TRAFFIC OPERATIONS, AND TRAFFIC IMPACT STUDIES.

— — — URBAN BOUNDARY (AS APPROVED BY FEDERAL, STATE & LOCAL AGENCIES)

..... DADE COUNTY YR. 2000 URBAN DEVELOPMENT BOUNDARY (AS OF 4/91)

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SIX
DIVISION OF PLANNING AND PROGRAMS

ATTACHMENT C-D

DADE COUNTY CONCURRENCY DATA

Dade Co Concurrency Database 2/3/95

03-Feb-95 FDOT TRAFFIC COUNT STATIONS PAGE 1

STA #	ROADWAY	LOCATION	L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
0003	SW 8 St/SR 90	W/O SW 177 Av/SR 997	2	1060	368	692	0	692	C	A	Dec-94
0004	SW 177 Av/SR 997	S/O SW 8 St/SR 90	2	550	553	-3	6	-9	C	F**	Dec-94
0005	SW 8 St/SR 90	E/O SW 74 Av	4	5460	3475	1985	57	1928	E+20	C	Dec-94
0007	Okeechobee Rd/US 27	NW/O HEFT/SR 821	4	2760	1214	1546	42	1504	C	C	Dec-94
0008	S. Dixie Hwy/US 1	S/O SW 232 St	4	3800	3559	241	397	-223	C	F**	Dec-94
0009	S. Dixie Hwy/US 1	N/O Dade/Monroe County Line	4	4980	930	4050	0	4050	C	A	Dec-94
0010	SW 82 St/Kendall Dr (SR 94)	E/O SW 177 Av/SR 997	4	3210	636	2574	297	2277	D	D	Dec-94
0012	Alton Rd/SR 907	N/O 20 St	4	2250	2889	-639	0	-639	E	F**	Dec-94
0014	S. Dixie Hwy/US 1	S/O SW 112 St/SR 990	6	9876	6741	3135	29	3106	EE	C	Dec-94
0015	Biscayne Blvd/SR 5)	S/O NE 192 St/Lehman Cswy	6	7090	5234	1856	2858	-1002	E	F**	Dec-94
0019	NW 42 Av/SR 953	S/O NW 103 St	4	2570	3433	-863	1	-864	E	F**	Dec-94
0020	NW 27 Av/SR 9	S/O NW 79 St	4	6660	2847	3813	62	3751	E+50	D	Dec-94
0021	NW 2 Av/SR 7)	S/O NW 183 St	6	5480	4522	958	4	954	E+20	E	Dec-94
0022	NW 27 Av/SR 9	N/O NW 138 St	6	6720	4731	1989	27	1962	E+50	E	Dec-94
0023	NW 27 Av/SR 9	N/O NW 103 St	6	6720	3559	3161	28	3133	E+50	E	Dec-94
0024	SW 42 Av/SR 953	S/O SW 22 St	4	3180	2889	291	6	285	E	E	Dec-94
0025	SW 42 Av/SR 953	S/O SW 8 St	4	4180	3810	370	5	365	E	D	Dec-94
0026	SW 42 Av/SR 953	N/O SW 8 St	6	5740	4103	1637	0	1637	E	C	Dec-94
0027	NW 42 Av/SR 953	N/O Flagler St	6	5740	4815	925	0	925	E	E	Dec-94
0028	NW 42 Av/SR 953	N/O NW 25 St	8	8480	5820	2660	32	2628	E	C	Dec-94
0030	NW 42 Av/SR 953	N/O NW 103 St	6	3480	2722	758	0	758	E	D	Dec-94
0032	NW 47 Av/SR 847	At Dade/Broward County Line	4	3840	896	2944	490	2454	E+20	B	Dec-94
0033	S. Dixie Hwy/US 1	N/O SW 152 St	6	9876	6281	3595	70	3525	EE	C	Dec-94
0034	SW 57 Av/SR 959	N/O S. Dixie Hwy/US 1	2	860	1983	-1123	0	-1123	E	F**	Dec-94
0035	SW 57 Av/SR 959	S/O SW 24 St	2	1020	1476	-456	89	-545	E	F**	Dec-94
0036	SW 57 Av/SR 959	N/O SW 8 St	2	1150	2167	-1017	0	-1017	E	F**	Dec-94
0037	SW 57 Av/SR 959	S/O SW 8 St	2	1180	2350	-1170	5	-1175	E	F**	Dec-94
0038	NW 57 Av/SR 959	N/O NW 159 St	6	6050	3224	2826	240	2586	E	B	Dec-94
0039	NW 72 Av/SR 969	S/O NW 74 St	4	2630	2177	453	73	380	E	D	Dec-94
0040	SW 177 Av/SR 997	N/O SW 248 St	2	600	784	-184	99	-283	C	F**	Dec-94
0041	SW 87 Av/SR 973	S/O SW 40 St	4	2730	2219	511	215	296	SUMA	D	Dec-94
0042	SW 87 Av/SR 973	S/O SW 24 St	4	3160	2763	397	271	126	SUMA	E	Dec-94
0043	SW 177 Av/SR 997	S/O SW 296 St	2			0	0		D	A	
0044	SW 87 Av/SR 973	S/O Flagler St	4	3190	2554	636	139	497	SUMA	D	Dec-94
0045	SW 107 Av/SR 985	N/O SW 88 St	4			0	0		SUMA	A	
0046	SW 107 Av/SR 985	N/O SW 72 St	4	2450	2219	231	101	130	SUMA	E	Dec-94
0047	SW 107 Av/SR 985	S/O SW 40 St	4	2350	2398	-48	11	-59	SUMA	F**	Dec-94
0050	SW 112 Av/SR 989	N/O HEFT/SR 821	4	3700	1214	2486	0	2486	SUMA	B	Dec-94
0052	SW 177 Av/SR 997	SW/O Okeechobee Rd	2	960	498	462	0	462	C	B	Dec-94
0054	SW 186 St/SR 994	W/O HEFT/SR 821	2	1580	1872	-292	366	-658	SUMA	F**	Dec-94
0056	SW 152 St/SR 998	E/O SW 112 Av	4	4360	2470	1890	122	1768	SUMA	B	Dec-94
0060	SW 88 St/SR 94	E/O SW 137 Av	6	5360	5150	210	108	102	EE	E	Dec-94
0062	SW 88 St/SR 94	E/O SW 127 Av	6	7512	5192	2320	182	2138	EE	C	Dec-94
0064	SW 88 St/SR 94	E/O SW 103 Av	6	6860	5443	1417	239	1178	EE	D	Dec-94
0066	SW 88 St/SR 94	W/O SW 87 Av	6	8830	4187	4643	789	3854	EE	C	Dec-94
0068	SW 72 St/SR 986	E/O SW 107 Av	4	4630	3685	945	264	681	EE	E	Dec-94
0070	SW 72 St/SR 986	W/O S Dixie Hwy/US 1	4	2310	2261	49	0	49	E	E	Dec-94
0072	SW 40 St/SR 976	E/O HEFT/SR 821	6	6770	3810	2960	27	2933	SUMA	B	Dec-94
0074	SW 40 St/SR 976	E/O SW 107 Av	6	7300	3391	3909	81	3828	SUMA	B	Dec-94
0076	SW 40 St/SR 976	W/O SW 87 Av	6	7760	4187	3573	414	3159	SUMA	B	Dec-94
0078	SW 40 St/SR 976	E/O SW 78 Ct	6	7040	4438	2602	624	1978	E+20	D	Dec-94
0080	SW 40 St/SR 976	W/O SW 57 Av	6	7320	4773	2547	0	2547	E+20	C	Dec-94
0082	SW 40 St/SR 976	E/O SW 42 Av	4	4080	3601	479	0	479	E+20	E	Dec-94
0084	SW 344 St/SR 936	E/O SW 187 Av	2	1460	563	897	57	840	D	B	Dec-94
0086	SE 13 St/SR 972	W/O Brickell Av	4	2480	846	1634	0	1634	E	D	Dec-94

C:\FSTA.WK1

STA #	ROADWAY	LOCATION	L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
0088	SW 8 St/SR 90	E/O SW 137 Av	4	6310	2261	4049	175	3874	D	B	Dec-94
0090	SW 8 St/SR 90	E/O SW 109 Av	4	2940	2512	428	0	428	D	C	Dec-94
0092	SW 8 St/SR 90	E/O SW 87 Av	8	7200	3098	4102	20	4082	D	B	Dec-94
0094	W Flagler St/SR 968	W/O NW/SW 42 Av	4	3200	3182	18	0	18	E	E	Dec-94
0097	W Flagler St/SR 968	W/O NW/SW 27 Av	4	3070	2847	223	0	223	E	D	Dec-94
0102	NW 36 St/SR 948	W/O NW 42 Av	6	7000	4271	2729	0	2729	E+20	D	Dec-94
0104	NE 79 St Cswy/SR 934	W/O NE 4 Ct (3L E & 1L W'bnd)	4			0	0		E	A	
0104	NE 82 St/SR 934	W/O NE 3 Pl (One-way Westbd)	3			0	0		E	A	
0107	NW 36 St/SR 25	W/O NW 37 Av	4	4080	2219	1861	0	1861	E+20	C	Dec-94
0109	Okeechobee Rd/SR 25	NW/O NW 103 St	6	5980	2428	3552	1683	1869	D	C	Dec-94
0110	S. Dixie Hwy/US 1	S/O Jct Palmetto Expwy/SR 826	6	10164	8248	1916	289	1627	EE	E	Dec-94
0112	NW 103 St/SR 932	W/O NW 42 Av	4	4120	3350	770	16	754	E	D	Dec-94
0118	SW 8 St/SR 90	E/O SW 57 Av	4	3930	3224	706	0	706	E	D	Dec-94
0121	NW 103 St/SR 932	W/O NW 7 Av	4	3550	2135	1415	14	1401	E	C	Dec-94
0122	NW 119 St/SR 924	W/O NW 7 Av	4	3280	2973	307	26	281	E	D	Dec-94
0124	163 St/SR 826	W/O Collins Av	8	4960	3140	1820	172	1648	E	D	Dec-94
0126	NE 125 St/SR 922	E/O NE 6 Av	4	2650	2680	-30	0	-30	E	F**	Dec-94
0127	S. Dixie Hwy/US 1	S/O SW 57 Av	6	10185	7578	2607	107	2500	E+50	E	Dec-94
0128	NW 7 Av/SR 7	N/O NW 119 St	6	5880	2889	2991	2	2989	E+20	B	Dec-94
0131	SW 177 Av/SR 997	S/O SW 328 St	2	1610	765	845	21	824	D	C	Dec-94
0132	96 St/SR 922	W/O Harding Av	4	3020	1541	1479	0	1479	E	C	Dec-94
0135	NW 27 Av/SR 9	N/O NW 95 St	4	5430	3098	2332	19	2313	E+50	D	Dec-94
0136	NW 138 St/SR 916	W/O NW 67 Av	2	1170	1475	-305	6	-311	E	F**	Dec-94
0138	NW 138 St/SR 916	W/O NW 42 Av	4	3820	2010	1810	0	1810	E	C	Dec-94
0140	NW 136 St/SR 916	W/O NW 7 Av (One-way Westbd)	3	2030	1047	983	0	983	E	E	Dec-94
0141	NW 135 St/SR 916	W/O NW 7 Av (One-way Eastbd)	3	2960	1107	1853	0	1853	E	C	Dec-94
0142	NE 79 St Cswy/SR 934	E/O NE Bayshore Ct	4	4530	3182	1348	0	1348	E	C	Dec-94
0144	NW 135 St/SR 916	W/O W. Dixie Hwy	4	2790	2387	403	54	349	E	E	Dec-94
0146	NW 183 St/SR 860	E/O NW 14 Av	4	3030	2345	685	78	607	E	D	Dec-94
0148	NW 183 St/SR 860	W/O NW 10 Ct	4	4740	3433	1307	5	1302	E	C	Dec-94
0150	NE 183 St/SR 860	E/O W. Dixie Hwy	4	3660	2763	897	1301	-404	E	F**	Dec-94
0151	Ingraham Hwy/SR 936	E/O Everglades Nat'l Park Ent	2	1530	88	1442	6	1436	D	A	Dec-94
0152	NE 192 St Cswy/SR 856	E/O Biscayne Blvd/US 1	6	3970	1781	2189	1303	886	E	D	Sep-92
0154	NE 203 St/SR 854	W/O I 95	6			0	0		E	A	
0158	NW 215 St/SR 852	W/O NW 2 Ave	4	2530	2051	479	209	270	E	C	Dec-94
0164A	S. Dixie Hwy/US 1	S/O Snapper Creek Bridge	6	8880	8374	506	14	492	E+50	E	Dec-94
0166	NE 6 Av/SR 915	N/O NE 163 St	4	2750	2345	405	42	363	E	D	Dec-94
0168	NE 6 Av/SR 915	S/O NE 170 St	4	3300	2177	1123	34	1089	E+20	C	Dec-94
0200	Okeechobee Rd/SR 25	SE/O NW 54 St	4	3240	3894	-654	14	-668	E	F**	Dec-94
0235	NW 7 Av/SR 7	N/O NW 95 St	4	3480	2554	926	19	907	E+20	C	Dec-94
0268	Biscayne Blvd/SR 5	S/O Dade/Broward County Line	6	4700	2638	2062	45	2017	E	C	Dec-94
0269	Collins Av/SR A1A	N/O 172 St	6	6250	3433	2817	0	2817	E	D	Dec-94
0314	Collins Av/SR A1A	N/O NE 192 St Cswy./SR 856	4	3110	2638	472	132	340	E	E	Dec-94
0323	NW 27 Av/SR 9	S/O NW 36 St	6	8040	2135	5905	52	5853	E+50	C	Dec-94
0324	NW 57 Av/SR 955	N/O W 21 St, Hlh	4	3120	2889	231	0	231	E	E	Dec-94
0332	S. Dixie Hwy/US 1	S/O SW 152	6	9150	5317	3833	378	3455	EE	C	Dec-94
0346	S. Dixie Hwy/US 1	N/O SW 112 Av	6	7540	4731	2809	772	2037	EE	D	Dec-94
0360	NW 57 Av/SR 955	S/O NW 138 St	4	3340	3726	-386	33	-419	E	F**	Dec-94
0361	SW 177 Av/SR 997	N/O SW 232 St	2	1610	2261	-651	58	-709	D	F**	Dec-94
0365	NW 2 Av/SR 7	N/O NW 199 St	6	6340	4480	1860	122	1738	E+20	E	Dec-94
0366	NE 167 St/SR 826	E/O N Miami Av	6	6410	5150	1260	42	1218	E	D	Dec-94
0377	SW 8 St/SR 90	E/O SW 177 Av/SR 997	2	960	569	391	0	391	C	B	Dec-94
0380	SW 8 St/SR 90	E/O SW 122 Av	6	5620	3308	2312	395	1917	D	C	Dec-94
0405	Palmetto Expwy/SR 826	E/O NW 57 Av	6	9780	8793	987	273	714	E	D	Dec-94
0417	NW 27 Av/SR 9	N/O Airport Expwy	4	6520	2345	4175	44	4131	E+50	D	Dec-94

STA #	ROADWAY	LOCATION	L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
0431	NW 27 Av/SR 9	S/O NW 103 St	4	5430	3433	1997	225	1772	E+50	E	Dec-94
0436	NW 7 Av/SR 7	N/O NW 147 St	6	6150	2177	3973	101	3872	E+20	B	Dec-94
0495	SW 112 St//SR 990	W/O SW 77 Av	2			0	0		D	A	
0518	SW 177 Av/SR 997	NW/O Jct US 1	2	1610	184	1426	0	1426	D	C	Dec-94
0519	NW 27 Av/SR 9	S/O NW 135 St	6	8440	4815	3625	72	3553	E+50	D	Dec-94
0521	S. Dixie Hwy/US 1	S/O Grand Av	6	10920	8207	2713	0	2713	E+50	E	Dec-94
0522	Biscayne Blvd/SR 5	S/O Jct NE 6 Av	4	7300	3224	4076	2	4074	E+50	C	Dec-94
0524	Biscayne Blvd/SR 5	S/O NE 123 St	4	6000	2722	3278	15	3263	E+50	C	Dec-94
0527	SW 8 St/SR 90	W/O SW 57 Av	4	5460	3224	2236	34	2202	E+20	C	Dec-94
0528	Okeechobee Rd/SR 25	SE/O Palmetto Expwy/SR 826	6	5190	4396	794	0	794	E	D	Dec-94
0529	NW 7 Av/SR 7	N/O NW 81 St	4	3480	2470	1010	24	986	E+20	C	Dec-94
0531	W. Dixie Hwy/SR 909	N/O NE 151 St	4	2570	1926	644	60	584	E	D	Dec-94
0533	79 St Cswy/SR 934	E/O E Treasure Dr	6	4620	2805	1815	0	1815	E	D	Dec-94
0534	NW 54 St/SR 944	E/O Okeechobee Rd/SR 25	3			0	0		E	A	Dec-94
0537	NW 79 St/SR 934	E/O NW 42 Av	4	2020	2261	-241	0	-241	E	F**	Dec-94
0538	NW 79 St/SR 934	W/O NW 27 Av	4	3400	2010	1390	6	1384	E	C	Dec-94
0540	Collins Av/SR A1A	S/O Bridge, Bal Harbour	6	4680	2977	1703	77	1626	E	E	Dec-94
0541	NW 54 St/SR 944	W/O NW 37 Av	4	4390	1675	2715	36	2679	E+20	C	Dec-94
0542	NW 54 St/SR 944	W/O NW 17 Av	4	4480	1926	2554	30	2524	E+20	B	Dec-94
0543	S. Dixie Hwy/US 1	S/O SW 344 St	4	3640	2135	1505	0	1505	D	C	Dec-94
0544	S. Dixie Hwy/US 1	N/O SW 328 St	4	3190	1608	1582	55	1527	D	C	Dec-94
0545	S. Dixie Hwy/US 1	N/O SW 308 St	4	4460	2010	2450	137	2313	D	C	Dec-94
0552	NW 27 Av/SR 9	S/O Dolphin Expwy	6	8370	4103	4267	0	4267	E+50	D	Dec-94
0553	Palmetto Expwy/SR 826	N/O Okeechobee Rd	8	11530	13801	-2271	0	-2271	E	F**	Dec-94
0554	Palmetto Expwy/SR 826	W/O NW 57 Av	6	9780	7680	2100	196	1904	E	D	Dec-94
0556	NE 167 St/SR 826	E/O Biscayne Blvd	8	5980	3308	2672	80	2592	E	D	Dec-94
0558	NW 42 Av//SR 953	S/O Miami River Canal	4	3960	3308	652	0	652	E+20	E	Dec-94
0559	NW 27 Av/SR 817	N/O NW 167 St	6	8770	4396	4374	43	4331	E+50	C	Dec-94
0560	NW 27 Av/SR 817	S/O NW 151 St	6	8460	3140	5320	24	5296	E+50	B	Dec-94
0562	Palmetto Expwy/SR 826	N/O S. Dixie Hwy/US 1	4	6280	2931	3349	309	3040	E	B	Dec-94
0563	Palmetto Expwy/SR 826	N/O SW 88 St	4	6280	5231	1049	291	758	E	D	Dec-94
0564	Palmetto Expwy/SR 826	N/O SW 72 St	4	6280	7420	-1140	1	-1141	E	F**	Dec-94
0565	Palmetto Expwy/SR 826	N/O SW 56 St	4	6280	7680	-1400	0	-1400	E	F**	Dec-94
0566	Palmetto Expwy/SR 826	N/O SW 40 St	8	12160	13504	-1344	0	-1344	E	F**	Dec-94
0567	Palmetto Expwy/SR 826	N/O SW 24 St	8	12160	13059	-899	0	-899	E	F**	Dec-94
0568	Palmetto Expwy/SR 826	N/O SW 8 St/SR 90	8	12160	13690	-1530	0	-1530	E	F**	Dec-94
0569	Palmetto Expwy/SR 826	N/O Flagler St	8	12160	13393	-1233	6	-1239	E	F**	Dec-94
0570	Palmetto Expwy/SR 826	N/O NW 12 St	8	12220	14580	-2360	171	-2531	E	F**	Dec-94
0571	Palmetto Expwy/SR 826	N/O NW 36 St	8	14790	13171	1619	571	1048	E	D	Dec-94
0572	Palmetto Expwy/SR 826	N/O NW 58 St	8	14790	13504	1286	0	1286	E	D	Dec-94
0573	Palmetto Expwy/SR 826	N/O NW 74 St	8	12930	14172	-1242	129	-1371	E	F**	Dec-94
0574	Palmetto Expwy/SR 826	N/O NW 103 St	6	9780	12354	-2574	0	-2574	E	F**	Dec-94
0575	Palmetto Expwy/SR 826	N/O NW 122 St	8	13040	10388	2652	0	2652	E	D	Dec-94
0576	Palmetto Expwy/SR 826	N/O NW 138 St	6	9780	8310	1470	1	1469	E	D	Dec-94
0577	Palmetto Expwy/SR 826	E/O NW 47 Av	6	9780	9535	245	343	-98	E	F**	Dec-94
0578	Palmetto Expwy/SR 826	W/O NW 27 Av	6	9780	9423	357	80	277	E	E	Dec-94
0579	Palmetto Expwy/SR 826	E/O NW 27 Av	8	13040	10945	2095	213	1882	E	D	Dec-94
0580	Palmetto Expwy/SR 826	E/O NW 22 Av	8	13040	9636	3404	130	3274	E	C	Dec-94
0581	Palmetto Expwy/SR 826	E/) NW 17 Av	8	13040	9458	3582	28	3554	E	C	Dec-94
0582	SW 177 Av//SR 997	N/O SW 8 St	2	590	590	0	2	-2	B	F**	Dec-94
0584	Okeechobee Rd/SR 25	S/O Dade/Broward County Line	4			0	0		C	A	
0589	SW 8 St/SR 90	W/O SW 87 Av	4	3640	2722	918	10	908	D	D	Dec-94
0592	SW 88 St/SR 94	E/O SW 110 Av	6	6290	5150	1140	243	897	D	C	Dec-94
0632	NW 47 Av/SR 847	N/O NW 183 St	4	3760	1678	2082	33	2049	E+20	C	Dec-94
0682	SW 177 Av/SR 997	S/O SW 88 St	2	2170	1152	1018	32	986	C	C	Dec-94

STA #	ROADWAY	LOCATION	L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
0683	SW 88 St/SR 94	W/O S Dixie Hwy/US 1	6	8190	3266	4924	718	4206	E+50	D	Dec-94
0684	SW 88 St/SR 94	W/O Palmetto Expwy/SR 826	6	8190	4271	3919	522	3397	E+50	D	Dec-94
1008	W. Dixie Hwy/SR 909	S/O NE 125 St	4	2100	1323	777	83	694	E	D	Dec-94
1009	NE 6 Av/SR 915	N/O Jct Bicayne Blvd/US 1	4	3270	854	2416	1	2415	E	C	Dec-94
1010	NE 6 Av/SR 915	S/O NE 111 St	4	2890	1700	1190	1	1189	E	C	Dec-94
1018	Alton Rd/SR 907	N/O 20 St	4	2650	2428	222	0	222	E	E	Dec-94
1023	Broad Cswy/SR 922	W/O N Bayshore Dr	4	4210	1926	2284	0	2284	E	B	Dec-94
1024	NE 123 St/SR 922	W/O NE 4 Av	4	2900	2470	430	0	430	E	E	Dec-94
1025	NW 135 St/SR 916	W/O N Miami Av	4	3960	3015	945	0	945	E	C	Dec-94
1026	NW 135 St/SR 916	W/O Biscayne Blvd/US 1	4	3170	1373	1797	15	1782	E	C	Dec-94
1030	NE 199 St/SR 854	E/O N Miami Av	6			0	0		E	A	
1048	SW 40 St/SR 976	W/O SW 42 Av	4	4900	3601	1299	0	1299	E+20	D	Dec-94
1049	SW 40 St/SR 976	E/O SW 57 Av	4	4900	4187	713	36	677	E+20	E	Dec-94
1050	SW 40 St/SR 976	E/O SW 74 Av	6	7320	5820	1500	77	1423	E+20	D	Dec-94
1053	SW 42 Av/SR 953	N/O Ponce De Leon Blvd	4	1940	2261	-321	0	-321	E+20	F**	Dec-94
1067	SW 72 St/SR 986	E/O Palmetto Expwy	4	3650	3182	468	137	331	E	F**	Dec-94
1068	SW 72 St/SR 986	W/O Palmetto Expwy	4	4530	3894	636	247	389	EE	E	Dec-94
1070	SW 72 St/SR 986	W/O SW 107 Av	4	3970	4020	-50	14	-64	EE	F**	Dec-94
1071	SW 72 St/SR 986	W/O HEFT/SR 821	4	4590	3391	1199	100	1099	EE	D	Dec-94
1074	SW 87 Av/SR 973	N/O SW 12 St	4	3200	2680	520	62	458	SUMA	D	Dec-94
1075	SW 87 Av/SR 973	S/O SW 56 St	4	3110	2094	1016	131	885	SUMA	C	Dec-94
1076	SW 87 Av/SR 973	N/O SW 85 St	4	3150	2177	973	40	933	SUMA	C	Dec-94
1077	SW 87 Av/SR 973	N/O SW 132 St	2	1620	1079	541	76	465	SUMA	C	Dec-94
1080	SW 88 St/SR 94	W/O SW 147 Av	6	8050	3433	4617	4144	473	EE	E	Dec-94
1089	SW 110 St/SR 990	E/O S Dade Expwy	4	5820	3140	2680	429	2251	E+20	B	Dec-94
1090	SW 107 Av/SR 985	S/O SW 8 St	6	6830	4187	2643	493	2150	SUMA	C	Dec-94
1091	SW 107 Av/SR 985	N/O SW 40 St	4	3090	2680	410	79	331	SUMA	D	Dec-94
1092	SW 107 Av/SR 985	S/O SW 93 St	4	1980	1675	305	30	275	D	D	Dec-94
1093	SW 112 St/SR 990	W/O US 1	2	1740	1300	440	84	356	EE	D	Dec-94
1095	SW 112 Av/SR 989	N/O SW 216 St	4	5180	1591	3589	369	3220	EE	B	Dec-94
1106	SW 152 St/SR 998	W/O S Dixie Hwy/US 1	4	5000	2722	2278	85	2193	SUMA	D	Dec-94
1114	SW 186 St/SR 994	W/O S Dixie Hwy/US 1	2	1350	1521	-171	0	-171	SUMA	F**	Dec-94
1116	SW 200 St/SR 994	W/O SW 127 Av	2	2280	526	1754	232	1522	SUMA	D	Dec-94
1117	SW 200 St/SR 994	E/O SW 177 Av	2	1210	433	777	145	632	D	C	Dec-94
1138	W Flagler St/SR 968	E/O NW/SW 42 Av	4	3070	2931	139	0	139	E	E	Dec-94
1139	W Flagler St/SR 968	E/O NW/SW 72 Av	4	4480	4271	209	4	205	E+20	E	Dec-94
1140	W Flagler St/SR 968	W/O NW/SW 72 Av	4	4480	4522	-42	9	-51	E+20	F**	Dec-94
1141	W Flagler St/SR 968	W/O Palmetto Expwy/SR 826	6	5570	5485	85	344	-259	SUMA	F**	Dec-94
1146	NW 12 Av/SR 933	N/O NW 20 St	4	2890	2094	796	0	796	E	D	Dec-94
1147	NW 12 Av/SR 933	N/O NW 36 St	4	2890	1666	1224	0	1224	E	D	Dec-94
1167	NW 27 Av/SR 817	At Dade/Broward County Line	6	5950	3685	2265	12	2253	E	C	Dec-94
1172	NW 36 St/SR 948	E/O NW 72 Av	6	6510	5694	816	149	667	E	D	Dec-94
1173	NW 36 St/SR 948	E/O SR 826/Palmetto Expwy	6	4500	5611	-1111	47	-1158	E	F**	Dec-94
1178	NW 42 Av/SR 953	S/O NW 18 St	8	8480	7411	1069	0	1069	E	D	Dec-94
1179	NW 42 Av/SR 953	S/O E 11 PL, Hlh	4	3300	3182	118	220	-102	E	F**	Dec-94
1180	NW 42 Av/SR 953	S/O E 23 St, Hlh	4	3300	3433	-133	62	-195	E	F**	Dec-94
1181	NW 42 Av/SR 953	N/O NW 119 St	6	3480	1482	1998	331	1667	E	C	Dec-94
1189	NW 57 Av/SR 959	N/O NW 7 St	6	3000	3015	-15	0	-15	E	F**	Dec-94
1190	NW 57 Av/SR 959	S/O NW 173 Dr	6	4450	3433	1017	2683	-1666	E	F**	Dec-94
1201	NW 72 Av/SR 969	N/O Flagler St	4	2840	2094	746	432	314	E	D	Dec-94
1202	NW 72 Av/SR 969	N/O NW 12 St	6	4970	2931	2039	465	1574	E	C	Dec-94
1204	NW 72 Av/SR 969	S/O NW 36 St	4	4290	3098	1192	548	644	E	C	Dec-94
1205	NW 72 Av/SR 969	S/O NW 41 St	4	3120	3098	22	69	-47	E	F**	Dec-94
1211	NW 87 Av/SR 973	N/O NW 8 St	6	5810	4103	1707	982	725	SUMA	E	Dec-94
1214	NW 103 St/SR 932	E/O NW 27 Av	4	3550	2470	1080	75	1005	E	D	Dec-94

STA #	ROADWAY	LOCATION	L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
1215	NW 103 St/SR 932	E/O NW 42 Av	6	4170	3140	1030	127	903	E	D	Dec-94
1216	NW 103 St/SR 932	E/O Palmetto Expwy/SR 826	6	5330	3936	1394	0	1394	E	D	Dec-94
1217	NW 103 St/SR 932	E/O NW 87 Av	4	3000	997	2003	0	2003	D	C	Dec-94
1218	NW 107 Av/SR 985	N/O NW 7 St	4	4090	5150	-1060	0	-1060	SUMA	F**	Dec-94
1219	NW 119 St/SR 924	W/O NW 1 Av	4	3660	1340	2320	31	2289	E	C	Dec-94
1220	NW 119 St/SR 924	E/O NW 27 Av	6	3670	2680	990	15	975	E	D	Dec-94
1221	NW 136 St/SR 916	E/O NW 27 Av (One-way Westbd)	3	2740	678	2062	0	2062	E	C	Dec-94
1222	NW 135 St/SR 916	E/O NW 27 Av (One-way Eastbd)	3	2740	879	1861	0	1861	E	C	Dec-94
1223	NW 135 St/SR 916	W/O NW 27 Av	4	2980	1708	1272	63	1209	E	C	Dec-94
1224	NW 135 St/SR 916	E/O NW 42 Av	4	2980	1784	1196	25	1171	E	C	Dec-94
1229	NE 183 St/SR 860	E/O NE 8 Av	4	4860	3308	1552	241	1311	E+20	D	Dec-94
1230	NE 183 St/SR 860	W/O NE 2 Av	4	3690	3350	340	1	339	E+20	E	Dec-94
1233	NW 183 St/SR 860	E/O NW 57 Av	4	4290	1658	2632	0	2632	E+20	B	Dec-94
2002	Snapper Creek Expwy/SR 878	W/O S. Dixie Hwy/US 1	4	7780	2337	5443	0	5443	E	A	Dec-94
2023	Airport Expwy/SR 112	E/O NW 17 Av	6	10780	6715	4065	0	4065	E	C	Dec-94
2036	I-95/SR 9	S/O NW 79 St	10	17260	14098	3162	10	3152	E	D	Dec-94
2041	I-95/SR 9	N/O NW 95 St	10	17260	14432	2828	10	2818	E	D	Dec-94
2050	Airport Expwy/SR 112	W/O NW 17 Av	6	10780	5454	5326	0	5326	E	C	Dec-94
2055	Airport Expwy/SR 112	E/O NW 27 Av	6	10780	6604	4176	0	4176	E	C	Dec-94
2060	Airport Expwy/SR 112	W/O NW 27 Av	6	10780	7272	3508	0	3508	E	C	Dec-94
2065	Airport Expwy/SR 112	E/O NW 42 Av	6	10780	7160	3620	0	3620	E	C	Dec-94
2080	NW 103 St/SR 932	E/O I-95	4	2910	2219	691	2	689	E	D	Dec-94
2085	I-95/SR 9	N/O NW 103 St	10	17260	12317	4943	0	4943	E	C	Dec-94
2095	I-95/SR 9	S/O Airport Expwy/SR 112	10	17260	13690	3570	0	3570	E	D	Dec-94
2100	I-95/SR 9	N/O NW 125 St	10	17650	13727	3923	7	3916	E	D	Dec-94
2105	I-95/SR 9	N/O NW 135 St	10			0	0		E	A	
2113	Palmetto Expwy/SR 826	W/O Florida Turnpike/SR 91	4	6520	2226	4294	0	4294	E	A	Dec-94
2114	Palmetto Expwy/SR 826	E/O NW 12 Av	8	13040	9386	3654	176	3478	E	C	Dec-94
2134	I-95/SR 9	S/O NW 151 St	8	14120	13208	912	127	785	E	E	Dec-94
2137	I-95/SR 9	N/O Golden Glades Interchange	8	14970	9832	5138	36	5102	E	C	Dec-94
2162	I-95/SR 9	N/O S. Dixie Hwy/US 1	4	6900	5083	1817	0	1817	E	C	Dec-94
2188	Dolphin Expwy/SR 836	E/O Palmetto Expwy/SR 826	8	12280	12280	0	78	-78	E	F**	Dec-94
2193	Dolphin Expwy/SR 836	W/O NW 57 Av	6	9210	12948	-3738	429	-4167	E	F**	Dec-94
2198	Dolphin Expwy/SR 836	E/O NW 57 Av	6	9940	14209	-4269	1102	-5371	E	F**	Dec-94
2207	Dolphin Expwy/SR 836	E/O NW 42 Av	6	9940	10611	-671	0	-671	E	F**	Dec-94
2208	Dolphin Expwy/SR 836	W/O NW 12 Av	8	13260	7606	5654	0	5654	E	C	Dec-94
2210	Dolphin Expwy/SR 836	W/O NW 27 Av	8	13260	12280	980	0	980	E	D	Dec-94
2232	Dolphin Expwy/SR 836	E/O NW 27 Av	8	13260	10277	2983	0	2983	E	D	Dec-94
2240	Dolphin Expwy/SR 836	W/O NW 10 Av	8	13260	10945	2315	0	2315	E	D	Dec-94
2242	Dolphin Expwy/SR 836	W/O NW 107 Av	6	8780	5417	3363	3	3360	D	C	Dec-94
2243	Dolphin Expwy/SR 836	E/O NW 107 Av	6	8780	7494	1286	893	393	D	D	Dec-94
2244	Dolphin Expwy/SR 836	E/O NW 87 Av	6	8780	8607	173	1014	-841	D	F**	Dec-94
2246	HEFT/SR 821	S/O SW 88 St	6	9370	2930	6440	106	6334	D	A	Dec-94
2248	HEFT/SR 821	N/O Okeechobee Rd	4	6470	3339	3131	107	3024	D	B	Dec-94
2250	HEFT/SR 821	N/O SW 8 St	6	9370	7420	1950	406	1544	D	D	Dec-94
2252	HEFT/SR 821	N/O SW 88 St	6	9700	4897	4803	85	4718	D	B	Dec-94
2254	HEFT/SR 821	N/O SW 168 St	8	16690	6493	10197	14	10183	EE	B	Dec-94
2256	HEFT/SR 821	S/O SW 186 St	4	8350	3896	4454	617	3837	EE	C	Dec-94
2258	HEFT/SR 821	N/O SW 137 Av	4	6470	2374	4096	80	4016	D	B	Dec-94
2260	HEFT/SR 821	N/O SW 312 St	4	6470	1855	4615	95	4520	D	A	Dec-94
2262	HEFT/SR 821	N/O SW 320 St	4	6470	1054	5416	35	5381	D	A	Dec-94
2264	HEFT/SR 821	E/O SW 112 Av	4	6470	1929	4541	112	4429	D	A	Dec-94
2266	HEFT/SR 821	S/O Jct S. Dade Expwy/SR 874	8	13940	7939	6001	64	5937	D	C	Dec-94
2268	HEFT/SR 821	S/O SW 40 St	6	9370	7939	1431	0	1431	D	D	Dec-94
2270	HEFT/SR 821	N/O SW 40 St	6	9370	5231	4139	0	4139	D	B	Dec-94

STA #	ROADWAY	LOCATION	L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
2272	HEFT/SR 821	S/O Okeechobee Rd	4	6250	3339	2911	0	2911	D	B	Dec-94
2274	S. Dade Expwy/SR 874	SW/O Killian Pkwy	4	8020	4489	3531	16	3515	EE	C	Dec-94
2276	S. Dade Expwy/SR 874	NE/O Killian Pkwy	8	16050	6975	9075	6	9069	EE	B	Dec-94
2278	S. Dade Expwy/SR 874	NE/O SW 87 Av	4	6220	5936	284	0	284	D	D	Dec-94
2485	I-95/SR 9	S/O NE 203 St	8	14970	10351	4619	22	4597	E	C	Dec-94
2487	I-95/SR 9	S/O Dade/Broward County Line	8	14970	10462	4508	22	4486	E	C	Dec-94
2500	I-75	W/O Palmetto Expwy/SR 826	8	13920	4192	9728	268	9460	D	A	Dec-94
2501	I-75	S/O NW 186 St	8	13920	3302	10618	193	10425	D	A	Dec-94
2502	I-75	S/O HEFT/SR 821	8	13920	3228	10692	130	10562	D	A	Dec-94
2503	I-75	N/O HEFT/SR 821	8	13920	6047	7873	0	7873	D	B	Dec-94
5005	NW 7 Av/SR 7	N/O NW 20 St	4	4530	1884	2646	0	2646	E+20	C	Dec-94
5006	NW 2 Av/SR 7	N/O NW 183 St	6	6690	4481	2209	51	2158	E	C	Dec-94
5008	SW 12 Av/SR 933	N/O SW 22 St	4	3110	636	2474	0	2474	E	C	Dec-94
5011	SW 12 Av/SR 933	N/O SW 7 St	4	2270	1298	972	0	972	E	E	Dec-94
5012	SW 12 Av/SR 933	N/O Flagler St	4	2270	1951	319	0	319	E	E	Dec-94
5014	NW 7 Av/SR 7	S/O NW 119 St	6	5130	2638	2492	126	2366	E	B	Dec-94
5017	SW 177 Av/SR 997	S/O SW 312 St	2	1610	959	651	10	641	D	C	Dec-94
5031	S. Dixie Hwy/SR 5	N/O Granada Blvd	6			0	0		E+50	A	Dec-94
5065	Biscayne Blvd/SR 5	N/O NE 71 St	4	7290	3559	3731	0	3731	E+50	C	Dec-94
5068	Biscayne Blvd/SR 5	N/O NE 79 St	4	7300	3517	3783	0	3783	E+50	C	Dec-94
5077	NW 36 St/SR 25	E/O I-95	4	2970	1256	1714	0	1714	E+20	D	Dec-94
5079	NW 36 St/SR 25	W/O NW 7 Av	2	2220	1373	847	0	847	E+20	D	Dec-94
5080	NW 36 St/SR 25	E/O NW 27 Av	4	4260	1968	2292	429	1863	E+20	C	Dec-94
5083	NW 36 St/SR 25	W/O NW 12 Av	2	2220	1616	604	0	604	E+20	D	Dec-94
5087	NW 36 St/SR 25	W/O NW 27 Av	4	4080	1926	2154	59	2095	E+20	C	Dec-94
5144	NW 7 Av/SR 7	N/O NW 63 St	4	4140	1759	2381	874	1507	E+20	D	Dec-94
5200	S. Dixie Hwy/SR 5	S/O SW 27 Av	6	10920	7495	3425	0	3425	E+50	E	Dec-94
5201	S. Dixie Hwy/SR 5	N/O SW 27 Av	6	10770	9128	1642	0	1642	E+50	E	Dec-94
5219	Biscayne Blvd/SR 5	S/O NE 163 St	6	9370	3391	5979	559	5420	E+50	C	Dec-94
5222	NE 167 St/SR 826	W/O Biscayne Blvd/US 1	6	6720	4103	2617	9	2608	E+20	D	Dec-94
5225	NE 167 St/SR 826	W/O NE 19 Av	6	7120	4354	2766	141	2625	E+20	C	Dec-94
5229	NE 167 St/SR 826	W/O NE 10 Av	6	6960	4941	2019	69	1950	E+20	E	Dec-94
5252	Okeechobee Rd/SR 25	SE/O NW 67 Av	6	5190	4103	1087	0	1087	E	C	Dec-94
5265	NW 54 St/SR 944	W/O NW 42 Av	4	2830	1800	1030	0	1030	E	D	Dec-94
5341	NW 54 St/SR 944	E/O Okeechobee Rd/SR 25	4			0	0		E	A	Dec-94
5348	NW 54 St/SR 944	W/O NW 12 Av	4			0	0		E	A	Dec-94
5371	NW 57 Av/SR 955	N/O W 42 St	4	2730	3517	-787	0	-787	E	F**	Dec-94
5372	NW 57 Av/SR 955	N/O NW 103 St	4	3340	2680	660	0	660	E	D	Dec-94

EE= LOS 120% E, with Extraordinary Transit between Infill Area and Urban Development Boundary.
HE= LOS E, with 20 minute Transit Headway between Infill Area and Urban Development Boundary.
E+50= LOS 150% E, with Extraordinary Transit in Infill Area.
E+20= LOS 120% E, with 20 minute Transit Headway in Infill Area.
SUMA= LOS E, State Urban Minor Arterial between Infill Area and Urban Development Booundary.
L= Number of Lanes
- = Negative Number.

STA #	ROADWAY	LOCATION	C/L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9106	Bird Dr/SW 40 St	W/O HEFT	A6	5380	2946	2434	290	2144	HE	C	Dec-94
9108	Bird Dr Ext/SW 42 ST	W/O SW 127 ave	A4	2170	2456	-286	67	-353	HE	F**	Dec-94
9110	Bird Dr Ext/SW 42 ST	W/O SW 137 ave	C4	2230	1899	331	191	140	D	D	Dec-94
9112	Bird Dr Ext/SW 42 ST	W/O SW 147 ave	C4	4790	345	4445	1085	3360	D	A	Dec-94

STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9114	Carribbean Blvd	E/O HEFT	C2	1280	1316	-36	17	-53	D	F**	Dec-94
9120	Coral Way/SW 24 St	E/O SW 67 Ave	A4	5260	2675	2585	72	2513	E+20	C	Dec-94
9121	Coral Way/SW 24 St	W/O SW 73 Ave	A4	5160	3331	1829	21	1808	E+20	C	Dec-94
9122	Coral Way/SW 24 St	W/O Palmetto Expwy/SR 826	A6	5470	4336	1134	120	1014	ME	D	Apr-94
9124	Coral Way/SW 24 St	W/O SW 87 Ave	A6			0	0	0	D	A	
9126	Coral Way/SW 24 St	W/O SW 97 Ave	A4	4930	3686	1244	290	954	D	B	Apr-94
9128	Coral Way/SW 24 St	W/O SW 107 Ave	A4			0	0	0	ME	A	
9130	Coral Way/SW 26 St	W/O HEFT	A4	3330	3638	-308	58	-366	D	F**	Apr-94
9132	Coral Way/SW 26 St	W/O SW 127 Ave	A4	3320	1756	1564	336	1228	D	C	May-94
9134	Coral Way/SW 26 St	W/O SW 137 Ave	C2	750	343	407	292	115	D	D	Apr-94
9136	Crandon Blvd	N/O Harbor Dr	A4	3120	1821	1299	444	855	E	D	Dec-92
9137	Crandon Blvd	S/O Harbor Dr	A4	5420	1668	3752	1500	2252	E	C	Jul-91
9138	Dadeland Blvd	S/O Kendall Dr/Sw 88 St				0	0	0	E	A	
9140	E 1 Ave (One-Way N'b)	S/O E 21 St	A3	2230	589	1641	25	1616	E	C	Apr-94
9142	E 1 Ave (One-Way N'b)	S/O Okeechobee Rd	A2	1140	1478	-338	0	-338	E	F**	Apr-94
9144	E 4 Ave	S/O E 21 St	C4	4330	1908	2422	5	2417	E	B	Apr-94
9146	East Dixie Hwy	S/O NE 215 St				0	0	0	E	A	
9148	East Dr	S/O Okeechobee Rd	C4	1940	1742	198	180	18	E	E	Dec-94
9152	Flagler St (SR 968)	W/O Red Rd/NW/SW 57 Ave				0	0	0	E+20	A	
9154	Flagler St	W/O NW/SW 87 Ave	A6	6200	3228	2972	23	2949	ME	B	Apr-94
9156	Flagler St	W/O NW/SW 97 Ave	A6	3650	2332	1318	6	1312	ME	C	Apr-94
9158	Flagler St	W/O NW/SW 107 Ave	C6	4190	2963	1227	31	1196	ME	B	Dec-94
9160	Flagler St	W/O HEFT	C4	4630	2707	1923	473	1450	D	A	Dec-94
9162	Galloway Rd/NW 87 ave	N/O NW 12 St	A6	5240	2903	2337	1418	919	D	B	Feb-94
9164	Galloway Rd/NW 87 ave	N/O NW 25 St	A6	5620	2837	2783	2319	464	D	C	Jul-94
9166	Galloway Rd/NW 87 ave	N/O NW 41 St	A4	2770	2230	540	800	-260	D	F**	Dec-94
9168	Galloway Rd/NW 87 ave	S/O I-75	C4	4380	1379	3001	1563	1438	D	B	Apr-94
9170	Galloway Rd/NW 87 ave	S/O NW 186 St	C2	710	386	324	99	225	D	C	Apr-94
9172	Galloway Rd/SW 87 ave	S/O Kendall Dr/SW 88 st	A2	1690	1430	260	29	231	SUMA	C	May-94
9174	Galloway Rd/SW 87 ave	S/O SW 184 St	C2	1330	497	833	0	833	D	B	Dec-94
9178	Hammocks Blvd	S/O Kendall Blvd/SW 88 St	C4	2070	579	1491	333	1158	D	C	Dec-94
9182	Hialeah Dr/NW 54 St One-Way W'b	SW/O Okeechobee Rd	C2	640	1107	-467	0	-467	E	F**	Apr-94
9184	Highland Lakes Blvd	S/O Ives Dairy Rd	C2	1620	1340	280	17	263	E	C	Apr-94
9186	Highland Lakes Blvd	S/O NE 215 St				0	0	0	E	A	
9194	Ingraham Hwy	E/O LeJeune Rd/SW 42 Ave	A2	1180	1595	-415	0	-415	E	F**	Apr-94
9196	Ives Dairy Rd/NE 203 St	W/O NE 22 Ave	A6	6040	3712	2328	575	1753	E	D	Apr-94
9198	Ives Dairy Rd/NE 203 St	W/O I-95	A6			0	0	0	E	A	
9200	Ives Dairy Rd/NE 203 St	E/O North Miami Ave	A6	5970	2533	3437	27	3410	E	C	Apr-94
9202	Kendall Dr/SW 88 St	W/O Old Cutler Rd	C2	1240	528	712	56	656	E	B	Dec-94
9204	Kendall Dr/SW 88 St	W/O HEFT	A8	11230	5571	5659	25	5634	EE	C	Apr-94
9206	Kendall Dr/SW 88 St	W/O SW 137 Ave	A6	6280	3587	2693	68	2625	EE	C	Apr-94
9208	Krome Ave/SW 177 Ave	S/O SW 184 St	A2	2200	1000	1200	16	1184	C	A	Dec-94
9210	Krome Ave/SW 177 Ave	S/O SW 216 St	A2	1590	823	767	21	746	C	B	Dec-94
9212	Krome Ave/SW 177 Ave	N/O SW 288 St	A2	2060	818	1242	15	1227	D	C	Dec-94
9214	Le Jeune Rd/NW 42 Ave	S/O E 21 St				0	0	0	E	A	
9216	Le Jeune-Douglas Connector	N/O NW 119 St	A6	5480	1987	3493	2	3491	E	B	Dec-94
9218	Le Jeune Rd/SW 42 Ave	S/O US 1				0	0	0	E	A	
9220	NW 74 St	SW/O Okeechobee Rd	C4	1410	1200	210	0	210	E	D	Dec-94
9222	Ludlam Rd/W 12 Ave	S/O NW 103 St/W 49 St	A4	3430	2065	1365	444	921	E	C	Apr-94
9224	Ludlam Rd/W 12 Ave	S/O NW 122 St/W 68 St	A4	3520	2216	1304	0	1304	E	D	Sep-94
9226	Ludlam Rd/NW 67 Ave	S/O NW 138 St	A4	2820	2173	647	80	567	E	D	Apr-94

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STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9228	Ludlam Rd/NW 67 Ave	S/O Palmetto Expwy/SR 826	A4	2840	3041	-201	67	-268	E+20	F**	Apr-94
9230	Ludlam Rd/NW 67 Ave	N/O NW 169 St	A6	5720	3417	2303	866	1437	E+20	D	
9232	Ludlam Rd/NW 67 Ave	N/O NW 186 St	A6	6790	2254	4536	101	4435	E+20	C	Dec-94
9234	Ludlam Rd/NW 67 Ave	N/O NW 202 St				0	0	0	E	A	

STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9236	Ludlam Rd/SW 67 Ave	S/O Flagler St	A4	1530	1220	310	23	287	E	E	Apr-94
9238	Ludlam Rd/SW 67 Ave	S/O Tamiami Trail/SW 8 St	A4			0	0	0	E	A	
9240	Ludlam Rd/SW 67 Ave	S/O Coral Way/SW 24 St	A4	1820	1752	68	53	15	E	E	Dec-94
9242	Ludlam Rd/SW 67 Ave	S/O Bird Rd/SW 40 St	A2	1070	1310	-240	22	-262	E	F**	Nov-94
9243	Ludlam Rd/SW 67 Ave	N/O SW 72 st	A2	1110	858	252	43	209	E	D	Jul-91
9244	Ludlam Rd/SW 67 Ave	S/O Kendall Dr/SW 88 St	C2	1360	1004	356	34	322	E	C	May-94
9246	Ludlam Rd/SW 67 Ave	S/O SW 112 St	C2	2150	1076	1074	18	1056	E	B	May-94
9248	Ludlam Rd/SW 67 Ave	S/O SW 136 St	C2	750	462	288	64	224	E	C	Mar-91
9250	Miami Gardens Dr/NW 183 St	W/O NW 37 Ave	A4	3570	1828	1742	101	1641	E+20	C	Dec-94
9252	Miami Gardens Dr/NW 183 St	W/O Red Rd/NW 57 Ave	A4	3850	2001	1849	845	1004	E+20	D	Dec-94
9254	Miami Gardens Dr/NW 186 St	E/O NW 79 Ave	A4	3330	1843	1487	1004	483	SUMA	D	May-94
9256	Miami Lakes Dr West	W/O Red Rd/NW 57 Ave	C4	2760	1424	1336	46	1290	E	B	Apr-94
9258	Miami Lakes Dr East	E/O Palmetto Expwy/SR 826	C4	4170	2154	2016	71	1945	E	B	Apr-94
9260	Miller Dr/SW 56 St	W/O Red Rd/SW 57 Ave	A2	1060	1789	-729	9	-738	E	F**	May-94
9261	Miller Dr/SW 56 St	W/O SW 69 Ave	A4	3610	2601	1009	5	1004	E	B	Feb-94
9262	Miller Dr/SW 56 St	W/O Palmetto Expwy/SR 826	A4	3330	3287	43	28	15	E	E	May-94
9264	Miller Dr/SW 56 St	W/O SW 87 Ave	A4	4620	3201	1419	37	1382	D	C	May-94
9266	Miller Dr/SW 56 St	W/O SW 97 Ave	A4	3460	3795	-335	43	-378	D	F**	May-94
9268	Miller Dr/SW 56 St	W/O SW 107 Ave	A4	5820	3141	2679	66	2613	D	B	May-94
9270	Miller Dr/SW 56 St	W/O HEFT	A4	3700	3013	687	9	678	D	C	May-94
9272	Miller Dr/SW 56 St	W/O SW 127 Ave	A4	3060	2581	479	0	479	D	C	May-94
9274	Miller Dr/SW 56 St	W/O SW 137 Ave	C4	3080	1900	1180	357	823	D	C	May-94
9275	Miller Dr/SW 56 St	W/O SW 147 Ave	C4	2220	1404	816	671	145	D	D	May-94
9278	NE 2 Ave	S/O NE 79 St	C4	2360	1114	1246	0	1246	E	B	May-94
9280	NE 2 Ave	N/O NE 96 St	C4	2590	1505	1085	0	1085	E	B	May-94
9282	NE 2 Ave	S/O NE 117 St				0	0	0	E	A	
9284	NE 2 Ave	S/O NE 215 St	C2	1170	450	720	0	720	E	C	Apr-94
9286	NE 6 Ave/SR 915	S/O NE 125 St				0	0	0	E	A	
9288	NE 6 Ave/SR 915	S/O NE 135 St				0	0	0	E	A	
9290	NE 10 Ave	S/O NE 125 St	C2	670	582	88	0	88	E+20	E	Apr-94
9292	NE 12 Ave	S/O NE 215 St				0	0	0	E	A	
9294	NE 16 Ave	S/O NE 123 St				0	0	0	E	A	
9296	NE 19 Ave	N/O NE 175 St	C4	2800	1555	1245	105	1140	E	C	Apr-94
9298	NE 79 St/SR 934	W/O Biscayne Blvd	A4	3130	1698	1432	0	1432	E	D	Dec-94
9300	NE 82 St/SR 934 One-Way W'b	W/O Biscayne Blvd	A3	2020	1179	841	0	841	E	B	Dec-94
9302	NE 163 St/Sunny Isles Blvd	E/O NE 35 Ave				0	0	0	E	A	
9304	NE 192 St Cswy/SR 856	W/O Collins Ave	F6	3971	2620	1351	866	485	E	E	Mar-91
9306	N Biscayne River Dr	N/O NE 135 St	C2	1240	548	692	0	692	E	C	Apr-91
9310	North Miami Ave	S/O NE/NW 79 St	A4	2440	1840	600	0	600	E	C	Dec-94
9312	North Miami Ave	N/O NE/NW 95 St	A4	2920	1764	1156	0	1156	E	C	Dec-94
9314	North Miami Ave	S/O NE/NW 119 St	A4	3510	1397	2113	0	2113	E	C	Dec-94
9316	North Miami Ave	N/O NE/NW 159 St	A4	1380	758	622	17	605	E	C	Jul-94
9318	NW 1 Ave	S/O NW 20 St	C2	610	144	466	0	466	E	B	Dec-94
9322	NW 2 Ave	S/O NW 79 St	C2	1010	497	513	0	513	E	B	Dec-94
9324	NW 2 Ave	S/O NW 119 St	C2	580	245	335	1	334	E	C	Dec-94
9326	NW 2 Ave	S/O NW 167 St				0	0	0	E	A	
9328	NW 2 Ave/US 441	S/O NW 215 St	A6	4050	3532	518	14	504	E	E	May-94
9336	NW 7 Ave/US 441	S/O NW 20 St	A4	3870	1400	2470	0	2470	E	C	Dec-94
9338	NW 7 Ave/US 441	S/O NW 79 St	A4	3550	2065	1485	0	1485	E	C	Dec-94
9342	NW 7 St	W/O NW 27 Ave	A4	3050	1797	1253	0	1253	E	C	Dec-94
9348	NW 7 St	W/O NW 60 Ave	A4	3300	1468	1832	585	1247	E	D	Apr-94

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STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9354	NW 12 Ave	S/O NW 79 St				0	0	0	E	A	
9356	NW 12 Ave	S/O NW 119 St	C2	920	375	545	9	536	E	B	May-94
9357	NW 12/13 Ave	S/O Palmetto Expwy/SR 826	C4	2090	995	1095	0	1095	E	B	Dec-94
9358	NW 12 St	W/O Palmetto Expwy/SR 826	A4	2980	2208	772	114	658	D	D	Dec-94

STA #	ROADWAY	LOCATION	C/L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9360	NW 12 St	E/O Galloway Rd/NW 87 Ave	C2			0	0	0	D	A	
9362	NW 12 St	W/O NW 97 Ave				0	0	0	D	A	
9364	NW 12 St	E/O NW 112 Ave	A4	3290	68	3222	213	3009	D	B	Aug-92
9368	NW 17 Ave	S/O NW 54 St	A4	2750	1352	1398	6	1392	E	C	Apr-94
9370	NW 17 Ave	S/O NW 79 St	C4	2570	1580	990	7	983	E	C	Dec-94
9372	NW 17 Ave	N/O NW 95 St				0	0	0	E	A	
9374	NW 17 Ave	N/O NW 119 St				0	0	0	E	A	
9376	NW 17 Ave	S/O NW 119 St	C4	2550	1119	1431	0	1431	E	B	Dec-94
9380	NW 17 St	W/O NW 27 Ave	C2	610	1249	-639	0	-639	E	F**	Dec-94
9381	NW 17 St	E/O NW 70 Ave	C2	1140	892	248	174	74	E	E	Jul-91
9384	NW 20 St	E/O NW 12 Ave	A4	3510	1631	1879	0	1879	E+20	C	Apr-94
9386	NW 20 St	W/O NW 22 Ave	C4	2830	1772	1058	15	1043	E+20	C	Dec-94
9388	NW 21 St	W/O NW 37 Ave				0	0	0	E	A	
9390	NW 22 Ave	S/O NW 54 St				0	0	0	E	A	
9392	NW 22 Ave	S/O NW 79 St				0	0	0	E	A	
9394	NW 22 Ave	S/O NW 119 St	C4	3560	2273	1287	5	1282	E	F**	Dec-94
9396	NW 22 Ave	S/O Palmetto Frontage Rd	C4	3030	1799	1231	65	1166	E	F**	Dec-94
9398	NW 22 Ave	N/O Palmetto Frontage Rd	C4			0	0	0	E	A	
9400	NW 25 St	E/O Palmett Expwy/SR 826	A4	2070	3077	-1007	127	-1134	E	F**	Dec-94
9402	NW 25 St	W/O Palmett Expwy/SR 826	A4	3060	3776	-716	3131	-3847	D	F**	Dec-94
9404	NW 25 St	W/O Galloway Rd/NW 87 Ave	A4	3610	2722	888	957	-69	D	F**	Dec-94
9406	NW 25 St	W/O NW 97 Ave	A4	2270	1633	637	286	351	D	C	Dec-94
9408	NW 25 St	W/O NW 107 Ave	C2	840	360	480	508	-28	D	F**	Dec-94
9410	NW 27 Ave/SR 9	N/O NW 54 St	A4	6610	2494	4116	116	4000	E+50	C	Dec-94
9412	NW 27 Ave/SR 9	S/O NW 119 St				0	0	0	E+50	A	
9414	NW 27 Ave/SR 817	N/O Miami Gdns Dr/NW 183 St				0	0	0	E+50	A	
9416	NW 27 Ave/SR 817	S/O NW 215 St				0	0	0	E	A	
9418	NW 28 St	W/O NW 27 Ave	C2	770	600	170	5	165	E	D	Dec-94
9422	NW 32 Ave	N/O NW 36 St	A4	1416	956	460	24	436	E+20	D	Dec-94
9424	NW 32 Ave	S/O NW 79 St	A4	3330	1829	1501	2	1499	E+20	B	May-94
9426	NW 32 Ave	S/O NW 119 St	A4	3910	1781	2129	289	1840	E+20	C	May-94
9428	NW 36 St/SR 948	E/O NWS River Dr				0	0	0	E+20	A	
9430	NW 36 St/SR 948	E/O Curtis Pkwy	A6	5740	4777	963	2	961	E+20	E	Dec-94
9432	NW 36 St Ext	W/O Palmetto Expwy/SR 826	A6	6020	4381	1639	481	1158	SUMA	D	May-94
9434	NW 36 St Ext	W/O Galloway Rd/NW 87 Ave	A6	3740	2496	1244	2530	-1286	D	F**	Dec-94
9436	NW 37 Ave/Douglas Rd	S/O Palmetto Expwy/SR 826	A4	2760	1950	810	11	799	D	C	Dec-94
9438	NW 37 Ave/Douglas Rd	S/O HEFT	A2	1330	813	517	193	324	D	C	Dec-94
9440	NW 41 St/NW 36 St Ext	W/O NW 97 Ave	A6	2950	1427	1523	3726	-2203	D	F**	Dec-94
9442	NW 41 St/NW 36 St Ext	W/O NW 107 Ave	A4	3030	2480	550	0	550	D	C	Jan-95
9444	NW 46 St	W/O I-95	C2	1330	564	766	0	766	E	B	Dec-94
9446	NW 46 St	W/O NW 27 Ave				0	0	0	E	A	
9448	NW 54 St/SR 944	W/O I-95	A4	4240	1327	2913	3	2910	E	C	Dec-94
9450	NW 54 St/SR 944	W/O Nw 27 Ave				0	0	0	E	A	
9451	NW 58 St	W/O NW 72 Ave	A4	2410	1387	1023	147	876	E	D	Dec-94
9452	NW 58 St	E/O NW 84 Ave	A4	3330	2280	1050	307	743	E	C	Dec-91
9454	NW 58 St	W/O NW 87 Ave	C4	1490	1019	471	608	-137	D	F**	Dec-94
9456	NW 58 St	W/O NW 97 Ave	C4	4280	815	3465	946	2519	D	B	Dec-94
9458	NW 62 Ave	S/O NW 74 St Connector	C4	1690	1302	388	4	384	E	D	Dec-94
9460	NW 62 Ave	S/O NW 138 St	C2	830	1037	-207	2	-209	E	F**	Dec-94
9462	NW 62 St	W/O I-95	A4	1620	1634	-14	0	-14	E	F**	Dec-94
9464	NW 62 St	W/O NW 12 Ave	A4	3440	1568	1872	0	1872	E	C	Dec-94

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STA #	ROADWAY	LOCATION	C/L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9466	NW 62 St	E/O NW 27 Ave	A4	2730	1376	1354	17	1337	E	C	Dec-94
9468	NW 62 St	W/O NW 27 Ave	A4	3000	1184	1816	1	1815	E	B	Dec-94
9470	NW 71 St	W/O I-95	C2	990	630	360	0	360	E	C	Dec-94
9472	NW 71 St	W/O NW 27 Ave	C2	830	341	489	0	489	E	B	Dec-94

STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9474	NW 72 Ave/W 16 Ave	S/O NW 103 St/W 49 St	C4	2870	2082	788	87	701	E	C	May-94
9476	NW 72 Ave/W 16 Ave	S/O NW 138 St/W 84 St	C2	1440	654	786	0	786	E	B	May-94
9478	NW 74 St Connector	E/O Ludlum Rd/NW 67 Ave	A4	4150	2928	1222	0	1222	E	C	Dec-94
9481	NW 74 St —	W/O NW 77 Ct	A2	4180	1139	3041	1165	1876	D	A	Sep-92
9482	NW 79 Ave	N/O NW 36 St Ext	C4	2540	1654	886	91	795	D	C	Dec-94
9484	NW 79 Ave	S/O NW 36 St Ext	C4	1750	1247	503	-433	936	D	C	Dec-94
9486	NW 79 St	W/O I-95	A4	2610	1668	942	3	939	E	D	Dec-94
9488	NW 81 St One-Way W'b	W/O I-95	A3	2060	1103	957	3	954	E	B	Dec-94
9490	NW 95 St	W/O I-95				0	0	0	E	A	
9492	NW 95 St	W/O NW 27 Ave	C2	850	378	472	14	458	E	C	Dec-94
9494	NW 97 Ave	S/O NW 25 St	C2	1700	306	1394	533	861	D	C	Jul-94
9496	NW 103 St/SR 932	W/O I-95				0	0	0	E	A	
9498	NW 103 St/SR 932	W/O NW 27 Ave				0	0	0	E	A	
9500	NW 103 St/W 49 St	W/O NW 57 Ave/W 4 Ave	A6	5880	3478	2402	0	2402	E	D	Nov-94
9502	NW 103 St/SR 932	W/O Palmetto Expwy/SR 826	A4	3220	1426	1794	124	1670	D	C	Dec-94
9504	NW 105 Way	SW/O Okeechobee Rd				0	0	0	D	A	
9506	NW 106 St	E/O HEFT				0	0	0	D	A	
9508	NW 107 Ave	N/O Dolphin Expwy/SR 836	A6	7820	4804	3016	571	2445	D	B	Dec-94
9510	NW 107 Ave	N/O NW 12 St	A4	4460	3083	1377	969	408	D	C	Dec-94
9512	NW 107 Ave	N/O NW 25 St	A4	4400	1799	2601	2941	-340	D	F**	Dec-94
9514	NW 116 Way	SW/O Okeechobee Rd				0	0	0	D	A	
9516	NW 119 St/SR 924	W/O I-95				0	0	0	E	A	
9517	NW 119 St/Gratigny Expwy	E/O NW 32 Ave	A4	3300	1705	1595	46	1549	E	B	Dec-94
9518	NW 119 St/W 65 St	W/O NW 57 Ave/W 4 Ave	C2	1060	762	298	2	296	E	C	Dec-94
9520	NW 122 St/W 68 St	W/O NW 57 Ave/W 4 Ave	A4	3070	1590	1480	52	1428	E	D	Dec-94
9522	NW 122 St/W 68 St	W/O Palmetto Expwy/SR 826	C4	2450	2211	239	0	239	D	D	Dec-94
9524	NW 125 St	W/O I-95				0	0	0	E	A	
9526	NW 135 St/SR 916 One-Way E'b	W/O I-95	A3	2590	1456	1134	1	1133	E	D	Dec-94
9528	NW 138 St/SR 916	E/O NW 57 Ave	A4	3550	2431	1119	0	1119	E	B	Dec-94
9530	NW 138 St/SR 916	W/O NW 57 Ave	A2	1320	1723	-403	85	-488	E	F**	Dec-94
9532	NW 138 St	W/O Palmetto Expwy/SR 826	C2	1430	1128	302	0	302	D	B	Dec-94
9534	NW 138 St Ext	SW/O Okeechobee Rd				0	0	0	E	A	
9536	NW 143 ST	W/O I-95				0	0	0	E	A	
9538	NW 151 St	E/O I-95				0	0	0	E	A	
9540	NW 151 St	W/O NW 7 Ave				0	0	0	E	A	
9542	NW 151 St	W/O NW 27 Ave	C2	2010	723	1287	21	1266	E	B	Dec-94
9544	NW 154 St	W/O Palmetto Expwy/SR 826	C4	3490	2830	660	1333	-673	D	F**	Dec-94
9546	NW 154 St	W/O NW 87 Ave	C2	960	42	918	287	631	D	C	Apr-91
9548	NW 167 St/SR 826	E/O NW 2 Ave	A6	6450	4675	1775	3	1772	E	C	Dec-94
9550	NW 169 St	E/O NW 77 Ct	C4	790	1032	-242	199	-441	D	F**	Dec-94
9552	NW 170 St	E/O NW 87 Ave	C4	2160	245	1915	323	1592	D	B	Dec-94
9554	NW 199 St/Honey Hill Dr	E/O Fla Turnpike	A4	3340	1622	1718	1	1717	E	C	Dec-94
9556	NW 199 St/Honey Hill Dr	E/O NW 27 Ave	A4	2180	1661	519	17	502	E	C	Dec-94
9558	NW 199 St/Honey Hill Dr	W/O NW 27 Ave	A4	1380	1712	-332	37	-369	E	F**	Dec-94
9560	NW 199 St/Honey Hill Dr	W/O NW 37 Ave	A4	2020	1140	880	51	829	E	C	Dec-94
9562	NW 202 St/Honey Hill Dr	W/O NW 57 Ave	C2	1090	408	682	10	672	E	C	Dec-94
9566	NWN River Dr	W/O NW 27 Ave				0	0	0	E	A	
9568	NWS River Dr	NW/O NW 25 St				0	0	0	E	A	
9570	NWS River Dr	NW/O Palmetto Expwy/SR 826				0	0	0	D	A	
9572	Ocean Blvd/SR A1A	S/O Dade/Broward County Line				0	0	0	E	A	
9574	Okeechobee Rd/SR 25	NW/O NW 57 Ave	A4	5730	3661	2069	72	1997	E	C	Dec-94

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STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9576	Okeechobee Rd/SR 25	SE/O NW 74 St Connector	A4	3310	3553	-243	0	-243	E	F**	Dec-94
9578	Okeechobee Rd/SR 25	NW/O Palmetto Expwy/SR 826				0	0	0	D	A	
9580	Okeechobee Rd/SR 25	SE/O Krome Ave				0	0	0	D	A	
9582	Old Cutler Rd	SW/O SW 72 St/Sunset Dr	A2	2420	1754	666	19	647	E	D	Dec-94

9584	Old Cutler Rd	SW/O SW 88 St/Kendall Dr	A2	1310	1334	-24	18	-42	E	F**	Dec-94
9586	Old Cutler Rd	S/O SW 136 St	A2	1700	1565	135	7	128	E	D	Dec-94
9588	Old Cutler Rd	S/O SW 152 St	A2	2070	1563	507	112	395	E	C	Dec-94
9590	Old Cutler Rd	S/O SW 168 St	A2	2050	1502	548	22	526	E	C	Dec-94
9592	Old Cutler Rd	SW/O SW 184 St	A2	1920	860	1060	312	748	D	C	Dec-94
9594	Old Cutler Rd	SW/O Franjo Rd	A2	2200	1466	734	312	422	D	D	Dec-94
9596	Opa Locka Blvd/SR 916 1-Way W'b	W/O I-95	A3	3140	1165	1975	5	1970	E	B	Dec-94
9598	Palm Ave/NW 52 Ave One-Way S'b	S/O E/W 21 St	A3	2220	1399	821	13	808	E	C	Dec-94
9600	Palm Ave/NW 52 Ave	S/O E/W 49 St/NW 103 St	A4	2700	1596	1104	52	1052	E	C	Dec-94
9618	Perimeter Rd/MIA Int Airport	E/O NW 57 Ave	A2	990	1675	-685	180	-865	E	F**	
9622	Ponce De Leon Blvd	S/O Tamiami Trail/SW 8 St	C4	2760	1227	1533	0	1533	E	B	Dec-94
9624	Ponce De Leon Blvd	N/O Bird Dr/SW 40 St	A4	4150	1515	2635	0	2635	E	C	Dec-94
9628	Red Rd/NW 57 Ave	S/O NW 74 St Connector	A4	3480	1805	1675	18	1657	E	D	Dec-94
9629	Red Rd/NW 57 Ave	N/O NW 183 Street	A6	4840	1374	3466	338	3128	E	C	Dec-94
9630	Red Rd/NW 57 Ave	S/O NW 215 St	A6	3180	964	2216	20	2196	E	A	
9632	Red Rd/SW 57 Ave	S/O Bird Dr/SW 40 St				0	0	0	E	A	
9634	Red Rd/SW 57 Ave	N/O Sunset Dr/SW 72 St	A4	2380	1790	590	14	576	E	D	Dec-94
9636	Red Rd/SW 57 Ave	S/O Kendall Dr/SW 88 St	A2	1930	1394	536	116	420	E	B	Dec-94
9638	Red Rd/SW 57 Ave	S/O SW 120 St	A2	1990	2004	-14	41	-55	E	F**	Dec-94
9640	Rickenbacker Cswy	W/O Virginia Key	A6	10050	2157	7893	525	7368	E	B	Dec-94
9642	San Simeon Way	S/O NE 215 St				0	0	0	E	A	
9644	Segovia St	S/O Tamiami Trail/SW 8 St	C2	760	225	535	1	534	E	C	Dec-94
9650	South Bayshore Dr	NE/O SW 17 Ave	A2	1940	1943	-3	0	-3	E	F**	Dec-94
9652	South Bayshore Dr	SW/O SW 27 Ave	A4	3870	1960	1910	0	1910	E	B	Dec-94
9654	Sunset Dr/SW 72 St	E/O SW 127 Ave	A4	3540	2068	1472	118	1354	EE	C	Sep-94
9656	Sunset Dr/SW 72 St	W/O Cocoplum Plaza	A2	2600	941	1659	0	1659	E	B	Dec-94
9658	Sunset Dr/SW 72 St	W/O SW 87 Ave				0	0	0	EE	A	
9660	Sunset Dr/SW 72 St	W/O SW 127 Ave	A4	3780	2676	1104	97	1007	EE	C	Dec-94
9662	Sunset Dr/SW 72 St	W/O SW 137 Ave	C4	2796	1997	799	14	785	EE	D	Dec-94
9664	Sunset Dr/SW 72 St	W/O SW 147 Ave	C4	3190	1477	1713	680	1033	EE	D	Dec-94
9665	Sunset Dr/SW 72 St	W/O SW 152 Ave	C4	3150	474	2676	1668	1008	EE	D	Jul-91
9674	SW 27 Ave	S/O US 1	A2	1700	1541	159	0	159	E	D	Dec-94
9676	SW 32 Ave	S/O Tamiami Trail/SW 8 St	C2	1010	878	132	0	132	E	D	Dec-94
9678	SW 37 AVe/Douglas Rd	S/O Tamiami Trail/SW 8 St	A4	3320	2057	1263	4	1259	E	D	Dec-94
9680	SW 37 AVe/Douglas Rd	S/O US 1	C2	970	891	79	0	79	E	E	Dec-94
9682	SW 62 Ave	S/O Tamiami Trail/SW 8 St				0	0	0	E	A	
9684	SW 72 Ave	S/O Bird Dr/SW 40 St	C2	1910	1154	756	15	741	E	C	Nov-94
9686	SW 72 Ave	S/O Miller Dr/SW 56 St	C2	940	956	-16	78	-94	E	F**	Dec-94
9688	SW 72 Ave	S/O Sunset Dr/SW 72 ST				0	0	0	E	A	
9690	SW 74 Ave	S/O Tamiami Trail/SW 8 St	C2	1140	838	302	23	279	E	C	Dec-94
9692	SW 77 Ave	S/O SW 136 St	C2	1450	724	726	39	687	E	B	Dec-94
9694	SW 82 Ave	S/O Tamiami Trail/SW 8 St				0	0	0	D	A	
9696	SW 85 Ave	SE/O Old Cutler Rd	C2	1090	479	611	142	469	D	C	Dec-94
9698	SW 97 Ave	S/O Tamiami Trail/SW 8 St	C2	1140	1106	34	21	13	D	D	Dec-94
9700	SW 97 Ave	S/O Bird Dr/SW 40 St	C2	1250	976	274	40	234	D	D	Dec-94
9702	SW 97 Ave	S/O Miller Dr/SW 56 St				0	0	0	D	A	
9704	SW 97 Ave	S/O Kendall Dr/SW 88 St	C2	1520	1071	449	10	439	D	C	Dec-94
9706	SW 97 Ave	N/O SW 136 St	C2	1280	741	539	2	537	D	C	Dec-94
9708	SW 97 Ave/Franjo Rd	S/O SW 184 St	C2	930	1274	-344	148	-492	D	F**	Dec-94
9710	SW 102 Ave	S/O SW 136 St	C2	1130	187	943	101	842	D	B	Dec-94
9712	SW 104 St	E/O SW 77 Ave	C2	650	700	-50	100	-150	E	F**	Dec-94

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STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9714	SW 104 St	W/O US 1	C4	4160	1250	2910	50	2860	EE	B	Dec-94
9716	SW 104 St	W/O SW 107 Ave	A6	7160	3804	3356	199	3157	EE	C	Dec-94
9718	SW 104 St	W/O HEFT	A6	7580	3758	3822	55	3767	EE	B	Dec-94
9720	SW 104 St	W/O SW 127 Ave	A6	3000	3593	-593	134	-727	EE	F**	Dec-94

STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9722	SW 104 St	W/O SW 137 Ave	C4	3940	2370	1570	167	1403	EE	C	Dec-94
9724	SW 104 St	W/O SW 147 Ave	C4	2860	1836	1024	266	758	EE	D	Dec-94
9726	SW 107 Ave/SR 985	S/O Kendall Dr/SW 88 St	A4	4110	1753	2357	18	2339	SUMA	C	Dec-94
9728	SW 107 Ave	S/O SW 160 St	C2	1200	517	683	342	341	D	C	Dec-94
9732	SW 107 Ave/Marlin Rd	NW/O US 1	C4	1520	1539	-19	1484	-1503	D	F**	Dec-94
9734	SW 112 Ave	SW/O Tamiami Trail/SW 8 St				0	0	0	D	A	
9736	SW 112 Ave/Allapattah Rd	N/O SW 232 St	A4	3000	1465	1535	2	1533	D	B	Dec-94
9738	SW 112 Ave/Allapattah Rd	N/O SW 268 St	C4	2690	760	1930	31	1899	D	B	Dec-94
9740	SW 112 St	E/O US 1	A2	1030	745	285	10	275	D	C	Dec-94
9742	SW 112 St	E/O SW 112 Ave/JCC Blvd	C2	1280	1234	46	9	37	D	D	Dec-94
9744	SW 117 Ave	S/O Miller Dr/SW 56 St	A4	2960	1682	1278	0	1278	D	C	Dec-94
9746	SW 117 Ave	S/O Sunset Dr/SW 72 ST	A4	1730	3897	-2167	75	-2242	D	F**	Dec-94
9748	SW 117 Ave	S/O Kendall Dr/SW 88 St	A4	2750	2025	725	107	618	D	C	Dec-94
9750	SW 117 Ave	S/O SW 112 St	A4	5130	1970	3160	242	2918	D	B	Dec-94
9752	SW 117 Ave	S/O SW 136 St	A4	2750	1631	1119	15	1104	D	C	Dec-94
9754	SW 117 Ave	S/O SW 152 St	A4	2920	1232	1688	65	1623	D	C	Dec-94
9756	SW 117 Ave	S/O SW 184 St	A2	980	971	9	22	-13	D	F**	Dec-94
9758	SW 117 Ave	NW/O US 1	A2	1330	1052	278	121	157	D	D	May-94
9760	SW 120 St	W/O SW 122 Ave	A4	2600	1613	987	142	845	D	C	Dec-94
9762	SW 120 St	W/O SW 137 Ave				0	0	0	D	A	
9764	SW 122 Ave	N/O SW 7 St	C2	440	405	35	311	-276	D	F**	Sep-94
9766	SW 122 Ave	S/O Tamiami Trail/SW 8 St	C4	2490	1637	853	95	758	D	D	Dec-94
9768	SW 122 Ave	S/O SW 104 St	C2	1550	1385	165	142	23	D	D	Mar-91
9770	SW 127 Ave	N/O Tamiami Trail/SW 8 St	C4	1640	383	1257	304	953	D	C	Dec-91
9772	SW 127 Ave	S/O Tamiami Trail/SW 8 St	C4	3240	732	2508	66	2442	D	B	Sep-91
9774	SW 127 Ave	S/O Coral Way/SW 26 St	C4	3040	1360	1680	38	1642	D	B	Mar-91
9776	SW 127 Ave	S/O Bird Dr/SW 42 St	C4	2760	1520	1240	28	1212	D	B	Apr-91
9778	SW 127 Ave	S/O Miller Dr/SW 56 St	C4	1530	1282	248	42	206	D	D	Apr-91
9780	SW 127 Ave	S/O Sunset Dr/SW 72 ST	C4	1190	956	234	11	223	D	D	Mar-91
9782	SW 127 Ave	S/O Kendall Dr/SW 88 St	C4	2330	1064	1266	17	1249	D	C	Jun-93
9784	SW 127 Ave	S/O SW 104 St	C2	1280	336	944	23	921	D	B	Sep-91
9786	SW 127 Ave	S/O SW 120 St				0	0	0	D	A	
9788	SW 127 Ave	S/O SW 184 St	C2	1100	184	916	47	869	D	B	Mar-91
9790	SW 127 Ave	S/O SW 216 St				0	0	0	D	A	
9791	SW 132 Ave	N/O Tamiami Trail/SW 8 St	C2	880	1474	-594	532	-1126	D	F**	Mar-91
9792	SW 136 St/Old Cutler Rd	E/O Ludlum Rd/SW 67 Ave	A2	2140	1445	695	59	636	E	C	Dec-94
9794	SW 136 St/Howard Dr	E/O US 1	C2	1630	936	694	92	602	D	B	Mar-91
9796	SW 136 St/Howard Dr	W/O US 1	C4	3270	1198	2072	185	1887	D	B	Oct-91
9798	SW 137 Ave	N/O Tamiami Trail/SW 8 St	C2	470	284	186	11	175	D	D	Mar-91
9800	SW 137 Ave	S/O Tamiami Trail/SW 8 St	A4	2690	1626	1064	667	397	D	D	Dec-94
9802	SW 137 Ave	S/O Coral Way/SW 26 St	A6	3500	2367	1133	320	813	D	D	Dec-94
9804	SW 137 Ave	S/O Bird Dr/SW 40 St	A6	4590	2260	2330	0	2330	D	C	Dec-94
9806	SW 137 Ave	S/O Miller Dr/SW 56 St	A6	4600	2560	2040	239	1801	D	D	Dec-94
9808	SW 137 Ave	S/O Sunset Dr/SW 72 ST	A6	3130	2120	1010	273	737	D	C	Dec-94
9810	SW 137 Ave/Lindgren Rd	S/O Kendall Dr/SW 88 St	A6	3500	2004	1496	0	1496	D	C	Dec-94
9812	SW 137 Ave/Lindgren Rd	S/O SW 104 St	A6	2800	1814	986	531	455	D	D	Dec-94
9814	SW 137 Ave/Lindgren Rd	S/O SW 120 St	A6	7270	1985	5285	2185	3100	D	D	Oct-91
9816	SW 137 Ave/Lindgren Rd	S/O SW 136 St	A6	6610	2108	4502	4146	356	D	C	Jan-95
9818	SW 137 Ave/Lindgren Rd	S/O SW 152 St	C6	6530	1008	5522	2303	3219	D	B	Dec-94
9820	SW 137 Ave/Lindgren Rd	S/O SW 184 St	C2	1130	150	980	209	771	D	C	Dec-94
9822	SW 137 Ave/Tallahassee Rd	S/O US 1	C2	1230	215	1015	27	988	D	B	Dec-94

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STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9824	SW 137 Ave/Tallahassee Rd	N/O SW 288 St	C2	1000	873	127	121	6	D	D	Dec-94
9826	SW 147 Ave	S/O Bird Dr Ext/SW 42 St	C4	2040	1013	1027	846	181	D	D	Dec-94
9827	SW 147 Ave	S/O SW 56 St	C4	3460	1379	2081	42	2039	D	B	Dec-94
9828	SW 147 Ave	N/O Kendall Dr/SW 88 St	C4	3830	1187	2643	28	2615	D	B	Dec-94

STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9830	SW 147 Ave	S/O Kendall Dr/SW 88 St	C4	1840	1132	708	39	669	D	C	Mar-91
9832	SW 147 Ave	S/O SW 104 St	C4	2190	783	1407	256	1151	D	C	Dec-94
9834	SW 147 Ave/Naranja Rd	S/O SW 152 St	C2	2640	427	2213	1110	1103	D	B	Dec-94
9836	SW 147 Ave/Naranja Rd	S/O SW 184 St	C2	1260	508	752	153	599	D	C	Dec-94
9838	SW 147 Ave/Naranja Rd	S/O SW 200 St	C2	1020	482	538	1	537	D	C	Dec-94
9840	SW 147 Ave/Naranja Rd	S/O SW 216 St	C2	1150	436	714	3	711	D	C	Dec-94
9842	SW 147 Ave/Naranja Rd	S/O SW 232 St	C2	1160	353	807	7	800	D	C	Dec-94
9844	SW 152 Ave	S/O Kendall Dr/SW 88 St	C2	1070	818	252	165	87	D	D	Dec-94
9846	SW 152 Ave/Kingman Rd	N/O SW 288 St	C2	1200	618	582	18	564	D	B	Jul-91
9848	SW 152 St/Coral Reef Dr	E/O US 1	A4	2970	1178	1792	74	1718	D	B	Dec-94
9850	SW 152 St/Coral Reef Dr	W/O SW 117 Ave	A4	5390	3028	2362	66	2296	D	A	Dec-94
9852	SW 152 St/Coral Reef Dr	W/O SW 127 Ave	A4	2190	1786	404	512	-108	D	F**	Dec-94
9854	SW 152 St/Coral Reef Dr	W/O SW 137 Ave	A4	5610	1197	4413	1727	2686	D	C	Dec-94
9856	SW 157 Ave	N/O Kendall Dr/SW 88 St	C4	2520	268	2252	788	1464	D	C	Apr-91
9858	SW 157 Ave/Newton Rd	S/O SW 216 St	C2	880	70	810	5	805	C	B	Jul-91
9860	SW 157 Ave/Newton Rd	S/O SW 272 St	C2	650	162	488	16	472	D	C	Mar-91
9862	SW 167 Ave/Tennessee Rd	S/O SW 216 St	C2	720	138	582	8	574	D	D	Apr-91
9864	SW 167 Ave/Tennessee Rd	N/O SW 288 St				0	0	0	D	A	
9865	SW 168 St/Richmond Dr	E/O SW 82 Ave	C2	1210	706	504	125	379	D	C	Nov-91
9866	SW 168 St/Richmond Dr	W/O SW 87 Ave	C2	560	986	-426	47	-473	D	F**	Dec-94
9868	SW 168 St/Richmond Dr	W/O US 1	C2	1560	840	720	136	584	D	B	Mar-91
9870	SW 184 St/Eureka Dr	W/O Old Cutler Rd	A2	1120	445	675	401	274	D	B	Oct-94
9872	SW 184 St/Eureka Dr	E/O US 1	A2	2010	1209	801	72	729	D	B	Oct-94
9874	SW 184 St/Eureka Dr	W/O US 1				0	0	0	D	A	
9876	SW 184 St/Eureka Dr	W/O SW 117 Ave	A4	4610	1693	2917	393	2524	D	C	Dec-94
9878	SW 184 St/Eureka Dr	W/O SW 137 Ave	C2	1900	586	1314	1424	-110	D	F**	Jan-94
9880	SW 184 St/Eureka Dr	E/O Krome Ave/SW 177 Ave	C2	600	421	179	156	23	C	B	Dec-94
9882	SW 186 St	E/O SW 107 Ave	A2	3950	1346	2604	580	2024	D	B	Dec-94
9884	SW 187 Ave/Redland Rd	S/O SW 216 St	C2	670	216	454	38	416	D	D	Apr-91
9886	SW 187 Ave/Redland Rd	N/O SW 288 St				0	0	0	D	A	
9888	SW 197 Ave/Richard Rd	N/O SW 288 St				0	0	0	D	A	
9890	SW 200 St/Carribbean Blvd	NW/O US 1	C2	1480	1376	104	190	-86	D	F**	Jun-91
9892	SW 200 St/Quail Roost Dr	W/O SW 137 Ave	A2	1620	502	1118	13	1105	D	B	Dec-94
9894	SW 211 St	E/O SW 112 Ave	C6	4400	1625	2775	3	2772	EE	B	
9896	SW 216 St/Hainlin Mill Dr	E/O HEFT	A4	1950	1312	638	471	167	D	C	Dec-94
9898	SW 216 St/Hainlin Mill Dr	W/O US 1	C2	990	565	425	223	202	D	D	Apr-91
9900	SW 216 St/Hainlin Mill Dr	W/O SW 134 Ave				0	0	0	D	A	
9902	SW 216 St/Hainlin Mill Dr	E/O Krome Ave/SW 177 Ave	C2	650	208	442	169	273	C	B	Mar-91
9904	SW 220 St/Old Cutler Rd	E/O US 1	C2	890	287	603	107	496	D	C	Mar-91
9906	SW 232 St/Silver Palm Dr	E/O US 1	C2	570	178	392	12	380	D	C	Apr-91
9908	SW 232 St/Silver Palm Dr	W/O US 1				0	0	0	D	A	
9910	SW 232 St/Silver Palm Dr	W/O SW 137 Ave	C2	850	240	610	231	379	C	C	Mar-91
9912	SW 232 St/Silver Palm Dr	E/O Krome Ave/SW 177 Ave	C2	670	227	443	389	54	C	C	Jul-91
9914	SW 248 St/Coconut Palm Dr	E/O SW 127 Ave				0	0	0	D	A	
9916	SW 248 St/Coconut Palm Dr	W/O US 1	C2	970	489	481	106	375	D	C	Jun-91
9918	SW 248 St/Coconut Palm Dr	E/O Krome Ave/SW 177 Ave	C2	2040	401	1639	101	1538	C	A	Mar-91
9920	SW 264 St/Bauer Dr	E/O Krome Ave/SW 177 Ave	C2	640	215	425	145	280	D	D	Dec-94
9922	SW 268 St/Moody Dr	W/O SW 127 Ave	C4	1850	766	1084	6	1078	D	B	Oct-94
9924	SW 268 St/Moody Dr	W/O SW 142 Ave	C4	5230	862	4368	132	4236	D	A	Dec-91
9926	SW 280 St/Waldin Dr	E/O US 1	C4	1470	260	1210	27	1183	D	C	Mar-91
9928	SW 288 St/Biscayne Dr	W/O SW 137 Ave	A4	4380	970	3410	113	3297	D	C	Dec-94

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STA #	ROADWAY	LOCATION	C L	MAX LOS	PHP	START	DO's TRIPS	AVAIL TRIPS	MAX LOS	LOS	LAST UPDATED
9930	SW 288 St/Biscayne Dr	W/O SW 147 Ave	A4	5020	994	4026	25	4001	D	A	
9932	SW 288 St/Biscayne Dr	W/O US 1	A2	1060	518	542	72	470	D	B	Dec-94
9934	SW 296 St/Avocado Dr	E/O US 1	C2	1080	865	215	49	166	D	C	Mar-91
9936	SW 296 St/Avocado Dr	W/O US 1	C2	1730	411	1319	56	1263	D	B	Jul-91

9938	SW 296 St/Avocado Dr	E/O SW 197 Ave	C2	1030	99	931	18	913	D	B	Jul-91
9940	SW 304 St/Kings Hwy	E/O US 1	C2	830	345	485	96	389	D	C	Mar-91
9942	SW 304 St/Kings Hwy	W/O US 1	C2	1610	773	837	8	829	D	B	Mar-91
9944	SW 312 St/Campbell Dr	E/O HEFT	A2	1330	242	1088	0	1088	D	B	Dec-94
9946	SW 312 St/Campbell Dr	E/O SW 167 Ave	A4	2310	1585	725	7	718	D	C	Dec-94
9948	SW 312 St/Campbell Dr	W/O US 1	A4	4300	1368	2932	6	2926	D	B	Dec-94
9950	SW 320 St	E/O US 1	C2	1660	251	1409	4	1405	D	B	Mar-91
9952	SW 328 St	W/O SW 137 Ave	C2	810	285	525	49	476	D	C	Jul-91
9954	SW 328 St	E/O US 1	C2	740	362	378	36	342	D	C	Jul-91
9956	SW 344 St/Palm Dr	W/O SW 137 Ave	C2	720	330	390	30	360	D	C	Jul-91
9958	Tamiami Trail/SW 8 St	W/O SW 37 Ave	A6	6080	2483	3597	0	3597	E	C	Dec-94
9960	Tamiami Trail/SW 8 St	W/O Palmetto Expwy/SR 826				0	0	0	D	A	
9962	Tamiami Trail/SW 8 St	W/O SW 97 Ave	A4	3370	2459	911	1	910	D	B	
9966	US 1/South Dixie Hwy	SW/O kendall Dr/SW 88 st	A6	5400	3483	1917	75	1842	D	C	Dec-94
9968	US 1/South Dixie Hwy	SW/O SW 136 St	A6	6890	5300	1590	34	1556	D	C	Dec-94
9970	US 1/South Dixie Hwy	SW/O SW 186 St	A6	6590	4009	2581	89	2492	D	B	Dec-94
9971	US 1/South Dixie Hwy	S/O SW 248 St	A4	4770	3100	1670	165	1505	EE	D	
9972	US 1/South Dixie Hwy	SW/O SW 288 St				0	0	0	EE	A	
9976	W 29 St	W/O Red Rd/W 4 Ave/NW 57 Ave	C4	2340	1674	666	278	388	E	D	Dec-94
9978	W 37 St/NW 90 St	W/O Red Rd/W 4 Ave/NW 57 Ave	C2	1210	530	680	190	490	E	C	Dec-94
9980	West Dixie Hwy	S/O NE 192 St				0	0	0	E	A	
9981	West Dixie Hwy	N/O NE 192 St	C2	1110	551	559	202	357	E	D	Jul-91
9982	West Dixie Hwy	S/O NE 215 St	C2	1200	647	553	6	547	E	C	Dec-94

EE=LOS 120% E with Extraordinary Transit between Infill Area and Urban Development Boundary
NE=LOS E with 20 minute transit headway between Infill Area and Urban Development Boundary.
E+50=LOS 150% E with EXtraordinary Transit in Infill Area
E+20=LOS 120% E with 20 minute transit headway in Infill Area
SUMA=LOS E, State Urban Minor Arterial between Infill Area and Urban Development Boundary
CL = Road Classification & No. Lanes; A=Arterial; C=Collector

ATTACHMENT C-E
CORRIDOR PRIORITY EVALUATION FORM

CORRIDOR PRIORITY EVALUATION FORM

Corridor	Planning Factors																	Total	Rank
	1	2	3	3a	3b	4	5	6	7	8	9	10	11	12	13	14	15	Points	#

ATTACHMENT C-F

MOBILITY STRATEGIES EVALUATION FORM

MOBILITY STRATEGIES EVALUATION FORM

Committee Member	
Department	

CORRIDOR: _____

Strategy	Ref. #	V/C Imp.	Mobility Factors 1	2	3	4	5	6	Total Points	Rank #

Factor	Description
1	People Movement
2	Modal Choice
3	Accessibility
4	Reasonable Speed
5	Moderate Cost
6	Ease of Implementation

Comments:

ATTACHMENT C-G

V/C DATA BASE

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	CONG >= .9 DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
SW 117 Ave	SW 80 St	Kendall	1.0	E	0.90	M	27,110	1,898	1	0.5	1.38	1,314
Main Hwy	SW 37 Ave	Poinciana Ave	1.0	E	0.90	M		0	1	0.3	1.40	0
NE 12 Ave	NE 163 St	NE 159 St	1.0	E	0.90	M		0	1	0.3	1.40	0
SW 67 Ave	SW 127 St	SW 136 St	1.0	E	0.90	M	5,310	372	1	0.6	1.40	313
W Dixie Hwy	NE 215 St	Ives Dairy Rd	1.0	E	0.90	M	8,260	578	1	0.7	1.40	568
Coral Way	SW 43 Ave	SW 42 Ave	1.2	T	0.90	M	20,690	1,448	1	0.1	3.23	468
NW 17 Ave	NW 20 St	Okeechobee Rd	1.2	T	0.90	M	15,610	1,093	1	0.5	3.23	1,765
SW 82 Ave	Coral Way	SW 34 St	0.9	D	0.91	M	7,790	545	1	0.6	0.53	173
NW 67 Ave	SR 826	NW 159 St	1.20	T	0.91	C	37,510	2,626	1	1	3.29	8,650
Coral Way	Greenway Dr	Columbus Blvd	1.2	T	0.91	M	20,690	1,448	1	0.4	3.31	1,918
Main Hwy	Poinciana Ave	SW 32 Ave	1.0	E	0.91	M		0	1	0.3	1.48	0
NW 14 Ave	NW 7 St	Flagler	1.0	E	0.91	M		0	1	0.5	1.48	0
NW 47 Ave	Flagler	SW 8 St	1.0	E	0.91	M	45,000	3,150	1	0.5	1.48	2,334
SW 32 Ave	SW 16 St	Coral Way	1.0	E	0.91	M		0	1	0.5	1.48	0
SW 72 Ave	Bird Rd	SW 48 St	1.0	E	0.91	M	8,980	629	1	0.5	1.48	466
SW 72 Ave	SW 8 St	Coral Way	1.0	E	0.91	M	13,300	931	1	1	1.48	1,380
W 44 St	W 10 Ave	W 8 Ave	1.0	E	0.91	M		0	1	0.25	1.48	0
SW 127 Ave	SW 64 St	SW 80 St	0.9	D	0.91	C	10,870	761	1	0.5	0.58	221
SW 296 St	US 1	SW 147 Ave	0.9	D	0.91	C	19,790	1,385	1	0.5	0.58	402
Coral Way	SW 49 Ave	SW 45 Ave	1.2	T	0.92	M	20,690	1,448	1	0.4	3.39	1,964
67 St	Indian Creek Dr	Collins Ave	1.0	E	0.92	M		0	1	0.1	1.56	0
Coral Way	SR 826	SW 82 Ave	1.0	E	0.92	M	54,450	3,812	1	0.5	1.56	2,975
Miami Lks Dr	NW 57 Ave	NW 57 Ct	1.0	E	0.92	M		0	1	0.1	1.56	0
NW 26 St	NW 32 Ave	NW 30 Ave	1.0	E	0.92	M		0	1	0.21	1.56	0
SW 16 St	SW 34 Ave	SW 32 Ave	1.0	E	0.92	M		0	1	0.2	1.56	0
SW 32 Ave	Coral Way	US 1	1.0	E	0.92	M		0	1	0.9	1.56	0
SW 77 Ave	SW 117 St	SW 120 St	1.0	E	0.92	M	4,090	286	1	0.2	1.56	89
East Dr	Okeechobee Rd	NW 36 St	1.0	E	0.92	C		0	1	0.6	1.59	0
Miller Dr	SW 112 Ave	SW 122 Ave	0.9	D	0.92	C	37,170	2,602	1	1	0.68	1,773
NW 154 St	SR 826	NW 82 Ave	0.9	D	0.92	C	40,410	2,829	1	0.5	0.68	964
NW 87 Ave	NW 36 St	NW 58 St	0.9	D	0.92	C	65,500	4,585	1	0.5	0.68	1,562
Harding Ave	NE 123 St	91 St	1.0	E	0.93	M	20,500	1,435	1	0.6	1.64	1,413
Main Hwy	SW 32 Ave	Grand Ave	1.0	E	0.93	M		0	1	0.3	1.64	0
NW 37 Ave	NW 21 St	NW 20 St	1.0	E	0.93	M		0	1	0.1	1.64	0
Port Blvd	End of Dodge Isl.	Lummus Isl	1.0	E	0.93	M	19,100	1,337	1	1	1.64	2,194
W Dixie Hwy	NE 183 St	NE 167 St	1.0	E	0.93	M	15,550	1,089	1	0.9	1.64	1,607
NW 36 St	NW 107 Ave	HEFT	0.9	D	0.93	C	59,430	4,160	1	0.5	0.78	1,626
NW 2 Ave	NW 199 St	NW 191 St	1.0	E	0.93	M	13,580	951	1	0.5	1.72	818

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	CONG >= .9 DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
NW 32 Ave	SR 836	NW 7 St	1.0	E	0.93	M		0	1	0.4	1.72	0
NW 47 Ave	NW 7 St	Flagler	1.0	E	0.93	M	61,500	4,305	1	0.5	1.72	3,703
NW 67 Ave	Tamiami Canal	Flagler	1.0	E	0.93	M	18,370	1,286	1	0.3	1.72	664
SW 77 Ave	SW 120 St	SW 130 St	1.0	E	0.93	M	4,090	286	1	0.6	1.72	296
SW 80 St	US 1	SW 62 Ave	1.0	E	0.93	M		0	1	0.5	1.72	0
Granada	Bird Rd	Blue Rd	1.0	E	0.94	M	5,820	407	1	0.5	1.80	367
Coral Way	SW 57 Ave	Ferdinand St	1.2	T	0.95	M	20,690	1,448	1	0.1	3.79	548
Hialeah Dr	Palm Ave	E 4 Ave	1.0	E	0.95	M	17,300	1,211	1	0.5	1.88	1,138
NW 47 Ave	E 32 St	NW 79 St	1.0	E	0.95	M	38,500	2,695	1	0.5	1.88	2,532
NW 62 Ave	W 70 St	Gratigny Dr	1.0	E	0.95	M	24,450	1,712	1	0.5	1.88	1,608
Miller Dr	SW 122 Ave	SW 132 Ave	0.9	D	0.95	C	30,840	2,159	1	0.5	0.98	1,061
SW 127 Ave	SW 48 St	SW 64 St	0.9	D	0.96	C	13,420	939	1	0.5	0.98	462
NE 171 St	NE 21 Ave	US 1	1.2	T	0.96	M		0	1	0.5	3.87	0
Coral Reef	SW 87 Ave	US 1	1.0	E	0.96	M	16,380	1,147	1	0.5	1.96	1,123
SW 42 Ave	US 1	Ingraham Hwy	1.0	E	0.96	M	18,360	1,285	1	1.5	1.96	3,776
SW 67 Ave	Blue Rd	SW 52 St	1.0	E	0.96	M	15,770	1,104	1	0.25	1.96	541
SW 72 Ave	Coral Way	Bird Rd	1.0	E	0.96	M	13,300	931	1	1	1.96	1,824
NW 87 Ave	NW 103 St	NW 107 St	0.9	D	0.96	M		0	1	0.2	1.00	0
I 95	County Line	Ives Dairy Rd	0.93	D	0.96	S	173,000	12,110	1	1	1.34	16,193
I 95	Flagler	US 1	0.93	D	0.96	S	106,500	7,455	1	2	1.34	19,937
SR 112	NW 17 Ave	NW 14 Ave	0.93	D	0.96	S	105,000	7,350	1	0.3	1.34	2,948
SR 112	NW 14 Ave	I 95	0.93	D	0.96	S	105,000	7,350	1	0.9	1.34	8,845
SR 826	I 95	NW 17 Ave	0.93	D	0.96	S	140,000	9,800	1	1	1.34	13,104
SW 97 Ave	Eureka	Quail Roost	1.0	E	0.97	M	12,500	875	1	0.2	2.04	357
Bird Rd	SW 139 Ave	SW 132 Ave	0.9	D	0.97	C	48,000	3,360	1	0.7	1.08	2,548
Anastasia Ave	SW 57 Ave	Ferdinand St	1.0	E	0.97	M		0	1	0.1	2.12	0
Espanola Way	Washington St	Ocean Dr	1.0	E	0.97	M		0	1	0.1	2.12	0
Grand Ave	Jefferson	SW 37 Ave	1.0	E	0.97	M		0	1	0.2	2.12	0
SW 117 Ave	SW 104 St	SW 112 St	1.0	E	0.97	M	22,410	1,569	1	0.5	2.12	1,661
SW 137 Ave	SW 122 St	SW 128 St	0.9	D	0.98	M	13,260	928	1	0.5	1.16	540
Anastasia Ave	Madrid	Columbus Blvd	1.0	E	0.98	M		0	1	0.1	2.20	0
NW 26 St	NW 22 Ave	NW 17 Ave	1.0	E	0.98	M		0	1	0.5	2.20	0
NW 37 Ave	NW 20 St	NW 14 St	1.0	E	0.98	M		0	1	0.5	2.20	0
Old Cutler Rd	Coral Reef Dr	SW 67 Ave	1.0	E	0.98	M	13,930	975	1	1.4	2.20	3,000
SW 16 St	SW 30 Ave	SW 27 Ave	1.0	E	0.98	M		0	1	0.3	2.20	0
University Dr	SW 49 Ave	SW 43 Ave	1.0	E	0.98	M		0	1	0.4	2.20	0
Coral Reef	SW 127 Ave	SW 134 Ave	0.9	D	0.98	M	29,200	2,044	1	0.7	1.24	1,779
SW 137 Ave	SW 128 St	SW 136 St	0.9	D	0.98	M	23,250	1,628	1	0.5	1.24	1,012

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	CONG >= .9 DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
NW 47 Ave	Okeechobee Rd	NW 39 St	1.0	E	0.99	M	41,500	2,905	1	0.6	2.28	3,968
NW 62 Ave	NW 36 St	NW 35 St	1.0	E	0.99	M	11,880	832	1	0.1	2.28	189
Sunset Dr	SW 57 Ave	SW 54 Ave	1.0	E	0.99	M	11,630	814	1	0.5	2.28	927
SW 137 Ave	Turnpike	SW 288 St	0.9	D	0.99	C	11,550	809	1	0.8	1.28	831
NW 12 St	NW 72 Ave	NW S Tamiami Canal	1.0	E	1.00	M		0	1	0	2.36	0
NW 169 Ave	Palmetto Exp	NW 67 Ave	1.0	E	1.00	M		0	1	0	2.36	0
NW 42 Ave	NW 191 St	NW 183 St	1.0	E	1.00	M		0	1	0.6	2.36	0
NW 47 Ave	S River Dr	Okeechobee Rd	1.0	E	1.00	M	41,500	2,905	1	0.1	2.36	684
NW 57 Ave	NW 190 St	NW 183 St	1.0	E	1.00	M	34,500	2,415	1	0.5	2.36	2,845
Granada	SW 8 St	Alhambra	1.0	E	1.00	M	5,820	407	1	0.7	2.44	695
NW 37 Ave	NW 175 St	SR 826	1.0	E	1.00	M	22,780	1,595	1	0.5	2.44	1,942
Okeechobee Rd	NW 62 Ave	NW 57 Ave	1.0	E	1.00	M	48,000	3,360	1	0.5	2.44	4,092
SW 37 Ave	Flagler St	Ponce de Leon	1.0	E	1.00	M		0	1	0.1	2.44	0
SW 80 St	SW 67 Ave	US 1	1.0	E	1.00	M		0	1	0.4	2.44	0
TOTALS FOR ROADWAYS WITH RCR BETWEEN 0.90 AND 1.0										**45**	**162**	**144,691**
WEIGHTWED AVERAGE CONGESTION DURATION												
Bird Rd	SW 87 Ave	SW 89 Ave	1.0	E	1.01	S	53,000	3,710	1	0.2	2.47	1,830
Bird Rd	SR 826	SW 87 Ave	1.0	E	1.01	S	64,000	4,480	1	1	2.47	11,048
Bird Rd	SW 89 Ave	Turnpike	1.0	E	1.01	S	48,000	3,360	1	2.8	2.47	23,202
Coral Way	SW 42 Ave	SW 37 Ave	1.0	E	1.01	S	20,690	1,448	1	0.5	2.47	1,786
E 4 Ave	NW 79 St	NW 74 St	1.0	E	1.01	S		0	1	0.3	2.47	0
NE 183 St	NE 2 Ct	NE 6 Ave	1.0	E	1.01	S	40,500	2,835	1	0.4	2.47	2,797
NE 183 St	NE 10 Ave	NE 21 Ave	1.0	E	1.01	S	33,000	2,310	1	1.1	2.47	6,267
NE 183 St	NE 6 Ave	NE 10 Ave	1.0	E	1.01	S	40,000	2,800	1	0.6	2.47	4,143
NE 79 St	NE 2 Ave	NE 3 Ave	1.0	E	1.01	S	23,760	1,663	1	0.1	2.47	410
NE 79 St	Miami Ave	NE 2 Ave	1.0	E	1.01	S	23,760	1,663	1	0.2	2.47	820
NE 79 St	NE 3 Ave	NE 6 Ave	1.0	E	1.01	S	23,760	1,663	1	0.4	2.47	1,641
NW 107 Ave	SR 836	Fountainbleau	1.0	E	1.01	S	66,500	4,655	1	0.4	2.47	4,592
NW 107 Ave	Fountainbleau	Flagler St	1.0	E	1.01	S	66,500	4,655	1	0.5	2.47	5,740
NW 107 Ave	NW 114 St	SR 836	1.0	E	1.01	S	47,080	3,296	1	0.3	2.47	2,438
NW 57 Ave	NW 5 St	NW 3 St	1.0	E	1.01	S	46,000	3,220	1	0.1	2.47	794
NW 57 Ave	NW 3 St	Flagler	1.0	E	1.01	S	46,000	3,220	1	0.3	2.47	2,382
NW 57 Ave	NW 7 St	NW 5 St	1.0	E	1.01	S	46,000	3,220	1	0.1	2.47	794
NW 72 Ave	NW 12 St	NW 19 St	1.0	E	1.01	S	24,500	1,715	1	0.3	2.47	1,269
NW 72 Ave	NW 39 St	NW 32 St	1.0	E	1.01	S	36,000	2,520	1	0.4	2.47	2,486
NW 72 Ave	NW 72 Ave	Weatherford Blvd	1.0	E	1.01	S	24,500	1,715	1	0.2	2.47	846
NW 72 Ave	NW 32 St	NW 25 St	1.0	E	1.01	S	36,000	2,520	1	0.5	2.47	3,107

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	CONG >= .9 DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
NW 72 Ave	NW 12 St	Flagler	1.0	E	1.01	S	24,500	1,715	1	0.9	2.47	3,807
NW 72 Ave	Weatherford Blvd	NW 75 Ave	1.0	E	1.01	S		0	1	0.2	2.47	0
NW 72 Ave	NW 75 Ave	NW 12 St	1.0	E	1.01	S		0	1	0.8	2.47	0
NW 72 Ave	NW 19 St	NW 72 Ave	1.0	E	1.01	S	24,500	1,715	1	0.1	2.47	423
NW 72 Ave	NW 25 St	NW 19 St	1.0	E	1.01	S	24,500	1,715	1	0.3	2.47	1,269
NW 79 St	NW 27 Ave	NW 25 Ave	1.0	E	1.01	S	32,500	2,275	1	0.2	2.47	1,122
NW 79 St	NW 17 Ave	NW 15 Ave	1.0	E	1.01	S	35,500	2,485	1	0.1	2.47	613
NW 79 St	NW 22 Ave	NW 17 Ave	1.0	E	1.01	S	32,500	2,275	1	0.5	2.47	2,805
NW 79 St	NW 25 Ave	NW 22 Ave	1.0	E	1.01	S	32,500	2,275	1	0.4	2.47	2,244
NW 79 St	NW 15 Ave	NW 6 Ave	1.0	E	1.01	S	35,500	2,485	1	0.9	2.47	5,516
NW 79 St	NW 2 Ave	Miami Ave	1.0	E	1.01	S	25,980	1,819	1	0.2	2.47	897
NW 79 St	NW 6 Ave	NW 2 Ave	1.0	E	1.01	S	30,740	2,152	1	0.4	2.47	2,123
NW 79 St	E 4 Ave	NW 42 Ave	1.0	E	1.01	S		0	1	0.4	2.47	0
NW 87 Ave	SR 836	NW 8 St	1.0	E	1.01	S	65,500	4,585	1	0.3	2.47	3,392
NW 87 Ave	NW 8 St	Park Blvd	1.0	E	1.01	S	65,500	4,585	1	0.4	2.47	4,523
NW 87 Ave	Park Blvd	Flagler St	1.0	E	1.01	S	65,500	4,585	1	0.3	2.47	3,392
SW 107 Ave	Flagler St	SW 8 St	1.0	E	1.01	S	66,500	4,655	1	0.5	2.47	5,740
SW 107 Ave	SW 8 St	Coral Way	1.0	E	1.01	S	46,000	3,220	1	1	2.47	7,941
SW 107 Ave	SW 48 St	Miller Rd	1.0	E	1.01	S	28,000	1,960	1	0.5	2.47	2,417
SW 107 Ave	SW 34 St	Bird Rd	1.0	E	1.01	S	29,000	2,030	1	0.4	2.47	2,003
SW 107 Ave	Miller Rd	SW 104 St	1.0	E	1.01	S	24,700	1,729	1	3	2.47	12,792
SW 107 Ave	Bird Rd	SW 48 St	1.0	E	1.01	S	28,000	1,960	1	0.5	2.47	2,417
SW 107 Ave	Coral Way	SW 34 St	1.0	E	1.01	S	29,000	2,030	1	0.6	2.47	3,004
SW 27 Ave	US 1	Bird Rd	1.0	E	1.01	S		0	1	0.3	2.47	0
SW 57 Ave	SW 82 St	Kendall	1.0	E	1.01	S	14,370	1,006	1	0.4	2.47	992
SW 57 Ave	SW 91 St	SW 96 St	1.0	E	1.01	S	14,370	1,006	1	0.3	2.47	744
SW 57 Ave	SW 16 St	SW 20 St	1.0	E	1.01	S	27,000	1,890	1	0.25	2.47	1,165
SW 57 Ave	SW 96 St	SW 104 St	1.0	E	1.01	S	14,370	1,006	1	0.5	2.47	1,240
SW 57 Ave	SW 120 St	Campamento St	1.0	E	1.01	S	19,710	1,380	1	0.4	2.47	1,361
SW 57 Ave	SW 8 St	SW 16 St	1.0	E	1.01	S	27,000	1,890	1	0.5	2.47	2,331
SW 57 Ave	SW 104 St	SW 112 St	1.0	E	1.01	S	19,710	1,380	1	0.5	2.47	1,701
SW 57 Ave	SW 55 St	Miller	1.0	E	1.01	S	16,110	1,128	1	0.2	2.47	556
SW 57 Ave	SW 51 St	SW 55 St	1.0	E	1.01	S	13,520	946	1	0.3	2.47	700
SW 57 Ave	SW 68 St	Ponce de Leon	1.0	E	1.01	S	20,800	1,456	1	0.1	2.47	359
SW 57 Ave	Coral Way	Bird Rd	1.0	E	1.01	S		0	1	1	2.47	0
SW 57 Ave	Kendall	SW 91 St	1.0	E	1.01	S	19,710	1,380	1	0.2	2.47	681
SW 57 Ave	Bird Rd	Blue Rd	1.0	E	1.01	S		0	1	0.5	2.47	0
SW 57 Ave	Ponce de Leon	US 1	1.0	E	1.01	S	20,800	1,456	1	0.1	2.47	359

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
SW 57 Ave	Miller	SW 68 St	1.0	E	1.01	S	20,800	1,456	1	0.7	2.47	2,514
SW 57 Ave	SW 20 St	Coral Way	1.0	E	1.01	S	27,000	1,890	1	0.25	2.47	1,165
SW 57 Ave	Sunset	SW 82 St	1.0	E	1.01	S	13,520	946	1	0.7	2.47	1,634
SW 57 Ave	Flagler	SW 8 St	1.0	E	1.01	S		0	1	0.5	2.47	0
SW 57 Ave	Blue Rd	SW 51 ST	1.0	E	1.01	S		0	1	0.2	2.47	0
SW 8 St	SW 87 Ave	SW 97 Ave	1.0	E	1.01	S	34,000	2,380	1	1	2.47	5,869
SW 8 St	Turnpike	SW 97 Ave	1.0	E	1.01	S	33,200	2,324	1	2	2.47	11,463
SW 8 St	SW 82 Ave	SW 87 Ave	1.0	E	1.01	S	27,000	1,890	1	0.5	2.47	2,331
SW 8 St	SW 122 Ave	SW 127 Ave	1.0	E	1.01	S	35,500	2,485	1	0.5	2.47	3,064
SW 8 St	SR 826	SW 82 Ave	1.0	E	1.01	S	27,000	1,890	1	0.5	2.47	2,331
SW 8 St	SW 127 Ave	SW 137 Ave	1.0	E	1.01	S	31,500	2,205	1	1	2.47	5,438
SW 87 Ave	Bird Rd	Sunset	1.0	E	1.01	S	27,000	1,890	1	2	2.47	9,322
SW 87 Ave	SW 8 St	SW 16 St	1.0	E	1.01	S	31,000	2,170	1	0.5	2.47	2,676
SW 87 Ave	Coral Way	SW 34 St	1.0	E	1.01	S	35,500	2,485	1	0.6	2.47	3,677
SW 87 Ave	Snapper Creek	Kendall Dr	1.0	E	1.01	S	25,000	1,750	1	0.5	2.47	2,158
SW 87 Ave	Sunset	Snapper Creek	1.0	E	1.01	S	25,000	1,750	1	0.5	2.47	2,158
SW 87 Ave	SW 34 St	Bird Rd	1.0	E	1.01	S	27,000	1,890	1	0.4	2.47	1,864
SW 87 Ave	Flagler St	SW 8 St	1.0	E	1.01	S	37,500	2,625	1	0.5	2.47	3,237
SW 87 Ave	SW 16 St	Coral Way	1.0	E	1.01	S	31,000	2,170	1	0.5	2.47	2,676
W Dixie Hwy	NE 10 Ave	NE 6 Ave	1.0	E	1.01	S	21,000	1,470	1	1	2.47	3,625
Miller Dr	SR 826	SW 72 Ave	1.0	E	1.01	C	394,510	27,616	1	0.1	2.49	6,877
SW 117 Ave	Coral Reef	SW 168 St	0.9	D	1.01	C	12,900	903	1	1	1.49	1,341
Miller Dr	SW 57 Ave	Alhambra Cr	1.0	E	1.01	M	17,300	1,211	1	0.3	2.52	914
SW 16 St	SW 32 Ave	SW 30 Ave	1.0	E	1.01	M		0	1	0.2	2.52	0
SW 77 Ave	SW 112 St	SW 117 St	1.0	E	1.01	M	4,090	286	1	0.3	2.52	216
SW 104 St	SW 122 Ave	SW 132 Ave	1.2	T	1.02	C	43,840	3,069	1	0.5	4.60	7,059
NW 20 St	NW 32 Ave	NW 27 Ave	1.0	E	1.02	M	22,830	1,598	1	0.5	2.59	2,073
NW 74 St	NW 72 Ave	W 12 Ave	1.0	E	1.02	M		0	1	0.5	2.59	0
SW 67 Ave	Sunset	Kendall	1.0	E	1.02	M	10,930	765	1	1	2.59	1,985
I95 WB Ramp from M	ac Arthur-NE 2 Av	to NE 1 Av	0.93	D	1.02	M		0	1	0.1	1.88	0
NW 122 St	NW 67 Ave	SR 826	0.90	D	1.02	C	16,630	1,164	1	1	1.59	1,846
NW 122 St	SR 826	NW 87 Ave	0.9	D	1.02	C	34,820	2,437	1	0.5	1.59	1,933
Okeechobee Rd	E 4 Ave	SR 112	1.0	E	1.03	M	41,500	2,905	1	0.5	2.67	3,884
SW 122 Ave	SW 104 St	SW 120 St	0.9	D	1.03	M	22,410	1,569	1	1	1.64	2,574
SW 127 Ave	SW 104 St	SW 112 St	0.9	D	1.03	M	8,740	612	1	0.5	1.64	502
SW 27 Ave	Bird Rd	Bayshore Dr	1.0	E	1.03	M		0	1	0.5	2.67	0
I 95 W Frontage	NW 2 St	NW 1 St	0.93	D	1.03	M		0	1	0.1	1.96	0
NW 62 St	NW 6 Ave	NW 9 Ave	1.00	E	1.03	C	20,860	1,460	1	0.3	2.69	1,179

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	CONG >= .9 DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
NW 62 St	NW 4 Ave	Miami Ave	1.00	E	1.03	C	24,020	1,681	1	0.4	2.69	1,810
Grand Ave	US 1	Jefferson	1.0	E	1.04	M		0	1	0.1	2.75	0
Miller Dr	SR 826	SW 82 Ave	1.0	E	1.04	M	39,510	2,766	1	0.5	2.75	3,808
Okeechobee Rd	NW 67 Ave	NW 62 Ave	1.0	E	1.04	M	48,000	3,360	1	0.5	2.75	4,626
SW 67 Ave	SW 52 St	Miller	1.0	E	1.04	M	15,770	1,104	1	0.25	2.75	760
I95 WB Ramp from M	ac Arthur-Biscayne	o NE 2 Av	0.93	D	1.04	M		0	1	0.1	2.04	0
MacArthur Cswy	USCG Station	5 Ave	0.93	D	1.04	M	31,500	2,205	1	0.7	2.04	3,146
Old Cutler Rd	SW 80 St	SW 57 Ave	1.00	E	1.04	C		0	1	2	2.79	0
SW 72 Ave	Miller Rd	SW 64 St	1.00	E	1.04	C	13,300	931	1	0.5	2.79	1,300
NW 17 Ave	Okeechobee Rd	SR 836	1.2	T	1.04	M	15,610	1,093	1	0.3	4.90	1,606
Anastasia Ave	Ferdinand St	Madrid	1.0	E	1.04	M		0	1	0.1	2.83	0
Sunset Dr	SW 54 Ave	Ponce de Leon Rd	1.0	E	1.04	M	11,630	814	1	0.5	2.83	1,153
SW 122 Ave	SW 8 St	Flagler St	0.9	D	1.04	C	22,540	1,578	1	0.5	1.79	1,410
Coral Reef	SW 134 Ave	SW 137 Ave	0.9	D	1.05	M	29,200	2,044	1	0.3	1.80	1,104
NE 19 Ave	NE 159 St	NE 151 St	1.0	E	1.05	M	10,240	717	1	0.5	2.91	1,044
W Dixie Hwy	Ives Dairy Rd	NE 183 St	1.0	E	1.05	M	15,550	1,089	1	1	2.91	3,170
NW 25 St	NW 87 Ave	NW 89 Ave	1.2	T	1.05	M	25,270	1,769	1	0.3	5.06	2,685
SW 200 St	US 1	SW 127 Ave	0.9	D	1.06	C	17,950	1,257	1	0.5	1.89	1,186
Alhambra Cr	Ferdinand St	SW 49 Ave	1.0	E	1.06	M		0	1	0.7	2.99	0
SW 107 Ave	Eureka Dr	Quail Roost	0.9	D	1.06	M	6,470	453	1	0.2	1.96	177
NW 25 St	SR 826	NW 79 Ave	0.9	D	1.07	M	26,150	1,831	1	0.3	2.04	1,119
NW 37 Ave	Ali Baba Av	NW 135 St	1.0	E	1.08	M	22,780	1,595	1	0.1	3.15	502
Harding Ave	86 St	81 St	1.0	E	1.08	M	20,500	1,435	1	0.3	3.23	1,391
SW 80 St	SW 72 Ave	SW 67 Ave	1.0	E	1.08	M		0	1	0.1	3.23	0
HEFT	SW 8 St	SW 40 St	0.93	D	1.09	S		0	1	2	2.49	0
HEFT	NW 77 Ave	Okeechobee Rd	0.93	D	1.09	S		0	1	5.5	2.49	0
I 95	NW 135 St	Gratigny Dr	0.93	D	1.09	S	210,000	14,700	1	1	2.49	36,573
I 95	NW 95 St	NW 79 St	0.93	D	1.09	S	212,000	14,840	1	1	2.49	36,922
I 95	NW 103 St	NW 95 St	0.93	D	1.09	S	210,000	14,700	1	0.5	2.49	18,287
I 95	Gratigny Dr	NW 103 St	0.93	D	1.09	S	210,000	14,700	1	1	2.49	36,573
SR 112	NW 27 Ave	NW 22 Ave	0.93	D	1.09	S	92,000	6,440	1	0.5	2.49	8,011
SR 112	NW 42 Ave	NW 27 Ave	0.93	D	1.09	S	84,000	5,880	1	1.5	2.49	21,944
SR 112	NW 17 Ave	NW 22 Ave	0.93	D	1.09	S	90,000	6,300	1	0.5	2.49	7,837
SR 826	Sunset	Kendall	0.93	D	1.09	S	67,000	4,690	1	1	2.49	11,669
SR 826	Miller	Sunset	0.93	D	1.09	S	92,000	6,440	1	1	2.49	16,023
SR 836	NW 72 Ave	NW 57 Ave	0.93	D	1.09	S	180,000	12,600	1	1.5	2.49	47,023
SR 836	NW 12 Ave	NW 7 Ave	0.93	D	1.09	S	148,500	10,395	1	0.5	2.49	12,931
SR 836	NW 72 Ave	SR 826	0.93	D	1.09	S	120,000	8,400	1	0.5	2.49	10,450

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	CONG >= .9 DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
SR 836	NW 22 Ave	NW 17 Ave	0.93	D	1.09	S	146,500	10,255	1	0.5	2.49	12,757
SR 836	NW 27 Ave	NW 22 Ave	0.93	D	1.09	S	146,500	10,255	1	0.5	2.49	12,757
SR 836	NW 12 Ave	NW 17 Ave	0.93	D	1.09	S	105,500	7,385	1	0.5	2.49	9,187
SR 836	NW 107 Ave	HEFT	0.9	D	1.09	S	82,500	5,775	1	1	2.49	14,368
Turnpike	County Line	NW 77 Ave	0.93	D	1.09	S	4,800	336	1	6.5	2.49	5,434
SW 112 St	SW 112 Ave	SW 117 Ave	0.9	D	1.09	C	8,710	610	1	0.5	2.19	667
Okeechobee Rd	NW 67 Ave	NW 72 Ave	1.00	E	1.09	C	48,000	3,360	1	0.2	3.29	2,214
E 64 St	E 6 Ave	E 8 Ave	1.0	E	1.09	M	8,820	617	1	0.25	3.31	511
Old Cutler Rd	SW 168 St	SW 162 St	1.0	E	1.09	M	13,930	975	1	0.4	3.31	1,291
SW 67 Ave	SW 112 St	SW 126 St	1.0	E	1.09	M	8,890	622	1	0.9	3.31	1,854
University Dr	SW 43 Ave	Riviera Dr	1.0	E	1.09	M		0	1	0.3	3.31	0
Krome Ave	Okeechobee Rd	Eureka Dr	0.8	B	1.10	S	6,900	483	1	30	1.49	21,522
MacArthur Cswy	Star Island	USCG Station	0.93	D	1.10	M	65,891	4,612	1	0.2	2.59	2,394
SW 152 Ave	SW 288 St	SW 292 St	0.9	D	1.10	M	11,550	809	1	0.2	2.28	368
Okeechobee Rd	NW 57 Ave	Palm Ave	1.0	E	1.10	M	48,000	3,360	1	0.5	3.39	5,695
SW 104 St	US 1	SW 57 Ave	1.0	E	1.10	C	12,700	889	1	0.5	3.39	1,509
SW 97 Ave	Flagler St	SW 8 St	0.9	D	1.10	C	15,370	1,076	1	0.5	2.29	1,232
SW 97 Ave	SW 16 St	Coral Way	0.9	D	1.10	C	15,370	1,076	1	0.5	2.29	1,232
SW 97 Ave	SW 8 St	SW 16 St	0.9	D	1.10	C	15,370	1,076	1	0.5	2.29	1,232
SW 62 Ave	SW 8 St	SW 16 St	1.0	E	1.11	M	8,540	598	1	0.5	3.47	1,037
Coral Way	SW 112 Ave	SW 122 Ave	1.0	E	1.11	C	41,560	2,909	1	1	3.50	10,169
Harding Ave	91 St	86 St	1.0	E	1.12	M	20,500	1,435	1	0.4	3.55	2,037
SW 67 Ave	SW 126 St	SW 127 St	1.0	E	1.12	M	5,310	372	1	0.1	3.55	132
SW 127 Ave	Moody Dr	Waldin Dr	0.9	D	1.12	M	2,790	195	1	0.8	2.44	381
SW 8 St	Turnpike	SW 122 Ave	0.9	D	1.12	S	35,500	2,485	1	0.5	2.47	3,064
Miller Dr	SW 92 Ave	SW 102 Ave	1.0	E	1.12	C	39,210	2,745	1	1	3.60	9,869
SW 117 Ave	SW 168 St	SW 184 St	0.9	D	1.12	C	12,900	903	1	0.5	2.49	1,124
SW 117 Ave	Quail Roost Dr	SW 200 St	0.9	D	1.12	C	12,900	903	1	0.5	2.49	1,124
SW 117 Ave	Eureka Dr	Quail Roost	0.9	D	1.12	C	12,900	903	1	0.5	2.49	1,124
MacArthur Cswy	Palm Island	Star Island	0.93	D	1.12	M	65,891	4,612	1	1	2.83	13,068
NW 26 St	NW 30 Ave	NW 27 Ave	1.0	E	1.12	M		0	1	0.2	3.63	0
NW 14 St	NW 27 Ave	NW 22 Ave	1.0	E	1.14	M		0	1	0.5	3.79	0
SW 107 Ave	Quail Roost Dr	US 1	0.9	D	1.14	C	6,470	453	1	0.5	2.69	609
NW 8 Ave	NW 7 St	Flagler	1.2	T	1.15	M	11,900	833	1	0.25	6.17	1,285
MacArthur Cswy	Watson Island	Palm Island	0.93	D	1.15	M	65,891	4,612	1	1	3.07	14,168
Bird Rd	SW 122 Ave	SW 132 Ave	1.0	E	1.15	C	48,000	3,360	1	1	3.90	13,095
Mac Arthur Cswy	I 95	East	0.93	D	1.16	M	65,891	4,612	1	0	3.15	0
MacArthur Cswy	US 1	Watson Island	0.93	D	1.16	M	65,891	4,612	1	1	3.15	14,534

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University Dr	Riviera Dr	SW 42 Ave	1.0	E	1.16	M		0	1	0.2	4.03	0
Caribean Blvd	HEFT	SW 97 Ave	0.9	D	1.17	C	21,040	1,473	1	1.5	2.89	6,390
W 64 St	W 2 Ave	Palm Ave	1.0	E	1.17	M	8,820	617	1	0.25	4.11	634
Bayshore Dr	SW 17 Ave	Alatka	1.0	E	1.18	M		0	1	0.4	4.18	0
NW 26 St	NW 12 Ave	NW 10 Ave	1.0	E	1.18	M		0	1	0.2	4.18	0
SW 42 Ave	Ingraham Hwy	Sunset	1.0	E	1.18	M	18,360	1,285	1	0.1	4.18	538
Alton Rd	Arthur Godfrey	44 St	1.0	E	1.19	M	30,500	2,135	1	0.2	4.26	1,821
NE 2 Ave	NE 199 St	NE 183 St	1.0	E	1.19	M	4,830	338	1	1	4.34	1,469
E 64 St	E 4 Ave	E 6 Ave	1.0	E	1.20	M	8,820	617	1	0.25	4.42	683
NW 25 St	NW 82 Ave	NW 87 Ave	0.9	D	1.22	M	26,150	1,831	1	0.5	3.39	3,102
TOTALS FOR ROADWAYS WITH RCR BETWEEN 1.01 AND 1.20										**141**	**492**	**752,524**
WEIGHTWED AVERAGE CONGESTION DURATION												
I 95 W Frontage	NW 1 St	Flagler	0.93	D	1.22	M		0	1	0.1	3.71	0
NW 25 St	NW 72 Ave	NW 67 Ave	1.0	E	1.23	M	26,150	1,831	1	0.5	4.66	4,267
SW 136 St	Old Cutler Rd	SW 67 Ave	1.0	E	1.23	M	14,490	1,014	1	0.1	4.66	473
SR 826	Okeechobee Rd Rd	NW 74 St	0.93	D	1.23	S	175,000	12,250	1	1	3.85	47,139
SR 826	SR 836	Flagler	0.93	D	1.23	S	180,000	12,600	1	0.8	3.85	38,788
HEFT	SW 40 St	SW 88 St	0.93	D	1.23	S		0	1	3	3.85	0
SR 826	NW 138 St	Gratigny Dr	0.93	D	1.23	S	154,000	10,780	1	1.3	3.85	53,927
SR 826	SR 874	Miller	0.93	D	1.23	S	92,000	6,440	1	0.2	3.85	4,956
SR 826	NW 17 Ave	NW 154 St	0.93	D	1.23	S	132,000	9,240	1	7	3.85	248,892
SR 826	Gratigny Dr	NW 103 St	0.93	D	1.23	S	162,500	11,375	1	1	3.85	43,772
SR 826	NW 58 St	NW 36 St	0.93	D	1.23	S	193,000	13,510	1	1.2	3.85	62,385
SR 826	NW 103 St	Okeechobee Rd	0.93	D	1.23	S	176,500	12,355	1	0.9	3.85	42,788
SR 826	Bird Rd	SR 874	0.93	D	1.23	S	92,000	6,440	1	0.8	3.85	19,825
SR 826	Coral Way	Bird Rd	0.93	D	1.23	S	174,000	12,180	1	1	3.85	46,869
SR 836	NW 37 Ave	NW 27 Ave	0.93	D	1.23	S	11,655	816	1	1	3.85	3,139
SR 836	NW 57 Ave	NW 42 Ave	0.93	D	1.23	S	197,000	13,790	1	1.5	3.85	79,597
SR 836	NW 42 Ave	NW 37 Ave	0.93	D	1.23	S	137,500	9,625	1	0.5	3.85	18,519
SR 826	NW 74 St	NW 58 St	0.93	D	1.23	S	181,000	12,670	1	1	3.85	48,755
SR 826	SW 8 St	Coral Way	0.93	D	1.23	S	170,500	11,935	1	1	3.85	45,927
SR 826	NW 36 St	NW 25 St	0.93	D	1.23	S	207,000	14,490	1	0.9	3.85	50,183
SR 826	NW 154 St	NW 138 St	0.93	D	1.23	S	105,000	7,350	1	1	3.85	28,283
I 95	Golden Glades	NW 135 St	0.93	D	1.23	S	184,500	12,915	1	2	3.85	99,395
SR 826	NW 25 St	SR 836	0.93	D	1.23	S	196,500	13,755	1	1	3.85	52,930
SR 874	SR 826	SW 87 Ave	0.93	D	1.23	S	76,000	5,320	1	1	3.85	20,472
SR 874	SW 87 Ave	SW 97 Ave	0.93	D	1.23	S	70,500	4,935	1	1	3.85	18,990

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HEFT	SR 836	SW 8 St	0.93	D	1.23	S		0	1	1.2	3.85	0
I 95	NW 62 St	SR 112	0.93	D	1.23	S	218,000	15,260	1	1.2	3.85	70,466
I 95	SR 112	SR 836	0.93	D	1.23	S	186,500	13,055	1	1.4	3.85	70,331
SR 826	Flagler	SW 8 St	0.93	D	1.23	S	199,500	13,965	1	0.5	3.85	26,869
I 95	NW 79 St	NW 62 St	0.93	D	1.23	S	218,000	15,260	1	1	3.85	58,721
NW 25 St	NW 79 Ave	NW 82 Ave	0.9	D	1.26	M	26,150	1,831	1	0.3	3.71	2,036
NW 199 St	NW 27 Ave	NW 32 Ave	1.00	E	1.26	C	20,200	1,414	1	0.5	5.00	3,537
Old Cutler Rd	SW 162 St	Coral Reef Dr	1.0	E	1.27	M	13,930	975	1	0.6	5.06	2,960
Bayshore Dr	Skyline Dr	SW 17 Ave	1.0	E	1.27	M		0	1	0.2	5.14	0
NW 62 Ave	NW 138 St	W 72 St	1.00	E	1.28	C	24,450	1,712	1	0.6	5.20	5,344
NW 39 St	SR 826	NW 79 Ave	1.2	T	1.29	M		0	1	0.3	7.84	0
E 1 Ave	Okeechobee Rd	NW 46 St	1.0	E	1.33	C		0	1	0.4	5.71	0
I 95 W Frontage	NW 11 St	NW 8 St	0.93	D	1.34	M		0	1	0.35	4.82	0
NW 167 St	NW 67 Ave	NW 64 Ave	1.0	E	1.34	M		0	1	0.3	5.77	0
Bayshore Dr	SW 27 Ave	SW 22 Ave	1.0	E	1.36	M		0	1	0.7	6.01	0
NW S Tamiami Canal	NW 12 St	NW 20 St	1.0	E	1.36	M	11,900	833	1	0.5	6.01	2,504
Okeechobee Rd	Palm Ave	E 4 Ave	1.0	E	1.37	M	48,000	3,360	1	0.5	6.09	10,235
Bayshore Dr	SW 22 Ave	Skyline Dr	1.0	E	1.38	M		0	1	0.4	6.17	0
Ingraham Hwy	Sunset Dr	SW 37 Ave	1.00	E	1.38	C		0	1	0.8	6.21	0
NW 14 Ave	SR 836	NW 7 St	1.0	E	1.42	M		0	1	0.3	6.65	0
Port Blvd WB	NE 6 St	NE 5 St	1.5	X	1.44	M	9,550	669	1	0.1	14.12	944
Port Blvd EB	NE 6 St	NE 5 St	1.5	X	1.45	M	9,550	669	1	0.1	14.20	949
NW 62 St	SR 826	NW 82 Ave	1.0	E	1.46	M		0	1	0.5	6.97	0
NW 79 Ave	NW 62 St	NW 39 St	0.9	D	1.46	M	20,780	1,455	1	1.5	5.54	12,079
NW 79 Ave	NW 39 St	NW 25 St	0.9	D	1.50	M	14,560	1,019	1	0.9	5.93	5,443
TOTALS FOR ROADWAYS WITH RCR BETWEEN 1.21 AND 1.50										**46**	**249**	**1,352,689**
WEIGHTWED AVERAGE CONGESTION DURATION												
I95 EB Ramp to Mac	Arthur		0.93	D	1.51	M		0	1	0.1	6.41	0
SW 97 Ave	SW 184 St	SW 93 Rd	0.9	D	1.56	C	12,500	875	1	0.5	6.41	2,804
Port Blvd	NE 5 St	East	1.5	X	1.57	M	19,100	1,337	1	0.1	15.95	2,133
Perimeter Rd	NW 57 Ave	NW 72 Ave	1.00	E	1.72	C		0	1	1.5	9.63	0
NW 20 St	NW S Tamiami Canal	NW 42 Ave	1.0	E	1.81	M	18,060	1,264	1	0	10.54	0
Port Blvd	Bayside	End of Dodge Il	1.0	E	1.85	M	19,100	1,337	1	2	10.94	29,258
SW 132 Ave	SW 8 St	SW 2 St	0.9	D	1.90	C	9,590	671	1	0.5	9.53	3,197
NW 20 St	NW 14 Ave	NW 12 Ave	1.2	T	1.92	M	23,160	1,621	1	0.2	15.55	5,043
SW 168 St	SW 87 Ave	SW 92 Ave	0.9	D	2.00	C	12,490	874	1	0.5	10.43	4,559
NW 17 St	NW 27 Ave	NW 30 Ave	1.00	E	2.09	C	13,730	961	1	0.3	13.34	3,848

DADE COUNTY CONGESTION MANAGEMENT STUDY - #94153

11/03/95

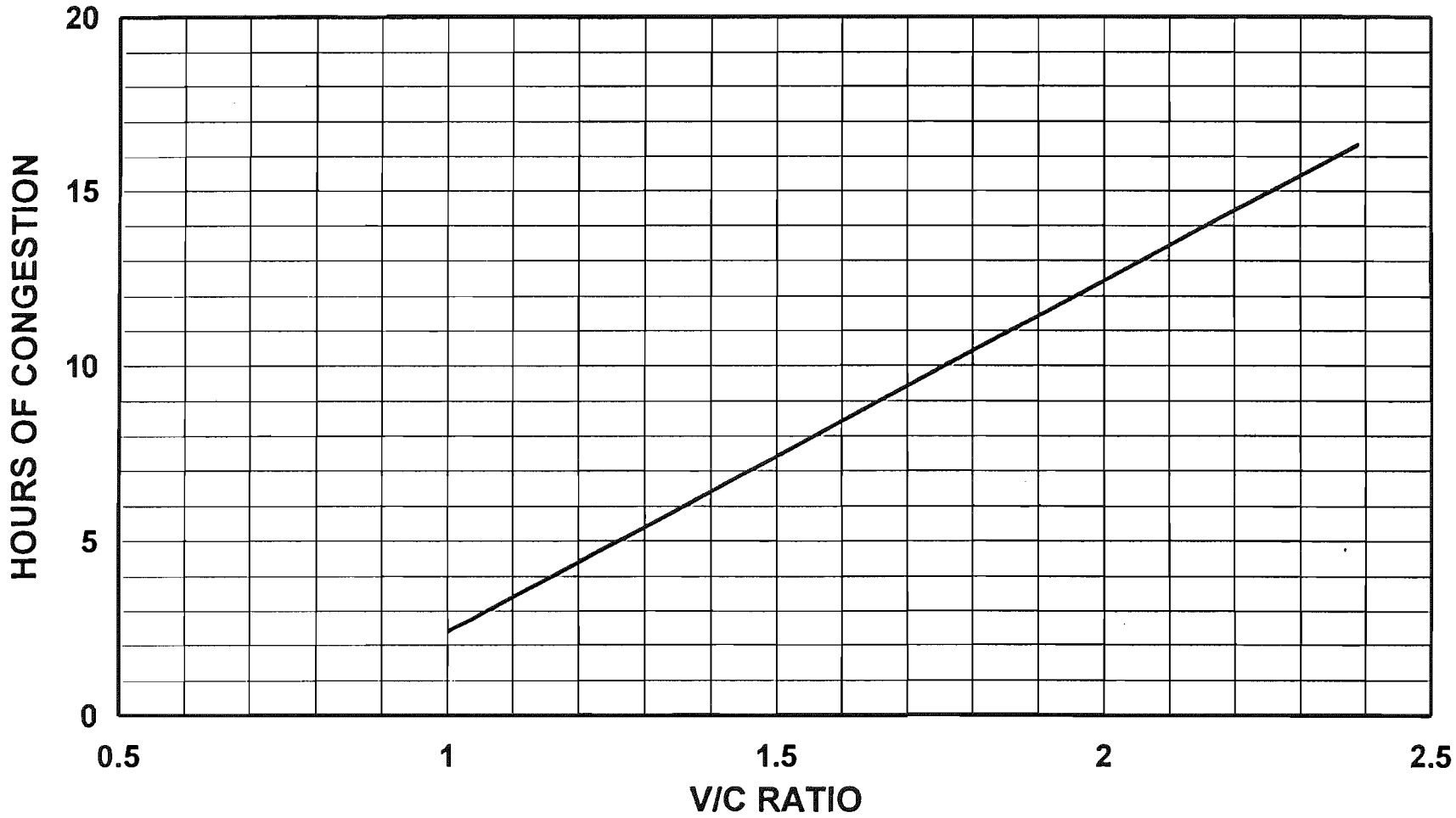
Road	From	To	Max V/C	LOS	CONGEST. RATIO	1995 V/C USED	ADT	PEAK HOUR COUNT	CONG >= .9 FLAG	CONG >= .9 DIST.	CONGESTION DURATION	CONGESTION VEH-MI-HRS
Port Blvd	US 1	Bayside	1.0	E	2.17	M	19,100	1,337	1	0.1	14.12	1,888
SW 117 Ave	Sunset	Kendall	1.0	E	2.30	C	27,110	1,898	1	1	15.45	29,329
NW 20 St	NW 12 Ave	NW 7 Ave	1.2	T	2.52	M	23,160	1,621	1	0.5	22.79	18,471
TOTALS FOR ROADWAYS WITH RCR GREATER THAN 1.50										**7**	**161**	**100,530**
WEIGHTWED AVERAGE CONGESTION DURATION												
TOTAL MILES OF CONGESTION										**240**	**MILES**	

ATTACHMENT C-H

CONGESTION DURATION

CONGESTION DURATION

MIAMI URBANIZED AREA MMP / CMS



APPENDIX D

LIST OF POTENTIAL STRATEGIES

Dade County

Metropolitan Planning Organization

MOBILITY MANAGEMENT PROCESS

MAIN MENU: STRATEGIES DEFINITION

I. TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES

1. **Development of Trip Reduction Ordinance (TRO):** A resolution approved by a regulatory authority to limit the use of single occupant vehicles in certain areas under specific conditions. These TROs usually apply to peak travel periods and are related to trip generators and land uses. The implementation of these measures usually require the following: high community participation and involvement, enforcement measures, control measures, monitoring systems and high development cost.

2. **Employee Transportation Coordinator (ETC):** An on-site individual responsible for coordinating transportation activities for major employers, colleges, universities, etc.

3. **Establishment of Shuttle Service:** Bus or van service that provides transportation between the company's facilities or from the employer's site to transportation facilities such as; P&R lots & metrorail stations.

4. **Ridesharing:** A vehicle shared by several persons for trips to and from work. The following categories are defined in this strategy:
   a. Carpooling: Use of a private car to carry fellow employees to work. Not necessarily limited to employees of the same company.
   b. Vanpooling: Use of a 8-15 passenger van, driven by a volunteer driver. Participants pay a monthly fee to share capital and operating costs.
   c. Subscription Bus: Use of a mini-bus to provide transportation to a transit facility or place of employment. This service is usually sponsored by employers to facilitate the commute of their employees. However, participants pay a monthly fee to cover operational costs. This is a subscription service that participants may cancel at any time.

5. **Marketing Information Programs:** Transit and traffic congestion marketing and educational programs are developed by employers and government agencies to promote travel reduction strategies for employees. Focusing areas in this strategy are: mobility improvement, congestion alleviation and air quality improvement. The campaign is oriented to create public awareness of transit services and alternatives. This can be done by using printed materials,

visual aids, conferences, seminars and workshops, among others..

6. **Preferential Parking:** Employers provide preferential parking spaces and treatments for carpool and vanpool vehicles. These parking spaces usually are located within close proximity to the main entrance. This strategy could also be considered under the parking management strategies.

7. **Emergency Ride Home Program:** RCAPs, TMAs or employers provide an allowance for a taxi or use of a company vehicle for employees who utilize a commute alternative if an emergency situation arises for the employee.

8. **Employer Subsidized Transit Use:** Employer provides full or partially paid transit passes to employees for commuting by public transit.

9. **Employee Transportation Allowance:** Transportation allowance provided by employers to employees exclusively for or to encourage use of public transit or nontraditional modes such as carpool, vanpool, walk or bike. This allowance usually replace free parking provisions.

10. **Parking Management:** Many options are considered in this strategy. Some of these are; Employers eliminate or reduce the number of parking spaces for employees to discourage driving alone to work; Parking enforcement; Construction of peripheral parking garages; Elimination of subsidies to employees for parking costs; Eliminate on-street parking and; Development of advanced parking information systems.

11. **Alternative Work Hours:** This strategy spreads the demand for travel at peak-periods. Some alternatives are:
    a. Staggered Work Hours: Different work groups are assigned to begin work at different times.
    b. Flex-Time: Employees are allowed to choose their own working schedules within company guidelines.
    c. Compressed Work Week: Employees are allowed to work four ten-hour days.

12. **Telecommuting:** Employees are allowed to work from home or a satellite office using PCs and phone lines connected to the main office.

13. **Areawide Commute Management Organization:** A public or private organization that coordinates and promotes matching services. Commute alternative marketing and educational programs are developed by RCAPs and TMAs/TMOs to promote TDM strategies at major employment sites and activity centers.

14. **Formation of Transportation Management Association/Organizations (TMAs)/(TMOs):** TMAs/TMOs are public-private partnership formed between business entities and municipal, county or state government. TMAs are designed to address transportation issues and mobility needs within a specific geographical area. Many TMAs act as advocacy organizations by involving the private sector in the transportation planning and decision-making process.

15. **Tax Incentive and Subsidy Program:** Local government provides a wide range of regulatory and financial measures to promote TDM strategies and alleviate traffic congestion.

II. TRAFFIC OPERATIONAL IMPROVEMENTS

1. **Operational Signal Improvements:** Improvements to signalized intersections by revising the timing of signal phases to accommodate a higher capacity of traffic and provide better pedestrian accessibility. This includes improvements to computerized traffic signal systems and traffic control devices.

2. **Equipment Replacement:** Evaluate the physical conditions and capabilities of the computer and signal equipment (hardware and software) and replace/upgrade as needed.

3. **Elimination and Relocation of Traffic Signals:** Evaluate traffic signal operation by corridor to determine the needs of existing traffic signalization. This may result in developing guidelines with set minimum requirements for reevaluation of traffic signals.

4. **One-Way Streets:** A two-way street is changed to a one-way street to increase the capacity of the roadway. The change may also be done by time of day.

5. **Intersection Improvements:** This includes a series of alternatives directed to improve traffic flow at the intersections, among them: changes in geometric design, grade separation, traffic signs, turning lanes, traffic islands and channelization.

6. **Restrictions on Turning Movements:** Prohibiting turning movements in some intersections thereby eliminating conflicts between pedestrians and vehicles. Also this measure has been shown to reduce accidents and alleviate congestion.

7. **Enforcement and Educational Programs:** Educational material is prepared for distribution at schools and activity centers to improve awareness in the community about traffic laws and enforcement, as well as how to manage congestion and improve mobility.

8. **Development of Superarterial Network:** Develop an alternate arterial network to alleviate congestion on the highway system. This includes widening, grade separations at intersections, minimized traffic signals, channelization, prohibition of turning movement, one-way streets, reversible lanes and parking prohibitions among others.

III. HOV LANES

1. **Development of High Occupancy Vehicles (HOV) Lanes:** Lane devoted exclusively for vehicles with 2 or more passengers on highways or arterials. This lane also allows carpool, vanpool and buses, among others.

2. **Development of HOV/Parking Facilities:** Parking facilities designed to provide direct flyover access from/to HOV Lanes.

IV. PUBLIC TRANSIT CAPITAL IMPROVEMENTS

1. **Fixed Guideway Transit:** Development of a public transit system capable of carrying large volume of passengers. There are different types of transit services in this alternative for example: heavy rail, light rail and commuter rail, among others.

2. **Bus Traffic Signal Preemption:** Development of a traffic signal system to provide preferred green light time for transit.

3. **Roadway Improvements/Amenities for Transit:** Physical roadway improvements designed to accommodate amenities for public transit. This also includes the construction of busbays and passenger amenities as benches, shelters, information booths and bus stops.

4. **Development of Park and Ride Facilities:** Parking lots are provided for commuters to transfer to public transit services.

5. **Development of Exclusive Bus Lanes:** Roadway lane devoted exclusively for buses. This lane could be established as a contra-flow or reversible lane, in freeways or arterials, by direction and by time of day, as required by the appropriate conditions.

6. **Acquisition of Vehicles:** Buses and vans are acquired to improve existing transit services or to create new routes.

V. PUBLIC TRANSIT OPERATIONAL IMPROVEMENTS

1. **Express Bus Services:** Bus operating without stops or very limited number of stops along a corridor. This service does not necessarily use the existing trajectory of a fixed route.

2. **Feeder Bus System:** Feeder routes transporting passengers to trunk lines, express services or rail system.

3. **Improvements to Bus Routes:** These improvements could be done by evaluating transit services in the following areas: schedules, trajectories, service frequency, area coverage, information programs, fare structure, transferability to other modes, physical facilities, etc...

4. **Monitoring of Services:** Transit company conducts periodic service evaluations to measure schedule adherence, passenger movement, frequency, etc...

5. **Modifications in the Transit Fare Structure:** The establishment of different fares by time of day. This includes lowering the existing fare to encourage transit ridership.

6. **Promoting Transit Passes:** The public transit agency encourages the use of monthly transit passes to improve service and increase ridership.

7. **Other Transportation Modes:** Coordinate and integrate the establishment of other transportation modes such as jitneys, water-taxi, paratransit services or any other mode that improves mobility and alleviates traffic congestion.

VI. NON-TRADITIONAL MODES

1. **Bicycle Routes, Paths and Lanes:** Provide bicycle routes, paths and lanes along congested corridors where appropriate. This strategy may include safety improvements, widening of existing bicycles facilities and signage.

2. **Promote Bicycle Programs:** Develop bicycle plans, maps and printed materials for general distribution. This also includes seminars, workshops, and rodeos to education cyclists in the proper use of safety equipment and rules.

3. **Bicycle Facilities:** Provide racks, lockers, showers and other bicycle facilities as appropriate.

4. **Integration of Bicyclists to Public Transportation:** Provide racks on buses and trains, as well as, lockers and other cyclist amenities at public transportation facilities.

5. **Bicycle Ordinances:** Revise existing requirements to include bicycle facilities along traffic corridors when appropriate.

6. **Sidewalks and Walkways Facilities:** Provide sidewalks and walkways as required. This strategy may include safety improvements, widening of existing pedestrian facilities and signage.

7. **Promote Pedestrian Programs:** Develop maps and printed materials to educate pedestrians in safety issues and rules.

8. **Sidewalks Amenities:** Provide sidewalks amenities where appropriate, such as benches, crosswalk & signage.

9. **Integration of Pedestrians to Public Transportation:** Provide sidewalk facilities for pedestrians to access public transportation.

VII. CONGESTION PRICING

1. **Parking Pricing:** Increase parking rates to discourage the use of single vehicles. This includes both on and off street parking.

2. **Auto Restricted Zones:** This is an area where vehicular travel is controlled, regulated or prohibited according to local conditions.

3. **Road Pricing:** This strategy establishes a charge for using a highway facility. In this case, toll facilities are built to control access to the highway. The charge can be all day, peak hour or it may vary throughout the day, as appropriate.

VIII. GROWTH MANAGEMENT AND ACTIVITY CENTER STRATEGIES

1. **Change Zoning Codes:** Review existing zoning codes to modify desired travel patterns. This includes limiting the parking supply for a desired demand.

2. **Land Use Policies:** Review existing land use policies and design criteria to reduce congestion and promote public transportation alternative modes or shorter/fewer trips.

3. **Growth Management:** Develop a comprehensive plan to regulate location, density and travel patterns of new or existing developments.

IX. ACCESS MANAGEMENT

1. **Access Management:** This program is directed to manage accessibility to freeways and arterials in order to improve average travel speeds and the capacity of the facility.

X. INTELLIGENT TRANSPORTATION SYSTEM

1. **Ramp Metering:** This strategy allows traffic to access a highway while minimizing the operational impacts on the mainline.

2. **Incident Management:** This program is directed to monitor traffic flow and detect incidents or accidents along the roadway network. Different mechanisms and services are used to manage the congestion produced by these situations. Among these are: roving tow and service vehicles, call boxes, motorist information systems, surveillance equipment, emergency services, etc....

3. **Roadway Network Surveillance System:** A surveillance and control system dedicated to monitor traffic flow on freeways and arterials.

4. **Motorist Information System:** This system provides information to motorists regarding traffic conditions. It may consist of changeable message signs, radio station or in-vehicle

navigation information systems.

5. **Automatic Electronic Toll Facilities:** This strategy allows motorist to pass toll facilities without stopping. Some elements of this strategy include; hardware, software, surveillance equipment and enforcement.

XI. GENERAL PURPOSE LANES

1. **Roadway Widening:** Road widening results may be achieved by increasing the width of an existing lane or by adding a new lane.

2. **Additional Lanes:** Planning new arterials to relieve congestion or provide accessibility to other areas. This also includes adding lanes to an existing facility without widening by eliminating the shoulder or the median.

XII. OTHER STRATEGIES

1. **Movement of Goods:** Review existing regulations and practices of the freight industry to minimize the congestion and accidents caused by truck movements during peak periods. This includes; freight movement improvements, changes in public policy, changes in business operating practices and improvements at shipping/receiving points.

2. **Loading Zone Improvements:** Loading zone improvements to avoid traffic conflicts.

APPENDIX E

EFFECTIVENESS STRATEGY TABLE

Dade County

Metropolitan Planning Organization

MOBILITY MANAGEMENT PROCESS

MAIN MENU: EFFECTIVENESS TABLE

Item #	Strategy	Imp. % V/C Ratio	Applicability			
			Spot	Corr.	Act. Cent.	Area wide
I	**Transportation Demand Management**					
1	Trip Reduction Ordinances (TRO)	0.80		X	X	X
2	Employer Transportation Coordinator	1.00	X		X	
3	Shuttle Services	1.00	X	X	X	
4	Ridesharing	-	-	-	-	-
	a. Carpool	5.00	X		X	X
	b. Vanpool	5.00	X		X	X
	c. Buspool	1.00	X		X	
5	Marketing Information Program	0.05		X	X	X
6	Preferential Parking	NA	X	X	X	X
7	Emergency Ride Home Program	1.00	X		X	
8	Employer Subsidized Transit Use	1.00	X		X	
9	Employee Transportation Allowance	0.80	X		X	X
10	Parking Management	1.00	X	X	X	X
11	Alternative Work Hours	-	-	-	-	-
	a. Staggered Work Hours	5.00	X		X	X
	b. Flex-Time	1.00	X		X	X
	c. Compressed Work Week	1.00	X		X	X
12	Telecommuting	NA	X		X	X
13	Areawide Commute Management Assoc.	10.00		X	X	X
14	Transportation Management Associations (TMAs)	1.00			X	X
15	Tax Incentive and Subsidy Programs	5.00	X		X	X

Item #	Strategy	Imp. % V/C Ratio	Applicability			
			Spot	Corr.	Act. Cent.	Area wide
II	**Traffic Operational Improvements**					
1	Operational Signal Improvements	5.00		X	X	X
2	Equipment Replacement	5.00	X	X	X	
3	Elimination/Relocation of traffic Signals	5.00	X	X		X
4	One-way Streets	35.0		X	X	
5	Intersections Improvements	5.00	X	X		
6	Restriction on Turning Movements	10.0	X	X		
7	Enforcement and Educational Programs	NA	X	X	X	X
8	Development of Superarterial Network	15.0		X		
III	**HOV Lanes**					
1	Development of HOV Lanes	2.00		X		
2	Development of HOV Parking Facilities	1.00	X	X	X	
IV	**Public Transit Capital Improvements**					
1	Fixed Guideway Transit	10.0		X		
2	Bus Traffic Signal Preemption	0.50	X	X	X	X
3	Roadway Improvements for Transit	0.05	X	X	X	
4	Park & Ride Facilities	1.00	X	X	X	
5	Exclusive Bus Lane	NA		X	X	
6	Acquisition of Vehicles	NA		X		X
V	**Public Transit Operational Improvements**					
1	Express Bus Service	0.50		X	X	
2	Feeder Bus System	NA		X		X
3	Improvements to Bus Routes	1.00		X	X	X
4	Monitoring of Services	NA	X	X	X	X
5	Transit Fare Structure	0.25		X	X	X
6	Transit Passes	0.25		X	X	X
7	Other Transportation Modes	NA		X		X
VI	**Non-Traditional Modes**					
1	Bicycle Routes, Paths and Lanes	0.05	X	X	X	X
2	Promote Bicycle Programs	0.05	X		X	X
3	Bicycle Facilities	0.05	X		X	X
4	Integrate Bicyclists to Transit	0.05	X	X	X	X
5	Bicycle Ordinances and Codes	0.05	X	X	X	X
6	Sidewalks and Walkways Facilities	0.05	X	X	X	

Item #	Strategy	Imp. % V/C Ratio	Applicability			
			Spot	Corr.	Act. Cent.	Area wide
7	Promote Pedestrian Programs	0.05	X	X	X	X
8	Sidewalk Amenities	0.05	X	X	X	X
9	Integrate Pedestrian to Transit	0.05	X	X	X	X
VII	**Congestion Pricing**					
1	Parking Pricing	5.00	X		X	X
2	Auto Restricted Zones	10.0			X	
3	Road Pricing	10.0		X		X
VIII	**Growth Management**					
1	Change Zoning Codes	5.00		X	X	X
2	Land Use Policies	10.0		X	X	X
3	Growth Management	5.00		X	X	X
IX	**Access Management**					
1	Access Management	5.00		X		
X	**Intelligent Transportation Systems**					
1	Ramp Metering	12.0	X	X		
2	Incident Management	30.0	X	X		X
3	Roadway Network Surveillance Systems	30.0		X		X
4	Motorist Information Systems	5.00	X	X	X	X
5	Automatic Electronic Toll Facilities	NA		X		
XI	**General Purpose Lanes**					
1	Roadway Widening	5.00	X	X		
2	Additional Lanes	30.0	X	X		
XII	**Other Strategies**					
1	Movement of Goods	5.00	X	X		X
2	Improvements to Loading Zones	1.00	X	X	X	

APPENDIX F

TURNING MOVEMENT COUNTS

CORRIDOR # 1

BIRD ROAD BETWEEN SW 57 AVENUE (RED ROAD) AND SW 87 AVENUE (GALLOWAY ROAD)

TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.: PAGE: 1
N-S Street: SW 57th AVENUE / RED RD FILE: BIRD57
E-W Street: SW 40th STREET / BIRD RD
Operator : DAB/GMF Movements by: All Veh DATE: 8/22/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
4:00 PM	20	82	34	18	468	43	24	64	36	18	239	54	1100
4:15	33	90	33	19	484	42	24	71	32	29	282	43	1182
4:30	30	80	37	23	515	49	26	69	33	28	301	30	1221
4:45	42	101	30	11	533	55	25	62	33	39	237	41	1209
HR TOTAL	125	353	134	71	2000	189	99	266	134	114	1059	168	4712
TOTAL	125	353	134	71	2000	189	99	266	134	114	1059	168	4712

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 5:00 PM

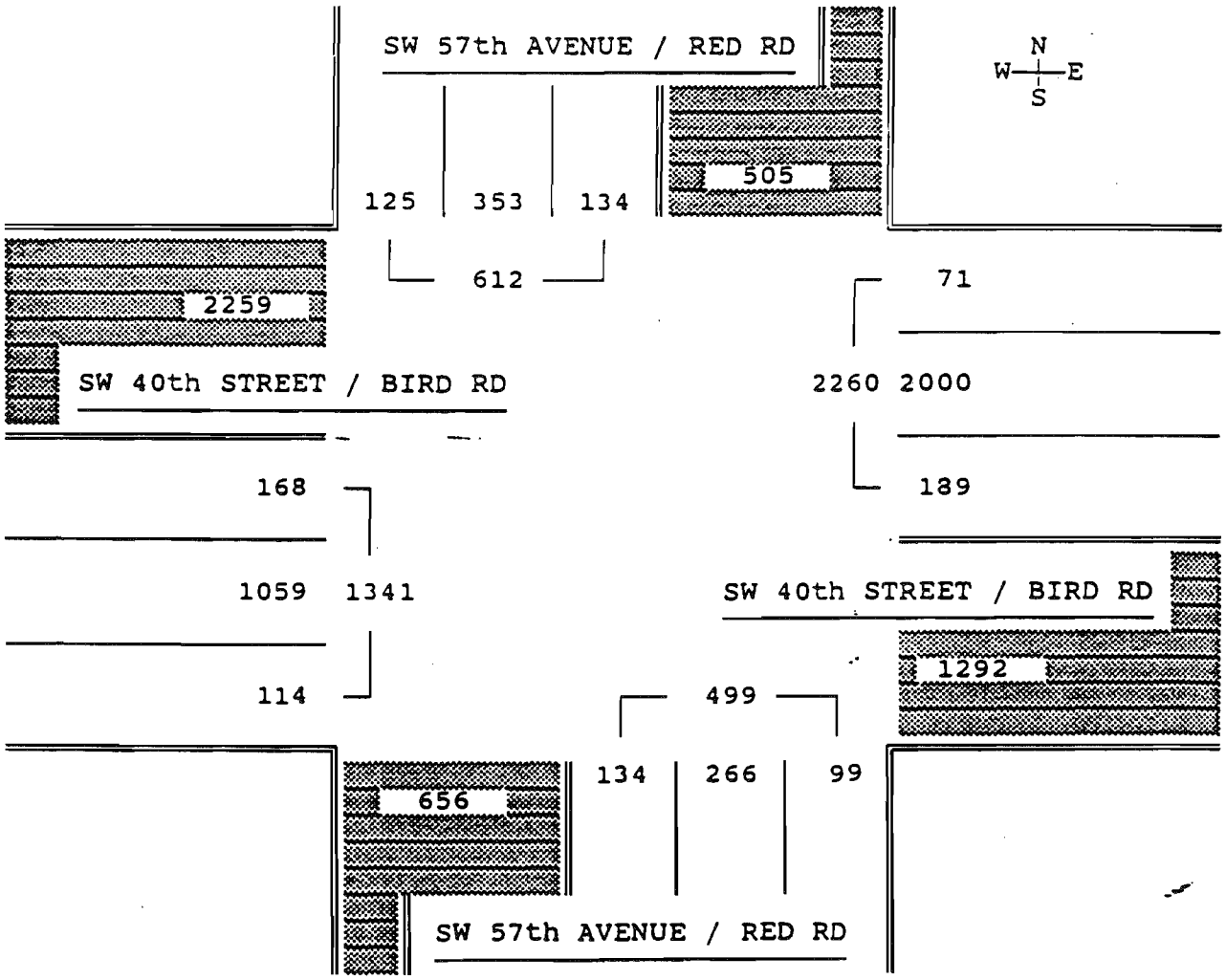
DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	4:00 PM	0.88	125	353	134	612	20	58	22
W'bnd	4:00 PM	0.94	71	2000	189	2260	3	88	8
N'bnd	4:00 PM	0.97	99	266	134	499	20	53	27
E'bnd	4:00 PM	0.93	114	1059	168	1341	9	79	13
Entire Intersection									
S'bnd	4:00 PM	0.88	125	353	134	612	20	58	22
W'bnd		0.94	71	2000	189	2260	3	88	8
N'bnd		0.97	99	266	134	499	20	53	27
E'bnd		0.93	114	1059	168	1341	9	79	13

Reference.:
N-S Street: SW 57th AVENUE / RED RD
E-W Street: SW 40th STREET / BIRD RD
Operator : DAB/GMF

Movements by: All Veh

PAGE: 1
FILE: BIRD57
DATE: 8/22/95

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SW 62nd AVENUE
E-W Street: SW 40th STREET / BIRD RD
Operator : DAB/GMF

PAGE: 1
FILE: BIRD62

Movements by: All Veh

DATE: 8/22/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
5:15	10	10	1	0	692	33	21	21	35	11	445	1	1280
5:30	6	17	3	5	702	43	25	9	27	17	418	2	1274
5:45	5	21	4	1	598	37	20	15	21	19	344	8	1093
HR TOTAL	21	48	8	6	1992	113	66	45	83	47	1207	11	3647
6:00 PM	9	12	4	4	624	45	20	13	20	11	329	7	1098
TOTAL	30	60	12	10	2616	158	86	58	103	58	1536	18	4745

PEAK PERIOD ANALYSIS FOR THE PERIOD: 5:15 PM - 6:15 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	5:15 PM	0.85	30	60	12	102	29	59	12
W'bnd	5:15 PM	0.93	10	2616	158	2784	0	94	6
N'bnd	5:15 PM	0.80	86	58	103	247	35	23	42
E'bnd	5:15 PM	0.88	58	1536	18	1612	4	95	1
Entire Intersection									
S'bnd	5:15 PM	0.85	30	60	12	102	29	59	12
W'bnd		0.93	10	2616	158	2784	0	94	6
N'bnd		0.80	86	58	103	247	35	23	42
E'bnd		0.88	58	1536	18	1612	4	95	1

TRANSPORT ANALYSIS PROFESSIONALS, INC.

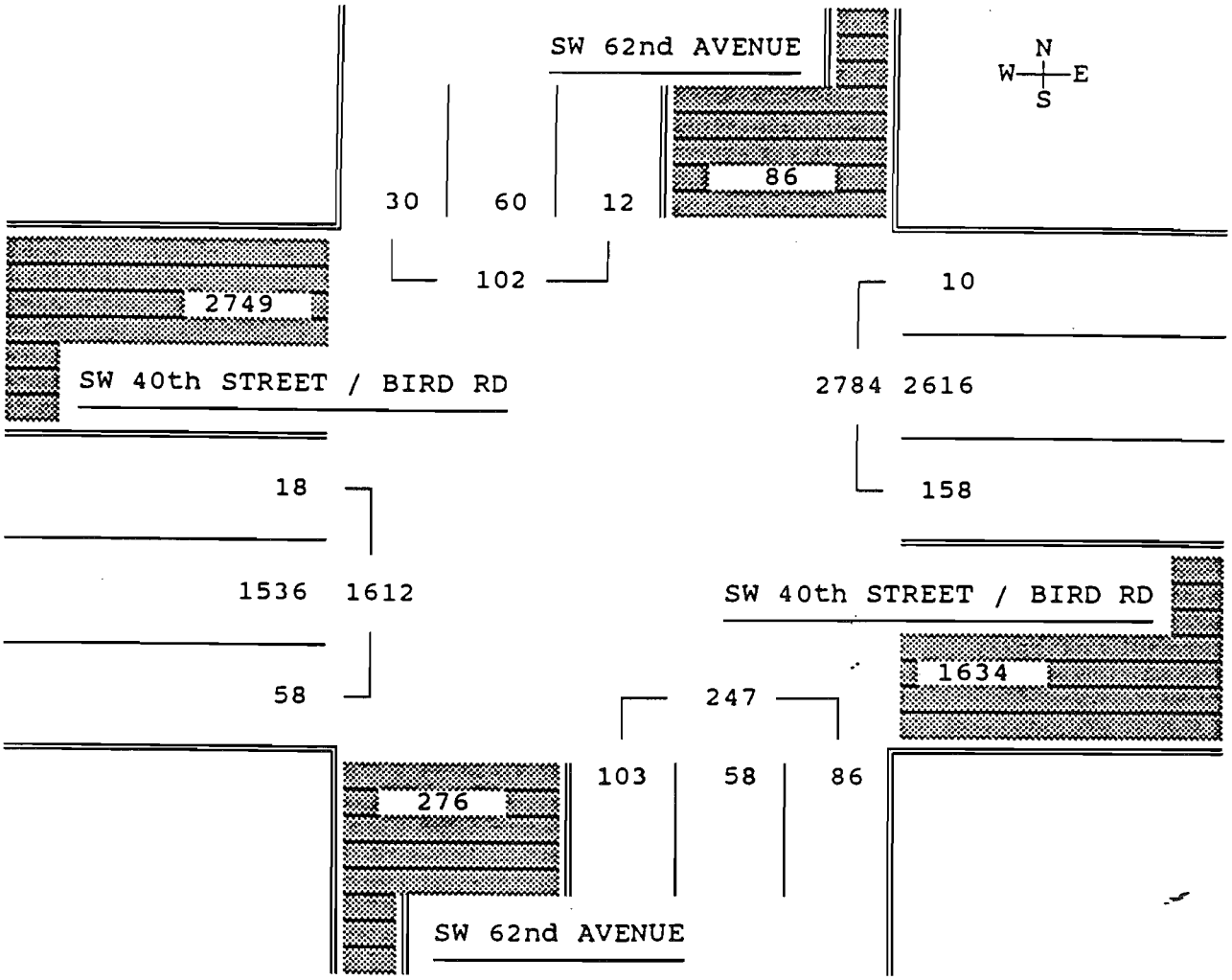
Reference.:
N-S Street: SW 62nd AVENUE
E-W Street: SW 40th STREET / BIRD RD
Operator : DAB/GMF

PAGE: 1
FILE: BIRD62

Movements by: All Veh

DATE: 8/22/95

Total Turning Volumes for the Period: 5:15 PM - 6:15 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

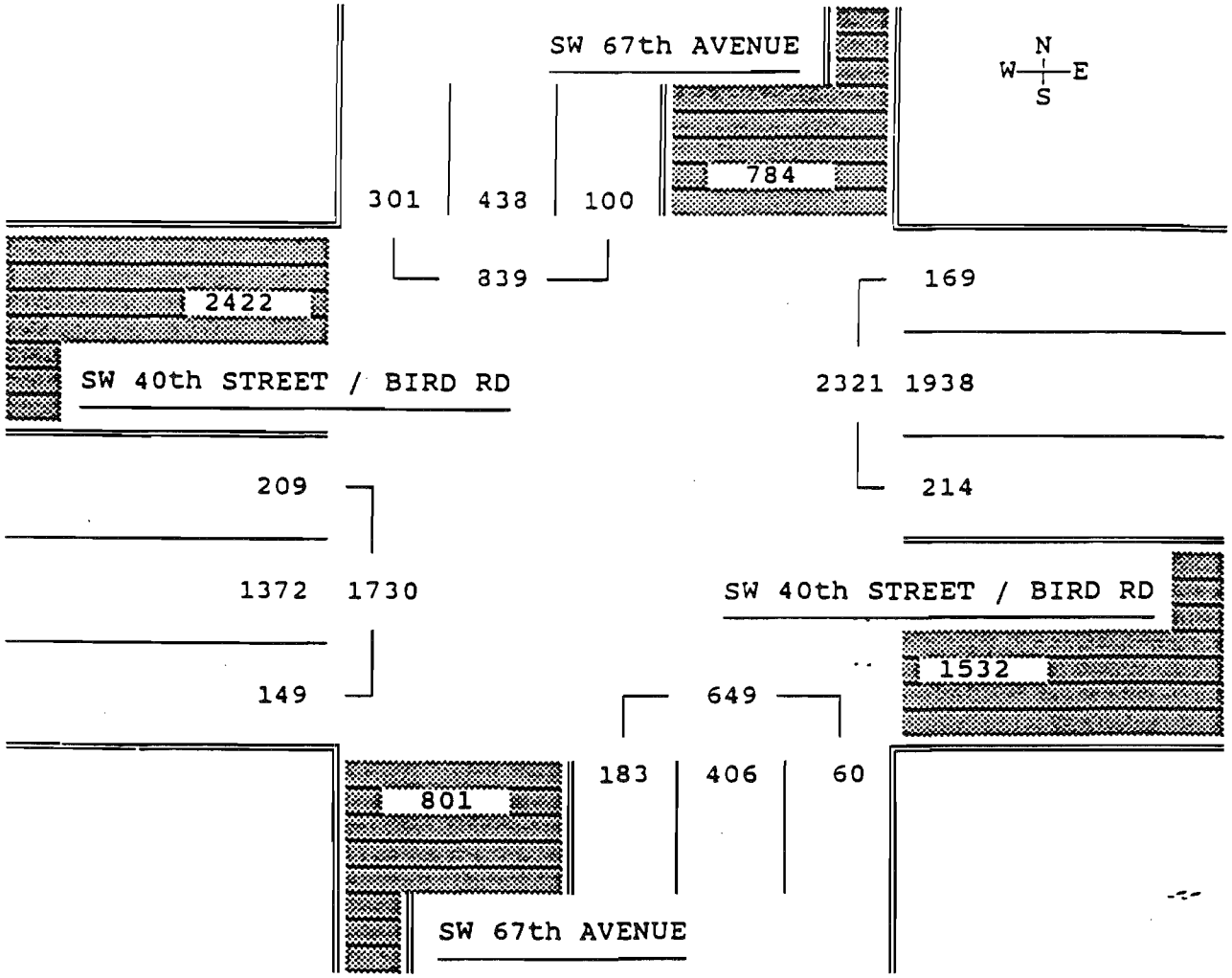
Reference.: PAGE: 1
N-S Street: SW 67th AVENUE FILE: BIRD67
E-W Street: SW 40th STREET / BIRD RD
Operator : PCC/PJM Movements by: All Veh DATE: 8/22/95

Time	S'bnd			W'bnd			N'bnd			E'bnd			Vehicle
Begin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
4:00 PM	72	90	28	41	472	47	7	100	50	33	352	53	1345
4:15	67	125	18	46	481	54	18	103	46	38	339	53	1388
4:30	87	109	27	47	485	58	23	112	46	41	373	49	1457
4:45	75	114	27	35	500	55	12	91	41	37	308	54	1349
HR TOTAL	301	438	100	169	1938	214	60	406	183	149	1372	209	5539
TOTAL	301	438	100	169	1938	214	60	406	183	149	1372	209	5539

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 5:00 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	..... VOLUMES ..... Right	Thru	Left	Total	.... PERCENTS ... Right	Thru	Left
S'bnd	4:00 PM	0.94	301	438	100	839	36	52	12
W'bnd	4:00 PM	0.98	169	1938	214	2321	7	83	9
N'bnd	4:00 PM	0.90	60	406	183	649	9	63	28
E'bnd	4:00 PM	0.93	149	1372	209	1730	9	79	12
Entire Intersection									
S'bnd	4:00 PM	0.94	301	438	100	839	36	52	12
W'bnd		0.98	169	1938	214	2321	7	83	9
N'bnd		0.90	60	406	183	649	9	63	28
E'bnd		0.93	149	1372	209	1730	9	79	12

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SW 72nd AVENUE
E-W Street: SW 40th STREET / BIRD RD
Operator : PCC/PJM

PAGE: 1
FILE: BIRD72

Movements by: All Veh

DATE: 8/22/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
5:15	45	47	30	30	599	42	31	45	57	33	395	22	1376
5:30	45	50	35	34	564	50	44	35	49	33	380	24	1343
5:45	40	43	28	45	560	44	43	48	55	36	359	18	1319
TOTAL	130	140	93	109	1723	136	118	128	161	102	1134	64	4038
6:00 PM	33	53	37	39	575	47	40	28	47	28	305	21	1253
TOTAL	163	193	130	148	2298	183	158	156	208	130	1439	85	5291

PEAK PERIOD ANALYSIS FOR THE PERIOD: 5:15 PM - 6:15 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	5:15 PM	0.93	163	193	130	486	34	40	27
W'bnd	5:15 PM	0.98	148	2298	183	2629	6	87	7
N'bnd	5:15 PM	0.89	158	156	208	522	30	30	40
E'bnd	5:15 PM	0.92	130	1439	85	1654	8	87	5
Entire Intersection									
S'bnd	5:15 PM	0.93	163	193	130	486	34	40	27
W'bnd		0.98	148	2298	183	2629	6	87	7
N'bnd		0.89	158	156	208	522	30	30	40
E'bnd		0.92	130	1439	85	1654	8	87	5

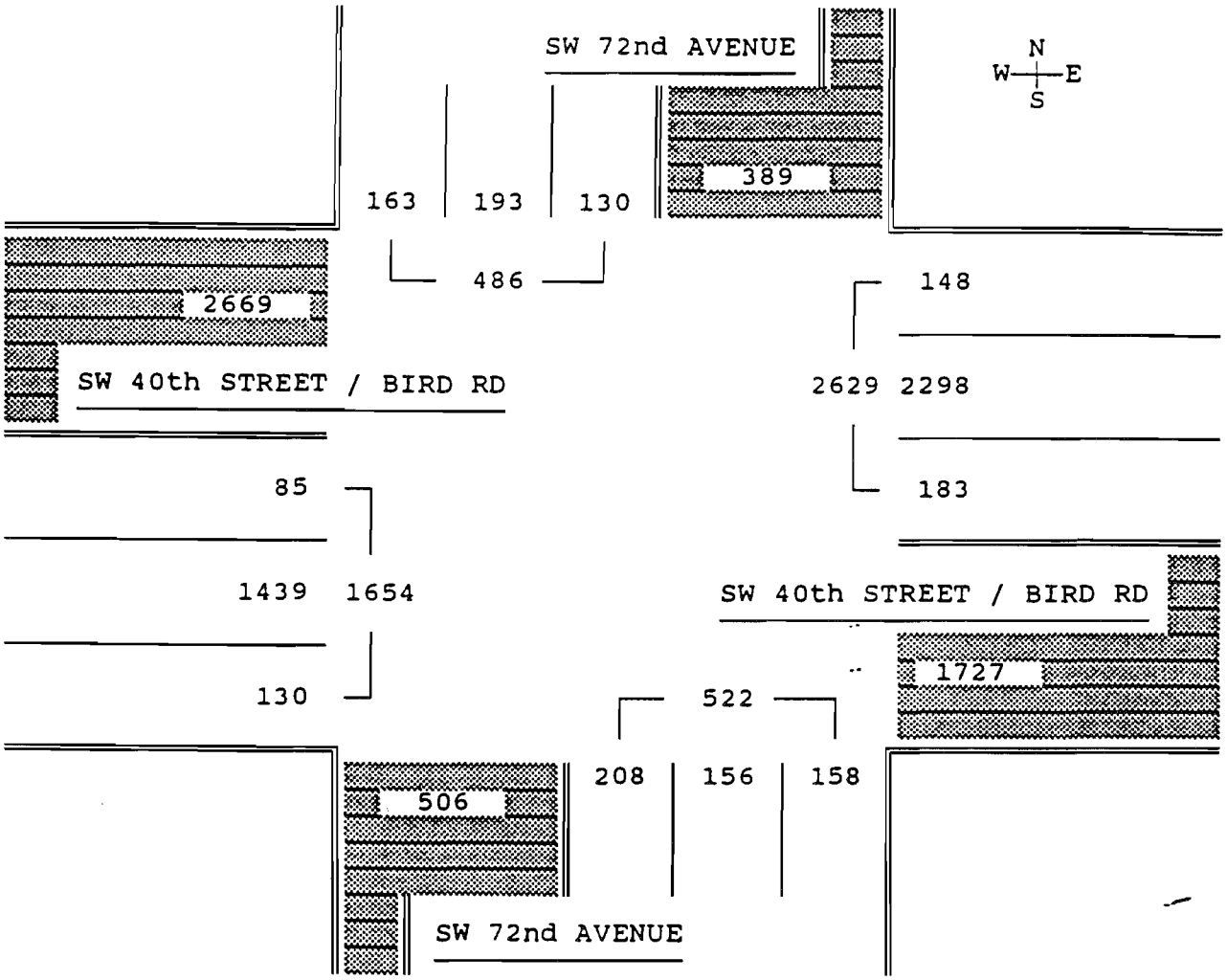
TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SW 72nd AVENUE
E-W Street: SW 40th STREET / BIRD RD
Operator : PCC/PJM

Movements by: All Veh

PAGE: 1
FILE: BIRD72
DATE: 8/22/95

Total Turning Volumes for the Period: 5:15 PM - 6:15 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SW 74th COURT
E-W Street: SW 40th STREET / BIRD RD
Operator : YPC/RPE

PAGE: 1
FILE: BIRD74

Movements by: All Veh

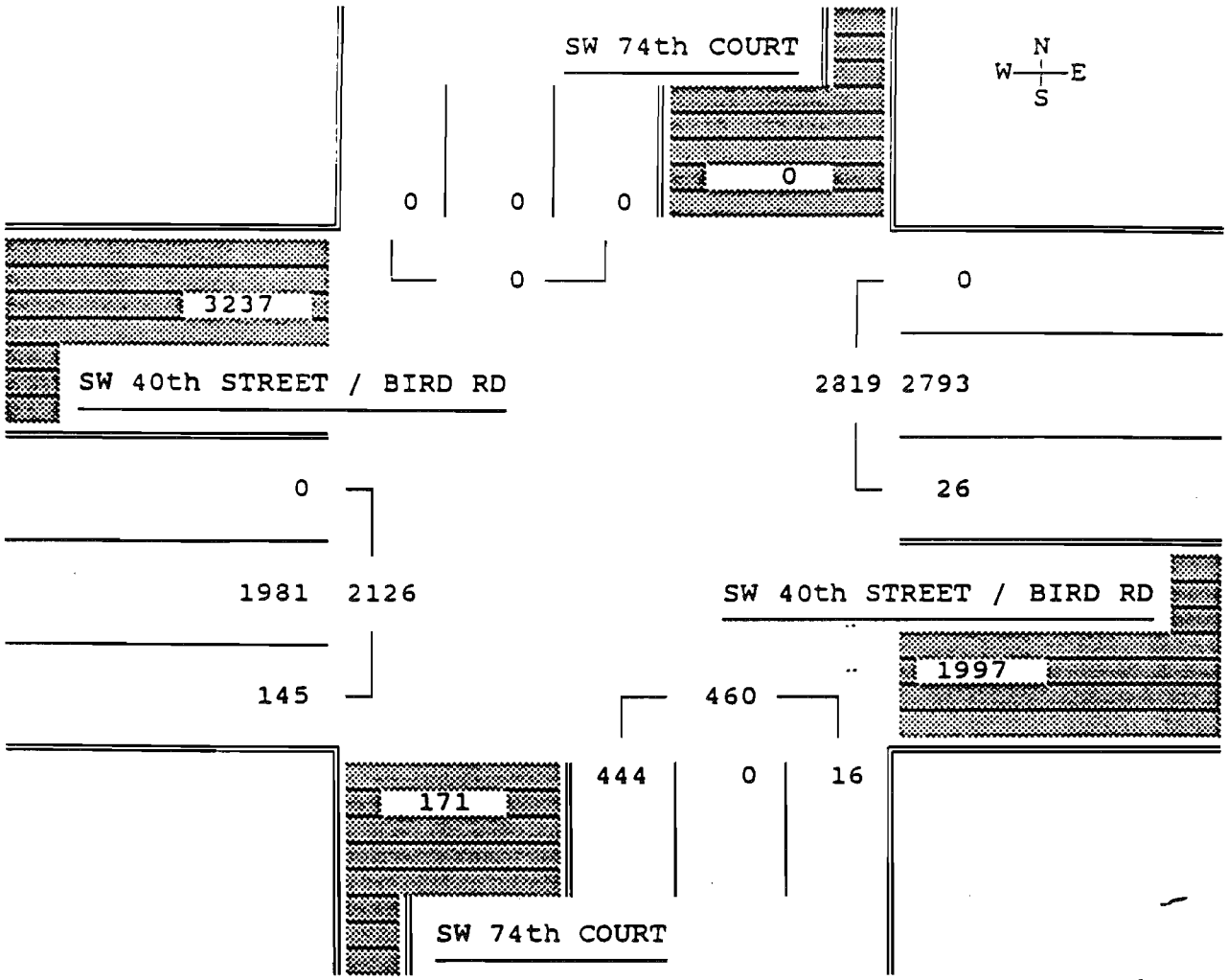
DATE: 8/22/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
4:00 PM	0	0	0	0	677	11	4	0	105	40	482	0	1319
4:15	0	0	0	0	682	7	3	0	122	34	526	0	1374
4:30	0	0	0	0	723	3	4	0	118	38	507	0	1393
4:45	0	0	0	0	711	5	5	0	99	33	466	0	1319
HR TOTAL	0	0	0	0	2793	26	16	0	444	145	1981	0	5405
TOTAL	0	0	0	0	2793	26	16	0	444	145	1981	0	5405

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 5:00 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	12:00 AM	0.00	0	0	0	0	0	0	0
W'bnd	4:00 PM	0.97	0	2793	26	2819	0	99	1
N'bnd	4:00 PM	0.92	16	0	444	460	3	0	97
E'bnd	4:00 PM	0.95	145	1981	0	2126	7	93	0
Entire Intersection									
S'bnd	4:00 PM	0.00	0	0	0	0	0	0	0
W'bnd		0.97	0	2793	26	2819	0	99	1
N'bnd		0.92	16	0	444	460	3	0	97
E'bnd		0.95	145	1981	0	2126	7	93	0

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SR 826 ENT/EXT RAMPS EAST
E-W Street: SW 40th STREET / BIRD RD
Operator : YPC/RPE

PAGE: 1
FILE: BIRD826E

Movements by: All Veh

DATE: 8/22/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
5:15	0	0	0	179	771	0	138	0	90	93	375	0	1646
5:30	0	0	0	163	780	0	132	0	107	86	360	0	1628
5:45	0	0	0	174	756	0	106	0	97	96	348	0	1577
## TOTAL	0	0	0	516	2307	0	376	0	294	275	1083	0	4851
6:00 PM	0	0	0	162	775	0	94	0	86	92	325	0	1534
TOTAL	0	0	0	678	3082	0	470	0	380	367	1408	0	6385

PEAK PERIOD ANALYSIS FOR THE PERIOD: 5:15 PM - 6:15 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	12:00 AM	0.00	0	0	0	0	0	0	0
W'bnd	5:15 PM	0.99	678	3082	0	3760	18	82	0
N'bnd	5:15 PM	0.89	470	0	380	850	55	0	45
E'bnd	5:15 PM	0.95	367	1408	0	1775	21	79	0
Entire Intersection									
S'bnd	5:15 PM	0.00	0	0	0	0	0	0	0
W'bnd		0.99	678	3082	0	3760	18	82	0
N'bnd		0.89	470	0	380	850	55	0	45
E'bnd		0.95	367	1408	0	1775	21	79	0

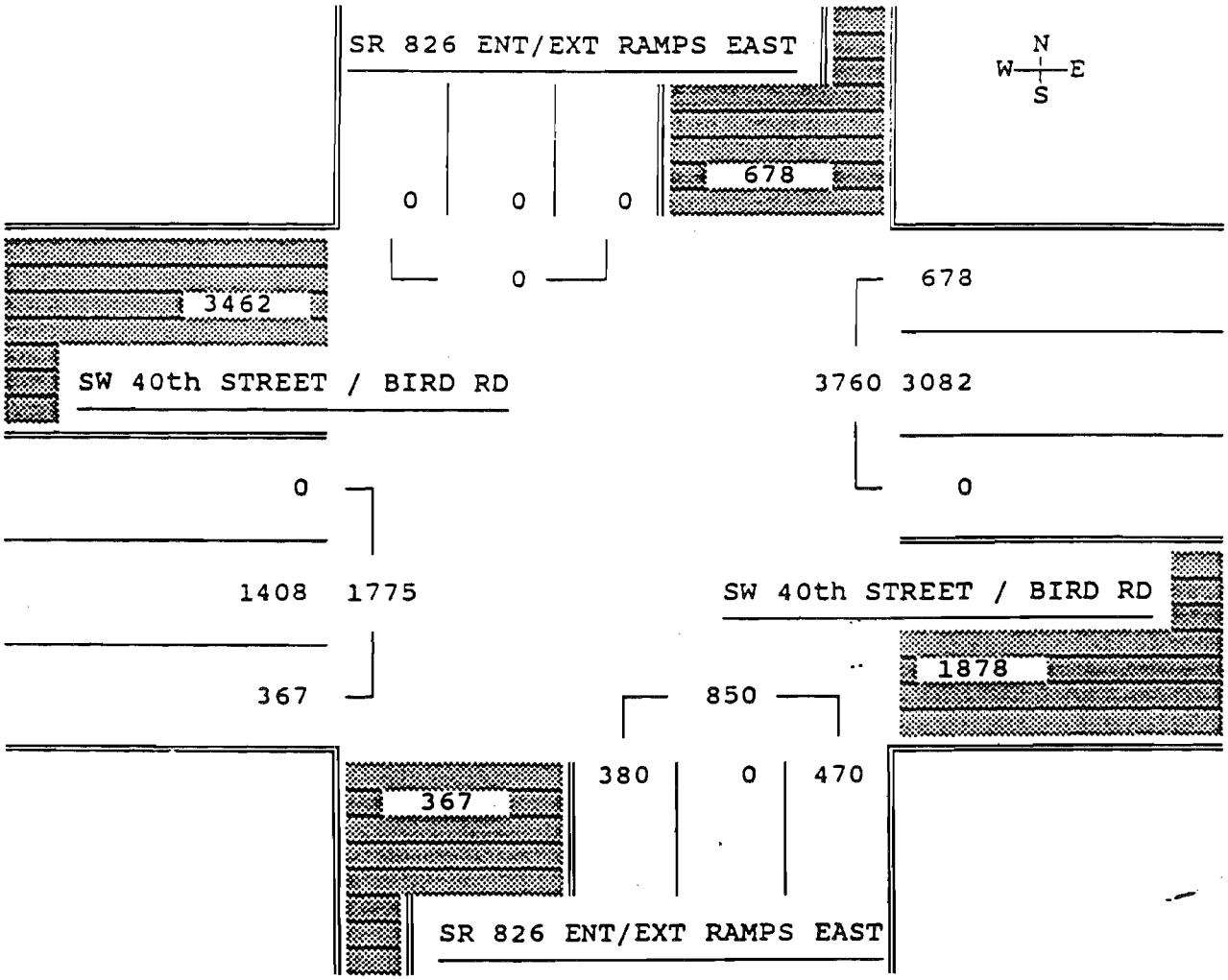
TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SR 826 ENT/EXT RAMPS EAST
E-W Street: SW 40th STREET / BIRD RD
Operator : YPC/RPE

Movements by: All Veh

PAGE: 1
FILE: BIRD826E
DATE: 8/22/95

Total Turning Volumes for the Period: 5:15 PM - 6:15 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SR 826 ENT/EXT RAMPS WEST
E-W Street: SW 40th STREET / BIRD RD
Operator : BSR/HAF

PAGE: 1
FILE: BIRD826W

Movements by: All Veh

DATE: 8/22/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
5:15	194	0	129	0	634	225	0	0	0	73	327	0	1582
5:30	163	1	134	0	630	232	0	0	0	51	304	0	1515
5:45	156	0	131	0	600	237	0	0	0	54	274	0	1452
PM TOTAL	513	1	394	0	1864	694	0	0	0	178	905	0	4549
6:00 PM	178	0	135	0	621	220	0	0	0	70	285	0	1509
TOTAL	691	1	529	0	2485	914	0	0	0	248	1190	0	6058

PEAK PERIOD ANALYSIS FOR THE PERIOD: 5:15 PM - 6:15 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	5:15 PM	0.95	691	1	529	1221	57	0	43
W'bnd	5:15 PM	0.99	0	2485	914	3399	0	73	27
N'bnd	5:15 PM	0.00	0	0	0	0	0	0	0
E'bnd	5:15 PM	0.90	248	1190	0	1438	17	83	0
Entire Intersection									
S'bnd	5:15 PM	0.95	691	1	529	1221	57	0	43
W'bnd		0.99	0	2485	914	3399	0	73	27
N'bnd		0.00	0	0	0	0	0	0	0
E'bnd		0.90	248	1190	0	1438	17	83	0

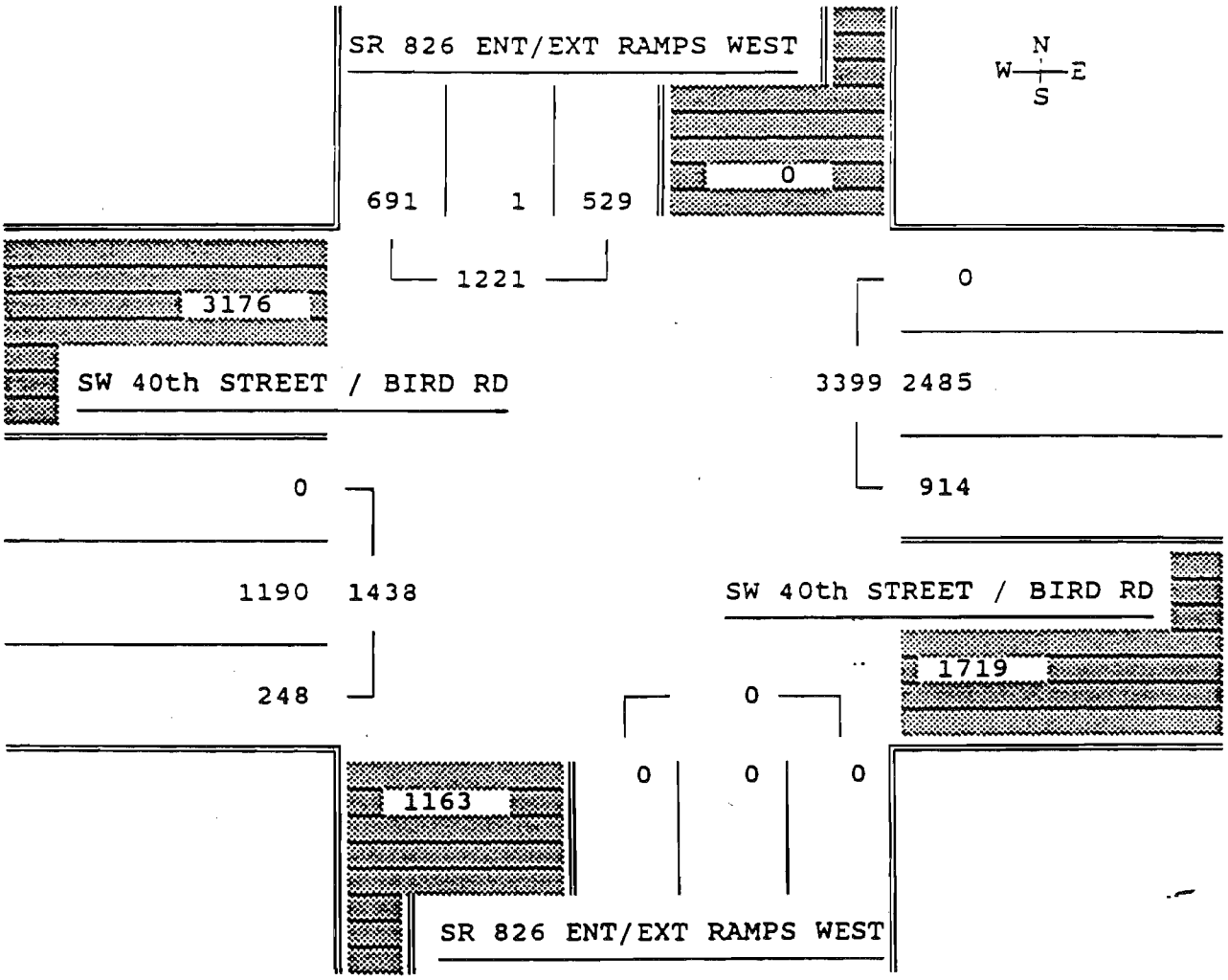
TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SR 826 ENT/EXT RAMPS WEST
E-W Street: SW 40th STREET / BIRD RD
Operator : BSR/HAF

Movements by: All Veh

PAGE: 1
FILE: BIRD826W
DATE: 8/22/95

Total Turning Volumes for the Period: 5:15 PM - 6:15 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: 7800 BLOCK / MALL ENT/EXT
E-W Street: SW 40th STREET / BIRD RD
Operator : BSR/HAF

PAGE: 1
FILE: BIRD78

Movements by: All Veh

DATE: 8/22/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
4:00 PM	43	0	66	71	562	0	0	0	0	0	394	24	1160
4:15	28	0	41	67	609	0	0	0	0	0	415	22	1182
4:30	50	0	53	64	648	0	0	0	0	0	362	29	1206
4:45	48	0	45	69	693	0	0	0	0	0	358	28	1241
HR TOTAL	169	0	205	271	2512	0	0	0	0	0	1529	103	4789
TOTAL	169	0	205	271	2512	0	0	0	0	0	1529	103	4789

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 5:00 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	4:00 PM	0.86	169	0	205	374	45	0	55
W'bnd	4:00 PM	0.91	271	2512	0	2783	10	90	0
N'bnd	4:00 PM	0.00	0	0	0	0	0	0	0
E'bnd	4:00 PM	0.93	0	1529	103	1632	0	94	6
Entire Intersection									
S'bnd	4:00 PM	0.86	169	0	205	374	45	0	55
W'bnd		0.91	271	2512	0	2783	10	90	0
N'bnd		0.00	0	0	0	0	0	0	0
E'bnd		0.93	0	1529	103	1632	0	94	6

TRANSPORT ANALYSIS PROFESSIONALS, INC.

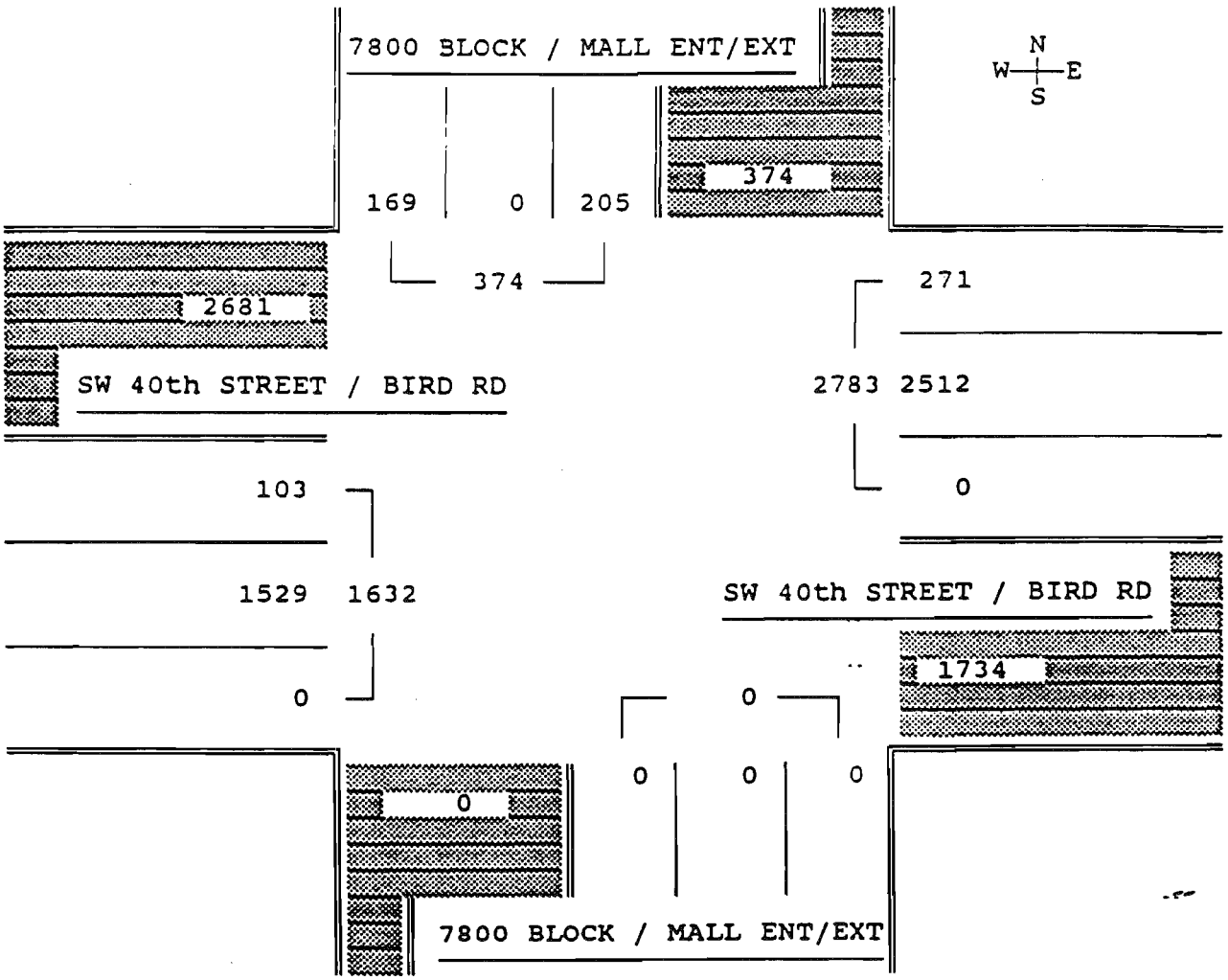
Reference.:
N-S Street: 7800 BLOCK / MALL ENT/EXT
E-W Street: SW 40th STREET / BIRD RD
Operator : BSR/HAF

PAGE: 1
FILE: BIRD78

Movements by: All Veh

DATE: 8/22/95

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SW 79th AVENUE
E-W Street: SW 40th STREET/BIRD RD
Operator : DAB/BJP

PAGE: 1
FILE: BIRD79

Movements by: All Veh

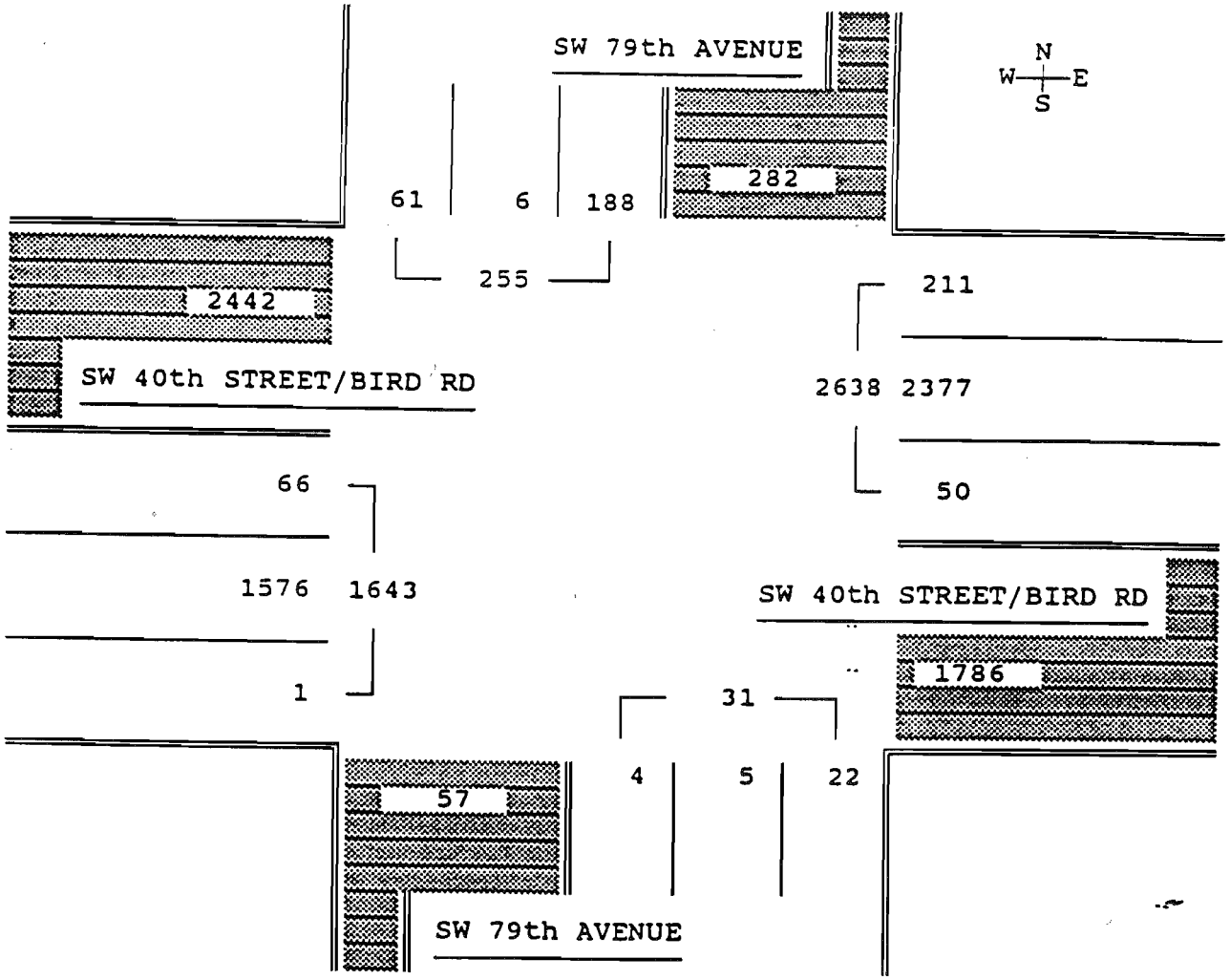
DATE: 8/30/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
4:00 PM	17	0	63	53	559	14	2	2	3	0	405	15	1133
4:15	16	3	40	55	618	12	7	2	0	0	428	14	1195
4:30	12	2	36	57	557	11	10	0	0	0	361	19	1065
4:45	16	1	49	46	643	13	3	1	1	1	382	18	1174
PK TOTAL	61	6	188	211	2377	50	22	5	4	1	1576	66	4567
TOTAL	61	6	188	211	2377	50	22	5	4	1	1576	66	4567

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 5:00 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	4:00 PM	0.80	61	6	188	255	24	2	74
W'bnd	4:00 PM	0.94	211	2377	50	2638	8	90	2
N'bnd	4:00 PM	0.77	22	5	4	31	71	16	13
E'bnd	4:00 PM	0.93	1	1576	66	1643	0	96	4
Entire Intersection									
S'bnd	4:00 PM	0.80	61	6	188	255	24	2	74
W'bnd		0.94	211	2377	50	2638	8	90	2
N'bnd		0.77	22	5	4	31	71	16	13
E'bnd		0.93	1	1576	66	1643	0	96	4

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SW 82nd AVENUE
E-W Street: SW 40th STREET/BIRD RD
Operator : DAB/BJP

FILE: BIRD82

Movements by: All Veh

DATE: 8/30/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
5:15	28	13	26	60	625	33	12	10	6	9	335	15	1172
5:30	31	14	21	75	627	50	12	7	9	8	307	15	1176
5:45	21	7	34	68	586	39	12	8	6	2	279	16	1078
HR TOTAL	80	34	81	203	1838	122	36	25	21	19	921	46	3426
6:00 PM	23	13	19	48	613	38	7	10	5	11	298	19	1104
TOTAL	103	47	100	251	2451	160	43	35	26	30	1219	65	4530

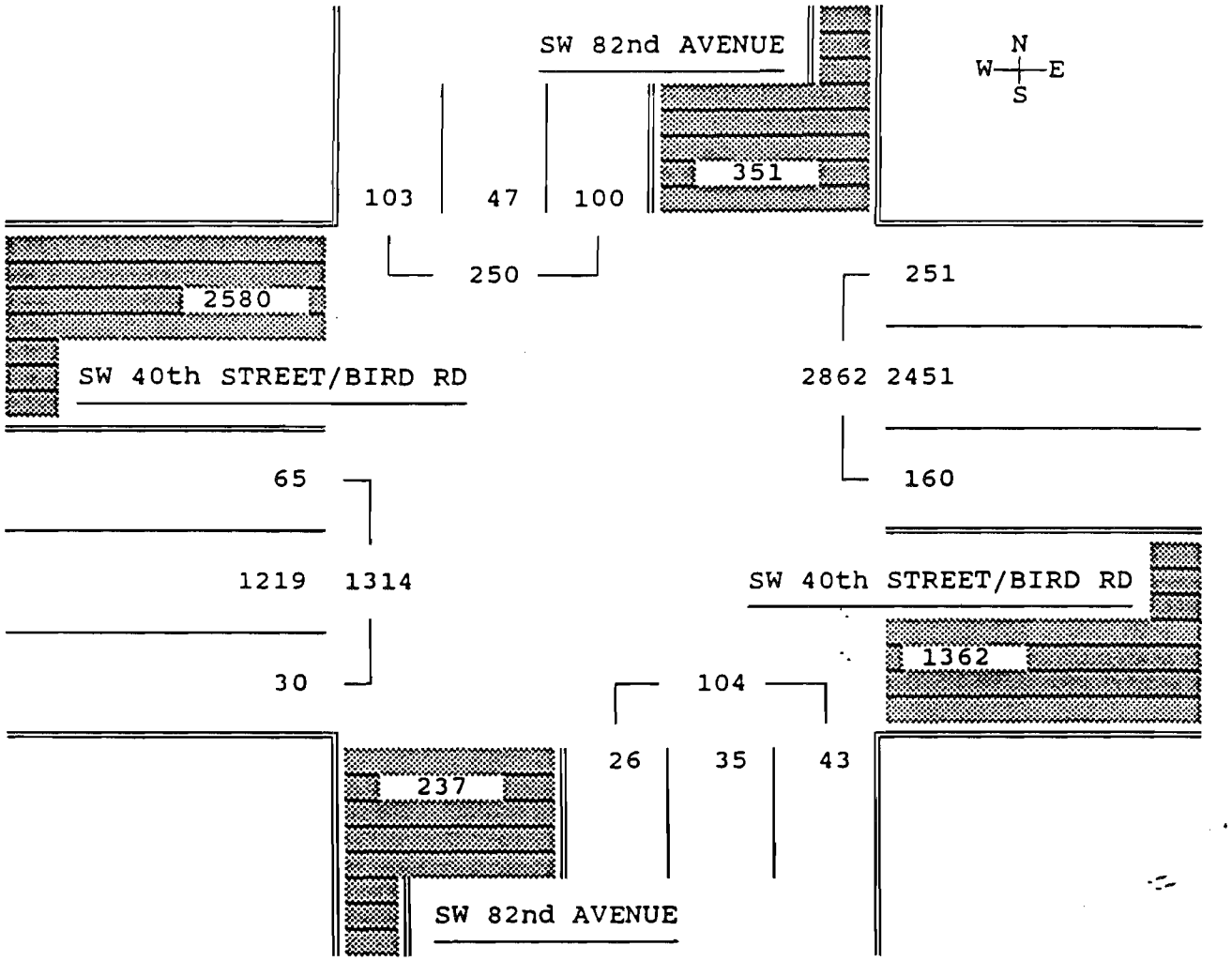
PEAK PERIOD ANALYSIS FOR THE PERIOD: 5:15 PM - 6:15 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	5:15 PM	0.93	103	47	100	250	41	19	40
W'bnd	5:15 PM	0.95	251	2451	160	2862	9	86	6
N'bnd	5:15 PM	0.93	43	35	26	104	41	34	25
E'bnd	5:15 PM	0.92	30	1219	65	1314	2	93	5
Entire Intersection									
S'bnd	5:15 PM	0.93	103	47	100	250	41	19	40
W'bnd		0.95	251	2451	160	2862	9	86	6
N'bnd		0.93	43	35	26	104	41	34	25
E'bnd		0.92	30	1219	65	1314	2	93	5

TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.: PAGE: 1
N-S Street: SW 82nd AVENUE FILE: BIRD82
E-W Street: SW 40th STREET/BIRD RD
Operator : DAB/BJP Movements by: All Veh DATE: 8/30/95

Total Turning Volumes for the Period: 5:15 PM - 6:15 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

eference.: PAGE: 1
N-S Street: SW 84th AVENUE FILE: BIRD84
E-W Street: SW 40th STREET / BIRD RD
Operator : DAB/BJP Movements by: All Veh DATE: 8/29/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
4:00 PM	16	24	19	36	422	34	17	24	11	13	325	25	966
4:15	15	18	19	28	508	39	13	13	8	12	402	24	1099
4:30	17	18	20	27	515	47	16	18	8	16	350	36	1088
4:45	5	14	13	37	489	39	20	20	10	8	334	30	1019
HR TOTAL	53	74	71	128	1934	159	66	75	37	49	1411	115	4172
TOTAL	53	74	71	128	1934	159	66	75	37	49	1411	115	4172

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 5:00 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	4:00 PM	0.84	53	74	71	198	27	37	36
W'bnd	4:00 PM	0.94	128	1934	159	2221	6	87	7
N'bnd	4:00 PM	0.86	66	75	37	178	37	42	21
E'bnd	4:00 PM	0.90	49	1411	115	1575	3	90	7
Entire Intersection									
S'bnd	4:00 PM	0.84	53	74	71	198	27	37	36
W'bnd		0.94	128	1934	159	2221	6	87	7
N'bnd		0.86	66	75	37	178	37	42	21
E'bnd		0.90	49	1411	115	1575	3	90	7

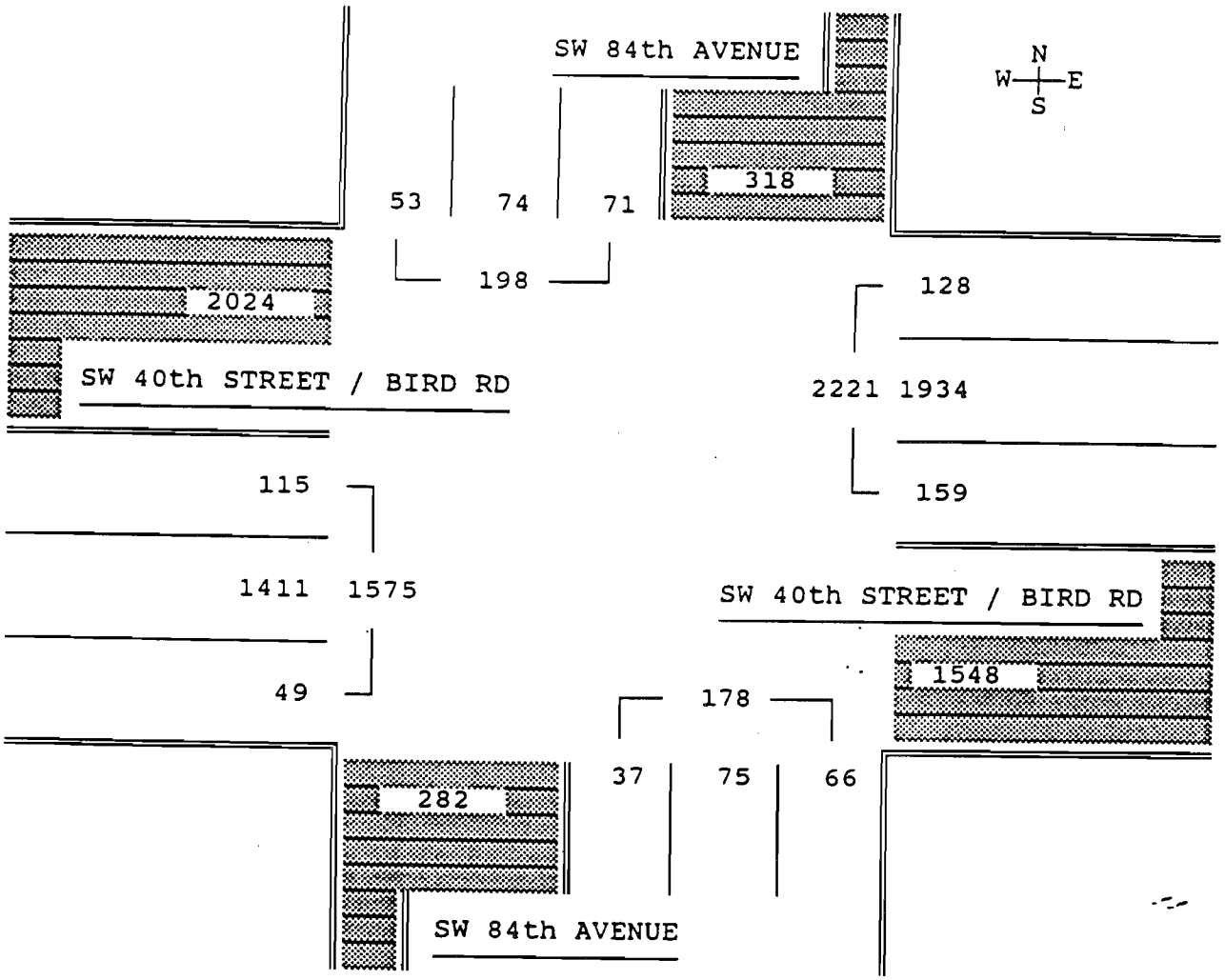
TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.:
N-S Street: SW 84th AVENUE
E-W Street: SW 40th STREET / BIRD RD
Operator : DAB/BJP

Movements by: All Veh

PAGE: 1
FILE: BIRD84
DATE: 8/29/95

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.: PAGE: 1
N-S Street: SW 87th Avenue FILE: BIRD87
E-W Street: SW 40th Street / Bird RD
Operator : DAB/BJP Movements by: All Veh DATE: 8/29/95

Time	S'bnd			W'bnd			N'bnd			E'bnd			Vehicle
Begin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
5:15	17	193	60	26	423	58	27	184	34	22	208	23	1275
5:30	33	178	53	42	396	64	26	185	32	33	215	17	1274
5:45	37	177	64	32	385	50	19	177	29	26	193	17	1206
HR TOTAL	87	548	177	100	1204	172	72	546	95	81	616	57	3755
6:00 PM	33	174	62	32	387	51	27	185	36	24	204	20	1235
TOTAL	120	722	239	132	1591	223	99	731	131	105	820	77	4990

PEAK PERIOD ANALYSIS FOR THE PERIOD: 5:15 PM - 6:15 PM

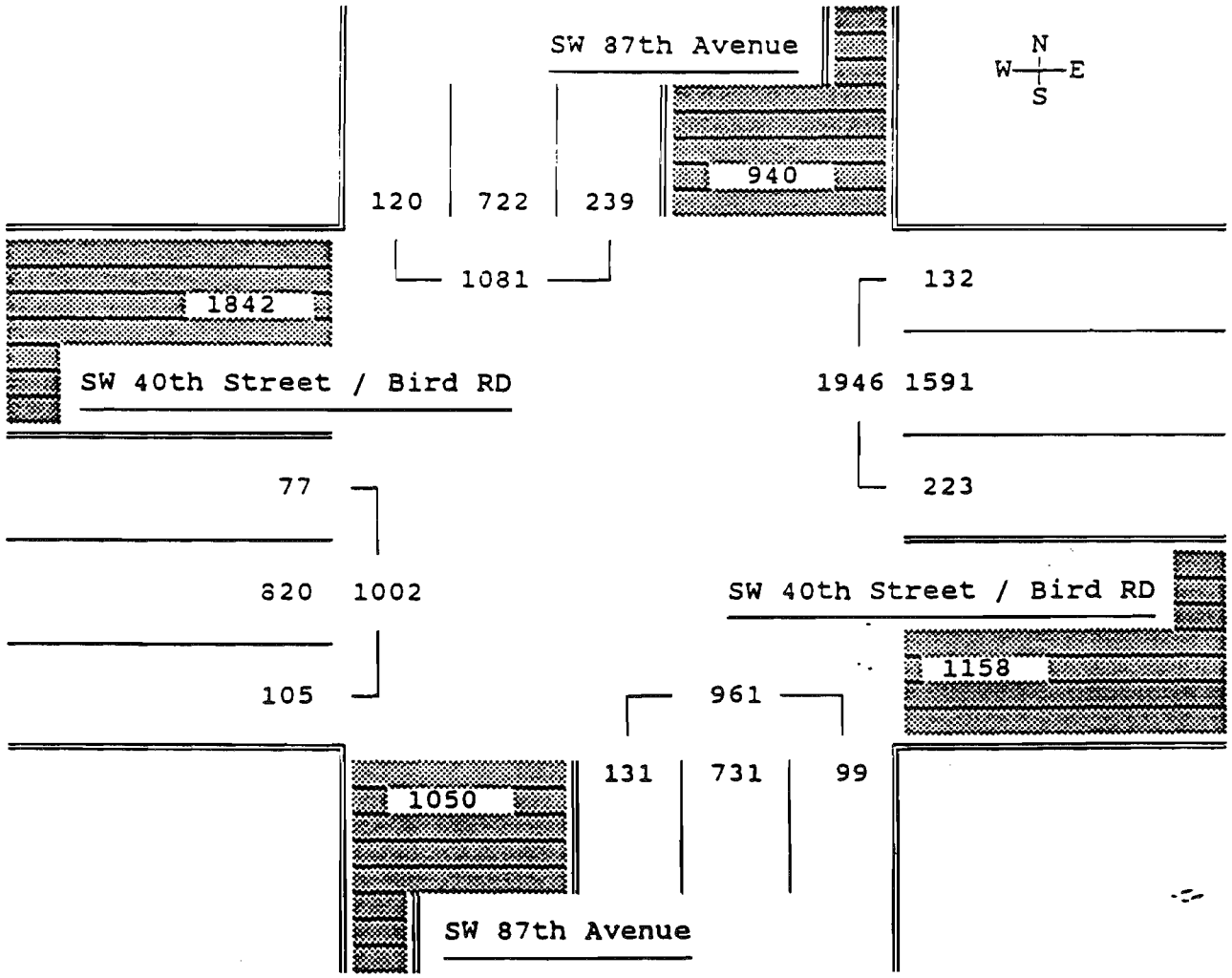
DIRECTION	START PEAK HOUR	PEAK HR FACTOR	..... VOLUMES ..... Right	Thru	Left	Total	.... PERCENTS ... Right	Thru	Left
S'bnd	5:15 PM	0.97	120	722	239	1081	11	67	22
W'bnd	5:15 PM	0.96	132	1591	223	1946	7	82	11
N'bnd	5:15 PM	0.97	99	731	131	961	10	76	14
E'bnd	5:15 PM	0.95	105	820	77	1002	10	82	8
Entire Intersection									
S'bnd	5:15 PM	0.97	120	722	239	1081	11	67	22
W'bnd		0.96	132	1591	223	1946	7	82	11
N'bnd		0.97	99	731	131	961	10	76	14
E'bnd		0.95	105	820	77	1002	10	82	8

Reference.:
N-S Street: SW 87th Avenue
E-W Street: SW 40th Street / Bird RD
Operator : DAB/BJP

Movements by: All Veh

PAGE: 1
FILE: BIRD87
DATE: 8/29/95

Total Turning Volumes for the Period: 5:15 PM - 6:15 PM



CORRIDOR # 2

SW 97 AVENUE BETWEEN SW 184 STREET (EUREKA DRIVE) AND US 1

TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.: PAGE: 1
N-S Street: SW 97th AVENUE/FRANJO RD FILE: 97US1
E-W Street: US-1/SOUTH DIXIE HIGHWAY
Operator : PJM Movements by: All Veh DATE: 8/29/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
4:00 PM	0	16	0	3	2	2	50	4	1	1	355	17	451
4:15	1	16	0	2	0	5	56	2	1	1	394	25	503
4:30	0	17	0	2	0	9	55	6	2	1	391	16	499
4:45	0	20	1	6	0	4	51	2	0	1	356	16	457
HR TOTAL	1	69	1	13	2	20	212	14	4	4	1496	74	1910
TOTAL	1	69	1	13	2	20	212	14	4	4	1496	74	1910

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 5:00 PM

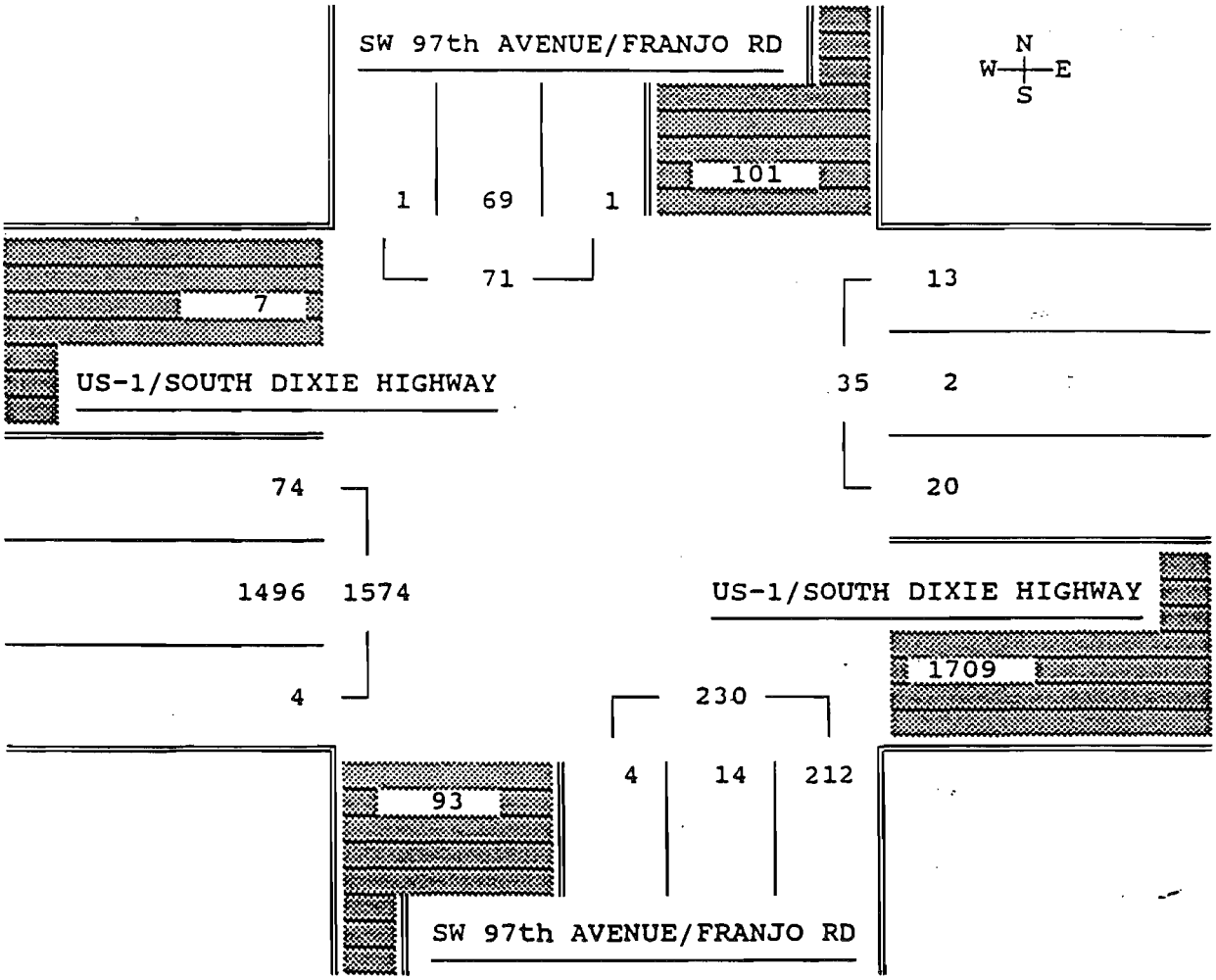
DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	4:00 PM	0.85	1	69	1	71	1	97	1
W'bnd	4:00 PM	0.80	13	2	20	35	37	6	57
N'bnd	4:00 PM	0.91	212	14	4	230	92	6	2
E'bnd	4:00 PM	0.94	4	1496	74	1574	0	95	5
Entire Intersection									
S'bnd	4:00 PM	0.85	1	69	1	71	1	97	1
W'bnd		0.80	13	2	20	35	37	6	57
N'bnd		0.91	212	14	4	230	92	6	2
E'bnd		0.94	4	1496	74	1574	0	95	5

Reference.:
N-S Street: SW 97th AVENUE/FRANJO RD
E-W Street: US-1/SOUTH DIXIE HIGHWAY
Operator : PJM

Movements by: All Veh

PAGE: 1
FILE: 97US1
DATE: 8/29/95

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.: 00097184
N-S Street: SW 97th AVENUE/FRANJO RD
E-W Street: SW 184th STREET/EUREKA DR
Operator : PMJ

PAGE: 1
FILE: 97EUREKA

Movements by: All Veh

DATE: 8/29/95

Time Begin	S'bnd RT	S'bnd THRU	S'bnd LT	W'bnd RT	W'bnd THRU	W'bnd LT	N'bnd RT	N'bnd THRU	N'bnd LT	E'bnd RT	E'bnd THRU	E'bnd LT	Vehicle Total
5:15	12	57	10	8	92	30	18	41	22	43	112	15	460
5:30	14	64	14	10	95	25	8	53	32	53	101	9	478
5:45	10	50	12	7	96	22	16	53	48	63	112	8	497
HR TOTAL	36	171	36	25	283	77	42	147	102	159	325	32	1435
6:00 PM	13	73	9	4	80	16	15	36	35	46	80	6	413
TOTAL	49	244	45	29	363	93	57	183	137	205	405	38	1848

PEAK PERIOD ANALYSIS FOR THE PERIOD: 5:15 PM - 6:15 PM

DIRECTION	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
S'bnd	5:15 PM	0.89	49	244	45	338	14	72	13
W'bnd	5:15 PM	0.93	29	363	93	485	6	75	19
N'bnd	5:15 PM	0.81	57	183	137	377	15	49	36
E'bnd	5:15 PM	0.89	205	405	38	648	32	62	6
Entire Intersection									
S'bnd	5:15 PM	0.89	49	244	45	338	14	72	13
W'bnd		0.93	29	363	93	485	6	75	19
N'bnd		0.81	57	183	137	377	15	49	36
E'bnd		0.89	205	405	38	648	32	62	6

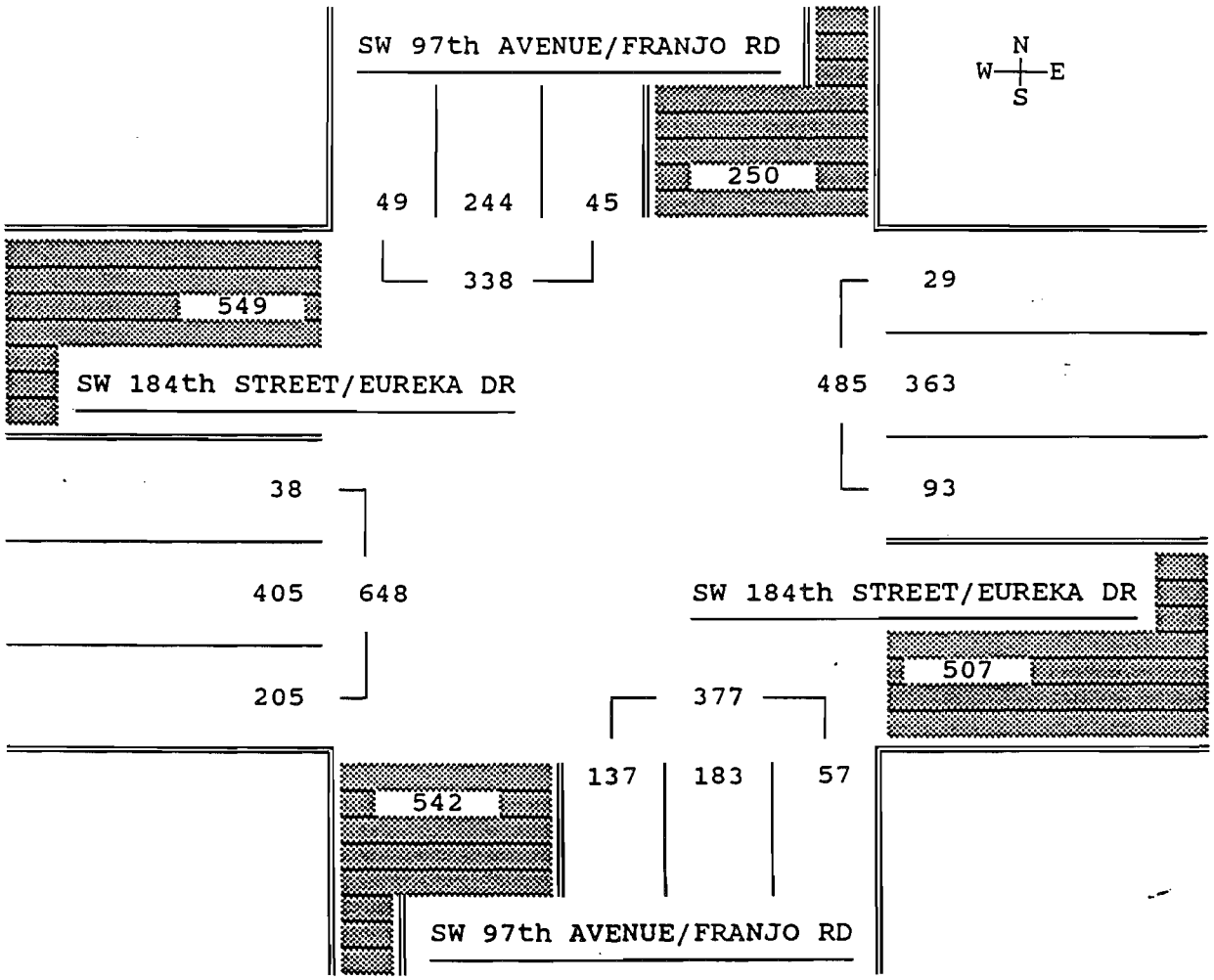
TRANSPORT ANALYSIS PROFESSIONALS, INC.

Reference.: 00097184
N-S Street: SW 97th AVENUE/FRANJO RD
E-W Street: SW 184th STREET/EUREKA DR
Operator : PMJ

Movements by: All Veh

PAGE: 1
FILE: 97EUREKA
DATE: 8/29/95

Total Turning Volumes for the Period: 5:15 PM - 6:15 PM



APPENDIX G

WORKSHEETS

CORRIDOR # 1

BIRD ROAD BETWEEN SW 57 AVENUE (RED ROAD) AND SW 87 AVENUE (GALLOWAY ROAD)

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-02-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 57 Ave (Red Rd)
Analyst: DPA File Name: BIRDREDE.HC9
Area Type: Other 10-2-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	<	1	1	1	1	1	1
Volumes	168	1059	114	189	2000	71	134	266	99	134	353	125
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vols			60			10			60			60
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	*	*			NB Left	*	*		
Thru		*			Thru		*		
Right		*			Right		*		
Peds					Peds				
WB Left	*	*			SB Left	*	*		
Thru		*			Thru		*		
Right		*			Right		*		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	5.0A	86.0P			Green	5.0A	18.0A		
Yellow/AR	3.0	5.0			Yellow/AR	3.0	5.0		

Cycle Length: 130 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	139	1770	1.273	0.108	*	*	*	*
	T	2536	3725	0.462	0.681	7.4	B		
	R	1078	1583	0.053	0.681	5.2	B		
WB	L	206	1770	0.966	0.108	52.3	E	19.9	C
	TR	2509	3686	0.907	0.681	17.1	C		
NB	L	132	1770	1.068	0.104	*	*	*	*
	T	294	1863	0.953	0.158	70.4	F		
	R	248	1574	0.165	0.158	36.0	D		
SB	L	132	1770	1.068	0.104	*	*	*	*
	T	294	1863	1.266	0.158	*	*		
	R	248	1574	0.278	0.158	36.8	D		

Intersection Delay = * (sec/veh) Intersection LOS = *

(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 62 Ave
Analyst: DPA File Name: BIRD62E.HC9
Area Type: Other 10-2-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	<	1	3	<	1	1	<	1	1	<
Volumes	18	1536	58	158	2616	10	103	58	86	12	60	30
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			10			10			10			10
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		*			NB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
WB Left	*	*			SB Left	*			
Thru	*	*			Thru	*			
Right	*	*			Right	*			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	7.0A	85.0P			Green	25.0A			
Yellow/AR	3.0	5.0			Yellow/AR	5.0			

Cycle Length: 130 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	102	151	0.186	0.677	6.0	B	8.0	B
	TR	3730	5541	0.492	0.673	8.0	B		
WB	L	228	1770	0.728	0.138	16.0	C	7.7	B
	TR	4174	5566	0.726	0.750	7.2	B		
NB	L	262	1240	0.412	0.212	34.3	D	34.0	D
	TR	360	1704	0.391	0.212	33.9	D		
SB	L	193	913	0.067	0.212	31.2	D	32.1	D
	TR	379	1793	0.221	0.212	32.3	D		

Intersection Delay = 9.4 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 5.0 sec Critical v/c(x) = 0.657

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-02-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) Ludlam Rd(SW 67 Ave)
Analyst: DPA File Name: BIRD67E.HC9
Area Type: Other 10-2-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	<	1	3	<	1	2	<	1	2	<
Volumes	209	1372	149	214	1938	169	183	406	60	100	438	301
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			10			10			10			10
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		*			NB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
WB Left	*	*			SB Left	*			
Thru	*	*			Thru	*			
Right	*	*			Right	*			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	7.0A	85.0P			Green	25.0A			
Yellow/AR	3.0	5.0			Yellow/AR	5.0			

Cycle Length: 130 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	129	190	1.711	0.677	*	*	*	*
	TR	3696	5491	0.473	0.673	7.8	B		
WB	L	231	1770	0.974	0.138	55.7	E	9.9	B
	TR	4124	5499	0.589	0.750	5.7	B		
NB	L	57	271	3.367	0.212	*	*	*	*
	TR	775	3664	0.649	0.212	37.0	D		
SB	L	63	300	1.655	0.212	*	*	*	*
	TR	741	3502	1.087	0.212	*	*		

Intersection Delay = * (sec/veh) Intersection LOS = *

(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 72 Ave
Analyst: DPA File Name: BIRD72E.HC9
Area Type: Other 10-2-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	<	1	3	<	1	1	1	1	1	1
Volumes	85	1439	130	183	2298	148	208	156	158	130	193	163
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vols			10			10			60			30
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left	*	*		
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds						Peds				
WB	Left	*	*			SB	Left	*	*		
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0A	74.0P			Green		11.0A	24.0A		
Yellow/AR		3.0	4.0			Yellow/AR		3.0	4.0		

Cycle Length: 130 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	167	1770	0.533	0.138	21.8	C	13.5	B
	TR	3194	5499	0.565	0.581	13.1	B		
WB	L	197	1770	0.980	0.138	64.4	F	22.9	C
	TR	3204	5516	0.880	0.581	20.1	C		
NB	L	272	1770	0.805	0.196	39.8	D	37.2	D
	T	365	1863	0.449	0.196	35.6	D		
	R	311	1583	0.332	0.196	34.4	D		
SB	L	307	1770	0.446	0.196	27.0	D	33.9	D
	T	365	1863	0.556	0.196	37.2	D		
	R	311	1583	0.451	0.196	35.7	D		

Intersection Delay = 22.0 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 4.5 sec Critical v/c(x) = 0.867

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 74 Ct
Analyst: DPA File Name: BIRD74CT.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		3	<	1	3		1	>	<			
Volumes		1981	145	26	2793		444		16			
Lane Width		12.0		12.0	12.0		12.0	12.0				
RTOR Vols			10			10			10			
Lost Time		2.00	2.00	2.00	2.00		2.00		2.00			

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	*			
	Thru		*				Thru				
	Right		*				Right	*			
	Peds						Peds				
WB	Left	*	*			SB	Left				
	Thru	*	*				Thru				
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		5.0A	91.0P			Green		16.0A			
Yellow/AR		4.0	6.0			Yellow/AR		8.0			

Cycle Length: 130 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	TR	4010	5516	0.611	0.727	6.8	B	6.8	B
WB	L	213	1770	0.127	0.123	4.9	A	5.3	B
	T	4431	5566	0.730	0.796	5.3	B		
NB	L	260	1572	0.808	0.165	51.2	E	51.9	E
	LR	313	1894	0.840	0.165	52.3	E		

Intersection Delay = 9.5 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 5.0 sec Critical v/c(x) = 0.749

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SR 826 East Ramp
Analyst: DPA File Name: BIRDPEE.HC9
Area Type: Other 10-2-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		3	1		3	1	2		1			
Volumes		1408	367		3082	678	380		470			
Lane Width		12.0	12.0		12.0	12.0	12.0		12.0			
RTOR Vols			60			60			60			
Lost Time		2.00	2.00		2.00	2.00	2.00		2.00			

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	*			
	Thru	*					Thru				
	Right	*					Right	*			
	Peds						Peds				
WB	Left					SB	Left				
	Thru	*					Thru				
	Right	*					Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		%0.0P				Green		22.0A			
Yellow/AR		4.0				Yellow/AR		4.0			

Cycle Length: 130 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	T	4363	5588	0.374	0.781	3.4	A	3.3	A
	R	1236	1583	0.261	0.781	3.0	A		
WB	T	4363	5588	0.818	0.781	7.5	B	7.0	B
	R	1236	1583	0.527	0.781	4.4	A		
NB	L	640	3539	0.644	0.181	39.1	D	*	*
	R	286	1583	1.510	0.181	*	*		

Intersection Delay = * (sec/veh) Intersection LOS = *

(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SR 826 West Ramp
Analyst: DPA File Name: BIRDPWE.HC9
Area Type: Other 10-2-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		3	1	1	3					1	> 1	1
Volumes		1190	248	914	2485					529	1	691
Lane Width		12.0	12.0	12.0	12.0					12.0	12.0	12.0
RTOR Vols			60			10						60
Lost Time		2.00	2.00	2.00	2.00					2.00	2.00	2.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left				
	Thru		*				Thru				
	Right		*				Right				
	Peds						Peds				
WB	Left	*	*			SB	Left	*			
	Thru	*	*				Thru	*			
	Right						Right	*			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		55.0A	36.0P			Green		28.0A			
Yellow/AR		3.0	4.0			Yellow/AR		4.0			

Cycle Length: 130 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	T	1612	5588	0.855	0.288	36.6	D	35.6	D
	R	457	1583	0.434	0.288	29.0	D		
WB	L	820	1770	1.173	0.877	*	*	*	*
	T	4089	5566	0.704	0.735	7.6	B		
SB	L	402	1770	0.707	0.227	39.0	D	*	*
	LT	403	1774	0.681	0.227	38.1	D		
	R	359	1583	1.848	0.227	*	*		

Intersection Delay = * (sec/veh) Intersection LOS = *

(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-12-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) 7800 Block
Analyst: DPA File Name: BIRD78E.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3			3 <					2		1
Volumes	103	1529			2512	271				205		169
Lane Width	12.0	12.0			12.0					12.0		12.0
RTOR Vols			60			10						60
Lost Time	2.00	2.00			2.00	2.00				2.00		2.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	*	*			NB Left				
Thru	*	*			Thru				
Right					Right				
Peds					Peds				
WB Left					SB Left	*			
Thru		*			Thru				
Right		*			Right	*			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	8.0A	90.0P			Green	17.0A			
Yellow/AR	4.0	5.0			Yellow/AR	6.0			

Cycle Length: 130 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	206	1770	0.524	0.169	22.1	C	3.9	A
	T	4474	5566	0.396	0.804	2.8	A		
WB	TR	3907	5491	0.822	0.712	11.0	B	11.0	B
SB	L	558	3539	0.398	0.158	37.7	D	38.0	D
	R	250	1583	0.461	0.158	38.8	D		

Intersection Delay = 10.2 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 7.0 sec Critical v/c(x) = 0.759

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 79 Avenue
Analyst: DPA File Name: BIRD79E.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	1	2	3 <		1	1	1	1	1 <	
Volumes	66	1576	1	50	2377	211	4	5	22	188	6	61
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
RTOR Vols			0			10			15			10
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru *			
Right		*			Right *			
Peds					Peds			
WB Left	*				SB Left *			
Thru	*	*			Thru *			
Right	*	*			Right *			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	7.0A	90.0P			Green 20.0A			
Yellow/AR	3.0	4.0			Yellow/AR 6.0			

Cycle Length: 130 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	120	170	0.574	0.708	11.7	B	6.7	B
	T	3933	5588	0.464	0.704	6.5	B		
	R	1114	1583	0.001	0.704	4.3	A		
WB	L	218	3539	0.253	0.062	44.3	E	6.2	B
	TR	4293	5499	0.695	0.781	5.5	B		
NB	L	252	1396	0.016	0.181	33.2	D	33.3	D
	T	337	1863	0.015	0.181	33.2	D		
	R	286	1583	0.024	0.181	33.3	D		
SB	L	315	1743	0.628	0.181	40.2	E	38.9	D
	TR	291	1611	0.203	0.181	34.5	D		

Intersection Delay = 8.1 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 5.0 sec Critical v/c(x) = 0.682

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 82 Avenue
Analyst: DPA File Name: BIRD82E.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	<	1	3	<	1	1	1	1	1	1
Volumes	65	1219	30	160	2451	251	26	35	43	100	47	103
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
RTOR Vols			10			10			30			60
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	*	*			NB	Left		*		
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds						Peds				
WB	Left	*	*			SB	Left	*	*		
	Thru		*				Thru	*	*		
	Right		*				Right	*	*		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0A	80.0P			Green		6.0A	21.0A		
Yellow/AR		3.0	4.0			Yellow/AR		3.0	4.0		

Cycle Length: 130 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	194	1770	0.351	0.169	19.7	C	9.8	B
	TR	3479	5549	0.412	0.627	9.3	B		
WB	L	252	1770	0.667	0.169	12.1	B	18.4	C
	TR	3442	5491	0.905	0.627	18.7	C		
NB	L	261	1510	0.103	0.173	34.4	D	34.4	D
	T	322	1863	0.115	0.173	34.5	D		
	R	274	1583	0.047	0.173	34.1	D		
SB	L	390	1770	0.269	0.119	30.2	D	29.7	D
	T	451	1863	0.109	0.242	29.1	D		
	R	384	1583	0.117	0.242	29.2	D		

Intersection Delay = 16.5 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 9.5 sec Critical v/c(x) = 0.770

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-11-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 84 Avenue
Analyst: DPA File Name: BIRD84E.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	<	1	3	<	1	1	<	1	1	<
Volumes	115	1411	49	159	1934	128	37	75	66	71	74	53
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			10			10			10			10
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	*				NB Left	*			
Thru	*				Thru	*			
Right	*				Right	*			
Peds					Peds				
WB Left	*				SB Left	*			
Thru	*				Thru	*			
Right	*				Right	*			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	97.0P				Green	23.0A			
Yellow/AR	5.0				Yellow/AR	5.0			

Cycle Length: 130 secs Phase combination order: #1 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	108	140	1.124	0.769	*	*	*	*
	TR	4241	5541	0.396	0.765	3.9	A		
WB	L	122	158	1.374	0.769	*	*	*	*
	TR	4222	5516	0.563	0.765	4.9	A		
NB	L	201	1025	0.194	0.196	33.2	D	34.7	D
	TR	342	1745	0.400	0.196	35.1	D		
SB	L	186	947	0.404	0.196	35.5	D	34.9	D
	TR	345	1759	0.356	0.196	34.6	D		

Intersection Delay = * (sec/veh) Intersection LOS = *

(g/C)*(V/c) is greater than one. Calculation of D1 is infeasable.

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-16-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 40 St (Bird Rd) (N-S) SW 87 Ave (Galloway)
Analyst: DPA File Name: BIRD87E.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	3	<	2	3	<	1	3	<	1	3	<
Volumes	77	820	105	223	1591	132	131	731	99	239	722	120
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			10			10			10			10
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	*				NB Left	*	*		
Thru		*			Thru		*		
Right		*			Right		*		
Peds					Peds				
WB Left	*				SB Left	*	*		
Thru		*			Thru		*		
Right		*			Right		*		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	10.0A	59.0P			Green	15.0A	30.0A		
Yellow/AR	3.0	5.0			Yellow/AR	3.0	5.0		

Cycle Length: 130 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	299	3539	0.277	0.085	42.5	E	18.9	C
	TR	2593	5482	0.408	0.473	17.1	C		
WB	L	299	3539	0.808	0.085	54.7	E	25.9	D
	TR	2605	5507	0.761	0.473	22.4	C		
NB	L	268	1770	0.515	0.258	23.2	C	33.2	D
	TR	1370	5481	0.692	0.250	34.7	D		
SB	L	268	1770	0.940	0.258	55.1	E	39.1	D
	TR	1366	5465	0.705	0.250	34.9	D		

Intersection Delay = 28.7 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 7.0 sec Critical v/c(x) = 0.782

CORRIDOR # 2

SW 97 AVENUE BETWEEN SW 184 STREET (EUREKA DRIVE) AND US 1

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-12-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 97 Ave/Franjo Rd (N-S) US 1
Analyst: DPA File Name: SW97US1.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes		> 3	<		> 1	<		> 1	<		> 1	<
Volumes	74	1496	4	20	2	13	4	14	212	1	69	1
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vols			1			5			10			0
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		*			NB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
WB Left	*				SB Left	*			
Thru	*				Thru	*			
Right	*				Right	*			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	8.0A	97.0P			Green	21.0A			
Yellow/AR	5.0	4.0			Yellow/AR	5.0			

Cycle Length: 140 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LTR	3912	5560	0.466	0.704	7.0	B	7.0	B
WB	LTR	116	1543	0.277	0.075	46.8	E	46.8	E
NB	LTR	240	1427	0.964	0.168	79.5	F	79.5	F
SB	LTR	277	1653	0.270	0.168	38.7	D	38.7	D

Intersection Delay = 16.5 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 7.5 sec Critical v/c(x) = 0.539

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4 10-12-1995
Center For Microcomputers In Transportation

Streets: (E-W) SW 97 Ave/Franjo Rd (N-S) SW 184 St/Eureka Dr
Analyst: DPA File Name: SW97EUE.HC9
Area Type: Other 10-10-95 PM Peak
Comment: Existing Traffic Conditions

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	<	1	1	<	1	1	<	1	1	<
Volumes	38	405	205	93	363	29	137	183	57	45	244	49
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			10			10			10			10
Lost Time	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		*			NB	Left	*	*		
	Thru		*				Thru	*	*		
	Right		*				Right	*	*		
	Peds						Peds				
WB	Left	*	*			SB	Left		*		
	Thru	*	*				Thru		*		
	Right	*	*				Right		*		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		5.0A	38.0P			Green		5.0A	27.0A		
Yellow/AR		3.0	4.0			Yellow/AR		3.0	5.0		

Cycle Length: 90 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	233	525	0.171	0.444	11.5	B	21.0	C
	TR	772	1759	0.817	0.439	21.6	C		
WB	L	201	1770	0.488	0.156	13.3	B	10.6	B
	TR	968	1834	0.415	0.528	9.9	B		
NB	L	271	1770	0.531	0.150	15.0	B	14.1	B
	TR	747	1792	0.324	0.417	13.5	B		
SB	L	289	881	0.163	0.328	16.3	C	18.7	C
	TR	593	1809	0.503	0.328	19.1	C		

Intersection Delay = 16.4 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 9.5 sec Critical v/c(x) = 0.715

APPENDIX H

IMPLEMENTATION PLAN FOR BIRD ROAD CORRIDOR IMPROVEMENTS

Dade County

Metropolitan Planning Organization

MOBILITY MANAGEMENT PROCESS

STRATEGIES IMPLEMENTATION PLAN FOR BIRD ROAD CORRIDOR

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	**Improve Transit Operation**																				
	a. Request evaluation to MDTA																				
	b. Obtain information																				
	c. Analyze results and prepare recommendations																				
	d. Implement recommendations																				
	e. Evaluate recommendations																				
2	**Traffic Operation Improvements**																				
	a. Submit recommendations to FDOT and DCPW																				
	b. Coordinate project with FDOT and DCPW																				
	c. Incorporate project in the TIP																				
	d. Prepare design																				
	e. Project construction																				

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
3	**Alternate Work Hour Programs**																				
	a. Coordinate with GCCS																				
	b. Contact employers																				
	c. Develop Programs																				
4	**Evaluation of Alternative Accesses**																				
	a. Coordinate with project manager (Superarterial Study)																				
5	**Promote Carpool/Vanpool Programs**																				
	a. Coordinate with GCCS																				
	b. Evaluate candidates for the Vanpool Pilot Project																				
6	**Promote Transit Passes**																				
	a. Coordinate with GCCS and MDTA																				
	b. Prepare marketing program																				
	c. Initiate promotional campaign																				
7	**Install Bicycle Facilities**																				
	a. Evaluate locations																				
	b. Coordinate with B/P Coordinator																				
	c. Develop project																				
	d. Installation of facilities																				
8	**Development of a Marketing Information Program**																				
	a. Coordinate with GCCS																				
	b. Submit and develop a study for the UPWP																				
9	**Establish an Express Bus Service**																				
	a. Coordinate with MDTA																				
	b. Evaluate feasibility of the recommendation																				

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
10	**Monitoring of Services**																				
	a. Prepare a monitoring program to evaluate strategies																				
	b. Collect and analyze data																				
	c. Make recommendations																				
11	**Provide Bike Connection to Transit**																				
	a. Coordinate with B/P Coordinator, MDTA & Tri-Rail																				
	b. Encourage people to use existing programs																				
	c. Expand programs																				
12	**Provide Sidewalk Amenities**																				
	a. Request study to Public Works Dept.																				
	b. Develop study																				
	c. Incorporate improvements in the TIP																				
	d. Project design, construction and installation																				
13	**Construction of Sidewalks**																				
	a. Include study in the UPWP																				
	b. Develop study																				
	c. Incorporate project in the TIP																				
	d. Design and construction of facilities																				
14	**TDM Demonstration Project**																				
	a. Coordinate with GCCS																				
15	**Bus Turnout Bays**																				
	a. Follow up transit study along the corridor (1.c)																				
	b. Evaluate results and incorporate project in the TIP																				
	c. Project design and construction																				

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
16	**Bycicle Lanes/Routes/Paths**																				
	a. Submit recommendations to the B/P Coordinator																				
	b. Coordinate recommendations with Park & Rec./DCPW																				
	c. Incorporate project to the TIP																				
	d. Project design and construction																				
17	**Freigh Movement**																				
	a. Coordinate with study's project manager																				
	b. Evaluate recommendations																				
	c. Develop implementation plan																				
18	**Improve Loading Zones**																				
	a. Coordinate with Public Works																				
	b. Evaluate warehouse area																				
	c. Make recommendatios																				
	d. Develop implementation plan																				
19	**Road Widening**																				
	a. Expand scope of study recommended in 12 above																				
	b. Develop study																				
	c. Make recommendations																				
	d. Incorporate project in the TIP																				
	e. Project design and construction																				
20	**Establish a Shuttle Service**																				
	a. Coordinate with MDTA																				
	b. Evaluate recommendations																				
	c. Implement service																				

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
21	**Freeway Ramp Improvements**																				
	a. Notify FDOT of the proposed improvements																				
22	**Establish an Arterial Surveillance Program**																				
	a. Submit recommendations to Public Works																				
23	**Construction of New Roadway (Connector)**																				
	a. Submit letter to DCPW regarding railroad track																				
	b. Evaluate railroad crossings																				
	c. Make recommendations																				
	d. Develop implementation plan																				
	e. Project design and construction																				
24	**Develop a Park & Ride Lot**																				
	a. Propose feasibility study in UPWP																				
	b. Develop study																				
	c. Evaluate recommendations																				
	d. Coordinate implementation plan																				
25	**Access Management**																				
	a. Submit recommendation to FDOT																				
26	**Coral Way Bypass**																				
	a. Submit recommendation to FDOT and DCPW																				

APPENDIX I

IMPLEMENTATION PLAN FOR SW 97th AVENUE CORRIDOR IMPROVEMENTS

Dade County

Metropolitan Planning Organization

MOBILITY MANAGEMENT PROCESS

STRATEGIES IMPLEMENTATION PLAN FOR 97th AVENUE CORRIDOR

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	**Improve Transit Operation**																				
	a. Request evaluation to MDTA	■																			
	b. Obtain information		■																		
	c. Analyze results and prepare recommendations			■																	
	d. Implement recommendations				■																
	e. Evaluate recommendations					■	■														
2	**Traffic Operation Improvements**																				
	a. Submit recommendations to DCPW	■																			
3	**Signal Improvements**																				
	a. Request traffic signal evaluation to DCPW	■																			
4	**Integrate Pedestrian to Transit**																				
	a. Coordinate with B/P Coordinator	■																			

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
5	**Monitoring of Services**																				
	a. Prepare a monitoring program to evaluate strategies																				
	b. Collect and analyze data																				
	c. Make recommendations																				
6	**Promote Bicycle and Pedestrian Activities**																				
	a. Coordinate with B/P Coordinator																				
	b. Prepare plan																				
	c. Develop activities																				
7	**Provide Bicycle Facilities**																				
	a. Coordinate with B/P Coordinator																				
	b. Determine potential location for facilities																				
	c. Develop project																				
	d. Install facilities																				
8	**Provide Pedestrian Amenities**																				
	a. Evaluate needs																				
	b. Determine locations for improvements																				
	c. Project development and construction																				
9	**Bicycle Lanes/Routes/Paths**																				
	a. Submit recommendations to the B/P Coordinator																				
	b. Coordinate recommendations with DCPWD																				
10	**Construction of Sidewalks**																				
	a. Determine needs and develop project																				
	b. Incorporate project in the TIP																				
	c. Design and construction of facilities																				

#	RECOMMENDATION	1996-97				1997-98				1998-99				1999-00				2000-01			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
11	**Bus Turnout Bays**																				
	a. Expand scope of work of (1) to evaluate this strategy																				
	b. Analyze results and incorporate project in the TIP																				
	c. Project design and construction																				
12	**Road Widening**																				
	a. Submit recommendations to DCPW																				
13	**Develop a Park & Ride Lot**																				
	a. Propose feasibility study in UPWP																				
	b. Develop study																				
	c. Evaluate recommendations																				
	d. Coordinate implementation plan																				
14	**Evaluate a Feeder Bus System**																				
	a. Coordinate with MDTA																				
	b. Submit study to the UPWP																				
	c. Develop study																				
	d. Implement recommendation																				
	e. Evaluate project																				
15	**Establish an Arterial Surveillance Program**																				
	a. Submit recommendations to Public Works																				