Executive Summary

In achieving this objective the system would:
- provide an automated centralized platform for sharing and analyzing data,
- function as a decision support tool providing the decision makers and officials improved access to transportation information within the Miami-Dade County area, and
- emphasize the development of the ITMS system using available data.

Background

The Miami-Dade Metropolitan Planning Organization (MPO) has developed the Miami-Dade County Integrated Transportation Management System (ITMS). This project follows the development of the Miami-Dade County Mobility Management Process/Congestion Management System (MMP/CMS) prepared by DPA for the MPO. A great deal of emphasis has been placed on coordination of the ITMS with various Miami-Dade County and Florida Department of Transportation (FDOT) departments.

Objective

Develop a transportation information/analysis system for Miami-Dade County that functionally integrates the implementation of six of the seven management systems initially required by the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) regulations.

The six ISTEA management systems are Mobility Management Process/Congestion Management System (MMP/CMS), Intermodal Management System (IMS), Pavement Management System (PMS), Public Transportation Management System (PTMS), Safety Management System (SMS) and Traffic Monitoring System for Highways (TMS/H).

Underlying Concept

ITMS Structure

The extensive information and comprehensive analysis in the ITMS has been organized into modules - one for each of the six management
systems. Even though the information resides in separate modules, it is integrated and is available across the modules for analysis and evaluation. This seamless assembly of data inputs and outputs is a primary aspect of the ITMS as an integrated information management system.

The basic elements of the ITMS are a relational database, a data input/update component, an analysis component, a visual and graphical presentation component, and a report generation component.

A typical ITMS module for individual management systems includes a sub component to convert all the input data into the appropriate formats. The data analysis sub component allows calculation of selected performance measures and analysis parameters, and preparation of standard pre-selected reports. The GIS sub component provides the visual analysis and preparation of standard pre-selected maps.
# Integrated Transportation Management System (ITMS)

## MIAMI-DADE

**Integrated Transportation Management System (ITMS)**

### Mobility Management Process/Congestion Management System

<table>
<thead>
<tr>
<th>Input Variables</th>
<th>RCR Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak to Daily Rate (e.g., 7.00)</td>
<td>FSUTMS Base Year: 1999</td>
</tr>
<tr>
<td>Annual Growth Rate (e.g., 1.00)</td>
<td>State Roads Base Year: 1995</td>
</tr>
<tr>
<td>RCR Threshold (e.g., 0.10)</td>
<td>Analysis Year (e.g., 1997): 1997</td>
</tr>
</tbody>
</table>

### Table of Concurrency Parameters

<table>
<thead>
<tr>
<th>Concurrency</th>
<th>RCR Output</th>
<th>County Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSUTMS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Roads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis Year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### System Management

- **SMS/PMS**: State Road (non-v.), Vanpool, Carpool
- **MMP/CMS**: Employer Transportation Coordinator, Ridesharing, Employer Parking

### Management Process/Congestion Management System

- **Input Variables**: -
  - Year: 1995
  - Year: 1997

### Table of Yearly Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Data</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**ITMS Functions at a Glance**

**Miami-Dade County Integrated Transportation Management System (ITMS)**

**Mobility Management**
- Process/Congestion
- Mobility Solutions (MMPS/CMS)

**Intergovernmental Management**
- System (ITMS)

**Pavement Management**
- System (PMS)
- Pavement Management

**Traffic Monitoring**
- System (TMS/H)

**Public Transportation**
- Management System (PTMS)

**Safety Management**
- System (SMS)

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**MAPS**
- State Roads - LOS
- Concurrency Data - LOS
- Florida Intrastate Highway System (FHS)
- Maximum Allowable LOS
- Analysis Year-Volume Ratio
- Congested Locations
- State Roads (FHS)
- State Roads (non-FHS)
- County Roads (Concurrency data)
- County Roads (FLOUTMS)
- Congestion Duration

**REPORTS**
- AADT Report
- AWDT Report
- SR - Vehicle Classification
- Performance Measures
- 15 Planning Factors
- Mobility Strategies
- Corridor Priority

**ANALYSIS**
- SR - LOS module
- Concurrency Data
- RCR module -
  - Data Normalization
  - User-Specified Input Factors, e.g.,
  - Growth Rates, Analysis Year, etc.
- Selection & Scoring Module -
  - Mobility Strategies
  - Corridor Priority

**Maps**
- Bikeways
- Intermodal System
- Railroad Network
- AMTRAK Terminal
- Tri-Rail System
- Tri-Rail Stations
- Major Airports
- Major Seaports
- Interline Bus Terminals
- Major Truck Terminals
- Freight Roadway Network
- Railroad System & Grade Crossing Hazards

**Reports**
- Miami International Airport Operations
- General Aviation Operations
- Port of Miami Operations
- SR - List of Prioritized Pavement Deficiencies
- SR - List of Work Program Schedule
- Public Works - Survey Results
- SR - Seasonal Volume Factors
- SR - Seasonal Axle Factors
- SR - Metrorail Ridership
- SR - Metromover Ridership
- SR - Metrorail System - Annual Ridership
- SR - High Accident Segments
- SR - High Accident Spots

**Analysis**
- Deficient Pavement Segment
- Deficient Pavement Segment +
  - Congested Locations Map
- SR - Pavement Deficiencies versus
  - Work Program Map
- County Commission Districts
- Traffic Analysis Zones
- County Political Boundaries
- Metrorail Ridership - Seasonal Variation
- Metromover Ridership - Seasonal Variation

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Source: David Plummer & Associates

**ITD - Florida Department of Transportation**
**ITD - Information Technology Department (Miami-Dade)**
**SR - State Roads**
**LOS - Level of Service**
**V/C - Volume to Capacity**
**FSUTMS - Florida Standard Urban Transportation Model Structure**
**AADT - Annual Average Daily Traffic**
**AWDT - Average Weekly Daily Traffic**
**RCR - Relative Congestion Ratio**
**Source: David Plummer & Associates**
**Working in ITMS**

A user-friendly program environment has been developed to guide a user through the components and modules of the ITMS program package. Upon starting the ITMS program, a sequence of GUIs display the available options and allow the users to select their desired option.

The exhibit titled *Working in ITMS* illustrates typical navigational steps and functional elements of the ITMS program. The chart titled *ITMS Functions at a Glance* maps out the comprehensive information that has been analyzed, and made available, in the ITMS program.

**Benefits**

The following is a list of the main benefits of the ITMS:

- Improve the planning process and project selection through better utilization of available information.
- Improve the decision making process using advanced decision support and analysis capabilities.
- Increase effectiveness of planning through improved access to integrated and seamless multimodal and multi-disciplinary information.
- Build synergy between governmental agencies by creating a system for improved data exchange and information sharing.
- Increase productivity and more effective resource allocation through better coordination of efforts avoiding duplication.
- Provide a robust information system that can be expanded to integrate other analysis tools and applications.
- Improve the efficiency of the transportation system in Miami-Dade County.
- Increase satisfaction of the traveling public.

**Future Needs**

The following is an initial listing of system enhancement recommendations for future phases:

- Develop Transportation Improvement Program (TIP) application.
- Update the ITMS system to incorporate FDOTs improved roadway network, when available.
- Automate maintenance of historic data.
- Develop an internal agency program for annual data updates.
- Integrate traditional transportation analysis tools, such as, Highway Capacity Software.
- Integrate FDOTs transportation modeling and GIS applications.
- Develop Internet applications.
- Develop applications to interact with other areas of transportation, e.g., bridge management, construction management, socio-economic data, land use, utilities, etc.
- Expand/enhance the means of accessibility to the system by other departments and agencies.
- Complete the population of all databases over time.
For further information regarding the Development of the Miami-Dade County Integrated Transportation Management System (ITMS) please contact:

Metropolitan Planning Organization
111 NW First Street, Suite 910
Miami, Florida 33128
(305) 375-4507

PREPARED BY DAVID PLUMMER & ASSOCIATES
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