CORRADINO

FINAL REPORT

Truck Route System for Miami-Dade County

Submitted to:

Miami-Dade Metropolitan Planning Organization




Submitted by:

The Corradino Group, Inc.

June 2007

Executive Summary

The Miami-Dade County Metropolitan Planning Organization (MPO) has prepared a Truck Route System Plan for Miami-Dade County. The MPO and its consultants have worked closely with the MPO's Freight Transportation Advisory Committee, the local trucking community, and affected local and state agencies in developing the plan.

Freight is a major issue in the transportation community. Transportation facilities, especially roads, are running out of the capacity needed to accommodate projected increases in goods movement. When combined with projected increases in day to day traffic, the ability of the transportation system to handle efficiently and safely even small increases in freight traffic is negligible. In an economy organized around fast and reliable delivery of goods, congestion is a huge variable in the cost of business and economic development. Congestion can also cost a community economic development, jobs, etc. In Miami-Dade County, both the airport and the port cite issues associated with loss of or projected loss of business because of congestion.

Literature/Community Review

As the interest in freight movement in recent years has grown, the number of studies done locally and nationally has increased. Some of those are noted in Table S-1 along with comments on their relationship to the proposed Miami-Dade Truck Route System.

In summary, what came out of the review is that most communities have relatively narrow freight/truck route system plans. The policies and plans that are in place generally include restricted lanes, roads, and areas and some signage. Some communities such as Atlanta are assessing the possibility of Truck-only-Toll (TOT) Lanes as a companion to High Occupancy Toll (HOT) Lanes being studied in other metropolitan areas, including Miami-Dade County.

Traffic Flows and Projections

Truck traffic in Miami-Dade County has historically been related to the middle of the County with the Port of Miami on the east and the Free Trade Zone on the west as key generators. Other major generators are the FEC rail yard, Miami International Airport, and the Miami River port. Over the last decade, the Doral area around the Free Trade Zone has grown into a major warehousing and distribution center. The major roads used by trucks – I-95, SR 836, SR 826, 25th Street, and others all have significant congestion. Trucks coming to and from the Port of Miami clog downtown streets. Figure S-1 shows Average Annual Daily Traffic (AADT) for 2000 and 2030. Given that today there are approximately 16,000 trucks per day on I-95, 10,000 on SR 836, and 13,500 on SR 826, and that these numbers will grow with traffic, it is clear that major capacity relief in the future will be critical to maintaining any kind of traffic flow. This becomes more critical every day because of the economic deterrent of rampant congestion on businesses considering starting up in or locating to the County. An additional component of improving truck traffic flow is regular traffic.

Despite the perception of many people that trucks are everywhere, the reality is that most roads in the County have less than 10 percent trucks, which suggests that a truck-only solution on these already very congested facilities may not be feasible.

There are several projects in current planning that affect the truck route system. The first is the 25th Street Viaduct Project, which will connect the airport to the Doral Area using an elevated bridge over 25th Street. A second project is the Port Tunnel from the Seaport to I-395. This project, which is currently anticipated for completion in 2013 but which has been on again and off again for a number of years, will have a dramatic impact on truck traffic in downtown if built. These and others will be important elements of the truck route system. Perhaps even more critical is ensuring that the facilities designated as truck routes have the correct geometrics and signalization to facilitate efficient traffic movement for both autos and trucks.

Truck Route Management System

An extensive list of recommendations has been developed as part of the system plan. Some of the key recommendations are shown in Table S-2.

Building on these recommendations, the truck route management system proposed for Miami-Dade County was developed in concert with the FTAC, which served as the steering committee for the project. The system is based on the concept of designating key routes that connect major freight generators and roadway facilities. The first step in the development of the system was a workshop with the FTAC, which resulted in the identification of a number of key facilities in the central part of the County. The results of this workshop are shown in Figure S-2. Figure S-3 shows the proposed truck route system, which combines the initial thinking developed in the workshop environment with analysis of the overall County transportation system.

Implementation and Costs

The MPO has taken the lead in promoting a truck-supportive roadway environment in the County. Initially, the primary emphasis will be improving existing streets at a low cost level and at a major cost level building projects such as the Port Tunnel and the 25th Street Viaduct to separate trucks and traffic. A second key element will be the ability of the public and private sector to embrace technology to provide truckers better information about how and where to go to best make their trips. The bottom line is these improvements and others are going to have a huge cost. But, the cost of congestion will be equally huge. With the support and leadership of the MPO, this plan is a starting point for creating a truck-supportive and friendly roadway environment.

Table S-1
Summary of Literature Review

Studies	Purpose	Recommendation	Position
Freight Movement Study	1. Improve Freight Traffic Movement. 2. Recommendations for incorporating freight movement to Miami-Dade's transportation planning process.	1. Dade County Freight and Truck Committee 2. Modify Dade County Travel Model to Include a Truck Element 3. Conduct Origin-Destination/Travel Survey Suitable for Dade County Travel Model 4. Conduct Industry/Location Specific Surveys 5. Improve Monitoring of Truck Traffic on the Roadways	Supportive
Short Range Truck Traffic Study for the Airport West Area	Develop a set of standards and an implementation plan to better accommodate truck traffic and commercial truckers' needs in the Airport West Area.	1. Intersection Improvements 2. Operational Improvements 3. Travel Behavior Change Improvements	Neutral
Trends in Heavy Truck Traffic	Develop recommendations for a heavy truck management program for Miami-Dade County.	1. Identify program leadership. 2. Establish a Technical Advisory Committee 3. Develop program strategy and operations plan. 4. Define implementation activities. 5. Establish ongoing program monitoring activities	Neutral
Cross Harbor Freight Movement	Evaluate several alternatives to move freight between locations.	▪ An enhanced and expanded regional railcar float system should be implemented. ▪ Improved height clearances should be advanced in the East of Hudson region to allow the use of modern rail equipment. ▪ Additional intermodal, bulk, and classification rail freight yards should be developed in New York City. ▪ The rail freight tunnel should be advanced, since no substantial diversion of freight from truck to rail will occur without a direct rail link across New York Harbor.	Supportive
San Francisco Regional Goods Movement Study	Determine the economic significance of goods movement in the area. Determine the most appropriate investment strategies in moving goods. Build consensus.	▪ Ensure freight firms remain economically viable ▪ Provide for the effacing movement of goods ▪ Improve the movement system ▪ Support Smart Growth strategies ▪ Coordinate City/County plans ▪ Provide priority consideration for projects that improve truck routes	Supportive

Table S-1 (continued)
Summary of Literature Review

Studies	Purpose	Recommendation	Position
Sarasota/Manatee Counties Freight Movement Study	Database development of a freight movement characteristics and pattern. Identification of current and future needs facing freight movement. Identification of possible improvements and actions for freight needs.	▪ Minimize operational impacts of heavy trucks ▪ Evaluate and rank truck corridors operating performance ▪ Improve operational characteristics of truck corridors	Supportive
Broward County Freight and Goods Movement Study	Develop a framework for an integrated freight program for Broward County.	▪ Implement Wide Ranging Strategies Including: ▪ Infrastructure Strategies ▪ Policy Strategies ▪ Operational/Technological Strategies ▪ Freight Program Enhancement Strategies ▪ Infrastructure Strategies	Supportive
Freight and Hazardous Materials Movement Study	Assist area decision makers in developing a freight transportation infrastructure that enhances safety, security, efficiency, and economy in the study area.	▪ Identify Projects That Increase Truck Movement in the Area ▪ Develop Additional Local Data on Freight Movements ▪ Coordinate With Freight Community	Neutral
Chittenden County Regional Freight Study	Incorporate freight transportation planning into its regional transportation planning process.	▪ Incorporate Study Findings Into MPO Transportation Plan ▪ Develop Freight Specific Projects ▪ Work with DOT to Prepare An Action Plan ▪ Develop Stakeholders Forum	Supportive to Neutral
Atlanta Truck-only Toll Facilities Study	Examine the feasibility and benefits of truck-only toll lanes in the Atlanta area	▪ Three scenarios examined ▪ All would have positive results ▪ Continue studies of more detailed scenarios	Supportive
Georgia DOT Truck-only Lanes Study	Examine the need for exclusive truck-only lanes in corridors throughout the state, with Savannah serving as the primary focus area.	▪ Study is ongoing and no findings have been published.	Supportive
New York DOT Truck Route Management and Community Impact Study	Study ways to improve truck movements and protect neighborhoods from adverse impacts.	▪ Recommendations in several areas including signage, enforcement, engineering and routing, and education.	Supportive

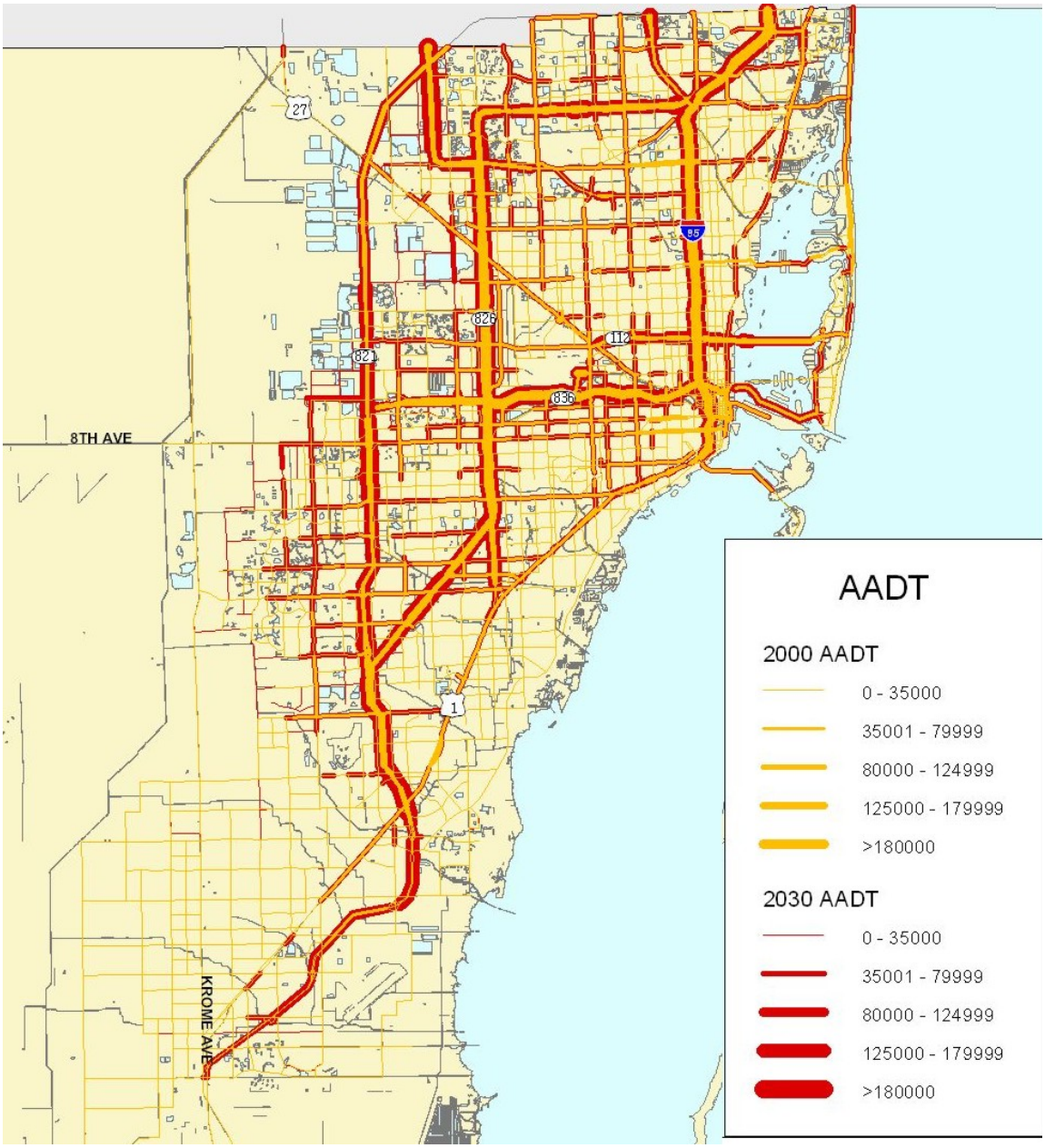
Source: The Corradino Group, Inc.

Table S-2
Partial List of Truck Route System Recommendations

Facility	Project	Policy	Responsible Agency
All Routes	Uniform maintenance and signage based on facility type (expressways, major arterials, minor arterials, local streets)	Fund truck-favorable improvements; continue to develop technology via internet access to improve information to community.	
I-95	Ramp metering, managed lanes, slip ramp at NW 6th Street	Promote truck access to the current HOT lanes proposal if implemented.	Florida Department of Transportation (FDOT)
SR 826	Widen/add lanes. Complete full interchange with SR 836. Add ramp lanes to increase storage for exiting trucks. Elevated flyover for auto traffic at Golden Glades. Free barriered truck lane with manageable entry/exit.	If truck-only lane added, trucks would be restricted in traffic lanes.	FDOT
US 27/Okeechobee Road	Redesign and replace bridges across Miami River Canal. Improve North River Drive.	Emphasize as a major truck route corridor; support continued FDOT improvements.	FDOT
SR-836	Elevated lanes with auto traffic elevated and truck traffic on surface. Consider truck-only toll lane on CSX corridor paralleling SR 836. Build connector with SR 112.	Support east-west passenger rail project to reduce passenger vehicle volumes.	Miami-Dade Expressway Authority (MDX)
Port of Miami	Expanded entry/exit gates; consider expansion of hours of operation; construct projects such as I-95 NB slip ramp at NW 6th Street; build Port Tunnel.	Major economic engine in County. Congestion tied directly to loss of business revenue and growth.	Port of Miami/ FDOT/DPW
NW 25th Street/NW 87th Avenue	25th Street Viaduct	Promote construction of entire project.	FDOT
Krome Avenue	Four-lane entire facility	Will experience tremendous freight growth in next twenty years.	Miami-Dade County

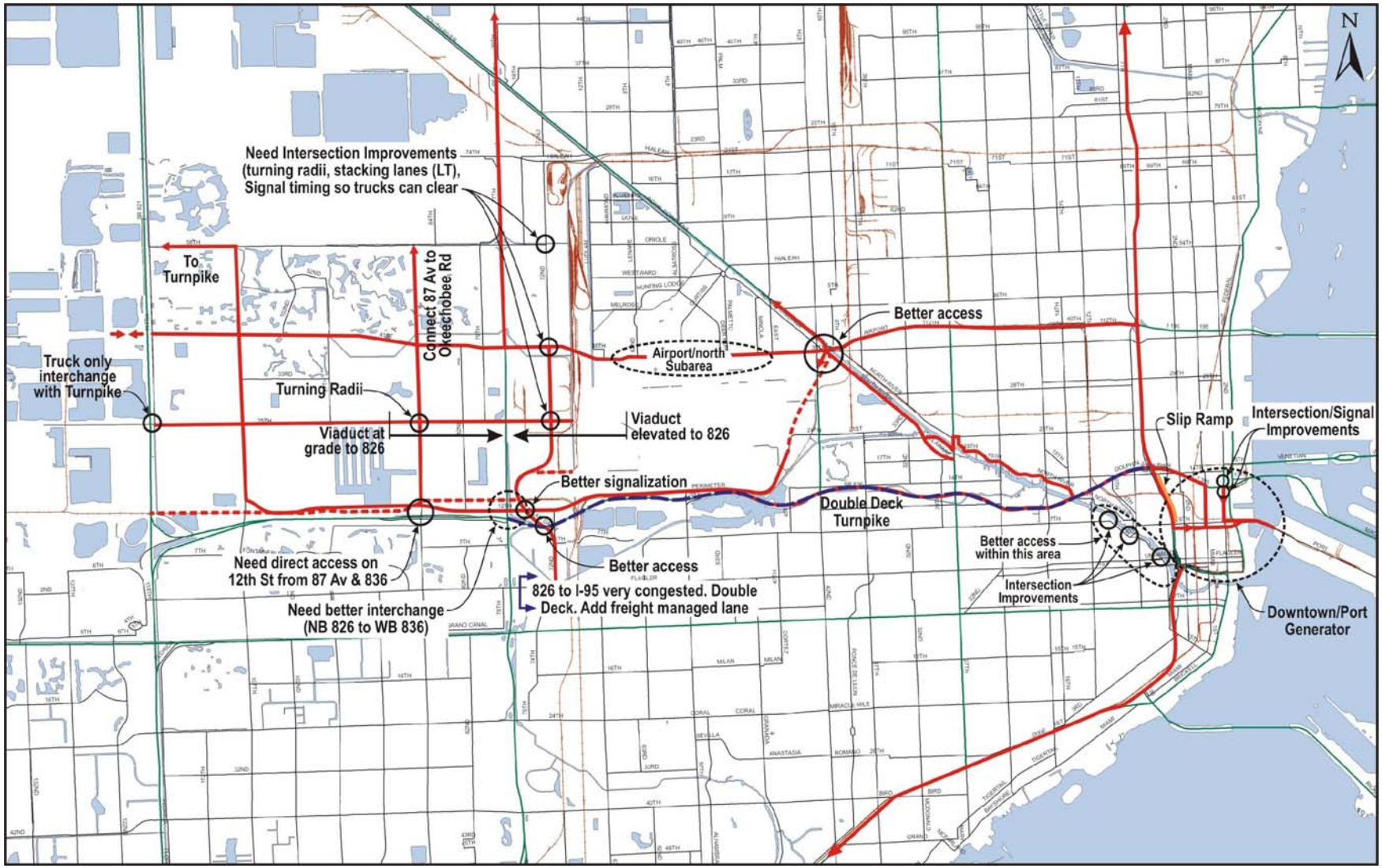
Source: The Corradino Group, Inc.

Figure S-1
2000/2030 AADT



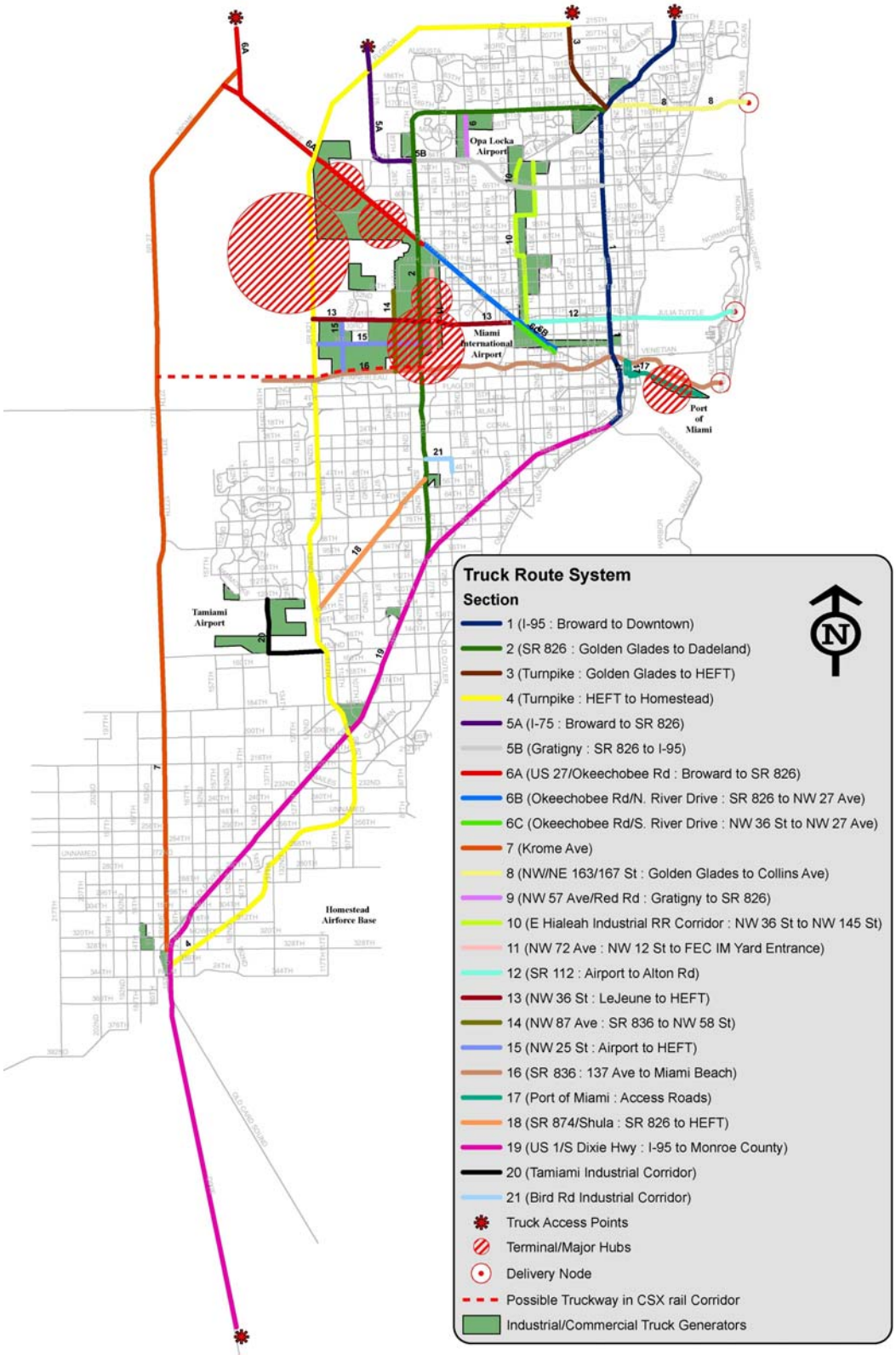
Source: The Corradino Group, Inc.

Figure S-2
Concepts from FTAC Workshop



Source: The Corradino Group, Inc.

Figure S-3
Miami-Dade County Truck Route System



Conclusions

As the MPO implements its Truck Route System for Miami-Dade County, the following activities are recommended:

1. Work with responsible agencies to identify operational issues on roads defined as part of the system and incorporate specific design parameters into future projects on truck roads.

2. Develop and implement signage program with uniform signage consistently placed on facility type (similar logo but different designs and fonts for expressways, major arterials, minor arterials, and local streets).

3. Identify and monitor municipalities with truck restrictions and maintain a freight information Web site that trucks and companies can access for information on current streets with truck restrictions as well as construction updates and other factors in the truck route system routes.

4. Continue to encourage strong participation through FTAC in the planning process.

5. Support truck-only and/or major capital projects such as the Port Tunnel, elevated lanes on 836, and other projects that will facilitate efficient and timely movement of trucks at all times of day.

6. Explore concept of truck-only or truck-only toll lanes in rail corridor in the County with no or limited rail service with particular emphasis on east-west connections.

It is clear that since the mid-1990s, the MPO has and will continue to provide direction to the various state, regional, and local agencies building and maintaining the County's transportation infrastructure. This is a critically important benefit to the economy of Miami-Dade County and southeast Florida as a whole. With the support and leadership of the MPO, this plan is a starting point for creating a truck-supporting and friendly roadway environment.

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1. Introduction

The Miami-Dade County Metropolitan Planning Organization (MPO) is developing a Truck Route System for Miami-Dade County. The MPO and its consultants have worked closely with the MPO's Freight Transportation Advisory Committee, the local trucking community, and affected local and state agencies in developing the plan.

Freight has emerged as a major issue in the transportation community. Transportation facilities, especially roads, are running out of the capacity needed to accommodate projected increases in goods movement. When combined with increases in day to day traffic, the ability of the transportation system to handle efficiently and safely even small increases in freight traffic is negligible. In an economy organized around fast and reliable delivery of goods, congestion is a huge variable in the cost of business and economic development. Congestion can also cost a community economic development, jobs, etc. In Miami-Dade County, both Miami International Airport and the Port of Miami cite issues with loss of or projected loss of business because of congestion.

The work in this study was coordinated with the Freight Transportation Advisory Committee (FTAC), which is a committee that includes representatives of the private and public sector and which advises the MPO on freight issues. The study was also coordinated with the Florida Department of Transportation (District 6), the Miami-Dade Expressway Authority, and Miami-Dade County Public Works.

The focus of the study was identifying the roads that currently and/or should be carrying the majority of truck traffic to designate them as a truck system. This system, combined with future projects, would provide the basis for efficient goods movement in Miami-Dade County in the future. The study also examined policy issues – specifically whether restrictive policies, i.e., no trucks on certain roads during peak hour, should be favored over policies that emphasize infrastructure. Both types of issues will have an impact on the trucking community. Currently, there are 16,000 trucks per day on I-95, 10,000 on SR 836, and 13,500 on SR 826. And, while they represent only about ten percent of the number of vehicles on the roads, because of their size relative to cars they represent up to 30 percent of the congestion problem in the region. So, identifying ways to safely and efficiently accommodate this traffic without jeopardizing economic activity is the ultimate goal of this study.

2. Literature Review

The economy of southeast Florida relies heavily on the ability to move freight effectively and efficiently. Freight movement, while reflection of global, and national economics, has a direct and significant local economic impact. More than ever before, decisions about where to locate businesses are based on how the transportation system functions. Congestion, an increasing transportation problem in urban areas, has implications for the urban economic base not only from a commuter standpoint but from the position of local and national freight movement.

To plan for an effective freight movement system, we should consider all aspects of the system including the individual practices of shippers, carriers, and the public, in addition to the specific and unique demands of freight movement (e.g., pickup and delivery, intermodal connections, and regional consolidation). Now, more so than ever the opportunity for technology to dictate how, when, and where goods will move can be very impactful. This chapter of the report reviews the freight movement initiative, reports on state and national efforts, and reviews a sample of projects that have been undertaken in other areas.

A review of similar studies shows that the efficient movement of freight cannot be tackled by freight carriers or government in isolation. It is best seen as an integral part of the transportation system. Many of the previous studies make recommendations that freight carriers may see as positive, by assisting them be more efficient in their practice, as opposed to negative recommendations, which tend to restrict or prohibit individual movements.

But even now, freight movement is a dynamic process. Many peripheral issues affect it including traffic congestion, development policies, and shopping patterns. For example, the combination of increased shopping on the Internet coupled with efficient carriers such as UPS and others has increased trips to local businesses and homes, creating a shift in the traditional form of order and delivery to and from light industrial areas and more formal distribution centers.

It is clear that congestion imposes costs to all aspects of the economic world, even on the movement of freight. Policies that can reduce congestion across the system would have a positive effect on goods movement and a benefit productivity, in no different a manner than an employee having to spend less time in traffic, and more time on the job. The issue then becomes the incompatibility between the competing needs of various users of the system, such as between the commuter and the freighter. Often the first approach is to develop congestion-based solutions, which encumber truck movements, such as peak-hour bans. More sensitive approaches attempt to ensure their more efficient use, such as exclusive freight lanes.

Technological innovation is a dynamic aspect in the more contemporary approach to urban freight movement. Intelligent transportation systems (ITS) will play an increasingly important role in improving traffic flow and managing the logistics of urban goods movement.

One of the most complex issues involving freight is how to develop a higher priority for freight projects than for other road projects. Given the existing criteria used by many LRTP's to evaluate project priorities, it has been difficult for freight projects to gain a high priority. It is through studies such as this, that that obstacle may be overcome in the State of Florida.

Freight movement has a major impact on the mobility and economy of the State of Florida. The state's seaports, airports, and railroads are integral to our economic prosperity. Freight shipments through these facilities continue to increase at a rapid pace. Florida is a major player in the international shipping arena because of its unique geographic location. FDOT has recognized this and has worked hard to develop the Strategic Intermodal System (SIS).

The continued success of freight transportation facilities depends on the interconnectivity of all modes of transportation throughout the state in order to effectively meet state, regional and world market needs.

The state's roadway system, along with airports, seaports, and railroads, provides the foundation of freight movement into, around and out of Florida. Freight movements, while carried out with increasing frequency by air and intermodal rail, are still dominated by trucking. Virtually every business and household in the state is dependent to some extent on the movement of trucks for shipping and receiving goods.

The Florida Intrastate Highway System (FIHS), designated in 1990 by the Florida Legislature, is composed of interconnected limited- and controlled- access roadways including Interstate highways, Florida's Turnpike, expressways, and selected arterial highways. As a statewide transportation network designed for the efficient movement of high-speed and high-volume traffic within the state, the FIHS carries a large share of Florida's long-distance freight/truck travel. Deficiencies occur primarily on the shorter distance facilities such as immediate connections to the seaports and airports, the congested urban streets over which truckers must move cargo, and even the major arterials leading to somewhat distant industrial parks, warehouses, freight yards, and rail yards.

Federal Perspective

Congressional passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 underscored the need to address the specific challenges for efficient freight movement in urbanized areas throughout the country. ISTEA required planning studies to address issues concerning the efficient movement of freight. ISTEA also required providing for adequate and efficient intermodal connections between roadway systems, seaports, airports, railroads and other freight handling facilities.

The Intermodal Surface Transportation Efficiency Act (ISTEA) required all States to develop, establish, and implement an Intermodal Management System (IMS) for coordinating access to intermodal transportation facilities. In metropolitan areas, these systems were to be developed and implemented in cooperation with the Metropolitan Planning Organizations (MPOs).

The Intermodal Surface Transportation Efficiency Act has also mandated that freight mobility be addressed as part of the transportation planning process. It requires that the Long-Range Transportation Plans must identify port access routes, airport access routes, major freight terminal access routes, intermodal facilities and other similar projects.

State of Florida Initiatives

With the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) many of Florida's MPOs are including the movement of freight in their decision making process. Many are inviting shippers and trucking associations to become members of their Technical Advisory Committees, while others are establishing Freight Advisory Committees that report directly to the Metropolitan Planning Organization. Goods movement studies are increasingly being undertaken by MPOs throughout the country.

The Florida Standard Model, FSUTMS, is used to forecast passenger and truck trips for Florida's urbanized areas. More sophisticated approaches to model truck movements through the use of economic development-related variables, such as dwelling units and employment by sector, have recently been incorporated into several of Florida's regional travel forecasting models.

This trend of modeling and planning for the efficient movement of freight and goods is growing at both the national and state level. Nationwide, 75 percent of the Metropolitan Planning Organizations (MPOs) have either created Freight Advisory Committees or added members from the freight community to existing committees. In Florida, 19 of the 25 MPOs are currently addressing freight and goods movement planning through either the long-range planning process or have developed specialized modeling procedures to help plan for the needs of the shipping community.

A number of studies have been conducted around the state to identify the needs of the shipping community. Most of these have been at the local or regional level. These studies have considered issues ranging from how best to collect and classify industry data to collecting and forecasting facility-specific freight movements.

Literature Review

A literature review of applicable freight studies has been completed in this task. There are several examples of communities which have done similar efforts. These range from our local experiences in Miami-Dade County of which this study is evolving from, to work in other parts of the state, like in Broward County and Manatee County. Larger communities with thriving ports have worked in this arena, as have moderately sized places. There are numerous methods and rational that has been employed in the planning process. The policies and recommendations of a cross section of studies have been characterized as "supportive," "neutral," or "negative" to truck movement. These have been placed in a table for quick and easy reference.
The following studies are examined herein:

- Freight Movement Study, Miami-Dade Metropolitan Planning Organization, December 1996.

- Short-range Truck Traffic Study for the Airport, Miami-Dade Metropolitan Planning Organization, July 2002.
- Trends in Heavy Truck Traffic, Miami-Dade Metropolitan Planning Organization, February 2005.
- Cross Harbor Freight Movement Major Investment Study, New York Economic Development Corporation, 2000.
- Regional Goods Movement Study, San Francisco MPO.
- Sarasota/Manatee Freight Movement Study, Sarasota/Manatee MPO, July 2000.
- Broward County Freight and Goods Movement Study, Broward County MPO, 2002.
- Freight and Hazardous Materials Movement Study, Corpus Christi, Texas MPO.
- Chittenden County, Vt., Regional Freight Study, Chittenden County MPO, 2001.
- Atlanta Truck-only Toll (TOT) Facilities Study, Atlanta, Georgia, 2005
- State of Georgia Exclusive Truck Lane Study, Savannah, Georgia, Ongoing.
- New York City DOT Truck Route Management and Community Impact Reduction Study, 2006.

Table 2-1 summarizes each study, its purpose, recommendation and the position relative to freight movement, as supportive, neutral or negative.

Freight Movement Study, Miami-Dade Metropolitan Planning Organization, December 1996

The purpose of this study was to identify ways to improve freight traffic movement on the surface transportation network. The study identifies recommendations for incorporating freight movement into Miami-Dade County's transportation planning process.

In order to identify freight patterns throughout the County, surveys were conducted involving local freight-associated firms. A one-week survey was conducted in the Port of Miami to determine primary paths through downtown and the rest of the County. A process for incorporating freight concerns into the MPO planning process and a Freight and Truck Committee was proposed as a part of the Transportation Plan Technical Advisory Committee.

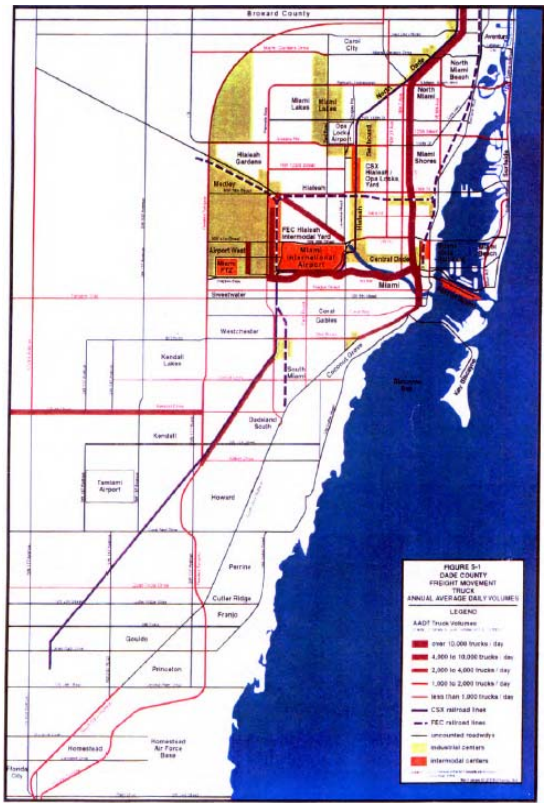


Table 2-1
Summary of Literature Review

Studies	Purpose	Recommendation	Position
Freight Movement Study	1. Improve Freight Traffic Movement. 2. Recommendations for incorporating freight movement to Miami-Dade's transportation planning process.	1. Dade County Freight and Truck Committee 2. Modify Dade County Travel Model to Include a Truck Element 3. Conduct Origin-Destination/Travel Survey Suitable for Dade County Travel Model 4. Conduct Industry/Location Specific Surveys 5. Improve Monitoring of Truck Traffic on the Roadways	Supportive
Short Range Truck Traffic Study for the Airport West Area	Develop a set of standards and an implementation plan to better accommodate truck traffic and commercial truckers' needs in the Airport West Area.	1. Intersection Improvements 2. Operational Improvements 3. Travel Behavior Change Improvements	Neutral
Trends in Heavy Truck Traffic	Develop recommendations for a heavy truck management program for Miami-Dade County.	1. Identify program leadership. 2. Establish a Technical Advisory Committee 3. Develop program strategy and operations plan. 4. Define implementation activities. 5. Establish ongoing program monitoring activities	Neutral
Cross Harbor Freight Movement	Evaluate several alternatives to move freight between locations.	▪ An enhanced and expanded regional railcar float system should be implemented. ▪ Improved height clearances should be advanced in the East of Hudson region to allow the use of modern rail equipment. ▪ Additional intermodal, bulk, and classification rail freight yards should be developed in New York City. ▪ The rail freight tunnel should be advanced, since no substantial diversion of freight from truck to rail will occur without a direct rail link across New York Harbor.	Supportive
San Francisco Regional Goods Movement Study	Determine the economic significance of goods movement in the area. Determine the most appropriate investment strategies in moving goods. Build consensus.	▪ Ensure freight firms remain economically viable ▪ Provide for the effacing movement of goods ▪ Improve the movement system ▪ Support Smart Growth strategies ▪ Coordinate City/County plans ▪ Provide priority consideration for projects that improve truck routes	Supportive

Table 2-1 (continued)
Summary of Literature Review

Studies	Purpose	Recommendation	Position
Sarasota/Manatee Counties Freight Movement Study	Database development of a freight movement characteristics and pattern. Identification of current and future needs facing freight movement. Identification of possible improvements and actions for freight needs.	▪ Minimize operational impacts of heavy trucks ▪ Evaluate and rank truck corridors operating performance ▪ Improve operational characteristics of truck corridors	Supportive
Broward County Freight and Goods Movement Study	Develop a framework for an integrated freight program for Broward County.	▪ Implement Wide Ranging Strategies Including: ▪ Infrastructure Strategies ▪ Policy Strategies ▪ Operational/Technological Strategies ▪ Freight Program Enhancement Strategies ▪ Infrastructure Strategies	Supportive
Freight and Hazardous Materials Movement Study	Assist area decision makers in developing a freight transportation infrastructure that enhances safety, security, efficiency, and economy in the study area.	▪ Identify Projects That Increase Truck Movement in the Area ▪ Develop Additional Local Data on Freight Movements ▪ Coordinate With Freight Community	Neutral
Chittenden County Regional Freight Study	Incorporate freight transportation planning into its regional transportation planning process.	▪ Incorporate Study Findings Into MPO Transportation Plan ▪ Develop Freight Specific Projects ▪ Work with DOT to Prepare An Action Plan ▪ Develop Stakeholders Forum	Supportive to Neutral
Atlanta Truck-only Toll Facilities Study	Examine the feasibility and benefits of truck only toll lanes in the Atlanta area	▪ Three scenarios examined ▪ All would have positive results ▪ Continue studies of more detailed scenarios	Supportive
Georgia DOT Truck-only Lanes Study	Examine the need for exclusive truck only lanes in corridors throughout the state, with Savannah serving as the primary focus area.	▪ Study is ongoing and no findings have been published.	Supportive
New York DOT Truck Route Management and Community Impact Study	Study ways to improve truck movements and protect neighborhoods from adverse impacts.	▪ Recommendations in several areas including signage, enforcement, engineering and routing, and education.	Supportive

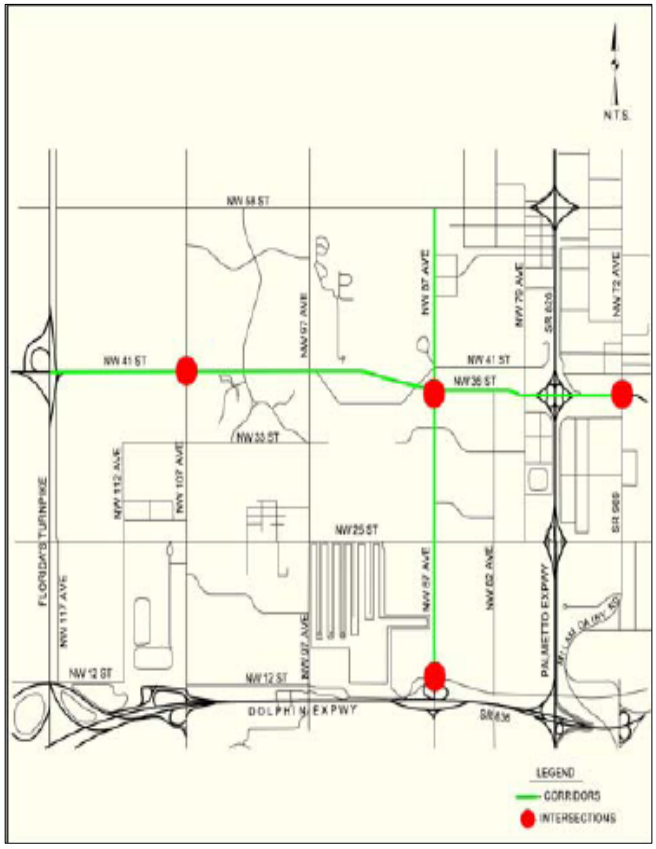
Source: The Corradino Group, Inc.

The report establishes five recommendations and five improvements. The first recommendation was to establish a Dade County Freight and Truck Committee. The second recommendation was to Modify Dade County Travel Model to Include a Truck Element. The third recommendation was to Conduct Origin-Destination/Travel Survey Suitable for Dade County Travel Model. The fourth recommendation was to Conduct Industry/Location Specific Surveys. The final fifth recommendation was to Improve Monitoring of Truck Traffic on the Roadways.

Short-range Truck Traffic Study for the Airport West Area, Miami-Dade Metropolitan Planning Organization, July 2002

This is an example of a localized look at freight movement in the near term. The study was oriented towards developing recommendations for alleviating localized truck movement problems within the Airport West Area, (AWA). The AWA is essentially modern day Doral, and is defined for this study as the area generally bounded by NW 58th Street on the north and SR 836 on the south, and runs from NW 72nd Avenue (Milam Dairy Road) on the east to the Turnpike (HEFT) on the west, an area of some 13 square miles.

Right-of-way was not available to widen the major study area corridors and intersections. Without additional physical capacity, traffic would continue to experience low levels of service.



However, a recommended improvement for the intersections specifically investigated was to adjust the timing of the signals. Signal retiming would result in significant reductions in delay. Another recommendation is to evaluate the number of median openings along the two study corridors. Prohibiting turning movements in some intersections (signalized or unsignalized), and revising the typical designs, along with reducing the frequency of median openings have demonstrated to reduce crashes and alleviate congestions. As part of this study, a set of suggested standards were developed for roadways in the AWA. The suggested standards include typical roadway segments and intersections, typical turn lane requirements, driveway spacing, and types of access to driveways, and cul-de-sacs. These standards were developed mainly to improve the maneuverability of trucks in the area.

Another concern was to maintain at least one travel lane open for emergency stopping and/or disabled vehicles. To accomplish this, the standards recommend that six-foot paved shoulders are

to be incorporated into ROW purchases, integrated into initial future roadway designs, and subsequently constructed on all two-lane, two-way roadways. Four-lane and six-lane roads should be accommodated with a 14-foot curb (outside) lane.

The study categorizes solutions as short-term solutions and long-term solutions. The short-term solutions address Intersection Improvements, Operational Improvements, and Travel Behavior Improvements. Under the long term solutions are Road Building, Road Widening, Operational Improvements and Travel Behavior Change Improvements.

Trends in Heavy Truck Traffic, Miami-Dade Metropolitan Planning Organization, February 2005

The primary objective of this project was to develop recommendations for a heavy truck management program for Miami-Dade County that facilitates the efficient and reliable movement of freight while maximizing passenger safety and security. In reviewing the experiences of other cities around the world, it became evident that communities were using a wide spectrum of program elements to control or manage their truck traffic.
Different and sometimes apparently conflicting activities, one motivated by a desire to restrict truck traffic and the other to promote truck access, can be undertaken to achieve similar objectives. In some cases, elements were deployed in a restrictive manner, while in other cases elements were deployed that promoted increased freight mobility. For example, truck route restrictions (based on restricting movements) versus truck route designation (based on providing a complete truck route system) both reflect truck routing techniques and the desire to effectively manage truck travel along certain corridors.

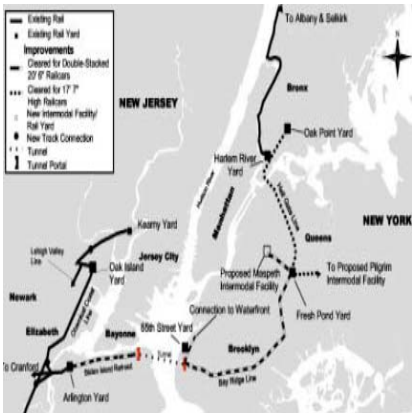
In an ideal situation, the state and local programs are coordinated to ensure connectivity of the networks. However, in many instances, this linkage is missing, causing bottlenecks for trucks where disconnects in truck-friendly or truck-acceptable facilities occur. These disconnects can result from little or no coordination between programs, or lack of formalized programs by one or both of the jurisdictions. Additionally, many cities impose restrictions on an ad hoc basis often in response to general community or specific neighborhood opposition to truck movements. This becomes especially problematic when residential communities and industrial areas "grow up" together.

The specific recommendations provided an outline of opportunities for Miami-Dade County to consider as it works to develop a truck management program.

Cross Harbor Freight Movement Major Investment Study, New York Economic Development Corporation, 2000

The New York metropolitan region, the financial center of the nation's economy, is a major hub of commerce, entertainment, services, fashion, and culture. Today, its competitive position is being challenged as the expansion of the global economic spreads prosperity. At the same time, the region faces unprecedented infrastructure demands. With over seven percent of the nation's population, the New York region is the largest, most diverse, and most densely populated consumer market in the nation, requiring an extraordinary transportation system. Over the next 20 years, the

impacts of growth in employment, personal income, and economic activity will increasingly burden the region's already congested highway system. Economic growth creates immense demand for the transportation of goods in the New York region - a demand that is increasing at five times the rate of population growth. By 2020 traffic congestion is expected to increase 50 percent on the area's roadways.



The primary movement of goods across the harbor is currently limited to two bridge crossings. Every day more than 30,000 tractor-trailer trucks cross these facilities. The bridges are chronically congested, creating a bottleneck for freight delivery. In contrast, less than three percent of the region's goods move by rail and there is no direct freight rail link to New York City, Long Island, Westchester County and southwestern Connecticut. Except for the existing limited railcar float service, goods destined for locations east of the Hudson River must be trucked across the harbor or take a 280-mile detour to cross the river by rail near Albany.

This study attempted to select feasible alternatives to make freight movement more efficient in a quickly changing environment, which is being overwhelmed by traffic and an antiquated distribution system. Initially the study examined over a dozen conceptual alternatives and implementation strategies. Through an extensive screening process, these strategies were narrowed to three alternatives that then underwent rigorous analysis. These three alternatives include:

1. Transportation Systems Management (TSM)/railcar float system.
2. Rail freight tunnel between Staten Island, NY and Brooklyn.
3. Rail freight tunnel between Jersey City, NJ and Brooklyn.

The evaluation of the three alternatives included engineering feasibility, market analysis, capital, operating, and maintenance cost estimates, revenue generation, and a detailed benefit-cost analysis. To provide a baseline comparison, these alternatives were contrasted with the "No Build" alternative, an alternative that describes freight movement in the region without the improvements considered in the MIS. The MIS demonstrated that each of the three alternatives were feasible, and would generate substantial benefits for the region's economy, quality of life, and environment. The alternatives, to varying degrees, achieve the study's goals and objectives by:

- Improving the overall movement of goods;
- Reducing overall travel time for shippers;
- Fostering freight reliability;
- Maximizing the use of existing capacity;
- Overcoming shortcomings in the existing network;
- Creating a more modally-balanced goods movement system;
- Supporting rail and marine alternatives;
- Improving air quality;
- Promoting economic development; Reducing costs for businesses and consumers;
- Enhancing the ability to attract businesses and jobs; and,
- Meeting commercial needs.

The following process was used to analyze the three alternatives:

- Public participation;
- Alternative Screening Process;
- Freight Trends;
- Shipper Choice Survey;
- Truck to Rail Diversion Assessment;
- Engineering Designs and Operating Plans;
- Capital and Operating Cost Estimates;
- Benefit-Cost Analysis; and,
- Funding Mechanisms.

The following recommendations were made:

- An enhanced and expanded regional railcar float system should be implemented.
- Improved height clearances should be advanced in the East of Hudson region to allow the use of modern rail equipment.
- Additional intermodal, bulk, and classification rail freight yards should be developed in New York City.
- The rail freight tunnel should be advanced, since no substantial diversion of freight from truck to rail will occur without a direct rail link across New York Harbor.

Regional Goods Movement Study, San Francisco Bay Area, December 2004

This is a particularly interesting study, because California, particularly the San Francisco Bay Area, has experienced the impacts of tremendous growth pressures, similar those now being felt in our region. It was recognized that the unfettered market-driven development of various aspects of the community would have negative impacts on the economy, the transportation system and the environment. The recognized imbalance would put the region at a competitive disadvantage. Paradoxically, the wealth from the unprecedented growth would ultimately be the undoing of the economy. Here planners felt that goods movement was an integral element of the Bay Area economy and transportation system. Local businesses rely on the goods-movement system to take their products to market and to receive supplies. Residents rely on the goods-movement system to bring consumer goods to the region, while seaports and airports are major international trade gateways for the rest of California and the United States.

The goals of the Regional Goods Movement Study were:

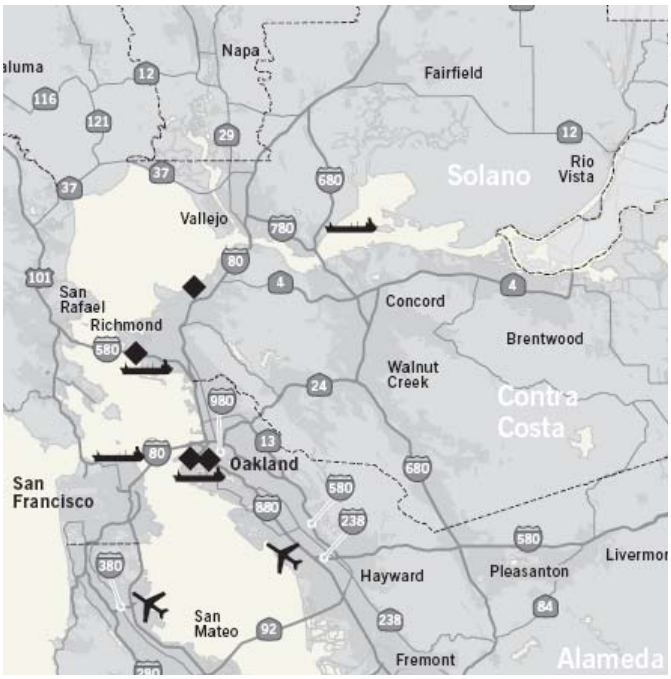
1. To determine the economic significance of goods movement in the Bay Area and to inform decision-makers about the economic implications of policy decisions that affect goods movement.

2. To provide guidance to MTC, so that it can determine the most appropriate investment strategies and policies for improving regional goods movement in MTC's current long-range RTP update (known as the Transportation 2030 Plan).

3. To forge a consensus that would allow the Bay Area to pursue goods-movement issues in the reauthorization of Federal surface transportation legislation and other state and national goods-movement policy discussions.

It was established that a truck route-planning program would be developed to:

- Establish standards for the selection and physical features of designated truck routes.
- Develop coordinated city/county truck route plans that ensure route continuity across jurisdictions.
- Provide priority consideration for projects that improve and maintain truck routes in the regional truck route system.



The government committed to coordinating its transportation investment and policy decisions with regional land-use policies in order to improve mobility and quality of life. This included consideration of the implications of local land-use decisions on regional goods-movement costs, efficiency and the environment. This concept, while fundamental in transportation and development, is easily lost at the local government levels. The results of not planning land use and transportation are evident in general inefficiencies. Miami Dade County is suffering from symptoms of this. This study recognized that if the supply of land for goods-movement uses could be preserved in key locations throughout the inner region, resident and business needs will be supported at lower cost and with reduced truck impacts on roads and air quality. Yet to achieve a vision of compact growth and livable communities, difficult challenges would have be acknowledged, accepted and addressed. Miami-Dade County is addressing similar concerns relative to the Eastward Ho movement, and those that are stemming from the South Miami Dade County Water Shed Study.

With respect to goods movement in San Francisco, it was thought that reuse of industrial spaces for housing and commercial development could drive goods-movement-oriented uses farther out to the perimeter of the region, driving up the cost of goods and reducing job diversity options. Land-use conflicts around trade gateway facilities, such as the seaports and airports, could threaten the long-term viability of these critical regional assets and dampen the fast-growing, trade dependent sectors of the regional economy.

As a result the following guiding principles were suggested to be incorporated into regional planning:

- In locations that support critical goods-movement needs of the central Bay Area, community benefits must be achieved through the application of best practices in off-site impact mitigation and better business practices, while still preserving central location options for the goods-movement-oriented businesses.

- Some suburban locations must accommodate the region's growing needs for warehouse and regional distribution facilities. These facilities will need to be integrated with current land uses without creating major auto/truck/rail conflicts. This smarter suburban development can be accomplished through new approaches to site layout and street design as well as consideration of targeted locations for key perimeter goods-movement facilities in "freight villages" to reduce conflicts and provide greater efficiency.

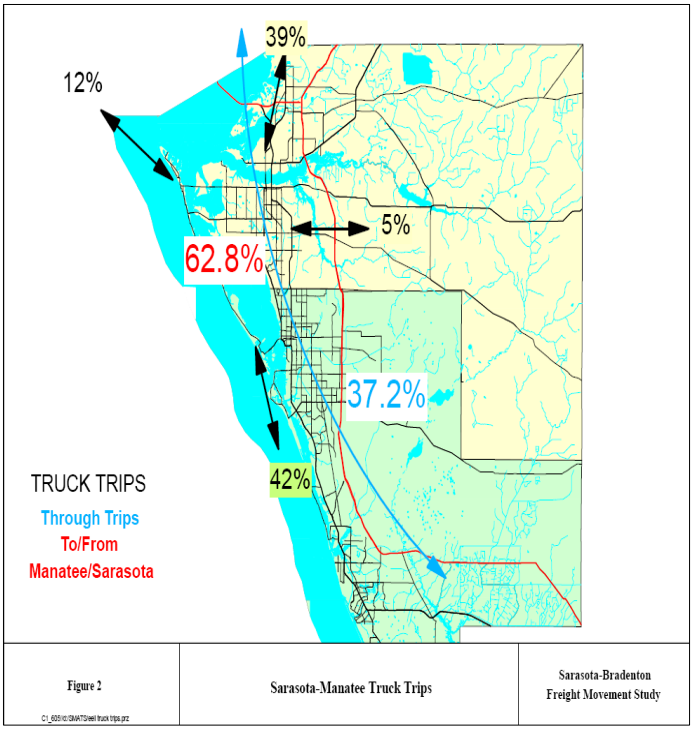
- In consideration of jobs-housing balance, the "jobs" side of the equation must achieve its own balance in terms of diversity of job opportunities for residents with the widest range of skill levels and training. Good-paying jobs at the lower end of the skill range must be preserved and land-use policies and transportation investments should be supportive of this objective.

The trade gateways of the Bay Area the seaports and airports represent significant regional assets. Trade is the fastest-growing component of the regional economy and increasing globalization of the world economy portends increasing demands on our gateway facilities. MTC has a particular role to play in ensuring that these facilities remain functional and economically viable. Yet one of the biggest constraints facing these facilities in the future was seen as the lack of suitable land for supporting businesses and seaport/airport-serving land uses. Regional strategies and incentive programs were deemed need to be developed that acknowledge the special needs of communities that house these facilities, so that they will be encouraged to preserve these critical supporting land uses.

Sarasota/Manatee Counties Freight Movement Study, Sarasota Manatee Counties, MPO, July 2000

In an example closer to home the Sarasota/Manatee Counties MPO has undertaken an evaluation. Here it was recognized that trucking is one of the most important modes of transportation for freight in the Sarasota-Bradenton area. Nationally tabulated commodity flow data for the Sarasota/Manatee area indicated that as much as 87 percent of the area's freight moves by truck. Trucks also provide the important intermodal link to Port Manatee, the airports, and the rail heads in the MPO area as well as in the region.

Truck traffic contributes to and is affected by roadway congestion in the area. This is especially true for large, heavily loaded trucks, which have limited acceleration and deceleration characteristics compared to automobiles. Operational characteristics defined in the study effort demonstrate that because of their slower stops and starts, large trucks impede the overall traffic stream, regardless of which lane they use. As such, the unique impact of heavy truck traffic on the automobile traffic stream requires special consideration.



While other freight movement studies in the United States range in scope from special purpose studies to action-oriented studies to comprehensive analyses of freight movement, the objectives of the Sarasota-Bradenton Freight Movement Study were defined as the development of a database for freight movement characteristics and patterns, the identification of both current and future needs facing freight movement, and the identification of a set of possible improvements and actions for freight movement needs. This was to be provided in the form of a resource document for use by the State, MPO, and local agencies in the subsequent evaluation of transportation improvement projects and long-range plan improvements. As such, this study effort could be classified as "action-oriented."

With the guidance and participation from the MPO's Freight Mobility Working Group (FMWG) and the associated Technical Review Subcommittee (TRS) formed for this study, efforts were focused on selected roadway corridors for the performance of traffic operational studies to determine, and if possible quantify, the impact of heavy trucks. Speed studies conducted in the selected corridors indicated that the presence of heavy trucks in the traffic stream affects overall travel speed. In addition, roadway design and level of service variables from these corridors were also evaluated.

These corridor-specific evaluations demonstrated that the concept of minimizing the operational impact of heavy trucks within the overall traffic stream could, under certain circumstances, improve overall traffic operations within the corridor. With the additional considerations of industrial land use locations and roadway system continuity, the major freight, heavy truck movement corridors could be isolated for existing conditions within the MPO area. These same factors could also be examined for future roadway conditions.

With the combined operational, design, and land use information for both existing and forecast conditions, a process evolved in which the major truck corridors could be evaluated and ranked in relative terms in regard to the level of improvement needed to optimize the heavy truck operating conditions. These conditions would not only improve overall corridor operating performance, but

also improve the movement of freight through the region. This evaluation process was labeled as the route's "truck friendliness" ranking.

"Truck friendliness" is used in this study to mean the combined traffic operations conditions that allow loaded heavy trucks to move as conveniently as possible. As such, this process assesses heavy truck and total volume levels, the ability of left and right turn lanes to adequately store heavy truck turning movements, and the ability of corner curb returns to permit heavy trucks to turn without hitting the curb or otherwise disrupting traffic.

The data and evaluations summarized in the resource document establish criteria to identify the most important heavy truck corridors in Sarasota-Bradenton where "truck friendly" improvements would have the greatest effect. Ideally, "truck friendly" improvements were to be focused on those major goods movement routes where flow optimization procedures and design can provide a significant benefit to overall traffic flow. This approach means focusing on those high-volume heavy truck corridors that link industrial centers, railroad terminals, airports, and seaports with the interstate highway system or other major arterials. Performance measures based on geometric characteristics are established to quantify the relative "truck friendliness" of each segment of each major truck corridor. The study database also includes construction cost estimates for improving each segment to desirable "truck friendly" conditions. Lastly, the Sarasota-Bradenton Freight Movement Study suggests that the Sarasota/Manatee Metropolitan Planning Organization incorporate the "truck friendly" evaluation criteria in the Transportation Improvement Program evaluation process. All information needed to include the various criteria is contained in this resource document.

The purpose of these evaluation criteria is to provide for a transportation system that safely and efficiently moves goods within and through Sarasota and Manatee counties. The evaluation criteria should be applied to existing and future roadways that represent major or "focus" freight corridors; namely, those routes that accommodate 500 or more heavy trucks per day and which have at least five percent heavy trucks in the traffic stream.

For the focus roadways, major intersections within the corridor leading to and from industrial areas should be designed to accommodate heavy vehicles by:

- Sizing corner curb turn radii to permit heavy truck right turns from the approach curb lane to the exit curb lane.
- Sizing right- and left-turn lane storage and the deceleration tape lengths for future heavy truck traffic volumes.
- Designing the distance between intersections to accommodate the turn lane lengths and standard access management criteria.

Broward County Freight and Goods Movement Study, Broward County MPO 2002

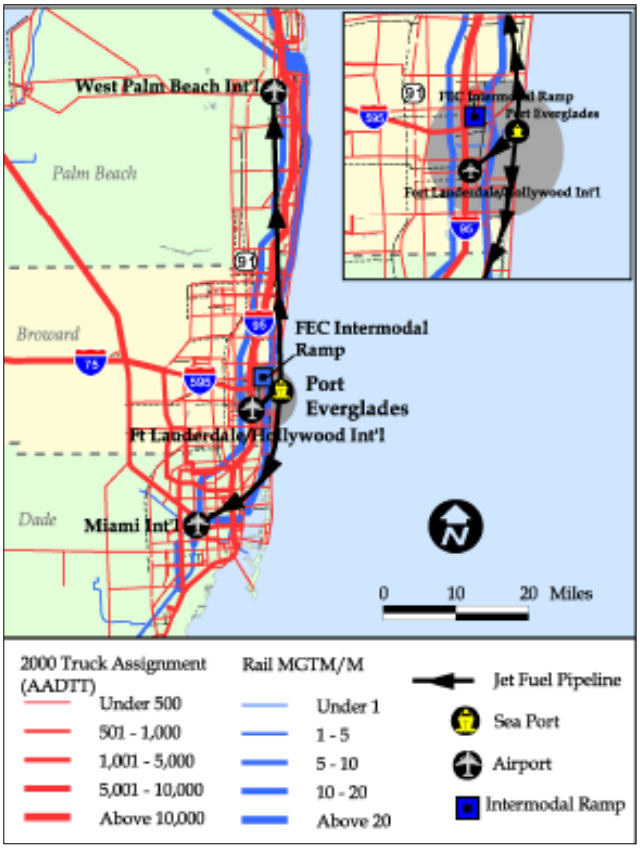
The Broward County Metropolitan Planning Organization (MPO) initiated this Freight and Goods Movement Study to develop a framework for an integrated freight program for Broward County. The MPO has become increasingly focused on freight transportation planning over the last several

years, undertaking several freight specific studies and research efforts, including the Freight and Goods Movement Industry Outreach Initiative, July; the Commercial Vehicle Driver Survey and Truck Stop Terminal Facility Research Project, Freight and Goods Movement Industry Outreach Initiative, Final Report, March; the Mega Transport Zone Feasibility Study; and the development of a Freight and Goods Movement Study Annotated Bibliography.

With these research efforts as a basis, the MPO recently undertook and completed the Freight and Goods Movement Study in an attempt to more formally incorporate freight transportation issues into the traditional MPO planning process. The primary objectives of this initiative consisted of the following:

- Identification and collection of existing data and information resources;
- Collection of viewpoints from select regional freight stakeholders;
- Development of a comprehensive profile of the freight transportation system in
- Broward County;
- Identification of key physical and operational constraints limiting the effectiveness of the freight system today;
- Development of key findings, conclusions, and recommendations for the region; and,
- Development of the initial freight component of the Long-Range Transportation Plan.

The study consisted of five separate tasks that were designed to review the existing data, collect additional data, analyze all data to develop a freight system profile, and prepare a comprehensive set of key findings, conclusions, and recommendations that could be used to develop and expand a freight program for Broward County. These recommendations came in a variety of areas including the following:



Infrastructure

- Review NHS intermodal connectors in Broward County.

Policy

- Investigate strategies to improve at grade rail crossings throughout the County.
- Investigate strategies to improve loading/unloading zones and access to industrial parks/locations.
- Consider expansion of the existing petroleum pipeline system to serve additional high-volume customers to reduce dependence on tank trucks.
- Support the development of the truck stop at the intersection of I-595 and Florida's Turnpike and work to develop other truck service centers throughout the region.

- Review existing weight limits on County roadways.
- Investigate the development of an additional east-west limited-access highway in the County.
- Ensure the security program provides efficient access to Port Everglades' terminals.
- Consider the development of truck only lanes within the County.

Operational Improvements/Technology

- Improve maintenance of downtown areas to facilitate truck access.
- Improve highway access to air cargo terminals.
- Provide improved information regarding port access and regional traffic conditions via additional signage and ITS.
- Improve and expand regional ITS for freight.

Freight Program Enhancement

- Conduct origin/destination surveys at key freight generators.
- Evaluate the economic impact of the freight industry.
- Develop and enhance regional freight modeling tools.
- Establish a Freight Advisory Committee.
- Collect additional vehicle classification counts.
- Conduct mail-out surveys to freight stakeholders.
- Develop a detailed train volume data set.
- Revise the existing ranking/prioritization methodology for transportation projects to specifically accommodate freight considerations.
- Establish an urban freight mobility program.
- Coordinate with the tri-county area to develop a regional freight plan.
- Develop commodity flow forecasts for the region.

Infrastructure

- Fort Lauderdale-Hollywood International Airport and Port Everglades should continue their joint development for an advanced passenger and baggage transfer system to service the cruise ship industry.
- Continue with plans to develop the ICTF in South Port to reduce drayage moves and stimulate rail use.
- Expand roadway capacity on high-use roads, such as Eller Drive and Eisenhower Boulevard.

Freight and Hazardous Materials Movement Study, Corpus Christi, Texas MPO

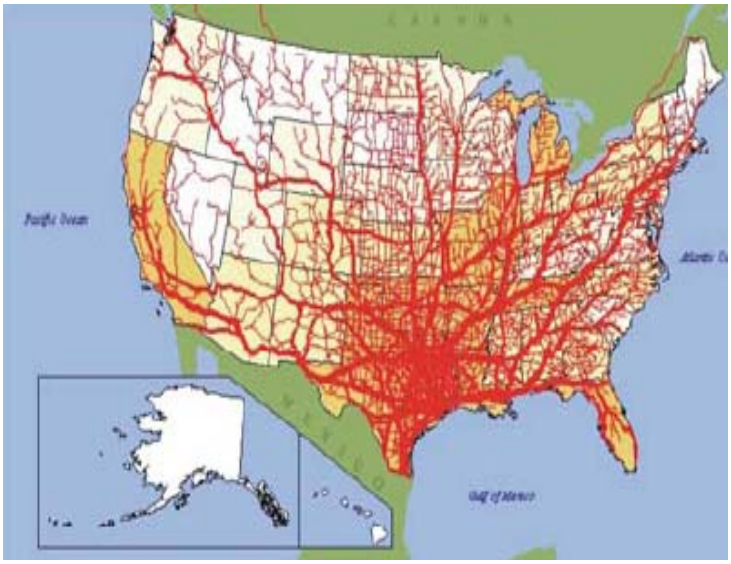
In Texas, this study was conducted in order to assist area decision makers in developing a freight transportation infrastructure that enhances safety, security, efficiency, and economy within the Corpus Christi metropolitan planning area. The MPO's project team researched existing data and information to help define freight movements on the roadways within the two-county area. They also contacted over forty-five individuals or organizations that play a role in the local freight picture.

Existing data that was reviewed and summarized included federal, state, and local resources. Demographic and socioeconomic data, state traffic counts, and data on tonnage and freight flows were just some of the information collected. Information from area project studies, city planning information, and federal and state highway studies and reports are provided in the report. Information was also collected on future area projects, such as the proposed La Quinta Trade Gateway and the new Joe Fulton International Trade Corridor, to provide an overview of some of the planned projects that could impact freight movements in this area. While the results do not represent a scientific survey, the individuals and organizations contacted provided a wealth of information about local freight practices and issues. Interviews were conducted with various elected and appointed officials, freight haulers, distributors, shipping agents, emergency responders, transportation officials, manufacturers, representatives of state and national trucking and transport associations, agricultural interests, local businesses and industries, and other freight interests. Using this information, the study identified key issues affecting freight movements in the two-county areas and discussed major area bottlenecks and potential projects that could produce major changes in the local conditions. While the focus of the study report was primarily truck-related movements, information on freight transportation by rail, barge, and pipeline were also discussed.

The study's findings point to a consistent trend that freight movements by truck are increasing in the area. The study identified a number of projects that could significantly increase truck and freight movements to the area. While the focus of this study was freight moved by truck, the need for improvements to the rail system was mentioned. The potential for additional intermodal rail-truck facilities and full service truck stops was identified. The study also pointed to the need to develop additional local data on truck movements and to work closely with freight community and key agencies involved with hazardous material analysis and response.

Chittenden County Regional Freight Study, Chittenden County MPO, 2001

The Chittenden County Metropolitan Planning Organization (CCMPO) has recognized the need to incorporate freight transportation planning into its regional transportation planning process. This study encompassed many different but complementary components that have been completed and integrated to form a comprehensive freight study. This effort was undertaken in coordination with the Statewide Freight Study conducted by the Vermont Agency of Transportation (VAOT). This project represented the first integrated freight initiative for the MPO. It provided the foundation and framework for the development of an ongoing freight transportation plan by describing the overall freight system and defining recommendations for future freight initiatives.



The goals of this study included:

- Develop a better understanding of the freight transportation system in Chittenden
- County;
- Acknowledge and address public concerns regarding specific freight movement practices;
- Provide data that can be used to preserve and improve the transportation system;
- Expand the tools available for freight planning efforts; and,
- Begin to identify and prioritize future investments in the freight transportation system.

The findings and conclusions were organized around five areas. These areas consist of the economy, the transportation infrastructure, freight flows, intermodal transportation, and institutional issues. Recommendations included:

- Incorporate the Freight Study findings into the Metropolitan Transportation Plan update to ensure freight movement needs are addressed on a continuing basis.

- Develop freight-specific projects for funding through the CCMPO's Transportation Improvement Plan (TIP) to address the infrastructure deficiencies affecting goods movement and to solidify the importance of freight in the overall project development and implementation process.
- Work with the Vermont Agency of Transportation to prepare an action plan to develop double-stack cleared rail routes in Vermont, based on required improvements in Chittenden County.

- Develop a stakeholder's forum for industry representatives to provide input and expertise to freight projects on an ongoing basis.

Atlanta Truck-only Toll (TOT) Facilities Study

As part of a series of studies for the future of transportation in the Atlanta region, the Georgia State Road and Tollway Authority commissioned a study of Truck-only Toll (TOT) facilities. The study, completed in 2005, was considered to be an important step in considering nontraditional solutions to Atlanta's transportation needs. The study showed that TOT lanes hold substantial promise of improving commercial vehicle mobility and improving the performance of the regional network of limited access highways and local roads. TOT lanes essentially are highway lanes that are reserved for use of commercial vehicles, primarily trucks and buses. By providing the option to commercial vehicles to use these lanes, freight movement can be more timely and reliable. In this study, the use of the TOT lanes was optional, i.e., trucks could use the lanes or elect to travel on the regular freeway. The study examined three scenarios, described below.

The first scenario was based on an analysis of truck flows on the limited access highway network in the region. Two major corridors were identified and it was assumed that two TOT lanes in each direction would be constructed in these corridors, in addition to HOV lanes, with access provided to the local road network at appropriate locations.

The second scenario focused on midday movements, which was the period of time identified as the one that accommodates the most commercial vehicle movements in the region, and local deliveries

in particular, as opposed to truck trips passing through the region. This scenario assumes that the TOT lanes from the first scenario are in place, but that HOV lanes also become TOT lanes during this period.

The third scenario suggested shifting of truck lanes into HOV lanes at specific locations, thus benefiting truck flow and the movement of passenger vehicles.

Overall the study found that under any of the three scenarios total vehicle hours traveled would be reduced, trucks traveling through the region would save time, congestion in the general purpose lanes would be reduced, and revenue could be generated to cover ongoing operating and maintenance costs.

Georgia DOT Statewide Truck Lanes Needs Identification Study, 2007

The Georgia Department of Transportation is conducting a study to examine the need for truck only lanes in Georgia. Truck only lanes are rare in the U.S., however the study is predicated on the fact that the rapid increase in truck travel in key locations in the U.S., especially near major ports and intermodal centers has caused a number of areas to consider truck only lanes to facilitate traffic flow and reduce the potential for truck-auto crashes. Additional information about the study and its process can be found at www.gatrucklanestudy.com.

New York City DOT Truck Route Management and Community Impact Reduction Study, 2006

From 2003 to 2006, the New York City Department of Transportation (DOT) was engaged in a study to coordinate engineering, education, information and enforcement efforts to mitigate the negative impacts relating to truck traffic, as well as to improve the overall truck management framework that exists in New York City. In New York, as in most major metropolitan areas, including Miami-Dade County, the movement of trucks and commercial vehicles is governed by various city, state, and federal guidelines. Perhaps the biggest challenge today is that nearly 99 percent of the goods and services needed to make the city function are provided by truck. The next biggest challenge is thee fact that the city's arterial system is more conducive to automobile traffic than trucks and most of the City's truck traffic is relegated to the arterial street network. The recommendations of the study were in five areas:

1. Signage improvements
2. Increased enforcement
3. Engineering and routing improvements
4. Regulatory and policy issues
5. Education and outreach

The signage recommendation focused on a complete redesign of the city's truck route signage. This revised program would feature new truck route identification signs, systematic placement of truck-related signs on truck routes, a revised system for negative sign[1] placement, and improved

[1] Negative signage are signs that prohibit an action, such as "No Trucks."

height clearance, way finding, and directional signage to assist truck drivers. The recommendations also include a program to achieve improved enforcement of illegal truck traffic. This focuses on several areas, including providing NYPD officers with information about truck route regulations, training in issues associated with trucks, and working with the courts to make sure violations are prosecuted when necessary. The study also focused on the truck routing by focusing on specific neighborhoods and communities with major truck issues. Key engineering issues dealt with wide turns and signal operations. Some of the regulatory proposals include time restrictions on the use of local truck routes in residential neighborhoods, providing incentives to businesses to encourage off peak deliveries, and creating preferred truck routing corridors on the City's parkways. Finally, the report recommended establishing a DOT Office of Freight Mobility, which would serve as the primary conduit through which education, enforcement, and goods management issues are coordinated and serve as the point of contact for most truck-related concerns brought by residents, truckers, and businesses.

3. Program Parameters

The discussion in this section focuses on those considerations that are considered vital to guiding the development of the Miami-Dade County Truck Route System. Goals and objectives were developed to provide a basis for defining program improvements. Program types – focusing on restrictive or supportive policies -- were reviewed to provide an overall focus to the system.

Goals and Objectives

The goals and objectives of the Miami-Dade County Truck Route System are as follows:

Goal 1: Ensure Safe and Efficient Movement of Goods

Objectives

- Ensure roadway geometrics are suitable for truck movements on major truck thoroughfares;
- Encourage infrastructure projects to the roadway system that improve truck movements and allow trucks to avoid congestion; and,
- Use technology to improve level of information available to truckers.

Goal 2: Minimize Road Congestion

Objectives

- Support truck-only roadway facilities;
- Offer alternatives for trucks to major routes such as SR 836; and,
- Consider incentives for off-peak travel by trucks.

Goal 3: Enhance Miami-Dade County Economy

Objectives

- Ensure adequate mobility to stimulate growth at Port of Miami and Miami International Airport;
- Support investment in infrastructure that enhances truck movements and reduces travel time; and,
- Discourage restrictions on trucks that would be disincentives to companies locating in Miami-Dade County.

Program Elements

A number of program elements were considered in the planning process and reviewed with the FTAC. Both restrictive and supportive policies were reviewed. Policies are classified as restricted when the action contemplated or carried out is intended to preserve the non-freight (residential,

business other than industry) community's travel patterns or routes at the expense of those of trucking and goods movement-related industries.[2] These are evident in Miami-Dade County such as in Doral where trucks are not allowed on 107th Avenue from 41st Street to 106th Street except for local traffic. Other examples are left-lane restrictions on highways such as on the Florida Turnpike.

Pro-freight truck management practices are those when the action is intended to improve, advance, optimize or maximize the ability of trucks to move effectively in an urban region, thus aiding operations of the freight industry.[3] Key components of a pro-freight program include designating truck routes and intermodal connectors, targeting funding for improvements related to trucking such as increasing turning radii along major truck routes, and supporting capital funding for projects related to goods movement.

The FTAC were presented with a number of proposals for truck management strategies. They did not support proposals that limited the ability of businesses to operate. An example is a proposal to restrict truck traffic during the peak hours. This was seen as prohibitive to shippers (floral, fish) who operate on very specific schedules that mandate they operate during the peak hour. Another example is the proposal to not allow trucks in the toll lanes of the proposed High-occupancy Toll Lane on I-95. While that issue is still being resolved, the FTAC felt that it would be in the best interest of everybody to allow trucks, whose owners would be willing to use and pay to use the lanes, to participate in the program.

[2] Cambridge Systematics, Inc., *Trends in Heavy Truck Traffic Management, Final Report*, prepared for Miami-Dade Metropolitan Planning Organization, February 2005.

[3] Ibid.

4. System Development

Stakeholders

The consultant met individually with representatives of the freight industry including companies associated with the floral distribution business, the frozen fish business, the freight forwarding business, the Port of Miami, Miami International Airport, the package distribution business and others. In addition, the consultant met with the FTAC at seven meetings and facilitated a workshop with FTAC in February 2007. Appendix A presents minutes of selected meetings.

Freight Markets and Corridors

The combination of Freight workshop held on February 28, 2007 at the Miami Free Trade Zone with the FTAC, and the previous analysis performed on this study an others over the past decade, several truck routes, bottlenecks and other projects have been identified as the basis for the Freight Management Plan. As identified, there are effectively three primary freight generation locations, and four secondary locations.

Primary generators include:

- Port of Miami/Downtown Miami
- Doral/Airport West
- South Dade/Homestead

Secondary generators include:

- NW 36th Street/Airport North
- North Palmetto Corridor
- Miami River
- Quarry pits west of the Homestead Extension of the Florida Turnpike (H.E.F.T.)

There are several primary corridors/routes which link these facilities:

- Downtown Miami/Port
- 836 from I-95 to Turnpike
- NW 112th Street from Turnpike to Airport
- NW 25th Street from Turnpike to Airport
- NW 107th Avenue from NW 112th Street to NW 58th Street
- NW 87th Avenue from NW 112th Street to NW 58th Street (to Okeechobee Rd.)
- NW 72nd Avenue from SR 836 to NW 74th Street
- Okeechobee Road from Turnpike to LeJeune
- South River Drive from SR 836 to LeJeune

- SR 826 from SR 836 to I-95
- I-95 from SR 826 to SR 836
- Krome Avenue from Homestead to Okeechobee Road

The following details the individual routes and possible improvements on each. The input for these improvements (Figure 4-1) was the February 28, 2007 freight workshop.

Downtown Miami/Port

All freight traffic destined to or originating from the Port of Miami must use the surface streets of Downtown Miami for ingress or egress. Multiple opportunities exist to access the port. The entrance to the Port is Port Boulevard (NE 6th Street). Trucks often cross Biscayne Boulevard and utilize NE 2nd Avenue north to I-395. At this location, there are two intersections directly abutting the north and south sides of I-395 on NE 2nd Avenue that need to be examined for their ability to handle heavy freight movement. Freight also uses NE 5th Street and North Miami Avenue to I-395 to access the port. Alternative traffic exiting I-95 utilizes NE 5th Street between I-95 and the Port. The northbound I-95 entrance from NE 9th Street allows no trucks to enter to access 836. Clearance is also a problem at this location. A slip ramp is desired at this location.

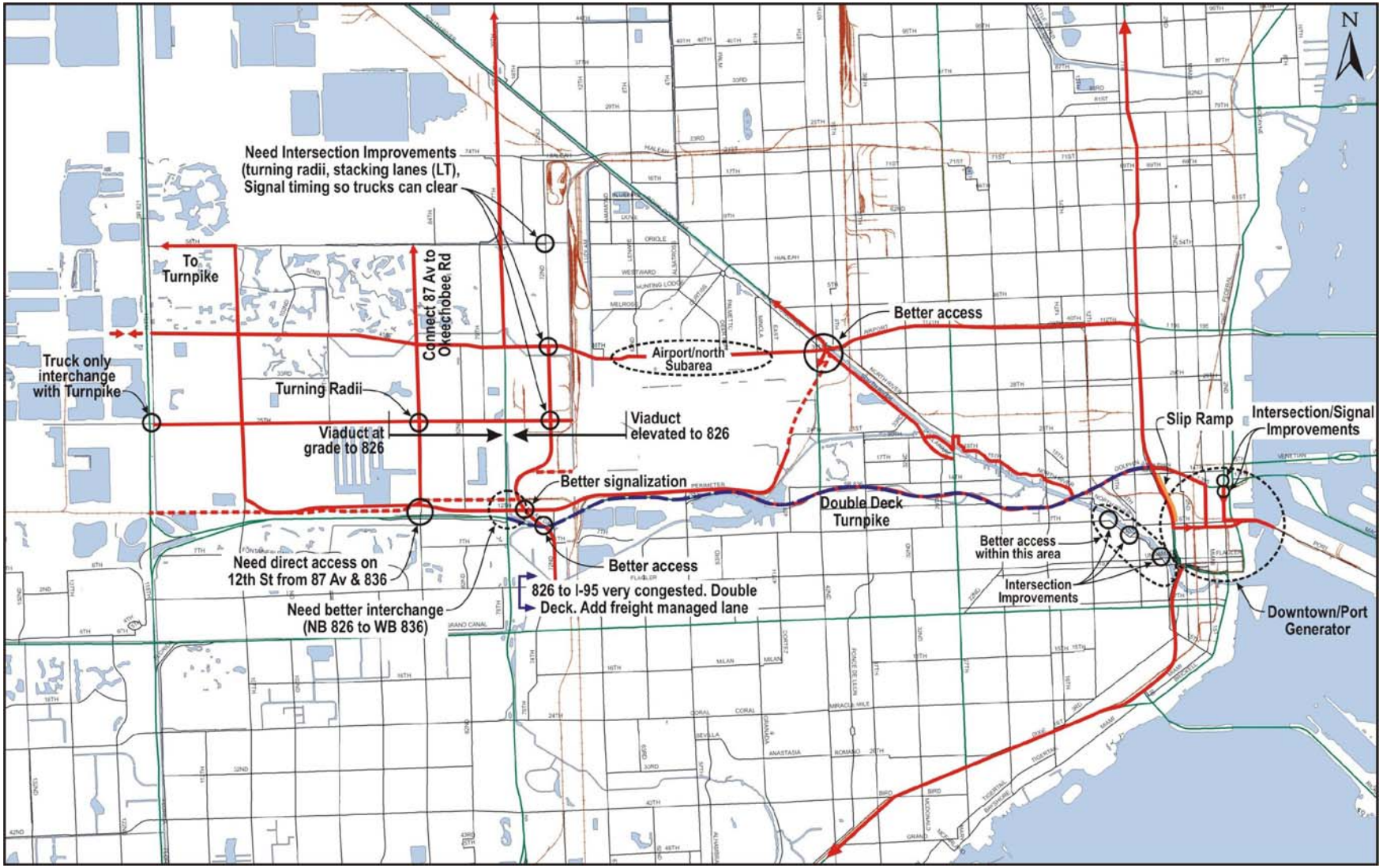
The biggest project currently facing the Port is the Port Tunnel. This $1 billion project has been promoted for years and as recently as summer 2007 was on track to be built as the result of a City, County, and State partnership. Recent developments associated with the City's willingness to finance the tunnel have left the report up in the air. The Port handles about nine million tons of cargo annually, most of which stays within the South Florida area. Since most of this freight is shipped locally, rail has not proven to be economical. As a result, a regional distribution system based on trucks has evolved and resulted in numerous conflicts both real and perceived in the downtown. The tunnel project, which would link the Port to I-395, would eliminate most of these conflicts. A study commissioned by the MPO and released in February 2007 examined the feasibility of a rail corridor from the Port using a tunnel to a point beyond the downtown was not really cost effective.

SR 836 from I-95 to Turnpike

State Road 836 from I-95 to the Florida's Turnpike is heavily congested many hours of the day. Because this east-west corridor is one of the most highly traveled truck route corridors and effectively links the Port of Miami and MIA with the Doral commercial area, the congestion has huge economic consequences in terms of travel time delay. Consensus has been reached that additional capacity is needed. The FTAC would like to see the entire facility double-decked. Some additional improvements to be considered include:

- Interchange between 836 and 72nd Avenue needs improvement.
- Interchange between 836 and 826 needs improvement.

Figure 4-1
Concepts from FTAC Workshop



Source: The Corradino Group, Inc.

NW 12th Street from Turnpike to Airport

NW 12th Street parallels SR 836 west of the Palmetto (SR 826) and serves as an exit point for traffic destined for Doral. As a result, there is significant truck presence in the traffic flow and the need for improvements to various parts of the road to accommodate trucks.

- Intersection at 12th Street and 72nd Avenue needs examination.
- Intersection at 12th Street and 87th Avenue and 836 needs direct, simple connection.
- Better signalization at Milam Dairy Road (72nd Avenue).

NW 25th Street from Turnpike to Airport

One of the heaviest traveled arterials in Miami-Dade County, NW 25th Street is the major connection between Miami International Airport and the Doral warehouse district. Freight forwarders, floral delivery service, frozen fish carriers, etc. need access between the airport and their locations in Doral.

- Need Truck-only interchange with Turnpike.
- Widen 25th from Turnpike to Airport.
- Elevated Viaduct from Turnpike to Airport.
- Eastbound traffic west of 826 needs access to Viaduct.

NW 107th Avenue from NW 12th Street to NW 58th Street

NW 107th Avenue in Doral is a major north-south artery in Doral that carries substantial truck traffic. Along the entire corridor there is a need for better intersection stacking, turning radii, and signal.

NW 87th Avenue from NW 12th Street to NW 58th Street (to Okeechobee Road)

NW 87th Avenue is another artery in Doral with commercial, industrial, and warehousing activity along the entire corridor. From south to north, key improvements include:

- Better interchange and direct access to 12th Street.
- Intersection at 25th Street needs better turning radii.
- Need to connect to Okeechobee Road from 58th Street.

NW 72nd Avenue from SR 836 to NW 74th Street

On NW 72nd Avenue, the intersections at 12th, 25th, 36th, 58th need improvement for turning radii, left-turn storage, and signal timing (left-turn clearance).

Okeechobee Road from Turnpike to LeJeune

There is a need for better access at intersection of Okeechobee and LeJeune.

South River Drive from SR 836 to LeJeune

There are many container yards in this area and very little access. Better access from I-95 or 836 is desired.

SR 826 from SR 836 to I-95

As with 836, double-decks of SR-826 between SR 836 and I-95 is seen as a key improvement to facilitate more efficient truck movement. Managed lane for freight with tolls should be considered.

I-95 from SR 826 to SR 836

I-95 is already being considered for a managed lanes demonstration program. Currently, there is no provision for trucks as possible participants. The FTAC strongly encouraged inclusion of trucks in the managed lane concept.

Krome Avenue from Homestead to Okeechobee Road

Krome Avenue is the western major arterial in Miami-Dade County. Much of its traffic is commercial. It should be four lanes and include a truck bypass of Homestead.

Traffic Flows and Projections

Traffic on most major arteries in Miami-Dade County is heavily congested during the peak hours, and increasingly during the off peak periods of the day as well, and expected to get worse. Truck traffic in Miami-Dade County has historically been related to the middle of the County with the Port of Miami on the east and the Free Trade Zone on the west as key generators. Other major generators are the FEC rail yard, Miami International Airport, and the Miami River port. Over the last decade, the Doral area around the Free Trade Zone has grown into a major warehousing and distribution center. The major roads used by trucks – I-95, SR 836, SR 826, 25th Street, and others all have significant congestion. Figure 4-2 shows 2000 and 2030 traffic. Figure 4-3 shows Average Annual Daily Truck Traffic (AADT) for 2000 and 2030. Table 4-1 shows truck flows by segment on expressways at major arterials in Miami-Dade County. Given the volumes today, approximately 26,000 trucks per day on I-95, 3400 on SR 836, and 2400 on SR 826, and that on these major roads, it is clear that major capacity relief in the future will be critical to maintaining any kind of traffic flow. This becomes more critical every day because of the economic deterrent of rampant congestion on businesses considering starting up in or locating to the County. An additional component of improving truck traffic flow is regular traffic. And despite the perception of many people that trucks are everywhere, the reality is that most roads in the County have less than 10 percent trucks, which suggests that a truck-only solution on these already very congested facilities may not be feasible. Figure 4-4 shows 2000 and 2030 truck AADTs which illustrates the new (red) growth in truck traffic. Figure 4-5 shows that there are a number of locations where truck traffic exceeds 10 percent which Figure 4-6 illustrates as dramatic increase in percent trucks, particularly in southwest Miami-Dade County.

Figure 4-2
Average Daily Traffic

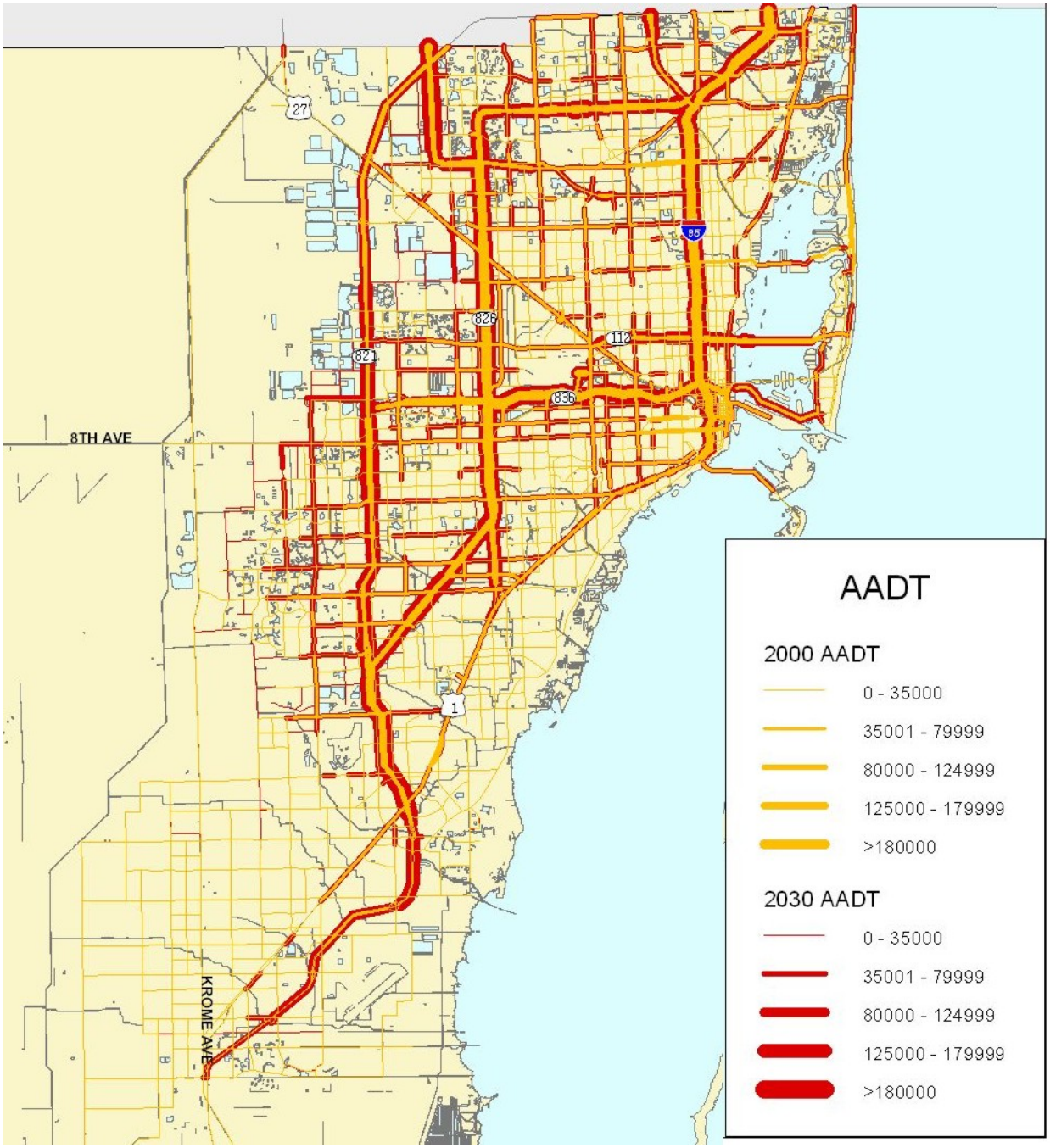


Figure 4-3
Average Daily Truck Traffic

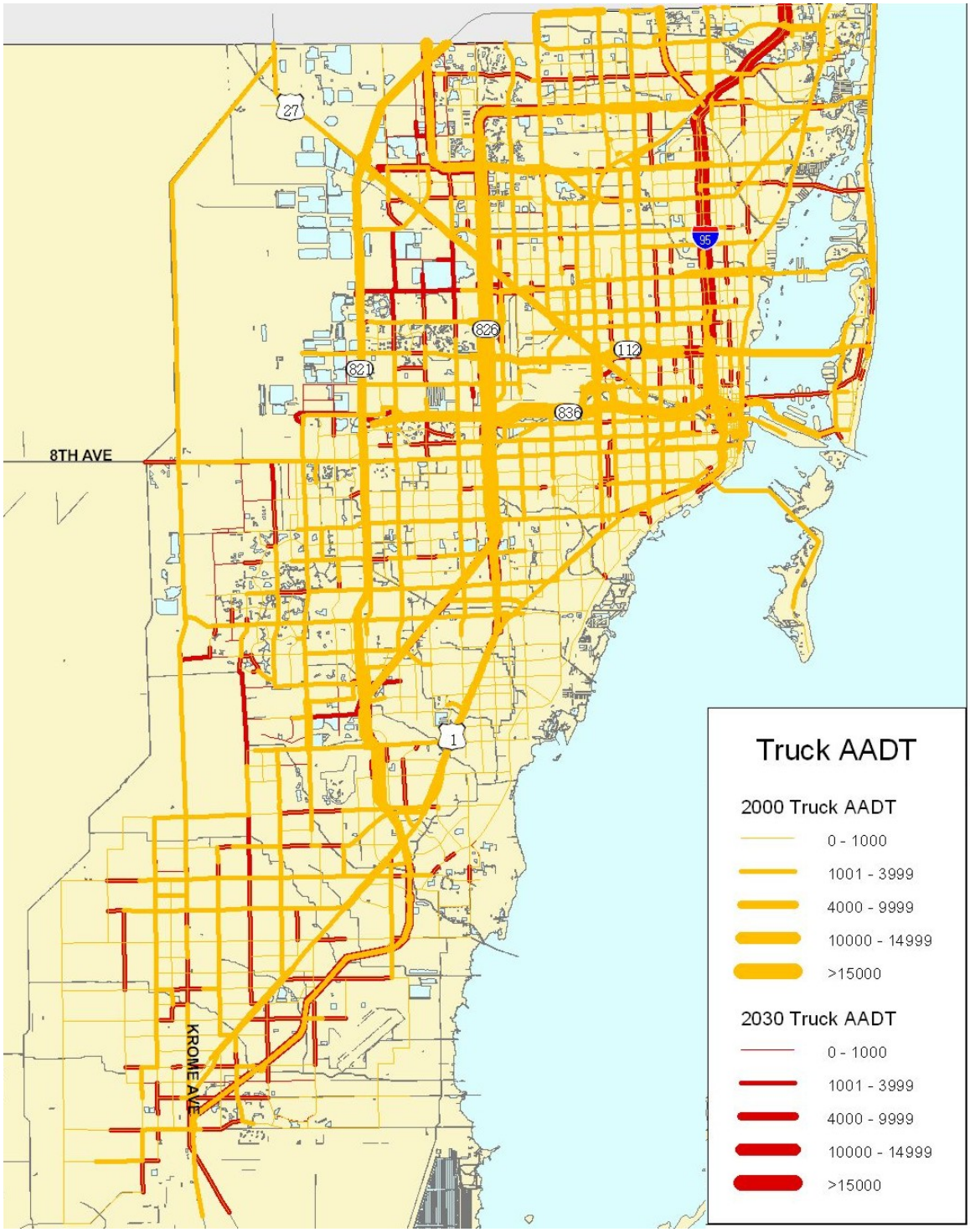


Figure 4-4
2000 AADT Percent Trucks

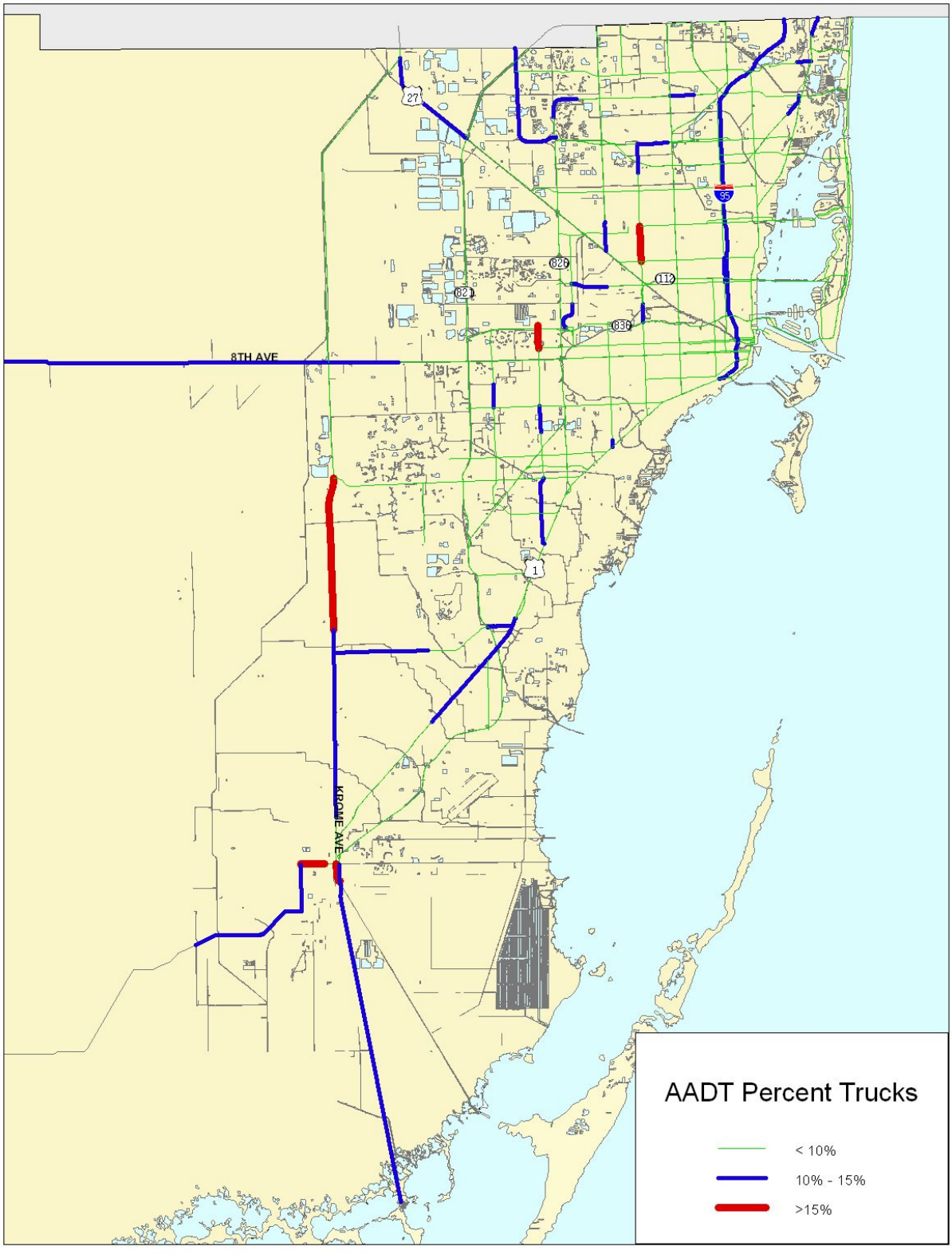


Figure 4-5
2030 AADT Percent Trucks

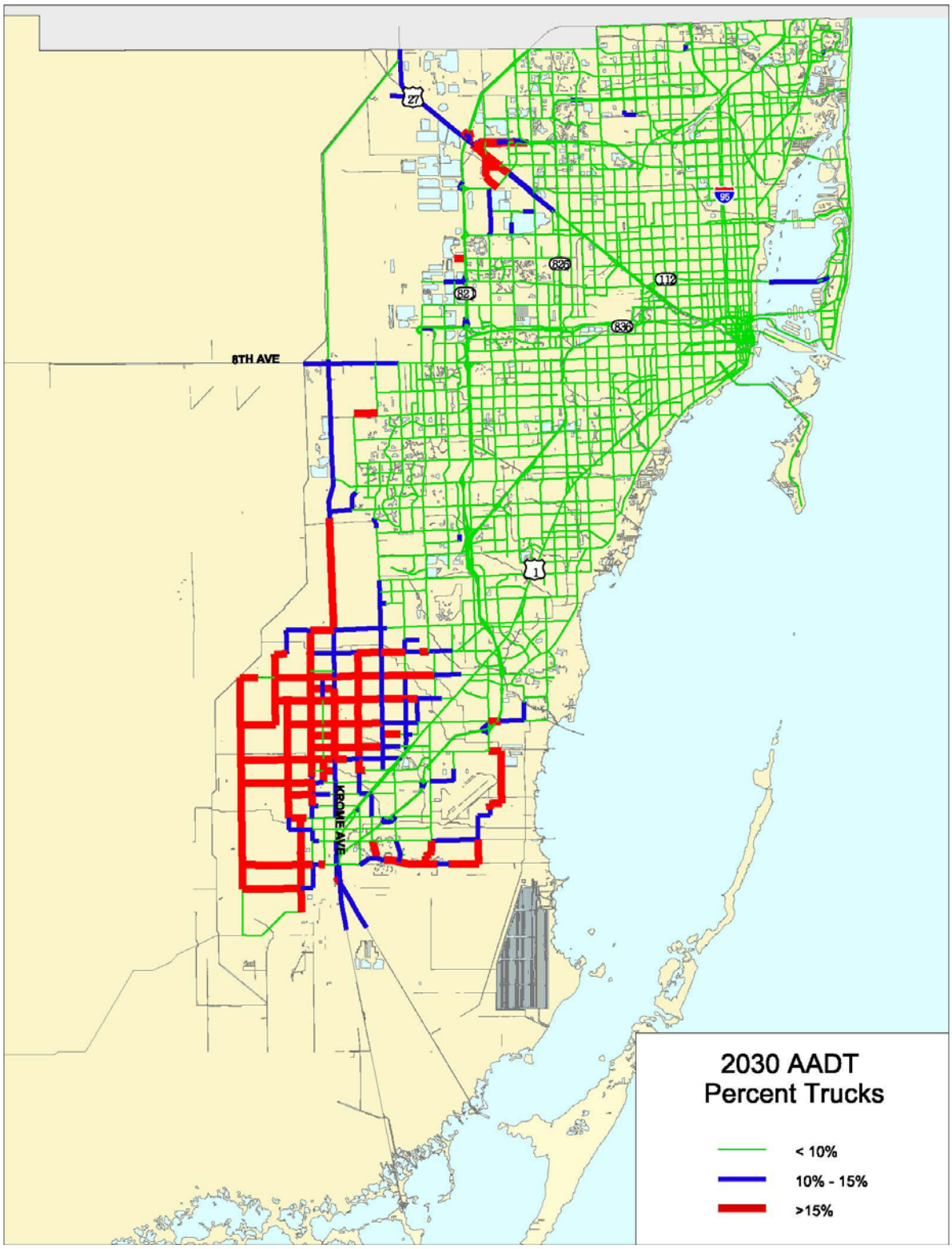


Table 4-1
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
Palmetto Expwy/SR 826	124	200' W Collins Av/SR A1A	45,000	5.46%	2,457
	556	NE 163rd St 200' E SR 5/U.S. 1	61,500	5.46%	3,358
	5222	NE 163rd St 200' W SR 5/ U.S. 1	47,000	5.46%	2,566
	5225	NE 163rd St 200' W NE 19 Av	51,000	5.46%	2,785
	5229	NE 167th St 200' W NE 10 Av	56,000	5.46%	3,058
	366	NE 167th St 200' E N Miami Av	62,000	5.45%	3,379
	2114	1500' E NW 12 Av	144,500	1.54%	2,225
	581	1000'E NW 17 Av	122,500	1.54%	1,887
	579	1000' E NW 27 Av	144,500	1.54%	2,225
	578	1500' W NW 27 Av	134,500	1.54%	2,071
	577	1000' E NW 47 Av	118,500	1.54%	1,825
	405	1100' E NW 57 Av/SR 823	115,000	1.54%	1,771
	554	1100' W NW 57 Av/SR 823	101,500	1.54%	1,563
	137	2600' W of NW 67th Av	133,799	1.54%	2,061
NE 125 St/SR 922	132	400' W of Harding Av	26,000	2.43%	632
	1023	200' W N Bay Shore Dr	24,000	2.43%	583
	126	150' E NE 6 Av	39,000	2.43%	948
	2535	200' E NW 6 Av	33,000	2.43%	802
Miami Gardens Dr/SR 860	150	200' E W Dixie Hwy	37,500	11.07%	4,151
	1229	200' E NE 8 Av	48,000	2.43%	1,166
	1230	200' W NE 2 Av	37,000	2.43%	899
	148	200' W NW 10 Ct/E Fla. TPK	38,000	2.43%	923
	146	200' E NW 14 Av/W Fla. TPK	36,000	2.43%	875
	1232	200' W SR 817/NW 27 Av	25,000	7.78%	1,945
	1233	200' E Red Rd/NW 57 Av	28,500	8.39%	2,391
	2516	200' W SR 823/Red Rd	35,000	2.43%	851
	2517	200' W NW 67 Av	35,500	2.43%	863
	2518	200' W NW 87 Av	37,500	3.01%	1,129
Gratigny Dr/SR 924	122	200' E of NW 11 Av	44,500	5.46%	2,430
	1220	400' E of NW 24 Av	47,500	5.46%	2,594
	2510	200' W SR 9/NW 27 Av	39,500	5.46%	2,157
	2512	1000' W SR 953/LeJeune Rd	38,500	8.28%	3,188
	2511	200' E NW 67 Av	52,500	7.49%	3,932

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

Table 4-1 (continued)
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
NW 103 St/SR 932	2080	200' E I-95	27,500	2.43%	668
	1214	200' E NW 27 Av	28,500	5.46%	1,556
	1215	200' E of E 8 Av (Hialeah)	40,500	5.46%	2,211
	1216	400' E of W 16 Av (Hialeah)	57,000	6.80%	3,876
	1217	1400' E of W 28 Av (Hialeah)	21,800	2.43%	530
SR 934	104	NE 79 St/ One way Pair EB, 200' W NE 4 Ct	26,500	5.46%	1,447
	105	NE 82 St/One Way Pair WB, 200' W NE 3 Pl	15,000	5.46%	819
	546	NW 79 St, 400' E NW 17 Av	44,500	5.46%	2,430
	539	NW 79 St, 400' E NW 27 Av	47,500	7.41%	3,520
	538	NW 79 St, 400' W NW 27 Av	26,500	4.92%	1,304
	537	NW 79 St, 500' E SR 953/ LeJeune Rd	27,500	4.92%	1,353
	536	NW 74 St/E 21 St (Hialeah), 400' W Palm Av	37,500	4.92%	1,845
	535	NW 74 St Connector, 200' W NW 57 Av	40,000	2.43%	972
	534	NW 74 St Connector, 200' E NW 72 Av	43,500	2.43%	1,057
NW 54 St/SR 944/Hialeah Dr	541	200' W of E 12 Av (Hialeah)	20,500	2.43%	498
	5265	200' W of SE 8 Av (Hialeah)	23,500	2.43%	571
	5341	200' E of Okeechobee Rd/SR 25	21,100	2.43%	513
	5348	200' W of NW 12 Av	22,500	6.84%	1,539
	5355	200' W of SR 5/U.S. 1	11,800	2.43%	287
Okeechobee Rd/SR 25/U.S. 27	7	200' NW of SR 821/HEFT	27,500	13.00%	3,575
	107	NW 36 St, 200' W of NW 37 Av	20,000	2.43%	486
	109	1000' NW of NW 103 St	45,000	5.09%	2,291
	200	700' SE of Hialeah Dr	43,500	5.09%	2,214
	584	200' S of Miami-Dade/Broward	22,000	6.40%	1,408
	2536	1000' of NB Ramp to HEFT	24,000	23.77%	5,705
	2537	500' NW of SR 826	45,000	11.49%	5,171
	5077	NW 36 St, 200' E of I-95	14,900	5.25%	782
	5079	NW 36 St, 200' W of NW 7 Av	15,900	2.43%	386
	5080	NW 36 St, 200' E of NW 27 Av	21,800	2.43%	530
	5083	NW 36 St, 200' W of NW 12 Av	17,500	2.43%	425
	5087	NW 36 St, 200' W of NW 27 Av	23,500	8.56%	2,012
	5252	200' SE of W 12 Av (Hialeah)	29,000	5.46%	1,583

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

Table 4-1 (continued)
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
I-195/SR 112	108	1600 ' E of SR-5/U.S. 1	96,863	1.54%	1,492
	2060	Airport Expwy, 1500' W of NW 27 Av	90,500	1.54%	1,394
	2055	Airport Expwy, 1500' E of NW 27 Av	89,500	1.54%	1,378
	2050	Airport Expwy, 200' W of NW 17 Av	82,500	1.54%	1,271
	2023	Airport Expwy, 200' E of NW 17 Av	95,500	1.54%	1,471
Dolphin Expwy/SR 836/I-395	2506	100' E of NW 2 Av	103,500	2.39%	2,474
	2240	200' W of BRIDG of NW 10 Av	133,500	2.39%	3,191
	2208	400' W of NW 12 Av	130,500	2.39%	3,119
	2232	800' E of NW 27 Av	161,000	2.39%	3,848
	2210	300' W of NW 27 Av	183,500	2.39%	4,386
	2207	1500' E of LeJeune Rd	139,500	2.39%	3,334
	2198	900' E of Red Rd/NW 57 Av	166,000	2.39%	3,967
	2193	900' W of Red Rd/NW 57 Av	186,000	2.39%	4,445
	2188	200' E of SR 826/ Palmetto Expwy	203,000	2.39%	4,852
	2244	1600' E of NW 87 Av	97,500	2.39%	2,330
	187	.8 Mi E of NW 107 Av Underpass	146,000	2.39%	3,489
	2243	300' E of NW 107 Av	107,500	2.39%	2,569
	2242	300' W of NW 107 Av	94,000	2.39%	2,247
Flagler St/SR 986	99	200' W of NW/SW 8 Av	15,800	2.43%	384
	98	SW 1 Street 200' W of SW 8 Av	14,000	2.43%	340
	97	400' W of NW/SW 27 Av	36,000	6.86%	2,470
	1138	70' W of SW 36 Av	40,500	6.86%	2,778
	94	350' W of Le Jeune Rd	39,000	2.43%	948
	1139	200' E of SW/NW 72 Av	52,000	3.83%	1,992
	1140	400' W of SW/NW 72 Av	52,000	2.43%	1,264
	1141	400' W of SR 826/ Palmetto Expwy	67,500	2.43%	1,640
	1142	200' E of NW 87 Av	55,500	2.43%	1,349
SW 8 St/SR 90/U.S. 41	5096	SW 7 St One Way WB, 200' E of SW 7 Av	17,000	3.74%	636
	5095	One Way EB, 200' E of SW 7 Av	19,000	4.54%	863

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

Table 4-1 (continued)
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
SW 8 St/SR 90/U.S. 41 (continued)	5098	One Way EB, 200' W of SW 12 Av	23,000	5.46%	1,256
	5097	SW 7 St One Way WB, 200' W of SW 12 Av	17,500	5.46%	956
	5099	SW 7 St One Way WB, 200' W of 17 Av	21,000	5.46%	1,147
	5100	SW 8 St One Way EB, 200' W of SW 17 Av	29,000	5.46%	1,583
	5105	SW 7 St One Way WB, 200' E of Beacon Blvd	16,000	5.46%	874
	5103	SW 8 St One Way EB, 200' E of Beacon Blvd	20,500	5.46%	1,119
	5104	200' W of SW 27 Av	33,500	6.36%	2,131
	5117	200' E of SW 37 Av	40,500	4.96%	2,009
	118	200' E of Red Rd/SW 57 Av	48,000	5.46%	2,621
	527	200' W of Red Rd/SW 57 Av	41,500	5.46%	2,266
	5	200' E of SW 74 Av	46,500	5.46%	2,539
	92	200' E of Galloway Rd/ SW 87 Av	58,000	5.46%	3,167
	589	200' W of SW 87 Av	52,000	5.46%	2,839
	90	200' E of SW 109 Av	56,500	6.14%	3,469
	2561	.25 M W of SW 122 Av	70,000	5.46%	3,822
	88	200'E of SW 137 Av	49,500	5.46%	2,703
	266	E of 139 Av	39,634	6.99%	2,770
Coral Way/SR 972	1038	1100' W of SW 2 Av	45,500	9.10%	4,141
	1037	1000' W of SW 12 Av	35,000	4.34%	1,519
	2534	200' E of SW 37 Av	44,000	2.43%	1,069
Bird Rd/SR 976	1048	200' W of SW 42 Av	51,000	5.46%	2,785
	1049	200' E of SW 57 Av	49,000	6.66%	3,263
	80	400' W of SW 57 Av	55,500	5.46%	3,030
	78	200' E of SW 7800 Block	72,500	5.46%	3,959
	76	200' W of SW 87 Av	53,000	5.46%	2,894
	74	200' E of SW 107 Av	52,000	5.46%	2,839
	72	600' E of FLA TPK/SR 821	53,000	4.59%	2,433
Sunset Dr/SR 986	70	200' W of SR 5/U.S. 1	29,500	6.13%	1,808
	1067	200' E of SR 826/Palmetto Exwy	39,000	2.43%	948
	1068	200' W SR 826/Palmetto Exwy	37,000	9.47%	3,504
	68	200' E of SW 107 Av	44,000	6.56%	2,886
	1070	200' W of SW 107 Av	41,000	6.56%	2,690
	1071	200' W of Fla. TPK/SR 821	49,500	2.43%	1,203

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

Table 4-1 (continued)
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
Kendall Dr	684	200' E SW 79 Av	50,000	2.03%	1,015
	66	200' W of SR 973/SW 87 Av	55,500	2.03%	1,127
	188	150' W of SW 91 Ave	47,044	2.03%	955
	64	200' E of Sw 103 Av	63,000	2.03%	1,279
	592	200' E of SW 110 Av	60,500	2.03%	1,228
	62	200' E of Sw 127 Av	80,000	2.03%	1,624
	60	200' E of Sw 137 Av	70,000	2.03%	1,421
	1080	200' W SW 147 Av	44,000	2.03%	893
	2529	200' W of SW 157 Av	26,000	2.03%	528
	2559	200' W of Sw 167 Av	18,400	2.03%	374
Killian Dr/SR 990	1093	200' W of SR 5/U.S. 1	11,400	2.43%	277
	58	200' W of Sw 87 Av	13,600	2.43%	330
	1089	100' E of N Ramp to SR 874	33,000	3.54%	1,168
Quail Roost Dr/SR 994	1114	200' W of U.S. 1 on SW 186 St	20,200	10.49%	2,119
	54	200' W of Fla. Tpk/SR 821	29,000	2.43%	705
	1116	200' W of SW 127 Av	16,700	5.96%	995
	1117	200' E Krome Av/SR 997	7,900	12.11%	957
I-95/SR 9	2487	200' S of Miami-Dade/Broward	224,000	13.36%	29,926
	2485	200' S Ives Dairy Rd/ SR 852	177,500	13.36%	23,714
	2554	200' N of 183rd St/Miami Gardens Dr/SR 860	171,000	13.36%	22,846
	2137	200' N of Golden Glades Interchange	168,000	13.36%	22,445
	2134	200' S NW 151 St.	258,000	13.36%	34,469
	2100	200' N NW 125 St	243,000	13.36%	32,465
	2095	200' S SR 112/Airport Expwy	213,000	13.36%	28,457
	2041	200' S NW 95 St	291,000	13.36%	38,878
	2036	200' S NW 79 St/SR 934	208,000	13.36%	27,789
	2553	200' S of NW 62 St	194,500	13.36%	25,985
	2505	200' S NW 6 St	134,500	13.36%	17,969
	2162	200' N SR 5/U.S. 1	101,500	13.36%	13,560
Palmetto Expwy/SR 826	576	1000' N NW 138 St	115,500	1.54%	1,779
	575	1200' N NW 122 St	133,000	1.54%	2,048
	574	1000' N NW 103 St	158,000	1.54%	2,433
	553	600' N Okeechobee Rd	173,000	1.54%	2,664
	573	1000' N NW 74 St	185,000	1.54%	2,849
	572	1000' N NW 58 St	181,000	1.54%	2,787
	571	1000' N NW 36 St	175,500	1.54%	2,703

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

Table 4-1 (continued)
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
Palmetto Expwy/SR 826 (continued)	570	1000' N NW 12 St	205,000	5.12%	10,496
	569	1000' N Flagler St	175,500	1.54%	2,703
	568	200' N SW 8 St/SR 90	216,000	1.54%	3,326
	567	1100' N SW 24 St	200,000	1.54%	3,080
	566	200' N SW 40 St/SR 976	172,500	1.54%	2,657
	565	500' N SW 56 St	100,500	1.54%	1,548
	564	1000' N SW 72 St	97,000	1.54%	1,494
	563	800' N N Kendall Dr	59,500	1.54%	916
	562	100' S SR 94/Kendall Dr	37,000	1.54%	570
Collins Ave/A1A	314	400' N SR 856/NE 192 St	25,000	7.78%	1,945
	269	300' N NE 172 St	48,000	5.46%	2,621
	2645	200' N of Miami Beach Blvd	49,000	5.46%	2,675
	540	200' S End Bridge/ NCL Bal Harbor	47,500	5.46%	2,594
	525	100' N 87 St	25,000	5.46%	1,365
	2541	200' S of 63 St	16,000	5.46%	874
	11	4000' N W 46 St	44,000	5.93%	2,609
	5170	N of 21 St	25,500	5.46%	1,392
	5159	200' N 5 St	16,100	5.46%	879
Alton Rd/SR 907	2647	200' N of Nautilus Dr	6,500	0.00%	-
	12	200' N of 20 St	46,500	5.26%	2,446
	2542	200' S of Venetian Cswy	34,000	5.26%	1,788
Fla. Trpk/SR 821	2285	MP 39.0 APPROX.	46,200	7.63%	3,525
	2248	2000' N Okeechobee Rd/SR 25	85,800	7.63%	6,547
	2272	100' S Okeechobee Rd/SR 25	91,400	7.63%	6,974
	2268	Okeechobee Plaza	99,800	7.63%	7,615
	2526	1000' S NW 36 St	99,000	7.63%	7,554
	2230	South of NW 41ST St	97,700	7.63%	7,455
	2250	300' N SW 8 ST/SR 90	172,100	7.63%	13,131
	2270	1000' N Bird Rd/SW 40 St	136,000	7.63%	10,377
	2252	1500' N North Kendall Dr/ SR 94	112,600	7.63%	8,591
	2246	2000' S North Kendall Dr/ SR 94	92,100	7.63%	7,027
	2290	MP 18.0	85,800	7.63%	6,547
	2266	300' S South Dade Expwy/ SR 874	158,100	7.63%	12,063
	2254	200' N Brg AT Richmond Dr/ SW 168 St	128,300	7.63%	9,789

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

Table 4-1 (continued)
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
Fla. Trpk/SR 821 (continued)	501	0.5 Mi S of Quail Roost Dr	101,500	7.63%	7,744
	2256	200' S Quail Roost Dr Exit	101,500	7.63%	7,744
I-75/SR 93	2501	200' S of Miami Gardens Dr/ SR 860	111,000	13.36%	14,830
	2502	200' S of Fla. Tpk/HEFT/SR 821	117,500	13.36%	15,698
NE 6th Av/SR 915	168	200' S of NE 170 St	28,000	2.43%	680
	166	200' S of NE 163 St	25,500	2.43%	620
	258	220' S of NE 157 St	27,114	2.43%	659
	1010	200' S NE 111 St	14,200	2.43%	345
	1009	400' N SR 5/U.S. 1	12,400	2.43%	301
NW 7 Av/SR 7/ U.S. 441/	436	200' N of NW 147 St	24,500	2.43%	595
	128	200' N of NW 119 St/SR 924	35,000	2.43%	851
	5014	200' S of NW 119 St/SR 924	39,500	2.43%	960
	235	200' N NW 95 St	33,000	2.43%	802
	529	200' N of NW 81 St/SR 934	38,500	2.43%	936
	5144	500' N of NW 62 St	25,000	2.43%	608
	5141	250' N of NW 54 St	23,500	2.43%	571
	5005	200' N of NW 20 St	25,000	2.43%	608
	5003	200' N of NW 6 St	17,600	2.43%	428
NW 27 Av/SR 9/SR 817	1167	400' S of Dade/ Broward County Line	50,000	5.93%	2,965
	559	100' N of SR 826/NW 167 St	54,500	5.46%	2,976
	560	100' S of NW 151 St	41,000	6.80%	2,788
	22	100' N of NW 138 St/York St	57,000	5.87%	3,346
	519	100' S of NW 135 St/SR 916	44,500	5.87%	2,612
	23	100' N of NW 103 St	44,500	8.07%	3,591
	431	100' S of NW 103 St	40,000	8.07%	3,228
	135	200' S of NW 95 St	45,500	7.88%	3,585
	20	100' S NW 79 St/SR 934	35,500	8.07%	2,865
	2543	200' N of NW 54 St	35,000	8.07%	2,825
	1166	200' N of NW 17 St	56,000	6.73%	3,769
	552	200' S of SR 836/ Dolphin Expwy	59,500	8.07%	4,802
SR 874	2278	300' NE SW 87 Av	48,000	1.54%	739
	2565	700' S of Ramp #87021003	35,000	1.54%	539
	2276	300' N of Killian PKWY	111,000	1.54%	1,709
	2274	500' N of Toll/S Killian PKWY	71,000	7.36%	5,226

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

Table 4-1 (continued)
Truck Volumes on Expressways and Major Arterials in Miami-Dade County

Roadway	Site	Segment	AADT[1]	"T" Factor[2]	AADTT[3]
Krome Av/SR 997	4	1050' S of SW 8 St/Tamiami Trl	15,100	5.18%	782
	361	200' N Silver Palm Dr/ SW 232 St	15,100	14.35%	2,167
	40	200' N Coconut Palm Dr/ SW 248 St	15,300	14.35%	2,196
	43	200' S of Avocado Dr/ SW 296 St	16,300	13.90%	2,266
	131	200' S of SE 8 St (Fla. City)	11,900	5.46%	650
	518	400' NW SR 5/U.S. 1	4,900	16.18%	793
U.S. 1/SR 5	543	2500' S Palm Dr (Fla. City)	26,000	13.20%	3,432
	544	100' N Lucy St/SW 328 St (Homestead)	29,000	5.46%	1,583
	545	100' N of SW 308 St	31,500	5.46%	1,720

Source: Florida Department of Transportation

[1] Average Annual Daily Traffic (two-way)
[2] "T" factor based on FDOT classification counts. Shaded areas refer to adjustments made by consultant to account for logical application and local knowledge.
[3] Annual Average Daily Truck Traffic (two-way)

5. Recommended Truck Route System

Proposed Truck Route System

Based on the work conducted in this study, and input from the FTAC, a proposed truck route system for Miami-Dade County was developed. There are several projects in current planning that affect the truck proposed system which have been referenced earlier in this report. The first is the 25th Street Viaduct Project, which will connect the airport to the Doral Area using an elevated bridge over 25th Street. A second project is the Port Tunnel from the Seaport to I-395. This project, which is currently anticipated for completion in 2013 but which has been on again and off again for a number of years, will have a dramatic impact on truck traffic in downtown if built. These and others will be important elements of the truck route system.

Figure 5-1 presents the system. As shown, it consists of the primary expressway corridors along with arterials that are key to overall truck movement. The system has 24 individual sections and includes a possible truckway corridor that would be located in right-of-way currently owned by CSX west of SR 826. Table 5-1 provides a listing of improvements for each of these sections. The improvements are separated in short-term, long-term, and policy type improvements. Suggested restrictions are also noted.

As a result of this research for this report it is apparent than states across the nation are facing a broad array of challenges attributable to increasing truck traffic. These include traffic congestion, transportation system deficiencies, safety, infrastructure deterioration, intermodal connections, environmental impacts, quality of life, economic development, and losses in productivity. The challenges that are most prevalent include congested urban highways, insufficient truck parking, and pavement deterioration, environmental issues including air quality and noise impacts, and economic issues such costs and lost productivity.

Agencies across the nation are undertaking a wide array of planning activities for dealing with truck traffic, including regional and local freight planning. Relatively few of the planning efforts have yet to be completed. The jury is still out as to the effectiveness of such planning. A wide range of potential strategies for managing increasing truck traffic, are being included, including improved highway design, special roadway facilities for trucks, operational improvements, intelligent transportation systems, improved signing, regulatory changes in allowed vehicle size or configuration, enhanced enforcement and compliance, and investments in alternative infrastructure.

Figure 5-1
Miami-Dade County Truck Route System

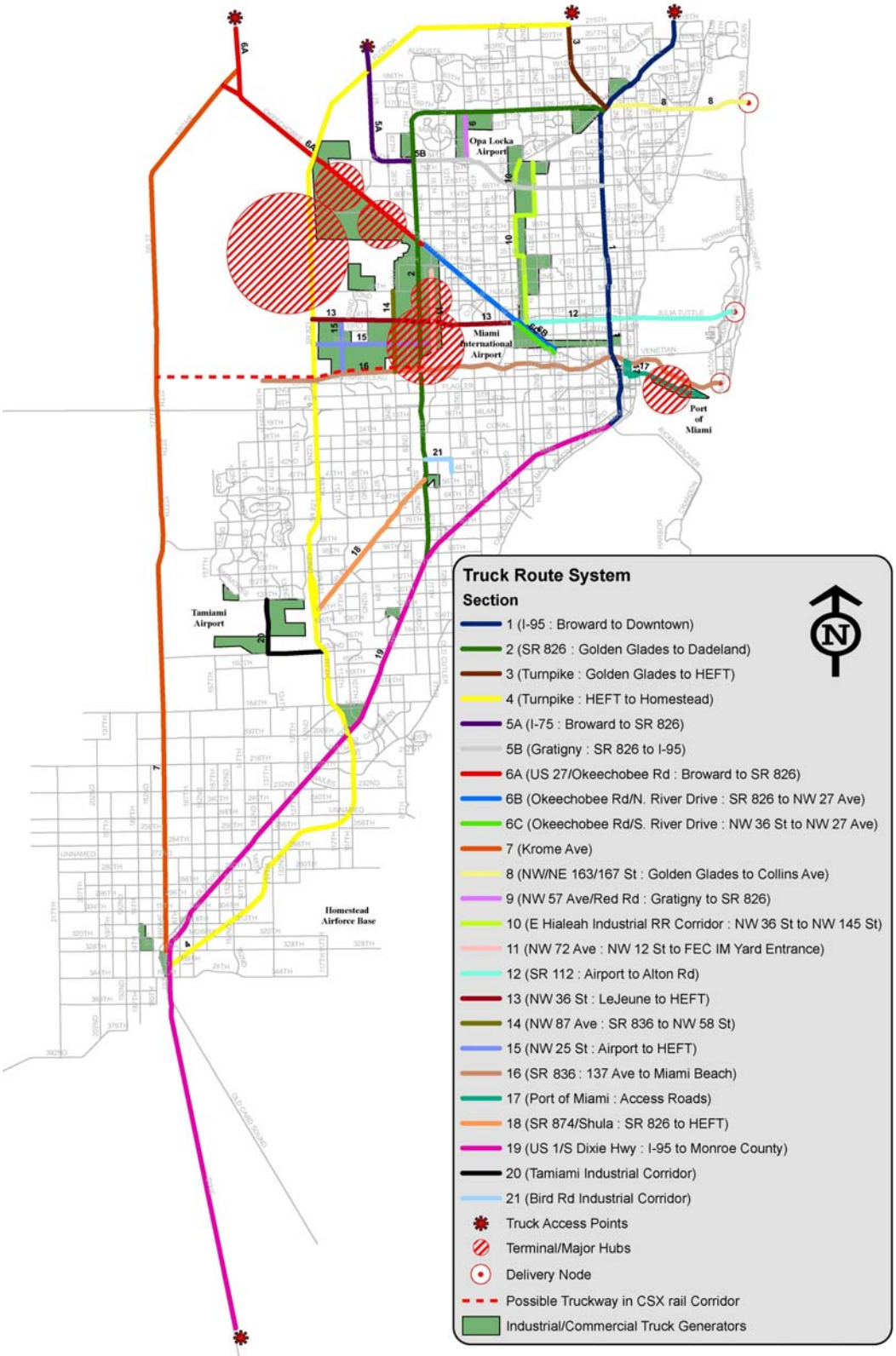


Table 5-1
Miami-Dade County Truck Route System Improvement/Policy Matrix

Section	Improvement			Restrictions
	Short-term	Long-term	Policy	
All Routes/All Sections	Emphasis on infrastructure and signalization improvements based on operation standards suited for trucks. Uniform signage consistently placed, based on Facility Type (similar logo but different size signs and fonts for Expressways, Major Arterials, Minor Arterials and Local Streets).	Traffic conditions monitored and data regularly compiled, analyzed, and published; traffic conditions displayed on MPO Freight Web site and sent to trucker Web site(s) (and eventually trucks) real-time; separate truck lanes and truck facilities planned and built into major expansion projects	Actively foster truck travel on identified and designated truck routes to access major Miami-Dade terminals, hubs, and economic generators; fund truck-favorable roadway improvements	Actively discourage through truck travel on non-truck route facilities; encourage enforcement to assist in promoting truck routes and reducing off-route through travel; create updated mapping of truck-restricted areas in the County
1 - I-95 (Broward County Line to Downtown)	Coordinate with pilot managed lanes program. Consider right lane designation for trucks (only 12-foot lane)	Traffic conditions monitored and data regularly compiled, analyzed, and published; traffic conditions displayed on MPO Freight Web site and sent to trucker Web site(s) (and eventually trucks) real-time; separate truck lanes and/or truck-only-toll lanes in future expansion projects.		With implementation of managed lanes, only 12-foot wide lane will be right lane. This should be signed as a truck lane.
	Coordinate with managed lanes program	Promoting Tri-Rail and Metrorail alignments in N & NE Corridors to reduce personal vehicle volumes	Economic generators; fund truck-favorable roadway improvements	Innermost 1-2 (or 3?) lanes will probably be/remain truck-restricted
	Slip ramp at NW 6th St with NW/NE 5th/6th St Improvements (see Port of Miami roadways)			Innermost 1-2 (or 3?) lanes will probably be/remain truck-restricted
2 – SR 826 (Golden Glades to Dadeland)	Widening/adding lanes to increase capacity	Elevated center lanes fly-over for passenger traffic Golden-Glades to SR 836	Not just accommodate but actively encourage truck use on this facility	
	Completion of full interchange with SR 836	As capacity is added, create separate barriered truck lane with manageable entry/exit	Truck lane would be free	Trucks would not be allowed in traffic lanes

Table 5-1 (continued)
Miami-Dade County Truck Route System Improvement/Policy Matrix

Section	Improvement			Restrictions
	Short-term	Long-term	Policy	
	Add ramp lanes to increase storage for exiting trucks/backups to keep out of main line 826 traffic flow			
3 – Florida's Turnpike (Golden Glades to HEFT)	Improved oversize toll booth/lanes for trucks			Lane restrictions
4 – Homestead Extension Florida's Turnpike (*"HEFT"*) (Turnpike to Homestead)	Improved oversize toll booth/lanes for trucks			Lane restrictions
	Interchanges at NW 106, 74, 58, 41 Streets, with dual-lane HEFT exit ramps	Implement truck-only interchange at NW 25th Street		
5A – I-75 (Broward County Line to SR 826)				
5B – Gratigny Parkway (SR 826 to I-95) NOTE: On map, truck route should follow Gratigny, *NOT* Opa-Locka Blvd/NW 135 St	Improved oversize toll booth/lanes for trucks			
5C – NW/NW 119 St (Gratigny to I-95) NEW			Develop E-W expressway connector mid-north County	
6A - US 27/Okeechobee Road (Broward Line to SR 826)	Continue FDOT improvements	Work with Medley on street redesign and widenings to alleviate backups getting into the city from Okeechobee/NW N River Dr	This is a major truckway in Miami-Dade County, and should be truck-movement favoring in design and operations	Possible weight restrictions on Miami River Canal bridges
	Re-design & replace bridges across Miami River Canal to provide better SE to SW exit turn, and NW to SE entrance turn radii for heavy trucks on roads & bridges spanning the waterway		See above	
6B - Okeechobee Road/NW N. River Drive (SR 826 to SR 112/LeJeune Rd/NW 36 St)	Continue FDOT improvements			
6C - Okeechobee Road/*NW N.* River Drive (SR 112/LeJeune Rd/NW 36 St to NW 27 Ave)	Lobby to get roadway designated an FIHS facility; improve main arterial-to-main arterial access movements in Iron Triangle area	Work with MPO, FDOT, MDT to best sire Airport Extension of Metrorail to minimize temporary construction delays, and minimize if not eliminate permanent obstructions	One of 2 main roads serving the industrial use section of the Port of the Miami River	

Table 5-1 (continued)
Miami-Dade County Truck Route System Improvement/Policy Matrix

Section	Improvement			Restrictions
	Short-term	Long-term	Policy	
	Repave, mark center lane as truck standing permitted, widen where possible to provide side-or-road truck parking			
	Monitor swing bridge replacement			
6D - Okeechobee Road/*NW S.* River Drive (SR 112/LeJeune Rd/NW 36 St to NW 27 Ave) *This part basically on opposite bank of segment 6C*	Lobby to get roadway designated an FIHS facility; improve main arterial-to-main arterial access movements in Iron Triangle area	Work with MPO, FDOT, MDT to best sire Airport Extension of Metrorail to minimize temporary construction delays, and minimize if not eliminate permanent obstructions in PD phases	One of 2 main roads serving the industrial use section of the Port of the Miami River	
	Repave, widen; seek to achieve shoulder parking at least on waterway-side of roadway			
	Implement truck-favorable intersection geometries when resurfacing and refurbishing projects are performed in already-developed areas			
7 - Krome Avenue	4-Lane Entire Facility	4-Lane Entire Facility	Preserve corridor as a transportation facility; work to avoid/reduce capacity increase implications for sprawl development	
	Develop minimum intersection turn radius design standards for truck movements; include long turn lanes to accommodate heavy trucks at major intersections o where truck traffic is anticipated; appropriately time signals		Promote 4 (and 4+)-laning of Krome for safe movement (passing) of cars around slower trucks, and for safe access/egress truck movements to/from Krome from side roadways	

Table 5-1 (continued)
Miami-Dade County Truck Route System Improvement/Policy Matrix

Section	Improvement			Restrictions
	Short-term	Long-term	Policy	
	Implement Homestead truck by-pass			
	Implement truck-favorable intersection geometries when resurfacing and refurbishing projects are performed in already-developed areas			
8 - NW/NE 163/167 Sts/Sunny Isles Cswy. (Golden Glades to Collins Ave)	Maximize truck-favorable intersection geometries when resurfacing and refurbishing projects are performed in this already highly-developed corridor			Possible weight restrictions on the drawbridge crossing the ICW
	Seek to direct SE-bound traffic away from this facility to Proposed Truck Route Section 5, the Gratigny/Gratigny Extension/NW 119 St, when possible			
9 - NW 57 Ave./Red Road (Gratigny to SR 826)	Provide L-turn bays for NB-to-WB traffic entering the commercial campuses west of Opa-Locka Airport if warranted by traffic volumes and/or safety concerns			Possible height restriction due to roadway being on glide path to Opa-Locka Airport; other aviation-related restrictions (cargo, time of day ops) may apply
10 - E. Hialeah Industrial RR Corridor (NW 36 St. to NW 145 St.)	Conduct research to determine the importance of this corridor; ascertain if there is a continuous N-S path, or at least a favored path of least resistance along the corridor linking the business, for travel in this corridor	Consider a RR-paralleling *surface truckway facility* akin to the alignment for the former expressway proposed for this corridor. Not only funding, but legal and operational constraints or fatal flaws may exist for such a proposal.		A discontinuous (interrupted) N-S roadway system in this corridor may limit its usefulness as a unified corridor; a variety of E-W RR spurs must be crossed when traversing this corridor N-S limiting through travel ease of movement and diverting such travel to adjacent major N-S arterials (e.g., LeJeune/E 8th)

Table 5-1 (continued)
Miami-Dade County Truck Route System Improvement/Policy Matrix

Section	Improvement			Restrictions
	Short-term	Long-term	Policy	
11 - NW 66/67 Ave. (NW 12 St. to FEC IM Yard Entrance)				
12 - SR 112/I-195 (Airport to Alton Road) NOTE: On map, follow SR 112, *NOT* NW/NE 36th St for the truck route	Improved oversize toll booth/lanes for trucks	Implement 836-112 Interconnector (part of the overall MIC project)		Possible truck restrictions on 6-lane cross-sections
13 - NW 36 St./NW 41 St. (LeJeune to HEFT)	In Doral area especially, implement truck-favorable intersection geometries, provide longer LT turn bays, and work to improve signal timing to accommodate improved truck clearance at intersections	Redesign NW 36/41 St as a superarterial per prior MPO Superarterial Network Study	Recognize inherent conflicts with roadway functioning as a freight and passenger vehicle gateway to mid-Doral; work with City of Doral to best accommodate trucking along this important arterial	
	Improve, where possible and feasible, intersection geometries for easier truck turning movements and better intersection clearing characteristics; also address signal timing adjustments to allow more truck throughput while optimizing overall traffic flow in highly congested conditions			
14 - NW 87 Ave. (SR 836 to NW 58 St.)	Review earlier MPO Airport Area Truck Traffic Study focusing on Doral area for recommendations		Recognize inherent conflicts with roadway functioning as a freight and passenger vehicle gateway to mid-Doral; work with City of Doral to best accommodate trucking along this important arterial	

Table 5-1 (continued)
Miami-Dade County Truck Route System Improvement/Policy Matrix

Section	Improvement			Restrictions
	Short-term	Long-term	Policy	
	Implement and/or improve SR836-NW 12 St-NW 87 Ave interconnections			
	Widening intersection turn radii, improving signal timing			
15 - NW 25 St. (Airport to HEFT)	Traffic signal improve-	Truck-only interchange at the HEFT		
	Implementing the NW 25th Street Viaduct	Implementing the NW 25th Street Viaduct		
16 - SR 836/I-195/MacArtur Cswy (NW137 Ave to Miami Beach)	Continue MDX-led improvements	Elevated express passenger vehicle lanes; truck-only lanes implemented on surface facility or managed freight lanes; actively work for implementation of E-W Rail Line to reduce passenger vehicle volumes	Recognize SR 836 as a major E-W freightway and work to encourage efficient truck movement along this corridor; integrate as seamlessly as possible with intersecting major arterial corridors (e.g., SR 826, HEFT, I-95)	Enormous costs for any significant major capital construction projects considers: elevated/managed lanes on 836; 836-826 interchange revision and reconstruction; E-W Rail line
		Implement 836-112 Interconnector (part of the overall MIC project)	Explore possibility of truckway in CSX corridor	
		Consider developing and implementing the "E-W CSX Truckway"	(see Possible on map)	
17 - Port of Miami (Including all access roads in/through downtown Miami)	Expanded Entry/Exit Gates at POM; work with port-oriented shipping/freight industry to try and expand hours of operations for entire logistics move	Port Tunnel	1) Provide expedited through movements across Downtown to minimize disruptions; then, 2) Drastically reduce Port trucks traversing Downtown Miami and provide best access for trucks in and out of the Port of Miami	Enormous costs, funding concerns

Table 5-1 (continued)
Miami-Dade County Truck Route System Improvement/Policy Matrix

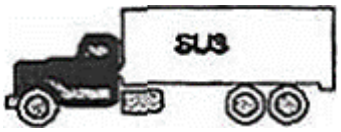
Section	Improvement			Restrictions
	Short-term	Long-term	Policy	
	Continue improving roadbeds, and improve turn radii, vertical and horizontal clearances, and signal timing in existing NW 1st/Miami Ave/NE/NW 5th/6th St corridor			
	Construct I-95 NB Slip Ramp at NW 6th St			
	Implement NE/NW 5th/6th Sts/Port Blvd improvements to act as access roads between POM and slip ramp/I-95			
18 - SR 874/Shula Expressway (SR 826 to HEFT)				
19 - US 1/S. Dixie Hwy (I-95 to Monroe County Line)	Enforce "don't block box' initiatives along US 1 corridor; review signal timing to optimize US 1 throughput and intersecting street traffic movements and intersection clearance times		Same as for Krome Avenue"	Preserve corridor as a transportation facility; work with DCA and Monroe County to avoid/reduce capacity increase implications for added development in Key Largo and the Upper Keys
	3-Lane 18-mile stretch	4-Lane 18-mile stretch		
20 - Tamiami Airport Industrial Corridor	Maximize truck-favorable intersection geometries when resurfacing and refurbishing projects are performed in this already highly-developed corridor			
21 - Bird Road Industrial Corridor	Maximize truck-favorable intersection geometries when resurfacing and refurbishing projects are performed in this already highly-developed corridor			

Operational Criteria

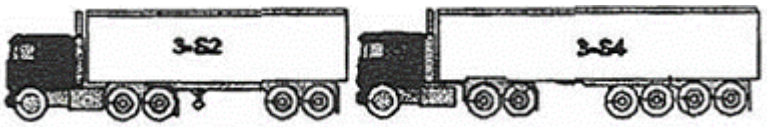
This section of the report details the optimum operational characteristics of a truck route as defined by the American Association of State Highway and Traffic Engineers (AASHTO). It is anticipated that not all of the truck routes developed as part of this study currently incorporate these characteristics, particularly on County or local surface streets, due to the incumbent physical constraints. It is recommended that each route be evaluated in the future for its general adherence to the criteria, and recommendations as to, specific mitigative measures required bringing each into general compliance, cost and practicality of compliance. Each route listed in this report should strive to have these operational characteristics implemented over time. These items will need to be identified, planned, designed and constructed on a previously existing roadway. Doing so is an inexact science as each route is generally part of multiple jurisdictions. Therefore it will be important to foster cooperation and coordination between the various agencies. This study is a start to that cooperation.

The speed and flow of vehicles on urban streets is influenced by several characteristics, including the street environment, the interaction among vehicles and traffic control. These become influential as different types of traffic are mixed, particularly along truck routes. The environment reflects the number and width of lanes, the type of medians, driveway access points and spacing between signals, as well as the existence of parking and the level of pedestrian activity and the speed limit. The interaction among vehicles is determined by the traffic density, as well as the proportion of trucks and other heavy vehicles. Traffic controls force a portion of all vehicles to slow or stop. The resulting delays and speed changes caused reduce speed. This can be a serious factor in mobility when related to trucks which have a slower stopping and starting characteristics than smaller vehicles.

There are several basic truck types that ply the roads of Miami Dade County. These range from single unit trucks with two or three axels, to semi-trailers to Turnpike Doubles. These range from under 40,000lbs to nearly 150,000lbs, while single unit trucks constitute the majority of the truck fleet, semi-trailers make up the predominant number of truck miles traveled. These generally have 5 axels and weigh between 80,000 and 100,000 lbs. They are used extensively for long and short hauls, in all urban and rural areas to carry and distribute all types of materials, commodities and goods. The lengths of trucks are constrained by weight regulations assigned by FDOT. Therefore nearly all combination trucks are 45' or more in length.



Single Unit Truck



Semi-Trailers

Turnpike double

Criteria examined in this document were related to eleven criteria, including:

- Lane Width
- Toll Lanes
- Curve Radius
- Ramping
- Pavement
- Intersection and links
- Bridges
- Train Track Clearance
- Curbing
- Signals
- Land Use

Lane Width

In order for roadways to be compatible with large trucks they must have lanes that are wide enough to accommodate such vehicles. Trucks crossing into oncoming lanes while in the process of making wide turns at intersections is also a concern. Lane width on truck routes should ideally be 12 feet, yet 11 feet is acceptable, because the majority of the trucks operating in Miami-Dade County are about eight feet wide from mirror to mirror.

Toll Lanes

The AASHTO "Green Book" does not specifically mention anything related to toll lane widths. Consequently, the AASHTO recommended 12 foot width should be adopted for express lanes. As described above, conventional plaza lanes have historically been less than 12 feet, although this is not necessarily applicable to newer conventional plaza designs. Twelve (12) foot wide toll lanes can more comfortably accommodate trucks and larger vehicles than in narrower lanes where they may come in contact with toll island equipment. Oversized loads (up to 14 feet wide) need to be accommodated in at least one lane, subject to FDOT/MDC permit requirements. Oversized vehicles are usually handled in the far right lane where a shoulder can be used to provide additional lane width.

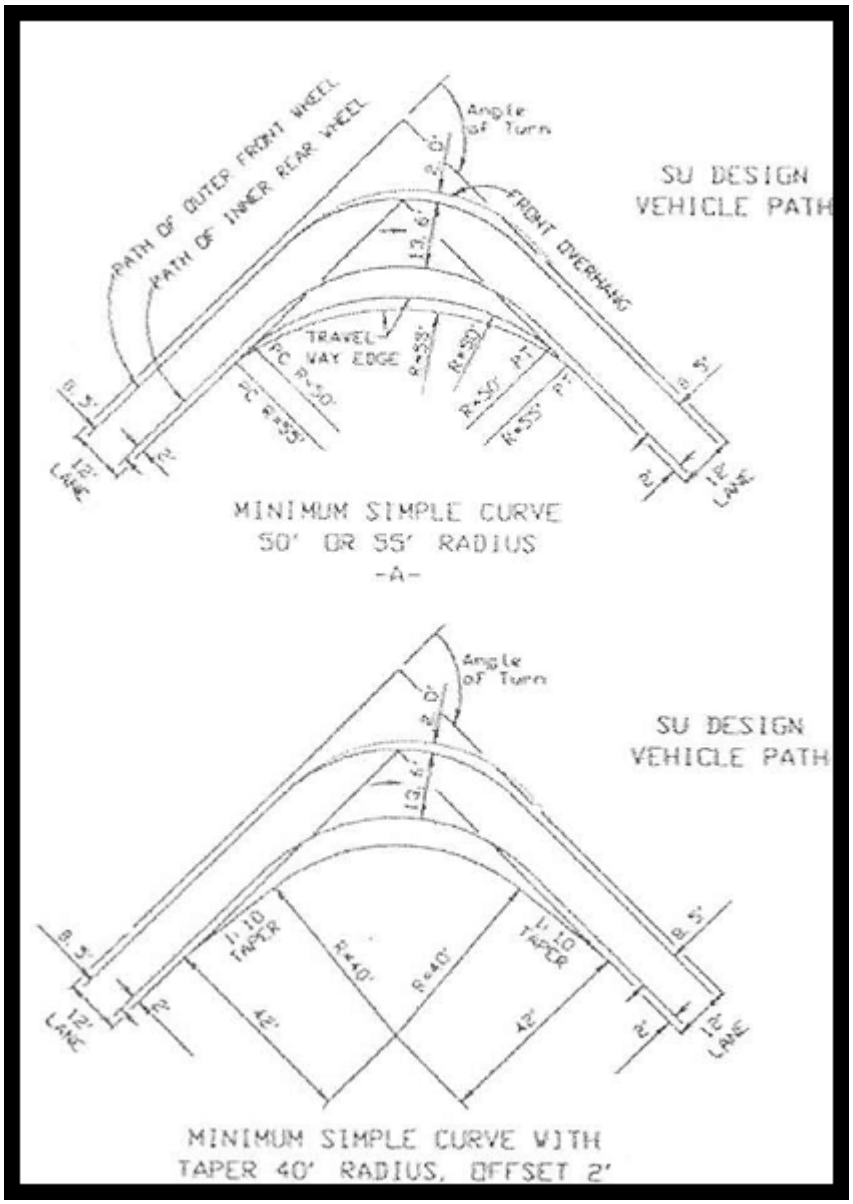
An ITE report recommends that various lanes have the following minimum widths:

Lanes with less than 10% trucks	10 feet minimum
Lanes with 10-30% trucks	11 feet minimum
Lanes with 30% trucks	12 feet minimum

Curve Radius

A small curve radius could affect a road's ability to handle freight traffic. Urban, specifically residential areas are usually more prone to this problem. The minimum turning radii for trucks

varies between 40 to 60 feet, depending on the type of truck. Typically, we design for intermediate semi-trailers with a typical length of 45.5 feet. The minimum turning radius for these trucks are 40 and 45 feet. (Refer to AASHTO, Chapter 2, Design Vehicles, for more information).



Minimum Travel-way Design for Single Unit Truck

Interchange Ramps

Ramps can cause safety issues with regards to heavy trucks as well. Ramps that are too short, not straight enough, or too steep may not allow trucks to gain enough speed to safely merge into traffic on interstates. The maximum super elevation rate for a ramp is 10 percent. The minimum/maximum

radius and grade is based on design speeds (Refer to Table 2-9.1 in FDOT Plans Preparation Manual).

Pavement Deterioration

Trucks do a great deal more damage to pavement than normal passenger cars do. According to tests, trucks can do 10,000 times more damage to pavement than cars can. In fact, cars have no practical effect on pavement life. Asphalt depth is based on traffic data; however a typical value could be around four inches (three inches structural course and one inch friction course).

Intersections and links

Both links and Intersections on truck routes should display different operational characteristics. Foremost would be the left turn lane stacking distance. Operational analysis should be performed to determine the length of the stacking lanes, which will need to be longer to accommodate the cue that accumulates at the intersections. Dual left turn lanes may be able to be accommodated in various instances. Alternatively a center dual-turn lane offering left turns may be appropriate in certain locations.

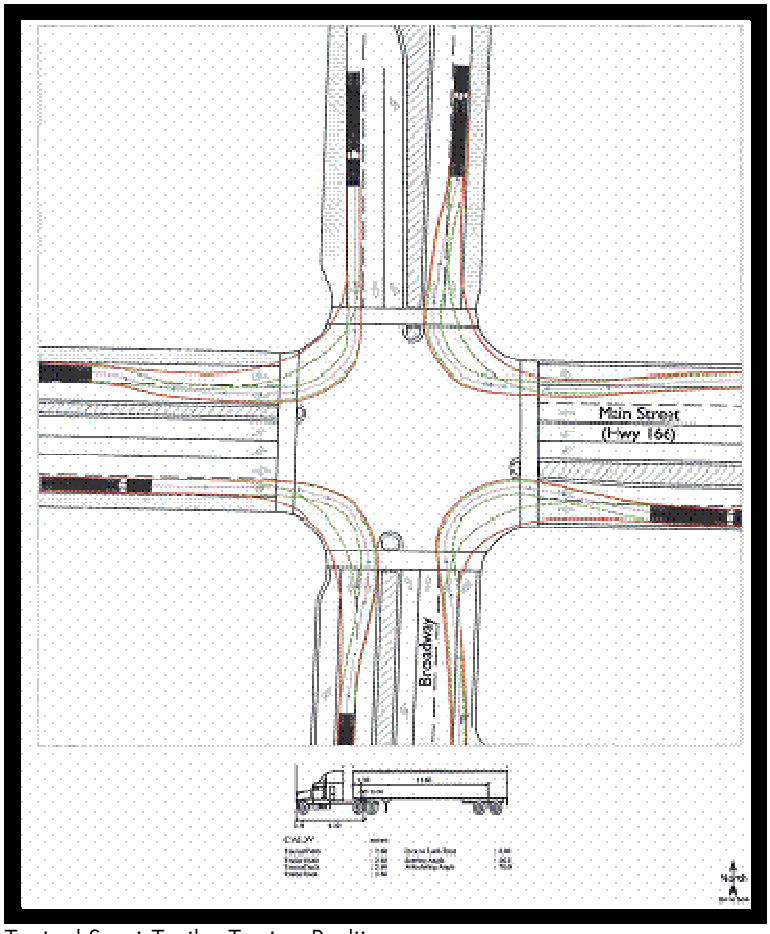
Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide. There are three highway functional classifications: arterials, collectors, and local roads. All streets and highways are grouped into one of these classes, depending on the character of the traffic (i.e., local or long distance) and the degree of land access that they allow. These classifications are described in the following table.

Functional System	Services Provided
Arterial	Provides the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control.
Collector	Provides a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterials.
Local	Consists of all roads not defined as arterials or collectors; primarily provides access to land with little or no through movement.

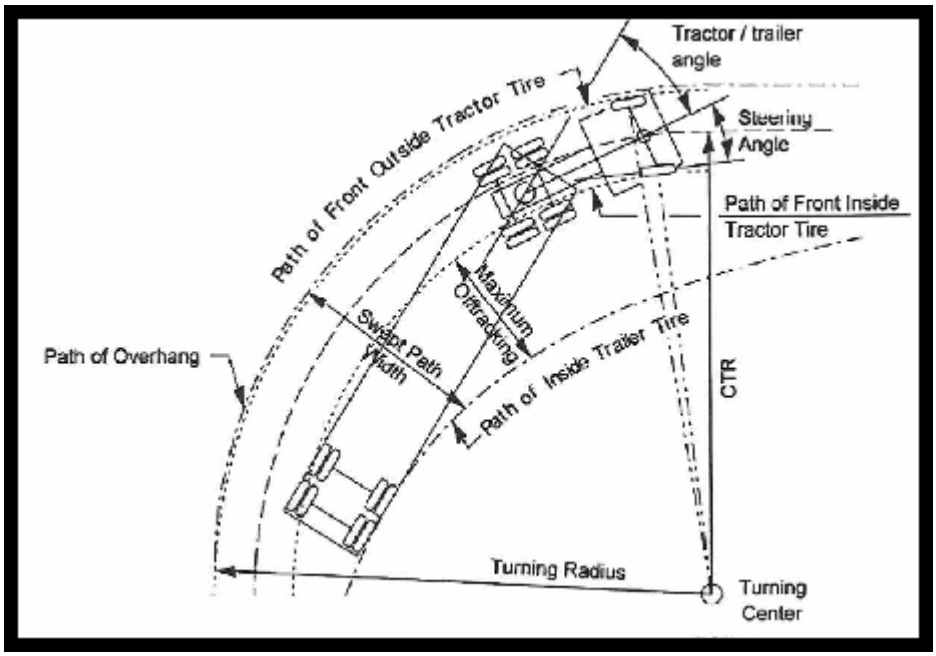
There is a basic relationship between functionally classified highway systems in serving traffic mobility and land access. Arterials provide a high level of mobility and a greater degree of access control, while local facilities provide a high level of access to adjacent properties but a low level of mobility. Collector roadways provide a balance between mobility and land access. Generally the truck routes suggested in this report are arterials.

There are two types of arterials which trucks would operate on as truck routes. These are minor arterials and principal arterials. Each has a functional classification developed to provide specific design criteria for the arterial. The design category depends on the speed limit, signal density, access point density, etc. These categories include High Speed, Suburban, Intermediate and Urban designs. Each of these design categories has a functional component based on one of four levels, level I through IV.

For both types of arterials, mobility is important. Truck trips within the county will generally be serviced by minor arterials because of the more moderate trip length with in relatively the small (sub-regional) geographic area. As such, these should display relatively low access, and be at a minimum, an undivided, one-way or two-way facility with two or more lanes, in an urban area, to a multilane divided or undivided facility with shoulders in an suburban or high-speed facility. Parking should be limited on these routes, and separate left turn lanes should generally be incorporated into the design. Signals should be well spaces at between 1 and 5 per mile if possible. Speed limits should generally range from between 30 to 55 MPH. Some pedestrian activity is acceptable. More may be unavoidable in urban areas. Surrounding land uses are best kept at low to medium density, while commercial would be preferred.



Typical Semi-Trailer Tuning Radii



Typical Turning Radii

Bridge Structures

A roadway's capacity for handling freight shipments depends in part on bridges meeting clearance requirements for trucks. Also, roads that carry a heavy truck load will require more frequent bridge maintenance and replacement than roads that rarely see truck traffic. Bridge clearance above finished asphalt should be 16'6". The full width of approach roadways should be provided across all new bridges on rural Principal Arterials and the same curb-to-curb width as the street across all new bridges on urban and village Principal Arterials. New bridges should be designed to HS-25 loading capacity. Older bridges should have at least the width of the roadway approach travel way plus 2-foot clearance to face of rail on each side, and should be adequate for State legal loads without posted restrictions.

Train Track Clearance

The possibility of vehicles carrying freight shipments bottoming out at train tracks is something to be considered when developing freight routes. Often pavement is lower before and after tracks and if this increase is not gradual enough then problems can occur. The grade at railroad crossings would be based on design speed. The maximum change in grade without a vertical curve for a 45 mph road should be 0.7 percent. The higher the speeds, the smaller the difference in change in grade can be.

Curbing

Curbs at intersections can cause safety problems for pedestrians, especially at intersections that do not have a right-turn-only lane. The curve at such intersections needs to be gradual enough to ensure that trucks do not have to cross the curb on the right side in order to make right turns. Mountable curbs on a 40- to 60-foot radius are preferred on freight routes. Of course, these intersections should be out of high pedestrian areas to minimize the pedestrian vehicular conflicts.

Signals

The timing and phasing of signals on truck routes is important. Trucks have different operating characteristics than to other types of automobiles. Various types of trucks operate differently as well. Depending on the type of truck on a specific route, traffic operations analysis should be performed at intersections to assure the adequate clearance of trucks from each leg of the intersection. Generally signal green time needs to be longer, due to the slow start-up time of truck movement. Additionally truck length plays a role in the capacity a signal allows. Relative to turning movements, longer left turn lead signal phases should be allowed for left turning trucks. Again this is generally unique to each route, dependant on the freight characteristics using it.

Land Use

While not practical to exclude trucks from all residential neighborhoods, regular truck routes should avoid areas which are predominantly residential, particularly single family neighborhoods, or areas where there high pedestrian activity. Adequate protection in the form of proper turning radii should be developed to avoid trucks imposing on the sidewalk. Municipalities in various areas of Miami-Dade, such as Doral, are, or have enacted, bans or restrictions on trucks on certain streets. Typically low density commercial areas would be best for truck routes, as pedestrian activity and heavy truck traffic are not necessarily compatible

6. Conclusions

As the MPO implements its Truck Route System for Miami-Dade County, the following activities are recommended:

1. Work with responsible agencies to identify operational issues on roads defined as part of the system and incorporate specific design parameters into future projects on truck roads.

2. Develop a typical truck route cross-section to be included in the Comprehensive Development Master Plan (CDMP).

3. Develop and implement signage program with uniform signage consistently placed on facility type (similar logo but different designs and fonts for expressways, major arterials, minor arterials, and local streets).

4. Identify and monitor municipalities with truck restrictions and maintain a freight information Web site that trucks and companies can access for information on current streets with truck restrictions as well as construction updates and other factors in the truck route system routes.

5. Continue to encourage strong participation through FTAC in the planning process.

6. Support truck-only and/or major capital projects such as the Port Tunnel, elevated lanes on 836, and other projects that will facilitate efficient and timely movement of trucks at all times of day.

7. Explore concept of truck-only or truck-only toll lanes in rail corridor in the County with no or limited rail service with particular emphasis on east-west connections.

It is clear that since the mid-1990s, the MPO has and will continue to provide direction to the various state, regional, and local agencies building and maintaining the County's transportation infrastructure. This is a critically important benefit to the economy of Miami-Dade County and southeast Florida as a whole. With the support and leadership of the MPO, this plan is a starting point for creating a truck-supporting and friendly roadway environment.

Appendix A

Minutes from Selected Stakeholder Interviews

Media Relations Group, LLC

MPO Truck Route Study
Freedom Fresh Meeting
March 21, 2007

Attendees:
Walter Vazquez- Freedom Fresh President & CEO
Larry Strange- The Corradino Group
Oscar Gonzalez- Media Relations Group, LLC

Mr. Strange gave some background information regarding the projects and explained the goals of the meeting. Below are comments made by Mr. Vazquez:

- 85 percent of the produce is trucked in from points across the country
- Would pay to use a toll road if there was a time savings
- Opposes any type of truck restrictions
- Provides produce to chains such as Fresh Markets and Whole Foods. Deliver to these stores daily.
- Port of Miami is a major destination as Freedom Fresh provides produce to cruise ships. Most of the deliveries are on the weekend but there are some mid week deliveries.
- Route to Port: 87th Avenue to 836 East and exit at Biscayne Blvd.
- Use 826, 836 and Turnpike frequently.
- Trucks try to leave docks at 5am
- 87th Avenue is very congested during peak times.
- Make deliveries to the Keys twice a Week.
- Deliveries to Naples 6 days a week. Route: Turnpike to I-75.

Freedom Fresh is located at: 8901 NW 33rd Street
Miami, Florida 33172-1226

Media Relations Group, LLC

MPO Truck Route Study
F.I.S.H
March 21, 2007

Attendees:
Carl Cruz- President
Larry Strange- The Corradino Group
Oscar Gonzalez- Media Relations Group, LLC

Mr. Strange gave some background information regarding the projects and explained the goals of the meeting. Below are comments made by Mr. Cruz:

- Have 10-15 trucks per day pick up at airport.
- Delivery locally and nationally. National deliveries are subcontracted.
- Deliver to WPB, route: Palmetto 1-95 or Sawgrass to Okeechobee
- Would favor tolls
- Not in favor of truck restrictions
- Would favor a system like one currently used in Mexico where vehicles are allowed on the roads on certain days based on their tag numbers.
- Deliver to distributors and restaurants.

F.I.S.H is located at: 3032 NW 72nd Avenue

Media Relations Group, LLC

MPO Truck Route Study
UPS Meeting
March 21, 2007

Attendees:
Paul Wasulko- Service Center Manager
Larry Strange- The Corradino Group
Oscar Gonzalez- Media Relations Group, LLC

Mr. Strange gave some background information regarding the projects and explained the goals of the meeting. Below are comments made by Mr. Wasulko:

- There are 42 trucks leaving the facility daily, delivering in excess of 500 shipments to points North and South. An average of 15 to 20 stops per truck.
- Approximately 20 percent are destined for Broward County.
- Delivery area in Miami-Dade County is within the Metropolitan Area. Many of the shipments are made to Freight Forwarders and Customs Brokers.
- Deliver to both the Port of Miami and Port Everglades.
- Route to Port of Miami: 36th Street to 112th Avenue.
- Opposes any type of truck restrictions.
- Would use toll road if it was safer and provided a time savings.
- County needs another North/South artery in between I-95 and 826.
- Also need another East/West option.

UPS Freight is located at: 5370 NW 74th Avenue
Miami, Florida 33166

Media Relations Group, LLC

MPO Truck Route Study
Port of Miami
May 9, 2007

Attendees:
Diana Lopez- Port of Miami
Larry Strange- The Corradino Group
Oscar Gonzalez- Media Relations Group, LLC

Mr. Strange gave some background information regarding the projects and explained the goals of the meeting. Below are comments made by Ms. Lopez:

- Access to Port from I-95 is from 2nd Avenue, egress is 3rd.
- Concern over traffic impacts once Apartment/Condo buildings being built along 2nd Avenue are occupied
- Slip Ramp is necessary to accommodate traffic in the downtown area.
- It is important to note that trucks carrying HazMat items cannot go thru the tunnel. These trucks will still need to travel the surface roads.
- Peak periods for the port are 7am, 1pm and 4pm.
- The port will be unable to maintain its competitive edge because of the increased travel times due to congestion.