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# Port of Miami Freight Access Study Executive Summary

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*Prepared for*

**Miami-Dade Metropolitan Planning Organization**

*Prepared by*

**Cambridge Systematics, Inc.**

**February 2007**

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# **Port of Miami Freight Access Study**

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*February 2007*

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# Executive Summary

Since its inception in the 1960s the Port of Miami (POM) has grown into a substantial transportation and economic hub for the City of Miami, Miami-Dade County and the rest of South Florida, contributing over \$12 billion to the local economy annually.<sup>1</sup> Port terminals handle more than nine million tons of cargo each year, including over one million 20-foot equivalent units (TEU), making it the largest container port in Florida. In addition, the POM is considered the cruise capital of the world, handling over 3.6 million multi-day cruise passengers each year. The POM expects to handle more than 1.5 million TEUs and more than 5 million passengers annually by 2015. Currently, the majority of containerized cargo moves to western Miami-Dade County via truck drayage service to the warehousing and distribution district in Doral or to Florida East Coast Railway's (FEC) intermodal facility in Hialeah. The reliance on trucks for regional cargo distribution as well as for servicing the cruise ships in port has created a long history of community conflicts given the required use of local city streets to access the POM.

In response to restricted port access and worsening downtown congestion, local leaders continue to explore a range of improvements that would support both port growth and downtown redevelopment, while reducing traffic conflicts. Currently, the preferred alternative moving forward is a tunnel that would connect the POM with I-395 on Watson Island, providing direct Interstate access.<sup>2</sup> Figure ES.1 illustrates the existing Strategic Intermodal System connectors for the POM.<sup>3</sup> As shown, the facility currently is served by roadway (solid red) and rail (dashed red) connections, with the new highway tunnel planned for the future (dashed red with yellow). As proposed, this would be one element to alleviate a portion of the truck traffic that currently traverses the downtown. A number of other access improvements are actively being discussed by community and industry leaders.

**Figure ES.1 SIS Connectors**



<sup>1</sup> The Four Gates Company, "The Economic Impact of the Dante Fascell Port of Miami-Dade County," May 2006.

<sup>2</sup> Effective November 1, 2006, the Florida Department of Transportation released a RFP for the Port of Miami Tunnel and Access Improvement Project.

<sup>3</sup> The Strategic Intermodal System (SIS) consists of a network of transportation corridors, hubs, and connectors designated by the Florida Department of Transportation which are eligible for new capacity funding.

The purpose of the *Port of Miami Freight Access Study* was to explore the feasibility of developing a rail-only tunnel connection to the POM. Study motivation grew out of local interest in the success of the Alameda Corridor in Southern California. This is a 20-mile rail corridor developed specifically to provide the Ports of Long Beach and Los Angeles with inland connections while eliminating over 200 at-grade conflicts with congested city streets. Figure ES.2 illustrates the Alameda Corridor. This corridor serves the largest seaport container facilities in the United States. The Ports of Los Angeles and Long Beach function as a gateway to the entire U.S. market for foreign trade. The capacity and service of the Alameda Corridor is predicated on this type of service and volumes.

**Figure ES.2 Alameda Corridor**



The *Port of Miami Freight Access Study* ultimately was initiated to evaluate the potential for a similar facility in Miami-Dade County. Figures ES.3 and ES.4 illustrate the current rail access to the POM. Currently, the POM handles a small fraction of the volume and primarily serves a Southeast Florida regional market. This study explores the potential application of this type of infrastructure project within these parameters.

**Figure ES.3 Rail Access Corridor at Biscayne Boulevard**



**Figure ES.4 Rail Access Corridor West of Biscayne Boulevard**



## ■ Key Considerations

Waterborne transportation at all U.S. ports has increased approximately 15 percent in the past 25 years.<sup>4</sup> This growth is anticipated to continue indefinitely as globalization expands.

<sup>4</sup> U.S. DOT, "Freight in America," January 2006.

At the local level, the POM serves as a critical link between the 5.5 million residents of South Florida and the global economy. As the region continues to grow and expand within an increasingly global economy, the POM and its peers throughout the Southeastern U.S. will be challenged to increase both throughput and quality of service. Since the majority of waterborne freight relies on at least one additional mode of transportation to reach its final destination, the POM will be directly impacted by its access to the region's intermodal system, as well as the reach of that system. The POM helps the region compete for affordable goods and services, minimizes the impact of long-haul rail and truck traffic, and provides a significant number of high-paying jobs. However, without reliable access to the landside transportation system, the POM will lose its competitive edge and will not achieve its potential in an increasingly global community.

## ■ Potential Access Improvements

As the POM has continued to grow both its cargo and cruise operations, Miami also has grown. Today, the only access to the port requires the use of city streets through mixed use developments. As a result, community leaders have promoted a variety of port access improvement strategies. The following briefly summarizes the three rail-specific proposals, followed by four non-rail-based options. While this Study was charged with evaluating a grade separated rail connection, it is critical that the community acknowledges and understands each of the alternatives.<sup>5</sup>

### Rail Access Improvements

- **On-Port Intermodal Container Transfer Facility (ICTF) with Existing At-Grade Rail Service.** FEC has developed a service profile utilizing existing at-grade service. This would require development of an ICTF on POM property as well as significant upgrades to the POM rail lead. FEC has proposed to provide one train in and one out daily between 1:00 and 5:00 a.m. This service is designed to handle the existing traffic currently being drayed to the Hialeah rail terminal for northbound service. Port staff and tenants are resistant to give up on-port land for an ICTF with limited service.
- **On-Port ICTF with New Tunnel - Traditional Long-Haul Intermodal Service.** This service would consist of a new 18-acre ICTF on port property and a grade separated connection (tunnel) to FEC's intermodal network. Traditional long-haul intermodal traffic would be loaded/unloaded directly at the POM for hinterland market service.

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<sup>5</sup> Note that it was not the intent or scope of this Study to provide detailed engineering or economic impact analysis for each potential access improvement. The intent was to focus on the conceptual feasibility of a grade separated rail connection to the Port of Miami, while acknowledging other proposals.

This service would handle existing demand and would be used stimulate additional rail traffic.

- **On-Port ICTF with New Tunnel – Short-Haul Shuttle Service.** This service would consist of a new 18- to 25-acre ICTF on port property and a grade separated connection (tunnel) to the FEC system. Frequent, short shuttle trains would connect the POM with the western Miami-Dade County distribution infrastructure via the FEC facility (or a new transfer facility). This service would be designed to significantly reduce truck dray moves in downtown Miami. *This access improvement project represents the primary focus of this study.*

## Other Potential Access Improvements

- **6<sup>th</sup> Street Slip Ramp at Interstate 95 and Other Local Street Enhancements.** The 6<sup>th</sup> Street slip ramp project would construct a new northbound on-ramp to I-95 at 6<sup>th</sup> Street, providing trucks exiting the port with direct access to I-95 northbound and SR 836 westbound. Local community opposition originally killed this project; currently FTAC members are working to build the necessary political support to move the project back into the MPO and FDOT work programs.
- **Port of Miami Tunnel (Highway).** This project would provide a new highway connection to the POM that provides direct access to the Interstate System by connecting the Port to I-95 via a tunnel connection to I-395 on Watson Island. The project has been endorsed by state and local leaders, although funding commitments remain unmet. The tunnel would eliminate or significantly reduce conflicts in the downtown, however it does not improve mobility along the region's expressway system. *This access improvement project currently represents the preferred regional alternative.*
- **Operational Improvements.** There are several options for non-infrastructure-based improvements, including reservation systems, time-of-day-specific operations, congestion pricing (PierPass), traffic modifications along key access routes, mass transit for person trips, as well as embracing various cutting edge software in order to augment day-to-day operations by streamlining information flows. Operational enhancements tend to be low capital investments with emphasis on outreach, consensus building, enforcement, and regulatory activities. Although discussion has taken place on several of these topics, none currently are moving forward.
- **Short-Sea Shipping/Barge Transfer to Port of Miami River.** Miami River industry representatives proposed a new short-sea shipping service that would reduce truck drayage movements at the POM by transferring them to barge. The barges would move containers from the POM up the Miami River to a terminal; trucks would pick up the containers at this terminal to complete the drayage move to a western terminus. This service would help reduce trucks in the downtown. The economics (e.g., additional handling/lift fees) have not been defined, nor has stakeholder support been generated.

## ■ Rail Corridor Analysis

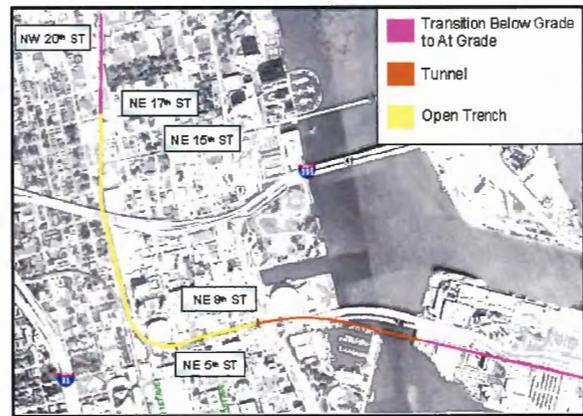
The rail tunnel assessment included the conceptual development of a grade separated freight rail corridor connecting a proposed new ICTF on the POM's Dodge and Lummus Islands with the FEC. This rail corridor would utilize a combination of tunneling and open-cut-below-grade techniques to bypass Miami's central business district and provide the POM with unrestricted intermodal freight rail access to the region's intermodal rail system. The northern limit of this rail corridor assessment extends to NE 20<sup>th</sup> Street, a point north of Interstate 395 where the below-grade cut section would transition and meet the existing FEC at-grade rail line.

The existing FEC rail line serving the POM travels south from North Miami parallel to the Atlantic shoreline where it diverges at a point north of NE 6<sup>th</sup> Street. At this point the rail line turns east and travels to a point where it crosses over Biscayne Bay on a rail causeway and onto Dodge Island. The rail line is single-track in this area and no support track or yard tracks are available south of Interstate 195.

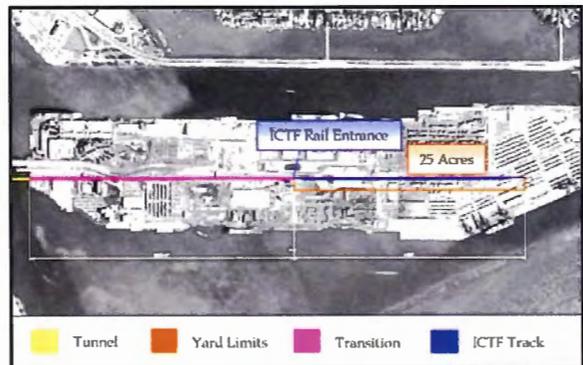
For a rail tunnel to be operationally feasible, grade separations must be extended through Miami to a point outside the immediate area of congestion and support track must be developed to manage train flows and train lengths into and out of the port. To provide for this separation, a point along the FEC right-of-way was identified as a possible grade transition point for a depressed rail corridor at the intersection of NE 17<sup>th</sup> Street.

The depressed rail corridor would extend south from NE 17<sup>th</sup> Street along the existing FEC right-of-way to a point where it would intersect the proposed tunnel under Biscayne Bay. The rail corridor would continue under Biscayne Bay and surface on Dodge Island and connect to the proposed ICTF (see Figures ES.5 and ES.6).

**Figure ES.5 Conceptual Rail Alignment**



**Figure ES.6 Conceptual ICTF Layout**



## ■ Key Findings

- **Technical Feasibility.** All other factors notwithstanding, a grade separated rail corridor, including an on-port ICTF, and a rail tunnel and trench, is technically possible. Analysis shows the corridor could be built within existing rights-of-way, along with a 25-acre terminal footprint on Dodge Island. Based upon the service characteristics, additional infrastructure improvements and new facilities would be required in western Miami-Dade County. Detailed engineering analyses are required to define more specific project characteristics.
- **Economic Feasibility.** A conservative \$1 billion cost estimate was developed for the conceptual rail corridor required for traditional intermodal service. This cost would increase if a rail shuttle service was developed due to additional ICTF capacity, stricter operational requirements, and significant off port costs to grade separate the corridor from NE 20<sup>th</sup> Street to the Doral area, and develop a sister facility (off port costs past NE 20<sup>th</sup> Street are not included in the cost estimate). Currently, only 11 percent of the POM's containers are drayed to the Hialeah rail yard for northbound service. This limited volume would translate into a significant cost per container (\$250 or more). For a shuttle train service that handles 90 percent or more of all POM's containers, the cost per container would be much lower (\$40 or more).<sup>6</sup>
- **Environmental Feasibility.** Environmental permitting and approval processes will be an obstacle for this project. From an operational perspective, it was determined that the preferred tunnel technology would be an immersed tube tunnel. This approach has a less steep grade, shortening the length of the tunnel on Dodge Island. Bored tunnel technology would require a significantly larger footprint on Dodge Island due to the length of track required to return to grade. The EPA already has ruled that the proposed highway tunnel must use the bored approach and community leaders insist this holds true for the rail tunnel. This significantly impacts on-port land and operations. In addition, the FEC right-of-way, as an industrial corridor, may have contaminated material that would complicate the excavation activities of the open trench, not to mention the impact of the water table.
- **Constructability.** Among all of the considerations that go into this analysis, the constructability issue is critical. This factor deals with the likelihood that the tunnel will be or can be built. It includes the funding and environmental issues, as well as building stakeholder and political support. It also covers the construction activities. The conceptual design presented in this report calls for the development of a below

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<sup>6</sup> Over a 25-year life, assuming a 5 percent per year growth in containers, the cost for each container could be between \$40 (shuttle) and \$250 (traditional) for the conceptual rail corridor defined by this analysis. This does not include any costs other than construction. Carrier transportation costs for the move, ongoing maintenance and operations, and additional costs to upgrade inland corridors and transfer facilities would all be additional.

grade rail corridor directly underneath Port Boulevard. This could significantly restrict port access during construction.

- **Funding Competition.** The ability to finance the project will be impacted by the advancement of the highway tunnel. At present, it is reasonable to assume that the highway tunnel project will continue to be advanced. Given that the State already has committed funding for a portion of the \$1 billion plus project, it is unlikely to assume that a second \$1 billion plus project would receive similar state support.
- **Rail Corridor Capacity.** The FEC Corridor currently is being studied for both passenger and cargo use. This study did not account for how a highly trafficked freight rail corridor would interact with some yet undefined new passenger service along the same corridor. Joint operations would need to be studied in detail, including the engineering requirements associated with at or above grade and below grade operations. In addition, there are equipment and operational requirements for rail corridors handling both freight and passenger service. The capacity will be significantly impacted by the rail service selected (shuttle or limited long-haul).
- **Political Support.** As has been seen with the proposed highway tunnel, political support will make or break a project of this magnitude. In fact, this study was the result of local political leadership striving to resolve the POM's conflicts with surrounding communities. Currently, there is limited support for development of a grade separated rail corridor connection to the POM. For this project to advance, support from local and state leaders would be critical.
- **Industry Support.** Building shipper support for a rail corridor will be a challenge. On-port terminal operators are reluctant to sacrifice already limited acreage for any type of ICTF; the vast majority of cargo originates or terminates within 50 to 100 miles making rail uncompetitive with truck in both cost and service; and a rail shuttle service would add additional handling costs to the supply chain.

## ■ Recommendations

- **Continue to Support Port Access Initiatives.** The POM continues to struggle with landside access. Community opposition, limited funding, and delays in project implementation contribute to this situation. The MPO should remain active with port staff to assist where appropriate.
- **FTAC Should Continue to Advocate for Port Access Improvements.** The FTAC has emerged as a strong supporter for freight transportation. Its leadership should continue to engage the community in discussions for port access improvements.
- **Use the truck Route Study to Further Explore Port Access.** The truck route study underway now by the MPO should ensure that port access routes are designated as part of the county's truck route system and recommendations should directly

address both specific port access routes and key regional corridors connection the port with western Miami-Dade County.

- **Investigate Opportunities for Reduced Passenger Traffic to the POM.** Currently, only 15 percent of port traffic is generated by cargo operations. The balance serves other port activities, including cruise operations and port administration. The cruise infrastructure currently houses significant parking capacity. The MPO should study the feasibility for relocating parking off port and providing mass transit service to eliminate congestion and increase cargo capacity.
- **Monitor Highway Tunnel Progress.** The highway tunnel will be a major factor in funding availability and stakeholder attitudes. If this project advances, a high-capacity rail corridor is unlikely. If it fails, all access alternatives should be reevaluated. It is critical the MPO and its port partners are prepared to provide immediate recommendations and input should the highway tunnel project falter.
- **Participate in Key Regional Freight Initiatives.** Regional freight investments could impact the POM and the MPO should monitor and participate in these projects. For example, the State currently is evaluating the feasibility of an inland port in south Florida. This could change regional distribution patterns for all ports in the region. In addition, the Atlantic Commerce Corridor Study will likely be updated in 2007, providing additional opportunities for regional investments in ports. Finally, FDOT currently is working to develop a statewide strategic seaport investment framework.