



Miami Int'l Debuts \$270 Million People Mover

By Greg Gerber

factsfigures

Project: Electric Rail People Mover

Location: Miami-Dade Int'l Airport

Name: MIA Mover

Cost: \$270 million

Funding: \$170 million from Miami-Dade County, \$100 million from Florida Dept. of Transportation

Route: Connects terminal & rental car facility

Size: 1.25 miles of track; 8 cars

Speed: 40 mph

Typical Capacity:
3,250 people/hour/direction

Increased Capacity:
48,000 passengers/day

Passenger Fare: \$0

Systems Consultant: Lea+Elliott

Design, Construction & Project Mgt:
Parsons-Odebrecht joint venture

Operating System: Mitsubishi-Sumitomo joint venture

System Operator: Crystal Mover Services (a subsidiary of Mitsubishi)

Noteworthy Details: After 9/11-related delays, project was completed on time & on budget. Consolidated design-build-maintain contract shaved 1½ yrs off the schedule.

Next: In 2012, Metrorail will extend to connect with airport system, providing train passengers airport access nearly everywhere in Miami-Dade County.



For years, large airports have used people movers to shuffle passengers between terminals. Today, landlocked airports are using them to "punch through" immovable boundaries such as highways or commercial districts.

The MIA Mover, which officially opened at Miami International Airport (MIA) in early September, is a \$270 million, 1.25-mile example of extending ground operations over streets and highways into the surrounding community to eventually connect with regional mass transit.

"With little room for expanded facilities on site, airports need access to additional parcels of land to service their passengers," explains Ginger Evans, Parsons' senior vice president and aviation division manager. "As airports pursue integrated planning and development with the larger cities they serve, people movers are an infrastructure asset that facilitates increased capacity and better passenger service."

Extending people movers over existing highways allows airports to "spread their wings," Evans continues. "Having easy access to the airport from the other side of the highway facilitates the development of hotel rooms, other transportation connection links and related business development."

Three years ago, the Miami-Dade Aviation Department began construction of an ambitious project to connect MIA to a ground transportation hub known as the Miami Intermodal Center. Currently, the center is a four-level structure that

houses 16 rental car companies. By 2013, it will also be a boarding station for rail services spanning Miami-Dade, Broward and Palm Beach counties and beyond.

MIA Mover is the 1.25-mile electric rail system that connects the airport to the Intermodal Center. Traveling at 40 mph, the new people mover shuttles 3,250 passengers per hour, per direction. During peak travel periods — like last winter when nearly 30,000 people rented cars some days — the frequency and speed of the new system can be adjusted to accommodate up to 48,000 visitors per day.

Next spring, a 2.4-mile extension called AirportLink will connect the Miami-Dade County Metrorail System to the Intermodal Center, giving train passengers access to the airport from nearly anywhere in the county and even further. Similarly, business travelers boarding the system on the MIA Mover at the airport will arrive in downtown Miami in a matter of minutes.

Planners considered building a Metrorail station at the airport, but traffic in the 1.25-mile stretch from the airport to the Intermodal Center is so heavy, it could have negatively impacted the entire Metrorail system.

As plans develop for the AirportLink connector, MIA Mover is already expediting ground travel at the airport. Rather than collecting their bags and waiting curbside for a shuttle bus to drive them to the Intermodal Center, passengers ride up an elevator and take a moving walkway to the MIA Mover station. Four minutes



later, they're at the rental car center (vs. about 15 minutes for the previous shuttle trip.)

Miami-Dade County paid approximately \$170 million of the \$270 million MIA Mover project, and Florida Department of Transportation paid the other \$100 million.



Greg Chin

"The capital investment is certainly worth every penny, because we expect to see an immediate improvement in customer service," relates MIA communications director Greg Chin. "Plus, the decreased

fuel emissions and decreased traffic congestion are priceless. You can't put a number on those benefits."

Greener Ground Transport

The system, notes Chin, will be instrumental in reducing fuel emissions at and around the airport. "The MIA Mover will remove about 1,400 shuttle bus trips at the airport every day," he elaborates. "Since it runs completely on electric power, the air will be cleaner and the environment will be much healthier for airport users."

Before the rental car center opened in July 2010, about 120 rental car buses made about 10,000 trips to/from the terminal weekly. After it opened, an airport-operated bus system cut that traffic in half by replacing

individual buses operated by numerous rental car companies.

The high level of vehicle gas emissions has always been a top passenger complaint at MIA, notes Odebrecht project executive Luiz Simon. "It was hard to breathe when standing by the curb, and all the rental car buses led to huge traffic issues on the arrivals level," Simon recalls.

Consolidating the rental car buses reduced fuel emissions by 15%, and the MIA Mover will reduce emissions another 15%, reports Chin. "This will be a huge benefit to the community," he notes.

Project officials also expect the station for the MIA Mover to achieve Leadership in Energy and Environmental Design Gold Certification.

Drafting the Team

Systems consultant Lea+Elliott was retained to help the county develop a transportation strategy, establish cost estimates and work out program details. The firm developed performance-based contracts for the project's infrastructure, operating system equipment, rolling stock, power distribution and train controls. It also supported the county in evaluating proposals and preliminary negotiations that led to final award recommendations.

"Performance-based specifications actually aid the competitive procurement process by



Crews worked in tight quarters to pour the station deck.



It took workers 36 months to erect the track.



Workers guide the MIA Mover people mover onto the track.

Technicians can monitor traffic, operate the trains, increase their speed or frequency, or even pull units off the track for maintenance from a separate operations center.

leveling the playing field among suppliers," emphasizes Sanjeev Shah, a principal with Lea+Elliott. "Companies can then specifically show how their proprietary systems will be adapted to meet the airport's requirements."

Performance levels were set high for the MIA Mover project, notes one team member. For example, if the system doesn't run at 99.5% availability, the company that operates it faces a substantial financial penalty.



Sanjeev Shah

To ensure that bar is reached, the operator monitors vehicles throughout the day, adding more cars during peak times and adjusting speeds as necessary. Cars are also routinely rotated off the track for maintenance.

During the first round of bidding, the airport received three bids: two for self-propelled systems and one for a cable-propelled system. After the review process determined that all three companies failed to respond to certain aspects of the bid, the firms were encouraged to make adjustments and resubmit their bids -- something just one company did, notes Shah.

As the "last man standing," Parsons-Odebrecht with Mitsubishi/Sumitomo was awarded the contract after additional negotiations, he recalls.

Joint Ventures

The massive MIA Mover project united several mainstays in the industry. A joint venture between Parsons Corporation and Odebrecht Construction was assigned overall design and construction responsibilities. Mitsubishi Heavy Industries America partnered with Sumitomo Corporation of America to supply the operating system, including eight vehicles. A Mitsubishi subsidiary, Crystal Mover Services, will operate the system for five years, with an option for an additional five-year contract. When the entire system is finished, Crystal will operate and maintain the track and two passenger stations. If necessary, a third station can be added later.

The Mitsubishi-Sumitomo team previously worked together on people mover projects at Washington Dulles International, Hartsfield-Jackson in Atlanta and the North Terminal at MIA.

Renting a car at MIA just got easier.



Photo by Morris Moreno

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Gino Antonello

The joint venture structure required firms to combine their management philosophies and integrate processes to complete a "super turnkey operation," says Gino Antonello, vice president of transportation systems and equipment for Sumitomo.

The integration strategy apparently worked, because the MIA Mover was completed on time, under budget and with no additional claims.

The use of joint ventures made it easier to resolve problems before they ballooned into costly delays, reasons Antonello.

"Combining design and build functions made it easier for the airport staff, because the same team was responsible from beginning to end," he explains. "Our partnership gave them a central point of contact for the entire project, making it much easier to manage than it would have been had there been one contract for civil engineering and one contract for operations."

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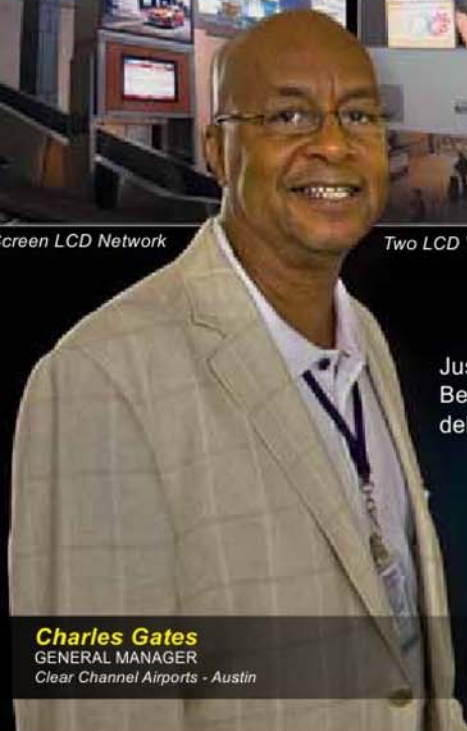
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The airport gave the contractors a “long leash” to do what they needed to meet deadlines; but it was also quick to provide oversight and voice opinions about what should be done, reflects Antoniello.

“The airport landside operations staff did a spectacular job making sure people could get into the airport and catch planes, as well as pick up luggage and get out,” recalls Simon. “We were as committed to the airport staff to keep their operation open and running at peak efficiency as they were committed to helping us keep the project on schedule.”

The other joint venture combined Parsons’ design experience with Odebrecht’s construction expertise.

“Parsons-Odebrecht was truly an integrated team,” says David Leverenz, Parsons’ vice president and joint venture project executive. “Both partners shared in the overall management of

the project. (Our) strengths complement each other, and it just made sense for us to pursue this as a joint venture.

“The design-build process added a great deal of value to the project by allowing us to finish on time, with no claims, no extra cost and money left over in an allowance account. Had we experienced a lot of friction within the joint venture, we could not have achieved that record.”

The Parsons-Odebrecht team worked together at MIA for the past decade. As a result, its existing relationships with local contractors helped move the people mover project along.

Leverenz recalls a “spirited discussion” about the placement of equipment that provides tickets as motorists enter the parking garages. “Rather than go back and forth via email, we just called the airport landside operations staff and everyone met on site to work out the details,” he explains. “We didn’t have to

submit designs based on what we think they wanted; they showed us up front so we could get it right the first time.”

On a similar note, airport personnel reacted quickly to unexpected changes during the construction process, recalls Leverenz. “We could simply pick up a phone and get people out to the site right away to identify a solution rather than just talk about it and submit a claim,” he explains.

On-site Constraints

The challenge of maintaining a construction site with 75,000 cars driving through daily fell to Brad Rinzler, the Parsons-Odebrecht technical director. “It wasn’t possible to put a fence around the facility because we were working above or near the main roads leading to the terminals,” explains Rinzler. “We were traversing the

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The customer service center at the consolidated rental car center is the first thing passengers see when getting off the MIA Mover.

main entrance, which can never close, and yet people never had a delay or problem entering or exiting the airport."

Simon's biggest challenge as deputy project executive was constructing massive structures a few feet from other buildings without severely impacting their use. To build the system station, workers had to erect a tower crane and construct the station around it (then disassemble it to get it out). Crews covered areas that were open to the adjacent garages with fabric to protect parked cars from dust and debris.

Building the station so close to the parking garages would have been impossible without support from the airport's land-side operations staff, reflects Simon.

Train Specs

Operating at 40 mph, the MIA Mover makes the trip from station to station in 3½ minutes, including passenger loading and unloading. The system is able to travel at much faster speeds, but planners considered round trip time, track engineering and passenger comfort when determining the vehicle's optimal speed, explains

Antoniello. After installation, trains were tested for a full month before the first passengers were allowed to board, he adds.

Currently, the system includes eight rail cars that travel in four pairs. Currently, its "people power" is about 3,250 people per hour, per direction. More cars, however, can be added to expand capacity. And it seems they may be needed. In 2010, the airport served 36 million passengers — a 5% increase from the year before. As of September, volume is up another 6% this year, reports Chin.

"It's a good problem to have," he quips. "We expect to see more passengers. Fortunately, the county had the foresight to invest in capital improvements, including widening the airport entrance and adding a lane on both sides."

A Decade in Planning

The MIA Mover project actually started more than a decade ago. Preliminary work had been completed, and the project was ready to go out for bids when 9/11 forced the airport to re-evaluate its priorities.

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Eight trains traveling in pairs shuttle 3,250 people per hour, per direction.

"We spent a considerable amount of time working with the airport staff in looking at their traffic projections to develop options that could fit within the airport's evolving business plan post 9/11," recalls Shah.

Lea+Elliott and the airport considered several different types of alignments for the rail service, including a fishhook design that would have connected all the terminals with the Intermodal Center. They also studied train operations in New York City and other communities.

The straight-line configuration with two stations that ultimately prevailed was 25% less costly than other options. "Realistically, it came down to what the airport could afford," Shah recalls. "A loop alignment offers the most options, with separate stops at each terminal. But financial constraints dictated that we stick with a straight alignment approach. That meant that people had to saddle up for certain compromises, like slightly longer walk distances; and those compromises were found to be acceptable."

On the Fast Track

After several years of delays, the airport was eager to get the MIA Mover moving. Contractors were challenged to put it on the fast track for completion, and Lea+Elliott came up with a plan to combine infrastructure design and construction with operating system in one bid.

"It was a turnkey approach in which a single contractor would build the system and operate it as well," Shah explains. "That meant we only needed one contract rather than multiple contracts. It reduced the staff oversight requirements because the contractor, as a single entity, had full responsibility for design, construction and integrating the entire project."

By combining contracts, the airport shortened the implementation schedule from four and one-half years to three. Construction began in September 2008, and the system opened, as scheduled, on September 9 this year. With passenger service in progress, Lea+Elliott will monitor the system's operation on behalf of the airport for six months to confirm that it runs as expected.

Safety Kudo

The Occupational Safety and Health Administration awarded Voluntary Protection Program Star Status to the MIA Mover team

in early August. Rinzler considers the award a major accomplishment for the construction contractors and for the aviation industry — especially given the scope and relatively short-term nature of the project.

"We were the first construction site in Florida and only the second in an eight-state region to qualify for an award of that caliber," he explains.

Achieving an exemplary safety record required the team to separate the public from construction operations that included cranes lifting 10-ton, 120-foot-long concrete beams.

"We often had to provide alternative means of traffic around the construction site," notes Simon. "Fortunately, we had a great relationship with the local police department who assisted us in managing traffic day and night."

Lessons Learned

Shah encourages airport managers who are evaluating options for transportation systems to be clear about their mission and goals. This will help them select a system that can grow with the airport and be operated within an affordable budget, he explains.


Managers should also make sure they pick the right class of technology, whether dealing with a self-propelled or cable-operated system. Once that decision is made, Shah cautions, it is extremely costly to switch to another format.

"Regardless of project size — but especially in large scale projects like building a people mover system — airport managers should make sure the project delivery and procurement approach allows a maximum number of suppliers to participate," he adds. "That's the only way to really foster a competitive procurement process and ensure good, reasonable pricing for the airport."

Failure to complete work on time was simply not an option during the MIA Mover project, he recalls. "That was something communicated to the contractors from the project's start."

Even though disagreements occurred, everyone remained focused on meeting the deadlines, he relates. "We worked hard to look a step or two ahead of the process and bring potential issues to the contractor early so we weren't painted in a corner later."

Simon praises MIA and other airports making major improvements in their ground transportation infrastructure. "Airports that construct consolidated rental facilities are taking a huge step toward improving passenger convenience and in reducing congestion," he says. "Connecting an airport to the local mass transit system is a huge plus for any community, but especially for larger cities, like Miami."

Rinzler is proud to have worked on the project: "We created a system to move people easier and faster with less cost and less impact on our environment. Sustainable mass transportation is the right thing to do, and the direction many airports are moving to meet growing travel demands." 



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