

# Public Roads

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July/August 2004 · Vol. 68 · No. 1

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## July/August 2004

### From Highways to Skyways and Seaways — the Intermodal Challenge

by John V. Broadhurst

*Partnerships are the name of the game when it comes to managing intermodal megaprojects.*

For transportation agencies today, the most complex and high-profile megaprojects often are intermodal, involving the convergence of multiple modes of transportation. Three key elements define intermodal transportation: (1) movement of goods or people, (2) use of more than one mode, and (3) seamless transport through the entire journey.

Among the expanded responsibilities that highway agencies need to consider during the planning process for large intermodal projects are tasks such as forming interagency and public-private partnerships; using unique contracting and financing mechanisms; incorporating new design and construction innovations and techniques; managing funding from multiple sources; encouraging public involvement; and complying with accessibility requirements at train stations, in parking lots, and elsewhere. Intermodal freight transportation, especially when it involves one or more foreign governments, adds additional layers of complexity. As highway projects take on these expanded roles, new regulations add to the challenge.



Gregg Gargan, Colorado DOT

**A component of the multimodal T-REX project in Colorado, this new tunnel (shown here at night) carries southbound traffic under the interchange from Interstate 225 to Interstate 25.**

These major ventures encourage the Federal Highway Administration (FHWA) and State departments of transportation (DOTs) to extend their areas of expertise. And intermodal megaprojects usually require coordination with other administrations within the U.S. Department of Transportation (USDOT), in addition to nontraditional partners and customers, who bring alternative perspectives to the table.

Three intermodal megaprojects selected from around the country offer insights into the practices and partnerships that are helping successfully deliver new and

rehabilitated transportation facilities: the Transportation Expansion Project (T-REX) in Denver, CO; the Miami Intermodal Center (MIC) in southern Florida; and the I-95 New Haven Harbor Crossing (NHHHC) in Connecticut.

## **T-REX Uses the "One DOT" Approach**

With major projects that are multimodal in nature, it is important to evaluate the appropriateness of establishing a combined one-stop approach to management. Oftentimes USDOT modal administrations administer projects differently from one another. Environmental reviews, contract administration, procurement, oversight, and even management approaches sometimes vary and can be confusing to a project delivery team. A One DOT approach, however, including transit, freight, rail, highway, airways, and waterways, can streamline many of the project delivery mechanisms.

The Colorado DOT, the Regional Transportation District (RTD), FHWA, and the Federal Transit Administration (FTA) together are overseeing a major intermodal project in the Denver, CO, metropolitan area. The \$1.67 billion T-REX project involves widening and reconstructing 30.5 kilometers (19 miles) of Interstates 25 and 225 and adding light rail to the roadway corridor.

On September 9, 1999, CDOT and RTD executed an intergovernmental agreement to finance and implement T-REX. In this partners-managed project, employees of both CDOT and RTD lead 11 of the 13 functional task groups, while private sector expertise rounds out the leadership and staffing of 88 full-time and 16 part-time positions.

"[The] partnering of FHWA and FTA began before the formal agreements and continues under the intergovernmental agreement establishing One DOT [in October 7, 1999]," explains former Deputy Regional Administrator Charles "Chick" Dolby of FTA. "The agencies knew this project wouldn't occur without major highway and transit elements. CDOT took the lead during the preliminary engineering and environmental process when the multimodal concept was first conceived."

The One DOT team has been involved in all project stages from environmental issues, rights-of-way acquisitions, and utility relocations to design, construction, and public information. The agreement establishes a structure of meetings and reports, and the Federal partners serve on the executive board of directors, meeting regularly with top management from T-REX and the contractor.

"In the One DOT partnering, we streamlined processes to avoid duplication. For example in the potential problem area of right-of-way acquisition, we agreed to use one process and defined how it would work," Dolby explains.

The T-REX team needed to acquire 200 parcels at a cost of approximately \$100 million. Since FTA requires a signoff on every appraisal where the fair market value runs more than \$250,000, these approvals would need to pass through one real estate expert at FTA headquarters who handles the entire country. Consequently, the FTA approval process would have hampered the timely acquisition of right-of-way properties. In the One DOT agreement, FTA and FHWA agreed to use the FHWA certification process instead, so FTA would not have to pass multiple acquisitions through its headquarters.

"In the environmental area, One DOT followed the FHWA procedure for preparing the [intergovernmental agreement] document and reviewing it with a little beefing up of vibration studies because of the light rail transit," Dolby adds. Typically FHWA would have to approve every change order on the interstate, so FTA agreed to review the change order process in conjunction with FHWA. Also, in the One DOT charter, FTA and FHWA agreed not to duplicate reviews.

Because the design-build contract assigns much of the quality assurance to the contractor, the owner-oversight team is smaller than on a traditional project of this magnitude."





Gregg Gargan, Colorado DOT

**Aerial view of the Elati light rail vehicle maintenance facility. The intermodal T-REX project in Colorado includes expanding highways and light rail transportation in the Denver, CO, area.**

"Our team philosophy is the project comes first," says Larry Warner, T-REX project director with CDOT. "It doesn't matter who pays you and who you work for because everybody on the organizational chart is working for T-REX."

In fact, Federal and State reports on interim lessons learned recommend locating all project—staff from public agencies to contractors and public affairs consultants—in the same building to facilitate communication and cooperation.

### **T-REX Collaborating With Third Parties**

Another lesson from T-REX: "Involving third parties in the early stages of development is a high priority for megaprojects," says Craig Actis, T-REX project administrator for FHWA. "What's in the best interest of a third party may not be in the best interest of the project, especially when requests for changes or additional work are made after construction has begun."

The T-REX team negotiated agreements and memoranda of understanding up front, with utility companies, local municipalities, businesses, law enforcement agencies, emergency service providers, and developers. T-REX Deputy Manager Rick Clarke, from RTD, credits the successful utility investigations and timely relocations to the early partnering between the transit and highway agencies.

Also, neighborhood associations, municipalities, and area businesses provided input through public meetings on design items, such as the light rail station and patterns for the sound walls.



Gregg Gargan, Colorado DOT

**Reconstruction of the I-225/I-25 interchange, shown in this aerial from January 2004, includes 40 retaining walls, a tunnel for exit from 225 to southbound 25, a tunnel for light rail, 38,862 cubic meters (50,800 cubic yards) of concrete, and 236 bridge girders.**

## **Managing Two Budgets**

The overall budget for T-REX breaks down into a budget for transit and another for highway-related tasks. "A unique challenge of a multimodal project is that we have to keep separate budgets for transit and highway components," Clarke says. "Allocating costs and keeping an extra set of books challenges the project controls people."

T-REX funding consists of \$397.5 million provided by FHWA, \$397.5 million provided by CDOT, \$525 million from FTA, and \$324.3 million from RTD, with local agencies contributing another \$30 million. An early agreement formalized how the parties will split the costs. Soft costs, such as design, utilities, and right-of-ways, are split 50-50 between highway and transit. Some elements, such as paving the highway or constructing light rail stations, clearly apply to either highway or transit.

"When a bridge is reconstructed to pass over both the highway and the light rail, the costs are split by measuring how much of the span passes over each and assigning percentages," Clarke says.

"The project is on time and on budget because all parties are committed and dedicated to making good decisions and working together to achieve a common goal," Warner says. He also credits cooperation from FHWA, FTA, and the U.S. Army Corps of Engineers with enabling the project team to complete its environmental document in a record time of 18 months.

Former FHWA Colorado Division Administrator William C. Jones sums up the success of the T-REX planning process: "We're really proud of the Federal and State cooperation on this project. In my 30-year career at FHWA, this is the first project where Federal transit and Federal highway are both at the table with an equal interest and an equal voice in the way the project would come together and be administered."

## **The MIC: A Hub for Many Modes**

According to the project Web site, the new Miami Intermodal Center (MIC) in southern Florida will be similar to New York City's Grand Central Terminal, offering safe and efficient transfers for pedestrians and users of rail systems, buses, taxis, privately owned automobiles, and bicycles.

Phase 1 will cost approximately \$1.35 billion over 5 years and consist of right-of-way acquisitions, new distributor and collector roads to access the airport, and highway improvements to the major north/south arterial on the east side of the airport. In addition, the first phase involves building a 325,000-square-meter (3.5-million-square-foot) rental car facility that occupies a footprint of more than 8 hectares (20 acres) per floor. Other components include an automatic train that delivers travelers to and from the terminal at Miami International Airport and the MIC central station, which is a rail node and pedestrian concourse adjacent to a rental car facility.





**The Automated People Mover station, to be built at the Miami Intermodal Center, received a design citation in the fall of 2003 from the Miami chapter of the American Institute of Architects.**

According to Ricardo Fernàndez, the facility's lead designer and the program manager who is providing architectural and engineering design for the principal buildings, south Florida's commuter train—Tri-Rail—will relocate to the rail node during the first phase. During phase 2, Miami's elevated rapid transit system—Metrorail—will add a platform at the rail node. Up to four tracks will accommodate Amtrak® and other ground transportation. The project team also is considering adding a parking facility for up to 4,000 cars.



**This rendering shows the exterior of the rental car facility, access roads, and mixed use development that surround the MIC. Public-private partnerships are integral to helping fund the project and keep it on schedule.**

### **Creating the MIC Steering Committee**

The Florida DOT took the lead in coordinating the MIC by forming a steering committee with representatives of all stakeholders, including FTA, FHWA, Miami-Dade County, Miami-Dade Expressway Authority, and private sector organizations. While creating a new partnership committee, one of the main questions will be about funding and contributions.

"My initial involvement with the MIC was FDOT asking us if Federal funds could be mixed with private funds to advance the project," says FHWA Florida Division Administrator Jim St. John. "We researched the issue and replied, 'Yes, if the facility would be used for both public and private ventures, and each entity

contributes a fair share to the cost of facility construction and operations."



**Another rendering shows the lobby of the rental car facility at the MIC with the storefronts for the rental car companies. The close proximity of the facility to the Miami International Airport will make it easy for airline passengers to pick up their rental cars.**

The challenge on the MIC has been getting the many partners on the same page and then coordinating the timing so the project can happen. "The committee is coordinating needs so whatever is built is consistent with the operation of each agency," says Dr. Carlos Bonzon, Miami-Dade surface transportation manager.

### **Sharing the MIC Costs**

MIC funds come from the Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA), the Florida State Infrastructure Bank, apportioned Federal-aid funds, State transportation trust funds, airport capital improvement funds, Miami-Dade Expressway funds, and ancillary revenues, such as lease-back payments from State rights-of-way not presently needed for project construction. In the lease-back scenario, the State leases the property until it is needed for construction, which enables them to receive additional revenue on property that otherwise might stand vacant until the appropriate time.

FHWA is providing more hands-on financial oversight than with a typical Federal-aid project. "Normally FHWA would not have direct project oversight with a noninterstate project," says Andrew DeTizio, major projects engineer with the FHWA Florida Division, "but because of the size, innovative financing, and public-private partners, the FHWA Florida Division negotiated a stewardship agreement with FDOT to define each agency's direct responsibilities."



"We started with two basic agreements," says Nick Serianni, transportation consultant to FDOT on the MIC project. "A comprehensive agreement between FDOT and Miami-Dade County (the airport operator) identifies every major element of the program and who is responsible [for its implementation]." A second major agreement, between FDOT and the Miami-Dade Expressway Authority, grants the authority right-of-way for a future elevated expressway in exchange for an \$85 million contribution to the MIC."





**Rendering of the proposed new Pearl Harbor Memorial (Q) Bridge design in steel. The new bridge will be an extra doped bridge hybrid between a cable-stayed bridge and a box girder bridge. The lower towers avoid encroaching into the air space for the airport, just a mile away.**



**Aerial view of existing Pearl Harbor Memorial Bridge in New Haven, CT, showing the project's proximity to the city and port.**

The \$433 million TIFIA loan splits into two parts: \$164 million for the rental car facility and \$269 million for the other elements except for the airport connector. Since income from the rental car concessionaires will repay the loan for the rental car facility, USDOT required signed contracts with the several concessionaires as a condition of the loan. But when the contracts, which are now signed, lagged behind schedule, FDOT advanced funds to design the facility and start construction with site clearing, utilities, and foundations. FDOT also agreed to contribute \$80 million for executing a money-saving redesign of the alignment for the airport connector and constructing the foundations in the shared corridor with the roadway.

FDOT will form other public-private partnerships to develop land acquired in the corridor and at the MIC core for hotels, offices, and retail space. The agency purchased a number of sites with existing buildings that will be demolished prior to constructing the roads and other components of the MIC. Tenants are remaining in these buildings and paying rent to FDOT until the time comes to clear the site for construction. "For the first time, FDOT is letting tenants occupy the sites purchased for the MIC and pay rent into a State account earmarked for the MIC until the site is demolished," says Adolfo Fassrainer, financial manager for FDOT.



**Aerial view of new commuter rail station at State Street, a component of the New Haven Harbor Crossing intermodal project.**

As with T-REX in Colorado, effective interagency partnering and collaboration between public and private parties are essential to ensuring the success of the MIC project. In addition, breaking the work down into smaller phases and using innovative cost-sharing practices are helping the project proceed on schedule as realistic funding sources become available.



**Entrance to the new commuter rail station at State Street. New Haven residents encouraged the project managers to complete this station prior to beginning construction on the highway component of the NHHC project to provide residents and commuters with an alternative means of accessing downtown.**

### **NHHC: Involving the Public**

"The genesis for the New Haven Harbor Crossing (NHHC) project was the replacement of the 'Q' bridge, an aging six-lane structure carrying Interstate 95 over the Quinnipiac River," says Mark Rolfe, NHHC project manager with the



Connecticut DOT (ConnDOT). A study conducted by ConnDOT on how to address safety, congestion relief, and capacity improvement in the area recommended a new 10-lane bridge and reconstruction of 11.6 kilometers (7.2 miles) of I-95 and bridge approaches and interchanges. A transit portion of the project includes building the new State Street Station for commuters on the Shore Line East, in separately funded and administered contracts, adding additional parking and platform upgrades. Federal funding will cover approximately 87 percent of the program cost, and State funding will contribute 13 percent of the \$1 billion project.

The overriding public dissatisfaction with the first draft environmental impact statement spurred ConnDOT to initiate the Intermodal Concept Development Committee to solicit additional public input. Twenty-six organizations from diverse interests participated, including transit and highway users, local municipalities, regional planning organizations, local interest groups, neighborhood association leaders, and State and Federal regulatory agencies. Over the course of 3 years and approximately 40 meetings, the committee evaluated more than 100 ideas for the corridor and reached a consensus on seven options. ConnDOT presented the options at numerous public meetings before selecting the current project components.

According to Amy Jackson-Grove, planning, research, and environmental program manager for the FHWA Connecticut Division, a key factor in the early success of the NHHC project was completion of the State Street Station in June 2002. "This project went smoothly with a tremendous amount of local and State support because we listened to public requests to improve transit alternatives before starting highway construction," she says. Within walking distance of downtown New Haven, the new station is part of a comprehensive plan to make rail transportation an attractive option for motorists to use during highway construction on I-95.

The design phase for the NHHC project will take more than 4 years to finish, while actual construction activities in the I-95 corridor will be ongoing for more than 11 years. The estimated completion date is scheduled for 2012.



Rob Moore, Connecticut DOT

**Aerial view of the existing stretch of I-95 east of the Pearl Harbor Memorial Bridge in New Haven.**



**This photo simulation shows the same road after construction is completed.**

### **Opportunities for Tomorrow**

These examples from Colorado, Florida, and Connecticut represent just the tip of the information iceberg. Strategies like locating all project staff and partnering organizations in one building, breaking down large projects into smaller phases to facilitate funding, and soliciting feedback from the public early on can grease the skids for successful project delivery.

As Federal, State, and local agencies and their partners gain more experience planning and executing these complex intermodal megaprojects, they will add to the knowledge base and provide new insights that will help today's megaprojects become tomorrow's success stories.

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**John V. Broadhurst** has served in financial positions at FHWA since 1973. In 2001 he became financial specialist on the Major Projects Team in the Office of Infrastructure, where he provides guidance on financial plans and serves as a liaison to the TIFIA Joint Program Office. Broadhurst is the contact for seven megaprojects, including T-REX in Denver. He earned a B.A. from the University of Connecticut in 1972 and financial management certification from the U.S. Department of Agriculture Graduate School in 2002.

*For more information on these projects, visit their Web sites [www.trexproject.com](http://www.trexproject.com), [www.micdot.com](http://www.micdot.com), and [www.i95newhaven.com](http://www.i95newhaven.com). Federal documents on the T-REX project, including the One DOT agreement and interim lessons learned, are available from Craig Actis at [craig.actis@fhwa.dot.gov](mailto:craig.actis@fhwa.dot.gov). A State document on lessons learned during the T-REX project is available from Barry Grossman at [grossmanbm@trexproject.com](mailto:grossmanbm@trexproject.com).*

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United States Department of Transportation - Federal Highway Administration

Identifying the highway freight that would benefit from converting to intermodal rail can prove time-consuming and challenging. If you are unfamiliar with intermodal it can be tough to know where to start, even if you're a seasoned expert, you may still be missing out on additional opportunities. Several factors determine whether a move would benefit from highway-to-intermodal rail conversion. The H2R Optimizer is able to analyze your full truckload moves taking into consideration total length of haul, proximity to an intermodal terminal and transit time to highlight opportunities for cost savings. To perform the analysis, all that is required are the origin and destination zip codes as well as the volume of your current over-the-road freight moves. Download Policy: Content on the Website is provided to you AS IS for your information and personal use and may not be sold / licensed / shared on other websites without getting consent from its author. While downloading, if for some reason you are not able to download a presentation, the publisher may have deleted the file from their server. - - e n D - -. Related Presentations. More by User. EMSA Facts and Figures 2017. ITRS 2003 Factory Integration Chapter Material Handling Backup Section -. details and assumptions for technology. Maritime and Shipping at Southampton Solent Univer The Saint Lawrence Seaway (French: la Voie Maritime du Saint-Laurent) is a system of locks, canals, and channels in Canada and the United States that permits oceangoing vessels to travel from the Atlantic Ocean to the Great Lakes of North America, as far inland as the western end of Lake Superior. The seaway is named for the Saint Lawrence River, which flows from Lake Ontario to the Atlantic Ocean. Legally, the seaway extends from Montreal, Quebec, to Lake Erie and includes the Welland Canal.