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July 2010

Transportation Management & Engineering



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Sun to Go

95 Express lanes go dynamic in Fla.

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On the cover: Inside the TMC that operates Florida's 95 Express lanes. Photo courtesy of Jeffrey G. Katz.

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Just ride, baby

Oakland may have a transit answer to its economic woes



The Oakland Raiders might want to keep an eye on Stanford undergrad Daniel Jacobson.

I am not sure if he can throw a partial spiral, let alone a perfect one, and I am absolutely sure he cannot run a 4.2 40-yard dash, but the kid has tremendous upside.

The Raiders are notorious for wasting their No. 1 pick, so for the city of Oakland I think they should try to land this aspiring transportation planner. He can't break tackles, but it looks like he can crack an economic dilemma that has been plaguing the region for quite some time, and that will be a huge victory for businesses in Oakland, including the National Football

League franchise.

City officials tried to work the X's and O's with plans for the 3.2-mile BART Oakland Airport rail connector, which was estimated at a killer \$522 million and carried a one-way ticket cost of \$6 that only a football star would take out of desperation. The system also provided no relief to nearby residents. Oakland had already dropped \$300,000 for a streetcar feasibility study in 2005 and an additional \$330,000 in feasibility studies in 2010, so the last thing they wanted to do was sit on the ball. That's when Jacobson strapped the chinstrap to his thinking cap.

The collegiate came up with a 2.5-mile streetcar line that forms a critical transportation artery through the heart of Oakland, connecting Piedmont to Jack London Square. The plan would connect two BART stations, the Oakland ferry, Amtrak and main transit lines. It is expected to create as much as 24,000 jobs, and Jacobson's plan activates 125 acres of underutilized land along the line that could create an urban housing boom.

But perhaps the greatest hit in all this, and one that actually carries very little impact, is the total cost of the revitalization, which is \$92 million. Now, I only took a couple of math courses in college, but by my count that is \$430 million less than the plan that was worked in the big leagues. It gets even better—Jacobson is not even charging for his design; it is his gift to the city.

"This could have more bang for the buck than virtually any project we could do in this area, which is the very heart of Oakland," said Oakland Councilwoman Rebecca Kaplan.

Jacobson's game was inspired by some of the greats, including the likes of Portland, Ore., and Seattle. He paid a visit to the Great Northwest to study up on his design using a \$1,275 grant from the office of the Stanford vice-provost of undergraduate education.

Jacobson told the *San Francisco Chronicle* that streetcars "are meant to reshape economically depressed or underused areas."

Too often as professionals we get wrapped up in a traditional mindset, and then comes along a rookie who opens up some daylight for us. However, Jacobson's means for coming up with a solution is really nothing new. He studied the subject and had the opportunity to see the success of the streetcar solution in action. Of course, his open-minded perspective helped, and hopefully Oakland will become a better city for it. It won't happen on the gridiron, but it will have a lasting effect on a grid of another kind.

It certainly has a championship ring to it.

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Scoping rail transit

Officials talk up recent accomplishments and prod Congress

Leading officials in public transportation gathered to discuss the future of rail transit on June 7 in a media conference call hosted by the American Public Transportation Association (APTA). The call was held during APTA's 2010 Rail Conference in Vancouver, British Columbia, and included guests Peter Rogoff, administrator of the Federal Transit Administration; Karen Rae, deputy administrator of the Federal Railroad Administration; and Ian Jarvis, chief executive officer of TransLink, the transit agency in Burnaby, British Columbia.

"We have seen over the last several years, but particularly in the last year, an attention on rail transit and intercity and high-speed rail like we have not seen in the U.S. in a long, long, long time," said Bill Millar, president of APTA.

Millar then listed some of the recent accomplishments in rail transit, such as the Canada transit line to downtown Vancouver, British Columbia, from the airport; a new light-rail extension Sound Transit has opened from Seattle to the Sea-Tac Airport; the Green line that has opened in Dallas; the debut of Northstar Commuter Rail, Minnesota's first commuter rail service; and the Gold line extension in Los Angeles.

Rogoff highlighted the strategic plan issued recently by the U.S. DOT and the transit bills sent to the U.S. House and Senate last December.

"We had some very good hearings once those bills were submitted," he said. "The ball has been in Congress' court since December. They hold the pen, and we believe, especially now, it's time for them to pick up that pen and move bills forward."

Rogoff said one of the most important issues in public transportation—and one of the five critical goals of the U.S. DOT's strategic plan—was keeping the nation's transit systems in a state of good repair.

ODOT has a taste for something tweet

The Ohio Department of Transportation (ODOT) is expanding its use of Twitter to help Ohio drivers have a "Worry Free Rush Hour" by providing information about major traffic delays before motorists hit the road each weekday morning and afternoon.

Starting in early June, followers of ODOT's Twitter feeds received rush-hour updates when highway traffic was slowed by new construction activities or major traffic incidents of the type that might close more than one lane of traffic for a significant amount of time.

"Social networking websites such as Twitter are becoming a very useful tool in sharing information, especially among our younger populations," said ODOT Director Jolene M. Molitoris. "Having this type of information before you get behind the wheel gives you the opportunity to plan ahead—to know before you go—which ultimately helps all of us get to our destinations safer."

ODOT will send out "tweets" on traffic conditions on interstates and highways in Akron, Cincinnati, Cleveland, Columbus, Dayton and Toledo.

Millar was enthusiastic about the state of transit ridership in the country.

"We have seen Americans ready for rail. 2009 was the fourth year in a row where we've seen ridership on America's transit systems exceeding 10 billion, much of that ridership on America's rail systems."

But the economic future for transit is not all rosy.

"Many transit systems are facing difficult budgets across the country," said Millar.

"We released a survey two months ago that showed 59% of transit agencies in the U.S. had reduced service or raised fares or laid off employees or combinations of all those things since the first of January 2009. Eighty-four percent of systems expect to have raised their fares or cut service by the end of this year."

Asked whether the funding would continue for maintenance as well as initial construction, Rae said, "We are trying to be very upfront and understand what the magnitude of those numbers are, to factor them into longer-term agreements, so that we clearly identify who is responsible for everything from construction costs through maintenance and operating.

I think by having that discussion be a transparent one at the front end of the process, you at least allow everyone to know what we're committing to."

Tapping auditions in N.Y.

New York City transit riders will be able to tap their credit card on a special sensor instead of swiping their MetroCard in a pilot program going on now, NY1.com reported. The Tap and Go program involves the Metropolitan Transportation Authority (MTA), the Port Authority of New York and New Jersey, and New York City Transit.

Any MasterCard PayPass card can be used on select city buses, PATH trains and New Jersey Transit trains. The fare is automatically deducted from the rider's PayPass account, similar to an E-ZPass account.

MTA would like to phase out the MetroCard swipe in favor of the contactless fare-collection technology, which the agency thinks will be faster and more convenient. If the new fare-collection method works out, MTA plans to go ahead with the \$275 million system-wide investment.

The pilot project will run through Nov. 30.

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Inrix, Kirkland, Wash., has launched InrixTraffic.us, a free Web service to provide state, regional and municipal transportation agencies a complete view of accurate real-time traffic flow on all major highways, interstates, arterials and secondary roads in major cities, rural areas and across state lines. The service provides a picture of real-time traffic speeds for more than 160,000 miles of roads nationwide.

Vector Capital Ltd. has agreed to purchase **Trafficmaster Plc.** and pay Trafficmaster shareholders 47 pence per share of Trafficmaster stock. The total value of all issued Trafficmaster stock was estimated at £73.27 million.

The **North Carolina Turnpike Authority** has selected **TransCore**, Raleigh, N.C., to provide radio frequency identification (RFID) technology statewide for North Carolina's wireless toll-collection systems. The first installation will be

on North Carolina's new all-electronic toll road, the Triangle Expressway. The contract value is an estimated \$5.9 million and includes providing RFID readers, windshield sticker tags and transponders along with selected support services.

Telvent has announced a partnership with **VidSys**. Under the agreement, Telvent will fully integrate VidSys Physical Security Information Management (PSIM) software into Telvent's SmartMobility Road Suite. The VidSys-Telvent partnership has already enabled multiple agencies within the state of New York and the New York State DOT to work more closely at the Joint Traffic Management Center in Long Island City, N.Y., by sharing critical traffic information and coordinating first-responder activities and information.

Total Traffic Network, Houston, and **EarthCam Inc.** have expanded

Impact Recovery Systems, San Antonio, Texas, has hired **David McKee** as regional sales manager in the northeastern U.S.

Communication Networks (ComNet) of Danbury, Conn., has named **Victor Milani** as the company's government sales manager.

Actelis Networks, Fremont, Calif., has appointed **Vivek Ragavan** as the company's new chief executive officer and president.

Arcadis, Chicago, has appointed **James J. Hagan** to the position of federal business development manager for the company's U.S. operations.

their Nationwide TrafficCam Network to include 25 additional cameras in six cities. New systems will be installed in Boston, Chicago, Dallas, Tampa and Washington, D.C. **TM&E**

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Lines of commitment

As the city of Toronto continues to grow, transit must keep pace. Transit and traffic congestion have reached capacity; it's time for transit to expand.

The Transit City Light Rail Plan is the largest expansion of light-rail transit (LRT) in the world. It includes plans to build 120 kilometers of light rail and eight LRT routes. Transit City is a light-rail plan committed to

bringing rapid-transit services to the city of Toronto. Funding for the Transit City project will be provided by the province of Ontario with support from the federal government. Each project will bring quick and reliable transit that enables residents to choose public transit over use of a private automobile.

The plan is currently in two phases: the current funded priority projects and future planned routes. Current priority projects are:

- Sheppard East LRT;
- Eglinton Crosstown LRT;

Light-rail plan aimed at making Toronto a world-class city of transit

- Etobicoke Finch West LRT; and
- Scarborough Rapid Transit.

The planned future routes are as follows:

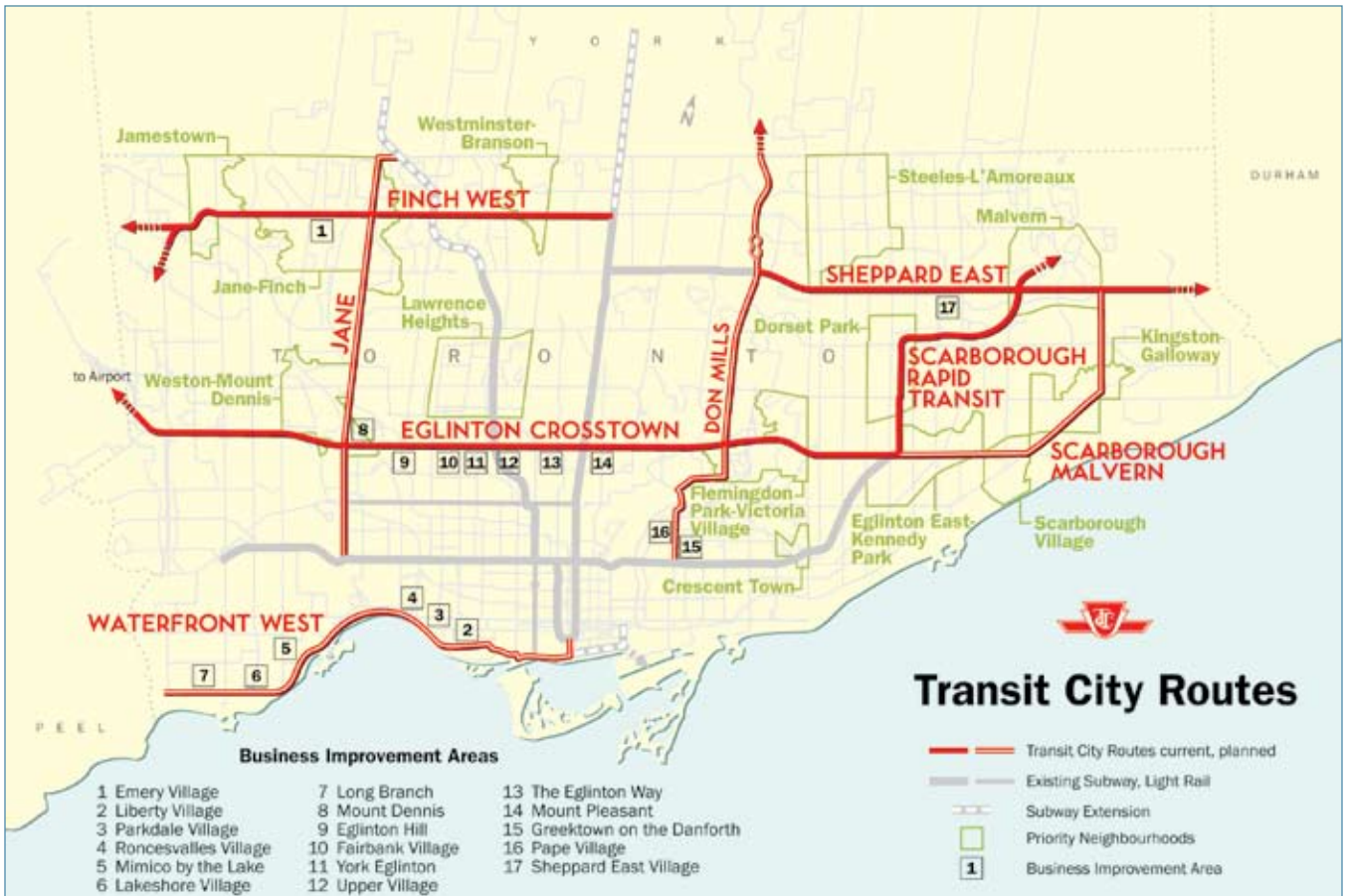
- Jane LRT;
- Scarborough Malvern LRT;
- Don Mills LRT; and
- Waterfront West LRT.

Vehicular amenities

Toronto has a long history of using streetcar networks to move riders. The Toronto Transit Commission (TTC)

In 2009 the TTC approved the initial purchase of 204 low-floor light-rail vehicles (LFLRVs) to replace its aging fleet. This purchase includes an option to purchase an additional 400 LFLRVs for the new Transit City lines.





Construction of the Sheppard LRT began in late 2009 and is expected to be completed in spring 2014. Contractors are currently working on completing the grade separation of the Agincourt GO station. Construction for the Eglinton Crosstown LRT is slated to begin in 2011.

currently operates 11 routes covering approximately 304 kilometers of road. Transit City will add 120 kilometers of rail to this network. In 2009 the TTC approved the initial purchase of 204 low-floor light-rail vehicles (LFLRVs) to replace its aging fleet. This purchase includes an option to purchase an additional 400 LFLRVs for the new Transit City lines. The Transit City vehicles will be phased in as construction is completed. Other factors in choosing light rail include environmental impact, cost, vehicle capacity and rider forecasting.

Light-rail lines and vehicles will be designed to be accessible and customer friendly for all passengers. Each Transit City LRT line will feature:

- Low floors with an accessible entrance;
- Better track to provide a smoother and quieter ride;
- Wider spacing of stations or car stops, leading to reduced travel times;

- Innovative fare-collection systems for faster passenger loading and unloading;
- Pre-emptive, transit-priority signaling at intersections; and
- Separated rights-of-way to minimize conflicts with automobiles.

The fare system Transit City will use will be “proof of payment.” Fare vending machines will be placed at all stops and stations, and security staff will patrol the system to ensure passengers have a valid fare.

Metrolinx, the provincial government’s regional transportation authority, is working with various transportation agencies such as GO Transit and the TTC to pilot a smart card named Presto. Presto technology allows users to purchase fares from multiple transportation authorities using the same card. Currently, 75% of the TTC operating costs are funded by fare-box revenue and 25% from operating subsidies provided by the city

of Toronto. Metrolinx and the TTC will finalize the financing of the Transit City operational costs.

Transit City strives to provide fast and reliable service. To support this, a transit-signal-priority system will be used. When a transit vehicle approaches the intersection, one of two things occurs. Using GPS and signal technology, when the signal is green it will extend until the transit vehicle passes. When the signal is red, the system will be prompted to return to green as soon as possible. Transit City’s transportation specialists are currently working with the existing system to improve accuracy and consistency.

Where we stand

The Transit City project will make Toronto a world-class leader in transit. Construction of the Sheppard LRT began in late 2009 and is expected to be completed in spring 2014. The federal and provincial governments have committed \$950 million



Transit City LRT lines will connect citizens in priority neighborhoods to provide vital access to employment centers, educational institutions and community centers to increase the quality of life in some of Toronto's most diverse socioeconomic communities.

(Canadian) to complete this project.

Contractors are currently working on completing the grade separation of the Agincourt GO station, which is located on the future Sheppard Light Rail line. Approximately 1.5 kilometers of the Sheppard line will be underground; the remaining will be at grade.

The primary contractor for this project is yet to be determined. URS Corp. completed the design for the Sheppard LRT and the Planning Partnership implemented the landscape design.

Construction for the Eglinton Crosstown LRT is slated to begin in 2011.

Motivating movement

Traffic congestion & emissions

Traffic congestion and delays in Toronto are among the world's worst. Such delays result in a loss of productivity and cost billions to the economy of the greater Toronto area. By expanding rapid transit, Torontonians will be able to travel to work, school and play via transit, reducing vehicular traffic, decreasing commuting times and lowering greenhouse-gas emissions.

Priority neighborhoods

Transit City LRT lines will connect citizens in priority neighborhoods to

provide vital access to employment centers, educational institutions and community centers to increase the quality of life in some of Toronto's most diverse socioeconomic communities.

Accessibility

Each light-rail vehicle will feature step-free access from convenient, sheltered platforms, enabling people with all levels of mobility to board and exit the vehicles with confidence and ease.

Transit capacity

Each LRT line will replace one or more current bus routes. Light-rail vehicles have double the

carrying capacity and will eliminate overcrowding and increase passenger comfort.

Economic development

When rapid transit is active in a community, it results in local economic development by allowing more people to work in a specified area without increasing demand for roadways and parking. Economic activity contributes to city building or the strategic intensification of land development. Building will enhance the quality of life for Torontonians through the provision of business or consumer choice, livable neighborhoods and access to amenities. It also will increase the mix of structures and activities on the land to maximize use and citizen choice. In addition to local economic development, expanded rapid transit will contribute to the general well-being of the city through job creation and increased property values. Accessibility and mobility will be

improved and will effectively link labor to business.

Transit connections

The Transit City Light Rail Plan will integrate various forms of transit. Routes will provide seamless connections to the existing TTC system, new LRT routes and regional interurban bus and rail networks. This approach to building transit is important to the future of public transit in Toronto by allowing commuters using multiple modes of transit to easily connect.

Transit City will bring a new era of transit to Toronto, a new means of transportation that gives access to the largest population centers in the greater Toronto area. Each project will contribute to the livability and economic health of the Toronto region by providing connections to various modes of transit for both existing and future projects. The LRT vehicles will be accessible for all commuters,

encompassed in an environmentally friendly mode of transportation. By providing access to reliable and rapid public transit, Transit City will reduce traffic congestion, reduce greenhouse-gas emissions and improve the air we breathe.

As Toronto plans for the coming increase in urban population, suburban areas with less density need to be redeveloped into livable, mixed-use neighborhoods. To achieve this, complementary development policies will be implemented to enable transit-oriented development. This will act as a catalyst for avenue revitalization and on-street activity, which in turn will make the neighborhood more accessible, vibrant and appealing.

More information is available at www.transitcity.ca. **TM&E**

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Tasty P's in the Denver pod

The Regional Transportation District (RTD) FasTracks Program is a \$6.5 billion transit expansion plan to build 122 miles of new commuter rail and light rail, 18 miles of bus rapid transit, 21,000 new parking spaces at light-rail and bus stations and enhance bus service for easy, convenient bus-rail connections across the eight-county district around Denver.

The program was initiated in 2004 after a ballot measure approved a 0.4% sales and use tax increase to fund the program.

As the cost of providing public infrastructure projects continued to rise, RTD looked at innovative financing options for delivering the FasTracks program within the general scope, time frame and financial capacity approved by voters in 2004. Public-private partnerships, or P3s as they are often called, are one concept that RTD is pursuing in the implementation of FasTracks.

A P3 is described by the Federal Transit Administration (FTA) as a contract wherein a single private entity, typically a consortium of

Massive FasTracks Program grows through partnerships

private companies, is responsible and financially liable for performing all or a significant number of functions in connection with a project. P3s have a solid reputation for delivering projects on time and on budget.

The Transportation Expansion (T-REX) Project, which was RTD and the Colorado Department of Transportation's combined light-rail and highway expansion project along the southeast I-25 corridor, was delivered as a design-build project—a type of P3. T-REX did, in fact, finish ahead of time and below budget.

RTD is in the process of procuring a major component of the FasTracks program through a design-build-finance-operate-maintain P3 contract.



As part of constructing the West Corridor, RTD recently rolled an assembled bridge structure into place across a highway. The West Corridor is a 12.1-mile light-rail transit corridor between Denver Union Station and the Jefferson County Government Center in Golden.

The Eagle Project, as it is known, comprises design and delivery, followed by operation and maintenance of the East Corridor, the Gold Line and a short segment of the Northwest Rail Corridor along with a new maintenance facility. The facility will serve as the operational hub of the new commuter rail system and service the electric multiple unit (EMU) vehicles.

The Eagle Project will form the core of the planned commuter rail system serving mainly the northern part of RTD's overall system when it opens for revenue operation in 2016.

RTD selected Denver Transit Partners as the concessionaire for the Eagle Project in mid-June. Denver Transit Partners' proposal was \$300 million lower than RTD's budget estimate, and the partnership plans to open the rail line to the Denver International Airport in January 2016, 11 months ahead of RTD's deadline. Denver Transit Partners is a partnership of Fluor Enterprises Inc., Macquarie Capital Group Ltd., Ames Construction, Balfour Beatty Rail Inc., Alternate Concepts Inc. and HDR.

The East Corridor is almost 23 miles long, extending from what will be a completely redeveloped Denver Union Station in downtown Denver to Denver International Airport. The line will have five intermediate stations, located at 38th/Blake, Colorado, Central Park, Peoria and 40th/Airport.

The Gold Line is just over 11 miles long and will run from Denver Union Station to Ward Road in Wheat Ridge, passing through northwest Denver, Adams County and Arvada along the way. The line will have six intermediate stations, located at 41st Avenue, Pecos, Federal, Sheridan, Olde Town Arvada and Arvada Ridge.

Segment 1 of the Northwest Rail Corridor will run from Denver Union

Station to South

Westminster. This first segment will be electrified to allow use of the EMUs. When the remainder of the Northwest Rail Corridor is constructed it will likely use diesel multiple units (DMUs) since the trains will be sharing the track with freight trains operated by the BNSF railroad.

Each of the corridors included in the Eagle Project will be operated by Denver Transit Partners in accordance with the requirements of the concession agreement. However, passengers will enjoy an entirely seamless transfer from the privately operated commuter rail lines to the RTD-operated bus and light-rail lines using a common fare system.

retire the debt incurred.

To secure the federal funding, RTD is currently awaiting approval for the project to move into final design, a major step along the road toward obtaining a Full Funding Grant Agreement (FFGA).

Following receipt of proposals in April, RTD will prepare and submit the documents required to request an FFGA. However, to allow the project to start design and construction as soon as possible, RTD has decided to break the project into two phases. Phase 1 will include the design of the entire Eagle Project and construction of the East

The Eagle Project will form the core of the planned commuter rail system serving mainly the northern part of RTD's overall system when it opens for operation in 2016.

Proposal accepted

In 2007, the planned \$2.4 billion Eagle Project was accepted into the FTA's Public-Private Partnership Pilot Program (Penta-P). It is expected that the project will attract just over \$1 billion in federal grants through FTA's New Starts program, and as an indicator of that intent, FTA has recommended \$80 million for the project in the president's budget for FY 2011. It is expected that Denver Transit Partners will provide the bulk of the balance of the funding and RTD will pay for the service provided over the 46-year life of the project to

Corridor, the maintenance facility and provision of the EMUs required for the project. Phase 2, which is contingent upon receipt of an FFGA, will include construction of the remainder of the project. Operation and maintenance services will be provided for the entire project built by the concessionaire.

Flexibility with strings

While Denver Transit Partners has been provided significant flexibility and responsibility under the terms of the concession agreement, RTD has retained control of key elements to



The East Corridor is almost 23 miles long, extending from a completely redeveloped Denver Union Station (pictured) to Denver International Airport. The line will have five intermediate stations, located at 38th/Blake, Colorado, Central Park, Peoria and 40th/Airport.

assure that the traveling public receives a quality experience consistent with the rest of RTD's transit system.

RTD will own all of the assets at all times, with the concessionaire having a lease to allow them to use the assets to provide the required services. RTD also will control and define the fare policy and structure to assure ease of transfers between the different modes within the district. Fare enforcement will be a joint effort utilizing the concessionaire's conductors and security personnel, along with RTD's existing fare enforcement and security personnel.

RTD will retain responsibility for managing the parking-management system introduced across the district and will retain all revenues generated from the corridors including the fares, any advertising, naming rights or other commercial enterprises.

The concessionaire will be paid certain construction payments during the design and construction period, based on the amount of work completed. These payments will

equate to just over half of the cost of the work performed. During the operations and maintenance period, the concessionaire will receive service payments. These payments will be calculated from the quality of the service provided. If the concessionaire performs well and provides all of the trains on time, keeps the stations clean and usable and performs maintenance and repair tasks within prescribed time periods, it will receive 100% of the expected payments.

If the concessionaire does not perform so well, up to 25% of the payments may be deducted each month, and continued poor performance may result in termination of the agreement and further significant financial losses to the concessionaire. These financial incentives are designed to assure that RTD's patrons are provided with a high-quality service for the duration of the project while paying the concessionaire a fair price for the products and services provided.

Extended procurement

RTD started the process of procuring the Eagle Project in 2007. The first step was to develop the basic structure of the project, identify key objectives and performance indicators that would be used to guide decisions along the way. RTD initiated an extensive program of communications with prospective proposers and has continued these communications throughout the process to assure that both partners, public and private sector, were in agreement with the path forward.

In August 2008, RTD hosted an industry forum to introduce the project formally to the proposing community. Immediately following the forum, RTD issued a request for qualifications (RFQ) to solicit statements of qualifications from interested teams. RTD deliberately focused the qualifications required on the firms that would form the core of the teams, the financiers, designers and constructors and the operations and maintenance providers.

It was not intended that fully



Denver International Airport (pictured) is the terminus of the Eagle Project's East Corridor. Each of the corridors included in the Eagle Project will be operated by Denver Transit Partners in accordance with the requirements of a concession agreement.

developed teams be qualified, rather it was to establish organizations with which RTD could have meaningful dialogue as part of the continuing procurement process. Three teams responded to the RFQ, and after evaluation by RTD all three were qualified to continue in the process.

On Dec. 31, 2008, shortly after the evaluation was completed, RTD issued a draft RFP for review by the teams and stakeholders, including the FTA. A large number of comments were received and numerous meetings were held with the teams to discuss how the draft could be clarified and certain concerns addressed. This process resulted in a number of modifications to the draft RFP and resulted in an RFP comprising three volumes being issued on Sept. 30, 2009.

The RFP included Volume 1, Instructions to Proposers, which details the rules for the procurement; Volume 2, Concession Agreement, which defines the legal, financial and technical requirements for the project;

and Volume 3, Reference Data, which contains all of the data prepared by RTD during the development of the project. The process of communicating with the proposers continued with formal RFP comments being received and confidential one-on-one meetings held on a regular basis to assure a full understanding of issues was attained.

The conclusion of the process was the receipt of technical proposals at the end of March 2010, which was followed by final proposals including the financial proposals at the end of April 2010. RTD evaluated the proposals and has now selected a preferred bidder.

Lessons have been learned from the process. RTD and the proposers agreed that it was important to have a plan and to stick with that plan, but at the same time be flexible enough to negotiate the inevitable obstacles that will be encountered along the way on a complex project such as the Eagle Project.

Risk transfer is possible but all transfers come with a cost. Each

decision regarding the transfer of risk should be measured against agreed objectives for the project to assure that the cost and benefits are consistent with those objectives.

The third P in P3 is critical: The partnership involves a long-term relationship between the parties, and it is critical that the partnership sets off on the right foot. Without partners there is no project; with partners that are at odds with each other in the early days, success is unlikely. Communication is key; through communication, issues and positions can be understood and solutions developed that meet both parties' principal objectives.

The inevitable difficult issues that arise during a complex procurement will only seem more intractable if clear and candid discussion does not happen.

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Clear skies

Florida finds sunny transportation with I-95 managed lanes

The I-95 corridor in southeast Florida is one of the most traveled corridors in the U.S.

Sections of I-95 in Miami-Dade carry more than 290,000 vehicles per day, with traffic volumes expected to exceed 360,000 vehicles per day by the year 2030. With limited right-of-way available, the Florida Department of Transportation District 6 (FDOT D6) had to develop innovative solutions to manage the growing demand in the corridor.

FDOT D6's solution was a managed-lane project referred to as "95 Express." The 95 Express project is sponsored by the Federal Highway Administration (FHWA), FDOT and the Federal Transit Administration (FTA) through the Miami Urban Partnership.

Prior to the implementation of the 95 Express project, average speeds in the northbound direction during the afternoon peak period were 18-19 mph in the high-occupancy vehicle (HOV) lanes and also the general-use lanes. This slow pace was particularly detrimental to express bus operations serving the Miami central business district. It was further detrimental in encouraging HOV ride sharing and vanpools.

The FDOT D6 Transportation Management Center (TMC) played an active role in supporting the startup of the 95 Express operations. The TMC operates the 95 Express 24 hours a day, seven days a week. The facility carries more than 50,000 vehicles per day in the northbound and southbound directions. During the morning and afternoon peak periods, the 95 Express

lanes operate above 45 mph for more than 95% of the time and operate anywhere from 15-20 mph faster than the general-use lanes. The facility is closed by incidents less than 1% of the time, proving to be a more reliable trip.

Total 95 Express transit ridership increased by 30% in the first three months of operation and has cut transit travel times by 68%. The 95 Express project also benefits motorists who choose to stay in the general-use lanes by increasing their average travel speeds by 15-20 mph during the peak periods. Overall, person throughput has increased by approximately 12%. For its success, the 95 Express project was awarded the SAASHTO Innovative Management, Medium Project, and AASHTO People's Choice Award for America's Best Transportation Project in 2009.

This article describes the FDOT D6 TMC's approach for express-lane operations, incident management and dynamic pricing. In addition, preliminary operational analysis was conducted to show the relationship between price and demand.

Expanding the belt

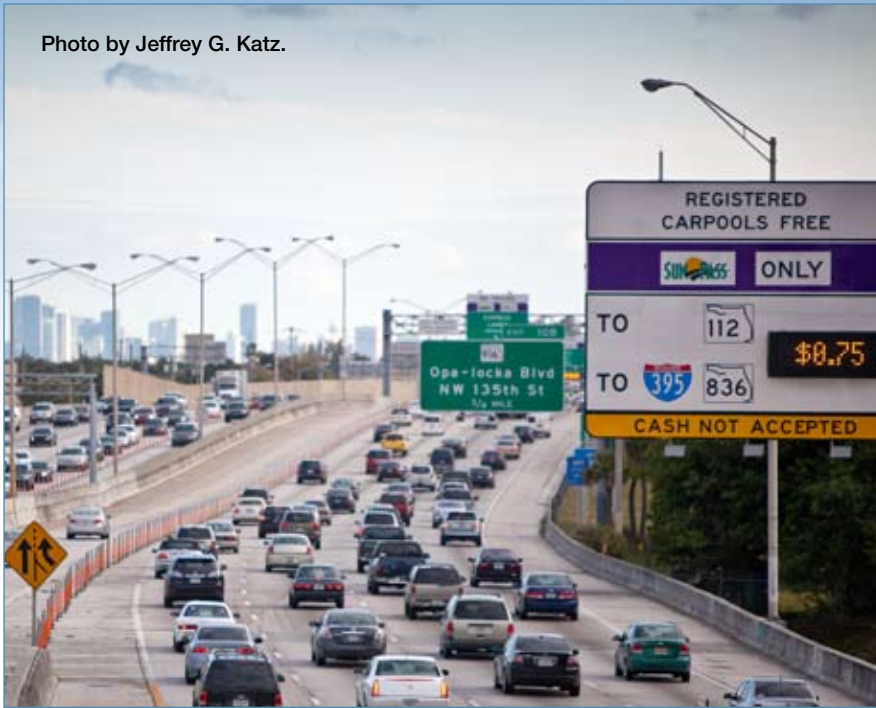
The 95 Express project includes the restriping of I-95 as needed to provide an additional lane in each direction. These additional lanes, along with the existing HOV lane, were converted into two high-occupancy toll (HOT) lanes, while maintaining the existing right-of-way and existing number of general-use lanes. The project limits extend from downtown Miami to the Broward Boulevard park-and-ride lot in Broward County. The project is divided into the following phases:



Photo by Jeffrey G. Katz.

AECOM staff worked with FDOT D6 to develop and integrate a separate software application to implement dynamic pricing approximately 1½ years ahead of schedule.

Photo by Jeffrey G. Katz.



The most significant challenge that the TMC had to overcome early in the process was to determine a way to calculate toll rates based on real-time traffic conditions along the 95 Express lanes in order to maintain free-flow conditions in these lanes.

95 Express includes restriping I-95 to provide an additional lane in each direction and converting two lanes to high-occupancy toll lanes.

- Phase 1A: I-95 northbound from S.R. 112 to the Golden Glades Interchange (operational Dec. 8, 2008);
- Phase 1B: I-95 southbound from the Golden Glades Interchange to I-395 (operational Jan. 10, 2010) plus complete the northbound portion between I-395 and S.R. 112 (opening March 15, 2010); and
- Phase 2: I-95 northbound and southbound from the Golden Glades Interchange to the Broward Boulevard park-and-ride lot in Broward County (scheduled opening is 2012).

The FDOT statewide software (SunGuide software) was enhanced to include a module (pricing subsystem) to the existing SunGuide Software for 95 Express operations. Due to a tight 95 Express project schedule, the initial version of the SunGuide software pricing subsystem module did not provide dynamic pricing functionality. The scope of the SunGuide software pricing subsystem module was limited to posting toll rates and lane status on dynamic message signs (DMS), scheduled time-of-day toll-rate

tables, free-form manual entry of toll rates, alerts, limited reporting and the transmission of toll rates to the Florida's Turnpike Enterprise (FTE) toll-operations system. Recognizing the limitations of SunGuide software, AECOM staff worked with FDOT D6 to develop and integrate a separate software application, called Express Lanes Manager, to implement dynamic pricing approximately 1½ years ahead of schedule.

SOGs to go

In order to provide structure to the TMC operations, the FDOT D6 TMC utilizes standard operating guidelines (SOG). The existing FDOT D6 TMC SOGs were updated to support 95 Express operations. Prior to the update, the TMC identified potential operational pitfalls and drafted policies to ensure the FDOT management supported the operational guidelines. The updates addressed additional 95 Express staff, operational modes, service patrol/incident response team coordination, event management, systems monitoring and reporting and procedures for 95 Express software applications.

Prior to the 95 Express, the FDOT D6 TMC operators' primary duties included incident-management coordination, service-patrol dispatching and operations and travel information dissemination. With the addition of 95 Express, active traffic management became an important aspect of the overall TMC operations. To adequately support the 95 Express operations, a new TMC operator position was created, the EL operator. Unlike regular TMC operators, the EL operator has different skills and knowledge. These operators need to understand basic traffic flow theory and how it affects the tolling algorithm, as well as the impact that incidents and malfunctions of field equipment and systems have on the overall project.

In addition, the FDOT D6 TMC provided training to the FTE toll operations staff on the new procedures. This interaction served to be valuable for both agencies, as it facilitated partnering and a better appreciation for each other's roles and responsibilities regarding the 95 Express project.

In July 2008, an Operational Risk Management Plan was developed by FDOT and identified incident

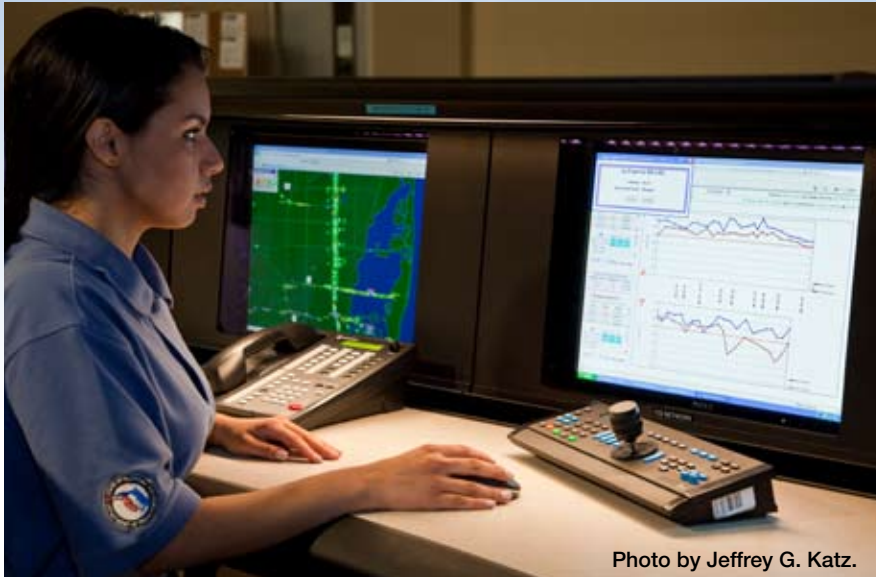


Photo by Jeffrey G. Katz.

With the addition of 95 Express, active traffic management became an important aspect of the overall TMC operations, and a new TMC operator position was created.

management in both the express lanes and the general-purpose lanes as a high-probability, high-impact and high-priority risk. The response strategy recommended a 95 Express Incident Management Plan (IM Plan) be developed to detail mitigation strategies.

Prior to the opening, FDOT D6 hosted multiagency workshops to discuss 95 Express incident management scenarios. The FDOT D6 TMC followed up with a series of partnering meetings to provide input into an incident-management plan that targeted 95 Express operations. The IM Plan is updated for each phase of the project by bringing together the partners to discuss any changes to it. These discussions revisit existing protocols and identify any new protocols that need to be implemented for each phase. The IM Plan contains a series of strategies that integrate resources, procedures and protocols.

Quick clearance is the theme of the plan and the resources necessary to achieve this goal were identified. These resources include additional service patrols, one additional highway patrol trooper, one specially equipped incident-response vehicle (IRV) and one flatbed tow truck. Special training was developed and delivered to bring these resources together and educate the responders on the new procedures, protocols and maintenance of traffic plans.

The driver of the IRV acts as an FDOT incident coordinator on-scene of events impeding the traffic flow in the 95 Express. The IRV operator assists responding agencies, coordinates maintenance of traffic activities of the service patrols and provides liaison between other responding agencies and FDOT resources. The IRV operator is the primary contact for the EL operator to ensure all response and clearance times are documented. In addition, the IRV operator facilitates postincident analysis meetings with other agencies. The IRV operator is trained and qualified in incident management and command, advanced management of traffic, incident clearance procedures, emergency-vehicle operation and first-responder functions and responsibilities.

Early results of these incident-management strategies have shown improvements in incident clearance times, most notably the reduction in travel-lane blocking duration from approximately 27 minutes prior to the implementation of the plan to approximately 12 minutes during the first six months of operation.

Quick calculation

The most significant challenge that the TMC had to overcome early in the process was to determine a way to calculate toll rates based on real-time traffic conditions along the 95 Express

lanes in order to maintain free-flow conditions in these lanes. Initially forecasted toll rates were generated from a modeling effort that addressed discrete time periods (weekday midday peak, weekday peak and weekday off-peak). While these forecasted toll rates were useful in the setting of boundaries (minimum and maximum) that relate toll values and time of day, it did not provide the practical functionality to effectively manage traffic demand (e.g., what should the rates in between the lower and upper limits be to maintain free-flow conditions).

AECOM staff worked with FDOT D6 to develop a software application called Express Lanes Manager (ELM), which calculates the toll rates based on real-time traffic conditions. In addition, the ELM provides a way for EL operators to graphically observe real-time traffic parameters per lane (speed, volumes and occupancy) along the study corridor, TMC management to review EL operator actions, as well as a number of operational reports for performance measurement and traffic analysis.

The dynamic-pricing algorithm built into ELM was developed based on the Florida Administrative Code (Rule: 14-100.003 Variable Rate Tolls for Express Lanes). Key aspects included:

- Safely operate at free-flow conditions in the express lanes, while maximizing throughput;
- Minimum toll rate of \$0.25 per segment;
- Maximum toll rate of \$1 per mile per segment;
- The toll rates will be set based on level of service in the express lanes; and
- When traffic volume in the 95 Express does not allow free-flow conditions, the toll rates will increase to improve traffic-flow conditions. Once the traffic demand in the express lanes returns to a free-flow condition, the toll rate will be reduced.

The dynamic-pricing algorithm utilizes concepts proven to be successful by other managed-lane facilities. The concept is to relate toll-rate boundaries

to facility level of service and adjust the toll rate within and across these boundaries based on how quickly traffic conditions deteriorate or improve. The level of service (LOS) is defined in accordance with the Highway Capacity Manual (HCM) using traffic density (TD), which is a combination of speed and volume. The algorithm is configured to provide the maximum throughput and speeds greater than 45 mph when rates are between \$2.50 and \$3.

The toll-rate calculations are based on a system-wide average of real-time traffic data that is collected and processed to exclude missing and invalid data. The traffic data is processed every 15 minutes to dynamically change the toll rate based on traffic density. The algorithm settings are configurable and define how quickly the toll rates will increase or decrease based on changes in traffic density.

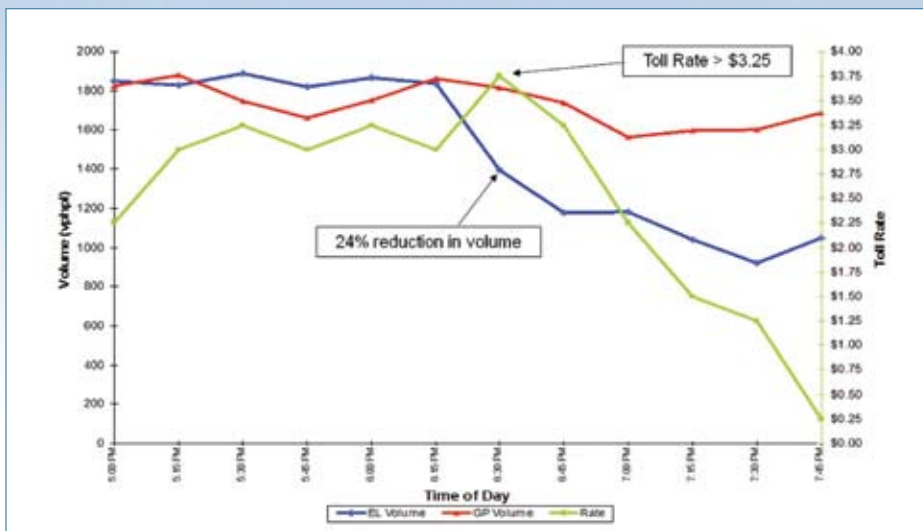
After the configuration requirements were established, the dynamic-pricing algorithm was back-tested to make final adjustments to the algorithm settings to account for typical variations in traffic conditions.

Historical toll rates for associated time periods (time of day and day of week) were developed and are used when real-time traffic data is not available. The initial tables were developed prior to launch and were updated weekly for the first month and then monthly for the first six months of operation. Subsequently, the tables are updated every six months.

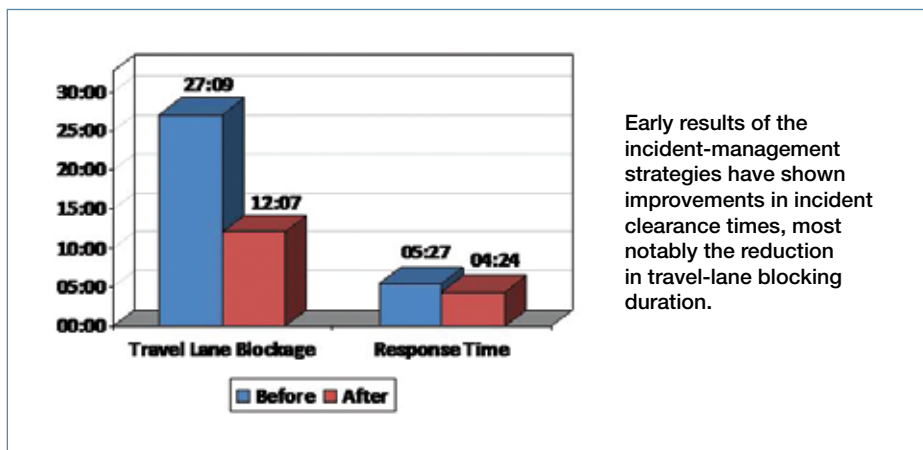
ELM was developed to provide FDOT D6 the ability to review traffic conditions for any historical time period. The criterion was to play back what the EL operators viewed as they made operational decisions. The analyst can select to fast forward, rewind and pause the updating of the historical views. This tool served to support customer inquiries on the benefits of the 95 Express lanes. In addition, ELM has a robust reporting system for traffic data and toll-rate history for the 95 Express.

A day in the life

One of the reports in ELM plots the demand (volume) in the 95 Express



The toll-rate calculations are based on a system-wide average of real-time traffic data. The traffic data is processed every 15 minutes to dynamically change the toll rate based on how quickly traffic conditions deteriorate or improve.



Early results of the incident-management strategies have shown improvements in incident clearance times, most notably the reduction in travel-lane blocking duration.

lanes and general-use lanes versus toll rates. This tool can be used to identify motorists' tolerance regarding how much they would pay to use the 95 Express. The volumes are taken at the I-95 mainline entrance to the northbound 95 Express and represent the average vehicles per hour per lane. Analyzing one day of data revealed that the demand for the 95 Express lanes is equal to or greater than the general-use lanes when \$3.25 or less is posted. However, the demand for the 95 Express lanes is reduced by 24% when the rates increase above \$3.25. It is important to note that on this particular day, reduction in demand occurred at 6:30 p.m. toward the end of the afternoon peak period. The FDOT D6 TMC plans to study these patterns in the near future and expects to use this information to adjust the settings

of the dynamic-pricing algorithm as demand for the facility grows.

In summary, it is important to get the operational staff involved before the launch to allow time for proper agency coordination, identification of resources and the development of guidelines. With this approach, the application of a managed-lane project has proven to be successful and continues to receive public support. In a recent survey, 76% believe 95 Express provides a more reliable trip and 58% would like to see express lanes on other roadways. **TM&E**

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Pricing abroad has currency at home

Road pricing has a long history in the form of tolled bridges, tunnels and turnpikes, designed to generate revenue to pay for the construction, operation and maintenance of these facilities.

toll or other charge) that may vary by traffic demand, time of day, vehicle classification or other factors.

The broad application of road pricing in the U.S. has been limited by political, institutional and public-acceptance concerns. However, variable charges have been used successfully by many U.S. industries, including hospitality, air travel, utilities and telecommunications.

International scan investigates lessons of road pricing for reducing congestion and funding transportation

of road pricing nationwide. These countries hosted a team of 10 U.S. transportation officials in December 2009 under the sponsorship of the American Association of State Highway & Transportation Officials (AASHTO), the Federal Highway Administration (FHWA) and the Transportation Research Board (TRB). The team met with road-pricing experts in Europe and Singapore to learn first-hand about their approaches and best practices.

Nine found

The host European Union (EU) countries and Singapore are ahead of the U.S. in broad-scale road-pricing implementation. Overall, the experience in each host country has proven that road pricing is an effective tool to manage demand and raise revenue. Based on discussions and observations made during and after the scan, the team developed the following nine major findings:

1. Host countries and regions with clearly defined and well-understood policy goals were able to achieve their outcomes most effectively.

While there are a number of basic goals underlying a road-pricing program, two primary purposes of road pricing emerged: to manage demand and to generate revenue. Some programs emphasize one objective or another, and others seek to blend the two objectives into one harmonious program. Looking through this lens, Stockholm, London and Singapore are in the demand-management circle, while Germany and the Czech Republic fall solidly



In Stockholm, congestion charges were designed primarily to reduce congestion in the city center. To achieve this goal, the program incorporated expanded transit and park-and-ride services. Residents generally believe the congestion charges improve their quality of life and would not support eliminating the congestion charges altogether.

In more recent history, road pricing has been viewed as an opportunity to leverage the principles of supply and demand to manage traffic in the form of congestion pricing. This is achieved by charging drivers a user fee (i.e., a

Road pricing has been instituted on a broader basis in other countries, notably Singapore, Germany, the Czech Republic, the United Kingdom and Sweden. The Netherlands is in the midst of planning for implementation

in the revenue-generation circle. The Netherlands would be placed in the overlapping area of the two circles.

A clear understanding of the primary policy objectives behind the implementation of road pricing and consistent decision making aligned with the objectives were essential elements for all successful projects.

Singapore, which instituted road pricing in 1975, identified transportation mobility as a critical foundation for urban development and economic growth and has maintained this focus for many years. In addition to its Electronic Road Pricing (ERP) system, congestion management also is addressed through multimodal transportation investments, parking-management systems and aggressive national fleet quotas that cap increases in vehicle ownership. Highly integrated land use and transportation planning also support congestion-management objectives.

In Stockholm and London, congestion charges were designed primarily to reduce congestion in the city center. To achieve this goal, the programs incorporated expanded transit and park-and-ride services. Residents of both cities generally believe the congestion charges improve their quality of life and would not support eliminating the congestion charges altogether.

Germany and the Czech Republic operate commercial vehicle toll programs that electronically charge haulers based on distance, number of axles and emissions class. The charges are set to capture revenues aligned with the infrastructure life-cycle costs required to maintain roadways for heavy-vehicle use.

The Netherlands is planning a “tax consolidation” approach to develop an aggressive and comprehensive replacement for fragmented vehicle ownership taxes into a single distance-based charging program that would apply to all vehicles and roadways. Dutch transportation officials believe a Global Positioning System-based distance charge would more effectively address their mobility and environmental concerns than the current ownership taxes. This

universal “user pays” principle in the Netherlands is expected to generate strong environmental benefits from trip consolidation and shifts to alternative modes, such as rail, bus and bicycling.

2. Thorough planning and setting of performance measures ensures achievement of overall goals, manages the pricing program as an element of overall system performance and helps to guide implementation and operations.

In Stockholm and London, congestion charges were designed to primarily reduce congestion in the city center. Programs incorporated expanded transit and park-and-ride services.

Comprehensive network planning was integral to the pre-implementation efforts for the road-pricing systems examined on this scan.

In planning the Stockholm system, internationally recognized traffic experts were retained to measure network effects of various alternative configurations of the charging zone to ensure that there were no unintended effects outside of the congestion-charging zone.

Singapore is using advanced analytics and traffic models to better understand the network impacts of pricing on parking and transit.

The Netherlands has undertaken comprehensive planning exercises to look at network effects of proposed tariffs across several modes, as well as the operating performance of the network when travel demand is redistributed by time of day.

Performance measurement is key to managing and maintaining goal attainment.

All new pricing systems adopted direct performance measurement of traffic reductions, travel speed increases, mode shift and clean-vehicle adoption, as well as estimates of business impacts and emission reductions.

Singapore’s ongoing management of its congestion charge includes quarterly verification of travel speeds and

refinement of prices to ensure that 85th percentile travel speeds are maintained.

3. Linking the pricing structure to the benefits received by the user contributes to public acceptance and helps to avoid the potential negative effects from traffic diversion.

In order to maintain support for road pricing, some of the sites visited attempt to connect the pricing structure to the benefits received by the toll payer.

In Stockholm, the cordon toll rates were set to reflect the expected benefits to those who would be paying the new charges. There was a concern that if tolls were perceived by the public to be too high, they would be less acceptable.

In Singapore, charges are set at levels to ensure that targeted “optimal” speeds can be maintained for at least 85% of all vehicles. All net funds collected via ERP are returned to the general fund and redistributed to road users in the form of vehicle ownership tax rebates, a practice that further emphasizes that the purpose of road pricing is not to generate revenue but to improve service levels during peak hours.

The German truck toll rates apply mainly for use of the freeway system (i.e., autobahns) and are low enough that there is little or no diversion of truck traffic to toll-free alternatives. While there was some diversion immediately after system implementation, truckers quickly realized the time and operating costs associated with diverting exceeded the new toll charges.

4. Public outreach and communication was a key component of the program at every stage: prior to making the implementation decision, during the design process and during the operational phase.



In Singapore, charges are set at levels to ensure that targeted “optimal” speeds can be maintained for at least 85% of all vehicles. All net funds collected via ERP are returned to the general fund and redistributed to road users in the form of vehicle-ownership tax rebates.

Both London and Stockholm had years of public debate about congestion charging before the political decision to implement was made. London’s program benefited from promotion by business groups concerned about congestion, while the Stockholm program was spearheaded by environmental groups. After the decision to implement road pricing was made, both programs were carefully designed to address public concerns and included a number of exemptions and discounts to mitigate negative effects on particular segments of the public.

Over the past two years, staff and leadership at the Dutch Ministry of Transport have invested heavily in public outreach and education. They have engaged in a thorough planning and public-involvement process and have developed clear, salient and timely messages about the purpose and benefits of pricing. A key message for the Dutch is “drive less, pay less.”

While the Singapore ERP is very

mature, key messages continue to be conveyed to the public to ensure continued support. These messages include: “keep roads free-flowing,” “people-centered transportation” and “public transit is a viable choice.”

5. Open-source system designs offer long-term advantages in leveraging market competition to manage costs of implementation and operations, ensure system flexibility and scalability and establish a foundation for interoperability.

The Netherlands plan will establish standards and requirements that will allow multiple vendor solutions to create a competitive environment. The Dutch procurement will encourage market engagement in all aspects of the system, driving down costs for system implementation, equipment and in-vehicle installations. Through open standards and private-sector engagement, the Netherlands will encourage private value-added services for on-board devices that are intended

to help defray operating costs as well as drive consumer adoption and public acceptance of road pricing.

Under Singapore’s ERP system, which requires every vehicle be equipped with an on-board unit, a separate prepaid, stored-value smart card is inserted into the on-board unit by the driver when the vehicle is in use. The smart cards are available through various banks and can be replenished at ATMs, kiosks, gas stations, online and by telephone. A newer-generation smart card was introduced in 2006 to increase the card’s utility to the holders. This smart card can be linked to bank accounts and used to pay for transit fares, parking and merchandise at various retail stores.

6. Interoperability among states and countries is recognized as a critical issue that needs to be addressed at high levels.

The EU has adopted Directive 2004/52/EC, which outlines requirements for member countries

to adopt interoperable standards for electronic tolling, thus allowing a vehicle to pay road-use fees anywhere in the EU via one contract and with one on-board unit.

Intergovernmental coordination in sharing national vehicle-registry information between agencies is essential for current operations and enforcement, as well as for interoperable systems. More agreements to share vehicle-registry information across borders are still needed.

All sites visited on the tour have procedures in place between agencies within their own country to share vehicle-registry data for easy applications of license-plate imaging for invoicing and violation processing.

7. Equity and privacy concerns are addressed by host countries through exemptions, revenue use, technology and business rules.

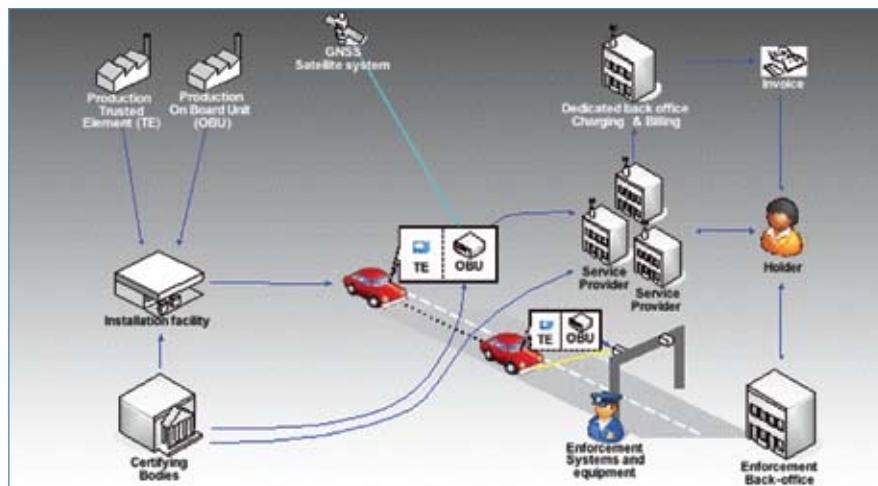
Exemptions are used in London and Stockholm to help address issues of equity. In addition, their emphasis on using toll revenues to fund transit sends a strong and clear message about equity and the project purpose.

Privacy was elegantly handled by Singapore’s use of a “smart cash card” that does not contain user data. The primary data on the smart card is the account balance.

8. The urban-area-pricing projects integrated public-transit investments and land-use planning in order to manage congestion.

Stockholm and London made robust investments in public-transit and alternative modes leading up to and following the introduction of road pricing. Singapore has committed funding to realize a master transportation plan that integrates road pricing, transit, roadway expansion and land use.

Road-pricing policy and public-transportation investments are best coordinated by a single entity. In London, Transport for London is responsible for implementing the Mayor’s Transport Strategy and for managing transportation services for all modes of transportation throughout the city. In Singapore, the Land Transport Authority plans the long-term transportation needs of Singapore



The Netherlands open-source procurement strategy will establish standards and requirements that will allow multiple vendor solutions to create competition. The Dutch procurement will encourage market engagement in all aspects of the system, driving down costs for system implementation, equipment and in-vehicle installations.

for those who drive as well as those who take public transportation. The Swedish government is in the process of consolidating its transportation agencies to bring all modes under one umbrella.

9. A large-scale demonstration is a powerful tool for public acceptance, allowing people to experience the benefits of congestion pricing.

Stockholm’s trial of the congestion-tax system demonstrated the benefits of congestion pricing firsthand. The pilot demonstration also provided technical and administrative staff the opportunity to refine the system and its performance, streamline business processes and reduce operating cost.

Going forward

Based on the key findings, the FHWA/AASHTO/TRB scan team is recommending that additional resources and effort be focused on the following three areas:

Enhanced outreach and communication

In order to advance the use of road pricing in the U.S., it is paramount that transportation leaders, policy makers, key stakeholders and a larger cross section of the public understand the benefits and implications of broader road pricing.

Additional research

There is continued need for

additional research to better comprehend issues related to public perception, implementation barriers, behavioral effects and integration of road pricing with multimodal land use and transit options.

Road-pricing toolkit

The transportation profession lacks a comprehensive decision-analysis tool to assess the merits of various road-pricing options. The toolkit would include a module to assist in making design decisions, the development of a guidebook or primer to assist technical managers in developing financing and procurement strategies, the development of comprehensive and synergistic transportation plans that incorporate road pricing, and the development of concepts applicable in the U.S. context and analytical tools to estimate performance and costs of alternative concepts in comparison with conventional tax-based approaches.

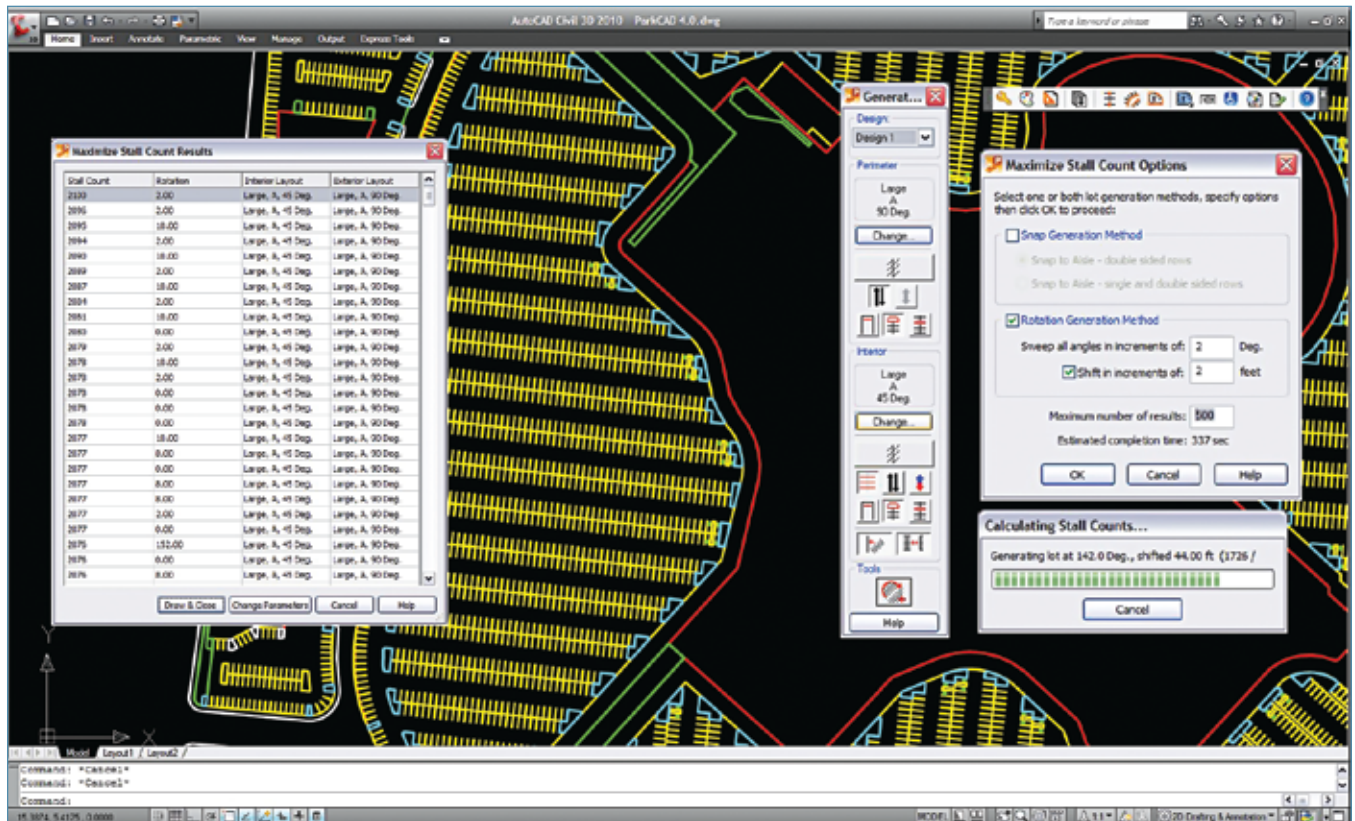
These tools would help transportation leaders make informed decisions regarding the relevance and feasibility of road pricing to address specific mobility and revenue needs.

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Maximizing space

Version 4.0 gives designers new tools for sustainability



Transoft Solutions Inc. has just introduced ParkCAD 4.0, the latest version of the company’s CAD parking site design software. ParkCAD includes new features that make designing parking lots a much more refined process with support of arcs in the creation of perimeter rows and drive aisles. ParkCAD now lets users run different combinations of row positions and rotations yielding the maximum number of parking spaces in a boundary. The new design manager functionality also allows multiple iterations of parking layouts to be saved, updated, recalled and then compared for client proposals and parking studies.

“ParkCAD 4.0 is a significant move forward in the field of design software for parking sites. The new release is, by far, our most advanced version to date and represents technology needed by firms to operate competitively by reducing the amount of time spent on tedious iteration work,” said Daniel Shihundu, P.E., Transoft Solutions vice president of product development. “As one of the first software of its kind, ParkCAD heralded a new standard for design efficiency and productivity in what is an often overlooked aspect of engineering—the creation of parking sites. And with the current version, ParkCAD has once again established its lead as a comprehensive solution.”

ParkCAD 4.0 introduces tools that make it easier for parking-site designers to account for green space and sustainability issues in today’s push for incorporating more environmentally friendly approaches in infrastructure

development. Designers now have the capability to minimize the parking-lot-area footprint by having ParkCAD automatically move in the site’s perimeter boundaries using excess space from oversized drive aisles. Mixing small- and large-vehicle stalls on the same row provides additional pervious surfacing for landscaping or water-retention sections. As well, users can distribute extra drive-aisle space into center paths in selected parking rows to be used as pedestrian walkways or landscaped spots.

ParkCAD retains all of the unique parking object reporting features from previous versions but now gives users the choice to assign treatments (Concrete; Landscape; Painted) to parking islands for cost-estimating purposes. Custom-island perimeters and areas can be reported in groupings, depending on the type of treatment received.

ParkCAD 4.0 is available now from Transoft Solutions for North America, Europe and the Asia Pacific region. A multilanguage release in French, German and Spanish is scheduled for July. A free demo version can be downloaded for a trial evaluation from the Transoft Solutions corporate website at www.transoftsolutions.com.

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A step up

Fiberglass ground sleeves support traffic equipment

It may look like concrete, but it's not. It's a fiberglass ground sleeve from Nordic Fiberglass for traffic-control equipment. Nordic manufactures a full line of GSTs (ground sleeve for traffic equipment) for a variety of traffic-control units. Each fiberglass unit is well constructed and warranted to support traffic-control equipment for 30 years.

These ground sleeves are produced of fire-retardant resin and a combination of chopped glass spray-up and hand lay-up using 18-oz. woven roving-glass reinforcement.

The GST exterior is covered with a mist gray (concrete color) gel coating, which contains a UV stabilizer for superior weatherability for all types

of weather. Other gel-coat colors are available.

Large GST models also incorporate a large walking surface for workers to step off of dewy grass and muddy boulevards and onto a clean surface.

In order to keep traffic-control units standing up for many years, Nordic can install stainless steel floating-nut inserts to match up with the control's bolting pattern.

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Nordic Fiberglass Inc.
218.745.5095
www.nordicfiberglass.com

On the move

Mobile switch bears up to harsh weather

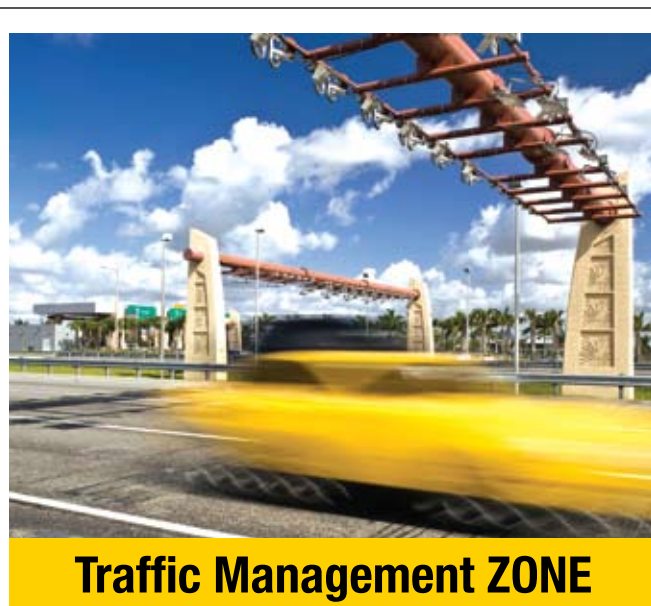
The first industrial-grade switches purpose-built for mobile



networking applications, GarrettCom's Magnum 6KMs, have M12 connectors that ensure tight connections against environmental disturbances, along with a hardened steel case (which serves as a heat sink), small industrial packaging and best-of-breed MNS-6K software. The switches are ideal for traffic-management applications with continuous motion or vibration, such as those found in installations on bridges and elevated highways, or in traffic-control and emergency-response vehicles. The 6KMs are hardened against extreme temperatures and harsh weather without the excessive cost of mil-spec waterproof products.

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You paid for it!

A facetious fairy tale of fiduciary malfeasance



By Daniel Baxter

You will not believe the story I am about to tell you on this page. There was this traffic engineer, you see, and he went to this technical conference in Las Vegas. Can you believe that? Las Vegas? Or was it Orlando? Not sure, but what a waste of the taxpayers' money.

The rest of the story is even more unbelievable. He left his family behind on a Sunday afternoon, while the public he serves watched football. No need to tell you what he did when he got there—he hopped into a subcompact rental car, checked into the hotel and walked by 100 slot machines on his way to his room, where he worked an hour finishing the PowerPoint for his presentation the next day. He was in Las Vegas on a weekend, and you paid for it.

That night he really went wild. At 8:30 p.m. he met eight other traffic engineers in a small conference room where they talked for two hours about developing standards for traffic-control equipment that ultimately would drive market competition and lower the price.

You know his real intention: to have fun at our expense.

Trust me, this guy was up to no good. He headed for the hotel bar, where they serve alcohol. He ordered a dried-out cheeseburger from the late-night menu, and guess what? You, the taxpayer, paid for that dried-out

cheeseburger, and it cost \$8. That's four times more for the burger than it was worth.

When asked if he wanted a beer, he said, "Not tonight, too tired, I'd probably fall off my chair."

He went back to his room and updated e-mail.

The next day he joined the rest of the group for breakfast at 7 a.m., after which he sat through three hours of technical presentations. He went up to the podium and presented material he had prepared on how the new traffic-signal system his city had procured was saving the city money on maintenance while reducing accidents. He provided detailed specifications.

When he sat down after his presentation, he received an e-mail from his staff back home that a bicyclist had been injured at an intersection by a driver under the influence, and the car swerved across the sidewalk and took out the signal-control cabinet. He e-mailed his authorization for an emergency contract for signal repair, and warned his technician that the signal had a fire station pre-empt and they better get it fixed fast in case the fire department gets called out.

Just then, the next speaker remarked that her city had achieved a power reduction with a new type of signal head. He wrote down the name of the supplier and the e-mail address of the speaker.

He worked two more 16-hour days in this fashion and returned home at 11 p.m. Wednesday, exhausted.

At 6:30 a.m. Thursday, he was out at the intersection with his traffic operations and maintenance staff to inspect the repairs and got into a long wasteful conversation trying to understand why the bicyclist and cabinet got hit.

He asked his No. 2 guy to contact the traffic engineer a thousand miles away in Douglas County, Colo., to find out how they had improved bicycle-lane

markings at intersections in Highlands Ranch.

He failed to mention that the so-called "conference" was in Las Vegas. His junket to Las Vegas (or was it Orlando? Not sure.) had betrayed the public trust, destroyed his accountability profile and misused precious public funding, placing his entire agency in jeopardy as a target for media scrutiny.

What he did in Vegas did not stay in Vegas. In fact, 45 other traffic engineers who listened to his presentation brought home notes about his new signal system. Can you imagine how much it cost to have that many dedicated public servants, all at a conference in Las Vegas?

Actually, it was less than 50 because 20 had to pay their own way if they wanted to attend.

Maybe corporations should travel, but let's make absolutely sure that our public-sector transportation engineers are not allowed to travel to technical conferences. That way, the totally fictional story above will never happen in real life.

Consider this: "The Return on Investment of U.S. Business Travel," a study by Oxford Economics USA, establishes the bottom-line value of business travel, especially when workers travel for meetings, conventions and exhibitions, training and incentive programs.

Travel as a core component of a successful business strategy is confirmed in Oxford's report: "For every dollar invested in business travel, companies realize \$12.50 in incremental revenue and \$3.80 in new profits. Curbing business travel also can reduce a company's profits for years."

Is travel by our public-sector transportation engineers any less valuable?

TM&E

Baxter is the chief engineer for transportation operations at CH2M Hill in Denver.