

Managed lanes offer choices, flexibility

The term “managed lanes” may be unfamiliar to many people, even those within the transportation community. This relatively new term encompasses a variety of strategies and facility types used to increase freeway efficiency. Managed lanes are typically separate or exclusive lanes that package operational and design strategies to offer flexibility in matching changing needs and goals.

“People hold different perceptions of what the term ‘managed lanes’ means. When we use it, we are referring to the evolution of high-occupancy vehicle lanes to include a wide variety of management tools and techniques,” explains Ginger Goodin, Texas Transportation Institute (TTI) associate research engineer.

In a particular corridor, for example, managed lanes might be used specifically for high-occupancy vehicles (HOVs), single-occupancy vehicles, commercial vehicles or special uses. Strategies might include time-of-day adjustments, vehicle type restrictions, fee-based use or incentives to rideshare.

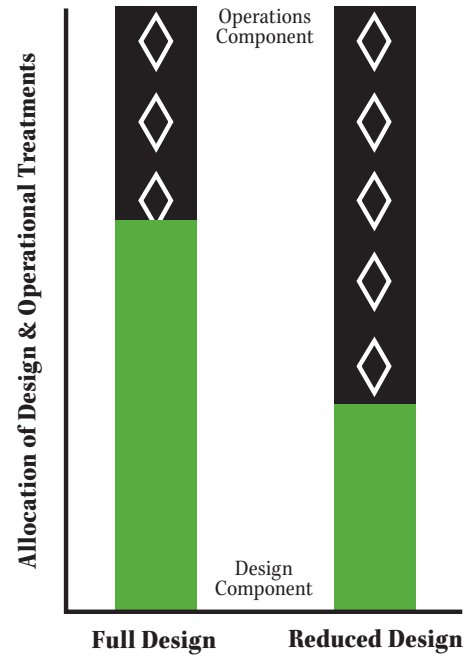
Establishing a Framework

In 2000, the Texas Department of Transportation (TxDOT) and TTI began a one-year project designed to provide preliminary guidance for planning, operating and designing managed lanes in Texas (Project 0-4161). The project resulted in guidelines for managed lane facilities regarding:

- Identifying roles and responsibilities of agencies and groups and planning for general-purpose lane conversion, priority pricing, public involvement, environmental issues and other issues
- Operational concerns such as access management, vehicle eligibility and requirements, hours of operation, transit service, enforcement and incident management
- Design elements including geometric characteristics and design criteria, cross sections, access type and location and enforcement area design
- Signs and pavement markings necessary for clear and consistent information
- Additional research needs

The findings highlight the relationship between design and operations components, notes Bill Eisele, TTI associate research engineer and co-research supervisor on the project with TTI assistant research engineer Angelia Parham.

“A facility built to full design needs fewer operational treat-



ments than a facility built to a reduced design,” explains Eisele (see figure above). “For example, in the real world we often have to retrofit managed lane designs into existing roadways. If we can’t spend as much money or take as much space as we need for a full design, a retrofit facility might need increased technology applications to detect and clear incidents. With a combination of design and operation treatments, an effective project can be implemented and achieve good results.”

Expanded Investigation

A multi-year project is now underway investigating the broad scope of interrelated issues surrounding managed lanes (0-4160).

Benefits

“One of the biggest potential benefits of a managed lane facility is that it provides motorists with travel choices,” says TTI Associate Research Engineer Beverly Kuhn. “Normally, in congested areas motorists can either drive a car and sit in traffic or take transit and sit in traffic. With managed lanes they can choose to carpool, take transit vehicles with reliable trip times, pay a toll to avoid congested lanes or choose other alternatives that improve travel time and trip reliability.”

In addition to offering choices to motorists, the concept is giving transportation professionals increased options to address congested freeways. Managed lanes represent a tool available to the transportation community to use as part of a comprehensive plan to achieve regional goals. They can:

- Add flexibility to daily operations and incident management
- Maximize use of existing capacity
- Manage demand
- Offer choices to planners and motorists
- Improve safety
- Generate revenue

“Some corridors, particularly in heavily populated urban areas, are unable to expand existing facilities due to limited space or money. They may face right-of-way constraints or community concerns that prevent expansion. Managed lanes may provide an option for improved mobility on these corridors and give planners and designers alternative choices,” notes TTI Associate Research Engineer Ginger Goodin.

The project, which runs through 2005, is developing guidelines for planning, designing and operating managed lanes.

“This project is approaching the concept from a variety of ways. One of the main tasks accomplished this year is evaluation of operational scenarios and design needs,” says Carlos Lopez, TxDOT Traffic Operations Division director and project director. “We have identified what we need to look for in planning and designing managed lane facilities, and the information will be helpful to the entire transportation industry.”

An advisory group comprised of individuals directly concerned with managed lanes was established to help guide the project. Toll authorities, cities, counties, metropolitan planning organizations and TxDOT division and district personnel are participating in the group.

“The idea is to create an opportunity for dialog among major stakeholders to bring out issues that can be addressed during the research or to give an opportunity to bring forward ideas from several perspectives,” says Beverly Kuhn, associate research engineer, who serves as TTI co-research supervisor of the project with Goodin.

The current project integrates previous work regarding HOV lanes with ongoing activities. Researchers are also working with the American Association of State Highway and Transportation Officials (AASHTO) by assisting in the update of its design guidelines for both HOV and park-and-ride facilities.

The project’s website serves as a growing resource for managed lane information and interaction (managed-lanes.tamu.edu). In addition to links to projects across the country, the website contains a calendar of events, a quarterly newsletter, and project reports and products as they become available. The project maintains an electronic distribution list for communicating with people interested in managed lane projects.

“The challenge of this project is to make it as applicable as possible across the state,” says Kuhn. “Every community has different goals for potential managed lanes. We are working with TxDOT project managers to provide resources and to help identify what approaches will work best to meet specific community needs.” The current project has produced position papers for statewide use with media and policy makers, and researchers are also looking at the challenge of interoperability with technology necessary for operation.

“Managed lanes are a moving target,” says Lopez. “We are learning something new about them every day. This project is recognized as the most extensive managed lanes research going on right now anywhere in the country.” **R**



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Related Publications: 4161-S, *Guidance for Managed Lane Facilities in Texas*; 4161-1, *Guidance for Planning, Operating, and Designing Managed Lane Facilities in Texas*; 4160-5, *Developing a Managed Lanes Position Paper for a Policy-Maker Audience*; 4160-6, *Developing a Managed Lanes Position Paper for a Media Audience*

Value Pricing: *What's it worth to get there faster?*

Value pricing is a concept that may help manage congestion by providing enhanced travel choices using monetary incentives.

It might work like this—

A congested freeway corridor has a wide median, but the transportation department will not have funds to widen the freeway for several years. However, a toll road authority can build a lane in the median sooner if drivers pay a toll to use it. The toll can be collected using freeway-speed electronic tolling (instead of traditional toll plazas), so the lane is built in the near term and pays for itself instead of waiting for tax-funded improvements.

Given the option of the toll lane or the free lanes, drivers can choose which best suits their needs based on the urgency of their trip. Typical “urgent” trip purposes include: not missing a flight at the airport, not missing a child’s soccer match, being on time to a critical work activity, or not being late to child care where late fees of \$1.00 per minute may apply. Each driver decides for her or himself whether or not the trip is worth a typical toll. Drivers choose to pay the toll when the value of their trip is worth the money—hence the term “value pricing.”

Like other capacity-limited services (e.g., airlines and electric utilities), the fees for these toll-financed lanes can be adjusted to keep the priced lanes flowing smoothly. Examples of value pricing projects are underway on:

- SR-91 in Orange County, CA
- I-15 in San Diego, CA
- Lee County bridges in Fort Myers, FL
- I-10 (Katy) Freeway high-occupancy vehicle lane in Houston, TX