

**TRB Managed Lanes Joint Subcommittee
Meeting Summary
Monday January 23, 2006**

Introductions

Ginger Goodin (TTI) presided and provided a brief introduction on the scope and focus of the joint subcommittee duties.

- The Managed Lane Joint Subcommittee is a forum for sharing information about managed lanes, tracking current projects, and supporting the HOV System Committee.
- Information about the managed lanes joint subcommittee can be found on the TTI website at – <http://managed-lanes.tamu.edu/>.

Current Research Activities and Resources

Jessie Young (FHWA) and Beverly Kuhn (TTI) provided information on current FHWA and research activities regarding managed lanes.

- A managed lanes primer is available on the FHWA website. The primer provides information on “managed lanes as a mobility strategy, and to give the reader a starting point for exploring managed lanes in their own community.” Topics covered include, defining managed lanes, managed lanes success stories, issues and challenges unique to managed lanes projects, and the future of managed lanes.

Link:

http://ops.fhwa.dot.gov/publications/managelanes_primer/managed_lanes_primer.pdf

- FHWA is developing a video to increase education and awareness of managed lanes and is planning on developing a brochure to increase awareness and understanding of managed lanes. A managed lane expert workshop will be held in conjunction with the mid-year HOV committee meetings to discuss the current status of managed lanes projects, research needs, and what actions need to be taken in the future.
- FHWA is conducting an international scan of all managed lanes facilities to learn more about how projects have been implemented and how they are being operated. The results of this scan will be presented at next year’s annual TRB meeting.

- Managed lanes will be one of the primary discussion topics at the 1st International Symposium on Freeway and Tollway Operations, which will be held in Athens, Greece on June 4-7, 2006.
- A CD was provided that included information on current managed lanes projects around the U.S. and a list of available managed lanes resources.
- Other on-going research projects include:
 - Access to/from managed lanes
 - Carpool preference
 - Managing access / ramp metering
 - WSDOT sponsored focus groups on managed lanes equity

Managed Lanes Inventory and Status of Projects

Ken Buckeye (MnDOT) presented an update on the I-394 MnPass HOT lanes that began operation in May 2005. The presentation highlighted the development, physical components, and operations of the HOT lanes.

- The purpose of the I-394 MnPass project is to increase the person and vehicle-carrying capabilities of the existing HOV lanes, which were underutilized in the peak hours, while maintaining free flow speeds for transit and carpools.
- The I-394 MnPass HOT system includes:
 - Three miles of two-lane barrier-separated reversible lanes and eight miles of buffer separated (one lane per direction) HOT lanes in the middle of a four lane freeway. The buffer consists of a 2' wide double white stripe.
 - Five (5) at-grade access points in both the eastbound and westbound direction.
 - Free use for transit, carpools, and motorcycles.
 - Dynamic pricing for SOVs that is adjusted every three minutes.
- Several innovations were used to implement the lanes including development of the project through a public-private partnership, tolling on barrier-free lanes with multiple access and egress points, dynamic pricing, and technology applications to assist enforcement.
- The I-394 HOT lanes are opened eastbound during the AM peak only (6 AM to 10 AM) and westbound during the PM peak only (2 PM to 7 PM). At all other times the lanes are open to all vehicles.
- Between the opening of the HOT lanes in May 2005 and January 2006 the number of trips has increased from 8,000/week to a peak of 20,000/week with an average of about 16,000/week. The weekly revenue has increased from \$5000/week to \$15,000 - \$16,000/week.

- Transponder leases have increased from 4,000 when the lanes opened to more than 9,000 by January 2006.
- Enforcement was a major focus of the I-394 HOT project and \$200,000 was dedicated for police enforcement before the project opened.
- Several technologies have been implemented to help with enforcement and toll collection including in-car transponder readers and overhead beacons to alert police.
- The HOT violation rates are between 5% and 10% and continue to decrease. This is significantly less than the violation rates in the HOV lanes, which were typically around 25%.
- Overall enforcement has been successful. Violations are low and enforcement has not had an adverse effect on peak period traffic flow.
- Transit operations have not been negatively impacted by the implementation of HOT lanes. The access locations have not caused a problem for transit vehicles and the HOT lanes remain free flowing. In addition, the park and ride lots along the corridor have remained full, indicating the transit and carpool options are still being utilized.
- The at-grade access points have been successful. There is high driver compliance and there have been no apparent safety issues. However, the limited access points do prevent the use of the HOT lanes for some trips, require the enforcement of the lanes along the non-access segments, and greatly reduce the ability to pass slower vehicles in the HOT lanes.
- A preliminary safety analysis indicates that there has been no increase in the number of crashes since the HOT lanes opened.
- The HOT lanes did impact the traffic operations in the general-purpose lanes during the peak period along one segment in the westbound direction. To address this problem an auxiliary lane between interchanges is being constructed to improve operations.
- Customer response has been very favorable. Transponder leases have continued to increase and there has been a less than 1% cancellation rate (and many of those are due to the relocation of customers and not dissatisfaction with the HOT lanes). 80% of all sign-ups for transponders have been web based.
- Revenues have been lower than projected, but 2006 revenues should cover the operational cost of the HOT lanes. Revenues could be higher if a different tolling scheme was implemented, one that focused on revenue and not just congestion management. However, revenue was not a major focus of the MnPass project and

the tolling scheme for the I-394 HOT lanes will probably not undergo any major revisions in the short-term.

- The performance of the general-purpose lanes is being tracked but has not been fully quantified.
- Minnesota is now looking at other corridors but there will be no additional tolls implemented until the I-394 HOT lanes are fully evaluated.

Managed Lanes Issues and Research Ideas

Issues relevant to planning, enforcement, design, signing / operations, and research coordination of managed lanes were presented and briefly discussed.

Planning – Phil Shapiro / David Ungemah

- Effects of tolls on carpools and transit
- Considering managed lanes on a regional level and analyzing interconnectivity of a managed lane system
- The differences and overlaps of NEPA and a toll revenue analyses
- How and when to use traffic simulations. How simulation results should be understood when applied to tolling analysis.
- The accuracy of traffic models and forecast traffic volumes
- Revenue implications of short queue jump scenarios where big time savings can result
- The role of activity based models
- Truck only lanes and managed lanes in the same corridor
- TCM / air quality conformance

Enforcement – Chris Swenson

- There is a need for a full inventory of existing enforcement methods and successes or failures resulting from those methods
- Automated vehicle occupancy enforcement technology may be available in the future, but current technology will still have to be used for some period to come. Perhaps the business rules for managed lanes enforcement could be modified (accepting some violation) as opposed to additional and complicated new methods or technologies for enforcement.
- There needs to be a synthesis of current technology and methods and institutional techniques. There needs to be outreach to the legal / judicial system to ensure that violations are handled efficiently and enforced in court.
- Enforcement can have an impact on the traffic flow of lanes that are near capacity

Design – Bill Finger / Charles Prestrud

- The type of buffer between the managed lanes and general-purpose (free) lanes must be studied further to determine the best practices for type and width of

- buffer, access locations, and type and location of tolling. FHWA should adopt guidelines or develop design standards for HOT lanes.
- Further study on the best methods to convert existing HOV lanes to HOT lanes is needed.
 - New HOV facilities should be designed with an understanding of the cheapest and easiest methods to convert to HOT lanes.
 - Tolling and revenue should be considered in the design of all HOT lanes. Capital and operating costs of the design should be considered along with potential revenue.
 - Research is needed to understand how the surface street network, particularly at the beginning or end of a managed lane facility impacts the managed lane design. The goal of the research should be to understand how surface street networks can accept / feed a particular managed lane facility.

Signing Operations – Beverly Kuhn

- Terminology needs to be uniform (exit / entrance signing, no-cash or E-ZPass only, etc.)
- The use of color or banners or supplemental sign plates in signing needs to be uniform
- Signing for access points (both for managed lanes and general-purpose lanes) needs to be clear and consistent
- The ITE technical committee of the Traffic Engineering Council is examining standards for toll plaza signing.