

0-6664: Peer State Review of TxDOT Maintenance Practices

Background

This project's objective was to provide the Texas Department of Transportation (TxDOT) with an assessment of their maintenance program and practices based on a review by maintenance directors from peer states. This information will be used by TxDOT to assess current maintenance program management and practices to identify areas for improvement and areas that are working well.

What the Researchers Did

The research team identified six peer state maintenance directors to participate in a 3-day workshop and road rally. The six peer states included California, Washington State, Kansas, Missouri, Georgia, and North Carolina. In addition, the researchers and TxDOT identified 15 key questions regarding the TxDOT maintenance management program and maintenance practices which the peer states were to answer during the workshop and road rally. The questions were organized according to five topic areas:

- Maintenance Planning Process
- 4-Year Pavement Management Plan
- Maintenance Performance Reporting and Measuring
- Funding Allocation
- Overall Maintenance Operations

The 3-day workshop was held at CTR and the TxDOT's North Travis Area Office. During the workshop TxDOT subject matter experts presented information on the five topic areas. The peer state representatives were provided ample opportunities to ask questions and discuss ideas regarding areas for improvement in a round-table discussion format.

The road rally provided the peer state and TxDOT participants to rate maintenance conditions on 34 one-mile test sections while traveling in six vans. Each participant was asked to rate the pavement, roadside, and traffic operations maintenance conditions of the one-mile section on a survey form, using a four-point scale ranging from 'Not Effective' to 'Very Effective'. The surveys were evaluated to compare peer states with TxDOT personnel ratings and to compare different participant groups to the Texas Maintenance Assessment Program (TxMAP) ratings conducted on each section.

In addition, the peer-state participants visited the North Travis Area Office to tour maintenance facilities; view pavement management data collection and maintenance equipment demonstrations; and discuss training, staffing, and maintenance operations.

What They Found

During the course of the 3-day workshop, each peer state participant completed the questionnaire and provided consensus answers for each of the 15 questions, recorded in a separate questionnaire. Figure 1 summarizes consensus questionnaire results.

Research Performed by:

Center for Transportation Research

Research Supervisor:

Mike Murphy

Researchers:

Jorge Prozzi

Seokho Chi

Lu Gao

Yetkin Yildirim

Zhanmin Zhang

Project Completed:

2-28-2011

| Peer Review of TxDOT Maintenance Program | | | |
|---|--------------------|-----------|----------------|
| Not Effective | Somewhat Effective | Effective | Very Effective |
| Maintenance Planning Process | | | |
| 4-Year Pavement Management Plan | | | |
| Maintenance Performance Measuring and Reporting | | | |
| Funding Allocation | | | |
| Overall Maintenance Operations | | | |

Figure 1. Peer state consensus responses regarding five key maintenance areas

The peer state participants identified a number of maintenance program areas that worked well and other areas that could be improved. Several key strengths of the TxDOT Maintenance Program were identified, including the following five examples:

1. excellent communication with the personnel working in the field;
2. the centrally managed systems;
3. TxDOT's (maintenance) funding allocation process is easily repeatable and reportable;
4. TxDOT's staff is knowledgeable and composed of people who take pride in their work;
5. TxDOT's willingness to evaluate and improve their program is a significant strength in itself.

Weaknesses in TxDOT's Maintenance Program were also identified, including the following five examples:

1. a focus on district-wide rather than statewide needs;
2. statistical unreliability of the sample size used for maintenance evaluations;

3. lack of a (performance-based) connection between funding and pavement condition;
4. many decisions are based on historical and cultural factors rather than system needs;
5. the lack of pavement layer data and treatment history.

What This Means

The peer state review workshop and road rally provided valuable information about strengths and weaknesses of the TxDOT Maintenance Management Program and practices. Based on these findings the researchers suggest that further studies regarding future improvements to the TxDOT Maintenance Management program could include the following:

- conduct a statistical evaluation of the current TxMAP rating section selection and rating processes;
- develop methods to consider the impact of pavement routine maintenance activities on short- and long-term pavement conditions;
- evaluate methods to incorporate both district and statewide performance and goals in funding allocation formulae;
- evaluate methods to capture and use pavement treatment history data in both PMIS and routine maintenance management processes;
- evaluate enhanced pay scales and other reward systems for maintenance employees;
- develop processes to capture and retain institutional knowledge, insights, and rules of thumb used by experienced maintenance supervisors and employees, but not currently documented.

For More Information

Research and Technology General Information:
(512) 416-4730

Research Supervisor:
Mike Murphy, CTR, (512) 232-3134

Technical reports when published are available at <http://library.ctr.utexas.edu>.

Research and Technology Implementation Office
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701-2483

www.txdot.gov

Keyword: Research