



# TESTIMONY

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## **Innovative Practices**

**Testimony Before the  
Senate Committee on Infrastructure Development and Security**

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## Innovative Practices

### INTRODUCTION

The Texas Department of Transportation (TxDOT) appreciates the opportunity to provide information on the department's innovative approaches to highway construction and maintenance and efforts to streamline our operations. Today's testimony will address the following questions: 1) what does TxDOT do to ensure the agency uses innovative practices, 2) what are the steps and timeline for a traditional project, 3) how does TxDOT measure effectiveness, 4) what are some examples of innovative approaches to highway construction and maintenance, and 5) what are some examples or recommendations for streamlining TxDOT operations, including methods for expediting permitting procedures while maintaining environmental safeguards.

### WHAT DOES TXDOT DO TO ENSURE THE AGENCY USES INNOVATIVE PRACTICES?

TxDOT draws from a number of sources to identify and evaluate innovative practices. These include national research agencies, multistate associations, cooperative research efforts, and our own employees.

#### *National Research Entities*

Nationally, TxDOT participates directly in information exchange groups and programs. The Transportation Research Board (TRB), a unit of the National Academy of Sciences and the National Research Council, provides consistently useful research and reviews of innovative approaches. Recent TRB case studies address cost-effective preventive maintenance; the physicochemical analysis of bituminous crack sealants; and the performance evaluation of a ten-year joint resealing project.

Other reviews have covered the performance of Louisiana's Chip and Seal Microsurfacing Program; the phenomena and conditions in bridge decks that confound ground-penetrating radar data analysis; the durability of concrete crack repair systems; the cost of maintenance, repair, and rehabilitation of Florida bridges; and the testing of a calcium nitrate corrosion inhibitor in concrete.

TRB has under its auspices the National Cooperative Highway Research Program (NCHRP), an objective national highway research program employing modern scientific techniques that is funded by the American Association of State Highway and Transportation Officials (AASHTO). Recently issued NCHRP reports cover illumination guidelines for nighttime highway work, truck characteristics as factors in roadway design, the effects of subsurface drainage on the performance of asphalt and concrete pavements, evaluation of traffic signals for left turn controls, improving land access to intermodal cargo hubs, and a series of guides for addressing collisions in different situations.

Participation in AASHTO also provides an opportunity to compare and recognize innovative practices in the field. AASHTO operates a Center for Environmental Excellence, a one-stop shop for the latest information and practices in air quality, water quality and wetlands, recycling and waste handling, historical preservation, endangered species, land use, and context sensitive solutions. Current information includes the status of projects that are seeing acceleration resulting from President Bush's September 18, 2002 Executive Order No. 13274, which calls for promoting environmental stewardship in the Nation's transportation system and expediting environmental reviews of high-priority transportation infrastructure projects.

AASHTO is similarly a leader in recognizing innovative practices in transportation asset management, including developing measures for quantifying the condition of transportation assets such as pavements and bridges and qualitatively analyzing their performance.

TxDOT has directly benefited by implementing the AASHTO-developed SiteManager system, a comprehensive state of the art automated construction management system. SiteManager was developed as part of a \$10 million AASHTO joint development project sponsored by 20 transportation agencies.

The Federal Highway Administration sponsors research that seeks to learn lessons from the states. A recent evaluation report, *A Study of the Impact of Nine Transportation Management Projects on Hurricane Evacuation Preparedness*, draws lessons learned from nine states' experiences with hurricane evacuations. These lessons include an understanding of the proper use of contraflow lanes, and the need to educate the public about them. Contraflow operation increases the capacity of the evacuation route for which it is used.

#### *Employee Involvement*

TxDOT has an innovative and resourceful workforce that all Texans can be proud of, so we do look to our own employees for input on agency processes. Employee initiatives have led to improved processes that save money and new inventions that make us more efficient. Since the establishment of the State Employee Incentive Program, TxDOT employees have submitted a total of 1142 suggestions, resulting in a cost savings of over \$2 million (\$2,005,507.44) realized by TxDOT based on implemented suggestions.

One example is the use of an automated roadway inventory system to develop speed zone strip maps. This suggestion from a Waco District employee saved over \$35,000. Another employee found a way to attach a skid box to the front of a motor grader, allowing the operator to distribute the material load from the cab using hydraulics. This innovation saved over \$400,000.

Other innovations from within the agency include a new aerial laser survey technique which saved hundreds of thousands of dollars and months off the survey work associated with the Interstate 69 project; expedited review of environmental impact statement-related documents through the creation of teams involving staff from the affected TxDOT district, the Environmental Affairs Division, and the Federal Highway Administration; a pager system that allows school zone lights to be changed from a remote location; and placement of detailed maps and information on the Internet such as [www.texasollways.com](http://www.texasollways.com).

It is not unusual for these innovations to receive national recognition. For example, the Federal Highway Administration recognized our streamlined right of way approach, contracting for Right of Way Acquisition Provider Services or ROWAPS. TxDOT established a professional service contract category for full service right of way acquisition that allows TxDOT to consider contractor qualifications and capacity rather than accepting low bids. TxDOT created a two-part process, qualifying potential bidders through a public request for proposals and review of the proposals followed by a negotiation process in which the fees for specific functions and tasks were determined. The result of the successful negotiation was an "indefinite delivery" contract that lasts two years. For projects that use contractor services, this ROWAPS process results in a right of way acquisition process that takes one third less time. The ROWAPS process reduced project and process delays, provided additional opportunity for public involvement with the selected ROWAPS contractors, and promoted the efficient use of public funds. As part of our goal to continuously review our processes, the Texas Transportation Commission recently increased the ROWAPS contract cap from \$1 million to \$2 million.

#### *Research and Technology Transfer Program*

TxDOT oversees an active research and technology transfer program that constantly strives to develop innovative ideas. An analysis of results from 21 research projects over 10 years shows that 245 lives were saved, crashes were reduced by 24,960, and cost savings in department operations exceeded \$322 million.

The cost savings resulting from one research project, the development of criteria for the use of an alternative roadway design for rural two-lane highways (Super 2 Geometric Design) are conservatively estimated at \$150 million over ten years. The development of roadway applications for the use of ground penetrating radar is expected to save the department \$57 million over the next ten years. Implementation of the model border crossing design will expedite traffic crossing the border without increasing congestion, wait times, or pollution from idling vehicles.

This research is primarily contracted out to such entities as the Texas Transportation Institute at Texas A&M University, the Center for Transportation Research at the University of Texas, the Center for Transportation Studies at the University of Texas at Arlington, the Center for Highway Materials Research at the University of Texas at El Paso, Texas Tech's Multidisciplinary Research in Transportation program, and the Southwest Region University Transportation Center including Texas Southern University.

Another example of innovative practices is TxDOT's Product Evaluation Program. TxDOT maintains a continuing interest in the development of new or improved materials, products, or equipment beneficial to the state's transportation system. As a public agency, TxDOT has a responsibility to taxpayers to avoid the expenditure of public funds for researching or developing commercial products, and to avoid competition with private laboratories for developmental testing of commercial products. TxDOT's Product Evaluation Program is limited to confirming vendor data. Typical data consists of laboratory test reports, engineering reports, technical publications, and other data citing

the economic and engineering advantages of the product.

The Product Evaluation Committee (PEC) serves as TxDOT's clearinghouse for coordinating the evaluation of commercially available products for which department specifications do not exist. The PEC makes determinations whether or not a new product may be useful in TxDOT operations. In making these determinations, the PEC evaluates which products will save money and increase efficiency, project delivery, and safety.

The status of PEC's product evaluations are now being posted on AASHTO's Product Evaluation Listing (APEL). APEL is a national database for state transportation departments to share product information and can be found at <http://apel.transportation.org/>. TxDOT personnel, as well as interested vendors, are encouraged to go to this site to see the results of TxDOT's and other states' product evaluations.

#### **WHAT ARE THE STEPS AND TIMELINE FOR A TRADITIONAL PROJECT?**

TxDOT has been using a design-bid-build process for constructing highway projects for many years. This process is commonly referred to as the project development process. This approach has worked well; however, it can be a complicated and long term process. Therefore, TxDOT has taken advantage of many opportunities to improve the process.

Before a project can begin to move through the process, funding must be considered. The availability of funding is a major factor in determining whether a project is selected for construction. Identifying funding sources is a continuous and on going exercise throughout the project development process. It begins by developing a funding strategy for the recommended project. The funding strategy may include a combination of resources including local, state and federal funds, bond financing, toll revenue, and pass through tolls.

Once funding has been identified, projects enter the project development process. Every highway project will go through five sequential development steps before it is let for construction. These steps include needs identification, feasibility validation, plan authority, develop authority and construct authority. Below is a brief summary of each of these steps.

##### *Project Identification*

The first step in the process is project identification. Every project starts with an idea or need. These ideas can be presented by an individual, government official, local or regional transportation planning committee or TxDOT. Once a need has been identified, project supporters typically approach TxDOT's local district office or their Metropolitan Planning Organization (MPO) to pursue it.

*Feasibility*

After a project is identified, the district or MPO will conduct a feasibility study to determine if the project needs to go forward into the project development process. Feasibility studies are in the department's long range planning category, which can take ten years to develop. A feasibility study includes examining various routes, design alternatives, preliminary environmental conditions and possible mitigation. Determining if the project is viable and if the project conforms to the department's transportation plan is also considered.

*Plan*

Upon completion of the feasibility study, the project enters PLAN authority where it is completely examined for environmental concerns including route determination. Projects in PLAN authority are in the initial stage of development. In the planning stage, a significant amount of time is spent on reviewing additional environmental studies, detailed route studies, design alternatives, economic impact, public input, and right of way determination. This step can be very long and complicated, especially for projects located in environmentally sensitive areas. Generally speaking, projects in PLAN authority take about ten years before entering DEVELOP authority.

*Develop*

Projects then compete at the local level for DEVELOP authority. Projects with develop authority are included in the Unified Transportation Program (UTP). The UTP is TxDOT's ten-year plan to guide transportation project development and construction. This program is financially constrained based on the projected revenues that the department will have over the next ten years. The UTP is the commission's mechanism to authorize project development actions. Develop authority allows the districts to prepare the construction plans and acquire the necessary right of way and adjust utilities. In this process, districts should complete project construction plans (geometric, structural, hydraulic and pavement design) and required right of way acquisition prior to moving to CONSTRUCT authority. The amount of projects in DEVELOP authority is generally constrained to seven years of anticipated future funding. While in DEVELOP authority, projects compete for forecasted construction dollars. Based on the availability of funds and local priorities, the commission will make the final decision to authorize construction. Once selected, a project moves to CONSTRUCT authority.

*Construct*

Under CONSTRUCT authority, districts are authorized to complete construction plans, perform necessary utility adjustments, and award a contract for the project. Contracts are awarded through a competitive bidding process and the lowest approved bid is submitted to the commission for approval. Once approval is received, the construction of the project begins.

*Timing*

The evolution of a project through PLAN, DEVELOP and CONSTRUCT authority may take as few as 3 years or as many as 20 years or more to complete. Completing a new, major highway construction project takes a number of years because of the many requirements and approvals that must be attained.

TxDOT has seen some positive results in using the traditional project development process. For example, in FY 2003, TxDOT delivered \$4 billion dollars in projects using traditional project delivery methods. This was the highest letting amount in the department's history.

**HOW DOES TXDOT MEASURE EFFECTIVENESS?**

In August 2001, the Texas Transportation Commission established a Transportation Working Group made up of elected and appointed officials, business leaders and transportation professionals from across the state. The group was charged with looking at Texas' transportation challenges and developing solutions to help the department build a new transportation vision for Texas, with clear goals and supporting actions. These goals were outlined in a report called "Texas Transportation Partnerships...Connecting You To The World." The report established five major transportation goals which include reliable mobility, improve safety, preserve responsible systems, streamline project delivery and increase economic vitality. The report also includes a list of performance standards that the department would need to meet to attain each goal. A copy of the report has been provided.

TxDOT has formal performance measures which were brought up to date by the 78<sup>th</sup> Legislature. These include number of engineering plans, dollar volume of contracts, number of projects awarded, and miles contracted for seal and overlay to name a few. TxDOT also conducts a continuous pavement rating program, monitors traffic fatalities and injuries, and uses modern measures for ease of public understanding such as peak period travel conditions and congestion delay.

Reducing construction time is a department goal. When evaluating construction projects, TxDOT measures time used to construct a project versus how much work was performed. Time measurements are analyzed and taken from construction project schedules. Another way to measure effectiveness is by analyzing the number of projects available to be let for construction versus the number of projects that cannot be let due to funding limitations. This gives a measure of the percentage of shelf plans available for construction. For example, at the end of Fiscal Year 2003, the department let all projects and still had 83 projects estimated at \$320 Million ready to be let. These measures are outlined in Chart 2, "TxDOT Performance Measures."

**CHART 2: TXDOT PERFORMANCE MEASURES**

- Project to Funding Ratio
- Percent of Projects Awarded on Schedule
- Number of Construction Project Preliminary Engineering Plans Completed
- Dollar Volume of Construction Contracts Awarded in Fiscal Year (Millions)
- Number of Projects Awarded
- Percent of Construction Projects Completed on Budget
- Percent of Two-lane Highways with Improved Shoulders
- Percent of Railroad Crossings with Signalization
- Percent of Construction Projects Completed on Time
- Urban Congestion Index
- Statewide Congestion Index
- Number of Airports Selected for Financial Assistance
- Administrative and Support Costs as a % of Facility Grant Funds Expended
- Percent of Bridges Rated in Good Condition or Higher
- Statewide Maintenance Assessment Program Condition Score
- Statewide Traffic Assessment Program Condition Score
- Number of Lane Miles Contracted for Resurfacing
- Number of Oversize/Overweight Permits Issued
- Number of Highway Lane Miles Resurfaced by State Forces
- Percent Change in the Number of Public Transportation Trips
- Administrative and Support Costs as a % of Grants Expended (public transit)

#### **CHART 2: CONTINUED**

- Number of Motor Vehicle Consumer Complaints Resolved
- Percent of Motor Vehicle Consumer Complaints Resolved
- Average Number of Weeks to Resolve a Motor Vehicle Complaint Resolution
- Number of Fatalities Per 100,000,000 Miles Traveled
- Number of Vehicle Titles Issued
- Number of Vehicles Registered
- Number of Cars Stolen Per 100,000
- Administrative and Support Costs as Percentage of Total Expenditures (ATPA)

**WHAT ARE SOME EXAMPLES OF INNOVATIVE APPROACHES TO HIGHWAY CONSTRUCTION AND MAINTENANCE?**



TxDOT is evaluating and implementing innovative ideas as a matter of daily agency business. One example is balanced letting schedules -- spreading project lettings throughout the year instead of bunching them in a few months. The letting balance is left unchanged, but the letting amounts remain balanced throughout the year, providing for better planning of projects without affecting project timing.

Another is over programming projects. Districts are authorized and expected to develop project plans in excess of 20% of their letting capacity. The benefit to over programming is that it allows the department to develop more projects than what can be let for construction. By doing this, TxDOT can substitute projects that are delayed in the right of way acquisition or design phase with projects that have been cleared for construction, thus meeting our letting goals. Additionally, developing and having projects ready and on the shelf allow the department to quickly take advantage of when additional funds become available.

#### *PLAN phase*

TxDOT is aggressively working to identify opportunities for environmental streamlining to facilitate the timely delivery of transportation projects. TxDOT's general goals are to reduce the review of routine projects that have little or no potential for environmental impacts and shorten the review times of resource agencies.

The development of a Memorandum of Understanding (MOU) with the Texas Historical Commission will ensure identification, preservation and mitigation of significant historic properties in an appropriate manner while facilitating project development.

The nomination of the Trinity Parkway and I-35 high priority corridor for consideration by President Bush's Transportation Infrastructure Streamlining Task Force, if selected, would provide for national focus on these projects which have the potential for delays associated with environmental review. The highlight of this program is the early identification and resolution of challenges.

Project flexibility is another way to increase effectiveness. Project flexibility allows the department to identify all projects as state - federal highway projects. By identifying and classifying projects under the same category, the department does not have to spend additional time and resources revising the project to meet federal guidelines.

TxDOT recently streamlined the Unified Transportation Program's project funding categories by reducing the number of funding categories from 34 to 12. Having fewer categories allows more funding in each category and maximizes the flexibility available to the commission to meet mobility needs.

*DESIGN phase*

TxDOT has also made innovative improvements in the development and design process. These improvements include a statewide district review of all projects. The purpose of the review is to determine how the department can equalize the work among districts. Equalizing work can be accomplished by sharing the work among districts or hiring contractors to assist with projects. By outsourcing to consultants, TxDOT is able to expand our resources and equalize the work in the districts.

TxDOT is also identifying utilities that need to be moved earlier in the design phase than was previously done.

TxDOT has developed standards for prefabricated bridges. Prefabricated bridges and box culverts are structural components that are typically constructed off-site and brought to the project location ready to install. They can also be constructed adjacent to the project site, out of the way of traffic, and then moved into position when they are needed. They can range from individual prefabricated elements, such as beams or caps, to completely prefabricated bridges. Bridge prefabrication accelerates project delivery in several ways. It allows the department to use bridge standards without having to use actual designs, reducing the time needed for developing a bridge. Bridge projects that use prefabricated elements and systems often require less design time than conventional bridge projects. A design can be developed for one element or system and then the same design can be applied to other elements or even other bridges.

Increasing use of prefabrication also encourages development of standard drawings that provide the design for prefabricated elements and systems, further reducing design time required for bridge projects. For example, TxDOT has developed standard designs and drawings for the construction of precast box culverts. These standard drawings cover a range of culvert sizes and fill heights and can be used by districts and consultants with very little additional design time.

Similarly, TxDOT has developed standard drawings for prefabricated bridges using prestressed concrete I-beams, slab beams, double tees, and box beams. TxDOT is currently developing additional standard drawings for prefabricated caps and abutments to assist designers in reducing the design time for these bridge elements.

Prefabricated bridges also minimize traffic impacts, improve construction zone safety, make construction less disruptive for the environment, make bridge designs more constructible, increase quality, and lower life-cycle costs.

TxDOT has also been able to reduce the time it takes to install traffic signals by using non-site specific signal contracts in districts that typically install 10 or more signals in a year. These types of contracts are let once and include quantities for several signals (usually five to ten

signals at sites to be determined). As needed signals are identified, work orders are issued to the contractor and the signals are installed. This process eliminates the need to develop and let projects for every new signal that is needed. Using non-site specific signal contracts usually reduces the time from when a signal is warranted to installed by about 25%.

Electronic bidding is another way to improve the project development process. Electronic bidding will allow the department to expedite the bidding process by accepting bids electronically versus having an open bidding process in person. Electronic bidding will eliminate travel time for contractors and would reduce the workload of staff.

#### *CONSTRUCTION Phase*

There have also been some innovations in construction. TxDOT has developed project incentives and disincentives for contractors who complete projects based on project milestones. These incentives or disincentives are based on the number of calendar days it takes for a project to be completed. Essentially, the fewer the number of calendar days it takes a contractor to build a project, the more the contractor is rewarded with incentives.

The High Five Interchange in Dallas is a good example of how these incentives accelerate construction. The cost to the traveling public caused by the delay they experience passing through this project is about \$320,000 per day. The amount is based on the congestion that existed before the construction versus the end condition of the interchange being complete. TxDOT gave the contractor five years to complete the work. But, for each day they finish ahead of that schedule, TxDOT pays them \$32,000 for up to one year, which is only 10% of the daily road user cost. On the other hand, if the contractor finishes late, they will be charged \$80,000 per day for every extra day they take. With the creation of these incentives, contractors now have a vested interest in getting the work done ahead of time.

However, not all of TxDOT's projects have incentives. Generally, these incentives are applied to high profile projects that will have a real financial benefit to the taxpayers with early completion.

Another innovative concept is TxDOT's long history of partnering with the construction industry. TxDOT is committed to improving working relationships with our partners in the construction industry, which encourages relationships based on integrity, trust, mutual respect and fair dealing. Creating the proper working environment will improve dispute resolution at the project level and encourage efficient project administration by TxDOT and efficient prosecution of the work by the contractor.

#### *MAINTENANCE Phase*

Pavement conditions in Texas have also improved. The overall condition of Texas pavements improved in FY 2003 to the highest level in three years because of improved distress and ride quality. In the first year of the Texas Transportation Commission's ten-year statewide pavement condition goal (90 percent good or better by FY 2012), the percentage of lane miles (main lanes and frontage roads) in good or better condition improved from 84.22 percent in FY 2002 to 85.28 percent in FY 2003. Pavement improvements in Texas continue to improve as the current statewide percentage of lane miles in good or better condition increased to 87.02 in FY 2004. These ratings are based on an analysis of the Pavement Management Information System (PMIS) which calculates pavement condition scores.

Below are some examples of pavement improvements that TxDOT has used to improve ride quality.

TxDOT is promoting the use of porous friction course (PFC) overlays as a way to improve ride quality and skid resistance on asphalt pavements, especially in high-traffic or urban areas. An example is IH 35 in San Antonio, just north of IH 410, where a 20-year old concrete pavement was overlaid with PFC nearly two years ago. The overlay made significant improvements in ride quality and in the reduction of spray during wet weather.

TxDOT is also using Superpave and "perpetual pavement" mixtures for asphalt pavement in high-traffic or urban areas. These mixtures provide greater structural strength than regular hot-mix asphalt, especially in areas where higher and heavier traffic volumes exists. To improve ride quality on new paving jobs, TxDOT implemented smoothness specifications for pavements. These specifications have improved the statewide ride quality in each of the last three fiscal years.

TxDOT also uses One Year Plans as an innovative practice. A One Year Plan is a highway maintenance plan that districts develop annually to evaluate and score their performance overall. Districts create a plan by identifying work to be performed, earmarking resources, evaluating their district's transportation system, setting project goals and scheduling work to be completed. Once these plans are established, districts will use their One Year Plan to monitor and evaluate their performance annually.

## **PROCESS IMPROVEMENTS IN PRACTICE**

Since 1923, TxDOT has overseen the preservation, upkeep and restoration of the Texas highway system. TxDOT uses every means to keep existing facilities in optimum condition, and to make sure Texas' highway system lasts as long as possible. To keep up with maintenance demands, TxDOT also makes every effort to outsource maintenance work whenever possible. The benefit

of outsourcing is that it expands the department's workforce and allows the department to leverage its maintenance dollars.

TxDOT is required by the Texas Legislature to outsource no less than 50% of maintenance. The following chart is a breakdown of TxDOT's maintenance expenditures for FY 2003.

### TxDOT Maintenance Expenditures, FY 2003

Description	TxDOT Personnel	Contracted
CONTRACTED PREVENTIVE MAINTENANCE	\$0	\$277,882,475
WAREHOUSE STOCK	124,937,474	3,541,388
MAINTENANCE MANAGEMENT	148,134,173	51,340,712
BASE AND SUBGRADE (Travel Lane and Shoulders)	9,772,845	22,364,151
ASPHALTIC SURFACES (Travel Lane and Shoulders)	41,277,005	46,020,074
CONCRETE PAVEMENT (Travel Lanes and Shoulders)	584,338	14,021,921
APPROACHES AND MISCELLANEOUS SHOULDER MAINTENANCE	2,349,867	1,488,431
ROADSIDE AND OTHER	33,342,451	84,637,316
MOWING	1,361,612	30,612,596
BRIDGES AND BRIDGE CHANNELS	2,210,843	10,532,600
TRAFFIC OPERATIONS	41,539,129	64,860,298
EXTRAORDINARY MAINTENANCE, EMERGENCY REPAIRS	6,879,756	8,056,192
INFORMATION RESOURCES	799,347	0
FACILITIES-NEW CONSTRUCTION	0	12,082,121
FACILITIES-REPAIR AND REHABILITATION	0	2,089,009
TRANSPORTATION EQUIPMENT	7,922,632	0
ROADWAY EQUIPMENT	15,641,289	0
<b>Total :</b>	<u>\$436,752,761</u>	<u>\$629,529,284</u>
<b>Maintenance Grand Total:</b>	<u><u>\$1,066,282,045</u></u>	
<b>Maintenance Contracting Percentage:</b>	<b>40.96%</b>	<b>59.04%</b>

TxDOT has been outsourcing maintenance work since the late 1970s. Since this time, TxDOT has contracted literally all items of maintenance work such as mowing, crack sealing, pot hole and edge repairs in single bid contracts.

In an effort to enhance our traditional contracting methods, TxDOT moved to using multiple bid item contracts. An example of this is in Houston, where the district packages maintenance work such as mowing, litter pick-up and edge repair in one contract. Under multiple bid item contracts, TxDOT retains management of the contract by deciding when, where and how much work the contractor will perform.

These efforts continued with the development of two pilot contracts commonly referred to as total maintenance contracts or asset management contracts. Below are examples of these contracts which the department uses today.

#### *Highway Asset Management Contracts*

In 1998, TxDOT investigated the possibility of performing pilot “turnkey” maintenance contracts. This would involve the complete privatization of the maintenance and operation of segments of the state highway system. This work would include all pavement repair, stripping, sign maintenance, guardrail repair, litter pick-up, mowing, bridge maintenance, and snow and ice control.

After determining the feasibility of this concept, two contracts were let in June 1999 for the total maintenance and operation of two highways in the Waco and Dallas districts. Both contracts would begin on September 1, 1999 and end five years later on August 31, 2004. These contracts also included provisions to allow for extensions. The Waco project included 120 miles of IH 35 and let for \$19.8 million and the Dallas project included 60 miles of IH 20 and let for \$11.3 million. VMS, Inc. based in Richmond, Virginia was the low bidder on both projects.

Over the four and a half years that these contracts have been in effect, the results have been extremely disappointing. The levels of service have continued to deteriorate substantially below the level at which the contractor took over management of the highways. Using the department’s Maintenance Assessment Program on approximately six month intervals, roadway evaluations on the Waco project have shown rating scores drop from 86.40% in July of 1999 to 74.64% in January 2004. In Dallas, project evaluations have dropped from 82.47% in October 1999 to 75.63% in January 2004.

During the course of these contracts, liquidated damages have been assessed and increased pressure has been placed on the contractor to improve their performance.

One of the benefits of asset management contracts is supposed to be a substantial reduction in management of the asset; however, just the opposite has occurred. The contractor has not taken on the responsibilities of identifying deficiencies, determining needed materials and methods, and scheduling work. Work that has been identified has frequently been delayed repeatedly due to the subcontractor not showing up for work nor performing the work.

Due to these unfortunate results with the Highway Asset Management Contract, TxDOT is changing the contract specifications in hopes of having better results. For example, the Waco project will soon be re-let as an Asset Management Contract with key specification changes that TxDOT feels will improve performance. The new specification will have payments tied to the results of the Maintenance Assessment Program evaluations. If the over-all scores fall below set standards, payment reductions will be triggered. In addition, the new specification allows the department to set time limits on deficient work and if the deadline is not met, further payment reductions will be made for each day past the deadline the work remains unfinished.

#### *Rest Area Management Contracts*

To encourage motorists to stop and take a break while driving, TxDOT has committed to make safety rest areas cleaner and more attractive. The Rest Area Management Contracts includes performance based standards where each rest area is graded by a random inspection by TxDOT personnel. Rest area contractors scoring high marks are given an increase in their monthly pay as an incentive. Contractors scoring low marks have their pay reduced until their performance improves.

TxDOT has awarded individual contracts for the maintenance of rest areas. These contracts included janitorial and grounds maintenance with the department retaining responsibility for repairs and water and wastewater operations. Historically, the results of using these small contractors for such work have been mixed. Most of the rest areas have been well maintained, but at times, some have not been up to par. TxDOT attributes these problems to a loss of motivation by rest area attendants and minimal supervision by the contractor.

TxDOT awarded four regional Rest Area Asset Management Contracts in March 2003, for the complete maintenance, operation and repair of the state's 94 rest areas. In addition, these contracts included provisions for the refurbishment of the older facilities. These contracts began in May of last year and will last two years with provisions for extensions. The "east" contract was awarded to A. L. Helmcamp for \$7.2 million, the "north" to Infrastructure Services Inc. for \$7.3 million, the "west" to Dan Williams Co. for \$5.12 million and the "south" also to Dan Williams Co. for \$10 million. Subsequent to the bidding process, Infrastructure Services was hired by Dan Williams to manage his two contracts.

Substantial incentive and disincentive clauses were included in these contracts. These contracts also included random unannounced inspections where the department would evaluate and score the condition of the rest areas. Items under evaluation include pavements, grounds, rest room fixtures, buildings, picnic tables and the appearance of attendants. Scores above 92 receive an extra incentive payment and scores below 85 receive a disincentive deduction.

Although the contractors were slow to complete the required enhancements and showed some initial problems gearing up for the work, the implementation of the incentive/disincentive clauses in the contract has resulted in the contractors increasing their attention on the contracts and substantially improving service levels. Overall, the statewide level of service average has risen from a 76 to a 91. While there continues to be occasional problems, TxDOT is generally pleased with the performance based clauses in these asset management contracts.

TxDOT believes that better results could be achieved by using larger asset management contracts. Larger contracts could mean better bids from organizations and better management abilities.

Although total maintenance contracts are another tool in maintaining our infrastructure, these contracts are still in their infancy. These contracts will continue to be evaluated by the department.

## **WHAT ARE SOME EXAMPLES OR RECOMMENDATIONS FOR STREAMLINING OPERATIONS?**

### *Environmental Process*

The development of the I-69 Environmental Process is one example of environmental streamlining. To address the complexity of the I-69 project, TxDOT and FHWA established an exceptional level of collaboration with other agencies. To oversee the direction of the project, they created the Technical Advisory Committee (TAC), which includes TxDOT, FHWA, and all state and federal resource agencies that play a role in the environmental review process. The Process Manual begins with the partnering agreement, signed by all members of TAC, which sets forth the goal of initiating a “new way of doing business” and streamlining the I-69 project development process. The I-69/Trans Texas Plan is still in its infancy, so measurement of the Process Manual’s effectiveness is limited. However, TxDOT and the FHWA have seen evidence of the manual’s ability to streamline the NEPA process beginning in the very first stages of project development, such as early agreement about how to settle disputes in a prompt fashion. Although the project’s size and complexity will extend its lifetime, significant savings of both time and money are expected as a result of the thoughtful planning that went into producing the Process Manual.

Additionally, TxDOT received approval from the Federal Highway Administration to use federal funds in the project planning phase while the environmental analysis for the IH-35 segment of the Trans Texas Corridor is conducted. This innovative contracting agreement will compress the timetable for the environmental process without affecting the quality of environmental review. This new opportunity will help Texas meet our transportation demands while maximizing innovative financing options. Without this agreement, Texas would not be able to use federal



funds on comprehensive development agreements until after the environmental process is complete.

*Recommendations for Statutory Change*

Amending the Transportation Code to allow CDAs on non-toll projects could continue the department's efforts to streamline our operations and accelerate project delivery. Some potential benefits of using CDAs on non-toll projects include: improving efficiency, lowering construction costs, having one point of responsibility on the developer's side, earlier cost certainty, lump summing the contract price which will limit the ability for the developer to obtain a change order thus increasing the price, expediting development work because some aspects of construction can begin prior to development of 100% design phase, assigning risk delays to the developer, development time can be reduced with good contract planning efforts, industry review before contracting of specifications and contract documents, and establishing complete and unambiguous contract documents and specifications.

Current concerns are still focused on the federal level, to revise federal rules in order to maximize the use of state-level tools. TxDOT still has more work to do at the federal level to have rules amended in order to compress the timetable for the environmental process on projects where appropriate. TxDOT will continue evaluating the groundbreaking changes in HB 3588 and the ways in which those tools can be used to accelerate existing projects and develop more projects.

**CONCLUSION**

TxDOT is a leader and practitioner of innovative practices, but there are still opportunities for improvement. TxDOT appreciates the opportunity to address these issues and looks forward to continue working with the committee.