

**How Do We Finance
Transportation?**

That Is the (Philosophical) Question

**Texas Legislature
Redefines Transportation
Reinvestment Zones**

Rider 42:

"Bang for the Buck" and "Fast Planning"
Key Elements of Mobility Investment
Priorities Project Study

TEXAS TRANSPORTATION Researcher

VOL. 49 | NO. 3 | 2013

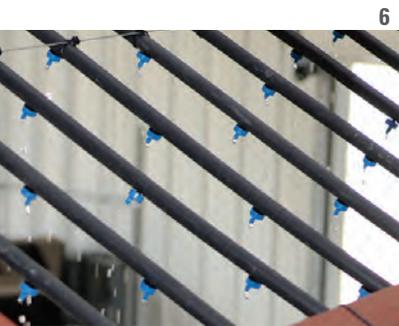
FINDING

Ways to Stretch Our
TRANSPORTATION
DOLLARS



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Texas Transportation Researcher (ISSN 00404748) is a quarterly publication of TTI Communications, Texas A&M Transportation Institute, 3135 TAMU, College Station, Texas 77843-3135. Periodicals postage paid at College Station.

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Research Points the Way to Progress

KNOWLEDGE IS ONLY AS USEFUL
AS THE BENEFITS IT PROVIDES.

At the Texas A&M Transportation Institute (TTI), we pursue knowledge through our research. We test assumptions, validate results, and use the state of the art to advance the state of the practice. **We work to make the transportation system better, safer and more efficient.**



by Dennis Christiansen
Agency Director

In 2016, the Interstate Highway System will celebrate its 60th anniversary. The system is starting to show its age. Building a transportation network is only the first step; maintaining that network at a level that promotes its safe use is just as important. In 2011, the Texas 2030 Committee identified a projected \$170 billion shortfall in revenue needed to maintain our state's roadway system over the next two decades. If we are to encourage and support further economic growth in Texas, sufficient funding is needed to provide and maintain that viable system.

This issue of the *Texas Transportation Researcher* looks at how TTI research is helping Texas bridge the gap between funding needs and available revenue. Providing support to the Texas Department of Transportation (TxDOT) and other sponsors to identify alternative financing mechanisms — like mileage-based user fees and transportation reinvestment zones — is one way TTI is advancing the way we think about paying for transportation.

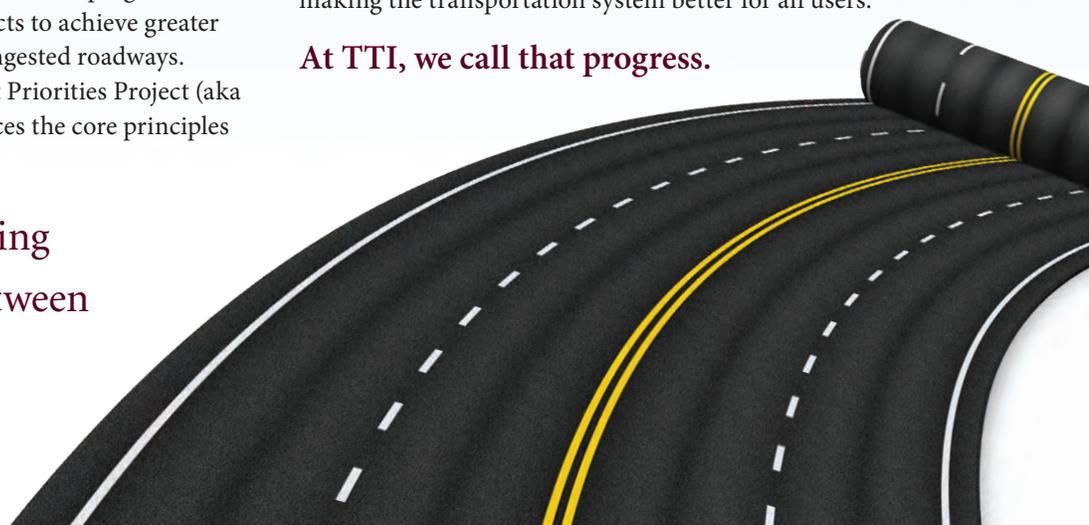
As part of the process of capturing more return on taxpayer investment, the Institute is helping TxDOT identify priority roadway projects to achieve greater mobility on the state's most congested roadways. Called the Mobility Investment Priorities Project (aka Rider 42), this initiative embraces the core principles

of enhancing agency coordination and improving communication with the general public. One example of this emphasis on public engagement is the pilot virtual open house TTI researchers developed for Austin's Oak Hill Parkway project. The website kept Austin commuters informed about the project and received largely positive feedback. This virtual open house is a great example of how Rider 42 advocates the sharing of knowledge to facilitate system development and operation.

Other stories in this issue explore how rail districts are fostering economic development in the rural areas of Texas and how the Lone Star State can benefit from the expansion of the Panama Canal. TTI's assistance to the TxDOT Panama Canal Stakeholder Working Group on developing the report, *Preparing Texas Land and Sea for the Panama Canal Expansion*, is also highlighted.

Through innovative research, outreach and expert testimony, the Institute's research continues to enhance our collective knowledge of issues that are vital to making the transportation system better for all users.

At TTI, we call that progress.



TTI research is helping
Texas bridge the gap between
funding needs and
available revenue.

How Do We Finance Transportation?

That Is the (Philosophical) Question

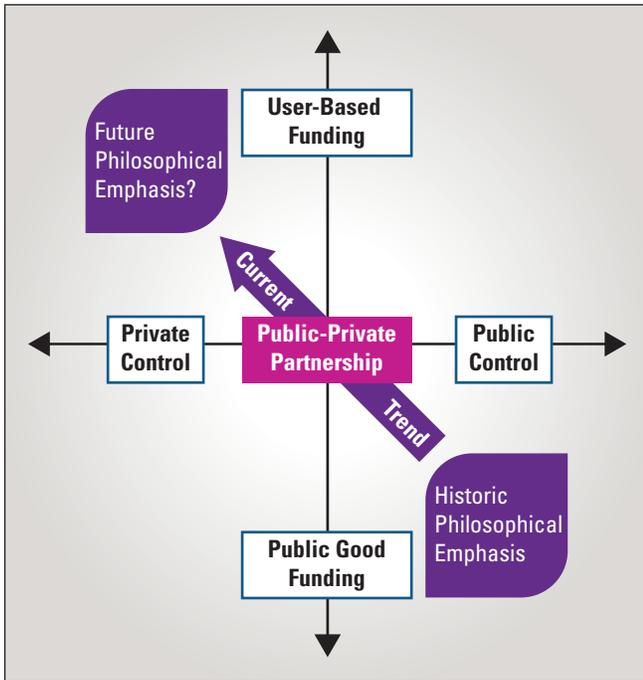


In the early 20th century, the internal combustion engine replaced the horse as the primary technology driving commuter transportation. **Enthusiasts hailed the enhanced economic opportunity promised by the multi-horsepower automobile and the prospect of less manure in the streets (a huge disease-breeding problem at the time).**

But dependency on the automobile created its own problems: urban sprawl, smoggy cities and a constant need to expand roadway capacity. “Before long, everything related to transportation had to accommodate the internal combustion engine,” says Dave Ellis, research scientist and manager of the Texas A&M Transportation Institute’s (TTI’s) Infrastructure Investment Analysis Program. “Roads needed paving. Gasoline needed refining. The Age of the Automobile was born.”

Lawmakers of the time created the gas tax, a fee paid on every gallon of gasoline, to fund the maintenance and expansion of the nation’s transportation infrastructure. And that worked . . . for a while. Innovations in technology — like electric, hydrogen-fueled and hybrid cars — and improved gas mileage have resulted in flat gas-tax revenues.

According to the Texas 2030 Committee, over the next 25 years the Lone Star State faces a \$170 billion gap between projected public revenues and infrastructure improvement needs. Without that revenue, Texans will have to accept a substandard transportation system.



TTI researchers mapped infrastructure finance strategies to establish a historical framework for how transportation is funded in Texas and provide a context for evaluating future finance strategies.

At the same time, demands on the transportation network have continued to rise. According to the Texas 2030 Committee, over the next 25 years the Lone Star State faces a \$170 billion gap between projected public revenues and infrastructure improvement needs. Without that revenue, Texans will have to accept a substandard transportation system.

With that as context, TTI conducted Project 6-0700: Innovative Finance for the Texas Department of Transportation (TxDOT). “We captured the different ways Texas has financed transportation in the past to identify prevailing ‘funding philosophies,’ ” says Ellis. “Once we understand what the pieces of the puzzle are, we can better determine how to fit them together.”

The puzzle Ellis refers to forms a matrix of finance principles and strategies. Within those categories, specific funding approaches — toll road-user fees versus vehicle registration fees, for example — can be mapped and classified. “The matrix was developed by three researchers at TTI — Trey Baker, Jason Wagner and Nick Norboge — and became the key to the project. These guys did a great job capturing the transition from one funding philosophy to another,” explains Ellis. “Historically, the approach has been ‘public funding for the public good.’ Recently, we’ve seen more public-private sector partnerships in applications like toll roads.”

Looking at trends identified in the input philosophies matrix, the obvious question is: does increasing a dependence on the private sector mean less of an emphasis on “the public good”?

“Not necessarily,” states Ellis. “If I own a company that builds and maintains a toll road, it’s in my best interests to make it the best-maintained road possible for commuters

TREDIS Crunches the Numbers for TxDOT

To help TxDOT prioritize its transportation projects, TTI is using Transportation Economic Development Impact System (TREDIS) software for quantitative analyses.

“You input travel patterns, market access, and spending data to estimate the potential benefits of a given construction effort,” says TTI Associate Transportation Researcher Brianne Glover. “It’s a way of predicting return on investment without making the investment first.”

Analyses start locally but can include a proposed project’s ripple effect on surrounding counties. TREDIS has been instrumental in TTI’s recommendations to TxDOT as part of its Rider 42 project (see center spread). Glover and her team are currently using it to conduct a cost-benefit analysis for projects in Houston, Austin and San Antonio.

“If I own a company that builds and maintains a toll road, it’s in my best interests to make it the best-maintained road possible for commuters and freight carriers, who depend on it to move their goods efficiently. To be profitable, a roadway becomes like any product: customer driven. In this case, literally.”

Dave Ellis, TTI research scientist

and freight carriers, who depend on it to move their goods efficiently. To be profitable, a roadway becomes like any product: customer driven. In this case, literally.”

Like 100 years ago, the game is changing again, Ellis says. That’s partly due to technology, as when the automobile supplanted the horse, but also due to rising costs and demands on the transportation network. With the matrix, state transportation planners and lawmakers can better understand the different funding approaches and focus whatever philosophical approach they choose more efficiently. ■



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TTI's SEC Lab Expands to Meet Demand

The SEC Lab expansion features:

- ASTM testing capabilities,
- three new 40-foot-by-8-foot soil fill trays (in addition to the existing 30-foot-by-6 foot trays),
- restroom facilities,
- a covered bed prep area,
- a viewing mezzanine,
- a soil storage building and
- an enhanced sediment collection system.



For years, the Texas A&M Transportation Institute's (TTI's) Sediment and Erosion Control (SEC) Laboratory (formerly the Hydraulics, Sedimentation and Erosion Control Laboratory) has provided sponsors with a state-of-the-art facility for assessing sediment and erosion control products.

The SEC Lab is recognized as one of the premiere facilities of its type in the world. Since 1990, the lab has regularly updated the Approved Products List (APL) for erosion control materials created for the Texas Department of Transportation. Many states — and even some municipalities such as Austin, Texas — not only use the APL, but also require manufacturers to undergo product-performance evaluation at the SEC Lab prior to approving their use.

Other states have used the facility through a pooled-fund project supported nationally by the Federal Highway Administration. The project maximizes the lab's capabilities and gives participating states priority in using the facility and receiving test results. In fact, the lab had become so popular for its capabilities and standards of excellence that customers were waiting in line for testing.

"At one point we had a year-and-a-half waiting list for people requesting testing," says TTI Assistant Research Scientist Jett McFalls, manager of the SEC Lab. "This expansion will more than double our current capabilities and reduce the waiting list."

With over 3,600 square feet of expanded research capabilities (featuring the ability to conduct

American Society for Testing and Materials [ASTM] testing), the SEC Lab is poised to become the go-to facility for sediment and erosion control research not only in Texas, but the entire country.

According to McFalls, the construction team applied lessons learned from the original SEC Lab to enhance the capabilities of the new indoor rainfall simulator building.

"It's little things like inverting the railing system for easier tray set-up and access and installing the mezzanine so visitors can safely view a rainfall simulation that will make this an attractive research facility for new sponsors," says McFalls. Another added feature to appeal to sponsors is the improved research responsiveness that will come with the expansion.

"The plan is to have one of the five rainfall simulator bays open and available," says McFalls. "That way, if a sponsor calls and needs something done quickly, we can accommodate the request in a timely manner." ■



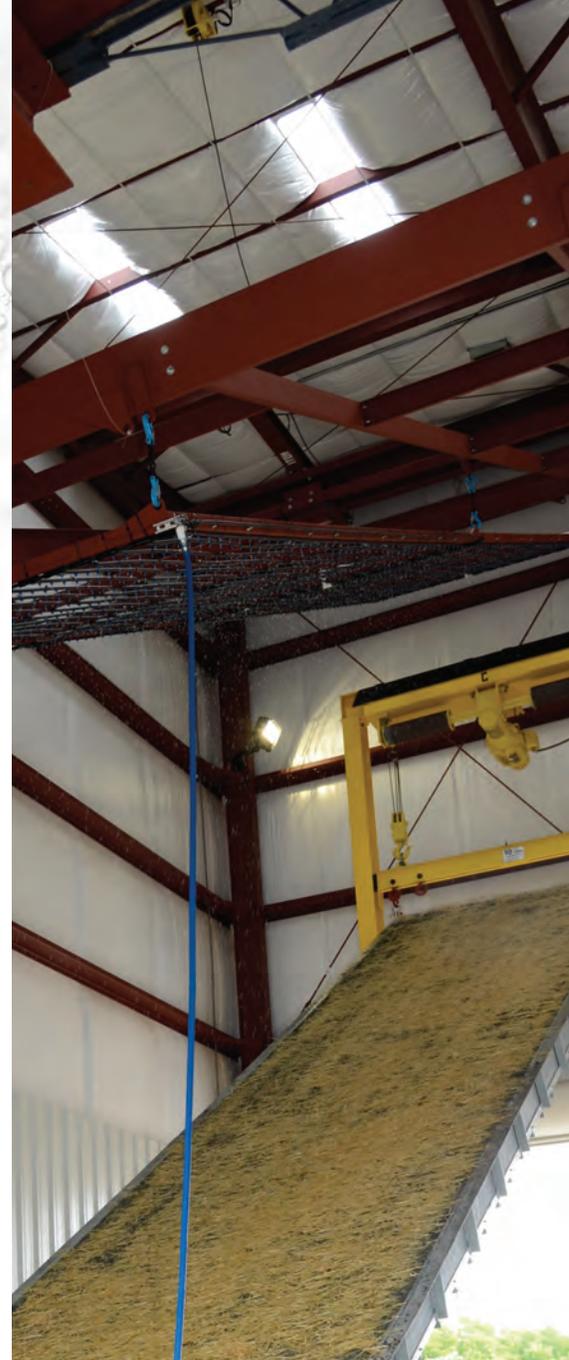
For more information, contact **Jett McFalls** at (979) 845-8709 or j-mcfalls1@tamu.edu.



“At one point we had a year-and-a-half waiting list for people requesting testing. This expansion will more than double our current capabilities and reduce the waiting list.”

Jett McFalls, TTI assistant research scientist and manager of the SEC Lab

(Above and below) The variable slope channel flume is used for testing the performance capabilities of flexible channel liner materials at a range of stress flows.



The rainfall simulators can adjust to match any desired slope up to 2:1 (50 percent) and accommodate any type of soil fill for research.



TTI Assistant Research Scientist Jett McFalls (right) demonstrates the sediment retention device test flume for grand opening attendees.

SEC Grand Opening

The grand opening of the SEC Lab was held Sept. 4 and 5. The event included a ribbon-cutting ceremony, tour of the expanded SEC Lab, pre-workshop social hour and keynote address, and workshop on sediment and erosion control. Brent Larsen of the U.S. Environmental Protection Agency gave the keynote address at the grand opening.

“The completion of this facility was no small endeavor on TTI and TxDOT’s part,” said TxDOT Design Division Director Mark Marek. “The additions and renovations of this new sedimentation and erosion control lab will expedite product information in this area, and we at TxDOT are proud to be one of TTI’s partners.”



TTI Sponsors Fifth Annual MBUF Symposium

Calling the fuel tax “a dying source of revenue,” attendees of the recent Symposium on Mileage-Based User Fees (MBUFs) in Nashville, Tenn., examined technology’s role in changing how we pay for road projects.

It was the fifth MBUF symposium sponsored by the Texas A&M Transportation Institute (TTI) and was held this year in conjunction with the Intelligent Transportation Society of America’s (ITS America’s) 23rd Annual Meeting and Exposition.

“We wanted to open the discussion with technology experts,” event organizer and TTI Research Engineer Ginger Goodin says. Goodin is also director of TTI Transportation Policy Research Initiative. “We’ve conducted these symposiums all over the country. We felt it was time to engage ITS America, and that group was very receptive and accommodating.”

ITS America “supports research and the subsequent implementation of alternatives to the gas tax — including a mileage based usage charge as one possibility — so as to provide a sustainable funding source for transportation improvements,” according to the organization.

The symposium examined multiple issues surrounding MBUFs, including the most recent research initiatives and pilot programs conducted in numerous states. Specifically, technology’s potential role in implementing a new funding source for transportation was the main topic of discussion.

“There’s a whole industry out there trying to get data from the vehicle,” says Chuck Larsen, road pricing information

systems program coordinator with the Oregon Department of Transportation. “So, if you can piggyback and build on the existing foundations in the market today, the change to a user is perceived as a lot less.”

“We’ve conducted these symposiums all over the country. We felt it was time to engage ITS America, and that group was very receptive and accommodating.”

Ginger Goodin, TTI research engineer

Oregon has been a leader in the study of MBUFs, conducting several pilot programs since its state legislature created a Road User Fee Task Force in 2001. Based on lessons learned from those pilot projects, Larsen says an MBUF program will only succeed if users are given numerous options on how mileage data are collected, including a non-technology option.

“I think we learned from the symposium that we don’t know exactly what an MBUF system will consist of in the future, but we do know that we have to build on a framework that is flexible and open and can leverage whatever new technology or approach that may emerge,” Goodin says. “And that is where research comes in.” ■



For more information, contact **Ginger Goodin** at (512) 467-0946 or g-goodin@tamu.edu.



Texas and the Panama Canal Expansion

The Panama Canal was a game changer in global maritime shipping when it opened in 1914. Will the canal be a game changer again in early 2015 when a \$5.25 billion expansion is completed? If so, how will it influence Texas ports and the landside transportation system in the state?

The Texas Department of Transportation (TxDOT) formed the Panama Canal Stakeholder Working Group in 2012 to help answer those questions. The Texas A&M Transportation Institute (TTI) assisted TxDOT with the working group meetings, reviewed previous studies and prepared the working group report.

Led by Harris County Judge Ed Emmett (chair) and Cameron County Judge Carlos Cascos (vice chair) the working group held six information-gathering meetings in locations across Texas. “We heard from shippers, carriers, ports, industry groups and other organizations on their current operations and use of the Panama Canal, their perspectives on use of the expanded canal, planned improvements, and future needs,” Judge Emmett notes.

“The working group findings, recommendations and actions focus on better positioning Texas to take advantage

of the Panama Canal expansion and other opportunities to enhance Texas’ role in global trade,” says Judge Emmett. “We especially considered opportunities to expand Texas’ position as a global gateway for the nation. By providing a low-cost, reliable, safe, secure and multimodal supply chain, the state can increase its global trade, create new jobs, and expand the economy of the state and nation.”

“Many of the recommendations from the working group are being implemented,” notes TxDOT Federal Affairs Director Coby Chase. “Creating a Maritime Division, expanding the working group into the Texas Freight Advisory Committee, and initiating work on a statewide freight plan represent just a few examples of follow-up activities.”

TTI Executive Associate Director Katie Turnbull assisted the working group and provided testimony to the Texas Senate Transportation Committee in December 2012. TxDOT Executive Director Phil Wilson and Port of Houston Authority Executive Director Col. Leonard Waterworth also testified on the possible impacts of the Panama Canal expansion on Texas. ■



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or k-turnbull@tamu.edu.



When the expansion of the Panama Canal is completed in 2015, improved capacity could positively impact the Texas economy.

RIDER 42:



“Bang for the Buck”

“Fast Planning”

KEY ELEMENTS OF MOBILITY INVESTMENT PRIORITIES PROJECT STUDY



Transportation was clearly a public policy focus in 2013 for Texas legislators, who worked diligently on a plan to add about \$1 billion to the state’s annual road-building and maintenance budget, if approved by voters next year. But long before the 83rd Regular Session was gavelled to order, action taken during the previous legislative session was beginning to bear fruit.

When lawmakers gathered in 2011, they set aside \$300 million to get the state’s highest-priority roadway projects moving, focusing primarily on the 50 most congested highway sections in Texas. They turned to the Texas A&M Transportation Institute (TTI) to help partner agencies prioritize projects to achieve the biggest bang for the buck in each of the state’s most populated regions.

The projects selected were directed by legislators to have the greatest impact considering congestion, economic benefits, user costs, safety and pavement quality. In addition, those projects should apply the best available traffic management and demand management principles, and public participation would ensure the most inclusive planning process possible.

Two years later, all parties involved in the Mobility Investment Priorities Project — spelled out in law as Rider 42 of the state budget for the Texas Department of Transportation (TxDOT) — can point to several noteworthy accomplishments.

Smarter Ways to Use Our Roads



Move
crashes and stalls
out of the way



Time
traffic signals so
more see green



Change
rush-hour
nightmares
through flex time,
telecommuting, etc.



Encourage
carpooling

- By coordinating with TxDOT districts, metropolitan planning organizations, and other local agencies and governments, **TTI staff helped implement a highly efficient process that identified priority projects and recommended funding levels to begin project development** in only five months, well ahead of the traditional transportation planning schedule. Two examples of the impact these projects will have on the state's most congested corridors are the 20-year acceleration in construction of US 290 in Houston and the completion of the funding for the Horseshoe Project near downtown Dallas.
- **TTI staff developed summaries of conditions and plans in the state's most congested corridors** in both one-pager (for quick comprehension) and longer (with technical implementation detail) formats. They also created more than 80 descriptions of congestion-reduction solutions, funding ideas and public-engagement strategies to assist agency and legislative staff, the business community, the general public, and the media in understanding the range of solutions aimed at reducing traffic congestion. These documents are accessible to all audiences through the project's website.
- After examining public-involvement practices in the congested regions and reviewing case studies in Texas and elsewhere, **TTI staff produced *Mobility Investment Priorities Project: Public Engagement Report***. The report presents best practices for ensuring an inclusive planning process for transportation projects. Those practices include leveraging advanced technologies and virtual meetings to ensure that broader discussions occur about which congestion-reduction efforts the public might support, as well as how best to pay for those efforts.

- **TTI developed sample PowerPoint presentations and other materials to help the public** better understand how the transportation system is funded and operated, the state's transportation challenges, potential options for addressing those challenges, and the consequences of inaction.
- **TTI developed a computer simulation model of I-35 in Austin to explore various improvement ideas and communicate the funding challenges** brought on by growth in jobs and population in Central Texas. The economic benefits of several large congestion-reduction projects in Houston, San Antonio and Austin were also explored using several new tools and techniques. These include using the Transportation Revenue Estimator and Needs Determination System model, developed for TxDOT by TTI, to improve knowledge about the expected returns from transportation infrastructure investment.

"Traffic congestion in our major cities is choking our highways and choking our economy. Without Rider 42 and a focus on our worst problems, we would have seen no action or progress on the state's most congested roadways," says State Sen. Tommy Williams, chair of the Senate



For more information, contact **Tim Lomax** at (979) 845-9960 or t-lomax@tamu.edu, or visit <http://mobility.tamu.edu/mip/>.

Get the Biggest Bang for the Buck



Tackle
most congested
roadways



Improve
safety



Support
biking, walking
and mass transit
options

"We've created a checklist of 'things we can do right now with relatively little funding,' and these are appropriate for almost all situations."

Tim Lomax, TTI senior research engineer and Regents Fellow

Finance Committee and a major force behind the Mobility Investment Priorities Project. "It's a single step forward, but it's a very important step forward."

The steps that need to be taken come in all sizes.

"We've created a checklist of 'things we can do right now with relatively little funding,' and these are appropriate for almost all situations," says TTI Senior Research Engineer and Regents Fellow Tim Lomax, who directed the Institute's efforts. "What we need to do is identify where each strategy can help, dismantle some institutional barriers, and consider these ideas as interim improvements before we get funding for the really big projects we need to address the state's mobility challenges." ■

Texas Legislature Redefines Transportation Reinvestment Zones



The funding generated from a transportation reinvestment zone helped build the retaining walls on the El Paso Transmountain Project.

The term hasn't made it into daily conversation yet, but "transportation reinvestment zone" (TRZ) will likely become a familiar phrase among Texas taxing authorities soon.

The 2013 Texas Legislature approved several bills that ease restrictions and expand the use of this new strategy for financing transportation.

Essentially, the legislation makes it easier to establish a TRZ to finance an infrastructure project. Here's how TRZs typically work: a taxing authority establishes a geographical area, or zone, where the anticipated increase in property values would be used to pay back the long-term loan that funded a project in the zone.

The 2013 legislation lifts previous restrictions limiting TRZs to highways or road projects within municipalities or counties. Originally approved by legislation in 2007, TRZs can now be established by port authorities and navigation districts and can finance improvements or construction of rail, transit, ferries, airports and even

parking lots. Lawmakers also approved county-level energy TRZs to fund road-maintenance projects in the vast oil boom areas of the state.

"Compared to years earlier, the number of transportation reinvestment zones across the state increased last year, and I think a lot more entities will be considering them now," says Rafael Aldrete, regional manager for the Texas A&M Transportation Institute's (TTI's) Research and Implementation Program offices in San Antonio and El Paso.

Aldrete was involved with TRZs early on when, in 2008, he helped assess the revenue potential of a zone to fund eight roadway projects

located in El Paso. The study led to the establishment of one of the first TRZs in Texas. Since then, a handful of other TRZs have been established in the state, but overall, reinvestment zones have seen limited use.

"It's important to point out that they really are not suited for every situation," Aldrete warns. "Yes, they give another local funding option for a transportation project, but taxing authorities need to do a lot of homework to determine if they should establish a TRZ. And that's the kind of work that TTI has been involved with."

Aldrete and other TTI employees have performed numerous corridor projections for taxing entities considering TRZs. One such sponsor was the City of El Paso. TTI assisted the city in the implementation of a TRZ. The Camino Real Regional Mobility Authority (CRRMA) then used the City of El Paso's TRZ to issue debt for an important regional project.

"Originally, the legislation for reinvestment zones had some provisions that made taxing entities a little nervous about tying up future revenues, but legislative fixes over the past couple of sessions have alleviated a lot of concerns. These legislative tweaks have generated a renewed interest in TRZs across the state," says CRRMA Executive Director Raymond Telles. "I've been asked to speak to groups in Austin, Corpus Christi and Dallas about TRZs. Each of their situations is different."

Telles says he would advise entities considering TRZs to project prospective revenues conservatively. "It's a lot easier when you have more money coming in than you were anticipating than to deal with the opposite situation," he says. ■

"Originally, the legislation for reinvestment zones had some provisions that made taxing entities a little nervous about tying up future revenues, but legislative fixes over the past couple of sessions have alleviated a lot of concerns. These legislative tweaks have generated a renewed interest in TRZs across the state."

Raymond Telles, CRRMA executive director



The construction of the Americas Interchange near El Paso was funded partially by the establishment of a TRZ.



For more information, contact **Rafael Aldrete** at (915) 532-3759 or r-aldrete@tamu.edu.

Pilot Virtual Open House Ushers in New Era of Public Engagement



Public input in the planning and implementation of transportation projects is a vital part of the project planning and development process for agencies responsible for our transportation system. But with today's ever-increasing time constraints, taking time out to attend a meeting in person can be difficult.

The Texas A&M Transportation Institute (TTI), working with the Texas Department of Transportation (TxDOT) and the Central Texas Regional Mobility Authority (CTRMA), recently developed a virtual open house website as an online forum for the general public to learn about possible improvements to the Oak Hill Parkway project in Austin, Texas. The initiative was funded by TTI's Rider 42 project (see the center spread of this issue).

"We are always looking for ways to improve and enhance public participation in the planning process," says TTI Associate Research Scientist Tina Geiselbrecht, manager of the Public Engagement Planning Program at TTI (see sidebar). "A virtual open house allows individuals to learn about the project on their own time."

The Oak Hill Parkway website featured nine project concept videos produced by TTI and narrated by TxDOT and CTRMA personnel. After registering, users were able to watch the videos and then offer comments and suggestions for each concept. The opportunity to chat in real time with others on the site and with the project development team was a unique feature of the virtual open house.

Judging by the early surveys, users were mostly positive about the ability to communicate via the comfort and convenience of their laptops or mobile devices. The next step for the team is to add enhancements for the next virtual open house. ■

TTI's Public Engagement Planning Program

Public scrutiny and accountability are at an all-time high for agencies charged with maintaining our transportation system. Through public-engagement planning and public-opinion research services, TTI's Public Engagement Planning (PEP) Program helps sponsors better understand their customers' concerns.

"If you can create a product — or build a roadway — with customer input from the beginning, you're bound to have more satisfied consumers when they use it," says PEP Program Manager Tina Geiselbrecht. **"It's cheaper in the long run to solicit that input up front rather than try and address concerns down the line."** Geiselbrecht and her PEP team are currently working on the next phase of the Oak Hill Parkway virtual open house website.



For more information, contact **Tina Geiselbrecht** at (512) 467-0946 or t-geiselbrecht@tamu.edu, or visit tti.tamu.edu/group/pep/.

REVISITING Rural Rail Districts



For rural towns throughout Texas, a rail line means more than just a familiar whistle blowing in the middle of the night.

It represents economic prosperity.

When a rural rail line is removed due to unprofitability, the affected towns are quick to seek options, like a rural rail transportation district (RRTD), to remedy the loss. RRTDs in Texas are formed at the county commissioners' court level to prevent the loss of rural rail lines abandoned by rail companies, to maintain the former rail right-of-way for future transportation uses, or to support new freight rail development. In a project for the Texas Department of Transportation titled *The Role of Rural Rail Transportation Districts in Texas*, the Texas A&M Transportation Institute (TTI) recently updated a set of reports documenting the history of RRTDs in Texas over a 32-year period and tracking their successes and failures.

“As the state becomes more involved in rail planning activities and demand for additional rail service becomes more acute, there is a continued role for interested local officials to play in protecting rail service and encouraging rail-based economic development.”

Curtis Morgan, TTI research engineer

“One of the things this project looked at was measuring the success of particular RRTDs,” says Curtis Morgan, TTI research engineer and manager of TTI’s Multimodal Freight Transportation Program. “Districts measure success in different ways — is it keeping the trains running or keeping the tracks and other infrastructure in place, or is success maintaining the right-of-way intact so that rail may return in the future?”

Multi-county RRTDs, largely focused on rail preservation, were first authorized by the Texas Legislature in 1981. In 1997, the 75th Legislature passed several amendments to the RRTD statutes, including a provision allowing single counties to form an RRTD. “These single-county districts have been chiefly formed to either enhance local economic development projects — with rail as a primary or secondary feature — or to construct new, site-specific rail transportation facilities in hopes of drawing new economic development to a rail-served industrial park,” says Morgan.

RRTDs around the state are currently pursuing a variety of projects. Examples of typical activities include:

- purchasing and rehabilitating a 15-mile rail spur in Rusk County that connects several local industries to the Union Pacific mainline;
- purchasing and preserving a 23-mile former rail right-of-way for future rail service at the direction of the legislature by the Northeast Texas RRTD;
- performing a feasibility study for building a transloading facility near the U.S.-Mexico border in Presidio County; and
- conducting several track work projects to eliminate flooding issues and move storage tracks to accommodate a second entrance to a rail industrial park near Midlothian, Texas.

Currently, there are 42 RRTDs in Texas, and as Morgan notes, the need for coordination of both local- and state-level rail planning activities is critical at this time. While many RRTDs are currently inactive, they provide a local government perspective to rail planning within the state. ■



For more information, contact **Curtis Morgan** at (979) 458-1683 or c-morgan@ttimail.tamu.edu, or **Jeff Warner** at (979) 862-2915 or j-warner@tamu.edu.

NHTSA's Strickland Highlights Advanced Vehicle Research at Bridges Conference Room Dedication

In his first visit to the Texas A&M Transportation Institute (TTI) on June 17, David Strickland, administrator for the National Highway Traffic Safety Administration (NHTSA), noted “we are on the precipice of being able to say that cars can’t crash.” Strickland detailed current NHTSA research in Ann Arbor, Mich., involving 3,000 connected vehicles equipped with vehicle-to-vehicle and vehicle-to-infrastructure communications devices.

“How to keep a crash from ever happening in the first place: that is our future,” Strickland said. “When fully implemented, vehicle-to-vehicle communications technologies can address up to 80 percent of crash scenarios.” Strickland said connected vehicles have the potential of reducing the number of annual crash deaths from 34,000 to 5,000.

Aside from semi- and fully autonomous vehicles of the future, Strickland discussed other safety concerns and reminded the crowd that half of all traffic fatalities were caused by not wearing a safety belt. He also noted that impaired driving still accounts for one-third of all fatalities. Lastly, he urged the bipartisan financial support of transportation projects going forward.

Strickland was in College Station to give the honorary lecture for the G. Sadler Bridges Conference Room



Family members of G. Sadler Bridges gather at the conference room dedication ceremony.



Director of TTI's Transportation Policy Research Initiative Ginger Goodin, NHTSA Administrator David Strickland and TTI Executive Associate Director Katie Turnbull.

dedication ceremony. Bridges, a longtime leader at TTI who died in 2008, was an early pioneer of in-vehicle technologies. His colleagues describe him as a visionary leader and moral compass for TTI. TTI Agency Director Dennis Christiansen said the dedication “illustrates the many contributions that Sadler made to TTI and the high regard in which he is still held throughout the Institute.”

Bridges helped establish the Southwest Region University Transportation Center and directed TTI's Intelligent Vehicle Program, which developed the ALERT™ (Advanced Law Enforcement and Response Technology) vehicle that integrated all functions of a police car into a single computer system. The project was recognized in 1997 by Vice Pres. Al Gore with the National Performance Review Hammer Award. Bridges was also a founding member of Intelligent Vehicle Highway Systems of America (today known as ITS America).

“Sadler’s legacy in supporting both our students and new technology is ingrained in everything we do here at TTI,” M. Katherine Banks, vice chancellor and dean of engineering of The Texas A&M University System, told attendees. “As we look to the future, let me suggest that this conference room be a constant reminder of our responsibility to create the next big idea.” ■



For more information, contact Terri Parker at (979) 862-8348 or t-parker@tamu.edu.

TTI ADVISORY COUNCIL

The Texas A&M Transportation Institute (TTI) Advisory Council is comprised of a small group of high-level transportation professionals from across Texas and every sector of the transportation world. The council, which meets annually, offers a tremendous service to the Institute by advising on transportation issues and trends and supporting TTI's research programs and initiatives. TTI profiles several council members in each issue of *Researcher*. ■



Judy Hawley

*Texas Business Development
Director*

Advanced Acoustic Concepts
Corpus Christi, Texas

Judy Hawley of Corpus Christi, Texas — a commissioner and secretary of the executive committee of the Port of Corpus Christi Authority — is a strong advocate of freight movement and transportation connectivity projects in Texas. During her tenure as a member of the Texas House of Representatives (1995–2002), Hawley addressed issues that impacted rural Texas and served as chair of the Rural Caucus. She also served as vice chair of both the Transportation and Energy Resources Committees.

Currently, she is the Texas business development director for Advanced Acoustic Concepts, which develops products for military applications and is a primary contractor to the U.S. Navy. Hawley has served on numerous boards, including the Texas Emerging Technology Fund Advisory Board, Texas Transportation Commission Corridor Advisory Board and Corpus Christi Regional Economic Development Corporation.



David Laney

*Attorney, Business and
Financial Law*

Dallas, Texas

David Laney of Dallas, Texas, is a longtime member of the council. He is a business and financial law attorney providing consulting services in transportation planning, construction, finance and state legislative matters. His experience also includes litigation management and planning, mediation, and strategic and organizational planning. Formerly he was managing partner at Jenkens & Gilchrist, P.C.

Laney has served as chair for the Texas Transportation Commission and the National Railroad Passenger Corporation (Amtrak), as well as a board member for the Southern Methodist University Dedman School of Law, Southwestern Medical Foundation, Texas Turnpike Authority, Finance Commission of Texas, Stanford University Board of Trustees, Atlas Funds/Atlas Insurance Trust, and Matador Resources Co.



Chase Untermeyer

International Business Consultant
Houston, Texas

From 2004 to 2007, Chase Untermeyer served as the U.S. ambassador to the State of Qatar. He formerly served as executive assistant to Vice Pres. George H.W. Bush and as assistant secretary of the navy under Pres. Ronald Reagan. He also served as director of presidential personnel and director of the Voice of America, the overseas broadcasting arm of the U.S. government, under Pres. George H.W. Bush. He is currently an international business consultant in Houston, Texas.

In addition to being a member of the Texas House of Representatives (1977–1981), Untermeyer has held positions in journalism, academia and business. He is a member of the Texas Ethics Commission and the Council on Foreign Relations. He is former chair of both the U.S. Naval Academy Board of Visitors and the Texas State Board of Education, and a former member of the Houston Port Commission.

Lomax Moderates Panel at Houston LINK Forum



Lomax

As part of the 17th annual Leadership, Involvement, Networking, Knowledge (LINK) Program held May 15–18, a

delegation of 110 metropolitan Atlanta leaders traveled to Houston to hear about metropolitan challenges and solutions experienced in that city. This year's agenda focused on Houston's economic development, transportation system, and the shipping and logistics industry.

TTI Senior Research Engineer and Regents Fellow Tim Lomax moderated a panel focusing on transportation solutions. "One of the key questions I had for the panel was what makes Houston transportation agencies work so well together," says Lomax. "Atlanta should be given credit for having this program. I don't know of any other region that does this." ■

TTI Co-sponsors Global Symposium on Connected Vehicles

The first annual Global Symposium on Connected Vehicles and Infrastructure took place in Ann Arbor, Mich., May 14–16. Hosted by the University of Michigan Transportation Research Institute (UMTRI), the symposium — co-sponsored by TTI and ITS America — was attended by 200 people from around the world. Guests included U.S. Department of Transportation Sec. Ray LaHood, who spoke at the opening session.

Most experts agree that cars will communicate with each other and the roadside infrastructure in the next few years. Driverless cars, already operational on a trial basis, may be available in the next two decades. As a result of the coming transportation revolution, it's believed that safety will increase, congestion will lessen, and air quality will improve.

"TTI should leverage its infrastructure expertise because no one is emphasizing that side of the equation," says John Maddox, who helped organize the symposium. Maddox, UMTRI's director of collaborative program strategies and a joint employee of TTI, pursues teaming opportunities for UMTRI and TTI. "I foresee a time when TTI could become the go-to place for vehicle-to-infrastructure research involving safety and mobility communications applications."

During the symposium, Ginger Goodin, TTI research engineer and director of TTI's Transportation Policy Research Initiative, examined the infrastructure perspective from a policy standpoint. "I agree that there is a transformational change under way, and we are poised to do work in this area," she said. ■

Briaud Gives Prestigious Osterberg Memorial Lecture

Protecting U.S. embassies against terrorist attacks was the subject of this year's Osterberg Memorial Lecture presented July 11 by Jean-Louis Briaud. Manager of TTI's Geotechnical and Geoenvironmental Program, Briaud also holds the Spencer J. Buchanan Chair in the Zachry Department of Civil Engineering at Texas A&M University.

Known worldwide for his engineering expertise, Briaud presented "Impact Tests to Protect Embassies against Terrorist Attacks" to the Deep Foundation Institute's (DFI's) Annual Congress in Columbus, Ohio. His research examines how deep-ground bollards, or posts, should be placed to stop a 7-ton truck going 50 miles per hour. The annual Osterberg Memorial Lecture is named after Dr. Jorj O. Osterberg, a pioneer in the field of geotechnical engineering. Calling Osterberg a giant in that field, Briaud, who "had the distinct pleasure of meeting him in 2001," says he was honored to give this year's memorial lecture. ■



Jean-Louis Briaud (left) is honored by David Coleman, the chairman of the DFI Educational Trust Board, following Briaud's Osterberg Memorial Lecture.

TTI Welcomes PVAMU's Summer Transportation Institute Students

TTI hosted a visit June 25 by 20 scholarship recipients of Prairie View A&M University's (PVAMU's) Summer Transportation Institute (STI). The tour included a full-scale crash test, a hands-on demonstration of TTI's driving simulator, and a visit to the Institute's Sediment Erosion Control Laboratory. PVAMU chooses its STI participants from 80 secondary-school applicants based on their grade-point averages and demonstrated interest in the field of engineering. Each year, TTI shows visiting students what life as a transportation engineer or planner might be like.

"I was interested in science and engineering, and that's why I applied to the STI program," Aldine High School student Robert Hall said. "But, actually making it a career was just a thought. Now, I know, this is what I want to do with the rest of my life." ■



Students from PVAMU's STI had the opportunity to test-drive TTI's driving simulator as part of their tour of the Institute in June.

Safety Conference Draws upon Multiple Perspectives

The 2013 Traffic Safety Conference was held June 3–5 in Fort Worth, Texas. Titled Different Paths, One Destination, the conference hosted by TTI discussed how connected-vehicle technologies can help improve safety by eliminating a majority of car crashes in the future.

"Traffic safety is a complex and multifaceted problem, and we all have a different perspective on it," said Robert Wunderlich, director of TTI's Center for Transportation Safety, at the opening session. His audience included representatives from law enforcement, traffic safety research, education and numerous other groups. "What we want to do here is bring those perspectives together in a single forum to create the relationships we need to solve that problem."

The conference also examined safety issues associated with the oil boom, especially on rural roads built decades ago before today's heavier traffic volume. Numerous breakout sessions examined topics including driver education, child passenger safety, traffic incident management and new research on distracted driving. Speakers discussed how new connected-vehicle technologies could impact the way attendees do their jobs in the near future. ■

For more information, contact Rick Davenport at (979) 862-3763 or r-davenport@tamu.edu.

TTI Safety Pioneer Gene Buth Retires



Buth

After a 50-year career with TTI, Assistant Agency Director Gene Buth retired May 31. As attendees at his retirement

reception discovered, Buth played a pioneering role in our nation's evolving roadside safety efforts.

His projects involved breakaway signs, light poles, crash cushions and bridge railings, all of which have increased roadside safety across the nation over the last half century. Buth's research eventually led to the design of special guardrails, including the landmark ET family of guardrail treatments designed to absorb the impact of crashes and minimize injuries associated with vehicles leaving the roadway.

The president of Trinity Highway Products, LLC, the company that licenses TTI's roadside safety products, spoke at the retirement reception. "Just to give you an idea of the safety impact of his work, we have installed 549,000 units globally," Greg Mitchell said. "We are very proud of the partnership with TTI and especially with Dr. Buth."

TTI Agency Director Dennis Christiansen noted that Buth "has been a phenomenal manager of the operation at Riverside. From my perspective, he's been a solid part of the TTI management team... forever. All I can say in closing is, Gene, you are one of the best, and thanks for all you have done." ■

TEXAS A&M TRANSPORTATION INSTITUTE
PUBLICATIONS

A full catalog of TTI publications and other products is online at <http://tti.tamu.edu/> publications. You can find the publications by searching for either the title or publication number listed here. Most of these publications are available as free downloads in portable document format (PDF).

Printed, bound versions of these reports are also available through the URL above.

RESEARCH VIDEOS

Access the research topics listed below via the URLs shown.

TTI and the Mobility Investment Priorities Project:
<https://vimeo.com/75786359>

Mileage-Based User Fees:
<https://vimeo.com/71848261>

TTI's Sediment and Erosion Control Laboratory:
<https://vimeo.com/74722165>

TTI Investigates Intercity Passenger Rail:
<https://vimeo.com/70408029>

TTI Research on the U.S.-Mexico Border:
<https://vimeo.com/66665274>

TECHNICAL REPORTS

Balanced RAP/RAS Mix Design and Performance Evaluation System for Project-Specific Service Conditions, by Fujie Zhou, **0-6092-3**, June 20, 2013.

Characterization and Best Use of Recycled Asphalt Shingles in Hot-Mix Asphalt, by Fujie Zhou, **0-6614-2**, July 25, 2013.

Development of a Statewide Motorcycle Safety Plan for Texas: Technical Report, by Patricia Turner, **0-6712-1**, June 18, 2013.

Evaluation of Skid Measurements Used by TxDOT: Technical Report, by David Newcomb, **0-6798-1**, July 16, 2013.

Evaluation of the Texas Tier System for Seal Coat Binder Specification, by Dick Zimmer, **0-6619-1**, May 16, 2013.

Executive Report: Toll Roads, Toll Rates, and Driver Behavior, by Curtis Beaty, **0-6737-1**, July 15, 2013.

Guidelines for Freeway Lighting Curfews, by Tracy Zhou, **0-6645-1**, June 20, 2013.

Improving DMS 9210 Requirements for Limestone Rock Asphalt — Year One Interim Report, by Cindy Estakhri, **0-6686-1**, May 16, 2013.

Initial Review of Rapid Moisture Measurement for Roadway Base and Subgrade, by Stephen Sebesta, **0-6676-1**, May 17, 2013.

MASH Test 3-21 on TL-3 Thrie Beam Transition Without Curb, by Dusty Arrington, **9-1002-12-3**, July 30, 2013.

New Generation HMA Mix Designs: Accelerated Pavement Testing of a Type C Mix with the ALF Machine, by Lubinda Walubita, **0-6132-2**, July 12, 2013.

New Generation Mix-Designs: Laboratory-Field Testing and Modifications to Texas HMA Mix-Design Procedures, by Lubinda Walubita, **0-6132-3**, July 18, 2013.

The Overlay Tester (OT): Comparison with Other Crack Test Methods and Recommendations for Surrogate Crack Tests, by Lubinda Walubita, **0-6607-2**, August 22, 2013.

Price Adjustment Clauses: Report, by David Newcomb, **0-6799-1**, June 7, 2013.

Report from the Panama Canal Stakeholder Working Group, by Katie Turnbull, **0-6800-1**, March 29, 2013.

Studies to Assess the Impact of Nighttime Work Zone Lighting on Motorists, by Melisa Finley, **0-6641-1**, May 29, 2013.

Treatments for Clays in Aggregates Used to Produce Cement Concrete, Bituminous Materials, and Chip Seals: Technical Report, by Anol Mukhopadhyay, **0-6444-1**, July 25, 2013.

Worker Safety During Operations with Mobile Attenuators, by LuAnn Theiss, **0-6707-1**, May 16, 2013.

PROJECT SUMMARY REPORTS AND PRODUCTS

Best Practices for Using RAP and RAS in HMA and WMA, by Fujie Zhou, **0-6738-P1**, June 11, 2013.

Evaluation of the I-10 Katy Freeway Managed Lanes, by Ginger Goodin, **0-6688-S**, August 12, 2013.

Guidebook: Managing Operating Costs for Rural and Small Urban Public Transit Systems, by Suzie Edrington, **0-6694-P3**, May 22, 2013.

Identifying Best Practices for Managing Operating Costs for Rural and Small Urban Public Transportation Systems, by Suzie Edrington, **0-6694-S**, July 12, 2013.

Managing Operating Cost for Rural and Small Urban Transit Systems: Workshop Materials, by Suzie Edrington, **0-6694-P2**, July 5, 2013.

Managing the TDM Process: Developing MPO Institutional Capacity, by Karen Lorenzini, **0-6691-S**, August 19, 2013.

Mixture Design Procedure for Flexible Base, by Jon Epps, **0-6621-P1**, May 29, 2013.

Revised Overlay Design System, by Sheng Hu, **5-5123-03-P2**, August 20, 2013.

Texas Flexible Pavements and Overlays: Calibration Plans for M-E Models and Related Software, by Lubinda Walubita, **0-6658-P4**, June 12, 2013.

Texas Motorcycle Crash Countermeasure Workshop, by Patricia Turner, **0-6712-P1**, June 12, 2013.

Texas Strategic Action Plan for Motorcycles 2013–2018, by Patricia Turner, **0-6712-P2**, June 18, 2013.

TPAD Data Analysis Software and User Manual, by Tom Scullion, **0-6005-P3**, June 18, 2013.

Training Materials for Testing and Mitigation Techniques, by Anol Mukhopadhyay, **0-6444-P1**, June 20, 2013.

Webinar Presentations for TxDOT Implementation Project 5-6386-01, Implementation of New Pavement Performance Prediction Models in PMIS, by Nasir Gharaibeh, **5-6386-01-P1**, May 29, 2013.

