



Research Digest

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TxDOT Research Publications, June-August 2012

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Item 1

Performance of Lap Splices in Large-Scale Column Specimens Affected by ASR and/or DEF

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 5722-1 • 2012

This research program conducted a large experimental program, which consisted of the design, construction, curing, deterioration, and structural load testing of 16 large-scale column specimens with a critical lap splice region, and then compared and calibrated models developed in the analytical program with the experimental behavior. Specimens were carefully instrumented both internally and externally to monitor the strain behavior of the concrete and reinforcing steel from specimen construction, curing, deterioration, and final structural load testing.

This report is available for free download (26.6 MB):

<http://tti.tamu.edu/documents/0-5722-1.pdf>

Item 2

User's Guide for TxCRCP-ME Design Software

TEXAS TECH UNIVERSITY. CENTER FOR MULTIDISCIPLINARY RESEARCH IN TRANSPORTATION (TECHMRT)

TechMRT 5832-P3 • 2012

This manual is organized to help users get accustomed to the operation modules of TxCRCP-ME, the structural design software for continuously reinforced concrete pavement (CRCP), which was developed under [this TxDOT research project]. An elaborate three-dimensional finite element analysis was conducted to identify the mechanisms of punchout distress in CRCP, and the critical component that may cause the punchout distress was mechanistically evaluated. A full factorial parametric study was performed for significant input variables to compile the database of the analysis results. A program was written using the 2007 version of Microsoft Excel to perform the analysis of the pavement system for given inputs in estimating the frequency of punchouts, the primary structural distress of CRCP. The conversion from mechanistic structural responses to pavement distress is achieved by a transfer function determined empirically, utilizing data collected from the TxDOT rigid pavement database project. The final results of the software are presented in the form of tables and charts. [Volume II, beginning on page 35] describes the architecture of the mechanistic-empirical CRCP design program.

This report is available for free download (5.8 MB):

<http://www.depts.ttu.edu/techmrtweb/Reports/Products/0-5832-P3.pdf>

Item 3

Full-Depth Reclamation: New Test Procedures and Recommended Updates to Specifications

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 6271-2 • 2012

Rehabilitating an old pavement by pulverizing and stabilizing the existing pavement is a process referred to as Full Depth Reclamation (FDR). The stabilized layer becomes either the base or sub-base of the new pavement structure. This process has been used widely for over 20 years in Texas to strengthen and widen structurally inadequate pavement sections. This project developed guidelines on successful FDR practices, developed training materials, and identified areas where improvements to current practices are required. To improve the FDR process, this report includes the following enhancements: (1) Current laboratory testing to select the optimal type and amount of stabilizer takes too long and requires too much material. Continue to run parallel testing with the small sample test protocols proposed in this report. (2) Use the falling weight deflectometer (FWD) during construction to validate that the design assumptions are being met. (3) Implement the proposed bond test to select the optimum prime material and amount needed to effectively bond the base to the surfacing materials. (4) Modify the specifications to avoid working in freezing conditions. (5) Consider implementing the other modifications to specifications proposed in this report.

This report is available for free download (3.1 MB):

<http://tti.tamu.edu/documents/0-6271-2.pdf>

Item 4

Performance Comparison of Various Seal Coat Grades Used in Texas

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 6496-1 • 2012

This report documents research efforts to provide comparative quantitative performance information for various grades of seal coat aggregate available in the Texas Department of Transportation's standard specifications. Length of service before replacement and level of noise generated at the tire-pavement interface were the primary focuses of the relative performance evaluations. The additional service life possible from seal coats with larger aggregate and higher asphalt application rates is compared to the additional cost generally associated with these larger aggregate seal coats. The comparative performance information combined with knowledge gathered from numerous department field engineers resulted in the development of guidelines for optimal seal coat grade selection.

This report is available for free download (Report PDF: 17.3 MB; CD-ROM ZIP: 20 MB):

<http://tti.tamu.edu/documents/0-6496-1.pdf>

<http://tti.tamu.edu/documents/0-6496-1-CD.zip>



Item 5

RTI Special Studies for TxDOT Administration in FY 2011

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)

CTR 6581-CT-3 • 2012

This research project was established by TxDOT's Research and Technology Implementation Office to address special studies required by the department's Administration during FY 2011. Three short-term, quick-turnaround tasks were completed and are documented. The following three tasks were undertaken in the period September 2010 to August 2011:

"Task 10: Dallas District IH 30 Noise Project (continued from FY 2010): The objective of this task was to conduct field measurements of traffic noise on a section of IH 30 in West Dallas, aid in implementing mitigation measures including noise wall treatments and porous friction course (PFC) overlays, and develop and support the implementation of a performance payment specification for a noise wall treatment at the location.

"Task 11: Statistical Analysis of TxCAP and its Subsystems (continued from FY 2010): The objective of this task was to conduct statistical analyses of the data used by TxDOT to develop Texas Condition Assessment Program (TxCAP) scores, and to recommend a sample size of the TxCAP system including the Pavement Management Information System (PMIS), the Texas Maintenance Assessment Program (TxMAP), and the Texas Traffic Assessment Program (TxTAP) sub-systems, with reasonable estimates of the likely levels of variance in the data.

"Task 12: Assessment of TxDOT FTEs for Project Development and Construction, and PS&E Backlog Analysis (FY 2011): The objective of this task was to examine full-time-equivalent (FTE) staffing needs for TxDOT project development and construction, and analyze needs for "backlogging" plans, specifications, and estimates (PS&E), i.e., preparing construction plans in advance and keeping them "on the shelf" for possible construction funding in the future." --p.2, Research Tasks

CONTENTS

- Chapter 1. Introduction
- Chapter 2. Dallas District IH 30 Noise Project
- Chapter 3. Statistical Analysis of TxCAP and Its Subsystems
- Chapter 4. TxDOT FTEs for PE and CE, and PS&E Backlogging
- Appendix A: Summary of Available Data
- Appendix B: Tolerable Error Estimation
- Appendix C: Sample Size Variation with Different Parameters
- Appendix D: Comparison of Scores Using t-test at 95% Confidence Level
- Appendix E: Results of t-test at 95% Confidence Level
- Appendix F: Current Level of Confidence

This report is available for free download (2.1 MB):

http://www.utexas.edu/research/ctr/pdf_reports/0_6581_CT_3.pdf

Item 6

Pavement Repair Strategies for Selected Distresses in FM Roadways

UNIVERSITY OF TEXAS AT SAN ANTONIO (UTSA). DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
UTSA 6589-1 • 2012

"Expansive soil is considered one of the most common causes of pavement distresses in FM roadways. Depending upon the moisture level, expansive soils will experience changes in volume due to moisture fluctuations from seasonal variations. The objective of this research was to evaluate existing repair projects on selected FM roadways. Those roadways experienced failures in the form of fatigue and rutting in the wheel path, and longitudinal (faulted) cracking including edge cracking. The causes of those failures were mainly linked to high PI expansive soil and narrow pavement.

This study involved field and laboratory testing on those projects to examine the effectiveness of the applied treatments. The projects presented in this report are examples of how TxDOT districts choose to address severe pavement conditions that lead to failure on FM roads. Some of those examples are innovative, and others are routine. These projects do not represent the only options for treatment, and each project should be designed based on its existing conditions, such as the intended design life cycle, cost effectiveness, local climate, local traffic, and available local materials.

This report is available for free download (5.5 MB):

<http://tti.tamu.edu/documents/0-6589-1.pdf>

Item 7

Developing a Mixture Design Specification for Flexible Base Construction

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)
TTI 6621-1 • 2012

In the Texas Department of Transportation (TxDOT), flexible base producers typically generate large stockpiles of material exclusively for TxDOT projects. This large "state-only" inventory often maintained by producers, along with time requirements for testing and reduced manpower within TxDOT offices, resulted in this project's investigation into a mixture-design specification for flexible base. The goals of this project are to develop a flexible base specification that reduces TxDOT's burden for sampling and testing, reduces time and space burdens on producers for maintaining TxDOT-only stockpiles, and maintains or improves the quality of the base. To facilitate accomplishing these goals, this project developed a draft quality control/quality assurance (QC/QA) specification for flexible base. Based on a thorough review of background information, sampling and testing placeholders for placement and production aggregate and mixture tests were selected and incorporated into a classical QC/QA format draft specification. While the current draft specification largely uses existing TxDOT test procedures, improvements may be realized by considering the Grace methylene blue method and the use of index tests as surrogates for modulus and permanent deformation properties. The methylene blue method may be able to better control the quantity and amount of fines, while linking index tests to mechanistic properties could enable acceptance testing better linked to design assumptions. The second year of this project will sample and test flexible base quarries around the state to determine material variability that is attainable in the real world without compromising the design strength.

This report is available for free download (2.2 MB):

<http://tti.tamu.edu/documents/0-6621-1.pdf>

Item 8

Continuous Prestressed Concrete Girder Bridges. Volume 1: Literature Review and Preliminary Designs

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 6651-1 • 2012

The Texas Department of Transportation (TxDOT) is currently designing typical highway bridge structures as simply supported using standard precast, pretensioned girders. TxDOT is interested in developing additional economical design alternatives for longer span bridges, through the use of the continuous precast, pretensioned concrete bridge structures that use spliced girder technology. The objectives of this portion of the study are to evaluate the current state-of-the-art and practice relevant to continuous precast concrete girder bridges and recommend suitable continuity connections for use with typical Texas bridge girders.

A wide variety of design and construction approaches are possible when making these precast concrete bridges continuous with longer spans. Continuity connection details used for precast, prestressed concrete girder bridges across the United States were investigated. Several methods were reviewed that have been used in the past to provide continuity and increase the span length of slab-on-girder prestressed concrete bridges. Construction issues that should be considered during the concept development and design stage are highlighted. Splice connections are categorized into distinct types. Advantages and disadvantages of each approach are discussed with a focus on construction and long-term serviceability. A preliminary design study was conducted to explore potential span lengths for continuous bridges using the current TxDOT precast girder sections, standard girder spacings and material properties. The revised provisions for spliced precast girders in the AASHTO LRFD Bridge Design Specifications (2010) were used in the study. The results obtained from the literature review and preliminary designs, along with precaster and contractor input, are summarized in this report.

This report is available for free download (3.6 MB):

<http://tti.tamu.edu/documents/0-6651-1.pdf>

Item 9

Texas Flexible Pavements and Overlays. Year 1 Report: Test Sections, Data Collection, Analyses, and Data Storage System

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 6658-1 • 2012

"This five-year project was initiated to collect materials and pavement performance data on a minimum of 100 highway test sections around the State of Texas, incorporating both flexible pavements and overlays. Besides being used to calibrate and validate mechanistic-empirical (M-E) design models, the data collected will also serve as an ongoing reference data source and/or diagnostic tool for TxDOT engineers and other transportation professionals. Towards this goal, this interim report provides a documentation of the work completed in Year 1 of the project including the following: 1) literature review; 2) development of data collection and analysis plans, and 3) field test sections. The MS Access Data Storage System, used for storing and accessing the collected data, is also discussed in this interim report."

This report is available for free download (9.6 MB):

<http://tti.tamu.edu/documents/0-6658-1.pdf>

Item 10

Field Evaluation of Automated Rutting Measuring Equipment

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 6663-1 • 2012

"The Texas Department of Transportation (TxDOT) has developed a state-of-the-art 3D system for rut measurements. This system will allow more accurate assessment of road performance at both the network and project levels and potentially eliminate the need for manual visual assessments. Furthermore, the improved accuracy, which can be achieved while traveling at highway speeds, will eliminate any subjective elements and lead to more consistent and reliable data. The improved accuracy of the system will significantly impact the TxDOT Pavement Management Information System (PMIS). PMIS is used to monitor statewide pavement condition and to evaluate the effectiveness of pavement maintenance and rehabilitation treatments. PMIS is also used to report progress towards the annual statewide pavement condition goal. To ensure the rational adoption of the new systems, TxDOT initiated this project to allow an independent assessment of the accuracy and repeatability of the newly developed system. The TxDOT system was compared to other, similar systems from a variety of different vendors to identify the most suitable system for implementation. The project consists of two phases. Phase I evaluated the rut measurements and Phase II will evaluate automated distress data measurements, including longitudinal, transverse, and alligator cracking; failures; spalled cracks; and punchouts. This report summarizes the Phase I tasks, data, analysis, main findings, and recommendations."

This report is available for free download (17.2 MB):
http://www.utexas.edu/research/ctr/pdf_reports/0_6663_1.pdf

Item 11

Asphalt Binder Brainstorm Workshop

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)
TTI 6674-P1 • 2012

This CD-ROM contains 5 PowerPoint presentations from TxDOT Research Project 0-6674. "The major objectives of project 0-6674 are: (1) Determine if the new AASHTO MSCR-based binder grading system is superior to the current TxDOT binder grading system; (2) Identify/develop a simple test method or methods to characterize fracture and adhesive properties of asphalt binders and associated tentative specification limits; (3) Determine if the asphalt binders not currently used in Texas would potentially improve overlay performance, if so conduct an associated cost-benefit analysis; (4) Identify optimal asphalt binder/aggregate combinations for different environmental zones in Texas; (5) Develop and initially populate a catalogue of all these measured (binder, binder/fine aggregate mastic, and asphalt mix) properties with relevant information that can be used to track the field performance of pavements constructed using these asphalt binders." --TRB Research in Progress database

CONTENTS

- Superpave Asphalt Binder Specification (.ppt, 13 slides)
- Multi-stress Creep and Recovery Test Method: A New Specification, AASHTO MP 19 (.ppt, 53 slides)
- Material Production, Mix Design and Pavement Design Effects on Moisture Damage (.ppt, 45 slides)
- Preliminary Study on Asphalt Binder Fatigue / by Fujie Zhou (.ppt, 15 slides)
- Fatigue Cracking (.pptx, 29 slides)

This report is available for free download (20 MB ZIP contains 5 files):
<http://tti.tamu.edu/documents/0-6674-P1.zip>



Item 12

Deliverable Background (Document to be embedded in SCI Algorithm) and SCI Analysis Workbook (Excel) -- Training/User's Manual on SCI and Network-level FWD Deflection

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 4322-01-P1/P2 • [2012]

The Pavement Structural Condition Index (SCI) is a screening tool for pavement maintenance and rehabilitation (M&R) decisions at the network-level.

CONTENTS

- 5-4322-01-P1 [0-4322-01-P1 Background document (PDF) ; SCI: Excel 2003 version ; SCI: Excel 2007 version]
- 5-4322-01-P2 [SCI Algorithm Tool: A User's Manual" ; "SCI Analysis Algorithm Workshop, December 9, 2010" Workshop Presentation and Agenda

This report is available for free download (P1: 1.3 MB; P2: 6.2 MB):

<http://library.ctr.utexas.edu/digitized/products/5-4322-01-P1.zip>

<http://library.ctr.utexas.edu/digitized/products/5-4322-01-P2.zip>

Item 13

Geosynthetic-Reinforced Unbound Base Courses: Quantification of the Reinforcement Benefits

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 4829-01-1 • 2012

As part of [TxDOT] Research Project 0-4829, a new testing device was developed and a monitoring program was initiated to evaluate the performance of geosynthetics used as reinforcement for unbound base courses. This implementation involves the use of the new testing device and procedures developed by the 0-4829 research project. Specifically, the testing involves a modified pullout device for characterization of the confined stiffness in geosynthetic reinforcements. The project also provides continued monitoring of 32 experimental test sections constructed on FM2 (Bryan District) for the purposes of correlating field performance with material characterization. The experimental component of this implementation project was accomplished by testing four different geosynthetic reinforcement products in order to verify the draft specifications recommended by project 0-4829. The field component of this implementation project involved continued condition survey, moisture monitoring, FWD testing, and weather data gathering in order to establish the threshold of the proposed parameter in the new specification based on field performance.

Keywords: soil-geosynthetic interaction, reinforced unbound base course, small pullout test, stiffness

This report is available for free download (4.9 MB):

http://www.utexas.edu/research/ctr/pdf_reports/5_4829_01_1.pdf



Item 14

GIS-based Resources for Selected Demand Response Transit (DRT) Providers Within Texas / Ready-to-Apply Versions of the DRT Accessibility Tool for the Selected DRT Providers Within Texas

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)

CTR 5178-03-P1/P2 • 2011

"This comprehensive guide provides all of the information necessary to effectively use the Demand Response Transit (DRT) Accessibility Tool, including background literature, underlying methodology, and step-by-step instructions. The DRT Accessibility Tool was developed to provide the Texas Department of Transportation (TxDOT) Public Transportation Division staff and other transportation professionals within the state of Texas a tool to measure and benchmark the level of accessibility for DRT systems. The tool, which is formulated in Microsoft Access, uses a system of models to simulate actual daily DRT travel patterns for service regions and fleets of any size. In the end, transit system operators and planners have the option of measuring accessibility for various combinations of population groups, times of day, and travel purposes. The goal is to provide decision-makers with detailed information that will enable them to pinpoint areas where DRT service needs improvement or specific populations that need to be targeted." DRT Accessibility Tool User Guide, p.3

CONTENTS

- Colorado Valley Transit District DRT Accessibility Tool files and GIS files:
http://library.ctr.utexas.edu/digitized/products/5-5178-03_ColoradoValleyTD.zip (18.7 MB)
- Community Council of Southwest Texas DRT Accessibility Tool files and GIS files:
http://library.ctr.utexas.edu/digitized/products/5-5178-03_CommunityCouncilSWtx.zip (15.5 MB)
- East Texas Council of Governments DRT Accessibility Tool files and GIS files:
http://library.ctr.utexas.edu/digitized/products/5-5178-03_EastTxCouncilGov.zip (18.9 MB)
- South Plains Community Action Association DRT Accessibility Tool files and GIS files:
http://library.ctr.utexas.edu/digitized/products/5-5178-03_SoPlainsCommunityAction.zip (26.0 MB)

This report is available for free download (User Guide: 8.6 MB; See detail record or ask librarian about additional files):

library.ctr.utexas.edu/digitized/products/5-5178-03_DRT-Accessibility-Tool_UserGuide.pdf

Item 15

Strut-and-Tie Model Design Examples for Bridges: Final Report

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 5253-01-1 • 2012

A series of five detailed design examples feature the application of state-of-the-art strut-and-tie modeling (STM) design recommendations. This guidebook is intended to serve as a designer's primary reference material in the application of STM to bridge components. The design examples are:

- Example 1: Five-Column Bent Cap of a Skewed Bridge – This design example serves as an introduction to the application of strut-and-tie modeling. Challenges are introduced by the bridge's skew and complicated loading pattern. A clear procedure for defining nodal geometries is presented.
- Example 2: Cantilever Bent Cap – A strut-and-tie model is developed to represent the flow of forces around a frame corner subjected to closing loads. This is accomplished, in part, through the design and detailing of a curved-bar node at the outside of the frame corner.
- Example 3a: Inverted-T Straddle Bent Cap (Moment Frame) – An inverted-T straddle bent cap is modeled as a component within a moment frame. Bottom-chord (ledge) loading of the inverted-T necessitates the use of local STMs to model the flow of forces through the bent cap's cross section.
- Example 3b: Inverted-T Straddle Bent Cap (Simply Supported) – The inverted-T bent cap of Example 3a is designed as a simply supported member. Results for both the moment frame case and the simply supported case are compared to illustrate the influence of boundary condition assumptions.
- Example 4: Drilled-Shaft Footing – Three-dimensional STMs are developed to properly model the flow of forces through a deep drilled-shaft footing. Two unique load cases are considered to familiarize the designer with the development of such models.

This report is available for free download (11 MB):

http://www.utexas.edu/research/ctr/pdf_reports/5_5253_01_1.pdf

Item 16

The Multimodal Freight Database: A Potential User Perspective

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)

CTR 6297-01-1 • 2012

As part of TxDOT (Texas Department of Transportation) Project 0-6297 entitled “Freight Planning Factors Impacting Texas Commodity Flows,” the Center for Transportation Research (CTR) team focused on understanding the critical factors that influence freight planning in Texas. All U.S. states are required in terms of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and by the subsequent Transportation Equity Act for the 21st Century (TEA-21) to conduct statewide freight transportation planning. However, understanding how freight impacts the transportation system of a state and conducting statewide freight planning requires robust data. Consequently, as part of TxDOT Project 0-6297, the CTR team developed a relational Multimodal Freight Database software (RMFDB) that captured relevant publicly available freight variables that can be used for updating TxDOT freight models and studies. The objective of this Implementation Project was to disseminate information about the Relational Multimodal Freight Database by hosting six workshops in Texas.

This report is available for free download (88 KB):

http://www.utexas.edu/research/ctr/pdf_reports/5_6297_01_1.pdf

Item 17

Implementation of Technology for Rapid Field Detection of Sulfate and Organic Content in Soils: Technical Report

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 6362-01-1 • 2012

The protocol using the Veris 3150 for determination of sulfate-rich soils has been implemented to two full-scale projects in Dallas and Paris Districts. The determination of organic-rich soil was not implemented in this project due to the unavailability of proper equipment. Researchers collected electrical conductivity (EC) data from two Veris 3150 units equipped at both TxDOT and TTI, simultaneously. Soil samples were collected on the basis of the constructed EC color map. The data collected from these projects were analyzed to identify potential relationships between Veris EC measurements and sulfate contents for different types of soil. Statistical modeling results indicate that Veris EC is a linear function of the natural log of the sulfate content, directly if other soil parameters such as moisture content, organic matter content, and clay content remain constant. Higher EC of soil responds to higher sulfate content of soil. It is imperative that soil samples be collected.

This report is available for free download (3.8 MB):

<http://tti.tamu.edu/documents/5-6362-01-1.pdf>



Research Digest

Item 18

Instructions for Detecting Sulfates Using the Veris 3150

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)
TTI 6362-01-P2 • 2012

This video provides step-by-step instructions for attaching the Veris 3150 Conductivity Device to a truck/tractor and setting up the data logger to record data. A PowerPoint presentation and PDF of the presentation are also included on the disc as alternatives to the video.

This report is available for free download (244 MB ZIP):

<http://tti.tamu.edu/documents/5-6362-01-P2.zip>

Item 19

Texas RPO Workshop Implementation Project Summary

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)
TTI 6483-01-1 • 2012

"This report documents rural planning organization (RPO) workshops conducted throughout Texas. An RPO is a voluntary organization created and governed by locally elected officials responsible for transportation decisions at the local level. RPOs address rural transportation planning priorities and provide recommendations to TxDOT for areas outside the boundaries of a metropolitan planning organization (MPO). More than 145 community leaders participated in the workshops, including county judges, county commissioners, and mayors and representatives from TxDOT Districts, cities, [MPOs], and councils of government. Since the RPO project was initiated, the number of RPOs in Texas has grown from four to 14. Additional RPOs are expected to organize and form in the next few years. The RPO workshops involved both new and existing RPOs throughout Texas." --
<http://tti.tamu.edu/publications/catalog/record/?id=36777>

This report is available for free download (1.1 MB):

<http://tti.tamu.edu/documents/5-6483-01-1.pdf>



Item 20

Rural Planning Organization Workshop Materials: Their Role in Transportation Planning and Project Development in Texas

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)
TTI 6483-01-P1 • 2012

This ZIP file contains three PDFS of materials used at TxDOT Project 6483 workshops. "The purpose of this workshop is to provide transportation planning practitioners, local officials and policy leaders with an introduction to rural planning organizations [RPOs] and how they fit into the transportation planning process in Texas. The workshop can be presented in a 3- or 6-hour format... At the end of this workshop, the participant should be able to: Identify the key transportation planning organizations in Texas, Describe how RPOs "fit" into the Transportation Planning Process, Describe Key Findings about RPOs, Describe changes in Texas demographics, Identify metropolitan and rural boundaries, Identify the key transportation planning organizations in Texas, Describe Programming and Project Prioritization, Define Goals, Objectives, and Performance Measures, Describe Successful Public Involvement, Explain Proposed Transportation Planning Rules, Describe Who does What in Transportation Planning" -- Instructor's Guide, p.3

CONTENTS

- Rural Planning Organizations: Their Role in Transportation Planning and Project Development in Texas [PDF of presentation slides]
- Rural Planning Organization Workshop:Instructor's Guide [PDF], "Published: May 2012"
- Rural Planning Organization Workshop: Rural Planning Organizations [PDF of Participant Handout], "Product 5-6483-01-P1, Published May 2012"

This report is available for free download (9.4 MB):

<http://tti.tamu.edu/documents/5-6483-01-P1.zip>

Item 21

A Four-Year Pavement Management Plan (FY 2011-FY 2014)

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 9035-01-P5 • 2012

"The 2011-2014 Pavement Management Plan (PMP) provides TxDOT with a mechanism to predict pavement conditions based on a specified funding level and project-specific plan. The resulting report consisted of the summary of the number of lane miles that each district planned to treat as Preventive Maintenance (PM), Light (LRhb), Medium (MRhb), or Heavy Rehabilitation (HRhb) and the impact that those treatments are predicted to have on the pavement conditions. Plan Components: the financial constraint for all categories of funding for FY 2011-14 was identified from; finance revenue projections and utilized to plan the projects; projects for the FY 2011-14 planned lettings were identified in P6 and considered for impact on pavement condition; all maintenance expenditures (Strategy 105/144) were captured in the PMP system, taking into account all routine and preventive maintenance work." --p.1

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- Section 1. FY 2011–2014 Pavement Management Plan Executive Summary
- Section 2. Analysis Assumptions
- Section 3. Statewide Summary
- Section 4. District Summaries

This report is available for free download (1.5 MB):

http://www.utexas.edu/research/ctr/pdf_reports/5_9035_01_P5.pdf



Item 22

A Four-Year Pavement Management Plan (FY 2011-FY 2014): Updated Analysis Report

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)

CTR 9035-01-P6 • 2012

"The 2011-2014 Pavement Management Plan (PMP) provides TxDOT with a mechanism to predict pavement conditions based on a specified funding level and project-specific plan. The resulting report consisted of the summary of the number of lane miles that each district planned to treat as Preventive Maintenance (PM), Light (LRhb), Medium (MRhb), or Heavy Rehabilitation (HRhb) and the impact that those treatments are predicted to have on the pavement conditions. Plan Components: The financial constraint for all categories of funding for FY 2011-14 was identified from finance revenue projections and utilized to plan the projects. Projects for the FY 2011-14 planned lettings were identified in P6 and considered for impact on pavement condition. All maintenance expenditures (Strategy 105/144) were captured in the PMP system taking into account all routine and preventive maintenance work." -- p.1

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- Section 1. FY 2011-2014 Pavement Management Plan Executive Summary
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This report is available for free download (1.3 MB):

http://www.utexas.edu/research/ctr/pdf_reports/5_9035_01_P6.pdf

Item 23

A 4-Year Pavement Management Plan (FY 2012-2015)

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)

CTR 9035-01-P7 • 2011

"Rider 55 of the Texas Department of Transportation's (TxDOT) appropriations bill requires that prior to the beginning of each fiscal year, the department provide the Legislative Budget Board and the Governor with a detailed plan for the use of these funds that includes, but is not limited to a district-by-district analysis of pavement score targets and how proposed maintenance spending will impact pavement scores in each district... The 2012–2015 Pavement Management Plan (PMP) provides TxDOT with a mechanism to predict pavement conditions based on a specified funding level and project-specific plan. The resulting report consists of the summary of the number of lane miles that each district plans to treat as Preventive Maintenance (PM), Light (LRhb), Medium (MRhb), or Heavy Rehabilitation (HRhb), and the impact that those treatments are predicted to have on the pavement conditions." -- Executive Summary, p.1

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- Section 1. FY 2012–2015 Pavement Management Plan Executive Summary
- Section 2. Analysis Assumptions
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This report is available for free download (1.4 MB):

http://www.utexas.edu/research/ctr/pdf_reports/5_9035_01_P7.pdf



Item 24

HeatWurx Patching at Two Locations in San Antonio

TEXAS A&M UNIVERSITY. TEXAS TRANSPORTATION INSTITUTE (TTI)

TTI 9043-01-1 • 2012

Patching asphalt pavement is an important, necessary part of TxDOT operations. Cracked and failed areas need to be replaced by high quality, sound pavement in order to meet the needs of the traveling public. This report documents the placing, cost, and performance of the HeatWurx™ pavement patching process, which uses infrared heating to make the pavement soft enough to mill and scarify so that it can be mixed with a rejuvenator and pavement millings to form a patch that stays bonded to the surrounding material. A total of 83 4 ft by 8 ft patches were placed.

This report is available for free download (4.1 MB):

<http://tti.tamu.edu/documents/5-9043-01-1.pdf>

Item 25

Implementing a Project and Portfolio Management System for TxDOT Project Development

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)

CTR 9012-01-1 • 2011

"Beginning in the summer of 2009, Texas Department of Transportation (TxDOT) started developing the framework for implementing a sophisticated new system to manage its large and diverse portfolio of projects during their development phase. This was followed by the implementation itself for managing project schedules, project and portfolio resources and costs during their development cycle. This unique and challenging implementation across TxDOT encompassed all functional areas involved in the project development phase. It was successfully completed by overcoming technical, technological, and cultural challenges inherent with any implementation of this scale and magnitude. During the course of this implementation, hundreds of TxDOT employees spread across various district and division offices were trained... the Center for Transportation Research (CTR) at The University of Texas at Austin provided critically needed experience and expertise. CTR had previous experience in developing and implementing a similar system across the Dallas District of TxDOT. During 2009-2010 CTR Assistant Director Nabeel Khwaja co-led the implementation, along with Maureen Wakeland of TxDOT. Today, the system is helping TxDOT develop and manage its four-year portfolio of active projects by helping define the portfolio of projects that can be developed in the next four fiscal years within the resource and fiscal constraints of its revenue projections. Through this system, TxDOT staff can monitor and track the progress and ensure timely delivery of projects, meeting commitments to the public on thousands of projects. The following report summarizes work performed by CTR under the RTI Implementation Project 9-9012-01." p.3, Executive Summary

This report is available for free download (928 KB):

http://www.utexas.edu/research/ctr/pdf_reports/9_9012_01_1.pdf