

Research Digest

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In this Issue:

TxDOT Research Publications (June-July 2014)**Table of Contents**

Item 1.	Procedures for the Installation and Quality Control of Anchored CFRP Sheets for Shear Strengthening of Concrete Bridge Girders (6306-01-1)	1
Item 2.	Improved Cross Frame Details for Steel Bridges (6564-1)	2
Item 3.	Performance Testing of Coagulants to Reduce Stormwater Runoff Turbidity (6638-1)	3
Item 4.	ASR Testing: A New Approach to Aggregate Classification and Mix Design Verification: Technical Report (6656-1)	4
Item 5.	Validation of the Maximum Allowable Amounts of Recycled Binder, RAP, & RAS Using Accelerated Pavement Testing. Interim Report (6682-1)	5
Item 6.	A Methodology to Support the Development of 4-year Pavement Management Plan (6683-1)	6
Item 7.	Minimize Premature Distresses in Continuously Reinforced Concrete Pavement (6687-1) ..	7
Item 8.	Minimizing User Delay and Crash Potential through Highway Work Zone Planning (6704-1)	8
Item 9.	Pilot Training Workshop Materials (6704-P1)	8
Item 10.	Design and Scope of Impact of Auxiliary Lanes: Technical Report (6706-1)	9
Item 11.	Training Strategies and Materials (6706-P1)	10
Item 12.	Quantitative Relationship between Crash Risks and Pavement Skid Resistance (6713-1)	11
Item 13.	Evaluating the Need for Surface Treatments to Reduce Crash Frequency on Horizontal Curves (6714-1)	12
Item 14.	Assessment of the Effects of Regional Channel Stability and Sediment Transport on Roadway Hydraulic Structures (6724-1)	13
Item 15.	Observation Method to Predict Meander Migration and Vertical Degradation of Rivers (6724-2)	14
Item 16.	Business Process and Logical Model to Support a Tour-Based Travel Demand (6759-1)	15

Research Digest

Item 1

Procedures for the Installation and Quality Control of Anchored CFRP Sheets for Shear Strengthening of Concrete Bridge Girders

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 6306-01-1 • 2014

The objective of the implementation study was to: Provide guidance for installation of strengthening systems. Provide training materials for personnel carrying out construction and inspection for shear strengthening of concrete beams using CFRP anchors and sheets on concrete beams. Suggest QA/QC procedures. Provide design recommendations and specifications for projects.
(x, 40 pages) : color illus.

This report is available for free download (2.8 MB):

<http://library.ctr.utexas.edu/ctr-publications/5-6306-01-1.pdf>

Research Digest

Item 2

Improved Cross Frame Details for Steel Bridges

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 6564-1 • 2014

Cross frames are critical members for the stability of straight and curved steel bridges. Conventional cross frames are often fabricated from steel angles; however these members have relatively poor structural behavior. Because of the low buckling strength, cross frames with angle diagonals are often designed as tension-only systems, therefore increasing the necessary steel. The angles are also connected through one leg resulting in eccentric connections causing bending of the members and potentially reducing the fatigue performance.

Improved behavior may result if concentric members are utilized for the cross frames. The increased buckling strength of tubes and double angles results in effective members in both tension and compression, and a single diagonal cross frame can provide effective bracing. Although there are structural advantages of utilizing concentric members, a suitable connection must be developed. Tubes are often connected by slitting the tube in the center and welding to a connection plate, which requires precise fabrication and relatively poor fatigue behavior. One proposed solution is to use a steel casting designed to connect easily to the beams and to seal the end of the tube (preventing exposure to atmospheric conditions).

In addition, the report covers in detail the categorization of the single angle detail for both X and K frame configurations. To date, the determination of the single angle fatigue detail has been largely based on component tests only. The project incorporated both component and full-scale cross frame fatigue tests to fully examine the interaction of the cross frame members with the overall structure. Finally, the project also examined the stiffness behavior of cross frames, using a combination of full-scale laboratory tests and computational finite element model analysis.

(xxviii, 317, [94] pages)

CONTENTS

- Chapter 1. Introduction
- Chapter 2. Background
- Chapter 3. Background on Steel Castings
- Chapter 4. Cross Frame Connections
- Chapter 5. Laboratory Tests for Cross Frame Strength and Stiffness
- Chapter 6: Models for Cross Frame Stiffness
- Chapter 7. Cross Frame Fatigue Tests
- Chapter 8. Finite Element Studies of Cross Frame Forces
- Chapter 9. Conclusions and Recommendations
- References
- Appendix A. Cross Frame Fatigue Test Details
- Appendix B. TxDOT Bridge Details for FEA Comparison

This report is available for free download (14.2 MB):

<http://library.ctr.utexas.edu/ctr-publications/0-6564-1.pdf>

Research Digest

Item 3

Performance Testing of Coagulants to Reduce Stormwater Runoff Turbidity

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

TTI 6638-1 • 2014

On December 1, 2009, the US Environmental Protection Agency (EPA) published a rule in the Federal Register establishing non-numeric and, for the first time, numeric effluent limitation guidelines (ELGs). The numeric ELGs included a turbidity limit of 280 nephelometric turbidity units (NTU) and sampling requirements for stormwater discharges from construction sites that disturb 20 or more acres of land at one time. At that time, the EPA required Texas to implement these new requirements when the Texas Commission on Environmental Quality (TCEQ) renewed their Texas Construction General Permit (CGP) in 2013. Due to litigation regarding the initial numeric ELG implementation, the EPA put numeric ELGs on hold in 2011 and on April 13, 2013, proposed to withdraw the numeric ELG as a requirement.

This project was initiated in 2010 to prepare the Texas Department of Transportation (TxDOT) for changes to the CGP regarding the monitoring and sampling of their construction site to meet the anticipated numeric ELG requirements. The scope of the project was modified due to EPA's actions. However, in light of anticipated future numeric limits, the project's monitoring and testing experiments proceeded to (1) determine "typical turbidity" representative of TxDOT's construction site discharges, (2) collect performance data on innovative erosion and sediment control measures that might be expected to achieve the discharge standard, and (3) provide update to TxDOT's Stormwater Managements Guidelines for Construction Activities.

(x, 75 pages)

This report is available for free download (1.6 MB):

<http://tti.tamu.edu/documents/0-6638-1.pdf>

Research Digest

Item 4

ASR Testing: A New Approach to Aggregate Classification and Mix Design Verification: Technical Report

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

TTI 6656-1 • 2014

The main objective of this study was to develop a fast, reliable test method to determine the aggregate alkali-silica reactivity (ASR) with respect to the overall alkalinity of the concrete. A volumetric expansion measurement device (VEMD) developed at the Texas A&M Transportation Institute was used in this research. The VEMD simulates the aggregate-pore solution reaction in concrete and measures free solution volume contraction due to ASR over time. The solution volume change over time at multiple temperatures is modeled to determine activation energy (E_a) based on the rate theory. The VEMD-based test can reliably predict aggregate alkali silica reactivity in a short period of time (5 days) in terms of measuring activation energy. A representative E_a can be determined by testing as-received aggregates (i.e., field aggregates) with 0.5N NaOH + Ca(OH)₂ solution (similar to concrete pore solution) and with permissible repeatability. Researchers have developed an E_a -based aggregate classification system, which can serve as a potential screening parameter in an aggregate quality control program. A relationship between E_a and alkalinity is developed, which became the basis to determine threshold alkalinity. The proposed method has the potential to be considered as an alternative method to the current AMBT method. An effective way of tailoring mix design depending on the level of protection needed is developed based on activation energy, threshold alkalinity, pore solution chemistry, and concrete validation testing. A new accelerated concrete cylinder test (ACCT) using VEMD (60°C, leaching-proof conditions) was developed to test concrete mixes in a short time. Although the testing period is not yet fully established, the ACCT method takes around 1 month to test a reactive straight cement concrete mix with varying alkali loadings (i.e., 8.9–4.5 lb/yard³) and around 3–4 months to test a slowly reactive straight cement mix with lower alkali loadings (e.g., 3.0–4.0 lb/yard³). The ACCT method has the ability to emerge as a potential method to test job mix. (xv, 184 pages)

This report is available for free download (44 MB):

<http://tti.tamu.edu/documents/0-6656-1.pdf>

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Item 5

Validation of the Maximum Allowable Amounts of Recycled Binder, RAP, & RAS Using Accelerated Pavement Testing. Interim Report

UNIVERSITY OF TEXAS AT ARLINGTON (UTA)

UTA 6682-1 • 2014

This report summarizes the work conducted on Project 0-6682 up to August 31, 2013. The report is organized in five chapters corresponding to separate tasks in the project work plan, as follows: Chapter 1 presents the summary of the findings from the literature review. Chapter 2 presents the plan for the accelerated pavement testing. Chapter 3 reports on the establishment of the accelerated pavement testing facility. Chapter 4 presents the results of the laboratory testing conducted to design the mixes. Chapter 5 presents the construction of the hot mix asphalt layers and provides results of the in-situ tests done during construction.

(xi, 65 pages)

CONTENTS

- Executive Summary
- Chapter 1. Literature Review
- Chapter 2. Detailed Planning of the APT Experiment
- Chapter 3. Establishment of the APT Facility
- Chapter 4. HMA Mix Designs
- Chapter 5. Monitoring of HMA Construction
- Appendix A. ABR Field Density Logs
- Appendix B. ABR Mix Quality Assurance Testing

This report is available for free download (4 MB):

<http://tti.tamu.edu/documents/0-6682-1.pdf>

Item 6

A Methodology to Support the Development of 4-year Pavement Management Plan

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

TTI 6683-1 • 2014

A methodology for forming and prioritizing pavement maintenance and rehabilitation (M&R) projects was developed. The Texas Department of Transportation (TxDOT) can use this methodology to generate defensible and cost-effective 4-year pavement management plans (PMPs). The developed methodology was implemented in a web-based software tool for evaluation by TxDOT personnel. This tool can potentially be used in the future by TxDOT to generate 4-year PMPs for individual districts and the statewide network. Key components of this methodology are: (1) Methods for grouping data collection sections into pavement management sections (potential M&R projects). (2) Pavement performance prediction models. (3) Methods for measuring performance benefits and life-cycle costs of alternative M&R types and projects. (4) A method for prioritizing competing M&R projects using an incremental benefits-cost analysis. (5) Analysis of the impact of funding scenarios on network condition throughout the planning period.

Projects are prioritized considering multiple factors that are deemed important by TxDOT's districts. These factors and their importance weights were identified using a web-based survey of TxDOT's districts. The methodology was tested and validated for Bryan, Fort Worth, and Lubbock Districts. The results highlights the potential of the developed methodology to improve pavement management planning by incorporating district priorities, producing cost-effective pavement management plans, and providing insights into the impact of these plans on the network condition.

(xii, 129 pages)

This report is available for free download (5.3 MB):

<http://tti.tamu.edu/documents/0-6683-1.pdf>

Research Digest

Item 7

Minimize Premature Distresses in Continuously Reinforced Concrete Pavement

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

TechMRT 6687-1 • 2014

The long-term performance of continuously reinforced concrete pavement (CRCP) has been quite satisfactory in Texas, providing an important network of highways with heavy truck traffic and minimal maintenance. Field evaluations of the performance of CRCP in Texas reveal that a substantial portion of distresses is not necessarily due to structural deficiencies of CRCP. Rather, many distresses appear to be due to construction and material related issues and to a lesser extent, imperfections in design details. Since these distresses occur long before structural distresses develop, they are considered premature distresses. The most effective way to prevent or minimize premature distresses is to identify the mechanisms of distresses, develop appropriate special provisions to existing specifications or special specifications, and modify existing design standards. Distresses at transverse construction joints (TCJs) were one of the most frequently observed and efforts were made to identify the mechanisms of those distresses and develop or improve design standards or specifications. Field evaluations of concrete and steel behavior near TCJs were made using various gages. The analysis of the data indicates that the current practice of placing additional tie bars at TCJs, along with poor construction practices, are the major causes of the distress. There is a large difference in the behavior of reinforcement between additional tie bars and longitudinal steel that is continuous through transverse construction joints. The premise that additional tie bars at TCJs will behave the same way as longitudinal steel, thus reducing steel stresses of longitudinal steel at TCJs, keeping the joint widths tight, and improving TCJ performance, is not necessarily correct. Also, the use of additional tie bars makes the consolidation of concrete at TCJs difficult due to the reduced spacing between longitudinal reinforcing steel. Not placing additional tie bars at TCJs, and the use of relief transverse saw cut joints near TCJs, along with improved construction practices at TCJs, will minimize the distresses. (xvii, 123 pages)

This report is available for free download (16.4 MB):

<http://www.depts.ttu.edu/techmrtweb/Reports/Complete%20Reports/0-6687-R1-Final.pdf>

Research Digest

Item 8

Minimizing User Delay and Crash Potential through Highway Work Zone Planning

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

CTR 6704-1 • 2014

Lane closures due to highway work zones introduce many challenges to ensuring smooth traffic operations and a safe environment for drivers and workers. In addition, merging has been found to be one of the most stressful aspects of driving and a merge process that is viewed as “unfair” through actions like queue jumping can lead to further unsafe behaviors stemming from “road rage.” To address these issues, the work in this project will focus on lane control solutions for intermediate and long-term highway work zones. In order to evaluate network performance, driver behavior, driver operations, and impacts on safety, several tools were used. Using a combination of field observations, microsimulation, and dynamic traffic assignment tools, the main objective was to develop a procedural guide or decision tree for freeway work zone traffic control planning. This procedural guide would then be presented to the Texas Department of Transportation in a pilot training workshop. Using microsimulation software, with a focus on VISSIM, the analysis of different applications of merge concepts through delay and safety is presented in the project. In order to appropriately draw conclusions about and identify trends of different merge concepts from the microsimulation software, early merge, late merge, and signal merge were first explored in a thorough literature review. In addition to delay and queuing analysis completed using VISSIM, the Federal Highway Administration’s Surrogate Safety Assessment Model (SSAM) was used to address the effects of implementing signal merge on rear-end and lane-change conflicts. Compiling the data collection, VISSIM microsimulation outputs, and SSAM signal merge safety outputs, general conclusions and decisions were provided.

(xiv, 141 pages)

This report is available for free download (3.5 MB):

<http://library.ctr.utexas.edu/ctr-publications/0-6704-1.pdf>

Item 9

Pilot Training Workshop Materials

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

CTR 6704-P1 • [2014]

"Simple intersection models include diverges, where one incoming link is connected to several outgoing links, and merges, where several incoming links are connected to one outgoing link. Freeway models of exit ramps and on-ramps map directly to LTM diverge and merge concepts. The simplest diverges model in LTM involves using fixed proportions to define the desired flow split at a node, and defining the final sending volumes by taking into account the downstream links’ maximum receiving flows $R_a(t)$. Such a model is implemented in the software tool described below, which computes the position of the queue tail in a freeway segment using the outputs of the LTM model and Kinematic Waves theory. Further technical details are available from the authors of [Report 0-6704-1]... The software tool developed by the researchers allows the user to define link characteristics for a freeway segment with up to three exit ramps. Further extensions will incorporate entry ramps as well." -- Report FHWA/TX-13/0-6704-1, page 81

This report is available for free download (990 KB):

<http://library.ctr.utexas.edu/ctr-publications/0-6704-p1.zip>

Research Digest

Item 10

Design and Scope of Impact of Auxiliary Lanes: Technical Report

TEXAS SOUTHERN UNIVERSITY (TSU). CENTER FOR TRANSPORTATION TRAINING AND RESEARCH

TSU 6706-1 • 2014

For decades, Texas Department of Transportation districts have constructed auxiliary lanes to support interchange ramp operations and to resolve congestion proximate to freeway entrance and exit ramps. While auxiliary lanes are built throughout Texas, the existing roadway design manuals/guidelines do not present all of the necessary design tools and details for design engineers. The objective of this research project was to develop implementation-oriented guidelines on the use of auxiliary lanes. To fulfill this goal, the researchers (1) reviewed and synthesized national and peer states' practices, (2) conducted a survey of traffic engineers, (3) analyzed operational benefits from adding auxiliary lanes at the segment level, (4) used micro-simulation to identify scope of impacts of auxiliary lanes at the corridor level, (5) analyzed safety impacts of adding auxiliary lanes, and (6) developed guidelines and recommended best practices.

The outcomes of this study provide important recommendations and numerical tools (e.g., the look-up tables) in implementing and designing freeway auxiliary lanes for new construction or rehabilitation projects. The developed methodologies and outcomes will complement the provisions in current state roadway design manuals/guidelines.

(xii, 200 pages)

CONTENTS

- Chapter 1. Introduction
- Chapter 2. Literature Review
- Chapter 3. Survey of Transportation Engineers
- Chapter 4. Operational Impacts of Auxiliary Lanes at the Segment Level
- Chapter 5. Operational Impacts of Auxiliary Lanes of the Corridor Level
- Chapter 6. Safety Impacts of Auxiliary Lanes
- Chapter 7. Guidelines for Designing and Assessing the Impacts of Freeway Auxiliary Lanes
- Chapter 8. Key Findings and Recommendations
- Appendix. Survey Instrument

This report is available for free download (6.2 MB):

<http://tti.tamu.edu/documents/0-6706-1.pdf>

Research Digest

Item 11

Training Strategies and Materials

TEXAS SOUTHERN UNIVERSITY (TSU). CENTER FOR TRANSPORTATION TRAINING AND RESEARCH

TSU 6706-P1 • 2014

"TxDOT project 0-6706 'Design and Scope of Impact of Auxiliary Lanes' has developed guidelines for implementation of auxiliary lanes including general guidelines on the use of auxiliary lanes and design guidelines for auxiliary lanes. To facilitate the implementation of the guidelines developed by this project, training strategies and materials have been developed for providing a training session for personnel within TxDOT who are involved in the design of freeway interchanges and ramps. This document consists of two parts. Part I "Training Strategies" provides details on the purpose, method, scheduling, and location for the training. Part II "Training Materials" provides a list of the developed training materials along with the printouts of these training materials" --Introduction
(65 pages)

CONTENTS

- Introduction
- Training Strategies
- Training Materials
- Guidelines for Designing and Methods for Assessing Auxiliary Lanes: PowerPoint Presentation for Workshop
- Guidelines for Designing and Methods for Assessing Auxiliary Lanes: Workbook Materials for Workshop

This report is available for free download:

<http://tti.tamu.edu/documents/0-6706-P1.pdf>

Research Digest

Item 12

Quantitative Relationship between Crash Risks and Pavement Skid Resistance

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

CTR 6713-1 • 2014

Faced with continuously increasing maintenance due to aging infrastructure, the Texas Department of Transportation (TxDOT) is evaluating the potential impact of reduced funding on highway safety. The main objective of this report is to develop a methodological procedure to identify threshold levels of pavement skid resistance for highways in the context of traffic crashes, assisting TxDOT Administration and engineers in making proper maintenance decisions. As a result, the efficiency and safety of the highway system could be preserved. The scope of this study covers all types of state-maintained highways in Texas.

(xiv, 57 pages)

CONTENTS

- Executive Summary
- Chapter 1. Introduction
- Chapter 2. Literature Review
- Chapter 3. Methodology
- Chapter 4. Data Sources and Data Processing
- Chapter 5. Relationship between Crash Risk and Skid Resistance
- Chapter 6. Numerical Analysis Results
- Chapter 7. Benefit / Cost Analysis
- Chapter 8. Conclusions and Recommendations
- References
- Appendix

This report is available for free download (1.2 MB):

<http://library.ctr.utexas.edu/ctr-publications/0-6713-1.pdf>

Item 13

Evaluating the Need for Surface Treatments to Reduce Crash Frequency on Horizontal Curves

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

TTI 6714-1 • 2014

The application of high-friction surface treatments at appropriate horizontal curve locations throughout the state has the potential to improve driver performance and reduce the number of crashes experienced at horizontal curves. These treatments must be implemented judiciously due to their cost, but have the potential to improve safety at lower cost than geometric improvements like curve straightening, and with greater effectiveness than control-device treatments like installing delineators or Chevrons. An analysis framework has been developed to assess the need for surface treatments at curves based on the concept of margin of safety analysis. Models have been developed to predict vehicle speeds throughout a curve, and calibrated using data from Texas curve sites. Safety prediction models have also been developed to quantify the relationship between skid number and curve crash frequency. This information can be applied to evaluate the safety performance of a curve of interest and estimate the potential safety benefit of installing a high-friction surface treatment.

CD-ROM: "This software can be used to assist with the assessment of margin of safety for a horizontal curve. It is intended for use by engineers and technicians responsible for safety analysis or management of rural highway pavement or traffic control devices."
(xi, 106 pages; 133 KB)

- Accompanying CD-ROM contains "Texas Curve Margin of Safety" [version 1]

CONTENTS

- Chapter 1. Overview
- Chapter 2. Safety Trends and Treatments for Horizontal Curve
- Chapter 3. Crash Data Analysis
- Chapter 4. Operational and Pavement Data Analysis
- Chapter 5. Guideline Development and Application

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

<http://tti.tamu.edu/documents/0-6714-1.pdf>

Research Digest

Item 14

Assessment of the Effects of Regional Channel Stability and Sediment Transport on Roadway Hydraulic Structures

UNIVERSITY OF TEXAS AT SAN ANTONIO (UTSA). DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

UTSA 6724-1 • 2014

"Rivers and streams evolve all the time. As a result, no stream channel is absolutely stable. Channels evolve at various speeds both vertically (degradation/aggradation) and horizontally (meander migration). They also respond to man-made changes ranging from in-stream modifications (such as bridges) to watershed changes (such as land use change and urbanization). Failure to consider these dynamics could result in costly repairs and even disastrous collapse. The current practice of using HEC-RAS in TxDOT to calculate local scour around hydraulic structures does not fully consider the effects of regional channel stabilities. The lengthy Federal Highway Administration (FHWA) publications on stream instabilities (e.g., HEC-11, 18, 20, and 23 series) are not consulted unless risks are apparent. In addition, there are no clear guidelines on how to address the problem in the current TxDOT Hydraulic Design Manual. A comprehensive investigation of the subject and synthetic study are needed. This final report is the compilation of all the interim technical memorandums submitted to TxDOT during the course of this project.

"The researchers conducted a thorough literature review on the subject of degradation and aggradation, bank erosion, channel stability, fluvial geomorphology, river hydraulics, and erosion countermeasures. They also collected and integrated data from all possible sources into a GIS database which can be used by TxDOT engineers. Then the research team surveyed existing numerical models with the aim of identifying tools to evaluate different design options. The selected tools are tested on six sites in Texas where field observations and measurements were carried out in this project...

"...The researchers found that though general guidelines are available from the Federal Highway Administration, they are too lengthy (roughly 2,250 pages for the documents surveyed). They only provide very general information and sometime are not so useful considering the unique geophysiological and hydrological characteristics of Texas. By synthesizing the existing federal documents, reports from relevant past TxDOT research projects, and the results from this project, the researchers summarized the current status in this field and provided updated information in the form of a concise report... The newly updated section in the TxDOT Hydraulic Design Manual reflects the state-of-art knowledge..."

This report is available for free download (68.9 MB):

<http://tti.tamu.edu/documents/0-6724-1.pdf>

Research Digest

Item 15

Observation Method to Predict Meander Migration and Vertical Degradation of Rivers

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

TTI 6724-2 • 2014

Meander migration and vertical degradation of river bed are processes that have been studied for years. Different methods have been proposed to make predictions of the behavior of rivers with respect to these processes. These two erosion controlled processes consist of the gradual change of the geometry of the river due to the flow of water eroding the soil. This erosion may cause a shift that could be a threat to existing bridges, highways and useful lands. Therefore, there is need for a method that can accurately predict the amount of erosion that may occur in rivers. Six different sites in Texas were selected for this project. Four of the selected rivers have meander migration problems and two have vertical degradation problems. Each river has shown erosion problems that have been a threat to the bridges, roads or farm lands. Aerial photos and maps from different years were obtained from different sources to study the change of the geometry of the rivers. River hydrographs were obtained from the U.S. Geological Survey to estimate the river velocity. Soil samples from each site were obtained for laboratory testing, using the Erosion Function Apparatus. A method to predict meander migration and vertical degradation was developed by using the three main factors: geometry, water flow and soil erodibility. A code was written in MATLAB and Excel to predict the future movement of the meander or the vertical degradation by using a model based on the erosion function obtained from the erosion tests of the soil at each site and the average daily velocity of each river. Because this method is based on observed data, it was called the Observation Method.

(xiii, 94 pages)

This report is available for free download (3.9 MB):

<http://tti.tamu.edu/documents/0-6724-2.pdf>

Research Digest

Item 16

Business Process and Logical Model to Support a Tour-Based Travel Demand

UNIVERSITY OF TEXAS AT AUSTIN. CENTER FOR TRANSPORTATION RESEARCH (CTR)
CTR 6759-1 • 2014

Changing modeling needs over the past few years, spurred by the evolving policy contexts of transportation planning and emerging technologies, have led the planning community to explore tour-based and activity-based modeling paradigms as an alternative to the traditional trip-based modeling paradigm. As a leading travel model practitioner, the Texas Department of Transportation (TxDOT) Transportation Planning and Programming Division sponsored an earlier study to synthesize tour-based modeling approaches in the country and identify potential benefits and costs of transitioning to this emerging modeling paradigm in Texas. Based on the results of that study, the current research effort developed a business case for a tour-based travel demand model system. The business case discusses the justification and need for a tour-based model, and includes a business process model and a logical data model that provide the step-by-step actions and procedures needed to support the design and development of a tour-based travel model. The business case not only justifies the need for tour-based models, but also proactively identifies potential challenges and constraints that may arise in implementation, and provides pathways to address them. It also addresses the need to continue to operate trip-based models in parallel with tour-based where needed or required, and assesses any impacts of tour-based modeling on the Technological Services Division of TxDOT. Although TxDOT has not yet transitioned towards a tour-based modeling approach, the current study can facilitate the model's implementation if TxDOT decides to move forward. ([xii], 79 pages)

This report is available for free download (655 KB):

<http://library.ctr.utexas.edu/ctr-publications/0-6759-1.pdf>