

# Focus on Research

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"Focus on Research updates engineers and technicians on items of interest upcoming in active TxDOT research projects."

## CTR Study Evaluating Potential for Additional State Toll Roads

Project 0-1322, *An Evaluation of the Status, Effectiveness, and Future of Toll Roads in Texas*, will critically evaluate toll road opportunities made available through federal (ISTEA) legislation. Based on this evaluation, the project will recommend to TxDOT ways of providing additional toll roads within the Texas transportation system.

The project will first inventory toll road experiences within Texas; next, it will identify conditions necessary for successful operations, identify infrastructure links where toll roads would benefit users, conduct a series of surveys with motorists and trucking operators, and then develop concise recommendations for toll road infrastructure in Texas.

The data collected in this project will identify for TxDOT those toll

road locations most strategic for Texas motorists. The implementation of findings and recommendations will be available at project completion. This project runs from February 1993 through August 1996.

**Area A — PD: Peggy Thurin, P.E., TPP**

**Researchers: Dr. Randy Machemehl, Mr. Mark Euritt, Mr. Rob Harrison, and Dr. C. Michael Walton, CTR**

## Rumble Strip Guidelines Studied

Project 0-1466, *Guidelines for Use of Rumble Strips*, will design guidelines and standards for rumble strips for areas across Texas. The researcher will achieve this objective by undertaking a literature search; by developing guidelines, specifications, and installation standards; and by developing methods by which to maintain rumble strips on highways.

This study will improve safety by alerting drivers to road boundaries, thereby reducing accidents. The rumble strip manual developed in this project will be used as a standard for the installation of rumble strips throughout Texas. This project runs from September 1994 through August 1995.

**Area 3 — PD: Chris Hehr, ATL**

**Researcher: Dr. Warren K. Wray, P.E., Texas Tech**

## HOV Projects in Texas Assessed

In an effort to enhance TxDOT's planning, design, and operation of its high-occupancy vehicle (HOV) facilities, Research Project 0-1353, *An Evaluation of HOV Projects in Texas*, is assessing all HOV projects currently being implemented by the agency. In addition, the project is monitoring the status of all priority treatment projects and providing assistance as needed by TxDOT on park-and-ride facilities. Expected benefits include:

- increased people-moving capacity on existing freeways;
- reduced air pollution;
- reduced energy consumption;
- reduced parking requirements at activity centers; and
- effective use of limited federal, state, and local tax dollars (both highway and transit).

The findings of this study will be used by TxDOT to develop additional HOV facilities. Already, several ongoing HOV planning studies in Texas are using the project's findings, and information from the special air quality assessment will be used in numerous reports now being prepared by agencies across Texas. This project got underway in September 1993 and will end in August 1998.

**Area 1 — PD: Alvin Luedecke, Jr., P.E., TPP**

**Researcher: Dr. Dennis L. Christiansen, P.E., TTI**

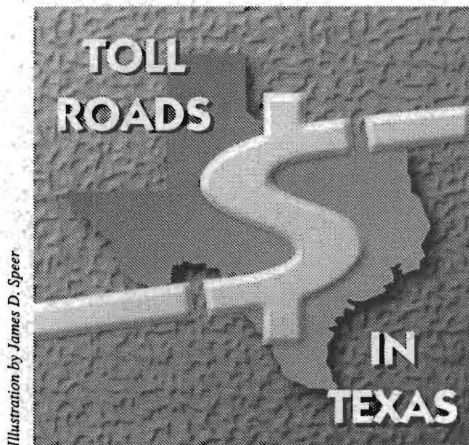


Illustration by James D. Speer



Research and  
Technology Transfer  
Office, in cooperation  
with the FHWA

# Researchers Focus on Epoxy-Coated Bar Performance

Epoxy coatings have been used successfully in many applications to deter deterioration of the reinforcement in concrete structures in highly corrosive environments. However, significant premature deterioration has been noted on fabricated and straight bars as well.

The purpose of Study 0-1265, *Structural Integrity of Epoxy-Coated Bars*, is to evaluate the performance of coated reinforcement under simulated structural and corrosive environmental conditions typical of those found in the real world. The specific research objectives include the following:

1. identify problems associated with deterioration of coated and uncoated bars in transportation structures in Texas;
2. sample coated bars used in the construction of structures;
3. establish an experimental program to determine the rate of deterioration of a fabricated reinforcement under a load; and
4. provide guidelines for improving epoxy-coated reinforcements in transportation structures.

This project hopes to identify the conditions that lead to coated reinforcement deterioration. In this way, designers will be able to maximize the service life of structures in a corrosive environment by taking proper precautions in their design, fabrication, construction, and maintenance. Ultimately, the researchers will develop and publish guidelines for improved coated-bar performance.

"The project is doing very well,"

reports Project Director Lloyd Wolf. "The researchers are doing a very good job. We have seen a marked improvement in the quality of epoxy-coated rebars delivered to TxDOT job sites during the course of the project."

The researchers have requested a 2-year extension to continue beam tests and extend the corrosion cell monitoring program. They will also evaluate several specimens of patching materials, as part of their effort

to develop more effective patching techniques. Finally, the researchers plan to assess rebar damage occurring during shipment, storage, and placement, and to evaluate hot water immersion tests. This project got underway in August 1990 and will end in September 1996.

**Area 4 — PD: Lloyd Wolf, P.E., DES**

**Researchers: Drs. J. O. Jirsa, P.E., and R. L. Carrasquillo, P.E., CTR**

## Study To Expand TxDOT Recycling Program

As part of its commitment to recycling, the Texas Department of Transportation is exploring the possibility of using recycled materials for the manufacture of roadside safety devices. Candidate systems or system components include energy absorbing elements in crash cushions, mailboxes and mailbox supports, traffic barrier filler, delineator supports, and work-zone traffic control devices. Project 0-1458, *Recycled Material in Roadside Devices*, objectives are to (1) determine availability, cost, and properties of usable material; (2) identify existing available devices made from recyclable material (wholly or in part) and verify their properties and compliance to nationally recognized standards; (3) conceptualize new roadside safety system designs using recycled materials, and recommend the most promising designs; and (4) develop standards and specifications of acceptable designs.

The benefits that will result from

developing recycled-content roadside safety devices include mitigation of disposal problems and associated health hazards, conservation of non-renewable natural resources, cost reduction, and highway safety improvement. Results will include a user-friendly tabular evaluation of existing or commercially available products, along with recommendations for potential improvements or modifications. The researchers will prepare detailed performance specifications suitable for inclusion in TxDOT standards of successfully tested features. They will also identify potential applications of recycled materials in highway safety devices and will recommend specific designs of applications for future consideration. This project began in September 1994 and will end in August 1997.

**Area 2 — PD: Tom Elliott, RTT**  
**Researchers: Drs. Roger Bligh, P.E., Hayes Ross, Jr., P.E., and King Mak, P.E., TTI**

### Focus on Research

The purpose of **Focus on Research** is to update engineers and technicians on items of interest in active upcoming projects. The contents of the various articles do not necessarily reflect the official views of the FHWA or TxDOT.

Contact Kathleen M. Jones (512) 465-7947, Research and Technology Transfer Office, P.O. Box 5080, Austin, TX 78763-5080, for more detailed information.



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Texas Department of Transportation  
Office of Research and Technology Transfer  
P.O. Box 5080  
Austin, TX 78763-5080