

# NEWS



TRANSPORTATION RESEARCH BOARD

500 Fifth Street, NW  
Washington, DC 20001

For Immediate Release  
News Release

Date: January 19, 2007  
Contact: Russell Houston  
(202) 334-3252  
[rhouston@nas.edu](mailto:rhouston@nas.edu)

## 2007 FRED BURGGRAF AWARD WINNERS ANNOUNCED

The Transportation Research Board's Fred Burggraf Award, which recognizes excellence in transportation research by researchers 35 years of age or under, will be presented to the authors of three award-winning papers on January 22, 2007, at the Thomas B. Deen Distinguished Lecture and Presentation of Outstanding Paper Awards during the Board's 86th Annual Meeting. The recipients are Hao Tang of Federal Express Corporation and Elise Miller-Hooks of the University of Maryland; Jason Weiss and Gaurav Sant both of Purdue University, and Pietro Lura of the Technical University of Denmark; and Paolo Perco of Trieste University, Italy. The Burggraf Award, which includes a cash prize, was established in 1966 to stimulate and encourage young researchers to contribute to the advancement of knowledge in the field of transportation. The award was named in honor of Fred Burggraf, who served as TRB's Executive Director from 1951 until his retirement in 1964.

The first of the award-winning papers, prepared by Tang and Miller-Hooks, is titled "*Interactive Heuristic for Practical Vehicle Routing Problem with Solution Shape Constraints.*" The paper has been published in *Transportation Research Record: Journal of the Transportation Research Board*, No. 1964.

The award-winning paper defined the vehicle routing problem (VRP) with solution shape constraints and proposed an interactive heuristic as the solution. Numerical experiments were conducted on real-world data to assess the proposed heuristic. Results of the experiments show that the heuristic, coupled with effective shape measures, is able to provide solutions with significantly improved layout while maintaining satisfactory results for conventional VRP measures.

Hao Tang is a Senior Operations Research Analyst at the Federal Express Corporation. He holds a master's degree in engineering from Tsinghua University, China, and a Ph.D. in civil engineering operations research from The Pennsylvania State University. Tang's primary areas of interest are transportation network optimization, logistics systems analysis, freight and intermodal transportation, intelligent transportation systems, operations research methods, and global positioning system applications. A member of several professional and technical organizations, Tang also serves on TRB's Committee on Transportation Network Modeling.

Elise Miller-Hooks is an Associate Professor of Civil and Environmental Engineering at the University of Maryland, and an affiliated faculty member with the Engineering and Public Policy Program. She holds a master's degree in engineering and a Ph.D. in civil engineering, both from the University of Texas at Austin. Miller-Hooks' primary research interests are in optimization and mathematical modeling of transportation systems, stochastic and dynamic network algorithms, routing and scheduling, emergency response and no-notice evacuation, inter-modal goods transport, hazmat transport, and collaborative and multi-objective decision making. Her research results have been published in several journals, including the *Transportation Research Record: Journal of the Transportation Research Board*. She is a member of TRB's Committee on Transportation Network Modeling.

The second of the award-winning papers, prepared by Sant, Lura, and Weiss, is titled "*Measurement of Volume Change in Cementitious Materials at Early Ages: Review of Testing Protocols and Interpretation of Results.*" The paper has been published in *Transportation Research Record: Journal of the Transportation Research Board*, No. 1979.

Many unrestrained shrinkage-testing protocols do not provide a comprehensive picture of the early-age shrinkage exhibited by cementitious materials, especially those used in higher-strength concrete. The authors of the award-winning paper revisited several early-age shrinkage testing procedures and presented a testing protocol to demonstrate how chemical shrinkage can be measured using buoyancy measurements. Measurements of autogenous shrinkage are compared with the chemical shrinkage tests to illustrate early-age length change. The results, through careful experimentation and interpretation, can provide the end-user with reliable test procedures to compare different paste compositions, different admixtures, and inputs for models that quantify the cracking potential.

Jason Weiss is an Associate Professor of Civil Engineering at Purdue University, the Assistant Head for Research in the School of Civil Engineering, and the Associate Director of the Center for Advanced Cement-Based Materials. He holds a B.A.E. degree from The Pennsylvania State University, and a master of science degree and a Ph.D., both from Northwestern University. Weiss is active in research on cement and concrete materials, including the development of new testing procedures to test the behavior of concretes as they transition from fluid materials into solids. He has developed software to predict the potential for restrained shrinkage cracking and is engaged in the development of procedures to measure and predict fluid transport in pristine and damaged concrete.

Gaurav Sant is a graduate research assistant at Purdue University. He holds a BSCE degree from Purdue University and is currently pursuing a master's degree in civil engineering with an emphasis in cement and concrete materials. Sant's research interests involve early-age properties of cementitious systems, including free and restrained volume changes, stress development and cracking, and the development of testing methodologies to identify the fluid-solid transition in cementitious systems.

Pietro Lura holds a master of science degree from the University of Brescia, Italy, and a Ph.D. from the Delft University of Technology, The Netherlands. He is with the European Patent Office in Munich, Germany. Previously, he was an Assistant Professor at the Technical University of Denmark and has served as a visiting researcher at both the National Institute of Standards and Technology and Purdue University. Lura's research interests include early-age concrete, particularly autogenous strain and internal curing. He has developed new models and new

measuring methods for early-age volume changes and cracking of cementitious materials. In the field of internal curing of concrete, Lura's contributions include fundamental studies, development of new advanced materials, and mixture proportioning in view of practical industrial applications.

The third award-winning paper, prepared by Paolo Perco, is titled "*Desirable Length of Spiral Curves for Two-Lane Rural Roads.*" The paper has been published in *Transportation Research Record: Journal of the Transportation Research Board*, No. 1961.

A potentially negative effect of the use of spiral curves in transition design—a long spiral transition on the driver's curve perception and safety—has been confirmed by analysis conducted on paths surveyed along 12 transitions with and without spiral curves. The award-winning paper describes the development of a model to estimate the desirable spiral length for transitions of sharp horizontal curves on two-lane rural roads. The model, which was developed from data collected in three studies, starts at the radius of the impending curve to calculate the desirable spiral length and provide a good description of real driver behavior. The results also demonstrate that the estimated spiral length is consistent with the real distance traveled by the vehicle, ensuring optimal operating conditions for drivers.

Paolo Perco is a research fellow in the Department of Civil and Environmental Engineering and a contract professor at Trieste University. He holds a master's degree in civil engineering, with a specialization in transportation engineering, and a Ph.D. in road infrastructures from Trieste University. Perco's principal areas of interest are geometric design, highway safety, traffic operations, and human factors. He has served as project leader for several highway and motorway projects for the S.p.A. Autovie Venete Company and as an investigator for numerous research studies. Perco is registered in Italy as a professional engineer and a construction safety professional.

More than 10,000 policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions are expected to attend the Transportation Research Board (TRB) 86th Annual Meeting, in Washington, DC, January 21-25, 2007. The meeting, held at the Marriott Wardman Park, Omni Shoreham, and Hilton Washington hotels, includes more than 2,800 presentations in 500 sessions, 75 workshops, and 400 TRB committee meetings covering all aspects of transportation.

TRB's mission is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, TRB facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation. A major focal point of TRB's activities, the Annual Meeting provides an opportunity for transportation professionals from all over the world to exchange information of common interest.

Organized in 1920, TRB is a division of the National Academies, which include the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council. The nation turns to the National Academies for independent, objective advice on issues that affect people's lives worldwide.

###