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Mack Nuggets, Spring 2009

Mack-Blackwell National Rural Transportation Study Center (U.S.)

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Mack Nuggets

Jack Buffington Retires

Featured Stories

- Associate Director retires
- Research Spotlight: Acceleration Lane Design for Higher Truck Volumes
- Advisory Board Spotlight: Wesley Kemp, COO

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L - Dan Flowers, Director of AHTD, presents Jack Buffington with a proclamation at his retirement party
R - Jack's Hog Cake



When someone mentions the name "Jack Buffington", you receive many positive responses but the common theme is that he is the most down-to-earth person you will ever meet. Jack has a positive impact on everything he does – from small town youngster to Navy Admiral to MBTC Associate Director.

Jack is from Westville, Oklahoma his father was in the world champion rodeo at Madison Square Garden with Roy Rogers in 1943 and 1944. One of Jack's fondest memories as a small child was when he was given a saddle by Bob Wills. These are just a few of the events that formed Jack as a young boy. Jack graduated from the University of Arkansas in 1961 with a Bachelor of Science degree in Civil Engineering. He received his Masters of Civil Engineering from Georgia Tech in 1968 and graduated from the Armed Forces Staff College in 1976. Jack spent 34 years

in the Navy Civil Engineer Corps and rose to the positions of Chief of the Engineers for the Navy, Commander of the Naval Facilities Engineering Command and Chief of the Civil Engineer Corps in charge of navy contracting and public works worldwide. He also represented the 24,000 active and reserve Seabees in the Navy.

Jack has been with the University for 13 years as Director, Associate Director and Interim Director of MBTC and in his directorial positions with MBTC, he managed studies for federal, state and local agencies and private. Jack serves on the executive committee for the Council of University Transportation Centers (CUTC) with the Department of Transportation (USDOT) and his work with these departments has been invaluable to MBTC and the transportation community. Robin Kline of the USDOT Research & Innovation Technology Administration said, "Jack has

been a spark of light in the UTC program ever since I began working here back in 1998. His life experience, related or unrelated to the program, is something that I've consistently learned from in the 11 years I've known him, and I've never left a conversation with Jack where I didn't feel I learned something new or valuable. Ever."

Jack is a past president of the National Academy of Construction, a member of the National Academy of Engineering, past president of the Arkansas Academy of Civil Engineering, member of the National Society of Professional Engineers and American Society of Civil Engineers.

Jack taught construction management for many years at the University of Arkansas and received the 1999, 2002 and 2004 "Outstanding Service to Students Award" from the College of Engineering for counseling students and assisting with job placement.



Message from the Director



Dr. Heather Nachtmann

I am dedicating my message in this issue to Jack Buffington. As you read in our feature story, Jack has retired from our Center and University. It is not possible to describe how much he will be missed by me and everyone who interacts with the MBTC in this brief message. We are so fortunate that he has agreed to serve on our Advisory Board.

Think about attending a CUTC or UTC event and

then remember the joy of seeing Jack and having the opportunity to speak with him. Then imagine being able to do that every day. That privilege is why we are so sad to see him retire.

Every minute you spend with Jack is a valuable learning experience. His wisdom stretches from professional insights to engineering science. The most amazing thing about Jack is that he imparts all of this knowledge in the

most humble manner. Jack is the epitome of a true educator.

I am one of thousands of people who have personally and professionally benefited from knowing Jack and for that I will always be grateful. Every time I walk to a colleague's office instead of sending an impersonal email, I will remember him.

Congratulations, Jack! You are our hero.

Acceleration Lane Design for Higher Truck Volumes

Dr. James L. Gattis of the University of Arkansas recently completed a study titled "Acceleration Lane Design for Higher Truck Volumes." The objective of MBTC research project 2094/3003 was to examine the speeds reached at certain distances by trucks accelerating onto the main lanes of a freeway, and offer recommendations about the lengths of acceleration lanes needed for heavy vehicles to accelerate to speeds closer to the speeds on the main lanes. This would reduce the degree to which entering trucks disrupt freeway traffic flow as they merge into the main lanes and be applicable to locations such as commercial vehicle weigh stations and freeway interchanges near truck stops or industrial facilities.

Data were collected at four separate commercial vehicle weigh stations in Arkansas and one in southwest Missouri.

The effects that truck weight, freeway volume, and roadway grade had on the speeds of measured trucks were examined and compared among the data collection sites. From the data, mathematical models that predicted the average and 10th percentile speeds for tractor-trailer trucks at each of three grade-groups (slight downgrade, nearly level, slight upgrade) were developed.

Longer acceleration lanes are needed so that the majority of tractor-trailer trucks can accelerate and enter the flow of traffic on the freeway at a speed closer to that of the main lanes.

Based on data from this research, when a high percentage of tractor-trailer trucks are entering the traffic flow on a freeway with a speed limit of 65 mph, an acceleration lane length on the order of 2700 feet is required just to allow an average vehicle on a level grade to get within 10 mph of the posted speed before the entry ramp ends. A length of almost 3500 feet would be needed to accommodate the 10th percentile vehicle.

The data collected during this research project reflect actual tractor-trailer truck behavior. However, the scope of the project is limited the number of sites studied. This project did not consider all of the factors that influence the operations of tractor-trailer trucks on freeway entrance ramps, such as a

"Longer acceleration lanes are needed so that the majority of tractor-trailer trucks can accelerate and enter the flow of traffic on the freeway at a speed closer to that of the main lanes."



Hope Weigh Station Building and Static Scales

continued on page 5...

Distinguished Lecture Series

Kenneth H. Stokoe, II, Ph.D., P.E. was the featured guest speaker for the spring Distinguished Lecture Series. Dr. Stokoe is a professor in the Civil and Environmental Engineering Department from the University of Texas at Austin.

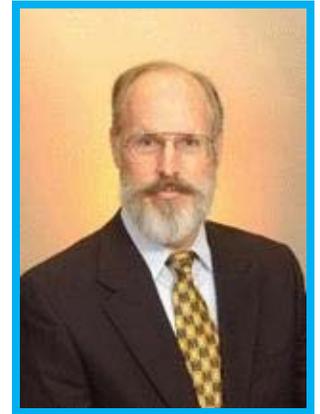
Dr. Stokoe's lecture entitled, "The Increasing Role of Seismic Measurements in Geotechnical and

Pavement Studies" was held on February 5, 2009 in the Combs Auditorium in the Bell Engineering Center.

Dr. Stokoe has been working in the areas of in situ seismic measurements, laboratory measurements of dynamic material properties, and dynamic soil-structure interaction for the past 38 years. Dr. Stokoe was instrumental in developing

the cross hole seismic method for in situ shear wave velocity measurement and he and his colleagues have also developed the Spectral-Analysis-of-Surface-Waves (SASW) method for non-destructive testing of geotechnical, pavement, and structural systems.

Many students and faculty as well as other interested parties attended his lecture.



Kenneth H. Stokoe, II, Ph.D., P.E.

MBTC Outstanding Student of the Year

Hugh R. Medal was selected as the 2009 Mack-Blackwell Rural Transportation Center (MBTC) *Outstanding Student of the Year* for his research and exceptional academic skills as well as his future goals as an educator. Hugh stated, "It was an honor for me to receive the student of the year award. I believe that it will have a positive impact on my planned career as a college professor."

Hugh also commented, "As research assistants, it is sometimes easy to see our efforts as insignificant. Receiving this honor made me feel that my work as a research assistant was appreciated."

Along with the monetary prize, Hugh was also given the opportunity to attend the CUTC Awards Banquet in Washington, D.C. and brought along his father as his guest to share in his experience. "The banquet was a good opportunity for me to

network with other people in the transportation industry and opened my eyes to how many people in government, industry, and academia are interested in transportation," Hugh declared.

Hugh is a doctoral student in Industrial Engineering at the University of Arkansas. He graduated from North Dakota State University with a B.S. in Industrial Engineering and Management in 2006.

Hugh's research interests are in modeling, simulation, optimization and its application to transportation and logistics problems. Hugh recently completed a master's thesis titled "Multi-Objective Simulation Optimization: A Comparison of Methods." Hugh examined the use of a variety of simulation optimization techniques on a multi-objective military transportation logistics

problem. Hugh's research for MBTC focused on routing models for rural transportation networks with time-varying constraints. The models developed focus on the transportation of live chickens in a rural poultry network with an emphasis on being able to deal with disease outbreak in the poultry industry in order to find alternate routes to reach their destinations without exposing the transported chickens to the potential disease. Hugh's research was published and presented at the Industrial Engineering Research Conference in May of 2008. Hugh is a model student with exceptional academic skills, a promising researcher, and an active student participant in a variety of student organizations.

Hugh's goal is to continue as a researcher and educator upon graduation.

"It was a great honor for me to receive the student of the year award. I believe that it will have a positive impact on my planned career as a college professor."



L to R – Paul Brubaker, Norman Y. Mineta, Randy Machemehl and Hugh Medal.

Center for Training Transportation Professionals



Ms. Roselie Conley, Ms. Mary Fleck,
Ms. Frances Griffith, Dr. Stacy Williams,
Ms. Carrie Pennington

The Center for Training Transportation Professionals (CTTP) recently formalized their arrangement with the Arkansas Highway and Transportation Department (AHTD), signing a three-year contract extension. CTTP will continue to offer regularly scheduled courses in Basic Aggregates, Portland Cement Concrete, Hot Mix Asphalt, Soils/Aggregates, and Concrete Strength Testing. Courses offered by request will include Roadway Construction Control, Concrete Patching, National Pollutant Discharge Elimination System (NPDES), and Bridge Scour.

CTTP certification in erosion and sediment control (NPDES) is now fully established. In this course, participants receive instruction in the basic principles of erosion and sedimentation, legal obligations relative to the recent Arkansas construction stormwater

permit changes, best management practices for minimizing stormwater pollution, and inspection procedures. The first pilot course was held in December, and generated a great deal of interest. As a result, a second pilot course was held in February and was attended by personnel from AHTD, ADEQ, local agencies, and industry. This course (NPDES) is now available upon request. Due to the significant need for this course, CTTP anticipates approximately seven NPDES course offerings to be scheduled in 2009.

In October 2008, CTTP hosted a pilot course in Stream Stability and Bridge Scour, which entailed a number of critical topics relating to the concepts of bridge scour and inspection methods for detecting significant problems affecting the integrity of bridges. The second phase of the course was held in March 2009, and focused on scour

monitoring, design methods for preventing the effects of scour, and countermeasures for mitigating the devastating effects of bridge scour. Due to its specialized nature, this class will be scheduled by request, with the initial course offerings expected in late 2009 or early 2010.

The staff members of CTTP continue to be involved in training and certification issues at the national level, holding key positions in a number of organizations and committees, including the American Concrete Institute, the American Society for Testing and Materials, the Transportation Coordination Curriculum Council, and the Southeastern Asphalt User Producer Group Training Task Group. Current issues within these organizations include regional and national certifications, mechanisms for reciprocity, and online training opportunities.



Training classes at CTTP



Transportation Research Board in Washington, D.C.

"TRB, an information-packed program, had nearly 600 sessions with more than 3,000 presentations addressing topics of interest."

The Transportation Research Board's (TRB) 88th Annual Meeting attracted more than 10,000 transportation professionals from around the world to Washington, D.C., January 10-15, 2009. MBTC Executive Director, Kevin Hall, Director, Heather Nachtmann, Associate Director, Jack Buffington, and Director of CTTP,

Stacy Williams attended the CUTC Annual Banquet and Awards Ceremony.

Dr. Williams presented her research at a podium session on Asphalt Pavements and also co-authored another on Pavement Design. Dr. Hall presented a poster on Gyration and Air Voids. He also presented a workshop on Pavement

Design and another on Structural Requirements. Dr. Heymsfield presented a poster on airfield work and Dr. James Gattis presented a paper on Speed and Travel Time.

MBTC faculty served on many committees such as Flexible Pavement, Surface Requirements, Transportation Earthworks, and Soil Mechanics.

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DOT invests in the future of transportation through its University Transportation Centers Program, which awards grants to universities across the United States to advance the state-of-the-art in transportation research and develop the next generation of transportation professionals.



The Research and Innovative Technology Administration (RITA) coordinates the U.S. Department of Transportation's (DOT) research programs and is charged with advancing the deployment of cross-cutting technologies to improve our Nation's transportation system and Mack-Blackwell is proud to be a participating university.

Kevin Hall, Ph.D., P.E.
Executive Director

Heather Nachtmann, Ph.D.
Director

Jack Buffington, P.E.,
RADM (Ret.)
Associate Director

Dana Ledbetter
Communications Director

Sandra Hancock CPS
Accountant

We're on the Web!

See us at:

www.mackblackwell.org

About Mack-Blackwell...

In our previous issues of *Mack-Nuggets*, we wrote about our previous directors. One area we have not touched upon is what happens behind the scenes.

Sandra (Sandy) Hancock CPS is the center's financial guru and has been with MBTC since its inception in May 1992. She is considered to be an expert in our field and is always willing to help others. As the financial manager of MBTC's UTC program, Sandy works tirelessly to ensure the MBTC DOT initiatives are successful from a budgeting perspective.

MBTC recently was named a member of the National Transportation Security Center of

Excellence (NTSCOE) with the Department of Homeland Security (DHS). Sandy stepped up and made the transition smooth for all MBTC personnel. She has played a vital role in working with numerous departments (research support, accounting, federal and state agencies), on and off campus, to keep our center on track.

Sandy is active in many professional activities. She is president of the Razorback Chapter of the International Association of Administrative Professionals (IAAP) and involved in many church activities such as Angel Food Ministries as well as learning Hebrew. She is

currently working on her master's in Operations Management in Industrial Engineering. Sandy has been married to Jeff Hancock for 15 years.

MBTC is grateful to have such a dedicated person looking out for our interests and keeping us on the right path.



Sandy Hancock CPS

Wesley Kemp, COO & President

For almost 40 years, Wes Kemp has been a figure of ABF Freight System, Inc. in Fort Smith, Arkansas. A recent article in the *Arkansas Trucking Report* chronicles his rise to President and Chief Operating Officer (COO). He began his career at ABF in 1969 as a management trainee and through hard work and dedication, made it to his current position as President and COO. According to the article,

Wes Kemp believes the gold rule works in his personal and professional life. This is one of Wes' many words of wisdom, "One thing my Dad always told me, in everything you do, always do more than the minimum. Always try to go the extra mile."

ABF is one of North America's largest LTL motor carriers. ABF provides direct service to more than 30,000 points through a network of more

than 300 service centers in all 50 states, Canada and Puerto Rico.

Wes has been a member of the MBTC Professional Advisory Board since its creation and is always available to lend his experience and knowledge to those in the transportation field.

Wes is married to Sharon Ann and they have two children, Wes II and Caroline.

Jack Buffington, associate director of MBTC, was awarded the prestigious Golden Eagle Award by the Society of American Military Engineers at a ceremony in Arlington, Virginia on March 27. The society is the premier professional engineering association in the United States for connecting architects, engineers and builders in the public sector and private industry, uniting them to improve individual and collective capabilities for national security.