Session 1 - Welcome and FHWA Program Updates

RPUG 2012 Speakers Bios and Abstracts

SESSION 1-0: ANITA BUSH (NVDOT-CHAIR OF RPUG) - MODERATOR

SESSION 1-1: DERRELL TURNER (FHWA-MN DIVISION ADMINISTRATOR)

- WELCOME

BIOS

Derrell E. Turner
FHWA Minnesota Division Administrator

On January 19, 2009, Derrell became the Division Administrator (DA) for FHWA's Minnesota Division Office. Prior to his promotion to DA, he served as the Assistant Division Administrator in FHWA's Arkansas Division Office for almost eight years. His hometown is Talladega, Alabama. After high school he attended the University of Alabama where he graduated in 1985 with a degree in civil engineering. While in college he was a member of the college's NCAA Track Team and worked for the Alabama Highway Department. Upon college graduation he was hired into FHWA's Highway Engineer Trainee Program (HETP). While in the HETP, Derrell worked in Tennessee, Colorado, Arizona, and Louisiana. As is the case with many of FHWA's employees upon graduation from the HETP in 1987, Derrell worked in numerous locations and positions with FHWA. These include:

- Area Engineer/Environmental Coordinator, Louisiana Division Office
- Project Development Specialist/NHI Instructor, HQ Office of Environmental Policy
- Division Operations Engineer, South Carolina Division Office
- Assistant Division Administrator, Arkansas Division Office

As the Division Administrator, Derrell and his multidisciplinary staff of 21 employees are responsible for administering the total Federal-aid Highway Program in Minnesota. On average the value of that program is just over $600Mper year. He provides guidance and direction to Mn/DOT and other transportation agencies/stakeholders in Minnesota on the implementation of the program in accordance with Federal laws, regulations, policies, and National transportation goals.

Derrell and his wife, Bernadette, have three children – Jeremy, Ethan, and Morgan. He is a member of Alpha Phi Alpha Fraternity Inc., a long/triple jump coach for

Track Minnesota, and attends Shiloh Missionary Baptist Church in St. Paul where he sings in the Men's Choir.

SESSION 1-2: TOM VAN (FHWA)

- FHWA MAP–21

BIOS

Thomas Van works with the Federal Highway Administration in the Office of Asset Management in Washington, DC. His focus areas include pavements, management systems, asset management and pavement preservation. He has been with the agency for 19 years, has a Masters Degree in Civil Engineering, and is a Registered Civil Engineer.

ABSRACT

N/A

SESSION 1-3: BOB ORTHMEYER (FHWA-RC)

- FHWA PAVEMENT SURFACE CHARACTERISTICS (PSC) AND PROFILE POOLED FUND PROGRAMS

BIOS

Experience:

- Began working in field in 1978
- Nine years with North Dakota State Highway Department
- Consultant in the private sector for 14 years
- Joined FHWA in 2001

Education:

- B.S.C.E., North Dakota State University
- Licenses and Registrations:
- P.E., North Dakota
- P.E., Minnesota

Areas of Expertise:

- Construction, Pavements, Pavement management, Asset management

Examples of recent projects done in support of the Division Offices

- Established and administering a $1.9 million pooled fund study, “Improving the Quality of Pavement Profile Measurement,” with support from 21 State agencies, the Office of Pavement Technology, Federal Lands and Division offices that will assist in building smooth roads; the study will provide a definition for a reference profile, build a reference profile device, supply a localized roughness module for ProVAL, and assist with strategies for verification sites.

ABSRACT

N/A

SESSION 1-3: ANDY MERGENMEIER (FHWA)

- FHWA- DEVELOPMENT AND DEMONSTRATION OF PAVEMENT FRICTION MANAGEMENT PROGRAMS

BIOS

Andrew Mergenmeier, P.E.
FHWA
Senior Pavement and Materials Engineer
Phone 410.962.0091
e-mail: andy.mergenmeier@dot.gov

Mr. Mergenmeier is a Senior Pavement and Materials Engineer with the FHWA’s Resource Center. His primary responsibilities include materials acceptance and pavement design and construction. He came to this position in 2007 after 7 years as Virginia DOT’s State Materials Engineer. At VDOT he was responsible for overseeing the Materials Division which included preliminary engineering and construction functions, such as, pavement design and materials acceptance programs. Before VDOT, Mr. Mergenmeier worked for the FHWA for 15 years in various locations throughout the country.

Mr. Mergenmeier is a Civil Engineering graduate from the University of Kansas, and a Registered Professional Engineer.

RPUG 2012 Speakers Bios and Abstracts

ABSRACT
N/A

SESSION 1-4: JUSTIN CLARKE (FHWA)

- FHWA HIGHWAY PERFORMANCE MONITORING SYSTEM UPDATE

BIOS

Justin Clarke joined the FHWA HPMS team in 2011. He has 12 years of GIS and data management experience in the fields of demographics and transportation. Justin's role at FHWA is primarily to support and review annual State HPMS submissions. Prior to joining FHWA, Justin worked as a transportation planner in Montgomery County, MD. Projects in Montgomery County included capital improvement tracking and mobility analysis integrating travel time, intersection performance and historical trend analysis for multiple modes of travel. Justin is a graduate of Carleton College in Northfield, MN and has a Master of Urban and Environmental Planning from the University of Virginia.

ABSRACT
N/A

Session 3 - RPUG workshops-PSC (1/2)

RPUG 2012 Speakers Bios and Abstracts

SESSION 3-0: JOHN ANDREWS (MD SHA) - MODERATOR

SESSION 3-1: STEVE KARAMIHAS (UMTRI)

- PSC 101 - ROAD PROFILE MEASUREMENT AND INTERPRETATION

BIOS
N/A

ABSRACT
N/A

SESSION 3-2: JOHN WIRTH (TXDOT)

- PSC 101 - TIRE-PAVEMENT NOISE

BIOS
N/A

ABSRACT
N/A

Session 4 - RPUG workshops-PSC (2/2)

RPUG 2012 Speakers Bios and Abstracts

SESSION 4-0: JOHN ANDREWS (MD SHA) - MODERATOR

SESSION 4-1: BRIAN SCHLEPPI (OHDOT)

- PSC 101 - TEXTURE AND TIRE-PAVEMENT FRICTION

BIOS

Brian grew up on a farm and still dabbles in agricultural activities. Brian is engaged to be married in 2013. He's been with ODOT 26+ years. He supervises the Infrastructure Management Section of the office of Technical Services. This section is responsible for all highway surface characteristic work at the agency and is heavily involved with Ride Quality Specifications, Friction Management, and Transportation Asset Management. Brian loves to sing with his buds in his A Capella Gospel quartet, SolaFide, as well as karaoke. He loves old tractors and old trucks and any opportunity to go hunting.

ABSRACT

N/A

RPUG 2012 Speakers Bios and Abstracts

SESSION 4-2: TOM HARMAN (FHWA-RC)

- PSC 101 - ROLLING RESISTANCE

BIOS

Thomas P. Harman
Pavement & Materials Technical Service Team (TST) Manager, Federal Highway Administration

Leader for the Office of Infrastructures, R&D in, McLean, VA.

- October 1997 FHWA Asphalt Materials Team Leader for the Roadway Applications Branch in McLean, VA.
- July 1990 FHWA Pavement Engineer/Project Manager for the Office of Technology Applications in Washington, DC. Responsibilities included conducting and managing the mobile asphalt laboratories for demonstration project 90, entitled, *"Superpave Mix Design & Field Management."*
- June 1989 Pavement Engineer for PCS/Law Engineer in Beltsville, MD. Responsibilities included pavement design, FWD analysis, software development, and PMS for airfields.
- June 1987 Director of Engineering & Marketing for the American Concrete Pavement Association in Arlington Heights, IL. Responsibilities included marketing development, training, software development, and technical support.

Education (Completion Dates)

- Dec 1985 Bachelor of Science in Civil Engineering, University of Maryland at College Park, *Major Areas of Study: Structures and Geo-technical*
- May 1987 Masters of Science in Civil Engineering, University of Illinois at Urbana-Champaign, *Major Areas of Study: Structures and Geo-technical*
- Spring 1990 Post Graduate Studies in Civil Engineering, University of Maryland at College Park, *Major Areas of Study: Elastic Layer Theory, Linear and Non-linear Modeling*
- Spring 1998 Post Graduate Studies in Civil Engineering, University of Maryland at College Park, *Major Areas of Study: Advanced Modeling of Pavement Systems*

Important Stuff: Married to Sharon since 1996, father of three Ashley, Corey, & Connor.

ABSRACT
N/A

Session 5 - MnRoad Program and Technical Tour

RPUG 2012 Speakers Bios and Abstracts

SESSION 5-0: BERNARD IZEVBEKHAI (MNDOT) - MODERATOR

SESSION 5-1: MAUREEN JENSEN (MNDOT) –

INTRODUCTIONS ON MNROAD PROGRAM

BIOS
N/A

ABSTRACT
N/A

Session 6 - Friction

RPUG 2012 Speakers Bios and Abstracts

SESSION 6-0: ERIC PRIEVE (CODOT) - MODERATOR

SESSION 6-1: ZOLTAN RADO (PSU)

- NEXT STEPS IN QUALITY CONTROL AND HARMONIZATION OF FRICTION MEASUREMENTS ON HIGHWAYS AND RUNWAYS

BIOS

Dr. Zoltan Rado is senior research associate at Penn State and the director of the Vehicle Systems and Safety Program and the Crash Safety Research Team at The Larson Institute. His research interests include advanced vehicle technologies and vehicle design: hybrid electric vehicles, alternative automotive fuels, automotive fuel cell research; transportation systems: advanced public transportation systems, intelligent vehicle systems, telematics and mobile wireless communication, intelligent vehicle highway systems; vehicle dynamics: vehicle surface interaction, dynamic frictional characteristics and braking; road surface characteristics; automotive safety: dynamic vehicle modeling and simulation, finite element analysis; and vehicle crash safety research.
Dr. Rado's applied research initiatives include the research design and build of a prototype low-speed road profiling equipment, special digital algorithms and filtering for inertial accelerometer and inclinometer systems for the use of road profiling and the research, design and development of ultrasonic and special "Light Slicing" measurement of surface texture and profiles; investigation of the feasibility of power production with Hybrid-Electric Vehicles; development of an integrated truck-based surface characteristics measurement system (for The Ministry of Transportation and Water Management, The Netherlands); investigation of frictional characteristics of transverse tined and longitudinal diamond ground pavement texturing for newly-constructed concrete pavement; research and implementation of PowerPark principle in hybrid-electric vehicles; research and demonstration of the feasibility of automotive hydrogen fueling applications; research and investigation of enabling logistics with portable and wireless technology; investigation of the braking and frictional behavior of a DC-10-10 aircraft involved in a runway overrun accident (Norway); real-time prediction of aircraft landing dynamics, braking friction and stopping distance from flight data recorder information; winter runway friction measurement research (sponsored by NASA, FAA, Transport Canada, EU); a multiphase project to research, define and develop the next-generation highway maintenance vehicle

(sponsored by Iowa DOT, Minnesota DOT and Michigan DOT); and the development of one-of-a-kind variable slip friction measurement research equipment. He has managed the integration, deployment, operational testing, analysis and review of advanced industrial automotive control and communications systems and operating support systems to evaluate performance and reliability, and managed product and system development for the automotive and aviation industries.
He has served as a reviewer for the Transportation Research Board, and is a recipient of the Soros Foundation Fellowship. He received a doctorate in mechanical engineering and an MBA from Penn State, and the M.Sc. degree from the Technical University of Budapest, Hungary.
Dr Rado presently serves as the leader of ASTM Committee E17's Group 3 on Pavement Surface Roughness and Profile."

ABSTRACT
N/A

SESSION 6-2: EDGAR DE LEÓN IZEPPI (VIRGINIA TECH)

- PSC POOLED FUND UPDATE AND LITTLE BOOK OF FRICTION

BIOS

Edgar de León Izeppi: Dr. de León has worked in the areas of pavement management and transportation engineering for over 20 years. He is currently a Senior Research Associate at the Center for Sustainable Transportation Infrastructure at VTTI working for the Pavement Surfaces Consortium and other multidisciplinary research projects that address end-result and performance oriented specifications for hot-mix asphalt (HMA). He completed doctoral research using non-contact methods to identify non-uniformities in HMA. He has performed extensive data collection for pavement structural and functional performance, as well as pavement life cycle cost analysis, pavement design and geometric design. He is a member of the Management of Quality Assurance (AFH20) TRB Committee since 2009.

ABSTRACT

RPUG 2012 Speakers Bios and Abstracts

To the forum that was first presented with a highway technical publication in this format, comes the “Little Book of Tire Pavement Friction” as it is presented to the highway community in what is being described as the 101 Session for Ride, Friction, and Tire/Pavement Noise at this 2012 Road Profilers Users Group (RPUG) annual meeting. This work could not find a better audience to be launched at than the RPUG meeting because of the extreme knowledge that all the attendees have with all of the areas of Surface Properties dealt with in this session. The authors would like to express their appreciation for this opportunity with the understanding that it is presented as a work in progress that still requires a lot of tweaking. This will hopefully happen after all the comments and reviews made by those in the audience and beyond are included to make it better.

The frictional properties of pavements have played a significant role in road safety. The proper understanding of the mechanisms of the friction between tire and pavement is considered a first step to contribute in reducing potential crashes. Drivers can execute maneuvers involving changes of speed or direction that develop forces at the interface in response to acceleration, braking, or steering. These forces in turn can cause reactions between the tire and the road (called friction), enabling vehicles to speed up, slow down, or track around a curve.

Car crashes are due to several factors: the driver, the vehicle, the environment, and the roadway infrastructure. Those factors caused by the roadway, where insufficient friction between the tire and pavement, is the concern of this book. It has long been recognized that, especially during wet weather conditions, this is one of the factors that can increase the risk of car crashes. Therefore, it is important for Departments of Transportation (DOTs) to monitor the friction of their pavement networks frequently and systematically. As more is being learned on this subject, it is now understood that the effect of texture, grade, cross-slope and the radius of curves are also very important in determining the adequate friction necessary in different segments of roads.

This document provides guidelines for state DOTs and highway agencies to effectively use tire-pavement friction, texture, grade, curvature, and cross-slope data to support asset management decisions. The principles of friction and texture are also explained in this document. Methods for measuring pavement surface friction and texture and other factors that can affect these measurement, are also discussed. The importance of friction in safety design of highways is also highlighted.

Session 7 - 3D scanning

RPUG 2012 Speakers Bios and Abstracts

SESSION 7-0: MAGDY MIKHAIL (TXDOT) - MODERATOR

SESSION 7-1: KELVIN WANG (OK STATE U) –

HIGHWAY SPEED 3D LASER IMAGING AT TRUE 1MM RESOLUTION

BIOS

N/A

ABSTRACT

A dramatic technological advancement in pavement data collection for surface condition has occurred through the use of 3D laser imaging technique which has been widely used in other industries in controlled environment. In the last two years for the 3D laser imaging technologies, the field-achievable 3D line rate in the transverse direction for pavement application was about several 1000s of profiles per second. This limitation translates to 4mm to 5mm resolution of the 3D data in the longitudinal direction, even though 1mm resolution is always maintained in the transverse direction.

This paper discusses difficulties that the research team led by the PI has overcome in the pavement application of the 3D laser imaging principle and how a sequentially triggered multiple 3D camera system can generate about 30,000 3D transverse profiles per second (30KHz) with 8 fully synchronized 3D cameras. This 3D line rate translates to over 60MPH data collection speed and true 1mm resolution in all three dimensions at that data collection speed. Further, the paper presents the performance of the new system called PaveVision3D Ultra that also integrates a 2D laser imaging sub-system that provides 1mm resolution 2D visual data on pavement surface. In all, a total of 10 high-performance 3D and 2D cameras are integrated along with line laser illumination to form the basis for the PaveVision3D Ultra sensors.

Lastly, preliminary data on using the new 30KHz sensors at true 1mm resolution at highway speed for condition survey, inertial longitudinal survey, macro-texture survey, and other surface characteristics are presented for both highway and airfield studies.

SESSION 7-2: JOHN LAURENT (PAVEMETRICS SYSTEMS, CANADA)

- USING 4000 POINT 3D TRANSVERSE ROAD PROFILES TO EVALUATE LONGITUDINAL PROFILES, IRI AND TO COMPENSATE THE EFFECTS OF DRIVER WANDER.

BIOS

N/A

ABSTRACT

This presentation will describe our progress in implementing the measurement of longitudinal profile by adding accelerometers to a 4000 point 3D transverse profiling system (LCMS). During this presentation we plan to show results for the cross-correlation and repeatability of consecutive profile measurements, we plan to compare our results to ground truth profiles (Surpro) and we intend to show that class 1 profiler status can be obtained using this system. We will demonstrate the importance of detecting the position of lane markings to compensate for driver wander. Results will show the possible improvements in repeatability when driver wander is corrected. Finally we will demonstrate the capacity of obtaining full lane coverage IRI maps or a pavement surface and discuss possible uses for this new type of data.

SESSION 7-3: JOHN FERRIS (VIRGINIA TECH)

- TERRAIN CHARACTERIZATION: MAKE EVERYTHING AS SIMPLE AS POSSIBLE, BUT NOT SIMPLER

BIOS

John B. Ferris, Ph.D. is an Associate Professor in the Mechanical Engineering Department at Virginia Tech, where he directs the Vehicle Terrain Performance Laboratory, and a Committee Member of RPUG. Dr. Ferris conducted research in vehicle dynamics and chassis development in the automotive industry for 15 years

before becoming a faculty member at Virginia Tech in 2005. His research expertise is in system dynamics and vibration, vehicle dynamics, stochastic modeling, physical system modeling, terrain characterization, and virtual proving grounds development.

Or, if you prefer, here is a long version...

Dr. Ferris spent 15 years researching chassis design, development, and advanced vehicle dynamics for Chrysler Corporation and ZF Lemförder before joining the Virginia Tech faculty in 2005. His expertise is in high-fidelity terrain topology measurement, statistical analysis, and stochastic (mathematical) modeling of terrain topology. Mathematically rigorous characterizations of terrain are developed from these stochastic models. These developments in terrain measurement and modeling and then used to improve vehicle performance by studying their interactions with the terrain.

As director of the Vehicle Terrain Performance Laboratory (VTPL), he has adopted a holistic approach toward research, investigating all aspects of vehicle-terrain interactions, and using a broad range of measurement, analysis, and modeling tools. Vehicles of interest include passenger cars and trucks, commercial and military vehicles, and motorcycles. Terrains that have been examined include highways, proving grounds, race tracks, and off-road terrain. Performance measures being investigated include ride, handling, durability, and mobility.

Professor Ferris serves as an Associate Editor for the American Society of Mechanical Engineers (ASME) Journal of Dynamic Systems, Measurement, and Control; Chair of the Automotive and Transportation Systems Technical Committee for the ASME; Chair of the Terrain Modeling Task Force for the Ground Vehicle Reliability panels for the Society for Automotive Engineers (SAE); Board Member for Academic Liaisons for of the Road Profile Users' Group (RPUG); and an editor for the International Journal of Vehicle Systems Modeling and Testing.

ABSTRACT

Engineers from many disciplines who work with pavement surfaces need to describe the overall physical characteristics compactly and consistently. Well established scalar characteristics (IRI and RMS) are the most compact representation, providing insight into the surface character, but limited because they are a single number. Alternatively, surfaces can be represented precisely by mathematical models defined by many parameters. Greater insight is gained, but

the representation is not compact. A long standing goal, therefore, is pursued in this work: to accurately characterize the principal physical characteristics of a surface with as few coefficients as possible.
Currently, surfaces can be decomposed into topological components (elevation, banking, crowning and rutting). Each component can be further decomposed by frequency content (long vs. short wavelengths). A mathematical model is applied to each bandwidth of each component; Autoregressive and Continuous-State Markov Chains are chosen as candidates. Several hundred parameters may be required to accurately describe this complete surface decomposition (reduced from the billion data points that may have defined the surface). For the k_{th} surface, this set of parameters can be written as a single vector, $\boldsymbol{p}_k$.
Presently, a method to estimate $\boldsymbol{p}_k$ using a few coefficients (consider three) is developed. A collection of surfaces is gathered and modeled, producing a set of parameter vectors. Singular Value Decomposition is used to identify the most important aspects of the parameter vectors and three orthonormal *basis* parameter vectors are developed: $\boldsymbol{q}_1, \boldsymbol{q}_2, \boldsymbol{q}_3$. The best estimate (in the least-squared error sense) for any $\boldsymbol{p}_k$ is a linear combination of these basis vectors: $\boldsymbol{p}_k \approx a_{1k}\boldsymbol{q}_1 + a_{2k}\boldsymbol{q}_2 + a_{3k}\boldsymbol{q}_3$. The resulting '*a*' coefficients is the projection of the parameter vector onto the three basis vectors, is the best estimate of the model parameters, and is proposed as the best compact characterization of terrain surfaces.

SESSION 7-4: ABBY CHIN AND MICHAEL J. OLSEN (OREGON STATE U)

- PAVING THE WAY FOR TERRESTRIAL LASER SCANNING ASSESSMENT OF ROAD QUALITY

BIOS
Abby Chin received her BS in Civil Engineering from Syracuse University before going to Oregon State for an MS in Civil Engineering. There she focused on Geomatics and Geotechnical Engineering and graduated this past June. This presentation is a result of her thesis research. Abby now works as a Survey Analyst at David Evans and Associates.

ABSTRACT

With the growing trend in use of 3D laser scanning technology for data collection, it is important to study the various potential applications of this revolutionary technology. A potential application is the determination of road roughness (e.g., IRI) at both large and small scales. At larger extents, terrestrial laser scanning (TLS) is compared to several current techniques to measure road profiles including digital levels, inclinometers, and inertial profilers. Since TLS is able to collect a large, dense set of data relatively quickly, this technology could provide states with an additional tool to both measure pavement roughness and collect as-built data for the entire roadway in one pass. TLS has the added benefit of being able to generate multiple profiles across the roadway efficiently.

At a fine scale, micron resolution 3D laser scanners can be utilized to determine the influence of asphalt mix designs on the surface texture of the pavement. Of particular interest is the selection of predominant aggregate size within the mix. Results showed that TLS can determine consistent elevation profiles and comparable IRI results to those from current methods. The elevation values collected within the profile were accurate within expected ranges. However, cross correlations, which take into account the location of the roughness and slopes, were poor, indicating that TLS is not an effective method to establish a reference profile. However, the TLS data provided both longitudinal and transverse profiles across the entire roadway, something that cannot be done efficiently with data from traditional techniques.

Session 8 - Pavement Evaluation Equipment

RPUG 2012 Speakers Bios and Abstracts

SESSION 8-0: LADONNA ROWDEN (ILDOT) - MODERATOR

SESSION 8-1: LI NINGYUAN (MTO, CANADA)

- EVOLUTION OF PAVEMENT CONDITION SURVEY, DATA COLLECTION AND PERFORMANCE EVALUATION TECHNOLOGIES – CANADIAN EXPERIENCE

BIOS

Dr. Li Ningyuan is currently with Ministry of Transportation of Ontario (MTO) as a senior pavement management engineer, and adjunct professor at the University of Waterloo, where he received his Ph.D. degree in 1996. He has over 30 years of experience in highway engineering and management, including pavement design, performance evaluation and maintenance management. Mr. Li has served many years for TRB sub-committees including Pavement Maintenance, Pavement Management; Monitoring and Evaluation. He is also a Steering Committee Member of Road Profiler User Group.

ABSTRACT

This presentation shares audience with over 30 years Ontario experience in evolution of pavement condition survey, data collection and performance evaluation technologies applied in managing pavement preservation and rehabilitation programs at provincial road network. The presentation covers three parts: 1) introduce the past and current approaches to conducting field survey and evaluation of pavement surface conditions, including manual or visual method, semi-automatic or video based data collection and evaluation method, fully automatic data collection and evaluation method, 2) discuss quality assurance of the three different pavement surface data collection and evaluation methods and their impacts on pavement management end results, such as pavement maintenance and rehabilitation programs and investment plans, 3) discuss some technical issues and needs identified for improvement in the future, including pavement condition index and calculation, pavement performance ranking, transition from manual and semi-automated to fully automated pavement distress condition survey, evaluation and reporting system.

RPUG 2012 Speakers Bios and Abstracts

SESSION 8-2: RICHARD WIX (ARRB) - A COMPARISON OF 2 AUTOMATED CRACK MEASUREMENT SYSTEM

BIOS

Richard joined the ARRB Group (formerly known as the Australian Road Research Board) in 1990 and since then has been involved in automated pavement data measurement, both as an equipment developer and in the collection of pavement condition data.

During this time, Richard has contributed to the development of Australian standards for automated pavement data collection and has had a keen interest in the verification of automated systems used to collect pavement condition data in Australia and overseas. Additionally, he has overseen many large scale automated data collection projects for each of the Australian State Road Authorities and a variety of international projects too, most recently in Malaysia and Vietnam.

He is presently a member of the ARRB's technical advisory group which is responsible for future developments in pavement data collection.

Richard is a frequent visitor to the RPUG and once again looks forward to being part of this year's meeting.

ABSTRACT

Monitoring pavement cracking is an important task for most road agencies as the ingress of water can lead to the rapid deterioration of the pavement. To assess the cracking across their networks road agencies often employ methods that require significant manual input whether that is a visual inspection, on foot or from the window of a vehicle, or by reviewing pavement images collected by an automated survey vehicle.
This presentation will compare the outputs from a trial undertaken earlier this year between two automated crack assessment systems, RoadCrack, a system designed and used extensively in Australia, and the LCMS unit distributed by Pavemetrics in Canada and other automated collections systems whose outputs were rated manually.

Session 9 - Profile Measurement and Analysis

RPUG 2012 Speakers Bios and Abstracts

SESSION 9-0: LADONNA ROWDEN (ILDOT) - MODERATOR

SESSION 9-1: JON PEARLMAN (U OF PITTEBURG)

- PEDESTRIAN PATHWAY ROUGHNESS

BIOS
N/A

ABSTRACT
N/A

SESSION 9-2: EMMANUEL FERNANDO (TTI)

- COMPARATIVE EVALUATION OF DIFFERENT LASERS FOR RIDE QUALITY MEASUREMENTS

BIOS

Emmanuel G. Fernando, PhD., P.E. Phone: (979) 845 – 3641
Sr. Research Engineer FAX: (979) 845 – 1701
309I TTI/CE Bldg. E-mail: E-Fernando@TAMU.EDU
Emmanuel Fernando is a registered Professional Engineer in the State of Texas. Over the years, he has actively worked with TxDOT engineers in developing and implementing smoothness specifications based on inertial profile measurements. In support of TxDOT's long-term efforts to implement profile-based smoothness specifications, Emmanuel established a facility at Texas A&M's Riverside campus for evaluating surface profilers, and oversees the operation of the equipment and inertial profiler operator certifications within the Texas A&M Transportation Institute. He is actively involved in research efforts related to developing construction and pavement management applications of inertial profiler data, smoothness specifications, and test protocols.

ABSTRACT

RPUG 2012 Speakers Bios and Abstracts

The Texas Department of Transportation (TxDOT) is implementing a smoothness specification based on inertial profile measurements. For quality assurance testing of hot-mix asphalt and Portland cement concrete pavements, this specification includes pay adjustment schedules that are tied to the international roughness index (IRI) determined from inertial profile measurements.
Since TxDOT began implementing its profile-based smoothness specification, technological developments have resulted in multi-point and wide-footprint lasers for non-contact height measurements. These developments came about in response to the observed effects of surface texture on IRIs determined from inertial profiles collected on certain textured pavements. Given that historical inventory data and acceptance criteria on pavement smoothness are largely based on tests made with single-point lasers, a need exists to establish the impact of different lasers on ride quality measurements. This presentation provides results from a comparative evaluation of IRI measurements made on a wide-range of textured surfaces with different lasers. Of particular importance to this investigation is verification of the ride statistics based on ground truth measurements to identify where changes might be needed to accommodate the use of wide footprint lasers for quality assurance testing of pavement smoothness under TxDOT's existing ride specification.

SESSION 9-3: THOMAS WAHLMAN AND PETER EKDAHL (RAMBOLL, SWEDEN)

- ESTIMATION OF STONE-LOSS ON NETWORK CONDITION SURVEYS BY USE OF MULTIPLE TEXTURE LASERS

BIOS

Peter Ekdahl has a Ph.D in Road and Traffic Engineering from Lund University in Sweden. He is the senior director of Ramboll RST and he is also the Ramboll Group coordinator for road survey, road management and road maintenance.

ABSTRACT

Precise surface texture has collected by use of multiple texture lasers in minimum 3 up to 5 transversal positions in network condition surveys with Laser RST by Ramboll since over 20 years. The Laser RST is a high performance measurement system with flexible data collection both in real-time as in post-processing of data. A new methodology to detect possible stone-loss or raveling has been developed by Ramboll. This method has successfully been used for large scale surveys of some 20.000km yearly in Finland. Ramboll has also performed network surveys in the Netherlands over the years 2006-2012. The road administration has put a request to substitute their current methodology of stone-loss detection by a new more precise methodology. The Ramboll methodology of stone-loss detection has now been modified to fulfill the demands in the Netherlands.
This presentation will present the new approach to determine stone-loss that has been developed for use in the Netherlands in condition surveys for the secondary road network.
The same methodology is also under evaluation to be used as in verification of new laid asphalt surface. The purpose of this is to determine the homogeneity of the asphalt layer by use of surface texture and to substitute or decrease the traditional testing methodology by core drilling.

RPUG 2012 Speakers Bios and Abstracts

SESSION 9-4: BUZZ POWELL (NCAT)

- PROFILER CERTIFICATION PROGRAM AT THE NCAT PAVEMENT TEST TRACK

BIOS

N/A

ABSTRACT

The Alabama Department of Transportation (ALDOT) became concerned that traditional profilographs used to adjust pay on highway construction projects were not producing statistically similar results. While confidence in traditional profile index devices came into question, numerous other technologies (lightweight profilers, high-speed inertial profilers, etc.) have been developed that present attractive options to both quality control and quality acceptance personnel.

A project was funded by ALDOT at the National Center for Asphalt Technology (NCAT) at Auburn University to provide the Department with a methodology to transition from the current profile index specification framework to a ride-based system that incorporates proven measurement technologies. Making this change necessitated two project deliverables. The first deliverable was a ride-based specification package that considered the successes and failures of other agencies via a comprehensive literature review. NCAT is working with ALDOT thereafter to refine the proposed specification package through preliminary interaction and trial projects.

Transition to the new specification necessitated a complementary program to evaluate the ability of both old and new technologies to generate reliable and meaningful data. The second project deliverable was the development of a ProVAL-based certification center at the NCAT Pavement Test Track in which profiling equipment and operators can be evaluated and certified. Regarding the equipment, certifications will be issued for both serial numbers and model numbers. Serial number certifications will be used to populate a qualified products list on which both public and private sector equipment purchases can be based. Model number certifications (with concurrent personnel certifications) will be used to provide confidence in project measurements made by specific deployed units.

This presentation will provide an overview of the development of ALDOT's new specification package and initial experiences with the ProVAL-based certification program at the NCAT Pavement Test Track.

Session 10 – Open Panel Discussion - Profiler Certification and Smoothness Specs

RPUG 2012 Speakers Bios and Abstracts

SESSION 10-0: JAMES WATKINS (MSDOT) – MODERATOR

5-min. quick updates from all panel members followed by questions from the audience.

SESSION 10-1: "DOC" ZHANG (LTRC)

BIOS

N/A.

SESSION 10-2: PETER VACURA (CALTRANS)

BIOS

N/A

SESSION 11-3: MIKE STENNETT (ORDOT)

BIOS

Mike Stennett, PE
Oregon DOT Assistant Pavement Materials Engineer

BS Civil Engineering 2001 from Oregon State University.

Worked for a Heavy Civil Marine Company until 2004, and then went to OR-DOT working out of a Construction Project Manager's Office. Joined OR-DOT

Pavement Services in 2008 in current position. Took over management of the profiler certification and contract smoothness program approximately 1 year ago.

SESSION 10-4: ALEX MIDDLETON (MSDOT)

BIOS

Alex is an Engineer-In-Training for the Mississippi DOT's Research Division and has been a part of the department for two years. His primary job is the implementation of Mississippi's new smoothness specification that will use Mean Roughness Index as opposed to Profilograph Index. He will also manage the DOT's new Profiler Certification program beginning in the next calendar year. Along with Smoothness Specification and Certification, he is Long Term Pavement Performance (LTPP) coordinator for the State of Mississippi.

SESSION 10-5: JOE WILSON (WIDOT)

BIOS

Joe Wilson is a lifelong River Rat, having grown up on the Wisconsin River near Lodi, Wisconsin. He is currently working for the Wisconsin DOT running the Department's Profiler Certification and Verification Program after having taken over the job duties of recently-retired Terry Treutel whom Joe would like to acknowledge deserves credit for getting the program up and running and graciously helping with Joe's transition to the position. In addition to the profiler work, Joe continues to provide the Department with non-destructive testing services such as the MIT Scan-2 device while also assisting in various pavement forensic investigations of early distress.
Joe graduated from the University of Wisconsin with a Bachelor's of Science Degree in Cartography in 1989. Among his previous work with the Department,

Joe developed a statewide GIS Highway Crash Analysis System, worked for a time as WisDOT's Aerial Photographer for the Surveying and Mapping Unit, operated the Department's Photolog van that was originally equipped with a 35mm motion picture camera and helped oversee that program's transition to digital data collection including gps. Joe then worked as a Research Analyst conducting various pavement related studies. Thus he has worked in a number of diverse positions within the Department over the past 21 years. Joe is determined to carry on and augment the foundation Mr. Treutel has laid with WisDOT's Profiler Program and is looking forward to making new acquaintances in the field of pavement profiling. His interests include hunting, fishing, camping and supporting his Wisconsin Badgers and World Champion Green Bay Packers.

SESSION 10-6: GARY MITCHELL (DYNATEST)

BIOS

Gary W. Mitchell is the Director of Sales and Marketing for Dynatest Consulting, Inc. covering the geographical areas of North, South, Central America, and African Countries South of the Equator. Before switching to the equipment production side of Dynatest he worked in the consulting division while completing his Bachelors of Business Administration at Texas A & M University. Prior to joining Dynatest, Gary worked eleven for the Texas Department of Transportation (TxDOT) in Roadway Maintenance, Construction, and Design. The last half of his time with TxDOT he was the District 17 Pavement Management Information Systems Coordinator. Gary was born in Hearne, Texas, a small town just north of College Station, Texas. He is married with no kids. When not working he and his wife enjoy cooking, entertainment, sports, and travel.