

MOVING FORWARD



“He who does not look ahead, remains behind.” (Spanish Proverb)

Ohio Department of Transportation, Office of Research and Development

2006 Volume 2

Prepping for the Future of Transportation Research

By: Ron Poole, ODOT Office of Communications

Success in business is about stretching the mind and embracing new ways of thinking about job duties, problems and challenges. New innovation is becoming a way of life, and anticipating the future is everyone's business.

Learning a new way of thinking about the future was the focus of the Research Advisory Committee (RAC) annual meeting for professionals in transportation research, held July 10 – 13 in Columbus, Ohio. The committee advises the Standing Committee on Research for the American Association of State Highway and Transportation Officials. ODOT was chosen to serve as host agency for the RAC meeting. This year's theme was "Transportation Research: From Your Doorstep to the Stars."

"For years, the 'bread and butter' of our field was solving the immediate problems right in front of us," said Monique Evans, administrator of ODOT's Office of Research and Development and organizer of the RAC annual meeting. "Now we are learning to work on the problems we will face not just five years from now, but in 15 or 20 years as well."

The meeting sessions explored the sharing of information as an important step in helping agencies better prepare for future challenges. Meeting attendants could listen to activity reports from national organizations conducting transportation research, such as the Federal Highway Administration, and the Research and Information Technology Administration, created under the latest transportation bill. These reports gave state and local agencies a chance to get a perspective on the country-wide concerns of transportation and to stimulate ideas on where they might focus their research. Members of the Online Computer Library Center in Columbus and the National Transportation Library were on hand to discuss the online tools available for agencies across the country to discover research results published by major universities and state agencies. Knowing how to access such information could save transportation researchers from duplicating efforts and help groups find answers to pressing problems.



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RFP for OEPA Permit Compliance

ODOT's Office of Research and Development is issuing a special Request for Proposals (RFP). By law, the Ohio Environmental Protection Agency (OEPA) may require anyone who disturbs one acre of land or more to furnish detention ponds. Due to safety concerns and escalating right-of-way costs, the Department has proposed the use of exfiltration trenches in place of detention ponds in urban areas. To ensure that highway runoff is being handled as effectively, if not better, in the trenches than the ponds and to meet the OEPA's National Pollutant Discharge Elimination System (NPDES) Construction Influent Guidelines Permit, the Department has agreed to conduct the following research studies:

PS-07-20 Vegetated Bio-Filter for Post Construction Storm Water Management for Linear Transportation Projects

PS-07-21 Exfiltration Trenches for Post Construction Storm Water Management for Linear Transportation Projects

To view the full RFP for these projects, visit our website at: <http://www.dot.state.oh.us/divplan/research/announcements/announcements.htm> and click on the link "**RFP for OEPA Permit Compliance.**" Formatting and submission requirements for proposals are also available on our website at <http://www.dot.state.oh.us/divplan/research/Forms/forms.htm>. Please note that these guidelines have been updated and differ from those in the RD&TT Manual of Procedures. **Be sure to follow the proposal formatting and submission requirements posted on our website.** An interactive budget form, which will calculate total costs, is also available on our website at <http://www.dot.state.oh.us/divplan/research/Forms/forms.htm>. **Be sure to use the budget form for standard proposals and not the budget form for OPREP submissions as they are different.**

Noncompliance with the formatting and submission requirements will disqualify proposals from consideration. The Department reserves the right to reject any and all proposals. If you have any questions about the formatting and submission requirements or desire additional clarification on either problem statement, **contact the Office of Research and Development at 614-644-8135 or via email at research@dot.state.oh.us.** Clarifications will be posted to the Announcements page of our website for everyone to access as they are made.

The deadline for consideration for this special RFP is **receipt by 4:00 PM on October 30, 2006. Absolutely no extensions will be granted to this deadline.** All items received after 4:00 PM on October 30, 2006 will not be considered. The Office of Research and Development will send a confirmation, via email, that submissions have been received. Proposals for research studies not listed above are not being accepted at this time.



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Aside from sharing research results, agencies can pool their resources together and collaborate on research projects. Presenters spoke about strategies for implementing new technologies and creating successful pooled fund projects.

Meeting sessions discussed specific ways in which state DOTs and local governments could work with each other across state lines, or with federal agencies, research groups and private companies.



“ODOT already uses its Web site and database mailings to inform the research community of our proposed research topics over the next five to ten years,” said Vicky Fout, an ODOT research contract manager who made a presentation at the seminar. “We are interested in getting feedback from other agencies, such as proposed project suggestions. This process gives other agencies a sense of where we are going in the future, and they can start thinking about ways we can all work together.”

The meeting included work sessions on ways to improve internal research and development programs. New managers were given an opportunity to talk with more experienced managers to learn

ways to better administer their programs. Meeting attendants also learned about innovations, including the airborne Light Detection and Ranging (LiDAR) system being worked on in the ODOT office of Aerial Engineering. LiDAR is a powerful remote sensing tool used to take land readings overhead for later use in making maps. ODOT is working in cooperation with The Ohio State University on developing and refining the system to take electronic readings of areas for project designs in ways that will be less costly and inconvenient to motorists.

The meeting devoted a full day to discussing ways to think strategically about upcoming challenges. The special guest speaker, Glen Hiemstra, spoke about transportation’s future as affected by larger forces like population changes and economics. An author and authority on future trends, Hiemstra told his audience the longer transportation organizations wait to think about change, the more difficult it will be to adjust for that change when it arrives. This is a message that is guiding ODOT’s research efforts.

“Identifying what our future priorities need to be – and the best way to prepare for them - is our constant challenge,” said Evans. “Along the way, we have to make certain people understand their roles in our common effort and have the tools and resources needed to perform those roles.”



For copies of speaker presentations and additional information, please see the meeting website at <http://www.dot.state.oh.us/aashtorac2006>.

Evaluation of ODOT Roadway/Weather Sensor Systems for Snow and Ice Removal Operations

Contributions By: Dr. Helmut Zwhalen, Ohio University

The Ohio Department of Transportation (ODOT) has initiated pretreatment as an integral part of a winter management strategy. In order for ODOT to develop the most effective plan for pretreatment, an in-situ study to provide data on decay of brine on trafficked pavement was needed. This study has been divided into five parts, and spans a period of five years. The current completion date is November 15, 2006. Completed portions of this report can be found on the Research website at: <http://www.dot.state.oh.us/research/Maintenance.htm>

Part 1: RWIS

The primary objectives of this phase were to assess the current state of practice and determine what sensor information should be collected by ODOT for making operational decisions. Specific tasks included determining whether or not the present pavement and weather sensors could be used more effectively together, and the conditions under which ODOT should install more of these integrated sensor systems based on benefit-cost analyses.

Recommendations for a statewide expansion of Ohio's RWIS network were made based on an extensive literature review, product review, lifetime cumulative cost comparison, survey of users and administrators, and site visits. Factors used to determine optimal RWIS station deployment included distance between existing RWIS stations in Ohio and surrounding states, declared snow days, and annual snowfall amounts in Ohio. Also recommended was the use of File Transfer Protocol (FTP) to work around proprietary system constraints, and placement of data from all vendors into a common database format. Although cost savings and benefits attributed to RWIS and anti-icing in the literature vary widely, there is a consensus that these systems do repay their costs in reduced maintenance costs and accident rates.

At a minimum, in addition to the RWIS stations already deployed in the Toledo, Columbus, and Cleveland areas, placement of 14 RWIS stations around the state was shown to be sufficient to meet basic statewide weather prediction and monitoring requirements. ODOT deployed considerably more RWIS stations to achieve a denser coverage encompassing all 88 counties in the state. The researchers recommended that exact sites should be chosen by district managers or personnel in consultation with meteorology and RWIS experts to give the district personnel an additional incentive to use the RWIS. Installations at locations with typical rather than extreme conditions were recommended plus each county garage should be equipped with a small weather station and simple pavement sensor near the station for the purpose of creating a weather conscious culture at the county garage level. The benefit of the RWIS network will come only if anti-icing methods are diligently applied using RWIS information. Performance measures for winter operations should be built into the maintenance system.

Part 2: RWIS Pavement Sensor Bench Test

Road Weather Information System (RWIS) pavement sensors from three vendors were evaluated under controlled conditions in a room-size climate chamber. One vendor supplied an active (cooling/heating cycle) sensor with an active-passive sensor as a combined system, and the other two supplied passive sensors. Each sensor was installed in a concrete block cut from a bridge deck and positioned in the chamber. The sensors were tested for accuracy and precision of temperature, freezing point determination, chemical percentage or index, surface status, and liquid depth, where appropriate.

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CPDs for Technical Project Review Sessions

The semiannual technical project review sessions for October 2006 are being scheduled. The Office of Research and Development has discussed the potential of offering Continuing Professional Development credits (CPD) for engineers and surveyors with the Office of Training. We are pleased to announce that the Office of Training has agreed to issue certificates for attendance at these sessions!

The technical project review sessions provide the opportunity to discuss the project's progress; a brief overview of the work proposed for current and future quarters; theoretical/analytical phases of the study; current/anticipated findings and their potential for implementation; and administrative matters such as funding, reporting, contractual obligations, etc. Typically, these sessions are scheduled for one-hour. Recognizing that a small portion of the review session will focus on the administrative/managerial aspects of the study as opposed to the technical merits, the certificate will reflect half an hour.

Neither the State Board of Registration for Professional Engineers and Surveyors nor ODOT pre-approves or guarantees CPD credits. It is the responsibility of each licensee to ensure that the courses they take meet the requirements specified in the Ohio Revised Code 4733.151. For additional information on CPD requirements, please visit the website for the Board at <http://ohiopeps.org/cpd/index.html>.

The schedule for the October 2006 technical project review sessions is as follows:

Date	Time *	Project – Research Agency
October 11, 2006	1:00 PM	A Simple Test Procedure for Evaluating Low Temperature Crack Resistance of Asphalt Concrete – Ohio University
October 11, 2006	2:30 PM	Determination of Mechanical Properties of Materials used in the WAY-30 Test Pavements – Ohio University
October 12, 2006	10:30 AM	Innovative Method for Calculation of Freeway Travel Time Using Limited Data – University of Akron
October 12, 2006	1:00 PM	Evaluation of the Effectiveness of Strategic Initiative 9 Pilot Bridge Concepts – University of Cincinnati
October 13, 2006	1:00 PM	Dynamic Pile Testing Technology: Validation and Implementation – University of Akron
October 18, 2006	11:00 AM	Forces on Wingwalls from Thermal Expansion of Skewed Semi-Integral Bridges – Ohio University
October 20, 2006	9:00 AM	Crash Base Rates for Freeways/Reduction Strategies for Rear End Crashes – PDP Associates, Inc.

** All review session are located in conference room 2B of the ODOT Central Office building unless otherwise noted.*

Space is limited, so please contact Omar Abu-Hajar (614-752-5274 or Omar.Abu-Hajar@dot.state.oh.us) to reserve a seat. Please refer to the Announcements page of our website for updates to the schedule (<http://www.dot.state.oh.us/divplan/research/announcements/announcements.htm>).



Knowledge Management at OTEC 2006

By: Jenny Schnell, ODOT Library

The 60th meeting of the Ohio Transportation Engineering Conference (OTEC) will be held October 24-25, 2006 at The Greater Columbus Convention Center. This year's conference theme is *The Interstate System's 50th Anniversary: Mile Markers, Milestones, Miles to Go*. Of particular interest is the session on Knowledge Management titled: *From the Interstates to the Internet: Traveling the Information Superhighway*. Moderated by ODOT's library administrator, Janet Bix, the session will focus on the effects of knowledge management, transportation libraries, and the Internet on the transportation industry. Practitioners will learn how they can use tools transportation librarians have created to improve their research. The session will include presentations by Maureen Hammer, George Needham, and Maggie Sacco.

Maureen Hammer, PhD is a knowledge management officer for the Virginia Department of Transportation. Hammer's presentation, *Haven't We Been Down This Road Before? Capturing Lessons Learned and Critical Knowledge*, examines the past, present, and future of Virginia DOT's Knowledge Management Division. The VDOT Knowledge Management Division is charged with identifying experts, capturing lessons learned, supporting the development of best practices, capturing institutional knowledge and creating an environment for knowledge creation. With the looming retirements of 30% of the organization, the move to decrease the size of the organization and the shift to outsourcing, it is imperative to capture what has been learned to be more efficient and effective in the future.

George Needham is vice president of member services for OCLC Online Computer Library Center in Dublin, Ohio. Needham's presentation, *From Interstate to Internet: Increasing the Speed of Ideas*, will show how the growth of the interstate highway system parallels the growth of the information highway. According to Needham, libraries have moved from being isolated "Mom and Pop" operations to being nodes on an international grid of information and learning. This presentation will focus on how OCLC helps transportation engineers and others tap into this grid to manage their information needs more effectively.

Maggie Sacco is the Library Services Consultant for the Transportation Library Connectivity Pooled Fund Study. Sacco's presentation, *Transportation Information On-Demand: TKNs & The Transportation Library Connectivity Pooled Fund Study*, will show how the Transportation Library Connectivity Pooled Fund Study acts as a Transportation Knowledge Network. The Transportation Library Connectivity Pooled Fund Study has 11 study partners in 9 states. It is, in many ways, a prototype of the national TKN called for in TRB Special Report 284, *Transportation Knowledge Networks: A Management Strategy for the 21st Century*. The goal of the pooled fund study is to streamline library services and work cooperatively to maximize the information resources and services transportation libraries can offer to their customers.

For more information on the OTEC Conference, visit the website: <http://www.otecohio.org>. Questions about OTEC and registration may be sent to Terri Barnhart: terri.barnhart@dot.state.oh.us.



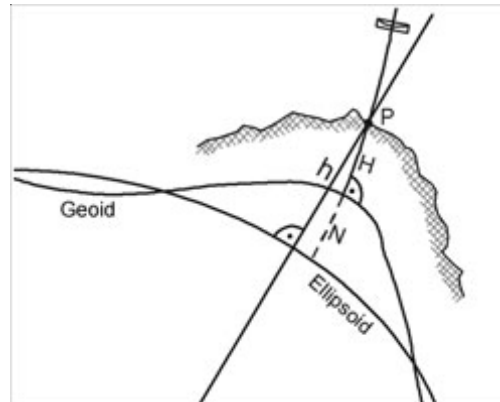
New OPREP Studies Selected for FY 2007

Two new research studies have been selected for Fiscal Year 2007 under the ODOT Partnered Research Exploration Program (OPREP).

The first study, “**Investigation of the Agreement of GEOID03 with Local Geometric GEOID Undulations, A Pilot Study for Height Modernization Activities in Ohio**”

was proposed by Dr. Dorota Grejner-Brzezinska of The Ohio State University. At present, GEOID03 (developed by the National Geodetic Survey) is the most recent and most accurate geoid surface for the U.S. However, it needs to be evaluated to determine whether it would serve as a suitable local geoid surface for the state of Ohio, or if a local geoid model may need to be considered. The Ohio Continuously Operating Reference Station (CORS) network used with an accurate geoid model in Ohio can constitute the foundation

of a modern state-wide vertical geodetic infrastructure. Such a system would facilitate orthometric height determination by anyone with access to GPS technology.



This project represents the first step to modernizing the height infrastructure in Ohio, which if implemented, will revolutionize the local surveying practice by eliminating the tedious labor and time-consuming leveling process. Overall, the new system will dramatically shorten the surveying data acquisition time, and will ultimately improve the competitiveness of Ohio businesses.



The second study, “**Demonstration of Innovative Techniques for Highway Safety Data Analysis**”

was proposed by Dr. Nancy Grugle of Cleveland State University. Numerous studies have shown that crash rates increase in work zones compared to the same road during pre-construction conditions. The precise reason why this occurs is still not clear. The objectives of this research are to use a macroergonomic approach to study the causes of work zone crashes, near crashes, and incidents to determine the primary causal factors, and to validate a high-fidelity driving simulator based on the findings of the naturalistic data.

This study expects to identify several behavioral, vehicular, environmental, and organizational factors that contribute to work zone crashes, near crashes, and incidents. In addition, the potential interaction between these factors will be better understood and clarified so that recommendations for improvements to work zone

safety countermeasures can be developed. Furthermore, the simulator will be sufficiently validated using the naturalistic data so that future ODOT projects can be conducted using a validated, low cost simulator. The simulator, model DS-600c, is manufactured by DriveSafety, Incorporated.

For further information on the OPREP program, please refer to the ODOT R&D Manual of Procedures at: <http://www.dot.state.oh.us/divplan/research/>.

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Results obtained for the three sensors varied considerably. Because of these results, none of the sensors in their current state was recommended for use at the present time.

Part 3: Optimization of Salt Brine Pre-Treatment Application Rates and Frequency

Objectives of this phase included a survey of other state DOT's pretreatment protocols, laboratory studies to discern brine concentrations that precluded ice formation, brine decay with traffic and time, and correlation of laboratory and field data.

In the laboratory, release temperatures of the ice/surface bond at various brine concentrations were obtained utilizing conductivity and physical observation techniques. Laboratory tests with the field brine measurement instrumentation (SOBO-20 by Boschung Mechatronic AG) provided correction factors for the field data on AC and PCC pavements.

Brine was applied at the standard rate and measured in-situ in mass per area at five field sites encompassing at least four sections at each site. Initial losses and decay due to time/traffic were obtained. Of the five test sites, AC (micro seal), AC (NOVA chip), and a transversely grooved PCC pavement provided statistically valid data to develop residual decay equations as a function of time/traffic. Field decay of brine was incorporated into laboratory brine/ice/specimen bonding temperature findings to determine the effective ice prevention temperatures as a function of time/traffic for AC and PCC at standard application rates.

Part 4: Optimization of Pretreatment or Anti-Icing Protocol

This phase addressed pretreatment protocol for winter maintenance of roadways using brine, further expanding on the work of Part 3. Information regarding pretreatment was assessed from surveys of personnel in state departments of transportation and county garages in Ohio. Field durability studies of various applications of brine were conducted on Portland cement concrete and asphalt concrete pavements in Ohio. Over three winter seasons, weather events and resulting pavement conditions were documented during pretreatment and during the subsequent events using visual and limited road grip tester (RGT) assessment. In addition, extensive laboratory studies were undertaken to supplement the field investigations. Integration of the findings resulted in a decision tree to aid in operational planning and pretreatment.



Part 5: Vehicular Speed Associated with Winter Pavement Conditions

The major objective of this phase was to develop a procedure to determine the level of service using the RWIS speed measurements. Average traffic speeds for five minute intervals were measured using Nu Metrics road sensors and related to the pavement and driving conditions. In addition speed data from two other studies were used. The pavement conditions were determined by conducting surveys at rest area

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buildings using a questionnaire form. It was found that the average traffic speeds were significantly lower during a major snow event even when periodic plowing and salting were conducted. The average speeds decreased almost linearly for the period of the snow storm, reached a minimum and then climbed back slowly towards normal speeds. The speeds appeared to be a fairly sensitive measure to judge the condition of the pavement. The motorist judgments about the pavement condition and driving safety during a winter storm are mirrored in the speed decrease. It appears from the survey that about two thirds of the motorists judge the deterioration of the road conditions and the inadequate level of road maintenance during a winter storm as bad or moderately bad. The responses obtained for the car and the truck drivers were fairly close to each other indicating that both groups can judge bad road conditions equally well. The observed road conditions appeared to influence the drivers in terms of how they subjectively feel about the level of safety and stress experienced when driving in the winter storm. A simple procedure was developed for winter maintenance management to determine the condition of the road based on the average speeds observed by the RWIS sensors. If the average winter speed of the traffic is equal to or greater than the historical established wet/salted pavement speed, the level of service is considered adequate. It should be noted that the winter pavement conditions can be highly dynamic. Depending on the rate of accumulation of snow, frequency of the snow plowing, length of the snow plow route, the pavement condition can improve and deteriorate a number of times during a winter storm. The level of service can get worse, even with maximum snow plowing and salting efforts in a situation with a high rate of snow accumulation. The winter speeds observed as a percentage of the wet/salted surface speed can be correlated with the level of service. A relatively more fine graduation of the level of service as a function of the percentage of the average wet/salted speed is proposed in the recommendations of the report. Level of service determination using dry surface speeds is also outlined in the recommendations of the report.

Effectiveness of RWIS Bridge Temperature Simulators

During Winter 2004-2005, a correlation study was undertaken of bridge deck simulator, air, bridge, and road temperatures at nine RWIS sites across Ohio that were equipped with both pavement sensors in the roadway and a bridge deck simulator (BDS). A brief survey of county garages indicated that BDS temperatures specifically and RWIS data in general were not highly regarded or widely used by county maintenance personnel.

Bridge and road temperatures were correlated to air and bridge deck simulator temperatures, and air temperatures were correlated to BDS temperatures. Nighttime results were significantly better correlated than results that also included daytime data with solar radiation, which was not measured by Ohio's RWIS. BDS temperatures generally correlated better with pavement sensor temperatures in both roads and bridges than did air temperatures.

Finite element methods were used to simulate bridge deck simulator and bridge temperature behavior under actual temperature gradient profiles for each site, and parameters were found that reached good agreement; however, simulation runs took several hours, so simulating temperature conditions on a bridge is unlikely to provide valuable real-time information.



Final Reports Available on the WWW

Final reports for research projects completed since 2000 are available on our website. Visit <http://www.dot.state.oh.us/research/default.asp> to get a copy of the following reports received since the last newsletter and many others:

Aerial

Topic 4: *Geo-Referenced Digital Data Acquisition and Processing System Using LIDAR Technology*, Ohio State University (February 2006)

Materials

Topic 9: *A Working Review of Available Non-Nuclear Equipment for Determining In-Place Density of Asphalt Pavement*, Ohio University (December 2005)

Pavements

Topic 38: *Cone Penetrometer Equipped with Piezoelectric Sensors for Measurement of Soil Stiffness in Highway Pavement*, Case Western Reserve University (November 2005)

Topic 39: *Truck/Pavement/Economic Modeling & In-Situ Field Data Analysis Application - Volumes 1 and 2* (total of 4 volumes expected), Ohio University (January 2006)

Topic 40: *Evaluation of Pavement Performance on DEL-23 - Interim Report*, Ohio University (January 2006)

Topic 41: *Investigation of Pavement Cracking on SR-4 and Demonstration of Multi-Head Breaker in Fracturing Reinforced PCC Pavement Before AC Overlay*, Infrastructure Management & Engineering, Inc. (May 2006)

Policy Development

Topic 1: *Freight Mobility, Access and Safety Strategies*, Cambridge Systematics Inc. (March 2006)

Roadway

Topic 1: *Development of an NCHRP Report 350 TL-3 New Jersey Shape 50-inch Portable Concrete Barrier*, Battelle Memorial Institute (June 2006)

Safety

Topic 6: *Evaluation and Design of ODOT's Type 5 Guardrail with Tubular Backup*, Battelle Memorial Institute (February 2006)

Structures

Topic 43: *Field Performance Evaluation of Multiple Fiber Reinforced Polymer Bridge Deck Systems Over Existing Girders - Phase II*, University of Cincinnati (October 2005)

Topic 44: *Transverse Cracking of High Performance Concrete Bridge Decks After One Season or Six to Eight Months*, University of Cincinnati (October 2005)

Topic 45: *Verification of Performance and Design Criteria for High Performance Steel Bridge Girders*, University of Cincinnati (January 2006)

Topic 46: *Further Use of Spread Footing Foundations for Highway Bridges*, Ohio University (April 2006)

Topic 47: *Evaluation of Stay-in-Place Metal Forms*, University of Toledo (May 2006)

Traffic

Topic 16: *Portable Bench Tester for Piezo Weigh-in-Motion (WIM) Equipment*, Athens Technical Specialists Inc. (June 2006)

Student Studies

The Department occasionally has the need to conduct a small research study that provides a solution to an immediate problem. Being of limited scope, the study may not warrant the time and expense required for a typical research project. In such a case, funds are made available to provide a supplement for a qualified graduate student to solve the problem under a Student Study.

In order to qualify as a Student Study, the study must address an ODOT need and be amenable to the development of a graduate thesis. The study must be completed within 12 months, and will receive a maximum amount of funding of \$10,000. Advisors for graduate students performing these studies will serve as Principal Investigators, but charges for their time are ineligible for reimbursement. Invoices are submitted as for any standard cost-reimbursement contract.

For further information and specific requirements of Student Studies, please see the ODOT R&D Manual of Procedures at <http://www.dot.state.oh.us/divplan/research>.

9th International Conference on Low Volume Roads

The 9th International Conference on Low-Volume Roads will be held June 24-27, 2007 in Austin, Texas. The conference will feature the latest international low-volume road topics and innovations of interest to transportation professionals such as safety improvements, environmental design, highway and road design best practices, innovative road surface treatments, and more. The conference is designed to benefit practitioners worldwide in both public and private sectors, including local, state, and federal agencies; universities; private industry; and international organizations. Transportation professionals who administer, plan, design, build, or maintain low-volume roads and bridges will learn innovative and improved ways of managing low-volume road systems.

For more information, please visit the conference website at www.TRB.org/Conferences/9LVR.

Calendar of Events

October - 2006

October - Program Offices update strategic research plans and prepare draft problem statements

October 4-6 - Ohio DOT Office of R&D Peer Exchange, Columbus, Ohio

October 9 - Columbus Day Observed - ODOT Closed

October 24-25 - OTEC 2006, Columbus, Ohio - For more information visit <http://www.otecohio.org/>

October 26-30 - AASHTO Annual Meeting, Portland, Oregon - For more information visit <http://www.transportation.org/meetings/annual>

October 30 - Proposal for OEPA Permit Compliance Due by 4:00 PM

November - 2006

November - RSC meets to prioritize problem statements for fiscal years 2008 and 2009 research program and select researchers for OEPA Permit Compliance RFP

November 11 - Veteran's Day Observed - ODOT Closed

November 23 - Thanksgiving Day Observed - ODOT Closed

December - 2006

December - Program offices modify draft problem statements for projects proposed for fiscal years 2008 & 2009 into requests for proposals to be bid in January 2007

December 25 - Christmas Day Observed - ODOT Closed

For information on TRB Sponsored Conferences and Workshops go to <http://trb.org/calendar>



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