

**SCHOOL OF CIVIL AND CONSTRUCTION ENGINEERING  
OREGON STATE UNIVERSITY COLLEGE OF ENGINEERING**

**SCHOLZ, TODD V., Assistant Professor**

**BIRTH DATE: January 19, 1963**

**DEGREES**

B.S., Civil Engineering, Oregon State University, 1987  
M.S., Civil Engineering, Oregon State University, 1989  
Ph.D., Civil Engineering, University of Nottingham, 1995

**PRINCIPAL AREAS OF INTEREST**

Civil Engineering Materials, Construction Equipment and Methods, Pavement Design, Mechanistic Analysis of Pavement Structures, Performance-Related and Performance-Based Specifications, Warranties, Quality Control/Quality Assurance, Pavement Management Systems, Geographical Information Systems, Life Cycle Cost Analysis, Monte Carlo Simulations, Engineering Software Applications Development.

**ACADEMIC POSITIONS**

Assistant Professor, Oregon State University, September 2005 - Present  
Assistant Professor, Michigan Technological University, August 2003 - May 2005

**NON-ACADEMIC POSITIONS**

Senior Engineer Intern, Kiewit Pacific Co., May 2005 - August 2005  
President, Roadworthy Research & Design, March 2000 - Present  
Senior Engineer, Nichols Consulting Engineers, March 1997 - March 2000  
Senior Engineer, PCS/LAW (MACTEC Engineering & Consulting, Inc), August 1996 - March 1997  
Research Assistant (Ph.D.), University of Nottingham, August 1992 - October 1995  
Research Engineer, Oregon State University, March 1989 - July 1992  
Research Assistant (M.S.), Oregon State University, September 1987 - March 1989  
Engineering Trainee, Oregon Department of Transportation, June - September 1987  
Engineering Technician, Federal Highway Administration, June - September 1986  
Engineering Technician, Federal Highway Administration, June - September 1985

**PROFESSIONAL ACTIVITIES**

**Registration**

Professional Engineer (Civil), State of Oregon, No. 16,079

**Committees**

Member, Bituminous Materials Committee, Construction Institute, American Society of Civil Engineers

**Societies**

Member, Association of Asphalt Paving Technologists  
Member, American Society of Civil Engineers

**AWARDS AND SCHOLARSHIPS**

Rees Jeffreys Research Fellowship, October 1995 - July 1996  
Worshipful Company of Paviers, 1992, 1993, 1994  
Ward K. Parr Scholarship, Association of Asphalt Paving Technologists, 1993

**PATENTS**

Co-inventor (with R.L. Terrel and S. Al-Swailmi) of the Environmental Conditioning System (U.S. Patent Number 5,365,793).

## PUBLICATIONS

### Refereed Publications

- Immanuel, S. S., Scholz, T.V., Rajendran, S., Shippen, N., and Hunt, L., "Field Forensic Investigation of Pavement Failures in the State of Oregon," submitted for presentation and publication at the 87<sup>th</sup> Annual Meeting of the Transportation Research Board, January 2008.
- James W. Boggs, R. Christopher Williams, Kris G. Mattila, and Todd V. Scholz, "The Pavement Enterprise – An Educational Partnership with Industry," submitted for presentation and publication at the 2004 North Midwest Regional Conference, American Society of Engineering Education, 2004.
- Todd V. Scholz, R.G. Hicks, and James Moulthrop, "Preventative Maintenance versus Reconstruction: Life Cycle Cost Analysis of Various Options," Proceedings, Ninth International Conference on Asphalt Pavements, *International Society for Asphalt Pavements*, Paper 4.2.2, Copenhagen, Denmark, August 2002.
- T.V. Scholz and S.F. Brown, "Rheological Characteristics of Bitumen in Contact with Mineral Aggregate," *Journal of the Association of Asphalt Paving Technologists*, Vol. 65, pp 357-384, 1996.
- T.V. Scholz, W.L. Allen, R.L. Terrel, and R.G. Hicks, "Preparation of Asphalt Concrete Test Specimens Using Rolling Wheel Compaction," *Transportation Research Record 1417*, pp 150-157, Transportation Research Board, Washington, D.C., 1993.
- R.L. Terrel, T.V. Scholz, A. Al-Joaib, and S. Al-Swailmi, "Validation of Binder Properties Used to Predict Water Sensitivity of Asphalt Mixtures," *Journal of the Association of Asphalt Paving Technologists*, Vol. 62, pp 172-222, 1993.
- D.F. Rogge, T.V. Scholz, R.G. Hicks, and D. Allen, "Asphalt Concrete Preservation with Cold In-Place Recycling," *Proceedings, Seventh International Conference on Asphalt Pavements*, Vol. Four, pp 94-106, Nottingham, August 1992.
- J.R. Lundy, R.G. Hicks, T.V. Scholz, and D.C. Esch, "Wheel Track Rutting Due to Studded Tires," *Transportation Research Record 1348*, pp 18-28, Transportation Research Board, Washington, D.C., 1992.
- D.F. Rogge, R.G. Hicks, T.V. Scholz, and D. Allen, "Use of Asphalt Emulsion for In-Place Recycled Asphalt Pavements in Central Oregon," *Transportation Research Record 1342*, pp 1-8, Transportation Research Board, Washington, D.C., 1992.
- D.F. Rogge, R.G. Hicks, T.V. Scholz, and D. Allen, "Case Histories of Cold In-Place Recycled Asphalt Pavements in Central Oregon," *Transportation Research Record 1337*, pp 61-70, Transportation Research Board, Washington, D.C., 1992.
- S. Al-Swailmi, R.L. Terrel, and T.V. Scholz, "The Development and Evaluation of a Test System to Induce and Monitor Moisture Damage to Asphalt Concrete Mixtures," *Transportation Research Board 1353*, Transportation Research Board, Washington, D.C., 1992.
- T.V. Scholz, R.G. Hicks, D.F. Rogge, and D. Allen, "Use of Cold In-Place Recycling on Low Volume Roads," *Transportation Research Record 1291*, Vol. 2, pp 239-253, Transportation Research Board, Washington, D.C., 1991.
- T.V. Scholz, D.F. Rogge, R.G. Hicks, and D. Allen, "Evaluation of the Mix Properties of Cold In-Place Recycled Mixes," *Transportation Research Record 1317*, pp 77-89, Transportation Research Board, Washington, D.C., 1991.
- T.V. Scholz, R.G. Hicks, and D. Allen, "Mix Design Practices for Cold In-Place Recycled Pavements," *ASTM STP 1079*, American Society for Testing and Materials, December 1988.

**Non-Refereed Journal Publications**

T.V. Scholz, S.B. Seeds, C.L. Monismith, and J.E. Epps, "Development of a Prototype Performance-Related Specification for Hot-Mix Asphalt Construction," *Journal of the Association of Asphalt Paving Technologists*, Vol. 70, pp 837-866, 2001.

**Conference Proceedings**

- Scholz, T.V., Huddleston, J., Hunt, E.A., Lundy, J.R., and Shippen, N.C., "Instrumentation and Analysis of a Perpetual Pavement on an Interstate Freeway in Oregon," *International Conference on Perpetual Pavement*, September 2006.
- T.V. Scholz and S.F. Brown, "Factors Affecting the Durability of Bituminous Paving Mixtures," *Proceedings, Performance and Durability of Bituminous Mixtures*, pp 173-190, E & FN Spon, London SE1 8HN, 1996.
- T.V. Scholz and S.F. Brown, "Effect of Mineral Aggregate on the Rheological Character of Bitumen," *First European Workshop on the Rheology of Bituminous Binders*, organized by Eurobitume, Brussels, April 1995.
- S.F. Brown, K.E. Cooper, J.M. Gibb, J.M. Read, and T.V. Scholz, "Practical Tests for Mechanical Properties of Hot-Mix Asphalt," *Proceedings, Sixth Conference on Asphalt Pavements for Southern Africa*, December 1994.
- R.G. Hicks, T.V. Scholz, and D. Allen, "Use of Cold In-Place Recycled Asphalt Mixes for Road Surfaces," *Proceedings, Fifth Conference on Asphalt Pavements for Southern Africa*, June 1989.

**Technical Reports/Other Publications**

- Jon A. Epps, Adam Hand, Steve Seeds, Todd Scholz, Colin Ashmore, Carl L. Monismith, John A. Deacon, John T. Harvey, and Rita Leahy, "Recommended Performance-Related Specifications for Hot-Mix Asphalt Construction: Results of the WesTrack Project," *NCHRP 455*, National Cooperative Highway Research Program, Washington, D.C., 2002.
- S.F. Brown and T.V. Scholz, "Permanent Deformation Characteristics of Porous Asphalt Determined in the Confined Repeated Load Axial Test," *The Journal of the Institution of Highways and Transportation and IHIE*, Vol. 45, No. 12, pp 7-10, December 1998.
- "Durability of Bituminous Paving Mixtures," *Doctor of Philosophy Thesis*, University of Nottingham, October 1995.
- "Design and Testing of Bituminous Mixtures," (with S.F. Brown and J.M. Read), Second Final Report, Department of Transport/Engineering and Physical Sciences Research Council LINK Programme on Transport and Operations, Department of Civil Engineering, University of Nottingham, October 1995.
- "Design and Testing of Bituminous Mixtures," (with S.F. Brown, J.M. Gibb, J.M. Read, and K.E. Cooper), First Final Report, Department of Transport/Engineering and Physical Sciences Research Council LINK Programme on Transport and Operations, Department of Civil Engineering, University of Nottingham, January 1995.
- "Water Sensitivity: Binder Validation," (T.V. Scholz, R.L. Terrel, A. Al-Joaib, and J. Bea), *SHRP-A-402*, Strategic Highway Research Program, National Research Council, Washington, D.C., 1994.
- "Literature Review on Durability of Bituminous Mixtures," (with S.F. Brown), Special Report, *PGR93037*, Department of Transport/Engineering and Physical Sciences Research Council

- LINK Programme on Transport and Operations, Department of Civil Engineering, University of Nottingham, December 1993.
- “Design and Testing of Bituminous Mixtures,” (with S.F. Brown, J.M. Gibb, J.M. Read, and K.E. Cooper), *PGR93041*, Department of Transport/Engineering and Physical Sciences Research Council LINK Programme on Transport and Operations, Department of Civil Engineering, University of Nottingham, December 1993.
- “Design and Testing of Bituminous Mixtures,” (with S.F. Brown, J.M. Gibb, J.M. Read, K.E. Cooper, and P.S. Pell), *PGR93003*, Department of Transport/Engineering and Physical Sciences Research Council LINK Programme on Transport and Operations, Department of Civil Engineering, University of Nottingham, January 1993.
- “Validation of the SHRP A-002A Hypothesis for Water Sensitivity,” (with R.L. Terrel, A. Al-Joaib, and J. Bea), *Final Summary Report 92-2*, Strategic Highway Research Program, National Research Council, Washington, D.C., December 1992.
- “Evaluation of Rutting Potential in Oregon Surface Mixes,” (with R.G. Hicks and K. Frick), Interim Report, *FHWA/OR-92-*, Federal Highway Administration, October 1992.
- “Wheel Track Rutting Due to Studded Tires,” (with R.G. Hicks and D.C. Esch), Final Report, *AK-RD-90-14*, Alaska Department of Transportation, December 1990.
- “In-Depth Study of Cold In-Place Recycled Pavement Performance,” (with D.F. Rogge and R.G. Hicks), Vol. I – Final Report, *FHWA/OR-90-02A*, Federal Highway Administration, October 1990.
- “In-Depth Study of Cold In-Place Recycled Pavement Performance,” (with R.G. Hicks and D.F. Rogge), Interim Report, *Transportation Research Institute Report 90-2*, Transportation Research Institute, Oregon State University, April 1990.
- “Evaluation of Cold In-Place Recycling of Asphalt Concrete Pavements in Oregon,” *Master of Science Thesis*, Oregon State University, June 1989.
- “Repeatability of Testing Procedures for Resilient Modulus and Fatigue,” (with R.G. Hicks and L. Scholl), *FHWA-OR/RD-89-09*, Federal Highway Administration, April 1989.
- “Development of Improved Mix Design and Construction Procedures for Cold In-Place Recycled Pavements,” (with R.G. Hicks, D. Allen, and R.E. Nelson), Final Report Vols. III and IV, *FHWA-OR/RD-89-01*, Federal Highway Administration, June 1988.
- “Evaluation of Cold In-Place Recycling – 1986 Projects: First Year Performance Report,” (with R.G. Hicks and D. Allen), *Transportation Research Institute Report 87-29*, Transportation Research Institute, Oregon State University, August 1987.
- “1986 Performance Evaluation Report: Lava Butte Road – Fremont Highway Junction,” *Transportation Research Institute Report 87-27*, Transportation Research Institute, Oregon State University, June 1987.

## **CONFERENCE PRESENTATIONS AND INVITED LECTURES**

### **Conference Presentations**

- International Conference on Perpetual Pavement: presentation of the paper titled “Instrumentation and Analysis of a Perpetual Pavement on an Interstate Freeway in Oregon,” September, 2006.
- 80th Annual Meeting of the Transportation Research Board: presentation of the paper titled “Development of a Prototype Performance-Related Specification for Hot-Mix Asphalt Construction,” Washington, D.C., January 2001.

- Annual Meeting of the Association of Asphalt Paving Technologists: presentation of the paper titled "Rheological Characteristics of Bitumen in Contact with Mineral Aggregate," March 1996.
- European Symposium on the Performance and Durability of Bituminous Materials: presentation of the paper titled "Factors Affecting the Durability of Bituminous Paving Mixtures," University of Leeds, March 1994.
- 7th International Conference on Asphalt Pavements: presentation of the paper titled "Asphalt Concrete Pavement Preservation with Cold In-Place Recycling," August 1992.
- 71st Annual Meeting of the Transportation Research Board: presentation of the paper titled "Use of Asphalt Emulsions for In-Place Recycling: Oregon Experience," Washington, D.C., January 1992.
- 71st Annual Meeting of the Transportation Research Board: presentation of the paper titled "Case Histories of Cold In-Place Recycled Asphalt Pavements in Central Oregon," Washington, D.C., January 1992.
- 70th Annual Meeting of the Transportation Research Board: presentation of the paper titled "Evaluation of the Mix Properties of Cold In-Place Recycled Mixes," Washington, D.C., January 1991.
- American Society of Civil Engineers 1990 Materials Engineering Conference: presentation of the paper titled "Water Sensitivity of Asphalt Paving Mixtures," Denver, Colorado, August 1990.
- 69th Annual Meeting of the Transportation Research Board: presentation of the paper titled "Repeatability of Testing Procedures for Resilient Modulus and Fatigue," Washington, D.C., January 1990.
- Asphalt Recycling and Reclaiming Association: presentation of "Mix Design for and Performance of Cold In-Place Recycled Pavements," Portland, Oregon, January 1989.
- Northwest Roads and Streets Conference: presentation of "Mix Design Practices for Cold In-Place Recycled Pavements," Corvallis, Oregon, February 1988.

#### **Invited Presentations**

- 79th Annual Meeting of the Transportation Research Board: workshop presentation on the "Development of the Performance-Related Specification for Hot-Mix Asphalt," Washington, D.C., January 2000.
- PRS 2000 Workshop: workshop presentation on the "Performance-Related Specification for Hot-Mix Asphalt Construction," Orlando, Florida, March 2000.

#### **SPONSORED RESEARCH**

##### **Current Research**

- Investigation of Premature Pavement Failure Due to Moisture*, October 2005 – Present; Principal Investigator, \$166,593. This project is sponsored by the Oregon Department of Transportation and Federal Highway Administration to conduct a forensic investigation of hot-mix asphalt pavement failures due to moisture. Deliverables for the project will include guidelines for site investigations, guidelines for pavement structural design techniques, guidelines for materials selection and testing, and guidelines for construction specifications.
- Mechanistic Pavement Design Input Parameters*; October 2005 – Present; Principal Investigator, \$120,000. This project is sponsored by the Oregon Department of Transportation and Federal

- Highway Administration to assist ODOT in developing appropriate inputs for use in mechanistic-empirical and perpetual pavement design.
- Abrasion-Resistant Concrete Mix Designs For Prestressed Bridge Deck Panels*; May 2007 – Present; Principal Investigator, \$170,000. This project is sponsored by the Oregon Department of Transportation and Federal Highway Administration to assist ODOT in developing concrete mix designs for prestressed, precast bridge deck panels that are resistant to studded tire wear.
- Instrumentation for Mechanistic Design Implementation*, October 2007 – Present; Principal Investigator, \$76,781. This project, sponsored by the Oregon Department of Transportation and Oregon Transportation Research and Education Consortium, is an extension of the *Mechanistic Pavement Design Input Parameters* project to assist ODOT in developing appropriate inputs for use in mechanistic-empirical and perpetual pavement design.
- Density Measurement Verification for Hot Mixed Asphalt Concrete Pavement Construction*, October 2007 – Present; Principal Investigator, \$120,000. This project is sponsored by the Oregon Department of Transportation and Federal Highway Administration to develop an improved and more accurate system to determine in-place density of hot mix asphalt pavements.

#### **Prior Research**

- Quality Control Information System*, March 2001 – March 2006; Principal Investigator. This project was sponsored by Granite Construction Incorporated to design and develop a quality control information system for aggregate, hot-mix asphalt, and concrete tests. The client/server application allows data entry for numerous tests and data retrieval to produce process control charts and tabular reports with summary statistics.
- Evaluation of Fine Aggregate Characteristics Tests and Their Relationship to HMA Performance*, June 2004 – May 2005; Principal Investigator. This project was sponsored by the Federal Highway Administration to assess the adequacy of the currently specified test for determining the angularity characteristics of fine aggregate incorporated in hot-mix asphalt mixtures under the Superpave mix design system. Several other tests were investigated to determine if the results from these tests can better quantify the contribution of the angularity of fine aggregate to hot-mix asphalt mixture performance.
- Caltrans Flexpave Project (On-Call Flexible Pavement Materials Program)*, February – June 2002; Consultant. This project was sponsored by Caltrans to develop training materials for an Asphalt Binder Training Seminar and a Hveem Mix Design Training Seminar as well as to develop an Asphalt Rubber Overlay Design Guide and an Asphalt Rubber Usage Guide.
- Life Cycle Costs for Lime in Hot Mix Asphalt*, June 2000 – November 2002, Co-Principal Investigator. This project was sponsored by the National Lime Association to design and develop a software application to conduct life cycle cost analyses for hot-mix asphalt pavements. The software allows either a deterministic or a probabilistic approach during a given analysis. The software was used to conduct life cycle cost analyses of pavements from 10 States and FHWA Federal Lands Highways.
- Portable Test System*, March 2000 – July 2001, Principal Investigator. This project was sponsored by OEM Inc. to design and develop a software application to control a hydraulically powered test system to conduct indirect tensile and axial resilient modulus tests, static and repeated load creep tests, and indirect tensile fatigue tests. The application acquires

- data from displacement, load, and temperature transducers and displays these digitally and graphically in real time during test execution.
- NCHRP Project 20-50(14)* titled *LTPP Data Analysis: Significance of “As-Constructed” AC Air Voids to Pavement Performance*, March 2001. Conducted analysis of variance (ANOVA) and student’s t-tests to determine if differences in variances and means exist among air voids from various LTPP general pavement studies (GPS) and specific pavement studies (SPS) experimental sections.
- Highway Materials Engineering*, National Highway Institute Course No. 13123, November 2000 – March 2001. Developed the majority of the instructional materials (PowerPoint slides and Student’s Guide) for this course.
- NCHRP Project 9-13* titled *Evaluation of Water Sensitivity Tests*, April – September 2000. Assisted in completing the final report for this work.
- NCHRP Project 9-20* titled *Performance-Related Specifications for Hot-Mix Asphalt Construction*, April – August 2000. Completion of the *HMA Spec* alpha version software that was developed to generate a performance-related specification (see *WesTrack Project* below).
- Summary Report on Pavement Management Systems*, March 2000. Region 1 of the U.S. Forest Service sponsored this project to develop recommendations for an appropriate pavement management system. This work involved providing an overview of pavement management systems, recommendations regarding software programs, and recommendations for implementation.
- WesTrack Project* (while employed by Nichols Consulting Engineers) – Co-developer of the methodology for determining a contractor’s payment for a delivered hot-mix asphalt pavement lot based on the findings from the \$14.7 million *WesTrack* project. Also designed and co-developed the alpha version of the software (*HMA Spec*) to generate a performance-related specification. In addition, designed and co-developed the *WesTrack Database*. This database application was developed to provide an easy-to-use set of tools for the extraction and reporting of the majority of data collected during the *WesTrack* project and contained in the database.
- NCHRP Project 1-37* titled *Development of the 2002 Guide for the Design of New and Rehabilitated Pavement Structures* (while employed by Nichols Consulting Engineers) – Assisted the Principal Investigator (Dr. R. Gary Hicks) in the development of the work plan for the project.
- Post-Doctoral Research at the University of Nottingham. This work involved fundamental research evaluating the permanent deformation characteristics of porous asphalt under various confining pressures in the repeated load axial creep test.
- Graduate research (Ph.D.) project titled *Bitutest* at the University of Nottingham. This project was undertaken in the United Kingdom and involved collaborative research amongst industry, the government, and academia to develop practical, mechanistic-based test methods for bituminous materials.
- SHRP A-003A* contract titled *Performance-Related Testing and Measuring of Asphalt-Aggregate Interactions and Mixtures*. Co-inventor (with R.L. Terrel and S. Al-Swailmi) of the Environmental Conditioning System (U.S. Patent Number 5,365,793), and co-developer of the “Standard Method of Test for Determining Moisture Sensitivity Characteristics of Compacted Bituminous Mixtures Subjected to Hot and Cold Climate Conditions,” SHRP Designation: M-006. Principal developer of the compaction method for hot-mix asphalt mixtures by means of rolling wheel compaction, which was adopted by SHRP as “Standard

Practice for Preparation of Test Specimens of Bituminous Mixtures by Means of Rolling Wheel Compaction,” SHRP Designation: M-008.

Graduate research (M.S.) project titled *Development of Improved Mix Design and Construction Procedures for Cold In-Place Recycled Pavements*. This work involved the development and evaluation of a mixture design procedure for cold in-place recycled asphalt concrete as well as development of construction guidelines and specifications for these mixtures.