

About transportation at the University of California, Berkeley

The University of California, Berkeley, attracts a large, diverse, continually changing community of people interested in every aspect of transportation.



The Institute of Transportation Studies (known as ITS) at UC Berkeley is the oldest and largest of the five transportation research groups on the campus. ITS has supported transportation research at the University of California since 1948. This year, its programs received \$41.5 million in research funds, the third largest award total for an organized research unit or academic department at Berkeley. About 50 faculty members, 50 staff researchers and more than 100 graduate students take part in this multidisciplinary program.

ITS is home to:

- the Harmer E. Davis Transportation Library, among the world's premier transportation libraries;
- PATH (Partners for Advanced Transit and Highways), the nation's largest program of intelligent transportation research;
- the Center for the Commercialization of ITS Technologies;
- the Technology Transfer Program;
- the Pavement Research Center, an international authority on pavement structures, materials and technologies;
- and the Traffic Safety Center, a joint venture of ITS and the School of Public Health.

Where to find Berkeley transportation groups on the Web:

The Institute of Transportation Studies:
www.its.berkeley.edu

Department of Civil and Environmental Engineering:
<http://www.ce.berkeley.edu>

Department of City and Regional Planning:
<http://www-dcrp.ced.berkeley.edu/>

The Institute of Urban and Regional Development:
<http://www-iurd.ced.berkeley.edu>

The University of California Transportation Center:
www.uctc.net

ITS is also an affiliate of the University of California Transportation Center, which supports transportation research and education throughout the UC system and is headquartered on the Berkeley campus.

Other academic departments and groups on the Berkeley campus that do work in transportation are the Department of City and Regional Planning, the Department of Civil and Environmental Engineering and the Institute of Urban and Regional Development.

Sister Institutes of Transportation Studies operate at UC Davis, Irvine and Los Angeles.

For more information about ITS, visit the Web site at <www.its.berkeley.edu>, or send e-mail to <its@its.berkeley.edu>. We would be delighted to hear from you.



Highlights 2000—2001

The UC Transportation Alumni Network was launched this year. It is an interactive Web site designed to collect detailed information from alumni of transportation programs on every UC campus and to serve as a gateway for prospective students and employers to current UC graduate programs in transportation and their graduates. It is sponsored by the UC Office of the President Industry-University Cooperative Research Programs as well as by the University of California Transportation Center and ITS Irvine. Please visit the network at <<http://transalum.its.uci.edu>>.

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The Traffic Safety Center, launched last year by the Institute of Transportation Studies and the School of Public Health, brought leading traffic safety experts to the Berkeley campus to present their research. It also offered courses in traffic safety planning and injury control. To learn more, please visit the Center at <www.tsc.berkeley.edu>.

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The Institute published the 15th edition of its best-selling textbook, *Fundamentals of Traffic Engineering*, in 2001. To order a copy, please send an e-mail to the ITS Publications Sales office at <itspubs@socrates.berkeley.edu>.

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The ITS Systems Unit released **FREQ12**, a new, Windows version of its freeway corridor simulation model. To purchase a copy or find about courses on its use, send an e-mail to <lannon@uclink.berkeley.edu> or visit <<http://www.its.berkeley.edu/computing/software/FREQ.html>>.

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The Institute continued to expand the amount of its research that is available on the Web. Now, more than half of its research publications can be downloaded for free over the Internet. Visit the ITS publications page at <www.its.berkeley.edu/publications/publications.html>.

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The National Center of Excellence for Aviation Operations Research (known as NEXTOR) is a consortium sponsored by the Federal Aviation Administration (FAA), consisting of UC Berkeley, the Massachusetts Institute of Technology, the University of Maryland at College Park, and Virginia Polytechnic and State University. Research areas addressed by NEXTOR include advanced air traffic management systems, air traffic safety and security, and the performance and productivity of the nation's aviation system. Some topics addressed this year by NEXTOR researchers at Berkeley include development of analytical techniques to support the operational evaluation of elements of the FAA's Free Flight Phase 1 Program, development of fast-time simulation techniques to model safety issues in the National Airspace System, the influence of airport-capacity constraints on airline fleet mix, and the development of improved analytical methods and tools to support the sharing of aviation safety information. Visit NEXTOR on the Web at <www.its.berkeley.edu/nextor>.

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The University of California Transportation Center (known as UCTC) at UC Berkeley serves as the University Transportation Center for federal Region IX, which comprises California, Arizona, Nevada and Guam. Now in its fourteenth year, UCTC receives funding from the U.S. Department of Transportation and Caltrans. UCTC funds research proposals from faculty and Ph.D. students on the nine campuses in the UC system and offers graduate fellowships at Berkeley, Davis, Irvine and Los Angeles. Reports on UCTC-supported research appear in *ACCESS* magazine, which is available on the Web, along with other UCTC research publications, at <www.uctc.net>.



The Institute's Pavement Research Center conducts research on ways to improve pavement structures, materials and technologies, often in partnership with other academic institutions and state departments of transportation, as well as private industry.

This year, the PRC continued its core mission, which is to research questions for the California Department of Transportation pertaining to the design, construction, rehabilitation and maintenance of the state's 75,000-lane-kilometer network of roads. At the PRC test site near Palmdale, CA, researchers are studying the strength and durability of new fast-setting hydraulic cement concrete. Reports from forensic studies of sections that were cracked during testing with the Center's Heavy Vehicle Simulator are expected in early 2002.

Near Ukiah, CA, the PRC is testing how much older pavement's life can be extended by retrofitting it with steel dowels. The Center's partners on the project are the Washington State Department of Transportation, Caltrans, Dynatest, Inc., Penhall Corporation and the CSIR of South Africa.

The PRC is also studying ways to better organize pavement jobs to minimize disruptions. For a pilot program on I-10 near Pomona, PRC researchers, sponsored by the Innovative Pavement Research Foundation and working with Caltrans and the Western Chapter of the American Concrete Pavement Association, devised a computer program and other tools to complete the repaving of roughly 12 lane-kilometers. Caltrans plans to use the techniques, which won an industry award, on other projects. On another project, the PRC, with the University of Minnesota, developed a computer program to predict asphalt concrete cooling.

With Caltrans and members of the California asphalt industry, the Center built on its previous work in the Strategic Highway Research Program and the Caltrans-sponsored California Accelerated Pavement Testing Program to develop new pavement designs for the rehabilitation of I-710 near Los Angeles. The partnership developed for this project, which is part of the Caltrans Long-Life Pavement Rehabilitation Program, combined expertise from the public, academic and private sectors to implement new ideas and research results. For more about the Center's work, visit <www.its.berkeley.edu/pavementresearch>. ■



The Pavement Research Center's Heavy Vehicle Simulator testing pavement on U.S. 101 near Ukiah, CA



The Institute's PATH (Partners for Advanced Transit and Highways) Program researches and evaluates new technologies that can reduce congestion in California's surface transportation system and make it safer. It supports faculty-directed research at 14 universities in California and the rest of the country; including research by full-time staff at UC Berkeley's Richmond Field Station.

The core of PATH's research is funded by Caltrans' Division of New Technology and Research. New projects are underway in bus rapid transit systems, warning systems at railroad crossings and automated steering controls guidance for highway snow removal equipment. Caltrans' Traffic Operations Program supported a project to install the Freeway Performance Measurement System (PeMS), which collects and disseminates real-time traffic data, in Caltrans district 7 in Los Angeles. PATH also continued to develop other new technologies for traffic management.

With funding from the U.S. Department of Transportation's Intelligent Vehicle Initiative, PATH researched collision warning and avoidance systems and sensor-friendly vehicles and roadways. At SmartCruise Demo 2000 in Tsukuba City, Japan, PATH showed how its magnetic marker guidance system could steer a vehicle and guide a driver.

The Institute's Technology Transfer Program expanded its training programs this year to help train some of the 3,000 engineers and planners recently hired by the California Department of Transportation (Caltrans). With Caltrans and the Institute's Pavement Research Center, TechTransfer also developed a five-day Materials Academy on pavement materials and design, to be delivered on an ongoing basis for Caltrans staff. Overall, TechTransfer trained more than 4,000 professionals around the state. In addition, TechTransfer's traffic safety experts evaluated traffic safety engineering and enforcement programs in 20 California communities.

On the federal level, TechTransfer developed a new course for the National Highway Institute to teach planners how to use the ITS Deployment Analysis System software to make cost-benefit analyses of ITS projects. TechTransfer also created on-line training materials about basic ITS concepts and terminology for local planners and engineers. It also developed and conducted workshops for Caltrans about PATH research on surveillance technologies and freeway traffic data.

TechTransfer's international symposiums on airport noise and air quality, held each year in San Diego, drew some 400 people last year, which was a record. ■

Last year, UC Berkeley and Caltrans approved the creation of the Center for the Commercialization of ITS Technologies, which was made part of PATH. CCIT opened its headquarters in downtown Berkeley this year. The Center works with industry and Caltrans to perform follow-up research, development and field testing of intelligent transportation systems to facilitate their commercialization and deployment. Current projects include intelligent car-sharing, automated border crossing controls, freeway traffic data, traveler information and support for multi-modal transportation systems.

The California PATH Database — the world's most comprehensive database on intelligent transportation systems — grew by some 2,500 records this year. It is maintained by Institute of Transportation Studies librarians. Visit the database at <<http://www4.nationalacademies.org/trb/tris.nsf/web/path>>.

PATH also supports the ITS Decision Web site, a comprehensive on-line source of evaluations of intelligent transportation projects. Visit it at <<http://www.path.berkeley.edu/itsdecision/>>. ■

The Institute of Transportation Studies' Harmer E. Davis Transportation Library, which is located on the Berkeley campus, serves academic researchers and students in the entire UC system, as well as local, state and federal transportation agencies. Private clients can join its Corporate Circle program to enjoy enhanced reference and borrowing services.

The Library continued its two-year-old fundraising drive, collecting \$4,150 in 2001. Donors included five individuals and one corporation. Their gifts paid for new materials for the collection. This was also the second year of the John P. Carter Book Fund, which is dedicated to purchases of publications about railroad transportation and shipping. The Library, working with the Water Resources Library, also produced and sold a fundraising calendar, *Spanning the Bay*, which featured historic photos of Bay Area bridges from Berkeley campus archives.

In addition to their regular duties, Institute librarians compiled two annotated transportation bibliographies, *Sources of Information in Highway Transportation* and *Sources of Information in Intelligent Transportation Systems*, which is the first comprehensive bibliography on the subject. To download them electronically or order them in hard copy, visit the publications page of the Institute's Web site at <www.its.berkeley.edu/publications/publications.html>. ■

A technician installing a steel dowel bar in a section of U.S. 101 near Ukiah, CA that is being retrofitted





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 Gordon Newell, Professor Emeritus of Transportation Engineering at UC Berkeley and a pioneer in the fields of transportation science and operations research, died in an automobile accident on Feb. 16, 2001. He was 76. His contributions to traffic flow theory, the theory of signal control and traffic dynamics are milestones that shaped the field of traffic flow theory. His work on queuing theory is equally acclaimed.

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 Melvin W. Webber, Professor Emeritus of City and Regional Planning at UC Berkeley, received the Distinguished Educator Award from the Association of Collegiate Schools of Planning. Webber served as founding director of the University of California Transportation Center from 1988 to 1996 and is founder and editor of its twice-yearly magazine, *ACCESS*.



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 Adib Kanafani, who directed ITS from 1983 to 1998 and now chairs the Department of Civil and Environmental Engineering at UC Berkeley, won the American Society of Civil Engineers' James Laurie Prize for significant contributions to the advancement of transportation engineering.



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 Samer Madanat, ITS Researcher and Associate Professor of Civil and Environmental Engineering at UC Berkeley, was chosen as Editor-in-Chief of the American Society of Civil Engineers' quarterly *Journal of Infrastructure Systems*.

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 UC Berkeley Professor Daniel L. McFadden won the 2000 Nobel prize in economics for pioneering work on discrete choice theory and econometric modeling, which dates back to a mode choice study he conducted in the 1970s when he was closely associated with ITS.

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 Al Erera, a Ph.D. in Civil Engineering from UC Berkeley, won first place in the 2001 Transportation Science Dissertation Prize Competition held by INFORMS (Institute for Operations Research and the Management Sciences).

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 Jonathan Ian Mason, a graduate student in planning at UC Berkeley, was awarded a fellowship by the Washington, D.C.-based Eno Transportation Foundation's Leadership Development Program and attended the Eno study conference in May 2001. Another three Eno fellowships went to graduate students from other UC campuses.

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 The University of California Transportation Center selected Karen Smilowitz as its Outstanding Student of the Year for 2000-2001 for her academic and professional accomplishments and her potential for contributing to transportation policy and systems analysis. Smilowitz received her Ph.D. in Civil Engineering at UC Berkeley this year.

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 The San Francisco chapter of Women's Transportation Seminar awarded the Helene M. Overly graduate scholarship to Ria Hutabarat this year. Hutabarat is getting a joint M.S./M.C.P. degree in transportation engineering and planning at UC Berkeley.

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