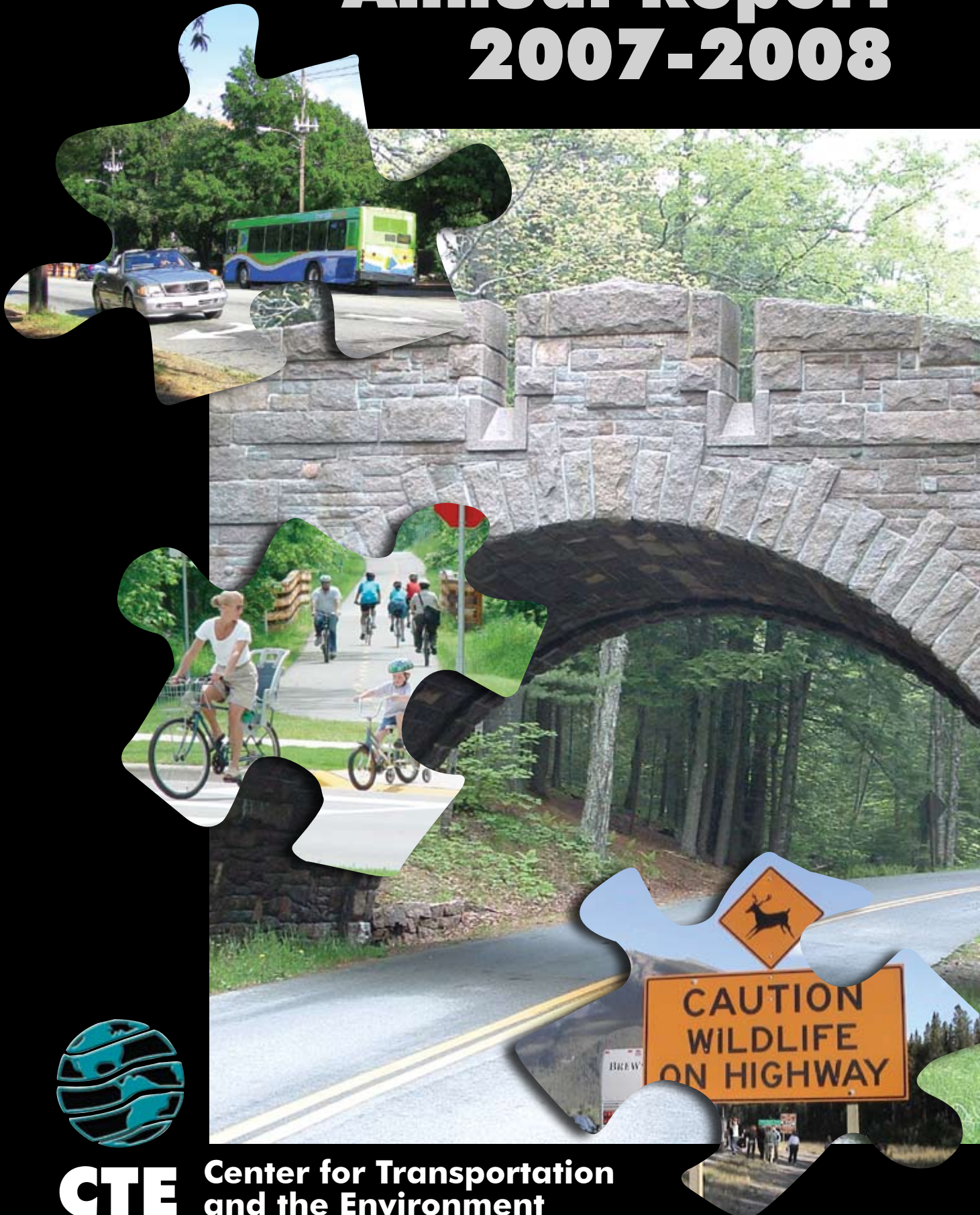


Annual Report 2007-2008



CTE Center for Transportation
and the Environment

NC STATE UNIVERSITY

Mission

The Center for Transportation and the Environment conducts innovative programs of research, education, and technology transfer that seek to mitigate the impacts of surface transportation on the environment.

CTE is an activity of the University Transportation Centers Program, administered by the Research and Innovative Technology Administration of the United States Department of Transportation. CTE is recognized as a national university transportation center of excellence.



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Message

From the Director


The Center for Transportation and the Environment (CTE), established in 1991 as a national center within the Institute for Transportation Research and Education at North Carolina State University, addresses a wide range of environmental issues at the local, state, and national levels. CTE continues to be one of the national university transportation centers of excellence.

This report highlights the several dimensions of our center's activities in FY2007-2008. Numerous research projects have been carried out or are in progress through our partnership with the NC Department of Transportation. A wide range of research topics are being addressed, involving many students and faculty; one example, based on the work of Professor Chris Frey and his NCSU faculty colleagues and graduate students, is highlighted in the report. Dr. Frey's work represents some of the first efforts to evaluate real-world air pollution emissions associated with construction equipment in operation, as opposed to measurements within a laboratory setting. Other work carried out by CTE researchers in NCHRP and other projects is also highlighted.

Regarding the education dimension, undergraduate and graduate students from different disciplines have had the opportunity to work with environmental aspects of the transportation profession. One highlight of the Center's activities continues to be our program for undergraduate students in the Context Sensitive Solutions Summer Academy, conducted by NCSU Professors Joe Hummer and John Stone through a partnership with NCDOT. Finally, CTE has maintained its strong emphasis on technology transfer through training programs, conferences, and teleconferences. A highlight this year is the publication of the proceedings of the 2007 International Conference on Ecology and Transportation. This publication, as well as information about our other CTE initiatives, is available on our website.

As you read more about some of our CTE activities, please let us know if you have any comments or suggestions about future partnerships.

Sincerely,



E. Downey Brill, Jr., Ph.D.
Director, Center for Transportation and the Environment
Professor, Civil, Construction and Environmental Engineering
North Carolina State University

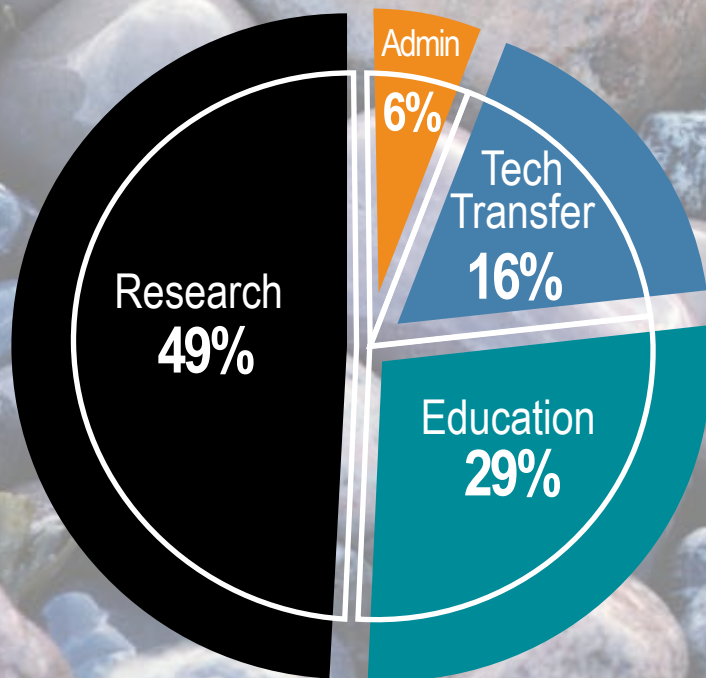
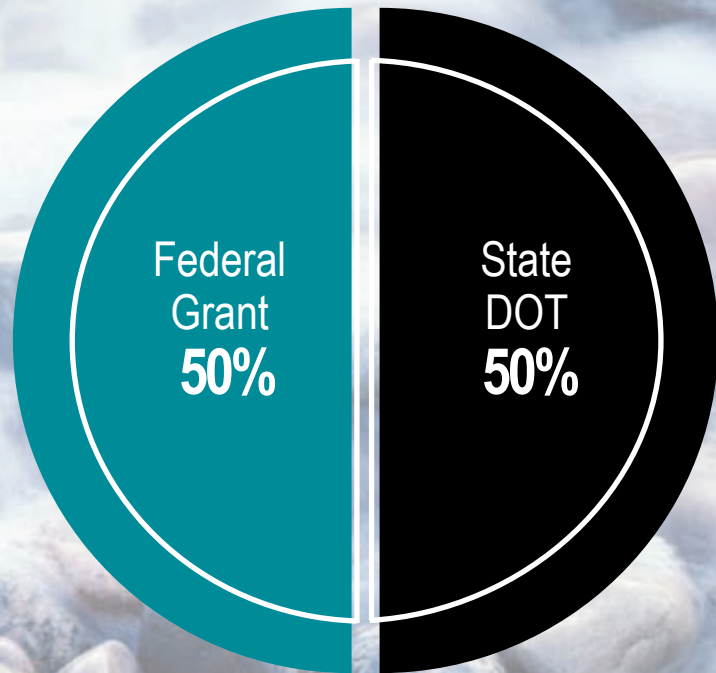


Financial Report

The Center for Transportation and the Environment is funded by the Research and Innovative Technology Administration of the US Department of Transportation, with matching support from the North Carolina Department of Transportation.

CTE's total annual operating budget for FY2007-2008 was \$816,600. USDOT provided \$408,300 through the University Transportation Centers Program. NCDOT provided the full state match requirement of \$ 408,300 through its funding of CTE / NCDOT joint research projects.

FY2007-08
Funding Sources



FY2007-08
Expenditures

Management Structure

CTE is administered by North Carolina State University, reporting to the Office of the Vice Chancellor for Research and Graduate Studies, and is one of 68 research centers, institutes, and laboratories on campus. CTE is located on NCSU's Centennial Campus in the offices of the Institute for Transportation Research and Education (ITRE).

The Center's research, education, and technology transfer programs are guided by the CTE Advisory Committee, which provides valuable input on program activities. The committee is composed of representatives from government, academia, and non-profits. In addition, ITRE's Advisory Council receives regular updates on CTE activities and provides input at the request of the Center's director, Dr. E. Downey Brill, Jr.

CTE Advisory Committee 2007-2008

Gorman Gilbert, PhD, PE
Director, Oklahoma Transportation Center
Oklahoma State University
Stillwater, OK

Robert E. Skinner
Executive Director
Transportation Research Board
Washington, DC

Nagui M. Roupail, PhD
Director
Institute for Transportation Research and Education
Raleigh, NC

Lyndo Tippet
Secretary of Transportation
North Carolina Department of Transportation
Raleigh, NC

ITRE Advisory Council 2007-2008

John Cameron, PhD
TransTech Management, Inc.
Greensboro, NC

David Harkey, PhD, PE
University of North Carolina
Highway Safety Research Center
Chapel Hill, NC

George List, PhD, PE
Civil, Construction and Environmental Engineering
North Carolina State University
Raleigh, NC

C.E. "Ed" Vick, Jr.
Kimley-Horn & Associates, Inc.
Raleigh, NC

Eugene Conti, Jr., PhD
PBS&J
Raleigh, NC

Edd Hauser, PhD, PE
Center for Transportation Policy Studies
University of North Carolina at Charlotte
Charlotte, NC

John F. Sullivan, III
Federal Highway Administration
North Carolina Division
Raleigh, NC

C. Michael Walton, PhD, PE
Civil Engineering
University of Texas at Austin
Austin, TX

Larry Goode, PhD, PE
Civil, Construction and Environmental Engineering
North Carolina State University
Raleigh, NC

David King
Triangle Transit Authority
Research Triangle Park, NC

Lyndo Tippet
North Carolina Department of Transportation
Raleigh, NC

Jim Westmoreland, PE
Greensboro Department of Transportation
Greensboro, NC

Management Structure

Center Staff



E. Downey Brill, Jr., PhD
Director



James B. Martin, MCE, PE
Associate Director



David Robinson, PhD, PE
Senior Research Associate



Ann Hartell, MRP
Research Associate



Katie McDermott, MA
Technology Transfer Director



Eugene Murray, BA
Distance Learning Specialist



Nancy Bailey, MLS
Web Developer



Walt Thomas, BA
Information Processing Assistant



University Faculty Affiliates

H. Christopher Frey, PhD
Professor of Civil Engineering
Water Resources/Environmental Engineering
North Carolina State University
Raleigh, NC

Joseph E. Hummer, PhD, PE
Professor of Civil Engineering
Transportation Systems and Materials
North Carolina State University
Raleigh, NC

Margery F. Overton, PhD
Professor of Civil Engineering
Water Resources/Environmental Engineering
North Carolina State University
Raleigh, NC

Sethu Raman, PhD
Professor of Atmospheric and Marine Sciences
North Carolina State University
Raleigh, NC

John R. Stone, PhD
Professor of Civil Engineering
Transportation Systems and Materials
North Carolina State University
Raleigh, NC

Billy M. Williams, PhD, PE
Associate Professor of Civil Engineering
Transportation Systems and Materials
North Carolina State University
Raleigh, NC

Research Program

Since 1998 CTE has partnered with the North Carolina Department of Transportation to conduct a joint environmental research program. The partnership was established following the Center's reauthorization in the Transportation Equity Act for the 21st Century (TEA-21).

Each year the NCDOT Research and Development Unit requests research proposals addressing transportation needs from across the state. Representatives from CTE, ITRE, and the Federal Highway Administration NC Division Office serve on a technical advisory committee responsible for reviewing and selecting the research projects. Contracts for all project awards are administered by ITRE. CTE's director serves on each individual environmental research project committee, which is responsible for providing overall guidance to the principal investigator(s) and monitoring their progress through project completion.

The CTE / NCDOT partnership has generated significant research results in various environmental areas, including air quality, water quality, wetlands mitigation, vegetation management, wildlife management, highway construction materials, and new technologies. During 2007-2008, the research program involved the active participation of more than 55 students and 29 university faculty representing many academic disciplines.

For more information on the program and research projects, please visit the CTE website at www.cte.ncsu.edu/cte/research.

New Projects

The following new research projects were awarded during the 2007-2008 reporting period.

Methodology to Assess Vegetation, Hydrologic & Soil Parameters that Affect Wetland Restoration Success (HWY-2008-16)

Performing Organization:

North Carolina State University

Principal Investigator: Dr. Mike J. Vepraskas

Period: August, 2007 – June, 2008

Effects of Highway Construction in Sedgefield Lakes and King's Mill Continued (HWY-2008-17)

Performing Organization:

North Carolina State University

Principal Investigators:

Dr. Daniel E. Line, Dr. Jean Spooner

Period: July, 2007 – December, 2008

Research Program

Ongoing Projects

The following research projects were in progress or in the draft final report stage during this reporting period.

Evaluation of Manufactured Stormwater Best Management Practices (HWY-2006-04)

Performing Organization:

University of North Carolina at Charlotte

Principal Investigators: Dr. Craig Allan, Dr. Jy Wu

Period: *May, 2006 – December, 2008*

Innovative & Environmentally Responsible Methods for Controlling Invasive Woody Plant Species in NC Right of Ways (HWY-2006-05)

Performing Organization:

North Carolina State University

Principal Investigators:

Dr. Joe C. Neal, Dr. Jim Burton

Period: *July, 2005 – August, 2009*

Effectiveness of Bear Crossings on I-26 in Madison County, North Carolina (HWY-2006-14)

Performing Organization:

North Carolina State University

Principal Investigators:

Dr. Richard A. Lancia, Dr. Phillip D. Doerr

Period: *July, 2005 – June, 2007*

Stilling Basin Design and Operation for Water Quality: Field Testing (HWY-2007-02)

Performing Organization:

North Carolina State University

Principal Investigator: Dr. Richard A. McLaughlin

Period: *January, 2007 – June, 2008*

Platinum Markers as Indicators of Transportation Impact (HWY-2007-03)

Performing Organization:

North Carolina State University

Principal Investigators: Dr. W. Gregory Cope,

Dr. Thomas J. Kwak, Dr. Damian Shea

Period: *July, 2006 – June, 2009*

Evaluation of Nutrient Loading Rates and Effectiveness of Roadside Vegetative Connectivity for Managing Runoff from Secondary Roads (HWY-2007-04)

Performing Organization:

University of North Carolina at Charlotte

Principal Investigators: Dr. Jy Wu, Dr. Craig Allan

Period: *July, 2006 – August, 2009*

Shoreline Monitoring at Oregon Inlet Terminal Groin (HWY-2007-18)

Performing Organization:

North Carolina State University

Principal Investigator: Dr. Margery F. Overton

Period: *July, 2006 – June, 2007*

Ongoing Maintenance and Enhancement of Precipitation Alert and Visualization Tool in Support of NCDOT's Storm Water Quality Monitoring (HWY-2007-20)

Performing Organization:

North Carolina State University

Principal Investigator: Dr. Sethu Raman

Period: *July, 2006 – June, 2009*

Research of Hydrologic and Water Quality Performance of Four Linear Wetlands in Eastern North Carolina and House Creek Watershed Interchange Retrofits (HWY-2007-21)

Performing Organization:

North Carolina State University

Principal Investigator: Dr. William Hunt

Period: *March, 2007 – June, 2010*



Research Program

Completed Projects

The following research projects were completed, and a final report issued, during the 2007-2008 reporting period. Final reports and other project details are available through the CTE website at www.cte.ncsu.edu/cte/research.

Ecological, Morphological, Micromorphological and Molecular Analyses of the Species in the *Hexastylis heterophylla* Complex (HWY-2002-04)

Performing Organization:

Appalachian State University

Principal Investigator: Dr. Zack E. Murrell

Period: July, 2001 – June, 2003

Application Placement Technologies for Vegetation Management on North Carolina Roadsides (HWY-2003-08)

Performing Organization:

North Carolina State University

Principal Investigators:

Travis Gannon, Dr. Fred Yelverton

Period: July, 2002 – June, 2006

Intraspecific Phlogenetic Relationships in the Freshwater Bivalve Genus *Alasmidonta* (Bivalvia: Unionidae) (HWY-0754)

Performing Organization:

North Carolina State University

Principal Investigators:

Dr. Jay F. Levine, Dr. Morgan Raley, Dr. Arthur E. Bogan (North Carolina Museum of Natural Sciences)

Period: August, 2003 – June, 2006

Evaluating Systems to Reduce Road Improvement Impacts on Mountain Streams (HWY-2005-05)

Performing Organization:

North Carolina State University

Principal Investigators: Dr. Richard A. McLaughlin, Dr. Gregory D. Jennings

Period: July, 2004 – June, 2007

Real-World Duty Cycles and Utilization for Construction Equipment in North Carolina (HWY-2006-08)

Performing Organization:

North Carolina State University

Principal Investigators:

Dr. H. Christopher Frey, Dr. William Rasdorf

Period: July, 2005 – June, 2007

Evaluating Sediment Capture Rates for Different Sediment Basin Designs (HWY-2006-17)

Performing Organization:

North Carolina State University

Principal Investigator: Dr. Richard A. McLaughlin

Period: July, 2005 – June, 2007

Stilling Basin Design and Operation for Water Quality (HWY-2006-22)

Performing Organization:

North Carolina State University

Principal Investigator: Dr. Richard A. McLaughlin

Period: August, 2005 – October, 2006

Effects of Highway Construction in the Sedgefield Lakes and King's Mill Watersheds (HWY-2007-17)

Performing Organization:

North Carolina State University

Principal Investigators:

Dr. Daniel E. Line, Dr. Jean Spooner

Period: July, 2006 – June, 2007



Research Program

Project Highlight

Real-World Duty Cycles and Utilization for Construction Equipment in North Carolina

CTE university faculty affiliate Dr. H. Christopher Frey, along with fellow researcher Dr. William Rasdorf and student assistants in the NCSU Department of Civil, Construction and Environmental Engineering, conducted a two-year study of tailpipe emissions from B20 biodiesel and petroleum diesel vehicles used by NCDOT in its road construction and maintenance operations. Diesel vehicles emit large amounts of air pollutants, so NCDOT recently began using B20 biodiesel equipment in its fleet to comply with more stringent US EPA emission standards and to improve air quality.

Emissions data from construction vehicles, including backhoes, front-end loaders, and motor graders, is typically collected during steady-state engine tests. Drs. Frey and Rasdorf recognized the need for measuring the real-world, in-use duty cycles and emissions of construction vehicles to gather more accurate emissions data. This data would help NCDOT when evaluating the benefits of replacing its older petroleum diesel vehicles with newer B20 models or when purchasing the more expensive biodiesel fuel.

Researchers used a portable emission measurement system (PEMS) installed on 15 NCDOT construction vehicles to measure their real world vehicle activity and emissions. A research assistant also video recorded each vehicle to document its activity, the site conditions, and the duty cycle. Results from the study

indicate a significant reduction in pollutant emission rates from B20 biodiesel construction vehicles as compared to petroleum diesel vehicles. The project recommends expanding the use of B20 backhoes, front-end loaders, and motor graders throughout the NCDOT fleet, and to replace older vehicles with newer ones, in order to reduce tailpipe emissions.



NCSU Civil Engineering professor Dr. Chris Frey (left) works with a graduate research assistant to perform emissions testing of NCDOT construction vehicles. Dr. Frey's research measured the benefits of using biodiesel vehicles in place of petroleum diesel vehicles for reducing exhaust emissions during roadway construction and maintenance. (Photo: Roger Winstead, NC State University)



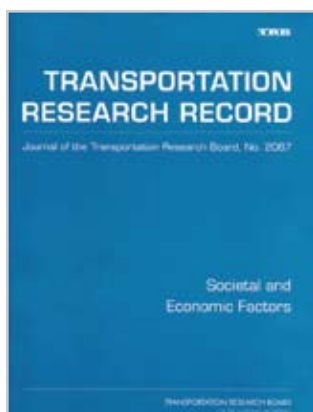
Research Program

Research Presentations and Publications

The Transportation Research Board (TRB) recognized the outstanding work of CTE researchers by selecting two projects for presentation and publication in 2008. Through the TRB, CTE research contributes to the national discourse on transportation and environmental issues and serves as an important resource for transportation decision-making.

Is Inadequate Transportation a Barrier to Community Involvement? Evidence from Social Capital Benchmark Survey

CTE research associate Ann Hartell was honored to present her paper at the 87th Annual TRB meeting held in January 2008 in Washington, DC. Her research was further recognized in the 2008 publication of the *Transportation Research Record: Journal of the Transportation Research Board*, No. 2067.



Since the late 1990s the concept of “social capital” – the value of connecting persons with their communities – has been increasingly a part of discussions about public policy, including transportation policy and planning. Using data from a national survey conducted in 2000, Hartell’s

study investigates whether inadequate transportation is a barrier to people’s community involvement. The research finds that women who were nonwhite, with household incomes less than \$30,000, and who had long commutes to work, had increased odds of citing transportation as a barrier. Most respondents cited other barriers along with transportation, such as inflexible work schedules, inadequate child care and concern for personal safety.

The results of the study suggest that improvements to transportation systems and transit service could improve access to community activities, but they will need to be combined with policies and programs that address other types of barriers to achieve a measurable positive effect. Travel demand management programs and better-coordinated transit service programs are two approaches to dismantling transportation barriers to community involvement. The Transportation Research Record and proceedings of the TRB Annual Meeting are available from the TRB website at www.trb.org.

NCHRP Project 08-36, Task 66, Improved Methods for Assessing Social, Cultural and Economic Effects of Transportation Projects

CTE researchers presented a poster of this project also at the TRB Annual Meeting in January 2008. The research was conducted for the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Planning as part of a project funded by the National Cooperative Highway Research Program (NCHRP). CTE partnered with Cambridge Systematics in the research to identify and describe social indicators that reflect quality of life considerations during the transportation decision-making process. An extensive, inter-disciplinary literature review led to the development of a three-domain framework for evaluating community effects, covering economics, social capital, and physical health. The study proposes a range of measures and data sources to expand the richness of these evaluations. This research leverages the Center’s extensive experience in community impact assessment, Context Sensitive Solutions, and socioeconomic research. Cambridge Systematics provided input throughout the development of the report. The project report is published online by AASHTO at www.statewideplanning.org/resources/234_NCHRP-8-36-66.pdf.

NCHRP Synthesis 373: Multi-Disciplinary Teams in Context Sensitive Solutions

In April 2008, NCHRP and TRB published this CTE research report documenting the current knowledge and practice of state departments of transportation in using multi-disciplinary teams to develop Context Sensitive Solutions (CSS). The report presents data from a nationwide survey, reviews of available literature, and examines all state DOT websites for information on CSS policies and programs. In addition, case studies showcase three projects and one programmatic approach that use multi-disciplinary teams, providing valuable lessons learned and best practices that can be applied to make multi-disciplinary teams an even more effective part of achieving CSS. The report is available online at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_373.pdf.

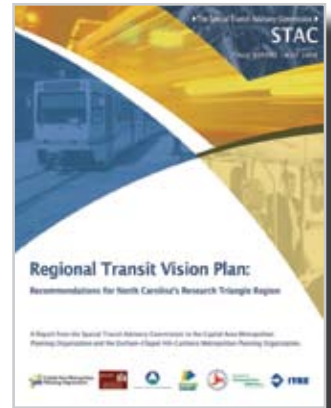
Research Program

An Exploration of Home Mortgage and Business Loan Data for Transportation Project Impact Analysis

Ann Hartell, CTE Research Associate, was invited to Vienna, Austria, to present this research at the Fulbright Summer School in May-June 2008. Hosted by the Research Institute for Spatial and Real Estate Economics at Vienna University, the school's program theme for 2008 was the intersection of urban and regional development and real estate research. Participating with Hartell were faculty from the University of North Carolina at Chapel Hill's Department of City and Regional Planning. Graduate students, post-docs, and young scholars from the US and Europe attend the summer program, which provides opportunities for scholars to present their work and engage in focused discussions to improve their research and yield further insights. Hartell and other participants also conducted a study tour of Vienna, visiting commercial and residential redevelopment projects in one of the city's districts. The tour included presentations and discussions from key project leaders.

STAC Regional Transit Vision Plan

Beginning in 2007, CTE staff collaborated with the Institute for Transportation Research and Education (ITRE) on a 14-month research project in support of the Special Transit Advisory Commission (STAC). The STAC was convened by the two Metropolitan Planning Organizations (MPOs) in North Carolina's Research Triangle Region to develop transit recommendations for the region's long-range planning. In May 2008 the Commission published its final report prepared by CTE and ITRE. The report outlines recommendations for enhancing region-wide bus networks, circulator services for major activity centers, and rail connections. It also provides an implementation strategy that addresses funding, linking land use with transit, and a regional approach to decisions on transit. The report sets forth several reasons for making transit investments, positioning transit as an important issue in addressing economic, community, and environmental issues in the region. The final report is available online at www.transitblueprint.org/stac.shtml.



CTE research associate Ann Hartell was recognized for her outstanding work on the STAC report with the 2008 NCSU Pack Leader in Innovation award, presented by the NC State University Transportation Department. Hartell accepted the award with fellow recipients Joe Huegy, ITRE program director for Travel Demand Modeling and Forecasting; Tom Cook, co-director, and Jud Lawrie, senior research associate, both of ITRE's Public Transportation program, who were also honored for their innovative work in transportation planning. The NCSU Pack Leader awards are presented annually and recognize individuals and organizations for their efforts to promote alternative forms of transportation on campus and in the Triangle region.



(From L-R) ITRE's Joe Huegy, Tom Cook, Jud Lawrie, and CTE's Ann Hartell accept the 2008 NCSU Pack Leader Award from NCSU Transportation Planner Torsha Bhattacharya.

Education Program

CTE's education program focuses principally on the Center's expertise in Context Sensitive Solutions (CSS), a collaborative interdisciplinary process for transportation planning and design. CTE has been a nationally recognized leader in CSS research and education since 2003. Education activities in 2007-2008 encouraged undergraduate and graduate students of diverse academic disciplines to participate in transportation and environmental research, and to consider potential careers in the field. The Center also conducted training activities to support the professional development needs of practitioners. More information about CTE's education program can be found at www.cte.ncsu.edu/cte/education.

CSS Summer Academy

In partnership with the North Carolina Department of Transportation, CTE staff and university faculty conduct a unique summer program for junior- and senior-level undergraduate students interested in careers in transportation. The Context Sensitive Solutions Summer Academy introduces CSS principles and teaches how these are applied in transportation planning, project development, construction, operations and maintenance. Thirty-four Summer Academy scholars have graduated since 2004 with an appreciation and working knowledge of CSS to support their professional goals.

The Academy emphasizes experiential learning through participation in CSS seminars, field trips, research, case studies and teamwork. Students also serve as NCDOT interns and conduct practical CSS research on NCDOT highway and bridge construction projects. Academy scholars in 2008 researched and analyzed 77 different NCDOT projects from across the state to determine their CSS-related costs of construction and operations. Interviews and questionnaires were conducted with key project officials to assess their attitudes regarding the importance and practice of CSS concepts.

"The students gave us a good look at CSS use during the construction phase," says Dr. Joe Hummer of NCSU's civil engineering department and an Academy instructor. "They found that CSS measures had been employed in over 60 percent of the projects sampled. This shows that CSS is gaining traction and the finding should be of value to NCDOT and to other agencies." Dr. John Stone, also with NCSU civil engineering, commends the students' research efforts. "The CSS scholars worked hard on a needed research topic. While our focus was on cost and schedule impacts, the students identified a variety of community and environmental benefits as well."

While gaining an understanding of CSS, Academy scholars also learn and practice valuable research skills. "They now know the importance of looking at prior literature, some basic questionnaire techniques, how peer review works for papers, and the need for consistent data collection standards," notes Dr. Hummer. "They employed statistical analysis techniques, and practiced preparing and giving a professional presentation. Whether the students go on to be producers or consumers of research during their careers, this experience should be beneficial."



Eleven undergraduate juniors and seniors from NC State University, North Carolina A&T University, and The Citadel successfully completed the 2008 CSS Summer Academy. The experience helps to better prepare these young scholars for their transportation careers and in turn helps improve future transportation project planning. More information about the CSS Summer Academy can be found at www.cte.ncsu.edu/cte/education.

CSS Summer Academy
Class of 2008

Education Program

2008 CSS Summer Academy Scholar Perspectives

Matthew Boatwright, Junior, Civil Engineering, NC State University



I was impressed when learning how taking a small amount of extra time to take into account how a project will affect the environment, can drastically affect the results. The CSS summer program opened up an interest and awareness of environmental issues I didn't have before. It's a great opportunity to introduce yourself to the problems engineers are presently facing, and learn how they are being solved.

Mustafa Mannan, Junior, Civil Engineering, NC State University



I had no idea what CSS was before the CSS Academy and it really opened up my eyes to what goes on during construction. I got to meet with Resident Engineers during the experience and gained some valuable information about future employment. I hope to either work for the state or a consulting firm, and CSS will definitely be a major part in my way of thinking. It has been an exciting and valuable experience taking part in the CSS Academy.

Philip Townsend, Senior, Civil Engineering, NC State University



I really had no understanding of the relationship before the class, and now I feel like I have a very solid idea of what needs to be done during the construction process to protect the human and environmental elements. I will be working in Roadway Design this fall, and if there is anyone there who has not taken the course I feel like I could help introduce them to the CSS thought process. The summer academy is worth taking!

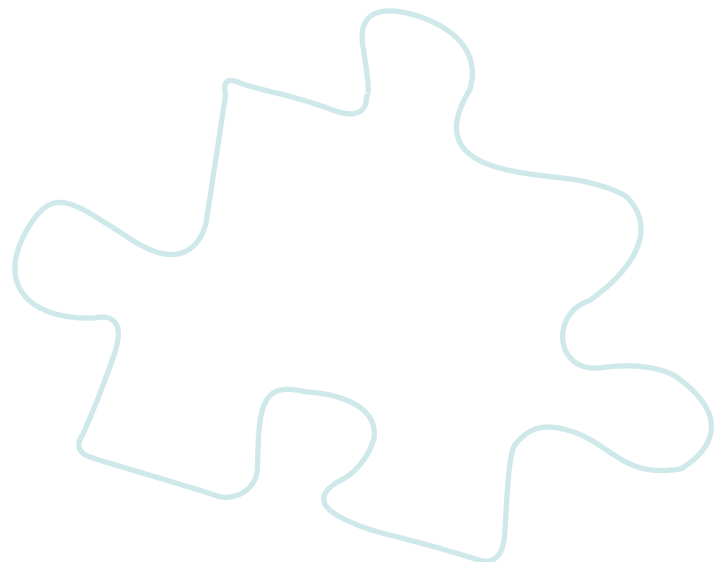
NCDOT Training

During 2007-2008, CTE continued its training of North Carolina Department of Transportation employees in two critical environmental areas.



One hundred seven NCDOT employees across the state completed the Center's three-day course titled "Context Sensitive Solutions: A Better Way." The in-depth training covers CSS approaches and tools from transportation planning, project development, and design to right-of-way, construction, operations, and maintenance. Participants learn through lectures, case study presentations, facilitated group discussions, and decision-making exercises. Since 2003, CTE has delivered over 50 CSS courses to more than 1,600 transportation department staff, local agencies and consultant groups across the state. Learn more about the Center's CSS training at www.cte.ncsu.edu/CTE/Education/css-training.asp

CTE also provided instructional and administrative support for the NCDOT's Merger 01 training courses. Merger 01 is a process to streamline transportation project development and permitting, and provide a forum for federal, state and local agencies to discuss and reach consensus on ways to meet the regulatory requirements of Section 404 of the Clean Water Act during the NEPA/SEPA decision-making phase. Three hundred seventeen transportation executives and practitioners participated in Merger 01 training in 2007-08. More information about Merger 01 can be found on the NCDOT website at www.ncdot.org/doh/preconstruct/pe/merger01.



Tech Transfer Program

CTE's technology transfer activities in 2007-2008 utilized both Web-based and traditional forums to connect students and practitioners with current information about transportation and environmental research and policy issues. Fostering communication and collaboration between transportation and environmental professionals is integral to the Center's mission. CTE is continually seeking technology transfer opportunities to increase and improve access to information on current research applications, best practices, and policies. For more information on the CTE technology transfer program, please visit the website at www.cte.ncsu.edu/cte/techtransfer.

Web Streaming for US EPA Teleconferences

Since 2001, CTE and the US Environmental Protection Agency (EPA) have maintained a successful cooperative agreement to support each other's technology transfer activities. CTE provides web streaming and hosting for teleconference broadcasts produced by the EPA Office of Air Quality Planning and Standards. Each program addresses important current issues for state, local and tribal air pollution professionals. The programs are carried live over EPA's Air Pollution Distance Learning Network, which also carries CTE National Teleconference broadcasts, then are transferred to the Center's web server for on-demand viewing and archiving. In 2007-2008, CTE added two EPA broadcasts to its online archive. To view these and other EPA broadcasts, visit the CTE website at www.cte.ncsu.edu/cte/techtransfer/teleconferences/epabroadcasts.asp.

Air Quality Data & Tools for Ozone Season & Beyond (July 2007)

This program focuses on new data and tools for air quality professionals that are useful in conducting technical analyses and in communicating air quality information. EPA representatives discuss recent air trends data and new air quality tools including the AirCompare and AirTrends websites, BenMAP geographic information system-based application, and Smog City 2 online interactive air pollution simulator.

PM 2.5 Implementation (September 2007)

In 2007, EPA issued a final rule defining requirements for state plans to clean the air in 39 areas where particle pollution levels do not meet national air quality standards. Fine particles or "PM2.5" can aggravate heart and lung diseases and have been associated with premature death and a variety of serious health



problems including heart attacks, chronic bronchitis and asthma attacks. This broadcast provides a general overview of the PM 2.5 Implementation Rule, addressed PM 2.5 nonattainment in the future, and RACT/RACM control requirements.



CTE provides web streaming of EPA teleconferences covering a variety of air quality issues including vehicle emissions.

High Speed Rail Summit

Rail industry leaders and government officials from across the nation gathered in October 2007 to discuss the future of high speed rail service in east coast rail corridors. CTE distance learning specialist Eugene Murray provided

technical support to plan and document the proceedings on video. The day-long summit titled "High Speed Rail for the East Coast – It's Time," held in Raleigh, NC, focused in particular on the connection between passenger and freight rail in east coast corridors. A series of discussion panels throughout the day featured national and international rail transportation experts who examined technical, policy and funding issues related to these corridors. US Congressmen James Oberstar (D-MN) and John Mica (R-FL) delivered remarks by video, and Congressman David Price (D-NC) participated in a panel discussion by video conference from Washington, DC. Wisconsin Secretary of Transportation Frank Busalacchi, and nationally syndicated columnist Neal Peirce, were among 20 speakers at the event attended by over 200 transportation professionals and interested public. The Women's Transportation Seminar North Carolina Triangle Chapter, lead organizer of the summit, invited CTE to assist with technical logistics and provide video recording services to document the event.

Washington Wildlife Crossings Field Course

In June 2008 CTE staff Nancy Bailey and Eugene Murray provided Web services and event documentation for this three-day professional development workshop held in Roslyn, WA. Organized by the Southern Rockies Ecosystem Project, the field course provided a constructive forum for sharing expertise and exploring new ideas in creating successful wildlife crossings. More than 100 professionals from state DOTs and natural resource agencies, universities, wildlife advocacy groups, and consultant firms participated. Presentations by a multi-discipline group of practitioners were given to address issues of planning, design, funding and monitoring of wildlife crossings. The course included a field tour of Washington State DOT's I-90 Snoqualmie Pass East project, a 15-mile highway improvement project where wildlife connectivity and habitat restoration efforts are being emphasized. CTE provided the Web-based registration for course participants, video recording and photography services during the event, and published its proceedings on the Center's website. Presentation videos, photos, and more information about the 2008 field course are available online, as well as proceedings from previous field courses conducted in Payson, Arizona (2005) and Alberta, Canada (2002) also documented by CTE. To learn more visit the CTE WFT Web Gateway at <http://cte.ncsu.edu/CTE/gateway/home.asp>.



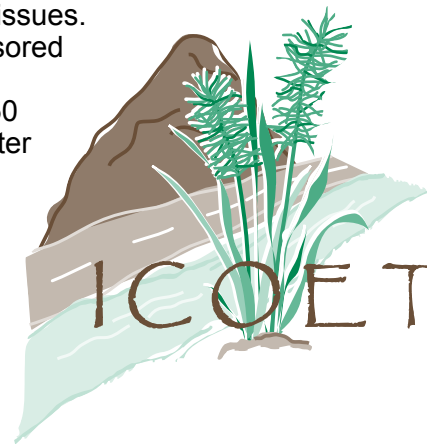
Staff from Washington State Department of Transportation and the US Forest Service discuss wildlife monitoring issues with field course participants during a tour of the I-90 Snoqualmie Pass East project. The tour visited several points of interest along the highway improvement project's 15-mile corridor where wildlife connectivity and habitat restoration are being emphasized.

Conferences and Workshops

CTE annually co-sponsors and serves as lead organizer for professional development conferences and workshops and that relate to the Center's mission of mitigating the impacts of surface transportation development on the environment. During 2007-2008 the Center was engaged in these activities:

ICOET 2007 Proceedings

In fall 2007 CTE published the proceedings of the 2007 International Conference on Ecology and Transportation (ICOET), held May 20-25, 2007 in Little Rock, Arkansas. ICOET is a multi-disciplinary conference conducted biennially to identify and share quality research and best management practices that address related transportation, wildlife, habitat, and ecosystem issues. Organized and co-sponsored by CTE, ICOET 2007 comprised more than 150 technical paper and poster presentations, exhibits, and field trips which surveyed the broad range of ecological concerns related to surface transportation. The conference included sessions on integrative planning approaches and a



special session on environmental considerations related to public-private partnerships. The successful event drew participation from over 350 international transportation and environmental experts representing 14 countries. ICOET is principally sponsored by the Federal Highway Administration and broadly supported by several federal resource agencies, state transportation agencies, universities, non-governmental organizations, and private consulting firms. The 2007 proceedings were published in print, on CD-ROM, and on the ICOET website along with video clips of selected sessions. For more information on ICOET 2007 or to view videos and download proceedings, visit www.icoet.net.

Tech Transfer Program

ICOET 2009 Conference Planning

CTE also began its initial planning this period for the ICOET 2009 conference, to be held September 13-17, 2009 in Duluth, Minnesota. The Center is honored to continue in its service as lead organizer and a co-sponsor of the event since it first convened in 2001. The conference theme of ICOET 2009 is "Adapting to Change," with the program focusing on the challenges faced by transportation and ecology professionals as they adapt for future global climate changes, shifts in transportation demand and patterns, and evolving environmental and transportation policy. The Call for Abstracts is scheduled to open in fall-winter 2008. The Minnesota Department of Transportation will serve as host agency for ICOET 2009. For more information visit the conference website at www.icoet.net.



CSS National Dialog

Initial planning also began in 2008 on this collaborative project between CTE and the Federal Highway Administration to facilitate an ongoing exchange of ideas and build momentum for broader implementation of Context Sensitive Solutions (CSS) in the transportation industry. The goals of the CSS National Dialog include introducing CSS principles to a wide array of partner organizations, identifying and presenting best practices, and bringing new perspectives to planning, designing, building and maintaining transportation facilities. The Dialog will feature a series of one-day workshops to be held across the US and focusing on a particular aspect of CSS. Current transportation projects, programs and plans will be used to highlight best practices and provide a springboard for discussion and interaction. CTE will launch the CSS National Dialog website in early 2009, and solicit case studies from around the country to be featured in the workshops. CTE's associate director James Martin and research associate Ann Hartell are lead staff on the project. For more information contact CTE at cssnationaldialog@ncsu.edu or call 919-515-9351.

Committees and Additional Conference Participation by CTE Staff

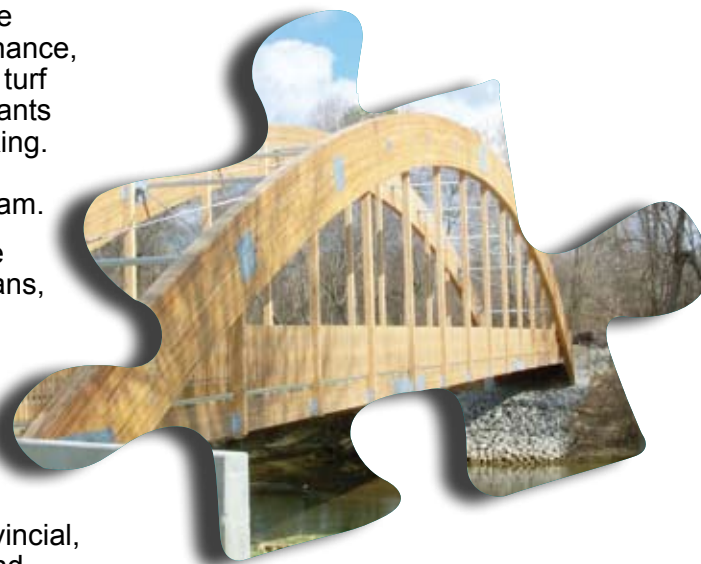
- TRB ADC10 Committee on Environmental Analysis in Transportation (D. Brill)
- TRB ADC30 Committee on Ecology and Transportation (J. Martin)
- TRB Transportation Planning and Air Quality, Orlando, FL, July 2007 (J. Martin)
- North Carolina Association of Metropolitan Planning Organizations, Greensboro, NC, October 2007 (A. Hartell)
- TRB National Asset Management, New Orleans, LA, November 2007 (J. Martin)
- Western Governors' Association Wildlife Corridors Meeting, Salt Lake City, UT, December 2007 (J. Martin)
- Transportation Research Board Annual Meeting, Washington, DC, January 2008 (D. Brill, A. Hartell)

Tech Transfer Program

TRB and FHWA Environmental Communications

CTE helps facilitate communications and information sharing for environmental committees of the Transportation Research Board through the Center's hosting of committee websites. CTE also moderates email listservs for committee members and their peers, and in support of FHWA programs. In 2007-2008 the Center continued its support of these TRB environmental committees and related listservs:

- TRB ADC10 Environmental Analysis in Transportation website
- TRB ADC30 Ecology and Transportation website
- TRB ADC50 Historic and Archaeological Preservation in Transportation website
- TRANSENVIRO – listserv for government officials, transportation and environmental professionals, and the public to informally exchange news about current research, discussion of problems and solutions, requests for advice and assistance, and announcements of upcoming conferences and events.
- WFTLISTSERV – listserv for officials, professionals, and public interest groups working in wildlife, fisheries, and transportation fields to exchange information and ideas regarding new research applications, policy issues, best practices, and upcoming events. The listserv includes subscribers who are active in the International Conference on Ecology and Transportation
- ROADSIDES – listserv for transportation officials, scientists, practitioners, and university researchers working in vegetation management along highway corridors. Subscribers include professionals working in landscape, maintenance, environmental services, erosion control and turf establishment, noxious weeds and native plants to increase information-sharing and networking. The listserv supports the Federal Highway Administration's Roadside Vegetation Program.
- TRANSARCH – listserv for cultural resource specialists, including archaeologists, historians, structural historians, and anthropologists, employed in transportation agencies. Subscribers share their individual knowledge, experience, and ideas on cultural resource problems with a nationwide audience of colleagues facing the same challenges. TransArch list members are restricted to staff of state, provincial, tribal, and county transportation agencies and to staff of the Federal Highway Administration.



More information and links to TRB committee websites can be found at www.cte.ncsu.edu/cte/trbpartners. For details on subscribing to the above listservs, visit www.cte.ncsu.edu/CTE/Lists/index.asp.

For More Information

For more information about the Center for Transportation and the Environment, or to inquire about partnership opportunities, please contact:

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