

Virginia Transportation Research Council

We Bring Innovation to Transportation

WHO WE ARE

Formed in 1948 by agreement between the then-Virginia Department of Highways (now the Virginia Department of Transportation, or VDOT) and the University of Virginia (UVA), the Virginia Transportation Research Council (VTRC) is one of the nation's oldest state-sponsored centers for transportation research. For 70 years VTRC has supported Virginia's transportation system by conducting an extensive program of applied, practical, customer-driven research with a strong emphasis on implementing research findings. In addition to applied research, VTRC's staff of research engineers and scientists with expertise across a wide spectrum of technical areas are also called upon frequently to provide quick turn-around technical assistance to VDOT districts and divisions faced with challenges requiring a rapid solution.

VTRC has strong collaborative relationships with Virginia colleges and universities – extending internal staff resources by contracting with world-class faculty and students at these institutions to conduct studies of value to VDOT. VTRC researchers employ their intimate knowledge of VDOT to guide, and often collaborate in, these efforts to ensure study results meet VDOT's needs. A secondary, but very important, benefit of VTRC's university relationships is the development of future transportation professionals that results from student involvement in these projects.

Every VTRC research project begins with a discussion of how the results of that project, if successful, will be implemented. "Beginning with the end in mind" helps to ensure that the work VTRC does is ultimately beneficial to VDOT and the broader transportation community. To support implementation, VTRC has a dedicated implementation coordinator and funding.

Using this proven, sound and successful business model, VTRC works closely with VDOT to identify, assess, develop and help put into practice improved processes, policies, and engineering and technological solutions to meet today's many challenges.

WHAT WE DO

Strategic focus

- Increase infrastructure service life
- Develop cost-effective innovative materials and designs
- Reduce crash and fatality risk

- Improve mobility and mitigate congestion
- Enhance transportation planning
- Create multimodal solutions for a more efficient statewide transportation system
- Preserve environmental and historic resources
- Improve agency business practices
- Conduct special studies for Virginia General Assembly, Secretary of Transportation and VDOT
- Train future transportation professionals through university partnerships
- Implement research results and foster putting innovative ideas and technologies into practice in the field

EXPERTISE AREAS

Structures

Cost-effective methods to maintain and preserve bridges and other structures; increase the service life of bridges; joint less bridges (integral abutments); innovative materials and designs; high-performance concrete; fiber reinforced concrete; low cracking concrete; corrosion-resistant reinforcement; non-destructive evaluations; evaluation of load carrying capacity; strengthening bridges; end-result specifications.

Pavements

In-place and mobile-plant recycling and reclamation processes to reuse existing materials in road rehabilitation projects; warm-mix asphalt; high-content reclaimed asphalt pavement (RAP); end-result and performance based specifications for materials and construction.

Safety, Operations and Traffic Engineering: Traffic-signal systems; hurricane-evacuation traffic management; data collection and analysis; performance measurement and management; active traffic management; visibility and conspicuity; crash causation and mitigation; connected-vehicle technology and automation

Environment, Planning and Economics: Storm water best management practices; waste management and recycling in highway maintenance operations; mitigation of animal-vehicle collisions; protection of endangered and threatened species in highway corridors; historic structures identification and management; access management; traffic forecasting models; socioeconomic forecasts for long range planning; bicycle and pedestrian studies; transit research; transportation funding and financing; cost-benefit and return-on-investment analyses for all research areas; legislative and policy studies.

EXTERNAL TECHNICAL ACTIVITIES

VTRC researchers are involved in technical activities of numerous Transportation Research Board (TRB) and American Association of State Highway and Transportation Officials (AASHTO) committees, National Cooperative Highway Research Program (NCHRP) and Transit Cooperative Research Program (TCRP) panels and other professional transportation organizations.

Each year, for example, VTRC scientists contribute to approximately 10-15 papers that TRB designates as “practice-ready” – or contributing to the solution of current or future transportation problems or issues – for presentation at TRB’s annual meeting.

HOW WE’RE FUNDED

VTRC receives funding from VDOT and federal support from the Federal Highway Administration (FHWA) through its State Planning and Research program and other categorical grant programs.

Additionally, VTRC has successfully secured external funding through collaborative state and federal pooled-fund studies, National Cooperative Highway Research Program (NCHRP) studies and other federal sources.

STAFFING

VTRC has about 45 full-time staff, including about 30 who conduct research, plus several part-time employees in technician and support positions. Many staff members hold PhDs in their area of expertise and are registered Professional Engineers in the Commonwealth of Virginia. VTRC also houses certain UVA faculty members, Graduate Research Assistants, and undergraduate student interns who collaboratively work with VTRC staff on projects of vital interest to VDOT.

FACILITIES

VTRC is located on the UVA Grounds in Charlottesville, Virginia, in the Tilton E. Shelburne Building. Erected in 1973 and named for the VTRC’s founder and first Director, the 48,000-square-foot Shelburne Building houses office space; meeting rooms; conference space; a 50,000-volume transportation library; and asphalt, concrete, binder, corrosion, petrography, environmental, and geotechnical labs.

Through our cooperative arrangements with both UVA and Virginia Tech, VTRC researchers have access to advanced research facilities such as:

- The UVA Smart Travel Lab
- Virginia Tech Cooperative Center for Bridge Engineering
- Virginia Smart Road located at the Virginia Tech Transportation Institute

VDOT RESEARCH LIBRARY

Established in 1954, the VDOT Research Library provides walk-in access and a “virtual” presence to VDOT employees statewide.

The library offers an array of collections and services through four departments (Loans, Research Support, Interlibrary Loans, and Technical Services) including:

- An online library catalog providing access to 50,000 printed volumes and 60,000 E-books and other digital documents.
- Resource sharing with libraries worldwide using OCLC’s WorldShare Interlibrary services software.
- Desktop access to 13 subscriptions from the VDOT network, which includes: technical reports, E-books, standards, videos, audio books and book summaries.
- “Remote access” to subscriptions from home, the field or mobile devices using the library’s Proxy Server and Virtual Library Card.
- A customized literature search service
- LibAnswers: An online customer service platform that includes: FAQ, live chat, and an online “ticketing” system.

Virginia Center for Transportation Innovation and Research
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