


# Turner-Fairbank Highway Research Center

ESSENTIAL, INDISPENSABLE, AND CONNECTED TO OUR CUSTOMERS

U.S. Department of Transportation
Federal Highway Administration

# Welcome to the Turner-Fairbank Highway Research Center

Welcome to the Turner-Fairbank Highway Research Center (TFHRC) in McLean, Virginia, *the Nation's premier highway research and development facility*. As the research center for the Federal Highway Administration (FHWA), TFHRC coordinates and conducts an ambitious program of innovative highway research and development to address critical needs of the national highway system. FHWA's leadership role in research and technology begins with the agency's mission to "improve mobility on our Nation's highways through national leadership, innovation, and program delivery" and grows from the role that FHWA has defined for itself to be "innovators for a better future."

*As a national leader in transportation research,* FHWA works with the U.S. Department of Transportation (DOT), partners in State and local governments, industry, and professional organizations to develop and deliver a comprehensive nationally coordinated research and technology program. FHWA also collaborates with other institutions, such as the National Academy of Science, University Transportation Centers, national laboratories, and international highway research laboratories and communities to support this national transportation research program.

FHWA's engineers, scientists, and psychologists conduct advanced and applied research to create innovative solutions that improve our national quality of life. By developing advanced technology and techniques and implementing systems and simulation tools, the focus is on preventing congestion, improving mobility, improving roadway safety, reducing highway crashes and related fatalities, and improving infrastructure performance.

Through its three research and development (R&D) offices—Infrastructure, Safety, and Operations—along with the Exploratory Advanced Research Program, FHWA is meeting the transportation challenges of today and those over the horizon.

# Infrastructure

The Office of Infrastructure R&D conducts and administers infrastructure R&D programs and projects for the FHWA that address problems of national priority within the U.S. highway system. The programs' approach to highway infrastructure R&D emphasizes interdisciplinary collaboration and strong stakeholder involvement. As a result, these programs recognize that pavements and bridges are integral and interrelated components of a highway system and do not function as distinct elements. Although the fundamental structure and components of pavements and bridges are quite distinct, some research and development needs are common to both. Only by using all facilities and assets available within the Office of Infrastructure R&D and working collaboratively with counterparts in other FHWA offices and with stakeholders throughout the highway community will U.S. highway needs and issues in the near and long term be addressed.

The Office of Infrastructure R&D focuses on the needed research and development where there is an appropriate Federal role by virtue of national needs, scope, duration, or risk. This role is reflected in the following six overarching strategies: (1) Long-Term Infrastructure Performance, (2) Durable Infrastructure Systems, (3) Accelerated Highway Construction, (4) Environmentally Sensitive Highway Infrastructure, (5) Performance-Based Specifications, and (6) Comprehensive and Integrated Infrastructure Asset Management.

## THE HISTORY OF TFHRC

**1938** *Congress responded to a growing public need for dedicated highway research by acquiring 235.3 hectares (581 acres) of land in McLean, VA, for a roadway research facility.*

**1941** *The beginning of World War II interrupted building construction at the research facility.*

# Safety

The Office of Safety R&D aims to reduce highway crashes and related fatalities and injuries by researching, developing, and implementing safety innovations. The focus is on FHWA's priority objectives of strategically managing safety, preventing and mitigating roadway departures, improving intersections, protecting pedestrians, and managing speeds. Safety R&D provides transportation practitioners with improved safety assessment and decision-support tools, new technologies and designs, and enhanced understanding of the human-behavioral and safety impacts of highway improvements.

Examples of safety-assessment and decision-support tools include SafetyAnalyst, the Surrogate Safety Assessment Model, Interchange Safety Analysis Tool, Pedestrian-Bicycle Crash Analysis Tool, and the Interactive Highway Safety Design Model. Technologies that support highway safety management and design include the Digital Highway Measurement System, advanced crash analysis and simulation, and highway driving simulation. Safety features studied include roadside hardware and slopes, innovative intersection designs, lighting designs for midblock pedestrian crosswalks, speed reduction treatments approaching high-speed rural intersections, and the Safety Edge.

Advanced research is focused on human factors and visibility, advanced sensing and communication between the vehicle and the road, and the feasibility of an integrated active transportation system.

## 1950

*After the war, funding was limited, and it was not until 1950 that the two original buildings, built on 17.8 hectares (44 acres) of the original purchase, were ready for occupancy. The Bureau of Public Roads moved to the McLean site, which was named the Langley Research Station.*

## 1960s

*In 1963, the site was renamed the Fairbank Highway Research Station, honoring Herbert S. Fairbank, the former Deputy Commissioner of Research for the Bureau of Public Roads (1944 to 1955). Land from the original site was transferred to the Central Intelligence Agency, the National Park Service, and the State of Virginia. Extensive modifications over the years improved the facilities but could not meet the growing needs of the national highway research and development program. Plans for expansion began in 1967.*

# Operations

The Office of Operations R&D conducts research on the application of Intelligent Transportation Systems (ITS) and other cutting-edge technologies to move people and goods more efficiently, quickly, and safely. Research focuses on two key areas: enabling technologies and travel management.

Enabling technologies are fundamental technologies that facilitate the operation of other applications. For example, advanced sensors measure traffic flow so that adaptive control systems can adjust to changing traffic patterns. Global positioning systems provide accurate location information that is necessary for automatic collision notification systems.

Our researchers are conceiving new systems that will incorporate sensors and positioning systems to support vehicle-infrastructure integration and advanced safety and mobility enhancing services.

Travel management research uses advanced technologies and techniques to estimate and predict the flow of traffic and to adjust signal timing to prevent congestion. FHWA and its partners in the Exploratory Advanced Research Program are exploring current research on how vehicle-infrastructure integration technologies can significantly improve traffic signal control systems.

## 1980s

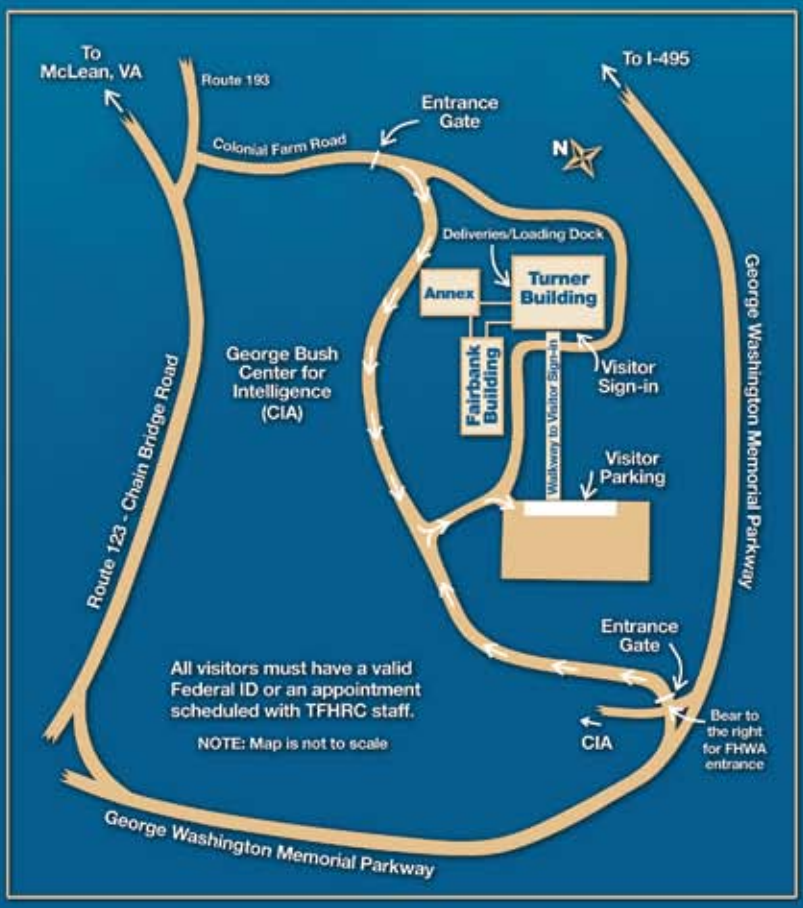
*In 1980, construction began on a third building. Completed in 1983, this building was dedicated to Francis C. Turner, the first Administrator of the Federal Highway Administration to serve his entire career with the agency, and the research station was renamed the Turner-Fairbank Highway Research Center. The Turner Building provides 7,432 square meters (80,000 square feet) of state-of-the-art laboratory, office, and support service space.*

*TFHRC now has more than 24 indoor and outdoor laboratories and support facilities. Approximately 300 Federal employees, onsite contract employees, and students are currently engaged in or supporting transportation research at TFHRC.*

## A New Millennium

# *Come See Us*

Each year, hundreds of people in scheduled groups visit the center and participate in tours of our laboratories. If you would like to know more about TFHRC's research and other activities, visit our Web site at www.tfhrc.gov. Whether you visit us in person or via the Internet, you will see FHWA's commitment to an exciting, vital research and service program that is **essential, indispensable, and connected** to America's growing transportation needs.




## TURNER-FAIRBANK
### HIGHWAY RESEARCH CENTER

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**FHWA-HRT-08-066**
**HRTM-03/2-09(2M)E**