



Source: FHWA.

# SAXTON LABORATORY

## Transforming Transportation Systems Through Research and New Technologies

### SAXTON TRANSPORTATION OPERATIONS LABORATORY

The Federal Highway Administration’s (FHWA’s) Saxton Transportation Operations Laboratory (STOL) serves as a nationally recognized source for cutting-edge operations research and development (R&D), advancing the safety, efficiency, and sustainability of the surface transportation system. Established in 2011, STOL is located at the Turner-Fairbank Highway Research Center in McLean, Virginia. STOL enables FHWA to conceptualize, validate, and refine innovative transportation services and technologies before large-scale development and implementation.

#### STOL VISION

By enabling the R&D of innovative intelligent transportation system technologies and accelerating industry adoption, STOL will shape the future of transportation system management and operations.

#### STOL FOCUS AREAS



##### *Cooperative Driving Automation (CDA)*

CDA enables infrastructure to communicate with automated vehicles, pedestrians, cyclists, and other road users to improve transportation safety, efficiency, and operations. STOL is spearheading the R&D of CDA features that, once deployed, have the potential to advance transportation safety, mobility, and efficiency.



##### *Analysis, Modeling, and Simulation (AMS)*

AMS tools quantify the benefits of proposed transportation solutions by estimating and evaluating the impacts of emerging technologies, data sources, and alternative strategies. STOL is developing new AMS tools to facilitate the addition of connected and automated vehicles into the traffic stream. With these new tools, STOL aims to support the selection of the best possible transportation investment decisions.



##### *Intelligent Transportation Systems (ITS) Technologies*

STOL is investigating the integration of legacy technologies, such as artificial intelligence and machine learning, with new technologies that use data collection and share information with the intent to build a network of cooperative perception among automated vehicles and infrastructure. STOL seeks to use these combined technologies to improve traffic management capabilities and develop decision support systems for traffic managers.



Figure 1. Illustration. Saxton Transportation Operations Laboratory.



## STOL FACILITIES

STOL is surrounded by extensive, connected road, traffic signal, and mobile-sensing networks that enable a broad range of research needs, including testing of connected automation applications. A fleet of vehicles for CDA R&D is housed within the facility's vehicle preparation garage, and connected laboratories on site host state-of-the-art simulation and analysis tools.



All images source: FHWA.

**Figure 2. Photos. Various research and development activities around the Saxton Transportation Operations Laboratory facility.**

Backed by a network of physical prototypes, test beds, and advanced simulation tools, STOL enables the convergence of Federal staff, transportation researchers, academics, and industry stakeholders who collaborate on cutting-edge transportation research. Through this critical work, STOL aims to enhance the national transportation system's efficiency, safety, capacity, and reliability.

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