Rain or Shine: TTI's SEC Lab Pioneers Roadside Environmental Management

As the wear and tear of time puts a toll on our roads and our environment, it's imperative to have measures in place to combat potential issues that may arise. With the ever-changing climate and increasing environmental regulations, now more than ever it's essential that the best products are being used on our roadways — not only for the safety of the people on them but for the longevity of our planet.

The Texas A&M Transportation Institute's (TTI's) highly acclaimed Sediment and Erosion Control (SEC) Laboratory houses a wide range of state-of-the-art equipment, including five indoor rain simulators, a physical property test lab, a 1,000-foot vegetated natural soil embankment, a variable slope channel flume, a sediment control device evaluation facility and pollinator test plots. Together, these one-of-a-kind assets have helped TTI conduct extensive research on erosion and sediment control, stormwater quality improvement, vegetation establishment, animal conservation and more.

"One of our most prominent projects in the facility has been developing the Interactive Approved Product List for Erosion and Sediment Control Products. This tool helps engineers and designers select the best management practice based on user input of site conditions," says TTI Associate Research Scientist Jett McFalls. "However, with the versatility of the lab, it also affords us the opportunity to take on different projects that address the impacts transportation has on our environment."

Originally built in 1990, the SEC Lab has been in operation for over 30 years and has earned international recognition for its research and testing capabilities. SEC Lab projects include state and federal research projects for the Texas Department of Transportation, Federal Highway Administration, American Association of State Highway and Transportation Officials, National Cooperative Highway Research Program, Transportation Research Board, Texas Commission on Environmental Quality and various state departments of transportation. The SEC Lab recently received the International Erosion Control Association's Environmental Excellence Award.

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The 30-foot outdoor variable slope channel flume is used for evaluating the performance capabilities of flexible channel liner materials at a range of shear stress flows.

A 19-acre indoor and outdoor facility operated by TTI's Multimodal Planning and Environment Division, the laboratory tackles roadside environmental management issues and conducts comprehensive product testing. A highly sought-after facility, the laboratory underwent a major expansion in 2013 to increase efficiency and sustainability in the face of demand. The expansion brought with it a brand-new building with three independently operated indoor rainfall simulators equipped with three 8-by-40-foot variable-slope soil-filled test beds, a 1,500-foot covered sediment bed preparation area and a 40-by-60-foot soil storage building. Today, the SEC Lab continues to act as a key resource for infrastructure and development projects.

"Over the years, the lab has provided the transportation industry with valuable information and solutions to the challenges posed by modern infrastructure issues," notes McFalls. "The facility has provided us with a scientifically sound platform to push the boundaries of testing, which has led to significant cost savings, greater environmental protection and more resilient roads." ■

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