FACILITIES

Materials Handling and Storage Facilities

This state-of-the-art facility will allow researchers to procure and process materials currently being used by industry for applied research applications. It also will allow researchers to utilize materials that might advance the resiliency of infrastructure systems not currently in use.

Conference & Training Facilities

The CIR features an integrated conference and training facility, providing a unique environment to develop transformative infrastructure solutions with an adjoining space to raise the knowledge and skill level of the workforce needed to build this new infrastructure. Through targeted training, knowledge transfer and continuing education activities, the CIR conference and training facilities help foster cross-industry and governmental agency partnerships and accelerate the implementation of new infrastructure solutions. These facilities include a large training room, two small boardrooms, a pre-function area with kitchen and an exhibit hall.

About the CIR

Focusing on research, innovation and workforce development, the Center for Infrastructure Renewal (CIR) is the national leader in the development of transformative infrastructure solutions. New solutions are needed to replace today's aging infrastructure that is in need of repair or has outlived its intended capacities. In 2015, the Texas Legislature recognized the need for new solutions and appropriated funds to create the CIR as a joint center between the Texas A&M Engineering Experiment Station (TEES) and the Texas A&M Transportation Institute (TTI). CIR labs are innovating new materials, technologies and processes to create solutions that last longer, have lower costs and can be built in less time

FOR MORE INFORMATION PLEASE CONTACT:

Zachary Grasley, Director
Email: *zgrasley@tamu.edu*
Phone: *979.317.1201*
cir.tamu.edu

CENTER FOR INFRASTRUCTURE RENEWAL

Labs & Facilities

TEES
TEXAS A&M ENGINEERING EXPERIMENT STATION

Texas A&M Transportation Institute

CENTER FOR INFRASTRUCTURE RENEWAL

Lower Cost, Less Time, Longer Life

LABS

Advanced Characterization of Infrastructure Materials Lab

The Advanced Characterization of Infrastructure Materials (ACIM) lab is unique among industry and university-based labs as it incorporates advanced characterization of the materials used to build the single and composite materials that support infrastructure. Using advanced micro/nano-analytical techniques and non-destructive evaluation, the ACIM lab provides equipment and computational power for the characterization of aggregates, bitumen, cement, asphalt and cement composites, soil and other related construction materials.

Advanced Infrastructure Materials & Manufacturing Lab

One thing we know for sure: the future of infrastructure will not look like its past. The main strength of this cross-disciplinary lab is to bridge the recent advancements in additive manufacturing technologies with large-scale structures. The Advanced Infrastructure Materials & Manufacturing (AIMM) Lab will focus on developing advanced, symbiotic and conjoint materials and manufacturing methods, including applications of robotics and 3-D printing in additive manufacturing technology. More efficient than conventional construction methods, these new methods can yield less material waste, greater quality and better on-site safety. The AIMM lab is shifting not only how infrastructure is constructed today, but also transforming the way infrastructure is designed and built in the future from beginning to end.

Asphalt Innovation Lab

The Asphalt Innovation Laboratory, accredited by the American Association of State Highway and Transportation Officials, has state-of-the-art equipment and world-renowned researchers from the Texas A&M Transportation Institute (TTI) that are investigating, developing and deploying improvements in asphalt technology. Researchers focus not only on defining problems, but solving them, and helping implement the solutions to improve our roadways for the traveling public and provide more effective products for transportation professionals who are building and maintaining the transportation system. The experts in this lab employ a holistic approach to pavements, including intricate modeling, chemical analysis, physical testing, and field investigations to provide research sponsors with the most thorough analysis of new products and solutions to their problems. A better understanding of asphalt through the innovations developed in this lab is leading to the development and implementation of pavements that rut and crack less, are longer lasting and ultimately cost less over their designed life.

Automated Vehicles/ Connected Vehicles Lab

Connected transportation is a major evolution in how vehicles and infrastructure will interact in the future, affecting every facet of transportation safety and mobility. Vehicles and the infrastructure will be able to talk to each other and communicate their real-time conditions. The lifespan of this research is expected to last more than two decades as communication and message standards are developed, application development takes place, and new data collection and analysis techniques are developed to bring this transformational technology to the roadways we all drive. The Automated Vehicles/Connected Vehicles Laboratory (AVCV Lab) is a fully equipped collaborative work space where different disciplines can work together to develop, test and deploy next generation sensors and data applications for the connected and automated vehicle environment, as well as the overall infrastructure arena. The facilities will also be a living laboratory for undergraduate and graduate students to develop expertise in connected transportation to be the future leaders in this emerging discipline.

Concrete Innovation Lab

This lab houses research on all things concrete – developing innovative and sustainable construction materials; alternative cementitious materials; concrete durability (especially ASR and freeze-thaw) with new and innovative approaches; developing performance-based approaches to formulate concrete mixes for different sustainable applications; the recycling and reuse of waste and marginal materials; nanotechnology; high-performance cement; innovative concrete curing practices; innovative approaches to studying concrete permeability and creep; durability-based specifications for high-performance concrete; innovative concrete pavement design; concrete microstructure; and material science aspects of cement, aggregate and concrete.

Intelligent Infrastructure Assessment Lab

Infrastructures must withstand normal service loads as well as extreme loading events. Over time, infrastructures show signs of wear and tear and often signs of distress. Engineers continually are required to assess the safety of infrastructure – particularly when facilities are aged – as owners need to know the expected remaining life of the infrastructure and when it may be subjected to a catastrophic event. With the advent of low-cost sensors and ubiquitous cloud computing, in the future the mainstreaming of sensed facilities will occur. Monitoring of these facilities will become the norm and not the exception. The Intelligent Infrastructure Assessment Lab will be a leader in this emerging field, developing intelligent infrastructure technology using innovative sensors, sensor networks, signal processing and controls for the assessment of infrastructure-related facilities.

National Corrosion & Materials Reliability Lab

Through research, education and training, the National Corrosion & Materials Reliability Lab (NCMRL) provides solutions to the corrosion needs of industry and government in order to maximize asset life, production efficiency and worker safety. The goal is to preserve and extend the integrity of the structures, such as buildings, bridges, pipelines, roads, ports and off-shore platforms that can be continuously occupied and operational during the entire design life of current or new civil infrastructures. The NCMRL conducts state-of-the-art research, development, testing and assessment of corrosion-resistant materials, corrosion mitigation strategies, corrosion sensors and asset life prediction tools.

Smart Grids Control Center

The Smart Grids Control Center (SGC) is an innovative vision of a large-scale, seamlessly integrated Power System Control Center of the future, featuring an integrated training room and facilities that emulate end-to-end control systems. The SGC functions as a living laboratory, one that continuously monitors certain sites in various grids through virtual substation equipment, as well as monitoring numerous sensors located throughout the RELLIS Campus. By developing advanced technology, fostering innovation and instilling management and entrepreneurial skills, this unique facility will empower students and young professionals in the industry to become the next generation of leaders who will serve the public, government, industry and academia.

Soil/Unbound Materials Innovation Lab

Infrastructure systems are only as good as the foundation on which they are built. Much of our existing infrastructure is in dire need of foundational upgrades or rehabilitation. This lab allows researchers to investigate soils, stabilization, and rehabilitation techniques that can be implemented in both the short and long term.

Structural & Materials Testing Lab

The Structural and Materials Testing Lab is one of the largest, best-equipped facilities of its kind in the country. The lab's ability to perform both full-scale, but also component and material testing, sets it apart. Most institutions must rely on numeral research with small-scale testing; but the CIR allows researchers to go one step further and conduct research on structural elements and systems similar to those put into service. Unique aspects of research performed in the Structural and Materials Testing Laboratory includes: full-scale testing of bridge support components, such as bent caps and girders; railroad rail fatigue testing under combined axial tension and bending; large-scale burst testing of service-damaged petroleum line pipe; scaffold and shoring proof-testing; seismically resilient bridge columns with sliding-rocking segmental joints; damage-resistant bridge columns using novel polymeric materials in damage-prone locations; and seismic performance assessment of structures accounting for environmental conditions and aging effects.