

Center for Underground Infrastructure Research and Education (CUIRE)

Equipment and Facilities



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The 25,000 sq. ft facility which houses Center for Underground Infrastructure Research and Education (CUIRE) is located in the west campus just south of the Maverick Stadium. The \$9.8 million building houses new research labs in asphalt/pavement, construction engineering and geo-mechanics/geo-environmental areas. The materials/structures lab is located in this facility with expanded capabilities. This facility provides the Civil Engineering department with much needed experimental growth space in teaching and research, and is useful in meeting the needs from increasing enrollment, faculty/staff numbers and research activities. Figure 1 illustrates the location of CUIRE.

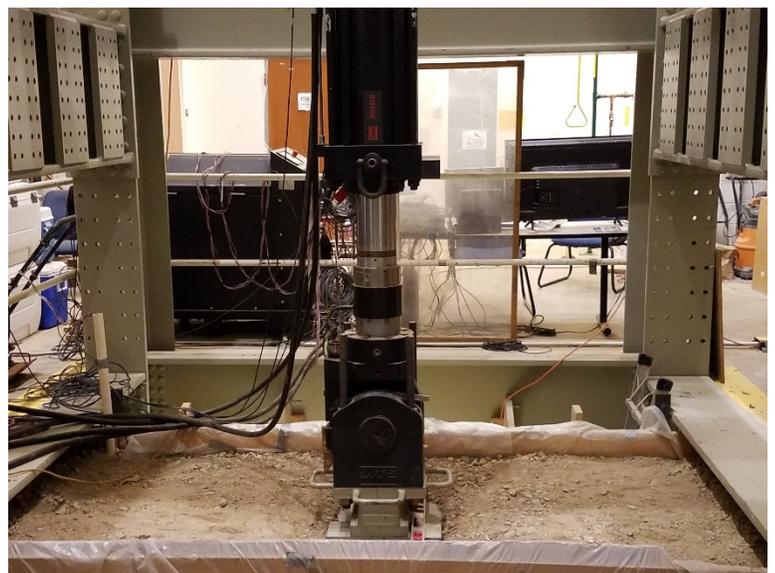


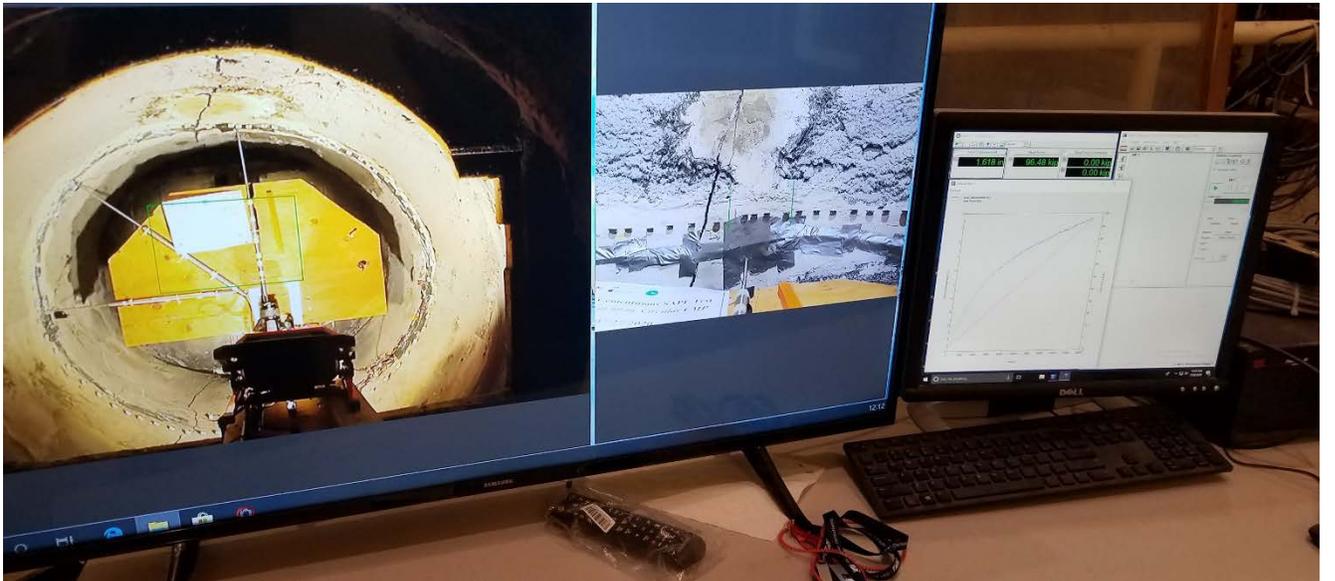
Figure 1. Location of Center for Underground Infrastructure Research and Education (CUIRE)

CUIRE Laboratory Receives a 330-kip Actuator

On February 2019, CUIRE installed a 330-kip actuator from MTS Company for its soil box testing of underground pipes. This actuator is used for the NCHRP SAPL Project to develop structural design methodology for Spray Applied Pipe Liners (SAPLs) in gravity storm water conveyance conduits through actual size soil box testing. This project is led by Ohio Department of Transportation (DOT) with participation of 6 other state DOTs (Delaware, Florida, Minnesota, New York, North Carolina and Pennsylvania). After completion of testing, a set of design equations for both rigid (cementitious and geopolymer) and flexible (Polyurethane and Polyurea) will be developed. Additionally, CUIRE team will prepare SAPL performance specifications.

For more information please call CUIRE at 817-272-9177 or email CUIRE@UTA.EDU.





The Center for Underground Infrastructure Research and Education facility is used for both research and teaching activities in the area of underground infrastructure. The lab consists of two primary areas: the physical testing lab and office/computer lab area. The physical testing lab is a 30-foot high-bay with an underground soil box. The soil box is equipped with a 330-kip MTS actuator and can be used for using soil/pipe interactions for static, dynamic, cyclic and fatigue vertical and horizontal testing. This lab accommodates a 10-ton bridge crane. The soil box area is 10 ft deep, 12.5 ft wide and 25 ft long. The office/computer lab area has a computer lab with simulation and finite modeling (Plaxis, Abaqus, Ansys) software, two faculty offices, a conference and workshop rooms, graduate student office for 20 students, a reception/waiting area, and a Ph.D. student office for two students.

Laboratories for the investigation of steel, concrete, masonry and composite materials are in the structural laboratories. The labs consists of eight spaces: a reaction floor area, environmental room, concrete curing room, concrete mixing room, small specimen testing room, small specimen preparation room, an experimental stress analysis lab and a non-destructive testing lab. Other equipment include long-term creep and internal and external pipe pressure testing. The reaction area has a 30-ft high bay and 3-ft thick concrete slab reaction floor. This lab houses two 17-ft tall, 16-ft wide, 800-kip capacity steel reaction frames for large to full scale structural testing. The steel reaction frames, in conjunction with hydraulic actuators, are used to perform full scale tests. Concrete and steel specimens can be tested in full-scale with extensive capabilities on test specimen dimensions and loading capacity. Loading conditions can include vertical, lateral, static and dynamic loads. The reaction floor has a 15-ton bridge crane that can be used to lift and carry full-scale specimens.