UNIVERSITY TRANSPORTATION CENTER FOR RAILWAY SAFETY

As the founding director of the University Transportation Center for Railway Safety (UTCRS), I am extremely proud of the work that has been accomplished by the faculty, staff, and especially our undergraduate and graduate students in only our second year as a newly established UTC. The UTCRS continued to engage in a wide variety of impactful research, education, technology transfer, professional development, and community outreach activities.

In research and technology transfer, our committed team of faculty and students were able to bring seven projects to a successful completion. These projects were funded as part of the inaugural 2014CY Call for Proposals. Final reports for projects can be found in our new UTRGV-UTCRS Web Site. As part of the 2015CY Call for Proposals, four new UTRGV - Mechanical Components Safety research projects eight new TAMU - Infrastructure Safety research projects, and eight new UNL - Operations Safety research were selected for funding, bringing the total number of projects funded by the UTCRS to 34 research projects. The research efforts have yielded 4 journal articles, 22 conference papers, 19 theses, 9 national presentations, and 5 research symposiums. Furthermore, the results from one of the projects are currently being utilized by a major railroad industry manufacturer to fabricate an electrically conductive version of the railroad bearing adapter steering polymer pad.

In education, the UTCRS continues to lead the way in the number of undergraduate students involved in transportation engineering research activities. The Research Experience for Undergraduates (REU) Program has been a great success with five of the eight 2014 REU participants choosing to continue their graduate studies at the consortium institutions. Two of those students were named Student of the Year honorees, one for the UTCRS and another for the Nebraska Transportation Center (NTC).
In 2015, the number of REU participants was increased to twelve and in 2016, fourteen REU participants have been selected. Of the 2015 REU participants, two have started their graduate studies at TAMU, and another will be starting her studies at UNL this summer. Since UTRGV does not have any engineering doctoral programs or a civil engineering graduate program, the UTCRS has been able to establish a bridge to graduate studies at its partner institutions for those students who are interested in majoring in transportation engineering fields. Moreover, these students have greatly benefitted from co-authorship of conference and journal papers, and presenting their research findings at national engineering conferences and research symposiums.

The community outreach activities have been one of the main highlights of the UTCRS. The community has embraced the UTCRS and has come to depend on the K-12 STEM summer camps and teacher professional development workshops focused on transportation engineering. The UTCRS serves a region that is known for its explosive economic growth yet with some of the highest poverty rates in the nation. Specifically, 53.1% of households earn well below the per capita income of the state of Texas. The region is over 90% Hispanic, a population who have been underrepresented in the transportation engineering fields. The UTCRS has established a very strong partnership with the 26 school districts who have invested financially to assist the UTCRS in growing these vital STEM summer programs. In fact, the UTCRS offers the only STEM camps for elementary students in the Lower Rio Grande Valley. This mutually beneficial partnership has resulted in the largest K-12 STEM summer camps, focused on transportation engineering, in the nation. These camps benefited 700 students in summer 2014, 1000 in summer 2015, and 1300 students for summer 2016. Additionally, this summer, the UTCRS is offering a national STEM teacher workshop. These professional development efforts are designed to train teachers on how to effectively implement the curricula that has been developed for the K-12 STEM Summer Camps. This railway safety themed curricula is an integrated STEM curricula that has been aligned to state and national standards.

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