

UTC Project Information	
Project Title	Acquisition of a Vardoulakis-Type Plane Strain Device for Advanced Testing of Soils
University	Oregon State University
Principal Investigator	T. Matthew Evans
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Funding Source(s) and Amounts Provided (by each agency or organization)	University of Washington PacTrans \$7,500 Oregon State University \$7,500
Total Project Cost	\$15,000
Agency ID or Contract Number	DTRT13-G-UTC40
Start and End Dates	December 16, 2016 – January 31, 2018
Brief Description of Research Project	In this project we will acquire and assemble a used Vardoulakis type plane strain device from the University of California and subsequently use it to perform PS compression tests on standard sands to confirm operability. This device will provide us an opportunity to perform research both theoretical and applied, in an area that is relevant to the needs of the profession, particularly as applied to the interface between the natural environment and our built transportation infrastructure. The device will be assembled in the OSU geotechnical engineering laboratory and outfitted with compressed air, vacuum, pressurized de-aired water, and automated data acquisition. Once assembled and functional, we will perform PS, CTC and DS tests on standard sands at the same initial relative density and compare the response across stress paths.

<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>We acquired, assembled, and performed proof-of-concept tests using the Vardoulakis-type biaxial device. Results were compared to previously published results on samples of the same sand at similar densities and agreement was good. System friction was quantified and observed to be quite low when proper lubrication procedures were employed. We developed a users' manual for the device to aid future researchers and provide continuity of knowledge after the GRA's graduation.</p>
<p>Impacts/Benefits of Implementation (actual, or anticipated)</p>	<p>The device is in the laboratory, ready for use. A proposal is currently in review at NSF and, if funded, would employ the device for testing of beach sands. We will continue to submit proposals that seek to use this unique equipment.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project Website 	<p>http://depts.washington.edu/pactrans/research/projects/acquisition-of-a-wardoulakis-type-plane-strain-device-for-advanced-testing-of-soils/</p>