

Short Term Scientific Mission Report

Host Institution: Durham University, School of Engineering and Computing Sciences

Host Institution representative: Prof. David Toll

STSM attendee: Piotr Osiński, Warsaw University of Life Sciences

Dates of STSM in Durham: 25.04.2014- 03.09.2013

I am pleased to confirm that the Short Term Scientific Mission for Piotr Osinski in Durham University was successfully accomplished as per the proposed working plan. Piotr has conducted a comprehensive short research programme in the Civil Engineering Laboratory at Durham, that was discussed and established before going for the Mission.

The STSM working plan was divided into two groups of laboratory tests. The first one was devoted to Soil Water Retention Curves determination for soil samples collected from a purpose built embankment. The measurements were conducted by using pressure plate method and high suction probes for stage and continuous wetting and drying cycles. There were 12 samples of different moisture content tested for the first group of measurements.

The example of results for Soil Water Retention Curves determination employing method of continuous wetting and drying cycles is presented on **Figure 1**.

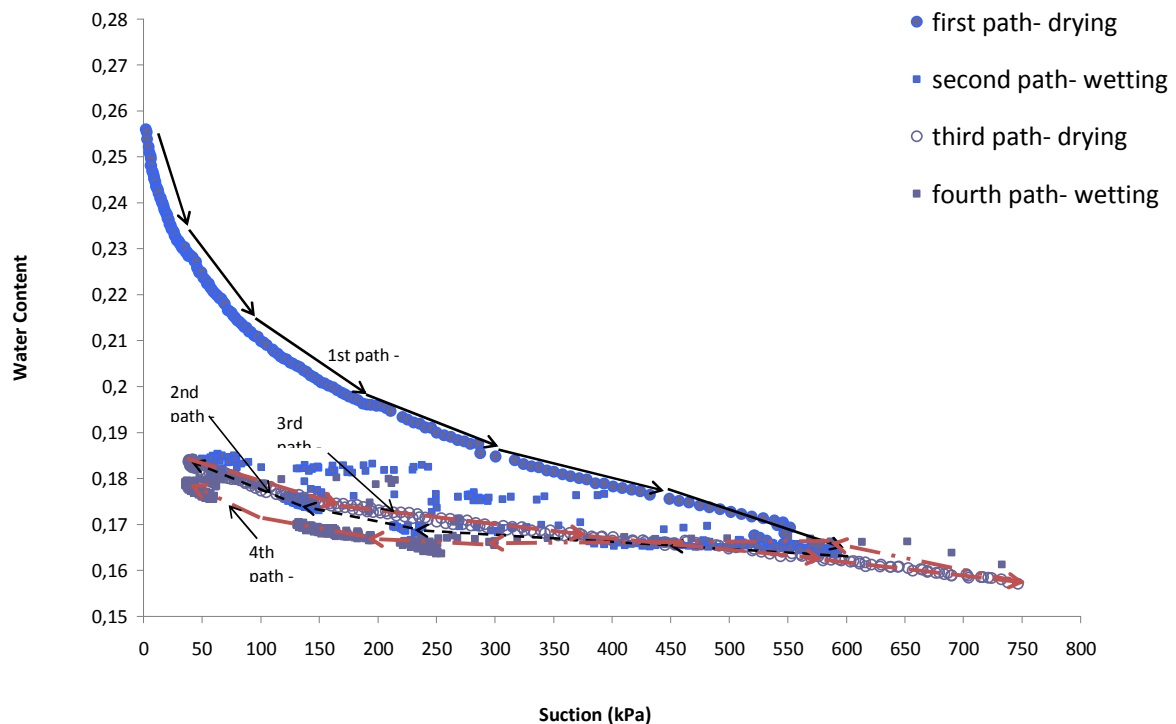


Figure 1. Soil Water Retention Curves determination employing method of continuous wetting and drying cycles.

The second group of tests was focused on determining mechanical behavior of soil samples collected from the purpose built embankment. The tests were conducted under fully saturated and unsaturated conditions with the use of standard triaxial test and double wall triaxial cell equipped with high suction probe for soil suction measurements. There were 3 samples of 16%, 19% and 24% of moisture content tested in a standard triaxial cell, and two samples of 18% and 24% of moisture content tested in double wall triaxial cell. The scheduled working plan for the STSM was fully completed during the research visit, with more additional tests that were not initially included in the proposed working plan.

The example of results obtained from double wall triaxial test, equipped with high suction tensometer and air circulation suction control system is presented in **Figure 2**.

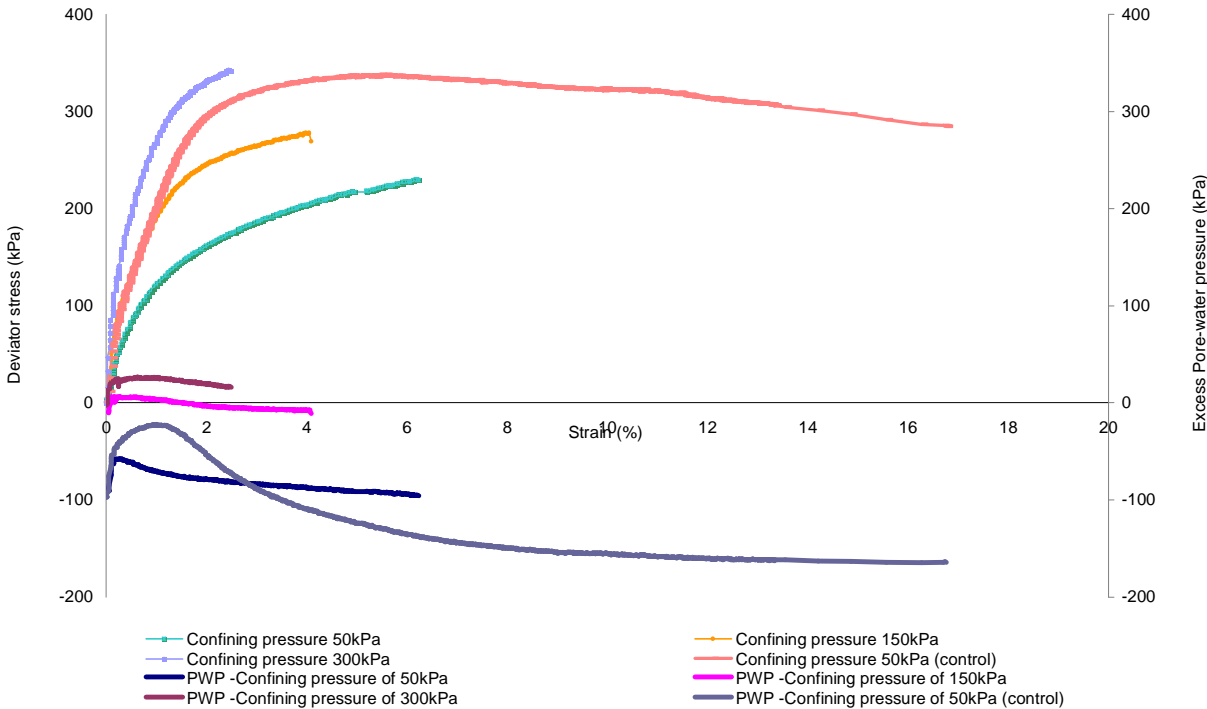

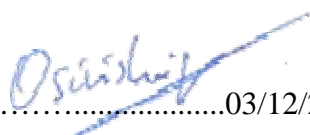


Figure 2. Results for excess pore water pressure against strain measured in double wall triaxial test

The planned output of the STSM is to prepare two scientific papers and presentations for international conferences (abstract already submitted to national conference of soil mechanics and geotechnical engineering in Lodz- Poland). Moreover, there are plans for an extension of cooperation between Durham University and Warsaw University of Life Sciences in the near future.

 03/12/2014
 Prof. David Toll
 (STSM host)

 03/12/2014
 Piotr Osinski
 (STSM attendee)