

Dynamic Passive Pressure on Abutments and Pile Caps – PI's Profs. Rollins and Gerber Quarterly Report May-July 2006

During this quarter work was essentially completed on Work Task 1 involving the literature review and write-ups of the literature review are being completed. Work is continuing on the data reduction and analysis of the testing performed in the summer of 2005 associated with Task 3. Analysis has focused primarily on the pressure cell and Tekscan measurements of earth pressure on the pile cap wall. During this quarter, design and construction was also completed on the four pile caps associated with Task 4 lateral load tests. These pile caps are located under the I-15 overpass at South Temple Street in Salt Lake City.

Budget Considerations

During this quarter funds were expended to pay for the construction of the four pile caps at South Temple which will be used for load testing in the next quarter. Funds were also expended for summer faculty salary for Prof. Rollins and student wages associated with Tasks 1, 3, and 4. The project is within budget limits.

Plans for Upcoming Quarter

The lateral load tests on the four pile caps described in Task 4 will be undertaken beginning August 14th. We anticipate that these tests can be completed in a one to two week period. A brief summary report on the field test results will also be prepared for the TA committee.

During preparations for load testing associated with work tasks 5 and 6, problems were encountered with the load measurement readings from the two 600 kip actuators. The load from the MTS actuators was not consistent with the load measured by independent load cells. After evaluating the problem with MTS technicians for a couple months, the problem appeared to be associated with the hydraulic hoses. However, after the hoses were replaced, the problems persisted. After additional debugging efforts, the problems were found to be faulty quick-connect valves which were then replaced with conventional threaded connections. While the equipment has been repaired, this exercise severely delayed preparations for tests planned for this summer. At the same time, refined lateral load analyses performed on the reaction piers at the SLC Airport indicated that the resistance would be insufficient to develop the full passive force on the test cap and that additional reaction shafts would be needed. Because of these difficulties, a request was made to the National Science Foundation for a one-year extension on the project and a \$20,000 supplement for drilled shaft construction. This request has been verbally approved by the program manager and plans for additional reaction piers will be developed during the upcoming quarter. We are also planning to have the piers constructed this quarter so that the test program can proceed without delay at the start of next summer (May 2007). Unfortunately, since the Pooled-Fund study is tied to the NSF study, this will delay the execution of tasks 5 and 6 from July of this year until May of 2006. In any event, we are certain that it is better to have high quality data from a successful test than to go ahead with the possibility of having unreliable data. Based on the preceding summary we are formally requesting a one-year no-cost extension of the pooled-fund project.

