



OREGON DEPARTMENT OF TRANSPORTATION

Research Section
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SPR Quarterly Progress Report
July 1, 2009 through September 30, 2009

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Date October 1, 2009

TO: Technical Advisory Committee Members:

Jan Six, ODOT
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1. Project

Calibration of LRFD Resistance Factor for the Wave Equation Analysis Program
SPR # 683

2. Key Dates

Start Date for ODOT: July 2008
Completion Date for ODOT: September 2010

3. Principal Investigator

Trevor Smith, Professor
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4. Progress

Task 2 Progress continues- now an ongoing DOT monitoring effort.

- Complete LRFD recalibration report from Wisconsin sent by Steve. Still awaiting final reports of similar efforts in Iowa with completion date next month.
- Site visit made by research group to ODOT MLK site to accompany Bert Miner in July and discussions with field inspectors helped understand filed procedures.

Task 5-Building Full PSU Master

- Concerted effort made to search, examine and quality assess the published literature to secure new case histories. These include personal appeals to the PI's own peer colleagues at other academic institutions, scouring deep foundation conferences and journals, locating any web pile load tests, private sector, and public agencies beyond the DOT structure, as well as the Library of Congress. Despite the time intensive nature of this approach it has been successful, especially with PSU inter-library loan involvement.
- The total number of pile cases in the Full PSU Master has now more than doubled from PDLT2000 numbers and is approaching 300. Of these the number of Tier 1 and Tier 2 case histories has moved from less than 100 at the May TAC to just in excess of 200.

Task 6-Full Bearing Graph Exercise

- The number of Model 1 and Model 2 Case histories analyzed with DRIVEN and GRLWEAP is at just over 100. Few Model 3 have been attempted yet. Little effect to the statistical patterns reported in May TAC.
- Expected discussion with Jan/Bert on those results placed in Output rank 3.
- GRLWEAP successfully re-authorized for PSU by GRL inc in Cleveland in July.

5. Problems

- Most DOT's appear very reluctant to undertake the data search to resolve anomalies and provide missing data from PDLT20000 and DFLTD case histories, even with recent published recalibration publications. Evidence is that states of LA, CA and FL have large separate databases. Frequent contact with Jay Wang (Louisiana tech) and "Doc" Zang of LA to provide data for PSU research group and resolve their anomalies in PDLT2000, and offer new database case histories in clay group. Not successful to date. FL response has been good and few anomalies remain. Unable to get responses from Tom Shantz, CA, and secure any database contributions.
- Difficulty in matching declared ODOT practice for BOR in clays (Model 3.2) as no drained clay residual friction angles are provided in any database, or available from ODOT. These are very unusual and expensive tests. Use of empirical relationships for friction angles to PI and other indirect relationships does create 'model' uncertainty difficult to quantify.
- The extra effort provided this quarter has successfully brought the number of case histories to a significant level for statistical confidence. However, this has slowed the full recalibration analysis effort by extending the time taken on Tasks 5 and 6

6. Work Planned for Next Quarter

- Continue resolving just the outstanding errors on existing case history data entries - not seek any additional case histories.
- Continue the DRIVEN and GRLWEAP on all Tier 1-3 for all Models

7. **Finances**
 SPR Project Summary

VENDOR	FY'09	FY'10	FY11	FY'12	TOTALS
ORIGINAL BUDGET	\$ -	\$ -			\$ -
REVISED BUDGET	\$ 98,241	\$ 141,759			\$ 240,000
EXPENDITURES - VENDOR	\$ 98,241	\$ -	\$ -	\$ -	\$ 98,241
BALANCE	\$ -	\$ 141,759	\$ -	\$ -	\$ 141,759
ODOT	FY'09	FY'10	FY11	FY'12	TOTALS
ORIGINAL BUDGET	\$0	\$0	\$0		\$ -
REVISED BUDGET	\$9,471	\$5,000	\$1,500		\$ 15,971
EXPENDITURES - ODOT	\$ 9,471	\$ 1,816	\$ -	\$ -	\$ 11,287
BALANCE	\$ -	\$ 3,184	\$ 1,500	\$ -	\$ 4,684
PROJECT	FY'09	FY'10	FY11	FY'12	TOTALS
ORIGINAL BUDGET	\$ -	\$ -	\$ -	\$ -	\$ -
REVISED BUDGET	\$ 107,712	\$ 146,759	\$ 1,500	\$ -	\$ 255,971
EXPENDITURES - PROJECT	\$ 107,712	\$ 1,816	\$ -		\$ 109,528
BALANCE	\$ -	\$ 144,943	\$ 1,500	\$ -	\$ 146,443