



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:

John Svadlenak, ODOT Transportation Economist
Cole Mullis, ODOT Quality Assurance Engineer
Mark Winn, ODOT QCCS
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FROM: Norris Shippen, Research Coordinator; phone: (503) 986-3538

1. Project

Statistical Analysis of QC/QA Data on Construction Projects
SPR 650

2. Key Dates

Start Date for ODOT: July 1, 2007
Completion Date for ODOT: June 29, 2009

3. Principal Investigator

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4. Progress

- Initial literature search completed
- Established contacts with ODOT personnel for site visits and interviews
- Revised, expanded literature search completed

- TAC meeting held, decision made to concentrate on modeling the QA/QC processes for key materials, using interview and ODOT process manuals, rather than conducting site visits
- Problems in literature review corrected.
- New PhD student assigned to project.
- TAC meeting held to discuss strategy for moving the work forward. Results include increased focus on establishment of limits for application of statistical process of quality assurance. Further, additional work in suggestions of software for QA analysis would be helpful.
- Investigation into establishment of margin of error computations for statistical tests
- Grad student met with ODOT and researched ODOT manuals of practice and standard specifications to establish process used by ODOT for QA for four basic materials (aggregates, HMAC, PCC-structural, and soils)
- Write-up of ODOT methods is completed
- Receipt of ranges of material quantities from ODOT staff
- Assignment of new student assistants to work on project
- Development of analysis of ODOT current methods and materials
- Preliminary recommendations developed.
- Final report submittal
- Finalization of recommendations
- *A version of the final report was completed and presented to the TAC*
- *Detailed QA/QC data from two ODOT projects was received, based on suggestions made by the TAC*
- *The project data was analyzed, comparing the current ODOT independent assurance, verification, and acceptance process to the more statistically-based process*
- *Revisions to the original recommendations have been made*

5. **Problems**

- PhD student involved in project prevented from returning to the U.S. due to visa issues; additional students assigned. Causing slowing in the completion of the project, although progress is being made. Project extended.
- Revised project end date expected to be met.
- TAC requested changes to the final report presented in late Spring, '09 were significant and the additional information that was requested was substantial.
- Principle investigator is unable to respond to requested changes until September.

6. **Work Planned for Next Quarter**

- Complete the changes and additions to the final report requested by the TAC

7. **Finances**

SPR Project Summary:

| VENDOR | FY'07 | FY'08 | FY'09 | FY'10 | TOTALS |
|------------------------|--------------|--------------|--------------|--------------|---------------|
| ORIGINAL BUDGET | | | | | \$ - |
| REVISED BUDGET | \$ - | \$ 50,789 | \$ 57,211 | | \$ 108,000 |
| EXPENDITURES - VENDOR | \$ - | \$ 50,789 | \$ 57,211 | \$ - | \$ 108,000 |
| BALANCE | \$ - | \$ - | \$ - | \$ - | \$ - |
| | | | | | |
| ODOT | FY'07 | FY'08 | FY'09 | FY'10 | TOTALS |
| ORIGINAL BUDGET | \$ 45,000 | \$ 83,000 | | | \$ 128,000 |
| REVISED BUDGET | \$ 2,006 | \$ 6,890 | \$ 9,352 | \$ 1,500 | \$ 19,748 |
| EXPENDITURES - ODOT | \$ 2,006 | \$ 6,890 | \$ 9,352 | \$ 2,630 | \$ 20,878 |
| BALANCE | \$ - | \$ - | \$ - | \$ (1,130) | \$ (1,130) |
| | | | | | |
| PROJECT | FY'07 | FY'08 | FY'09 | FY'10 | TOTALS |
| ORIGINAL BUDGET | \$ 45,000 | \$ 83,000 | \$ - | \$ - | \$ 128,000 |
| REVISED BUDGET | \$ 2,006 | \$ 57,679 | \$ 66,563 | \$ 1,500 | \$ 127,748 |
| EXPENDITURES - PROJECT | \$ 2,006 | \$ 57,679 | \$ 66,563 | | \$ 126,248 |
| BALANCE | \$ - | \$ - | \$ - | \$ 1,500 | \$ 1,500 |