



SPR Quarterly Progress Report
April 1, 2009 through June 30, 2009

Date: July 23, 2009

TO: Technical Advisory Committee Members:
Tim Rogers, FHWA
Tony Kojundic, Silica Fume Association
Richard Hart, PE, ODOT
Norris Shippen, ODOT
Craig Shike, ODOT
Steve Soltesz, ODOT

FROM: Steve Soltesz, Research Coordinator; phone: (503) 986-2851

1. **Project**

Abrasion-Resistant Concrete Mix Designs for Bridge Decks
SPR 622

2. **Key Dates**

Start Date for ODOT: October 2004
Completion Date for ODOT: December 2009

3. **Principal Investigators**

Todd Scholz
School of Civil and Construction Engineering
100 Merryfield
Oregon State University
Corvallis, OR 97331

4. **Progress**

- Mixed and cast all concrete specimens as per the experiment design for Phase II (5 mixtures). Specimens were cast for:
 - Compressive strength (1-day, 28-day, and 56-day; 3 specimens per period per mixture),

- Abrasion resistance (56-day; 3 specimens per mixture), and
- Chloride ion resistance (56-day; 3 specimens per mixture).
- Conducted a mini-study to determine whether it was better to apply curing compound to the specimen or to cover it with plastic sheet after casting in order to avoid evaporation of water from concrete before steam curing. Four extra sample blocks were cast for this test, two of which were covered with plastic sheet and the other two samples were coated with curing compound.
- Tested the compressive strength at 1 day and 28 days (3 specimens per period).
- Initiated testing for the 56-day period.
- Summarized the results of the tests conducted.

5. Problems

- A part failed on the abrasion machine causing a short delay (5 days) in completing the abrasion tests for one of the mixtures (an extra control mixture without air, and which was not included in the experiment design).

6. Work Planned for Next Quarter

- Test the remaining specimens for the 56-day period.
- Summarize the remaining test results.
- Analyze all of the results to determine if statistically significant differences existed between properties of the five mixtures.
- Present the results at the July TAC meeting.
- Help determine the best mix design to be used for the field study.

7. Finances

SPR Project Summary

VENDOR	FY'04	FY05	FY06	FY07	FY08	FY'09	FY'10	TOTALS
ORIGINAL BUDGET	\$ 14,000	\$ 164,000	\$ 25,000	\$ 25,000	\$ 12,000	\$ -	\$ -	\$ 240,000
REVISED BUDGET	\$ -	\$ 21,810	\$ 33,019	\$ 312	\$ 95,328	\$ 59,360	\$ 15,000	\$ 224,829
EXPENDITURES - VENDOR	\$ -	\$ 21,810	\$ 33,019	\$ 312	\$ 95,328	\$ 40,154		\$ 190,623
BALANCE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 19,206	\$ 15,000	\$ 34,206
ODOT	FY'04	FY05	FY06	FY07	FY08	FY'09	FY'10	TOTALS
ORIGINAL BUDGET	\$ 1,626	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ -	\$ -	\$ 21,626
REVISED BUDGET	\$ -	\$ 5,747	\$ 9,795	\$ 7,107	\$ 6,429	\$ 6,786	\$ 2,000	\$ 37,864
EXPENDITURES - ODOT	\$ -	\$ 5,747	\$ 9,795	\$ 7,107	\$ 6,429	\$ 6,786		\$ 35,864
BALANCE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,000	\$ 2,000
PROJECT	FY'04	FY05	FY06	FY07	FY08	FY'09	FY'10	TOTALS
ORIGINAL BUDGET	\$ 15,626	\$ 169,000	\$ 30,000	\$ 30,000	\$ 17,000	\$ -	\$ -	\$ 261,626
REVISED BUDGET	\$ -	\$ 27,557	\$ 42,814	\$ 7,419	\$ 101,757	\$ 66,146	\$ 17,000	\$ 262,693
EXPENDITURES - PROJECT	\$ -	\$ 27,557	\$ 42,814	\$ 7,419	\$ 101,757	\$ 46,940	\$ -	\$ 226,487
BALANCE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 19,206	\$ 17,000	\$ 36,206