



SPR Quarterly Progress Report
January 1, 2009 through March 31, 2009

Date: May 6, 2009

TO: Technical Advisory Committee Members:
Tim Rogers, FHWA
Tony Kojundic, Silica Fume Association
Richard Hart, PE, ODOT
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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
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4. Progress

- Testing of compressive strength of the 12 mix design of Phase I study
- Analysis of results of compressive strength.
- Review of analysis

- Development of experiment design for next phase of work

5. **Problems**

- Renovation of Graf Hall.
- Shifting of lab from Graf hall to Merryfield 111

6. **Work Planned for Next Quarter**

- Mixing and casting of concrete as per the Phase II experiment design matrix (shown below). Specimens will be cast for compressive strength, chloride ion resistance and abrasion resistance.
- Testing the compressive strength at 1 day, 28 days and 56 days.
- Testing for abrasion resistance and chloride ion resistance at 56 days.
- Analysis of Results
- An experimentation to determine the best way to handle the four hours before applying steam to the concrete specimen.
- Modification of external mixture design to come up with a concrete mixture design to achieve the compressive strength target of 16000 psi.
- Since it was discussed in the meeting that steam curing followed by application of curing compound followed by ambient curing would be best curing regime for high strength development at site, we are using this curing regime for Phase II experiment designs.
- Details of planned experiment mixture design as discussed in January is given below:

Experimental Design		Compressive strength			Abrasion Test	Chloride Penetration test
		1 day	28 day	56 day	56 day	56 day
Control	66% cement+4% silica fume+ 30% Fly ash	3	3	3	3	3
Exp A	7% silica fume + slag (27%)	3	3	3	3	3
EXP B	10% silica fume + slag (24%)	3	3	3	3	3
EXP C	7% silica fume + Fly ash (27%)	3	3	3	3	3
EXP D	10% silica fume + Fly ash (24%)	3	3	3	3	3

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	\$ 27,358		\$ 177,827
BALANCE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 32,002	\$ 15,000	\$ 47,002

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	\$ 6,000	\$ 2,000	\$ 37,078
EXPENDITURES - ODOT	\$ -	\$ 5,747	\$ 9,795	\$ 7,107	\$ 6,429	\$ 5,335		\$ 34,413
BALANCE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 665	\$ 2,000	\$ 2,665

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	\$ 65,360	\$ 17,000	\$ 261,907
EXPENDITURES - PROJECT	\$ -	\$ 27,557	\$ 42,814	\$ 7,419	\$ 101,757	\$ 32,693	\$ -	\$ 212,240
BALANCE	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 32,667	\$ 17,000	\$ 49,667