

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: June 30, 2007

Program: SPR-0010(36) FFY99		Part: II Research and Development	
Project Title: Evaluation of Methods of Rebar Protection, Prevention, and Repair Techniques on Concrete Girders		Project ID: 0092-06-06	
Administrative Contact: Nikki Hatch		Sponsor: Wisconsin Department of Transportation	
WisDOT Technical Contact:		Approved Starting Date:	
Approved by COR/Steering Committee:		Original End Date:	
Project Investigator (agency & contact): H. Tabatabai, UW-Milwaukee		Current End Date:	
		Number of Extensions:	

Percent Complete: 50%

Request a No Cost Time Extension (Please Select One): YES NO

Reason for No Cost Time Extension:

Project Description: The objective of this research program is to evaluate the effectiveness of select available, new and promising materials and processes applicable to reinforced and prestressed concrete bridges using the methodologies and hardware developed in an earlier WHRP research program. The research team would analyze the laboratory performance data and other available data including field performance and cost information to comment on the practicality and effectiveness of these methods.

Progress This Quarter:

Two bridges in Dodge County were visited and chloride samples were taken. Zinc spraying on specimens was completed. All specimens were placed in position and wiring was completed. Test specimens are shown below:



The following describes changes to the original plan and reasons for them:

Corrosion Prevention Specimens

- 1 and 2: Originally, Vector Corrosion Technologies was to spray their Galvanode ASZ+ humectant-activated metalized zinc to the specimens. However, none of their job sites were readily available, so we had Racine Flame Spray apply pure zinc and then added the humectant supplied by Vector Corrosion Technologies. The use of Racine Flame Spray was approved by Vector.
- 3 and 4: Same as 1 and 2 for thermal spray. Originally, the coating over the thermal sprayed zinc specified for the project was Sherwin Williams Zinc Clad. However, after further discussions with Sherwin Williams representatives, it was determined that an epoxy/polyurethane coating system (Macropoxy 646/acrolon 218 HS) would be a better solution. Also, the US Army Corp of Engineers specifies this combination for use with thermal sprays.
- 5 and 6: No change
- 7 and 8: The coating to be used for the embedded anodes was originally the Sherwin Williams zinc clad. Since the zinc clad will not be used on the thermal sprayed zinc, it was determined that another coating should be used for the specimens with the embedded anodes. The coating chosen is a elastomeric, crack-bridging, anti-carbonation, acrylic protective coating (Sikagard 550W). This coating was approved by Vector. This product is not on the WI DOT list. However, Mr. James Parry replied to our request for its use and said that he did not have information on the product.
- 9 and 10: No change
- 11 and 12: TK 290 is no longer on the approved WI DOT list, so TK 590 will be used as it is on the approved list.
- 13: The Sherwin Williams epoxy/polyurethane coating system is to be tested on regular concrete instead of the zinc clad.
- 14: The Sikagard 550W is to be tested on regular concrete instead of the zinc clad.
- 15 and 16: Control. No change

Corrosion Control Specimens

- 17 and 18: See 1 and 2
- 19 and 20: See 3 and 4
- 21 and 22: No change
- 23 and 24: See 7 and 8
- 25 and 26: No change
- 27 and 28: Originally, the Sherwin Williams zinc clad was to be tested. However, it will not be used for this project. In our proposal, we suggested using fiber reinforced mesh for a patch repair application on the precast girders from the previous project. However, we now plan on using the fiber reinforced mesh from TechFab on these two specimens.
- 29 and 30: Control. No change

Work Next Quarter:



Accelerated corrosion test process will begin.

Circumstances Affecting Progress/Budget:

The original plan was to have Vector Technologies apply the zinc coating on specimens during field applications in the Midwest. However, projects in the Midwest area were not available. Therefore, the coating was applied at a local company. Vector OK'd the application at that facility. However, this delayed start of the testing phase.

Gantt Chart:

Year	2005			2006												2007																
Month	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
	0	1	2	1	2	3	4	5	6	7	8	9	0	1	2	3	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	
Task A	Planned			Work Performed																												
Task B				Planned			Work Performed																									
Task C				Planned												Work Performed									Planned							
Task D				Planned												Work Performed									Planned							

 Planned
 Work Performed