

State of Wisconsin/Department of Transportation/Midwest Regional University Transportation
Center
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: June 30, 2008

Program:	Part
Project Title: Guidelines and Strategies for the Preventive Maintenance of Bridges	Project ID: MRUTC 07-14 (0092-07-20)
Administrative Contact: Jason Bittner	Sponsor: MRUTC
WisDOT Technical Contact: Bruce Karow	Approved Starting Date: March 01, 2007
Approved by COR/Steering Committee:	Approved Ending Date: June 30, 2008
Project Investigator (Agency & Contact): University of Wisconsin-Madison, Jose A. Pincheira	

Description: The goal of the project is to create a guideline for state DOTs to gain approval of using federal HBP funds for preventive maintenance of Federal Aid Highway Bridges. (Note since the research proposal was written, the federal Highway Bridge Replacement and Rehabilitation Program (HBRRP) was renamed as the Highway Bridge Program.) Specific objectives are to (1) analyze existing information to quantify the cost effectiveness of preventive maintenance strategies applied to highway bridges, and (2) recommend project guidelines for conducting preventive maintenance work, on the right bridges at the right time to be used by state DOTs.

Total study budget	Current FFY budget	Expenditure for current quarter	Total Expenditure to Date	Percent Complete
\$ 50,000	\$50,000		\$49,984	95%

Progress This Quarter

All of the planned surveys were complete and the final report is being prepared. Here is the list of survey performed.

1. Survey to FHWA Division Offices
2. Survey to Bridge Engineers in WisDOT

Moreover, the research team selected one preventive maintenance activity and attempted to demonstrate the effectiveness of the activity – deck washing. The analysis will show how much the bridge condition can be improved by deck washing and will suggest its optimal cycle.

The final report is being prepared and scheduled to be done by the end of July.

Task 1: Analysis of State Proposals to Use HBP Funds for Preventive Maintenance: Survey for FHWA Representatives

The survey was complete. As a result, eight states delivered their documents related to their bridge preventive maintenance funded by Highway Bridge Program (HBP). They are Colorado (CDOT), Hawaii (HDOT), Michigan (MDOT), Minnesota (Mn/DOT), New York (NYSDOT), Texas (TxDOT), Virginia (VDOT), and Washington (WSDOT). The final report will analyze the delivered documents and characterize the systematic process to establish the eligible preventive maintenance. The typical bridge

preventive maintenance activities approved for federal funding also will be shown. All delivered documents will be attached as appendixes in the final report.

Task 2: Overview of Preventive Maintenance Activities in State DOTs: Survey to Bridge Engineers in WisDOT Regions

The survey and the following up interviews with bridge engineers in WisDOT have been conducted. From the survey, the research team obtained the list of preventive maintenance activities which have been performed in WisDOT. The list contained preventive maintenance activities, unit cost, and life extension with or without activity with supportive bridge maintenance data. The final report will discuss about bridge management system as well as preventive maintenance activities conducted in WisDOT.

The research team also attained the survey result conducted in 2004 by Mn/DOT. The survey was to elicit expert opinion relating to the effectiveness of preventive maintenance. Here, the experts include bridge maintenance and inspection supervisors. The result will be also analyzed and compared to the list of preventive maintenance conducted in WisDOT.

Task 3: Analysis of Preventive Maintenance – Bridge Deck Washing

The research team decided to demonstrate the effectiveness of bridge preventive maintenance activity. Due to time and budget limit, only one activity was selected – bridge deck washing. The data acquired from Matt Murphy in SW region was applied and bridge Health Index (Pontis Index) was used for this study. Since deck washing is not a repair activity, it can not improve the condition of the structure but delay the deterioration rate. Thus, it was required to investigate the long term impact of the activity. Two approaches were attempted to show the effectiveness of deck washing.

1. Compare the condition of bridges with deck washing and without washing
2. Compare the condition of bridges with deck washing yearly, every other year, every 4 years and etc.

The results will be shown by appropriate graphs and statistical analysis.

Task 4: Writing Final Report

A final draft report is being prepared. It is scheduled to be complete by end of July.

Work Next Quarter

- 1) Finish demonstrating the effectiveness of Deck Washing
- 2) Finalize the report

Gantt chart (Original plan)

Task	% complete		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1. Collect Data	50%	Proposed												
		Actual												
2. Preliminary Analysis	0%	Proposed												
		Actual												
3. Regression Tree Analysis	0%	Proposed												
		Actual												
4. Cost Models and Optimization	0%	Proposed												
		Actual												
5. Sample Implementation	0%	Proposed												
		Actual												
6. Final Report	0%	Proposed												
		Actual												

Gantt chart (Modified work plan)

Task	% complete		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. FHWA Survey	100%	Proposed												
		Actual												
2. WisDOT Survey	100%	Proposed												
		Actual												
3. Analysis	80%	Proposed												
		Actual												
4. Final Report	70%	Proposed												
		Actual												