

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: March 31, 2006

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: An Asset Management Approach for Drainage Infrastructures & Culverts	Project ID: 06-08
Administrative Contact: Nina McLawhorn	Sponsor: MRUTC
WisDOT Technical Contact: Jason Bittner	Approved Starting Date: 1/1/06
Approved by COR/Steering Committee:	Approved Ending Date: 12/31/06
Project Investigator (agency & contact): Michigan State University – Center for Underground Infrastructure Research and Education, Mohammad Najafi, Najafi@msu.edu	

Description:

Total study budget	Current FFY budget	Expenditures for current quarter	Total Expenditures to date	Percent Complete
\$145,257	\$138,257	\$7000	\$7000	15%

Progress This Quarter:

(Includes project committee mtgs, work plan status, contract status, significant progress, etc.)

- Work scheduled for this quarter, i.e review of various hydraulic, land-use changes, and mechanical factors affecting the deterioration of drainage structures and review of existing inspection, data analysis, and reporting methods for drainage structures and culverts and study of the modifications to be brought to buried pipes technologies to be implemented on drainage structures and culverts was conducted successfully.
- A research meeting was conducted in University of Cincinnati on February 15th 2005 between MSU/CUIRE, University of Cincinnati, MDOT and ODOT. The minutes of meeting was sent to meeting participants.
- Two meetings were conducted with Mr. Peter Funkhouser of MDOT. Project progress was discussed and some brainstorming session was conducted.
- A list of parameters was identified for culvert inspection and analysis based on hydraulic, structural, traffic and miscellaneous.
- Participated at the NODIG conference, which was held from March 27th – 29th at Gaylord Opryland Resort and Convention Center, Nashville, Tennessee. Project poster was displayed.
- Review of infrastructure asset management concepts has been initiated.
- Review of methodology, implementation and applications of decision support systems has been initiated.
- Review of most frequently used repair, rehabilitation and replacement techniques has been initiated.

Work Next Quarter:

- Visit to Bowling green to look at the research done by ODOT on 60 culverts
- Conduct a national survey of best practices on drainage structures and culvert asset management efforts among the 50 state (specially the Midwestern states) DOTs and 10 Canadian provinces.
- Review of various hydraulic, land-use changes and mechanical factors affecting the deterioration of drainage structures. Collected information will be checked against MDOT and ODOT documented history of failed, repaired, as-built and replaced drainage structures and culverts.
- Review of existing inspection, data analysis and reporting methods for drainage structures and culverts and study of the modifications to be brought to buried pipes technologies to be implemented on drainage structures and culverts
- Establish a set of protocols and business rules for culvert inventory and inspection.
- Prepare for pilot study

Circumstances affecting progress/budget:

Due to late signing of contract and availability of funds, the project start date has been pushed back to January 1, 2006.

Gantt Chart:

Task/Month	1	2	3	4	5	6	7	8	9	10	11	12
1	X	X	X	X								
2			X	X	X							
3			X	X	X	X						
4				X	X	X	X					
5					X	X	X	X				
6							X	X	X			
7							X	X	X	X		
8								X	X	X	X	
9, 10 and 11										X	X	X

- 1-Review of existing literature and conduct a national survey of best practices on drainage structures and culvert asset management efforts among the 50 state (specially the Midwestern states) DOTs and 10 Canadian provinces.
- 2-Review of various hydraulic, land-use changes and mechanical factors affecting the deterioration of drainage structures. Collected information will be checked against MDOT and ODOT documented history of failed, repaired, as-built and replaced drainage structures and culverts.
- 3-Review of existing inspection, data analysis and reporting methods for drainage structures and culverts and study of the modifications to be brought to buried pipes technologies to be implemented on drainage structures and culverts.
- 4-Develop an inventory and inspection protocols and business rules for MDOT and ODOT engineers and field operators.
- 5-Synthesize the research findings into a platform for a decision support system for culvert inspection, rehabilitation, maintenance, and asset management.
- 6-Project review
- 7-Perform pilot studies in Michigan and Ohio to validate the protocol and decision support platform
- 8-Collaborate with MDOT and ODOT engineers to write a section on inventory and inspection to be added to current best practices and business rules manuals.
- 9-Write a final report documenting all research findings.
- 10-Write several papers and articles to disseminate research results specifically for use of other Midwest states.
- 11-Offer educational workshops for MDOT and ODOT personnel to present results of this important research. Submit final report.