



PUTTING RESEARCH TO WORK

BRIEFS

Investigator



"We thought there was benefit to all of the practices. WisDOT can pick and choose which ones to implement depending on project or management needs."

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Best Practices from WisDOT Mega- and ARRA Projects

With the inception of the Marquette Interchange Project in 2004 – Wisconsin's first ever highway megaproject (over \$500 million) – WisDOT developed a number of new techniques, methods, processes and procedures for project management. The department continued to utilize many of these methods on the \$1.9 billion I-94 North-South Freeway Project starting in 2009. Also in 2009 and 2010, the federal government required a slate of project and financial management tools for \$350 million of projects funded through the American Recovery and Reinvestment Act of 2009 (ARRA).

What's the Problem?

The department's senior management team recognized the benefits of many of these new practices, but there had been no formal evaluation of their effectiveness or potential applicability to other projects. WisDOT managers called for a policy research study to determine which practices should be implemented on future megaprojects or standard highway construction projects to improve accountability, efficiency and performance.

Research Objectives

To keep the scope of the study manageable, the research focused on best practices during project construction: project management, project change management, document control and financial reporting. The goal was to identify and evaluate the most effective practices used on ARRA projects, the Marquette Interchange and the initial stages of the I-94 North-South Project. The study evaluated the effectiveness of practices, determined benefits for future use and discussed how and where these could be most readily adopted by the department for other projects.

Methodology

Investigators at the University of Wisconsin–Madison Construction and Materials Support Center undertook the following steps to identify and evaluate practices:

1. Reviewed the documentation from the Marquette Interchange project and collected practices that WisDOT staff felt worked most effectively.
2. Interviewed staff involved in both ARRA and megaprojects to determine the effectiveness of processes and procedures that were implemented.
3. Reviewed WisDOT databases to determine what metrics could be used to establish benchmarks for the most effective practices.
4. Reviewed best practices used by other state and national agencies for their own ARRA and megaprojects, and identified those that WisDOT might adopt.
5. Worked with WisDOT staff and experienced engineering consultants to evaluate and rank the methods, tools, processes and procedures identified to determine possible limitations and if their effectiveness indicated classification as a best practice.

Results

Researchers identified 49 best practices from all four areas of the construction phase that could be applicable to other projects. They provided guidance about the use, application and cost implications of these practices in a stand-alone reference, *Practices from WisDOT ARRA and Megaprojects—Best Practice Catalog*. Each practice was categorized by primary or secondary objective (such as cost control, safety or dispute resolution) to aid WisDOT staff in matching an effective practice to a

Project Manager



"This objective research will aid managers in determining what processes and procedures from these mega- and ARRA projects are appropriate to apply to future projects."

—Daniel Yeh

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WisDOT is already using some of the best practices highlighted in this study on the I-94 North-South Freeway Project in southeast Wisconsin.

project management need. Researchers also assessed whether practices could be effectively applied to three project categories – megaprojects, major projects (expansions) and 3R projects (resurface, recondition, reconstruct).

Although the researchers found value in presenting guidance on all 49 best practices identified, they also developed a short list of 11 particularly important practices that could be applicable to any type of project. All but one of these practices related to project management. These practices were:

- Establish a clear hierarchy for project decision making to avoid slowdowns.
- Use a Request for Information form and process.
- Require the contractor to submit three-week look-ahead schedules that reflect planned activities and potential impacts to traffic, community activities and the environment.
- Establish project closeout procedures early in the project, and track progress toward meeting all milestones.
- Assign responsible parties for all action items at project progress meetings.
- Track and address open issues at project progress meetings.
- Hold separate specialty group meetings to address issues and progress related to specific functional areas of the project, such as utility coordination and traffic management.
- Use a Work Authorization Form to communicate to the contractor the work to be performed or any changes to the work requested.
- Encourage third-party representation at project progress meetings.
- Establish goals for timely approval of documents by the project team.
- Conduct weekly internal WisDOT project management meetings to discuss overall project status and any issues that could significantly or negatively impact the project or reactions to the project by the public, press and stakeholders.

Implementation

WisDOT had already begun using some of the best practices identified in this project based on perceived benefits prior to the study. The findings from this research and from other internal reviews will support WisDOT's future consideration of changes to construction-phase processes and procedures.

This brief summarizes Project 0092-10-20, "Best Practices from WisDOT Mega and ARRA Projects," produced through the Policy Research Program for the Wisconsin Department of Transportation Research Program, 4802 Sheboygan Ave., Madison, WI 53707.

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