

MOUNTAIN-PLAINS CONSORTIUM

PROJECT BRIEF | October 2014

Impacts and Benefits of Implementing Building Information Modeling on Bridge Infrastructure Projects



the ISSUE

Building information modeling (BIM) is a computerized modeling process that aids in decision making during the planning, designing, construction and operation of structures. BIM is currently an underutilized tool in bridge construction. This research investigates the potential impact of using BIM on bridge construction by comparing its implementation on one of two similar bridge projects.

the RESEARCH

This research implemented a case study methodology. The case studies analyzed the superstructure of two roadway bridge constructions in Colorado. Key tasks were to 1) review the “current state of the infrastructure industry” through interviews / surveys of peer mass transit organizations; 2) adapt and synthesize metrics to assess impact of BIM implementation on bridge construction 3) collect data from two similar, current bridge construction projects: one implementing BIM, one not; 4) compare and analyze data to assess the impact of BIM implementation on bridge construction; and 5) validate findings through interview of project representatives.



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Project Title

Impacts and Benefits
of Implementing BIM
on Bridge Infrastructure
Projects

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the FINDINGS

Findings suggest negative impacts are associated with first implementation of BIM on accelerated bridge construction. However, additional findings suggest the use of BIM may facilitate otherwise unfeasible projects, reduce change-orders, and has the potential to realize significant cost savings during follow-on projects.

BIM's full benefit, however, is not limited to the construction phase, but can continue once an asset is in operation. In sum, this case study validates previous research which suggests BIM has important impacts across several investment and return metrics. In addition, the case study provides data regarding the magnitude of these impacts as related to both first time and follow-on implementation during construction.

the IMPACT

Numerous stakeholders involved with bridge construction and operation currently seek information regarding the potentially significant benefits of integrating BIM into infrastructure asset management. This research is important because it serves to inform such an imminent transition. The contribution of this research is to document and assess the role of BIM implementation and potential impacts in order to use it in assisting throughout the lifecycle of infrastructure assets. The impact of such research will be to encourage and support companies and organizations as they begin to realize the benefits of incorporating BIM into their transportation infrastructure asset management.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=778>

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7938 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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