DRISI

Caltrans Division of Research, Innovation and System Information

Research Notes

Building Information Modeling (BIM) for Bridges and Structures, TPF-5(372)

Support the implementation of building information modeling in transportation structures.

Seismic

SEPTEMBER 2019

Project Title:
Building Information Modeling (BIM) for Bridges and Structures, TPF-5(372)

Task Number: 3242

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WHAT IS THE NEED?

Building information modeling (BIM) is a process supported by various tools that generate and manage digital representations of physical and functional characteristics of places. It has been widely used in the commercial sector and vertical construction to manage projects from conception through design, fabrication, construction, and future maintenance.

Although some fabricators who perform work on both vertical construction and transportation structures have begun employing BIM tools in the fabrication of bridge components, its use in transportation infrastructure is limited due to the lack of standardization.

To take advantage of the efficiencies associated with the use of BIM in transportation structures, a comprehensive strategic plan by The American Association of State Highway Transportation Officials (AASHTO SCOBS) is needed.

As a first step, the technical committee on technology and software (T-19) initiated a study that was funded by National Cooperative Highway Research Program (NCHRP). The NCHRP project titled "Standardized Format for Bridge and Structure Information Models" presented a framework for BIM implementation roadmap and provided T-19 a list of actionable items. Following the conclusion of the NCHRP study and extensive discussions, T-19 identified a path forward for BIM implementation for bridges and structures.

The Iowa Department of Transportation serves as the lead for this project.

WHAT ARE WE DOING?

The research team will:

1. Establish standards, guidelines, or manuals for bridge project stakeholders to facilitate the wide use of Industry Foundation Class (IFC) as an exchange standard in BIM for bridges and structures in bridge projects. This would include recommending or mandating the use of common modeling format and IFC submittal.
2. Develop a national standard for Model View Definition, data definitions, and model life cycle data requirements for all data exchanges for transportation bridges and structures. This national standard will use the above governance and stewardship model to facilitate the development and future maintenance.
3. Collaborate with stakeholders to provide timely update of IFC data dictionary for common bridge elements.

WHAT IS OUR GOAL?

The purpose of this study is to provide the primary funding mechanism for AASHTO SCOBS T-19 to perform the duties of governance and stewardship of BIM for bridges and structures.

WHAT IS THE BENEFIT?

California Department of Transportation will be able to take advantage of the efficiencies associated with the use of BIM in transportation structures, once a comprehensive strategic plan by AASHTO SCOBS is established.

WHAT IS THE PROGRESS TO DATE?

The annual project meeting was held on February 19 – 20, 2019 in St. Petersburg, FL.