

4th World Congress and Exhibition on

Construction & Steel Structure

October 16-18, 2017 Atlanta, USA

Near miss reporting, analysis and data visualization in BIM

Eric Marks

Georgia Institute of Technology, USA

Although the number of fatalities experienced by the U S construction industry has been declining, the magnitude of the decrease has stagnated in recent years. Several improvements have been realized in visualizing construction project information through Building Information Modeling (BIM). One improvement in construction safety can be found in the collection, analysis and visualization of safety leading indicator data including near miss events. Furthermore, the visualization of reported near misses can assist safety managers to identify high frequency and high severity events within a construction site for mitigation or hazard removal techniques. The objective of this research is to provide a framework for near miss data collection and visualization within a BIM platform. A near miss database was created in a commercially-available BIM design software to allow construction site personnel to report near misses and visualize within an existing BIM. Algorithms were created to enable filtering for visualization based on user input properties of each individual near miss. A feasibility study for the created tool was conducted with an expert review panel of experienced safety managers. Contributions of this research include a near miss visualization user-interface allows construction personnel to view near misses throughout a construction project to identify hazardous areas and frequency of near misses as well as feasibility study data of the created tool.

Biography

Eric Marks is a Professor of the Practice in the School of Civil and Environmental Engineering at the Georgia Institute of Technology. He currently teaches courses in Construction Engineering at the graduate and undergraduate levels. He conducts research in safety technology and innovation, specifically by capitalizing on safety leading indicators and their positive impact on construction safety. He has published more than 15 peer-reviewed journal papers. Before his career in academia, he was a Staff Engineer with the Kentucky Transportation Cabinet where he managed capital intensive transportation infrastructure construction projects.

eric.marks@ce.gatech.edu

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