

SIMULATION FOR STEEL BRIDGE ERECTION BY USING BIM TOOLS

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Abstract

Steel bridge erection requires a series of processes in the construction site including shipping, sequentially lifting, and installing bridge components that are fabricated in the factory. Each process is critical and the risks are high due to the fact that conditions in the field are far more complex than in the factory. A detailed lifting plan is important to ensure the successful completion of steel bridge erection. In this particular study, Building Information Modeling (BIM) tools were used to precisely establish the 3D model of a π shape steel arch bridge following 2D detailed design drawings. Combined with the lifting and installation sequences described in the original lifting plan which were prepared by using 2D drawings and explanations, a 4D simulation for the steel bridge erection was produced and used to review and improve the lifting plan. A spatial conflict of steel component and concrete abutment was detected and corrected in time by postponing pouring of a part of the concrete. Three out of the four issues raised by using the 4D lifting plan were verified and the effectiveness of simulation was confirmed in the construction site.

Keyword : Building Information Modeling, Steel Bridge Erection, Virtual Design and Construction