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Postprint: Application of Tekla Structures Secondary Development in Frame Bridge Design

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Date: 2017-12-21T00:00:00+00:00

Abstract

Three-dimensional modeling and two-dimensional drawing production hold equal importance in the current stage of BIM application. To fully leverage the advantages of TEKLA software in BIM modeling of reinforced concrete structures and enhance the design efficiency of box culvert bridges, this paper presents a box culvert bridge design tool developed through secondary development of TEKLA software using the C# language. The tool utilizes text file results from the FUBS box culvert bridge reinforcement calculation program as input data, and automatically generates three-dimensional reinforced concrete structure models of box culvert bridges, produces two-dimensional engineering drawings, and performs quantity statistics by invoking the TEKLA API. Additionally, this paper analyzes the development process of the design tool and proposes solutions to certain challenging issues. Practical verification demonstrates that employing this design tool for box culvert bridge design offers the advantages of high efficiency and accuracy. The development process and design philosophy of this tool can serve as a reference for similar engineering applications.

Full Text

Preamble

Note: Figure translations are in progress. See original paper for figures.

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