

An efficient method for the identification of risk factors during bridge construction

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Abstract

This paper presents a methodology for identifying the risk factors during bridge construction. The method integrates the concepts of analytical hierarchy process and fuzzy consistent matrix method. The advantage of the method is that it does not use 9-point scale of relative importance of conventional analytical hierarchy process. Instead, a 3-point scale is utilized for describing the scale of importance, thus greatly simplifying the comparison of identification problem of risk factors. Moreover, the difficulties of making judgment and comparison caused by uncertainty that jeopardizes the accuracy of the results in conventional analytical hierarchy process can be overcome by the use of the 3-point scale. Another advantage of the method is that it does not involve consistency checking, thus large amount of CPU time can be saved. It is demonstrated with a numerical example that the proposed fuzzy analytical hierarchy process based on 3-point scale offers significant computational savings over the conventional analytical hierarchy process.

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