

A study on the target 2D tracking analysis using digital image correlation at bridge deck wind tunnel test

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Summary

The aim of this paper is a position image tracking analysis for reducing geometric displacement error in bridge deck wind tunnel test. When wind blow on the scaled bridge deck in wind tunnel test, traditional experiment method includes geometric error compared with extracting laser displacement transducer. DIC technique can be represented lateral and vertical displacement respectively with no interference each displacement factor. This paper includes template matching technique, geometric error, wind tunnel experimental test. at the result of wind tunnel test, lateral displacement error is increased according to increase wind force.

Keywords: DIC(Digital Image Correlation) technique, bridge deck wind tunnel test, geometric error.

1. Introduction

Extracting accuracy data is necessary to observe an engineering phenomenon. And in case of bridge deck wind tunnel test, scaled displacement through experimental test result is amplified one size displacement with a law of similarity. The amplified displacement comes for an unexpected result with mathematical terms. For this reason, the accuracy measured experimental data is required for motion characteristic of bridge motion in wind tunnel test.

In this paper, geometric error is evaluated comparing with non-considered geometric error. DIC technique was used for accuracy measured displacement. Target was glued to the bridge model and images were extracted by CCD camera by synchronized with laser displacement transducer. Lateral