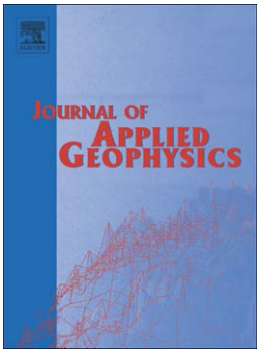

An Attempt to Describe a Relationship Between Concrete Deterioration Quantities and Bridge Deck Condition Assessment Techniques

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Abstract

This paper presents a study of the performance of four techniques – visual inspection, Ground Penetrating Radar (GPR), Ultrasonic Surface Wave (USW), and core control – that were used to assess condition of a concrete bridge deck. The bridge deck was then rehabilitated using hydrodemolition, and the concrete removed during hydrodemolition was assumed to be deteriorated. LiDAR measurements of concrete depth removal collected after hydrodemolition were used as ground truth. Comparisons of bridge deck condition assessment data and LiDAR concrete removal measurements were performed in this study. The comparisons attempt to find and describe a possible relationship between bridge deck assessment techniques and quantities of concrete deterioration.

1. Introduction

Degradation in reinforced concrete bridge decks is a significant problem that can lead to serviceability problems and even structural failure. In order to prevent failure and extend the service life of concrete bridge decks, proper assessment must be conducted periodically