

ANALYSIS OF THE EFFECT OF PAVEMENT CONSTRUCTION VARIABILITY ON PAVEMENT PERFORMANCE AND CONTRACTOR PAY FACTOR : A CASE STUDY IN EGYPT

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Abstract

Recently many agencies have developed quality control or quality assurance techniques with the desire to improve the quality of construction and provide an incentive for the contractors to use new construction methods or materials. Materials and construction variability is one of the measures to assess quality and it is thought that reduced variability is an indication of improved quality of construction. The objective of this research is to analyze the effect of variability in materials and construction variables (quality characteristics) in Egypt on pavement performance and contractor pay factor. The study reviewed the variability in pavement construction in Egypt and used these results in developing the variability in pavement performance and pay factor using two approaches : Monte Carlo approach and Partial Derivative method. A sensitivity analysis was performed to examine the effect of deviation from the target for different variability of materials and construction variables on pavement performance and contractor pay factor. From this study, it can be concluded that the variability in pavement construction significantly affects the pavement performance and contractor pay factor.