Kansas Department of Transportation

TECHNICAL SUMMARY

Investigation of Quality Control/ Quality Assurance Data to Review Current Specifications for Portland Cement Concrete Pavement Acceptance in Kansas

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Introduction

Quality control (QC) and quality assurance (QA) attributes of highway construction must be measured and achieved throughout each project. Statistical specifications are commonly used to ensure compliance of QC and QA attributes, and attribute data must be reviewed periodically to improve specifications for agencies and contractors. The Kansas Department of Transportation (KDOT) typically considers concrete compressive strength and slab thickness to be QC attributes for portland cement concrete (PCC) pavements.

Project Description

This study reviewed KDOT QC/QA data from 24 PCC projects to investigate the effects of statistical level of significance and sample size on pay adjustment. Pay adjustments were calculated based on current KDOT practices and practical performance models (PPMs).

Project Results

Results showed no significant differences between lot means for all projects at any significance level or for any sample size, and no specific patterns were

observed in pay adjustments for changing sample sizes. The PPM yielded higher pay deductions compared to current KDOT practices. This study also implemented a multivariate control chart to monitor and regulate the KDOT QC/QA process.

Further investigation should explore why no significant differences were evident in lot means for strength and thickness. Further research is also recommended to study the effect of sublot size on pay adjustment since pay adjustments can vary with the number of sublots. Coefficients of the PPM methods must be revisited if KDOT implements PPM methods for pay adjustments. Although use of a multivariate process control chart could be useful, especially when multiple variables are included in the QC process, further research is needed to effectively implement multivariate process control charts into the QC process.

Project Information

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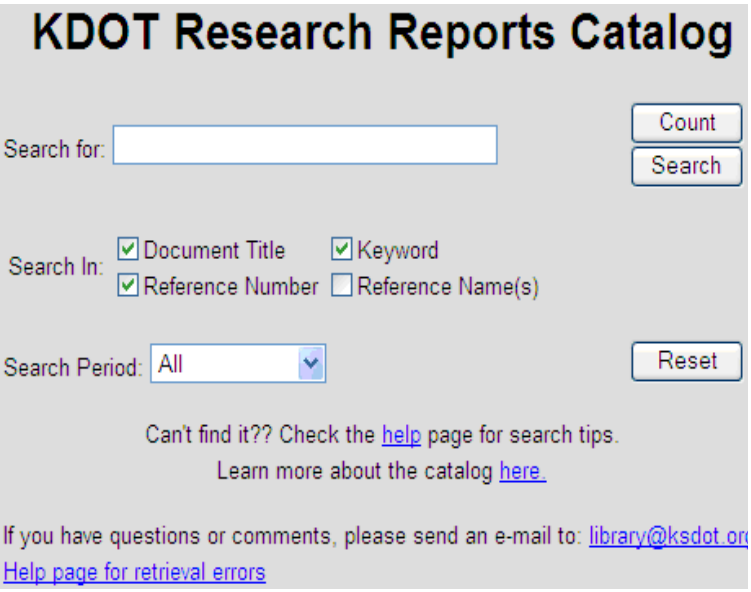

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