

PAY ADJUSTMENT SYSTEM FOR AC PAVEMENTS

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Background

Oregon's use of statistical pay adjustments (contractor incentives) in AC pavements began in 1985 as part of a nationwide trend toward End Result Specifications (ERS's). After several construction seasons, the net amount paid out to contractors was averaging approximately 1.7% of the bid price. Oregon State Highway Division (OSHD) management became concerned that the State should be receiving something of corresponding value in return for these payments. To address this concern, the OSHD Research Unit conducted a study which concludes that pay incentives have increased both pavement life and the level of cooperation with contractors.

Statistical Analysis

The study includes a rigorous statistical analysis of test results for five material properties and the average changes in these properties since starting the pay adjustments. These properties are: Relative Compaction; Percent Passing the # 200 Sieve; Percent Passing the # 10 Sieve; Asphalt Content; and Moisture Content. The most dramatic improvement took place in the area of Relative Compaction, which showed an increase of at least 1.1% since the pay adjustments were started. By applying a regression equation developed during an earlier study, it was estimated that the 1.1% improvement in compaction would increase the average pavement life by 16%. When this is compared to the 1.7% average cost of pay adjustments, the value of the system becomes clear. In addition, there has also been a dramatic reduction in moisture content, and all five of the properties show a moderate reduction in variability, indicating that a more consistent product is being produced.

Questionnaire

In another part of the study, results are presented from a questionnaire to Project Managers, Region Materials Inspectors, and Region Assurance Specialists. Several Project Managers included responses from their paving inspectors, along with their own. All responses were tabulated together. Generally, the most positive responses came from the Project Managers themselves, rather than their inspectors. When asked whether they think the pay adjustment system has improved cooperation with contractors, 76% of respondents answered "YES", 14% answered "NO", and 10% were unsure. When asked whether they think the current system is effective, 57% responded "YES", 19% responded "NO", and 24% were unsure. This generally positive response indicates general agreement that the pay adjustment system is improving the level of cooperation with contractors. The effectiveness of the system, though not so widely recognized, is clearly demonstrated by the statistical part of this study, as outlined earlier.

Evaluation of Early Distress

Project Managers were also questioned about any recent paving jobs that were showing signs of early distress. This was done in order to determine if the weights assigned to any of the constituents should be changed to better control early distress. None of the projects receiving bonuses were found to have any early distress that could be related to factors covered by the statistical pay adjustments. There were two cases, however, where problem projects received penalties that were small in comparison to the extent of early distress. The Project Managers who reported on these projects suggested that greater weight should be given to fine aggregate when calculating the pay adjustment.

Study Recommendations:

Continue the pay adjustment system in essentially its present form.

Consider changing Tables 106-1 and 106-2 in the standard specifications to agree with the AASHTO recommendations.

Consider giving Project Managers specific authority to shut down a contractor whenever any constituent falls below a 0.75 pay factor. This would provide Project Managers with another tool for assuring product quality when the product goes out of specification on gradation.

Continue to evaluate the potential to include a factor for "ride" or "smoothness" in the pay adjustments.

Set up a program to record the field location of the material represented by each subplot in all AC projects. This is essential information for anyone who wants to find out what went wrong in jobs with early distress. Computerized field location data should be readily available as part of all test results.

Recently, the results of this study were published in a final report titled "Pay Adjustment System for AC Pavements (A Five-Year Evaluation)". To obtain a copy of this report or any additional information on this topic, please contact:

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