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PORTLAND CEMENT CONCRETE DURABILITY EVALUATION IN NEW BUILT TWO-LAYER HIGHWAY PAVEMENTS IN CENTRAL/EASTERN POLAND

Abstract

A review of material aspects of pavement durability at several sections of new built expressways in Poland is presented. For XF4 durability the specified air void characteristics, including the spacing factor and the microvoids content, was evaluated on core specimens drilled from the constructed pavements. A correlation between the microvoids content in the hardened concrete and the super air meter data on fresh concrete was established. Concrete durability in high moisture environment (E3), combined with fatigue traffic load and external supply of alkaline deicing salt solutions was considered using newly developed principles of nonreactive aggregate selection. The selection was based on petrographic detection of potentially reactive minerals and the evaluation of expansive behaviour of concrete. Using the advanced microstructure diagnostic tools several job mixtures were reconstructed for further material property evaluation. The suitability of the established methodology for durability acceptance testing for exploration of alternative materials for paving is discussed.

KEYWORDS: AIR ENTRAINED CONCRETE / AIR VOIDS CHARACTERIZATION/ ASR PERFORMANCE TESTS / CONCRETE DURABILITY / JOB MIXTURES / MATERIALS SELECTION.

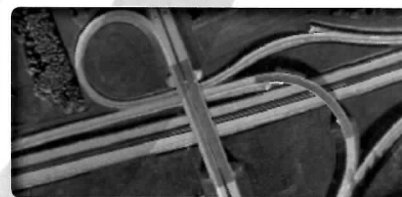
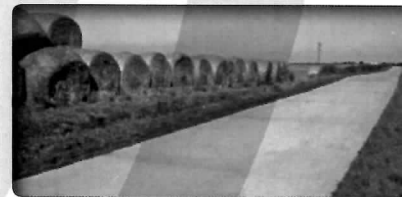


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