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Title:

Evolution of New Compaction Technique in Flexible Pavement

Abstract:

MTO and the Construction industry made necessary improvements to asphalt pavements in the field of asphalt binders to bond asphalt layers, material selection, testing procedure, mix design method and material handling through significant technological advancement in laying process. These actions and efforts created an assumption that newly constructed asphalt pavements which meet design objectives are structurally sound. However no significant improvements to the pavement surface cracks which are induced by current compaction equipment and techniques were made to date. Pavement surface cracks which are induced by current compaction method ruins the above combined effort made by authorities and industry to achieve long lasting pavement. The aim of this report is to convey the need for improvement in flexible pavement compaction processes and to identify available compaction technology to construction industries for their consideration. Improving compaction practices by introducing new compaction methods like AMIR by construction industries can provide the quality of highway network with respect to MTO expectations.

This papers, as well as earlier studies, show that AMIR roller applies low compaction pressure over a long contact duration, which helps to provide: efficient particle contact, expulsion of entrained air and keeps the initial stiffness response of the asphalt at low. Large contact area of the roller minimizes horizontal forces applied to the asphalt mat and provides a high degree of confinement during compaction. Elimination of roller induced cracking reduces surface permeability, increases density with less passes, improves resistance to fatigue damage and permits the full compaction energy to be applied to the pavement layer. This will enhance the existing necessary improvements made by transportation authorities in highway construction. The end product is expected to reduce the required maintenance and rehabilitation costs which have been performed more frequently than expected.

Keywords: asphalt binder, compaction, compaction pressure, contact area, density, fatigue damage, permeability, surface crack

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