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Sensitivity analysis of stormpav composite pavement

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Abstract. This study investigates the design and performance of modified composite pavement called StormPav. In this study, the sensitivity analysis is carried out by using available freeware to prove whether the StormPav composite pavement is able to provide long-life pavement and better levels of performance, both structural and functionally, than the traditional pavements. For this case, the sensitivity analysis is included data for fatigue behavior, rutting in the HMA (Hot Mix Asphalt) layer, and temperature gradient reduction of PCC slab with an HMA overlay. The StormPav composite pavement is actually an innovation IBS green pavement with structural, environmental and economic advantages. Inspired from Legos concept, the StormPav is made out of modular panels or "roadblocks" that are like enormous lego pieces that assemble and interlocking together forming a uniform settlement and at the same time acting as the monolithic character. The idea of StormPav is actually to minimize the usage of material in the composite pavement but provide the same strength and benefits as composite pavement.

1. Introduction

It is undeniable that pavements play an essential part of our daily life as we use them as roads, runways, parking lots and driveways. Like any other engineered structure, pavements are expected to be adequately strong and durable for their design life. Especially when it is related to highway, they are expected to function properly under heavy load and high speed as well as with smooth traveling experience under the various condition of the environment. Unfortunately, transportation agencies and the road building industry of worldwide have designed and used the same traditional pavement system over the years which are no longer competent to withstand the developing and increasing use of traffic nowadays. The two types of traditional pavements are flexible (asphalt) and rigid (concrete) pavement.

Conventional composite pavements generally consist of two parts: rigid base and asphalt surface. With their excellent pavement performance, composite pavements have shown great potential to become a promising alternative for sustainable pavement under heavy traffic [13]. Although there are two different types of pavement design systems which are conventionally used in the construction of roadways such as flexible and rigid pavement, the performances of both rigid and flexible pavements do not provide outstanding quality as composite pavements. There is another alternative pavement which is conventional composite pavements that have been proved to provide better levels of performance, both structurally and functionally, than the traditional pavement designs [3][11]. The conventional composite pavement is however considered expensive and is rarely used as new

