

ASPHALT BRIDGE DECK PAVEMENT BEHAVIOR, THE EGNATIA EXPERIENCE

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ABSTRACT

Egnatia Odos is a 675km motorway crossing a particularly mountainous terrain. A great number of bridges have been constructed along its route. The standard construction bridge deck pavement practice is to lay 2X5cm asphalt over a bituminized waterproofing membrane. Few variations have been applied to this practice. Most Egnatia bridge pavements have been trafficked for 5 to 15 years carrying 1 to more than 10 million Standard Axles, whilst they have been exposed to a variety of adverse weather conditions. The mountainous of the terrain implies that the bridge geometry comprises many tight curves and steep slopes (for motorway standards). This means that there is a high need for consecutive braking for heavy vehicles along downgrade bridges. Also centrifugal forces develop along bridge horizontal turns. Thus, high horizontal shear strains apply to the bridge pavements and may cause a variety of wear and pavement damages. That wear has been observed as pot holes, shoveling, raveling or other type of shear failure, mostly appearing to downgrade decks in comparison to their twin upgrade decks of a bridge as well as to bridge decks in comparison to their adjacent embankments. In this paper an attempt is made to present and classify the extended experience concerning waterproofing and pavement surfacing behavior of decks which has been gathered by Egnatia during 15 years of operation, together with a scientific documentation of the observed damages and decay.