

RECENT MODIFICATIONS TO THE 1993 AASHTO EQUATIONS FOR FORWARD-CALCULATING SUBGRADE AND PAVEMENT MODULI

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ABSTRACT

Alternative methods of deriving layered elastic properties from pavement deflections consist of closed-form formulas to obtain the pavement structure and subgrade modulus directly. These calculation techniques, termed forwardcalculation, are used by several agencies around the world. Besides AASHTO 1993, which does not allow calculating subgrade and pavement resilient moduli in a fully direct manner, newer forwardcalculation techniques include YONAPAVE and EVALIV. This paper suggests modified replacement equations, called AASHTOLIV, which like the old ones, still present basic deviations from the true elastic properties of the pavement structure and pavement subgrade. The suggested corrective equations take into account the influence of (a) errors induced in the forward-calculations as a result of correlative equations developed for the two-layer model and (b) depth to bedrock measured from the subgrade surface. The rate of depth to bedrock reveals a significant influence on forwardcalculated subgrade modulus and only a minor effect on forwardcalculated pavement modulus.