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Macro level analysis of sea level rise effect on pavements structural capacity

The State of Florida maintains 40,000 lane-miles of paved roads. The design of such roads calls for a 3 foot clearance between the pavement base and the ground water table for multi-lane roads and a 2 foot clearance for rural 2-lane roads. The purpose of this clearance is twofold: First, allow for dry conditions during construction to facilitate placement and compaction of subgrade and base layers. Second, budget for a capillary rise of 24" and fluctuating ground water table and ensure dry subgrade conditions during the life of the road, which is essential for a good subgrade support, as characterized by the Subgrade Resilient Modulus. The objective of this effort is to quantify the effect of ground water table rise, caused by Seal Level Rise, on pavement structural capacity. Examine, at a network level, a set of strategies that can help with the SLR challenge over the next 30 years. It is envisioned that maps of roads be prepared on the basis of base-water clearance. Then use time forward projection of ground water table rise rates to determine the time frame in which FDOT would have to address the pavement deficiencies. Three scenarios will be considered for the rate of SLR; Low, Moderate and High.

Biography

Hesham Ali has 21 years of Civil Engineering experience, mostly in pavement design, analysis and construction. He published more than 30 papers and participated in the delivery of hundreds of roadway and airport construction projects in New York, Maryland, Pennsylvania, Texas, Virginia and Florida. He has 10 years of executive experience at FDOT where he participated in the delivery of \$3 Billion of highway construction and maintenance projects. He holds a Master's and PhD in Civil Engineering from The City University of New York. He has been involved in the technical development and promotion of pavement recycling.

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