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Temperature fluctuation of porous asphalt pavement designs

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This study explores the extent to which porous asphalt pavement influences pavement temperatures and to study the characteristics of various pavement design, and also to understand the temperature fluctuation or distribution within the pavement cross section. Three different AC pavement designs: Traditional pavement (section 1), permeable pavement (section 2), semi-permeable (section 3) in the National Pingtung University of Science and Technology (NPUST) Expressway were implemented. The temperature measurements were completed with interval from 6:00 to 24:00 once in every 1-hour and were conducted during the season. Moreover, the measurements were taken at various depths of 25, 40 and 60 cm. It is found that there are some

factors influenced temperature fluctuation such as thickness, air temperature, solar radiation, material reflectance, and wind. The temperature fluctuation with different depths in the section 1, 2 and 3 are followed closely behind the air temperature variations. Subsequently, based on the results, it is shown that the fluctuation at 20 cm depth of pavement is higher than that of 45 cm depth, while at 60 cm depth the variation is relatively stable.

Conclusion: Temperature fluctuation of pavement affected by many factors, such as air temperature, thickness, solar radiation and reflectance, and wind. In the other hand, different material will affect heat on pavement surface temperature.

Biography

Yu-Min Wang received his PhD from the National Pingtung University of Science and Technology in Taiwan. He investigates about the temperature fluctuation of pavement along with affect of different materials.

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