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A review of monitoring systems of pavement condition in paved and unpaved roads

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Abstract: The rising number of vehicles on roadways expedites the urge to increase efforts in implementing monitoring systems that look after road pavement conditions. This rising in number of vehicles on roadways also cause more damages and distresses on road pavement. Road pavement conditions should be accurately evaluated to identify the severity of pavement damages and types of pavement distress. Therefore, monitoring systems are considered a significant step of maintenance processes. Paved roads and unpaved roads require regular maintenance to provide for and preserve users' usability, accessibility, and safety. Transport agents and researches would spend a lot of time and money in inspecting some sections of the roadway surface; that inspection would then be followed by results recording and data analysis to diagnose the type of treatment required. These monitoring systems have been developed using various methods that include smart technologies and prepared equipment. Many related studies evaluate road pavement degradation and distress, while others focus on identifying the best maintenance monitoring approach in terms of time and cost. This paper set out to explore different monitoring techniques used to evaluate road pavement surface condition. Also, this study introduces dynamic and static monitoring systems used in both paved and unpaved roads to identify the severity of pavement degradations and types of pavement distress on road surfaces and also this study explains the used equipment in the previous monitoring studies.