ISSN(O): 2320-5407 | ISSN(P): 3107-4928

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

ISSN NO. 2320-5407

REVIEWER'S REPORT

Manuscript No.: IJAR-59945

Title: Intelligent Material Testing and Predictive Quality Monitoring for Sustainable Road and Highway Infrastructure in Saudi Arabia

Recommendation:

Accept as it is .....

Accept after minor revision√.....

Accept after major revision .....

Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		…		
Techn. Quality		…		
Clarity	…			
Significance		…		

Reviewer's ID: JPR-215

Detailed Reviewer's Report

The manuscript presents a relevant and technically valuable discussion of intelligent material testing and predictive quality monitoring for sustainable road and highway infrastructure in Saudi Arabia. It provides a well-organized overview of conventional laboratory testing, intelligent compaction, thermal profiling, dielectric measurements, pavement condition surveying, and machine learning applications in construction quality management. The proposed integrated framework is a significant aspect of the paper, as it connects material qualification, construction monitoring, independent verification, and in-service pavement assessment within a unified quality management approach. The discussion appropriately considers the influence of Saudi Arabia's climatic conditions, heavy traffic loading, and infrastructure development requirements on pavement performance and durability. The manuscript also demonstrates an understanding of important technical limitations, including sensor calibration, measurement uncertainty, environmental transferability, and the need for independent engineering verification. Its consideration of lifecycle sustainability, material consumption, construction rework, maintenance requirements, and service continuity adds practical relevance to the study. However, the review methodology is based on a targeted integrative approach rather than an exhaustive systematic review, and the proposed framework has not yet been validated through original field measurements. These limitations are acknowledged in the manuscript and should be clearly maintained when interpreting its conclusions. Overall, the paper is logically structured, addresses an important area of highway engineering, and offers a useful conceptual foundation for future research and practical implementation. **The manuscript is recommended for publication after minor revision.**