

## Evaluation of Surface Roughness Condition Using App Roadroid

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**Abstract :** The roughness index of a road is considered the most important parameter about the quality of the pavement, as it has a close relation with the comfort and safety of the road users. Such condition can be established by means of functional evaluation of pavement surface deviations, measured by the International Roughness Index (IRI), an index that came out of the international evaluation of pavements, coordinated by the World Bank, and currently owns, as an index of limit measure, for purposes of receiving roads in Brazil, the value of 2.7 m/km. This work make use of the e.IRI parameter, obtained by the Roadroid app. for smartphones which use Android operating system. The choice of such application is due to the practicality for the user interaction, as it possesses a data storage on a cloud of its own, and the support given to universities all around the world. Data has been collected for six months, once in each month. The studies begun in March 2018, season of precipitations that worsen the conditions of the roads, besides the opportunity to accompany the damage and the quality of the interventions performed. About 350 kilometers of sections of four federal highways were analyzed, BR-020, BR-040, BR-060 and BR-070 that connect the Federal District (area where Brasilia is located) and surroundings, chosen for their economic and tourist importance, been two of them of federal and two others of private exploitation. As well as much of the road network, the analyzed stretches are coated of Hot Mix Asphalt (HMA). Thus, this present research performs a contrastive discussion between comfort conditions and safety of the roads under private exploitation in which users pay a fee to the concessionaires so they could travel on a road that meet the minimum requirements for usage, and regarding the quality of offered service on the roads under Federal Government jurisdiction. And finally, the contrast of data collected by National Department of Transport Infrastructure - DNIT, by means of a laser perfilometer, with data achieved by Roadroid, checking the applicability, the practicality and cost-effective, considering the app limitations.

**Keywords :** roadroid, international roughness index, Brazilian roads, pavement

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