

**ROAD DAMAGE CONDITION CLASSIFICATION BASED ON
GEOGRAPHIC INFORMATION SYSTEM (CASE STUDY of DPUPR
KABUPATEN JEMBER**

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ABSTRACT

Kabupaten Jember has a road network of 2,823.052 km that requires periodic condition monitoring. Although road condition data has been integrated through the PKRMS application, the development of a Web GIS that is widely accessible and easy to use by various related parties at DPUPR Jember Regency has not been implemented. This research developed a web-based geographic information system that classifies road damage conditions using the Surface Distress Index (SDI) method. Validation on 30 sample segments showed 100% accuracy, and User Acceptance Testing (UAT) produced an average score of 5.00 out of 5.00. The system successfully classifies road conditions into four categories: Good (SDI < 50), Fair (SDI 50-100), Minor Damage (SDI 100-150), and Major Damage (SDI > 150), displayed on an interactive GIS map accessible by multiple users in real-time.

Key words: *geographic information system, Surface Distress Index, road condition classification, Laravel, web-GIS*