

# **EVALUTION OF THE CONDITION AND REMAINING SERVICE LIFE OF A BRIDGE BASED ON VISUAL INSPECTION (Case Study: Morong Strait Bridge, Rupert Subdistrict)**

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## **ABSTRACT**

Assessment of bridge condition and prediction of its remaining lifespan are crucial aspects of infrastructure management to ensure safety and operational sustainability. This thesis aims to evaluate the structural condition of the Selat Morong Bridge and predict its remaining lifespan using visual inspection methods. The research involves applying visual inspection techniques to detect damage to various bridge elements. The data obtained from visual inspections are then analyzed to assess the current condition of the bridge and project its remaining lifespan based on the observed parameters.

The research methodology includes data collection through detailed visual inspection in the field, covering elements such as the framework, railing supports, lighting, and expansion joints. Inspection results are categorized according to the level of damage, and evaluation methods are used to assess the relationship between the observed condition and the estimated remaining lifespan of the bridge. A lifespan prediction model is applied, considering historical data and applicable bridge evaluation standards.

Analysis results indicate that the Selat Morong Bridge has overall minor damage, which requires routine maintenance. The predicted remaining lifespan of the bridge, based on the analysis, shows a value of 1.5, indicating an approximate remaining lifespan of 26 years. These findings underscore the need for routine maintenance to prevent further deterioration. The conclusions of this study emphasize the importance of regular visual inspections and preventive actions to maintain the bridge's condition. Recommendations are provided for a sustainable maintenance program to extend the bridge's service life and ensure road user safety. This research is expected to make a significant contribution to planning more effective bridge maintenance and repair.

**Keywords:** bridge, damage, maintenance, inspection, visual