

ABSTRACT

DEFLECTION ANALYSIS OF THREE SPAN CONTINUOUS BRIDGE WITH ROTATION DATA FROM MONITORING TILTMETERS

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The bridge is a two-way connector that is cut off due to a geographical situation. Indonesia's geographical conditions have many rivers, straits, seas, channels and valleys. Therefore bridges are needed to connect the road. In addition to connecting broken roads, the benefits of building bridges can shorten travel time. Bridges are infrastructure that experience a dynamic and repetitive load in the long run, so that the condition has the potential to decrease over time. To ensure that bridges are always in service, a systematic effort is needed to monitor the condition of the bridge structure. To meet this demand, in the last few decades Structural Health Monitoring Systems (SHMS) have been introduced which describe a number of ways of monitoring that are implemented on a full scale in civil buildings that aim to assist operators to obtain information on civil service building on an ongoing basis. Among the structural parameters, vertical deflection is the most important parameter to be monitored both in the short and long term or measured in load tests for the purpose of predicting abnormal conditions and ensuring the overall safety of the bridge. This research is aimed at building a mathematical model of the relationship between rotation that occurs in the supports of the bridge with deflection that occurs in the middle of the span of the bridge, especially the three span continuous bridge. The method used is simulating deflection and bridge rotation through a two-dimensional structural analysis of bridges with the application of several positions of centralized loads. Serial data deflection and rotation obtained are then processed into mathematical models of deflection and rotation equations using the analysis of the multiple regression equations.

Keywords: *Bridges, Structural Health Monitoring Systems, Deflection, Rotation*