

PILE BEARING CAPACITY ANALYSIS USING AN ANALYTICAL MERHOD BASED ON PILE TEST RESULT

(Case Study: Sodongkopo Bridge and Road Construction Project)

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ABSTRACT

The Sodongkopo Bridge project has a bridge span of ± 140 m without a pier in the middle of the span and only relies on two abutments as a support, this is a challenge in building the bridge, so the foundation design for the bridge needs to be planned as well as possible. In planning a foundation as an initial reference, planners use analytical methods in their calculations. So, in this study, analytical methods will be used which in turn can be used as data reinforcement when planning. The purpose of this research is to find out the analytical method that is close to the real results in the field. The analysis with analytical calculations uses several methods, namely, Meyerhof, Vesic, α , β methods for axial bearing capacity and Broms method and Meyerhof method for lateral bearing capacity and pile deflection and then verified with pile test results. The results showed that Meyerhof method (Q_p) is the closest value to the PDA test results with $Q_p = 144.09$ tons; ratio 1.16. Then the $\alpha + \beta$ method (Q_s) is the total blanket bearing capacity value closest to the PDA test results with $Q_s = 574.38$ tons. While for the comparison results of Q_u , the combination of Meyerhof and $\alpha + \beta$ methods is the closest value to the PDA test results with $Q_u = 718.47$ tons; ratio 0.99. The comparison results of the lateral bearing capacity of Broms, Meyerhof and lateral test results with a permit deflection of 10 mm are 28,14 ton; 167,53 ton; and 62.5 tons, respectively. Then Broms method is the closest method to the pile test results.

Keywords : Axial bearing capacity, Lateral bearing capacity, Analytical method, Pile test.
