

ABSTRACT

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Retaining walls are structures designed to withstand soil pressure and prevent erosion on a cliff or slope. The planning for a corrugated concrete sheet pile (CCSP) type retaining wall is planned for the Kamal Reservoir in connection with the flood control program in Jakarta, especially North Jakarta, by the DKI Jakarta Provincial Government. The purposed of the research is to design and calculate the construction stability of CCSP type retaining walls and calculate the budget required. Based on the results of soil research, it was found that the characteristics of the soil type were soft clay with a hard soil depth of 26.50 – 40.50 meters. Analysis of slope stability calculations at 6 bore hole points was calculated using the help of geotechnical software and manual calculations using the slice method (Fellenius). The results of the analysis of each bore hole based on calculations show that the slope safety value (safety factor) is <1.5 so the slope is unsafe. The deformation results from the geotechnical application calculations showed that the deformation was 6,138 – 34,459 cm. The CCSP W600-B type earth retaining wall is planned as slope reinforcement with a CCSP length of 26 m, with the condition of the wall being embedded to a depth of 20 m and the non-embedded part being 6 m long. The results of the calculation of the stability of the retaining wall with the planned dimensions have met the safety requirements, namely safety factor ≥ 1.5 (1,759 – 2,250) at the 6 bore hole points. The results of the safety factor calculation analysis using the plaxis application obtained a safety factor value of ≥ 1.5 (1,569 – 2,005) so that it was declared safe against the danger of collapse, and the deformation results from the plaxis calculation were found to be 2,546 – 4,429 cm, which means it has met the maximum deformation requirement of $0.005H$ or 11.75 cm. The total of CCSP W600-B required and the planning of retaining walls in the Kamal Reservoir is 1540. The total costs used in planning this retaining wall include PPN of 15%, is IDR. 128.765.737.519,00.

Keywords: Geotechnical application, Slope stability analysis, CCSP Wall, Cost budget plan, Safety factors, Kamal Reservoir.