ANALYSIS OF PILE FOUNDATION
(Case Study On Workers Rusunawa 1 Twin Block Pringwulung, Sleman, Yogyakarta)

By
Muh. Zainal Arifin
NIM. 07510134016

Abstract

The foundation of the building Rusunawa Pringwulung, Sleman, Yogyakarta, located on the sand soil is designed to use pile foundation. Pile foundation designed to continue loads in a building on the hard ground at specific depth. Analysis of pile foundation on the building was aimed to know the value of the vertical bearing capacity, elastic settlements, and the lateral bearing capacity at a depth of 6.2 meters.

Analysis of pile foundation has several steps, namely data collection, which includes the boring test data, and sondir testing (CPT), and data analysis of the structure with the help of ETABS program v.9.0.5. Analysis of the vertical bearing capacity based on the method of Meyerhof (1974). Analysis of elastic settlements based on the method Vesic (1977). And analysis of lateral bearing capacity based on the method of Brinch Hansen (1961).

Results of the analysis obtained allowable the vertical bearing capacity of single pile (Qa) for the type of foundations P1 and P2 is 378.585 kN, and allowable the vertical bearing capacity of single pile (Qa) for the type of foundations P3 and PG is 311.330 kN. While the maximum vertical load single pile (Qmaks.) from the analysis of load distribution is P1 type of 333.600 kN; P2 type of 337.740 kN; P3 type of 204.796 kN, and PG type of 241.143 kN. Results of the analysis vertical bearing capacity of pile groups (Qg) on the each type of foundation, that is the P1 type of 2271.511 kN; P2 type of 1892.926 kN; P3 type of 1245.318 kN and PG type of 3113.295 kN, while the total vertical load (Qtot.) is P1 type of 1940.430 kN; P2 type of 1587.534 kN; P3 type of 819.185 kN and PG type of 2309.415 kN. Results of the analysis elastic settlements for the single pile be obtained type of foundations P1 and P2 is 9.36 mm, and type of foundations P3 and PG is 8.04 mm, while the allowable elastic settlements by Coyle and Castello (1981) is 12 mm. Results of the analysis lateral bearing capacity be obtained lateral bearing capacity of single pile (H) is P1 type of 23.214 kN; P2 type of 27.856 kN P2: P3 type of 25.537 kN; and PG type of 22.132 kN, while the lateral load ultimit (Hu) from the analysis structure of each type of foundations is P1 type of 12.612 kN; P2 type of 17.166 kN; P3 type of 14.552 kN; and PG type of 6.033 kN. From the analysis of pile foundation indicates that the pile foundation able to resist the loads in place.

Keywords: pile foundation, analysis, bearing capacity, elastic settlement of pile.