

ABSTRACT

The foundation planning for PT. Sampoerna Kayoe's factory in the Batang Integrated Industrial Area was conducted as a comparative study of two foundation alternatives that is bored pile and piled raft on soft clay soils characterized by low bearing capacity and high settlement potential. The evaluation covers aspects of bearing capacity, settlement behavior, reinforcement design, construction methods, and cost estimation. Analysis results indicate that the piled raft system yields an allowable bearing capacity for combination systems as big as 98533.33 kN, higher than the bored pile system as big as 166.45 kN. In terms of deformation, the maximum settlement of the piled raft was 8.99 mm (numerical) and 22.27 mm (empirical), which is higher than that of bored pile at 27.091 mm for the empirical approach and 0.21 mm that lower than bored pile from numerical approach respectively. The piled raft was reinforced with D36-85 in two directions including D25-150 shear reinforcement, while the bored pile used 10D16 with D10-75 and D10-150 stirrups. However, the total cost for the piled raft system reached Rp3,268,135,900 or about 3.25 times higher than the bored pile at Rp1,005,166,466, making it less economically viable. Given that the performance gain does not justify the cost increase, the bored pile system is concluded to be the most technically and economically efficient foundation alternative under the given site conditions.

Keywords: Bored Pile Foundation, Piled Raft Foundation, Bearing Capacity, Settlement, Efficient Alternative.