

ABSTRAK

Fundasi merupakan bagian paling bawah konstruksi bangunan yang memiliki peranan penting yang memikul seluruh beban bangunan dan beban lainnya yang turut diperhitungkan, serta meneruskannya ke dalam tanah sampai kelapisan atau kedalaman tertentu. Setiap fundasi tiang tidak lepas dari perhitungan kuat daya dukung serta penurunan fundasi. Penelitian ini dilakukan untuk menganalisis daya dukung fundasi tiang dengan analisis manual menggunakan metode Meyerhof. Untuk penurunan fundasi tiang dianalisis menggunakan analisis manual dan *software* Plaxis 2D. Data yang digunakan untuk menghitung daya dukung fundasi dan besarnya penurunan fundasi berdasarkan hasil data tanah dari pengujian di lapangan yaitu data N-SPT.

Hasil analisis daya dukung fundasi tiang tunggal dengan kedalaman tiang 5 m, 10 m dan 15 m yaitu pada titik BH JU 15 diperoleh masing-masing sebesar 49,79 Ton, 116,71 Ton dan 157,12 Ton, sedangkan pada titik BH JU 16 diperoleh masing-masing sebesar 66,29 Ton, 143,76 Ton dan 193,01 Ton. Hasil analisis daya dukung fundasi tiang kelompok di titik BH JU 15 diperoleh masing-masing sebesar 1.407,99 Ton, 3.300,12 Ton dan 4.442,88 Ton, sedangkan titik BH JU 16 diperoleh masing-masing sebesar 1.874,36 Ton, 4.064,97 Ton dan 5.457,48 Ton.

Hasil analisis manual penurunan fundasi tiang tunggal titik BH JU 15 diperoleh masing-masing sebesar 18,83 mm, 21,06 mm dan 23,72 mm, sedangkan untuk hasil analisis *software* Plaxis 2D sebesar 17,74 mm, 20,69 mm, dan 21,26 mm. Kemudian, pada titik BH JU 16 diperoleh masing-masing sebesar 19,12 mm, 21,64 mm dan 24,62 mm, sedangkan untuk hasil analisis *software* Plaxis 2D sebesar 18,17 mm, 20,74 mm dan 22,14 mm. Hasil analisis manual penurunan fundasi tiang kelompok di titik BH JU 15 diperoleh masing-masing sebesar 53,25 mm, 59,57 mm dan 67,09 mm, sedangkan untuk hasil analisis *software* Plaxis 2D sebesar 49,80 mm, 57,73 mm dan 62,00 mm. Kemudian, pada titik BH JU 16 diperoleh masing-masing sebesar 54,09 mm, 61,21 mm dan 69,65 mm, sedangkan hasil analisis *software* Plaxis 2D sebesar 51,50 mm, 58,11 mm dan 64,19 mm.

Kata Kunci : Fundasi Tiang, Daya dukung, Penurunan, Plaxis 2D

ABSTRACT

The foundation is the lowest part of the building construction which has an important role in carrying the entire load of the building and other loads that are taken into account, and continues it into the ground up to a certain layer or depth. Each pile foundation cannot be separated from the calculation of the strength of the bearing capacity and the settlement of the foundation. This research was conducted to analyze the bearing capacity of the pile foundation with manual analysis using the Meyerhof method. The settlement of the pile foundation was analyzed using manual analysis and Plaxis 2D software. The data used to calculate the bearing capacity of the foundation and the amount of foundation settlement is based on the results of soil data from field testing, namely N-SPT data.

The results of the analysis of the bearing capacity of a single pile foundation with a pile depth of 5 m, 10 m and 15 m, namely at the BH JU 15 point, were obtained respectively 49.79 Tons, 116.71 Tons and 157.12 Tons, while at the BH JU 16 point obtained each of 66.29 Tons, 143.76 Tons and 193.01 Tons. The results of the analysis of the bearing capacity of the group pile foundation at the BH JU 15 point were obtained for 1,407.99 Tons, 3,300.12 Tons and 4,442.88 Tons respectively, while the BH JU 16 points were obtained for each of 1,874.36 Tons, 4,064.97 tons and 5,457.48 tons.

The results of the manual analysis of the settlement of the BH JU 15 point single pile foundation were obtained at 18.83 mm, 21.06 mm and 23.72 mm respectively, while for the analysis results of the Plaxis 2D software were 17.74 mm, 20.69 mm, and 21.26 mm. Then, at the BH JU 16 points, 19.12 mm, 21.64 mm and 24.62 mm were obtained respectively, while for the results of the Plaxis 2D software analysis they were 18.17 mm, 20.74 mm and 22.14 mm. The results of the manual analysis of the settlement of the group pile foundation at the BH JU 15 point were 53.25 mm, 59.57 mm and 67.09 mm respectively, while the results of the Plaxis 2D software analysis were 49.80 mm, 57.73 mm and 62.00mm. Then, at the BH JU 16 points, 54.09 mm, 61.21 mm and 69.65 mm were obtained respectively, while the results of the Plaxis 2D software analysis were 51.50 mm, 58.11 mm and 64.19 mm.

Keywords: *Pile Foundation, Bearing Capacity, Settlement, 2D Plaxis*