

ABSTRAK

Fondasi tiang pancang termasuk kedalam kategori fondasi dalam yang mempunyai fungsi memindahkan atau mentransfer beban kontruksi di atasnya ke lapisan tanah yang lebih dalam. Fondasi harus mampu menahan beban agar tidak mengalami penurunan sampai batas keamanan yang telah ditentukan. Tujuan dari penelitian ini adalah untuk menghitung dan membandingkan daya dukung aksial fondasi tiang pancang tunggal dari data SPT metode Mayerhoff, dan metode Resse & Wright, hasil Kalendering metode Helley, metode Dutch Formula, dan metode Engineering New Formula (ENF). Menghitung daya dukung lateral fondasi tiang pancang metode Brooms. Dan menggunakan bantuan Program Plaxis 8.6 maupun AllPile. Sedangkan menghitung penurunan elastis yang terjadi, menghitung penurunan tiang kelompok, dan efisiensi kelompok tiang pancang. Pada Proyek Pembangunan Jalan Tol Semarang – Demak STA 20 + 700.

Berdasarkan hasil perhitungan daya dukung aksial data SPT kedalaman 44 m dengan metode Mayerhoff = 4444,42 Ton, Resse & Wright = 4449,17 Ton, data Kalendering metode Helley = 1330,142 Ton, Dutch = 141,588 Ton, New Engineering Formula = 502,086 Ton. Hasil perhitungan daya dukung lateral metode Brooms = 1374,8 Ton. Hasil penurunan tiang tunggal diperoleh nilai $S_{e(1)} = 20,934$ mm, $S_{e(2)} = 0,631$ mm, $S_{e(3)} = 5,969$ mm dengan total penurunan 27,541 mm. Perhitungan kelompok tiang pancang diperoleh nilai sebesar 0,17 mm. Untuk perhitungan elastisitas tiang didapat nilai sebesar 27,541 mm. Nilai efisiensi kelompok tiang dengan metode *Converse-Labarre* = 0,673. Hasil penurunan tiang menggunakan Plaxis 8.6 dilanjut AllPile didapat nilai sebesar 1,6 mm. Perbedaan daya dukung dan penurunan tersebut disebabkan oleh perbedaan tanah dan parameter yang digunakan dalam perhitungan.

Kata Kunci : Tiang pancang, SPT, Kalendering, Daya Dukung, Penurunan, Plaxis 8.6, AllPile.

ABSTRACT

The foundation of the stake belongs to the category of inner foundation that has the function of moving or transferring the construction load on it to a deeper layer of soil. The foundation must be able to withstand the load so that it does not decrease to the predetermined safety limits. The purpose of this study was to calculate and compare the axial carrying capacity of a single stake foundation from the MAYERHOFF method SPT data, and the Resse & Wright method, the Results of The Helley Method Calendaring, the Dutch Formula method, and the Engineering New Formula (ENF) method. Calculates the lateral carrying capacity of the foundation of the brooms method stake. And use the help of Plaxis 8.6 and AllPile programs. While calculating the elastic decrease that occurs, calculating the decrease of the group pole, and the efficiency of the stake group. In Semarang Toll Road Construction Project – Demak STA 20 + 700.

Based on the results of the calculation of axial carrying capacity of SPT data depth of 44 m with the method Mayerhoff = 4444.42 Ton, Resse & Wright = 4449.17 Ton, Data Kalendering Helley method = 1330,142 Tons, Dutch = 141,588 Tons, New Engineering Formula = 502,086 Tons. The result of the calculation of lateral carrying capacity of Brooms method = 1374.8 Tons. The result of the single pole drop was obtained the value of $S_{e(1)} = 20,934$ mm, $S_{e(2)} = 0.631$ mm, $S_{e(3)} = 5,969$ mm with a total decrease of 27,541 mm. The calculation of the stake group obtained a value of 0.17 mm. For the calculation of pole elasticity obtained a value of 27,541 mm. The efficiency value of the pole group by *converse-labarre* method = 0.673. The result of pole reduction using Plaxis 8.6 followed by AllPile obtained a value of 1.6 mm. The difference in carrying capacity and decrease is caused by differences in soil and parameters used in the perhitugan.

Keywords: Stake, SPT, Kalendering, Carrying Capacity, Drop, Plaxis 8.6, AllPile.