

Analisis Perbandingan Penggunaan Pondasi antara *Bored Pile* dengan Tiang Pancang dan *Franki Pile*

(Pada Konstruksi Jembatan Sigandul di Temanggung)

Oleh:

Hafid Maulana Priambudi¹⁾, Putra Alza Rahmatullah¹⁾, Soedarsono²⁾, Djoko Susilo Adhi²⁾

ABSTRAK

Pondasi adalah suatu konstruksi pada bagian dasar struktur / bangunan (*sub structure*) yang berfungsi meneruskan beban dari bagian atas struktur / bangunan (*upper structure*) ke lapisan tanah di bawahnya tanpa mengakibatkan keruntuhan geser tanah dan penurunan (*settlement*) tanah / pondasi yang berlebihan.

Tujuan dari studi ini yaitu menghitung dan menganalisa daya dukung dan penurunan pondasi *Bored Pile*, Tiang Pancang (*Spun Pile*), *Franki Pile* dengan metode manual (*Meyerhoff*), dan akan dibandingkan penurunan pondasi dengan aplikasi *Plaxis v.8.2*. Dengan data sekunder yang didapatkan dari konsultan perencanaan dan melakukan studi ke perpustakaan.

Dengan hasil perhitungan pondasi *Bored Pile* metode *Meyerhoff* daya dukung ijin tiang tunggal sebesar 404,405 ton, metode N-SPT sebesar 101,789 ton, metode *Meyerhoff* tiang kelompok sebesar 2377,901 ton. Pada pondasi Tiang Pancang (*Spun Pile*) metode *Meyerhoff* daya dukung ijin tiang tunggal sebesar 125,652 ton, metode N-SPT sebesar 138,901 ton, metode *Meyerhoff* tiang kelompok sebesar 792,487 ton. Pada pondasi *Franki Pile* metode *Meyerhoff* daya dukung ijin tiang tunggal sebesar 5953,372 ton, metode N-SPT sebesar 943,195 ton, metode *Meyerhoff* tiang kelompok sebesar 35005,827 ton. Dengan hasil penurunan pondasi metode manual *Meyerhoff* pada pondasi *Bored Pile* sebesar 12,947 mm, aplikasi *Plaxis v.8.2* sebesar 27,78 mm. Pondasi Tiang Pancang (*Spun Pile*) sebesar 6,533 mm, aplikasi *Plaxis v.8.2* sebesar 10,92 mm. Pondasi *Franki Pile* sebesar 63,534 mm, aplikasi *Plaxis v.8.2* sebesar 24,74 mm. Berdasarkan analisa dan jenis tanah pondasi yang paling tepat pada jembatan Sigandul – Temanggung yaitu pondasi *Bored Pile*.

Kata kunci : Daya dukung, penurunan, *Bored Pile*, Tiang Pancang, *Franki Pile*.

¹⁾ Mahasiswa Fakultas Teknik Universitas Islam Sultan Agung

²⁾ Dosen Fakultas Teknik Universitas Islam Sultan Agung

Comparative Analysis of the Use of Foundation between Bored Pile and Pile and Franki Pile

(On Construction of the Sigandul Bridge in Temanggung)

By:

Hafid Maulana Priambudi ¹⁾, Putra Alza Rahmatullah ¹⁾, Soedarsono ²⁾, Djoko Susilo Adhi ²⁾

ABSTRACT

The foundation is a construction on the structure / building base (sub structure) which functions to carry the load from the top of the structure / building (upper structure) to the subsoil without causing soil shear failure and excessive soil / foundation settlement.

The purpose of this study is to calculate and analyze the carrying capacity and decrease of the foundation of Bored Pile, Pile (Spun Pile), Franki Pile by manual method (Meyerhoff), and will be compared to the decrease in foundation with Plaxis v.8.2 application. With secondary data obtained from planner consultants and study into the library.

With the results of the calculation of the Bored Pile foundation, Meyerhoff's method of single pole permit carrying capacity was 404.405 tons, the N-SPT method was 101.789 tons, the Meyerhoff pole group method was 2377.901 tons. On the foundation of the Pile (Spun Pile) method Meyerhoff's single pole permit carrying capacity is 125,652 tons, the N-SPT method is 138,901 tons, the Meyerhoff pole group method is 792,487 tons. In the Franki Pile foundation, Meyerhoff's method of carrying capacity of a single mast was 5953,372 tons, the N-SPT method was 943,195 tons, the Meyerhoff method was 35005,827 tons. With the results of the reduction of the foundation of the Meyerhoff manual method on the Bored Pile foundation of 12.947 mm, the Plaxis v.8.2 application was 27.78 mm. The foundation of the Pile (Spun Pile) is 6.533 mm, the Plaxis v.8.2 application is 10.92 mm. Franki Pile foundation is 63,534 mm, Plaxis v.8.2 application is 24,74 mm. Based on the analysis and type of foundation soil that is most appropriate on the Sigandul - Temanggung bridge is the Bored Pile foundation.

Keywords: Carrying capacity, decline, Bored Pile, Pile Piling, Franki Pile.

¹⁾ Students of the Faculty of Engineering, Sultan Agung Islamic University

²⁾ Lecturer at the Faculty of Engineering, Sultan Agung Islamic University