

ANALISA *NEGATIVE SKIN FRICTION* PADA PONDASI BOR PILE AKIBAT TANAH TIMBUNAN

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Abstrak

Pembangunan konstruksi memerlukan pondasi yang kuat untuk menopang beban, namun sering terjadi masalah *negative skin friction* yang menyebabkan tiang tertarik ke bawah akibat penambahan beban tanah timbunan di atas tiang bor pile. Penelitian ini bertujuan untuk menganalisis pengaruh *negative skin friction* pada pondasi bor pile akibat tanah timbunan pada pembangunan Rusunawa Pondok Pesantren Nurul Qarnain Jember. Metodologi penelitian menggunakan metode kuantitatif dengan jenis penelitian eksperimental, untuk analisis pembebanan struktur menggunakan aplikasi bantu program SAP2000 v22, dengan perhitungan daya dukung tiang menggunakan pendekatan metode Meyerhoff, metode Reese & Wright, dan metode Terzaghi dan Peck, serta menghitung *negative skin friction* (Q_{neg}) untuk mengetahui seberapa besar pengaruh beban gaya gesek dinding negatif terhadap tiang bor pile kedalaman 4 meter. Hasil analisis menunjukkan bahwa *negative skin friction* dapat mengurangi kapasitas daya dukung pondasi bor pile sebesar 19% akibat tanah timbunan setinggi 5,5 m dengan penurunan tanah sebesar 0,229 m. Nilai daya dukung grup tiang bor pile (P_{Max}) tanpa dipengaruhi *negative skin friction* didapatkan sebesar 85,94 kN, sedangkan dipengaruhi *negative skin friction* (Q_{neg}) didapatkan sebesar 167,127 kN. Desain tiang bor pile telah memenuhi persyaratan keamanan dan keandalan, dan dapat digunakan untuk menahan daya dukung beban bangunan.

Kata Kunci: *Negative Skin Friction*; Pondasi Bor Pile; Rusunawa; Tanah Timbunan.

ANALYSIS OF NEGATIVE SKIN FRICTION ON FOUNDATION DUE TO EMBANKMENT

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ABSTRAK

Construction development requires a strong foundation to support the load, but there is often a negative skin friction problem that causes the pile to pull down due to the additional load of backfill soil above the pile drill. This study aims to analyse the effect of negative skin friction on the pile drill foundation due to backfill soil in the construction of Nurul Qarnain Jember Islamic Boarding School Flats. The research methodology uses quantitative methods with experimental research types, for structural loading analysis using the SAP2000 v22 application program, with the calculation of the bearing capacity of the pile using the Meyerhoff method approach, the Reese & Wright method, and the Terzaghi and Peck method, and calculating negative skin friction (Q_{neg}) to find out how much influence the negative wall friction load has on the pile drill pile depth of 4 meters. The analysis results show that negative skin friction can reduce the bearing capacity of pile foundation by 19% due to 5.5 m high backfill soil with 0.229 m soil settlement. The group bearing capacity of the bored pile (P_{max}) without being affected by negative skin friction was found to be 85.94 kN, while affected by negative skin friction (Q_{neg}) was found to be 167.127 kN. The design of bored pile has met the safety and reliability requirements, and can be used to withstand the load bearing capacity of the building.

Keywords: Negative Skin Friction; Drill Pile Foundation; Flat; Backfill Soil.