

ANALISIS KAPASITAS DUKUNG FONDASI *BORE PILE* PASCA KONSTRUKSI DAN KEHANDALANNYA TERHADAP PENGARUH POTENSI LIKUIFAKSI DI PESISIR SELATAN PULAU JAWA (STUDI KASUS : PROYEK PEMBANGUNAN *DOME COAL YARD* PLTU JAWA TENGAH 2 ADIPALA, CILACAP, JAWA TENGAH)

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ABSTRAK

Pembangunan *Dome Coal Yard* PLTU Jawa Tengah 2 Adipala berlokasi di selatan Kabupaten Cilacap dan berbatasan dengan pesisir selatan Pulau Jawa. Berdasarkan Peta Kerentanan Likuifaksi Indonesia 2019, lokasi pembangunan memiliki kerentanan tinggi terhadap bencana gempa bumi dan likuifaksi. Penelitian ini dilakukan untuk mengetahui nilai kapasitas dukung fondasi pasca konstruksi terhadap pengaruh potensi likuifaksi.

Analisis potensi likuifaksi dilakukan dengan persamaan yang diusulkan oleh *Idriss dan Boulanger (2008)* menggunakan data SPT (*Standard Penetration Test*). Sedangkan analisis kapasitas dukung fondasi diketahui dengan beberapa cara seperti metode empiris berdasarkan data pengujian SPT dan pengujian langsung di lapangan dengan metode *PDA Test* dan *CAPWAP*.

Dari hasil penelitian ini, fondasi BP71 mengalami penurunan nilai kapasitas dukung ijin (Q_a) dari yang semula sebesar 1.822,48 kN menjadi 1.028,25 kN karena terjadi longsor pada lubang fondasi sehingga dianggap tidak memiliki tahanan ujung. Kemudian pada analisis likuifaksi dengan simulasi magnitudo gempa sebesar 8 SR, lokasi pembangunan berpotensi mengalami likuifaksi masing-masing setebal 6 meter pada titik tinjauan BM-01, 2 meter pada BM-02 dan 0 meter pada BM-03. Sehingga nilai kapasitas dukung fondasi mengalami penurunan lagi yang semula sebesar 1.028,25 kN menjadi 545,34 kN. Nilai kapasitas dukung fondasi pasca konstruksi dengan pengaruh likuifaksi masih lebih besar daripada beban layannya.

Kata kunci : *Likuifaksi, Kapasitas Dukung, PDA Test, CAPWAP, SPT, Gempa Bumi, Idriss-Boulanger, Tahanan Ujung, Mayerhof, Reese dan O'Neill*

ANALYSIS OF PILE FOUNDATION BEARING CAPACITY BY CONSIDERING THE EFFECT OF POTENTIAL LIQUEFACTION IN SOUTHERN COAST OF JAVA (A CASE STUDY OF DOME COAL YARD PLTU JAWA TENGAH 2 ADIPALA CONSTRUCTION PROJECT, CILACAP, CENTRAL JAVA)

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ABSTRACT

The construction of the Dome Coal Yard PLTU Jawa Tengah 2 Adipala is located in the southern part of the Cilacap Regency and is directly adjacent to the southern coast of Java Island. Based on the 2019 Liquefaction Vulnerability Map of Indonesia, the construction site is in an area that has a high vulnerability to liquefaction. This research was conducted to determine the value foundation bearing capacity on the effect of liquefaction.

The analysis of liquefaction was carried out with the equation proposed by Idriss and Boulanger (2008) using data from the Standard Penetration Test. The analysis of pile foundation bearing capacity can be identified in several ways, such as an empirical method based on Standard Penetration Test and direct field testing using the PDA Test and CAPWAP.

The results of this research show that the bearing capacity value of the BP71 foundation (Q_a) has decreased from 1,822.48 kN to 1,028.25 kN due to a landslide in the foundation hole so it is considered to have no end bearing capacity. The liquefaction analysis with a magnitude of 8 SR shows that the construction site has the potential to have liquefaction, there are 6 meters at the BM-01, 2 meters at BM-02, and 0 meters at BM-03. So, the value of the pile foundation bearing capacity has decreased again, from 1,028.25 kN to 545.34 kN and it means that the bearing capacity with the effect of liquefaction is still greater than the service load.

Keywords : *Liquefaction, bearing capacity, PDA Test, CAPWAP, SPT, earthquake, Idriss-Boulanger, end-bearing capacity, Mayerhof, Reese and O'Neill*