



**ANALYSIS OF BEARING CAPACITY AND SETTLEMENT
OF BORE PILE FOUNDATION**

UNDERGRADUATE THESIS
Submitted as part of the requirements to obtain
Sarjana Teknik

By:

ORIZA SATIVA YONERI
022202000026

FACULTY OF ENGINEERING
CIVIL ENGINEERING STUDY PROGRAM

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FINAL PROJECT REPORT APPROVAL PAGE

This approval page is for the thesis in titled:

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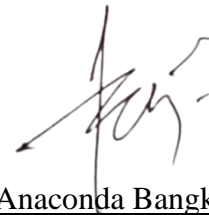
ORIZA SATIVA YONERI

022202000026

Approved by:



Prof. Ir. Binsar Hariandja, M.Eng., M.S., Ph.D
Thesis Advisor



Dr. Ir. B. M. A. S. Anaconda Bangkara, M.T., M.SM.
Head of Civil Engineering Study Program

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Dr. Ir. B. M. A. S. Anaconda Bangkara, M.T., M.SM.
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CHAPTER I INTRODUCTION 1.1 Background The foundation is an important part of construction because it functions to withstand the load on it.

The foundation transmits the load into the ground which determines whether or not a building is stable.

Likewise the Refinery Development Master Plan (RDMP) project, which is a government policy to increase the country's energy security and encourage economic revitalization, in this case, the development of oil refinery facilities, which will reduce the country's dependence on foreign oil.

This project is implemented in Balikpapan, East Kalimantan by PT Kilang Pertamina Balikpapan which is a dependent organization of PT Pertamina (Persero).

This project is experiencing a fairly high level of difficulty because the new refinery is not built on vacant land but in the middle of the old refinery that is still operating.

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ABSTRACT

This final project presents the bearing capacity and settlement that occurs on the bore pile foundation for a sulfuric acid tank with an operational weight of 796 kN, a diameter of 3 m, and a tank height of 6 m. The use of bore pile foundations is another alternative because there are existing buildings in the construction area. Bore pile foundation construction generally produces less vibration so it does not disturb existing buildings around the construction area. The foundation is crucial to the building's construction because it ensures the building's safety, stability, and structural integrity. Without a solid and powerful base, the structure can be severely damaged and even lead to a collapse.

Calculate bearing capacity and settlement with a bore pile foundation depth of 5,15 m, using variations in 40 cm and 30 cm diameter variations. Based on SPT data using the Reese & Wright method, the allowable carrying capacity of a single pile foundation for a diameter of 40 cm is 293,6 kN, and for a diameter of 30 cm is 201,9 kN. The bearing capacity of the pile group is also calculated, with the results for a bore pile foundation with a diameter of 40 cm, namely 1001,54 kN with a total of 4 piles, while for a pile diameter of 30 cm, it is 990,91 kN with a total of 6 piles, these values are greater than the axial load (P) which is 931,63 kN. The results of calculating the settlement of a single bore pile using the Vesic method is 3,24 cm, and the group settlement is 7,41 cm, while with a pile diameter of 30 cm, the settlement of a single bore pile is 2,41 cm and settlement in the pile group is 7,23 cm. The settlement that occurs in both variations of pile diameter is said to be safe or still at the tolerable limit because they are smaller than the allowable settlement, which is around 15 cm.

Keywords: Bore Pile, SPT, Bearing capacity, Settlement

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Last but not least, hopefully, the results of this research can provide benefits and can be a reference for students who will make a similar report. Of course, there are still shortcomings and errors in completing this final project. For this reason, constructive criticism and suggestions are highly expected so that they can be useful in the progress of the world of education.

Cikarang, October 2023



Oriza Sativa Yoneri

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