



## **DESIGN AND STABILITY CONSIDERATION OF SHALLOW FOUNDATION OF SULFURIC ACID TANK CONSTRUCTION**

**UNDERGRADUATE THESIS**  
Submitted as one of requirements to  
Obtain Sarjana Teknik

**By:**

**MAGDALENA NOVEMBRINE NGANTU**  
**022202000009**

**FACULTY OF ENGINEERING**  
**CIVIL ENGINEERING STUDY PROGRAM**  
**CIKARANG**

**OCTOBER, 2023**

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**Design and Stability Consideration of Shallow Foundation  
of Sulfuric Acid Tank Construction**

**By:**

**MAGDALENA NOVEMBRINE NGANTU  
022202000009**

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.S.M.  
Head of Civil Engineering Study Program

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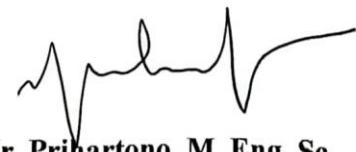
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Name : Magdalena Novembrine Ngantu

Student ID number : 022202000009

Study Program : Civil Engineering

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ANALYSIS OF BEARING CAPACITY AND STABILITY OF SHALLOW FOUNDATION IN SULFURIC ACID TANK CONSTRUCTION  
Submitted as part of the requirements for Completing Bachelor Program By: MAGDALENA NOVEMBRINE NGANTU  
022202000009 CIVIL ENGINEERING STUDY PROGRAM SCHOOL OF ENGINEERING PRESIDENT UNIVERSITY Cikarang, 2023 ii  
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Binsar Hariandja, M.Eng., M.S., Ph.D Dr. Ir.

B. M. A. S. Anaconda Bangkara, M.T., M.SM.

Thesis Advisor Head of Civil Engineering Study Program iii PANEL OF EXAMINERS' APPROVAL The Panel of Examiners declares that the undergraduate thesis entitled Analysis of Bearing Capacity and Stability of Shallow Foundation in Sulfuric Acid Tank Construction that was submitted by Magdalena Novembrine Ngantu majoring in Civil Engineering from the faculty of Engineering was assessed and approved to have passed the Oral Examination on xxx xxth 2023 Panel of Examiners Prof

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## **ABSTRACT**

This final project presents the bearing capacity, settlement and rotation that occurs in the shallow foundations that are analyzed. This shallow foundation will support a tank load of 780,6 kN with a diameter of 3 m and a height of 6 m. The use of this shallow foundation is another alternative in foundation construction because in carrying out a project it will be better if the costs incurred can be minimized with a foundation design that remains optimal. Foundations are one of the most important elements in a building. Its function is to distribute structural loads and building floor loads to the ground below. Choosing the right type of foundation is very crucial because it can affect the stability, strength and overall performance of the building. Calculations of bearing capacity, settlement and rotation were analyzed on a foundation with a width of 4 m and a length of 6 meters with a depth of 0,5 m.

Based on SPT data using the Meyerhof method, The bearing capacity of a shallow foundation is 255,5 kN/m<sup>2</sup>. This is said to be safe because the soil tension is 66,4 kN. Based on the results of calculations using Coduto foundation design principles, it was found that the decrease that occurred in shallow foundations was 0,02 mm. This is said to be safe because the allowable settlement in the tank structure is 25 mm. then regarding the rotation that occurs in shallow foundations with predetermined dimensions. The analysis used uses the Bowles method, then the rotation that occurs in the rectangular foundation analyzed is quite low with a value of 0,06 radians.

*Keyword: Shallow foundation, SPT, Bearing capacity, Settlement, Rotation*

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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



Magdalena Novembrine Ngantu

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