

CHAPTER I

INTRODUCTION

1.1. Background

In the construction project, foundation takes very important part. The main aim of the foundation is to distribute the load from the upper structure to the ground layer under the foundation. The dimension and the kind of foundation is depends on the load carried by the structure, and also the allowable stress of the soil. In the high load structure, pile foundation is used to resist axial and lateral load from the above structure. There are a lot of parameters influences the characteristics of the soil. Those parameters are used to determine the pile foundation resistance capacity.

PT. Atlas Resources as a mining contractor has the project where located in the Siluq Ngurai Village, West Kutai, East Kalimantan. The name of the project is Diva Kencana Borneo Project which has work on the coal mining. In coal mining, pile foundation can be used in the conveyor. Conveyor is tool used for distribute coal from the one place to another place.

In-situ test for the soil composition and the design recommendation has been done by PT. Swadaya Manunggal Karsa. The author thought that the design of the pile foundation that has been done by PT. Swadaya Manunggal Karsa of the jetty conveyor is not efficient enough; because of the load resistance capacity of the pile foundation of the conveyor is too high while the need is not that high.

1.2. Problem Statement

Based on the background, the problem statement of this final project is to redesign of the pile foundation in the Barge Loading Conveyor using different method from the previous design by PT. Swadaya Manunggal Karsa. PT. Swadaya Manunggal Karsa as a contractor of in-situ test for the soil composition and the design recommendation, using Hiley method, Vesic method, and Tomlinson method to design pile foundation. In this final project, the author wants to redesign pile foundation using cone penetration test data.

The CPT data are calculated using three ways, first is direct calculation using the CPT data, second is using interpretation of CPT data that support for the calculation based on the soil properties, and third is using interpretation of CPT data that support for the Standard Penetration Test calculation.

1.3. Problem Limitation

In order to focus on problem statement, it needs to be made a matter boundaries, there are:

1. Design only Barge Loading Conveyor (jetty conveyor)
2. Design using concrete pile and steel pile
3. The direct calculation design using The Dutch method, Schmertmann's method, and LCPC method
4. The calculation based on the soil properties using α method, λ method, and β method

5. The calculation based on CPT - SPT correlation using Meyerhof's method and Briaud's method

1.4. Objectives

There are some objectives of this study:

1. To redesign pile foundation in the Barge Loading Conveyor using different method from the previous design, those are:
 - a) The direct calculation design using Schmertmann's method, The Dutch method, and LCPC method
 - b) The calculation based on the soil properties design using β method, α method, and λ method
 - c) The calculation based on CPT - SPT correlation using Meyerhoff method and Briaud method
2. This final project also aims to give knowledge to the other students about the method to design the pile foundation.

1.5. Research Benefits

Some benefits that are expected to be achieved in this research, there are:

1. This research is expected to give some information or guidance for design planning and decision making for pile foundation.
2. This research can be used as an evaluation for the PT. Atlas Resources (in here owner of the project) for their next project.

3. This research can be used as a reference for further related research in other fields.

1.6. Location of The Project

The Diva Kencana Borneo Project was located in the Siluq Ngurai Village, West Kutai, East Kalimantan. The geographical location of the project was in sector 45N, 9964124.733 North and 399007.264 East, UTM coordinates.



Figure 1.1 Map of the Kalimantan Island

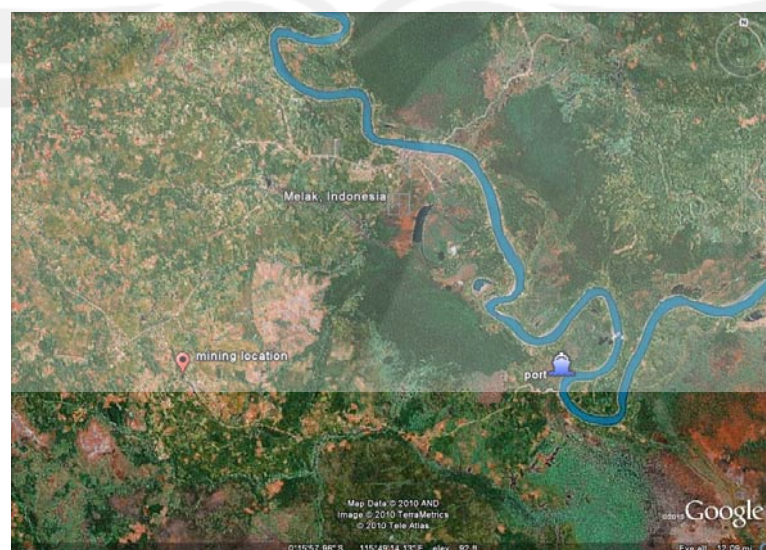


Figure 1.2 Location of the Project