CHAPTER I

INTRODUCTION

1.1 Background

Nowadays, the technology and innovation in construction industry always develop, specifically innovation in formwork and concrete. At the beginning, the formwork would be made by timber, also known as conventional method. Even though the price of timber always increases each year, the request of timber will not ever be reduced because it is used as the main material of formwork.

Formwork is a temporary mold that is use to hold the concrete while being poured, and shaped according to the desired shape (Stephens, 1985: p.1). In other words, the formwork needs to maintain the shape of the structural elements to make the surface as smooth as possible. Formwork that made by timber or plywood, can only be used for two times. It is fine if the conventional formwork is use for residential project because usually the houses only have small size column / beam. In contrast to high rise building construction, the use of conventional formwork will not be efficient because the owner must prepare more cost only for the formwork. Not only cost more money, but also take more time to just finish one formwork. With all that disadvantages from conventional formwork, then it was designed knock down formwork system which made by steel plate or plywood with thickness of 18mm and hollow iron.

Knock down formwork was firstly invented by American namely Edward C. Rowley in 1976. As stated in U.S Patents by Rowley, the objective of his invention is to make a separable and reusable concrete construction form which is

economical to manufacture, extremely durable and long-lasting, and easy to assemble by unskilled labor.

However, there are still some engineers that have not applied knock down formwork, or might have lack information about knock down formwork. Therefore, it is needed to discuss about the cost and time of knock down formwork compare to conventional formwork. Furthermore, the engineer can choose which formwork is compatible for their project, by considering the cost and time aspects.

1.2 Problem Statement

The following research questions were formulated to further examine the problem statement:

1. How much the total cost of knock down formwork?
2. How much the cost differences of knock down formwork if compared to the conventional?
3. How much the total duration of knock down formwork installation?
4. How much the duration differences of knock down formwork installation if compared to the conventional?
5. What are the advantages of using knock down formwork?

1.3 Problem Limitation

In order to make this research focused in the main problem, author set several limitations:

1. This research will be conducted in on-going high rise-building construction project in Yogyakarta.
2. The kind of formwork that will be observed is column formwork.
3. This research did not consider about the repeatably use of the formwork.

1.4 Purposes of the Research

This research is aimed to:

1. Know the total cost of knock down formwork
2. Know the cost differences between knock down formwork and conventional formwork
3. Know the total duration of knock down formwork
4. Know the duration differences between knock down formwork installation and conventional formwork installation
5. Know the advantages of using knock down formwork

1.5 Benefits of the Research

The result of this study is expected to be useful for various parties, among others:

1. For the contractors: this research can be as references to choose which formwork is compatible for their project.

2. For the author: this research can give information about the efficiency of knock down formwork if compared to the conventional formwork and also give extensive knowledge about formwork.