

CHAPTER I

INTRODUCTION

1.1 Background

There are many things that need to be considered in the planning stage of a development project, some of which include structural aspects, project financial management aspects, water aspects, and geotechnical aspects. These aspects need to be considered so that the project can run according to the quality, cost, and time planned. Each project has different standards according to the function and purpose of each building. The definition of a building structure is the parts of a building that make up the building. Part of the building structure starting from the foundation, beams, framework, walls and others. These structures serve to support other construction elements such as the interior and architecture of the building. The elements of the building frame structure do have different functions, but their purpose remains the same. The frame structure of the building has an important role in the world of construction. The safety of people is very dependent on its strength. Weakness or damage could result in injury or death. Therefore, the structure should not be built haphazardly. Therefore, structural planning is a very important factor to note.

There are several main components found in the building structure such as columns, beams, and slabs. Columns are vertical compression members that carry the weight of the entire building. Column is a very important element to the durability of a building. Columns that do not meet the standards are very dangerous, because the whole building can collapse. This section is a combination of iron and concrete. Both of these materials are very strong to withstand the pull and pressure. With columns, frames, sloofs, and beams that can withstand pressure. If the columns are vertical bracing, then the beams are horizontal bracing. Beams serve as a binder for columns and seats for the upper floor and roof. Just like columns, beams are also made of iron and concrete. Slab is a slab that functions to support the load towards the vertical support frame in the building structure. The function of the slab is to distribute dead loads or live loads on the supporting frame, so as to increase the strength of the building. To make the desired shape of the column, beam or slab, formwork is needed which

aims to be a concrete mold so that columns, beams, and slabs can be formed according to the desired shape and design.

Concrete is one of the components supporting the stiffness properties of structures made from a mixture of coarse aggregate, fine aggregate, water, cement, and other additives. Each project has different reinforced concrete specifications according to the design that has been made. The specifications of a concrete can be fulfilled if it fulfills various requirements, one of which can be tested through a slump test. At each casting, before pouring the concrete it is very important to test the concrete so that it can monitor whether the concrete is of good quality and according to specifications. This is one of the methods of work carried out on the Upper West project in order to produce a building with good quality and on time.

1.2 Project Overview

The review carried out in the process of discussing the installation of prestress beams was carried out directly through observation and data processing during the implementation of the PKKM internship in the Upper West project. The installation of prestress beams is located only on floors 1, 2 and 6 with 6 types of prestress, namely PC 1 – 6. The review was carried out with the aim of facilitating the discussion process and minimizing errors in the report processing process in order to produce valid reports in accordance with field conditions and in accordance with standards security that has been set.

1.2.1 Project General Data

Upper West Apartment has various unit such as penthouse, small office home office (SOHO) and office. This apartment also equipped with collaborative space, experimental resto, wellness & yoga terrace, chilled area, and day care. Upper West Apartment located in the downtown of BSD City that surrounded by commercial area, mall, and top university that make it has a large investment potential for rent at a fairly high rental price. Upper West apartment project starts on 4 March 2022 and plan to be completed on 14 March 2022 that consist of 2 towers, 1 basement, 44 floors structural work, and roof.

The general project data for the construction of Upper West Apartment can be described as follows:

1. Project Title : Upper West Apartment BSD City - Tangerang
2. Project Location : CBD 55 Lot II.6 BSD City, Tangerang

3. Building Type : High Rise Building Apartment
4. Scope of Work : Structure, Architecture, & Plumbing
5. Contract Type : Lump Sump Fixed Price
6. Contract Value : Rp. 480.000.000.000,- (Excl. Ppn)
7. Project Owner : PT. BUMI MEGAH GRAHA UTAMA
8. Construction Management : -
9. Consultants
- a. Structure : PT. KETIRA ENGINEERING CONSULTANS
 - b. Architect : PT. PRIMA DETAILINDO
 - c. MEP : PT. ARNAN PRATAMA CONSULTANS
 - d. QS : PT. REKA PRIMA KUANTIMA
 - e. Landscape : PT. DACANIA CINITRA
10. Contractor : PT. TATAMULIA NUSANTARA INDAH
11. Execution Time : 630 Calendar Day (36 Months)
12. Start Date : 04 March 2022
13. Finish Date : 14 March 2025
14. Payment System : Monthly Progress Payment
15. Maintenance Period : 365 Calendar Day (12 Months)
16. Execution Time : 28 Months (Phase 1), 24 Months (Phase 2)
17. Direct Contractors : Mechanical Electrical, Vertical Transportation (Lift), Swimming Pool, STP, Genset, Gondola
18. Sub-Contractors / Supplier
- Structure Work : Excavation, Dewatering, Capping Beam, Raft, Column, Shear Wall, Slab, Waterproofing Integral, Waterproofing Membrane, Termite, Steel
 - Architecture Work : Floor Hardener, Waterproofing Coating, Homogenous Tile, Ceramic, Marble, Ceiling, Rendering, Gypsum Partition, Wood and Iron Door, Aluminium, Natural Stone, Cubical, Insulation, Folding Glass Partition, Indoor Glass Work, Railing, Sanitary, Alum Comp. Panel, Painting, Wood Decking
 - Plumbing Work : Installation of Clean Water, Hot Water, Dirty Water, Dirt, Vents, Rainwater, Fire Stop, Infiltration Wells, Clean Water

Pumps, Submersible Sewage Pumps, WTP (Ultimedia Filter,
Sand & Carbon Filter)

Land Area : 7118 m²

Building Area :

- Tower 1 : 46,147.55 m²
- Tower 2 : 21,812.70 m²
- Total Building Area : 67,960.25 m²



Figure 1.1 FACADE Upper West BSD City

1.2.2 Project Location

Upper West Apartment project located on CBD 55 Lot II.6 BSD City, Tangerang.



Figure 1.2 Project Location

The location of this building is adjacent by:

- North : BSD CBD Street
- South : Mercure Tangerang BSD City
- East : BSD CBD III Street
- West : BSD CBD I Street

1.3 Problem Formulation

in terms of the process of implementing the apprenticeship carried out, the preparation of this report resulted in several problem formulations which are the focus of the discussion of this report.

1. How is the analysis of column formwork?
2. How is the quality control of prestress concrete?

1.4 Purpose

This report has the aim of discussing the formulation of the problems that arise, so that the topics discussed in this report can be arranged in more detail and clearly. There are several purposes referred to in the report on the application of prestress beams.

1. Know the analysis of column formwork.
2. Know the quality control of prestress concrete.

1.5 Research Method

As the material for the Final Infrastructure Design Project report on the Upper west project, a research method is needed to determine the stages of work to be carried out. The research method is carried out so that the work process can be carried out effectively and achieve the expected efficiency. In the discussion of formwork strength analysis on the Upper West project, the discussion of formwork is divided into two, namely vertical and horizontal with the data used based on the method of carrying out the horizontal formwork work of the Upper West project, the method of carrying out the vertical formwork work of the Upper West project, and shop drawings of the formwork of the Upper West project. In the discussion of implementation methods and controls on the Upper West project, the data used are the method of performing prestress beam casting work, the results of concrete compression tests, and the results of stressing prestress beams. In discussing the details of the implementation and constraints found in the Upper West project, the data used is a list of constraints and a catch-up plan. The data collected later becomes the basis for answering each problem formulation.

1.6 Scope of Observation

Due to the limited time for the internship which lasted for approximately 4 months, this report is given the scope of the problems that have been determined with the supervisor team, which is limited to the part of the work carried out during the internship process, including:

1. Conduct a column formwork deflection analysis.
2. Describe the quality control of prestress concrete.

1.7 Final Project Systematics

The final project systematics is structured to help the writing team compile and complete a series of infrastructure design final assignments that have been set. Systematics is prepared based on the results of work carried out during the internship period by including detailed job descriptions in accordance with what is obtained in the field.

1.8 Data Collection

This practical work report uses several methods to obtain the data needed in its preparation. As for the data - the data obtained obtained by the following methods:

a. Observation Method (Direct Observation)

Observing directly in the field to find out about technical methods and efficient work of carrying out work in the field so that data can be obtained that can support practical work reports.

b. Interview Method (Interview)

In this case I conducted interviews or direct questions and answers with all parties involved in the project, interviews with project supervisors, contractors, foremen or with carpenters regarding matters that were not yet known or asked various problems encountered in the field with the intention of getting input. – useful input in the future in this practical work.

c. Literature Method (Library)

Collect data, materials and materials as well as information obtained from books or journals available in the implementation of development. The literature method is used in solving problems encountered in making practical work reports.

d. Instrumental Method (Documentation)

The documentation method is carried out using tools - tools in practical work such as cameras for field documentation. This method is also used to collect data obtained from the project during implementation in the field.