CHAPTER I

INTRODUCTION

1.1   Background

In millennial era, the construction world is required to keeping with the growing times. Currently the construction called the era of Industry 4.0. The Era demands that workers in the field of construction to utilize technology and still consider the resources effectively and efficiently. It is expected that the increasing technology can save energy, cost, time and resources in the construction.

The development of information technology now allows us to create models "*Virtual Building*" on the computer to simulate the building before it is built. Virtual building that includes all elements of the building into a complete database, then utilize the database in making the design drawings. With "*Virtual Building*" technology can draw using three-dimensional (3D) building elements such as columns, plates, beams, walls, roofs, doors, windows, stairs, and other objects. The computerized system used in the construction world is based on the principle of Building Information Modeling (BIM). With BIM can create the unity of architecture, structure, and MEP (mechanical electrical Plumbing). The first implementation of BIM in the concept of Virtual Building in 1987 by ArchiCAD Graphisoft.

To reduce the costs, improve productivity and quality by creating BIM modeling, this model creation can be created in 3D so that the system can detect in case of problems such as MEP modeling that intersect with

Structural elements. The amount of material volume and estimated cost can be calculated more quickly and the data that is issued by the 3D Model has been automatically so that the cost budget plan can be taken into account.

Construction project is a very complex activity because it has complexity in every field. Ranging from structural, architecture and MEP are very important and interdependent with each other. Design planning is a building aspect that is contained in the shopdrawing. Shopdrawing into one tool used in the implementation of construction projects. If there is an error in the picture of the shopdrawing will have potential occurrence of conflicts between each personal involved and can result in the implementation of the field to be obstructed. It can harm any of the construction perpetrators both in time and cost. Using case studies on project X feeding the research will be focused on identifying problems that may occur in the application of BIM.

1.2 Problem of Research

The Following research question was formulated to further examine the problem statement:

1. Analyze clash detection in project x and identify the rework cost if there are clash detection analysis.

1.3   Scope of Research

The scope of this research is carrying out on Project X, Balikpapan,

East Borneo.

1.4   Objectives of Research

1. Identify and classification the potential conflict between structure,
    Architecture and MEP on the construction using Navisworks.

2. To Identify the rework cost if there are clash detection analysis

1.5   Benefits of Research

1. Knowing clash detection analysis using Navisworks Autodesk

2. Knowing How to Identifying and classification the potential clash
    between structure, Architecture and MEP on the construction.

1.6   Systematic of Research

There are five chapters in this research report, those are introduction,

literature review, research methodology, data analysis and discussion. The

explanation of each chapter will be provided below.

Chapter I is introduction that consist of the background, problem of

research, scope of research, authenticity of research, objective of research,

benefit of research, systematic of research and Final Project originally

Chapter II is literature review that consist of explanation of any theories that become a base for the problem that want to be solved and other thing that can be used as base theory.

Chapter III is methodology of research that consist of any phases of this research that is used during this research in order to solve the problem and reach the aim of this research.

Chapter IV is data analysis that consist of the explanation about collected data and also some analysis to analyze the data in order to get expected result and solve the problem.

Chapter V is conclusion and suggestion that consist of conclusion of whole research that already done, and also provide suggestion.

1.7   Final Project originalities

The topic "Analysis Clash Detection Structure, Architecture and Mechanical Electrical in Project X with Building Information Modeling" have never been used in any other final project before. Therefore, there has never been any attempt to conduct a similar research in Construction Project. This final project will be a unique and a new project in its attempt to analysis Clash Detection Structure, Architecture and Mechanical Electrical in Project X with Building Information Modeling.