

# **CHAPTER I**

## **INTRODUCTION**

### **I.1 General Background**

Nowadays there are many construction projects in Indonesia especially in Java Island. Many highrise buildings have been built and will be built. To design the building, architect and civil engineer need to be corporate. The buildings with steel construction often preferred because of several advantages such as processing time relative fast. Designing the building using steel construction has many aspects to consider. One of them is about designing the connections. A good design requires the evaluation of several framing plans – that is, different arrangements of members and their connections. (Segui, 2007)

Connections of structural steel members are of critical importance. An inadequate connection, which can be the “weak link” in a structure, has been the cause of numerous failures. Failure of structural members is rare; most structural failures are the result of poorly designed or detailed connections. (Segui, 2007) In current design for beam to column connections in Special Moment Frame (SMF) do not consider about shear and moment interaction. In a research this may cause the heavier connections.

Load and Resistance Factor Design (LRFD) in the AISC Seismic Design Provisions (AISC 2005) is a method of achieving the latter seismic design requirements. This method will be used in this paper later on.

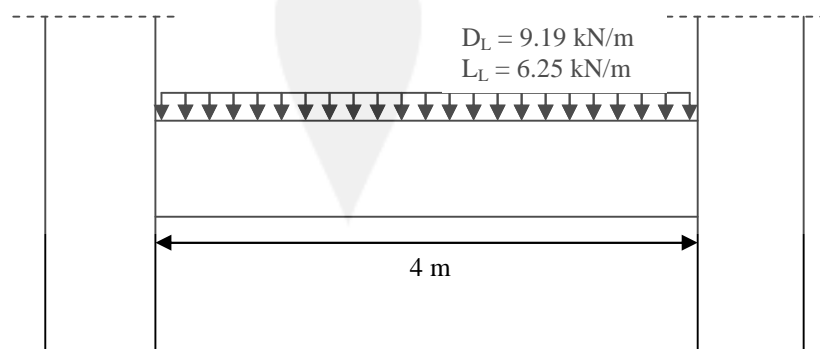
Over time, many researches have been developed to improve the understanding about connections. By the research result and the provisions from AISC, in this paper the author tries to design a connection that considering the interaction of shear and moment. Hopefully the result of the designed connection can be more efficient.

## **I.2 Problem Statement**

The problem in this final project is using the theory of interaction between shear and moment from the research and AISC provisions to get a better result of connection.

## **I.3 Problem Limitation**

1. The steel profile that will be used is WF-shape. The column profile is W14X257 and the beam profile is W24X55.



**Figure I.1** Design Case

2. The structural members that will be designed is beam to column connections only.
3. The connection will be designed as Reduced Beam Section and using welded connection of Complete Joint Penetration (CJP) groove weld.
4. Detailing of the connections according to AISC 358-05.
5. The connection design will follow AISC 358-05 and the research result.

#### **I.4. Objective of the Study**

The objectives of the study are to:

1. Design a connection,
2. Improve the result of the analysis from basic code design by the research result.