

## INTRODUCTION

### 1.1 Background

The Government has decided to move the capital of Indonesia from DKI Jakarta Province to Kalimantan Province, the quefgirstion is will be the center of the economical of this country move as well? Because it obviously the infrastructure will follow the economic growth. However, Jakarta will continue to be the nation's commercial and financial centre.

Jakarta's growth rapidly since independence day, a lot of investors of big companies built their office in Jakarta to keep up with their goals, Contractor industry local has been working to build the infrastructure since 1960 era. Tall building is the best decision to minimize the needs of the land and maximizing the building area. However, the available of land in DKI Jakarta decreasing and they slowly find the land in other city around the capital. Tangerang Selatan, Bekasi and Depok now growing crowd slowly as well and become great places for companies to build their office and PT. Kino Indonesia decided to build the office building in Alam Sutera, Tangerang.

Indonesia is located between the plaques of Australian, the Eurasian, and the Pacific. In addition, Indonesia is also included in the Pacific Ring of Fire, which is no other than a group of volcanoes in the world. This is why earthquakes always occur as tectonic or volcanic. As a civilian who isn't capable to avoid it, each building needs to be designed properly to resist the earthquake according to the Indonesian National Standards (SNI 1726:2012).

### 1.2 Problem Statement

According to the background's explanation, this design will be focus on the problem bellow:

1. How to design building structure with dual system by following the standards requirements?
2. How to know the building behaviours due to earthquakes, whether is it full fill the dual system requirement or not?

### 1.3 **Problem Limitation**

This final project designed a 27-story building structure that functioned as an office building. This building constructs above the stiff soil classification SD (stiff soil). There are three SNI (Standard National Indonesia) used for this design:

1. Structure designed refers to the architecture drawings of PT KINO Alam Sutera, Tangerang Selatan with 23 stories.
2. Load design according to: Minimum design loads for building and other structure SNI 1727-2013 (AISC 7-10).
3. Structure design according to: Building Code Requirements for Structural Concrete 2847-2013 (ACI 318M-11).
4. Earthquake analysis of response spectrum by static equivalent method according to: Earthquake resistance planning procedures for structures of buildings and non-buildings SNI 1726-2012.
5. Design including: Column, beam, cantilever beam, slab, stair and core wall.
6. Structure analysis using ETABS software.
7. Material Specification:
  - a. Concrete  $f'_c = 28$  MPa and 35 MPa
  - b. – Reinforcement  $f_y = 240$  MPa diameter  $< 10$  mm
  - Reinforcement  $f_y = 400$  MPa diameter  $> 10$  mm

### 1.4 **Final Project Originality**

Based on the project sources the building of PT Kino Alam Sutera Tangerang Selatan never be taken for any thesis or final project before.

### 1.5 **Objective**

The purpose of this final project is to get a satisfying building structure design of 23 story with dual system and to know the building performance due to earthquake by ETABS software to checking the resisting lateral force.

## 1.6 **Benefits**

This building structure design experiment is expected to be useful in work field as a knowledge and experience before the author start to study in master degree to be a professional engineer.

