

# **CHAPTER I**

## **PRELIMINARY**

### **A. Project Background**

Congestion is a situation or circumstance stagnated or even interruption of traffic caused by the large number of vehicles exceeding the capacity of the road. Congestion happens in the big cities, belongs to Surakarta, which is one of the big city in Java, especially in Beteng area as a trading center. There are many vehicles in the parking lot that were not sufficient, so the parking lot is diverted on the street. It becomes a problem when the Batara Kresna Train passes

So, to return the road to its function in the Beteng area planned building parking eight floors with Intermediate Moment Resisting Frame (IMRF) method

### **B. Problem Formulation**

Based on the background described above, the formulation of the problem that can be taken as a reference is:

1. Increasing the need for accommodation facilities for private transport users.
2. How to plan the structure of eight floor parking buildings resistant to the earthquake in Surakarta.

### **C. The Purpose of Planning**

1. Design the parking lot of eight floors to provide facilities for private vehicle users
2. Plan an eight floors parking structure in Surakarta that is strong against the earthquake by IMRF method

### **D. Benefits of Planning**

Improvement knowledge of planning and provide experience in planning of earthquake-resistant seismic parking structures, especially in the design of reinforced concrete structures.

## **E. Scoop of Limitation**

To Anticipate the widening of the discussion, in the preparation of this final project, the planning of the building is limited to the following issues:

1. Standard used
  - a. SNI-2847:2013, Requirements for Structural Concrete Building
  - b. SNI-1726:2012, Endurance Earthquake Planning Procedures for Building Structures and Non-Building.
  - c. SNI-1727:2013, Minimum Load For Designing Building and Other Structures.
2. Calculation and data to planned
  - a. The structure of parking building eight floors with a partial ductile in Surakarta
  - b. Planning of the calculated structure includes roof, slab roof, slab floor, base slab, stairs, beams, column and foundation.
  - c. Concrete quality ( $f^c$ ) 30 MPa
  - d. Steel quality ( $f_y$ ) 400 MPa for main reinforcement, and Steel quality ( $f_y$ ) 240 MPa for shear reinforcement
  - e. Thickness of roof slab taken 12 cm, floor slab 15 cm. and base slab 20 cm
  - f. Column dimension 800 mm x 800 mm, beam dimension 600 mm x 300 mm, and joists dimension 500 mm x 250 mm.
  - g. The height of the column, the 1<sup>st</sup>-7<sup>th</sup> floor is 3.20 m, the 8<sup>th</sup> floor is 3.60 m.
  - h. The foundation type is pile foundation.