# CHAPTER I
# INTRODUCTION

## A. Background

Concrete is a primary requirement in a skyscraper, considering the effects of the use of glass which can lead to global warming and unsustainable then the modern era concrete is a solution to the construction of an environmentally friendly, there are several kinds of concrete over time many important thing we can find to a subject at a later date.

Many discoveries about the concrete starting from 1824, a scientist who discovered portland cement named Aspdin, then by JL Lambot in 1850 introduced the basic concepts of composite construction (combined two different construction materials that work together - together carry the load), In 1861 F. Coignet to test the use of iron distribution in roof construction, pipe anddome, in 1887 Gustav Wayss & Koenen and Hennebique introduce stirrups as anchoring the shear force and the use of beam "T" to reduce the burden of its own weight, and still a lot of research that utilize other concrete ,

Concrete characteristics have destroyed voltage high compressive and tensile crushed a low voltage, while the use of fly ash as filler is an empty cavity in order to increasingly close ties between the material and a binder such as portland cement.

Based on the above, this study aims to determine the compressive strength of high strength concrete were aged 1 day to add fly ash material Paiton, and how the influence of fly ash to concrete compared with normal concrete (0% fly ash).

## B. Problem Formulation

Research on high strength concrete with age 1 today taken the formulation of the problem as follows:

1) How the concrete compressive strength of high quality age of 1 day with a variety of mix 0%, 7%, 9%, 11%, 13%, and 15% additive *Fly Ash* Paiton?
2) In variations of what is in getting the highest compressive strength?

## C. Objectives

The objectives of this study are as follows:

1. to determine the effect of the use of *fly ash* to concrete compressive strength Paiton high Quality at the age of 1 day.
2. Can determine the percentage of the optimal composition using a high Quality concrete and fly ash additive Paiton.

## D. Benefits Research

this research is expected to contribute ideas for planning the manufacture of concrete economical and high quality with added material utilization of fly ash *(fly* ash).

## E. Limitations

To anticipate the discussion occurs outside the problem, therefore, is defined the problem as follows:

1. The cement used is Portland cement brands Gresik.
2. Coarse aggregate derived from Kulon Progo, Yogyakarta.
3. Fine aggregates derived from Muntilan, Sleman, Yogyakarta.
4. Fly ash or fly ash from the power plant Paiton, Probolinggo, East Java
5. Water used from the Civil Engineering Laboratory UMS.
6. Quality concrete is planned $f'_c$ = 20 MPa method mix design using SNI (The Britist Design Method)
7. Testing fresh concrete is done with the *slump test*
8. *Fly ash* as an admixture to replace the 0%, 7%, 9%, 11%, 13%, and 15 % by weight of cement.

9. Fas of 0.3
10. compressive strength with a cylindrical specimen with a diameter of 15 cm and 30 cm high and concrete testing at the age of 1 day

## F. Authenticity Research

1. **previous research**

To research away from the use of paiton fly ash as a added concrete the quality of high have been in them adhy and setyawan ( 2014 ) , by using dust as a substitute for fine aggregat , obtained strong press at the age of 28 days to variation 12.5 % paiton fly ash of the weight of a cement of 43,03 MPa and has increased 43,38 % of normal concrete.

2. **The research:**

Research filed with the title **"EXPERIMENTAL EARLY AGE CONCRETE USING PAITON FLY-ASH "** discussed on the use of variation fly ash as many as 0 % , 7 % , 9 % , 11 % , 13 % and 15 % of the cement weight**.**