CHAPTER 1

INTRODUCTION

1.1 Background and Problem Statement

Increasing of economic growth in the world in generalas well as in Indonesia in particular, has brounght to the increasing of air traffic to fulfill the movement of passanger and goods. Trade and other society activities, both international and local need a fast transportation to bring them goes around the world to meet their need. To support the operational of air traffic, airports completed with length and strong of runway are verry necessaried. The simple airport at least must have terminal building and one runway, while the big and busy airport normaly completed with other facilities, both for pasanger and for airport official. Airport facilities in general is shown in Figure 1.1. Runway, however, is the most important for an airport.

Runway is the important part of the airport the place where aircraft can take off and landing. The size of the runway influence the capacity of the airport. The longer of runway is, the larger the capacity of airport. Therefore, very important to build long and strong runway in the airport. If the capacity of airport significantly increase, the traveling time will become relatively short and more passenger will interested in using air transportation.

Runway is defined as rectangular area on a land aerodrome prepared for the landing and takeoff of the aircraft. Runways may be a man-made surface (often asphalt, concrete, or a mixture of both) or a natural surface

(grass, dirt, gravel, ice, or salt). Runway pavement surface must be constructed to have good skid resistance, and have a good drainage. [1]

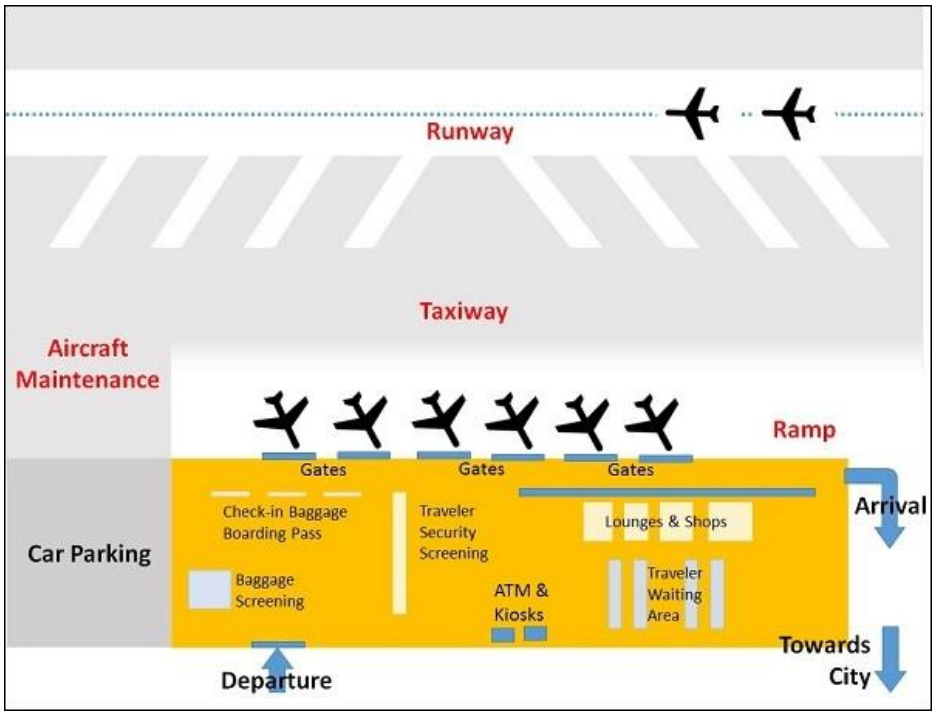

Figure 1.1. Layout of an airport in general [2]

In this Final Assignment, design of runway pavement, both flexible and rigid pavement will be conducted and four design methods of runway pavement will be used. Those four design methods of runway pavement are California Bearing Ratio (CBR), Federal Aviation Administration (FAA), Load Classification Number (LCN) and Portland Cement Association (PCA) design method.

1.2 Problem Statement

From the explanation above, show that runway have an important role of the airport. An airport without a runway can not be said as an airport. Runway should be designed properly, it should have strong pavement structure and should have

sufficient length for aircraft to be able landing and taking off savely. Unfortunately, knowledge of how to design and calculate runway pavement structure have not been given in the lecture of Airport Engineering in the Civil Engineering Departement, Faculty of Engineering of UNISSULA. Therefore, design and calculation of runway pavement structure will be studied in this final assignment, where by designing and calculating runway pavement structure is expected can get knowledge about runway pavement structure.

1.3 Objectives of the Study

From the background and problem statement above, the objectives of the Final Assignment can be mentioned as follows:

1. To add knowledge of airport engineering by doing runway pavements design and calculation.
2. To apply some runway pavement design methods which have been found from some literatures.

1.4 Scope of the Study

To accomplish those objectives, this study started with a literature review of the information pertaining to design runwaypavement structure. All books, journals, papers pertaining to runway pavement design will be reviewed. Literature review and then will be followed by methodology. In the chapter of methodology, different types of aircraft and different subgrade soil as well as different runway pavement design methods will be described. Design and calculation of some runway pavement of three airports will be given in chapter four, Design and Calculation of runway pavement, while the results will be given and discuss in chapter five.