

CHAPTER ONE
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1.1 General

Airport pavements are constructed to provide adequate support for the loads imposed by airplanes and to produce a firm, stable, smooth, all-year, all-weather surface free of debris or other particles that may be blown or picked up by propeller wash or jet blast. In order to satisfactorily fulfill these requirements, the pavement must be of such quality and thickness that it will not fail under the load imposed. In addition, it must possess sufficient inherent stability to withstand, without damage, the abrasive action of traffic, adverse weather conditions, and other deteriorating influences.

With proper design, any pavement type (rigid, flexible, composite, etc.) can provide a satisfactory pavement for any civil airplane. However, some designs may be more economical than others and can still provide satisfactory performance. The engineer is required to provide a rationale for the selected design in the engineer's report. Engineers often base this rationale on economic factors derived from evaluating several design alternatives. Use life-cycle cost analysis if the design selection is based on least cost. An airfield pavement and the airplanes that operate on it represent an interactive system that must be addressed in the pavement design process. For that the structural design of the runway with the steady growth of a new generation of aircraft tacks into account air traffic variables.

1.2 Project Objectives

1.2.1 General Objectives

The general objectives of the study are:

- To study the different ways and methodologies of airports pavement design.
- Study the different ways and methodologies of airports pavement design and to make a comparison between them to select the best design method
- To provide an airport system that meets current and future needs

1.2.2 Specific objectives

The specific objectives of the research can be listed as follow:.

- Analysis of design method used in the Sudan and incorporated in the design compared with other methods.
- Study and find the dimensions of the runway length, width and direction.
- Apply the structural design methodologies for flexible and rigid pavements to the case of study using each method and compare results to find the best design way.
- Make the forecast for the traffic by scientific methodology
- Study of different paving materials and compare them.
- To make a comparison between different design methodologies to select the best design method;