

CHAPTER ONE

INTRODUCTION

1.1 General

Elevated storage tanks are used to deliver water either through large distribution systems or through stand pipes located at or near the source or at other watering points.

Elevated storage tanks are used where ground tanks cannot be built due to lack of sufficient natural elevation and where stand pipes are served from a well with a windmill or other powered pumps, elevated tanks can serve either a large community or small group of families. The storage tank reservoir function provide a reserve of treated water that will minimize interruptions of supply due to failures of mains pumps or other plant equipment; help maintain uniform pressure provide a reserve of water for fire fighting and other emergencies; act as a relief valve on system of mains supplied by pumping and allow pumping at the average rather than peak flow rate.

1.2 The problem statement

Now it is ostensible that there is no full study about analysis and design for elevated water tanks. This research was offer an example of analysis and design of elevated water tanks with different types to illustrate the problem.

1.3 Scope

Thesis may introduce principle knowledge in water tanks and element of water tanks, and short brief in elements behavior and details.

1.4 Research objectives

The objectives are summarized as follows:

1. To study the analysis of elevated water tanks using computer program SAP200.

2. To make a study about the design of liquid retaining structure according to American Concrete Institute Specifications (ACI).
3. To make comparisons between the different water tanks types and to select the most suitable one.

1.5 Methodology

The researcher has done this work by introducing to water tanks in general and in details; he introduced the basics of structural analysis and design of elevated water tanks, assumed three elevated water tanks and volume of three tanks are constant to study the different behavior of different tanks and after those discussion results of three cases.

1.6 Thesis Outline

Chapter one contains introduction, the scope, research objectives, methodology and organization of the research. Chapter two is literature review of tanks, types of elevated tanks, water tanks elements, analysis method and programs used in analysis and design methods of elevated water tanks elements. In chapter three the analysis results of different elevated tanks using in case study. Chapter four describes the design calculation of design for water tanks elements, discusses the results and chapter five conclusion and recommendations.