

HIGHER TECHNICAL INSTITUTE  
Nicosia - Cyprus

CIVIL ENGINEERING DEPARTMENT

Academic Year 1992/93

Diploma Project Number: C/668

Title: Design of a Water Tower in Concrete

Objectives:-

1. To estimate Water and Wind Pressures.
2. To design the super-structure.
3. To design the foundations.
4. To prepare Structural drawings for the Tower.
5. To make an approximate estimate of Cost of the Structure excluding fixtures.

Terms and Conditions:

1. Capacity to be 100,000 gal.
2. Height of reservoir above ground 20 m.
3. Soil Bearing Capacity 150 KN/m<sup>2</sup>.

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DA/ML



## ACKNOWLEDGEMENTS

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Finally, I would like to thank my parents for their support in my three years in H.T.I. and especially my father to whom this project is dedicated.

## PREFACE

The object of this project was to design an elevated water tower.

The water tower will be constructed at the outskirts of a city to act as water reservoir in a water supply system. In order to satisfy the needs of the community the water tank must hold 180,000 gal. ( $351\text{m}^3$ ) of water and its bottom slab must be at least 20m above datum in order to provide sufficient pressure head.

The shape of the water tower was chosen having in mind the aesthetic appearance and also the economic and environmental factor. However, in these structures the aesthetic appearance has a predominant role because of their height. In this water structure all members are cylindrical

The water tower has a maximum internal diameter of 9.0m and height above floor slab 70m. The widths of all members are varied from 0.225m to 0.300m. The water tower is supported by a circular shaft with internal diameter of 2.50 m in which steel ladders water pipes and pumps are accommodated.

In this report except of the structural analysis and design of all members, drawings for the details of reinforcement and the accommodation of water pipes are provided. Also an approach to the approximate cost of the structure was made.

The construction period was estimated for 18 months and the design life 40 years.

## CONTENTS

ACKNOWLEDGMENTS

PREFACE

### PART A

Page

1.0	INTRODUCTION	1
2.0	STRUCTURAL ANALYSIS AND DESIGN	
2.1	ROOF SLAB OF THE TANK	5
2.2	EXTERNAL WALL OF THE TANK	17
2.3	INTERNAL WALL OF THE TANK	25
2.4	RING BEAM 1	35
2.5	INCLINED WALL OF THE TANK	40
2.6	BOTTOM SLAB OF THE TANK	51
2.7	RING BEAM 2	59
2.8	WIND LOADING	62
2.9	CENTRAL SHAFT OF THE TANK	64
2.10	FOOTING OF THE TANK	69
3.0	STABILITY OF THE WHOLE STRUCTURE	75
4.0	APPROXIMATE COST	76
5.0	CONCLUSIONS AND DISCUSSIONS	82
6.0	APPENDICES AND CHARTS	84
7.0	REFERENCES	90

### PART B

DRAWINGS AND DETAILING