

H.T.I

DESIGN OF A MULTISTOREY CAR PARK

By

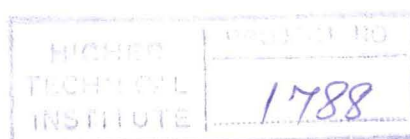
SOTIROULLA PAPAIOANNOU

Project Report

Submitted to
the Department of Civil Engineering
of the Higher Technical Institute
Nicosia Cyprus
in partial fulfilment of the requirements
for the diploma of
TECHNICIAN ENGINEER

in
CIVIL ENGINEERING

June 1991



SUMMARY

The design of a multistorey car park has been attempted in this project.

Multistorey car parks constitute a very important component of every comprehensive development scheme for city centres today.

The parking facilities combined with parking problems are presented in general. Multistorey car parks configuration is presented in more detail.

The problem of choosing the most suitable type of multistorey car park and ramp system, is very complicated and should be examined carefully, having in mind the size and shape of the parking lot, the approach to it and the cost of construction.

The purpose of this project was to involve the student in the parking problems and policy to be followed and to provide an alternative solution of the car park problem to the Municipality of Nicosia.

This alternative is of course the analysis and design of a multistorey car park.

CONTENTS

	Page
Acknowledgements	
Summary	
Introduction	
CHAPTER 1 - PARKING IN GENERAL	
1.1 On-street parking	1
1.1.1 On-street space items	1
1.1.2 Management of on-street parking	1
1.1.3 Problems due to on-street parking	2
1.2 Off-street parking	3
1.2.1 Off-street Inventory items	3
1.2.2 General analysis of off-street inventory items	3
1.2.2.1 Locating off-street parking facilities	4
1.2.2.2 General problems of intake and discharge as affecting traffic congestion	5
1.2.2.3 Number of spaces provided	5
1.2.3 Off street parkings	6
1.2.3.1 Parking Lots	6
1.2.3.2 Parking Garages	6
1.3 Parking Policy	14
CHAPTER 2 - CAR PARKS AND THE NICOSIA MUNICIPALITY	
2.1 Introduction	16
2.2 A study of parking within the Nicosia Central Area	16
2.2.1 Object	16
2.2.2 Procedure	17
2.2.3 The Parking study	17
2.3 Note	17
- Parking Study	18
2.4 Conclusions and recommendations	48
2.4. Main recommendation	49

CHAPTER 3 - MULTISTOREY CAR PARKS

	Page	
3.1	General Information about Multistorey car parks	50
3.2	Design of multistorey car parks	52
3.2.1	Different groups of multistorey car parks	52
3.2.2	The Survey	54
3.3	Configuration of a Multistorey car park	59
3.3.1	Design of parking stalls and aisles	59
3.3.1.1	Car sizes and manoeuvrability	59
3.3.1.2	Parking Arrangements	62
3.3.1.3	Garages and garage courtyards	63
3.3.1.4	Private garages	63
3.3.1.5	Pedestrians and disable people	63
3.3.2	Convenience and Ease of Parking	63
3.3.3	One and Two way aisles	67
3.3.4	Traffic Circulation	67
3.4	Structural design Considerations	69
3.5	Building Regulations	71
3.5.1	Lighting	71
3.5.2	Signs	72
3.5.3	Heating	72
3.5.4	Ventilation	72
3.6	Travel facilities	74
3.6.1	Staircases	74
3.6.2	Lift System	74
3.6.3	Elevators	75
3.6.4	Ramps	76
3.6.5	Elevators versus Ramps	79
3.6.6	Types of car park layouts and circulation patterns	80
3.7	Fee Collection Equipment	84
3.8	Some Conclusions	84

CHAPTER 4 - MULTISTOREY CAR PARK IN THE CITY OF NICOSIA

	Page	
4.1	Reasons for the construction of a multistorey car park	86
4.2	Necessary arrangements for a multistorey car park	86
4.3	Major existing and proposed off-street car parks	87
4.4	Location of the design Multistorey car park	87
4.5	Reasons for choosing this area	88
4.6	Conclusion	89
4.7	Characteristics of the designed Multistorey car park	92
	References	95