

DESIGN OF THE CENTRAL ANTENNA AND SOUND
DISTRIBUTION SYSTEM OF A HOTEL

BY

CONSTADINOS HAJDICONSTANTI

Project report submitted to
the Department of Electrical Engineering of the
HIGHER TECHNICAL INSTITUTE
Nicosia Cyprus

In partial fulfillment of the requirements for
the diploma of

TECHNICIAN ENGINEER

in

ELECTRICAL ENGINEER

MAY 1992

1977

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my project supervisor Mr. C. Loizou, for his guidance and motivation, as well as for his willingness to offer me every possible help for the preparation and evolution of my project.

Furthermore, I express my appreciation and thanks to the employees of PHILIOS CHRISTODOULIDES & CO. and particularly Mr NICOS AFAMIS for giving me information and guidance for this project.

SUMMARY - INTRODUCTION

DESIGN OF THE CENTRAL ANTENNA AND SOUND DISTRIBUTION OF A HOTEL

(BY HAJDICONSTANTI CONSTANTINOS)

This project deals with the design of the Central Antenna and Sound Distribution system of a Hotel.

This project includes specification and tender drawings, as well as calculations of the design carried out. It also includes the material and labour costing.

When attempting to design such systems, it is very important to know beforehand all possible information concerning the specific installation. Design must be made very carefully and calculations must be checked very carefully, as the minor fault could lead to a number of discouraging results when attempting to install equipment in the building.

TABLE OF CONTENTS

	PAGE
ACNOWLEDGEMENTS	
SUMMARY-INTRODUCTION	
CHAPTER 1 - CENTRAL ANTENNA SYSTEM	
1.1 Theory of Central Antenna System	1
1.2 Equipment involved	3
1.3 General Technical Requirements	8
1.4 Installation Instructions	9
1.5.1 Calculation for UHF/VHF Signals for the lines A,B	12
1.5.2 Calculation of each line A,B splitter output	14
1.5.3 Calculation of splitter S1 input	16
1.5.4 Calculation for VHF/UHF signals for the the lines C,D	17
1.5.5 Calculation of each line C,D splitter output	16
1.5.6 Calculation of splitter S2 input	19
1.5.7 Calculations for line E signals	20
1.5.8 Calculations for line F signals	21
1.5.9 Calculations for line G signals	24
1.5.10 Calculation for splitter S3 input	26

1.5.11	Calculations for line H signals	27
1.5.12	Calculations for line I signals	29
1.5.13	Calculations for splitter S1 input	31
1.6	Calculations for Bangallows	32
1.6.1	Calculations for UHF/VHF signals for Bangallow Blocks (1-4)	32
1.6.2	Calculations for UHF/VHF signals for Bangallow Blocks (5-10)	34
1.6.3	Calculation of the receiving signals of the Bangallows from the main Hotel	35
1.6.4	Calculation of the attenuators	41
1.6.5	Design of the attenuators	43
1.7	Calculation of Signals Required to be fed to the amplifier by the antennas	45
1.7.1	Calculation of the Gain of the antennas	46
1.8	Checking calculations	48
1.9	Equipment specification and cost analyysis	57

CHAPTER 2 - SOUND DISTRIBUTION SYSTEM

2.1	Theory of Sound Distribution System	59
2.1.1	Sound System Equipment	59
2.1.2	Assembly and mounting of apparatus	59

2.1.3	Equipment involved	60
2.1.4	Fundamentals of Sound Distribution	65
2.1.5	Design Procedure	67
2.2	Actual Design	72
2.2.1	Calculation of the number of speakers required in the Basement	72
2.2.2	Calculation of the number of speakers required in the Ground Floor	75
2.2.3	Calculation of the number of speakers required in the Mezzanie	78
2.2.4	Calculation of the number of speakers at external public places	79
2.3	Selection of loudspeakers	81
2.4	Selection of Transformers for Volume Controls	82
2.5	Calculation of the Audio Amplifiers	84
2.6	Equipment Specification and Cost Analysis	85
2.7	Costing of the complete installation	87
2.8	Legend	
	Appendixes	
	References	
	Drawings	