

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN OF AN INTRUDER ALARM FOR A
HIGH SCHOOL

E. 1266

ANTONIOU MICHALIS

JUNE 2001

**DESIGN OF AN INTRUDER ALARM SYSTEM FOR A
HIGH SCHOOL**

by Michael Antoniou

Project Report

Submitted to

the department of Electrical Engineering

of the Higher Technical Institute

Nicosia, Cyprus

in partial fulfilment of the requirements

for award of the diploma of

TECHNICIAN ENGINEER

in

ELECTRICAL ENGINEERING

Project Supervisor: Mr. A. Georgiou

June 2001

HIGHER TECHNICAL INSTITUTE	PROJECT NO. 3260
----------------------------------	---------------------

CONTENTS

Acknowledgements	3
Summary	4
Introduction	5
CHAPTER – 1 – Basic Considerations	6
Section – 1 – Risk assessment	7
CHAPTER – 2 – Security Lighting	10
Section – 1 – Exterior illumination evaluation	11
Section – 2 – Illumination Design	13
CHAPTER – 3 – Outdoor Intruder Alarm System	20
Section – 1 – General Information	21
Section – 2 – Equipment	23
CHAPTER – 4 – Outdoor Alarm Power & Wiring Requirements	30
Section – 1 – Power supply	31
Section – 2 – Wiring requirements	31
Section – 3 – Single line diagram	32
CHAPTER – 5 – Interior Backup Intruder Alarm System	33
Section – 1 – General information	34
Section – 2 – Equipment	34
CHAPTER – 6 – Interior Alarm Power & Wiring Requirements	37
Section – 1 – Power supply	38
Section – 2 – Wiring requirements	38
Section – 3 – Separation of zones.....	40
Section – 4 - Single line diagram	41

CHAPTER – 7 – Instructions For Interior System Service & Maintenance	42
Section – 1 – Introduction	43
Section – 2 – Preventative maintenance	43
Section – 3 – Corrective maintenance	44
Section – 4 – Records	45
CHAPTER – 8 – Costing	46
Conclusions	49
References	50
Appendices	51

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to all those who offer their assistance for the completion of my project, and in particular Mr A. Georgiou whom suggestions and comments on the project have been very helpful.

Thanks are also due to Mr David Garnet the director of CCTV LTD and Mr. Savvas Savva the director of P.I.R SYSTEMS LTD for there invaluable help in supplying product information with a detailed analysis and for the many helpful suggestions they made as a result.

Specially I would like to express my deep respect and appreciation to my parents for the moral and financial support during my intense effort for the preparation of this project.

SUMMARY

MICHAEL ANTONIOU DESIGN OF INTRUDER ALARM SYSTEM FOR HIGH SCHOOL

It is generally accepted that most of the schools are not protected from any kind of criminal activity. And this is because crime in school has only become a major issue in recent years. Thus as crime prevention was not considered as important issue during initial architecture design of the school, adequate security measures have to be taken in order to overcome any safety problems.

Alarm systems can significantly enhance safety if installed and used properly .And is the main objective of this project ,to illustrate how an integrated security system based on Video Surveillance with backup inside the building detectors, can be put into practice in a school so that adequate protection for life and property will be sustained.

This study highlights the common problem areas with the school and the main points to be considered in the design of a security system. It also includes details about the planning and installation of the security systems used. What's more inspection methods incorporated in each of the system as well as the analytical costing evaluation can be found in this project.

The system must be affordable and give "peace of mind". That's the main thesis to which the whole formation of the protection system was based. And the final result coming out from the analysis of the completed arrangement is that effectiveness against intruders has been achieved with a logical under the situation cost.

INTRODUCTION

These days, school security is on everyone's mind. And as the concern about the issue continues to rise, the majority of the schools are making efforts to step up their security measures. However most schools have not yet benefited from the remarkable progress in the security industry. Vandalism is the most common crime experienced on school property, followed by robberies and aggressive behaviour of either the students or strangers and malicious fires.

This project counteracts with those even growing problems and present's a solution in the form of a completed protection system with both outdoor and interior back-up protection.

The British Standard BS4737 Intruder Alarm Systems in Buildings defines an intruder alarm system as:-An electrical installation to detect and indicate the presence, entry or attempted entry of an intruder into protected premises.

And in the school under examination the intruder alarm system will be divided into zones so that easiest detection and thus effective action could be initiated.

This installation is designed to comply with British Standards regulations. And the equipment used was chosen as part of an integrated security system so that optimum results can be achieved. In addition all systems are attached to an auto-dialler which directly report to the police and the fire brigade according to the nature of the incident occurred.

Furthermore it must be stressed out that during both the design and the construction of intruder alarm arrangement, numerous parties have to be consulted. Those are: a) the system installer, b) the health and safety executive, c) the intrusion insurer, d) the police e) the consultants. Especially by establishing a coordination with local police can help reduce response time to alarms and increasing the chances of arresting the intruder.