HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

DESIGN OF A HIGH SPEED HOIST

M / 889

BY: TSINGIS POLIS

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Polis Tsingis

Project Report

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CONTENTS

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SUMMARY

The objective of this project is to design a high speed hoist for a multi-storey building, for lifting a cage of goods of total mass of 1200kg.
Conditions to be satisfied are: Weight of balancing mass 500kg.
The multi-storey building to be of 30m high.

Also, to present complete design calculations; to present manufacturers catalogues and selection procedures for the machine components to be used. To present assembly drawings, to make separate detail drawings to a large scale for small components and to prepare a cost estimate for the disign.

The whole project is divided into 11 chapters

Chapter 1, deals with the requirements of the well, machine room, cars, car travelling cable and their dimensions.

Chapter 2, deals with the wire rope selection with some relevant calculations for estimation of its diameter and the tensile force exerted on it. Also, it deals with rope fastening and selection of thimble.

Chapter 3, deals with the Design of the car and calculation for the design of the various parts which consist it.

Chapter 4, deals with the design of the counterweight and calculations for the design of the various parts which consist it.

Chapter 5, deals with the selection of the guides, method of fixing and jointing, selection of sliding clips and guide lubrication.

Chapter 6, deals with the power transmition, relevant calculations for the design of the sheave, diverting pulley, shafts, keys, keyways and the selection of the engine.

Chapter 7, deals with the calculation of braking torque and selection of type of brake.

Chapter 8, deals with the selection of type of doors, operation, and locks.

Chapter 9, deals with the safety features all elevating devices must be provided with.

Chapter 10, deals with the maintenance and Testing procedures.

Chapter 11, analyzes the total cost.