

H.C.T.I.  
HIGHER TECHNICAL INSTITUTE

CIVIL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

ANALYSIS, DESIGN AND DETAILING  
OF A STRUCTURAL STEEL  
SPACE TRUSS

C/954

HARITOU KYPROS  
ASSOS STEFANOS

JUNE 2002

**HIGHER TECHNICAL INSTITUTE  
H.T.I.**

DEPARTMENT  
OF  
CIVIL ENGINEERING

FINAL YEAR PROJECT

ANALYSIS, DESIGN AND DETAILING  
OF A STRUCTURAL STEEL  
SPACE TRUSS  
C/954

By  
Assos Stefanos  
Haritou Kypros  
June 2002

HIGHER TECHNICAL INSTITUTE	PROJECT NO. 3316
----------------------------------	---------------------

## ACKNOWLEDGEMENT

Gratitude is to expressed to Mr Crysis Papaleontiou for his supervision and guidance through this project throughout the semester.

Also I would like to thank Mrs M. Haritou for her help in typing.

HIGHER TECHNICAL INSTITUTE	PROJECT NO. 3316
----------------------------------	---------------------

# CONTENTS

Acknowledgement

## CHAPTER ONE

Introduction

## CHAPTER TWO

2.1. Space Frames

2.2. Structural Types

2.3.1. Corrosion Process

2.3.2. Other Forms of Corrosion

2.3.3. Effect of the Environment

2.3.4. Surface Preparation

2.3.5. Metallic Coatings

2.4.1. Lateral-Torsional Buckling

2.4.2. Fully Restrained Beams

2.4.3. Loads on Structures

## CHAPTER THREE

3.1.1 General

3.1.2 Verification problems No1

3.1.3 Verification problems No2

3.1.4 Verification problems No3

3.1.5 Staad Pro Analysis Results

## CHAPTER FOUR

4.1 Introduction

4.2 Input Procedure

4.2.1 Geometry

4.2.2 General

4.2.3 Analysis

4.2.4 Design

4.3 Output

4.4 Critical Members

## CHAPTER FIVE

Staad Pro Design Results

## CHAPTER SIX

### 6.1 Discussion and recommendations

#### 6.1.1 Time of Completion

#### 6.1.2 Cost of Structure

#### 6.1.3 Analysis Results

### 6.2 Final Conclusion

## Appendix A – input model

Nodes

Beams

## Appendix B – input model

Section Properties

Materials

Supports

Releases

Basic Load Cases

Combination of Load Cases

## Bibliography