HIGHER TECHNICAL INSTITUTE CIVIL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

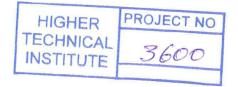
STRUCTURAL STEEL DESIGN AND DETAILING OF A PLAIN TRUSS

C/994

BY

MARKOU IOANNIS

JUNE 2005



1. INTRODUCTION

In order to achieve our goal which was the presentation of a structural steel design and detailing of a plain truss we had firstly to learn to work with software for steel designing that was called STAAD.Pro.

At the beginning we had to learn the basic instructions and the usage of the software starting with some examples for practicing. After we solved the examples by hand using the code BS5950 we compared the values with the ones in the software and we assured that the results were approximately the same.

Afterwards, we became familiar with the software, we were able to start drawing our model but we steel had some difficulties which eventually we managed to overcome with the help of our supervisor Mr. Chrisis Papaleondiou.

At the end we succeed to make the model and this due to the help of our professor and to the fact that we found this project quite interesting and it was an opportunity for us to enrich our knowledge about STAAD.Pro and steel design.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS 1. INTRODUCTION

• A few words about STAAD.Pro

2. HISTORY OF STEEL

- The Advantages of Iron.
- Iron Ore.
- Creating Iron.
- Creating Steel.
- History of Building in Steel.

3. TRUSSES

- Types of trusses
- Projects of trusses
- Advantages of light gauge steel trusses

4. BRIDGES

- The Basics
- The Beam Bridge
- Types of Beam Bridges
- The Suspension Bridge

5. FAILURE OF TRUSSES IN STEEL DESIGN

• The collapse of twin towers.

6. EXAMPLES

- Calculations by hand
- Calculations using STAAD. Pro

- 7. ANALYSIS & DESIGN OF THE MAIN STRUCTURE
 - Description of the model
- 8. RESULTS
- 9. CONCLUSIONS