HIGHER TECHNICAL INSTITUTE

CIVIL ENGINEERING DEPARTMENT

# DIPLOMA PROJECT

# TRANSPORTATION ANALYSIS - CYCLEWAYS



BY: EVAGELIA IOANNOU

JUNE 2000

# TRANSPORTATION ANALYSIS

## CYCLEWAYS

**By Evagelia Ioannou**

**Project Report**

Submitted to
the Department of Civil Engineering
of the Higher Technical Institute
Nicosia Cyprus
in partial fulfilment of the requirements
for the diploma of

**TECHNICAL ENGINEER**
**in**
**CIVIL ENGINEERING**

**JUNE 2000**

**HIGHER TECHNICAL INSTITUTE**

**NICOSIA CYPRUS**

**CIVIL ENGINEERING DEPARTMENT**

**Academic Year:** 1990-00

**Diploma Project Number**:C/898

**Title**: Transportation Analysis -Cycleways.

**Objectives:**

1.Identify problems caused from transportation.

2.Make an effort to encourage the use of bicycle in the urban transport.

3.State cycle facilities for safety and proper traffic control.

4.Plan and demonstrate a cycleway at an existing environmental area.

**Student**: Evagelia Ioannou

**Supervisor**: Mr N. Kathijotes.

**External Assessor** :Mr Yiangos Yiangou.

# ACKNOWLEDGEMENT

I would like to express my sincere appreciation and thanks to Mrs N.Nicolaou, member of the "Life" program, for her great help during the preparation of this project.

Many thanks I would like to give to Mr I. Kathijoties. With his quittance, I managed to finish this project successfully.

I also want to thank my family, friends A.Kynigou, E.Charilaou, C.Assos, for their support and precious help.

# CONTENTS

***1.4.7.Road Accidents.***

***1.4.7.1.Table-Number of injuries caused by road accidents.***

***1.4.7.2.Table-Number of deaths caused by road accidents.***

***1.4.7.3.The number of road accidents caused by different kinds of transportation means.***

## 1.5..Cycling as an Alternative means of Transport.

## CHAPTER 2

## 2.0.BICYCLE HISTORY.

## 3.0.CYCLING.

### 3.1.Cycling Facilities.

***3.1.1.Things that have to be considered when planning a cycleway.***

***3.1.2.Location.***

***3.1.3.Special Provisions on Busy Roads.***

### 3.2.Geometric Standards.

***3.2.1.Headroom.***

***3.2.2.Gradient.***

***3.2.3.Barriers.***

***3.2.4.Visibility.***

***3.2.5.Speed and Stability.***

***3.2.6.Average Distance Covered.***

***3.2.7.Widths of Cycle Lines.***

3.3.Weathering Conditions.

3.4.Providing for cyclists at Junctions and Crossings.

***3.4.1.New Junctions.***

***3.4.2.Existing Junctions.***

***3.4.3.Crossing Major Roads.***

***3.4.4.Signalised Junctions.***

***3.4.5.Roundabouts.***

3.5.Cycle Parking.

***3.5.1.Different Types of Cycle Parkings.***

3.6.Types of Cycleways.

***3.6.1.One-way Direction Cycleway.***

***3.6.2.Two-way Direction Cycleway.***

***3.6.3.Cyclists Use of Bus Lanes.***

***3.6.4.Secial Routes.***

***3.6.5.Bicycle Lane, one way Direction.***

***3.6.6.Pavements on which Cycling is Allowed.***

***3.6.7.Stone Pavement and Town Squares where Cycling is Organised.***

3.7.Safety Measures and Cyclist Protection.

3.8.Traffic Signs for Cycling Facilities.

## 4.0.Speed reducers(Traffic Calming measures).

***4.1.Location.***

***4.2.Marking.***

***4.3.Main Types.***

*1./Pre-warnings.*
*2./Gates.*
*3./2-lane Raised Areas.*
*4./2-lane Humps.*
*5./Staggering.*
*6./Staggering with Raised Area.*
*7./2-lane Narrowings from Road Side.*
*8./2-lane Narrowings From Road Side.*
*9./Narrowings to 1 Lane.*
*10./Narrowings to 1 lane with Raised Area.*
*11./Narrowings to 1 lane with Humps.*
*12./Staggering with Narrowing to 1 Lane.*
*13./Staggering with Narrowing to 1 Lane and Raised Area.*
*14./Staggering with Narrowing to 1 Lane and Humps*

## 4.4.Example on Speed Reducers.

## 4.5.Individual Elements.

***4.5.1.Carriageways.***

*4.5.1.1.Numberof Lanes.*
*4.5.1.2.zebra Crossings.*

*4.5.1.3.Humps.*

*4.5.1.4.Visual and Acoustic Speed Reducers.*

*4.5.1.5.Change of Colour.*

## 4.5.Marking.

***4.5.1.Road Marking.***

***4.5.2.Vertical Marking.***

***4.5.3.Lighting.***

## CHAPTER 3

## 5.0.DEMONSTRATION OF CYCLEWAY NETWORK AT AN ENVIRONMENTAL AREA.

5.1.Paphos a town suitable for cycleway planning.

***5.1.1.Map No.1.***

**5.1.2.Map No.2.**

5.2.Main Land Users.

5.3.Reasons for Selecting this specific cycle network.

5.4.Types of cycleways that may be used.

***5.4.1.Comments on Figures 5.4.1.1. &5.4.1.2.***

***5.4.2.Map No.3.***

5.5.Use of Traffic calming measures at a proposed cycleway.

## CONCLUSION

Transportation

Transportation has profound and enduring effects on a nation and its people. "Unquestionably the most important industry in the world". The presence or lack of adequate transportation facilities shapes the boundaries of national, state, and local governments. Wars may be won or lost because of the mobility or lack of mobility of a nation's troops and weapons.(1)

# INTRODUCTION.

The goal of this project is the promotion of cycling as a viable alternative the car, for both leisure and utilitarian purposes.

The environmental damage caused by motorised vehicles though their emissions and the space they take, walking, cycling and the use of public transport have gained more importance for Cypriot planners, politicians and, of course , for the population.

The private car should be restricted as much as possible in order to bring the deterioration of the inner city fabric to a halt. The creation of an effective and functional system of cycle networks in the towns of Cyprus is a possible way to reduce the excessive use of the private car and the urban wounds that this custom creates.

It could be safely assumed that the existing local conditions in Cyprus create all necessary prerequisites for planning cycleways. Amongst these factors we may site the fine weather conditions, the long tradition in cycling especially till the 1970's, the need for people to exercise, the suitable size of Cyprus towns , the need to control the increasing levels of atmospheric pollution, the need to reduce fuel consumption and last but not least the need to protect the environment.

In order to persuade Cypriots to use bicycles instead of vehicles more cycleways must be planned and cycling facilities must be developed all over Cyprus. In many European countries development of facilities for bicycles has resulted increased the usage of bicycles . In Sweden, for example, adding bicycle storage facilities at park-and-ride stations lead to the following changes in bicycle automobile usage in a modal split public transport analysis.(1)

| CITY | BICYCLE USAGE | AUTOMOBILE USE |
|---|---|---|
| Vasteras | +30% | -20% |
| Malmo | +25% | -15% |
| Uppsala | +17% | ------- |
| Goteborg | +15% | -10% |

Undoubtedly, the interaction of bicycle transport leads to a transport system that is ecologically acceptable, healthy, and helps to save energy. That's why cycling should be encouraged, cycling facilities must be carefully planned and designed to the appropriate standards. Safety, proper traffic control, parking and storage are all essential elements of the facilities.