

### Course Overview

A four-day course which will provide students with a comprehensive introduction to highway technology and will give students the confidence to do this type of work once back in the working environment. The course is valuable to students new to the subject matter or those with practical experience but lack the academic background in the subject area. The qualification is a well-respected demonstration of competence in this area of work.

The course is taught as four separate modules, with one day of classroom-based tuition for each module. At the end of each module an assignment will be set. This should be completed by the student and submitted by the start of the next module. There will be around six weeks between the modules, which allow students sufficient time to complete the assignment and hand it in before the next module commences.

### Aims and Objectives

The course will provide students with a comprehensive introduction to highway technology and will give students the confidence to do this type of work once back in the working environment. The course is valuable to students new to the subject matter or those with practical experience but lack the academic background in the subject area. The qualification is a well-respected demonstration of competence in this area of work.

### Topics Covered

The module breakdowns are as follows (including more details overleaf):

<b>Module 1</b>	Responsibility for Public Highways, Investigation and Design of Highways, Ground Investigation and Introduction to Safety
<b>Module 2</b>	Planning and Design of Earthworks, Earthworks methods and plant, Principles of drainage, Sub-Soil Drainage, Surface Water Drainage
<b>Module 3</b>	Pavement Design, Sub-Bases and Roadbases, Bituminous Materials, Surfacing and Quality Control of Surfacing
<b>Module 4</b>	Rigid Pavement, Footways, Signs and Markings

### Module 1

#### Responsibility for Public Highways

- Legal responsibility for highways
- Financial responsibility for highways

#### Investigation and Design of Highways

- The overall project
- Perception
- Investigation
- Preliminary design
- Final design



## Ground Investigation

- Aims for ground investigation
- Methods of ground investigation
- Ground properties

## Introduction to Safety

- Safety and highway technology
- Principles of construction safety
- Design and construction of safe roads

## Module 2

### Planning and Design of Earthworks

- Earthworks
- Acceptable and unacceptable material
- Stability of cutting
- Safe slopes in cuttings
- Stability of embankments

### Earthworks methods and plant

- Site clearance
- Topsoil
- Excavation, loading and hauling
- Spreading and compaction of fill
- Preparation of the formation

### Principles of drainage

- Harmless water?
- Moisture and road construction

### Sub-Soil Drainage and Surface Water Drainage

- Moisture in the subgrade
- Methods of sub soil drainage
- Disposal of sub soil water
- The need for a drainage system
- Surface topography
- Channel types
- Spacing and location of gullies
- Detailed design of gullies
- Culverts, sewers, drains and pipes
- Manholes
- Connections

## Module 3

### Pavement Design

- Action of traffic on pavements
- Multi-layer pavements
- Properties of the subgrade
- Pavement design procedures

### Sub-Bases and Roadbases

- Selection of materials
- Setting out
- Laying and compaction
- Quality control

### Bituminous Materials

- The origin and composition of bituminous materials
- Production and transportation of materials
- The role of aggregates in skid resistance
- Selection of bituminous materials for surfacing
- Ordering bituminous materials from a supplier

### Surfacing and Quality Control of Surfacing

- Laying organisation
- Surfacing plant
- Levels and riding quality
- Factors affecting durability
- Skid resistance



## Module 4

### Rigid Pavement

- Components of a rigid pavement
- Preparing to lay the concrete
- Laying the concrete

### Footways

- Design considerations
- Structure and construction
- Kerbs and channels
- Street furniture

### Signs and Markings

- Permanent signs and markings
- Signing of roadworks
- Chapter 8 of the Traffic Signs Manual

## Certification

This course offers a BTEC Level 4 Certificate of Achievement for students through completion of a series of assignments that will be assessed by TMS and Bath College. This course can also contribute to the achievement of a Professional Diploma in Highway Engineering by further study of Highways and Transportation topics from the TMS and Bath College training programme.

Students who attend the course and do not successfully complete the assignments will receive a certificate of attendance providing all four modules / course days are attended. Students are not permitted to attend individual modules: *they must attend all four dates advertised.*

A joint TMS/Bath College Certificate/Diploma will also be issued to students completing the course.

## In-House Training

Please note this is now only available as an in-house training course, delivered at your offices or at a suitable venue.

In-house training can often work out more cost effective where you have several members of staff you would like to be trained at any one time. The maximum number of delegates we can train on this course is limited to 16.

If you would like a quotation or further information regarding this training, please contact us on the details below.



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