

**THE HONG KONG INSTITUTION OF ENGINEERS  
ENGINEERING GRADUATE TRAINING SCHEME “A”**

**MODEL TRAINING GUIDE**

**LOGISTICS AND TRANSPORTATION ENGINEERING**

**Model Training Guide (MTG)**

The Model Training Guide is a guide to Companies on the practical experiences considered relevant in the formal training of potential Professional Engineers.

**Training Programme (TP)**

The Training Programme is the plan prepared by a Company which is designed to meet the experiences listed in the MTG and to meet the objectives set out in the Record of Objectives. This ‘plan’ is presented for approval on Form TD1 Part 2 as a part of the Assessment/Reassessment procedures.

**Training Period - Nominally 2 years**

The length of the training is based on meeting the objectives and not determined by time. The times shown below are indicators only of the time that a trainee would normally take to meet the relevant objectives.

**Training Aim**

It is important to note that the Scheme “A” Graduate Training is designed to be a fast track by which a graduate can obtain full professional status. The training therefore covers both Technical and Professional matters.

**Continuing Professional Development (CPD)**

An implicit part of the Scheme “A” training is related to CPD which should be an integral and relevant part of the development of the graduate trainee.

**Training Programme Content**

1. Introduction (suggest 1 week in total)
  - 1.1 Information about the company
    - (a) Size, history, subsidiaries (if any)
    - (b) Management structure and functions
    - (c) Communications systems
    - (d) Safety and health
  - 1.2 Information about training programme, prospects and career development
    - (a) Training programme and objectives
    - (b) Continuous Professional Development (CPD)

- (c) Obligation, discipline and career development
- (d) Relationship with HKIE, Engineering Supervisor, Tutor, Mentor and VTC (if appropriate)

2. Engineering Practice (minimum 12 months in total)

2.1 Policy, Regulations & Basics (minimum 1 month)

- (a) Transport policies
- (b) Regulatory framework
- (c) Relevant laws, regulations and ordinances; customs and tariff rules
- (d) Standards and codes of practice
- (e) Design manuals and statutory requirements

2.2 Data Collection, Survey, Measurement and Statistical Analysis [At least 2 of the following] (minimum 2 months)

- (a) Quality Control Sampling Method
- (b) Statistical Process Control (SPC)/ Statistical Quality Control (SQC)
- (c) Measurement e.g. use of measuring instruments
- (d) Design and implementation of database systems
- (e) Data/ Information collection, treatment and analysis
- (f) Statistical analysis and practical recommendations
- (g) Measurement of systems performance
- (h) Traffic & transport surveys (planning, design and execution)
- (i) Automatic traffic counting technologies and devices
- (j) Transport statistics and data
- (k) Research for improvement initiatives
- (l) Computer simulation to support analysis

3. Management, Operation and Other Activities Related to Logistics Systems or Transport Systems [Choose 3.1 or 3.2] (minimum 9 months)

3.1 Activities Related to Logistics Systems

3.1.1 Logistics Operations [At least 2 of the following] (minimum 4 months)

- (i) Logistics information systems
- (ii) Warehouse operations
- (iii) Resource planning and allocation
- (iv) Freight forwarding
- (v) Supply chain integration
- (vi) Third party logistics
- (vii) Shipping and port logistics
- (viii) Air logistics
- (ix) Transportation management
- (x) Logistics systems safety and security, TAPA, C-TPAT, and AEO
- (xi) Digital trade and transportation network (DTTN)]
- (xii) Environmentally responsible logistics
- (xiii) Cold-chain, special and/or dangerous goods handling

- 3.1.2 Associated Technical Activities on Logistics Systems [At least 4 of the following] (minimum 4 months)
- (i) Demand forecasting
  - (ii) Inventory control
  - (iii) Transportation operations and management
  - (iv) Vehicle routing, scheduling and fleet dispatching
  - (v) Optimisation of transportation carrier operations
  - (vi) Supply chain network design
  - (vii) Procurement and sourcing
  - (viii) Management of supply chain
  - (ix) Supply contracts and collaboration
  - (x) Distribution management
  - (xi) Material handling and transfer automation
  - (xii) Warehouse operations and management
  - (xiii) Standard operations procedures design
  - (xiv) Wireless and mobile applications in logistics.
- 3.1.3 Industrial Management and Commercial Activities [At least 2 of the following] (minimum 1 month)
- (i) Organization and methods
  - (ii) Training/ Human resources management
  - (iii) Purchasing/ supply /supplier relationship management
  - (iv) Receiving and warehousing
  - (v) Dispatch and transportation
  - (vi) Sales/ marketing and business development
  - (vii) Plant engineering/ maintenance
  - (viii) Logistics and support
  - (ix) Security of plant, product and service
  - (x) Services product development and/or liaison with customers
  - (xi) Materials management e.g. sourcing, specifications, requirements.

### 3.2 Activities Related to Transport Networks/ Systems

- 3.2.1 Network/ System Assessments [At least 3 of the following] (minimum 4 months)
- (i) Network demand and capacity analysis
  - (ii) Accessibility and risk analysis
  - (iii) Traffic impact assessments
  - (iv) Pedestrian simulation and evacuation assessment
  - (v) Road safety audits
  - (vi) Economic, social and environmental impact assessments
  - (vii) Multi-objective evaluations; including economic evaluation
  - (viii) Feasibility studies in transport context
- 3.2.2 Planning, Design of Transport Networks/ Systems [At least 4 of the following] (minimum 5 months)
- (i) Territorial and regional transport planning
  - (ii) Integration of land use and transport planning

- (iii) Transport master-planning
- (iv) Highway planning, design and construction
- (v) Public transport network planning
- (vi) Public Transport Interchange (PTI) design and planning
- (vii) Pedestrian network and pedestrianisation schemes
- (viii) Cyclist network and bike plan
- (ix) Goods vehicle plan
- (x) Streetscape design
- (xi) Layout design of road junctions and/or other traffic facilities
- (xii) Traffic management schemes/ calming measures
- (xiii) Traffic signage, road markings and traffic aids
- (xiv) Traffic signal plan, ducting and details
- (xv) Urban traffic control
- (xvi) Traffic and transport information systems
- (xvii) Parking management and control
- (xviii) Temporary traffic management and traffic diversion

3.3 Functional Specialist Training [Choose (3.3.1) or (3.3.2)] (minimum 6 months in total)

3.3.1 Logistics Industry [At least 2 of the following]

- (i) Warehouse operations
- (ii) Demand forecasting and inventory control
- (iii) Procurement and supplier management
- (iv) Resource planning and management
- (v) Air and port management
- (vi) Transportation management
- (vii) Distribution management
- (viii) Logistics services
- (ix) Freight forwarding
- (x) Logistics systems development and implementation
- (xi) Reverse logistics

3.3.2 Transportation Industry [At least 2 of the following]

- (i) Development of traffic/transport models
- (ii) Border and gateway operations
- (iii) Demand forecasting
- (iv) GIS applications and spatial analysis
- (v) Global Positioning Systems (GPS)
- (vi) Area licensing scheme, congestion charging and user toll systems
- (vii) Traffic Control and Surveillance Systems (TCSS)
- (viii) Intelligent Transport Systems (ITS)
- (ix) Traffic accident investigation and prevention
- (x) Parking control and information systems
- (xi) Crowd control
- (xii) Access control and security
- (xiii) Operation and management of public transport services
- (xiv) Public transport routing/ scheduling/ service design

- (xv) Public transport fares and ticketing systems
- (xvi) Inter-modal hub/PTI design
- (xvii) Railway signal system and control
- (xviii) Transport operations simulation
- (xix) Automatic fare/toll collection systems
- (xx) Regulatory control and enforcement systems
- (xxi) Maintenance and assets management systems

#### 4 Objective Training (the balance)

This is training in any one or more of the activities outlined in (2) and (3), which leads to an initial appointment as an engineer. It should also aim to develop skills and knowledge needed to make an effective start. Special courses dealing with the particular technologies having a bearing on future work may be necessary during training. Where appropriate, computer applications should be considered at a priority

#### 5 General (minimum 1 month in total)

- 5.1 Staff relationship, human resources planning, motivation and enforcement
- 5.2 Professional ethics and responsibility
- 5.3 Stakeholder engagement/ public consultation
- 5.4 Report writing and presentation
- 5.5 Financial forecasting, budgeting and cost control
- 5.6 Risk management
- 5.7 Conditions of contract, their compliance and limitations
- 5.8 Environment, health and safety

#### **N.B.**

1. The minimum training period must not be less than 24 months.
2. The programme set out is for guidance only but substantial departure should not be made. Employers should endeavour to provide training to their trainees in as many areas as possible as is appropriate to the sector of employment.
3. This guide should be read in conjunction with Section 3 of the Membership Admission Requirements booklet.
4. During their training, each trainee is required to maintain a Graduate Training Log Book, CPD Logbook and Record of Objectives.