

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

MODEL TRAINING GUIDE

CIVIL 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 3 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

(C=Core, D=Desirable)

1. Introduction (1 week in total)
 - 1.1 Size and history (D)
 - 1.2 Management structure and functions (D)
 - 1.3 Communication systems (C)
 - 1.4 Training programmes & career development (C)

2. Design and Associated Office Practice (minimum 12 months in total)
 - 2.1 Organisation of design and associated offices (C)
 - 2.2 Programme of design work (D)

- 2.3 Familiarisation with standards, codes of practice and design manuals (C)
 - 2.4 Examination of site investigation records in deciding outline solutions taking due consideration of possible alternative designs and their costs (D)
 - 2.5 Site inspection and survey for design (D)
 - 2.6 Site investigation including knowledge of equipment and techniques (D)
 - 2.7 Testing of samples to obtain design data and proper use of testing equipment (D)
 - 2.8 Feasibility studies including economic and environmental considerations (D)
 - 2.9 Civil engineering design of permanent and/or temporary works and preparation of drawings (C)
 - 2.10 Methods of construction including safety considerations (C)
 - 2.11 Taking off quantities and preparation of bills of quantities to standard methods of measurement (C)
 - 2.12 Environmental monitoring and audit (D)
 - 2.13 Estimating costs (C)
 - 2.14 Knowledge of conditions of contract and specifications (D)
 - 2.15 Tender preparation and evaluation (D)
3. Site Experience (minimum 12 months in total)
- 3.1 Planning and programming of construction (C)
 - 3.2 Resource planning, allocation and control (D)
 - 3.3 Methods of construction and their proper sequence, including design of temporary works (C)
 - 3.4 Setting out of works and knowledge of surveying instruments (C)
 - 3.5 Mechanical plant including knowledge of use, capacity, output and cost (D)
 - 3.6 Materials including their cost, storage and handling problems, quality and other characteristics (C)
 - 3.7 Testing materials (C)
 - 3.8 Measurement of works (C)
 - 3.9 Valuation of variations including variation orders (C)
 - 3.10 Interim statements and certificates (C)
 - 3.11 Site safety (C)
 - 3.12 Environmental Monitoring and Audit (D)
 - 3.13 Working conditions and welfare (D)
 - 3.14 Liaison with other organisations and the public (D)
 - 3.15 Site administration including control and management of subcontracts (D)
 - 3.16 Site records and reports (C)
4. General (applicable to both office experience and site experience) (the balance)
- 4.1 Staff relationship, human resource planning, motivation and enforcement (C)
 - 4.2 Professional ethics and responsibility (C)
 - 4.3 Statutory requirements, laws and ordinances affecting project

- implementation (C)
- 4.4 Report writing and presentation (C)
- 4.5 Financial forecasting, budgeting and cost control (D)
- 4.6 Conditions of contract, their compliance and limitations (D)
- 4.7 Appreciation of computer techniques and their limitations (D)

N.B.

1. The minimum training period must not be less than 36 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. For training in Civil Discipline there are requirements for minimum total periods of training both on site and in an office; however many of the modules to be covered are applicable to either or both of these situations and cannot be separated. The diversity of core modules requires that there are flexibility in the allotment of time spent on each one to suit the particular job circumstances and to specify minimum duration for each module is neither desirable nor practical.
4. For each of Section 2 (Office) and Section 3 (Site) a minimum aggregate total of twelve months training and experience is required. It is expected (though not essential) that each of the minimum twelve months duration will be spent by the trainee in one continuous engagement to enable him to take some measure of responsibility and gain knowledge of as many aspects of civil engineering as possible associated with one working environment.
5. This guide should be read in conjunction with Section 3 of the Membership Admission Requirements booklet.
6. During their training, each trainee is required to a Graduate Training Log Book, CPD Logbook and Record of Objectives.