

PRACTICAL TRAINING GUIDELINES FOR CIVIL ENGINEERS

A: INTRODUCTION

Subject to the contents of these practical training guidelines, every trainee in the Civil engineering discipline shall complete training in the types of works specified for a minimum period of three years or as specified in the Architects, Engineers and Quantity Surveyors Registration Regulations 2014.

- (a) In the case of research workers and other specialists, where the nature of work renders it impracticable to adhere to the requirements set out in the contents of these practical guidelines, the Board shall evaluate each individual's case separately having due regard to the practical training approved for the time being by the Board.
- (b) The main thrust for professional and technician engineer trainees is as follows:-

(i) *Professional engineers:-*

The main thrust is on knowledge, understanding subject matters, analysis and methods. Professional engineers must have analytical capabilities, adaptability to varying situations, ability to identify, rectify and design solutions, management capabilities, power and communication skills, adherence to the professional ethics and conduct as specified in the Architects, Engineers and Quantity Surveyors Registration Regulations 2014 and as amended from time to time.

(ii) *Technician engineers:-*

The main thrust is on know-how of subject matters. Technician engineers must have independent judgement within the field, top class engineering applications, development of cost effective systems and safe procedures, applications of appropriate mathematics, science and related subjects, team and resource management.

B: CONTENTS OF PRACTICAL TRAINING

(a) Design office

Every trainee shall work under the supervision of a registered professional Civil engineer for a minimum period of one year or as determined by the Board in accordance with the Architects, Engineers and Quantity Surveyors Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Project planning and appraisals including environmental impact assessment.
- Tracing and checking of designs and drawings
- Knowledge and ability to judge on application of various design standards and codes of practice
- Development of design data assumptions, calculations, specifications and drawings, including application of computer aided design (CAD) programmes
- Estimation of quantities and costs
- Preparation of contract documents
- Damage research, including trouble shooting, damage/failure analysis and design of solutions to the damages/failures

(b) Construction site

Every trainee shall work under the supervision of a registered professional Civil engineer for a minimum period of one year or as determined by the Board in accordance with the Architects, Engineers and Quantity Surveyors Registration Regulations during which time knowledge and experience should be acquired in most of the following areas: - Setting out and surveying

- Processing supply, scheduling utilization and recording of Materials, Labour and Plant
- Weighting and Batching
- Preparation and implementation of Work Schedules (programs)
- Production of Building/Civil works components
- Quality control by Field/Laboratory testing of materials and building/civil works components
- Measuring up works, costing and preparation of accounts
- Use of explosives and Quarry operations
- Staff and Labour relations

(c) Maintenance

Every trainee shall work under the supervision of a registered professional Civil engineer for a minimum period of 6 months or as determined by the Board in accordance with the Architects, Engineers and Quantity Surveyors Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Infrastructure condition evaluation by visual inspection and equipment
- Design/planning of resultant maintenance interventions
- Development of work quantities and specifications
- Processing supply, scheduling utilization and recording of materials, labour and plant
- Preparation and implementation of work programs
- Measurement and costing of works
- Quality Control
- Staff and Labour relations.

(d) General management

Every trainee shall work under the supervision of a registered professional Civil engineer for a minimum period of 6 months or as determined by the Board in accordance with the Architects, Engineers and Quantity Surveyors Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- General office routines/administration
- Organization structures and their translation in practice
- Communication skills
- Staff regulations and Labour laws
- Materials/equipment procurement, management, storage and handling
- Safety practices at site
- Production planning and control of resources (Labour, equipment, material, funds)
- Tendering procedures including tender preparation and tender evaluation
- Knowledge of various types of contracts and the applicable conditions of contract
- Contract administration
- Quality management