

ENGINEERS REGISTRATION BOARD

PRACTICAL TRAINING GUIDELINES FOR MINING AND MINERAL PROCESSING/METALLURGY ENGINEERS

A: INTRODUCTION

- (a) Subject to the contents of these practical training guidelines, every trainee in the Mining and Mineral Processing/Metallurgist engineering discipline shall complete training in the types of works specified for a minimum period of three years or as specified in the Engineers Registration Board Regulations, 1999.
- (b) 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.
- (c) 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 Engineers Registration Board Regulations, 1999 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) **General Training**

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

(i) Familiarization with mining operations:-

- Drilling operations;
- Blasting operations;
- Loading and haulage of materials;
- Mine planning and design;
- Maintenance of mine equipment and facilities;
- Familiarization with processing plant operations;
- Mining geological works, e.g. sampling, drilling, mapping etc
- Mine surveying
- Explosives handling;
- Data and record keeping
- Handling of mine waste (rock waste and tailings);
- Water and power supply;
- Environmental considerations;
- Mineral laboratory procedures;
- Mine administration, accounts and store keeping; management
- General safety regulations

(ii) Specialized Training

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

(b) Mining Engineers

During this time, Mining Engineers are expected to develop good understanding of the following:-

- Reading and interpretation of geological and survey data and maps
- Mine design and planning (design of production blocks, roadways, benches, etc);
- Production scheduling;
- Planning and execution of drilling operations;
- Planning and execution of blasting operations (Blasting certificate to be obtained);
- Shaft maintenance (for underground mine);
- Mine support (planning, installation, maintenance, understanding the principles, etc.);
- Mine ventilation;
- Loading and haulage of materials;
- Hoisting (for underground mine) operations of the system, communication system, general maintenance (e.g. of ropes and sheaves)
- Mine drainage (water inflow characteristics, water storage, pumping, etc.);
- Mine safety and rescue (procedures, equipment, etc);
- Mine environmental considerations;

(c) Mineral Processing/Metallurgists:

Mineral Processing Engineers and Metallurgists are expected to develop good understanding of the following:-

- Minerals assaying laboratory techniques and procedures
- Crushing and grinding;
- Minerals concentration (depending on type of minerals mined, methods, chemical, balances etc)
- Minerals refinement;
- Smelting (where applicable);
- Waste disposal and treatment (design, planning, maintenance, monitoring etc);
- Plant safety and rescue (procedures, equipment, etc.)
- Mine environmental considerations;

(d) Mine/Plant Management

Every trainee shall work under the supervision of a registered professional Mining and Mineral Processing/Metallurgy engineer for a minimum period of two years or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Familiarization with mine/plant organization structure;
- Organization of labour, work schedules, stock controls, etc.
- Production scheduling;
- Realization of the production plans
- Mine development planning and scheduling;
- Costing and cost centres;
- Stores and stores management;
- Explosives storage, handling and transportation (for mining engineers);
- Mine/plant maintenance management;
- Mine administration, accounts and store management
- Quality management
- Communication skills