

**Guidance Notes to attain
Materials Discipline Membership
for Engineers
Working in the Construction Industry**



THE MATERIALS DISIPLINE ADVISORY PANEL

MATERIALS DIVISION COMMITTEE

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1 Introduction

1.1 Over the years, Materials Engineers in the construction industry have been trained from universities with science and engineering curriculum and practiced in the industry under varieties of professional undertakings. Nonetheless, as their professional status are often not been recognized by appropriate engineering institutions, it has undermined their career development and hence cannot fully mobilize their potentials and contribute to the engineering field at large.

1.2 The Materials Division of the Hong Kong Institution of Engineers sees the need to facilitate the career development of Materials Engineers in the construction industry and intends to streamline the route to corporate memberships of materials engineers by defining clearly the roadmaps to the same. university graduates can hence start to prepare for their development right after graduation and the currently practicing Materials Engineers can gear themselves to meet the corporate membership requirements.

1.3 The issuance of this guidance notes is to map out the basic requirements to attain the corporate membership of Materials Discipline in the construction industry.

2 Categorization of Materials Engineers in the Construction Industry

2.1 The nature of works of Materials Engineers in the construction industry can be broadly categorized under the following areas:-

- (a) Construction Management
- (b) Materials Factory Management
- (c) Laboratory Management
- (d) Certification and Audits
- (e) Research and Development

2.2 It is intended that Materials Engineers being granted the corporate membership should have taken up a role over and above that of the technician grade and have assumed a managerial role in his field of practices.

2.3 The criteria for assessing the Materials Engineer following the above different routes are laid down in the ensuing sections.

3 Construction Management

3.1 Scope of work

The scope of construction works may include civil engineering works, building works, foundation works or other related construction works.

3.2 Duties and responsibilities

Materials Engineers involved in construction management shall be assuming the role of construction manager, assistant construction manager, quality manager, assistant quality manager, quality control engineer or similar position at the time of application. Main duties may include materials resources

planning and control, mobilization of plants and equipment, quality management and testing works, supervision of construction works, etc.

3.3 Years of experience

A minimum of 6 years post-graduation experience is required, unless it is under the Scheme A training of the Materials Discipline which shall be 4 years.

Out of the 6 years minimum experience, a minimum of two years shall be assuming certain managerial role. If not, alternative academic evidence such as at Certificate Level in Management Study (e.g. Certificate/Diploma in Management Study from HKMA) is considered acceptable.

3.4 If the applicant satisfies all the aforesaid requirements, he will be allowed to take an assessment.

4 Materials Factory Management

4.1 Scope of work

The scope of materials factory management may include prefabrication factory of concrete or steel components, factory of building materials and components, ready mix concrete plant, or other related factory management works.

4.2 Duties and responsibilities

Materials Engineers involved in factory management shall be assuming the role of production manager, assistant production manager, quality manager, assistant quality manager or similar position at the time of application. Main duties may include production planning and control, stock control of incoming materials, operation of plants and equipment, quality management and testing works, supervision of works, stacking and storage, transportation and delivery of materials, etc.

4.3 Years of experience

A minimum of 6 years post-graduation experience is required, unless it is under the Scheme A training of the Materials Discipline which shall be 4 years.

Out of the 6 years minimum experience, a minimum of two years shall be assuming certain managerial role. If not, alternative academic evidence such as at Certificate Level in Management Study (e.g. Certificate/Diploma in Management Study from HKMA) is considered acceptable.

4.4 If the applicant satisfies all the aforesaid requirements, he will be allowed to take an assessment.

5 Laboratory Management

5.1 Scope of work

The scope of laboratory management may include testing of construction materials such as concrete and its ingredients, steel reinforcement, steel sections, cementitious materials,

architectural materials and components, building services materials and components, or other related laboratory works.

5.2 Duties and responsibilities

Materials Engineers involved in laboratory management shall be assuming the role of laboratory manager, assistant laboratory manager, quality manager, assistant quality manager or similar position at the time of application. Main duties may include management of supervisory and technical personnel, acquisition and management of testing equipment, monitoring of environmental conditions of laboratory, development of testing procedure and manual, implementation of testing standards and guidelines, uncertainty of tests, document control, contract administration, etc.

5.3 Years of experience

A minimum of 6 years post-graduation experience is required, unless it is under the Scheme A training of the Materials Discipline which shall be 4 years.

Out of the 6 years minimum experience, a minimum of two years shall be assuming certain managerial role. If not, alternative academic evidence such as at Certificate Level in Management Study (e.g. Certificate/Diploma in Management Study from HKMA) is considered acceptable.

5.4 If the applicant satisfies all the aforesaid requirements, he will be allowed to take an assessment.

6 Certification and Audit

6.1 Scope of work

The scope of certification and audit works may include the quality review of the management of engineering design and construction firms, the production and process control of factories of construction materials and components, or other related certification and audit works.

6.2 Duties and responsibilities

Materials Engineers acting as auditor shall be involved in leading or participating in certification and audit teams to scrutinize on the management systems of engineering firms in respect of their compliance with regulations and standards, their design and/or construction undertakings, quality and safety operations. Certification and audit may also be conducted in factories to review not only their management system but also their process control in strict adherence to their factory working procedures and associated risks on quality and safety requirements.

6.3 Years of experience

A minimum of 6 years post-graduation experience is required, unless it is under the Scheme A training of the Materials Discipline which shall be 4 years.

Out of the 6 years minimum experience, a minimum of two years shall be assuming certain managerial role. If not, alternative academic evidence such as at Certificate Level in

Management Study (e.g. Certificate/Diploma in Management Study from HKMA) is considered acceptable.

- 6.4 If the applicant satisfies all the aforesaid requirements, he will be allowed to take an assessment.

7 Research and Development

7.1 Scope of work

The scope may include research and development activities in R & D institutes, namely in universities and in science and engineering research centres.

7.2 Academic requirements

The applicant must possess an earned doctoral degree relevant to science and engineering and the university granting the degree is accredited under the Washington Accord.

7.3 Years of experience

The applicant must possess at least 8 years post first degree experience. Within the 8 years of research experience, the applicant shall have at least two years taking a leading role in a research team.

7.4 Research and development undertakings and achievement

The applicant shall submit evidence of engineering research or development work of original nature and which have been carried out over a substantial period. The work should normally

have a blend of experimental and numerical investigation. The applicant shall submit at least five quality papers that have been published in refereed journals which are included in relevant citation indexes. In these papers, the applicant must have played a major part in activity, being the sole author or the principal co-author.

- 7.5 If the applicant satisfies all the aforesaid requirements, he will be allowed to take an assessment.

8 Procedures for Submission for Professional Assessment

- 8.1 Professional assessment is a process of assessing the extent to which a candidate for the Class of Member meets the admission requirements. Interview and essay writing are the two major parts in the professional assessment process.
- 8.2 Candidate should submit to the Institution application form for Election or Transfer to the Class of Member (Form 1/M) with supporting signatures. Requisite periods of training and experience should be completed by the date of submission of the form unless specifically stated otherwise.
- 8.3 Interviews will be arranged for candidates as soon as applications and submissions have been received and checking procedures have been completed. The writing of the essay normally follows the interview immediately.

8.4 Submissions required from candidate

8.4.1 Report of Training and Experience

The objective of the candidate's report is to inform the Assessors about the candidate's training and experience. The report should be concise, between 1600 to 2000 words, in good English, typewritten on single sides of A4 paper and submitted in duplicate. At the head of the report the candidate must set out in chronological order, giving the inclusive dates of months and years for the particular periods of training and experience he has acquired.

The report must describe the tasks on which the candidate has been employed and should explain clearly the precise position he has occupied in each case and the degree of responsibility assigned to and discharged by him. An indication of the size and cost of the works should be given.

8.4.2 Drawings and document

The candidate is required to provide evidence or examples of recent work in support of his claim of attaining professional status, such as reports, plans, photographs, etc. as appropriate. All these documents should be submitted with the report.

8.5 Interview

Assessors will aim to satisfy themselves that the candidate has spent sufficient time on suitable work to absorb the lessons to be learnt therefrom. The candidate may be tested on his

knowledge of engineering processes and management, his appreciation of investigation, planning, design, construction, manufacture, operation and research. Other questions may include organizational abilities, safety issues, environmental protection and management in general.

8.6 Essay

The essay writing is intended primarily as a test of the candidate's knowledge and experience in engineering practice and management as well as the broader issues of the engineer in community. It would also demonstrate the candidate's ability to marshal his thoughts and to express his ideas in a clear and concise manner in written English.

8.7 Final Assessment

A candidate will be recommended for admission to Member if his report and results of interview and essay combined are judged to be acceptable.

The Hong Kong Institution of Engineers
9/F Island Beverley
No.1 Great George Street
Causeway Bay
Hong Kong