APEC Engineer Register
Hong Kong Special Administrative Region, People's Republic of China

DOCUMENTATION

APEC Engineer Register
Hong Kong Special Administrative Region, People's Republic of China

Part I Assessment Statement

I. The Hong Kong APEC Engineer Monitoring Committee is the authority under Statute to develop and maintain a Register of APEC Engineers in Hong Kong. The Terms of Reference of the Monitoring Committee is attached as Annex A.

II. The composition of the Hong Kong APEC Engineer Monitoring Committee (APECEMC) is :-

Chairman :	Elected among members of the Committee
Members :	President of the Hong Kong Institution of Engineers (HKIE) Chairman of the Engineers Registration Board (ERB) Vice-Chairman of the Engineers Registration Board (ERB) Chairman of the HKIE Qualification and Membership (Q&M) Board Permanent Secretary for the Environment, Transport and Works (Transport and Works)'s representative
Co-opted Members :	One member to be co-opted by the Committee for a period of three years Immediate Past Q & M Board Chairman for a period of one year only
Secretary :	The Secretary of the HKIE or his representative

III. To assist in examining the qualification and experience of applicants who purport to be registered in the Hong Kong APEC Engineer Register, a Registration Sub-committee with the following composition would be set up :-

Chairman :	Chairman of the HKIE Q&M Board
Members :	Vice-Chairman of the ERB Chairman of the HKIE Professional Assessment Committee Chairman of the HKIE Quality Control Committee Chairman of the HKIE Education & Examination Committee A representative from each engineering discipline covered by the HK APEC Engineer Register (to be nominated by the HKIE)
Secretary :	The Secretary of the HKIE or his representative

IV. APEC Engineers

An APEC Engineer is defined as a person who is recognised as a professional engineer within an APEC economy, and has satisfied an authorised body in that

economy, operating in accordance with the criteria and procedures approved by an international coordinating committee, that they have:

- completed an accredited or recognised engineering program;
- been assessed within their own economy as eligible for independent practice; and
- gained a minimum of seven years practical experience since graduation; and
- spent at least two years in responsible charge of significant engineering work; and
- maintained their continuing professional development at a satisfactory level.

All practitioners seeking registration as APEC Engineers must also agree to be bound by the codes of professional conduct established and enforced by their home jurisdiction and by any other jurisdiction within which they are practising. Such codes normally include requirements that practitioners place the health, safety and welfare of the community above their responsibilities to clients and colleagues, practise only within their area of competence, and advise their clients when additional professional assistance becomes necessary in order to implement a program or project.

APEC Engineers must also agree to be held individually accountable for their actions, both through requirements imposed by the licensing or registering body in the jurisdictions in which they work and through legal processes. By applying for registration, applicants authorise the signatory organisations to exchange such personal and other data as may be necessary to ensure that the application of a sanction or penalty in any economy in which an engineer is registered or licensed to practice will be taken into account in deciding upon their continued designation and will be appropriately recorded in the Register.

V. For Hong Kong engineers to be eligible for entry onto the Hong Kong APEC Engineer Register, they must :-

(a) be Registered Professional Engineers under the Engineers Registration Ordinance; and,
(b) have gained a minimum of seven years practical experience since graduation; and,
(c) have spent at least two years in responsible charge of significant engineering work; and,
(d) have maintained their continuing professional development at a satisfactory level.

VI. Qualifications for registration under Engineers Registration Ordinance

(1) The Engineers Registration Board shall not register a person as a registered professional engineer unless-

(a)

(i) he is a member of the Institution (HKIE) within a discipline; or
(ii) he is a member of an engineering body the membership of which is accepted by the Board as being of a standard not less than of a member of the Institution within a discipline; or
(iii) he has passed such examination in engineering and other subjects and has received such training and experience as the Board may accept, either generally or in a particular case, as a

qualification of a standard not less than that of a member of the Institution within a discipline; and

(b) he satisfies the Board that he has had 1 year's relevant professional experience in Hong Kong before the date of his application for registration; and
(c) he is ordinarily resident in Hong Kong; and
(d) he is not the subject of an inquiry committee or a disciplinary order under Part IV which precludes him from being registered under this Ordinance; and
(e) he satisfies the Board by declaration in writing that he is competent to practise in the relevant discipline; and
(f) he is a fit and proper person to be registered.

VII. The Hong Kong Institution of Engineers

As Corporate Member (MHKIE) of the Hong Kong Institution of Engineers (HKIE) is the major professional qualification meeting the requirements of Registered Professional Engineer under the Engineers Registration Ordinance, the mechanism currently adopted by the HKIE for admitting Corporate Members is the primary procedures and criteria for registration as APEC Engineers in Hong Kong. This principal supporting document is given at Annex B.

VIII. Seven Years Experience after Graduation in an Engineering Discipline

Applicants are required to submit the following:

(i) Proof of Registered Professional Engineer status of the Engineers Registration Board in good standing in an engineering discipline

(ii) A curriculum vitae which show at least seven years post graduation work experience in an engineering discipline, with at least two years in responsible charge of significant engineering work

(iii) Verification of work experience of the applicant by a Corporate Member of the HKIE or a Hong Kong APEC Engineer or a Registered Professional Engineer of the Engineers Registration Board or a EMF Engineer or the employer concerned

(iv) Record of CPD activities of the last two years

(v) A self-declared statement by the applicant agreeing to be bound by the rules of conduct enforced in the APEC Engineer's jurisdiction within which he is practicing, and be held accountable for his own actions

(vi) Payment of all fees as determined from time to time.

IX. Two Years Experience in Responsible Charge of Significant Engineering Work

It is the requirement for Corporate Member of the HKIE that they must have at least one year responsible experience. Some candidates might have exceeded this when they qualified as Corporate Members.

Candidates for Hong Kong APEC Engineer Register must submit a curriculum vitae to show that they had two years responsible charge of significant engineering work after graduation. The work experience concerned must be verified by a Corporate Member of the HKIE or a Hong Kong APEC Engineer or a Registered Professional Engineer of the Engineers Registration Board or a EMF Engineer or the employer concerned.

X. Professional Development

Candidates applying for registration in the Hong Kong APEC Engineer Register must comply with the policy of Continuing Professional Development of the HKIE or the recognised professional body of the ERB.

XI. Compliance with Code of Conduct

All members of the HKIE and all Registered Professional Engineers of the Engineers Registration Board are governed by the Code of Conduct of the HKIE and so are all engineers on the Hong Kong APEC Engineer Register.

XII. Audit of APEC Engineers

APEC Engineers on Hong Kong Register will be required to renew their registration on an annual basis.

Application for renewal will require the following:

(i) declaration of competent to work in an engineering discipline

(ii) declaration of meeting the current CPD requirements

(iii) payment of a fee as determined from time to time

XIII. Disciplines

For the purpose of the APEC Engineer Register, Hong Kong Special Administrative Region, People's Republic of China, engineers will be identified according to the following engineering disciplines:

- Biomedical
- Building
- Building Services
- Chemical
- Civil
- Control, Automation and Instrumentation
- Electrical
- Electronic

- Environmental
- Gas
- Geotechnical
- Information
- Marine and Naval Architecture
- Material
- Manufacturing
- Mechanical
- Structural

Note : Registration indicates maintained competence in one or more Disciplines of professional practice. The definition of an APEC Engineers recognises that the responsibilities which an engineer takes, often involve an increasing emphasis on management roles, thus causing him to engage in continuing professional development activities relevant to those roles. In general terms, an APEC Engineer who declares competence in any discipline, may:

- accept direct or indirect responsibility for the planning, design, execution or review of some specialized technical aspects of the engineering projects or programmes; and/or

- accept ultimate responsibility, which may extend beyond a single discipline, for the technical integrity of the engineering projects or programmes; and/or

- engage in professional practice which, directly or indirectly, call upon his engineering knowledge, skills, experience and judgment, and has a significant influence on the technical direction of the engineering projects or programmes; and/or

- engage in other professional activities such as project management, which call on his engineering qualifications and experience, and which place demands on his skills, knowledge and judgment that are comparable to those experienced in the above aspects of engineering practice.

Annex A

APEC Engineer Monitoring Committees
(Approved by the APEC Engineer Steering Committee on 5 November 1998)

TERMS OF REFERENCE

Each Monitoring Committee:

- develops and maintains a Register of APEC Engineers in its own economy;
- functions as a single point of contact on all matters relating to APEC Engineers;
- accepts and promotes the substantial equivalence in competence of all APEC Engineers;
- advises bodies responsible for registering or licensing professional engineers accordingly;
- provides timely and accurate information on whether individuals are APEC Engineers;
- develops and maintains an assessment system to ensure that APEC Engineers have:
  - completed an accredited or recognised engineering program;
  - been assessed within the economy as eligible for independent practice; and
  - gained a minimum of seven years practical experience since graduation; and
  - spent at least two years in responsible charge of significant engineering work; and
  - maintained their continuing professional development at a satisfactory level;
- where appropriate, authorises other bodies to carry out assessments against these criteria;
- ensures that a mechanism is available for individuals to appeal against adverse judgments;
- audits compliance by such authorised bodies with the conditions of authorisation;
- directly, or through authorised bodies;
  - audits continuing compliance by APEC Engineers with the conditions of registration;
  - receives, investigates and resolves complaints against APEC Engineers; and
  - provides advice on professional conduct and professional practice;
- maintains and disseminates a list of persons whose registration has been cancelled;
- submits statements to enable the Coordinating Committee to review the proposed system;
- publishes information on its assessment procedures, criteria, systems and performance;
- provides such other information as may by required by the Coordinating Committee;
- maintains records and documents in a form suitable for review by other economies;
- provides representatives to assist in reviewing other assessment systems; and
- participates in the other deliberations of the Coordinating Committee.

Annex B

Assessment Mechanism of the Hong Kong Institution of Engineers (HKIE) in admitting Corporate Members

1. Accreditation or Recognition of Higher Engineering Education Programmes

1.1 The HKIE is a signatory to the Washington Accord and accredits all engineering programmes in Hong Kong that meet the standards required. The policy and criteria of the HKIE in accreditation is published in the Professional Accreditation Handbook. A list of engineering degrees accredited by the HKIE is maintained. An accreditation manual containing guidelines to accreditation visiting team members, sample visit schedule, and accreditation submission format is available on request. All engineering degrees accredited by Washington Accord signatories which also meet the Discipline requirements of the HKIE are recognized by the HKIE as meeting the academic requirements for Corporate Membership.

1.2 Alternative Assessment Mechanisms

Other qualifications may be considered for satisfying part or all the academic requirements for Corporate Membership of the HKIE based on individual merit. An Education and Examination Committee which consists of a panel of academic and practicing engineers, is responsible for reviewing these qualifications.

It must be noted that this alternative assessment mechanism for academic qualifications is not the major route of gaining entry to Corporate Membership of the HKIE.

2. Assessment for Independent Practice

2.1 Outline of the Current Assessment Mechanism for Independent Practice in An Engineering Discipline

Assessment of Discipline is conducted by the HKIE in the form of professional assessment which is carried out throughout the year with the exception of the Civil and Structural Disciplines which are carried out only once a year. It must be noted that the HKIE register engineers in 16 disciplines. Candidates who apply for Corporate Members must meet the engineering requirements, training requirements and professional experience requirements in the Discipline.

Candidates who meet the academic requirements for Corporate Membership may use one of the following three routes in gaining the relevant professional experience before they could attend professional assessments.

2.1.1 Formal Training Route

This route is one where a graduate is formally registered with an HKIE approved company/organization. Approval includes a pre-approved training programme whereby the training is structured to meet the common core together with the core and specific objectives of the particular discipline. The training is carried out under the guidance of an Engineering Supervisor. The training period is normally two years with the exception of the Civil, Environmental, Geotechnical and Structural Disciplines which are three years. A handbook on Engineering Graduate Training Aims and Procedures and a Model Training Guide for different disciplines are available on request.

2.1.2 General Experience Route

2.1.2.1 General Requirement

Under this route, the experience acquired by a candidate before or after he has satisfied the academic requirements of the Institution may be accepted in lieu of formal training on the basis of two years' experience counting as one year formal training. However, such experience must have provided the individual with a sound and broad understanding of his particular Discipline of engineering.

2.1.2.2 Supporters' Responsibilities

Whilst not all post-qualification experience may be recoginsed in full, a candidate's post-qualification experience must be vouched by one or more of his supporters for satisfying in part or in full the training requirements for Corporate Membership stating in what capacity and on what basis of their judgement in the Discipline.

2.1.2.3 Record of Experience Obtained

It is probable that a candidate may be employed by more than one organisation during his career. A record giving full details of employers, and nature of experience, should be kept by the candidate to supplement his application to the Institution for any class of Membership.

2.1.2.4 Duration of Training

For all engineering disciplines, under the General Experience Route, a minimum of five year of post-qualification general experience is required in lieu of a formal training programme. Structured training schemes not formally pre-approved by the HKIE may be considered for exemption toward the five year period by individual merit.

2.1.3 Responsible Experience Requirements

2.1.3.1 Formal Training Route

In addition to completing the training requirements, each candidate for Corporate Membership is required to have held a position of responsibility, acquiring knowledge and practise in an engineering Discipline, for the following minimum periods:-

(i) In Civil, Environmental, Geotechnical and Structural Engineering Disciplines,

A minimum of one year of responsible post-training experience.

(ii) In all other Engineering Disciplines,

A minimum of two years of responsible post-training experience.

Upon completion of his training programme the candidate is expected to exercise his own judgement and undertake responsibility in a professional capacity, with little referral to his superiors.

2.1.3.2 General Experience Route

The general experience duration referred to in 2.1.2.4 shall be followed by a minimum of one year of responsible experience. This applies to all disciplines. As experience is gained, the degree of responsibility will normally increase progressively up to and beyond the stage at which the individual is accepted for Corporate Membership. It is important that work, regarded as constituting responsible experience, is professional in character and involves responsibility for the management of people and resources.

2.1.4 Professional Assessment

2.1.4.1 Introduction

The purpose of a Professional Assessment is to assess the extent to which a candidate for the Class of Corporate Member meets the admission requirements and to ascertain the quality of his technical and responsible experience in his Discipline of engineering. The Professional Assessment consists of two parts: an interview and an essay.

The time taken to achieve the standards required for Corporate Membership will vary from candidate to candidate with the minimum period of four years. Candidates over 35 years of age may be admitted under a different procedure as Mature Candidates.

The HKIE is a qualifying body for a number of disciplines. Some disciplines have specific requirements for the Professional Assessment. All candidates are required to complete application forms and enclose the relevant submissions described in 2.1.4.3 and 2.1.5.4 as appropriate.

2.1.4.2 Exemption from Professional Assessment

Certain candidates may be exempted from part or all of the Professional Assessment and may proceed directly to Corporate Membership. These `Direct Entry' candidates will be Corporate Members of Institutions having Reciprocal Recognition Agreements with the HKIE, particularly in the relevant Discipline.

2.1.4.3 Submissions Required from Candidates

The following submissions are required from candidates for the Professional Assessment.

(i) Report on Training and Experience

The object of the report is to inform the Assessors about the candidate's training and experience. The report should be concise, between 1600 and 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 months and years in each case, the inclusive dates of the particular periods of training and experience that he has had.

In the report, which must not be a mere inventory of work prepared and executed, the candidate must describe the tasks on which he has been employed. It is essential to describe as clearly as possible what work has been done and what responsibilities the candidate has borne. An indication of the size of the projects should be given.

(ii) Drawings and documents

The candidate is required to provide evidence or examples of recent work in support of his claim to professional status, such as drawings, reports, plans, calculations, photographs, etc as appropriate.

(iii) The HKIE Logbook for candidates under the Formal Training Route

The HKIE logbook or logbooks from other recognised institutions' training schemes will be accepted.

(iv) Continuing Professional Development (CPD) Record

A record of Continuing Professional Development should be provided. For candidates under the Formal Training Route the requirement is a minimum average of 45 hours (or 7.5 days) per year calculated from September 1994 or from the commencing date of the Formal Training Scheme, up to the time of the Professional Assessment. For candidates under the General Experience Route, the minimum average is the same except it is calculated from January 1996 onwards.

CPD may include technical conferences, seminars, symposia, courses, organised site visits and meetings of professional bodies. It is desirable to have as much variety as possible and a balance between technical, contractual or professional subjects should be sought. Some emphasis should be devoted to Environment, Health and Safety.

Candidates' records of CPD activities should be maintained in the Institution's CPD logbook or similar.

2.1.4.4 Interview

For both normal and mature candidates, Assessors aim to satisfy themselves that the candidate has spent sufficient time on suitable work to absorb the lessons to be learned therefrom. Both Assessors are senior members of the Institution in the discipline and may put questions to the candidate with the object of ascertaining how far he has taken advantage of the opportunities provided during his training and experience and whether he has attained a standard of proficiency and competence sufficient to justify admission to Corporate Membership.

To begin with, questions will be directed largely at the candidate's submissions, mainly to test his application of theory to practice. The Assessors need to know the extent to which it is his own work and if he has appreciated his client's needs. They may test the technical accuracy and the practicality, both technical and financial. They may consider his appreciation of factors outside his responsibility and the degree of his involvement.

The Assessors will then test the candidate as a professional, the quality of his work and attitudes and his personal responsibility; whether he has exercised original thought and judgement and scientific insights. They may ask about his supervisory and organizational experience and whether he has been involved in training others. They may test his broad appreciation of engineering and the extent to which he strives to keep abreast of his own field.

They may also question him on his knowledge of professionalism, his appreciation of ethics in relation to the engineering profession, responsibility to others, personal relationships and the importance of communication.

Finally he may be tested on his knowledge of engineering processes and management, his understanding of investigation, planning, design, construction, manufacture, operation, maintenance and research, where relevant to his field of work experience. Questions may cover organisational problems, safety and reliability, environmental protection and general management.

2.1.4.5 Essay

Upon completion of the oral Interview, each candidate is required to write an essay of about 1600 words (two hours allowed), on a subject stipulated by the Assessors. It should be noted that an essay of under 1000 words is unlikely to warrant a passing grade. The candidate may be requested to write the essay at another place and time to be arranged and advised by the Assessors. The subject should bear on the Discipline of engineering work on which the candidate has been engaged, his training and experience. It is intended primarily as a test of the candidate's ability to communicate in good English, marshal his thoughts and express them on paper in a clear and concise manner and should include management, where this is appropriate to the candidate's experience, and the engineer in the community. The requirement for essay writing may be waived only in very exceptional circumstances and then only by the Qualification and

Membership Board. (Additional discipline candidates may be exempted from the essay).
Notes for Assessors are available to assessment them in conducting interview and marking essays. An assessment form for interview and essay has to be signed by the Assessors before it could be submitted to the Quality Control Committee for review. (Section 2.1.6 refers)

2.1.5 Mature Route

2.1.5.1 Introduction

Candidates over 35 years old may seek admission to the Class of Corporate Member via the Mature Route. There are two general categories under the Mature Route: with recognised academic qualifications and without recognised academic qualifications.

2.1.5.2 Recognized academic qualifications

Candidates with recognized academic qualifications, training and experience may be permitted to undergo the normal Professional Assessment route or the Mature Route.

2.1.5.3 Without recognized academic qualifications

Candidates in this category are persons with considerable responsible experience as engineers but lacking the normal academic qualifications prescribed for Corporate Membership. Such a person may, if his candidature is approved, seek admission to the Class of Member by submitting a paper on an approved engineering subject and by attending an assessment interview based upon the paper.

(i) Eligibility

a) be at least 35 years old at the date of application;

b) have had experience in posts of generally increasing responsibility in a relevant Discipline of engineering over a period of at least 15 years; and

c) have attained a position demonstrating a level of competence that would have admitted him to the class of Member had he satisfied the normal academic requirements.

2.1.5.4 The Submission

(i) The submission should take the form of a paper, in English, normally 5,000 - 10,000 words in length and on a subject approved by the Institution. It may be based on a design study, on a report of original work or be previously published works of his own authorship. In the case of a joint paper the candidate's own contribution must be made clear.

(ii) Original papers must be typewritten or printed preferably in double spacing on single sides of A4 paper. Two copies should be provided and signed by his

employer or principal, who should preferably be a Corporate Member of the Institution, to certify that the paper is the candidate's own unaided work.

(iii) In the paper the candidate is expected to offer an ordered and critical exposition of the subject, defining the problems, detailing engineering solutions and relating the application of fundamental engineering principles to some aspects of engineering practice. Historical reviews should not be undertaken except as a necessary background to the subject. Most candidates will find it more profitable to concentrate in depth on an engineering achievement in which they have themselves played a major part than to attempt to cover a wider field. Where appropriate the text should be illustrated by clearly drawn sketches and/or diagrams and a reference list should be provided if the candidate makes use of any source material.

2.1.5.5 The Assessment Interview

(i) If the Discipline Panel is satisfied with the sufficiency of the candidate's submission he will be required to attend an interview at an appointed place and time by two senior Corporate Members of the Institution. He may bring to the interview other material such as design study notes and/or drawings of original works that he considers will be helpful in demonstrating that he has attained a standard of knowledge in his particular field of engineering which justifies exemption from the formal academic requirements for Corporate Membership.

(ii) The Assessors will judge whether the candidate has demonstrated sufficient understanding of the principles of engineering and whether he has attained a standard of proficiency and competence sufficient to justify admission to the class of Member.

2.1.6 Approval Mechanism

After professional assessments are performed, all results are sent to the Quality Control Committee for review. The Quality Control Committee consists of a Chairman and a panel of discipline experts who are very experienced in professional assessments. Their duties are to review the results of professional assessments conducted by different assessors' panels to ensure consistency in quality standards. The results reviewed are then submitted to the Qualification and Membership Board, which is the authority for approving candidates to become Corporate Members of the HKIE.

All candidates for Corporate Member approved by the Qualification and Membership Board are then elected to the class of Member (MHKIE) with immediate effect through the Council.

Part II Audit of CPD of Hong Kong APEC Engineer

Corporate Members of the HKIE are asked to take 30 hours CPD in each year and they have to comply a self-declaration of the completion of these requirements.

Hong Kong APEC Engineers have to undertake the same self-declaration and to meet the same requirements. The records of CPD of Hong Kong APEC Engineer are subject to the review by the Hong Kong APEC Engineer Monitoring Committee.

Part III Mapping of Registration Requirements of Hong Kong to the APEC Engineer

1. Qualification for registration under Engineers Registration Ordinance

(1) The Engineers Registration Board shall not register a person as a registered professional engineer unless-

(a)

(i) he is a member of the Institution (HKIE) within a discipline; or

(ii) he is a member of an engineering body the membership of which is accepted by the Board as being of a standard not less than of a member of the Institution within a discipline; or

(iii) he has passed such examination in engineering and other subjects and has received such training and experience as the Board may accept, either generally or in a particular case, as a qualification of a standard not less than that of a member of the Institution within a discipline; and

(b) he satisfies the Board that he has had one year's relevant professional experience in Hong Kong before the date of his application for registration; and

(c) he is ordinarily resident in Hong Kong; and

(d) he is not the subject of an inquiry committee or a disciplinary order under Part IV which precludes him from being registered under this Ordinance; and

(e) he satisfies the Board by declaration in writing that he is competent to practise in the relevant discipline; and

(f) he is a fit and proper person to be registered.

2. For Hong Kong engineers to be eligible for entry onto the Hong Kong APEC Engineer Register, they must :-

(a) be Registered Professional Engineers under the Engineers Registration Ordinance; and,

(b) have gained a minimum of seven years practical experience since graduation; and,

(c) have spent at least two years in responsible charge of significant engineering work; and,

(d) have maintained their continuing professional development at a satisfactory level.

Part IV Indicative Area of Practice and Indicative Scope of Education Programmes of Disciplines

Civil Discipline

Indicative Area of Practice

Concerns materials such as steel, concrete, timber, earth and rock, and their application in the design, construction, operation and maintenance of infrastructure works such as highways, railways, bridges, tunnels, airports, ports, harbour, dams, reservoir, drainage, sewerage, water supply, water treatment and municipal services.

Indicative Scope of Education Programs

The following engineering topics are normally included in the education programme and proficiency is expected in a minimum of 4 areas.

1. Structural Analysis and Design
2. Foundation Engineering and Soil Mechanics
3. Engineering Hydraulics and Hydrology
4. Water Supply Engineering
5. Wastewater and Waste Engineering
6. Transportation Planning and Traffic Engineering
7. Construction Management

Building Services Discipline

Indicative Area of Practice

Concerns research, design, development, manufacture, installation, operation, maintenance and management of mechanical and electrical equipment, plant, systems and components for built environment to interact with the external environment, the building envelop and the occupants to improve and maintain the environment for the protection of human health, for the enhancement of life safety, for the provision of environmental conditions in support of production processes, for the protection of both outdoor and indoor environments, for the environment related enhancement of the quality of human life, for providing a quality workplace environments for people and associated facilities to maximise the productivity.

The building service engineering have a wide coverage including electrical, HVAC (heating, ventilating and air conditioning), fire services, plumbing and drainage, vertical transportation, building automation system and many others like, communal aerial broadcasting and distribution, security, public address, gas, and the like.

Indicative Scope of Education Programs

Education programs in building services engineering (BSE) aim at developing intellectual skill and analytical capacity over the range of BSE systems. These normally cover :

- the science of the built environment;
- the science of design and operation of the BSE systems;
- the dynamic interactions between the external environment, the building envelope, the BSE systems and the people and activities housed in the building;
- the integration of the BSE systems and the architectural and structural elements;
- mathematical and computational techniques to analyze, model and design BSE systems under steady and transient conditions;
- experimental techniques including instrumentation, data acquisition and performance analysis;
- communication in an effective and professional manner;
- the contractual, legal and financial background in the building construction sector;

The indicative topics in the programs include:

- Built Environment
- Engineering Fundamentals
- Heating, Ventilating, Air-conditioning and Refrigeration
- Fire Dynamics
- Fire Engineering Systems
- Water Supply Engineering
- Wastewater and Waster Engineering
- Electrical Installations & Systems

- Building Electronics
- Lighting Engineering
- Vertical Transportation
- Systems Modeling and Analysis
- Design Simulation Software
- Building Management and Control
- Designing for Operation & Maintenance
- Building Environmental Performance
- Building Acoustics
- Energy Efficient Building
- Demand Side Management for Buildings
- Renewable Energy
- Construction Management
- Engineering Law

Electrical Discipline

Indicative Area of Practice

Concerns research, planning, development, design, manufacture, installation, testing, operation, maintenance and management of equipment, plan and systems within the electrical areas.

Primary area of practice includes electrical power generation, transmission, distribution, utilization and manufacture in industry. Those practicing may also involve in the instrumentation and control (including integration and control of computer systems) associated with the primary area of practice listed above.

Indicative Scope of Education Programs

The following engineering topics are normally included in the program :

Circuit Analysis and Network Theory
Electromagnetic and Electrical Fields
Analogue and Digital Electronics
Control System
Communications Systems
Energy Conversion
Power and Machines
Power Electronics

Electronics Discipline

Indicative Area of Practice

Concerns design, development, research, planning, acquisition, testing, installation, operation, maintenance, production, and other management aspects of materials, components, devices, modules, equipment, systems, and plants in the areas of electronics, computer, communications, and control for both manufacturing and service sectors.

Applies in telecommunications, computer network, information processes, computation, consumer electronics, electronic entertainment, automation, instrumentation, radar, and other electromagnetic systems for civilian and military uses.

Indicative Scope of Education Programs

Provides a thorough understanding of the principles of electricity, electronic circuits, computers, communications, and electromagnetism.

Includes adequate training in analytical skills, simulation techniques, local and international standards, current engineering practices, hands-on experience, system integration, and communication skills.

Familiarizes with various engineering related topics such as management, labor relationship, ergonomics, professional ethics, environmental protection, safety concerns, intellectual properties, and other legal, political, and social issues.

On top of the engineering related topics, the technical part normally includes

- Circuit analysis, analog and digital circuits
- Electrical and electromagnetic fields
- Microprocessors and microcomputer systems
- Integrated circuits and computer-aided circuit design
- Linear systems, signal processing, and theory of control
- Wired and wireless communications, optoelectronics
- Data communications, computer network, and Internet protocols
- Multimedia technologies and information processing techniques
- Programming techniques, data base management, and software engineering tools
- Power electronics and micro-motor control

Environmental Discipline

Indicative Area of Practice

Environmental Engineering is the engineering for the protection of the environment. It requires fundamental understanding of environmental science and an appreciation of the mechanics of environmental systems to enable design, manipulation & control of such systems. An environmental engineer is one who has been trained and qualified in one or more of following :

Air, water & noise pollution control
Solid & hazardous waste management
Environmental Impact Assessment
Energy conservation
Environmental technology

Indicative Scope of Education Programs

Fluid Mechanics
Mechanics of Materials
Ground Water Hydraulics and Hydrology
Heat & Mass Transfer
Soil Physics
Biological and Chemical Processes
Environmental Assessment and Management Systems
Sustainable Systems

Gas Discipline

Indicative Area of Practice

Concerns research, design, development, installation, operation, maintenance and management of plants, process systems and facilities for the exploration, production, distribution and utilization of gases.

Indicative Scope of Education Programs

Education programs provide a thorough grounding in engineering science and chemistry.

The following engineering topics are normally included in the program :

Applied Thermodynamics
Heat, Mass and Momentum Transfer
Fluid Mechanics
Mechanics of Engineering Materials
Process Design
Safety Systems
Plant Engineering and Plant Maintenance

Geotechnical Discipline

Indicative Area of Practice

Concerns the planning, investigation, design, construction and maintenance of works involving the ground, and works constructed from excavated natural materials.

Indicative Scope of Education Programs

Education programmes may include the followings:-

Engineering Geomorphology
Engineering Geology
Hydrogeology
Geo-environmental Engineering
Geophysics
Soil Mechanics
Rock Mechanics
Foundation Engineering
Engineering Seismology and Ground Treatment
General subjects relating to civil engineering
Earth Sciences

Information Discipline

Indicative Area of Practice

Information Engineering concerns research, design, development, manufacturing, installation, operation, maintenance, system integration and project management of products and services within the area of telecommunications, information technology, and computing systems.

Indicative Scope of Education Programs

Education Programs should provide a thorough understanding of the fundamental scientific principles, the prevalent technology standards, and common engineering practice of telecommunications (wired and wireless), computing systems, networks, and information systems.

This discipline covers a wide educational area. It is commonly that students follow different educational tracks within the same program. Each track normally contains a substantial number of the following topics :

Basic Circuit & Electronics
Digital Systems & Microprocessor
Digital Communications
Radio Communications
Optical Communications
Computer Network, System Architecture & Distributed Computing
Telecommunications Switching and Networking
Cryptography & Security
Image/Video Coding & Processing
Software Engineering (covering Analysis, Design Implementation, Testing, Maintenance and Quality)
Computer Graphics
Operating Systems
Database Systems
Programming Languages, Compilers & Methodology
Artificial Intelligence
Information Systems Management
Decision Making & Optimization

Materials Discipline

Indicative Area of Practice

Concerned with research, design, development, production, manufacture, investigation, testing, operation, fabrication, maintenance and management of engineering materials.

Applies to the engineering, construction and manufacturing industries.

Indicative Scope of Education Programs

Educational programmes cover a diverse range of subjects. Some are general in nature (e.g. materials technology courses) while others involve specific scientific disciplines such as metallurgy, geology or chemistry. The range of topics that may be covered includes :

Engineering Materials
Geology
Mineralogy
Chemistry
Physics
Metallurgy
Construction Materials Science
Microelectronic Materials
Design and Manufacture
Materials Selection and Failure Analysis
Analysis of Composite Materials
Polymer Engineering

Marine and Naval Architecture Discipline

Indicative Area of Practice

Concerns research, development, design, analysis, construction, maintenance, repair, and operation of marine vehicles and off shore facilities, both on and below water surface, including their structures, power system, service systems and equipment.

Applied to the efficient use of resources and technology in building and maintaining ships, marine power systems and off shore machinery, as well as achieving their safe operation and protection of the marine environment.

Indicative Scope of Education Programs

Education programs for both disciplines normally include mathematics and computational techniques, and the following engineering topics :

Marine Engineering

Applied Thermodynamics
Control
Design of Marine Systems and Components
Electrical and Electronic Engineering
Fluid Mechanics
Kinematics and Dynamics of Machines
Maintenance Technology
Marine Power Systems
Materials Engineering
Ship Operation Technology

Naval Architecture

Control
Design of Marine Systems and Components
Electrical and Electronic Engineering
Fluid Mechanics
Marine Power Systems
Materials Engineering
Ship Building Processes
Ship Design
System Dynamics

Mechanical Discipline

Indicative Area of Practice

Concerns research, design, development, analysis, evaluation, production, installation, testing, operation, maintenance and management of machines, equipment and plants in the field of energy conversion systems, manufacturing processes, environmental control, material processing, transportation and materials handling.

Indicative Scope of Education Programs

Education programs normally include the fundamentals engineering science, mathematical and computational techniques, principles of instrumentation and control to the design development, analysis and performance prediction of a wide range of mechanical engineering equipment and systems.

The following topics are normally included in the education programme :

Thermodynamics
Heat and mass transfer
Fluid mechanics
Mechanics of machines
Mechanics of solids
Materials technology
Product and engineering design
Manufacturing Systems and Technology
Computer aided engineering
Automation and control systems

Manufacturing Industrial Engineering Discipline

Indicative Area of Practice

Manufacturing engineering concerns about the understanding, application and control of engineering procedures in manufacturing processes and methods of the production of industrial commodities and products. It thus requires the ability to plan the practices of manufacture, to research and develop the tools, processes, machines and equipment, and to integrate the facilities and systems by which products may be manufactured economically.

Industrial engineering is concerned with the design, improvement, and installation of integrated systems of people, material, equipment, information and energy. It requires the ability to plan, organize, and operate industrial and business facilities and processes for the economic, safe and effective use of physical and human resources.

Indicative Scope of Education Programs

Education programmes normally include the fundamentals of engineering science, mathematical and computational techniques, basic engineering communication skills such as engineering drawing, report writings etc.

The following subjects are normally included in the education programme:

Engineering Materials
Manufacturing Processes Analysis
Engineering Metrology
CAD/CAE/CAM Technology
Computer Integrated Manufacturing and Automation
Tool Design
Quality and Reliability Engineering
Operations Management
Project Management
Ergonomics (Human Factors) and Work Design (Work Study)
Manufacturing Databases and Systems
Logistics and Materials Management
Operations Research
Engineering Economic Analysis
Industrial Information Systems
System Modeling and Simulation

Building Discipline

Indicative Area of Practice

Building Discipline is intended to cover an identifiable area of professional engineering application with a reasonable depth of expertise in Building Engineering, Building Management, Building Development, Building System and Construction Technology.

Indicative Scope of Education Programs

Building Engineering
Building Management
Building Development
Building System
Construction Technology

Control, Automation and Instrumentation Discipline

Indicative Area of Practice

a) The Sales Support, design, implementation and maintenance as well as project management of the following areas:

- Control Systems
- Building Services
- Process Automation and Control
- Building Automation
- Plant/Instrument Design and Installation

b) R & D in Control and Automations

c) Lecturing of the CAI systems/ theories in tertiary educational institutions

Indicative Scope of Education Programs

Electronics, Electrical, Computer, Software, Mechanical, Mechatronic, Control & Automation and Building Automation Engineering

Economy: Hong Kong, China

Part V APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr C Project Manager
Age **Date of Birth**		41 21 Dec 1959
Discipline		Civil
Academic Background		BASc in Civil Engineering, University of Toronto, in 1984
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
25	1984	Planning, supervision and coordination of Hong Kong Bank Development Project (9 months)
26	1985	Design and construction of prestressing works for a number of projects (24 months)
28	1987	*Contract No. 19/TW/82 (Kau Wah Keng Approach Road and Drainage)* – Responsible for the construction of R. C. retaining wall and 1.2km twin-cell box culvert along Kau Wah Keng, water mains diversion, drainage and realignment of the existing road (22 months)
30	1989	*Shell Tsing Yi Project* – Responsible for construction of oil tank foundation and pipe supports structure, and responsible for planning, sub-contracting preparation, co-ordination, progress monitoring, cost control (10 months)
31	1990	*TDD Contract No.YL/19/89* – Yuen Long Development Package 9 – Responsible for the design of temporary falsework and formwork for bridge, pumphouse and box culvert (18 months)
32	1991	*Container Terminal No. 8 Project* – Responsible for the planning works for tender and construction purpose and works progress monitoring; Design of falsework for the construction of berth structures and construction of berth structures (38 months)
38	1997	**Admitted as a Corporate Member of HKIE in the Civil Discipline**
38	1997	*Shuen Wan Landfill Restoration Contract* – Designing and construction of works to restore the Shuen Wan Landfill and their subsequent aftercare; including Landfill gas management, leachate management, surface water management, ground water management, restoration capping, fencing and environmental monitoring and auditing (12 months)
39	1998	**Registered as a Registered Professional Engineer in the Civil Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr D Engineer (in University)
Age **Date of Birth**		47 2 Jan 1953
Discipline		Civil
Academic Background		BSc (Hons) in Civil Engineering, Middlesex Polytechnic, in 1982 Master of Engineering Studies in Civil and Mining Engineering, University of Sydney, 1995
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
29	1982	Planning and designing the remedial work for disused tunnels including the stabilization of tunnel structure above (15 months)
33	1986	Designing temporary structural work, inspecting r. c. work for 20-storey residential building at Long Ping Estate Phase III (8 months)
33	1986	Checking all r. c. work, the quality of all materials delivered on site and the site workmanship for Tsing Yi Estate Phase II (23 months)
35	1988	Supervising all site works especially r. c. and steel works for 32-storey building in Wong Tai Shing Phase III B (9 months)
36	1989	Monitoring site progress, participating in site meetings, controlling site administration and budgets for Hong Kong Polytechnic Phase III B project (15 months)
38	1991	Designing twin bridges, retaining walls, drainage and estimating cost for Twin Round about Bridge over SH2 at Goulburn (6 months)
41	1994	Preparing prequalifications and tenders of Civil/Building work (10 months)
42	1995	**Admitted as a Corporate Member of HKIE in the Civil Discipline**
42	1995	Conducting practical training teaching class up to Honour Degree (23 months)
44	1997	**Registered as a Registered Professional Engineer in the Civil Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr E Assistant Technical Manager
Age **Date of Birth**		31 4 Aug 1969
Discipline		Mechanical
Academic Background		BSc (Hons) in Engineering (Mechanical Engineering), University of Hong Kong, in 1991 MSc in Engineering (Building Services Engineering), University of Hong Kong, 1995
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
22	1991	*Under Scheme 'A' Training in Swire Properties Ltd* - Estimating labour, materials, installation and transport cost; Design of temporary and plumbing facilities; Testing and commissioning of various system of Cityplaza 4 and Devon House; Installation of PAU; Project work scheduling of Cityplaza condensing water system balancing; Design of ventilation system for Cornwall & Somerset House Chiller Plant Room; Retrofit of Chiller; Design and installation of orifice for cooling tower; Installation of BTU meter; Design of exhaust air system (24 months)
24	1993	Responsible for the following areas of work:- *Tenancy fitting out works* – To liaise with tenant's architect/designer/consultant and oversee tenant's contractor fitting out work *Liaison with consultant and architect* – To liaise with consultant and architect regarding new development and major alteration works *Work Specifications and Tender* – To prepare work specifications and appraise tender of alteration works and maintenance contract *Budget Preparation and Control* – To prepare and control budget relating to HVAC system *Routine Maintenance* – Responsible for routine maintenance scheduling to ensure efficient operation of all installed plant. To prepare basic engineering design of minor alteration works *General Administrative Works* – To prepare technical reports on major alteration works and feasibility study reports of improvement works, and to supervise subordinate to handle specific tasks assigned by management (43 months)
28	1997	**Admitted as a Corporate Member of HKIE in the Mechanical Discipline**
28	1997	Responsible for all technical and administration works relating to HVAC system in Taikoo Place and budget preparation and control relating to HVAC system (19 months)
30	1999	Responsible for all technical and administration works relating to all building services systems in Taikoo place with 6 commercial buildings and budget preparation and control (11 months)
30	1999	**Registered as a Registered Professional Engineer in the Mechanical Discipline**

Have at least two years Responsible Charge of Significant Engineering Work	Yes
Have gained a minimum of seven years practical experience since graduation	Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr F Associate Professor
Age **Date of Birth**		36 16 Nov 1964
Discipline		Mechanical
Academic Background		BSc (Hons) in Engineering (Mechanical Engineering), University of Hong Kong, in 1987 PhD, University of Hong Kong, 1990
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
27	1991	*Research Fellow* – Conduct engineering research (16 months)
28	1992	*Lecturer* – Teaching; conducting engineering research; consultant for new finite element implementation in FEMVISION™ (40 months)
31	1995	*Assistant Professor* – Teaching; conducting engineering research; supervising laboratories and the pertinent teaching/research activities; consultant for new finite element implementation in SSS/NASTRAN (US – based) commercial finite element software (12 months)
32	1996	*Lecturer* – Teaching, conducting engineering research; supervising laboratories and the pertinent teaching/research/consultative activities; consultant for new finite element implementation in SSS/NASTRAN (US – based) commercial finite element software (12 months)
33	1997	**Admitted as a Corporate Member of HKIE in the Mechanical Discipline**
33	1997	Teaching the bachelor and master degree courses; supervising postgraduate students for their theses; supervising the mechanics of Solids Laboratory and Material Testing Laboratory which house more than HK$2 millions equipment and software; securing internal and external research grants, managing research projects and publishing research papers related to Mechanics of Solids, finite element methods, etc; offering consultation services to the industries and government (20 months)
35	1999	**Registered as a Registered Professional Engineer in the Mechanical Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr G Senior Engineer
Age **Date of Birth**		40 27 Jun 1960
Discipline		Structural
Academic Background		BEng (Hons) in Civil Engineering, University of Stratchlyde, in 1987 PhD, University of Aston, 1992
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
28	1988	*Research Project on Numerical Simulation of Particulate Material* – Simulation of force transfer during deformation, the effects of compression, shear and Raleigh waves on the 'debonding' nature of particle-particle adhesion, and also studied the evolution of crack in 'intact' material (45 months)
32	1992	Design works include earthwork, retaining structures (R. C. wall, diaphragm wall and sheetpile wall), viaduct and building foundations (mini-pile; bored pile and caisson) Structural design includes retaining structures, foundations, swimming pools, temporary shoring, pile cap and building structures (16 months)
34	1994	Supervision of foundations and earthworks; concrete reinforcement and formwork, steel erection and basement works Preparation of site inspection and progress report Liaison with design team and other parties (9 months)
34	1994	Co-ordination and checking of design work Liaison and co-ordination with Engineers for ASD project Design of foundation and basement for a commercial project (9 months)
35	1995	Design and scheming of a university redevelopment project and a residential building Design of pedestrian tunnel in urban area Liaison with client, government department and contractors Preparation of tender, cost estimation, specification and drawings (10 months)
36	1996	**Admitted as a Corporate Member of HKIE in the Structural Discipline**

36	1996	• *University of Hong Kong, School of Biological Sciences Building* – Responsible for the design submission for site formation and foundation bored piles for 10-storey building. Design was in strict accordance to the conditions listed in the Mid-Levels Scheduled Area • *Pacific Band Headquarters* – As a Senior Resident Engineer for the design and construction of a 7 level deep basement in Kuala Lumpur (mainly responsibility includes design, supervision and budget control) • *Northern Site Basement* – To supervise the installation of remedial piles • *KCRC East Rail Extension, Contract TDD500 Tai Wai Depot and Overrun* – As a Geotechnical Discipline Leader for this detailed design package which includes site formation in the form of reinstatement of old slopes and formation of new fill slopes. Retaining walls, in the form reinforced concrete wall. Other duties include planning of a comprehensive ground investigation and design of deep foundation system • *Deep Bay Link Feasibility Studies* – As a Geotechnical Discipline Leader for this feasibility studies package which includes extensive site formation, in the form of slopes, retaining walls and Abutments and ground investigation. Other duties also included the study of natural terrain hazard and boulder survey in the North Western New Territories • *The University of Hong Kong Strategic Master Plan for Expansion* – As a Project Engineer responsible for the geotechnical feasibility study relating to the university's master programme for expansion including site investigation contract. Studies of stability of existing slopes and walls within the university. Also the planning of cutting and filling of existing topography to suit the master planning was also included • *MTRC Tseung Kwan O Extension, Contract 612* – Responsible for the checking of all temporary works including formation of temporary slopes, retaining structures and rock blasting, and also for the checking of permanent anchors (electrically isolated for the proposed Tseung Kwan O and the existing Kwun Tong lines • *MTRC, LAR2 Contract C506a, Mei Foo Station Interchange* – As a Senior Geotechnical Engineer responsible for the foundation and other related geotechnical design of the Mei Foo Interchange. Other workscopes included preparation of particular specifications relating to geotechnical works • *KCRC West Rail, Contract CC300 Tsuen Wan West Station* – As a Geotechnical Discipline Leader for this detailed package which includes expensive land and marine ground investigations, foundation and deep basement design (43 months)
39	1999	**Registered as a Registered Professional Engineer in the Structural Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr H Research Officer
Age **Date of Birth**		48 9 Aug 1952
Discipline		Structural
Academic Background		Diploma in Civil and Structural Engineering, College of Building Engineering of Guangdong, in 1975 MSc in Civil and Structural Engineering, South China Institute of Technology, in 1982 PhD, University of Hong Kong, 1988 (the above combined qualifications were assessed and approved by the Education and Examination Committee of the HKIE as satisfying the academic requirements for Corporate Member)
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
25	1977	Lecturer of College of Building Engineering of Guangdong (31 months)
30	1982	Lecturer of Department of Civil Engineering, South China Institute of Technology (22 months)
36	1988	Post Doctorate Research in Department of Civil and Structural Engineering, University of Hong Kong (7 months)
37	1989	As a Project Engineer responsible for detailed design and site supervision of a large spanned tension structure in Hong Kong Park Aviary (13 months)
38	1990	As a Senior Engineer responsible for design and project management in site supervision, foundation, and superstructure, tender documentation, site supervision and communication with clients, architects and contractors. Projects involved include a steel structure of 30m span for Atrium Skylight at Metro Plaza (1000m^2, completed in 1992), a 29-storey r.c. structure of warehouse building at Tsuen Wan (54,800m^2, 195M, completed in 1994) and a residential and commercial complex of 24 towers in Macau (104,000m^2, 400M, in 1995) (34 months)
41	1993	As an Associate in charge of the firm's computer division for development of engineering software, being the tutor of young engineers under the formal training scheme, and responsible for design and project management in all aspects. Projects involved include a 27-storey r.c. structure of commercial building in Guangzhou, China (52,000m^2), a commercial complex of 4 office towers in Guangzhou (185,000m^2) and various steel structures at Ocean Park, Grand Central Plaza and KCRC Mongkok Station (67 months)
46	1998	**Admitted as a Corporate Member of HKIE in the Structural Discipline**
47	1999	Research Officer – Consultation services to Highways Department and Housings Department, HKSAR (12 months)

48	2000	**Registered as a Registered Professional Engineer in the Structural Discipline**	
Have at least two years Responsible Charge of Significant Engineering Work			Yes
Have gained a minimum of seven years practical experience since graduation			Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr I Engineer
Age **Date of Birth**		32 31 Jan 1968
Discipline		Electrical
Academic Background		BEng (Hons) in Electrical and Electronic Engineering, Newcastle Upon Tyne Polytechnic, UK, in 1990 MSc in Electronic Engineering, The Hong Kong Polytechnic University, in 1996
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
22	1990	*Under Scheme 'A' Training in Hong Kong Electric Co Ltd* – Investigation of system interruption and faults; HV & LV cable fault location and repair; Emergency maintenance and replacement of faulty equipment; HV & LV cable jointing and termination; Switchgear operation and maintenance and related test including pressure test, cable spiking etc; Electrical wiring busduct maintenance; Repair and maintenance of electrical plants in the power station including generators, motor drives, HV & LV switchgear, power plant auxiliaries; Appreciation of various application of SCADA computers for operation of the transmission and distribution system; Control the system var & voltage, frequency & power in the power system; Assist in erection, commissioning, testing, repair and maintenance of transmission and distribution apparatus including switchgear, transformer and other substation apparatus; Assist in installation and testing of protection schemes in power stations, switching stations and load dispatching zone substation; Work with a project team on planning and installing of generation, transmission and distribution system and related project engineering work; Design of test plan on DEC system test and carry out user acceptance test for new customer accounting system (24 months)
24	1992	Responsible for a sub-section of staff dealing with operation of plant equipment in the distribution network, various aspects of the provision of electricity to customers like the processing of application, the inspection of customer installation of all type including 11kV, provision of advisory services, resolution of difficulties, investigation of complaints, smooth operation of metering activities in processing of application, meter replacement, supply disconnection Responsible for drawing up specification, tendering, project management and budget control of HEC owned risers Supervision of a team of engineering staffs to carry out investigation, study and provide advisory services on electricity supply quality related matters including electromagnetic interference etc Supervision of a team of engineering staffs to carry out energy survey for customers and to provide advisory services on efficient use of electricity Responsible for implementation of Ambassador Programme to disseminate updated services and interface installation requirements to customers, and to collect their feedback to formulate the enhancement of the Electricity Supply Services

		Act as a Transmission & Distribution Division (T&D) Training Advisory Committee Member on behalf of Customer Services Department. T&D Division Training Advisory Committee is responsible for:- • Formulate and establish training policy for T&D Division • Identify and review training needs and training methods for every level of T&D employees • Co-ordinate training programme and maximise the utilisation of available training resources Act as a Project Leader responsible for Process Re-engineering of application flow for connection of supply in Customer Installation Section so as to optimise resources, reduce the processing time for the connection of supply and expedite services to customers Act as a Project Leader responsible for the overall system/work flow design, compilation, vetting of the CD-ROM for Hong Kong Electric Co Ltd (details the Company's interface requirement on electrical installation, Supply Rules, Company's Service Standards and various useful information to customers) which is first of its kind in Hong Kong's Utilities (74 months)
31	1999	**Admitted as a Corporate Member of HKIE in the Electrical Discipline**
31	1999	Act as a Customer Care Manager to provide a one-stop personalised services to corporate account customers for technical and account matters in relation to electricity supply Responsible for a sub-section of staff dealing with operation of plant equipment in the distribution net work in various aspects of provision of electricity to customers Responsible for drawing up specification, tendering, project management and budget control of HEC owned risers Supervision of a team of engineering staffs to carry out investigation, study and provide advisory services on efficient use of electricity Responsible for implementation of Ambassador Program to disseminate updated services and interface installation requirements to customers, and to collect their feedback to formulate the enhancement of Electricity Supply Services Act as a Project Leader responsible for the overall system/work flow design, compilation, vetting of the CD-ROM for Hong Kong Electric Co Ltd (14 months)
32	2000	**Registered as a Registered Professional Engineer in the Electrical Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr J Lecturer
Age **Date of Birth**		38 1 Mar 1962
Discipline		Electrical
Academic Background		Associateship in Electrical Engineering, Hong Kong Polytechnic, in 1987, Passed in Engineering Council (UK) Part II Examinations Postgraduate Certificate in Education, University of Hong Kong, in 1992 Master of Education, University of Hong Kong, in 1995
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
25	1987	Research Assistant of University of Hong Kong – under the supervision of Ir Prof C C Chan to conduct the 2-year project titled "PWM Inverter for Electric Vehicle". A controller had been developed which controlled the performance of an electric vehicle, Mark III, driven by 12 traction batteries; responsible for the design of the chassis, testing of batteries performance, and the 3-phase 15kW induction motor (24 months)
27	1989	Responsible for all teaching packages for students of the Department of Electrical Studies in the CMA Choi Cheung Kok Provocational School, and also set up a Electrical Engineering Laboratory and one Electrical Wiring Workshop during the services (60 months)
32	1994	As a Lecturer of Hong Kong Technical College (Department of Electrical and Communication Engineering) As a Course Leader of Higher Certificate in Electrical Engineering (particular in drives and traction), involved in the curriculum design of the electrical engineering (all levels in the department) Leading the projects related in power electronics, drives, and electric vehicles in the past years as follows: ● *Project of Variable Frequency Pressure Regulatory System for Water Supply in Tall Building in China (with cooperated Shanghai Electric Apparatus Co Ltd)* ● *Project of Performance Improvement of 3-phase Soft Switching Inverters (with cooperated Shanghai Electric Apparatus Co Ltd)* ● *Project of Performance Study on DC Permanent Magnet Motor for Fishing Boat (cooperated with Outboard Marine Corporation Asia Ltd)* ● *Project of Converted Electric Vehicles driven by DC and AC Motor (cooperated with Outboard Marine Corporation Asia Ltd)* ● *Project of Soft Switching Inverter for AC Drive (cooperated with the Department of Electrical and Electronic Engineering, University of Hong Kong)* (28 months)
35	1997	**Admitted as a Corporate Member of HKIE in the Electrical Discipline**

35	1997	Leading the projects related in power electronics, drives, and electric vehicles in the past years as follows: • *Project of High Frequency Converter for Industrial AC Drive (cooperated with Danfoss Industries Ltd)* • *Project of Study of Micromotor (cooperated with Johnson Electric Industrial Manufactory Ltd)* (14 months)
36	1998	**Registered as a Registered Professional Engineer in the Electrical Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr K Principal Environmental Protection Officer
Age **Date of Birth**		48 12 Jan 1952
Discipline		Environmental
Academic Background		Passed in Engineering Council (UK) Part II Examinations, in 1978 MSc in Engineering, University of Hong Kong, in 1985
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
27	1979	Technical consultation to industry on air pollution control equipment, and to supervise and assurance check chimney emission test (52 months)
31	1983	Consultation services to industrial development and examine air pollution control engineering options in regard to air pollution Development of air legislation, technical notes and air management plan Consultation services in environmental impact assessments and to follow development in industrial and vehicular air emission control technologies (31 months)
33	1985	Provision of technical advice on air pollution control to government departments and legislative control of air polluting industries (7 months)
34	1986	**Admitted as a Corporate Member of HKIE (without Discipline)**
34	1986	As a Senior Environmental Protection Officer, various posts included head of the motor vehicle emission control section, the technical assessment and advice sections responsible for legislative development, code of practice law enforcement, technical and professional support and air monitoring and air impact assessment areas (60 months)
39	1991	As a Principal Environmental Protection Officer responsible for the air technical services and development project area, the air control programme area and the vehicle emission control area (54 months)
43	1995	Responsible for development of control programmes on motor vehicle emissions, including emission inspection and maintenance programmes, alternative fuel vehicle, and engineering control of smoke emission from diesel vehicles (14 months)
44	1996	**Admitted as a Corporate Member of HKIE in Environmental Discipline**
45	1997	Responsible for legislative control of industrial air pollution and specifying engineering control requirements for polluting industrial processes, asbestos abatement works, and ozone layer depleting substances such as refrigerants (16 months)
46	1998	**Registered as a Registered Professional Engineer in the Environmental Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes

Have gained a minimum of seven years practical experience since graduation	Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr L Professor & Associate Head
Age **Date of Birth**		47 19 Jun 1953
Discipline		Environmental
Academic Background		BSc (Hons) in Engineering (Mechanical), University of Hong Kong, in 1975 PhD, University of Hong Kong, in 1980
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
25	1978	As an Assistant Lecturer and Lecturer in the Department of Civil Engineering, Hong Kong Baptist College (24 months)
27	1980	As an Assistant Engineer and Engineer of Wong & Ouyang (HK) Ltd, Architects and Engineers (34 months)
30	1983	As an Engineer of JRP (Central) Ltd (E&M Consulting Engineers) (14 months)
31	1984	As a Lecturer (36 months), Senior Lecturer (24 months), Principal Lecturer and Associate Professor (68 months), Professor and Associate Head (over 56 months) To teach and carry out research in the disciplines of Civil and Environmental Engineering during the services Offering consultation services to the industries and government, e.g. ● *Kwai Chung Container Port Extension Culvert Outfall through Terminal 2 Model Study for Maunsell Consultants Asia in 1985* – To assess the pattern of dispersion of pollutants contained in the nullah discharge and to assess the effectiveness of various baffle wall configurations on the reduction of hydrodynamic forces on berthed container vessels due to the culvert discharge ● *Kwai Chung Container Port Extension: Further Study of Hydrodynamic Forces on Container Vessels for Maunsell Consultants Asia in 1987* – To study the hydrodynamic force on the largest container vessel expected to call at the terminal with the optimum baffle wall in position ● *Estimation of Extreme Incoming Wave Conditions for Civil Engineering Department, HKSAR in 1994* – To conduct a detailed study of the extreme wave conditions offshore of Hong Kong as part of the Lantau Port and Western Harbour Development Studies ● *Enhancement to the WAHMO Physical Tidal Model (Harbour Hydraulics Laboratory, Tuen Mun), In Conjunction with the Delft Hydraulics of the Netherlands for Civil Engineering Department, HKSAR in 1995* – To recommend replacement of the existing boundary control system and outdated equipment and to re-calibrate the physical tidal model after modification of its coastline ● *Upgrading of the Water Quality and Hydraulic Mathematical Models for Civil Engineering Department, HKSAR in 1996* – To serve as a member of the Advisory Committee to advise on the selection and calibration of new models
44	1997	**Admitted as a Fellow Member of HKIE in Environmental Discipline**

44	1997	Continue to provide consultation services in various government departments and the industry
46	1999	**Registered as a Registered Professional Engineer in the Environmental Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr M Associate Director
Age **Date of Birth**		51 22 Jan 1949
Discipline		Geotechnical
Academic Background		BSc in Civil Engineering, San Jose State University, USA, in 1974 MSc in Civil Engineering, San Jose State University, USA, in 1976
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
25	1974	Responsible for site reconnaissance, site assessment and design works in several projects. Works included major international airports, nuclear power plants and earth dams (39 months)
28	1977	Responsible for the geotechnical aspects of a Waste Water Management Program for the City. Works included investigation, planning, study of alternatives and liaison with client and contractors (16 months)
29	1978	Responsible for implementation, design, investigation and contract management for public works and private development projects (18 months)
31	1980	Responsible for design, investigation, site supervision, construction management of projects works for public and private sectors (29 months)
33	1982	Responsible for geotechnical investigation, design and contract administration for several government and private development projects (47 months)
37	1986	Responsible for the management and technical aspects of a US based geotechnical and environmental firm. Works included site investigation, reconnaissance, design, project management for some major civil and public transport projects. Project included various studies on land use, planning studies, landslide preventive works, design consultancy on geotechnical aspects of site development, deep basement, foundation designs for high-rise structures and site formation design and construction management. Notable projects included acting as project design coordinator for the Mass Rapid Transit in Taipei, Taiwan and land reclamation for the airport in Macau (57 months)
42	1991	Responsible for land development, acquisitions, engineering assessment and development planning for private development projects (60 months)

46	1995	Responsible for the day to day operation of the geotechnical practice. Works included investigation, design, consultancy, site control and project management for public and private sectors. The following projects had been involved: - *Landslide Failure Investigation, California* - *Grizzly Island Road Project, California* - *Folsom East Sewer Interceptor Section 3, California* - *Cellular Communication Stations in San Francisco Bay Area* - *East Bay Regional Park District Project, California* (33 months)
49	1998	Responsible for the geotechnical aspects of the detailed design for the KCRC, West Rail Tuen Mun Section and Kam Tin Depot/Station. Works included site investigation, foundation recommendations, ground treatments and construction advice Preliminary study on the geotechncial aspects of the connection of KCRC East Rail links from Hung Hom to Tsim Sha Tsui, Tai Wai to Ma On Shan. Study included site investigation, foundation recommendations, deep excavation for Tsim Sha Tsui Station, special study on alternatives of tunnel cross-over existing MTR tunnel and cross harbour tunnel Planning and development study of strategic growth areas in the North-East New Territories. Study included site reconnaissance, water shed study, identification of potential hazardous geotechnical constraints areas to be integrated in a master plan programme Studies on various housing development schemes for Hong Kong Housing Authority, Territory Development Department and private developers. Duties included site investigation, foundation design, site formation design and geotechnically related works (24 months)
50	1999	**Admitted as a Corporate Member of HKIE in Geotechnical Discipline**
50	1999	Continue to lead and oversee various geotechnical projects in consultancy practice
51	2000	**Registered as a Registered Professional Engineer in the Geotechnical Discipline**

Have at least two years Responsible Charge of Significant Engineering Work	Yes
Have gained a minimum of seven years practical experience since graduation	Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr N Geotechnical Engineer (in University)
Age **Date of Birth**		41 20 Feb 1959
Discipline		Geotechnical
Academic Background		BSc in Geology, National Taiwan University, in 1984 Diploma in Education, the Chinese University of Hong Kong, in 1985 PCEd in Education, Biola University, in 1988 MSc in Geomaterials, University of London (Queen Mary and Westfield College), in 1992 (the above combinations of academic qualifications were assessed and approved by the Institution of Mining and Metallurgy (UK) as meeting their academic requirements for Corporate Members)
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
32	1991	Undertook a full time Master degree course in Geomaterials including engineering geology; soil and rock mechanics, geophysics; concrete technology; physical and chemical laboratory analysis for soil, rock and concrete properties; aggregate and construction material; aerial photograph interpretation; etc (12 months)
34	1993	As an Engineering Geologist and involved in the planning and supervision of ground investigations including a Government term contract. The main responsibilities included the preparation of factual and interpretative reports, which consisted the design of slopes and piled foundations, and in the development of a geotechncial library (16 months)
35	1994	To engage on geotechnical projects including the Landslip Preventive Measures (LPM) programme for Geotechnical Engineering Office. These included Stage 3 and Stage 2 Studies involving detailed desk study, aerial photograph interpretation, site inspection, stability assessment and detailed design, and also involved in the design and checking of slopes, retaining walls and foundations for other projects. Responsible for supervision of bored pile foundations for two high rise buildings and also Class C Supervision for a temporary excavation and installation of sheet piles (42 months)

38	1997	Joined in the Campus Development Office of the Chinese University of Hong Kong (CUHK) as a Geotechnical Engineer. Works included: - to manage over 6 geotechncial consultants currently employed by the University to undertake the geotechnical consultancy services for slopes be served a DH order by Buildings Department of Hong Kong Special Administrative Region. The total number of these slopes is about 40. Duties engaged contract administration; tendering assessment for consultancy services; review the proposed ground investigation, topographic survey works, design options and detail design of stabilization improvement works; and supervise the implementation of the contingency plan, precautionary and temporary measures for the captioned slopes - to recommend, design and supervise the non-routine maintenance works for other slopes those not be served a DH order. The number of such slopes is about 20. Engage to provide the geotechnical advice on projects such as site formation, foundation design, drainage improvement and road widening in the campus. - to act as the Secretary of Standing Committee on Campus Geotechnical Matters to help draw up policies, deal with the geotechnical problems and enforce safety plans as well as monitor the progress of slope improvement works with the Campus. (30 months)
40	1999	**Admitted as a Corporate Member of HKIE in the Geotechnical Discipline via Reciprocal Recognition Agreement with the Institution of Mining and Metallurgy (UK)**
40	1999	**Registered as a Registered Professional Engineer in the Geotechnical Discipline based upon the Corporate Member of the Institution of Mining and Metallurgy (UK) and Chartered Engineer**

Have at least two years Responsible Charge of Significant Engineering Work	Yes
Have gained a minimum of seven years practical experience since graduation	Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr A Engineer I
Age **Date of Birth**		33 17 Nov 1967
Discipline		Building Services
Academic Background		BEng (Hons) in Building Services Engineering, The Hong Kong Polytechnic University, in 1991
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
24	1991	Assessment of contractors' submissions, coordination with architects and contractors in projects and witness of testing and commissioning process (12 months)
25	1992	*City Plaza Phase V* – Preparation of tender drawing and specification of temporary chilled water plant for undemolished City Plaza Phase I *City Polytechnic of Hong Kong Phase III* – Attend handover meeting and inspection Yaumeti Six Street Residential Redevelopment (9 months)
26	1993	*McDonald Restaurant* – Design of HVAC system *Lantau Airport Railway (Lai King Station)* – Design of Environmental Control System (ECS) including station A/C system, smoke extraction system, etc *Guangzhou Metro Line 1* – Design of ECS of two above-ground stations (22 months)
28	1995	*Lantau Airport Railway (Lai King Station)* – Preparation of tender drawing & specification, assessment of contractors' drawing and material submissions *Lion Rock Tunnel (Upgrading of existing tunnel ventilation system)* – Perform computer simulation to estimate the system performance during T&C stage *Hanoi Hotel Extension* – Design of HVAC system, assessment of submissions *Airfield Tunnel in New Airport* – Assessment of contractors' submissions *LFC (Lantau Abutment Transition Structure Slip Road*) – Perform engineering calculations to verify the performance of tunnel ventilation system *QPL/ASAT China Plant* – Design of MVAC system *K101 LDC Development in Waterloo Road/Yunnan Lane* – Coordinate with design team, diversion of existing utilities services *Jinyunshan & Zhongliangshan Tunnel* – Perform calculation to verify the performance of tunnel ventilation system, develop mode table & control philosophy *Guangzhou Metro Line 2 (Pre-feasibility Study)* – Preliminary ECS design *District Open Space in Area 7 Tsuen Wan* – Act as Deputy project manager (36 months)
31	1998	**Admitted as a Corporate Member of HKIE in the Building Services Discipline**
31	1998	Design and coordination of Infra-structure project (e.g Tsueng Kwan O Extension – Tunnel ECS design) (12 months)
32	1999	**Registered as a Registered Professional Engineer in the Building Services Discipline**

Have at least two years Responsible Charge of Significant Engineering Work	Yes
Have gained a minimum of seven years practical experience since graduation	Yes

Economy: Hong Kong, China

APEC Engineer Register Candidates Examples to be Recommended as Hong Kong APEC Engineer

Examples of Registered Engineer		Mr B Lecturer
Age **Date of Birth**		34 2 Jan 1966
Discipline		Building Services
Academic Background		BEng (Hons) in Building Services Engineering, The Hong Kong Polytechnic University, in 1990
Age	**Year**	**Summary and Period of Engineering Experience since Graduation (including Significant Engineering Work)**
24	1990	Preliminary and detailed design, tender preparation and analysis, project coordination and management, and site supervision on HVAC and piped services (39 months)
27	1993	Teaching and design project supervision mainly on HVAC services for final year students of HDBSE (Higher Diploma in Building Services Engineering) in City University of Hong Kong (26 months)
29	1995	Consultation for HVAC detailed design and services coordination of Chek Lap Kok New Airport Terminal Building (1 month)
30	1996	**Admitted as a Corporate Member of HKIE in the Building Services Discipline**
30	1996	Supervision of final year design project of Building Services Engineering; Teaching of HVAC services engineering for course Higher Diploma in Building Services Engineering in City University of Hong Kong (20 months)
31	1997	**Registered as a Registered Professional Engineer in the Building Services Discipline**
Have at least two years Responsible Charge of Significant Engineering Work		Yes
Have gained a minimum of seven years practical experience since graduation		Yes