

competency standards for advanced level engineer



APEC-ENGINEER REGISTER PHILIPPINES

National Monitoring Committee

FOREWORD

In the fast growing world economy, global challenges emerge to be a great concern of human resources in every country. In a developing nation like the Philippines, aspiring for higher level of competence should be the priority of every professional towards competitiveness.

The APEC National Monitoring Committee, through the Commission on Higher Education (CHED), The Professional Regulation Commission (PRC), and the Philippine Technological Council (PTC), through its International Relations Committee, spearheaded a series of workshops to develop the competency standards for engineers. In this effort, invaluable assistance was provided by the Institution of Engineers-Australia (IE Aust), which has a well-developed National Competency Based Assessment for admitting chartered engineers. Among other things, they supplied experts who assisted us in the workshops and who contributed important inputs during consultative meetings and through exchange of electronic correspondences, for which we are extremely grateful.

The Philippine Technological Council, being the umbrella organization of the accredited professional organizations in the technological fields, recognizes the need to have an instrument of assessment for the advanced level engineers in our country. We have therefore taken a step ahead in developing the standards of competence for advanced level of professional practice in the technological disciplines.

The development and completion of the competency standards and assessment mechanism could not have been possible without the very active participation and contributions in the workshops by the invited representatives of the Technical Panel for Engineering, Technology and Architecture and the International Affairs Services of the CHED, the International Affairs Department of the PRC, the Professional Regulatory Boards (PRB's), Past Presidents, Officer and the Board of directors of the PTC, and the Accredited Professional Organizations of the technological fields of practice; namely, the Philippine Society of Agricultural Engineers (PSAE), the Philippine Institute of Civil Engineers (PICE), the Philippine Institute of Chemical Engineers (PIChE), the Integrated Institute of Electrical Engineers of the Philippines (IIEE), the Institute of Electronics and Communication Engineers of the Philippines (IECEP), the Philippine Institute of Environmental Planners (PIEP), the Geodetic Engineers of the Philippines (GEP), the Philippine Society of Mechanical Engineers (PSME), the Society of Metallurgical Engineers of the Philippines (SMEP), the Philippine Society of Mining Engineers (PSEM), the Philippine Association of Naval Architects and Marine Engineers (PANAME), and the Philippine Society of Sanitary Engineers, Inc (PSSEI), the Society of Aerospace Engineers of the Philippines (SAEP) and the United Architects of the Philippines (UAP).

We take great pride to present this Competency Standards Handbook for Advanced Level Engineers. These will be utilized by all engineers who are qualified to apply for the APEC and ASEAN Engineer Registries.


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INTRODUCTION

The purpose of this handbook is to enhance your understanding of engineering competencies and how they are gained. You will apply this to prepare your Engineer Practice Report (EPR) and to successfully complete your application for Advanced level Engineer status. Please read the handbook and follow the instructions carefully for best results.

Competency Terms

Advanced level Engineers have broad-based professional experience such that they are able to practice in a competent, independent and ethical manner, i.e , they have demonstrated professional skills and judgement in addition to their educational qualifications.

Competency is the ability to perform activities within an occupation to standards expected and recognized by employers and the community, Competencies are expressed in terms of Units, Elements and performance Criteria. Each Unit describes a particular area of performance, e.g., Project Implementation. The elements are the necessary components or activities which make up that Unit of Competency. Each Element has a set of Performance Criteria which specify precisely the level of observable or quantifiable performance required of that element. The Performance Criteria allow in accurate measurement of whether the Competency Element has been achieved.

ENGINEERING PRACTICE REPORT (EPR)

Preparing your Engineering Practice Report (EPR)

Your **Engineering Practice Report (EPR)** consists of a series of written **Career Episode Reports**, each of which described experiences gained during your professional formation.

The significance of individual career episodes varies. A minor career episode may cover a relatively short period of time (several months) and can be cited to claim some elements of Competency. A major career episode (a large or lengthy project for example) can be cited to demonstrate an entire Unit of Competency.

The series of narrative-form Career Episode Reports collectively comprise your EPR. Each narrative (Career Episode Report) should emphasize problems identified and the techniques you utilized in solving them. A sample of a Career Episode Report is contained in **Appendix C**.

Full details of the Competency Units, Elements and Performance Criteria that you are required to address in your EPR are given in **Appendix B**.

The following describes the step-by-step procedures you should follow when prepare your Competency Based Assessment. Follow the instruction carefully and if necessary, consult with the Accredited Assessor identified by the PTC International Relation committee.

STEP 1 (Prerequisites)

To be eligible to apply for Advanced Level Engineer, you must:

- be a holder of a baccalaureate degree from an en engineering institution considered as Center of Excellence or Center of Development or its equivalent;
- be a holder of valid professional certificate of registration and/or professional identification card;
- have gained a minimum of seven years practical experience since graduation, at least two years of which have been in responsible charge of significant engineering work;
- maintain continuing professional development at a satisfactory level;
- be a bona fide member in good standing of the Accredited Professional Organization (APO) in your profession, which APO shall be a member of the Philippine Technological Council.

STEP 2

Do a self-assessment to check whether you have the necessary competencies to proceed with your application. To do the self-assessment, refer to the Competency details in **Appendix A**. Detailed explanations of the Performance Criteria of the Elements under each Unit are considered in **Appendix B**.

To qualify for Advanced Level Engineer, you must fulfil **all three Core Units of Competency**, plus **one of the two Elective Units of Competency**. The Core units contain competencies which are considered to be fundamental to the practice of all disciplines. Hence, the Core Units, you need to cover **all Elements and the majority of the performance criteria** in each element. In the Elective Units, the **majority of the Performance Criteria** are expected to be met.

In your Career Episode Reports, you are required to indicate the specific competency elements you are claiming. These Career Episode Reports, which collectively comprise your EPR, will be used as the basis for the assessment whether you have met the required competencies and will be further verified and evaluated during a subsequent Professional Interview. Your self-assessment vis-à-vis the required competencies will therefore help you in determining the specific career episodes to highlight in your EPR in order to show compliance with the required competencies.

STEP 3

Browse through the sections titled “Accredited Professional Organization Membership and Registration” and “Areas of Practice” in **Appendix D** and “Code of Ethics” in **Appendix F**.

STEP 4

Proceed to write your EPR. Your EPR will consist of one or more narrative-form Career Episode Reports on project(s) and accomplishment(s) that you regard as highlighting your professional experience in the area of practice in which you are seeking registration. A sample of the “Career Episode Report” is shown in **Appendix C**. As many “Career Episode Reports” may be written, until you have addresses all the required Units and their respective Elements. Remember that the wording

of Each “Career Episode Reports” should be such as to clearly indicate how these elements have been covered. Indicate the criterion or criteria the work activity supports (Ex. PC1.1a, PC2.1b, PC2.2b....etc)

The “Career Episode Reports” should emphasize:

- your personal contribution and responsibilities
- the problems you faced
- the solution(s) you found
- the engineering judgement you made
- the impact your solution(s) and judgements generated.

Your “Career Episode Reports” are to be word processed in English and in narrative form, using the active voice and the first person singular and should describe the specific contributions you have made. Each of your “Career Episode Reports” must be verified by APEC Engineer/ASEAN Engineer with equivalent experience and standing. Verifiers must attest that they are familiar with the work you have written about and the contributions you have made. In some instances this may not be possible and a Declaration (refer to the Appendix H) is required in lieu of the attestation.

STEP 5

Read the section on “Continuing Professional Development” (Appendix E) and accomplish the “Summary of Activities Claimed as Continuing Professional Development”. This summary must be accompanied by appropriate supporting documents such as certificates of attendance/completion, diplomas, certifications, transcripts, copies of publications and the like.

STEP 6

You are now able to complete your application by providing ONE ORIGINAL AND TWO COPIES of the following documentation:

- Covering Letter
- Completed Application Form
- Detailed curriculum Vitae (CV) indicating your employment history, responsibilities and achievements
- Verified Engineering Practice Report (EPR)
- Details of your Continuing Professional Development (CPD) completed in accordance with **Appendix E**.
- Certified copy of the Assessment Letter from your Accredited Professional Organization (APO) indicating that you are a member in good standing (Please consult with your APO on how to obtain this Assessment letter.)
- [Endorsement letter from your APO](#)
- Valid certificate of Professional Registration and/or Professional ID.
- Payment of the Application Fee

Submit all of these documents and your payment to:

PHILIPPINE TECHNOLOGICAL COUNCIL

Room 405 – 406 National Engineering Center

Agoncillo st., corner Osmeña Ave.,

University of the Philippines Campus

Diliman, Quezon City, Philippines 1101

Tel/Fax No: +632 9266893

E-mail Address: edo@ptc.org.ph, melferrer2002@yahoo.com

STEP 7

When your EPR is assessed as satisfactory, you will be invited to a one-hour professional Interview (PI). The PI is essentially a peer review of the competencies you have claimed. The PI will be conducted by a Panel of Experts of the National Monitoring Committee (NMC), which will include Professional Interviewers from your chosen area of practice and/or professional discipline. The Accredited Assessor who assessed your EPR will also be present or be linked by telephone but mainly as an advisor to the interviews.

At the start of the PI, you will be asked to make an uninterrupted fifteen-minute presentation in support of your application. During the remainder of the PI, you should be prepared to discuss the Performance criteria pertaining to your selected Elements of Competency.

You should also be prepared to answer questions on the code of Ethics (refer to **Appendix F**) and contemporary engineering issues such as the environment and sustainable economic development. If there are points that require clarification, you may be requested to undertake a Technical Assignment at the completion of your PI.

You should note that as a registered Advanced Level Engineer, you are expected to be able to communicate effectively in the English Language. Your competencies in English will be assessed both during the PI and in the assessment of your EPR.

APPENDIX A

COMPETENCY UNITS AND ELEMENTS

Compulsory Units and their Respective Elements

Full details of the Competencies are given in **Appendix C**.

When applying for Advanced Level Engineer, you need to address the following three Compulsory Units of Competency. **NOTE THAT ALL SIXTEEN (16) ELEMENTS WITHIN THE THREE COMPULSORY UNITS MUST BE ADDRESSED.**

UNIT PC 1	CONTRIBUTES TO THE DEVELOPMENT OF ENGINEERING PRACTICE	Self-Assessment	
ELEMENTS: (ALL THESE ELEMENTS <u>MUST</u> BE ADDRESSED)			
PC1.1	Provides significant contributions to science and practice of engineering	YES	NO
PC2.2	Leads engineering practice in area of specialization	YES	NO
UNIT PC2	LEADS MANAGES SIGNIFICANT PROJECTS	Self-Assessment	
ELEMENTS: (ALL THESE ELEMENTS <u>MUST</u> BE ADDRESSED)			
PC2.1	Interpret project scope	YES	NO
PC2.2	Manage project quality, safety and risk	YES	NO
PC2.3	Implement planning and design process	YES	NO
PC2.4	Review the design outcomes in operation	YES	NO
PC2.5	Prepares and maintain documentation during the design process	YES	NO
PC2.6	Manages time and progress	YES	NO
PC2.7	Review the design to achieve acceptance	YES	NO
PC2.8	Manages work priorities and resources	YES	NO
PC2.9	Manages the assets within the operation system	YES	NO
UNIT PC3	DEMONSTRATES ENGINEERING LEADERSHIP	Self-Assessment	
ELEMENTS: (ALL THESE ELEMENTS <u>MUST</u> BE ADDRESSED)			
PC3.1	Facilities innovation	YES	NO
PC3.2	Promotes the engineering profession	YES	NO
PC3.3	Provides significant engineering contributions to community	YES	NO
PC3.4	Encourages and manages workplace change	YES	NO
PC3.5	Motivates and monitors other	YES	NO

Elective Units and Their Respective Elements

You need to address one of the two Elective units and the required number of Elements stipulated within the Units.

UNIT PE1A	MANAGES ENGINEERING BUSINESS ORGANIZATIONAL OUTCOME	Self-Assessment	
AT LEAST TWO ELEMENTS MUST BE ADDRESSED FROM THE FOLLOWING :			
PE1A.1	Establishes engineering business organization direction	YES	NO
PE1A.2	Manages a multi-disciplined team	YES	NO
PE1A.3	Leads and Manages the engineering business/organization	YES	NO

OR

UNIT PE1B	RESEARCH AND DEVELOPMENT	Self - Assessment	
AT LEAST TWO ELEMENTS MUST BE ADDRESSED FROM THE FOLLOWING :			
PE1B.1	Identifies opportunities for new or improved processes and / or product/materials	YES	NO
PE1B.2	Identifies the resources required for R&D	YES	NO

PE1B.3	Initiates concept developments	YES	NO
PE1B.4	Gains Commitments to the R&D proposal	YES	NO
PE1B.5	Ensures research is undertaken	YES	NO
PE1B.6	Collaborates in the application or potential commercialization of research outcome	YES	NO

ADVANCED LEVEL ENGINEER COMPETENCY STANDARDS UNITS, ELEMENTS AND PERFORMANCE CRITERIA

Below is a summary of the Units that comprise the Advanced Level Engineer Standards. Each standard is supported by some examples to assist both the candidate and the assessor.

UNIT 1: Contribute to the Development of Engineering Practice

DESCRIPTION: This unit outlines the significance and depth of engineering practice that engineers with extensive and diverse experience contribute to the profession and the community within their area of specialization.

ELEMENT	PERFORMANCE CRITERIA
1.1 Provides significant contribution to the science and practice of engineering	<ul style="list-style-type: none"> a. Develops or applies new engineering principles b. Develops or applies new concepts c. Develops new codes, standards and engineering practices d. Contributes to developing and communicating the engineering body of knowledge e. Contributes professional; services for the civic good.
1.2 Leads engineering practice in area of specialization	<ul style="list-style-type: none"> a. Provides commentary to guide public policy to benefit from the specialist area of engineering expertise and/or presents research at public conferences b. Seeks opportunities to integrate specialist engineering knowledge to shape the direction of sustainable economic development

UNIT 2: leads/Manages Significant Projects

DESCRIPTION: This unit outlines the application of project management competence within the area of engineering specialization.

ELEMENT	PERFORMANCE CRITERIA
2.1 Interprets project scope	<ul style="list-style-type: none"> a. Manages Integration of the nine functions of project management b. Manages the internal and external environments c. Manages project throughout life cycle
2.2 Manages quality, safety and risk	<ul style="list-style-type: none"> a. Initiates a quality program to ensure that the outcomes are achieved to the required standards of quality specified in the contract b. Manages the reporting and documentation of quality and controls non-conformances c. Establishes a plan for management of occupational health and safety d. Manages hazards identification and the prevention of accidents e. Manages remedial action and reporting when accidents occur f. Identifies risks, their potential impacts and produces a risk minimization plan
2.3 Implements planning and design process	<ul style="list-style-type: none"> a. Arranges design tasks to meet the agreed

	<p>outcomes and cost structure</p> <p>b. Analyzes and selects resources/processes/systems to develop the plan or design</p> <p>c. Develops and checks the design solution using engineering specification</p> <p>d. Creates a demonstration model of design</p> <p>e. Establishes documentation management process</p>
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ELEMENT	PERFORMANCE CRITERIA
2.4 Reviews the design outcome in operation	<p>a. Develops Periodic test schedules to monitor performance and enable others to take any corrective action necessary.</p> <p>b. Seeks feedback from the commissioning process to facilitate corrective actions or improvements</p> <p>c. Evaluates the performance of the design outcome in the user's environment using appropriate tools</p> <p>d. Evaluates community reaction to the design outcome</p>
2.5 Prepares and maintains documentation during the design process	<p>a. Ensures that the supporting documentation required to implement the design is accurate , complete, concise and clear</p> <p>b. Ensures that designed item is identified by agreed design documentation/records</p> <p>c. Applies the agreed documentation control process when making changes to the design</p> <p>d. Ensures that the documentation for the design remains accurate and current during the design development</p>
2.6 Manages time and progress	<p>a. Determines and implement project programs</p> <p>b. Monitors project process against program and initiates remedial action if necessary</p> <p>c. Identifies and manages potential areas of conflict at the work site and between , stakeholders, clients and regulators</p> <p>d. Monitors contracts against outcome</p> <p>e. Keeps accurate records on all aspects of project progress including environmental conditions</p> <p>f. Communicates on project progress to the project team, clients and regulators</p>
2.7 Reviews the design to achieve the acceptance	<p>a. Reviews the design tasks to ensures that user's requirements are met</p> <p>b. informs the users of the likely impact on the users lifestyle</p> <p>c. incorporates corrections and make improvements to the design ensuring social responsibilities, such as sustainability, are met</p> <p>d. Reviews the design with the client to gain documented acceptance</p>
2.8 Manages work priorities and resources	<p>a. Prioritizes competing demands to achieve</p>

	<p>personal, team and the organization's goals and objectives</p> <p>b. prepares, monitors, and reviews work plans, programs and budgets</p> <p>c. develops creative and flexible approaches and solutions</p> <p>d. Manages emerging challenges and opportunities</p> <p>e. manages in a manager to advance sustainability</p>
2.9 Manages the assets within operation of the system	<p>a. Defines asset performance parameters in consultation with others</p> <p>b. Develops maintenance strategy and implementation plan</p> <p>c. Prepares and manages whole of life costing</p> <p>d. Trains staff to implement condition monitoring</p> <p>e. Diagnoses faults and identifies requirements for appropriate technical testing</p> <p>f. develops logistics and costing for the resources acquisition required to support and maintenance plan</p> <p>g. Develops an energy and resource minimization plan</p>

UNIT 3: Demonstrates Engineering Leadership

DESCRIPTION: This unit outlines the level of leadership excellence that engineers with extensive and diverse experience contribute to the profession and the community.

ELEMENT	PERFORMANCE CRITERIA
3.1 Facilities innovation	<p>a. Identifies and implements best practice</p> <p>b. Constructively reviews and supports proposals and opinions</p> <p>c. Seeks to advance sustainable practices and outcomes</p> <p>d. Identifies/Negotiates financial resources to promote innovation</p> <p>e. Encourages others to seek and achieve innovation</p> <p>f. Promotes commercialization of innovation to advantage the Philippines</p>
3.2 Promotes the engineering profession	<p>a. Communicates & promotes engineering outcomes</p> <p>b. Identifies technical/expertise requirements</p> <p>c. Demonstrates professional leadership</p> <p>d. Leads the development of alliances and partnerships with other professionals to achieve integrated social and environmentally sensitive engineering solutions</p> <p>e. Advocates on behalf of the relevant engineering association to influence the development of the profession</p>
3.3 Provides significant engineering contributions to the community	<p>a. Identifies opportunities to effect decisions that have engineering implications</p> <p>b. Advocates to ensure government policies and</p>

	<p>directions in order to support the achievement of engineering standards</p> <p>c. Advocates innovative engineering solutions</p> <p>d. Leads and informs the community on engineering options to gain their involvement in the development of engineering solutions to community problems</p>
3.4 Encourages and manages workplace change	<p>a. Assists in understanding (of) change</p> <p>b. Adopts/implements/manages change</p> <p>c. Identifies opportunities for change</p> <p>d. influences and encourages responsive and sustainable engineering practices</p> <p>e. Develops a culture conducive to achieving engineering outcomes in a changing environment</p>
3.5 Motivates and mentors others	<p>a. Leads and promotes ethical decisions</p> <p>b. Guides and supports young engineers to develop a career decisions path</p> <p>c. Manages diverse and multi-disciplined teams</p> <p>d. Encourages continued professional development</p>

ELECTIVES

UNIT 1A: Manages Engineering Business/Organizational Outcomes

DESCRIPTION: This unit outlines the level of strategic engineering management that engineers with extensive and diverse experience contribute to the profession and the community.

ELEMENT	PERFORMANCE CRITERIA
1A.1 Establishes engineering business/organization direction	a. Develops engineering strategies b. Interprets strategic goals to integrate with engineering business planning c. Seizes wealth creation opportunities for communities and business d. Produces environmental scan for engineering developments e. Identifies and assesses new technologies f. Monitors and contributes to market plans for engineering applications
1A.2 Manages a multi-disciplined team	a. Leads communication across professional groups b. Develops and manages the performance of a diverse team c. Ensures documentation of outcomes are integrated across professions d. Provides leadership on ethical considerations across disciplines
1A.3 Leads and manages the engineering business/organization	a. Manage work processes b. Develops and maintains stakeholder and client relationships c. Seeks and establishes engineering business opportunities d. Guides market development and market penetration for engineering contributions e. manage risks f. leads the integration of Research & Development outcomes g. Achieves agreed commercial and community development outcomes

UNIT 1B: Research and Development

ELEMENT	PERFORMANCE CRITERIA
1B.1 Identifies opportunities for new or improved processes and/or products/materials	a. Identifies and documents opportunities for the engineering application or adaptation of new concepts, products or technologies b. Analyses situations or required outcomes, in consultation with potential clients and other stakeholders, to determine justification for research c. defines the process for initial background

	<p>documentation and literature review</p> <p>d. identifies emerging risks of pursuing or rejecting the opportunity</p> <p>e. Identifies potential benefits and tangible outcomes of the research and development opportunity</p> <p>f. Identifies how sustainability can drive innovation and improvement in process and products/materials</p>
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ELEMENT	PERFORMANCE CRITERIA
1B.2 Identifies the resources required for R & D	<p>a. Scopes the R & D concept to develop project objectives in terms of results and time lines</p> <p>b. Formulates and submits cost estimates of development, design, methodology, procedures, research and analysis</p> <p>c. Defines research deliverables in terms of specific measurable results by stages of the research</p> <p>d. Conduct R & D scoping under the direction of environmental management requirements</p>
1B.3 Initiates concept development	<p>a. Determines preliminary strategic objectives and priorities being addressed by the research</p> <p>b. refines the research process required through a collaborative process to ensure that all parties that could have a potential interest have an opportunity to express their interest</p> <p>c. Identifies the extent and combination of fundamental or applied research</p> <p>d. Analyses the impact of emerging engineering methods, technologies, processes and hypotheses to refine the R & D concept</p> <p>e. Scopes the R & D concept to develop project objectives in terms of results and time-limits</p> <p>f. Clarifies commitment to the concept with all parties directly involved</p> <p>g. Develops the concept in relation to the imperatives of environmental and social sustainability</p>
1B.4 Gains commitment to the R & D proposal	<p>a. Prepares formal application for research funds together with supporting documents</p> <p>b. Identifies applications for possible commercial opportunities for R & D application</p>
1B.5 Ensures research is undertaken	<p>a. establishes R & D Project management</p> <p>b. Identifies a research focus, conducts tests and identifies information for general application</p> <p>c. Methodically measures and records research project parameters</p> <p>d. Communicates and monitors R & D Progress</p> <p>e. Ensures R & D continues to provide innovative engineering applications/systems/processes</p> <p>f. Ensures regulatory and legal requirements are addressed</p>

	<p>g. Analyses recorded results and develops conclusions</p> <p>h. Reports results with analysis of their significance to the underlying engineering problem</p> <p>i. prepares demonstrations (models or prototypes) of the R & D outcomes</p>
<p>1B.6 Collaborates in the application or potential commercialization of research outcomes</p>	<p>a. collaborates with others to review the costs and benefits of Research & Development</p> <p>b. Provides recommendations for the implementation of research & development based on commercial analysis</p> <p>c. Consults on the development of projects that are implementing Research & Development outcomes</p> <p>d. Provides engineering advice on specific aspects of application and possible commercialization such as regulatory and legal requirements, pricing distribution and promotion</p> <p>e. Consults to transfer new technology into potential commercial production or other applications</p>

A. SAMPLE OF CAREER EPISODE REPORT

Career Episode Title: Construction of Main Drainage Channels for Yuen Long and Kam Tin	Competency Element Claimed
Dates of Career Episode: 1.2.97-31.1.98 (12 months)	
<p><i>CE1.1 Introduction</i> From 1.2.97 – 31.1.98 (12 months), I was posted to Drainage Services Department – Drainage Projects Division of Hong Kong Government of Special Administrative Region (HKSAR). This career episode summarizes the experience I have gained during my training as a civil engineering graduate</p> <p><i>CE1.2 Background</i> I was involved in the construction project entitled “Construction of Main Drainage Channels for Yuen Long and Kam Tin”. The cost of the project was about HK\$316M. The project aimed at alleviating the flooding problems in Northwest New Territories of Hong Kong by widening the existing Kam Tin River. Approximately 2000 meters of Trapezoidal drainage channels and a number of box culverts were constructed under this project. I was the assistant resident engineer of the project and I was responsible for contract administration and site supervision.</p> <p><i>CE1.3 Supervision of construction of drainage channels</i> I was responsible for the supervision of the construction of the drainage channel embankments. The drainage channel embankment was formed by cut and fill method. I paid particular attention to the soil compaction of the fill embankment so as to avoid differential settlement of the fill embankment, which would damage the facilities to be built on the embankment, I supervised the in-site soil density tests and checked the soil test results so as to ensure there was sufficient compaction for the fill embankment.</p> <p>Beside differential settlement, the stability of the embankment was also concerned the piezometric pressure and the shear strength of the soil could affect the stability of the embankment. As advised by advisory Division of Geotechnical Engineering Office, Geotechnical instrumentation including installation of inclinometer, settlement plate, piezometer and extensometer in the fill embankment was implemented in this project to monitor the stability of the fill embankment. I was responsible for monitoring the geotechnical data and reporting to the Engineer for any substantial change in the data.</p> <p><i>CE1.4 Site Safety</i> I paid particular attention to the safety and the health of both site personnel and the public. During routine site inspections, I requested the contractor to rectify the deficiencies promptly whenever any potentially dangerous location or operation was identified. As the project involved widening the existing Kam Tin River, water diversion was required during the formation of drainage channels and there was potential hazard of flooding. According to the contractor’s proposed method statement, temporary earth bunds were constructed for water diversion. I was responsible for checking the Contractor’s proposed water diversion schemes and the temporary works designed by the earth bunds so as to ensure that the construction works were carried out free from flooding hazard and that the stability of the earth bunds were maintained. Moreover, I attended regular Site Safety Management Committee meetings with the Constructor to discuss any unsafe acts found on site and to review the Safety Plan from time to time.</p> <p><i>CE1.5 Environmental protection and monitoring</i></p>	<p>PC3.6a</p> <p>PE1B.2c PC1.1b</p> <p>PC3.4d</p> <p>PE1B.5b PC2.6b</p> <p>PC1.3b PC3.3c</p> <p>PE1B.5a</p> <p>PC1.1b PC3.2f</p>

<p>Environmental monitoring System was implemented in the project and I was involved in environmental monitoring. As there were huge quantities of earth works involved in the project. I paid particular attention to the generation of dust during construction. To reduce the dust level, I advised the contractor to carry out some mitigation measures, such as water spraying on unpaved roads, water spraying during handling of fill materials, and covering of fill materials during stockpiles and transportation.</p>	<p>PE1A.3b</p>
<p>Besides daily monitoring on the contractor’s environmental performance, I was also responsible for preparing a quarterly Environmental Monitoring Report for the project. For this project, three main areas had been identified as necessitating environmental monitoring and auditing. They were the water quality of Kam Tin River, noise pollution and dust pollution during construction and were mentioned in accordance with the duration, frequency and methodology stipulated in the environmental manual. A base line study had been carried out to determine the existing environmental characteristics. Those were the air quality, The water quality of Kam Tin River and the original noise level before the construction works commenced.</p>	<p>PE1A.3c PE1A.1e</p>
<p>During preparation of the report, I summarized and revised the monitoring results For any non – compliance results, I would identify the source and check the contractor’s construction methods, Then I discussed with the contractor the corrective measures to be carried out to as to avoid further exceeding of the specified levels.</p>	<p>PE1A.2d</p>
<p><i>CE1.6 Assessment of extension of time (EOT) due to inclement weather</i></p>	
<p>I assisted the Engineer to assess claims for Extension of Time (EOT) due to inclement weather submitted by the Contractor under General Conditions of Contract (GCC) Clause 50. I studied the Clause before carrying out my assessment so as to fully understand the basis of the claim. I then studied all relevant information available for the EOT claimed, such as site records (site diary), the Contractor’s programme of works, weather reports, as well as labour and plant records. From the site records, I decided whether the works were affected. According to the Contractor’s programme of works. I checked weather the activities on the critical path had been delayed. After studying the information, I estimated the extent that the progress of works had been affected. Lastly, I determined the extension of time for the Engineer’s consideration.</p>	
<p><i>CE1.7 Summary</i></p>	
<p>In this one-year site training, I was involved in site supervision, site safety, environmental monitoring and handling claims of extension of time, Furthermore, I exercised a good engineering judgement and solved site problems properly, Through the site supervision, I acquired experience in the different construction methods and familiarized with the different types of the construction equipment, I understood the roles and responsibilities of the resident engineer.</p>	
<p>Signature of Candidate:</p>	
<p>Candidate’s Verifier/s Name:</p>	
<p>Engineering Qualifications:</p>	
<p>Signature:</p>	

NOTE : THE ASSIGNED PERFORMANCE CRITERIA ON THIS CAREER EPISODE REPORT MAY BE RIGHT OR WRONG. THIS IS FOR TEST EXERCISE.

International Agreements, Registration, Obligations and Areas of Practice

1. International Agreements

Becoming an Advanced Level Engineer of the Philippines may allow you to join overseas projects and practice your profession in ASEAN/APEC economies without having to undertake further examination or interview. In some cases, you may also be able to obtain discounted dual membership in both your APO and an equivalent engineering society or institution overseas. PTC has negotiated mutual understanding agreements with overseas organizations that provide reciprocal membership.

2. Accredited Professional Organization Membership and Registration

There are currently fourteen Accredited Professional Organizations who are council members of the Philippine Technological Council: The Society of Aerospace Engineers of the Philippines, The Philippine Society of Agricultural Engineers, The United Architects of the Philippines, The Philippine Institute of Civil Engineers, The Philippine Institute of Chemical Engineers, The Integrated Institute of Electrical Engineers of the Philippines, The Institute of Electronics and Communication Engineers of the Philippines, the Philippine Institute of Environmental Planners, The Geodetic Engineers of the Philippines, the Philippine Society of Mechanical Engineers, the Society of Metallurgical Engineers in the Philippines, the Philippine Society of Mining Engineers, the Philippine Association of Naval Architects and Marine Engineers, and the Philippine Society of Sanitary Engineers, Inc. The Assessment by the APO is carried out concurrently. In case of multi-disciplined professionals, your Engineering Practice Report (EPR) must show that you have gained professional experience in the general area of practice in which you choose to be registered. Your EPR must also show that you are currently practicing in this area.

Persons applying for registration must undertake to meet the obligations of registration with their APO. A separate registration fee is payable to AER-PTC in addition to your annual APO membership dues.

3. Obligations of Persons Registering in ASEAN/APEC Engineer Registry

Persons who apply for registration in the ASEAN/APEC Engineer Registry undertake to be bound by the Code of Ethics of his profession. All registrants are required to practice only within the limits of their competence and to maintain records of their continuing Professional Development (CPD) for audit purposes. Registered engineers are obliged to undertake 150 weighted hours of CPD during any three year period. He must also certify that he/she spent a total of at least one (1) year independent practice during the last three years.

4. Areas of Practice

Eleven general areas of practice are currently available for registration as Advanced Level Engineer: Agricultural Engineering, Civil/Structural Engineering, Chemical Engineering, Electrical Engineering, Electronics and Communications Engineering, Sanitary and Environmental Engineering, Geodetic Engineering, Mechanical Engineering, Metallurgical Engineering, Mining Engineering and Naval and Marine Engineering further details can be provided by the respective APO's.

**CONTINUING PROFESSIONAL
DEVELOPMENT (CPD)
Information and Record Sheet**

1. What is CPD?

Broadly speaking, Continuing Professional Development (CPD) includes any activity that extends or updates one's knowledge, skill or judgement and enables him/her to:

- be more productive
- understand and apply advances in technology
- face changes in career direction
- better serve the community

Registered Professional Engineers undertake CPD activities in order to maintain and extend their knowledge, skills and judgement. One of the main functions of CPD is to equip one to plan his/her career path.

For an activity to qualify as CPD, it must be related to one's career as a Professional Engineer. For many Engineers, CPD activities will include both technical and non-technical topics. Non-technical topics include management, accounting, law, economics and foreign languages by which one carries out business.

Functions that are routinely performed as part of one's employment are not normally claimable, for instance university lecturers cannot claim, under Presentations and Papers (see section 7 below) the lectures they present as part of their employment.

2. CPD requirements for Accredited Professional Organization (APO) members

The CPD requirements for APO members are identical in scope. On an ongoing basis, one needs to undertake at least 150 weighted hours of CPD activities during any three-year period, keeps records of such activities and makes the records available for audit when required.

For many engineers, the most convenient method of recording in sufficient detail for audit will be through brief entries in their professional diaries.

Six main types of CPD activities are discussed below for which different time weighting

factors apply. Engineers in academic positions must also show that they undertake a minimum of 40 hours of industry involvement in any three years.

The weighted hours of CPD for any given activity are obtained by multiplying the actual hours spent on the activity by the relevant time weighting factor.

For example, participation in a short course attracts a time weighting factor of 2 (see Section 4 below) Hence, if 8 hours were actually spent on the short course, this would convert to 16 weighted hours.

3. Types of CPD

The six major types of CPD are:

A Formal Education and Training Activities

B Informal Learning Activities

C Conferences and Meetings

D Presentations and Publications of Papers

E Service Activities

F Industries Involvement (for Academia)

If one believes he is undertaking other types of CPD that comply with the general definition in Section 1 above, one should make a submission for this to be recognized.

4. A- Formal Education and Training Activities (time weighting factor – 2)

These include formal face-to-face education distance education, short courses and formal on-the-job training. These will almost always include time spent in preparation and/or follow-up and most will involve assessment.

A special case relates to the undertaking of the entire course work for a higher degree or postgraduate diploma, either by the face-to-face or distance modes, which will cover the CPD requirements for the rolling three-year period containing the course. However, one should continue to record other relevant CPD activities for future reference.

For formal face-to-face education, the time claimed can include the actual hours of lectures attended and/or research undertaken. For distance learning, the simplest approach is to estimate the equivalent number of hours of formal face-to-face education that would have been involved if this mode had been utilized instead of the distance mode. A time weighting factor up to 2 can then be applied.

Short courses are defined as involving presenters who are external to the workplace. These include courses at tertiary institutions that are not taken for award purposes. On-the-job training activities are similar to short courses, but are conducted by expert staff from within the workplace.

5. B – Informal Learning Activities (various time weighting factors)

Typical of these activities are the reading of books, journals, manuals, etc. and familiarization with the operation of technological aids, computer programs, equipment, etc.

Informal learning activities include on-the-job learning that takes place because of workplace requirements and private study where one can exercise complete discretion. On-the-job learning requirements usually arise when one undertakes a new project and identify areas where one needs to extend one's competency base. Private study is an opportunity for one to direct the way in which one's professional career develops.

In both cases, any activity claimed must pass the simple test that it contributes to the development of one's career as a professional engineer. A time weighting factor of 1 applies to on-the-job learning while a factor of 0.5 applies to private study. In each case, the maximum number of "weighted" hours that one can claim over a three year period is 75 hours. Hence one can meet the 150 hours CPD obligations if one is able to justify the maximum allowable claims for both on-the-job learning and private study.

6. C – Conferences and Meetings (time weighting factor = 1)

These include all conferences, symposia, technical inspections and meetings run by APO's & PTC to provide information. Those run by other acknowledge experts could also be claimed provided that the content relates to the development of one's professional career.

The hours claimed should be for the formal technical presentations and inspections that one attended at such conferences, symposia, inspections and meetings.

7. D – Presentations and Publication of Papers (various time weighting factors)

The preparation and presentation of material for courses, conferences, seminars and symposia can be claimed if these activities contribute to the engineering related competencies of engineers and associated professionals. A time weighting factor of 10 should be

applied to the actual duration of the presentation if the paper is not published.

Material published in journals and conference papers can be claimed as follows:

- 40 hours per paper for technical papers or research reports for conferences; or
- 50 hours per paper for papers is referred prior to publication

The preparation and presentation of material designed to promote awareness of engineering, membership in PTC and benefits of registration of potential members and the community can be claimed. A time weighting factor of 5 should be applied to the actual duration of the presentation. One may claim up to 30 weighted hours of this type of CPD in any three-year period.

8. E – Service Activities (time weighting factor – 1)

Service to the profession may be allowable particularly where it contributes to the continuing professional development of others. Within PTC, this includes contributions as a Member Reviewer, member of a course accreditation team, participation in CPD audits, review of technical papers prior to publication and technical aspects of work undertaken in or for the Boards and Committees of the APO's and/or PTC, including national committees and technical societies. CPD allowable under this heading is limited to 20% of one's total in any three years.

9. F – Industry Involvement (for academia) (time weighting factor =1)

Engineers employed in academic positions are expected to foster links with industry to the benefit of engineering education, research and practice in Philippines. This requirement also ensures that they are exposed to developments in engineering practice outside their academic institutions.

Industry involvement will normally be in the form of consulting services. However, where one has close ties with industry, one can include supervision of industry-sponsored research.

Supervision of design projects carried out for industry and fieldtrips may also be counted if they have contributed to the above objectives.

Professional Engineers in academic positions must be able to show they have at least 40 hours of industry involvement every three years.

NOTE: CPD equivalence as provided by Professional Regulation Commission will govern in case of inconsistencies.

SUMMARY OF ACTIVITIES CLAIMED AS CONTINUING PROFESSIONAL DEVELOPMENT

Referring to the types of CPD described in the preceding pages, use the table below as a summary of those records.

REF	DATE	TYPE	CPD activity/topic/provider	Time (hours)		
				Actual	Weight factor	Weighted hours
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

Total CPD activities (Goal 150hours/3 year period)

Name: _____ Signature: _____ Reg.No. _____

If you have recorded your CPD activities in another format, please submit them with your statement of experience. Your record must be comprehensive and include as a minimum the details as shown on this pro forma all appropriate supporting documentations must be submitted with this form.

CODE OF ETHICS

THE PTC CODE OF ETHICS

PREAMBLE

It is a solemn responsibility of a PTC member, after admission in the practice of a particular profession to adhere to the fundamental principles of his profession guided by the norm of conduct consistent with this Code of Ethics.

**ARTICLE 1
DECLARATION OF PRINCIPLES**

Rule 1. The practice of a particular allied Technological Profession is a privilege granted by the state. The privilege requires high degree of knowledge, efficiency, responsibility, and morality. The dignity and honor of the profession must at all times be kept unblemished.

Rule 2. The PTC Member shall, in the practice of his profession, be governed by the Golden Rule, and the ideals of services to man and his environment.

Rule 3. The duly constituted authorities shall be recognized and obeyed in the practice of his profession.

**ARTICLE II
RESPONSIBILITIES TO THE STATE**

Rule 1. The PTC member shall maintain allegiance to the Republic of the Philippines, support the Constitution and obey all laws duly promulgated and approved by the duly constitute authorities.

Rule 2. He shall be well informed of the latest technological progress in his own line of work. He shall encourage, and require the use or application of standard equipment, machinery, or process for safety, economy and efficiency.

Rule 3. He shall update and enhance constantly his professional knowledge and skills through assiduous research and study, and meaningful participation in continuing education programs and seminars conducted by the different Technological Associations or Educational Institutions supervised by the state.

Rule 4. He shall avoid and discourage sensational, exaggerated and unwarranted statements that might induce participation in unsound enterprises.

Rule 5. When he discovers faulty or unsafe devices, equipment, or machinery in any place, work or plant, he shall without delay, give notice thereof to the proper authority, public or private, for its immediate and effective correction.

**ARTICLE IV
RESPONSIBILITIES TO EMPLOYER AND CLIENTS**

Rule 1. The PTC Member must faithfully use his knowledge and skills on performing his tasks to his clients or employer.

Rule 2. He shall protect with utmost professional attention the interests of his employer or client.

Rule 3. He shall not advance or promote any interest of his client or employer which is contrary to law, public or professional obligations and ethics.

Rule 4. Whenever his obligations to his employer or clients are in conflict with his professional obligations or ethics, he should endeavour to resolve the conflict in accordance with the law public policy, and the provision of this code. When the conflict is beyond reconciliation, he should serve his professional engagement.

Rule 5. He shall not divulge any information given in confidence during his employment, neither shall he attempt to profit therefrom nor shall he use, directly or indirectly, such information to the prejudice of his employer and other contracting parties shall be faithfully determined and discharged

Rule 6. He shall not engage or offer to engage, his professional services to those with conflicting and adverse interests.

Rule 7. He shall act as trustee of his client or employer in the preparation of contracts and similar documents. He shall be impartial in the interpretation of such documents so that the rights and obligations of his clients or employer and other contracting parties shall be faithfully determined and discharged.

Rule 8. He must refer his client or employer, whenever necessary, to serve the interests of the later, to experts or consultants. He must not accept any favour or compensation whatsoever for the referral to such experts or consultants.

**ARTICLE V
RESPONSIBILITY TO EMPLOYEES**

Rule 1. The PTC Member, as employer, shall at all times be concerned with the welfare of his employees whose rights as workers are guaranteed under the Constitution and protected by laws.

Rule 2. He shall be willing to share the substantial profits from his enterprise with the employees responsible thereof.

Rule 3. He must observe and obey all laws, rules and regulations on labor, particularly those affecting labor relations, hours of work, wages and terms and conditions of work.

Rule 4. He shall at all times strive to improve the knowledge and skills of his employees, provide safety measures for his men, and maintain the operations efficiency of his machines or equipment.

**ARTICLE VI
RESPONSIBILITIES TO COLLEAGUES**

Rule 1. "To thine oneself be true and thou cannot be false to any man "expresses the duty which a PTC Member owes to himself and to others.

Rule 2. He shall use only fair means to gain professional advancement. In the pursuit thereof, he shall not injure the work employment opportunities of others, or use any improper or questionable method of soliciting employment of clientele.

Rule 3. He shall not fraternize with those engaged in unethical practices.

Rule 4. He must duly acknowledge the professional work of his colleagues and subordinates and give full recognition thereto.

Rule 5. He shall define clearly the line of authority and the scope of responsibility of his associates and assistants, orders or the recall thereof, shall be issued through proper channels.

Rule 6. He must always encourage and promote the professional advancement of his colleagues, especially when he occupies a position of authority. He shall exert efforts to assist in the development of the Knowledge and skills of his colleagues.

Rule 7. He shall be receptive to new ideas and suggestions from others, and ready to recognize, encourage, and accredit the authors thereof.

Rule 8. He shall use tact and discretion in dealing with his colleagues and associates, but not at the sacrifice of firmness. He shall work out difficult problems with courage and serenity.

Rule 9. He shall actively support the duly accredited association with the end in view of enhancing the practice of the profession and discharging his public responsibilities as a professional.

PENAL PROVISIONS

Violation of any provision of this code shall constitute unethical or unprofessional conduct and shall be dealt with under the provisions of the pertinent section of the particular Architecture, Engineering or Allied Profession's Law.

In addition to the PTC code of ethics, each of the professional disciplines has its own Code of Ethics, which the professional is expected to observe and be bound with.

ACCREDITED ASSESSORS AND PROFESSIONAL INTERVIEWERS

The Candidate's Engineering Practice Report (PR) will be evaluated as to compliance with the required Competency Units and Elements by an Accredited National Assessor, who is an Advanced Level Engineer duly accredited by the PTC-IRC. When the EPR is assessed as having met the requirements in terms of structure and the apparent quality of the content, the Candidate will be invited to a Professional Interview (PI). The PI is essentially a peer review of the competencies claimed by the candidate in his EPR.

The PI is carried out by an assessment panel (the Panel of Experts) consisting of two (2) Professional Interviewers and an Accredited National Assessor. The PI usually takes about an hour.

The final determination and choice of the Professional Interviews will be made by the PTC – IRC, who will be responsible for arranging:

- The selection of Professional Interviews representing the candidate's area of practice and/or professional discipline;
- The availability of the Professional Interviewers;
- The date, time and place of the Interview.

The Professional Interviewers are likewise Advanced Level Engineers who are officially endorsed by the Accredited Professional Organization of PTC council members and will be chosen such that they have had no prior relationship with the candidate that could prejudice the interview and be able to treat the Engineering Practice Report (EPR) as commercial-in-confidence and not be in competition professionally with the candidate or his/her employer;

The main tasks and responsibilities of the Professional Interviewers are to:

- Read and analyse the EPR;
- Prepare a strategy for questioning the candidate;
- Listen to and evaluate the candidate's 15-minute presentation;
- Ask in-depth questions and evaluate/assess the responses of the candidate during the 30 minutes allocated time for the discussions and questions;
- Participate in the assessment and final evaluation of the candidate.

A list of Accredited national Assessors and Professional Interviewers may be obtained from:

PHILIPPINE TECHNOLOGICAL COUNCIL

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