Professional Engineering Practice (Civil) - Singapore

ASEAN Engineers Information Exchange Platform

1. Executive Summary

This paper provides comprehensive information about the Professional Engineers (Civil) framework in Singapore, focusing on registered and licensed professional engineers. The goal is to enhance transparency, facilitate mutual understanding of domestic regulations, and support regional mobility among ASEAN professional engineers.

2. Professional Engineers Board Singapore (PEB)

2.1 Background

The Professional Engineers Board Singapore (PEB) is a statutory board in the Ministry of National Development. PEB was established in 1971 under the Professional Engineers Act.

PEB's Mission is to safeguard life, property, and welfare of the public by setting and maintaining high standards for registering professional engineers (PE), and by regulating and advancing the practice of professional engineering. A copy of the registration requirements of PE is in **Annex A**.

2.2 Key Objectives of PEB

- Maintain an internationally acceptable standard of assessment which emphasises quality academic education, examination, and practical experience that ensures only competent individuals are accepted for registration as professional engineers.
- Maintain a process that ensures professional engineers demonstrate a high standard of professional development and conduct and ethics that meet the expectations of clients, employers and the public.
- Develop responsible self-governance of the profession through judicious administration of the Act and Rules on professional conduct and ethics.
- Coordinate and facilitate cross-border mobility of qualified professional engineers.

2.3 Main Functions of PEB

The main functions of PEB, as prescribed in the Professional Engineers Act, are:

- Keep and maintain a register of professional engineers, a register of practitioners and a register of licensed corporations.
- Process applications for registration as professional engineers, including the conduct of examinations for the purpose of enabling persons to qualify for registration.
- License corporations and partnerships which supply professional engineering services in Singapore.
- Establish and maintain standards of professional conduct and ethics of the engineering profession.
- Hear and determine disputes relating to professional conduct or ethics of professional engineers.
- Promote learning and education in connection with engineering.

2.4 Prescribed branch of professional engineering work

PEB registers PEs from the 4 engineering branches:

- Civil Engineering
- Electrical Engineering
- Mechanical Engineering
- Chemical Engineering

3. Regulatory Framework and Requirements

This framework establishes the mandatory Professional Engineer requirements across respective regulatory agencies in Singapore, which includes the Building and Construction Authority (BCA), Land Transport Authority (LTA), Ministry of Manpower (MOM), National Parks Board (NParks), Public Utilities Board (PUB) and Singapore Civil Defence Force (SCDF). The framework ensures that critical infrastructure and safety systems are designed by Professional Engineers in the appropriate branch of professional engineering work.

The works listed under each agency are not exhaustive. Please visit the respective agency website for details. All works listed require a PE(Civil).

3.1 Building and Construction Authority (BCA)

Works	Scope
Major Structural Works	This includes, but is not limited to, new erections (foundation, substructure, and superstructure), addition and alteration works affecting structural elements, structural strengthening of aging or damaged building members, and complex demolition works
Civil Engineering and Geotechnical Works	This includes, but is not limited to, earth retaining and stabilising structures (ERSS), foundation works (piling, raft foundations, and footings), tunnelling, and formation of slopes, embankments, or soil nailing
Temporary Structures	This includes, but is not limited to, event structures (tentages, stages, and gantries), and temporary site facilities (workers' quarters and site offices)
Statutory Inspections and Safety Certifications	This includes, but is not limited to, Periodic Structural Inspections (PSI) for buildings

Applicable regulatory requirements include the Building Control Act, Building Control Regulations, and BCA Approved Document (Acceptable Solutions), among others. For more details, please visit the BCA website at https://www1.bca.gov.sg/

3.2 Land Transport Authority (LTA)

Works	Scope
Works on Public Streets	This includes, but is not limited to, new road construction and modifications, commuter infrastructure, vehicular access plans for new entrance culverts and driveways, and proposals involving street furniture and lighting
Engineering Works in Road Structure Safety Zones	This includes, but is not limited to, deep excavations, earth retaining structures (sheet piles, diaphragm walls, or bore-pile walls) near public streets, use of cranes or heavy equipment impacting road structural safety, and major box culverts
Railway Protection Zone Works	This includes, but is not limited to, restricted activities (piling, drilling, ground treatment, and excavation) within the railway protection zone, tunnelling near railway lines, temporary structures within the protection zone and within the railway zone

Applicable regulatory requirements include Railway & Road Structure Protection and Safety Zones, Street Works, and Vehicle Parking, among others. For more details, please visit the LTA website at https://www.lta.gov.sg/content/ltagov/en.html

3.3 Ministry of Manpower (MOM)

Works	Scope
Temporary Structures and Work-at-Height	This includes, but is not limited to, complex scaffolding or non-standard designs (cantilevered, hanging, or jib-supported), suspended scaffolds and gondola outriggers, formwork structures for wet concrete, and temporary access platforms or staging
Worker Housing and Dormitory Submissions	This includes, but is not limited to, structural safety certification for temporary workers' quarters and certification of floors and supporting columns for workers housed in uncompleted buildings
Lifting Operation Interfaces	This includes, but is not limited to, design and certification of crane foundations and structural supports for tower cranes or heavy mobile cranes, and structural integrity verification of lifting points and load-bearing surfaces for critical lifts

Applicable regulatory requirements include the Workplace Safety and Health Act (WSHA), Workplace Safety and Health (Design for Safety) Regulations 2015, and Workplace Safety and Health (Major Hazard Installations) Regulations 2017, among others. For more details, please visit the MOM website at https://www.mom.gov.sg/

3.4 Public Utilities Board (PUB)

Works	Scope
Drainage and Stormwater Management	This includes, but is not limited to, surface water drainage plans for internal drainage systems, basement pumped drainage systems (pump sumps, storage tanks, and swan neck connections), stormwater detention tanks, and erosion control measures integrated with drainage designs during construction
Sewerage and Sanitary Works	This includes, but is not limited to, construction works within Public Sewer Corridors, design of reinforced concrete trenches for sewer protection, and sewerage and sanitary detailed plan submissions for large-scale industrial, commercial, or multi-unit residential developments
Protection of Water Infrastructure (POWS)	This includes, but is not limited to, Construction Impact Assessment Reports (CIAR) for nearby construction activities, instrumentation and monitoring plans for ground movements and vibrations near large-diameter pipes or Deep Tunnel Sewerage System (DTSS) structures, and engineering plans for piling, deep excavation exceeding 0.5m, or ground treatment near public water infrastructure
Operational and Completion Clearances	This includes, but is not limited to, Temporary Occupation Permit/Certificate of Statutory Completion clearances certifying that drainage and sewerage works were constructed according to approved plans, endorsement of as-built drawings and survey plans confirming platform and crest levels, and certification of automated flood barrier inspection and operational SOPs

Applicable regulatory requirements include the Public Utilities Act, Code of Practice on Surface Water Drainage, and Code of Practice on Sewerage and Sanitary Works, among others. For more details, please visit the PUB website at https://www.pub.gov.sg/

3.5 Singapore Civil Defence Force (SCDF)

Works	Scope
Structural Fire Precautions	This includes, but is not limited to, design and endorsement of fire-rated walls, floors, and columns, structural plans for fire compartmentation walls and floors, and performance-based fire safety designs involving structural solutions
Minor Addition and Alteration (A&A) Works	This includes, but is not limited to, certification of new internal partition walls involving fire-rated materials, and structural opening modifications for fire-rated door replacements
Annual Fire Certificate (FC) Renewal	This includes, but is not limited to, certifying that fire-rated materials used in construction (such as fire-rated boards for structural steel) meet SCDF standards, and certification of the maintenance of passive structural fire protection elements

Applicable regulatory requirements include the Fire Safety Act 1993, Fire Code, and Building Control Regulations (Fire Safety provisions), among others. For more details, please visit the SCDF website at https://www.scdf.gov.sg/

4. Role and Duties of PE (Civil)

Professional Engineers appointed for the above works must maintain valid practising certificates and comply with all relevant professional standards and codes of practice established by their respective regulatory authorities. The appointed PE shall ensure all works are carried out in accordance with approved plans, specifications, and applicable regulations.

5. Conclusion

This framework supports the ASEAN Engineers Information Exchange Platform by providing systematic information about Singapore's PE (Civil) requirements across all regulatory agencies, enhancing regional understanding and facilitating professional mobility while maintaining high standards across ASEAN Member States.

For further information or clarification on any aspect of Singapore's Professional Engineers framework, please contact the Professional Engineers Board Singapore via registrar@peb.gov.sg

Annex:

Annex A - Guidelines for PE registration

GUIDELINES FOR REGISTRATION AS A PROFESSIONAL ENGINEER

1. Professional Engineers Board (PEB) registers professional engineers in prescribed branches of engineering, namely civil engineering, mechanical engineering, electrical engineering or chemical engineering. A person who meets the following requirements may apply for registration as a professional engineer with PEB in any one of the prescribed branches of engineering.

   a) An applicant is required to:

      i) hold any degree, or qualification listed in the Professional Engineers (Approved Qualifications) Notification; or

      ii) satisfy the Board that he or she is otherwise qualified by having proper and recognised academic qualifications in engineering and who satisfies such conditions prescribed by the Board.

   b) The applicant has sat and passed the oral examination (See Note 1 below) or the following written examinations:

      i) Fundamentals of Engineering Examination (FEE)
      ii) Practice of Professional Engineering Examination (PPE)

   c) After obtaining the approved qualifications, the applicant has acquired at least four years of practical experience of such nature and duration as prescribed by the Board.

   Note 1: With effect from 18 Jan 2017, a person may apply to sit for the oral examination—

      a) if the person was previously registered under the Act as a professional engineer or is an experienced applicant,

      b) if the person has not applied to sit for any of the written examinations, and

      c) where applicable, a period of 12 months has elapsed from the date of the last unsuccessful application to sit for the oral examination.

   An experienced applicant means a person who —

      a) before 1 December 2005, obtained a qualification specified in Part 1 or 3, Division 3, 4 or 5 of Part 4 or Division 2 of Part 5 of the Schedule to the Professional Engineers (Approved Qualifications) Notification 2009, and

      b) has not less than 25 years of such practical experience in professional engineering work as may be acceptable to the Board, of which at least 10 years must be obtained in Singapore.

   An application to sit for the oral examination (at a fee of $450), will be processed together with the application for registration as a professional engineer (at a fee of $300). The oral examination will be conducted before the professional interview for registration in a single session where applicable.

2. An application for registration as a professional engineer shall be made within five years of passing the oral examination or Practice of Professional Engineering Examination. There are no restrictions based on age, citizenship or residency status, and no requirement on membership of any professional body.

3. An applicant may submit an application to PEB complete with a report of postgraduate engineering experience and a fee of $300. For application details, refer to Annex A.

4. Subject to meeting application requirements, an applicant will be required to attend a professional interview conducted by PEB. For details of interview, refer to Annex B. If successful, the applicant will be accepted for registration as a professional engineer.

Annex A

APPLICATION REQUIREMENTS FOR REGISTRATION AS A PROFESSIONAL ENGINEER

1. Application for registration and payment of the prescribed fees of $300 shall be submitted online. The fee comprises a non-refundable application for registration fee of $150 and a fee of $150 for the certificate of registration.

2. Applicant may login to PEB website >Login to PEB Portal (E-Services) to submit your application. For more information on registration as a Professional Engineer, an applicant may refer to "User Guide to Apply for Professional Engineer (PE) Registration" available in PEB's Website > Resources. All documents including the PPE results are to be uploaded into the PEB Portal.

3. An application must be supported by two testimonials (Form PEB 1A) of good conduct and character. These testimonials should be given by persons who have personal knowledge of the applicant's conduct and character. The referees shall be equal or senior to the applicant. The applicant may select colleagues, associates or any other person, e.g. architects, lawyers, prominent persons who can vouch for the applicant's conduct and character. Testimonials from subordinates are not acceptable. All testimonials must be signed by the referees and should also include their names, professions, titles, firms, contact details and dates. Testimonials should be current, those dated more than two months before the date of the submission will not be accepted.

4. An application must be accompanied by a Summary of Postgraduate Professional Experience and a Report on Postgraduate Engineering Experience. The detailed requirements for the summary and the report are as indicated in the **Guidelines for Professional Interview for Registration As Professional Engineer** (see Annex B for details).

5. The Summary of Postgraduate Professional Experience and Report on Postgraduate Engineering Experience must be verified by registered Professional Engineer in Singapore, accompanied by the professional engineer's stamp. The Report on Postgraduate Engineering Experience must also be signed by the applicant himself or herself.

6. Applicant should familiarize himself or herself with the requirements as stipulated in the **Guidelines for Professional Interview for Registration As Professional Engineer** (see Annex B for details).

Annex B

GUIDELINES FOR PROFESSIONAL INTERVIEW FOR REGISTRATION AS PROFESSIONAL ENGINEER

1. Under the Professional Engineers Act 1991, an applicant applying for registration with the Board must satisfy several requirements to be entitled to registration. The requirements are:

   a) appropriate qualifications –Section 21(1);

   b) passed prescribed examinations – Section 21(2)(a);

   c) appropriate experience – Section 21(2)(b);

   d) good character and reputation – Section 21(4)(a); and

   e) able to carry out the duties of a professional engineer effectively – Section 21(4)(b).

2. To register as a PE, an applicant is required to provide sufficient evidence to demonstrate that he has met the competence standard expected of a professional engineer. One major aspect of such evidence would be sitting and passing the prescribed examinations. **In particular, passing the examinations is an assurance that the applicant has acquired the necessary competencies in professional engineering practice to a substantial extent.**

3. In addition, the PE Act 1991 requires that such competence should be acquired on the basis of practical experience that is of an appropriate standard.

4. Therefore, the purpose of the professional interview is to determine the following:

   a) the duration and adequacy of practical experience;

   b) the type, quality and relevance of practical engineering experience;

   c) the character and reputation; and

   d) the ability to carry out the duties of a professional engineer effectively.

5. The professional interview process comprises three components: review of the Summary of Postgraduate Professional Experience, assessment of the Report on Postgraduate Engineering Experience and attending the professional interview.

Summary of Postgraduate Professional Experience

6. The applicant is required to submit a chronological summary of his or her work history including a description of previous employment positions held and degree of responsibility in each position, nature and cost of projects involved, the professional engineers who had supervised the applicant (see section 7 below), etc. The summary should indicate the activities that the applicant has undertaken in his/her past and present work roles that demonstrate that he or she has acquired competency in each element indicated in the **Checklist for Professional Interview** in Appendix A. (Use abbreviations PRO, DDS, EVA, RFD, MEA, JUD and COM as applicable) (See also suggested format on pages 11 and 12 of guidelines)

7. Except for a person who was previously registered under the Act as a professional engineer, or is an experienced applicant, the practical experience that a person applying for registration as a professional engineer must have after obtaining the approved qualifications is the practical experience of at least 4 years -

a) that is relevant to the branch of engineering that the person seeks to be registered in;

b) that is in such professional engineering work and at such level of responsibility for the person to be sufficiently competent for registration as a professional engineer;

c) of which at least 24 months (in total) is acquired in Singapore; and

d) of which at least 24 months (in total) is acquired not more than 5 years immediately before the application for registration.

The practical experience shall include the following:

i) where the person seeks to be registered in the civil engineering branch, the practical experience shall be obtained in Singapore:

- during a period of not less than 12 months (in aggregate) in a design office whilst under the supervision of any registered professional engineer who has in force a practising certificate and,

- during a period of not less than 12 months (in aggregate) in supervisory work at a project site or engineering investigation work, whilst under the supervision of any registered professional engineer who has in force a practising certificate.

ii) where the person seeks to be registered in the chemical engineering branch, the practical experience must be obtained in Singapore during a period of not less than 2 years (in aggregate) in process design, process operations, process safety management or any combination of chemical engineering work (as the case may be) involving inspection, investigation, assessment or evaluation whilst under the supervision of any registered professional engineer who has in force a practising certificate

iii) where the person seeks to be registered in the electrical or mechanical engineering branch, the practical experience must be obtained in Singapore during a period of not less than 2 years (in aggregate) whilst under the supervision of any registered professional engineer who has in force a practising certificate in either —
- design and supervisory work, or

- design and supervisory work, and any combination of electrical or mechanical engineering work, as the case may be, involving inspection, investigation, evaluation, or testing and commissioning.

iv) where the person seeking registration in the branch of civil, chemical, electrical or mechanical engineering is engaged in full-time teaching or research work, the practical experience shall be such experience as may be acceptable to the Board obtained during a period of not less than 2 years whilst under the supervision of any registered professional engineer who has in force a practising certificate.

8. For civil engineering, a minimum of 12 months practical experience is required for both design and supervision experience respectively as mentioned above. There are no such requirements for the other branches of engineering in terms of practical experience.

Report on Postgraduate Engineering Experience

9. The applicant is required to submit a 2,000-4,000 words Report on Postgraduate Engineering Experience (word count of the report should be indicated). In the Report on Postgraduate Engineering Experience, the applicant is required to describe in detail his or her involvement in not more than four projects that he or she regards as the highlights of his professional experience in the branch of engineering that he or she is seeking registration.

10. For each project, the applicant shall describe his or her involvement in the technical, managerial, contractual, regulatory and other areas that he or she was involved in. He/She shall describe his or her personal contribution and responsibilities, the problems faced, the solution(s) found, the engineering and other judgments made and the impact the solution(s) and judgments generated.

11. In preparing his or her report, he or she shall refer to the Checklist for Professional Interview in Appendix A and demonstrate how he or she has achieved **all** of the elements of competence in the checklist (competence element(s) addressed should be indicated in the headings of the write-up or in the margins of the pages). The wording of the report for each project should be such as to clearly indicate how these elements have been demonstrated.

12. Upon receiving an application for registration, an interview panel would be appointed to assess the application. The panel would conduct a desktop assessment to assess if the report is adequate. The assessment shall be carried out on the basis of the checklist as shown in Appendix A. Following the assessment, the applicant will be invited to a professional interview (PI).

Professional Interview

13. The professional interview (PI) is a review of the competencies that the applicant has claimed in his or her report. At the start of the PI the applicant would be invited to make a presentation (without use of computer or projector) of about 10 minutes on one or more of his or her projects highlighted in his or her report. (For a person who was previously registered under the Act as a professional engineer or is an experienced applicant, the professional interview would be preceded by the oral examination where applicable.)

14. During the remainder of the PI, the applicant would be expected to discuss with the panel on his or her involvement in achieving the various competence elements as presented in his or her report. The applicant is also expected to answer questions on other aspects relating to his or

her application and professional practice such as the summary of postgraduate experience. The interview is expected to be about 45 minutes (inclusive of applicant's presentation).

15. The applicant shall be informed in writing of the result of the interview. For an unsuccessful applicant, a minimum period of deferment of 12 months would be imposed before he or she could make another application.

Appendix A

Checklist for Professional Interview

	Competence Element/Performance Indicators
1.	Define, investigate, and analyse complex problems **(Problem Analysis - PRO)** · Identifies and defines the scope of the problem · Investigates and analyses relevant information using quantitative and qualitative techniques · Tests analysis for correctness of results · Conducts any necessary research and reaches substantiated conclusions
2.	Design or develop solutions to complex problems **(Design and Development of Solutions - DDS)** · Identifies needs, requirements, constraints and performance criteria · Develops concepts and recommendations that were tested against engineering principles · Consults with stakeholders · Evaluates options and selects solution that best matched needs, requirements and criteria · Plans and implements effective, efficient and practical systems or solutions
3.	Evaluate the outcomes and impacts of complex activities **(Evaluation - EVA)** · Identifies risks · Develops risk management policies, procedures and protocols to manage safety and hazards · Manages risks through 'elimination, minimisation and avoidance' techniques
4.	Be responsible for making decisions on part or all of complex activities **(Responsibility for Decisions - RFD)** · Takes accountability for his or her outputs and for those for whom he or she is responsible · Accepts responsibility for his or her engineering activities
5.	Manage part or all of one or more complex activities **(Manage Engineering Activities - MEA)** · Plans, schedules and organises projects to deliver specified outcomes · Applies appropriate quality assurance techniques · Manages resources, including personnel, finance and physical resources · Manages conflicting demands and expectations
6.	Exercise sound judgment in the course of his or her complex activities **(Judgment - JUD)** · Demonstrates the ability to identify alternative options · Demonstrates the ability to choose between options and justify decisions · Peers recognise his or her ability to exercise sound professional engineering judgement
7.	Communicate clearly with others in the course of his or her activities **(Communication - COM)** · Uses oral and written communication to meet the needs and expectations of his or her audience · Communicates using a range of media suitable to the audience and context · Treats people with respect · Develops empathy and uses active listening skills when communicating with others · Operates effectively as a team member

Characteristics of Complex Problem

	Attribute	Complex Problems
1.	Preamble	Engineering problems which cannot be resolved without in-depth engineering knowledge and having some or all of the following characteristics in items 2-9.
2.	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering, and other issues
3.	Depth of analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
4.	Depth of knowledge required	Requires in-depth knowledge that allows a fundamentals-based first principles analytical approach
5.	Familiarity of issues	Involve infrequently encountered issues
6.	Level of problem	Are outside problems encompassed by standards and codes of practice for professional engineering
7.	Extent of stakeholder involvement and level of conflicting requirements	Involve diverse groups of stakeholders with widely varying needs
8.	Consequences	Have significant consequences in a range of contexts
9.	Interdependence	Are high-level problems possibly including many component parts or sub-problems

Characteristics of Complex Activities

	Attribute	Complex Activities
1.	Preamble	(*Engineering)* activities or projects that have some or all of the following characteristics in items 2-6.
2.	Range of resources	Involve the use of diverse resources (and for this purpose resources includes people, money, equipment, materials, information and technologies)
3.	Level of interactions	Require resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering, or other issues
4.	Innovation	Involve creative use of knowledge of engineering principles in novel ways
5.	Consequences to society and the environment	Have significant consequences in a range of contexts
6.	Familiarity	Can extend beyond previous experiences by applying principles-based approaches

Notes: PEB acknowledged that in the Checklist for Professional Interview above, description of competence elements, complex problems and activities, are adapted from 'Graduate Attributes and Professional Competency Profiles for the Engineer, Engineering Technologist, and Engineering Technician' by Washington Accord etc. Performance indicators are adapted from 'Institution of Professional Engineers New Zealand (IPENZ) Competence Standard for Professional Engineers'.

Suggested Format for Report Writing

Project 1 : _____

Word Count : _____

Section 1 Introduction comprising a brief write-up of project 1

Sections 2 -7 Using each Competence Element/Performance Indicators as heading, describe the problems and activities that you have addressed or been involved in to demonstrate your attainments under each heading.

Suggested Format **SUMMARY OF POSTGRADUATE PROFESSIONAL EXPERIENCE**

Date		Title, duration and cost of project, title of position held, degree of responsibility in each engagement, indicate supervising PE where applicable	Time (yrs & mths)								Total time (yrs & mths)		Comp. Elements Acquired	Name and Address of Employer	To be verified by Professional Engineer (with signature & PE stamp)
			In Design or Research		Supervisory work		Inspection, Investigation, Assessment, Evaluation, Or Testing and Commissioning Work		Process Design, Process Operations or Process Safety Management						
From	To		Yrs	Mths	Yrs	Mths	Yrs	Mths	Yrs	Mths	Yrs	Mths			
TOTAL LENGTH OF PRACTICAL EXPERIENCE			**2**	**7**	**1**	**9**	**0**	**5**	**0**	**0**	**4**	**9**			
Start Date 1	End Date 1	Employer 1	1	1	0	0	0	5	0	0	1	6		Name of Employer 1 Address	
		Project 1.1: Name of Project Cost of project: Duration: Position: Scope of responsibilities: Supervising PE:											PRO DDS EVA		

		Project 1.2: Name of Project Cost of project: Duration: Position: Scope of responsibilities: Supervising PE:											PRO DDS EVA COM		
		…..													
Start Date 2	End Date 2	Employer 2	1	6	1	9	0	0	0	0	3	3		Name of Employer 2 Address	
		Project 2.1: Name of Project Cost of project: Duration: Position: Scope of responsibilities: Supervising PE:											PRO DDS EVA COM		
		Project 1.2: Name of Project Cost of project: Duration: Position: Scope of responsibilities: Supervising PE:											JUD DDS EVA COM		
		…..													