

A Review on Certification Procedure for Professionals Engineer based on Engineering Act in Indonesia

Irika Wideasanti, Rizal Z Tamin

- ¹ Institut Teknologi Bandung, Construction Engineering and Management
Faculty of Civil and Environmental Engineering
Jl. Ganesha 10 Bandung, Jawa Barat, Indonesia
Universitas Negeri Jakarta, Civil Engineering, Faculty Engineering
Jl. Rawamangun Muka, Jakarta Timur, Jakarta, Indonesia
- ² Institut Teknologi Bandung, Construction Engineering and Management
Faculty of Civil and Environmental Engineering
Jl. Ganesha 10 Bandung, Jawa Barat, Indonesia
irika@unj.ac.id; rzt@si.itb.ac.id

Abstract—The coastal area has a very strategic value because the city nearby this area can be developed as a port city, recreation and conservation. Development of coastal areas requires professional human resources. Professional credentials for individuals can be attained through professional certification. This paper presents the procedure of professional certification base on Decree no. 11,2014 on Engineering. This study is a descriptive and qualitative research, carried out through the stages of literature study and data collection include professional competence assurance system, profession licence, qualification assurance systems engineering profession. Data were analyzed reference to best practices certification procedure in Malaysia, Singapore and the Philippines. The study show there are two stages of examinations and three standards in the certification procedure. The examinations are professional examinations and competence examinations. Professional examinations held in the Professional Engineers Program while competence examinations organize by Professional Certification Body. The standard that used are the Engineers Service Standard, Engineers Competency Standard, and Engineers Professional Program Standard. All of these standards underlying the certification engineering procedure. Institutions directly involved in the certification process are the Board of Engineers Indonesia, Higher Education that organizer Profession Engineers Program, Professional Certification Body, and The Institution of Engineers Indonesia

Keywords: professional certifications, Engineering act

1. Introduction

Economic development aims to improve the quality of life and general well-being, among others, can be achieved with the availability of human resources and a reliable professional who is able to do engineering in order to increase the added value, competitiveness, efficiency, efficiency and effectiveness of the budget, public protection, the advancement of science and teknologi, and cultural achievements and high civilization.

Engineers are the main components in engineering services. Engineers are required to have the competence to do the job in a professional manner so that activities that do can improve the quality of life and himself. The products produced by the engineer must be accountable, materially, morally and legally. So that the services in the field of engineering is done in a professional, responsible, professional ethics. have legal certainty in providing

protection for engineers and engineering users. It required legislation governing professionalism. Special to the engineering profession has been issued Act 11, 2014 on Engineering (Engineering Act).

Economic development was also carried out in coastal areas. The coastal area has a very strategic value because the city nearby this area can be developed as a port city, recreation and conservation. Development of coastal areas requires professional human resources. Professional credentials for individuals can be attained through professional certification. This paper presents the procedure of professional certification base on Decree no. 11,2014 on Engineering.

2. Literature Review

2.1. Professional Engineer

Professional is a person of high educational background and or have the ability and explore and master the application of knowledge, science, technology, art and or specific areas. In the field of construction services expertise is in the field of construction workers who have a certificate for construction planners, construction supervisors and the contractor as proof of professional competence and ability of working expertise in the field of construction services according to scientific disciplines and / or kefungasian and / or specific expertise. (Rachmanto 2009)

The title Professional Engineer (PE) implies that one holds paramount the safety, health, and welfare of the public (web-1). The process of certification is the decisive career step that raises a technically trained person to the status of professional engineer with all of the implicit responsibilities that go with the authority to make critical decisions affecting the public. Every state has its own specific requirements for certification as a professional engineer (Schexnayder & Anderson, 2011).

2.2. Registration Process and Certification

Registration process and certification of construction services are effort to have construction service business class based on classification is classify the business based on area and sub area of works, and qualification is classification of business based on grade of competence and capability. (Tilaar & B. F. Sompie, 2009). Basically, certification is a proof of acknowledgement in determining classification and qualification of competence and capability in construction service sector. In personal form or in the form of company a proof of acknowledgement of personal competence and capability of professional skills in construction services sector according to specific field of study and skill as well as expertise.

2.3. Professional Certification

Efforts to improve the quality of competence and professionalism of experts can be done through certification serves as a quality assurance system. (Adi, 2010). Professionalism of Indonesian experts stipulated in the Law of the Republic of Indonesia Number 11 of 2014 concerning engineering. (web-2). Act engineering created with the aim to prevent errors and omissions engineering practices that can be harmful to society, addressing technology and technologists work, securing investment and development budget, develop engineering (web-3) In addition, engineering law will also regulate the professional engineer certification, the organization of the working license to service standards.

Certification is part of the requirements that must be possessed by workforce who will work in the corporate world of construction services in a professional manner. Labor certification, in an effort to meet the quality demands professional workforce, which is needed by the business / industry locally, nationally and internationally.(Kuncoro, 2012) Implementation of certification experts construction services should have the firmness of rules regarding competency standards can ensure the competence or quality construction workforce.(Widiasanti, 2013)

2.4. Characteristic differences Professional and Skilled

After more than 15 years of fighting, dated March 22, 2014 Indonesian engineering Act was passed. It gives great hope; a strong foundation of Indonesia as a development engineer honorary citizen in carrying out the profession to serve the interests of the community, the nation, and the state in the field of engineering (Tamin, 2014). Indonesia became the eighth country in the ASEAN has a law on engineering

Other ASEAN countries (except Laos and Cambodia), set the professional and Skilled in different legislation. This is because there are very different characteristics between professional and Skilled as shown in Table 1.

Table 1. Characteristic differences Professional and Skilled

No	Parameter	Professional	Skilled
1	Output	keen intelligence	skill
2	Learning Process	Education	Training
3	Legal Liability	Liabe	not liable
4	Competency Standard	Professional related	Job related
5	Competency Test	Peer to peer assessment	Skill Test
6	Organization	professional associations	Labor unions

(Oerip, 2014)

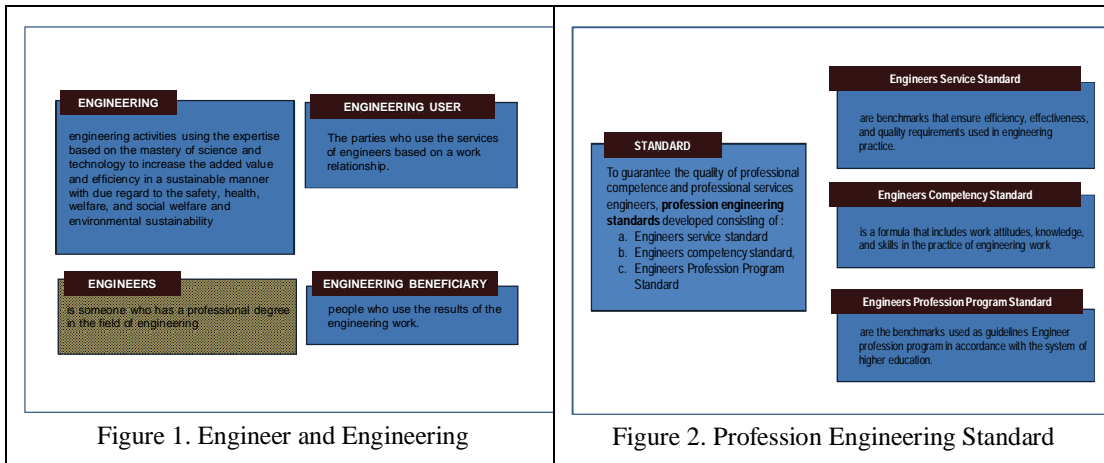
3. Research Methodology

Research methodology is a scientific way hasbeen used to achieve data with certain aims. Academic way means that the activities arebased on scientific methods (Sugiyono, 1999).These scientific methods are combination of rational and empirical approaches(Suriasumantri, 1978). Rational approach givesa coherent and logic paradigm, while empirical approach gives a frame work of empiric inensuring a truth.

This study is a descriptive and qualitative research, carried out through the stages of literature study and data collection include professional competence assurance system, profession licence, qualification assurance systems engineering profession. Data were analyzed reference to best practices certification procedure in Malaysia, Singapore and the Philippines. The study show there are two stages of examinations and three standards in the certification procedure.

4. Analyses and Discussions

The discussion begins by considering the terms used in the Engineering Act 11, 2014, such as Engineer, Engineering, Engineering User, Engineering Advantegas shown in Figure 1. In other country, Engineering User was call as Engineering consultancy practice.



Someone to obtain an engineer's degree can be obtained through four sources, namely: (Widiasanti 2015b)

1. Higher Technical Education Graduates who hold a Bachelor of Engineering (Sarjana Teknik -ST),
2. Higher Technical Education Graduates who hold a Bachelor of Engineering (Sarjana Teknik -ST)with experience working in engineering
3. Higher Technical Education Graduates who hold a Bachelor of non Engineering (non Sarjana Teknik – non ST),
4. Recognition of prior learning (RPL)

Each of these sources has different stages in obtaining a degree insnyur, as shown in Figure 3. Recognition of prior learning (RPL) describes a process used by regulatory bodies to evaluate skills and knowledge (learning) acquired outside the classroom for the purpose of recognizing competence against a given set of standards, competencies, or learning outcomes.

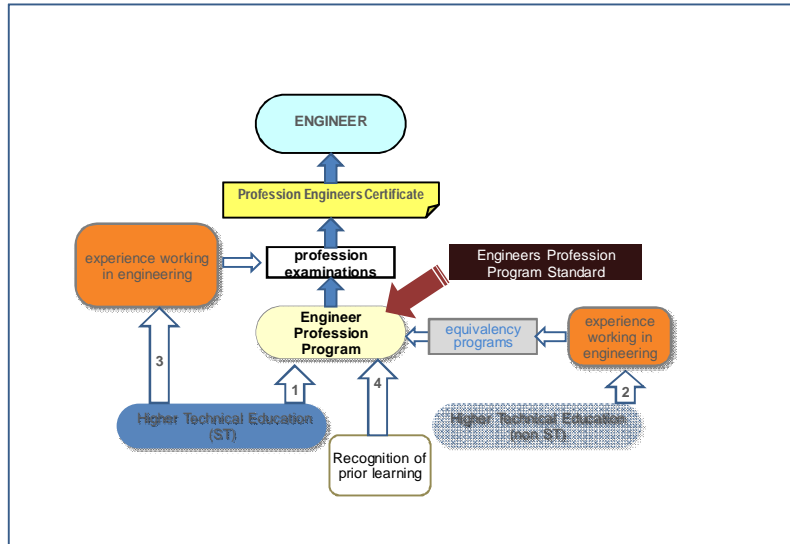


Figure 3. Profession Engineers Program

The process of formation of an engineer towards professionalism in the field of engineering, through several stages, in detail shown in Figure 4.

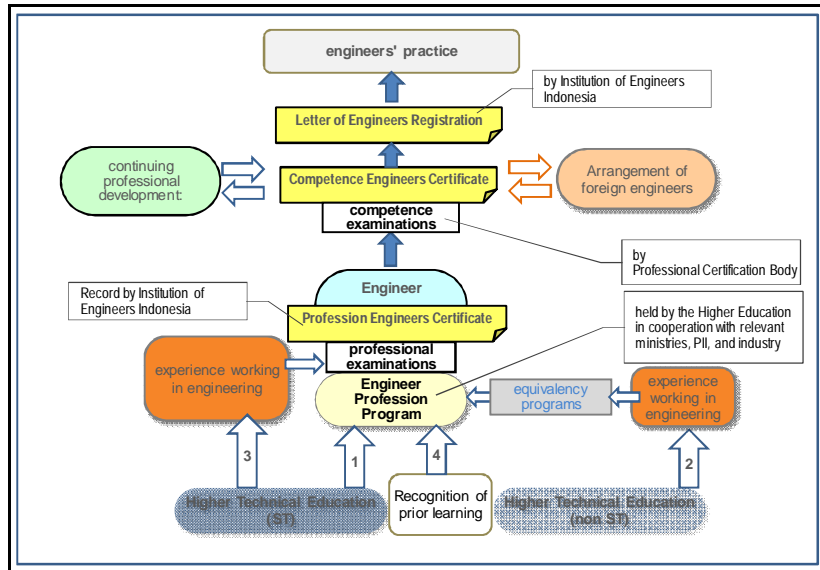


Figure 4. Certification Engineering Procedure

Institutional framework certification according to Engineering Act 11, 2014 involves the Board of Engineers Indonesia, Higher Education that organizer Profession Engineers Program, Professional Certification Body as organizers Competency Test, and The Institution of Engineers Indonesia (Widiasanti, 2015a). The arrangement is only for professional

engineers.. This is in contrast with the certification arrangements in Construction Services Law No. 18, 1999, is governing the certification of professional along with skilled certification.

Furthermore, studies comparing the Certification Procedure for Professionals Engineer based on Engineering Act in Indonesia with the laws in force in Malaysia, Singapore and the Philippines.

INDONESIA		
<p>ACT NO. 11, 2014 ON ENGINEERING (March 22 , 2014)</p> <p>a. provide the foundation and law enforcement in engineering is responsible; b. provide protection to engineering user and engineering beneficiary of malpractice through competence and quality assurance engineers working; c. provide direction to the growth and enhancement of professionalism engineers</p>		<p>d. Indonesian engineering put on a role in the national development through increased value-added wealth of the homeland with master and advance science and technology and to develop the independence of Indonesia; e. ensure the realization of the implementation of Indonesian engineering with good governance, ethical, dignified, and have a national identity.</p>
MALAYSIA	SINGAPORE	PHILIPPINES
<p>ACT 138 REGISTRATION OF ENGINEERS ACT 1967 <i>(Revised – 2007) – Enacted in 1967 as Act No. 66 of 1967</i></p> <p>An Act to provide for the registration of engineers, and sole proprietorships, partnerships and bodies corporate providing professional engineering services and for purposes connected therewith.</p>	<p>PROFESSIONAL ENGINEERS ACT (CHAPTER 253) – (August 30, 1991)</p> <p>An Act to establish the Professional Engineers Board, to provide for the registration of professional engineers, to regulate the qualifications and conduct of professional engineers and to regulate corporations, partnerships and limited liability partnerships which supply professional engineering services in Singapore</p>	<p>REPUBLIC ACT NO. 544* CIVIL ENGINEERING LAW Approved, June 17, 1950 (As amended by R.A. No. 1582, approved on June 16, 1956).</p> <p>“civil engineer” as used in this act shall mean a person duly registered with the Board for Civil Engineers in the manner as hereinafter provided.</p>

Figure 5. Engineering Act

Figure 5 shown that Indonesia most recently enacted legislation on Engineering (2014). compare with Malaysia , 1967, Singapore, 1991, and Philippines, 1956.

INDONESIA		
<ol style="list-style-type: none"> 1) To achieve the goal of setting engineering, established the Board of Engineers Indonesia. 2) Board of Engineers Indonesia.is responsible to the President. 3) Board of Engineers Indonesia.based in the capital city of the Republic Indonesia. 		
MALAYSIA	SINGAPORE	PHILIPPINES
<p>For the purposes of this Act there is hereby established a board to be called "Board of Engineers" which shall be a body corporate with perpetual succession and a common seal and which may sue and be sued.</p>	<p>There shall be established in Singapore a body to be called the Professional Engineers Board which shall be a body corporate with perpetual succession and a common seal, with power, subject to the provisions of this Act, to sue and be sued in its corporate name, to acquire and dispose of property, both movable and immovable, and to do and perform such other acts as bodies corporate may by law perform</p>	<p>For the purposes of this Act there is hereby established a board to be called Board for Civil Engineers that shall be created a Board of Examiners for Civil Engineers,</p>

Figure 6. Board of Engineers

INDONESIA	
<ul style="list-style-type: none"> a. establish a registration system policy engineers; b. Proposed for Engineers Profession Program Standard c. establish standards for continuing professional development d. to supervise the implementation of engineering practice; 	<ul style="list-style-type: none"> e. establish policies for system Competency Examination; f. establish engineers competency; g. perform engineering international cooperation agreements h. ratify international engineering cooperation agreement
MALAYSIA	SINGAPORE
<ul style="list-style-type: none"> a) to keep and maintain the Register; b) to approve or reject applications for registration under this Act c) to order the issuance of a written warning or reprimand, the imposition of a fine, suspension, cancellation, removal or reinstatement d) to fix from time to time with the approval of the Minister the scale of fees to be charged by registered Engineers and Engineering consultancy practices for professional engineering services rendered; e) to hear and determine disputes relating to professional conduct f) to determine and regulate the conduct and ethics of the engineering profession; and 	<ul style="list-style-type: none"> (a) to keep and maintain a register of professional engineers, practitioners and licensees; (b) to arrange examinations for the purpose of enabling persons to qualify for registration under this Act; (c) to approve or reject applications for registration under this Act; (d) to establish and maintain standards of professional conduct and ethics of the engineering profession; (e) to promote learning and education in connection with engineering (f) to hear and determine disputes relating to professional conduct (g) to license corporations, partnerships and limited liability partnerships
PHILIPPINES	<ul style="list-style-type: none"> a) to administer oaths, b) issue, suspend and revoke certificates of registration c) to investigate violations of this Act d) to inspect educational institutions offering courses in civil engineering, civil engineering works, projects or corporations, for safeguarding of life, health and property, e) To discharge other powers as may affect ethical and technological standards of the civil engineering profession in the Philippines. f) The Board may, with the approval of the Professional Regulation Commission issue such rules and regulations as may be deemed necessary to carry out the provisions of this Act.

Figure 7 Function of the Board

INDONESIA	
<ul style="list-style-type: none"> 1) To obtain a professional degree Engineers, a person must pass from the Professional Program Engineer. 2) graduate professional education program entitled to a certificate of professional Engineers and recorded by PII 3) Engineers professional title abbreviated with "Ir." imprinted on the front and the name of the eligible carry it. 	<ul style="list-style-type: none"> 4) Pass competence examinations → Competence Engineers Certificate 5) Competence Engineers Certificate → conditions for obtaining Engineers Registration Certificate 6) Engineers Registration Certificate (by Institution of Engineers Indonesia) → requirement to perform engineering practice in Indonesia
MALAYSIA	SINGAPORE
<ul style="list-style-type: none"> a) practise, carry on business or take up employment which requires him to carry out or perform professional engineering services; be entitled to describe himself <ul style="list-style-type: none"> • using the abbreviation "Ir." before his name or • the abbreviation "P.Eng." after his name; b) use or display any sign, board, card or other device representing or implying that he is a Professional Engineer; (c) be entitled to recover in any court any fee, charge, remuneration or other form of consideration for any professional engineering services 	<p>Subject to the provisions of this Act, the person is a registered professional engineer, shall use verbally or otherwise</p> <ul style="list-style-type: none"> (a) the words "professional engineer" or any additions to or abbreviation or derivative of those words in connection with his designation; (b) the word "engineer" or the abbreviation "Er." or "Engr." as a title before his name; or (c) any word, name or designation that will lead to the belief that the person is a registered professional engineer,
PHILIPPINES	<p>All successful candidates in the examination shall be required to take a professional oath before the Board of Civil Engineers or other Government Officials authorized to administer oaths, prior to entering upon the practice of the civil engineering profession</p>

Figure 8 Professional Engineer

INDONESIA		
<p>1) Foreign engineers who perform engineering practice in Indonesia must have a work permit foreign labor.</p> <p>2) To obtain a work permit Foreign Engineers must have a letter of Registration Engineers by PII or certificate of competency Engineers according to national law.</p>	<p>3) Foreign engineers are required to transfer knowledge and technology.</p> <p>4) Supervision of the implementation of the transfer of knowledge and technology implemented by the Board of Engineers Indonesia.</p>	
MALAYSIA	SINGAPORE	PHILIPPINES
<p>A foreign engineer may be considered for registration as a Temporary Engineer if he satisfies the Board that -</p> <p>(a) he possesses the necessary qualification which is recognised for the practice of engineering as a professional engineer in the country where he normally practises; and</p> <p>(b) he possesses the necessary expertise and his physical presence is required in Malaysia for not less than one hundred and eighty days in one calendar year or he is a resident representative of the foreign component of a joint venture.</p>	<p>Every person registered as a professional engineer under this Act shall, on payment of the prescribed fee, be entitled to receive a certificate of registration under the hand of the Registrar</p>	<p>No person who is not a citizen of the Philippines at the time he applies to take the examination shall be allowed to take it unless he can prove in the manner provided by the Rules of Court that, by specific provision of law, the country of which he is a citizen, subject, or national either admits citizens of the Philippines to the practice of the same profession without restriction or allows them to practice it after an examination on terms of strict and absolute equality with citizens, subjects, or nationals of the country concerned</p>

Figure 9 Foreign Engineers

INDONESIA		
<p>1) Engineering users are those who use the services of engineers based on a work relationship.</p> <p>2) Engineering users afforded protection from malpractice engineering through competence and quality assurance engineers working;</p>	<p>3) Engineers obliged complete the work in accordance with agreements with engineering user;</p> <p>4) Engineering users are entitled to legal protection as consumers of services and the results of engineering activities</p>	
MALAYSIA	SINGAPORE	PHILIPPINES
<p>(1) a sole proprietorship, partnership or body corporate may practise as an Engineering consultancy practice, if it is registered with the Board as an Engineering consultancy practice and has been issued with a certificate of registration.</p> <p>(2) Every application by a sole proprietorship, partnership or body corporate for registration as an Engineering consultancy practice shall be made to the Board in the prescribed form and manner and shall be accompanied by the prescribed fee.</p>	<p>1) professional engineering services" means consultancy or advisory services that require a person to engage in professional engineering work;</p> <p>2) Subject to the provisions of this Act, the Board may grant a licence to any limited corporation to supply any professional engineering services in Singapore</p>	<p>The practice of civil engineering is a professional service, admission to which must be determined upon individual, personal qualifications. Hence, no firm, partnership, corporation or association may be registered or licensed as such for the practice of civil engineering:</p> <p>That persons properly registered and licensed as civil engineers may, among themselves or with a person or persons properly registered and licensed as architects, form, and obtain registration of, a firm, partnership or association using the term "Engineers" or "Engineers and Architects."</p>

Figure 10 . Engineering consultancy practice

5. Conclusion

The study show there are two stages of examinations and three standards in the certification procedure. The examinations are professional examinations and competence examinations. Professional examinations held in the Professional Engineers Program while competence examinations organize by Professional Certification Body. The standard that used are the Engineers Service Standard, Engineers Competency Standard, and Engineers Professional Program Standard. All of these standards underlying the certification engineering procedure. Institutions directly involved in the certification process are the Board of Engineers Indonesia, Higher Education that organizer Professional Engineers Program, Professional Certification Body, and The Institution of Engineers Indonesia.

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