

BACKGROUND TO THE PROFESSIONAL COMPETENCY EXAMINATIONS

Is there a need ?

Board of Engineers Malaysia (BEM)



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Competency Examinations

Is there a need ?

Defining Professional Competence

Abstract from “Professional Competence Evaluation” by McGaghie

Professionals are individuals who use technical or specialized knowledge and skill in service of public welfare. The importance of evaluating the competence of professionals is to receive assurance that the services delivered by professional persons are effective and safe.

“Defining & Assessing Professional Competence” by Epstein, MD et.al.

Professional competence is the habitual and judicious use of communication, knowledge, skills, clinical reasoning, emotions, values and reflection in daily practice for the benefit of the individual and community being served. Competence builds on a foundation of basic clinical skills, scientific knowledge and moral development.

Competency covers many other professions in particular the medical profession where there is direct life & death issue

What are the Attributes of a “Competent” Professional Engineer ?

- (1) The P.E. registration with BEM allows the Engineer to be the Submitting/Qualified Person under the Street & Drainage Act. Is the P.E. then a ‘Competent Engineer’ ?**
- (2) With the P.E. registration the engineer can set-up an Engineering Consultancy Practice registered with BEM within 3-4 years. Has the P.E. sufficient general engineering experience ?**
- (3) How many Professional Engineers in practice understands the concept of duty, care and due diligence to the Public and Client ?**
- (4) Does the previous work of the Professional Engineer demonstrate adequate competence to handle the work under question ?**
- (5) Has the Professional Engineer a reputation of outstanding integrity and honesty ?**
- (6) What is the Professional Engineer’s standing in the profession and his reputation with his Clients ?**

Such questions regularly “crops-up” when competency

Failures in the Building/Construction Industry

Such high profile failures do not abide well

Bukit Antarabangsa – Hill slope collapse

6th December 2008



**BUKIT ANTARABANGSA
LANDSLIDE**

Jaya Supermarket – Structure collapse during demolition

28th May 2009



JAYA SUPERMARKET
COLLAPSE

Gong Badak Stadium – Roof collapse

2nd June 2009

GONG
BADAK
STADIUM
ROOF
COLLAPSE



STATEMENTS FROM PUBLIC FIGURES HAVE BEEN UNFORGIVING

The Minister of Work's Y.B. Dato' Shaziman statement to the public after the collapse of the roof at Kuala Trengganu stadium and the Jaya Supermarket collapse during demolition works

Quote “Bangunan lama pun roboh, bangunan baru pun roboh dan bangunan nak diroboh pun roboh” **Unquote** should be in the annals of engineering.

Even Tan Sri Lee Lam Thye in his statement to the press has this to say after many incidents in the construction industry

Quote “it raises many questions concerning the professional conduct of the various parties involved in construction” and “there must be a moral reawakening in the building industry”.
Unquote

Are these engineering failures avoidable or are they “An Act of God” ?

PUBLIC OUTRAGE WAS SELF-EVIDENT ON THE CAUSE OF THE COLLAPSE !!!



Due to Ultraman wannabes ?

Or due to Ultraman himself ?



Cynicism was the order of the day

WITHER PROFESSIONALISM

The Collapse of Professionalism

New Straits Times 4th. June 2009

The Professional Engineer



Where is Professionalism Heading?

New Straits Times

4th. June 2009

Quote “.... we also loose a little more of the trust that we still have for the expertise and ethics of the architects and engineers. It is time for the professional associations and the statutory bodies to step up and act on any failure to carry out their duties with due care and diligence in accordance with the laws and ethics that govern their professions.” Unquote

A Review of BEM's Current Registration

Lets get back to the basics.....

Current Regulatory Regime

LAWS OF MALAYSIA

ACT 138

REGISTRATION OF ENGINEERS ACT 1967 (REVISED - 1974)

Incorporating latest amendment - Act A1158/2002

First enacted :	1967 (Act No. 66 of 1967)
Date of coming into operation :	23rd August 1972 [P.U (A) 253/72]
Revised up to :	1974 (Act 138 w.e.f. 1st July 1974)

Long Title

An Act to provide for the registration of engineers, and sole proprietorships, partnerships and bodies corporate providing professional engineering services and for purpose connected therewith.



[Am. Act A1158:s.2]

What is the purpose ?

Current Regulatory Regime

ACT 138

REGISTRATION OF ENGINEERS ACT 1967 (REVISED - 1974)

Incorporating latest amendment - Act A1158/2002

Section 2. Interpretation.

“professional engineering services” means engineering services and advice in connection with any feasibility study, planning survey, design, construction, commissioning, operation, maintenance and management of engineering works or projects and includes any other engineering services approved by the Board;

CONCLUSION

The Act essentially regulates engineers practicing in the building and construction industry.



Current Regulatory Regime

WHAT IS THE BUILDING INDUSTRY ?



STREET, DRAINAGE AND BUILDING ACT 1974 ACT 133

Preamble

An Act to amend and consolidate the laws relating to street, drainage and building in local authority areas in West Malaysia, and for purposes connected therewith.

Similar building laws exists in Sabah & Sarawak

Current Regulatory Regime

STREET, DRAINAGE AND BUILDING ACT 1974 ACT 133

Part I, 3. Interpretation

"principal submitting person" means a qualified person who submits building plans to the local authority for approval in accordance with this Act or any by-laws made thereunder and includes any other qualified person who takes over the duties and responsibilities of or acts for the first mentioned qualified person;

"qualified person" means a Professional Architect, Professional Engineer or building draughtsman registered under any written law relating to the registration thereof;

"submitting person" means a qualified person who submits plans other than building plans to the local authority or relevant statutory authority in accordance with this Act or any by-laws made thereunder and includes any other qualified person who takes over the duties and responsibilities of or acts for the first mentioned qualified person;

Current Regulatory Regime

STREET, DRAINAGE AND BUILDING ACT 1974 ACT 133

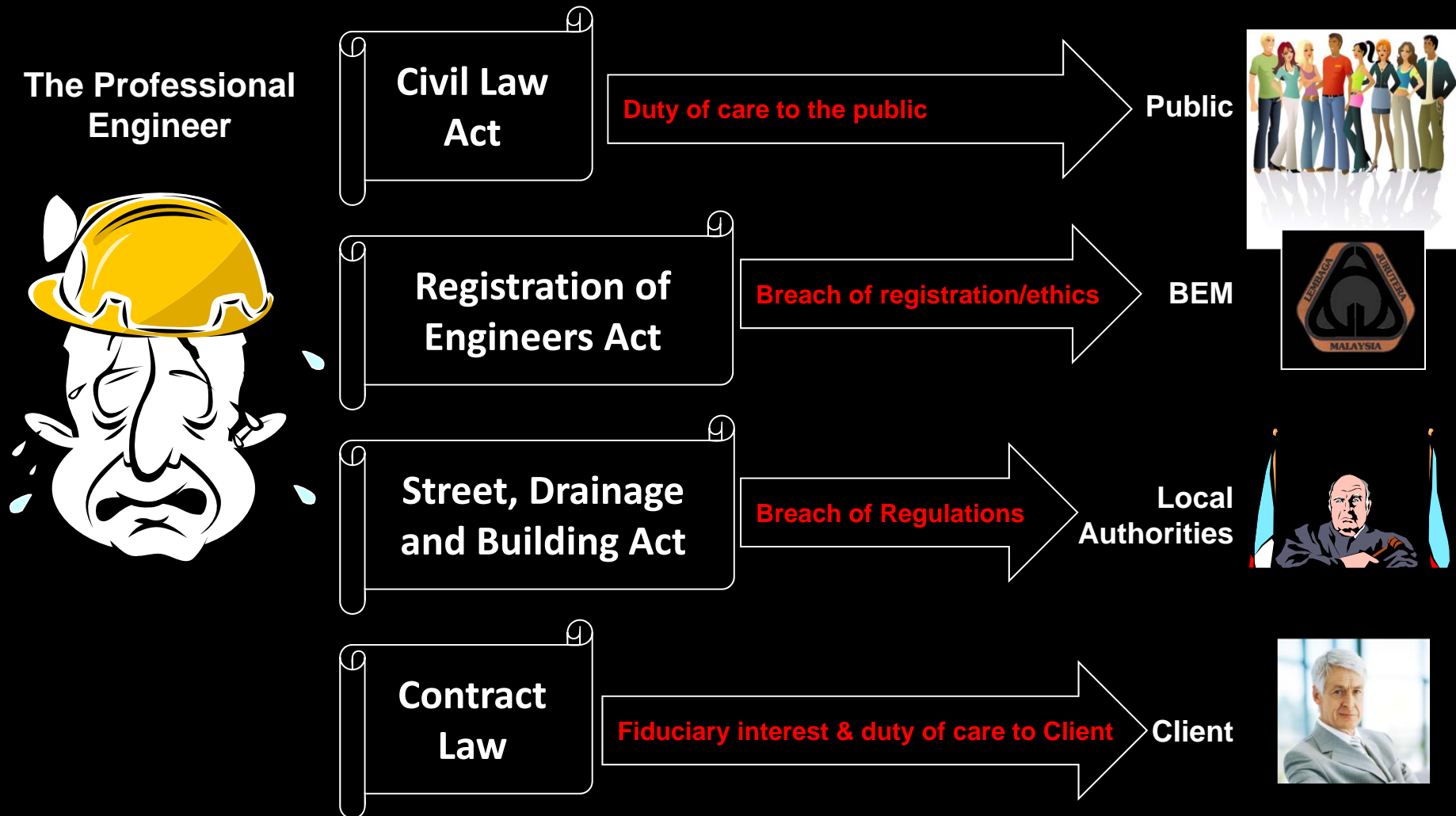
CONCLUSION

Only Professional Engineers registered with the Board of Engineers (BEM) are allowed to submit plans under the “Street, Drainage and Building ACT”



Such registration is necessary when the activities of engineers in the building & construction industry has a direct impact & are critical to public safety and interest.

The responsibilities of a Professional Engineer



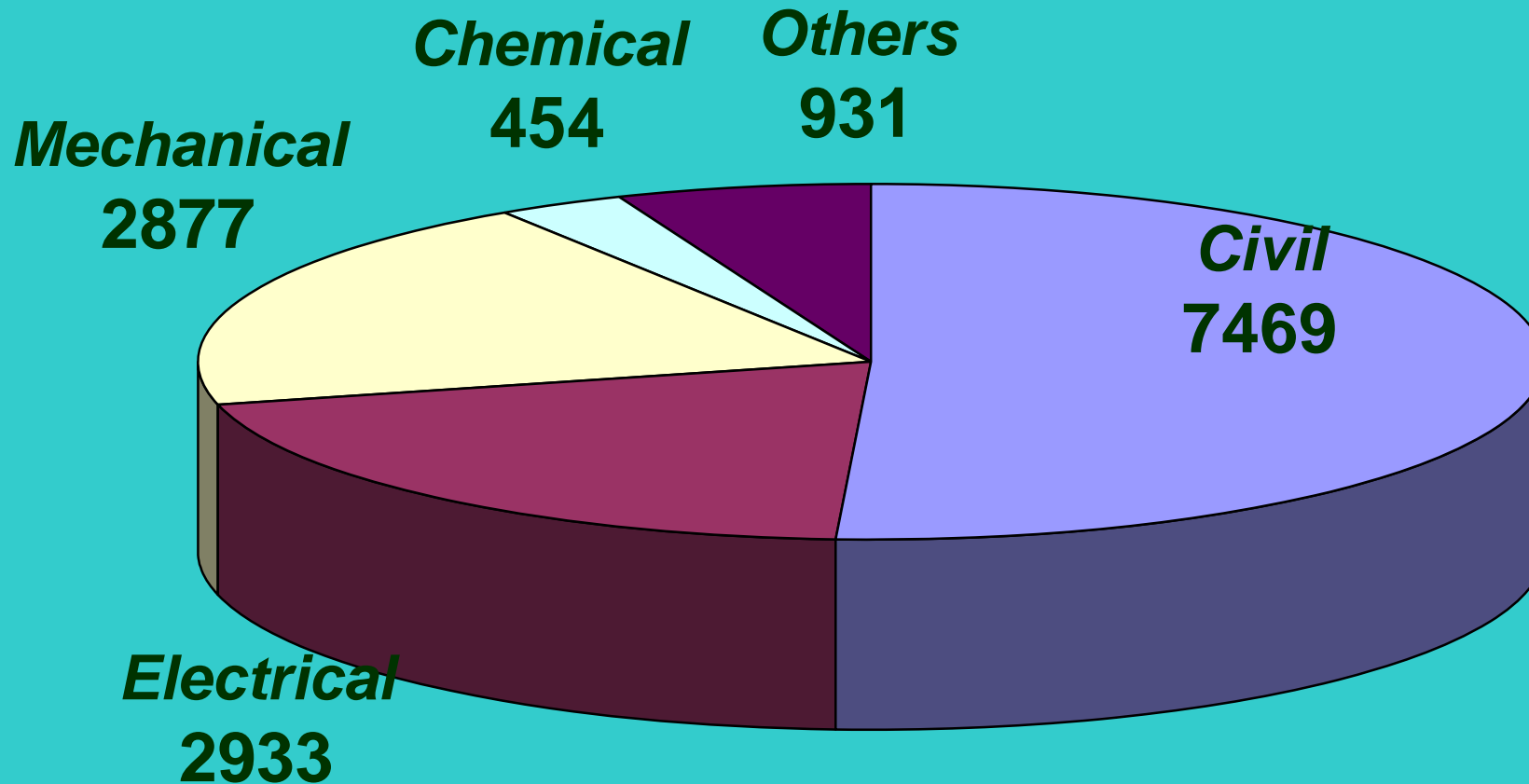
How many professional engineers understands the above concepts

How many engineers are registered

Many do & many don't

Composition of Professional Engineers

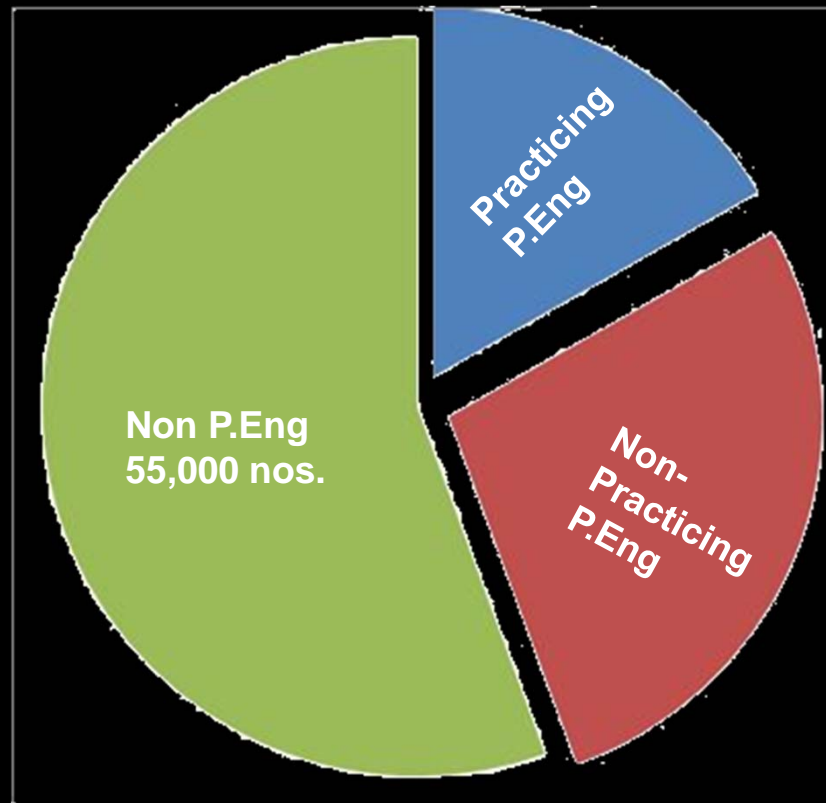
Registered Professional Engineers By Discipline



■ Civil ■ Electrical ■ Mechanical ■ Chemical ■ Others

How many Professional Engineers are in the Building/Construction Industry ?

The Engineering Profession has the largest register of professionals.



- Approx. 70,000 registered engineers.
- Approx. 15,000 are Professional Engineers.
- Many of the Professional Engineers are in academia, research, production, industry, maintenance etc.
- No data on how many Professional Engineers are “practicing engineers” in the building/construction industry.
- Estimated that there 2,000 to 3,000 Professional Engineers act as the Submitting or Qualified Person under the Building Laws.

BEM registers engineers in every engineering discipline

Registration with BEM as a Professional Engineer

The Professional Assessment Examination (PAE)

BEM

The Professional Assessment Examination allows a substantial body of engineers in research, teaching, maintenance and production engineering to qualify as a P.E.



Registration as P.Eng - BEM



BEM

BEM allows registration of engineers in research, teaching, maintenance and production engineering to qualify as Professional Engineer.



CONCLUSION

A substantial body of Professional Engineers exist who are NOT involved in the building industry BUT are allowed to submit plans under the “Street, Drainage and Building ACT”

Registration as an Engineer with BEM requires Declarations

- For Form A – Graduate Engineers
“ I agree to abide by the Registration of Engineers Regulations 1990, including the Code of Professional Conduct.”
- Form B1 – Professional Engineers
“ I am a Graduate Engineer, have undergone the prescribed practical experience, am a MIEM/have passed the PAE and have complied with all the requirements of the Board”
“I agree to abide by the Registration of Engineers Regulations 1990, including the Code of Professional Conduct”
- Form E – Engineering Consultancy Practice
Submission of Statutory Declaration of sole proprietor/all partner in the partnership/all directors and shareholders in the body corporate.
- The above two declarations in Form A & B1 are almost equivalent to a Statutory Declaration and each form has a WARNING at the end on PENALTY

The Engineer accepts a specific code of conduct & ethics

So you are A Registered Engineer !

RECOGNISED IN LAW AS A PROFESSIONAL BUT ALSO IMPLY RESPONSIBILITIES, OBLIGATIONS AND LIABILITIES BETWEEN PARTIES TO AN AGREEMENT!



BENEFITS



**OBLIGATIONS &
LIABILITIES**

..... and as the Qualified Person undertake various Declarations under various Building Laws

STREET, DRAINAGE AND BUILDING ACT; UNIFORM BUILDING BY-LAW

Some standard declarations required by local authorities

Tandatangan Jurutera

Saya memperakui bahawa perincian dalam pelan pelan ini adalah menurut kehendak kehendak Undang Undang Kecil Bangunan 1985 dan saya terima tanggungjawab penuh dengan sewajarnya.

Tandatangan Jurutera

I hereby to the best of my knowledge, certify that the following systems conform to the requirements of the Uniform Building By-Laws and other relevant standards and codes of practice specified by the Director General of Fire Services & Rescue Department, Malaysia:

<u>Systems</u>	<u>Standards</u>	<u>System Certified</u>
Sprinkler	CIFS/LPC	<input type="checkbox"/>
Hose Reel	BS 5306 : Part 1	<input type="checkbox"/>
Wet/Dry Riser	BS 5306 : Part 1	<input type="checkbox"/>
Fire Alarm	BS 5446 : 3116/CP 1019	<input type="checkbox"/>
CO2	NFPA 12	<input type="checkbox"/>
Fire Extinguishers	BSCP - 402 : Part 3	<input type="checkbox"/>
Down Comer	BS 5306	<input type="checkbox"/>
Wet Chemical	NFPA 17A	<input type="checkbox"/>
Smoke Detector	BS 5305 : Part 7	<input type="checkbox"/>
Heat Detector	BS 5445 : Part 5	<input type="checkbox"/>

BEM receives many complaints

In the Building & Construction industry

Complaints are mainly confined to the Building & Construction Industry

Over 200 complaints were made to BEM over a period from 2009 to 2011 from

- * Members of the public & individuals
- * Non-governmental organizations eg. Residents Associations
- * Government organizations eg. JKR, LLM, Local authorities
- * Private companies eg. IWK, Water authorities
- * House buyers
- * Employers & Contractors
- * Fellow Engineers

The most common type of complaints may be categorized as follows;

- * Contractual cases – Eg. Lack of supervision
- * Violation of the Act - Eg. Taking over the work of another Engineer without L.O.R.
- * Negligence cases – Eg. Design flaws

Responsibility & Accountability of Stakeholders in the Construction Industry

Types of Failures

- * Building failure of all public building involving structures or services
- * Building failure of other building/structure involving life or injury to human
- * Construction site incidence involving human injury or loss of life
- * Serviceability problem of buildings which creates nuisance and interruption to users of public buildings (internal pipe burst, leaks etc.)

Causes of Failures by Stakeholders

Contractor: 42%

Engineers: 37%

The rest by Developers, Land Office, Supervisor, Architect and Planner

Such statistics can be alarming

Linkway Bridge Collapse at Shah Alam

This case which appears in BEM Bulletin is the deregistration of an Engineer because of a collapse of a linkway bridge at Shah Alam causing a fatal accident. The Engineer was charged and found guilty by the Board.

There are five(5) charges against the Engineer;

- (1) Failed to exercise any or adequate care to ensure that the design of the said linkway bridge was in accordance with good engineering practice.
- (2) Failed to carry out any or adequate periodic inspections of the construction works and to check whether the works were executed in accordance to good engineering practice.
- (3) Failed to comply with UBBL by failure to supervise the works as the Qualified Person in submitting the drawings etc. to Majlis.
- (4) Failed to comply with UBBL by failing to discharge your responsibility as the Qualified Person.
- (5) Failed to take any adequate steps to ensure that the drawings are submitted to Majlis.

In all the five charges the statement '..... fail to have full and proper regard for the public interest ...' precedes it.

The Federal Court sets rule on discipline of professionals

The Highland Tower Case

- The Board has cancelled the registration of the Engineer involved.
- The Board came to the decision to cancel his registration at a hearing where three charges were brought against him;
 - (1) for assisting in the application of CF when the drainage system had not been completed
 - (2) for signing the infrastructure plans to obtain CF although he did not design or supervise the earthworks, retaining walls, road & drainage works
 - (3) for having failed to advise the possibility of a landslide and the design of the foundation do not cater for this
- This case was also brought to the Courts where the plaintiff seek redressed from the Consultant, Developers and Majlis.

Or the Highland Tower tragedy is now a distinct pass and is fading from our memories. Perhaps to some of us here but definitely not for the victims and for those directly affected

Gong Badak Stadium Roof Collapse

The independent panel set-up to investigate the cause of collapse prepared 3 volumes of the report. The Report was made public by the state Government of Trengganu.

The causes of collapse are:

- (1) The design was inadequate.
- (2) The roof was erected in an undesirable manner.
- (3) The design of the reinforced concrete supports has been compromised.
- (4) There was no quality control at site.
- (5) The engineers were working in isolation and uncoordinated.
- (6) The Project Management Team did not have the necessary skills.
etc. etc. etc.

Preventative recommendations:

- (1) The Project Manager, S.O. and his team for a complex project should be properly selected to reflect the **competency** required.
- (2) **All parties involved in design and construction should be aware of the law that governs engineering practice under the Registration of Engineers Act 1967.**
etc. etc. etc.

Although high profile cases receives the attention but there are many other failures that go unnoticed

Cogent reasons for a review

In Particular for Building & Construction industry

Unwarranted Publicity can be Minimized

The Professional Engineer must therefore understands that;

- Safety, health and welfare of the public is paramount.
- Understands the Registration of Engineers Act & Regulations as a basic minimum.
- Is fully proficient and aware of all local Building Acts and By-laws that governed the building/construction industry.
- Be proficient in engineering practice, standards, code of practice and procedures which he certify.
- Understands and is aware of the type and extent of technical standards which is applicable in local engineering practice.
- Perform only in areas of competence.
- Skills considered 'expert level' in yesteryears will become "normal practice" in present times. This requires engineers to have CPD in order to stay current in his practice.

Competency is a must to ensure proficiency in the above items

A Return to the Basics of P. Eng. Registration

The following issues require an **URGENT** reassessment of the current basis of Professional Engineer registration:

- * **THREE** major building failures within 12 months.
- * **AWARENESS** of 'duty of care' under torts.
- * **SELF-REGULATION** under Certificate of Completion & Compliance (C.C.C.) replacing the CFO.
- * **COMMITMENT** to liberalization under FTAs & the hazards to the public of sub-standard foreign imports.

A PROFESSIONAL COMPETENCY EXAM TO COMPLEMENT CURRENT PROFESSIONAL ASSESSMENT EXAM IS NECESSARY TO ADDRESS THE ISSUES OF:

- * **UPHOLDING** standards of professionalism.
- * **MINIMUM** standards of proficiency & competency in the building industry.
- * **SAFEGUARD** measure to protect the public against sub-standard foreign engineering service providers due liberalization

AMENDMENTS TO THE ENGINEERS' ACT TO ADDRESS THE COMPETENCY OF PROFESSIONAL ENGINEERS

1ST. TIER OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ASSESSMENT EXAMINATION (PAE) (Existing examination)

The PAE in a nutshell;

“This examination tests a candidate on what he knows and not what he does not know”.

2ND. TIER OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL COMPETENCY EXAMINATION (PCE)

The PCE is a new examination system to test the competency of professional engineers

“This examination tests a candidate on what he does not know and which he ought to know”.

PROFESSIONAL COMPETENCY EXAMINATION AS A SAFEGUARD MEASURE

**SAFEGUARD MEASURES ARE NECESSARY TO FACE THE
CHALLENGES OF LIBERALISATION!**

Why?

To ensure that local markets can withstand any debilitating effect from foreign markets.

Protect the public against hazards of sub standard foreign imports.

To ensure that local/national policies are not negatively affected e.g. local industries have sufficient safeguards.

To ensure that liberalization promotes growth as originally intended.

Safeguard measures by developed countries are even more comprehensive compared to developing countries

PROFESSIONAL COMPETENCY EXAMINATION AS A SAFEGUARD MEASURE

SAFEGUARD MEASURE

How?

Impose higher technical standards:

GATS & MRA; existing barriers to trade should be frozen on date of FTA, principles of liberalisation NOT retrogression then proceed from date of FTA.

e.g. if foreign imports of a certain product was allowed before FTA, instituting ban on foreign imports or even ban on any one member countries is not allowed after FTA

The fourth preamble to GATS recognises the right of Members to '*regulate and introduce national regulations on the services industry to meet national policy objectives and given asymmetries*'

e.g. impose higher technical standards (e.g. health, environment, safety etc.).

Establish Competency Exams for Professional Engineers wishing to submit plans under the 'S.D.B. ACT' and the UBBL

Establishment of the Professional Competency Examination

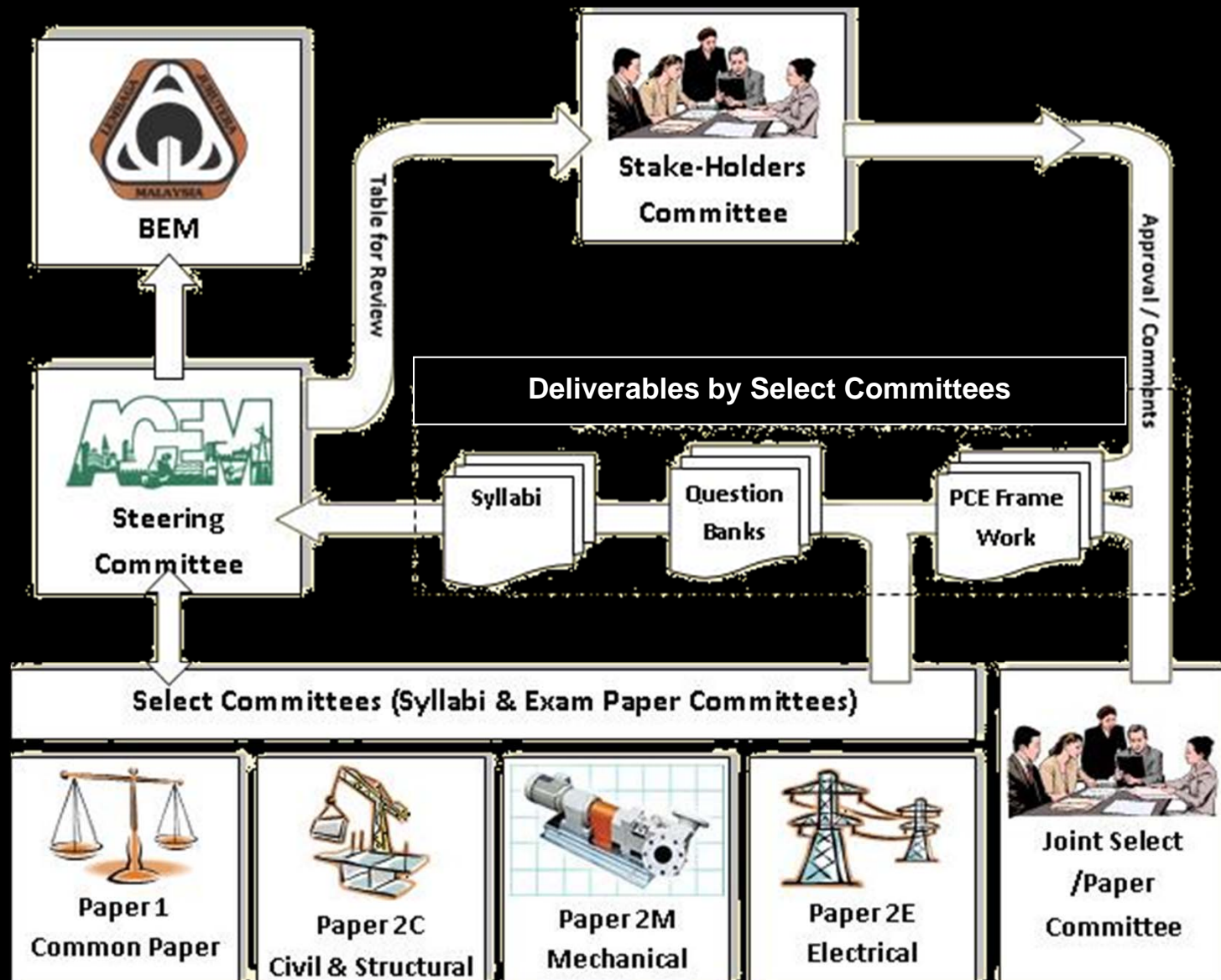
The beginning

TIMELINE FOR THE PROFESSIONAL COMPETENCY EXAMINATION

TIME LINE

- 2003 Board of Engineers Malaysia proposes a review of engineer's registration procedure by establishing competency exam.
- 2007 Working Group of the Engineers Act Committee of BEM recommends a two tier registration. For those wishing to practice Licensing is necessary.
- 2008 Association of Consulting Engineers Malaysia (ACEM) proposes to BEM "Framework and Action Plan" for establishing the Professional Competency Exam.
- 2009 BEM agrees with ACEM proposal and request work to establish the Professional Competency Exam. MIDA awarded grant to ACEM for establishing the Professional Competency Exam.
- 2010 ACEM completed the work on the Professional Competency Exam and submitted to BEM.
- 2012 BEM setup subcommittee to operationalize the Professional Competency Exam as required under the amendments to the REA.

COMMITTEES FORMED TO WORK ON THE PROFESSIONAL COMPETENCY EXAM DURING THE INITIAL STAGE



MEMBERS OF THE STAKE HOLDERS COMMITTEE

Comprise stake holders impacted by the Professional Competency Exam

(Workshops were held to discuss the issues below)

Review and approved papers issued by working committees of the PCE:

- **Information security plan**
- **Syllabus for the various papers**
- **Format and difficulty levels of exam questions.**
- **Framework for establishing and PCE exam board**
- **Survey on existing laws and regulations**

Board of Engineers Malaysia

Jabatan Bomba & Penyelamat Malaysia.

Construction Industry Development Board Malaysia.

Jabatan Keselamatan & Kesihatan Pekerjaan.

Jabatan Kerja Raya Malaysia.

Jabatan Pengairan & Saliran Malaysia.

Kementerian Kerjaan Tempatan & Perumahan Sabah.

Kementerian Pembangunan Infrastruktur dan Perhubungan Sarawak

Kementerian Perumahan & Kerajaan Tempatan.

Suruhanjaya Perkhidmatan Air Negara, Suruhanjaya Tenaga.

Institution of Engineers Malaysia

ACEM Sabah Branch, ACEM Sarawak Branch

Case Study on Singapore – Competency Examination

CASE STUDY - SINGAPORE

Professional Engineers Board Singapore (PEB)

Ministry of National Development



PEB IS VERY SPECIFIC ON THE TARGET GROUP OF ENGINEERS TO BE REGULATED:

As of 1st December 2001, the PEB, Singapore only accepts registration of Professional Engineers in the following prescribed branches of engineering:

- * Civil engineering
- * Electrical engineering
- * Mechanical engineering
- * such other branches of engineering as may be prescribed e.g. Geotechnical engineers

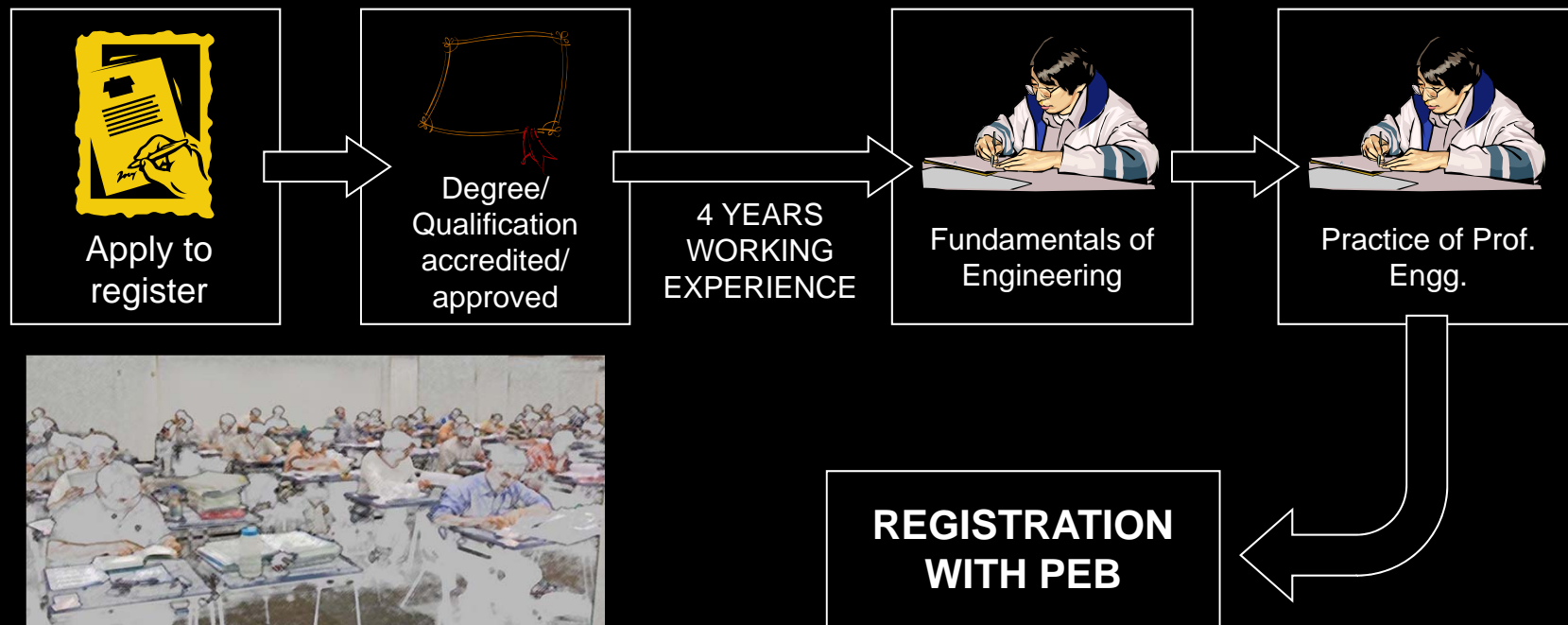
Generally engineers that have a direct impact on public safety i.e. the building and construction industry

Case Study on Singapore – Competency Examination

CASE STUDY – SINGAPORE'S PROFESSIONAL EXAMINATIONS

Professional Engineers Board Singapore

Ministry of National Development



Singapore's registration of engineers is a one tier system

Case Study on Singapore – Competency Examination

CASE STUDY - SINGAPORE

Professional Engineers Board Singapore

Ministry of National Development



PROFESSIONAL PRACTICE EXAMINATION COMPRISE OF 2 PAPERS.

Subjects	Time Allocated	Format
<u>PPE Part 1</u> Common paper	2 hours (9 am - 11 am)	<ul style="list-style-type: none">• Answer 10 compulsory Multiple Choice Questions• Answer 3 out of 5 essay questions
<u>PPE Part 2</u> Civil/mechanical/electrical engineering	4 hours (1 pm - 5 pm)	<ul style="list-style-type: none">• Answer 1 compulsory question plus 4 out of 6 questions (civil, electrical)• Answer 1 compulsory question plus 4 out of 7 questions (mechanical)

Case Study on Singapore – Competency Examination

CASE STUDY - SINGAPORE

Professional Engineers Board Singapore



PRACTICE OF PROFESSIONAL ENGINEERING COMPRISE OF 2 PAPERS - SYLLABI

Paper 1 (Common)	Paper 2 (Civil)	Paper 2 (Electrical)	Paper 2 (Mechanical)
Professional Engineers Act	URA Planning control handbook	Code of Practice CP2 (Lifts) up to CP97 (illumination)	Piped Services (Hot & Cold Water)
Code of Conduct	SCDF Fire Codes/Practice	Power supplies & tariffs	ACMV
Professional Engineers Rules	LTS, rapid transit, railway zones, streets, parking etc	Protection for safety, Cables, Earthing,	Fire Services
Past Disciplinary Actions	NEA, CP environmental health, pollution control	Lightning Protection, Emergency Lights,	Lift & Hoisting Systems, Other Mech. Systems,
	PUB, CP drainage, sewage	Generators,	Energy Conservation,
	Nparks, Guidelines	Fire Alarm,	Relevant CPs, Standards
	BCA, Buildable Design, NPQS,	Emergency Voice System	All relevant Spore CPs and Standards.
	Civil eng'g CP & Standards	Testing & Commissioning	

Framework for the Professional Competency Examination

To suit Malaysia's requirements

What is the correct model ?

Board of Engineers Malaysia – Current Registration Practice



Weakness of System:

- * Engineers in all sectors are registered. It does not differentiate the building sub sector from other engineering sectors.
- * Engineers whether in teaching, research, industry once registered as P.E. are allowed to submit plans under the 'S.D.B. Act' and the UBBL. They may not be sufficiently aware of their obligations.
- * Even engineers in the building sector may not be sufficiently bench-marked to ascertain their proficiency in the issues of the building sector.

An Engineer who has designed drainage all his life is entitle for the P.E. (Civil) after which he can submit plans for a multi-storey building. Is he Competent ?

A Two-Tier Registration of Professional Engineers ?

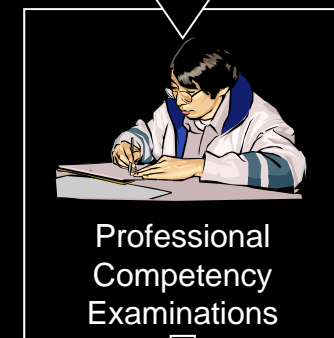
Board of Engineers Malaysia – Model for Professional Competency Exam

EXISTING PROFESSIONAL ASSESSMENT EXAMINATION RETAINED.



Model for P.C.E. – Advantages

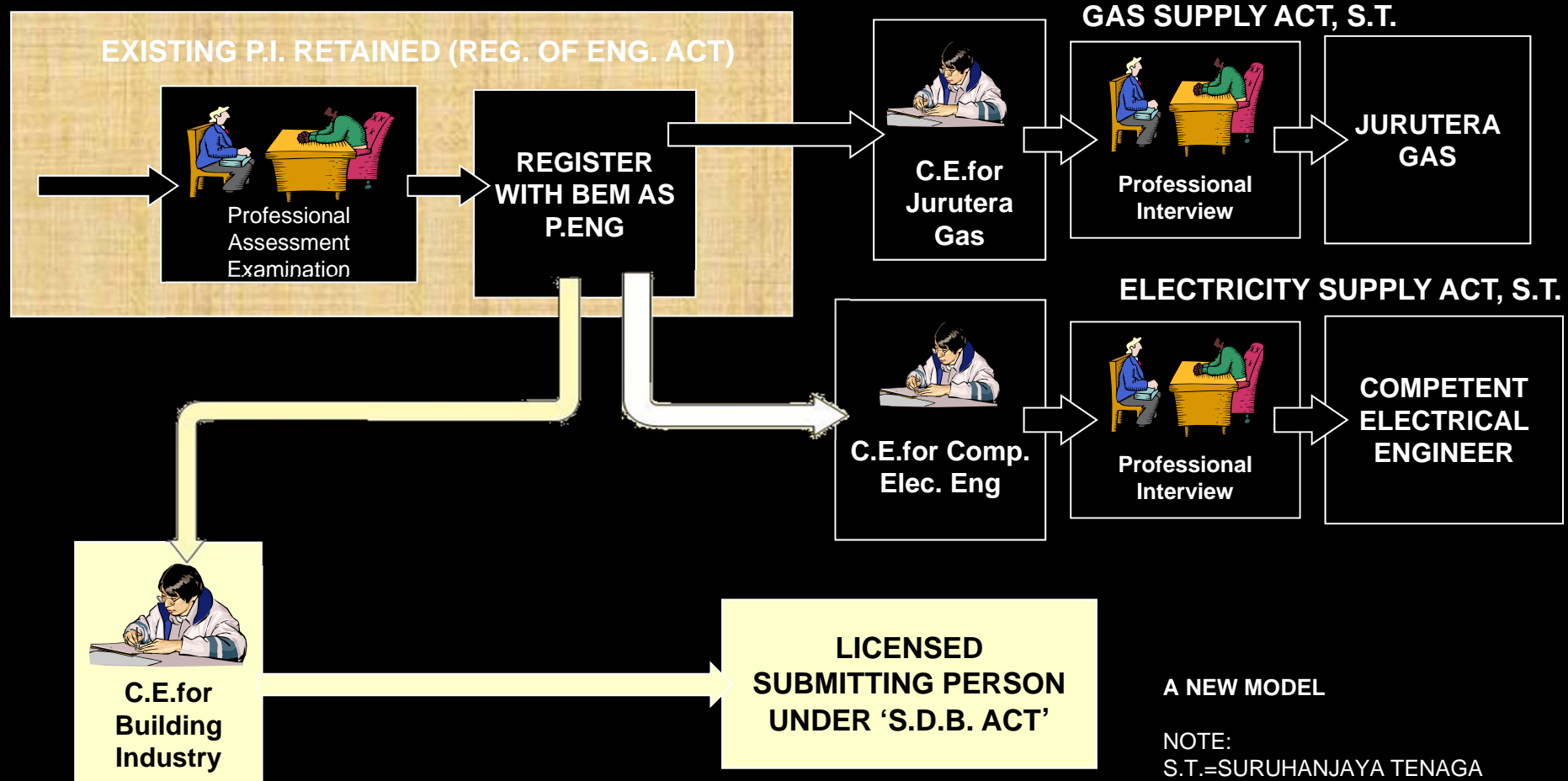
- * Existing Professional Assessment Examination and P.Eng registration to be retained. This will allow ALL categories of engineers to be registered as P.Eng.
- * The role of BEM is NOT reduced.
- * Flexibility to allow for licensing of specific sector, e.g. current registration under 'Gas Supply Act'.



LICENSED TO SUBMIT
PLANS UNDER 'S.D.B.
ACT'

A Two-Tier Registration of Professional Engineers ?

Board of Engineers Malaysia – Model for Professional Competency Exam



.... and complements other Competency Examinations

Electricity Supply Regulations

Regulation 47. Eligibility to become Competent Electrical Engineer:

(1) A person, in order to be considered eligible to sit for the examination for a Certificate of Competency as a Competent Electrical Engineer, shall satisfy the Commission that he complies with the following conditions:



(a) that he is a Malaysian citizen;

(b) holds an accredited Degree;

(c) is a P.Eng (electrical) engineering registered with the Board of Engineers;

(d) has not less than five years working experience in an environment where electrical equipment is in operation and has had experience of controlling live equipment;

(e) able to speak and write in the national language; and

(f) able to comply with any other conditions as the Board deems necessary.

.... and complements other Competency Examinations

Gas Supply Regulations

Regulation 97. Eligibility to become a Gas Engineer:

Certificate of Competency as a Gas Engineer And Gas Engineering Supervisor

97. Eligibility to become a Gas Engineer.

(1) In order to be considered eligible to sit for the examination for Certificate of Competency as a Gas Engineer, a person shall satisfy the Panel that he complies with the following conditions:

(a) that he is a Malaysian citizen;

(b) that he holds a degree or qualification equivalent to a degree in gas, mechanical, civil, chemical, petroleum, fuel, electrical, mining, industrial or production engineering from a recognised university or institution or any engineering degree recognised by the DG;

(c) that he is a Professional Engineer registered with the Board of Engineers;

(d) that he has not less than two years working experience in gas pipeline or gas installation work;

(e) that he is able to speak and write in the national language; and

(f) any other conditions as the Panel deems necessary.

Format of BEM's Professional Competency Examination

Preliminary Syllabus

Common Paper	Civil & Structural	Mechanical	Electrical
Professionalism	Regulatory Practice	Regulatory Practice	Regulatory Practice
Code of conduct	Geotechnical	Air Conditioning	Public Network
Professional Torts	Foundations	Fire Fighting	LV Distribution
Contract Law	Earth Work	Plumbing	PQ & EMC
UBBL	Structure	Sanitary/Waste	Lightning Protection
Regulatory Practice	Water Supply	Lifts/Escalators	Fire Protection
	Drainage	MS1525	Voice & Data Net
	Sewerage		Energy Efficiency
	Roads		Protection
			MV Equipment
			Lighting

And on to the details of the Professional
Competency Examination

THANK YOU