Engineers PEI Engineering Competencies

CBA Competency Interpretation Statements

Competency Description	Engineers PEI Interpretation
Engineering : Category 1 – Technical Competence Minimum category rating: 3.0	
1.1 **Regulations, Codes & Standards**	
Demonstrate your knowledge and awareness of Canadian regulations, codes and standards. This includes local engineering procedure and practices as applicable	Candidate to provide an example that cites specific regulations, codes or standards and how it impacted their engineering work. Saying "I was familiar with **PEIs** XXXX legislation, regulations and codes in this engineering project…is not sufficient. Does the example: • Reference a Canadian regulation/code/standard? • Cite a specific section of regulation/code/standard? • Explain how a specific regulation/code/standard affected or was impacted by the application of **engineering principles**?
1.2 Project & Design Constraints	
Demonstrate your knowledge of materials, or operations as appropriate project and design constraints, design to best fir the purpose or service intended and address inter-disciplinary impacts	Candidate to provide an example that identifies a technical constraint that affected their engineering design/work and how they managed that constraint. Does the example: • Clearly specify what the constraint was? • Show how the situation required the application of **engineering principles** to manage the constraint?
1.3 Risk Identification & Mitigation	
Analyze technical risks and offer solutions to mitigate the risk.	Candidate to provide an example that clearly identifies a technical risk and how they mitigated it using **engineering knowledge**. Does the example: • Describe a technical risk (i.e. related to the application of engineering principles)? • Clearly explain the identified risk? • Demonstrate the application of **engineering principles** to identify or mitigate the risk?

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1.4 Application of Theory	
Apply engineering knowledge to design solutions.	Candidate to provide an example that specifies the engineering theory used and how they applied it to solve a problem. Saying "I used structural design principles to . . ." is too general. Ensure the example rises to a level of 'moderately complex' (a '3' rating). Does the example: • Identify a specific **engineering theory** that was used? • Verify the theory was applied to a problem of 'moderate complexity' in the application of engineering principles?
1.5 Solution Techniques	
Be able to understand solution techniques and independently verify the results.	Candidate to provide an example that explicitly identifies which solution technique they used. The most common example type is using engineering software to model a problem and then verifying the model output (e.g. by hand calculations, measurements, etc.). If using a software model, ensure it requires engineering knowledge to arrive at a result – simply filling in an on-line tool for example, is not sufficient. The solution or the independent verification must involve the application of **engineering principles**. Does the example: • Specify a solution technique (e.g. software modelling)? • Demonstrate how the technique was used on an engineering problem? • Show how the candidate independently verified the results? Note: There can be a supervisor reviewing their work.
1.6 Safety Awareness	
Demonstrate your knowledge and awareness of Canadian regulations, codes and standards pertaining to safety.	Candidate to provide an example that relates an engineering problem to a safety issue or demonstrates how they used engineering to address safety regulations/guidelines. They should ensure the example is specific on which safety guidelines was used. Participating in general safety activities such as OHS training, confined space training, morning safety meetings are not acceptable examples because they do not involve applying **engineering principles**. Does the example: • Refer to a specific safety guideline or regulation that impacted the candidate's **engineering work**? • Show how the candidate incorporated the safety guidelines or regulations in their design (e.g.)? • Demonstrate the application of engineering principles (isn't just following standard safety procedures)?

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1.7 Systems & Their Components	
Demonstrate understanding of systems as well as of components of systems.	Candidate to provide an example that demonstrates that they understand the engineering aspects of each system component and how these components were inter-related in the system. They should be specific on demonstrating their understanding of the components. The candidate must demonstrate an understanding of **engineering principles** in either the overall system or in at least one of the components. Does the example: • Specify an engineering system with multiple components? • Demonstrate that the candidate is familiar with each individual component and their interactions within the system?
1.8 Project & Process Lifecycle	
Exposure to all stages of the process/project life cycle from concept and feasibility analysis through implementation.	Candidate to provide an example of project management **in an engineering context** where they were exposed to all stages of the project life cycle (initiation to closing). Relate the example to a specific **engineering project**. Does the example: • Relate to an engineering project (not just a project management example)? • Demonstrate exposure to most/all stages of the project life cycle (not just one or two stages)?
1.9 Peer Review & Quality Control 	
Demonstrate your understanding of the role of peer review and quality management that is essential to engineering practice in Canada.	Candidate to provide an example that addresses both aspects of this competency – peer review and quality control. Showing development or participation in quality control planning and monitoring is important. They should relate quality control to specific Canadian quality standards. Does the example: • Cite specific QA/QC procedures the candidate developed or followed to undertake engineering work? • Demonstrate the candidates' use of peer review in engineering work?
1.10 Engineering Documentation	
Transfer design intentions to drawings and sketches; Understand transmittal of design information to design documents.	Candidate to provide an example that shows that they developed design documents (from sketches or concepts) and understood how documentation moves through the documentation process (e.g. reviews, approvals, approved for construction, etc.). These design documents are typically drawings, but may take other forms, such as written technical descriptions. Does the example: • Demonstrate personal involvement in creating design documents? • Show an understanding of the documentation process?

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Engineering: Category 2 – Communication Minimum category rating: 3.0	
2.1 Oral Communication	
Demonstrate effective verbal communication with team members, clients, contractors, and members of the public in Canada's official languages (**English** or French).	Candidate to provide an example that describes a time they verbally conveyed technical information in English (the language of business in PEI) in an **engineering environment**. Examples that say 'I give project updates at regular meetings' are too general; they need to be specific on the purpose, content and audience of the presentations they provided. Did they create all the content or just some of it?
2.2 Writing	
Demonstrate your ability to communicate effectively in writing with team members, clients, contractors, and members of the public in Canada's official languages (English or French).	Candidate to provide an example that describes a time conveyed written technical information in in English (the language of business in Manitoba) in an **engineering environment**. They must ensure the **example is engineering related** and mentions specific examples of written documents.
2.3 Reading and Comprehension	
Demonstrate your ability to effectively review key documents in Canada's official languages (English or French).	Candidate to provide an example that describes a time they read and comprehended **engineering documents** in English (the language of business in PEI); simply reviewing contracts or project related documents may not be sufficient.
Engineering: Category 3 – Project and Financial Management Minimum category rating: 2.0	
3.1 Project Management Principles	
Awareness of project management principles.	Candidate to provide an example that shows they understand project management principles in an **engineering environment** (e.g. charter, scope development, execution, monitoring, etc.). They should also demonstrate an understanding of their purpose (e.g. why is scope important?). They shouldn't just list principles but relate them to specific work examples.
3.2 Level of Responsibility	
Demonstrate increasing level of responsibility for project planning and implementation.	Candidate to provide an example that demonstrates an increasing level of **engineering responsibility** over time. They should not simply list a set of current responsibilities as this doesn't demonstrate a change in responsibilities over time.

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3.3 Expectations vs Resources	
Manage expectations in light of available resources.	Candidate to provide an example that describes the expectations (e.g. deadlines, meeting technical specifications, etc.) and how they used their **engineering knowledge** to manage the expectations given the available resources. They should clearly identify the expectations and resources they were balancing.
3.4 Financial & Budgets	
Understand the financial aspects of their work.	Candidate to provide an example that demonstrates they have gained an understanding of financial aspects of their work. Simple calculations of materials costs (e.g.) are not sufficient. Providing evidence of a wider range of financial aspects (e.g. budgeting, estimating, cost monitoring, etc.) is required.
3.5 Response to Feedback	
Ask for and demonstrate response to feedback.	Candidate to provide an example that describes a time they received feedback on their **engineering work** (preferably technical) and how they responded to that feedback. Giving feedback to a contractor on their work (e.g.) doesn't address this competency.
4.1 Work Respectfully	
Work respectfully and with other disciplines/people.	Candidate to provide an example that demonstrates how they have worked with other disciplines/co-workers in their engineering work. They should provide a **specific engineering example (project)** that shows their interactions with others.
4.2 Resolve Differences	
Work to resolve differences.	Candidate to provide an example that describes a time they had to resolve a difference with a co-worker, contractor, etc. They should not use general examples of conflict management (e.g.?) but provide a real-life example where they had to resolve a difference. The difference should be related to an **engineering issue**.
Engineering: Category 5 – Professional Accountability Minimum overall category rating: 3.0	
5.1 Code of Ethics	
Demonstrate an awareness of your own scope of practice and limitations.	Candidate to provide an engineering example that relates a specific **engineering example** to an ethical principle they followed in the course of their work. To meet the requirement of "moderate experience" the example should demonstrate an ethics choice being made.

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5.2 Awareness of Limitations	
Demonstrate an awareness of your own scope of practice and limitations.	Candidate to provide an **engineering example** that demonstrates a time when they recognized their **engineering limitations** and describes how they resolved the issue.
5.3 Conflict of Interest	
Understand how conflict of interest affects your practice.	Candidate to provide an example that describes a time when they encountered a real or potential conflict of interest in an **engineering context**, how it could have affected their practice, and how they dealt with the situation. In cases where they don't have a specific real-life example, providing a hypothetical situation that could have occurred on a project is acceptable. They must understand the definition of 'conflict of interest'.
5.4 Professional Liability	
Demonstrate and awareness of professional accountability.	Candidate to provide an example that addresses both 'professional accountability' and 'liability' in an **engineering context**. What are the differences between accountability and liability? What impacts will be incurred if they or their company is found liable in an engineering situation?
5.5 Use of Stamp & Seal	
Demonstrate an understanding of appropriate use of the stamp and seal.	Candidate to provide an example that demonstrates their understanding of the proper use of the stamp/seal in an **engineering context**. Simply stating how to properly use the stamp and seal is not acceptable, they must include an understanding of why this is important.
5.6 Strengths & Weaknesses	
Understand own strengths/weaknesses and know how they apply to one's position.	Candidate to provide an example that demonstrates an understanding of their personal strengths and weaknesses (i.e. 'soft skills') and how they affect their engineering work. This competency does not ask for technical or engineering knowledge gaps; those items are covered in other sections.
Engineering: Category 6 – Social, Environmental and Sustainability Minimum overall category rating: 2.0	
6.1 Public Impacts & Safeguards	
Demonstrate an understanding of the safeguards required to protect the public and the methods of mitigating adverse impacts.	Candidate to provide an example that demonstrates how their **engineering work** impacted the public in regard to safeguards. How does their **engineering work** contribute to safeguarding the public? They should avoid general statements that could apply to non-engineers.

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6.2 Engineering and the Public	
Demonstrate your understanding of the relationship between the engineering activity and the public.	Candidate to provide an example that demonstrates how their **engineering work** relates to the public. How does their engineering relate to or serve the public?
6.3 Role of Regulatory Bodies	
Understand the role of regulatory bodies on the practice of engineering.	Candidate to provide an example that demonstrates their understanding of the purpose of regulatory bodies. Candidates should define the 'role of regulatory bodies'. Why do they exist? What is their purpose? How do regulatory bodies impact their **engineering work**? Simply listing regulatory agencies, they have worked with is not sufficient.
6.4 Sustainability & Practice Guidelines	
Be aware of any specific sustainability clauses that have been added to practice guidelines that apply to their area.	Candidate to provide an example that demonstrates an awareness of sustainability in practice guidelines. They should cite a specific sustainability clause and explain how they applied **engineering principles** to address it. Notes: • sustainability, in this context, pertains to 'environmental' sustainable development (NOT sustaining a business model). • This competency is not the same as 'promotion of sustainability' (6.5).
6.5 Promotion of Sustainability	
To the extent possible, recognizing the candidate's position of influence, consider how sustainability principles could be applied and promoted in his/her specific work.	Candidate to provide an example that demonstrates a time when they used their **engineering knowledge** and/or position to promote sustainable development in a project. Notes: • sustainability, in this context, pertains to 'environmental' sustainable development (NOT to e.g. sustaining a business model).

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Engineering: Category 7 – Personal Continuing Professional Development Minimum overall category rating: 3.0	
7.1 Professional Development Activities	
Demonstrate completion of professional development activities.	Candidate to provide an example that demonstrates completion of **PD activities that relate to engineering**. They should show how they participated in professional development that addressed technical gaps. It is important that activities include the maintenance or strengthening of knowledge in the application of **engineering principles**. This competency asks, “What have you done?”
7.2 Identify Training Needs	
Demonstrate awareness of gaps in knowledge and areas requiring further development.	Candidate to provide an example that identifies current gaps in their **engineering knowledge** that they plan to address in the future. They shouldn’t just list past activities (i.e. 7.1 does that) but future planned activities. Ensure gaps are **engineering related**. It is important that activities include the maintenance or strengthening of knowledge in the application of **engineering principles**. This competency asks, “What are your current gaps in abilities and technical knowledge that you plan to address in the future?”
7.3 Professional Development Plan	
Develop a professional development plan to address gaps in knowledge and maintain currency in field of practice.	Candidate to provide an example that shows how they have developed a professional development plan and listed **engineering activities** they intend on addressing in this plan. They must describe a ‘plan’ – not just a list of activities – they should show they have a strategy to address technical gaps. It is important that activities include the maintenance or strengthening of knowledge in the application of **engineering principles**. This competency asks, “What are my future plans to address the gaps identified in 7.2? Is there a concrete plan in place?”

= Canadian engineering environment competency