

**ATTRIBUTES FOR PROFESSIONAL COMPETENCY**

The following attributes demonstrated by Professional Engineer on various projects will be taken into account while assessing the professional competency for award of IntPE(Pak) title. Applicant/Engineer in a lead role or in capacity of in-charge of a project will have to describe following attributes on the project(s) while compiling his technical report(s). Technical /project report(s) must be endorsed by a Professional Engineer.

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| **Sr.No** | **Attribute** | **Professional Competency** |
| 1 | **Comprehend and apply universal knowledge:** Breadth and depth of education and type of knowledge | Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practices |
| 2 | **Comprehend and apply local knowledge:** Type of local knowledge |  Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practices specific to the jurisdiction in which he/she practices. |
| 3 | **Problem analysis:** Complexity of analysis | Define, investigate and analyze complex problems |
| 4 | **Design and development of solutions:** Nature of the problem and uniqueness of the solution | Design or develop solutions to complex problems |
| 5 | **Evaluation:** Type of activity | Evaluate the outcomes and impacts of complex activities |
| 6 | **Protection of society:** Types of activity and responsibility to public | Recognize the reasonably foreseeable social, cultural and environmental effects of complex activities generally, and have regard to the need for sustainability; recognize that the protection of society is the highest priority |
| 7 | **Legal and regulatory:** No differentiation in this characteristic |  Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities |
| 8 | **Ethics:** No differentiation in this characteristic | Conduct his or her activities ethically |
| 9 | **Manage engineering activities:** Types of activity | Manage part or all of one or more complex activities |
| 10 | **Communication:** No differentiation in this characteristic | Communicate clearly with others in the course of his or her activities |
| 11 | **Lifelong learning:** Preparation for and depth of continuing learning | Undertake CPD activities sufficient to maintain and extend his or her competence |
| 12 | **Judgment:** Level of developed knowledge, and ability and judgment in relation to type of activity | Recognize complexity and assess alternatives in light of competing requirements and incomplete knowledge. Exercise sound judgment in the course of his or her complex activities |
| 13 | **Responsibility for decisions:** Type of activity for which responsibility is taken | Be responsible for making decisions on part or all of complex activities |

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1. **Comprehend and apply universal knowledge:**

**What this competence means in practice**

Means that you comprehend and apply advanced theory-based understanding of engineering fundamentals to predict the effect of engineering activities.

**Indicators of Attainment**

1. Develop and apply current research papers to inform and shape perceptions of engineering possibilities to meet [client] needs
2. Apply advanced theory-based knowledge of engineering fundamentals and the forefront of a practice area to the delivery of engineering projects, systems and programs (including educational)
3. Use mathematical, numerical and computational tools pertinent to the engineering discipline to predict technical, commercial, environmental and social performance
4. Apply the principles and theories of engineering science and mathematics to help make accurate performance predictions, including predicting failure
5. Apply engineering fundamentals and logic to the development and operation of complex financial, commercial or managerial systems

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**SAMPLE**

I studied engineering for 10 consecutive years. I did my diploma of science and engineering then bachelor of civil engineering, then masters of civil engineering, then 2 years of PHD in civil/structural engineering. So I am well aware and linking the engineering theory and academia with the professional daily engineering practise and activities.

**Literature Review, Research & Development (R&D):** The civil engineering field is a rapid growing field, a regular reading and development is a requirement to be a competitive and up to date engineer. I do weekly reading and research, some of my readings include Scientific American magazine, National Geographic and much more. I published two engineering papers the first titled “Modelling Chloride Ingress into Concrete Part 3 - Success and Limitations” (by AZojomo) and the second titled “Traffic and Granular Flow '13” (by Springer). Moreover, I do publish my engineering experience articles and technical notes on my LinkedIn profile. I do literature review and research about new topics which I face daily at my work place and I skim through company’s websites.

I read case studies that are most relevant to my site situation. At DOHA OASIS I am nearly involved in all the steel structural activities onsite, so to extend my knowledge and link it to previous situations and projects, I have been reading about the importance of applying steel structure fireproofing paint (Intumescent) on steel, I read many fire engineering case studies like the World Trade Centre (WTC) steel structure buildings in NYC-USA and how the fireproofing application back in the 1970s didn’t work well and the building collapsed after half an hour of fire commencement. This gave me extensive knowledge and solid background to work and assess the efficiency of the fire engineering activities related to my steel dome structure at DOHA OASIS.

**Computer Modelling & Design:** I use AUTOCAD on a daily basis at workplace, I learnt using this software at university. I use it to compile as built drawings. Moreover, I do design checks and readings of approved for construction drawings (AFC) using AUTOCAD so I can zoom in/out the complicated structural details.

**Wind Engineering:** DOHA OASIS specifications has a section about the project wind tunnel. I did a wind course at university and this helped me a lot to get the knowledge to understand this section of the specification.

**Steel Structure:** At DOHA OSIS site, I am responsible for a structural steel works (SSTW) of a dome, I do works (WIR) and material (MIR) inspections and daily site visits to check the on-going construction works according to the approved shop drawings and that the steel members are as per the approved fabrication drawings. I did a lot of steel structure research, readings and I referred back to my university notes to identify the type of weld and bolt connections, the welding procedures and non-destructive testing used for welds and much more.

**Reinforced Concrete Design:** I do daily structural elements inspections, basic structural analysis and judgment is required, I apply the theory knowledge that I learnt at university during my onsite structural inspections. I do inspect beams, slabs, retaining walls, columns, shear walls etc.. It is one of the main and critical subjects that I refer back in my career.

**Post Tension (PT):** Inspection of PT slabs, transfer beams and PT beams. I use this on a daily basis during my PT slab inspections. I do assess all the stages of PT process: number of strands, ducts, grouting, cutting and patching approvals. All these steps have been learnt at university and my knowledge been extended through readings.

**Construction Materials:** at DOHA OASIS I do Material inspection requests (MIR), I do daily material inspections of reinforcement bars and a lot of many other construction materials. Moreover, I go to testing labs to test different materials like couplers, PT cables, bolts, nuts. Laboratories use extensive and advanced testing equipment/machines which usually draw the stress-strain diagram, I used and been familiar with many of the testing methods before at university.

**Geotechnical Engineering:** At killard Excavation all my infrastructure jobs required a solid knowledge of the geotechnical field. I have been assessing a lot of geotechnical reports to order the suitable shoring boxes for open trenches.

1. **Comprehend and apply local knowledge:**

**What this competence means in practice**

Means that you acquire and apply local engineering knowledge; and means that, where appropriate, you apply engineering knowledge contributed by other people including suppliers, consultants, contractors and independent experts.

**Indicators of Attainment**

1. Apply accepted local technical literature and engineering practices and locally applied international standards.
2. Take into account local environmental plans, conditions, constraints and opportunities
3. When appropriate, apply and incorporate engineering knowledge embodied in standards, design guides, product datasheets, existing products and designs in order to produce reliable and economic results in a timely manner
4. Keep yourself informed about new and emerging technologies, techniques, products, materials, theories and science relevant to your practice areas
5. Apply local knowledge and practices, including unwritten engineering knowledge in the area of engineering

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**SAMPLE**

I have worked in Australia for 4 years and I have been working in Qatar for the past year on different projects and have acquired and applied substantial local engineering knowledge trough my experience. I have used a lot of knowledge to facilitate my work and to ensure that the final construction product meets the highest engineering standards and requirements. As a site engineer I have been involved in the construction of many project with extensive different activities. My role of responsibility requires a lot of knowledge for making the legal and professional decisions. Moreover, innovation, creativity, vision and seeking continuous engineering knowledge are very crucial to develop an engineering leadership character.

I have been applying a lot of engineering knowledge, I usually collaborated and work with colleagues, designers, contractors, suppliers and manufacturers to ensure the best productive delivery. I consulted a number of references:

* **Bridge Design:** at Killard Excavation I worked on many projects next to RTA/RMS roads and bridges. On one of the projects, the laser bore (pipe jack) head jammed and stuck during drilling/boring under the bypass RTA Bridge. My tasks was to determine the reason behind this problem before meeting with the RTA and local councils. I ensured to look at the bridge/RTA/RMS standards (AS5100: Bridge Design) and highlight the clauses needed to support my discussion. It was found that the contractor who build the bridge over excavated for the foundations and all the all the excavated area has been filled with mass concrete. So our site team drilled in concrete which caused our machine to jam.
* **Steel Design:** at DOHA OASIS project I am responsible and involved in the construction of a massive steel dome structure. I mainly consult the QCS (Qatar Construction Specifications) - Section 16 - Structural Steel Works. Moreover, I refer to different international standards like the Chinese, British, American and Australian standards. It is very important to have extensive steel structural knowledge to ensure the best delivery of work.
* **Concrete Design:** for the concrete structure I consult the QCS - Section 05 - Concrete Works and I refer to the AS3600: Concrete Structures. I do ensure my site works meets my knowledge extracted and learnt from these standards.
* **Environmental Management Plan (EMP):** at Killard Excavation I was responsible as a contractor for preparing EMP for every site and I submit it to my project manager then the client for approval. The EMP is developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with environmental legislation. The EMP is referred to the local council standards, Sydney Water environmental standards, site specific geotechnical investigation reports conducted by third party, environmental blue book (Knowledge and familiarity with the environmental controls) and AS14001: Environmental Management Systems.
* **Project Management Plan (PMP):** I have prepared many PMP for different sites. A PMP is a formal, approved document that defines how the project is executed monitored and controlled. The objective of the PMP is to define the approach to be used by the [Project team](http://en.wikipedia.org/wiki/Project_team) to deliver the intended project management [scope](http://en.wikipedia.org/wiki/Scope). It may be summary or detailed and may be composed of one or more subsidiary management plans like the Traffic Management Plan (TMP), Compound Management Plan (CMP), Environmental Management Plan (EMP) and Noise management Plan (NMP)) and other planning documents. The PMP should be agreed and approved by the project team and the client. It refers to many standards and Codes of Practice like (OH&S Act 2000) (Workers Compensation Act 1998) (Protection of the Environment Operations Act 1997) (AS/NZS 4360:1995 - Risk Management) (AS 1742 – Traffic Management) (AS 4801 OHS Management Systems) (AS 4804 OHS Management Systems Specifications) (AS 9001 Quality Management Systems).
* **Council Standards:** It is very crucial to get familiar with the relevant local authority specifications because council signoff sheet are very vital to close any contract and receive the final claim payment from the client. I was involved in the reconstruction/restoration of many footpath kerb, cutter and crossing. The standard is usually available on the council websites and linked to some Australian Standards.
1. **Problem analysis:**

**What this competence means in practice**

Means that you define, investigate & analyses engineering problems & opportunities.

**Indicators of Attainment**

1. Accurately determine the main issues that require addressing in analyzing the problem and reliably identify opportunities to improve outcomes
2. Work with customer or employer to reach an agreed understanding of the expected capability or functionality of the required product, project, process or system
3. When you identify or are presented with engineering problems, adopt appropriate research methods to locate previously known solutions to similar problems, including seeking advice or help from informed people
4. Conduct research, investigation and analysis in relation to product, project, process or system
5. Adopt educational best practice and inclusive principles in the design and delivery of educational programs and courses
6. Engage in dialogue with appropriate people to reach an agreed understanding of technical issues for which there are no-well understood and reliable solutions

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**SAMPLE**

At DOHA OASIS, I am responsible for many construction activities. Problems are always possible in construction. Usually every site issues is discussed through an internal team meeting and with other departments like the MEP and architectural teams. Site problems lead me to investigate and do problem analysis and research and to consult the civil/structural technical team in some cases. The repetitive or common construction site problems are noted and distributed to all team members to prevent such problems and to improve the work outcomes in the future and on-going site activities. A Preventative Hierarchy of Controls is applied for all problems (design, Substitute, Isolate, engineer, administrative means and personal protective equipment).

* **Structural Deflection:** at DOHA OASIS project some deflections took place at various locations because of many reasons. The contractor removed the back propping and shutter at the CJ (construction joint) and this caused a sagging in the slab edge. Moreover, the contractor didn’t follow the correct procedure and steps of de-shuttering to prevent deflection. A structural analysis has been conducted and a permanent steel beam has been installed to support the slab and prevent further deflection and sagging of the slab.
* **Formworks Failure:** some core walls and retaining walls formworks setup blast and opens during some casting activities, this is a repetitive issue onsite. I agreed with the contractor to weld the corners and add tie rods and instructed not to use cheap materials.
* **Honey Combing:** at DOHA OASIS we have 24 RC tree column (2.2m×2.2m) concrete, after de-shuttering one column we realized a lot of honey combing. The congestion of rebar and lack of vibration caused this problem. The contractor used ultrasonic testing to see the possibility of rectifying the column by patching the affected area. After investigation and problem analysis it is agreed that the contractor to jackhammer/chip the concrete and do the casting again so a safe column can be achieved.
* **Cold Joints:** at DOHA OASIS the failure of concrete pump can lead the concrete to harden before the completion of casting of the whole structural element, so a quick action should be taken to prevent any structural defect that would effect on the structure in the future. I controlled cold joints by adding additional vertical and horizontal reinforcement at the cold joint to strengthen the weak joint line.
* **Waterproofing Membrane:** dewatering is considered a critical activity on every construction site. At DOHA OASIS the generator went off for (Electricity failure) sometime, the site was flooded with water in some areas. The weak points has been detected and the problem solved by instructing the client to Injecting Sika water proof material to prevent leakage.
* **Grouting of PT tendons:** Some of the issues we faced at PT slabs is the blockage of grouting hoses. This might be because of the bent of grouting hoses when casting. I instructed the contractor to do a careful drilling of PT slab till reaching the affected PT tendon. Then the drilled hole will act like a hose and will allow grout to go out.
* **Early Structural Loading**: the contractor load freshly casted slab with heavy materials like reinforcement rebar and formwork elements etc… early loading can cause internal cracks and weaken the structure. The contractor been instructed to use a crack filler to provide additional propping.
* **Lack of Curing:** because of the rapid progress and massive site, the contractor didn’t apply curing on some freshly casted RC elements. This caused a lot of internal useable cracks. I instructed the contractor to apply water, hessian rolls and polyethylene sheets. I assigned one of the site engineers to do daily checks on the slab to see if curing is going properly. Moreover a crack repair has been done at later stages of the project.

I concluded that my daily activity problem analysis and detection has been very important to achieve the highest engineering outcomes.

1. **Design and development of solutions:**

**What this competence means in practice**

Means that you apply and implement current workplace health and safety requirements; and means that you identify the economic, social and environmental impacts of engineering activities; and means that you anticipate and manage the short and long-term effects of engineering activities

**Indicators of Attainment**

1. Provide for the safety of workers and others in design, manufacture, construction, commissioning, use decommissioning, demolition, removal and disposal of plant, products, substances or structures
2. Take into account well-accepted standards of practice for design safety, while making the most economic use of financial, human effort, energy and material resources
3. Develop designs or solutions to engineering problems that balance the impact of present engineering activities with the economic, social and environmental prospects of future generations
4. Manage engineering activities to enhance the economic, social and environmental prospects of future generations

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**SAMPLE**

In construction Occupational Health and Safety and sustainable policies are very important in the office and the site workplace. As a construction company, engineers and laborers in the construction industry deal with dangerous machines, equipment and materials, so occupational health and safety policies are very important to direct, orient and advice the workers.

In addition to that, trust should be developed between the employees and it should become the goal of the entire team to ensure safety, healthy and secure work place environment. OHS in the office is of equal importance in the site.

I have worked as a site engineer for the past 5 years, I worked in different areas in NSW & Qatar. In Qatar the safety and sustainable concerns are very basic and immature compared to Sydney-NSW. So I am using my expertise to help the safety team to implement and train other team members to reduce the impact of work onto the health, safety, environment and the community.

* **Engineering Activities & the Environment:** I have been an environmental officer and I have been involved:
* I prepared many Environmental Management Plan (EMP) for different sites in Sydney-NSW. Work should be done without any effect on the environment.
* Part of my job as a site engineer is writing monthly waste/environmental reports and oil/diesel reports. The purpose of the reports is to calculate the amount of each material (general waste, metal, plastic and concrete) generated from site and the recycling tip delivered to so recycling reports can be produced.
* **Engineering Activities & Sustainability:** I managed many site amenities by:
* Collecting rain water from site offices roofs (surface area) in tanks and then use the water in dust control, water plants and clean construction machinery.
* I always place the site offices windows (openings) facing the sunrise and sunset directions to minimize the usage of energy / turning on light bulbs.
* **Engineering Activities & Care for Community:** I have been a public relation officer and I have been involved:
* I used to deliver notification/drop letter (door knocking) for the residents living around construction site to inform them of the duration, noise and the type of work.
* I keep encouraging site staff/workers to use local nearby suppliers to by the construction needs and to minimize the driving distance so reduce traffic and carbon emission and to support the local businesses.
* I used to purchasing sunscreen during summer time, I remember in 1 year I purchased $20,000 AUD worth of sunscreen.
* Placement of cattle grid at the site entrance gate to minimize mud/soil washed into the public road.
* **Engineering Activities & Safety**:
* One of AECOM’s core values is safety, my yearly goals is to submit more than 365 site safety observations into life guard (Aecom’s safety system).
* I am involved in writing Incident reports and in Incident investigation on site and the corrective actions taken after each site incident.
* I do daily site safety inductions on site to make new workers aware of the safety, environmental and community concerns and issues on site.
* I prepare safe work method statements (SWMS), risk assessment management Plan (RAMP), task risk assessment (TRA).
* I do keep and update safety register records for fire extinguishers, lifting slings, first aid kits and much more.

During the weekly progress meetings I discuss the appropriate action that should be taken if a safety problem appears, moreover my manager remind all the workers to keep aware and informed on how to address a certain situation because the company reputation is strongly related to safety, quality and sustainable standards. Safety rules and posters are posted on walls in the office and site to remind, adhere and help the employees to minimize the occurrence of any incidents resulting from poor practices.

When it is time to head off to the site, it is very important and essential to have all the personal protective equipment requirements. The fluoro reflector vest and steel construction cap boots, safety classes, hard hats (Helmets), sunscreen, and earplugs. Providing all necessary Personal Protective Equipment (PPE) for all staff members shows the importance of the equipment and ensures there are no loop holes in the system.

1. **Evaluation:**

**What this competence means in practice**

Means that you evaluate the outcomes and impacts of engineering activities.

**Indicators of Attainment**

1. Evaluate ongoing projects, products and processes to identify and diagnose performance deficiencies, impending or actual failures, and propose remedies and solutions
2. Monitor and evaluate product, project, process or system against whole of life criteria (cost, quality, safety, reliability, maintenance, aesthetics, fitness for purpose and social and environmental impact and decommissioning)
3. Determine criteria for evaluating a design solution and address designer obligations for work health and safety
4. Undertake and report design verification (e.g. of pressure equipment) to required standard
5. Set or adopt criteria for evaluation and review and evaluate the effectiveness of engineering programs
6. Evaluate product, project, process or systems outcomes against the original specification or design brief
7. Diagnose performance deficiencies, conceive and design remedial measures and predict performance of modified systems
8. Evaluate product, project, process or systems outcomes for constructability and maintainability as input to future design improvement
9. Assess and use technical information and statistics correctly to ensure that opportunities are based on sound evidence
10. Engage in periodic review and continuous improvement of educational programs and courses

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**SAMPLE**

As a site engineer working for AECOM I have been evaluating and inspecting structural works on a daily basis for the past year. At DOHA OASIS project, slabs are considered the most complicated structural elements because of its elliptical shape. In addition to that, many requirements to be considered when inspecting, evaluating and proposing solutions for any structural element such as cost, schedule, health and safety, quality, constructability and durability.

Any structural failure can lead to disastrous consequences, so a through slab inspection steps and acceptable construction procedure and supervision should be implemented.My slab inspection procedure should satisfy all the requirements to an acceptable standard. My slab evaluation procedure includes the following:

* **Review Shop Drawings:** before going on site, I read and review the relevant approved for construction (AFC) shop drawings. I check if the design drawings are constructible in the field. My design/structural experience is important in these reviews, and if unsure I would consult and coordinate with the design engineer in our technical office.
* **Check ITP & Method Statement:**I refer to and read the inspection test plan (ITP) and method statement to check for the slab reinforcement fixation procedures. I ensure the correct and safe method is followed onsite.
* **Safety:**when arriving to site the first thing I do is evaluating the safety concerns. I assess and always ensure a safe access and eagres to the slab area, I check for work at height risks and ensure the barricade height and toe board which are fixed properly.

In addition to that, the steel fixers working unsafely and placing themselves in a hazardous work conditions to quickly complete the reinforcement placement. Whenever, I observe unsafe conditions I stop work immediately. Unsafe work is not acceptable regardless the progress, cost and schedule requirements. I always ensure the contractor’s steel fixers had a safe means and environment of installing the reinforcement without impacting the progress.

* **Pre-Inspection** I do a walk over the slab to be inspected and I give the contractor some generic comments and feedback. I check the formworks and the propping and that all the works is going smoothly. I check for any challenges and difficulties that could have impacted on the performance. Some of my comments would be:
* The scheduler either forgetting to schedule some bars or scheduling (BBS-Bar Bending Schedule) them incorrectly.
* The steel fixers placing bars incorrectly.
* Steel reinforcement orientation is wrong.
* The steel fixers modifying the reinforcement to make it easier for them to install.
* **Inspection & Comment Sheet:** After notifying the contractor of my pre-comments, then I wait for the contractor to request an official inspection (WIR) so I can approve the slab and concrete can be ordered.

I spent most of my day onsite with the contractor’s steel fixers to ensure that the reinforcement has been placed in accordance with approved shop drawing. Then I issue a comment sheet signed by contractors QA/QC engineer.

* **Inspecting Comments & Final Approval:** I wait for my comments to be rectified and all the clearances are available and submitted (MEP, Façade & Cladding, Steel Structure and Formworks Clearances). After that I issue the final approval of the slab.
* **Assess the Casting Plan & Final Approval:** I assess the contractor’s concrete casting plan. I ensure all the pumps boom can reach all slab areas and that a feasible concrete trucks traffic management plan is in place.
* **Concrete supply:** I ensure my presence at the commencement of casting, I do regular assessment and evaluation of the concrete supply flow. I do regularly coordinate with the contractor site engineer to ensure a smooth casting of slab.

This site experience gave me a good understanding of the daily challenges of any slab procedure. I can easily inspect, evaluate and assess any slab. It is very valuable for my future role as civil as engineer.

1. **Protection of society:**

**What this competence means in practice**

* Means you identify stakeholders, individuals or groups of people who could be affected by the short, medium and long-term outcomes of engineering activities, or could exert influence over the engineered outcomes, including the local and wider community.
* Means you identify stakeholder interests, values, requirements and expectations using the terminology of the stakeholder through consultation and accurate listening.
* Means you work ethically to influence perceptions and expectations of stakeholders and negotiate acceptable outcomes in the best overall interest of relevant communities.

**Indicators of Attainment**

1. Consider safety, environmental, public health and other public interest issues relevant to the engineering activities.
2. Engage responsibly with appropriate communities to convey information on the consequences of engineering activities and potential solutions to engineering problems.
3. Take into account the reliance of others on engineering expertise when engaging with the community.

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**SAMPLE**

At killard Excavation and AECOM I have been involved in live infrastructure, buildings and services that affect directly the community and client. I worked on roads, bridges and underground services. At the start of every project I identify the stakeholders who would have an interest and engagement in the project. These would be our client, the council, various service providers in the area, the contractor, the subcontractors and the community who would then use our project product and the labours. I have done many decisions and activities during the project that gave consideration to stakeholder interests and this included:

**Being a public relation officer:** at Killard I had been a public relation officer with many duties likedelivery of notification letters to inform the community about our construction/noisy activities. I used to broom/clean the road and keep it clean and free of pebbles to eliminate its bouncing on cars. I used to deliver purchase gift vouchers for residents affected by our activities. In addition to that I used to support financially the local sports clubs and arrange site BBQ and invite the community. Moreover I encourage the site team to use local businesses to support the distracted community and much more.

**Attending councils meetings:** at Killard I engaged with many City Council all around NSW (Bankstown, Blacktown, Camden, Sydney City Council, Parramatta, etc...) on behalf of the client (Sydney water) to identify any requirements to be considered during the construction activities of the project. Like TMP traffic management plan etc...

**Engaged with the client:**  at AECOM I am engaged with the client deadline expectations. I do regular meetings with my client to seek their feedback on the construction works, quality and safety. I need to make sure that our work meet their requirements. I responded to their concerns that helps me to identify a number of key requirements that they had for the project. The client requirement are to be different and unique in the construction industry in Doha-Qatar in terms of safety and quality. In addition to that the client wants progress and quick completion of the project before a major sporting event 2022 world cup Doha - Qatar. Moreover, the completion of Doha Oasis project will refresh the old historic city of Doha (Mushireb) which lacks attractions and entertainment centres. So this project is very important for the client, community and the government.

**Restoration of public places:** at Killard I was heavily involved in the council signoff letters (completion of Job letters) , So I was responsible in restoration of public facilities like pedestrian path, verge, kerb, gutter and ramp. All the public including old/senior people and people with special need or on wheel chairs. So top quality has been taken into consideration to avoid any complaint from the public would affect our company reputation and would prevent us from getting more jobs.

**Traffic Control Plan:** at Killard Excavation I had the red and orange RMS (RTA) cards which allows me to design, inspect, select and modify traffic control plans. I was responsible for local road closure, using alternative routes, installation of road signage to help the community to use alternative routes and stating the duration and reasons of our closure. This was a very vital responsibility.

**Underground Services:** at Killard Excavation I assigned a junior civil engineer to obtain information (Dial before You Dig (DBYD)) of the existing services in the project area before the commencement of excavation works. This is very important so that we could determine who might be affected if anything went wrong like excavator hitting an underground service like gas, storm water, fiber optic, telecommunications, electricity and traffic signal communications. This is very important to prevent any risk of damaging a service, such a damage can affect directly the community like internet, water or electricity shortage and stoppage.

**Safety & Environment:** I prepared a lot of noise management plan (NMP), environmental management plan (EMP), compound management plan (CMP), project management plan (PMP). All these plans manage the coordination and responsibilities between the different parties involved in the project (contractor/subcontractors/client). I rented noise barriers blankets and hanged them all along fence to reduce the noise waves during night shift hours to eliminate distraction to surrounded residents as per noise management plan.

1. **Legal and regulatory:**

No differentiation in this characteristic

**What this competence means in practice**

Means that you should be able to demonstrate an understanding of the laws, regulations, codes and other instruments which you are legally bound to apply, and apply these in your work.

**Indicators of Attainment**

1. Identify and comply with the codes, standards of compliance or legal instruments relevant to a particular product, project, process or system
2. Draft commercial contracts that cover the procurement of services, equipment, materials, access rights or access to information
3. Seek advice, rulings or opinions from time to time to ensure that your understanding of legal and regulatory requirements is up-to-date
4. Practice within legal and regulatory requirements
5. Negotiate appropriate approvals from regulatory authorities for engineering activities
6. Protect intellectual property

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**SAMPLE**

I have been using many legal and regulatory requirements in the delivery of my projects. As a site engineer with Killard Excavation and with AECOM I understand that we need to operate under a regulatory framework that ensures the top and highest delivery of our services and to meet the agreed requirements. Some of the legal and regulatory requirements that I followed and used:

* **Project Specification:** I am required to read and understand the project specification, it highlights the client’s requirements and needs on site. It is a portion of the contract documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the work, and performance of related services.
* **Qatar Construction Standards (QCS):** I use this standards on a daily bases, it is extracted mainly from the British standards (BSEN) and American standards (ASTM), it covers all aspects of construction like formworks, steel, MEP, landscaping, concrete etc... I refer back to this standard when I want to clarify certain issues or clarification about ongoing site activities.
* **Project Quality Plan (PQMP):** based on the quality management system (QMS) I am required to understand and follow our project Quality Management Plan which is based on ISO 9001:2015. It describes the key processes in the business and the management systems and the project specific procedures to deliver the best services to clients. I am audited against this manual by an independent quality auditor annually and have always achieved good results.
* **Health Safety & Environmental (HSE):** I am required to understand and follow AECOM and Killard Excavation Environment, Health and Safety Manual. This document is my main reference providing project information by way of procedures and guidelines that can be used on projects. I understand that these are legislative obligations that relate to construction safety, as well as them being social and ethical responsibilities.
* **Australian Standards (AS):** I used
* **WSA:** **W**ater **S**upply Code of **A**ustralia (Sydney Water) - I always refer to this code in my ordering of the materials and water/sewer system fittings, in addition to that I ensure that the whole construction arrangement comply with the standards.
* **Sewer Code** WSA 02
* **Water Code** WSA 03
* **AS 3600** - Concrete Structures (Reinforced Concrete Structures) I use this code to refer back my structural inspections onsite,
* **AS 1170** -Structural Design Actions (Loading Code) I used this code once when working near structures to see the safety factor of construction machinery vibration on the structure.
* **AS 5100** - Bridge Design I used this code when I was involved in excavating a trench near overhead bridge in Camden-NSW. I used the code to estimate the depth of the concrete embankments as per standards.
* **The Blue Book** - Managing Urban Storm water (MUS): Soils and Construction commonly referred to as the Blue Book.  I always refer back ti the Blue Book when it comes to environment, it is part of a series of documents produced by the NSW Government.
* **AS 1715** & **AS 1716** - Health and Safety - I always refer to these codes when preparing management plans.
* **Technical Data Sheets:**

I use these very useful data to study and analyze new materials on site, this sheets consists of information referred to many international standards.

I believe that this demonstrates my understanding of the laws, regulations and codes that I am legally bound to apply and how I have applied these in my work.

1. **Ethics:**

**What this competence means in practice**

Means you anticipate the consequences of your intended action or inaction and understand how the consequences are managed collectively by your organization, project or team; and
means you demonstrate an ability to identify ethical issues when they arise and to act appropriately

**Indicators of Attainment**

1. Appraise and respond appropriately to ethical dilemas in your practice area
2. Recognize an unethical situation; take appropriate action
3. Engage in ethical reflective practice
4. Seek appropriate advice and consult Engineers Australia Code of Ethics

**SAMPLE:**

**Mustafa:**

At AECOM & Killard Excavations, my work as an engineer forces me not to have misjudgment or error in my services. Any lack of responsibility during work might lead to disastrous effects on the society. The moment I miss any engineering calculation, safety observation and quality test in order to save costs or speed the work progress or simply stop caring about my job, might affect and risk the lives of many people in the society.

At AECOM & Killard Excavations, equal employment opportunity is applied and achieved by eliminating and prohibiting discrimination between employees because of their gender, race, religion, disability, marital status, age or political party. AECOM & Killard Excavations employ hundreds of employees from different nationalities. Moreover, as a contractor (killard) and consultant (AECOM) in the construction field, females are employed and if they feel intimidated or looked down because of their sex, they must talk with the human resources department that are responsible for resolving such issues as this male dominated industry.

When I started as a junior or trainee engineer, I was exposed to do more mistakes due to my limited experience. Usually before I submit any document or drawing I should acknowledge and consult with my supervisor to sign, skim and check my work, to avoid any problems like safety, quality and finance. As a site engineer working for a contractor, I faced a lot of unethical situations that can negatively affect the community and myself.

Once I had one of the excavator operators excavating a trench for laying a water pipe, according to the underground services locator, there is no services detected, so our excavation would be safe and no risk of hitting any hidden cable, suddenly the excavator hit one optic fiber cable that was missed by the locator, labors on site informed me to hide the cable and pretend as if nothing happened. I definitely refused and contacted DBYD (Dial before You Dig) and informed them that I hit one cable. Later it was realized that this cable supply internet to the community of Richardson Area-NSW. A quick action was taken and I was responsible to prevent and save the community from any shortage in the internet services.

Another incident happened during pipe casting, we closed (limited hours of road closer permit) half of the road lanes for replacing old pipe, I mistakenly ordered short amount of concrete which was not enough for casting the whole new pipe (I was trying to save my boss’s money). Ordering additional amount of concrete was not possible because all the batching plants where closed and it is impossible to supply more concrete. As a site engineer I was able to order my labors to backfill without casting and hide my mistake, but I took the responsibility and informed my manager about what happed and a correction action was taken.

Killard Excavation responsibility is to maintain highest possible standard to ensure a good services to the community and environment. We are not only dealing with a daily job but also our responsibility as successful contracting company is to provide the community with the water system network that is feasible for drinking. We work to ensure that the water pipe we are laying meets the standards, we work for the interest of the community. We do chlorination tests (cleaning) to the pipes to ensure clean pipes and to ensure people are receiving clear healthy water ready for drinking.

Another major issue that I learnet from my experience is the importance of having a friendly, trust, professional and healthy relationship between engineers and laborers and stakeholders (clients and suppliers) involved in the project to ensure that the best profit, success and achievement can be reached. All the above demonstrates my understanding and ability to handle any work place issue correctly and in accordance with the Code of Ethics.

1. **Manage engineering activities:**

**What this competence means in practice**

* Means that you develop and operate within a hazard and risk framework appropriate to engineering activities.

**Indicators of Attainment**

1. Identify, assess and manage product, project, process, environmental or system risks that could be caused by material, economic, social, or environmental factors
2. Establish and maintain a documented audit trail of technical and operational changes during system or product development, project implementation or process operations
3. Follow a systematic documented method and work in consultation with stakeholders and other informed people to identify unpredictable events (threats, opportunities, and other sources of uncertainty or missing information) that could influence outcomes
4. Assess the likelihood of each event, and the consequences, including commercial, reputation, safety, health, environment, regulatory, legal, governance, and social consequences
5. Devise ways to influence the likelihood and consequences to minimize costs and undesirable consequences, and maximize benefits
6. Help in negotiating equitable ways to share any costs and benefits between stakeholders and the community

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**SAMPLE**

As a site engineer I spend most of my time on site, so many risks can be observed, highlighted and detected. Usually I report directly to the safety/environmental/community relation officers and my project manager.

Risks are part of construction so before the commencement of any new activity onsite, I prepare task risk assessment (TRA) risk assessment management plan (RAMP) safe work method statement (SWMS) to eliminate and reduce such risks in the future. I keep updating these plans according to the site conditions and requirements. Through my experience, I have identified, assessed and managed many different risks.

**Identify, Assess & Manage Safety Risk:**

I have been facing a lot of safety risks on a daily basis such as rainy day, hot/sunny day, an excavator hitting overhead power cables, working with asbestos etc...

I created a WhatsApp safety group which have all the employees onsite, the purpose of this group is to take a quick action and report directly any safety observation so the right corrective action can be taken. In addition to that, I bought Ice machines, drink bottles and sunscreen to eliminate heat stress and dehydration.

**Identify, Assess & Manage Environmental Risks:**

I have been facing a lot environmental risks like long grass (snakes & spiders attraction habitant), excavation of contaminated soil and disturbance of animal inhabitant (bird or ant nest) during excavation and hitting tree branches.

I created and environmental corridor for excavators and workers, so the surrounded native environment can stay safe. In addition to that, I regularly cut the grass around the site offices to keep it safe from insects and animals, moreover I bought first aid kit and bite kit and kept them available at site office. I prepared an environmental management plan (EMP) and included it in my site inductions so workers can stay aware of the environmental concerns and follow and refer back to procedures.

**Identify, Assess & Manage Quality Risks:**

Some of the quality risks I faced on site is concrete pump break down during concreting or casting of structural elements (slab, beam or core wall), or slow supply of concrete due to traffic peak hours. This can lead to a cold joint which is a fatal structural defect.

I call the concrete supplier and push them to update me of the quantity supplied and the reason for the delay, moreover I slower concrete pouring onsite to avoid cold joint and save concrete until more trucks arrives to site.

Some other quality risks like delivery of unapproved or damaged construction materials on site, usually the contractor wants to save money and use the material, me as a consultant (AECOM) I do daily material inspection to make sure that the delivered materials is according to the project specifications and requirements. I raise such issues during weekly progress meetings.

**Identify, Assess & Manage Financial Risk:**

As a contractor at Killard Excavation, financial risks are high, I need to keep a record of every single activity onsite. At one project the estimators (tenderers) priced for excavated soil according to the geotechnical report. But during excavation it found to be hard rock which doubled the excavation efforts and original price. This unexpected material turned to be a big variation.

I keep a variation register supported with photos, survey points, receipts and tip delivery tickets. I prepared a big variation which reflected positively on the project. Such documents are very important for documenting variations and seeking client (Sydney Water) approvals before proceeding with additional works.

**Identify, Assess & Manage Management Risk:**

I faced many risks that can delay and weaken the progress of the project like the unavailability (out of stock) or late delivery of construction materials and stormy rainy weather. I prepared project management plan (PMP) and a Gantt Chart Programme (Microsoft project) of the different tasks and activities on the project. I used the programme as a reference on a daily basis to assess project progress, critical path and proposed client milestones. I do resource levelling when needed. I inform my project manager on a weekly/daily basis on my progress regards to budget spent, programme, milestones met and any issues which had the potential to cause delay.

1. **Communication:**

**What this competence means in practice**

Means you can communicate in a variety of different ways to collaborate with other people, including accurate listening, reading and comprehension, based on dialogue when appropriate; and means you can speak and write, taking into account the knowledge, expectations, requirements, interests, terminology and language of the intended audience.

**Indicators of Attainment**

1. Respect confidentiality obligations
2. Build and maintain collaborative relationships with other people, gaining their respect, trust, confidence and willing, conscientious collaboration
3. Exercise informal leadership in order to coordinate the activities of diverse people who contribute to engineering activities
4. Collaborate effectively within multi-disciplinary teams including other professions in the workplace
5. Lead and sustain discussion with others and, where appropriate, integrate their views to improve deliverables
6. Convey new concepts and ideas to technical and non-technical stakeholders
7. Deliver clear written and oral presentations on engineering problems and engineering activities in English or in a language appropriate to the engineering work

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**SAMPLE**

As a civil/structural site engineer I need to coordinate with all site disciplines/departments like MEP, technical team, safety team, contractor, subcontractors, quality control department and the client. For a successful delivery of the construction project it has been essential to use the whole range of communication skills:

* **Employee Survey Engagement:** AECOM assigned me to represent Doha Oasis (my current project) for enhancing the work place. I am the link between the site and our head office. I do monthly meeting with the HR department raising issues that prevent happy work environment.
* **Multilanguage:** Communication has been a key aspect to the success of any project. I have been working hard to develop my communication skills, English is my third language after Arabic and French, but this enables me to build a stronger working relationship with the locals and being multicultural through my strong ability to align culturally.
* **Placing Purchase Orders:** at Killard Excavation and during the project execution I have collaborated and communicated in written and oral form with many different suppliers from multiple disciplines and companies. I have developed purchase order form and procedure so it is easy for our accounts department to trace any purchase order. In addition to that, I did an excel spread sheets having all our suppliers with their contact details so all the engineers can access the sheet when needed.
* **Sketches:** I always do sketches, it makes it easy to understand any issue. I do sketches for my reinforcement takeoffs when placing an order, I found it very useful tool to prevent discrepancies and fabrication delivery mistakes.
* **Council Meetings:** I have done many meetings with different councils in NSW, I attended council meetings to discuss traffic management plans, restoration plans and council road closer permits. Moreover, I have been emailing the RMS (RTA previously) regarding projects.
* **Personal Development Program (PDP):** AECOM head office in Qatar assigned me PDP. I conduct monthly presentations and activities about different career development skills. I have been delivering many power point presentations. In addition to that, I mentored the younger graduate engineers on the project so they can escalate their career.
* **Writing emails:** I use it on a daily basis at my work place. It is one of the most effective and important means of communication in my field. Usually after any phone call I sent a confirmation emails about the talk so I can use it for future reference if needed.
* **Phone Calls:** I have to contact the suppliers to arrange construction materials and equipment. I built strong network with suppliers and this was very beneficial for our firm.
* **Weekly Progress Meetings:** I attend weekly project progress meetings to update my management department, client and subcontractors on project news, progress, activities and issues. I write the minutes for these meetings and distributed them to all members of the team.
* **Trainings Presentations with staff members:** I do weekly readings of method statements, technical data sheets so I can do weekly presentations to explain to my colleagues about new materials and site activities. We do open questions and answers session to listen and solve problems and to achieve efficient and well‐coordinated project work.
* **Daily Report:** I do submit a daily site report highlighting the quality, safety and progress observations onsite.
* **Social Media Pages:** at Killard Excavation I was responsible for our company Facebook social media page and YouTube channel. I posted a lot of videos and information so our followers can stay updated about our firm current and future projects.
* **Computer:** I extensively and proficiently use computer based tools and software to develop, modify and publish documents, presentations and drawings. I have been using Word, Excel, Power Point, Project, Primavera and AutoCAD.
* **Contact Technical/Structural Department:** On a daily basis throughout the construction of the project I need to communicate and coordinate with the civil/structural technical department about any issues onsite. Sometimes structural modifications are needed depending on the site conditions and requirements and ease of construction.
* **Business Meetings & Socialising:** I attend business invitations from other companies to attend technical talks, Christmas parties etc... Such socialising events are very important because it opens efficient discussions/ feedback and share ideas.
1. **Lifelong learning:**

Preparation for and depth of continuing learning

**What this competence means in practice**

Means you assess, acquire and apply the competencies and resources appropriate to engineering activities.

**Indicators of Attainment**

1. Regularly assess your own competence (in the absence of assessment by more experienced engineers) and continually acquire new knowledge and skills.
2. Maintain a concise description of your areas of competence.
3. Carry out engineering work only within the boundaries of your known areas of competence.
4. Maintain records of Continuing Professional Development activities

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**SAMPLE**

Engineering is a rapid and extensive field, having only a university degree is not enough to be a successful civil engineer. I keep escalating and maintaining my skills and keep it up to date with the latest technological trends and technical knowledge updates. In addition to that, I value team work, the hierarchy, the diversity of experience and knowledge which can be reinforced from working with professional team. I believe this result in a better outcome in specialised engineering work.

I do this through a list of activities or actions that I undertake, this would be part of my career development and daily work and extracurricular activities. The below activities are not limited into the engineering field, I also acquire new knowledge in adjacent fields like management and leadership.

I keep a record of my professional development activities, I maintain an excel spread sheet which lists all activities undertaken including details, such as type, topic, duration, lecturer, presenting company and supporting documents.

* **AECOM’s Personal Development Program (PDP):** I attend monthly meeting at AECOM’s head office in Qatar. The purpose of the meetings is to teach us and develop our skills. The topics covered so far are: (1) team dynamics, (2) communication skills, (3) presentation skills, (4) time management skills, (4) time management planning & prioritizing your time, (5) technical writing (6) introduction to client relationship management, (7) consulting & commercial awareness, (8) Introduction to Project Finance and much more. My commitment to my professional and career development is long term and extends beyond the project and AECOM’s requirements.
* **Performance Review:** With AECOM I have been completing performance reviews every 12 months. The nominated reviewer and I assess my competence against a range of criteria and also determine areas where further skill development is required.
* **Professional Magazines & Memberships:** Engineers Australia monthly magazine, CIOB - [Chartered Institute of Building,](http://www.ciob.org/) CPEng - Chartered professional engineer, MMUP - Ministry of Municipality & Urban Planning, ASQ - American Society of Quality, CQE - Certified Quality Engineer.
* **Presentations and training:** This is not restricted to my specialist field of practise. I am member with Toast Masters club in Qatar & previously in Sydney. Toastmasters, is a supportive club that develop your communication & leadership skills in a mutually supportive environment you can learn to be a better speaker and leader. It has the tools to help you. It’s a place whereleaders are made.Toastmasters clubs and escalate and develop greater confidence, techniques to deliver a speech, stronger public speaking skills, Skills to take a lead role in an organization, Build a social network.
* **I read relevant literature:** reading is leading, I do weekly reading related to my field about concrete, steel, design, and much more. In addition to that I do personal development reading of books, currently I am reading 2 books: Finding your Element & Rich Dad Poor Dad.
* **Courses:** I did a lot of courses and trainings like, certificate 4 in building and construction, first aid training, Identify Locate and protect underground services (Pipeline), construct and install water distribution assets (Pentair), safe spine leader training, mission zero behavioral safety.
* **AECOM’s University:** I have been completing company’s internal online courses about Autocad, Revit, management and much more.
* **Setting yearly Business Goals:** I setup yearly goals and site observation related to Quality and safety on site. I do this to build/develop proactive approach in reporting as many observations in construction work/activities with respect to the Project Quality Plan (PQP) and safety/environmental controls.
* **Employee Survey Engagement:** I am part of AECOM’s engagement team to improve the work environment, I raise up issues to the head office to enhance the work environment and make the site a happy place. This is very useful for my future career.
* **Mentoring:** In addition I also mentor and guide junior engineers, I have mentored a junior engineer from New York-USA who joined AECOM Qatar.
* **Global & Local Conferences:** I attended a conference (GOLD) Global Outreach and Leadership Development in New York City.
* **Volunteering:** In order to develop my skills I do volunteering activities - participate in community activities: clean up Australia day, CVS Community Visitor Scheme-Australian Red Cross, national tree day and much more.
* **Languages:** communication is the key of success, I am learning Urdu and Pilipino language this is very important to have proper and understandable communication with labors in Qatar.
1. **Judgment:**

 Level of developed knowledge, and ability and judgment in relation to type of activity

**What this competence means in practice**

Means that you exercise sound judgment in engineering activities.

**Indicators of Attainment**

1. Deal decisively with engineering activities which have significant consequences and diverse or conflicting stakeholder interests.
2. Supervise, monitor and evaluate the progress of technical work performed by other people, diagnosing performance deficiencies and negotiating appropriate remedial measures, such as providing training and assistance.
3. Seek appropriate advice and decide whether to proceed or suspend work when faced with unexpected obstacles, performance deficiencies, impending or actual failures.

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**SAMPLE**

For the past year I have worked for AECOM which is a global engineering firm with a very high international engineering standards. I have had varying responsibilities including checking the design/work of some structural elements (WIR), inspecting construction materials (MIR) and assessing the progress of the project and construction works by prepare daily progress report which is checked daily by our client and senior management.

As a site engineer I am responsible for the civil/structural works of a 30 storey 7 stars hotel tower at DOHA OASIS. The client has been very interested and looking forward for the completion of this part (tower) of the project.

The client planned for a 4 days construction cycle for each level/story, so it needs minimum 4 months to build the tower. But within all the available and unlimited human resources, machinery and materials it was out of my control and a definite impossible to fulfil the client’s needs. Each slab is taking 1 week to complete. I reported and suggested during meetings with the client and my senior management that it is impossible to achieve the required cycle within the current design status of the tower.

The DOHA OASIS tower has been designed as a composite structure, an RFI request for information has been raised to the structural designer to change the design from composite structure to RC reinforced concrete structure.

The tower design has been changed from 12 external composite column (steel + concrete) into pure 12 RC columns. The composite columns were time consuming because a lot of steel welding and testing (by third party using UT ultrasonic Testing) is required and sometimes a weld defect rectification is needed. Moreover, the dense RC drop beams linking the columns has been changed to post tension (PT) beams. The design change makes it much easier in terms of reinforcement fixation and progress.

I strongly believe that I exercised professional engineering judgment. The appropriate advice, supervision has been taken. I monitored the construction activity progress well to achieve the final outcome of changing the design to speed the progress of construction of the DOHA OASIS hotel tower.

1. **Responsibility for decisions:**

Type of activity for which responsibility is taken

**What this competence means in practice**

Means that you initiate, plan, lead or manage engineering activities.

**Indicators of Attainment**

1. Contribute to successful proposals, bids, technical qualification and tender documents for engineering activities
2. Provide initiative and leadership in coordinating technical, commercial, social and environmental aspects of engineering activities implementation
3. Gain sufficient confidence from stakeholders for them to provide you with financial and other resources to conduct your work independently on the understanding that you will deliver agreed results on time within a given cost target
4. Apply and use appropriate formal coordination and management systems and organizational processes such as project management, quality management, production management, logistics, enterprise resource and planning systems, maintenance management, configuration management, information management
5. Report progress relative to the agreed schedule, expenditure relative to the budget, provide agreed deliverables, and report on any outstanding issues
6. Manage projects effectively, including scoping, procurement and integration of physical resources and people; control of cost, quality, safety, environment and risk; and monitoring of progress and finalization of projects
7. Keep financial and other records to substantiate the effective application of finance and other resources provided in support of your work, in a form that is appropriate to meet the needs of agencies that will audit the conduct of the work

SAMPLE

As a part of my career development path at Killard Excavation Pty Ltd, my project manager gave me the chance to be involved in a tender document, I took part of a proposal project to lay a drinkable water main (trunk main) pipe along Richardson Road - Camden Area NSW. This was a challenging and critical project in terms of affecting the surrounded community and environmental concerns.

As a team we reviewed Sydney Water tender documents for this project and did a site walk to inspect the surrounded community and to check if any additional concern should be taken into consideration in our tender/cost document. Sydney Water (Client) requested a through environmental analysis, community mitigation report and traffic control plan for a major road closer which will take place for 2 months to install a laser bore machine and jack the 1.8m diameter pipes.

I did thorough study of the project by assessing the geotechnical report, environmental/heritage reports, material takeoffs, approved for construction (AFC) drawings, involvement of subcontractors, material suppliers etc…

We proposed the construction methodology and traffic management plan along Richardson road which is the busiest road in Camden area. Moreover, we included the CVs and profiles (trainings, previous experience and similar projects) of all the engineers, foremen, welders and pipe layers, who will be involved in the proposed project. In addition to that, I prepared a Gant Chart (Microsoft project document) for the estimated time of the project. A risk and cost analysis has been prepared regarding the possibility of any delay in the progress.

I was given a permission for a site walk inspection and dilapidation report at the proposal stage of the project. This increased the expenses before the potential contract award. This is very important to gain a well knowledge of the site since Google earth is not enough and updated to show well the surrounded area.

I coordinated the bid process and integrated/compiled all the documents received into my proposal. I took part of a master spreadsheet dividing all the project activities and their cost. And to ensure a competitive bid we proposed a reduction or discount because Sydney Water was our main client.

Sydney Water accepted my proposal and after my company Killard Excavation was awarded the contract, I took few the following actions:

**Permits Approvals:**

I prepared a meeting with the local council (Camden Council) and I submitted the road closure permit application to the RMS (RTA previously), then I emailed Sydney Water the outcomes so I can show them of my prepared and coordinated team.

**Management system:**

I set up a job number in my company's internal financial management system. I created sub job numbers and assigned them to the various crews who are involved in the project so I can trace back any discrepancy. I prepared a project management plan (PMP), compound management plan (CMP), noise management plan (NMP), environmental management plan (EMP), traffic management plan (TMP), safe work method statement (SWMS), task risk assessment (TRA).

**Quality Assurance QA:**

As a site engineer I divided the site tasks for all personnel working on the project. For each person I documented their expected deliverables and estimated budget. I requested each team member to read, review and understand thoroughly the required tasks. As a site engineer I felt comfortable in the fact that my different crew/team members were taking ownership of their individual tasks. I checked and tracked actual incurred project costs against my budgeted amounts on a Weekly basis.

I keep records and registers for calibration certificates/history, construction machinery, safety kits, suppliers, purchase orders, tender documents and much more. All these activities keeps a track of the site actions to facilitate and manage the construction activities of our company.

I received an email from the client (Sydney Water) stating that after reading my proposal they felt confident in me getting involved in the tender document and my team ability to successfully deliver such critical project with community. Moreover, the client requested a face to face presentation for further discussions.