Why i chose to study engineering

The significant contribution of engineers to the local and global communities is what has inspired me to study engineering. There are many disciplines of engineering though I have chosen to study architectural engineering. In this essay, I will reflect on my choice of study and explore the skills and contributions of architectural engineering. I will discuss what factors have inspired and motivated my choice of study, the roles of an architectural engineer, the attributes required to be a successful engineer, how they serve society and the obstacles that will be faced in the industry.

I did not choose architectural engineering at random, there are some aspects that inspired and motivated my choice. I have always known I wanted to pursue a career in engineering, as I enjoy mathematics and physics, but I was unsure of which field. My personal interests have had a large impact on my choice of study. I love to design and create, take on new challenges, solve problems and give back to my community. Originally, I intended to study mining engineering and participated in a week of work experience at a mine. After that week, I believed that it was not for me. I had heard of architectural engineering and thought I would check it out. I researched everything I could about it and knew that it was the field I wanted to do. Architectural engineers give so much to the community through the structures they assist in designing. I hope to be able to help create systems that will assist our society. There were times when I was doubtful as engineering is a male-dominate field and the only course available is in Melbourne. However, my parents have pushed me to pursue my dream. They are my motivation, I do not want to let them down. I aspire to make them proud.

Architectural engineers apply engineering principles and technology to the design, construction and planning of buildings. They are responsible for taking a design from an architect and developing the details of the building's structural and environmental systems. The systems of a building include: structural integrity, heating/air conditioning systems, ventilating systems, plumbing, fire protection and electrical systems [1]. As shown in [2] architectural engineering incorporates elements of several other engineering disciplines including mechanical, electrical, fire protection, and others. Some architectural engineers may focus on specific areas, such as a structure's capability to endure the stress of natural disasters. While others may concentrate on improving air quality, energy efficiency and minimising environmental impact. They work in teams with architects and engineers who a specialist in other fields [1]. As to be able to design and construct a stable and safe building, they need to be able to communicate, work together and solve problems.

The attributes of a successful engineering can be listed in to three categories set by Engineers Australia. These three categories are: ' knowledge and skill base; engineering application ability; and professional and personal attributes' [3]. The first two categories are based on having an understanding and application of engineering, mathematics and physics. The last category includes many of the key attributes required to be a successful architectural engineer. The ability to communicate with others and work in a team environment are two of the main key attributes. An engineer needs to be able to communicate well, both orally and in writing, to not just other engineers but also other specialist. In the industry, there will be times when

engineers must work with others that may not have the same level of knowledge, so they must convey technical ideas in non-technical language understood by the audience [3]. Architectural engineers need to ‘ be creative, inquisitive, analytical and detail-oriented’ [1]. This will enhance their problem-solving skills and lead to further ideas and developments that will serve society.

Architectural engineering has a large impact on the systems that support society’s standard of living [4]. Engineers are continuously aiming to improve and develop concepts that will greatly benefit society through the use of science and technology. Architectural engineers create building systems based on what is requested from society [4]. They have developed buildings that can withstand the stress of a natural disaster. They strive to create safe and convenient places for people to work and live. The designs developed by architectural engineers do not just benefit society with the final structure but also during the planning and construction phases. The different stages of a project require people from different professions, initiating many job opportunities for people within the communities. When architectural engineers have a project, they aim to create a safe and functional building suited for the consumers but this doesn’t come without many obstacles.

In the work force, there will be obstacles and challenges. There are many factors that could impact a project including: environmental impact, budgeting, resources and work environment. There are major concerns from society about the environmental impact of projects, thus engineers are trying to minimise our impact [5]. Budgets are a foremost factor in the creation and construction of a building as it is what gives architectural

engineers a guideline, though sometimes it is considered a constraint. The budget allowed also impacts the availability of resources and materials. Architectural engineers can only create a building with what is available as it is unprofessional to start a project and realise that there is a limited amount of the building materials. The final factor, workplace environment as seen in [6] is the ‘ most critical factor’ in maintaining the productivity rate and satisfaction levels of a workplace and employees.

The main aspect that has inspired me to study architectural engineering is the large contribution it has on improving and developing society’s standard of living. In this essay, I have reflected, discussed and explored the aspects that have inspired and motivated my choice of study, the responsibilities and role of an architectural engineer, the attributes required to become an accredited engineer, the impact that they have on society and the challenges that will be faced in the workplace.

References

[1] Architectural Engineering Overview, Sloan Career Cornerstone Center. Accessed on: Mar. 10, 2017. [Online]. Available: http://www. careercornerstone. org/pdf/archeng/archeng. pdf

[2]C. Ozansoy, Class Lecture, Topic: “ Chapter 1 – What is Engineering?” NEF1103, College of Engineering and Science, Victoria University, Melbourne, Vic., Feb., 27, 2017.

[3] D. Dowling, R. Hadgraft, A. Carew, T. McCarthy, D. Hargreaves and C. Ballie, “ What is Engineering?” in Engineering Your Future: An Australasian Guide, 3rd ed. Milton: John Wiley & Sons, 2016, ch. 1, pp. 24-27.

[4] University of Michigan (2013, Aug. 2). *2013 James R. Mellor Lecture – William Banholzer* [Video file]. Accessed on: Mar. 19, 2017. Available: https://www. youtube. com/watch? v= 4XY4mMZNGl4

[5]D. Dowling, R. Hadgraft, A. Carew, T. McCarthy, D. Hargreaves and C. Ballie, " Sustainable Engineering," in Engineering Your Future: An Australasian Guide, 3rd ed. Milton: John Wiley & Sons, 2016, ch. 3, p. 119.

[6]E. Ajala, " The Influence of Workplace Environment on Workers' Welfare, Performance and Productivity", The African Symposium: An online journal of the African Educational Research Network, vol. 12, no. 1, p. 141, 2012.