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Practicing Professional Ethics in Engineering: How This Field is Developed and Its Importance

Abstract. Many associations of engineers around the world have worked to develop rules in an effort to regulate the ethical practice of the engineer's profession. These rules are usually referred as Code of Ethics for Engineers and tries to explain how an engineer must practice his work with professional ethics. The purpose of this paper is to show, in informative form, how this field has developed around the world and to emphasize the importance of implementing these rules during the practice of the profession of engineer.

Keywords: Code of ethics, rules of practice, engineer's profession.

1. Introduction

Various societies and associations of engineers around the world apply the Codes of Ethics in the rules and procedures of professional works, respectively in the practice of the profession of engineer.

The formulation of codes of ethics has an early beginning, ie at the end of the 19th century the first engineering ethics standards were drafted, and then many engineering societies formulated different regulations, the first who started to work in this field was four American engineering societies of different fields, for example the American Society of Civil Engineers (ASCE) adopted the first draft of the "Code of Ethics" in year 1914 which after amended to the development of fundamental principles of the "Code of Ethics of Engineers", then Japan Society of Civil Engineers (JSCE) promulgated "the Beliefs and Principles of Practice for Civil Engineers" in 1938 where through this document tries to present and regulate standards of conduct of engineers and researchers in the practice of their profession. Then in 1946 the National Society of Professional Engineers (NSPE) developed the "Canon of Ethics for Engineers and Professional Conduct".

All engineering societies and associations aim at formulating documents that regulate and determine the behavior of engineers in the exercise of their profession, and all drafts have almost the same or unified intention content.

2. Content of the Code of Ethics

Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct.

As described above, Codes of Ethics are documents compiled by various societies of engineers, therefore for informational reasons, ie in order to present what they contain or how they are formulated, in the following we are presenting the compiled draft by National Society of Professional Engineers (NSPE). This code, like other codes developed for the same purpose, is presented and clarified through three chapters:

- I. Fundamental Canons
- II. Rules of Practice
- III. Professional Obligations

2.1 Fundamental Canons

1. This chapter we are going to present as it is originally described by NSPE.
2. Engineers, in the fulfillment of their professional duties, shall:
3. Hold paramount the safety, health, and welfare of the public.
4. Perform services only in areas of their competence.
5. Issue public statements only in an objective and truthful manner.
6. Act for each employer or client as faithful agents or trustees.
7. Avoid deceptive acts.
8. Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

2.2 Rules of Practice

Rules of Practice explain in details how engineers shall apply above main Fundamental Canons. For every of six canons are given descriptions and situations at which engineer shall comply with these canons in his/her practicing of profession. The explanation of the best ways of practicing the profession of engineer is done through the Case Study which shows the appropriate forms of behavior of engineers in different situations, always being the behavior of engineers in accordance with these codes of ethics.

2.3 Professional Obligations

This chapter aims to explain the obligations of the engineer as a professional during the practice of his profession. Even for this chapter we will present only the titles of the paragraphs that describe the obligations of the engineer, while the explanations for each point the reader can find in the official document of NSPE.

- 2.3.1 Engineers shall be guided in all their relations by the highest standards of honesty and integrity.
- 2.3.2 Engineers shall at all times strive to serve the public interest.
- 2.3.3 Engineers shall avoid all conduct or practice that deceives the public.
- 2.3.4 Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve.
- 2.3.5 Engineers shall not be influenced in their professional duties by conflicting interests.
- 2.3.6 Engineers shall not attempt to obtain employment or advancement or professional engagements by untruthfully criticizing other engineers, or by other improper or questionable methods.
- 2.3.7 Engineers shall not attempt to injure, maliciously or falsely, directly or indirectly, the professional reputation, prospects, practice, or employment of other engineers. Engineers who believe others are guilty of unethical or illegal practice shall present such information to the proper authority for action.
- 2.3.8 Engineers shall accept personal responsibility for their professional activities, provided, however, that engineers may seek indemnification for services arising out of their practice for other than gross negligence, where the engineer's interests cannot otherwise be protected.
- 2.3.9 Engineers shall give credit for engineering work to those to whom credit is due, and will recognize the proprietary interests of others.

3. Responsibility of engineers

To better present the responsibilities of the engineer we are also giving a description given by NSPE and cited on Wikipedia, as follows:

The engineers recognize that the greatest merit is the work and exercise their profession committed to serving society, attending to the welfare and progress of the majority. By transforming nature for the benefit of mankind, engineers must increase their awareness of the world as the abode of humanity, their interest in the universe as a guarantee of

overcoming their spirit, and knowledge of reality to make the world fairer and happier. The engineer should reject any paper that is intended to harm the general interest, thus avoiding a situation that might be hazardous or threatening to the environment, life, health, or other rights of human beings. It is an inescapable duty of the engineer to uphold the prestige of the profession, to ensure its proper discharge, and to maintain a professional demeanor rooted in ability, honesty, fortitude, temperance, magnanimity, modesty, honesty, and justice; with the consciousness of individual well-being subordinate to the social good. The engineers and their employers must ensure the continuous improvement of their knowledge, particularly of their profession, disseminate their knowledge, share their experience, provide opportunities for education and training of workers, provide recognition, moral and material support to the schools where they studied, thus returning the benefits and opportunities they and their employers have received. It is the responsibility of the engineers to carry out their work efficiently and to support the law. In particular, they must ensure compliance with the standards of worker protection as provided by the law. As professionals, the engineers are expected to commit themselves to high standards of conduct (NSPE).

4. Conclusions

The idea of this paper is to present in the form of information for the engineering community of our country how different societies around the world have tried to present and regulate the codes of ethics of behavior of engineers during the practice of their profession, so through this information should be an attempt to show the need or necessity to have such an official document even in us as an engineering community in our country. Also, considering the importance of the respective behavior of the engineer during the exercise of his profession, it is seen the necessity of regulating the profession of engineer that is done through licensing. As can be seen from the descriptions given in this paper, the correct practice of the profession of engineer is of paramount importance throughout the performance cycle and the quality of construction, therefore the implementation of codes of ethics by engineers is of particular importance, so we as an engineering community should work for the completion of the licensing of engineers which would regulate the exercise of the profession of engineer and precisely its conduct in accordance with the approved codes of ethics.

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