

ENGINEER IN SOCIETY

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Outline of Presentation

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- Definition of an Engineer
- Social Responsibility of Engineers
- Engineer Ethics
- Engineering Practice in Canada and in Nepal
- Conclusion

Definition of an Engineer

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“Engineering is that profession in which knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind.”

(The Accreditation Board for Engineering and Technology – ABET, 1992)

Ultimate Objective is to Benefit People

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- Sanitation; Piped Water Supply; Irrigation
- Transportation
- Landslip Prevention
- Modern Housing

Engineering and Society

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“Engineering is a great profession. There is a fascination of watching a figment of the imagination emerge, through the aid of science, to a plan on paper. Then it moves to realization in stone or metal or energy. Then it brings jobs home to men. Then it elevates the standards of living and adds to the comfort of life. That is the engineer's high privilege....To the engineer falls the job of clothing the bare bones of science with life, comfort, and hope...”

--Herbert Hoover

(US mining engineer & 31st President of the US)

(1874 - 1964)

Why Did You Choose to Engineering Career?

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- Make money?
- My family wanted me to be an Engineer?
- Big Dowry?
- Excited by the creative opportunities and challenges it presents?
- Service to humanity?

Requirements to be an Engineer

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- Scientific knowledge
- Understanding Society and its expectations
- Able to communicate
- No recipe solution /very creative
- Huge Responsibility

Why We Have To Be Socially Responsible?

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- Because public trusts us.
- Because we create the technology
- Because we have an honorable profession
- Because we are responsible moral beings who think about the effects of our actions and creations especially if they impact others

Social Responsibilities of Engineers-

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- Ensure the safety and well-being of the public
- Ensure that society's funds and resources concerning technology are well used
- Refusing to work on a particular project or for a particular company
- Speaking out publicly against a proposed project
- Blowing the whistle on illegality or wrong-doing

Social Responsibilities of Engineers-2

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- Professional Societies' obligation to provide protection for whistleblowers
- Individual and organizational concern about the impact of engineering projects on society
- Contributing one's services to worthy, non-profit groups and projects
- Engineering schools' commitment to educating future engineers about their social responsibilities

What does “having” social responsibilities mean?

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- Commitment to place the public safety and interest ahead of all other considerations and obligations
- Take into account and show due regard for the consequences of their conduct for the well-being of others as well as for the impact of their work on society and the citizenry.
- Make determined efforts to discover all of the relevant facts concerning the design, development, and deployment and of all possible outcomes of the choices available that may positively and negatively affect/impact society and the citizenry

Contract Between Society and the Engineering Profession

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Professionals agree to:

- * provide a service
 - for the public well-being
 - promote public welfare, even at own expense
- * self-regulation
 - enforce competence
 - enforce ethical standards

Fundamental Canons

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- Hold paramount the safety, health, and welfare of the public
- Perform services only in areas of their competence
- Issue public statements only in an objective and truthful manner
- Act for each employer or client as faithful agents or trustees
- Avoid deceptive acts





Instruments to Ensure that Engineers Act responsibly

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- Personal Moral/Ethical Standard
- Professionalism
- Duty of Proportionate care
- Engineer's Code of Conduct

Nepal Engineering Council

Professional Code of Conduct

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- Discipline and Honesty : The Engineering service/profession must be conducted in a disciplined manner with honesty, not contravening professional dignity and well-being.
- Professional Work: Individuals should only do professional work in their field or provide recommendations or suggestions only within the area of their subject of study or obtained knowledge or skills. With regard to the works not falling within the subject of one's profession, such works should be recommended to be done by an expert of that subject matter.
- Personal responsibility: All individuals will be personally responsible for all works performed in connection with his/her engineering profession.

Engineering Codes of Ethics

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- ASCE Code of Ethics
 - ▣ **Fundamental Canon 1.** Engineers shall hold paramount the safety, health and welfare of the public and shall **strive to comply with the principles of sustainable development** in the performance of their professional duties.

- Software Engineering Code of Ethics
 - ▣ **Principle 1.03.** Approve software only if they have a well-founded belief that it is safe, meets specifications, passes appropriate tests, and **does not diminish quality of life, diminish privacy or harm the environment. The ultimate effect of the work should be to the public good.**

IEEE Code of Ethics for Engineers

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ARTICLE IV

- Engineers shall, in fulfilling their responsibilities to the community:
- Protect the safety, health and welfare of the public and **speak out against abuses in these areas affecting the public interest;**
- Contribute professional advice, as appropriate, to civic, charitable or other non-profit organizations;
- Seek to extend public knowledge and appreciation of the engineering profession and its achievements

Liability of an Engineer

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- As a general rule, when an engineer negligently performs services on behalf of his firm or employer, the individual allegedly suffering damage from the engineer's negligent performance may sue the company and/or the individual engineer.
- Typically, in the case of an engineering firm in private practice, the firm's professional liability insurance carrier will respond to claims against any past or present principal, partner, director, officer, or employee acting within the scope of their duties.

Nepal's Engineering Practice

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- We have no regard to public safety
- We assume responsibilities outside our competence
- Public have no confidence on our integrity



Niderfinow Boat
Lift, Gerrmany



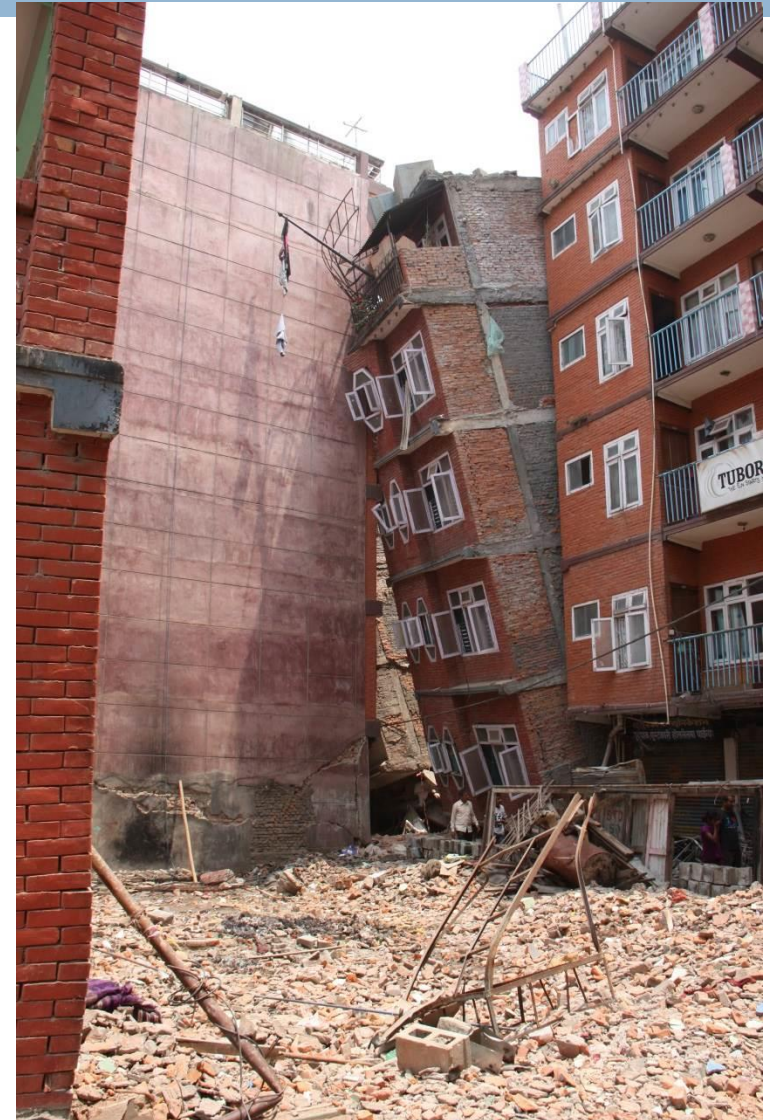
Chautara, Sindhupalchok



Reinforced concrete 15-storeys
Dhapasi, Kathmandu

3.5 Guest Houses

Balaju & Gungabu (Bus Park)



- 2 m Silty Clay
- 12 m Gravelly Sand
- 4 m Sand
- 33 m Clayey Sand
- 187 m Clay



Where do we go from here?

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- Be proud of your profession
- Respect your code of ethics
- Be open and critical of wrong doings/make suggestions for improvement
- Do not be a defeatist
- Believe in your self ; we can do better.

— You're fluent in twenty-four programming languages, but you can't even talk about the weather with me!"



Igor Aleshin

DATAART
Enjoy IT