NOTICE

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NOTICE

2017 Professional Engineers CONFERENCE

Engineering Ethics

Samuel G. Sudler III, P.E., IntPE, DFE, MIET, CFEI, CVFI

NSPE™ NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

"Among the universal ethical values are honesty, integrity, promise-keeping, fidelity, fairness, respect for others, responsible citizenship, pursuit of excellence and accountability."

– Michael Josephson

Engineering Ethics

- **Black and White Areas – Easy**
  - Right vs. Wrong
- **Gray Areas – Tougher**
  - Right vs. Right
  - Lesser of the Evils/Dilemma
- **Other Factors**
  - Time/Money
  - Family
  - Career
  - Reputation

Engineering Ethics

Professional Maturity

Learning to Be Comfortable with Ambiguity

More than One Answer to the Same Question

Sometimes One Answer is Not Entirely Correct

Engineering Ethics

Emotional Intelligence

Self-awareness (e.g., handling stress)

Self-regulation (e.g., the words you use)

Empathy (e.g., feeling other's pain)

Social Skills (verbal, non-verbal skills)

Engineering Ethics

"Novice" – Complies with strict rules based on context free features of the task environment

"Advanced Beginner" – Recognizes the situational aspects of the task environment and follows maxims to adjust his or her actions accordingly

Engineering Ethics

"Competent Performer" – Does not try to account for all discrete elements of the task environment; instead, he or she selects a plan, goal or perspective to establish which elements are relevant and which may be safely ignored

"Proficient Performer" – No longer reflects on the task environment as a detached observer; without having to evaluate multiple options, he or she simply sees what needs to be done and then chooses how to go about doing it

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"Expert" – Intuitively perceives both what needs to be done and how to do it, making extremely subtle and refined discriminations in a variety of task environments that are sufficiently similar to those previously encountered

Engineering Ethics

- Data
- Information
- Facts
- Knowledge
- Expertise
- Wisdom

Engineering Ethics

Confucianism…"What you yourself do not want, do not do to another person…"

Islam…"None of you is a believer as long as he does not wish his brother what he wishes himself…"

Buddhism…."A state which is not pleasant or enjoyable for me, will also not be so for him, and how can I impose on another a state which is not pleasant or enjoyable to me…"

Engineering Ethics

Hinduism…"One should not behave towards others in a way which is unpleasant for oneself: that is the essence of morality…"

Jainism…"Human beings should be indifferent to worldly things and treat all creatures in the world as they would want to be treated themselves…"

Christianity…"Whatever you want people to do to you, do also to them…"

Judaism…"Do not do to others what you would not want them to do to you…"

Engineering Ethics

Utilitarianism – What is ethical is that which produces the greatest good for the greatest number

Duty Ethics – What is ethical is to perform duties regardless of whether they lead to "good" outcomes

Rights Ethics – Mirror of Duty Ethics; People have rights that cannot be violated

Virtue Ethics – Actions reflecting good character traits are good; vices are bad; outcome of action is not relevant

Engineering Ethics

Why Study Engineering Ethics?

To Understand the Standards Governing What is Acceptable Behavior in the Practice of Engineering

Why Practice Engineering Ethically?

Personal Injury/Property Damage

Disciplinary Action

Impact on Reputation, Employer, Clients, Profession

Possible Loss of Job, Business, etc.

Engineering Ethics

- *"All products of technology present some potential dangers, and thus engineering is an inherently risky activity…Engineering should be viewed as an experimental process. It is not, of course, an experiment conducted solely in a laboratory under controlled conditions. Rather, it is an experiment on a social scale involving human subjects"*
  - Martin and Schinziger, Ethics in Engineering

Professional Codes of Ethics

A code of professional ethics results when a field organizes itself into a profession. The resulting code is central to advising those professionals how to conduct themselves, to judge their conduct and to understand the profession. Engineering Professional and Technical Societies - NSPE, ASCE, ASME, IEEE, AIChE, etc.

Engineering Ethics

Hierarchy of Ethical Obligations

Primary: Ethical Obligations to the Public

Secondary: Ethical Obligations to Employer or Client

Tertiary: Ethical Obligations to Other Professionals and Other Parties

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Three Basic Ethical Obligations

(1) Public, (2) Employer/Client and (3) Other Professionals...

Never Mutually Exclusive - Reciprocal

Not A “Zero Sum Game”

All Need To Be Considered At All Times

Should Be Complementary to be Integrated With One Another To The Fullest Extent Possible

Ethical Integration = Professional Integrity

Seven Principles Impacting Each Obligation

1. Protecting The Public Health, Safety and Welfare
2. Demonstrating Professional Competence
3. Maintaining Objectivity/Truthfulness
4. Addressing Conflict of Interest
5. Preserving Confidentiality
6. Receiving and Providing Valuable Consideration
7. Emerging Areas/Emerging Challenges

Engineering Ethics

1. Protecting The Public Health, Safety and Welfare

   - Conformance with Applicable Standards
   - Approval/Signing and Sealing of Engineering Drawing
   - Responsible Charge/Responsible Control
   - Judgment Overruled
   - Awareness of Safety Violations
   - Awareness of Illegal Practice

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2. Demonstrating Professional Competence

- Education, Experience, Qualifications
- Acceptance of Assignment
- Signing and Sealing of Work
- Coordination of Work
- Scope of Practice

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3. Maintaining Objectivity/Truthfulness/ Non-Deception

- Inclusion of All Relevant Information
- Issuance of Public Statements
- Disclosure to Interested Parties
- Expression of Technical Opinions
- Reviewing Work of Another
- Sales and Marketing Practice

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4. Addressing Conflicts of Interest

- Faithful Agent and Trustee
- Avoid vs. Disclosure
- “Appearances”
- Acceptance of Compensation from More Than One Party
- Serving on Public Bodies
- Accepting Contracts from Government Bodies
- Part-Time Engineering Work
- Contingent Fee Arrangements
- Representing Adversary Interests
- Consent

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5. Preserving Confidentiality

- Business or Technical Affairs of Employers/Clients
- Proprietary Information/Files
- Arranging for New Employment or Business Opportunities
- Consent

Engineering Ethics

6. Receiving and Providing Gifts and Other Valuable Consideration

   - Accepting Consideration from Suppliers for Specifying Product
   - Accepting Commissions/Allowances Directly from Contractors
   - Political Contributions
   - Bribery

Engineering Ethics

7. Emerging Areas/Emerging Challenges
   - Technology
     - Use of Internet and Electronic Practice
     - Sustainable Design/Development
     - Environmental Considerations
     - Alternative Project Delivery
       - Integrated Project Delivery
       - Building Information Modeling
       - Design/Build

Engineering Ethics

A Word About Fraud

Fraud is…

A deceitful practice

Results in an injury

It is always intentional

It always includes a lie

Engineering Ethics

Recommended Practices for Design Professionals Engaged in the Resolution of Construction Industry Disputes

Endorsed by 30 organizations (including NAFE and NSPE)

Engineering Ethics

The engineer should avoid conflicts of interest and the appearance of conflicts of interest.

Engineering Ethics

The engineer should undertake an engagement only when qualified to do so, and should rely upon other qualified parties for assistance in matters which are beyond the engineer's area of expertise.

Engineering Ethics

The engineer should consider other practitioners' opinions relative to the principles associated with the matter at issue.

Engineering Ethics

The engineer should obtain available information relative to the events in question in order to minimize reliance on assumptions, and should be prepared to explain any assumptions to the trier of fact.

Engineering Ethics

The engineer should evaluate reasonable explanations of cause and effect.

Engineering Ethics

The engineer should strive to assure the integrity of tests and investigations conducted as part of the engineer's services.

Engineering Ethics

The engineer should testify about professional standard of care only with the knowledge of those standards which prevailed at the time in question based upon reasonable inquiry.

Engineering Ethics

The engineer should use only those illustrative devices or presentations which simplify or clarify an issue.

Engineering Ethics

The engineer should maintain custody and control whatever materials are entrusted to the engineer's care.

Engineering Ethics

The engineer should respect confidentiality about an assignment.

Engineering Ethics

The engineer should refuse or terminate involvement in an engagement when fee is used in an attempt to compromise the engineer's judgment.

Engineering Ethics

The engineer should refuse or terminate involvement in an engagement when the engineer is not permitted to perform the investigation which the engineer believes is necessary to render an opinion with a reasonable degree of certainty.

Engineering Ethics

The engineer witness should strive to maintain professional demeanor and be dispassionate at all times.

Engineering Ethics Example

Conflict of Interest—Role on Public Utility Board

Case No. 13-1

Facts:
Engineer A is appointed officer and partner at a full-service design, engineering, and construction firm in his hometown. Engineer A is also appointed by the mayor to the board of directors of a local public utility—the state's largest. Coinciding with Engineer A's service on its board, the utility spends three years researching options for a new power-generation plant. Two years into project research, Engineer A resigns his professional position to form his own engineering-construction management company. However, Engineer A remains on the public utility board. The public utility's staff informs Engineer A and other board members of its decision to build a new power plant and asks for immediate incremental approval to advance financing. Engineer A votes to approve financing and the vote passes. After the vote, Engineer A resigns from the board, and about a month after his resignation, Engineer A submits a proposal to serve as the owner's representative for the utility on the project.

Question:
Was it ethical for Engineer A to submit a proposal to serve as the owner's representative for the utility on the project?

Engineering Ethics Example

Conclusion:
It was not ethical for Engineer A to submit a proposal to serve as the owner's representative for the utility on the project.

Board of Ethical Review:
Curtis A. Beck, P.E., F.NSPE
John C. Branch, P.E.
Daniel K. O'Brien, P.E., F.NSPE
Luke Patterson, P.E.
Robert J. Andreoli, P.E.
Mumtaz A. Usmen, Ph.D., P.E., F.NSPE *(Vice Chair)*
Samuel G. Sudler III, P.E., NSPE *(Chair)*

Engineering Ethics Example

Expert Witness—Engineer's Confidentiality and Non–Disclosure Agreement

Case No. 13-4

Facts:
Engineer A performs engineering expert witness services for attorneys and other clients in civil and criminal law matters. Engineer A is contacted by Attorney X who saw Engineer A's information listed in an online directory. After discussing the case with Engineer A, and inquiring whether Engineer A would have the time and resources necessary to assist in a legal matter, Attorney X requests a copy of Engineer A's curriculum vitae to review in contemplation of litigation, which Engineer A sends to Attorney X. Engineer A does not hear any more from Attorney X. Without engaging Engineer A's services and as part of settlement discussions with the opposing party, Attorney X tells opposing counsel Attorney Y that he "has engaged the services of Engineer A" and thereafter shares Engineer A's Curriculum Vitae with Attorney Y. Following this conversation, Attorney Y advises Attorney X that his client has decided to settle the case. Engineer A learns about Attorney X's misrepresentation that his services had been engaged as part of the litigation. In order to prevent such future misrepresentations, Engineer A establishes a policy whereby any attorney or client who considers retaining Engineer A and who requests a copy of Engineer A's curriculum vitae or other material must sign a confidentiality/nondisclosure agreement with Engineer A.

Question:
Was it unethical for Engineer A to establish a policy whereby any attorney or client considering retaining Engineer A and requesting a copy of Engineer A's curriculum vitae or other material must sign a confidentiality/nondisclosure agreement with Engineer A?

Engineering Ethics Example

Conclusion:
It was not unethical for Engineer A to establish a policy whereby any attorney or client considering retaining Engineer A and requesting a copy of Engineer A's curriculum vitae or other material must sign a confidentiality/nondisclosure agreement with Engineer A.

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Engineering Ethics Example

Confidentiality – Becoming Aware of
Technical Information Important to the Public Health and Safety

Case No. 13-9

Facts:
Engineer A performs an investigation of a recent structural failure in connection with services provided to Attorney B for Client C. Engineer A signs a confidentiality agreement by which Engineer A is prohibited from disclosing any of the conclusions reached in connection with the cause of the structural failure without the consent of Client C.

Early during the litigation process, Attorney B negotiates a settlement agreement for Client C. As part of the settlement agreement, Attorney B and Client C agree that all investigative reports, including the work performed by Engineer A, will be sealed and remain strictly confidential forever. Engineer A believes that his investigation has identified a significant technical issue that, if communicated more broadly in the technical literature, could prevent future structural failures.

Question:
What are Engineer A's obligations under the circumstances?

Engineering Ethics Example

Conclusion:

Engineer A should explain to Attorney B and Client C his ethical obligations as a professional engineer to work for the advancement of the safety, health, and welfare of the public and explore an alternative path to identifying the technical issue, including developing a paper or article that explains his technical issues without revealing specific and identifiable facts and circumstances that would compromise the settlement agreement involving Client C. However, if Client C refuses to allow Engineer A to disseminate this information, and Engineer A is convinced that the matter rises to the level of an imminent or urgent threat to public safety, health, or welfare, Engineer A should notify such other authorities as may be appropriate to safeguard the public.

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Engineering Ethics

Questions

Summary and Conclusion

Engineering Ethics

"The reputation of a thousand years may be determined by the conduct of one hour"

Japanese proverb

Contact Information

Samuel G. Sudler III, P.E., IntPE, DFE, MIET, CFEI, CVFI

795 Cromwell Park Drive, Suite N

Glen Burnie, Maryland 21061

800-635-9507 (General)

e-mail: ssudler@sealimited.com

Visit our website at www.SEAlimited.com