Ethical Challenges for Engineers

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Lessons Learned

- What Ethics Codes apply to engineers?
- What to do when you feel you are confronting an ethical issue or dilemma?
- Identifying and managing key ethical issues.
- Educating your staff and your clients on engineering ethics

I. Fundamental Canons

Engineers, in the fulfillment of their professional duties, shall:

- 1. Hold paramount the safety, health, and welfare of the public.
- 2. Perform services only in areas of their competence.
- 3. Issue public statements only in an objective and truthful
- manner.
- 4. Act for each employer or client as faithful agents or trustees.
- 5. Avoid deceptive acts.
- 6. Conduct themselves honorably, responsibly, ethically,
- and lawfully so as to enhance the honor, reputation, and
- usefulness of the profession.

NSPE Code of Ethics

- This Code applies to all individual engineers that are members of the National Society of Professional Engineers, or any State affiliate of the NSPE.

- State codes also have adopted the NSPE Code or ethical codes very similar to the NSPE Code and made those applicable to all engineers licensed in the state.

II. Rules of Practice

1. Engineers shall hold paramount the safety, health, and welfare of the public.

- a. If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate.
- b. Engineers shall approve only those engineering documents that are in conformity with applicable standards.
- c. Engineers shall not reveal facts, data, or information without the prior consent of the client or employer except as authorized or required by law or this Code.
- d. Engineers shall not permit the use of their name or associate in business ventures with any person or firm that they believe is engaged in fraudulent or dishonest enterprise.
- e. Engineers shall not aid or abet the unlawful practice of engineering by a person or firm.

Business Cards and Advertising
Case 16-6 (2/23/17)

- Engineer had a business card with his name, phone, and email, but no physical address.
  - Handed out the card to someone in the state in which he was licensed. Any ethical violation?

Holding: Case 16-6 (2/23/17)

- NSPE Board states "handing out a business card is an expression of accepted business etiquette and does not, ipso facto, rise to the level of an offer to do work…."
- So long as following all legal requirements and offering services only in the state in which licensed, there is no ethical problem.
- Held: "It is not unethical for Engineer A to not include a geographic address or the state(s) in which he is licensed on his business card."

E-Mail Signatures and Providing Engineering Advice on Social Media – Case 17-5

- Engineer includes an email signature in his email that does not indicate in which states he is licensed.
- Engineer also participates on social media and sometimes provides engineering information, observations, and advice to engineering colleagues and members of the public.
- Are either of the above unethical?

Holding in 17-5

- **Business Card**: "Unless there is some legal proscription that requires an individual to include on a business card one's mailing address or the state in which the individual is licensed, or there is some other requirement of a physical office in the state, it is ethical for Engineer A to not include a geographic address or the state(s) in which he is licensed on his business card."

- **On Social media**: "In providing opinions or advice on social media, the engineer must endeavor to not reveal any information that may be sensitive without the consent of client/employer, and must be truthful and professional in posting on social media in accordance with the Code of Ethics."

Public Health, Safety & Welfare
NSPE Case 16-1

- Engineer observed that certain new testing equipment being designed by his company was failing outside testing performed by an independent lab (even while meeting the internal company tests).
- Raised concerns with his supervisor, but months later nothing had been done.
- The supervisor then asks the engineer to issue a report to the government regulatory stating that the equipment is on track to meet the required testing standards.
- Question: What are the engineer's ethical obligations?

Case 16-1 – Held had a Duty to Report

- Engineer has obligation to report to his supervisor his concerns that the equipment testing equipment his engineering firm was designing was failing to meet regulatory standards; and

- If Supervisor ignores Engineer's recommendation then Engineer should report his concerns to his supervisor's supervisor.

Signing and Sealing—Manufacturer's Drawings
Case No. 19-11

- Engineer is the lead engineer for a firm that is designing a plan to interface with a manufactured alarm and public address system with existing equipment at State X Government Laboratory.
- The final design drawings will show the interconnections between the manufactured alarm and public address system, and the State X facility infrastructure, such as speakers and alarm triggers.
- The preliminary drawing package consists of two groups of documents: 1) the interconnection drawings specifically designed for the government client, and 2) the standard drawing from the PA system manufacturer of their cabinet, with modifications to facilitate connection to the facility.
- The Client, State X Government Laboratory, has requested that the final drawings be sealed by Engineer, including drawings provided by the manufacturer, which contain changes made by the manufacturer to their drawings that were required for interfacing to the customer's systems at the request of the Engineer.

NSPE Code of Ethics References

- *Section II.2.a. - Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.*
- *Section II.2.b. - Engineers shall not affix their signatures to any plans or documents dealing with subject matter in which they lack competence, nor to any plan or document not prepared under their direction and control.*
- *Section II.2.c. - Engineers may accept assignments and assume responsibility for coordination of an entire project and sign and seal the engineering documents for the entire project, provided that each technical segment is signed and sealed only by the qualified engineers who prepared the segment.*

Holding 19-11

- Engineer did not have “responsible charge” (direct control or personal supervision) over the work of the independent contractor; was not involved in the initial design of the manufactured alarm and public address system; and did not have any authority or control over any changes made by the manufacturer to its drawings.

- A far better course of action would be for Engineer to seal only the interface drawings for the client. Also, the Engineer should work with the manufacturer if necessary to get the manufacturer have another professional engineer sign and seal its work so that the work will be completed in a proper professional manner, consistent with State X laws and regulations.

Public Health Safety and Welfare – Engineering Standards (17-7)

- Proposed traffic engineering infrastructure amendment to a local ordinance will be contrary to established engineering standards and create safety problem in the opinion of the local engineering community, including Engineer A.

- City attorney attempted to explain to city council why they should not adopt this citizen-proposed change, but city voted to approve it.

- What, if any, obligations does Engineer A have?

Holding 17-7

- Engineer has no duty to report the situation to the public authority since the authority is a already aware of the facts and circumstances.

- BUT – the Engineer has an "obligation to further report the situation to appropriate local, state, and/or federal authorities to ensure that relevant engineering standards are consistent with protecting the public health, safety and welfare."

Responsible Charge & Sealing Drawings
2-02 (7/1/21)

- Agency B hires Consulting Firm A to prepare rehabilitation plans for underground utility lines owned by Agency B.
- Agency B's engineering staff reviewed the existing conditions and relevant data for the utilities and performed the design by recommending the rehabilitation methods for each segment of the utility.
- Agency B provided the recommendations to Firm A (the condition data was requested but not provided to Firm A) and Firm A's licensed engineers prepared the CAD drawings for the work based on Agency B's recommendations, including making any revisions directed by Agency B.
- The drawings are based on as-built plans and GIS mapping that was provided by Agency B. Engineer A of Firm A reviews the drawings prior to submitting to Agency B, and Agency B ultimately approves the design and the drawings produced by Firm A.

Can Engineer Seal the Drawings?

- Agency B is now ready to bid the work and requests that Firm A affix a PE seal to the drawings.

- Engineer A informs Agency B that since he and Firm A did not make any engineering decisions on the project and only provided drafting of the drawings, it is not appropriate for the Engineer to seal the drawings.

- Agency B believes that since the Engineer prepared the documents and reviewed them prior to submitting to Agency B, that is enough to seal the drawings.

- Question: What are the Engineer's obligations?

Applicable NSPE Code Sections

- *Section II.2.a. - Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.*

- *Section II.2.b. - Engineers shall not affix their signatures to any plans or documents dealing with subject matter in which they lack competence, not to any plan or document not prepared under their direction and control.*

- *Section II.2.c. - Engineers may accept assignments or assume responsibility for coordination of an entire project and sign and seal the engineering documents for the entire project, provided that each technical segment is signed and sealed only by the qualified engineers who prepared the segment.*

- *Section III.1.b. - Engineers shall advise their clients or employers when they believe a project will not be successful.*

- *Section III.2.b. - Engineers shall not complete, sign, or seal plans and/or specifications that are not in conformity with applicable engineering standards. If the client or employer insists on such unprofessional conduct, they shall notify the proper authorities and withdraw from further service on the project.*

Holding 20-02

- " … Engineer A did not have full responsibility for the design (was not provided with details of the utility conditions in order to design the repairs or to verify Agency B's repair methods) and was only drafting Agency B's design.
- Engineer A's work did not meet the definition of responsible charge..
- In cases when public agencies and utilities perform portions of the design or make most of the design decisions and outsource the drawing preparation, they should not expect engineers with whom they contract to sign and seal drawings if the engineers were not given full responsibility for the design. Doing so devalues the work of engineering professionals and turns their services into a commodity or, worse, constitutes "plan-stamping," which is unethical.
- It would be more appropriate for engineers employed at Agency B to sign and seal the project drawings.
- **Conclusion:** It would be unethical for Engineer A to sign and seal the drawings for Agency B."

Objectivity and Truthfulness
Previously Encountered Site Conditions
16-8

- Engineer was about to sign a contract to design a facility for Client B.
- Engineer advised Client B that its work could be completed in 150 hours under a “best-case scenario.”
- During these negotiations, the Engineer knew it had encountered differing site conditions on a neighboring property when it was working for a different client − Client C. Those conditions had caused the Engineer to significantly exceed its budget when performing for Client C.
- Engineer didn’t disclose that information to its new client, Client B.
- Was that unethical?

Key NSPE Code of Ethics Sections

- Section II.3 – "Engineers shall issue public statement only in an objective and truthful manner."
- Section II.3.a – "Engineers shall be objective and truthful in professional reports, statements or testimony. They shall include all relevant and pertinent information in such reports, statements, or testimony ….
- Holding: Engineer has an obligation to act as a faithful agent and trustee to a client in the performance of professional services.
- This involves "general candor and honesty in written and oral communications to the fullest extent possible."

Holding in 16-8 (2/23/17)

- "It was unethical for Engineer to fail to disclose to Client B the previously encountered site conditions that resulted in significant additional time for Engineer to complete the final design for Client C."

- "Failure to disclose what can best be described as "relevant and highly significant" facts that Engineer clearly had within his possession was unethical."

Public Health and Safety—
Observed Structural Defects and Inspection by County Building Official – (19-10)

- Engineer is hired by Client to conduct a building investigation to determine the origin and cause of a fire resulting in financial loss. During the investigation, Engineer, who was also a structural engineer, observes that the building is structurally unstable.
- Engineer performs a preliminary investigation of the building and after speaking with Client, concludes that there were recent structural changes made to the building that may have caused the roof to sag and the walls to lean outward due to insufficient lateral restraint.
- Engineer also learns that following construction modifications, the building was issued a certificate of occupancy by a county building official. Although not imminent, collapse of the building is a danger ,the Engineer believes.
- Engineer immediately advises Client and calls the county building official. The county building official did not return Engineer's phone call. Engineer also recommended that owners brace the building to prevent its collapse.

Holding in 19-10

- Professional engineers must decide, after pointing out the situation, how far their obligation to seek corrective action reaches.
- Here, Engineer brought his concerns to Client and also contacted the county building official who did not return Engineer's phone call.
- Although Engineer didn't believe the building was in danger of imminent collapse, Engineer had an obligation to continue to pursue a resolution of the matter by working with Client and in contacting the supervisor of the county official, the fire marshal, or any other agency having jurisdiction to determine whether an investigation was warranted after the issuance of the certificate of occupancy.

Issues to Consider

- Confidentiality.
- The duty to maintain confidentiality in Section III.4 is overcome by the more important duty in Section 1 to "hold paramount the safety, health, and welfare of the public.
- COMMENT: Be careful of contracts barring the engineer from disclosing all "confidential" information.

Misrepresentation—Obligation to Report/Impact on Client Case No. 18-3

- Engineer A, a licensed professional and forensic engineer, is hired by Attorney B to serve as an expert witness during a civil trial on behalf of Party C. Prior to the trial, Engineer A learns that Engineer D will be called by Attorney E to serve as the opposing expert on behalf of Party F.
- Engineer A reviews Engineer D's credentials and discovers that Engineer D is misrepresenting himself as a licensed professional engineer on his business website, stationery, signatures, etc. Engineer A advises Attorney B of Engineer D's misrepresentation. Subsequently, when Engineer D is deposed, it becomes clear that he was never licensed in any state or territory.
- Just prior to a follow-up deposition of Engineer D a few months later, Engineer A notices that Engineer D is no longer representing himself as a professional engineer on his business website, stationery, signatures, etc.

18-3 (Continued)

- Engineer A confers with Attorney B regarding the possibility of reporting Engineer D's earlier misrepresentation to the state licensing authorities.
- Attorney B asks that Engineer A not report Engineer D's actions until the legal proceedings are complete because doing so could potentially harm the interests of Party C. Specifically, Attorney B explains that reporting the matter would appear that Engineer A was making an "unwarranted and uncalled for" attack on Engineer D merely to weaken Engineer D's effectiveness as an opposing expert, which could potentially backfire on Client C.
- In addition, Attorney B explains that he believes that the case will probably go to trial and that this misrepresentation will be exposed during Attorney B's cross-examination of Engineer D, which will place his misrepresentation before the court.

Applicable NSPE Code Section

- *Section II.1.f. - Engineers having knowledge of any alleged violation of this Code shall report thereon to appropriate professional bodies and, when relevant, also to public authorities, and cooperate with the proper authorities in furnishing such information or assistance as may be required.*
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Holding (18-3)

- "The issues here require a balancing of the multiple considerations at stake in this matter regarding Engineer A's obligation to report violations of the state engineering licensing law as well as Engineer A's duty of loyalty to both Attorney B and Client C. As with many ethical issues, there must be a consideration of the practical implications of taking immediate action as opposed to delaying action in light of pending events. To paraphrase the Hippocratic Oath, an ethical oath subscribed to by physicians, the duty of every professional is first, to do no harm. In the context of the present case, in view of the fact that there does not appear to be an imminent harm in Engineer A's failure to take immediate action in reporting Engineer D's misrepresentation to state authorities, it is the BER's view that it would be appropriate in serving the best interests of Engineer A's client to refrain from reporting the misrepresentation to the state authorities since the violation has been resolved. While the BER takes seriously Engineer D's misrepresentation, a balance must be struck between the multiple considerations."

Signing and Sealing of Documents—Electronic Seal and Signature
Case No. 18-7

- Engineer is a solo practitioner in private practice who performs engineering design services in a rural area. Engineer recently established an internal process for using an electronic seal and signature protocol after finalizing engineering design documents. Electronic signatures and seals are permissible in the jurisdiction in which Engineer practices. Thereafter, Engineer is retained by Client in a nearby rural community to perform engineering design services in connection with Client, a private industrial building owner. Engineer does not advise Client in advance regarding Engineer's use of an electronic seal and signature. Unbeknownst to Engineer, Client does not have the necessary software to permit a valid exchange of the electronic information in a compatible manner to allow Engineer's signed and sealed documents to be transmitted to Client. As a result, code official approval; financing; and construction are delayed, causing inconvenience and increased costs to Client.

Holding (18-7)

- In this case, although Engineer did not perform an unethical act, the facts indicate that Engineer should have taken appropriate steps in advance to communicate to Client how Engineer's engineering deliverable would be transmitted to Client.
- Engineer should have clearly communicated this fact either at the time of initial selection of Engineer by Client or in any contractual agreement between Engineer and Client. Engineer's failure to do so conflicted with Engineer's obligation to act for each employer or client as a faithful agent or trustee.
- **Conclusion:** While Engineer A's actions were not unethical, Engineer should have taken appropriate steps in advance to communicate to Client how Engineer's engineering deliverable would be transmitted to Client.

Contracts—Fiduciary Duty
Case No. 18-12

- Engineer is a professional engineer in private practice and is negotiating a contract with Client for the design and construction of a building. Client places a provision in the contract that states:
  - "Engineer shall act as a fiduciary on behalf of Client in the performance of engineering services for the benefit of the client."
- A fiduciary is a person who is required to act for the benefit of another (here,the Client) on all matters. The fiduciary owes the other party the duties of good faith, trust, confidence, and candor in all matters within the scope of the relationship.
- **Question:** Would it be ethical for Engineer to agree to a contractual provision to act as a fiduciary on behalf of Client?

NSPE Explanation (18-12)

- Under the fiduciary liability standard, a standard higher than the professional standard of care normally imposed upon a professional engineer, Engineer would be required to place the interests of the client ahead of the interests of other parties. Generally, a fiduciary is a person who is required to act for the benefit of another (here, the Client) on all matters. The fiduciary owes the other party the duties of good faith, trust, confidence, and candor in all matters within the scope of the relationship.

18-12 (continued)

- The concept of a fiduciary duty raises at least two significant issues in the context of professional engineering practice.
  - First, a fiduciary duty imposes a higher standard of practice upon a professional engineer, a standard that exceeds what is legally required by the common law. This higher standard could expose a professional engineer to greater personal and professional liability and the engineer's employer to greater professional liability. Such liability exposure may not be covered under conventional professional liability insurance policies designed to cover professional engineers, placing both the individual engineer and the employer at heightened risk.
  - Second, a fiduciary duty could require the professional engineer to place the client's interests and concerns above all others—and potentially interfere with the professional engineer's primary ethical obligation to hold paramount the public health, safety, and welfare. As an example, the fiduciary duty could create a conflict under which a professional engineer's fiduciary obligation to a client to maintain confidentiality could interfere with the professional engineer's paramount duty to report a situation that could endanger the public health and safety. In addition, the fiduciary responsibility could interfere with the engineer's contractual role as the impartial initial arbitrator of disputes between the client and the contractor. For the reasons stated, the BER has concerns regarding the advisability of a professional engineer agreeing to a fiduciary standard due to the potential for muddying professional liability and ethical issues.

Holding in 18-12

- In closing, the BER would strongly urge that any professional engineer agreeing to a fiduciary duty and fiduciary liability should do so with the full knowledge of their employer and with appropriate advice from legal and insurance counsel.

- **Conclusion:**

While the BER cannot say that entering into such an agreement is on its face a breach of engineering ethics, at a minimum, a professional engineer agreeing to a fiduciary liability standard must clearly communicate to any other contracting party (here, Client X) that Engineer's paramount obligation is to protect the public health and safety. The engineer should negotiate additional language in the agreement recognizing this fundamental ethical obligation.

Public Health and Safety—Building Codes to Address Environmental Risk

Case No. 18-9

- Engineer is an engineer in private practice. Engineer is retained by Client, a developer, to perform hydrodynamic modeling and coastal risk assessment in connection with potential climate change and sea level rise for a residential development project near a coastal area.
- The geographic area in which Client is planning to build the project currently has no building code in place.
- Based on newly released information as well as a recently developed algorithm that includes newly identified historic weather data, Engineer believes the residential development project should be built to 100-year projected storm surge elevation, due to public safety risks even at lower projections of future surge level rise.
- Because of the increased cost, Owner refuses to agree that the residential development project be built to a 100-year projection storm surge elevation.

NSPE Code of Ethics References:

- *Section II.1. - Engineers shall hold paramount the safety, health, and welfare of the public.*
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- *Section II.1.a. - If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate.*
-
- *Section II.1.b. - Engineers shall approve only those engineering documents that are in conformity with applicable standards.*
-
- *Section III.1.b. - Engineers shall advise their clients or employers when they believe a project will not be successful.*
-
- *Section III.2.d. - Engineers are encouraged to adhere to the principles of sustainable development in order to protect the environment for future generations.*
-

Holding 18-9

- While the desire of the developer to reduce costs is understandable and a legitimate consideration, when weighed against the apparent substantial risk to life and property, the latter consideration should prevail. Engineer should continue to pursue discussions with Client to convince Client of the danger in which future residents, as well as the general public, could be placed, and the potential for significant property and environmental damage.

- If Client refuses to agree with Engineer's design standard, Engineer should withdraw from the project. Engineer should also consider contacting local government officials to advocate for the implementation of appropriate and updated region-wide building codes in all jurisdictions for the geographical area where or near where the residential development project is being built.

- Engineer should continue to pursue discussions with Client to convince Client A of the danger in which future residents, as well as the general public, could be placed, and the potential for significant property and environmental damage. If Client A refuses to agree with Engineer's design standard, Engineer should withdraw from the project.

Questions?

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