LECTURE 2
ETHICS AND LEADERSHIP

CEEN 4812: Construction Management
Uzair (Sam) Shamsi, Ph.D., P.E.
Adjunct Professor
Department of Civil / Environmental & Chemical Engineering

1

1. ETHICS

2

ETHICS OUTLINE

- Definition
- Example: Sara's Story
- Licensed Engineer's responsibilities
- Traits for engineering students
- ASCE canons
- Recommendations for further study
- Four case studies

3

Some Slides in Ethics Lecture are Based on

Licensing and Ethical Responsibilities For Civil Engineering Students

From the American Society of Civil Engineers

ETHICS DEFINITIONS

- Synonym for “morally correct” or justified
- Set of justified moral principles of obligation, rights, and ideals
- Particular beliefs or attitudes concerning morality
- An area of study that deals with understanding moral values, resolving moral issues, and justifying moral judgments.

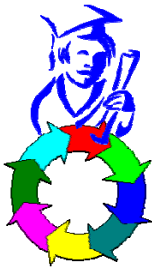
5

ETHICS EXAMPLES

- Violation of personal ethics:
  - Software piracy
  - Expense account padding
  - Copying of homework or tests
  - Income taxes
  - “Borrowing” office supplies from employer
  - Copying of videos or CDs
  - Plagiarism
  - Using the copy machine (for personal work) at work
- Violation of professional ethics:
  - Plagiarism
  - Exaggerating your resume when applying for jobs
  - Exaggerating staff resumes in bids and proposals
  - Exaggerating company qualifications in bids and proposals
  - Selecting a consultant based on gifts or donations rather than merit

6

SARA'S ETHICS DILEMMA



- A case study in engineering ethics
- Download full report from
  http://www.asce.org/pdf/ethics_student_guide.pdf
- About Sara
  - Graduated from an ABET-accredited program
  - Took the FE Exam
  - Worked under the supervision of a licensed engineer for almost 4 years
  - Just before she took the PE Exam...
- Sara has been reported to her State's Engineers Board for a possible ethics violation.

ASCE

7

TO REPORT, OR NOT TO REPORT...

- Sara's firm was retained to investigate the structural integrity of an apartment complex.
- *STRICT* confidentiality required.
- Noticed no structural problems
- BUT, she did observe some apparent electrical deficiencies
- Sara knew these electrical deficiencies might pose a hazard to the occupants
- She knew the client didn't want to hear bad news
- She felt the strain of the strict confidentiality requirement
- She did not want to damage the client relationship...
- She verbally informed the client about the problem
- She made an "oblique" (indirect) reference to the problem in her report

ASCE

8

THOSE NAGGING DOUBTS...

- Later Sara learned the client did not disclose any of her concerns about the electrical deficiencies
- She struggled with whether she should have been more persistent in making her concerns known.
- She eventually put it out of her mind.
- Time passes …

ASCE

SARA FOR CITY COUNCIL!

- Sara, now a highly successful principal in a respected engineering firm, is urged to run for public office.
- She agrees to run.
- Sara's investigation of the apartment complex so many years ago resurfaced.
- Sara learned that the apartment complex caught on fire, and people had been seriously injured.
- During the investigation, Sara's report was reviewed, and somehow the cause of the fire was traced to the electrical deficiencies.

ASCE

THE STATE LICENSING BOARD FINDS...

- It is important for Sara, or any licensed engineer, to realize the engineer's paramount responsibility is for the safety of the public.
- The occupants of the apartment complex were not aware of the electrical deficiencies.
- Although not an electrical engineer, Sara had some knowledge of city building codes and the ability to foresee the potential dangers.
- Sara had informed her client of the possible electrical deficiencies, but she failed to mention possible consequences of ignoring her concerns.
- Sara could have referred to the ASCE Code of Ethics before making a decision.
  - *Canon 1. Engineers shall hold paramount the safety, health and welfare of the public....*
- They only issued a formal reprimand (warning) and did not suspend her license to practice engineering. But, the Board took the opportunity to remind Sara that all licensed engineers, as professionals, have an obligation to understand and keep in mind their ethical responsibilities.

ASCE American Society of Civil Engineers

11

LICENSED ENGINEER

- "Engineering Practice Act" -- to protect the health, safety and welfare of the citizens of that state.
- Having an engineering license means more than just meeting a State's minimum requirements. It means you have accepted both the technical and the ethical obligations of the engineering profession.
  - (Ref: ASCE Policy Statement # 433)

ASCE American Society of Civil Engineers

12

RESPONSIBILITIES OF LICENSED ENGINEERS

- Two Types of responsibilities:
  - Technical, and
  - Ethical
- Most of a civil engineer's education focuses on technical matters, that is, "how to do things right," and most of the engineer's professional practice is devoted to applying this technical knowledge in service to the needs of society.
- However, another important element of both education and practice involves ethics, or "how to do the right thing."

ASCE American Society of Civil Engineers

13

RESPONSIBILITIES OF LICENSED ENGINEERS

- Engineering ethics is a vital part of the engineering profession. The ethical issues are not always easy to answer.
- Choosing between "good" and "bad" appears easy until unseen variables are introduced such as time constraints, family, promotion opportunities, job security, peer pressure, supervisor pressure, and professional reputation.

ASCE American Society of Civil Engineers

14

TRAITS FOR ENGINEERING STUDENTS

15

TRAITS FOR ENGINEERING STUDENTS

- CE students need "Critical Skills" beyond technical skills to resolve ethical issues
- Here are some traits students should develop:
  - Understanding: A clear understanding of professional ethics
  - Communication Skills: A capability and willingness to communicate ethical issues
  - The Ability: to recognize ethical issues

ASCE

16

TRAITS FOR ENGINEERING STUDENTS

- **An Awareness:** that guidance on ethical dilemmas is available from ASCE and elsewhere
- **Comprehension:** "Knowing What's Right"
- **A Desire and the Willingness:** to "do what's right."
- **The ability:** to resolve ethical issues by using traditional engineering methods of inquiry, namely:
  - Listing your options
  - Testing your options
  - Making a decision, and
  - Most importantly, ***acting !***

ASCE
American Society of Civil Engineers

17

CANON

- A system of non-statutory (non-legal), non-mandatory *codes* of personal conduct.
- A fundamental belief that usually encompasses several rules.
- Example: ASCE Code of Ethics has seven canons.

18

ASCE SEVEN FUNDAMENTAL CANONS OF ETHICS

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.
2. Engineers shall perform services only in areas of their competence.
3. Engineers shall issue public statements only in an objective and truthful manner.
4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.
5. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
6. Engineers shall act in such a manner as to uphold and enhance the honor, integrity, and dignity of the engineering profession and shall act with zero-tolerance for bribery, fraud, and corruption.
7. Engineers shall continue their professional development throughout their careers, and shall provide opportunities for the professional development of those engineers under their supervision (life-long learning).

http://www.asce.org/inside/codeofethics.cfm

19

GUIDELINES TO PRACTICE UNDER THE FUNDAMENTAL CANONS OF ETHICS

http://www.asce.org/inside/codeofethics.cfm

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.

1. Engineers shall recognize that the lives, safety, health and welfare of the general public are dependent upon engineering judgments, decisions and practices incorporated into structures, machines, products, processes and devices.
2. Engineers shall approve or seal only those design documents, reviewed or prepared by them, which are determined to be safe for public health and welfare in conformity with accepted engineering standards.
3. Engineers whose professional judgment is overruled under circumstances where the safety, health and welfare of the public are endangered, or the principles of sustainable development ignored, shall inform their clients or employers of the possible consequences.
4. Engineers who have knowledge or reason to believe that another person or firm may be in violation of any of the provisions of Canon 1 shall present such information to the proper authority in writing and shall cooperate with the proper authority in furnishing such further information or assistance as may be required.
5. Engineers should seek opportunities to be of constructive service in civic affairs and work for the advancement of the safety, health and well-being of their communities, and the protection of the environment through the practice of sustainable development.
6. Engineers should be committed to improving the environment by adherence to the principles of sustainable development so as to enhance the quality of life of the general public.

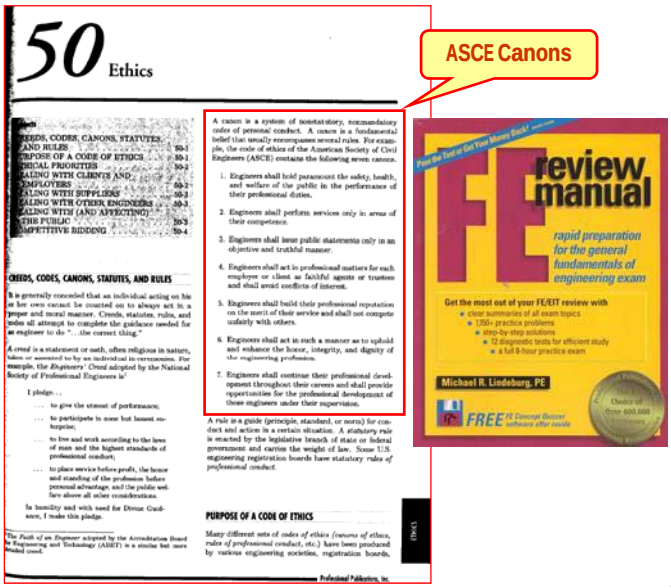
20

RECOMMENDATION FOR FURTHER STUDY

- National Society of Professional Engineers (NSPE) Web site
  www.nspe.org/ethics
- "Gilbane Gold" is an excellent engineering ethics video available from nspe.org.

RECOMMENDATION FOR FURTHER STUDY

- FE Review Manual by Michael R. Lindeburg, PE
- Chapter 50 "Ethics"



ENGINEERING ETHICS CASE STUDY NO. 1

While supervising a construction project in a developing country, an engineer discovers that his client's project manager is treating laborers in an unsafe and inhumane (but for that country, legal) manner. When he protests, the engineer is told by company executives that the company has no choice in the matter if it wishes to remain competitive in the region, and he should just accept this as the way things are. What would ethics require the engineer to do?

(A) Take no action--the company is acting in a perfectly legal manner.
(B) Withdraw from the project
(C) Report the company to the proper authorities for its human rights abuses.
(D) Assist the laborers in organizing a strike to obtain better working conditions.

ENGINEERING ETHICS CASE STUDY NO. 1

The company hasn't broken any laws, so there is no one to report them to, but it is using unethical business practices. The engineer should at least, withdraw from the project as a form of protest, and end any business relations with the company. He could go so far as to assist the workers in protesting, but this might actually be illegal in the country in question. In any case, such activism would be a personal choice on the part of the engineer, not something he is obligated to do under a code of ethics.

Correct Answer: B

ENGINEERING ETHICS CASE STUDY NO. 2

An engineering professor with a professional engineering license and 20 years of experience in engineering education is asked to consult to review a building design. Can the professor accept this request? Choose the best answer.

A. Yes, but she should review and comment on only those portions of the project in which she is qualified by education and experience.
B. Yes, a professor is a subject matter expert and as such should be fully competent to review the design.
C. Yes, as a licensed professional engineer, the professor has demonstrated her competence in engineering and may review the design.
D. No, there is a tremendous difference between working in academia and having professional experience. The review should be conducted by a practicing engineer.

ENGINEERING ETHICS CASE STUDY NO. 2

It is perfectly legal and ethical for the professor to consult on the building design. She should, however, review and comment on only those portions of the design that deal with matters in which she is technically competent; the fact that she is a professor with 20 years of experience does not necessarily mean that she is fully knowledgeable of all current design procedures and practices.

Correct Answer: A

ENGINEERING ETHICS CASE STUDY NO. 3

Two engineers submitted sealed bids to a prospective client for a design project. The client told engineer A how much engineer B had bid and invited engineer A to beat that amount. Engineer A really wants the project and honestly believes he can do a better job than engineer B. What should he do?

A. He should submit another quote, but only if he can perform the work adequately at the reduced price.
B. He should withdraw from consideration for the project.
C. He should remain in consideration for the project, but not change his bid.
D. He should bargain with the client for the cost of the work.

ENGINEERING ETHICS CASE STUDY NO. 3

It would be unfair and unethical for engineer A to submit another bid. Depending upon the regulating agency, it may also be illegal. He does not, however, have to remove himself from consideration for the project.

Correct Answer: C

ENGINEERING ETHICS CASE STUDY NO. 4

A local engineering professor acts as technical advisor for the city council in a town. A few weeks before the council is scheduled to award a large construction contract, the professor is approached by one of the competing companies and offered a consulting position. Under what circumstances would it be ethical to accept the job?

A. Both the company and the council must know about and approve of the arrangement.
B. The professor should arrange not to begin work until after the council's vote.
C. The professor may accept the job if the advisory position to the council is on a volunteer basis.
D. The professor must not participate in any discussions concerning the project for which the company is competing.

ENGINEERING ETHICS CASE STUDY NO. 4

The professor's association with the company is bound to influence his advice to the board, even if the job doesn't start until later. Regardless of whether the board understands and approves of this situation, the engineer is obligated to withdraw from any of the council's discussions concerning the project.

Correct Answer: D

HOMEWORK No. 2

- Due date: Next class
- This is a team homework.
- Each team will submit one homework.
- Have a team meeting. The team leader will assign tasks to team members with deadlines .
- Each member of the team should contribute to his/her team homework. Team leader will identify any member that did not contribute.
- A NON-CONTRIBUTING TEAM MEMBER WILL GET ZERO POINTS FOR HOMEWORK.

31

HOMEWORK No. 2

- Review the Ethics Case Study on the next page
  - **QUESTION**: Did the engineer of record's actions in placing his seal on design documents without verifying the soundness of the structural design violate ASCE's Code of Ethics?
  - Client Team: Represent Hyatt Hotel
  - Consultant Team: Represent Engineer's company
  - Contractor Team: Represent the Fabricator's company
  - Agency Team: Represent ASCE Committee on Professional Conduct (CPC)
- Submit a team report (3-5 pages) indicating and describing which (if any) ASCE Canons and guidelines were violated. Also indicate and justify the final decision of your team (imprison, expel, suspend, reprimand, fine, no action).
- Include a sketch or diagram of the structural problem described.

32

HOMEWORK ETHICS CASE STUDY

In July 1980, the Hyatt Regency Hotel in Kansas City, Missouri, opened for business, boasting among its design features a multistory atrium with three suspended walkways—a fourth-story walkway spanning directly above a walkway on the second floor, with a third-story walkway offset by a few meters. One year after the opening, the walkways on the second and fourth stories collapsed under the weight of partygoers, killing 114 people in one of the most devastating structural failures in U.S. history in terms of lives lost.

The collapse was traced to failure of the connections between the fourth-story box beams and the hanger rods supporting the second-story and fourth-story walkways. An investigation revealed that the original design sketches had called for the two walkways to be suspended by a single set of hanger rods threaded through the upper walkway box beams and terminating beneath the box beams of the lower walkway. Although that design proved to be in violation of Kansas City's minimum load requirements, the primary cause of the failure was a change from the original design to a double-rod system, one hanger rod connecting the ceiling to the upper walkway and the other connecting the lower and upper walkways. This change had the effect of doubling the load on the upper walkway connections, resulting in a design capable of withstanding only an estimated 30 percent of the mandated minimum.

The engineer of record attributed the fatal design flaw to a breakdown in communication. He stated that he had assigned supervision of the project to an associate structural engineer, who was not an ASCE member. As the engineer of record was responsible for roughly 10 associate engineers, each of whom supervised six or seven projects at a time, he acknowledged that he could not personally oversee every aspect of the design. Instead, he entrusted the responsibility to the associate in charge of each project.

33

HOMEWORK ETHICS CASE STUDY

The engineer of record further contended that it was common practice in the industry for the structural engineer to leave the design of steel-to-steel connections to the fabricator. The original design provided in the structural drawings was intended only to be conceptual.

When the fabricators found that design to be impracticable, they requested approval of the double-rod system by telephone. The structural engineer verbally approved the change, with the understanding that a written request for the change would be submitted for formal approval. This follow-up request was never honored. In fact, the fabricators had just begun work on the shop drawings when a sudden increase in workload required them to subcontract the work to an outside detailer. That detailer, in turn, mistakenly believed that the double-rod connection on the shop drawings had already been designed and therefore performed no calculations on the connection himself.

The design documents were returned to the engineer of record with a request for expedited approval. He assigned review to a technician on his staff; however, the connections were not detailed on the drawings and the technician did not perform calculations on the connections. The structural engineer performed "spot checks" on portions of the shop drawings, and the engineer of record affixed his seal to the documents. The latter stated that he had not personally checked all calculations and had relied on the work of his project engineer and design team.

34

2. LEADERSHIP

35

Some Slides in Leadership Lecture are Based on

American Society of Mechanical Engineers

ASME Student Leadership Training Seminar

LEADERSHIP OUTLINE

- What is Leadership?
  - Are Leaders Born or Made?
  - Examples of Good Leaders
- Leadership 101
- Leadership qualities
- Leadership Principles
- For More Information

37

WHAT IS LEADERSHIP?

- Leadership is a process by which a person influences others to accomplish an objective and directs the organization in a way that makes it more cohesive and coherent.
- Good leaders are made not born. If you have the desire and willpower, you can become an effective leader. Good leaders develop through a never ending process of self-study, education, training, and experience (lifelong learning).
- Good leader examples:
  - Give some examples of good leaders.
  - What qualities made them good leaders?

38

LEADERSHIP 101

- Becoming an effective leader is not easy
  - Part skill development
  - Part experience
- Leadership is Action, not Position
  - Power does not make you a leader...it simply makes you the boss
- How do YOU become an effective leader?
  - No "cookbook formula"
  - Situational, as well as individual

39

YOU ARE NOT A GOOD LEADER IF YOU …

SOURCES OF HUMAN CONFLICT
CAUSES OF DIFFICULTIES

- Are inconsistent
- Are dishonest
- Are inflexible
- Are afraid to make decision
- Are poor communicator
- Are not punctual
- Are unreasonable
- Are self-centered
- Are duplicitous (two-faced)
- Have self-interest over others
- Have superiority viewpoint
- Have lack of trust
- Have unrealistic expectations
- Don't share recognition
- Don't care
- Don't "step up" to situation
- Don't listen
- Aren't accountable
- "forget" commitments
- Refuse to admit errors
- Fail to use empathy (compassion)
- Lack enthusiasm
- Lack respect for others

40

LEADERSHIP PRINCIPLES

1. Show Interest
2. Have a Positive Approach
3. Address Complaints
4. Keep Promises
5. Get the Facts
6. Discuss Professionally
7. Design an Approach
8. Explain Why
9. Admit Mistakes
10. Have Reasonable Expectations
11. Be Prompt
12. Compliment
13. Prepare for Change

41

1. SHOW INTEREST

- **Develop a Relationship**
  - **Frequent personal contact - LISTEN to others**
  - **Keep an open and honest attitude**
  - **Take time to learn & understand other people's needs**
  - **Sell ideas based on merit, value to others**
  - **Never force a personal agenda**
  - **Offer suggestions to help others solve their OWN problems**

42

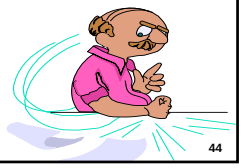
2. POSITIVE APPROACH

- Consider other person's feelings & objectives in planning what you do/say
  - Plan before you speak
  - Give "benefit of the doubt"
  - Avoid jumping to conclusions
  - Consider other's point of view and emotional state
  - Keep negative emotion out of discussion

43

3. ADDRESS COMPLAINTS

- View complaints not as personal criticism, but as valuable feedback and suggestions
  - Address complaints quickly. Listen to whole story.
  - Remain composed and calm. Avoid interruptions
  - Show problem is understood by restating it. Ask questions to clarify misunderstandings
  - Show appreciation and indicate what will be done.
  - FOLLOW UP with action.



44

4. KEEP PROMISES

- Make few promises, and keep them!
  - Credibility is lost when leadership fails to keep promises
  - Ensure commitment is realistic and attainable
  - Keep stakeholders informed of progress
  - If situations change, and promise cannot be kept:
    - Immediately contact those affected, avoid rumors
    - Explain carefully and thoroughly the reasons
    - Allow free feedback, consider others
    - Follow up with mutually agreed corrective actions

45

5. GET THE FACTS

- Examine all facets of a situation
  - Evaluate evidence
  - Allow everyone involved to express viewpoint
  - Consider other's rights, what's fair
  - Ignore unsubstantiated information
  - Base decisions on logical thinking, not emotions

46

6. DISCUSS PROFESSIONALLY

- Keep it a business-like discussion
  - Stick to the subject
  - Listen respectfully
  - Avoid getting hung up on personalities
  - Grant that other person “may have something”
  - Do not loose temper
  - Plan the time and place for the discussion

47

7. DESIGN AN APPROACH

- Design an approach that appeals to other’s motivations and emotions
  - Be pleasant, remain calm
  - Use questions, and listen to responses
  - Observe body language, clues to other’s feelings
  - Give direct answers
  - Speak in a manner the other participants understand/relate to

48

8. EXPLAIN WHY

- Reasons for why/why not
  - Be truthful
  - Show willingness to answer questions
  - Present the complete story

49

9. ADMIT MISTAKES

- Recognize no one is perfect
  - Natural tendency is to avoid sharing or rationalizing a mistake
  - No mistakes means employee or leader might not be doing enough or taking risks
  - Determine who is affected by mistake, and if any corrective action needed
  - Recognize mistake was made, regardless of how discovered. Show mistakes are learning opportunities
  - Document “lessons learned” for each project

50

10. HAVE REASONABLE EXPECTATIONS

- **Present fair/realistic expectations**
  - Listen completely to any objections
  - Restate objections, outlining competing positions and underlying reasoning
  - Use illustrations and examples
  - Present complete picture, and rationale for subsequent decision

51

11. BE PROMPT

- **Be responsive to situations / issues**
  - Does not mean need to always act immediately
  - Be consistent, use a structured problem solving technique
  - Base decisions on facts. If this takes time:
    - *promptly acknowledge understanding of situation*
    - *Let others know what is going on*
    - *Allow others to assist, give choices of alternatives*
  - Always follow up!

52

12. COMPLIMENT

- Always give recognition where deserved
  - Be sincere and consistent
  - Understand each person is an individual. Tailor recognition to be meaningful to the person
    - *Recognition can be simple, a note of thanks*
    - *Decide whether best kept personal or public*
  - Give commendation for special accomplishments & efforts
  - Do not overlook contributions of others, especially public

53

13. PREPARE FOR CHANGES

- Prepare others in advance for changes affecting them
  - Change is threatening! And a fact of modern life
  - Review impending change, determine effect on others
  - Determine what/how much information should be disseminated
  - Understand and explain reasons for change
  - Select right time, forum for communications
  - Promptly publicize news
  - Listen & respond to questions, suggestions

54

THE MOST IMPORTANT LEADERSHIP WORDS

- The six most important words: "I admit I made a mistake."
- The five most important words: "You did a good job."
- The four most important words: "What is your opinion."
- The three most important words: "If you please."
- The two most important words: "Thank you,"
- The one most important word: "We"
- The least most important word: "I"

- Author unknown

55

FOR MORE INFORMATION

ASME's Professional Practice Curriculum

http://www.professionalpractice.asme.org/

Online Training Modules:

- **Leadership Principles**
- **Leadership Styles and Attributes**
- **Teambuilding**

56