WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

TOWARDS ETHICAL PROFESSIONAL PRACTICE

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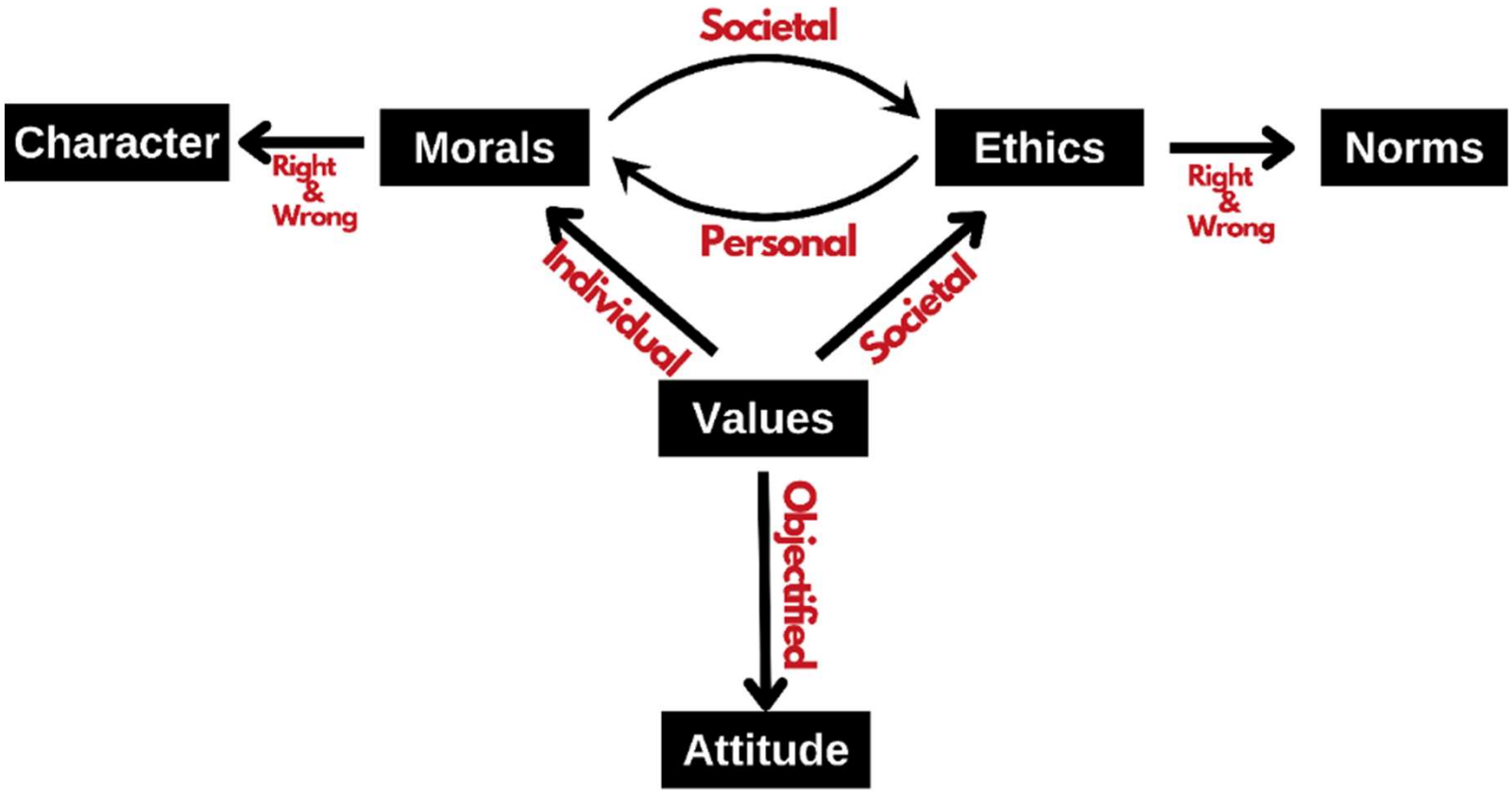
AGENDA

- Definitions
- Practical Case Studies
- Summary

We will never be perfect.

Committing now
to acting ethically
makes it easier to choose
the ethical option later.

VALUES, ETHICS, MORALS, & ATTITUDE



Source: Civilspedia. (2024, June 26). Values, Ethics, Morals, and Attitude. Retrieved from Civilspedia.com: https://civilspedia.com/values-ethics-morals-and-attitude/

THEORY OF PLANNED BEHAVIOR

Icek Ajzen, University of Massachusetts, Amherst

A person's behavior is influenced by three things:

- **Attitude:** What do I think?
- **Subjective norms:** What do others think?
- **Perceived behavioral control:** Do I think I can change my behavior, and do I want to change my behavior?

Source: https://www.youtube.com/watch?v=Rfq3AdgbnkI

PROFESSIONAL CODES OF ETHICS

- Provide guidance on ethical behavior for engineers and other construction professionals.
- Outline public, employer, client, and peer expectations.

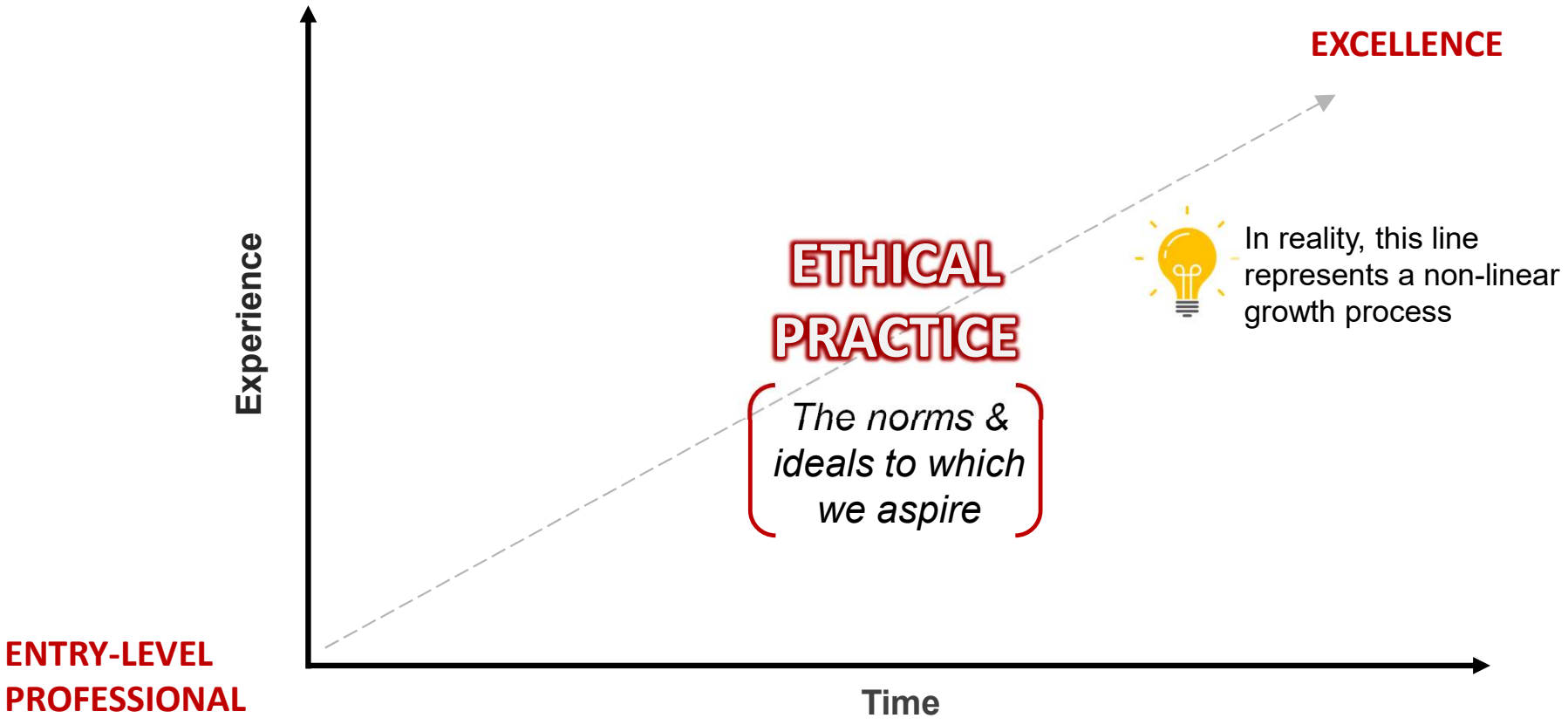
Source: Arthur E. Schwartz, *The Bridge,* https://www.nae.edu/File.aspx?id=168633

CODES OF ETHICS FOCUS ON THESE ISSUES

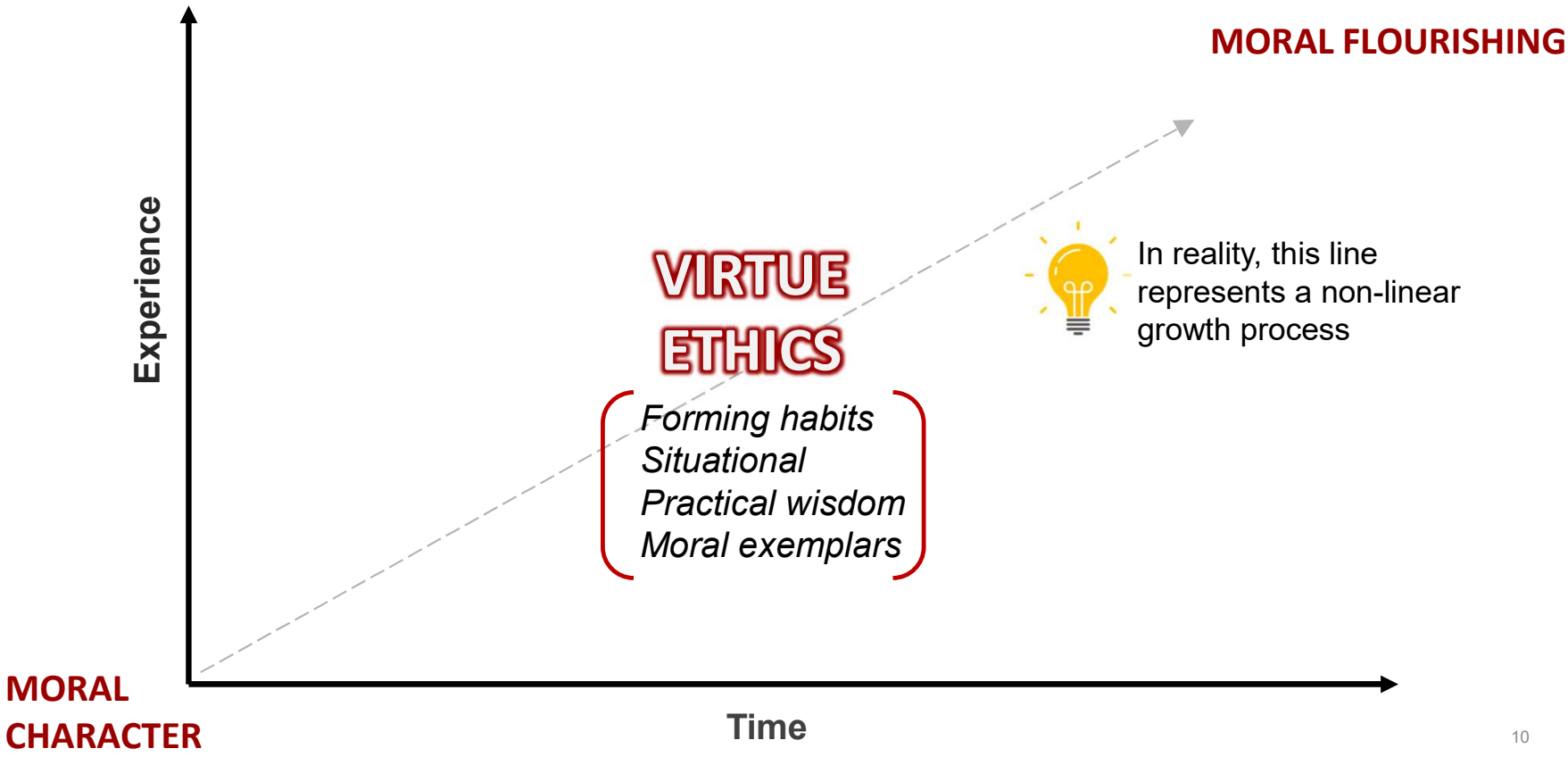
- Public health, safety, & welfare
- Duty to employer & client
- Disclosure of concerns to clients
- Disclosure of concerns to authorities
- Competency

Source: Arthur E. Schwartz, *The Bridge,* https://www.nae.edu/File.aspx?id=168633

ETHICS: DUTY vs. ASPIRATION



VIRTUE ETHICS LEAD TO MORAL FLOURISHING



NORMATIVE ETHICS: THE RIGHT WAY TO BEHAVE

- **Utilitarianism:** An action is moral if the good for the highest number of stakeholders is greater than the damage caused.
- **Egoism:** An action is ethical if it promotes an individual's self-interest.
- **Golden rule:** Treat others as we want to be treated.
- **Immanuel Kant's categorical imperative:** Evaluate every action by asking "What if everyone did this?"
- **Divine command:** Behavior is right if God says so.
- **Cultural relativism:** Morality is a set of social norms that varies from one culture to another.
- **Social contract theory:** An act is morally right if permitted by a social rule that a free, equal, and rational person would endorse.

VIRTUE ETHICS

- Virtues include honesty, courage, temperance, compassion, fairness, and others
- Attaining practical wisdom through experiences
- A process of becoming a virtuous person
- Habits of behavior and action
- Understanding the golden rule
- Learning from moral exemplars
- Working to become the best version of yourself

Image source: https://thepreachersword.com/2015/09/21/word-of-the-week-virtue/

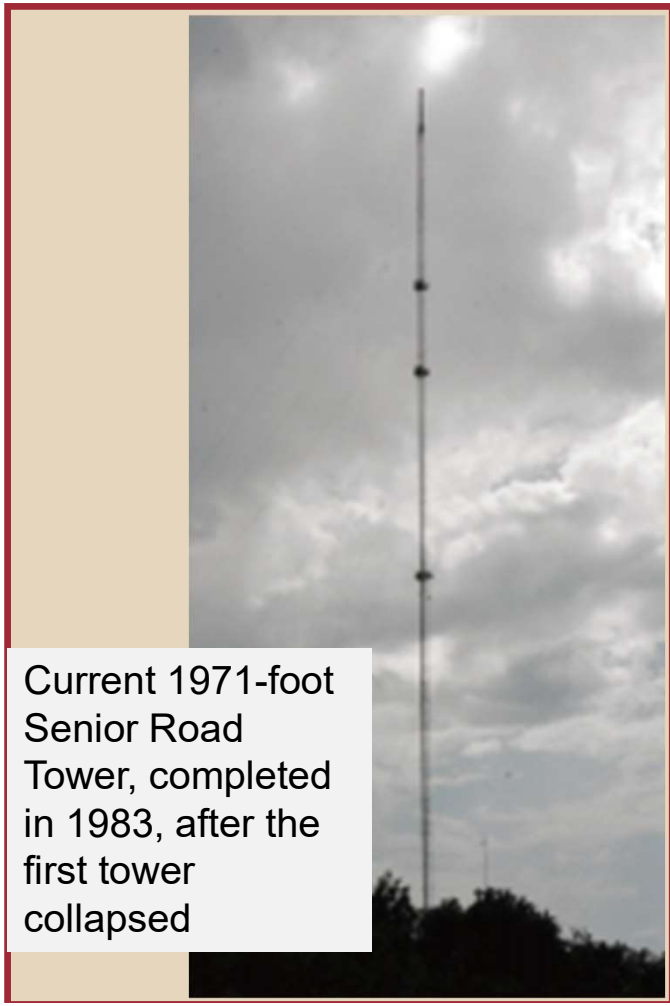
PROFESSIONAL ETHICS AND PUBLIC SAFETY: MAJOR FAILURES

Construction Operation

THE SENIOR ROAD TOWER COLLAPSE

December 7, 1982

- Designed as a guyed mast tower with antennas for FM radio and TV broadcasting.
- The first section of the tower, with an antenna for TV broadcasting, was completed in October 1982.
- On December 6, 1982, workers hoisted the first half of the section that would hold the FM antennae into place.



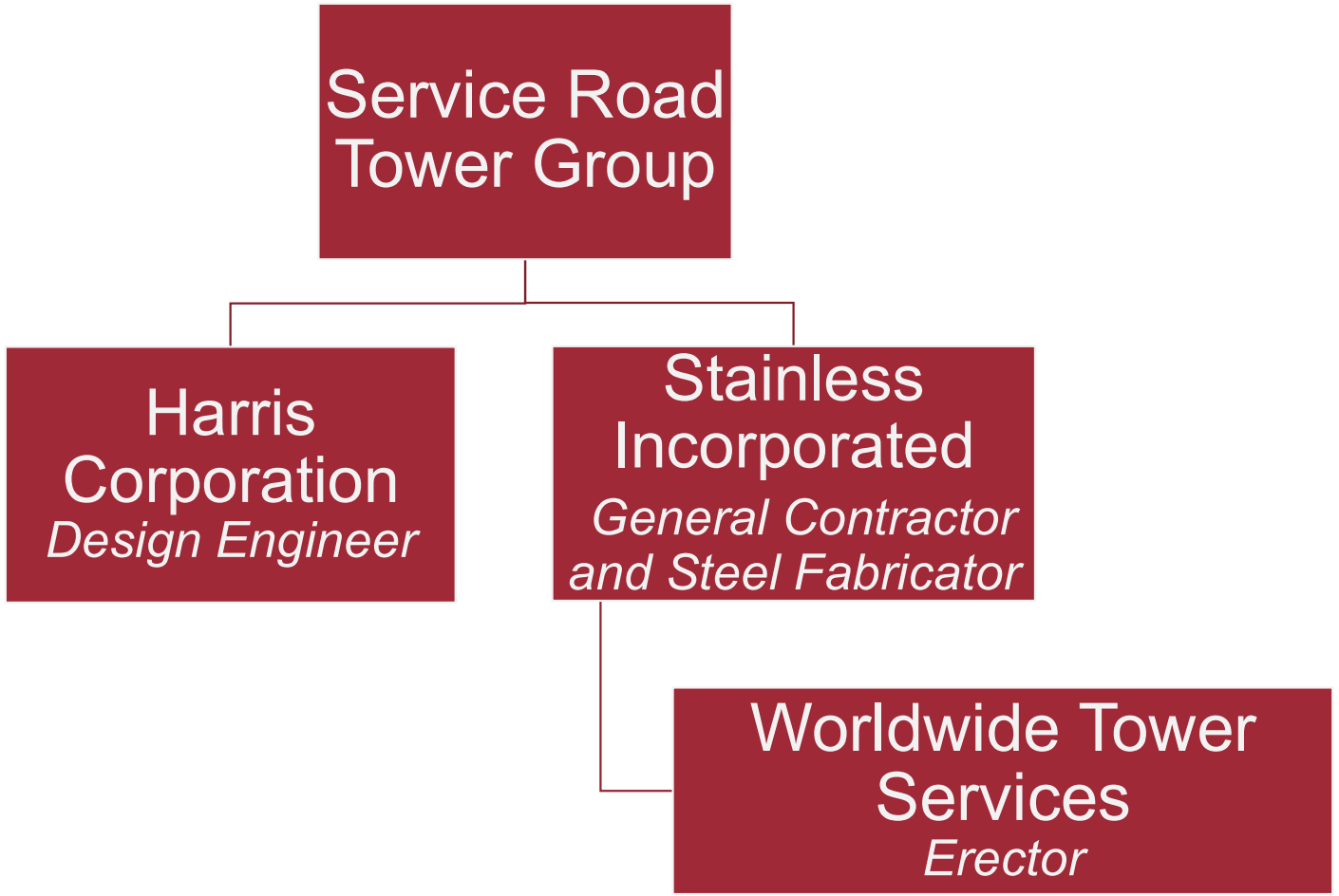
Current 1971-foot Senior Road Tower, completed in 1983, after the first tower collapsed

Sources: Scott Fybush/fybush.com, https://www.youtube.com/watch?v=KqJF3zFZJQ4


View from top platform of current tower, with guy wires

THE SENIOR ROAD TOWER COLLAPSE

Organization

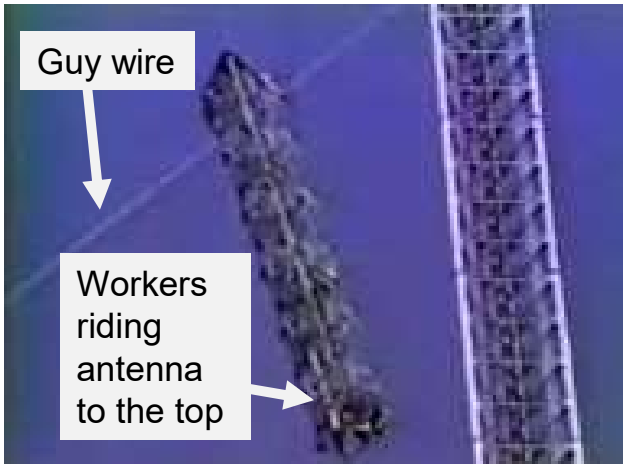


Sources:

THE SENIOR ROAD TOWER COLLAPSE

December 7, 1982

- The apparatus created to lift the 60-foot section failed and the section fell, snapping a guide wire which in turn caused the entire tower to collapse, killing five people and injuring three.
- After a 10-day trial, in February 1985, a federal jury awarded nearly $19 million to the families of the victims, with Stainless to pay 100% of the damages



Sources: https://ethics.tamu.edu/wp-content/uploads/sites/7/2017/04/TVAntennaCollapse.pdf, Wikipedia; YouTube; https://en.wikibooks.org/wiki/Professionalism/Collapse_of_the_TV_Antenna_in_Missouri_City,_Texas

PROFESSIONAL ETHICS AND PUBLIC SAFETY: MAJOR FAILURES

Maintenance and Operation

SILVER BRIDGE COLLAPSE

December 15, 1967

The Silver Bridge (connecting Point Pleasant, WV, and Gallipolis, OH, over the Ohio River) fell during a Friday evening rush hour, killing *46 people*.

The event remains the worst road bridge disaster in U.S. history.

The catastrophic event led to major reforms, including

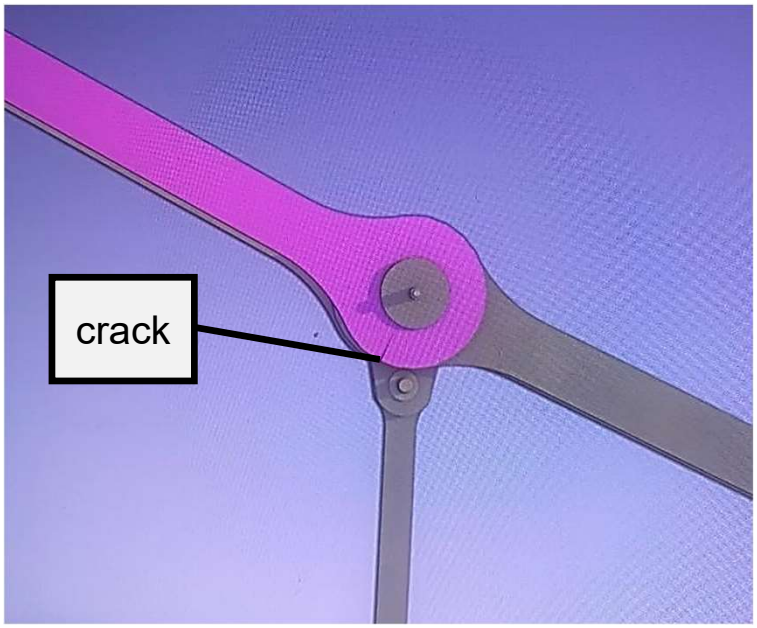
- Creation of the National Bridge Inspection Standards (1971), and
- A shift away from non-redundant eye-bar designs in favor of safer, more robust systems with wire cables and greater redundancy.

West Virginia State Archives

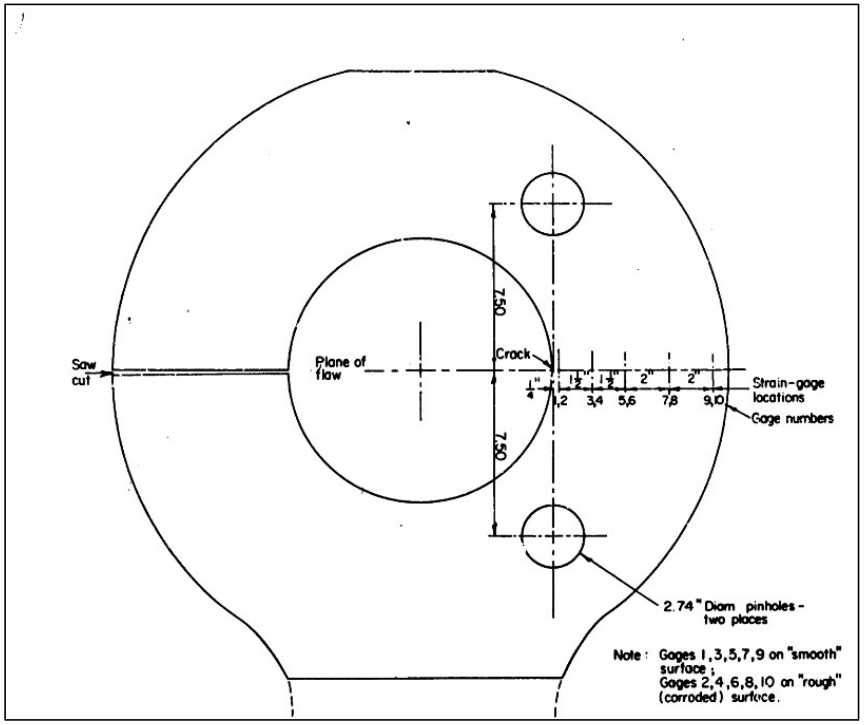
Source: National Transportation Safety Board Highway Accident Report: Collapse of US 35 Highway Bridge, Point Pleasant, WV Dec 15, 1967.

SILVER BRIDGE COLLAPSE

A single, undetected hairline fracture in a critical eye-bar link at joint C13 within the suspension chain, exacerbated by corrosion, led to a domino effect failure that resulted in an almost instantaneous, full collapse of the structure into the Ohio River, plunging 31 vehicles into the water. The bridge's eye-bar chain design lacked structural redundancy, meaning failure of *one* link was disastrous.



Eyebar 330 on Silver Bridge



Source: Transportation.wv.gov WVDOT marks 55th anniversary of the Silver Bridge collapse, remembers those who lost their lived (12/15/2022); https://www.thegreatcoursesplus.com/epic-engineering-failures-and-the-lessons-they-teach; https://www.ntsb.gov/investigations/AccidentReports/Reports/HAR7101.pdf

MIANUS RIVER BRIDGE COLLAPSE

June 28, 1983

Around 1 a.m., a 100-foot span of the I-95/Mianus River Bridge in Cos Cob, Connecticut collapsed. Two tractor-trailers and two passenger cars plunged 70 feet into the river below.

Three people were killed: Harold Brazy, Jr. of Louisiana, and Luis Zapata and Reginal Fisher of Stamford, CT. Three others were injured.

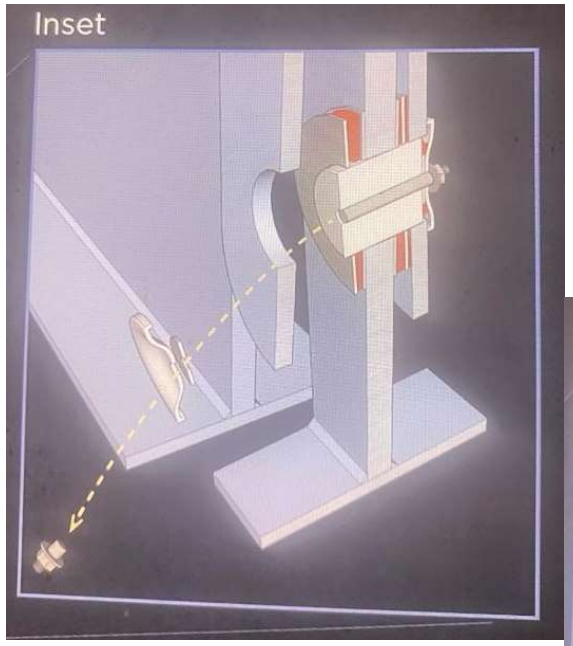
Until repairs were complete in September 1983, as many as 90,000 vehicles each day were diverted from I-95 to local streets, causing the worst traffic problems the town had ever seen, resulting in tremendous safety and environmental issues for residents.

Source: National Transportation Safety Board Highway Accident Report: Collapse of a suspended span of Int Route 95 bridge over Mianus River Greenwich, Conn June 28, 1983.

MIANUS RIVER BRIDGE COLLAPSE

Key Factors:

- **Corroded Support Pins**: Packout corrosion caused the hanger to slip off its lower pin.
- **Blocked Drainage**: The drains for steel plates installed for resurfacing ten years previous were covered, preventing water from escaping. This caused severe corrosion in the joints.
- **Systematic Neglect**: The state's inspection and maintenance program failed to:
  - Allocate sufficient resources to conduct the inspection.
  - Respond to federal advice to monitor the pin-hanger connections.
  - Address the identified defect before the collapse.



Source: National Transportation Safety Board Highway Accident Report: Collapse of a suspended span of Int Route 95 bridge over Mianus River Greenwich, Conn June 28, 1983. ; https://www.thegreatcoursesplus.com/epic-engineering-failures-and-the-lessons-they-teach

MIANUS RIVER BRIDGE COLLAPSE

Source: https://www.thegreatcoursesplus.com/epic-engineering-failures-and-the-lessons-they-teach

PRACTICAL APPLICATIONS

People often commit unethical acts because they are seeking a competitive advantage.

ENR
Engineering News-Record

July 8, 2025

Engineering Giant Stantec Pays $4M to Settle Alleged EPA Grant Fraud

- Stantec, a provider of environmental development and engineering services based in Edmonton, Alberta, will pay $4 million to resolve allegations that it violated the False Claims Act by submitting false certifications in applications for U.S. Environmental Protection Agency grants.
- Between 2014 and 2022, Stantec, through subsidiaries, drafted or assisted in drafting requests for proposals and statements of work for grants that they then competed for and won, without the separation required under federal procurement rules and EPA guidelines.

Source: https://www.enr.com/articles/61004-engineering-giant-stantec-pays-4m-to-settle-alleged-epa-grant-fraud

PRACTICAL APPLICATIONS

- The schemes outlined below are examples seen on job sites across the country that range from actions committed by one person to more complex activities that involve two or more people.
- The tone at the top, strong internal controls, integrity, background checks, codes of ethics, training, tip lines, and internal surprise audits can mitigate the conditions that allow fraud by employees, suppliers, and subcontractors.
  - **Tool theft:** Hand tools may disappear from jobsites and be reported as lost.
  - **Materials waste:** Excessive materials as well as non-project materials may be ordered and diverted for personal use and ultimately reported as stolen.
  - **Products substitution:** Inferior grades of materials may be ordered.
  - **Duplicate payments:** Two checks written to the same payee, with the fraudster endorsing the second check over to themselves or a third party. Alternatively, two payments received by the vendor on the same invoice.
  - **Fictitious vendors and shell company invoicing:** Payments authorized and sent to a post office box or a non-existent address.
  - **Ghost employees:** Payroll for extra hours not worked or hours for a non-existent employee.
  - **Vehicle and equipment maintenance:** Payment to a service provider from a construction company for work done on a nonbusiness vehicle or parts ordered for nonbusiness reasons.
  - **Offsite work:** Services performed at an unauthorized site may include a change order created to falsely identify the cost as project-related.
  - **Bid collusion:** Multiple contractors or subcontractors may agree which company will be awarded a job and at what price.
  - **Kickbacks:** Payments made "under the table" for favoritism or special deals result in higher costs for the legitimate company.

Source: Hecht, Marion A. (2011, Dec 4). Commentary: Construction Fraud Mirrors a Worldwide Ethics Problem. *Engineering News Record*. Dec 4, 2011.

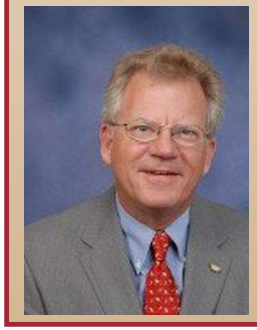
PRACTICAL APPLICATIONS

Overarching lapses in ethics in action may result in the failure to:

- Recognize unique project circumstances and characteristics.
- Recognize the undue influence of economic and schedule pressures on all systems.
- Recognize significant changes to the original project plan impacting performance.
- See physically observed results not matching expected physical behaviors.

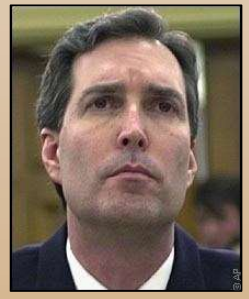
Source: Bell, Glenn R. "The Decade of Disaster" *Proceeds of the ASCE 9th Congress on Forensic Engineering, Nov 2022: Elevating Forensic Engineering* - Denver, USA, pp 1-11.

LEADERSHIP FAILURES

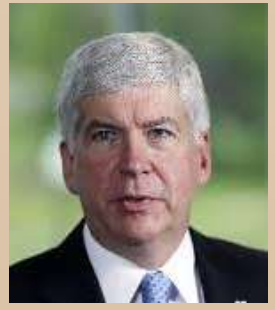


W. Denny Pate, FIGG lead engineer on FIU bridge: Despite a legal order to preserve all evidence, claimed his cell phone, which contained emails and photos, was accidentally thrown into a washing machine along with dirty clothes.

Jerry White, Connecticut state bridge inspector: Altered his notes about a routine inspection "to make it appear that he had warned Connecticut officials about the condition of the Mianus River Bridge" months before it collapsed



Nancy Temple, Enron legal counsel, and David Duncan, Arthur Anderson auditor: Destroyed records related to Enron's accounting scandal.



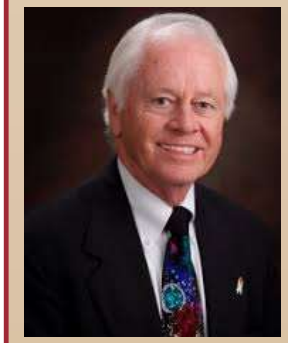
Rick Snyder, governor of Michigan during the Flint water cris: Criminally charged for his "his willful neglect of his mandatory legal duties under the Michigan Constitution and the Emergency Management Act, thereby failing to protect the health and safety of Flint's residents. Eight other officials were also indicted. All charges were ultimately dropped because prosectors' use of a single grand jury rendered the charges invalid.

Sources: https://www.miamiherald.com/news/local/community/miami-dade/article272940335.html, https://www.miamiherald.com/news/local/article231486703.html , https://www.nytimes.com/1983/09/10/nyregion/inspector-faces-forgery-charge-in-i-95-collapse.html, https://www.nytimes.com/2002/06/17/us/enron-s-many-strands-the-lawyer-a-big-misunderstanding-or-a-calculated-gamble.html, https://www.latimes.com/archives/la-xpm-2002-may-14-fi-andersen14-story.html, https://alchetron.com/Nancy-Temple, https://alchetron.com/David-Duncan-(accountant), https://www.detroitnews.com/story/news/local/michigan/2021/01/14/arraignments-begin-lyon-faces-involuntary-manslaughter-charges/4156464001/,

LEADERSHIP SUCCESSES

Kim Gwang-ho, Korean safety engineer at Hyundai: In 2016, reported that the automaker failed to address a design flaw that caused engines to catch on fire, leading to a massive safety recall. After enduring retaliation by his employer, he ultimately received a $24.3 million award from the NHTSA for his willingness to speak up.

Frances Haugen, data engineer and product manager at Facebook: In 2021, disclosed tens of thousands of Facebook's internal documents to the Securities and Exchange Commission and the Wall Street Journal proving that the company knowingly harmed children, intentionally spread political misinformation internationally and in the United States, and undermined democracy in pursuit of profit."



Allan McDonald, director of the booster rocket project at NASA contractor Morton Thiokol: On January 27, 1986, the night before the disastrous space shuttle Challenger launch, refused "to sign off on the launch authorization" citing unsafe conditions that could lead to disaster and continued to argue against it. Afterwards, he exposed NASA's attempt to cover up the cause of the explosion.

Sources: https://www.freep.com/story/money/cars/2021/11/09/former-hyundai-engineer-multimillionaire-whistleblower/6356925001/; https://www.npr.org/2021/03/07/974534021/remembering-allan-mcdonald-he-refused-to-approve-challenger-launch-exposed-cover; https://www.npr.org/2021/10/05/1043377310/facebook-whistleblower-frances-haugen-congress; https://www.nytimes.com/2021/10/03/technology/whistle-blower-facebook-frances-haugen.html

A REASONABLE GOAL

- We will never be perfect.
- But we can think about what it means to behave ethically.
- And we can commit to acting ethically.
- As an engineer, you have the power to harm people — in some cases a lot of people — if you don't behave ethically.

Committing now to acting ethically makes it easier to choose the ethical option later.

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QUESTIONS, COMMENTS & FEEDBACK?

Contact me: jeffrey.russell@wisc.edu

THANK YOU!

RESOURCES ON ENGINEERING ETHICS

- ASCE, A Question of Ethics: https://www.asce.org/career-growth/ethics/question-of-ethics
- National Academy of Engineering Center for Engineering Ethics and Society: https://nap.nationalacademies.org/author/CEES/national-academy-of-engineering/center-for-engineering-ethics-and-society
- NSPE Code of Ethics: https://www.nspe.org/resources/ethics/code-ethics
- ASCE Code of Ethics: https://www.asce.org/career-growth/ethics/code-of-ethics

EXTRA SLIDES NOT USED IN PRESENTATION

MORALS & ETHICS ARE NOT THE SAME

Morality:	"Principles concerning the distinction between right and wrong or good and bad behavior. A particular system of values and principles of conduct, especially one held by a specified person or society."
Morals:	Personal ideals, values, attitudes, and desires.
Ethics:	A set of principles governing behavior.

Your personal morals might emphasize trust, respect, and loyalty, but without ethics, your morals might compel you to do something unethical, like helping a friend commit a crime.

Source: MasterClass. (2022, Oct 23) Moral vs. Ethical: 3 Differences Between Ethics and Morals - 2023. *Masterclass*.com; Oxford Languages: Morality. Oxford University Press.

NSPE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Code of Ethics for Engineers

Source
https://www.nspe.org/sites/default/files/resources/pdfs/Ethics/CodeofEthics/NSPECodeofEthicsforEngineers.pdf

Preamble

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.

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.

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.
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.

2. Engineers shall perform services only in the areas of their competence.

a. Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.
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.
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.

3. Engineers shall issue public statements only in an objective and truthful manner.

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, which should bear the date indicating when it was current.
b. Engineers may express publicly technical opinions that are founded upon knowledge of the facts and competence in the subject matter.
c. Engineers shall issue no statements, criticisms, or arguments on technical matters that are inspired or paid for by interested parties, unless they have prefaced their comments by explicitly identifying the interested parties on whose behalf they are speaking, and by revealing the existence of any interest the engineers may have in the matters.

4. Engineers shall act for each employer or client as faithful agents or trustees.

a. Engineers shall disclose all known or potential conflicts of interest that could influence or appear to influence their judgment or the quality of their services.
b. Engineers shall not accept compensation, financial or otherwise, from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed and agreed to by all interested parties.
c. Engineers shall not solicit or accept financial or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible.
d. Engineers in public service as members, advisors, or employees of a governmental or quasi-governmental body or department shall not participate in decisions with respect to services solicited or provided by them or their organizations in private or public engineering practice.
e. Engineers shall not solicit or accept a contract from a governmental body on which a principal or officer of their organization serves as a member.

5. Engineers shall avoid deceptive acts.

a. Engineers shall not falsify their qualifications or permit misrepresentation of their or their associates' qualifications. They shall not misrepresent or exaggerate their responsibility in or for the subject matter of prior assignments. Brochures or other presentations incident to the solicitation of employment shall not misrepresent pertinent facts concerning employers, employees, associates, joint venturers, or past accomplishments.
b. Engineers shall not offer, give, solicit, or receive, either directly or indirectly, any contribution to influence the award of a contract by public authority, or which may be reasonably construed by the public as having the effect or intent of influencing the awarding of a contract. They shall not offer any gift or other valuable consideration in order to secure work. They shall not pay a commission, percentage, or brokerage fee in order to secure work, except to a bona fide employee or bona fide established commercial or marketing agencies retained by them.

III. Professional Obligations

1. Engineers shall be guided in all their relations by the highest standards of honesty and integrity.

a. Engineers shall acknowledge their errors and shall not distort or alter the facts.
b. Engineers shall advise their clients or employers when they believe a project will not be successful.
c. Engineers shall not accept outside employment to the detriment of their regular work or interest. Before accepting any outside engineering employment, they will notify their employers.
d. Engineers shall not attempt to attract an engineer from another employer by false or misleading pretenses.
e. Engineers shall not promote their own interest at the expense of the dignity and integrity of the profession.
f. Engineers shall treat all persons with dignity, respect, fairness, and without discrimination.

2. Engineers shall at all times strive to serve the public interest.

a. Engineers are encouraged to participate in civic affairs; career guidance for youths; and work for the advancement of the safety, health, and well-being of their community.
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.
c. Engineers are encouraged to extend public knowledge and appreciation of engineering and its achievements.
d. Engineers are encouraged to adhere to the principles of sustainable development[1] in order to protect the environment for future generations.
e. Engineers shall continue their professional development throughout their careers and should keep current in their specialty fields by engaging in professional practice, participating in continuing education courses, reading in the technical literature, and attending professional meetings and seminar.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

PREAMBLE

Members of The American Society of Civil Engineers conduct themselves with integrity and professionalism, and above all else protect and advance the health, safety, and welfare of the public through the practice of Civil Engineering.

Engineers govern their professional careers on the following fundamental principles:

- create safe, resilient, and sustainable infrastructure;
- treat all persons with respect, dignity, and fairness in a manner that fosters equitable participation without regard to personal identity;
- consider the current and anticipated needs of society; and
- utilize their knowledge and skills to enhance the quality of life for humanity.

All members of The American Society of Civil Engineers, regardless of their membership grade or job description, commit to all of the following ethical responsibilities. In the case of a conflict between ethical responsibilities, the five stakeholders are listed in the order of priority. There is no priority of responsibilities within a given stakeholder group with the exception that 1a. takes precedence over all other responsibilities. [1]

CODE OF ETHICS

1. SOCIETY

Engineers:

a. first and foremost, protect the health, safety, and welfare of the public;

b. enhance the quality of life for humanity;

c. express professional opinions truthfully and only when founded on adequate knowledge and honest conviction;

d. have zero tolerance for bribery, fraud, and corruption in all forms, and report violations to the proper authorities;

e. endeavor to be of service in civic affairs;

f. treat all persons with respect, dignity, and fairness, and reject all forms of discrimination and harassment;

g. acknowledge the diverse historical, social, and cultural needs of the community, and incorporate these considerations in their work;

h. consider the capabilities, limitations, and implications of current and emerging technologies when part of their work; and

i. report misconduct to the appropriate authorities where necessary to protect the health, safety, and welfare of the public.

2. NATURAL AND BUILT ENVIRONMENT

Engineers:

a. adhere to the principles of sustainable development;

b. consider and balance societal, environmental, and economic impacts, along with opportunities for improvement, in their work;

c. mitigate adverse societal, environmental, and economic effects; and

d. use resources wisely while minimizing resource depletion.

3. PROFESSION

Engineers:

a. uphold the honor, integrity, and dignity of the profession;

b. practice engineering in compliance with all legal requirements in the jurisdiction of practice;

c. represent their professional qualifications and experience truthfully;

d. reject practices of unfair competition;

e. promote mentorship and knowledge-sharing equitably with current and future engineers;

f. educate the public on the role of civil engineering in society; and

g. continue professional development to enhance their technical and non-technical competencies.

4. CLIENTS AND EMPLOYERS

Engineers:

a. act as faithful agents of their clients and employers with integrity and professionalism;

b. make clear to clients and employers any real, potential, or perceived conflicts of interest;

c. communicate in a timely manner to clients and employers any risks and limitations related to their work;

d. present clearly and promptly the consequences to clients and employers if their engineering judgment is overruled where health, safety, and welfare of the public may be endangered;

e. keep clients' and employers' identified proprietary information confidential;

f. perform services only in areas of their competence; and

g. approve, sign, or seal only work products that have been prepared or reviewed by them or under their responsible charge.

5. PEERS

Engineers:

a. only take credit for professional work they have personally completed;

b. provide attribution for the work of others;

c. foster health and safety in the workplace;

d. promote and exhibit inclusive, equitable, and ethical behavior in all engagements with colleagues;

e. act with honesty and fairness on collaborative work efforts;

f. encourage and enable the education and development of other engineers and prospective members of the profession;

g. supervise equitably and respectfully;

h. comment only in a professional manner on the work, professional reputation, and personal character of other engineers; and

i. report violations of the Code of Ethics to the American Society of Civil Engineers.

1 This Code does not establish a standard of care, nor should it be interpreted as such.

Source: https://www.asce.org/-/media/asce-images-and-files/career-and-growth/ethics/documents/asce-code-ethics.pdf

ETHICS TAXONOMY

←	Right vs. Wrong	→
Reports wrongdoing Fairness Objectivity Self-aware Safety focused Product liability Micro/macro ethics	Breach of public trust	Lying Fraud Bid rigging Conflict of interest Sexual harassment Discrimination Bribery Ignoring public safety
←	**Right vs. Right**	→
Truth Immediate concerns Individual Justice	Well-intentioned stakeholders failing to implement a coherent plan to identify and address risks	Loyalty Long-term concerns Community Mercy
←	**Right vs. Poor Engineering Judgment**	→
Sustainability Product liability Research integrity	Incompetence	Ignoring risks Lack of specialized knowledge Failure to follow peer review standards

DEFINITIONS: JUDGMENT

What is "**judgment**"?

judgment: the ability to form valuable **opinions** and **make good decisions**; a decision or opinion about someone or something that you form after thinking carefully. (Cambridge Dictionary)

DEFINITIONS: PROFESSIONAL JUDGMENT

What is "***professional* judgment**"?

The process of reaching a conclusion where there are a number of possible **alternative solutions** and **uncertainty** is involved.

Source: The KPMG Professional Judgment Framework, Steve Glover, Ph.D., Doug Prawitt, Ph.D.

DEFINITIONS: ENGINEERING JUDGMENT

What is "***engineering* judgment**"?

"Engineering judgment could be defined as the ability to **recognize** and/or **predict**, through a combination of **intuition**, **insight** and **experience**, the **probable outcome** of an analysis, design or process."

Source: Bruhl, J. C., & Klosky, J. L., & Mainwaring, T., & Hanus, J. P. (2017, June). *Accelerating the Development of Engineering Judgment in Students through Inquiry-Based Learning Activities*. Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. 10.18260/1-2--27532