WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

# TOWARDS ETHICAL PROFESSIONAL PRACTICE

**Jeffrey S. Russell, Ph.D., P.E.**
Professor of Civil and Environmental Engineering
Jeffrey.Russell@wisc.edu

# AGENDA

- Definitions
- A code of ethics
- Applied ethics
- Summary

# We will never be perfect.

# INSTEAD, WE NEED A REASONABLE GOAL

- Think about what it means to behave ethically
- Commit now to acting ethically later

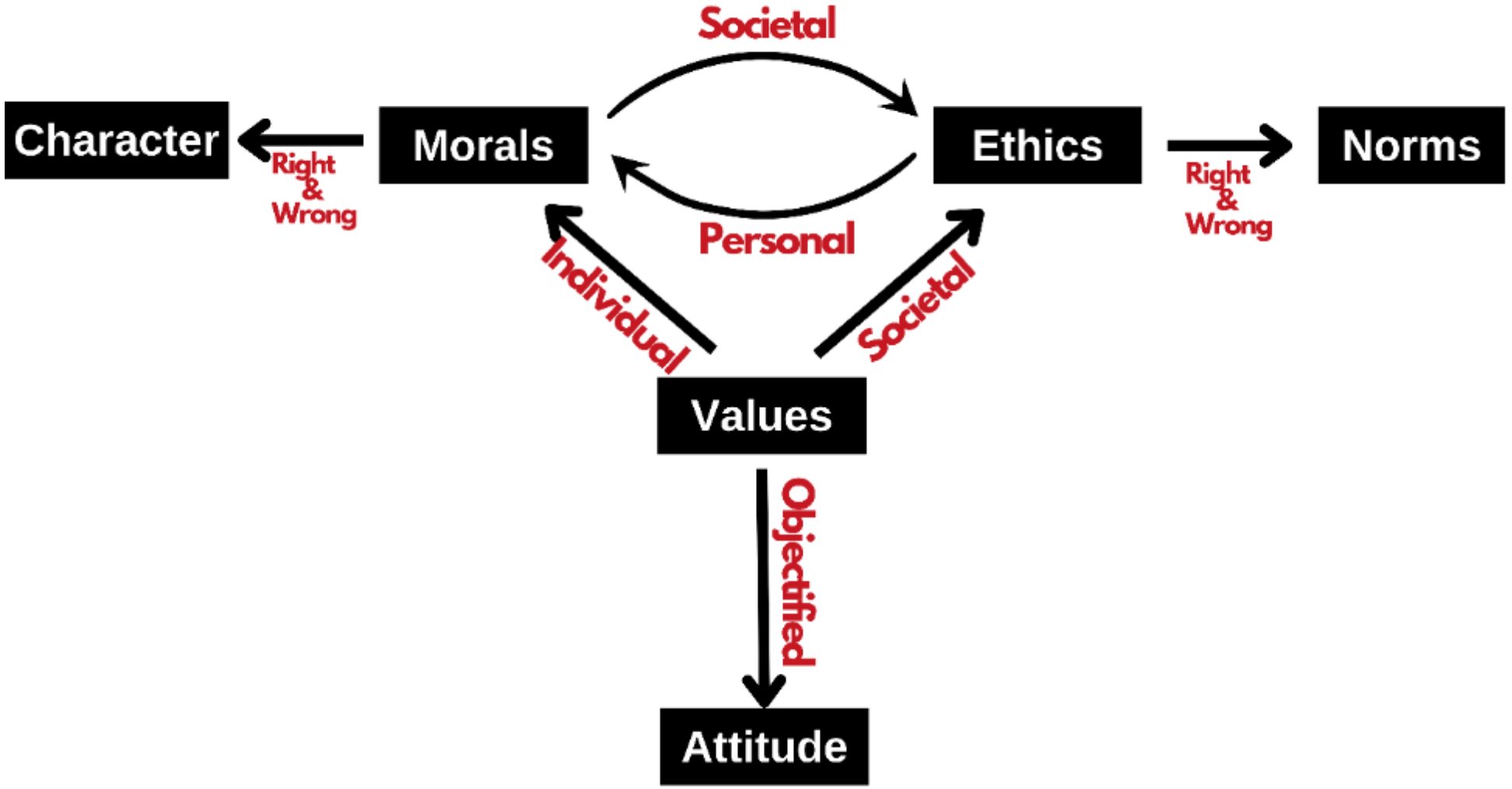
**Committing now**
**to acting ethically**
**makes it easier to choose**
**the ethical option later.**

# PROFESSIONAL DEVELOPMENT MODEL: 70 – 20 – 10

- 70% learning gained from job-related experiences
- 20% learning from interactions with others
- 10% from formal education

Source: 70:20:10 model was developed by Morgan McCall, Michael M. Lombardo and Robert A. Eichinger, and is described here: https://trainingindustry.com/wiki/content-development/the-702010-model-for-learning-and-development/

# 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/

# WHAT IS TRUST?

- Trust is an **expression** of character because it demonstrates integrity.
- Trust **results from character** that includes wisdom, courage, and temperance.
- Trust involves **accepting** risk.
- Trust begins where **prediction ends**.
- Trust is the **glue** that bonds relationships together.

# PRACTICAL DEFINITIONS OF TRUST

"A willingness to accept personal risk based upon another person's actions."

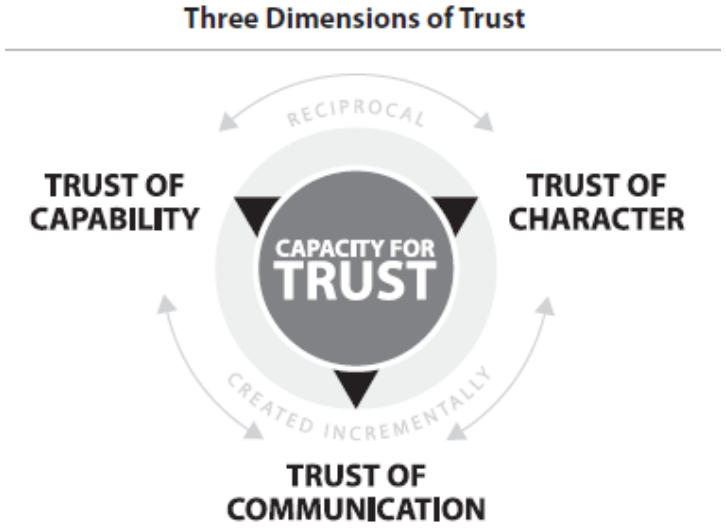
"Choosing to make something you value vulnerable to another person's actions."

"The feeling and belief that a person has our best interest at heart; that they will behave in a consistent manner, and their behavior honors the expectations that we have for them."

Sources: Interaction Associates, "Building Workplace Trust-Trends and High Performance"; Charles Feltman, *The Thin Book of Trust*

# THE THREE C's OF TRUST

***Practicing "The Three C's of Trust" behaviors lets others know they can trust your character, your word, and your abilities.***




- **Trust of Character** is the trust of mutually serving intentions and the starting point for all relationships.
- **Trust of Communication** is built when you share information, tell the truth, admit mistakes, maintain confidentiality, give and take feedback, and speak with good purpose.
- **Trust of Capability** is most aligned with your unique competence. You build this dimension of trust when you acknowledge others' skills and abilities, express appreciation for work well done, involve others in making decisions, and encourage learning.



Source: Reina, D. S., & Reine, M. L. (2015). Trust and betrayal in the workplace: Building effective relationships in your organization

# TRUST & PROFESSIONAL ETHICS

- Trust is an **individual attitude** which is directly related to **risk** in decision-making.
- **Professional obligations** include holding paramount public health, safety, and welfare; being ethical in dealings; providing expertise only in areas of competence; and maintaining public trust.
- Attributes of **ethical professional practice** include:
  - A daily zero tolerance attitude and mindset.
  - Engage and if you see something, say something.

# ETHICS IN CONTEXT

- Ethics, at an individual level, manifests itself as **integrity**.
- Ethics externally is seen as one honoring one's **commitments**.
- Professional ethics are a set of **expected behaviors**.
- **Professional ethics** is one factor that comprises or gives tangible evidence of **trustworthiness**.
- **Trustworthiness is the first virtue of an ethical professional life.**

# PROFESSIONAL CODES OF ETHICS

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

U.S. Department of Transportation

State of Wisconsin
Department of Transportation

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

# ETHICS

## Overview

DOT employees must adhere to specific standards of ethical conduct. DOT employees must also comply with Federal ethics laws and other laws that address employee conduct. To assist DOT employees in meeting their ethical obligations, DOT conducts an ethics program that provides ongoing ethics training, advice, and counseling. The Standards of Ethical Conduct provide an essential guide for employees to follow as they perform their duties and responsibilities.

## What Are You Looking For?

- Standards of Ethical Conduct
- Supplemental Standards of Ethical Conduct
- Federal Ethics Laws
- Ethics Commitments by Executive Branch Personnel
- Financial Disclosure
- DOT Ethics Program
- Contact Us

## Standards of Ethical Conduct

DOT employees are required to adhere to the Standards of Ethical Conduct for Employees of the Executive Branch. These standards are set out in Executive Order 12731 of October 17, 1990. All executive branch employees hold their Government positions as a public trust and the American people have a right to expect that all employees will place loyalty to the Constitution, laws, and ethical principles above private gain. Employees fulfill that trust by adhering to the Standards of Ethical Conduct.



Source: https://www.transportation.gov/ethics#:~:text=Prohibit%20employees%20from%20holding%20financial,the%20Standards%20of%20Ethical%20Conduct

# ETHICS

## The Standards of Ethical Conduct:

- Prohibit employees from holding financial interests that conflict with the performance of duty.
- Prohibit an employee from accepting gifts from sources seeking official action from, doing business with, or conducting activities regulated by the agency, or from sources with interests substantially affected by the employee's performance of duty.
- Prohibit employees from engaging in financial transactions using nonpublic Government information, making unauthorized commitments, using public office for private gain, and engaging in nonofficial activities that conflict with the performance of duty.
- Require employees to act impartially, protect and preserve Federal property, report waste, fraud, abuse, and corruption to appropriate authorities, satisfy in good faith their obligations as citizens, and adhere to all laws and regulations that provide equal opportunity to all Americans regardless of race, color, religion, sex, national origin, age, or handicap.
- Require employees to strive continually to avoid any action that would create the appearance that they are violating the Standards of Ethical Conduct.

The Standards of Ethical Conduct are further explained in regulations of the Office of Government Ethics (OGE). These regulations are published in 5 CFR Part 2635.



Source: https://www.transportation.gov/ethics

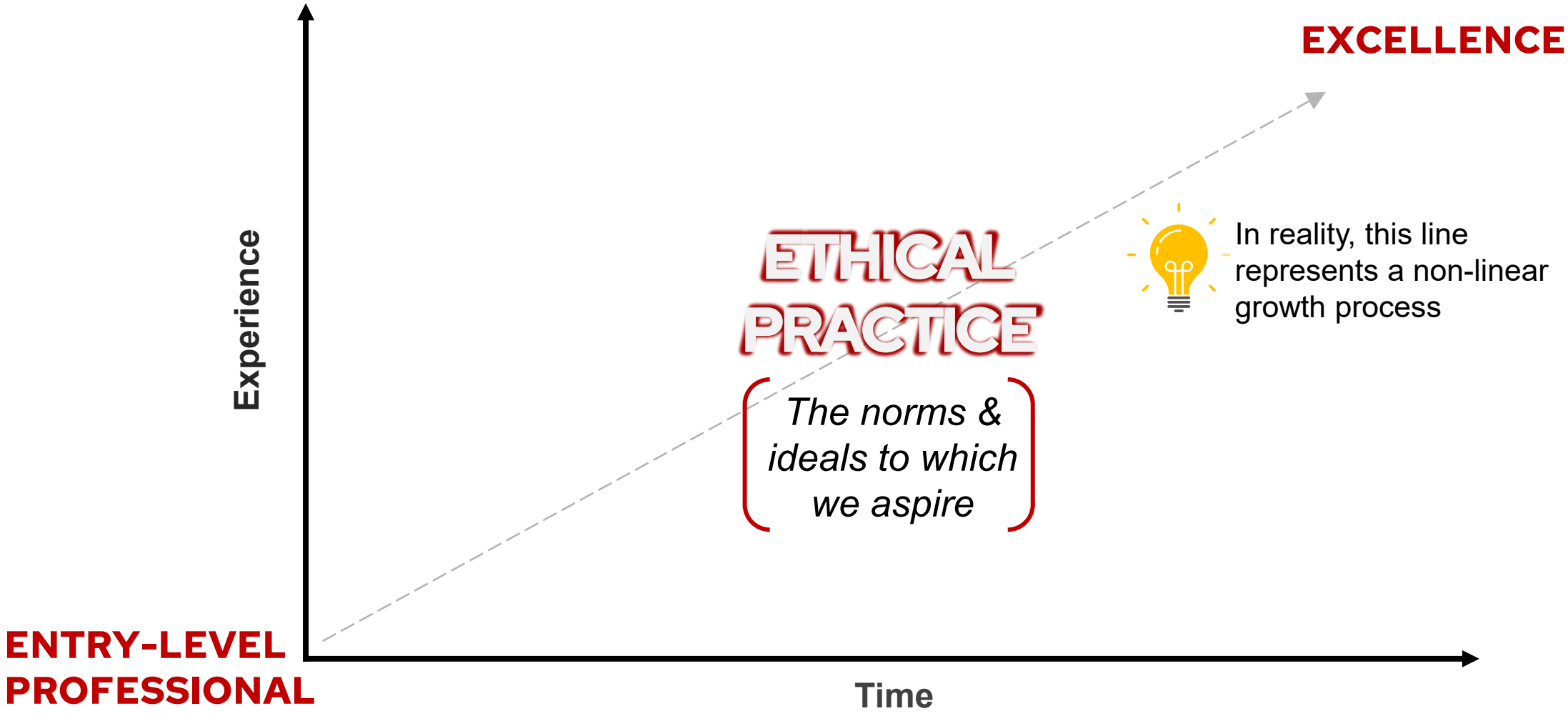
# CODES OF ETHICS FOCUS ON THESE ISSUES

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

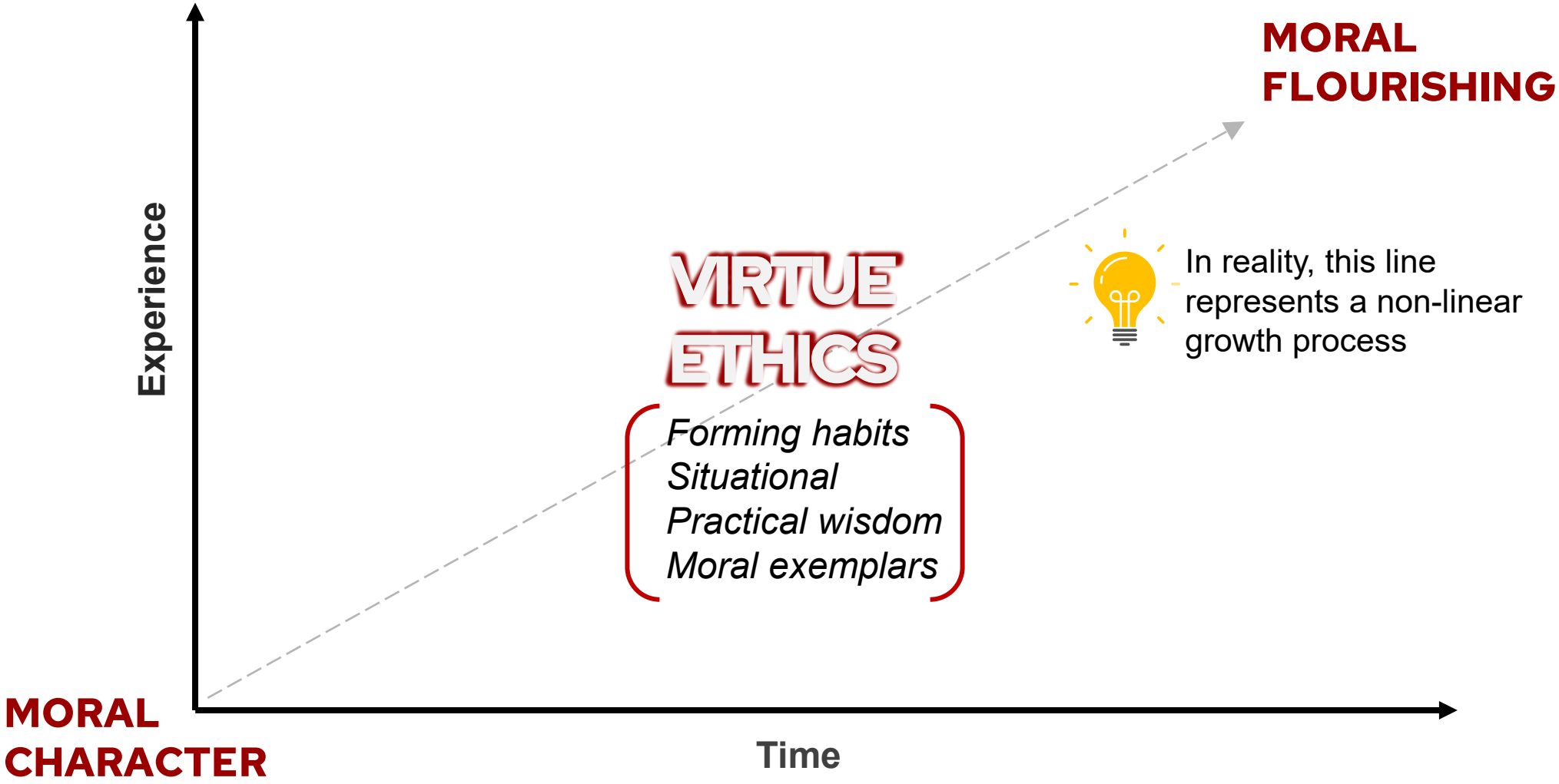


Source: Arthur E. Schwartz, *The Bridge,* https://www.nae.edu/File.aspx?id=168633

# ETHICS: DUTY vs. ASPIRATION



# VIRTUE ETHICS LEAD TO MORAL FLOURISHING



# ETHICS TAXONOMY



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

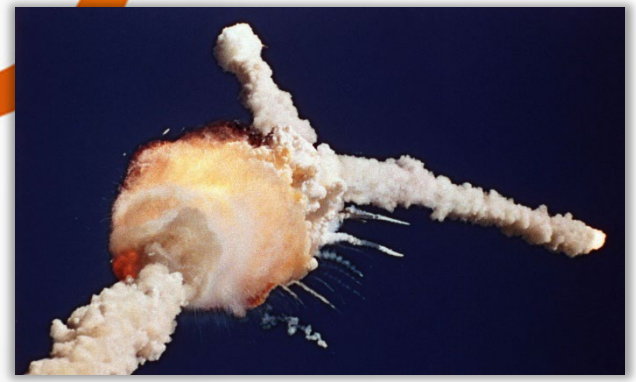
# THE ROLE OF FAILURE IN ENGINEERING

- Failure has always been part of the engineering profession.
- Even successful engineering projects can be considered failures over time, either because of changes in the physical environment, or because social change can cause people to demand new and higher standards of success.
- But we have an opportunity to learn from failure:
  - ✓ Technical knowledge
  - ✓ Organizational design
  - ✓ Decision-making and effectiveness
  - ✓ Changing social contexts
- And we must communicate the magnitude and urgency of problems in a way that decision-makers can understand.

# ETHICS & QUALITY IN PRACTICE

**HYATT REGENCY WALKWAY COLLAPSE**
July 17, 1981

**CHALLENGER DISASTER**
January 28, 1986



**FLINT, MI WATER CRISIS**
Began April 2014

**DEEPWATER HORIZON**
April 20, 2010

**FIU BRIDGE COLLAPSE**
March 15, 2018

# HYATT REGENCY WALKWAY COLLAPSE

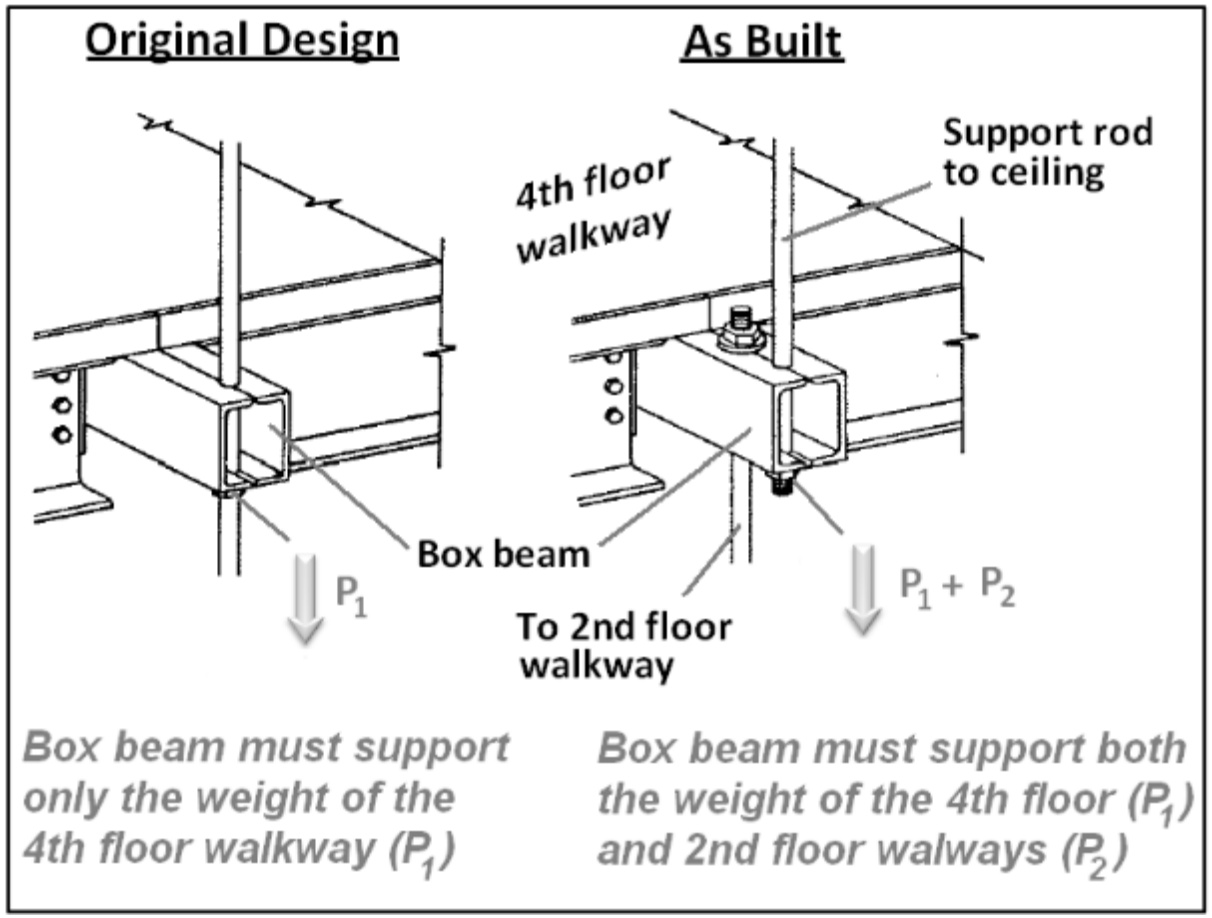
July 17, 1981

114 people killed;
at least 216 injured

Image source:
https://barneymccoy.wordpress.com/2011/07/20/remembering-the-kansas-city-skywalk-collapse/

# HYATT REGENCY WALKWAY COLLAPSE

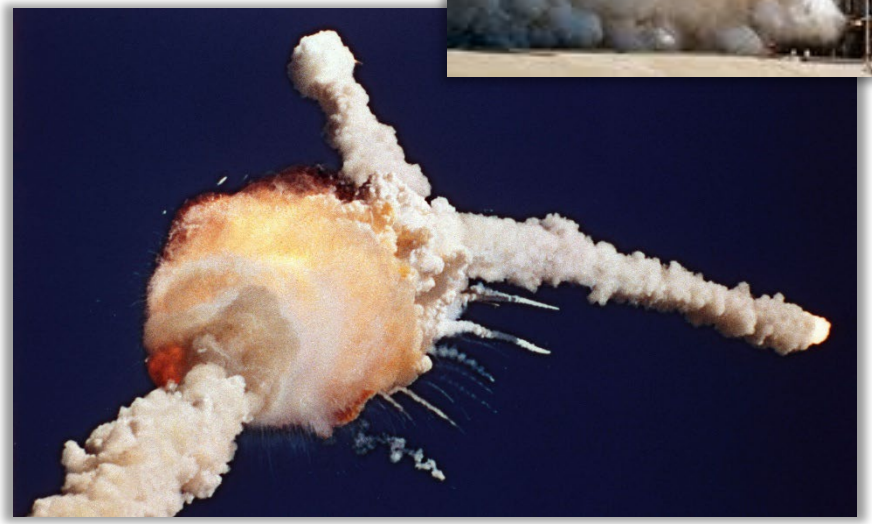
## Single-Rod Design Vs. Two-Rod Modification




Source: NASA Safety Center. (2008). Two Rods Don't Make It Right. (S. Wander, Ed.) System Failure Case STudies, 2(4), 1-6. Retrieved from https://sma.nasa.gov/docs/default-source/safety-messages/safetymessage-2008-05-01-hyattregencywalkwaycollapse.pdf?sfvrsn=eaa91ef8_4

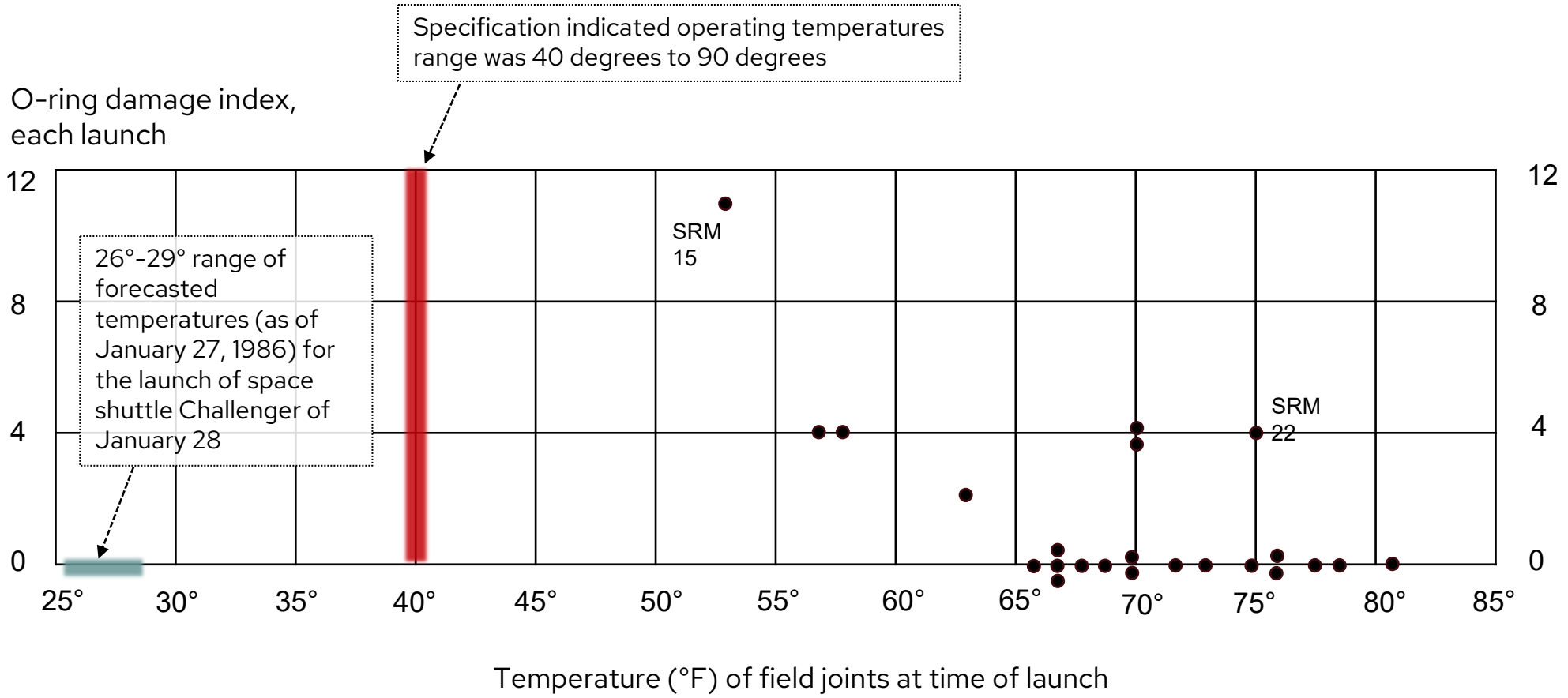
# CHALLENGER DISASTER

January 28, 1986




*Front row, left to right: Michael J. Smith, Francis R. "Dick" Scobee, Ronald E. McNair.*
*Back row left to right: Ellison S. Onizuka, S. Christa McAuliffe, Gregory B. Jarvis, and Judith A. Resnik.*

# CHALLENGER DISASTER




Sources: McDonald, Allan J., Hansen, James R. (2012). *Truth, Lies, and O-Rings: Inside the Space Shuttle Challenger Disaster*. University Press of Florida.; *NASA Report to the President By the Presidential Commission On the Space Shuttle Challenger Accident*. June 6th, 1986; Washington, D.C.

# DEEPWATER HORIZON

April 20, 2010

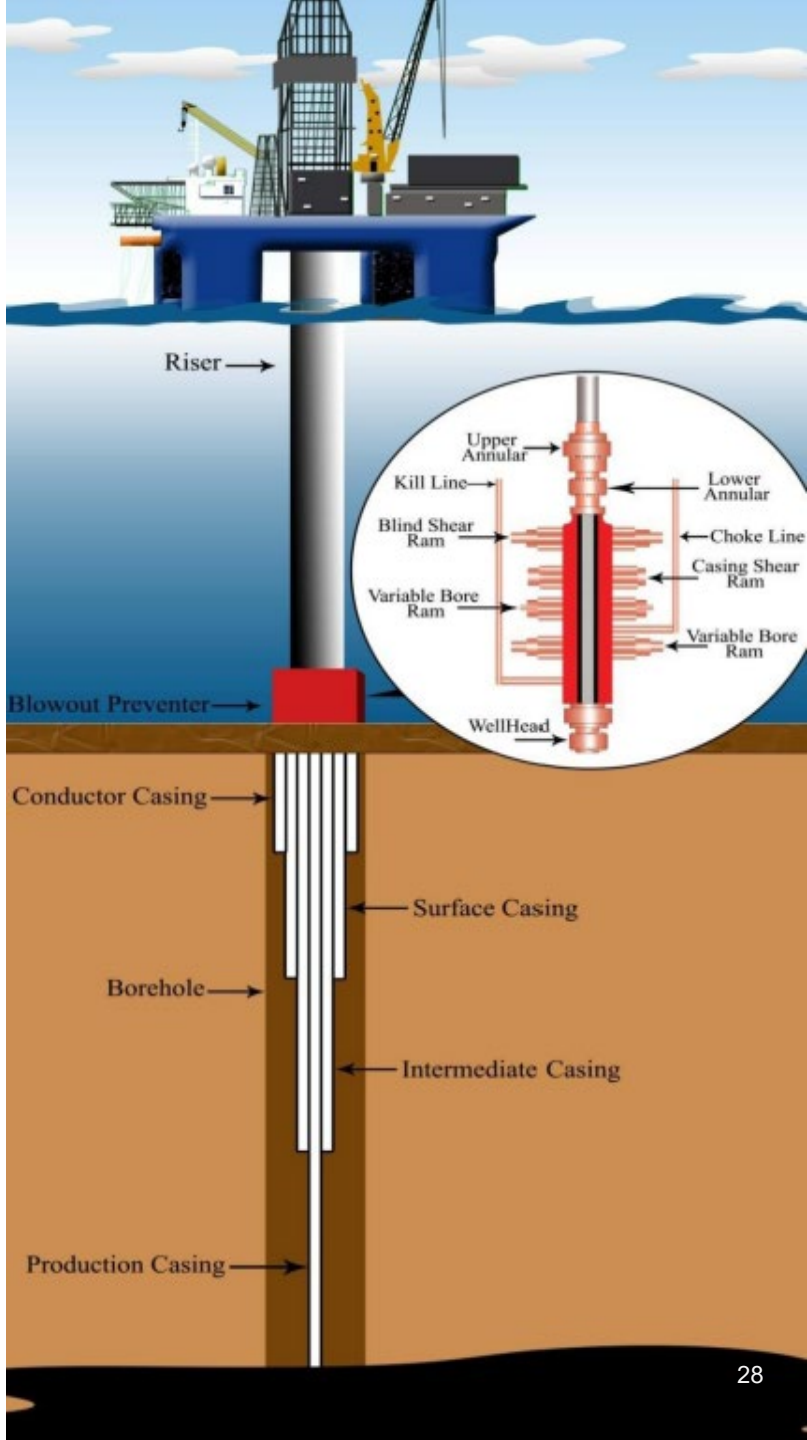

- 11 dead, 17 injured
- Largest marine oil spill in history released 134M gallons of oil into the Gulf of Mexico over 87 days
- Devastating environmental damage and economic impact
- BP and Halliburton paid billions of dollars in civil and criminal penalties




Sources: Photo: U.S. Coast Guard. (n.d.). Deepwater Horizon oil rig: fire. Retrieved March 14, 2025, from United States Coast Guard: U.S. Department of Homeland Security. Graphic: The Wall Street Journal. (2011, March 28). Adapted from "Deepwater horizon Victims". The Wall Street Journal. Retrieved from www.wsj.com.

# DEEPWATER HORIZON

- **Flawed well plan**
  - Long-string casing used instead of a more secure liner and tieback system.
  - Lack of additional centralizers to ensure proper cement distribution.
- **Light-weight, untested, nitrogen-infused cement** failed to properly seal the well.
- **BP skipped the required cement bond log test** which would have shown that the cement had failed to seal the well.
- **Failed safety systems**
  - Blowout preventer (BOP) failed because of poor maintenance and design flaws. Even if it had been functional, the crew failed to activate it in time.
  - Valves designed to prevent cement backflow didn't close.
  - Misinterpreted negative pressure test results led to decisions that exacerbated the situation.
  - Gas alarms and other emergency systems failed or were ignored.




Sources: Illustration: Offshore Operations Subgroup of the Operations and Environment Task Group. (2011, September 15). Working Document of the NPC North American Resource Development Study. Retrieved from National Petroleum Council: Text: National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. (2011). Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling. Congressional Hearings, House of Representatives, Committee on Natural Resources. Retrieved from www.govinfo.gov

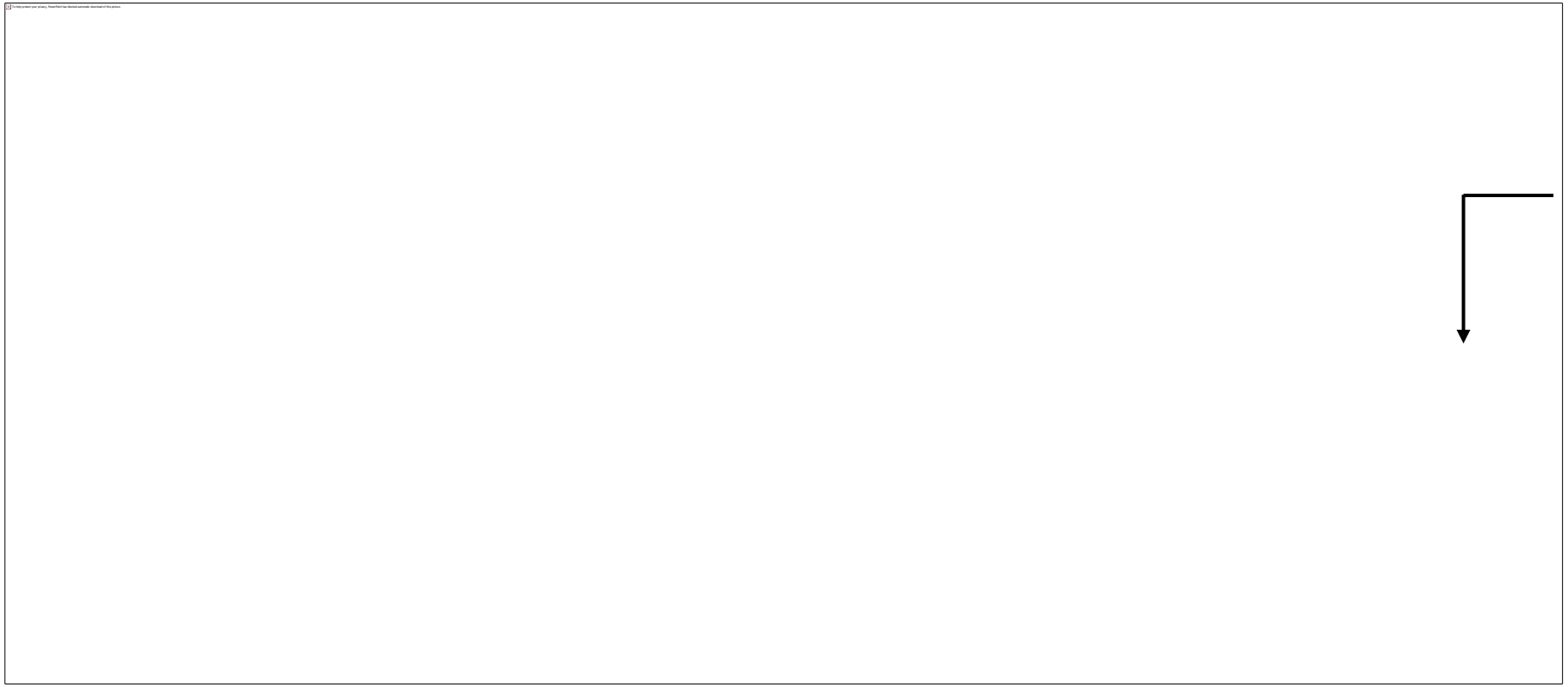
# FLINT, MI WATER CRISIS

Began in April 2014


2015: Flint River without Corrosion Control

2016: Detroit Water with Enhanced Corrosion Control

# FLINT, MI WATER CRISIS



In Oct 2015, the city's water supply was switched back to Lake Huron

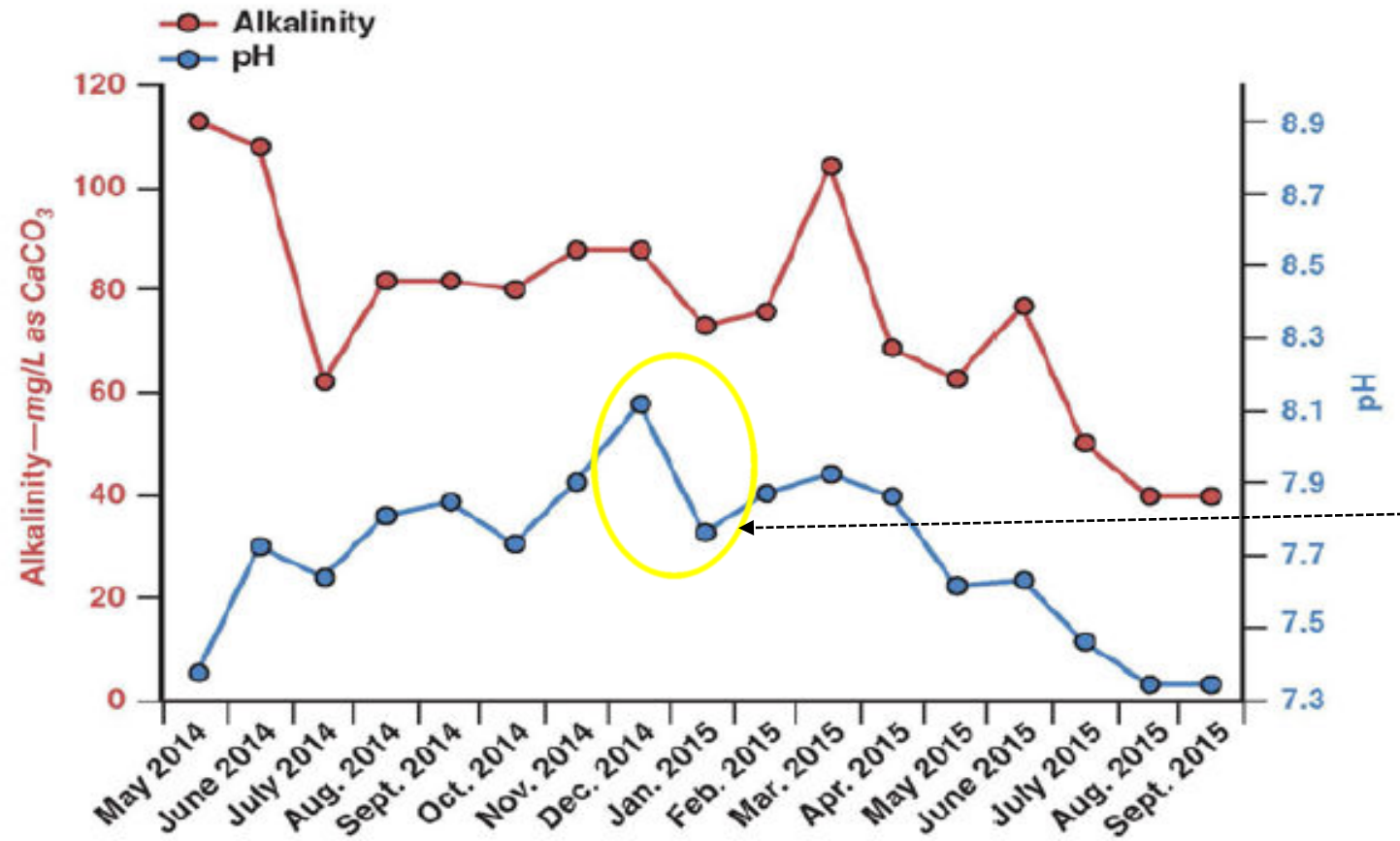
Accounts of the numbers of people killed in Flint by Legionnaires during this outbreak vary by source from eight to thirteen, though according to The Washington Post, dozens more may be linked.



Source: Bernstein, L. and Dennis, B. (2016, Feb 27). Did Flint's contaminated water cause deadly Legionnaires' outbreaks? The Washington Post.; Bellware, K. (2019, Sept 12). There may have been dozens more deaths linked to the Flint water crisis than previously known. The Washington Post.

# FLINT, MI WATER CRISIS

**Figure 7.** Monthly average pH and alkalinity in the treated Flint River




Source of data: City of Flint monthly operating reports

$CaCo_3$—calcium carbonate

Note where, at this point, for example, the daily measured pH fluctuated + or - 0.2 -0.3 pH units. Changes in pH more than 0.2 units per week are not recommended as rapid changes in the water chemistry may adversely affect system equilibrium and the passivation layer and scales on the insides of pipes.



Source: Masten, S., Davies, S., Mcelmurray, S. (2016) "Flint Water Crisis: What Happened and Why?" *JA Water Works Assoc.* 108(12): 22–34. doi:10.5942/jawwa.2016.108.0195.

# FLORIDA INTERNATIONAL UNIVERSITY (FIU) BRIDGE COLLAPSE

March 15, 2018


Six people lost their lives.

Nine others injured.

One permanently disabled.






# FIU BRIDGE COLLAPSE

The investigation focused on the following safety issues:

- **bridge design and construction plan errors**, and unique bridge characteristics and mechanisms of failure;
- independent peer review of complex bridge design;
- **shortcomings in oversight of evaluation of and response to significant observed bridge structure distress** prior to collapse; and
- **lack of redundancy guidelines** in specifications for pedestrian and concrete truss bridges.

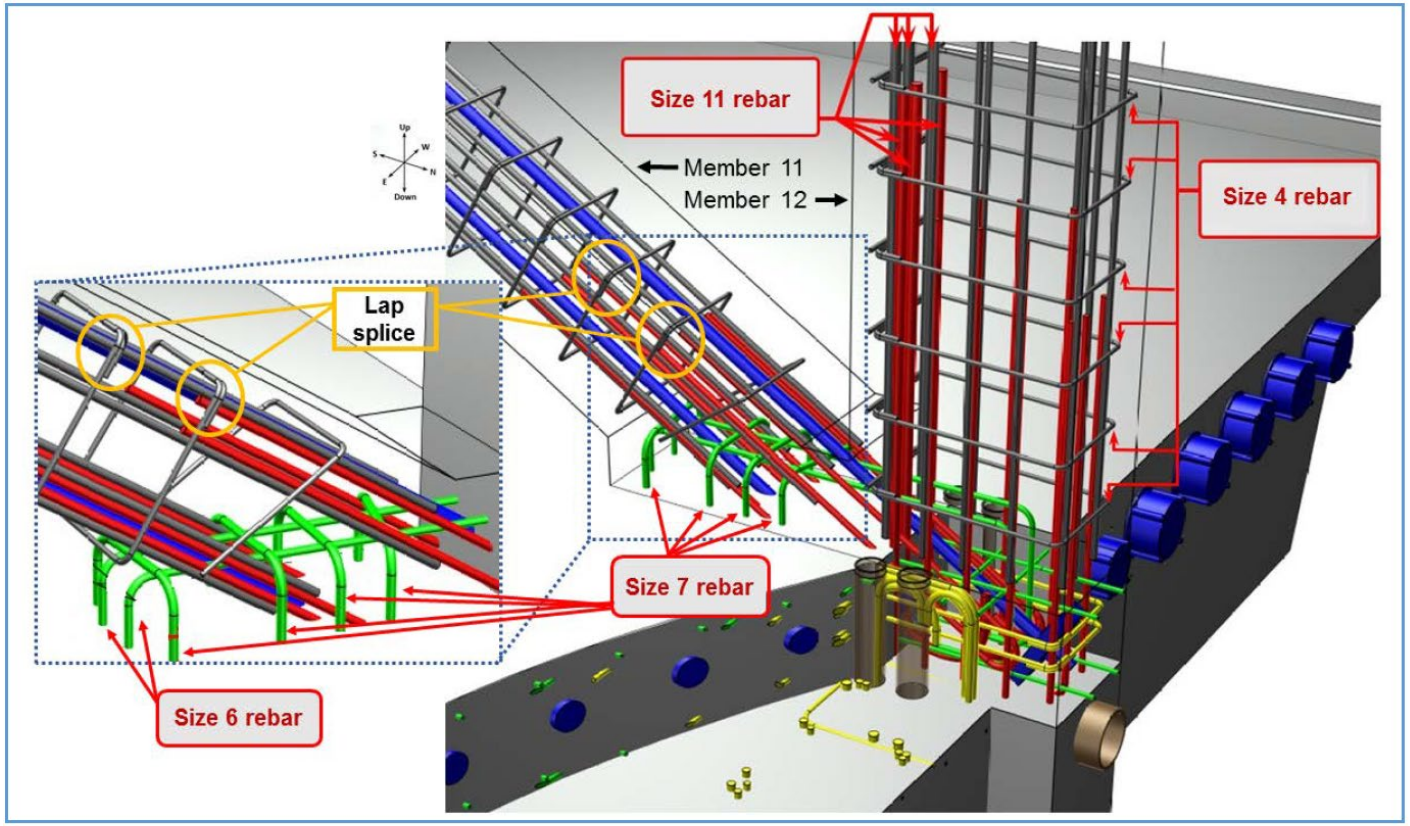



**Figure 17.** Main span, north end, showing rebar detailing in member 11, member 12, and node 11/12. Inset shows another view of rebar in node 11/12 and detail of lap splice from member 11. (Source: FHWA 2019)



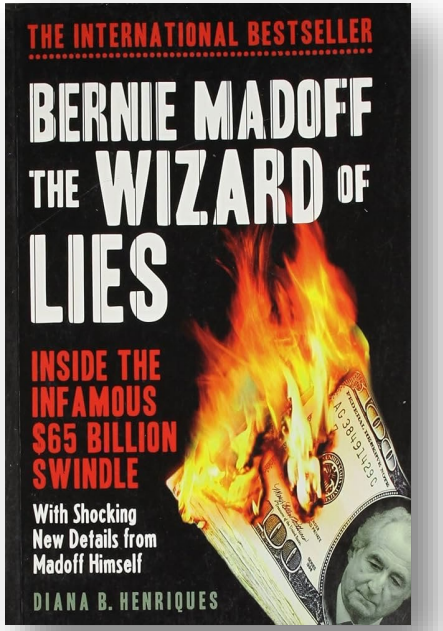
Source: National Transportation Safety Board Highway Accident Report: Pedestrian Bridge Collapse over SW 8th Street, Miami, Florida March 15, 2018.

# PRACTICAL APPLICATION

- In many cases, there was no one person at fault; a collective failure led to catastrophic results.
- In the cases of the FIU bridge collapse, Challenger disaster, etc., there were signals something wasn't right, but no one acted.

# PRACTICAL APPLICATION

- In so-called “white collar crimes,” there often are no lives lost nor a physical disaster site, yet the ramifications are enormous.
- For some, like Enron (2001), there was outright fraud and theft of other people’s money. The Wells Fargo cross-selling scandal (2016) and the Bernie Madoff scandal, history’s biggest Ponzi scheme, are others. These represent **clear cases of intentional bad acts** that destroyed the financial futures of people who trusted the company to act ethically, **but many other cases are less clear**.





# PRACTICAL APPLICATION

- In other cases, the unethical act(s) are taken to create 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 the grants, then competed for them, successfully winning ones on which they had contributed to developing, without 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 APPLICATION

- 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 APPLICATION

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

- Recognize unique project circumstances and characteristics.
  [FIU, Katrina, Kemper Arena roof collapse, L'Ambiance Plaza and Mianus River Bridge collapses]
- Recognize the undue influence of economic and schedule pressures.
  [Hartford Coliseum, Kemper Arena, Willow Island, Hyatt, Harbor Cay, Riley Road Interchange]
- Recognize significant changes to the original project plan impacting performance. [Challenger, OceanGate *Titan* submersible implosion, Hyatt]
- See physically observed results not matching expected physical behaviors.
  [FIU, Challenger, Horizon, Hyatt, Hartford Coliseum roof collapse, Harbor Cay condominium, Riley Road Interchange Ramp collapse]
- **Assess the risk of human harm and well-being. [ALL]**



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

# 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.**

WISCONSIN
UNIVERSITY OF WISCONSIN–MADISON

# 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

# PROFESSIONAL ETHICS

- Defined by a **code of ethics** that a **group of people aspire to attain**, such as that of the National Society of Professional Engineers (NSPE) or American Society of Civil Engineers (ASCE).
- Applied to questions of "**correct" behavior within a relatively narrow area of activity**, e.g., medical ethics, academic ethics, legal ethics.

Source: ASCE.org/code-of-ethics

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

# OVERARCHING ETHICAL STANDARDS

- Avoiding conflicts of interest
- Confidentiality
- Objectivity, honesty, truthfulness

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

# ENGINEERS AND THE LAW


- Gifts and bribery
- Discrimination and harassment
- Sustainability and the environment

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

# BUSINESS ETHICS

The standards for **morally right and wrong conduct in business**. Law partially defines the conduct, but "legal" and "ethical" aren't necessarily the same. Business ethics enhances the law by outlining acceptable behaviors beyond government control. (Redlands Business & Society Blog, University of Redlands)

> "Sound **business ethics** require all parties to understand the rules of engagement, and all parties to follow the rules, resulting in outcomes that are predictable, equitable, and sustainable." - Peter Strange

- ✓ Say it aloud.
- ✓ Communicate the rules to participants.
- ✓ Accept the outcome.

# 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.

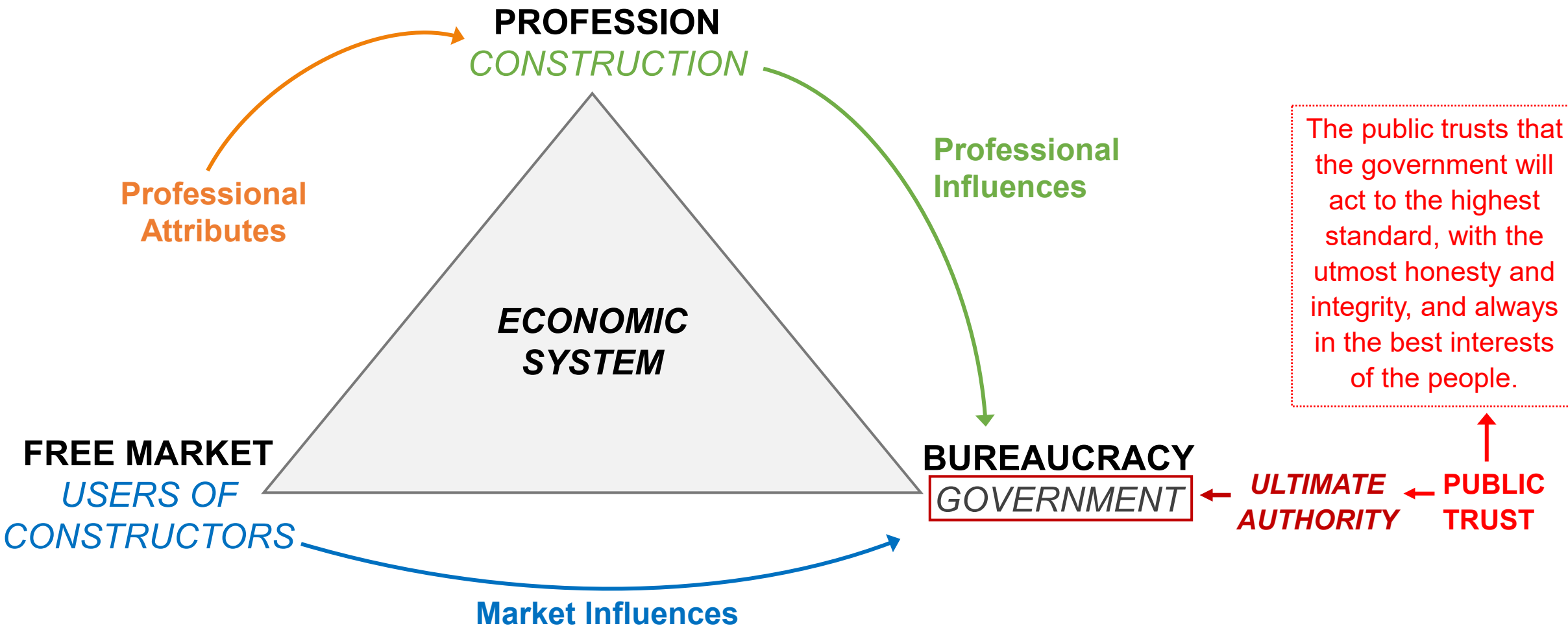
# DEFINITIONS: ENGINEERING JUDGMENT

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

# FREIDSON'S THIRD LOGIC




The public trusts that the government will act to the highest standard, with the utmost honesty and integrity, and always in the best interests of the people.

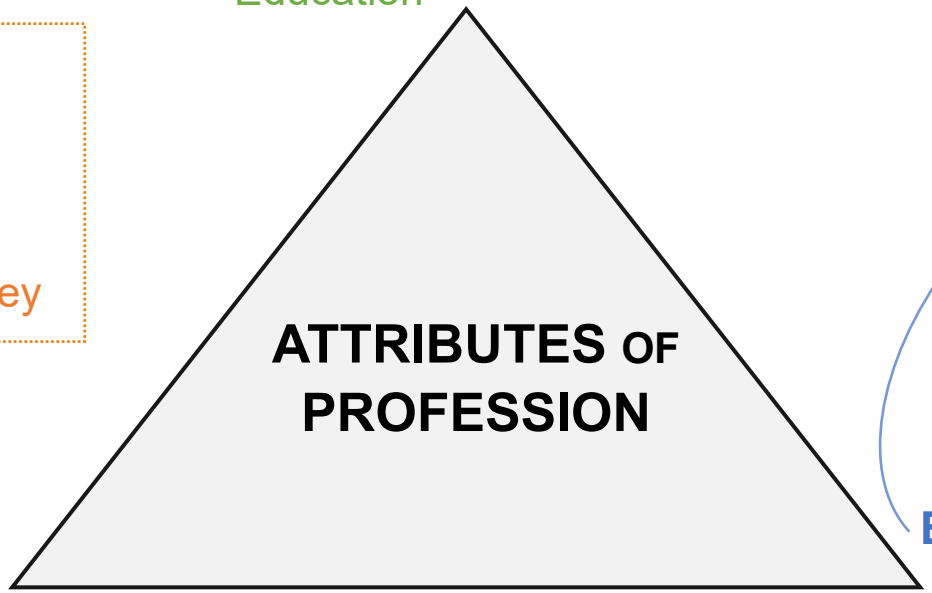
Source: Freidson, Eliot. (2001) *Professionalism: The Third Logic.* (University of Chicago Press)

# THE ATTRIBUTES OF A PROFESSION

**KNOWLEDGE**
- Body of theory
- Professional authority ← **TRUST**
- Education

Professionals serve clients, not customers

- A measure of trust in the profession's ability to handle the clients' affairs
- Related to professional authority where trust is key




The client-professional relationship places moral obligations on the professional

**ORGANIZATION**
- Professional associations
- Monopoly & licensing ← **PUBLIC TRUST**
- Professional autonomy

↑ **TRUST**

**ETHICS OF PROFESSIONAL SERVICE**
- The service ideal ← **TRUST**
- Code of ethics
- Professional career

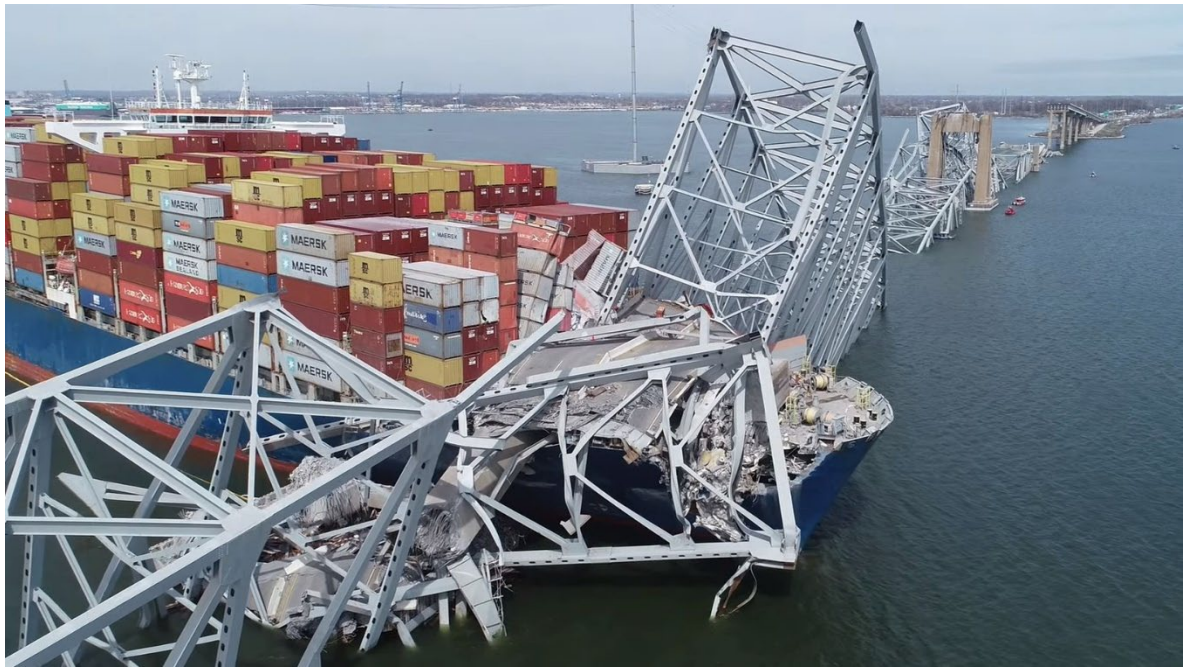
Source: Lawson, William. (2004). Professionalism, The Golden Years. *ASCE Journal of Professional Issues in Engineering Education and Practice, 130 (1).*

# 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.




# BRIDGES DON'T JUST COLLAPSE; THEY ARE FAILED BY THE SYSTEM MEANT TO PROTECT THEM.

Despite a $232 billion budget allocation to the U.S. Department of Transportation (USDOT) in 2025, the bridge repair backlog totals nearly $191 billion (USDOT 2025; ASCE 2025).

# APPLICATION OF ENGINEERING ETHICS

## Knowledge

- Thorough understanding of codes and standards.

## Skill

- The ability to recognize an ethical issue.

## Reasoning

- The ability to make moral and ethical decisions.

## Motivation

- The will to take action.

# PRACTICAL APPLICATION

- Recognize we all make mistakes and need to address them, as well as to be cognizant of our personal and team blind spots.
- When significant changes to a project occur, we must be mindful to
  - recognize the change,
  - think critically about the implications, and
  - act when prudent.
- Watch for excessive pressure on performance goals and resulting decision-making fatigue.