*“****PREAMBLE*** *. . .and above all else* ***protect*** *and* ***advance*** *the health, safety, and welfare of the public through the practice of Civil Engineering.”*

* **Protect:** i.e., safeguard, defend, shield, insulate, preventive, fail-safe
* **Advance:** i.e., achieve,accelerate, move up, propel, advocate, campaign.

*“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.”***

*“There is no priority of responsibilities within a given stakeholder group with the exception that* ***1a. takes precedence over all other responsibilities****.*

***“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;”***

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

***4. CLIENTS AND EMPLOYERS*** Engineers:

*“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;”*

***5. PEERS Engineers:***

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

1. ***report violations*** *of the Code of Ethics to the American Society of Civil https://www.intechopen.com/books/system-of-system-failures/failures-in-a-critical-infrastructure-system*

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* [***Seven of the Deadliest Infrastructure Failures Throughout History***](https://www.nytimes.com/2018/08/14/world/bridge-collapses-history.html) ***[[1]](#footnote-1)***

# [Infrastructure Failure](https://www.lansingmi.gov/671/Infrastructure-Failure) [[2]](#footnote-2)

* [**Failures in a Critical Infrastructure System**](https://www.intechopen.com/books/system-of-system-failures/failures-in-a-critical-infrastructure-system) **[[3]](#footnote-3)**

# [ROOT CAUSE ANALYSIS – CHALLENGER EXPLOSION](https://www.thinkreliability.com/case_studies/root-cause-analysis-challenger-explosion/) [[4]](#footnote-4)

1. [https://www.nytimes.com/2018/08/14/world/bridge-collapses-hisFailures in a Crirical Infrastructure Systemtory.html](https://www.nytimes.com/2018/08/14/world/bridge-collapses-hisFailures%20in%20a%20Crirical%20Infrastructure%20Systemtory.html) [↑](#footnote-ref-1)
2. <https://www.lansingmi.gov/671/Infrastructure-Failure> [↑](#footnote-ref-2)
3. <https://www.intechopen.com/books/system-of-system-failures/failures-in-a-critical-infrastructure-system> [↑](#footnote-ref-3)
4. <https://www.thinkreliability.com/case_studies/root-cause-analysis-challenger-explosion/> [↑](#footnote-ref-4)