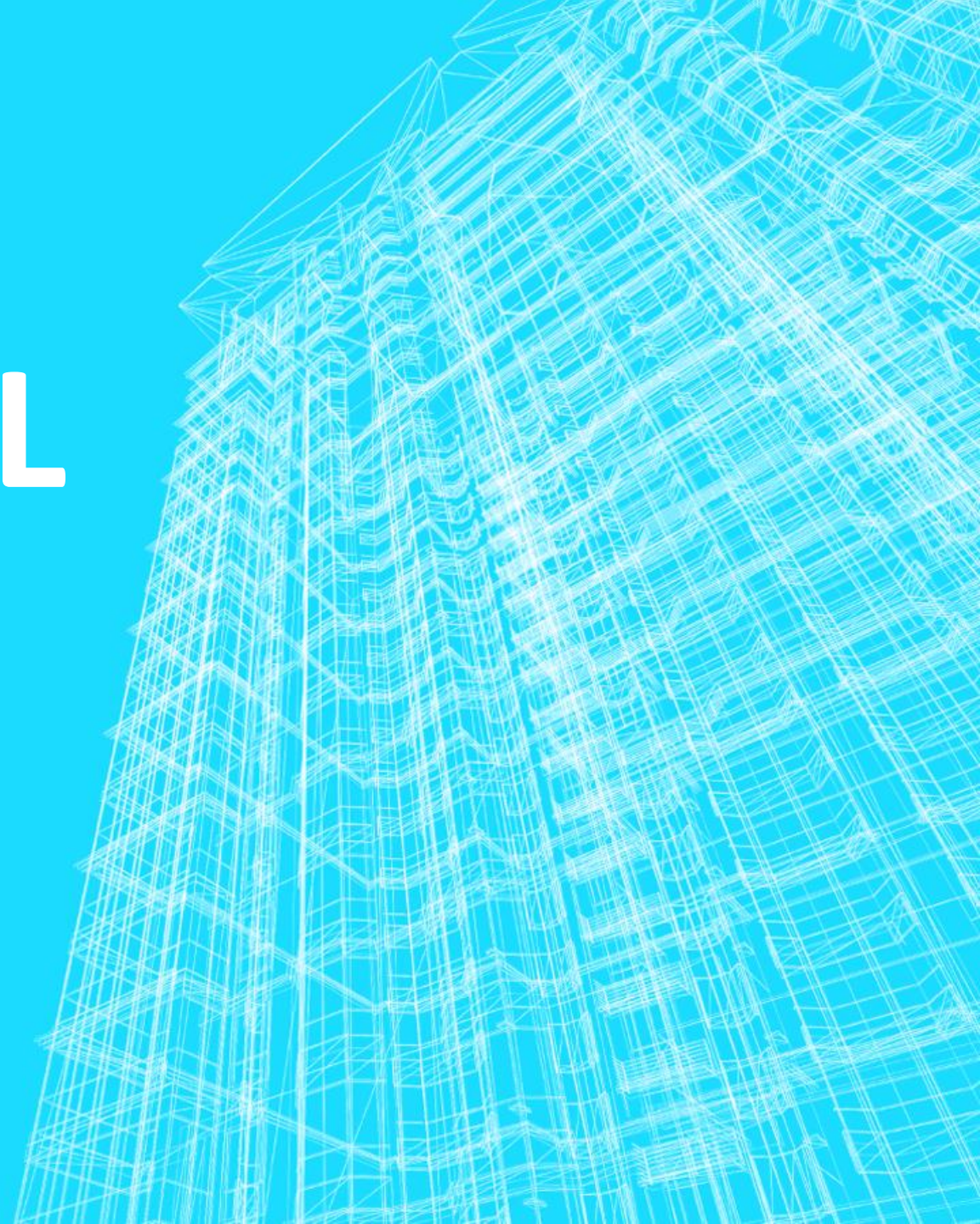


# ETHICS FOR PROFESSIONAL ENGINEERS

**Review of Other Engineer's Work**





# STATE LAW EXERCISE 1

## GROSS NEGLIGENCE? INCOMPETENCE? MISCONDUCT?

Engineer has been a PE for 11 years and has successfully designed and overseen construction of multiple buildings. Engineer designs and oversees construction of a garage. His plans were reviewed by the city engineer and approved after some minor changes. During the review, the question of whether the roof was appropriately designed to hold the load was raised and the reviewing engineer was satisfied with the response. During construction, the Engineer carries out some welding work on the door frames for the garage door. He does not hold the necessary certifications to do welding work.

Later, the roof of the garage collapses. No one is hurt. It is determined that there was an error in the design of an open web frame truss that meant the roof could not support a reasonable live load. Engineer agrees that he made the error, and it was the error that was the cause of the collapse. “This has been the first and only failure that I have experienced during the eleven years of private practice, and I can assure you, the last” he said. All the reviewing engineers agree that the design error was not obvious.



## STATE LAW EXERCISE 2

### GROSS NEGLIGENCE? INCOMPETENCE? MISCONDUCT?

Engineer has been in practice for 10 years and has submitted designs for many runoff control and manure storage systems for permitted CAFOs. Each time she submits a design, the department engineers find errors. The designs do not meet minimum code requirements, commonly in the quality of concrete proposed. Nearly every submittal is returned for correction.

If built according to the proposed design, the systems would initially work as required. But the errors would have resulted in the systems having a shorter than normal useful life resulting in unexpected failure of the systems and significant discharges from the CAFOs. The initial build may be cheaper, but the repairs would be much more costly for the CAFO owner in the long run.



# NSPE EXERCISE

Engineer A practicing in Wisconsin requires the services of a structural engineer in Utah. Engineer A contacts Engineer B, who is the secretary of the Utah Society of Professional Engineers, to request the name of an appropriate engineer to perform the required structural engineering work. Engineer B suggests Engineer C, who Engineer A then retains. Not satisfied with the services provided by Engineer C, notably Engineer C's lack of regular communication, Engineer A later contacts Engineer B and tells Engineer B of his general dissatisfaction with Engineer C, but does not first communicate this displeasure to Engineer C. Engineer B talks with Engineer C. Soon thereafter, Engineer C contacts Engineer A and expresses his strong displeasure toward Engineer A for the comments he made to Engineer B.



# NSPE EXERCISE

Engineer A, a professional engineer works with a construction contractor on a design/build project for the construction of an industrial facility. During the construction of the project, the construction contractor retains the services of Engineer B, a professional engineer, to design structural footings. Engineer B's degree and background is in chemical engineering. Engineer A has been unable to establish that Engineer B has any apparent subsequent training in foundation design and Engineer A has reservations concerning the competence of Engineer B to design the structural footings. She reports her concerns to the contractor. Engineer B proceeds with the design work.



# GENERAL EXERCISE - 1

Following an inspection of records at a facility permitted under WPDES, it becomes clear that the facility has been misreporting discharge monitoring data required by the permit. The facility discharges effluent from industrial processes to a river used for drinking water supply.

- The lab reports show different results than reported and demonstrate a clear violation of permit terms that has been ongoing for many years.
- The manager, a professional engineer said during the inspection that he was solely responsible for reporting. When asked about the lab report, manager said he did not trust the lab reports, so he reported what he thought were the right numbers.



# GENERAL EXERCISE - 2

NR 507.21(3) requires a solid waste disposal facility to sample all leachate head wells for leachate head levels on a quarterly basis and report the data to the department semi-annually. For a number of years of operation, PE Consultant has submitted landfill reports on behalf of the landfill under her PE stamp. The leachate head level data was collected by a technician. Technician provides the results to the landfill manager who passes it on to the PE Consultant. The PE Consultant wrote the landfill's reports discussing the data in the narrative and generated tables of the data.

The data collected showed no leachate had been removed from certain phases of the landfill and the leachate head levels were zero for a number of years. During this time, significant decisions relating to operation of the landfill and the leachate collection system were made, on the advice of the PE Consultant. These decisions were made on the basis of the reports and the leachate data.

Another manager of the landfill company reviewed the reports and noticed things didn't "add up." The company had a 3rd party perform leachate head level monitoring and discovered leachate head levels in excess of 1 foot in violation of code. The company reported this to the DNR and DNR issued an NOV impacting the reputation of the company. An internal investigation revealed:

- The monitoring technician said he didn't know how to use the different meters (he had been working as the technician for over 3 years).
- Manager said he trusted his employee and was not aware he had not been adequately trained in use of the equipment. He agreed to establish a more thorough training regimen.
- PE Consultant questioned whether the historical data was actually wrong and maybe there had been a recent change in conditions that resulted in the leachate level readings. She insisted that there was no evidence that the data in the prior reports was in error.



# GENERAL EXERCISE - 3

Professional Engineer A works for SmallCo which has just been acquired by BigCo. A has had her PE license for 2 years. BigCo is building a landfill in Wisconsin and Engineer B is the PE overseeing construction. The landfill liner is 70% complete when B leaves the jobsite due to illness. BigCo assigns A to take over.

A inspects a delivery of clay and finds it is not to specification. There is visible debris and boulders in it. When she rejects the delivery, the supplier complains that the load is from the same source as the prior deliveries that were accepted. The tests all show the clay meets specification but it clearly does not. A confirms the information with BigCo staff. She visits the clay source and finds that the clay is not been excavated from the right location.

Engineer B returns to work and A outlines the issue. Construction is behind schedule and most of clay layer is now covered by the drainage layer. B is angry with A. He says the tests show the clay is to spec. He has not visited the source and relied on staff to inspect the deliveries. He reports A to management as being incompetent. He also tells the other engineers at BigCO what he thinks of A and advises them not to use her on other jobs. A eventually leaves BigCo.