As I have learned more about engineering, I have started to think differently about what being a responsible engineer means. I used to think it mostly meant doing accurate work, following standards, and following company rules. Those things still matter, but they are only part of the responsibility. Engineers make decisions that affect people who had nothing to do with the design process. Most people simply expect the products and systems they use to be safe and reliable. I think engineers have to respect that trust. I also do not want to become someone who sees a problem and ignores it because it technically belongs to someone else. Engineers have responsibilities to their employers, clients, coworkers, and profession as well. The NSPE Code of Ethics says engineers should put the safety, health, and welfare of the public first. It also expects engineers to be honest, work within their areas of competence, and act faithfully toward employers and clients. These responsibilities sound simple on paper. In a real job, I think they become harder when two responsibilities point in different directions.

For example, a company might be trying to meet a deadline or reduce costs while an engineer thinks more testing is needed. I do not think a supervisor making the final decision removes the engineer's responsibility. If I noticed a serious risk, I would want to explain what I found and why I was concerned. I would rather bring up a concern and find out I was wrong than stay quiet and find out later that the problem was serious.

The BART case from the course made me think about this in a more realistic way. Three engineers working on the automatic train control system became concerned about testing, oversight, and documentation. Management did not address their concerns, so they contacted a member of the BART board. They were eventually fired.

Their situation was one of the parts of the course that stayed with me. It is easy to say that public safety comes first when there is no personal consequence. For the BART engineers, speaking up affected their jobs. Before learning about this case, I thought engineering ethics was mostly about

figuring out which decision was right. The case made me realize that sometimes an engineer already knows what the responsible choice is. The harder part is deciding whether to speak up when doing so might create problems for you.

If I were in a similar position, I would first make sure I understood the technical issue before making a serious claim. I would gather evidence, document what I found, and raise the concern through the proper process. I would also listen to other engineers. There is always a chance that I missed something or misunderstood part of the problem. I do not want confidence in my own work to stop me from listening to someone else. But if I still believed there was a serious safety issue, I would continue raising it. The NSPE Code says engineers should notify the appropriate people when their professional judgment is overruled in a situation that could endanger life or property.

Safety is also not the only concern engineers deal with. Cost, environmental impact, sustainability, social impact, and legal requirements all affect engineering decisions. I think cost deserves serious consideration because every project has a budget, schedule, and limited resources. Engineers have to work within those limits. Still, there is a point where saving money is no longer worth the added risk. I think one of the harder parts of being an engineer will be recognizing where that point is and being able to explain why. The low frequency electromagnetic fields case showed me another side of this problem. Researchers did not have a clear answer about whether exposure to electromagnetic fields caused health problems, but engineers still had to make design decisions. I liked this case because there was no simple answer. Engineers sometimes have to make choices before they have all the information they would like to have.

In a situation like that, I would look at the evidence available at the time and consider how serious the possible harm might be. I would also look at ways to reduce the risk and what those changes would cost. If stronger evidence came out later, I would be willing to change my decision. I think

admitting that an earlier decision was wrong, or no longer makes sense, is part of being responsible. I would rather change my mind based on better evidence than defend a decision because I do not want to admit I was wrong.

I think environmental impact and sustainability deserve the same kind of attention. A design might meet its technical requirements while still wasting energy, using unnecessary resources, or causing environmental problems later. The NSPE Code encourages engineers to consider sustainable development and the environmental needs of future generations. I want to think about these issues while I am working on a design, when changes are still possible, instead of treating them as something to think about at the end.

Laws and regulations are important too, but following the law should not be the only question I ask. A design might meet every legal requirement and still create a risk that should have been handled better. If something went wrong, I would not want my only explanation to be that I technically followed the rules.

As I get closer to starting my career, I think responsible engineering will show up most often in smaller everyday choices. It might mean checking a calculation again because the result looks strange, asking someone for help when I am working outside my knowledge, or taking a coworker's concern seriously even when a deadline is close. I know I will make mistakes, especially early in my career. I also know I will not always have enough experience to recognize the best answer immediately. I want to be comfortable admitting when I do not know something instead of pretending that I do.

Technical knowledge will help me solve engineering problems, but I also have to decide how I use that knowledge. One standard I want to keep for myself is simple. I want to feel comfortable trusting my own work if I were the person using the final product. To me, that means taking responsibility for my decisions, being honest when I am unsure, listening when someone raises

a concern, and speaking up when something does not seem safe. Those are habits I want to carry with me as I become an engineer.