CE 790 Engineering Ethics Case Studies Rubric.
Instructed by: Steve Starrett, Ph.D., P.E., D.WRE

Task	Maximum (%)	
1. Gather the facts, state assumptions.	12	12
2. Define and separate the various ethical issues.	9	12
3. Study more information available on web.	1	3
4. Identify the affected parties (stakeholders).	7	7
5. Identify the consequences related to each issue.	6	7
6. Identify the obligations related to each issue.	7	7
7. Consider the character and integrity related to each issue.	7	7
8. Think creatively about potential actions or solutions.	9	9
9. Develop competing viewpoints or arguments supporting each solution.	12	12
10. Visit with peers.	6	6
11. Test solutions.	6	6
12. Decide on action and prepare to deal with opposing arguments.	10	12
TOTAL	92	100

QUALITY OF WORK PRESENTED IN A REPORT

poor
missing some steps
short on facts/assumptions of case
very short analysis of the 3 methods
few potential solutions presented and argued
doesn't argue decision well
report not well constructed
overall does not illustrate understanding of case or issues

good
all steps included in report
Some analysis of the three methods weak
not exhaustive list of potential solutions
decision argued well
report well done
understands case, just not every point considered

excellent
all steps done in-depth
all topics considered, analyzed
very convincing argument for decision
report organization excellent
exhaustive list of potential solutions
illustrates expert understanding of case, issues, how to analyse, and great decision argumen

PE Sealed Plans

1) Facts and Assumptions

a. Facts:

- The county where the project is located requires a PE seal on plans submitted for permits.
- Although a PE is assigned to the project design team, he is not certified in the state of Utah.
- The company needs to send out the permit plans immediately in order to avoid problems for their client.
- A PE that is certified in Utah works in the office where the plans are but he is unavailable and unfamiliar with the project.
- A second Utah licensed PE works in a different office and may have contributed to the project design in the early stages but is unfamiliar with the final plans.
- A stamp for a Utah certified PE is available in the design office.

b. Assumptions:

- The company employees are members of the NSPE and are bound by the organization's guidelines.

2) Ethical Issues

- The central ethical issue in this case in whether or not the EIT and his staff should use the PE stamp of another company engineer in order to expedite the delivery of the permit plans. This could be done with or without the knowledge of the engineer whose stamp is used.

2nd issue needs expanded

3) Additional Information

- The NSPE code of ethics provides at least two guidelines that are applicable to this case. First, a fundamental canon of the NSPE that broadly covers the issue is that which directs engineers to avoid deceptive acts. The second applicable guideline is a rule of practice which states "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." In this case, if the EIT used a PE stamp from one of the Utah certified PEs, they would be in violation of the NSPE since they were not closely involved in the project.

CODE

4) Affected Parties

- The EIT, his design staff, and all other employees that are involved in the project.

- The Utah certified PEs working at the company.
- The senior management of the engineering firm.
- The client of the engineering company.
- The environment and residents of the county where the project will be located.

5) Consequences of Issues (short and long term)

- The first potential consequence of this issue is the company's liability for submitting fraudulently certified engineering plans. Although competent engineers designed the plans, including one certified in another state besides Utah, if the EIT were to use the PE seal of an uninvolved engineer, the company could be in violation of established standards. Because many specifics of this case are not known, it is difficult to predict the likelihood of this occurring.
- The second potential consequence could arise if the submitted plans are approved but later, either during construction or sometime after, the design is determined to be faulty. In this case, the company could be held liable for the design flaws. The likelihood of this consequence is also difficult to predict because of the lack of known details in the case.
- The last consequence is the potential for the company to submit a sound technical design but because a Utah certified PE did not work closely on project, specific requirements unique to Utah were not considered. If this occurred, it may be discovered when the county inspectors review the design. In this case, the company would obviously be questioned as to how and why a Utah PE approved and submitted a design that did not meet state requirements.

6) Obligations of Issues

- The first obligation is for the EIT and his team to perform their duties in accordance with the company and NSPE guidelines that they are bound by. If this obligation is fulfilled, the integrity of the EIT and his company will be preserved and the safety of the public will not be compromised by unethical actions.

7) Character of Issues

- From a Utilitarian standpoint, the EIT and his team should formulate possible solutions by considering how to bring the most benefit to all involved parties, while minimizing any adverse effects. For this to be successful, the team must consider all of the potential effects on the company's reputation and employees as well as the local community where the project is located.
- Although it is not specifically mentioned that the company employees are part of the NSPE, it is reasonable to assume that they are. With this in mind, if the issue is viewed from a Deontological standpoint, the EIT and his team must honor their duties, responsibilities, and obligations to the NSPE. As discussed above, NSPE guidelines prohibit an engineer from certifying plans that were not developed under their direct control.

- From a Virtue based approach, the analysis of any solution to this issue must consider whether others would consider the proposed action honest and morally excellent. In this case, the solution should be completely forthcoming and free from deception when judged by others.

8) Potential Actions and Solutions

- The first potential solution is for the EIT to certify the plans with the Utah PE's stamp that is available from the local office manager. After submission, the company would have two choices. First, they could allow the certified plans to be reviewed by the county and if approved, continue with the project. As an alternative, after submitting the plans, the company could get the Utah certified engineer to thoroughly review the design and if any flaws were found, the plan could be reworked and resubmitted to the county.
- A second solution is for the EIT to attempt to locate the other local engineer that is certified in Utah and ask him to review and certify the plans.
- The third solution is for the EIT and his company to explain the situation to their client with the goal of obtaining approval for a delay.

9) Competing Viewpoints and Arguments Supporting Solutions

- The first proposed solution has several advantages but could also be risky for the company and the engineer whose stamp is used for the certification. The main advantages of this solution are that it allows a timely submission of the plans and preserves the reputation of the company. However, because the engineer would be certifying a design that he was not closely involved in, he would likely be reluctant to approve of it. Additionally, if a design flaw is eventually discovered, the company and the engineer could be liable. As mentioned above, one way to mitigate the potential for a design flaw would be to have the Utah PE review the design and if he discovers any flaws, the project could be redesigned and new permit plans submitted. While this action may have some risk, provided the engineers that were involved in the design were careful and competent, the risk is relatively low. Opponents to this solution would likely argue that because the Utah PE was not involved in the design process from the beginning, it would be unethical for him to certify the plans.
- While the second solution would allow for the submission of certified plans, because the engineer was not involved in the design, opponents may argue that he should not sign off on the plans. Additionally, because the engineer is not currently available and it would take time to review the plans, this solution would result in at least some delay in the submission.
- The third solution offered is perhaps the most ethical but it would also have negative consequences for most of the involved parties. Because specific details are not available, it is difficult to know the full impact of a delay but it can be assumed that financial penalties and damage to the company's reputation would result. The main advantage of this solution is that it would allow a proper review

of the plans and therefore the company would be upholding their contract and ethical standards.

10) Peer Consultation

- While discussing this case with others, for many reasons we agreed that an uninvolved engineer should not certify the plans, at least without a thorough review. Besides being unethical, it would also place the certified PE in an uncomfortable position if the EIT and his company asked him to sign-off on plans that he was not familiar with. It was also pointed out that while it would certainly hurt the company to delay the plans, it was also the company's fault for not fully understanding the requirements and they should be prepared to accept the consequences.

11) Action and Opposing Arguments

- My solution to the issue would combine elements from the first and third possible solutions. The first action I would take would be to locate the certified engineer whose stamp is available in the office. Provided he is available, I would explain the issue to him and see if he would be comfortable allowing the plans to be submitted with his seal. This would occur with the understanding that he would have to thoroughly review the plans as soon as possible and if errors were found, the plans would be changed and resubmitted. While this action could have consequences if it was discovered, it will ensure that a technically sound design is submitted by a Utah certified PE. Unfortunately, if the engineer were not comfortable sealing the plans, there would be no choice but to inform the client that the plans were not yet complete and more time was needed.

12) Solution Test

- Attempting to explain the rationale for my solution could be difficult. Because the engineer would be sealing plans that he was not initially involved in, some may be critical of the solution. The reason I would feel comfortable justifying the action is the fact that competent engineers were involved throughout the design and a Utah PE would review the plans as soon as possible, and before any construction began. Provided this was well explained, the public should understand that the project was properly designed and was subjected to the established approval process.

PE sealed plans not familiar with

I am an EIT that works in California. One of my recent projects was located in Utah. We received a request from our client for a preliminary set of drawings that were to be used as a permit set to be sent to the county. Normally a permit set would not require a stamp and signature but for this particular county a PE seal was required. We finished the drawings and necessary specs in time to send the project out but were unaware of the PE seal needed until right before the set had to be sent out via Fed-Ex. A delay on our part would cause a lot of problems for our client. The experienced engineer I worked closely with on this project was a PE in numerous states, however he was not licensed in Utah. Our problem was that the only engineer in my main office that was licensed in Utah was out of the office, and to my understanding not even familiar with the current state of the project. Another Utah licensed PE happened to be one of the company's principles (worked in a different office) that only really gets projects started and never really works directly on a design project. Our office manager had duplicates of his PE stamps in her desk so that he did not need to bring the correct one anytime he visited our office and needed his PE stamp.

What should we do?