

Public Health and Safety—
Observed Structural Defects and Inspection by County Building Official

Case No. 19-10

Facts:

Engineer A is hired by Client B to conduct a building investigation to determine the origin and cause of a fire resulting in financial loss. During the investigation, Engineer A, who was also a structural engineer, observes that the building is structurally unstable. Engineer A performs a preliminary investigation of the building and after speaking with Client B, concludes that there were recent structural changes made to the building that may have caused the roof to sag and the walls to lean outward due to insufficient lateral restraint. Engineer A also learns that following construction modifications, the building was issued a certificate of occupancy by a county building official. Although not imminent, collapse of the building is a danger, Engineer A believes. Engineer A immediately advises Client B and calls the county building official. The county building official did not return Engineer A's phone call. Engineer A also recommended to the owners to brace the building to prevent its collapse.

Question:

What are Engineer A's ethical obligations under the circumstances?

NSPE Code of Ethics References:

- Section I.1. - Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health, and welfare of the public.*
- Section I.2. - Engineers, in the fulfillment of their professional duties, shall perform services only in areas of their competence.*
- Section II.1.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.*
- Section III.1.b. - Engineers shall advise their clients or employers when they believe a project will not be successful.*

NSPE BER Case References: [00-5](#), [07-10](#),

Discussion:

The role of the professional engineer in protecting the public health, safety, and welfare is fundamental to the practice of engineering and is the overriding value in the NSPE Code of Ethics. The NSPE Board of Ethical Review has considered ethical dilemmas involving the public health and safety on many occasions. While there can be no one standard that applies to these types of cases, there are basic values and principles in the NSPE Code of Ethics that provide important guidance to professional engineers who are faced with such situations.

An illustration of how the Board has addressed this dilemma can be found in [BER Case No. 00-5](#). In this case, Engineer A worked for a local government and learned about a critical situation involving a bridge that was 280 feet long and 30 feet above a stream. This bridge was a concrete deck on wood piles built by the state in the 1950s. It was part of the secondary roadway system given to the counties many years ago. In June 2000, Engineer A received a telephone call from the bridge inspector stating that the bridge needed to be closed due to the large number of rotten pilings. Engineer A had barricades and signs erected within the hour on a Friday afternoon. Residents in the area were required to take a 10-mile detour. On the following Monday, the barricades were found dumped in the river, and the “Bridge Closed” sign was found beyond the trees by the roadway. More permanent barricades and signs were installed.

The press published photos of some of the piles that did not reach the ground and the patchwork installed over the years. Within a few days, a detailed inspection report prepared by a consulting engineering firm, signed and sealed, indicated seven pilings required replacement. Within three weeks, Engineer A had obtained authorization for the bridge to be replaced. Several state and federal transportation departments needed to complete their reviews and tasks before funds could be used. A rally was held, and a petition with approximately 200 signatures asking that the bridge be reopened to limited traffic was presented to the County Commission. Engineer A explained the extent of the damage and the efforts underway to replace the bridge. The County Commission decided not to reopen the bridge. Preliminary site investigation studies were begun. Environmental, geological, right-of-way, and other studies were also performed. A decision was made to use a design-build contract to avoid a lengthy scour analysis for the pile design. A nonengineer public works director decided to have a retired bridge inspector, who was not an engineer, examine the bridge, and a decision was made to install two crutch piles under the bridge and to open it with a five-ton limit. No follow-up inspection was undertaken. Engineer A observed that traffic was flowing as well as significant movement of the bridge. Log trucks and tankers crossed it on a regular basis, while school buses went around it.

In determining Engineer A’s ethical obligation under these circumstances, the Board decided that Engineer A should have taken immediate steps to press his supervisor for strict enforcement of the five-ton limit, and if this was ineffective, contact state and/or federal transportation/highway officials, the state engineering licensure board, the director of public works, county commissioners, state officials, and other such authorities as appropriate. Engineer A also should have worked with the consulting engineering firm to determine if the two-crutch pile with five-ton limit design solution would be effective and report this information to his supervisor. In addition, Engineer A should have determined whether a basis existed for reporting the activities of the retired bridge inspector to the state board as the unlicensed practice of engineering.

Reviewing earlier Board of Ethical Review Case Nos. [89-7](#), [90-5](#), and [92-6](#), the Board noted that the facts and circumstances facing Engineer A “involved basic and fundamental issues of public health and safety, which are at the core of engineering ethics.” Said the Board, “For an engineer to bow to public pressure

or employment situations when the engineer believes there are great dangers present would be an abrogation of the engineer’s most fundamental responsibility and obligation.” The Board continued by noting that Engineer A should have taken immediate steps to contact the county governing authority and county prosecutors, state and/or federal transportation/highway officials, the state engineering licensure board, and other authorities. By failing to take this action, Engineer A had ignored his basic professional and ethical obligations.

In [BER Case 07-10](#), the Board was faced with a case in which Engineer A had designed and built a barn with horse stalls on his property. Four years later, Engineer A sold the property, including the barn, to Jones. Later, Jones proposed to extend the barn and, as part of the extension, removed portions of the columns and footings that supported the roof. The changes were approved by the town, the extension was built, and a certificate of occupancy was issued. Engineer A learned of the extension and was concerned that the structure may be in danger of collapse due to severe snow loads. Engineer A verbally contacted the town supervisor, who agreed to review the matter, but no action was taken. The Board concluded that while Engineer A had fulfilled his ethical obligation by taking prudent action in notifying the town supervisor—the individual presumably with the most authority in the jurisdiction—Engineer A should have also notified the new owner about the perceived deficiency in writing.

In reaching its conclusion, the Board distinguished [BER Case 00-5](#) from [BER Case 07-10](#), noting that the facts and circumstances of [BER Case 07-10](#) were different in several respects from those in [BER Case 00-5](#). First, the danger involved, while possibly significant, was not nearly as imminent or widespread as the potential bridge collapse in [BER Case 00-5](#). In addition, in [BER Case 00-5](#), as an employee of the local government, Engineer A had a specific responsibility for the bridge in question and was compelled both as a professional engineer and a public employee to take appropriate measures to address the issue. Finally, in [BER Case 00-5](#), the circumstances dictated a “full-bore” campaign to bring this matter to the attention of public officials in positions of authority who could take immediate steps to address the situation. The BER concluded that in [BER Case 07-10](#), the limited nature of the danger did not appear to require this (higher) level of response. Instead, the BER determined that the prudent action would involve Engineer A notifying the town supervisor—the individual presumably with the most authority in the jurisdiction—in writing. At the same time, in the Board’s view, it would have been more appropriate for Engineer A to first notify the current owner of his concerns regarding the structural integrity of the barn. According to the Board, Engineer A should have made a written record of his communication with the owner and town supervisor and follow the verbal communication up with a written confirmation to the town supervisor, restating his concerns, while continuing to monitor the situation. If appropriate steps are not taken within a reasonable period of time, Engineer A should again contact the town supervisor in writing and indicate that if steps are not taken to adequately address the situation within a specific period of time, Engineer A would be required to bring the matter to the attention of county or state building officials, as appropriate.

This case presents another example of a fundamental ethical dilemma faced by professional engineers in their professional practice. In this case, a professional engineer is presented with a situation involving a potential impact on the safety and welfare of the public. In such cases, professional engineers must decide, after pointing out the situation, how far their obligation to seek corrective action reaches. Here, Engineer A brought his concerns to Client B and also contacted the county building official who did not return Engineer A's phone call. Although Engineer A did not believe the building was in danger of imminent collapse, Engineer A had an obligation to continue to pursue a resolution of the matter by working with Client B and in contacting the supervisor of the county official, the fire marshal, or any other agency having jurisdiction to determine whether an investigation was warranted after the issuance of the certificate of occupancy.

Conclusion:

Engineer A had an obligation to continue to pursue a resolution of the matter by working with Client B and in contacting in writing the supervisor of the county official, the fire marshal, or any other agency with jurisdiction, advising them of the structural deficiencies.

Board of Ethical Review:

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