

PUBLIC WELFARE – BRIDGE STRUCTURE

Case No. 00-5

Facts:

Engineer A was an engineer with a local government. Engineer A learned about a critical situation involving a bridge 280 feet long, 30 feet above the stream. This bridge was a concrete deck on wood piles built in the 1950's by the state. 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 this bridge needed to be closed due to the large number of rotten piling. 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 in the river and the "Bridge Closed" sign was in 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 myriad of patch work 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 departments in the state and federal transportation departments needed to complete their reviews and tasks before the 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 damages and the efforts under way 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 non-engineer 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 the bridge with a 5-ton limit. No follow-up inspection was undertaken.

Engineer A observes that traffic is flowing and the movement of the bridge is frightening. Log trucks and tankers cross it on a regular basis. School buses go around it.

Question:

What is Engineer A's ethical obligation under these circumstances?

References:

- Section II.1. - Code of Ethics: *Engineers shall hold paramount the safety, health and welfare of the public.*
- Section II.1.a. - Code of Ethics: *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 II.1.e. - Code of Ethics: *Engineers having knowledge of any alleged violation of this Code shall report thereon to appropriate professional bodies and, when relevant, also to public authorities, and cooperate with the proper authorities in furnishing such information or assistance as may be required.*
- Section III.8.a. - Code of Ethics: *Engineers shall conform with state registration laws in the practice of engineering.*

Discussion:

The obligation of a professional engineer to take action when faced with a situation involving a direct threat to the public health and safety has been addressed by this board on several other occasions. A review of the cases decided over the years by the NSPE Board of Ethical Review demonstrates a consistent approach regarding this fundamental obligation on the part of professional engineers.

For example, BER Case No. 92-6 involved Technician A serving as a field technician employed by a consulting environmental engineering firm. At the direction of his supervisor, Engineer B, Technician A sampled the contents of drums located on the property of a client. Based on Technician A's past experience, it was his opinion that analysis of the sample would most likely determine that the drum contents would be classified as hazardous waste. If the material was hazardous waste, Technician A knew that certain steps would legally have to be taken to transport and properly dispose of the drum, including notifying the proper federal and state authorities. Technician A asked his supervisor, Engineer B, what to do with the samples. Engineer B told Technician A only to document the existence of the samples. Technician A was then told by Engineer B that since the client did other business with the firm, Engineer B would tell the client where the drums were located but would do nothing else. Thereafter, Engineer B informed the client of the presence of drums containing "questionable material" and suggested that they be removed. The client contacted another firm and had the material removed.

In considering whether it was ethical for Engineer B merely to inform the client of the presence of the drums and suggest that they be removed, and whether Engineer B had an ethical obligation to take further action, the Board noted that the extent to which an engineer has an obligation to hold paramount the public health and welfare in the

performance of professional duties (See NSPE Code Section I.1.) overlaps the duty of engineers not to disclose confidential information concerning the business affairs, etc. of clients (See NSPE Code Section III.4.). With regard to Case No. 92-6, the Board noted, that unlike the facts in the earlier cases, Engineer B made no oral or written promise to maintain the client's confidentiality. Instead, Engineer B consciously and affirmatively took actions that could cause serious environmental danger to workers and to the public, and were a violation of various environmental laws and regulations. Under the facts, it appeared that Engineer B's primary concern was not so much maintaining the client's confidentiality as it was in maintaining good business relations with a client. In addition, it appeared that, as in all cases that involve potential violations of the law, Engineer B's actions could have had the effect of seriously damaging the long-term interests and reputation of the client. In this regard, the Board noted that, under the facts, it appeared that the manner in which Engineer B communicated the presence of the drums on the property must have suggested to the client that there was a high likelihood that the drums contained hazardous materials. The Board noted that this subterfuge is wholly inconsistent with the spirit and intent of the NSPE Code of Ethics, because it makes the engineer an accomplice to what may amount to an unlawful action.

The Board noted that Engineer B's responsibility under the facts was to bring the matter of the drums possibly containing hazardous material to the attention of the client with a recommendation that the material be analyzed. To do less would be unethical. If analysis demonstrates that the material is indeed hazardous, the client would have the obligation of disposing of the material in accordance with applicable federal, state, and local laws.

In an earlier case, BER Case No. 89-7, an engineer was retained to investigate the structural integrity of a 60-year-old, occupied apartment building, which his client was planning to sell. Under the terms of the agreement with the client, the structural report written by the engineer was to remain confidential. In addition, the client made it clear to the engineer that the building was being sold "as is," and the client was not planning to take any remedial action to repair or renovate any system within the building. The engineer performed several structural tests on the building and determined that the building was structurally sound. However, during the course of providing services, the client confided in the engineer that the building contained deficiencies in the electrical and mechanical systems, which violated applicable codes and standards. While the engineer was not an electrical or mechanical engineer, he did realize that those deficiencies could cause injury to the occupants of the building and so informed the client. In his report, the engineer made a brief mention of his conversation with the client concerning the deficiencies; however, in view of the terms of the agreement, the engineer did not report the safety violations to any third parties. In determining that it was unethical for the engineer not to report the safety violations to appropriate public authorities, the Board, citing cases decided earlier, noted that the engineer "did not

force the issue, but instead went along without dissent or comment. If the engineer's ethical concerns were real, the engineer should have insisted that the client take appropriate action or refuse to continue work on the project." The Board concluded that the engineer had an obligation to go further, particularly because the NSPE Code uses the term "paramount" to describe the engineer's obligation to protect the public safety, health, and welfare.

In BER Case No. 90-5, the Board reaffirmed the basic principle articulated in BER Case No. 89-7. There, tenants of an apartment building sued its owner to force him to repair many of the building's defects. The owner's attorney hired an engineer to inspect the building and give expert testimony in support of the owner. The engineer discovered serious structural defects in the building that he believed constituted an immediate threat to the safety of the tenants. The tenants' suit had not mentioned these safety-related defects. Upon reporting the findings to the attorney, the engineer was told he must maintain this information as confidential because it was part of the lawsuit. The engineer complied with the request. In deciding it was unethical for the engineer to conceal his knowledge of the safety-related defects, the Board discounted the attorney's statement that the engineer was legally bound to maintain confidentiality, noting that any such duty was superseded by the immediate and imminent danger to the building's tenants. While the Board recognized that there may be circumstances where the natural tension between the engineer's public welfare responsibility and the duty of nondisclosure may be resolved in a different manner, the Board concluded that this clearly was not the case under the facts.

The Board believes much of the same reasoning in the earlier cases applies to the case at hand. The facts and circumstances facing Engineer A involve basic and fundamental issues of public health and safety which are at the core of engineering ethics. 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. Engineer A should take 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 would be ignoring his basic professional and ethical obligations.

Conclusion:

Engineer A should take immediate steps to go to Engineer A's supervisor to press for strict enforcement of the five-ton limit, and if this is ineffective, contact state and/or federal transportation/highway officials, the state engineering licensure board the director of public works, county commissioners, state officials, and such other authorities as appropriate. Engineer A should also work 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

determine whether a basis exists for reporting the activities of the retired bridge inspector to the state board as the unlicensed practice of engineering.

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