

## **PUBLIC WELFARE—STRUCTURAL DEFICIENCY**

### **Case No. 03-3**

#### **Facts:**

Engineer C is retained to perform an inspection of a private residence by Owner X who suspected that there was a structural problem involving the roof framing. Upon performing a cursory visual inspection, Engineer C concludes that there indeed is a structural deficiency because past modifications to the roof shingles added weight to the original structure that it was not designed to carry, thus overloading the original roof structure. Engineer C advises Owner X to make immediate repairs, and certainly before the next snowstorm as any significant additional roof loads would likely lead to failure to the roof structure and potentially cause injury and loss of life.

Engineer C offers to provide engineering services to design, prepare plans and specifications, and file the proposed work with the municipal authorities for a reasonable fee. Owner X declines Engineer C's offer to provide the design services and advises Engineer C via e-mail through Owner X's attorney that Engineer C should "have no further involvement" in the project.

Several weeks pass and Engineer C observes that no work has been done to correct the structural deficiency in the roof.

#### **Question:**

Does Engineer C have an ethical obligation to take further action?

#### **References:**

- Section I.1. - NSPE Code of Ethics: *Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health and welfare of the public.*
- Section II.1.a. - NSPE 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.c. - NSPE Code of Ethics: *Engineers shall not reveal facts, data or information without the prior consent of the client or employer except as authorized or required by law or this Code.*
- Section II.4. - NSPE Code of Ethics: *Engineers shall act for each employer or client as faithful agents or trustees.*
- Section III.4. - NSPE Code of Ethics: *Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve.*

#### **Discussion:**

The duty to protect the public health and safety balanced with the duty to maintain the confidentiality of client information is among the more difficult ethical dilemmas faced by engineers. The Board has examined this issue on a number of occasions. The determination of what is the most appropriate action is generally established on a case-by-case basis after a careful weighing of all of the facts and the circumstances involved.

In BER Case 98-9, the Board considered a case involving Engineer A, a structural designer of a large commercial building, who incorporated new and innovative design concepts into his work. After construction was complete and the building was occupied, Engineer A found an omission in his calculations that could result in the building's collapse under severe, but not unusual, wind conditions. The collapse would not only jeopardize the occupants and their immediate surroundings, but could possibly cause a "domino" effect threatening a much larger area.

Engineer A advised the architect and client of the problem. The architect, the client, and the city engineer agreed upon remedial construction, which could be accomplished over the next few months. A storm monitoring system and contingency evacuation plan for the building and surrounding neighborhood were also developed for the time before construction was complete. Both the client and architect strongly agreed that the situation should be kept secret, with construction accomplished during the evening hours when the building was unoccupied. Engineer A was confident that the remedial construction would completely rectify any structural concerns and that the evacuation plan had a reasonable chance of success. However, Engineer B, the city engineer, had concerns for the public, especially the office workers in the building and their right to know, but the architect and the client maintained that right was superseded by the consequences of a possible public panic resulting from any notification.

In finding that it was not ethical for the structural engineer to comply with the client's and the architect's desire for secrecy, and that it was not ethical for Engineer B, the city engineer, to maintain secrecy, the Board noted that Engineer A had an obligation to go further, noting the primary obligation of the engineer to protect the safety, health, property, and welfare of the public. The Board noted that the obligation of the engineer to refrain from revealing confidential information, data, and facts concerning the business affairs of the client without consent of the client is a significant ethical obligation. However, said the Board,

“We further believe that matters of public health and safety must take precedence. Again, the NSPE Code of Ethics is clear on this

point—Code Section I.1 employs the word "paramount" to describe the obligation of the engineer with respect to the public health and safety.”

In Case 98-9, the Board further noted that Engineer A's actions in promptly reporting his findings to the client and providing a corrective design were both ethical and commendable. Nevertheless, the necessary repairs required months before the building's stability could be ensured. During that time, the building's occupants along with a large area of the city remained in jeopardy, with only an untested evacuation plan protecting them from possible disaster. The Board recognized that the desire to avoid public panic was certainly a legitimate factor in deciding upon a course of action. However, withholding critical information from thousands of individuals whose safety might be compromised over a significant period of time is not a valid alternative for the conditions presented. It would seem that Engineer A should have informed the client and the architect that, while he has an obligation of confidentiality to them as clients, he has this ultimate, paramount obligation to see that the public is protected. He should have let them know that he must inform the appropriate authorities unless they, the client and the architect, immediately develop and carry out a plan to do so. Such a plan, developed in consultation with a public relations firm and legal advice, could have avoided panic and sensational media hype, while protecting the public."

While the Board believes the yardstick established in BER Case 98-9 is a good measuring instrument to use in the present case, the facts and circumstances in the present case are somewhat different than those in BER Case 98-9. In BER Case 98-9, Engineer A was the party actually responsible for developing the structural design, which involved unique and innovative techniques. Therefore, Engineer A was the creator of the circumstances that could have led to the potential structural failure. In the present case, Engineer C is only performing an inspection of an existing structure for which Engineer C had no apparent connection prior to being retained to perform the inspection. In the Board's view, the professional considerations and the ethical obligations for an engineer responsible for the design of a major office building may be somewhat different than that of an engineer performing an inspection of a single residence. In addition, BER Case 98-9 involved a large commercial building in what appears from the facts to be a large urban area where presumably thousands of individuals would be affected. The instant case relates to a private residence owned by Owner X, where possibly only Owner X would be affected. As we noted earlier, each case must be evaluated on its unique facts and circumstances, as no rule or set of rules can apply without a careful evaluation of all of the issues involved.

It is the Board's view that there are additional considerations that must come into play that are different than those in BER Case 98-9. One consideration is the probability of failure and the imminence of the danger. Another fundamental consideration is whether Owner X is the only party who is potentially at risk in connection with the residential structure. For example, it is reasonable to consider that family members, visitors, guests, public servants such as firefighters, and other members of the public might conceivably be at risk in Owner X's residence. In view of these considerations, the Board believes that Engineer C should act, but that Engineer C can use professional judgment and discretion to explore other potential approaches in seeking to resolve this matter.

In summary, while it seems clear in this particular case that Engineer C is obligated to take some action on behalf of the public health, safety and welfare, unlike the situation in BER Case 98-9, the Board is not of the view that the facts and circumstances require the immediate reporting of the structural deficiencies to public authorities. From the facts, there does not appear to be an imminent threat or a threat; therefore, a more deliberate approach would appear to be a more reasonable method to resolve the situation. For example, Engineer C could meet with Owner X's attorney to explain the technical and safety issues involved, the potential harm that may result to Owner X or other parties, and possibly suggest the involvement of another independent consultant to perform a "second opinion" review of the structural integrity of the residential structure to either confirm or offer another perspective concerning the property.

### **Conclusion:**

Engineer C does have an ethical obligation to take further action. Commensurate with the facts of the case, the immediate reporting of structural deficiencies to public authorities does not seem warranted; however, deliberate and reasonable steps toward addressing the situation in view of the public health, safety and welfare should be taken, not the least of which is to advise Owner X's attorney of the technical, safety, and risk issues involved.

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