RECONCILING DESIGN DRAWINGS AND RECORD DRAWINGS

Case No. 00-2

Facts:

Engineer A prepares a set of drawings for a client for the design and construction of a building. Owner contracts with Contractor X, not an engineer, for construction, but does not retain Engineer A for construction phase services. Engineer A is paid in full for his work. Engineer A's drawings are filed with town code officials and a building permit is issued. Contractor X builds the building, but does not follow Engineer A's design, relying upon Contractor X's own experience in construction. Following construction, Contractor X, with the assistance of Engineer C, prepares a set of record "as built" drawings based upon the actual construction of the building as reported by Contractor X. Because the design and the construction drawings are not reconciled, the building official refuses to issue an occupancy permit to the Owner. Owner asks Engineer A to "reconcile" the original design and the record drawings. Engineer A, not wanting to perform additional studies, agrees to perform the "reconciliation."

Questions:

1. Was it ethical for Engineer A to perform the design reconciliation?

2. Was it ethical for Engineer C to prepare a set of record drawings based on the construction without notifying Engineer A?

References:

Section II.1.b.	-	*Code of Ethics:*	*Engineers shall approve only those engineering documents which are in conformity with applicable standards.*
Section II.1.d.	-	*Code of Ethics:*	*Engineers shall not permit the use of their name or associate in business ventures with any person or firm which they believe is engaged in fraudulent or dishonest enterprise.*
Section II.2.b.	-	*Code of Ethics:*	*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.*
Section II.3.b.	-	*Code of Ethics:*	*Engineers may express publicly technical opinions that are founded upon knowledge of the facts and competence in the subject matter.*
Section III.2.b.	-	*Code of Ethics:*	*Engineers shall not complete, sign or seal plans and/or specifications that are not in conformity with applicable engineering standards. If the client or employer insists on such unprofessional conduct, they shall notify the proper authorities and withdraw from further service on the project.*
Section III.7.a.	-	*Code of Ethics:*	*Engineers in private practice shall not review the work of another engineer for the same client, except with the knowledge of such engineer, or unless the connection of such engineer with the work has been terminated.*

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Section III.8.a. - Code of Ethics: Engineers shall conform with state registration laws in the practice of engineering.

Discussion:

The facts in this case involve one of the most fundamental issues involved in the practice of engineering – the professional engineer's responsibility for the work which the engineer has signed and sealed.

Over the years, the NSPE Board of Ethical Review (BER) has had occasion to explore this issue in some detail. In BER Case No. 91-8, an engineer's firm was retained by a major fuel company to perform site investigations in connection with certain requirements under state and federal environmental regulations. Under the procedures established by the engineer's firm, the site visits would be conducted by engineering technicians under direct supervision of Engineer A who would perform all observations, sampling, and preliminary report preparation. Engineering technicians would also take photographs of the sites. No professional engineers were present during the site visits. Following site visits, all pertinent information and material was presented to Engineer A, who was competent in this field. Following a careful review, Engineer A would certify that the evaluations were conducted in accordance with engineering principles.

In considering whether it was ethical for Engineer A to certify that the evaluations were conducted in accordance with engineering principles, the Board noted that the NSPE Code of Ethics is very clear concerning the requirements of engineers not to affix their signatures to any plans or documents dealing with subject matter in which the engineers lack competence, nor to any plan or document not prepared under their direction and control. The Board concluded that it was ethical for the engineer to certify that the evaluations were conducted in accordance with engineering principles, so long as the engineer exercising direction and control performs a careful and detailed review of the material submitted by the engineer's staff and there has been full compliance with NSPE Code Section II.2.c.

In BER Case No. 86-2, an engineer was the chief engineer within a large engineering firm, and affixed his seal to some of the plans prepared by licensed engineers working under his general direction who did not affix their seals to the plans. At times, the engineer also sealed plans prepared by unlicensed graduate engineers working under his general supervision. Because of the size of the organization and the large number of projects being designed at any one time, the engineer found it impossible to give a detailed review or check of the design. He believed he was ethically and legally correct in not doing so because of his confidence in the ability of those he had hired and who were working under his general direction and supervision. By general direction and supervision, the engineer meant that he was involved in helping to establish the concept, the design requirements, and review elements of the design or project status as the design progressed. The engineer was consulted about technical questions and he provided answers and direction in these matters. In evaluation of the facts and circumstances in this case, the Board focused on the language in NSPE Code Section II.2.b. relating to the obligation of

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engineers not to affix their signature to documents or plans...not prepared under their "direction and control." Following a careful review of the plain meaning of the terms "direction" and "control," the Board concluded that the terms have meaning which, when combined, would suggest that an engineer would be required to perform all tasks related to the preparation of the drawings, plans, and specifications in order for the engineer ethically to affix his seal. The Board also noted at the time that the NCEES Model Law would require that an engineer must be in "responsible charge" -- meaning "direct control and personal supervision of engineering work" -- in order to affix his seal. After careful evaluation, the Board concluded that it would not be ethical for the engineer to seal plans that have not been prepared by him or which he has not checked and reviewed in detail.

In BER Case No. 90-6, the Board considered two separate fact situations involving the signing and sealing by an engineer of documents prepared using a CADD system. In considering the facts, the Board noted that the rendering of the Board's decision in BER Case No. 86-2 raised a considerable degree of discussion within the engineering community because to many, it appeared to be inconsistent with customary and general prevailing practices within the engineering profession and would therefore place a significant number of practitioners in conflict with the provisions of the NSPE Code. The Board noted at the time that the NSPE Code is not a static document and must reflect and be in consonance with general prevailing practices within the engineering profession. Said the Board, "the Code must not impose an impossible or idealistic standard upon engineers, but rather must establish a benchmark of reasonable and rational methods of practice for it to maintain its credibility and adherence." The Board determined that the conclusion in BER Case No. 86-2 should be modified to reflect actual practices which exist within engineering and not impose an impossible standard upon practice. Said the Board, "Were the Board to decide BER Case No. 86-2 today, the Board would conclude that it was not unethical for the engineer in that instance to seal plans that were not personally prepared by him as long as those plans were checked and reviewed by the engineer in some detail. The Board does not believe this represents a reversal of the Board's decision in BER Case No. 86-2, but rather a clarification, particularly for those who were troubled by the Board's discussion and conclusion in that case."

Turning to the facts in the present case, the Board is of the view that the facts and circumstances go beyond anything that would be permitted under the letter or the spirit of the NSPE Code of Ethics. The Board interprets the facts to suggest that Engineer A is being asked to adopt a design that was neither prepared by Engineer A, not under Engineer A's direct control or supervision, and does not reflect the professional judgment and intent of Engineer A. Instead, it appears that the Owner is seeking to have Engineer A seal the drawings in question to satisfy the requirements of the building official. Unlike BER Case No. 91-8, the work in question was not performed under the responsible charge (direct control or personal supervision) of Engineer A. In fact, the work that was prepared by Engineer A was essentially ignored or rejected by Contractor X in favor of another solution chosen by the Contractor X. Since Engineer A was not retained for construction-

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phase services, Engineer A never had the opportunity to observe the work and provide guidance to Owner or Contractor X as to the relationship of the work to the design and construction documents prepared by Engineer A. Moreover, the Board believes its earlier decisions in BER Case Nos. 86-2 and 90-6 are instructive under these facts because in both instances, the Board stressed the critical importance of the engineer being squarely involved either in the preparation of the work or being in responsible charge of the work which the engineer ultimately seals. In contrast, the facts in this case illustrate an example where an engineer is being asked to sign and seal work for which the engineer was neither in responsible charge nor which the engineer was involved in preparing. In essence, it can be argued that the facts present the appearance that Engineer A's services were used by the Owner merely to gain approval for the project with no intent on the part of the Client or Contractor X to follow Engineer A's design intent.

Clearly, the facts and circumstances in the present case suggest a difficult situation for Engineer A's client. It is not entirely clear under the facts whether Owner knew or chose to accept Contractor X's decision to ignore Engineer A's designs. In unilaterally altering Engineer A's design, Contractor X may have engaged in the unlicensed practice of engineering. However, since Engineer A's design was approved by the building official, and Contractor X's approach was at variance with the approved design, Owner may now find that Contractor X's approach will result in additional design and/or construction costs to obtain building official acceptance of the building. Clearly there is a lesson here for clients that fail to appreciate the importance of publicly approved design drawings. There appears to be substantial reason that the structure might not be approvable as built since Contractor X is not an engineer.

Conclusions:

1. It was not ethical for Engineer A to reconcile his original design documents without extensive investigation to assure that all original design intent was followed.

2. The Owner is the ultimate client, therefore, it was not ethical for Engineer C to prepare a set of record drawings based on the construction without notifying Engineer A. Moreover, there is a possibility that Engineer C was aiding and abetting the unlicensed practice of engineering.

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