

Signing and Sealing of Documents—Fire Sprinkler Layout Drawings

Case No. 16-2

Facts:

Engineer A is a professional engineer with significant expertise in fire protection engineering. Recently Engineer A was contacted by a fire sprinkler contractor and asked to review, sign, and seal the proposed layout design document developed solely by the fire sprinkler contractor without the involvement of a professional engineer, in order for the document to be submitted to the local code official for review and approval. Under the state law, fire sprinkler design documents are required to be prepared by or under the responsible charge of a licensed professional engineer. Engineer A has significant experience preparing detailed fire sprinkler layout drawings and performing hydraulic calculations and fluid delivery time calculations as required by National Fire Protection Association standards.

Question:

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

NSPE Code of Ethics References:

- Section I.2. - Engineers, in the fulfillment of their professional duties, shall perform services only in areas of their competence.*
- Section II. 2. - Engineers shall perform services only in the areas of their competence.*
- Section II.2.a. - Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.*
- Section II.2.b. - 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.2.c. - Engineers may accept assignments and assume responsibility for coordination of an entire project and sign and seal the engineering documents for the entire project, provided that each technical segment is signed and sealed only by the qualified engineers who prepared the segment.*

NSPE BER Case References: 86-2; 90-6; 91-8

Discussion:

The ethical responsibility to meet the required standards in signing and sealing engineering documents is among the most fundamental responsibilities of a professional engineer. The act of signing and sealing engineering documents signifies that (1) the work was prepared by the professional engineer or under the professional engineer's direct control or personal supervision; (2) the signing and sealing professional engineer is of the opinion that the documents contained meet usual and customary engineering standards of practice; and (3) the documents are appropriate for review and approval by the appropriate code enforcement official.

The Board of Ethical Review has previously considered cases focused on the role of the professional engineer in the signing and sealing of work. For example, BER Case 86-2 involved the chief engineer in a large engineering firm, Engineer A, who affixed his seal to some of the plans prepared by licensed engineers working under his general supervision who did not affix their seals to the plans. At times, Engineer A also sealed plans prepared by non-licensed graduate engineers under Engineer A's supervision. Because of the size of the organization and the large number of projects being designed at any one time, Engineer A found it impossible to give a detailed review or check of the designs. He believed he was ethically and legally correct in not doing so because of his confidence in the ability of the engineers he had hired who were working under his general direction and supervision. By general direction and supervision, Engineer A meant that he was involved in helping to establish the concept or design requirements, and reviewed elements of the design or project status as the design or project progressed. Engineer A was consulted about technical questions, and he provided answers and direction on these matters.

In determining that it was unethical for Engineer A to seal plans that had not been prepared by him, or which he had not reviewed and checked in detail, the Board noted that the term "direction" contained in NSPE Code Section II.2.b. is generally defined as "guidance or supervision of action or conduct; management; a channel or direct course of thought or action." The word "control" is generally defined as "the authority to guide or manage; direction, regulation, and coordination of business activities." The Board recognized that the role of a chief engineer in an engineering firm may be that of a "manager who provides guidance, direction, and counsel to those within his responsible charge." In a large engineering firm, this role is crucial to the successful operation of the firm. The Board noted that under the facts in Case No. 86-2, the chief engineer should be involved at the outset of the project in the establishment of the design concept and the design requirements, as well as in the review of the various elements of the design or project status as the design or project progressed. In addition, the chief engineer should also be available to consult on technical questions relating to the project design.

In contrast, five years later, the Board took a contrary position in a related case. In Case No. 91-8, Engineer A'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 Engineer A's firm, the site visits were conducted by engineering technicians (under the direct supervision of Engineer A) who performed all observations, sampling, and preliminary report preparation. The engineering technicians also took photographs of the sites. No professional engineers were present during the site visits. Following the visits, all pertinent information and material was presented to Engineer A, who was competent in the field. Following careful review, Engineer A certified that the evaluations were conducted in accordance with engineering principles. In concluding that it was ethical for Engineer A to certify that the evaluations were conducted in accordance with engineering principles, the Board reviewed its reasoning in Case No. 86-2 as well as Case

No. 90-6, which involved an engineer's signing and sealing of documents prepared using a CADD system.

In Case No. 90-6, the Board had noted that in rendering its decision in Case No. 86-2, the Board raised considerable discussion within the engineering community because, to many, the opinion appeared to be inconsistent with customary and general prevailing practice within the engineering profession and would therefore place a significant number of practitioners in conflict with the provisions of the NSPE Code. After concluding that the Board's decision in Case No. 86-2 needed to be clarified, the Board noted that "customary engineering practice includes the use of engineering technicians, technologists, graduate engineers, and others to prepare preliminary reports, studies, evaluations, etc. with a professional engineer performing a careful review of all pertinent material and then signing and sealing appropriate plans and drawings."

Turning to the facts in the present case, based on the language in the NSPE Code of Ethics and the earlier Board of Ethical Review opinions, it is clear that Engineer A had an ethical obligation to fully understand the code requirements as well as the state engineering licensure law regarding the signing and sealing of the fire sprinkler layout design documents in the applicable jurisdiction. To this end, it is important to emphasize that, over the years, this area of professional practice has raised various issues regarding the role of fire sprinkler contractors, engineering technicians, and professional engineers in the preparation and submission of fire sprinkler design documents. Because of the many and varied health, safety, and welfare considerations involved, it is generally agreed that the professional engineer should initiate the design process, taking into account an evaluation of the broad range of hazard protection methods required to develop a workable, integrated solution to address fire safety concerns and then move forward in preparing design documents for the fire protection system. Following this process, a fire protection contractor and its competent engineering technicians should perform system layout, prepare shop drawings, and develop material submittals, all in accordance with the professional engineer's design, and support the installation of fire protection systems under the direction of the professional engineer.

Conclusion:

Engineer A should decline to review, sign, and seal the fire sprinkler contractor's proposed layout design documents developed solely by the fire sprinkler contractor. Instead, Engineer A should propose that Engineer A should initiate the design process, taking into account an evaluation of the broad range of hazards and protection schemes required to develop a workable, integrated solution to address fire safety concerns, and then move forward in preparing design documents for the fire protection system. Following this process, the fire sprinkler contractor and its competent engineering technicians should perform system layout, prepare shop drawings, and develop material submittals, all in accordance with the professional engineer's design, and support the installation of fire protection systems under the direction of the professional engineer.

Board of Ethical Review:

John C. Branch, P.E.

Vincent P. Drnevich, Ph.D., P.E., F.NSPE

Neil A. Norman, P.E., F.NSPE, D.E.E.

Luke Patterson, P.E.

Susan H. Richard, P.E., F.NSPE

Susan K. Sprague, P.E., F.NSPE

Francis “Frank” J. Stanton Jr., P.E., F.NSPE (**Chair**)

NOTE: The NSPE Board of Ethical Review considers ethical cases involving either real or hypothetical matters submitted to it from NSPE members, other engineers, public officials, and members of the public. The BER reviews each case in the context of the NSPE Code and earlier BER opinions. The facts contained in each case do not necessarily represent all of the pertinent facts submitted to or reviewed by the BER.

Each opinion is intended as guidance to individual practicing engineers, students, and the public. In regard to the question of application of the NSPE Code to engineering organizations (e.g., corporations, partnerships, sole proprietorships, government agencies, and university engineering departments), the specific business form or type should not negate nor detract from the conformance of individuals to the Code. The Code deals with professional services, which must be performed by real persons. Real persons in turn establish and implement policies within business structures.

This opinion is for educational purposes only. It may be reprinted without further permission, provided that this statement is included before or after the text of the case and appropriate attribution is provided to the National Society of Professional Engineers' Board of Ethical Review.

To obtain additional NSPE opinions, visit www.nspe.org or call 888-285-NSPE (6773).