

# WHY ENGINEERS GET SUED AND HOW TO REDUCE YOUR RISK <sup>1</sup>

*David J. Kerkes, Ph.D., P.E.* <sup>2</sup>

## ABSTRACT

It seems that increasingly we are learning about failures in civil engineering structures, which were once rare, and these are only the ones that make the news. There are numerous other failures that never make the news which may be less dramatic, but not necessarily less significant from an engineering perspective, and members of the profession maintain client confidentiality as long as it does not threaten the safety of the general public. Fortunately, not all failures are a threat to the safety of the general public, but often the failure of a design results in additional costs to the owner, and owners will frequently seek redress in the courts when these costs become significant. Of course, in the litigious society that we live in, an engineer may be sued for any number of reasons, and not all lawsuits have merit. Unfortunately, in all too many cases engineers deserve to be sued, and unless some positive steps are taken on the part of engineering firms, the situation is only likely to get worse. Faced with what seems like ever increasing pressure to be cost competitive, many engineering firms are implementing practices that place themselves at risk for litigation, often without realizing the potential consequences. In my practice as an independent consultant in the field of geotechnical engineering, I have provided my services as an expert on a number of cases, conferred with professional associates on others, and I would like to share some observations on this subject with my colleagues in the civil engineering profession in the hope that it will help them reduce their risk of ever being sued.

## DISCUSSION

Let me begin, however, by stating that initially I had mixed emotions about testifying against my colleagues in the civil engineering profession. That is until I realized that not testifying would actually be a greater disservice to the profession. Experts are sometimes perceived by their colleagues as “hired-guns,” engaged by attorneys to provide opinions in support of the attorney’s case. This is where a misconception exists on the part of some engineers. While the services of experts are secured by an attorney or law firm, the services of the expert are actually intended for the benefit of the court, not necessarily the attorney. The purpose of the expert is to provide impartial, factual information to the court so that a fair and equitable decision can be reached on the matter. An expert who fails to recognize this fundamental point is simply, in a word, unethical. As any senior graduating from an accredited engineering program should be able to

---

<sup>1</sup> Proceedings of the ASCE Texas Section Spring Meeting, Beaumont, TX, 19-22 April 2006

<sup>2</sup> Consulting Geotechnical (Civil) Engineer, 1311 Mustang Trail, Houston, TX 77339

tel. 281-358-5155

tell you, the first fundamental canon in the Code of Ethics for Engineers, as defined by the National Society of Professional Engineers, is that “Engineers, in the fulfillment of their professional duties, shall hold paramount the safety, health, and welfare of the public.” That being the case, there have been a number of times when, after reviewing the technical information on a particular case, I have informed the attorney that I would not be able to provide an opinion that would support the attorney’s argument. When informed of this, I have encountered two types of responses from attorneys. The response I prefer is from the ethical attorney who appreciates being informed of the facts, even when they do not support the case. A good attorney actually wants to know the facts and has no desire to let a case go to trial that has no hope of a judgment in favor of their client.

So why do engineers get sued? A good many years ago I met with an attorney to discuss how, as an independent consultant, I could limit the risk of ever being sued, and the attorney’s response was, “Don’t make mistakes.” While that answer might appear obvious, in saying this the attorney was not trying to be facetious. He pointed out to me that in his experience, litigation against engineers did not (contrary to what one might think) involve subtle differences associated with complex technical theory. Rather, engineers are sued because of “blunders.” By blunders I am referring to basic and avoidable mistakes, such as computing the area of a triangle by multiplying the base times the altitude and forgetting to divide by two. This is not complex trigonometric theory; this is a blunder. I do not mean to suggest that errors in trigonometry are the primary reasons for lawsuits brought against engineers, but rather that the types of errors that result in lawsuits are usually very basic. They are the types of mistakes that might be expected of an entry level engineer, but not an experienced licensed professional engineer.

So how do engineers avoid blunders? The answer is simple; have someone check the work. This, however, involves additional cost to a project, and with the ever increasing pressure to keep costs to a minimum in order to remain competitive, internal quality control is an area that has suffered in a great many organizations. I do agree that a project can be technically sound and cost effective at the same time, and I do agree that companies can take steps to improve their efficiency; however, the risk of making serious design errors increases when the emphasis is moved from the project to the profit. In an effort to keep “the bottom line” attractive, many companies are making radical changes in their staffing structure. New phrases have entered the language such as “restructuring,” “streamlining,” and “downsizing” to describe what was once referred to simply as laying off staff. Platitudes abound as to how this is being done for the good of the company, and how it will make the organization more efficient and competitive; however, the realities are often another matter. There is always some excess that can be trimmed from almost any organization, but what the profession is seeing today goes far beyond that. When projects are not properly staffed and individuals are expected to do more work than is reasonable and/or perform their work within schedules that are unreasonable, quality will inevitably suffer. Add to that, the absence of a thorough series of checks and the potential for an error to go unnoticed increases dramatically.

While a weak argument might be offered as to why design calculations were not checked, no credible argument can be made as to why design calculations were not performed. Though it might seem incredible to the reader that an engineer would submit construction drawings without having first performed appropriate design calculations, be assured that it has happened on more

than one occasion. In such situations the position of the engineer is basically indefensible and the work of the plaintiff's attorney and expert is very straightforward. It is amazing that a licensed professional engineer would perform such work; however, the requirement of many state licensing boards that professional engineers annually obtain a minimum of one or two professional development hours in ethics is further evidence that the engineering profession has its share of unscrupulous individuals and poor in-house engineering practices. Among too many engineers there appears to be a fine line between aggressively competitive and unethical. We have all seen, too often, projects awarded to engineering firms at ridiculously low costs, knowing full well that the client will not be receiving the quality of work that is expected. Clients seem to understand the direct relationship between cost and quality when purchasing commodities and when securing the services of other professionals; however, cost is often the primary criteria used in the selection of civil engineering services. What the clients do not seem to realize is that their decision to cut costs in engineering design services carries certain risks. There is a greater risk of potential failure resulting in project delays or the total loss of use of the facility. There is also a likelihood that the cost of the project itself may be substantially higher because an overly conservative design has been adopted to compensate for the level of engineering that is not being performed. Clients need to understand that there is a basic cost associated with each and every project, and that basic cost will either be paid to the engineer and construction contractor, or it will be incurred in litigation. Making clients realize this fact will not happen overnight and is likely to take a considerable amount of time and effort. As a profession we have done a poor job of educating our clients, and as a profession we suffer the consequences.

No less surprising are situations where the owner has brought a developing problem to the attention of the designer only to have the engineer dismiss the matter. While failures can and do occur without warning, it is quite common for evidence of a developing problem to manifest itself over a period of time before the failure occurs. What amazes me at times is how a structure exhibiting signs of severe distress could continue to function for an extended period before actually collapsing. Equally amazing is the fact that the engineer of record either did not recognize the seriousness of the problem or simply failed to take steps to prevent the failure. In some cases the problem can be traced back to the construction, and in other cases the fault lies with the design. Regardless of where the fault lies, the engineer of record needs to keep in mind that he/she has an obligation to the client even after the last invoice has been paid, not to mention the engineer's responsibility to the general public. The concern over liability if the engineer takes action appears to prevent some engineers from acting in the best interest of their client. As a result, what sometimes happens is that all parties do nothing until a failure occurs, at which point the attorneys begin to make things happen. Unfortunately, at this point substantially greater costs are incurred, not to mention the emotional stress that is involved with a lawsuit, than would have been incurred if steps had been taken to prevent the failure. The engineer will ultimately be in a much better position, both professionally and financially, by taking positive steps to first, assist their client in preventing the failure, and second, identify the cause of the problem. If it is then determined that the problem is related to the design, the engineer has a better chance of resolving the matter with the client and avoiding litigation. Most engineers know how difficult it is to obtain new clients; therefore, whenever a client has a problem (real or imagined) it is in the engineer's best interest to take immediate steps to resolve the problem.

Finally, call in experts early in the project, not after the project ends up in litigation. At times I have been contacted by attorneys when, had the engineer contacted me early in the project it would not have ended up in litigation. Early in my career I worked for a company that would engage the services of independent consultants to perform an internal review of a design before the project was completed. This is almost unheard of today. It might seem to the reader that the author's point is self-serving, but it is simply a statement of fact. The civil engineering profession would not have specialized areas of practice if the need did not exist. Unfortunately, it is difficult to identify those projects that did not end up in litigation because all the problems were identified and appropriately dealt with during the design phase. While we all know that hindsight has twenty-twenty vision, foresight is no less clear and is far more cost effective. To call an expert in for a few hours to discuss a technical problem or issue early in the design phase involves an insignificant amount of money compared to the cost of construction claims and lawsuits. I know of no engineer, myself included, who does not benefit from a discussion or exchange of ideas with a colleague. Were that not the case, we could all teach ourselves. All too often project managers tend to be "penny wise and pound foolish" in this area. They believe that they are saving the client or company money when in fact, they are often putting both at greater risk.

## CONCLUSION

As a profession we all lose when failures occur. First, the credibility of the profession suffers. Secondly, all engineers end up paying higher premiums for professional liability insurance. Insurance companies do not make money by paying claims; they make money by collecting premiums. The costs that insurance companies incur are inevitably passed back to the consumer. Another way of looking at this is that good engineers subsidize the professional liability insurance of bad engineers. While it is unlikely that insurance companies are going to be quick to reduce premiums if the number of claims declines, it is not unreasonable to think that premiums will stop continuing to increase if insurance companies have fewer claims to pay. We can only hope that competition within the insurance industry will ultimately lead to a reduction in the cost of professional liability insurance. Regardless of the issue of liability insurance, however, a reduction in the number of failures and attendant lawsuits is certainly in the best interest of the profession.

In the preceding paragraphs I have attempted to identify a few of the common areas or situations that result in lawsuits against civil engineers. These are situations that are easily corrected and, in my opinion, should be a matter of routine for all engineering firms. They can be summarized as follows.

1. Make sure that calculations are checked and designs are reviewed internally by senior personnel knowledgeable in the particular field of work. If the firm does not have qualified senior personnel in the firm, engage the services of a consultant. If the project budget is exhausted, do it anyway. If it will delay project submittal, do it anyway. If the project is properly managed, the first two scenarios may very well be averted.

2. Respond immediately and proactively to concerns expressed by clients after the project is complete. Do not be concerned that such action implies that you are responsible for a problem because it would be far better for you to establish that fact than to have an expert express that opinion during litigation. Rather, be of the mind-set that this is simply part of the service you provide your client as their engineer. This is not only the appropriate response as a professional, but it is also good business practice.

3. Do not be reluctant to engage the services of a technical consultant outside the firm, and the earlier in the project the better. The consultant's degree of involvement is determined entirely by the firm; therefore, the services of a consultant do not have to be a major cost element of the project. I believe that firms that utilize consultants effectively recognize not only the value that the individual brings to the project, but the benefit derived by the engineers who work with the consultant.

As to the matter of engineers who knowingly grossly underbid projects and/or otherwise fail to meet the standards of the profession, the author does not expect that this article will change their professional conduct. Based on the author's experience, however, the odds appear high that their practices will ultimately result in lawsuits that will cost them their profits and/or licenses to practice engineering.