Sharing Claims Experience for Better Structural Engineering

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Structural Engineering is a great profession. Every day structural engineers engage in something new, making visions into reality, visions often created by talented people many of whom are architects. Their contribution to society, while mostly hidden from the general public, cannot be discounted. Seldom do their structures fail. It is a great profession.

However, among all engineering disciplines, the structural engineer in private practice bears the highest cost, as a percentage of fees, for professional negligence insurance.

A 2001 study of 17,000 claims against A&E consultants resulted in the *Table* of 2011 study results below.

Insurance underwriters use two metrics to assess risk exposure, frequency, and severity. Frequency is how often we are sued, and severity is how much it costs each time. The *Table* (Factor) indicates a higher severity. Since architects' fees are generally five times that of structural engineers, architects' number of claims should be closer to 60 percent as a percentage of claims studied. Right?

The conclusion is that structural engineers experience more frequent and more severe claims. Why? Are structural engineers part of the problem? Are there things that can be done to reduce the chance and severity of a claim?

Here are some suggestions, with six simple rules to follow:

From the same study, 13 percent of the claims, when finally resolved, are a result of the contract. The rest, 87 percent, were claims for professional negligence. Recall the generally accepted definition of professional negligence; *the failure to use such care as a reasonably prudent person would use under similar circumstances in the same geographic region*.

During a deposition in one of the author's cases, an opposing expert was asked, "Will you testify at the time of trial that XXXX practiced below the standard of care?" The answer, "I don't know what that means." The author's firm was sure they would win the case. They did not. What does the standard definition of professional negligence actually mean? How do you put it into everyday practice? When this definition is communicated to staff, what are they supposed to do?

Let us try a non-legal definition that may be more useful: *to provide structural engineering services in accordance with expectations*. At least this definition provides some direction and includes the expectations of the client, the owner, the contractor, and society.

To meet expectations, structural engineers need to know the expectations of those they serve and, to a large degree, they are in a position to control these expectations and reduce claims.

The control begins with the decision to accept participation in the project. There are internal concerns related to the ability to perform the work and external concerns like the project's inherent technical risk and the expectations of all those involved, including expected schedule and budget. Many firms have checklists to evaluate participation. Checklists are also available through the American Council of Engineering Companies' Coalition of American Structural Engineers (CASE).

External concerns can be controlled with an appropriate scope of services and contract. Internal concerns are easier to control. If the internal concerns are not met (availability and capability of staff) then pass on the project, **Rule 1**.

A crucial part of controlling external expectations is the written scope of services, within a contract or otherwise communicated. Be diligent when writing the scope of services. Some structural engineers forget that the project scope of services defines what they are required to do instead of all the things they are capable of doing, or worse, all the things they would like to be capable of doing. The scope of services needs to be carefully written, **Rule 2**.

Add a corollary to the definition of standard of care: the standard of care means the level of engineering *quality*. The level of quality, including the amount of detail in the contract documents, depends on many factors, one of which is the expectations of the client. But, sometimes a structural engineer's client, even a well-established architect, does not perceive or communicate the owner's expectations. For owners without design and construction experience (like many municipalities, school districts, churches), the architect often does not realize a need for full or expanded construction services. For example, if the project has a brick facade, employing a brick veneer on steel stud system, then the owner's expectation of the building life requires investigation. If the building is expected to last more than 100 years, stainless steel ties are required in addition to other special detailing of the exterior, and the stud design should be fully defined in the contract documents. The owner of a 100-year building does not expect the veneer to crack, even if the cracks are cosmetic.

Being detached from the owner's expectations by clients could be one of the reasons structural engineers' claims are more frequent and severe. Investigation into owners' expectations is required, **Rule 3**.

Besides owner expectations, the level of quality depends on the type of project. For example, when the project is a wood frame condominium in a high seismic area, the inspection of the installation and placement of hold-downs is a required level of quality, not to mention a straight forward way to show the hold-down locations on plans so that even a dyslexic contractor knows where they need to be placed. For condominium developers, if the project does not include full construction and inspection services, then pass on the project, **Rule 4**.

As the design and construction proceed, the level of quality, usually occurring with changes in the scope of services, will adjust. Appropriate adjustments are critical to the prevention of claims. When a change in scope occurs, structural engineers need to consider and communicate any resultant changes in quality. Often, a situation can occur where a cost reduction proposal results in a design change and an

Table of 2001 study.

Discipline	No. of Claims as a Percent of Claims Studied	Cost as a Percent of Claims Studied	Factor
Architects	48%	46%	.96
Civil/Survey	29%	26%	.90
Structural	12%	18%	1.50
Mechanical	9%	9.0%	1.00
Electrical	2%	1%	.50

associated change in the level of quality. Others typically make these decisions, and structural engineers often do not adequately record the event, record the reason for the change, or identify the decision maker. When scope and quality are changed, make a record, **Rule 5**.

On many projects, the level of quality necessary does not match the fees for the project. The reasons are many. For example, accept for a moment that a structural engineer is involved in a project where the fee is less than the level of quality the project requires. A typical response is to cut back on the hours applied to the project, reducing the design cost, and inadvertently lowering the quality of the contract documents and services. The structural engineer has thus created a mismatch between external expectations and what they produce. A low fee is no defense. Do not change the level of quality (standard of care) on a project because of a low fee, **Rule 6**.

This is a small sample of lessons learned from the author's 40 years of actual claims experience. What structural engineers do is technically complex. However, the day-to-day practice, the many decisions made daily, and their relationships with others in the construction industry is also complex. There are no easy answers to avoiding being sued for negligence; structural engineers can only reduce the probability. The most important thing is to become more educated about the source and nature of claims, and the best way to do this is by sharing claim stories.

Unfortunately, today the sharing of mistakes seldom occurs. Some complain that the problem is with lawyers and insurance companies. They run the show, drive the messages, and, as professionals, structural engineers act like sheep, just pawns in a much larger economic game set up by those who have different interests. Insurance companies, brokers/agencies, defense counsels, and resulting defense settlement agreements are blocking feedback to practicing structural engineers on mistakes engineers are making. However, it is not the attorney's or insurance company's fault. They are behaving perfectly rationally within their own interests, and structural engineers cannot expect them to change.

The problem is us; our profession needs to change.

The ASCE Committee on Claims Reduction and Management (CCRM) was formed to fill the information-sharing gap. Different levels of sharing claims information are being defined, ranging from full-disclosure, like the claim presentations at the last seven Structures Congresses and the 2016 NCSEA Winter Forum, to just adding to a redacted database identifying source and nature of claims.

If you would like to share a claim with the rest of the profession, please contact the author and arrangements will be made.

A final rule for this writing – If structural engineers want to help the profession avoid claims, add the following phrase, which has always been accepted without resistance, to the settlement agreement's no-disclosure clause: "except for educational purposes," **Rule 7**.▪

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