

# Qualifying Expert Witness Testimony

By W. Gene Corley, S.E., P.E.

Because it sometimes seems as if structural engineers are sued on every major project, minimizing the effects of litigation has become a significant part of managing any structural office. Successful risk management can depend on understanding the role expert witnesses play in dispute resolution, and on anticipating what expert witnesses on either side of a case may say about a structural design. This article offers guidance on deciding when an expert is needed and discusses the qualifications an expert needs in order to testify. It describes limits on testimony established by the “Daubert” ruling, and explores examples of expert witness work in some recent cases.

## Who needs an expert?

When it comes to any structural engineering dispute, both sides commonly hire experts. In fact, the famous trial lawyer Melvin Belli has said that “in this modern age, an ‘expert’ is found in any field, no matter how esoteric. The cost may be high to employ the expert, but it may well be higher not to employ one. Indeed, counsel who chooses to proceed without an expert may be flirting with malpractice.”

In many technical trials, and particularly in structural engineering disputes, issues become a “battle of the experts.” From the structural engineer’s point of view, an opposing expert often seems unqualified. The experts called upon to testify almost never have the same background and experience as the structural engineer who is defending his or her design. But does that mean the expert is not qualified in the eyes of the court? What are the qualifications for an expert?

## Who is an expert?

According to Black’s Law Dictionary, Seventh Edition, an expert is “a person who, through education or experience, has developed skill or knowledge in a particular subject, so that he or she may form an opinion that will assist the fact finder.” Clearly, this basic standard for an expert does not require any specific education or experience in the area that is in dispute. Rather, it simply requires that the expert has somehow obtained skill or knowledge of the particular subject. In other words, if a structural engineer is sued because of allegedly faulty design of a 59-story building, the expert on the other side will not be prevented from testifying just because he or she never designed a 59-story building.

## Daubert Test

A more stringent qualification process is required of “a testifying expert” in the Federal court system, one that considers a wide range of information about the testifying expert’s qualifications and opinions, including all information that the witness considered in forming the opinion. Any expert called upon to testify about a scientific, technical, or professional issue (such as structural engineering) must demonstrate familiarity with the subject or special training in the field. Furthermore, testimony in the Federal court system must pass the “Daubert Test.” Some State courts, including California, also have tests similar to the Daubert Test.

What is the Daubert Test? The Daubert Test is used by Federal courts to determine whether Federal court testimony by experts is admissible under Federal Rule of Evidence 702. This rule



requires that expert testimony consist of scientific, technical, or other specialized knowledge that will assist the fact finder in understanding the evidence or determining a fact at issue. The presiding judge makes a determination at a hearing outside of the jury’s presence.

The Daubert hearing requires an expert to address the following four questions about the methodology behind his or her testimony:

- 1) Can or has the theory been tested?
- 2) Has the theory been subjected to peer review or publication?
- 3) What is the theory’s known or potential rate of error, and are there standards that control its operation?
- 4) To what degree has the relevant scientific community accepted the theory?

The Daubert Test is intended to keep junk science out of the courtroom. However, Daubert rulings can cut both ways.

A recent court ruling excluded an engineering method from use in a trial, even though a PhD thesis on the subject was published more than 30 years ago, the method is referenced in textbooks, and there is an ASTM standard on developing the information. In the ruling, the judge disallowed the method because there was no ASTM standard that described the interpretation of the results.

In the case described, the judge used the Daubert test to rule out a scientifically based method that had been used in other courts for years. Such rulings can preclude SEs from defending themselves in a lawsuit and suggest that the Daubert test cannot be considered always to further the pursuit of the truth.

Once an expert has been accepted to give testimony, that witness is permitted to give opinion. According to Black’s Law Dictionary, Seventh Edition, opinion evidence is “a witness’s belief, thought, or inference about a disputed fact.” Black’s Dictionary quotes 19<sup>th</sup> century Harvard Law School Professor James B. Thayer as follows: “In a sense all testimony to matter of fact is opinion evidence; i.e. it is a conclusion formed from phenomena and mental impressions.” This observation was made in 1898 and has not changed since. Once an expert has

reviewed documents, done the necessary work on the project, and been qualified as an expert, that person can then give expert opinion based upon his or her work. Frequently, the expert will be asked if that opinion is based on a “reasonable degree of engineering certainty.” In general, the reasonable degree of engineering certainty means that based on engineering principles, it is more likely true than false. This is a relatively low threshold for evidence.

## How Experts Get Disqualified

There are many grounds that can cause an expert to be disqualified. Among these are the following:

- Failing to be truthful while testifying
- Demonstrating difficulty remembering events & communications
- Displaying inadequate knowledge in the expert’s field
- Talking to a juror
- Responding in an argumentative or inaudible way
- Making disparaging remarks
- Giving long and vague answers or refusing to give precise answers
- Refusing to answer a question
- Giving narrative answers to simple questions
- Interrupting counsel for either party when questioned
- Looking for a cue from the client attorney for an answer
- Accepting compensation on a contingency basis
- Displaying an unauthorized exhibit
- Using obscene, profane or indecent language
- Making inflammatory or prejudicial statements
- Being unavailable for cross-examination

## Case Study: Disqualifying an Expert

As an example of how experts sometimes are disqualified, consider a case where the owner of a building that was destroyed by fire sued the Federal government. The lawsuit was brought in the Federal court system.

The incident involved the use of a military vehicle, which served as a battering ram to damage a building where the Plaintiffs were entrenched. Eventually, the building burned to the ground, causing significant loss of life. The Plaintiffs claimed that the damage done by the military vehicle had blocked fire exits. They further claimed that, as a consequence, the people who burned up in the fire were unable to escape.

The Plaintiff’s expert was a mechanical engineer, a pilot, and an auto accident reconstruction specialist. He was certified in the investigation of vehicle accidents. However, no evidence was presented that he had experience in building fires or with any military vehicles.

After hearing the qualifications, the Court ruled that the Plaintiff’s expert was not qualified. In the trial, the Defendants prevailed and the Plaintiffs received no compensation.

## Case Study: Nitpicking Structural Calculations

An example that shows trials do not always go as anticipated involved a dispute over the design of a large structure. The structure was extremely large, and located in an area of high seismic activity. It was designed using a finite element program and a time history ground motion. Ordinary procedures were used for the design, including material properties based on code values, finite elements as recommended by the finite element program, ground motions developed by a licensed seismologist, and an unpublished mathematical convergence based on a pushover curve and shear

The Plaintiff challenged the design, stating that the assumptions were wrong and the analysis was incorrect. One complaint was that the structural design had been based on code material properties,

rather than the properties of materials actually used in the structure. Plaintiff claimed that the designer should have done lab tests on the materials used in the structure and then used a range of properties to do the design. Next, the Plaintiff presented ground motions done by a different seismologist and claimed that these were the ones that should have been used. For the analysis itself, the Plaintiff’s expert said a different convergence should have been used in the finite element program. The convergence recommended by the expert was not in a published standard, but had been published in a paper by the expert and had been referenced in a pre-standard document. Although the differences between the results of the two methods were very small, the Plaintiff challenged the Defendant’s analysis and claimed that the design was wrong.

In the “Daubert” hearing, the Judge ruled that the analysis used by the Defendant could not be entered into the trial because the convergence used by the engineer was not published. This ruling weakened the structural engineer’s defense.

## Summary

This article has explored some of the duties and qualifications of an expert witness. In general, qualifications to serve as an expert are not extremely high. In fact, courts can accept as an expert anyone with more knowledge of a subject than the average person. This knowledge need not have come from university training but can be limited to experience.

To reduce the number of “hired guns” who provide expert testimony, Federal courts and a few State courts have begun to use a qualification procedure based on the “Daubert” ruling. In general, the “Daubert” test has reduced the number of cases where junk science has been admitted. However, its potential drawbacks have not been well understood.

Because of the “Daubert” test, the use of engineering judgment in design is now more at risk. If calculations are done using a system that is not entirely understood by a court, the structural engineer can be at a great disadvantage in defending his or her design.

When the expert witness goes to court, nothing beats preparation. The expert should not only be familiar with the field and the specific case, but also should have recently reviewed all of the issues and be prepared to respond in a way consistent with deposition testimony. By no means should the expert ever bluff. Although the court system itself may not be able to determine that an expert is basing testimony on unsupported assumptions, the expert on the other side almost certainly will see through the bluff. Direct, simple and truthful testimony will always win the day when the structural engineer has done the job correctly. ■

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## References

- Black’s Law Dictionary, Seventh Edition, West Group, St. Paul, Minn., 1999.*  
*James B. Thayer, A Preliminary Treatise on Evidence at the Common Law, 524 (1898), quoted in Black’s Law Dictionary, p. 579.*