

# STRUCTURAL BUILDING COMPONENTS MAGAZINE

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## Frequently Asked Questions

Truss Technician vs. Engineer (How Engineering Is Undertaken in Our Industry) by Ryan J. Dexter

*The primary reason for us all to understand the work of an engineer versus a technician is that if this process is inaccurately described, the result will be confusion at best. At worst, your company could be accused of practicing engineering without a license.*

At the recent WTCA Engineering & Technology Committee meeting in San Diego, component manufacturers requested that we create a document explaining the engineering process that is undertaken in our industry. ANSI/TPI/WTCA 4-2002 provides an excellent description of the roles of the specific parties involved in the component design process. In your role as truss technician, exactly how does the process work? As a technician, what work are you performing?

### QUESTION:

Can you describe the process through which a truss technician receives sealed Truss Design Drawings from Truss Design Engineers?

### ANSWER:

The importance of a solid understanding of this process cannot be understated. The primary reason for us all to understand the work of an engineer versus a technician is that if this process is inaccurately described, the result will be confusion at best. At worst, your company could be accused of practicing engineering without a license. For instance, if your company claims to be doing engineering by calling your "technical" department an "engineering" department, you may wind up facing a professional engineering review board to defend your business practices. Additionally, depending on what you say before the professional engineering review board, a spotlight may also be placed on the professional engineer who is sealing your Truss Design Drawings.

Most component manufacturers have licensed truss design software installed on their business computers into which technicians can enter design parameters and internally generate preliminary truss designs. These preliminary designs are important for preparing accurate truss quotes, inventory analysis and management, and other purposes.

In the building/approval process, for certain types of structures, some states may only require a

preliminary design prepared by the component manufacturer's technician without a professional engineer's involvement. In other words, a sealed Truss Design Drawing is simply not required and can essentially be viewed as a direct replacement for the rafter tables found in building codes.

However, many areas of the country require a Truss Design Drawing that is prepared and sealed by a professional engineer licensed in that state. Unless the component manufacturer employs an engineer, the component manufacturer will often request that a set of truss designs be undertaken for a building and a sealed set of Truss Design Drawings be produced by a Truss Design Engineer, who is generally one of their plate supplier's engineers.

In making this Truss Design Drawing request to the Truss Design Engineer, the truss technician could simply call, fax or mail a request containing all of the appropriate design parameters needed to successfully design the set of trusses for the building. However, given the state of technology, this is most efficiently done electronically via computer. The following describes how this electronic transfer can occur:

- First, the truss technician retrieves a data file from his computer storage constituting a previously run preliminary design as well as all design parameters used to generate the design.
- Typically, when this data file is sent over the Internet along with a detailed request for the Truss Design Engineer to undertake the needed truss designs, the licensed truss design software actually extracts and transmits the design parameters entered by the truss technician to generate the preliminary design. These transmitted parameters are automatically input into the Truss Design Engineer's computer at their office to eliminate the possibility of data entry errors.
- Next, the Truss Design Engineer undertakes the design and analysis needed to produce a sealed Truss Design Drawing. The Truss Design Engineer has complete control of the lumber values, plate properties and other design settings existing in their engineering software. Thus, when a Truss Design Engineer applies their professional seal to a design, they are sealing work which they have prepared or which has been prepared under their direct supervision or control. They are not sealing preliminary designs generated by a component manufacturer's truss technician at a location remote from the plate supplier's engineering office.

Professional engineers are charged with one of the most significant responsibilities a person can undertake—ensuring that public health and welfare is protected through the designs they produce. Professional engineering laws have been created to protect both the general public and the engineering community in that regard. The truss industry has grown to a \$10 billion industry largely on the back of its engineering foundation. As our industry continues to grow and evolve, it is wise for everyone that is involved to fully understand the engineering laws we are subject to, the engineering process and procedures we use, and why we use them. With this knowledge, our industry will continue to be served well by its engineering foundation while we help to strengthen it.

Please share this article so that we can all clearly understand how our industry functions in relation to the practice of engineering.

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# Terms & Definitions

It is wise for our industry to have an understanding of key terminology as found in the typical state professional engineering regulations. Here are some of the definitions that you will find outlined in engineering laws.

- Engineer includes the terms professional engineer and licensed engineer and is defined as someone who is licensed to engage in the practice of engineering.
- Engineering includes the term professional engineering, which means any service or creative work, the adequate performance of which requires engineering education, training and experience in the application of special knowledge of the mathematical, physical and engineering sciences.
- Someone who practices any branch of engineering; who, by verbal claim, sign, advertisement, letterhead, or card, or in any other way, represents him/herself to be an engineer shall be construed to practice engineering within the meaning and intent of the law.
- License means the licensing of engineers or certification of businesses to practice engineering in this state.
- No licensee shall affix or permit to be affixed their seal, name or digital signature to any plan, specification, drawing, final bid document or other document that depicts work which they are not licensed to perform or which is beyond their professional expertise.
- No licensee shall affix or permit to be affixed their seal, name or digital signature to any final drawings, specifications, plans, reports or documents that were not prepared by them or under their responsible supervision, direction, or control. Violation of this rule is often known as “plan stamping.”
- Responsible charge means that degree of control an engineer is required to maintain over engineering decisions made personally or by others over which the engineer exercises supervisory direction and control authority.
- The following is a test to evaluate whether an engineer is in responsible charge: An engineer who signs and seals engineering documents must be capable of answering questions relevant to the engineering decisions made during the engineer’s work on the project, in sufficient detail as to leave little doubt as to the engineer’s proficiency for the work performed.
- Engineering design means the process of devising a system, component or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics and engineering sciences are applied to convert resources optimally to meet a stated objective.
- When an engineer is asked to sign and/or seal any document or work on any project, a determination shall carefully be made regarding: 1) if the engineer has the expertise to undertake the work requested; 2) if the engineer needs to limit the scope of work to those matters which the engineer can properly sign and/or seal; or 3) if the engineer should decline to undertake the work.
- Engineers who sign and/or seal certifications or undertake projects that:  
(a) relate to matters that are beyond the engineer’s technical competence; or (b) involve matters that are beyond the engineer’s scope of services actually provided; or (c) relate to matters that were not prepared under engineer’s responsible supervision, direction, or control; would be subject to disciplinary proceedings.

[Editor’s note: The definitions above are taken directly or paraphrased from the Florida

Professional Engineering law and Florida Board of Professional Engineer's rules and regulations. The concepts are generally the same in other state laws and rules that we have reviewed.]

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To pose a question for this column, email us at [faq@woodtruss.com](mailto:faq@woodtruss.com). To view other questions visit the [WTCA website](#).

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