

# Editorial | Education in Wood Structural Design: Who Needs It?

By Steven M. Cramer, Ph.D., P.E. and Dan L. Wheat, Ph.D., P.E.

In early 2008, with Robert Taylor, then of the American Wood Council, we presented a paper at the 2008 Structures Congress predicting the outlook on structural wood design education in universities and colleges. We predicted that faculty with expertise in wood structural design would become increasingly scarce, university budgets would continue to decline and the elimination or reduction of wood structural design course offerings would be collateral damage. The lack of faculty expertise would be driven by a supply line problem caused by a decline in the production of PhD structural engineers specializing in wood design.

Little did we know what would happen later that fall, as housing demand collapsed and the economy dived. Wood construction dramatically decreased, with suppliers and designers reducing and fighting for survival. As we approach the three-year mark of these events, wood construction recovery has been elusive, despite fleeting glimmers of hope. A vast experience base has left the industry. One can only assume that ultimately this exodus will be felt via a lack of design experience and with the lack of a knowledge base – in practice and in academia – by which to teach others. In addition, the fiscal challenges in the majority of states are translating into deep cuts at universities and colleges. It is not likely that engineering curricula, including structural engineering and wood structural design, will come out of this process unscathed despite increasing enrollments. In short, one may conclude that the events of late 2008 will accelerate the changes we predicted.

In an attempt to check our predictions, we recently developed a survey and sent it to the department chairs of 238 civil engineering undergraduate programs. The objectives of the survey were to gather a snapshot of the offering of wood structural design to civil engineering students over the past two decades and to assess the outlook going forward. The survey consisted of 7 questions that could be answered in under 10 minutes. With our appreciation, 49 percent of the chairs responded. *Figure 1* illustrates the main outcomes of the survey.

Slightly more than 50% of institutions regularly offered a wood design course in the decade beginning in 1990, and the percentage increased in the following decade. However, not all of these courses devoted a full 3 credit hours to wood structural design and roughly 25 percent mixed wood with other topics such as masonry design. In academic year 2009-2010, 50 percent of the respondents offered a course in wood structural design, indicating that the definition of “regular” does not mean an offering at least once per year as is typically done for steel and reinforced concrete structural design. Surprisingly, 58 percent of the respondents indicated that they plan to continue to “regularly” offer a wood structural design course in the future. Whether this is a stretch of the term “regular” remains to be seen. Of those who have eliminated or reduced the frequency of wood structural design offering, primary reasons (in decreasing order of the number of similar comments) included:

- Lack of faculty or expertise in the area
- Faculty demands in other sub discipline areas

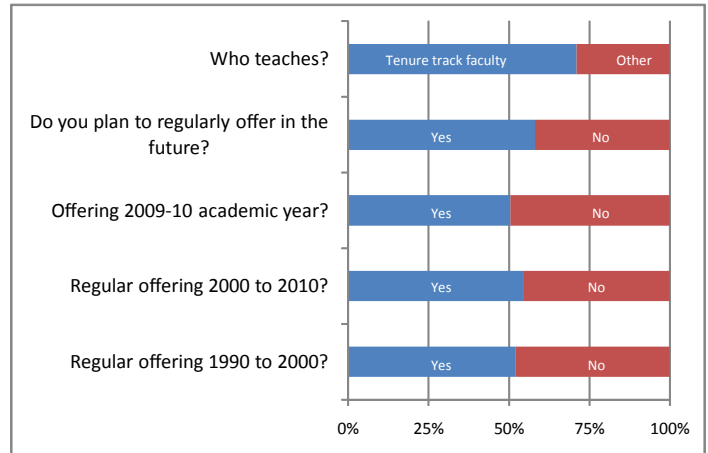


Figure 1: Responses from 117 civil engineering department chairs on teaching wood structural design.

- Budget reductions
- Belief that the design is too similar to steel and concrete to justify a separate course

For those who offered a wood structural design course at one time or another:

- 71 percent relied upon tenure track faculty to teach the course,
- 24 percent relied upon adjuncts and lecturers,
- 3 percent used some combination of both and
- 2 percent relied on retired faculty.

In 2008, we knew that our predicted changes would take time to play out. Our survey reveals they have not fully occurred to date, but the events since spring 2008 and detail in survey responses indicate they are beginning. Wood continues to provide an environmentally-sensitive, economical, and aesthetically-pleasing building material that owners will continue to demand in increasing volume as existing inventory is absorbed. Wood structural design requires a detailed understanding of the material and corresponding structural behavior that extends beyond a cursory knowledge of the basic design provisions. Teaching this subject promises to be important in the future, but in response to the events in play, will likely be delivered in new ways. Out of trial comes opportunity and innovation. ■

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