

V 3812 P 29  
**100-Year-Old Professional Engineers Group  
Maintains Ethics, Standards Of Excellence**

BY BRYAN WHITTLE

This year marks the 100th anniversary of the licensing of Professional Engineers in the United States.

"The origins of licensure are in the state of Wyoming," said Lawrence Jacobson, executive director of the National Society of Professional Engineers (NSPE). "One hundred years ago, railroad building and mining were highly active. For the purpose of ensuring that things were being built correctly, examinations were set and engineers certified. The practice spread to other engineering works where safety and lives were at stake.

"Nowadays, if any city or state is carrying out a public works project, such as building a bridge, at some point a professional engineer does the calculations and applies professional judgment. When he or she is satisfied that the plan will work the professional engineer signs off on the final engineering plan and literally seals the document," he said.

No government agency will accept an engineering document without a seal applied by a professional engineer. "Then the plan can be filed by the government agency, and building permits issued to contractors to build the project. The same professional engineer will likely check that the plan is actually being built to specification, making use of their established understanding and judgment of the project," he said.

This is especially likely if a project is of a type that has not been done before.

"In addition, the city will have a professional engineer on staff with responsibility for the project," Jacobson said. "While commercial projects with life safety requirements, such as car and airplane building, do not strictly need professional engineer sign off, manufacturing companies employ all sorts of professional engineers to maintain ethics and quality standards for their products."

Jacobson placed engineers in the context of "the big five professions that ultimately rest on the ethics of the profession. Namely physicians, attorneys, accountants, architects, and engineers.

"Doctors and lawyers must be licensed to practice legally. For the other three professions there are unlicensed and licensed levels of practice. However, the trust level is much higher at the licensed level. A person with a new bachelor's degree in engineering can work in the profession but to seal the documents, one needs to be a licensed professional engineer."

In the United States, the Uniform Licensure Act imposes certain requirements for licensure. The first step is graduation from a four-year engineering degree accredited by the Accreditation Board for Engineering and Technology. The second step is passing of a Fundamentals of Engineering examination.

This is set by the National Council of Examiners for Engineering and Surveying (NCEES) which writes and administers examinations for states.

The third step is five years of hands-on engineering experience. These are prerequisites to taking the professional engineers examination set by NCEES. To then practice in multiple states, a professional engineer must obtain a license per state. Thereafter, depending on the state, there are typically requirements set by the state for a certain number of hours of annual training.

NSPE offers some of that training. NSPE itself is nearing 75 years old, having been founded in 1934.

"The goal of NSPE is to represent the interests of professional engineers in the United States," said Jacobson.

He estimated there are four million engineers "of all shades" in the U.S. About 10 percent, or four hundred thousand, are licensed professional engineers. About 10 percent of those, around 45,000, are in NSPE.

Jacobson characterized NSPE members as successful engineers, typically working for big companies or running boutique practices. About 3,000 are elected by their peers to the distinguished level of fellow of the NSPE. NSPE also recognizes professionals licensed to stringent requirements in other countries.

There are a variety of organizations in other countries. Whereas all licenses in the U.S. are granted by state government, in some countries a society grants a license of comparable

status.

"Ethics is top priority for NSPE," said Jacobson. "Ethics is the key to the whole thing. If you lose a sense of ethics, for example saying 'we can build this with cheaper steel,' it will not have the required margin of safety.

"There are always temptations during construction to cheapen the materials. This rarely happens in the United States due to the oversight of professional engineers. Peer pressure is an important component of maintaining standards. The professional engineers in the NSPE know each other and will take issue with someone acting unethically."

NSPE also helps professional engineers stay current. In addition, to providing some of the ongoing training, it includes newsletter and magazine media for communication of projects.

*Continued On Page 30*

## Engineers Group Marks 100th Anniversary

*Continued From Page 29*

both successes and failures, that engineers might not otherwise hear about.

He said any major failure is analyzed over and over and over again to make sure it does not happen again.

"One example is the analysis of engineering problems that led to the fall of the World Trade Center towers on 9/11," said Jacobson.

NSPE sponsors an annual National Engineers Week, or EWeek, each February with outreach activities in around 150 cities across the U.S.

This year, the licensure anniversary has figured prominently. Associated state societies and 500 local chapters, as well as other organizations of engineers, are also celebrating the anniversary.

Jacobson hopes the celebrations promote greater public awareness.

"Surveys show that people don't know what an engineer is," he said. "How can you feel safe in a world that is very complicated? If there were not professional engineers with the highest ethical standards signing and sealing documents, you could not feel safe.

"Professional engineers are entrusted with safety affecting more people than anywhere else."

Jacobson is also looking for young people



*Lawrence Jacobson says ethics is a top priority of his organization, the NSPE.*

Courtesy of the National Society of Professional Engineers

to become interested in engineering. High ranking engineers are having meetings and conversations to promote young peoples' understanding and enthusiasm for engineering as a profession.

Jacobson wants parents to see the profession as something important for their children.

For further information, visit [www.nspe.org](http://www.nspe.org) or call 1-703-684-2800. □