

THE RELATION OF THE STATE REGISTRATION LAW  
TO COUNTY ENGINEERS

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When in the 1921 session of the legislature, I obtained, as a state representative from St. Joseph County, the passage of the state registration law, I was not so certain just how far it would go in correcting the situation created by our 1851 State Constitution, which broadly specified that a "Surveyor" should be merely a "Qualified Voter." This lack of foresight has resulted in millions of dollars in losses occasioned by inexperienced men handling our great public works in Indiana.

This is a much more intelligent group of engineers than could have been mustered together twelve years ago. I firmly believe that our registration law has gone far to bring about better engineering in our state and to improve the standing of the engineering profession. There has been much progress in this first decade of the law's existence. My desire is to see the status of engineering so raised in Indiana that every qualified man will become a registered engineer of his own desire and not simply because the law says that he must. My one year's experience on the board convinces me that this stage is approaching rapidly.

The fight to make the word *Engineer* mean exactly what it should mean, and no more, is progressing very, very slowly. We have every type of engineer from the janitor to the insurance engineer. This battle may continue as long as the one involving the differentiation between the words *Engineer* and *Architect*, and with equally regrettable friction.

There are now registered in this state 1,079 engineers, 28 land surveyors, 204 former architects (now presumably registered under their own law), and 532 delinquents. During the ten-year period, 101 of our number have died. We have issued 60 reciprocal cards. There are a total of 88 counties having registered engineers therein. We have 2 registrants in Canada, and 1 each in Russia, Greece, and Colombia. Twenty-three states, in addition to our own, have registration laws.

The 24 states having registration boards of one type or another have formed a body known as the National Council of State Boards of Engineering Examiners. In 1931, its committee on examinations presented a very excellent report which evidences the trend in the manner of engineering qualifications, as may be determined from examinations. The report is too long to give in full, but the conclusions are as follows:

1. Written examinations should be maintained as a *standard requirement* for the registration of professional engineers,

exemptions being given only in exceptional cases of obviously outstanding educational and professional qualifications.

2. Exemption of engineering graduates from the written examinations is not favored.

3. The major part of the written examinations (about three-fourths) should be uniform for all applicants, and the remaining minor part may be differentiated for the different major branches of engineering (civil, electrical, mining, and chemical).

4. Any further subdivision of these major branches of engineering into further specialties should not be recognized by differentiated examinations.

5. The written examinations for registering professional engineers should be scheduled to take at least *two days*, preferably three days.

6. Oral interviews may be provided, at the option of the board, to supplement the written examinations in special cases; but the use of any oral technical examinations should be progressively minimized.

7. The major part, at least, of the written examinations should be planned to permit the use of reference books. The use of a slide rule may be permitted in all parts of the examinations.

8. The requirements of a thesis to be submitted as part of the written examination is recommended as a desirable feature but may, for the present, be left optional with the individual state boards.

9. Certification of successful candidates should be as professional engineers (or preferably as engineers) without classification or differentiation into branches or specialties. The examinations should be planned on this governing principle.

10. The written examination, to meet present requirements and educational standards, should test: (a) basic knowledge of the *fundamental mathematical and physical principles* underlying all engineering work; (b) general knowledge of the *common essentials of all branches of engineering*; (c) *more thorough general knowledge of one major branch of engineering*.

11. Each examination paper should contain from 10 to 15 questions, from which the candidate is to select 10.

12. The official time allowance should be 3 hours for each paper, but the questions should be so framed as to permit completion in a fraction of the allotted time.

13. The questions should be simple and direct, and such as can easily be answered by an engineer who has been out of college for 10 years.

#### CONCLUDING REMARKS

A profession is judged by its qualification standards. Without written examinations to test educational qualifications, engineering cannot take its rightful place among the

learned professions. To justify the breadth of scope of practice claimed for our profession, the qualifying examinations must be broad in scope. The range of subjects included in the examination should be comparable to the range of practice claimed by the profession.

To the extent that engineering is essentially a mode of thought based on a mastery of the laws of Nature, the examinations should be basic and fundamental rather than specialized. To the extent that the greater part of engineering training is common to all engineers, without regard to branch or specialty, the greater part of the examination should be uniform for all candidates.

The essential purpose of the examination should be to test and qualify the candidate as an engineer, not as a specialist.

We must combat what I choose to call the "quack engineering factories," such as have been started here in the state. Your best service to your own profession is in making the men of your acquaintance realize that there are institutions absolutely lowering the standard of American engineering practice, and hence expensive to the public as a whole.

We have existing some feeling that the present law should have more teeth in it, and with this sentiment I am naturally in full accord. Since the board itself is an administrative board, it ill becomes the members thereof to push legislation; but at all times we are pleased to confer with the registered engineers on the advisability of any phase of further legislative enactment.

The law should be so amended that the surplus, if any, at the end of each fiscal year may be used by the board, acting with the state librarian, for the purchase of engineering and technical publications of any and all kinds to be placed in the new state library in a special room set aside for the use of the engineers and architects of the state. This would be a great step in the right direction toward making better engineers and educating the general public to the engineers' requirements. We have paid into the state general fund approximately \$58,000, and I would rather see this annual surplus used in such a way as to be of value to those men who pay it to the state.

Engineers are losing a great opportunity of presenting to the public the magnitude of our operations with the taxpayers' dollars. We are not showmen. Would that we might have a Barnum in the profession—what a showing he could make with the figures expressing the millions of dollars being spent each year under the direction of engineers! Give your newspapers interesting engineering stories; they will always appreciate the opportunity of using useful information of interest to taxpayers. Make the public engineer-minded; then, and only then, will it be possible to charge and collect compensation that pays you a rightful percentage on your investment in your education.