

***The Teaching Hospital Model ...***

Unlike law school students, the structural engineering students in Texas and most other states are not permitted to take their licensing exams immediately upon graduation. Rather, they must first serve an apprenticeship of three or four years. During this period, they typically carry the title of Engineer-In-Training (EIT). By state law, EITs are required to perform engineering work under the direct supervision of licensed professional engineers.

Ideally, EITs are exposed to a wide range of projects, from simple to complex, from small to massive, from new construction to long-overdue renovation, and from their local community to overseas. They are given the opportunity to work with many different construction materials and frequently visit jobsites to observe ongoing construction. In the office, they are taught their firm's structural analysis and design process, from concept through completion. Perhaps most importantly, they are educated in the role of structural engineers, both within their firms and within their project teams.

Mentoring is arguably the most important aspect of workplace training. This is the process by which young engineers are actively coached by the experienced engineers around them. It is a critical process, because it is the only way that knowledge and wisdom are effectively passed from one generation to the next. EITs generally want more guidance, but senior engineers are often reluctant to provide it under the pressure of tight project budgets and schedules. Formal mentoring programs attempt to assure authenticity by pairing EITs with senior engineers and holding both accountable for meaningful communication.

Prior to licensure, EITs are expected to tackle ever-increasing engineering challenges and responsibilities, to gain confidence in their abilities, and to earn the confidence of others. Are these outcomes usually achieved? Very few structural engineering employers have training programs that consistently succeed. These firms tend to be relatively large organizations. Smaller firms, which represent the vast majority of structural engineering employers, present quite a different picture.

Many structural engineering firms attempt to provide EIT training, but lack the project diversity or organizational resources necessary to be effective. Other firms put little thought or effort into EIT training and often assign their EITs to menial and repetitive tasks. Unfortunately, some firms simply view EITs as a source of relatively inexpensive and easily disposable labor. In summary, there is no standard workplace training experience for EITs.

Last year, more than 10,000 structural engineering leaders were invited to participate in an online survey. Only 15% reported that they have formal mentoring programs, and 34% reported no mentoring of any kind. Slightly more than 80% reported that they support workplace training, whether in-house, online, or out-sourced. However, 75% of such training addresses technical skills intended to increase productivity, and only 25% targets the soft skills necessary to support career growth. Only 40% reported that they maintain a specific budget for training. Not surprisingly, 75% concluded that their approach to training needs improvement.

There must be a more productive and consistent way to train and mentor young engineers prior to licensure. One concept is based on "The Teaching Hospital Model." In this adaptation, leading structural engineering firms will agree to serve as "teaching firms." Working through a professional organization, they will create a standardized program to train, mentor, and monitor the progress of the EITs in their workplaces. The professional organization will work as a clearinghouse to distribute new graduates to the teaching firms based on merit, location, and other considerations.

Teaching firms will compensate their EITs fairly, in accordance with their various policies, but may or may not become the permanent employers of the EITs whom they train. In turn, an EIT might work for more than one teaching firm prior to taking the licensing exam. In fact, in an ideal situation, an EIT might spend one year with an American bridge design firm, another with a foreign structural engineering firm, and a third with an American building design firm. That EIT would be uniquely prepared and almost certainly would be highly valued by structural engineering employers.