

Advanced Education to become a Licensed Land Surveyor: Is it a Help or a Hindrance?

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We had multiple panel discussions focused on moving the profession forward at the 2022 Western Regional Survey Conference. This conversation centered on whether the advanced education requirement is a help or a hindrance to the profession.

Many of today's surveying companies have less than five employees. They're also booked out for months. Demand has never been higher for surveying professionals—in part because our workforce pool has never been smaller.

The million-dollar question often asked is whether specific education requirements will help bolster our workforce or leave it lagging even further.

In this article, we will focus primarily on the path to becoming a licensed land surveyor. We all understand that not everyone wants to pursue licensure and we still need just as many survey technicians over the next few years.

Professional land surveyors are on the decline



It's tempting for surveyors to look at the current climate as job security and a hefty paycheck. But in the long term, we need more surveyors to fill our ranks.

Why? It's only a matter of time before the short supply of surveyors results in legislative change. Developers aren't patient. If they have to wait three months to get a boundary or topo survey, they'll head to the lobbyists.

The most likely candidates to fill surveyor shoes are engineers. There are currently 513,000 engineers who already have a formal education and would just need a few extra surveying classes to round out their eligibility to tackle surveying work.

There are currently 35,000 licensed land surveyors. An estimated 44% of surveyors over the age of 61 are going to be retiring in the next 10 years. That's a loss of 15,000, which means our profession needs to average 1,500 new licensed surveyors a year just to maintain the status quo. Meanwhile, only 596 people are taking The Principles and Practice of Surveying (PS) exam right now, and only 68% of those will likely pass.

The need for more licensed surveyors is clear. Is education the answer?

Will degree requirements solve the land surveyor shortage?

We may not answer that question here, but we will explore it in full.

The truth is that the current generation of professional land surveyors came to surveying through a wide variety of pathways. Many fell into surveying later in life.

Here is a small sampling of how attendees of the 2022 Western Regional Survey Conference came to the land surveying profession:

- An associate degree in AutoCAD, no formal surveying education.
- An associate degree in land surveying
- A survey technician role, plus some high school drafting classes
- A bachelor's degree in aviation management and a few classes in surveying—after a 30-year career at Caltrans
- A surveying career after 20 years in the Air Force
- A degree at Great Basin College
- An engineering dropout who became a survey technician, then went back for a bachelor's degree in land surveying and geomatics 10 years later

There was not one clear path into surveying for the current generation of land surveyors, and there still isn't a single path today. There are pros to this fact, but also cons.



In recent years, more emphasis has been put on advanced education, but our numbers are declining more than ever. Are new degree requirements to blame? Perhaps in part, but that doesn't explain why numbers in states like California and Arizona are also declining—neither of which has any degree requirement for licensure.

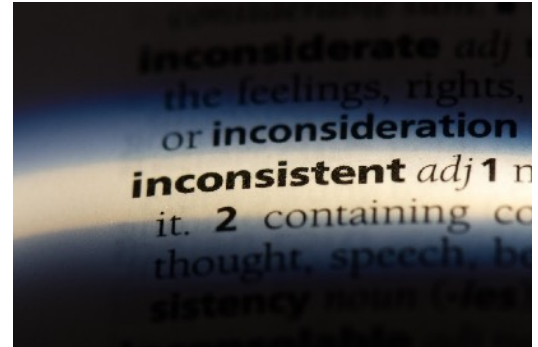
The truth is that the puzzle is more complicated than that.

Requirements are inconsistent between states

Education requirements vary from state to state. Currently, there are about 38+ states that require either a certificate, a two-year degree, or a four-year degree in order to become a licensed land surveyor.

On one end of the spectrum are states like Arizona, which requires only six years of experience, and no education. This makes it one of the least stringent and easiest of all 50 states.

On the other end of the spectrum are states like Nevada, which requires a four-year bachelor's degree plus four years of experience in order to become licensed, although the degree does not have to be strictly a bachelor's degree in surveying, but you will be required to have some college credits in surveying. In the middle are states like Utah, which requires a two-year associate's degree plus four years of experience.



Requirements aren't static. For instance, Texas just switched from a four-year education requirement to two years. The problem? Their test pass rate went down significantly. The purpose of lowering the education requirement was to get more people licensed. But if you're not getting people licensed, it's not helping the profession. North Carolina just did the same thing by lowering their requirements from a four-year degree to a two-year degree as well. You can read more about the changes by searching North Carolina Senate Bill 219.

Pros of multiple paths to licensure:

The multiple paths to licensure discussed above do have benefits. Not all students are interested in 4-year degree requirements, and would prefer to attend community college. By talking to the Association of School Counselors, we can advertise the fact that there are multiple paths into our profession, including those students who want to get working right after high school.

In Arizona, the overall number of licensed surveyors is going down, but that drop does not seem to be tied to education. 75% of land surveyors in the last year and a half have had either no formal education or an associate's degree, but they are still passing all the exams required to get licensed.

When we define licensure, it is a minimum standard to be able to practice as a land surveyor. It is not a statement that you're actually good at what you're doing; it means that you are minimally competent to do it.

Many surveyors believe that a path to licensure through experience is just as valid as a path through education. For example, the CST program is not tied to a formal education requirement, but is still an opportunity for surveyors to prove their knowledge through exams.



The largest benefit to multiple paths to licensure is this: the more options you offer, the bigger the "funnel" will be of incoming surveyors. If the problem with our professions is getting bodies in the door, strict education requirements will only limit that. Such requirements may result in better surveyors, but fewer of them.

Having multiple paths opens up that base level of surveying to a lot more people. The key is to get people in the door, period, and then funnel them up as they become ready. If we restrict the base level by adding requirements, we restrict the profession as a whole.

Cons of multiple paths to licensure:

There are also cons to offering multiple paths to surveying. The biggest issue is that our profession is not providing a clear message to those coming into the profession, because we're giving them those alternate paths. Sometimes if a path is too unclear or complicated, people will avoid it altogether.

Many of today's licensed surveyors came from different paths. But that was then, and this is now. In today's world, multiple paths can be a hindrance.

Our requirements are inconsistent between states. Our surveying schools are few and far between. When presenting the profession to a 15-year-old high school student, that type of inconsistency can be challenging for a young person trying to make an informed career choice.

In order to provide a more consistent message and a unified front to our profession, it would behoove us to pick one clear path to licensure and advertise it. Otherwise, we will continue to get surveyors who come into the profession and then sit on the sidelines as they wait for the degree requirements to get reversed.

If we pursue additional changes like expanding the experience-only route, it could just be a short-term solution that gets us further away from that single message that will help us see long-term success.

Surveying needs a unified voice

Whether we pursue one path or continue to offer multiple paths, what's clear is that surveying needs a unified voice. NCEES developed the Model Law. How many states have adopted it? (more research to come) The statistics can show us what's happening, but only by coming together as a profession can we decide what we want to do and work towards greater clarity.

We need to collectively decide if education is valuable or not, and in what forms. Then, we need to take steps to make it happen.

Up until this point, individual states have undertaken grassroots efforts to help the profession by implementing or modifying licensure requirements.

Fresno State, Great Basin, and New Mexico are all trying to work on academic programs in order to get the profession more well known and create a different, modern narrative as to what it is. The issue is that everybody's doing it all on their own. We have to have the support of our associations, and Board of Registration to say: this is what we want. We want it to be better. Let's support it. Let's do it.

With declining numbers, we have to do whatever we can to bring everybody in. We may never get all 50 states to have the same licensing requirements, and we will have to accept that. But we need to be more consistent with the messaging that we're sharing with new surveyors.

Is an advanced degree necessary?

Pros of advanced education requirements:

The benefits of higher education aren't just an increase in surveying knowledge. The real benefit lies in learning how to think critically and solve problems. Education provides discipline, researching skills, and the ability to ask the right questions. When surveyors have gone to school, they are often more proactive when problems arise, quickly picking up the phone to seek out solutions.

Keep in mind that degrees don't need to be in surveying to be valuable. They could be a degree in construction management, GIS, business, or some other application.

Degrees come in especially handy in more complex environments, such as urban areas. In dense city blocks, surveyors aren't going out looking for corners, they are doing construction surveying. More complex environments and new complex technology are both good reasons to formally educate and train our workforce.

Topics like properties of light and wavelengths can prepare surveyors to do remote sensing. Technology is pushing our profession to be better, but we're not always smart about it. Many of today's surveyors need to be more than technicians. Technicians are critical, but we need an element of the workforce that goes beyond button-pushing.

In short, education helps you learn how to learn.

Cons of advanced education requirements:

It's hard to argue with the fact that education is important. But is it helping the profession out of its current predicament? Many would say no.

The original intent of the education requirement was for us to get equal footing with other professions, period. To validate Land Surveyors as Professionals, not as an occupation. At the time, expanding the workforce wasn't a key part of that conversation. Many surveyors now question how long we are going to continue to pursue degree requirements as we watch our profession die out.

To keep our profession alive, there is a clear argument to embrace non-education paths to surveying.

It's possible to require training and tests to become a professional land surveyor without requiring a degree. Those surveyors who want a degree could certainly obtain one, but there should also be other clear paths to the profession.

It can be hard to sell exactly how a degree helps you as a professional, especially when surveying best practices sometimes outpace classroom curriculum. Trade school and certifications could also do the trick of setting a bar for licensure and provide more direct and relevant education in the process.

Students leaving a 4-year degree don't know everything. And even those obtaining a degree in surveying only have very few credit hours directly related to surveying. They may not even know how to find a corner until they get on-the-job experience.

There is also the fact to consider that most young surveyors have no interest in going back to school to get licensed. But they might be persuaded to pursue other avenues to professionalism if those options were offered with unified clarity.



The challenges facing higher education programs



Requiring a four-year degree is one thing, but requiring a four-year degree in surveying is another. It's becoming more complicated each year as more and more universities fail to see the value in their surveying program, and drop it.

Over the last couple of years, our education committee interaction has been lacking. For example, money collected over the last decade with the intention of endowing a chair at Fresno State has never materialized.

Funding is probably the biggest problem facing surveying programs, and the next problem is the perceived relevancy of the curriculum.

Of the universities that do have surveying programs, is there a way to know for sure if they are meeting the needs of the profession? The primary reason that a degree is useful is because of rapid changes to technology. But if schools don't have access to that technology, or are using technology that is 10 years old, is anyone benefiting?

Some programs have obtained classroom technology by partnering with local survey firms to borrow the latest equipment for labs. Others have partnered with vendors like Leica USA or even Trimble to have the latest equipment donated, then giving it back so the vendor can sell it to survey firms at a reduced rate. But those formalized partnerships seem to be the exception to the rule, rather than the norm.

The value of the CST exam



One program that we can utilize more heavily is the CST program. Currently, the program is most active on the east coast, but it is beginning to see wider adoption and recognition out west.

The CST level three is technically equivalent to an LSI, while the CST level four is almost equivalent to the knowledge of a licensed surveyor.

In states like Florida, in order to work on any Florida DOT work, your party chief must be a CST. In Nevada, some of the local municipalities are going to add additional points if you have CST on your staff.

One current downside is that it is expensive to obtain your CST and upkeep it.

Approximately 500 CST exams are administered yearly, and only 2,200 are active. The CST level one is often free, but if individuals don't see a clear benefit, they don't renew. If employers were to provide a monetary incentive to take the CST and keep it up, we would see higher involvement.

If the CST were adopted more universally across the United States, we could see an enhancement in survey knowledge and professionalism. The test bank would also need to be treated as a living document that gets continually revised to reflect current industry trends and technologies.

The argument for creating a new professional track

An interesting argument that builds from the above perspectives is that there could be great value in creating a new professional track within the land surveying profession.

Some surveyors have argued that there should be a new certification path to become a professional-category land surveyor, below the level of a licensed surveyor.

This idea acknowledges and embraces the fact that there are two main paths to land surveying: those who want to become fully licensed land surveyors, and those who do not.

Many of our talented technicians have no desire to go to school whatsoever, and no desire to become licensed surveyors. And we need to focus on investing in and training those individuals. Meanwhile, we can still consider requiring a bachelor's degree for those who do want to become fully licensed.

A non-accredited professional online program could help draw in technicians. Such a program could be combined with a summer camp or placement program where techs could meet surveyors to work for. Whether or not such a program is accredited doesn't matter as long as it's sponsored by a groups like WestFed or NSPS.

The key ingredient here is the support of WestFed, NSPS, and NCEES to set up such a pathway or apprentice program. Once supported, the program could be rolled out to state boards. We can take charge of our profession and create something new that meets our profession's unique needs.

It seems clear that to help our profession, we must get people interested and involved. Sometimes, interest takes time to build. Your employees may not want to become licensed and take over your business today. But in another decade, their outlook could change.

If we can increase the overall pool of talent coming into the profession today, then we can increase the chances that a percentage of those employees will get licensed in the future. In the meantime, we can build up professional-track curriculum that is timely, relevant, and caters to working surveyors.

A certification that is in-between entry-level and licensed could help to provide a clearer path to advancement and earning potential, while also attracting and keeping employees in the profession. The average 18-year-old may not be passionate enough about surveying to pursue a license right out of high school, but a seasoned technician could be.

Our task will be to take the ideas outlined here, vote on the best path of action, and urge WestFed, NSPS & NCEES our national organization to help us provide one clear and unified front to push the profession in a new and productive direction.