

Wow! I'm an LSIT!!

(uh... *NOW* what I do?)

At a recent gathering of Land Surveyors, it was mentioned that many Land Surveyors In Training aren't sure what path they should take to prepare for the Professional Land Surveyors exam. Some, I'm told, as soon as they meet the requirements to take the exam, take it "cold", with little or no advance preparation, just to get an idea of what the exam is like.

In my opinion, that is a terrible waste of time and resources! Just filling out the application is quite an undertaking. Then the test and grading facilities are used to evaluate a test that is likely to have a failing grade. If,

by chance or good fortune, you DO manage to pass the exam (when in doubt, choose 'C') you will be unleashed on an unsuspecting public as a Professional Land Surveyor.

Your objective should not be to become licensed. Your objective is to become qualified, through a satisfactory mix of education and experience as a competent and professional Land Surveyor!

Perhaps my path to becoming a Professional Land Surveyor will be helpful to others:

I took my first PLS exam in Alaska in 1974. Fortunately for me, two weeks prior to the exam, I was working on a

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project that required my presence 10 hours a day, but only required my participation for 10-15 minutes every couple of hours. We were setting anchor bolts in bed-rock, and the drilling was slow but precise.

I was determined to be prepared for my exam—sixteen hours worth. I had eight years of field experience, all but six months as a crew chief. I was technically proficient with the instruments of the period, and was the beneficiary of some great mentors. Two of the most important things they taught me were:

1. If we don't have time to do it right, when will we ever find time to do it over?
2. We do the most complete and competent job possible, going the extra mile and taking those redundant measurements. Any alternative is simply unacceptable.

Every available textbook on land surveying that I could get my hands on was not just read, but studied. I worked every math problem at the end of the chapters, and completed every quiz. Sun shots and star shots were taken on known Coastal Geodetic monuments, tide gauges and river flows were monitored.

Of course the literature has been seriously updated in the last forty years, but even the old editions I had in the early 70's would help you pass the exam today. Here's a partial list of the books I used:

- SURVEYING Theory and Practice. Davis, Foote & Kelly, 5th edition 1966
- Boundary Control and Legal Principles. Curtis Brown, 2nd. edition, 1969
- Evidence and procedures for Boundary Location; Curtis Brown (1st edition)
- Manual of Surveying Instructions for the Survey of the Public Lands; GLO 1902
- Manual of Surveying Instructions for the Survey of the Public Lands; GLO 1947
- Boundaries and Adjacent Properties, R.H. Skelton, 1930
- Clark on Surveying and Boundaries, 3rd edition 1959
- Elementary Surveying, Breed & Hosmer, 8th edition, 1945
- Higher Surveying, Breed, Hosmer & Bone, 8th edition 1962
- Field Engineering, Text & Tables, Searles, Ives & Kissam 22nd edition, 1949

- Route Surveys & Design, Hickerson 4th edition 1959
- The Civil Engineers Handbook, International Correspondence Schools (My favorite!)

The last two were in my field case at all times—of course that was when we were still doing our computations with a set of logarithm tables and a slide rule. Later I got a Curta calculator.

You will notice that the list is heavy with engineering texts. I had four years experience with the Bureau of Public Roads, and four years with a private firm that did a lot of highway design and right of way

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acquisition, so lot of engineering and rights of way problems were encountered.

Don't dismiss the engineering books as being irrelevant to boundary surveying—they are not. How many boundary surveys have a railroad or a highway right of way involved? That's right, almost all of them. A good understanding of construction and design practices will serve you well. As I review the above list, they are pretty much in order of importance.

GPS technology was not available until many years later. The library of the modern surveyor is incomplete without a copy of “GPS for Land Surveyors” by Jan Van Sickle 2nd edition.

A working familiarity with “Blacks Law Dictionary” is extremely valuable. Attend some trials, and become familiar with courtroom procedure. Your chance of escaping the witness stand throughout your career is somewhere between “slim chance” and “fat chance”.

Along with your studying, shadow the oldest and most experienced LS—or the one you respect the most. (Usually one and the same.) Ask questions, discuss the day's work, and find out if they have any insight

on any portion of the work you didn't completely understand.

If you think you understood the how and why of everything that was done, you weren't paying attention. Ask your mentor about alternative methods of doing the same task. Remember, the only “dumb question” is the one you're reluctant to ask.

One reason I recommend the oldest surveyor in the firm, is that they'll have a lot of “war-stories” about how we did things in the days before distance meters, total-stations data collectors and HP calculators is invaluable! Could you conduct a survey if your batteries went dead? The war-stories may be repeated from time to

time, depending on the age and verbosity of your mentor, but there's a wealth of information in them.

So what do you do if you're not working in some aspect of the Surveying Profession? That's what Saturdays and vacation days are for. Select a surveyor who runs a one or two person shop, and offer to work a few days for free, just as long as you can tag along and ask a lot of questions.

Follow the pattern of asking what you're going to be doing that day, go do it, and then discuss what you did. It never hurts to hope for a long drive to and from the jobsite.

About a week before taking the LS exam, make some final notes on what you've learned. Then put your mind in neutral, and take a break! The day before the test, review your notes, get a good night's sleep and go ace the exam!

When you're done with the exam, get up and walk out. Don't go back for review and start second-guessing yourself. If you've followed my counsel, you are well versed

in survey practice. Remember, your initial answer will most likely be the correct one.

After your initial LS licensure, you may want to become licensed in a couple neighboring States. Spend time with a knowledgeable Professional Land Surveyor from that state reviewing state-specific practices and, of course, study the state's statutes and regulations which are relative to surveying practice. And, study their Minimum Standards. You'll find that legal principles of boundary location are fairly uniform from State to State. However, each state will have differences, compared to all others, and you can expect questions on the state-specific exam concerning these differences. (That's the purpose of the state-specific exam, of course.) I have little experience in the metes & bounds states, I would anticipate some significant differences. Hawaii is in a class all of its own!

Write down anything in the law that differs from what you'd expect to find, or that you wouldn't normally have to deal with. Get a good night's sleep, a good breakfast while you review your notes and go ace the test!

I have taken and passed two full LS exams, four state-specific exams, one oral exam, and one 20-question multiple choice test in the back of the book on becoming licensed in that state. They mailed me the booklet; I took the test at home and mailed it back!

The "study-like-crazy-get-a-couple-days-rest-and-ace-the-exam" method has never failed me. Happy Surveying! ■

Jerry Anderson is in private practice in southern Missouri, with frequent projects in other states. He has been surveying since 1965 and was licensed as an LS in eight States. Four of those licenses have been placed on inactive status. He can be contacted at jandersonsurveyor@gmail.com

The editor responds:

Thanks, Jerry, for your insight on preparing for what today would be NCEES' "Fundamentals of Surveying" exam (FS Exam, 5 hours and 20 minutes) and their "Principles and Practice" exam (PS Exam, 6 hours) and the states' "State Specific Exam" (for most states, being 2 hours). No doubt your sage advice for a method of study and preparation is still applicable today. There's no substitute for study, progressive experience, mentorship, preparation and immersion in the subject to become a Professional Land Surveyor.

Of course, surveying practice has changed and the exam formats have certainly changed (the NCEES FS Exam is now computer based). Perhaps a summary of the NCEES FS and PS Exams would be helpful.

"Fundamentals of Surveying" Exam (FS Exam)

The "Fundamentals of Surveying" exam is the "first" exam, typically used by most states as the LSIT (or SI) step toward licensure as a Professional Surveyor. The FS Exam is now computer based and is administered year round through NCEES. The exam is down from 8 hours (in the previous "paper" version) to 5 hours and 20 minutes, during which time the examinee responds to 110 multiple choice (a. through d.) questions. There is a 25 minute break during the exam.

The FS Exam is closed book, but the candidate is provided with the electronic "FS Reference Handbook." To become familiar with the Handbook, go to the NCEES website where it can be downloaded and printed. When taking the exam, the Handbook appears on a split screen in a searchable pdf format.

As to FS Exam content, a complete exam specification is published by NCEES, but the exam covers 13 "knowledges."

"Principles and Practice" Exam (PS Exam)

The PS Exam is the "second" exam, designed to test the ability of one to practice the profession of surveying. For most states, it is used between the LSIT and the PLS. Unlike the FS Exam, the PS Exam is still a "paper" exam. The 4 hour morning session has 67 multiple choice (a. through d.) questions. The 2 hour afternoon session

has 33 multiple choice questions. Most states require a 2 hour state specific exam.

The PS Exam is closed book, but the candidate is provided a reference manual. To become familiar with the provided "PS Reference Handbook," it can be printed from the NCEES website. You cannot print and bring your copy to the exam...one will be provided at the exam.

As to PS Exam content, a complete exam specification is published by NCEES, but the five topics and approximate percentage of the exam are: I. Standards and Specifications, 12%; II. Legal Principles, 26%; III. Professional Survey Practices, 26%; IV. Business/Professional Practices, 20%; V. Types of Surveys, 16%.

This is but a quick summary of the FS and PS Exams. There is much to know about the content, formats, calculators allowed; and, especially the mechanics of taking the online FS Exam. For complete information about these matters, go to their website: www.ncees.org. Once there you will be referred to www.youtube.com for tutorials.

Preparing for the Exam

And, for those preparing to take one or more exams, these tips on preparing might be helpful:

- Attend a review course. Much of the organizing of the material has been done for you. These are not for the purpose of learning new material.
- Set up a reasonable schedule for study and review, perhaps three nights per week, building toward the exam.
- Do not take off from work three days before the exam to study. That won't work.
- Become an educated surveyor. Read *The American Surveyor* (of course), become a member of your state association, interact with as many surveyors as you can.
- Obtain your NCEES-approved calculator and use and practice with it.
- Read every word of NCEES.org that concerns the exams, study their practice exams. Go to youtube.com and watch the applicable tutorials.
- Breathe deep and relax.

Wishing you examinees success! ■