

# A professional surveyor has many options...

*"It's exciting to see construction projects progress from the initial surveys of the raw land to a finished construction project."*

Matt Riegner  
Transportation Survey Technician  
PennDOT, Williamsport, PA

*"I'm always being challenged to apply surveying principles, technology, and creative thinking to my specialty of surveying in underground heavy construction—specifically tunnels and rapid transit."*

Don Falken, LS, CST IV  
Capital Projects Management  
Washington Metro Area Transit Authority  
Washington D.C.

*"Surveyors wear several hats at any given time. We may have to be historians, detectives, and mathematicians. We also may need knowledge of geology, forestry, hydrology, and botany on a project. Every project is different and you will learn something new on a daily basis."*

Eric Hearon, PLS  
Project Manager  
Stantec, Reno, NV



*"Hydrographic surveying is an interesting and rewarding field. It requires a solid understanding of the principles of navigation and topographic surveying. However, to truly serve your client well, you must also understand how waterway currents, storms, construction activities, and variations in the waterway's bed composition can alter the elevation and the shape of the land under water."*

M. Ernest Gammon, PLS, President  
Hydro Consultants Inc., Baton Rouge, LA

*"Geodesy has undergone a tremendous change in the past 10–15 years with the development of GPS. We can now pinpoint the location of something on the Earth's surface within a centimeter. This is very exciting and has a huge impact on how businesses, governments, and landowners manage the land."*

David R. Doyle, Chief Geodetic Surveyor (Retired)  
National Geodetic Survey, Silver Spring, MD

Professional surveyors measure and analyze angles and distances between property corner markers on a piece of land. The land could be under water, on a mountain, or in a city. It could be at your home or in the middle of an industrial complex. Surveyors work with landowners, city planners, construction engineers, architects, lawyers, and many other professionals. As a team, they modify and confirm the characteristics of land. Many career paths are available to surveyors.

## Construction Surveyor

Think about what we build: bridges, houses, skyscrapers, underground tunnels, pipelines, utility networks, refineries, shopping centers, and offshore oil rigs. The list is endless. Construction surveyors make measurements and recommendations to engineers, architects, and other professionals at all stages of construction projects.

## Boundary Surveyor

Boundary, or cadastral, surveyors measure, mark, and map the boundary lines of land ownership. These surveyors trace deeds and other public records to verify the measurements of a piece of property for which the original survey could date back hundreds of years.

## Geodesist

These surveyors determine the size and shape of the Earth and the precise location of points on its surface. Geodesy is closely connected to astronomy and has been used to guide the old great sailing ships and today's water traffic. With the recent creation of GPS, or global positioning systems, geodesists can tell the exact position of an object on the Earth's surface—usually within a centimeter. Geodesists often work for the government in all areas of the country.

## Geographic Information Systems Analyst

GIS analysts use high-tech computer software and hardware that stores, displays, analyzes, and maps information. The land survey is the first layer and provides the framework for additional data layers that give more detail. Additional layers could include a city's traffic lights and fire hydrants, for example. Large companies, cities and towns, and commercial developers use GIS studies to plan projects.

## Photogrammetrist and Remote Sensing Analyst

These specialists gather information about a site without actually coming in contact with it. Aerial photography and satellite imagery are examples of data collected. These surveys are good for land inaccessible by foot or large areas that need to be surveyed quickly. For example, a photogrammetrist may be hired to track the movement of a pollutant in a large body of water after an environmental accident.

## Forensic Surveyor and Expert Witness Specialist

Federal, state, and local laws play a large part in surveyors' careers. A licensed surveyor can clarify and add credibility to a court case about a property dispute or aspects of an industrial accident. Surveyors who build reputations as expert witnesses are in high demand. Being an expert witness requires extensive knowledge about a particular area of surveying and many years of experience.

## Topographic/Hydrographic Surveyor

Topographic surveyors measure and map the shape, contour, and location of land features such as valleys, mountains, and man-made objects on the surface of the land and below bodies of water. Underwater topographic surveying is known as hydrography. This type of surveying is important when measuring erosion, guiding dredging projects, exploring for oil and rare mineral deposits, and marking underwater hazards. Hydrographic surveyors use specialized equipment to gather data and draw maps for many clients, including the shipping industry, government researchers, oil companies, and utility networks.

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## Surveyors can be assured of...

### Jobs

Job opportunities are plentiful, exciting, and varied. Technology advancements in recent years will keep the demand for surveyors high. In fact, the Bureau of Labor Statistics in the U.S. Department of Labor predicts a 10 to 20 percent increase in the number of jobs.

### Options

Surveyors have a number of paths from which to choose. They can be CEOs of firms, expert witnesses in court, business owners, researchers, computer specialists, mapmakers, and even crime and accident investigators. They work outdoors and indoors, in mountainous terrain, and the city.

### Professionalism

Licensing and continuing education play a large part in the professionalism found in surveying. Because most surveys become legal documents, all states require that licensed surveyors review and verify the data and resulting maps. Survey technicians can pursue four levels of certification, often leading to increased responsibility and salary advancement.

### Technology

Today's surveyors use cutting-edge technology to collect and analyze data. High-precision GPS equipment, 3D laser scanning systems, robotic total stations, and intricate geographic information systems challenge surveyors to apply increasingly complex technology to measure and map our world.

*"When I finish college, I know I won't say, can I find a job? Instead I'll say, where would I like to work? The job opportunities are definitely available."*

Brandon Monette  
Ferris State University  
Big Rapids, Michigan

*"Surveying is a profession—not a trade."*

Rita Lumos, PLS  
City Surveyor, retired  
Las Vegas, Nevada

*"Surveyors of the future will do well. Technology constantly advances in our field. Even though I've been a surveyor for many years, I learn something new every day."*

M. Greg Johnson, PE, PLS  
Land Engineering Supervisor  
Georgia Power Company, Atlanta, Georgia

*"If you enjoy the challenges of new technologies and performing different tasks, then this career is for you."*

Jeff Warner, LS, President  
Jeff Warner Land Surveying Inc.  
Manassas, Virginia

## How to Become a Surveyor

In general, people who like surveying also like math—primarily geometry and trigonometry. The field attracts people with geology, forestry, history, and astronomy backgrounds, too. Accredited college programs throughout the country—sometimes called geomatics engineering—offer two-year and four-year degrees. Visit our Web site, [www.nspss.us.com](http://www.nspss.us.com), to see a list of accredited surveying education programs.

Getting a license is important to advancing in a surveying career. Every state requires a licensed surveyor to verify and sign each finished survey. States set their own laws, requirements, and procedures for surveyors to obtain their license. After their education, surveyors have to obtain work experience under the supervision of a licensed surveyor. Then surveyors can take an exam for the state in which they will work. Many surveyors pursue a license in multiple states, especially when they work for large firms.

*"I tell people that the only way they can get to know what it's like is to spend a summer working on a crew and asking questions. You don't have to have a degree or experience to help on a crew for a summer job. It will give you a chance to see what surveying is all about."*

Wayne Hebert, PLS  
Statoil Gulf Services, LLC  
Houston, Texas

*"My first surveying class in college opened a whole world to me. I like surveying because every problem has a resolution. You just have to know how to find it."*

Kelly L. Miller  
Purdue University  
West Lafayette, Indiana



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