THE IMPORTANCE OF SURVEYING

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INTRODUCTION

Land surveying is simply the art and science of mapping and measuring land. Private ownership of property demands well-defined boundaries, and those boundaries cannot be interpreted or understood without the aid of a survey plan. A survey plan enables the reader to discover:

- the size and shape of the property
- the location of rights of ways
- dimensions and distances to the boundary of houses, fences, utilities and any features of importance to the landowner
- The location and description of pegs that have been placed to mark the limits of the land.

In summary, a survey plan is an essential homeownership document that will help you protect your property rights and enjoy your land with confidence and peace of mind.

What do land surveyors do?

In the field surveyor’s measure land to determine the boundaries of properties, which help to identify where the buildings or roads will be constructed. The information collected by surveyors helps to create maps. They also help to solve land or property disputes. Surveyors’ works on different projects e.g. land subdivision, detail survey, setting out, construction etc. They are experts in determining land size and measurement. In their offices surveyor’s use software, such as Civil Designer and Model Maker to draft plans and map the onsite measurements. Surveyors play an important role in land development, from the planning and design of land subdivisions through to the final construction of roads, utilities and landscaping.

Who uses land surveyors?

Surveyors give advice and provide information to guide the work of:
- Architects
- Civil Engineers
- Developers
- Town planners
- Construction companies
- Property owners and
- Mining companies
Why is Land Surveying so important?

1. **It helps to prepare topographical maps which show natural and man-made features**

A topographic survey, or topo survey for short, is another important type of land surveying. It is used to identify and map contours of the ground and existing features on the surface of the earth or slightly above or below the earth surface e.g. trees, buildings, manholes, retaining walls, utility poles, etc. Before any kind of construction activity is started, it’s important to have a topo survey done in the area so an accurate record of the land’s existing conditions exists. The purpose of a topographic survey is to collect survey data about the natural and man-made feature of the land, as well as its elevations. Topographic maps are used to show elevations and grading for architects, engineers, and building contractors.
2. **It helps to prepare cadastral maps showing the boundaries of the properties, servitudes and other land rights**

A cadastral map is a map which provides detailed information about property within a specific area. A simple instance of a cadastral map might be a map of a village which shows the boundaries of all of the parcels or lots within the village. These maps do not just show the boundaries of lot lines, they provide measurements on each lot. The map also provides people with information about property rights. Maps can also detail how the land is being used, so that people interested in land use patterns can easily identify areas of interest.

An example of cadastral boundaries superimposed over rectified aerial photograph.

An example of general plan.
A cadastral survey plan is basically a property boundary survey. They are primarily carried out for legal purposes so as to accurately establish land ownership boundaries and usage.

Boundary surveying, for instance, allows you to know where your property corners or property lines are. This is especially helpful when disputes with a neighbour or with other people arise in terms of where your property ends. A professional land surveyor can help to eliminate issues that arise because of land boundaries. If you’re having a building constructed, it is very important that you have the land surveyed to make sure that you are not encroaching onto other peoples’ property. A boundary survey is required to prevent this.

- An example of when land survey is necessary is if your family wants to divide a tract of land and transfer ownership to other family members, a boundary survey is one of the first steps in this process.

3. **It helps to prepare an engineering map which shows the details of engineering works such as roads, railways, reservoirs etc.**
An engineering map is a map showing important information for planning an engineering project or development and for estimating its cost. It is a reference for engineers and contractors who may be involved with engineering projects. It can provide information about utilities, public works installations, and natural phenomena of concern. First the engineering design needs precise land surveying results for the main purpose of designing.

4. **It helps to prepare a contour map to determine the steepness or gentleness of slopes**

A contour map is a map illustrated with contour lines, for example a topographic map, which shows valleys and hills, and the steepness or gentleness of slopes.

They are extremely useful for various engineering works. Civil engineers study the contours and find out the nature of various areas to identify suitable sites for their projects. Earth
works can be estimated for civil engineering projects like road works, railways, dams etc. Quantities of water flow at any point of a river can be found. Contours are very important in determining flood levels.

An example of road design with contours obtained from field survey

5. **It helps with control surveys to establish horizontal and vertical positions of control points.**

A control survey is a survey which is performed to achieve higher than normal accuracies. Horizontal and vertical control is established to create a framework around which other surveys can be adjusted. A control point is a point on the ground or any permanent structure whose horizontal and vertical location/position is known. Control points are used as a starting point of all types of surveys. Additional control points or working points are fixed on site if required ensuring they are accurate and also tie-in to the national grid system.
6. **It helps with construction survey, surveys which are required for establishment of points, lines, grades and for staking out engineering work.**

Surveyors are the first people on any construction site, measuring and mapping the land. These primary measurements are then used by architects to understand and make the most of the unique landscape when designing and engineers to plan structures accurately and safely, ensuring buildings not only fit with the landscape but are able to be constructed.
The construction surveyor monitors reference points and establishes markers which guide the construction of new installations. It is carried out to layout engineering and construction works. Measurements are done for reference points which determine the location of the planned structure or improvements, vertical and horizontal positioning, dimensions, and to control the elevation of the new structures.

The planning and design of all Civil Engineering projects such as the construction of highways, bridges, tunnels, dams etc. are based upon surveying measurements. Moreover, during execution, a project of any magnitude is constructed along the lines and points established by surveying. Throughout the construction period a surveyor assists the work as necessary. As expected, the construction surveyor conducts a construction survey which plays an important part of the whole construction project.

**Conclusion**

In conclusion, there are so many important uses for land surveying, and most of us depend on it so as to ensure order in the physical world around us. Without surveyors land ownership, developments and construction would be absolute chaos. If you need a project to be executed perfectly, hire a reputable land surveying company to confirm your property lines before starting any home construction or additions. This first step will help save time, money, neighbourly disputes, and legal headaches.

**References**

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