

Glossary of Terms and Acronyms

Below is a list of terms and acronyms that you'll likely come across when surveying.

Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

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Standard Surveying Units

- ❑ **Acre** - The English acre is a unit of area equal to 43,560 square feet, or 10 square chains, or 160 square poles. It derives from a plowing area that is 4 poles wide and 40 poles long (a furlong). A square mile is 640 acres. The Scottish acre is 1.27 English acres. The Irish acre is 1.6 English acres.
- ❑ **Arpent** - Unit of length and area used in France, Louisiana, and Canada. As a unit of length, approximately 191.8 feet (180 old French "pied," or foot). The (square) arpent is a unit of area, approximately .845 acres, or 36,802 square feet.
- ❑ **Cable** - Imperial = 100 fathoms. From the cable (several ropes twisted together; very strong) used to secure ships at sea.

- Chain - Imperial = 4 poles = 22 yards. Attempt by Edmund Gunter (U.K. 1620s) to make land measure a decimal system. His 66-foot chain had 100 links, but possibly variant by locale. See also Rathbone's Chain. The name comes from the heavy metal chain of 100 links that was used by surveyors to measure property bounds.
- Circle - One revolution = 360° .
- Colpa - Old Irish measure of land equal to that which can support a horse or cow for a year. Approximately an Irish acre of good land.
- Degree - 60 nautical miles (latitude).
- Fathom - Imperial = 6 feet. From Old English faethm.
- Foot - Imperial = 12 inches. Based on the length of the human foot.
- Engineer's Chain - A 100-foot chain containing 100 links of 1 foot apiece.
- Furlong - Unit of length equal to 40 poles (220 yards). Its name derives from "furrow long", the length of a furrow that oxen can plow before they are rested and turned. See Gunter's Chain.
- Gunter's Chain - Unit of length equal to 66 feet, or 4 poles. Developed by English polymath Edmund Gunter early in the 1600s; the standard measuring chain revolutionized surveying. Gunter's chain was 22 yards long, one tenth of a furlong, which was a common unit of length in the old days. An area 1 chain wide by 10 chains long was exactly one acre. In 1695, Queen Elizabeth I had the mile redefined from the old Roman value of 5,000 feet to 5,280 feet in order for it to be an even number of furlongs. A mile is 80 chains.
- Hectare - Metric unit of area equal to 10,000 square meters, or 2.471 acres, or 107,639 square feet.
- Hide - A very old English unit of area, a hide was of variable size depending on locale and the quality of the land. It was the amount of land to support a family and ranged from 60 to 180 acres. After the Norman Conquest in 1066, it became standardized at around 120 acres.
- Inch - Imperial. From Old English (ynce) meaning one twelfth.

- Labor** - The labor is a unit of area used in Mexico and Texas. In Texas, it equals 177.14 acres (or 1 million square varas).
- League (legua)** - Unit of area used in the southwest U.S., equal to 25 labors, or 4,428 acres (Texas), or 4,439 acres (California). Also, a unit of length approximately three miles.
- Link** - Unit of length equal to 1/100 chain (7.92 inches).
- Mile** - Imperial = 1760 yards = 8 furlongs. From *mille passum*, a term used by the Roman armies of Caesar 'Mile' and 'pace'. Minute (1/60 of 1°) - 1 nautical mile (latitude).
- Morgen** - Unit of area equal to about .6309 acres. It was used in Germany, Holland, and South Africa, and was derived from the German word *morgen* ("morning"). It represented the amount of land that could be plowed in a morning.
- Myriad** - Historical (Greek) 1 myriad = 10,000 stadia.
- Nautical mile** - Used in marine and aeronautical navigation as 1nm = 1° (latitude).
- Octant (45°)** - Historical. Meaning one eighth.
- Out** - Ten chains. When counting out long lines, the chain carriers would put a stake at the end of a chain, move the chain and put a stake at the end, and so on until they ran "out" of 10 stakes.
- Perch** - See Pole.
- Point** - A point of the compass. There are four cardinal points (North, South, East, West), and 28 others yielding 32 points of 11.25 degrees each. A survey line's direction could be described as a compass point, as in "NNE" (north northeast). To improve precision, the points would be further subdivided into halves or quarters as necessary, for example, "NE by North, one quarter point North". In some areas, "and by" meant one half point, as in "NE and by North".

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- Pole - Unit of length and area. Also known as a perch or rod. As a unit of length, equal to 16.5 feet. A mile is 320 poles. As a unit of area, equal to a square with sides one pole long. An acre is 160 square poles. It was common to see an area referred to as "87 acres, 112 poles", meaning 87 and 112/160 acres.
- Pueblo - A Spanish grant of less than 1,000 acres.
- Quadrant (90°) - Historical. Meaning one quarter.
- Rancho - A Spanish grant of more than 1,000 acres.
- Rathbone's Chain - A measuring chain two poles, or 33 feet, in length.
- Rod - See Pole.
- Rood - Unit of area usually equal to 1/4 acre.
- Sea league - Imperial = 3 nautical miles.
- Sextant (60°) - Imperial = 3 nautical miles.
- Stadia (Stade) - Historical (Greek) = 202 yards.
- Vara - Unit of length (the "Spanish yard") used in the U.S. southwest. The vara is used throughout the Spanish speaking world and has values around 33 inches, depending on locale. The legal value in Texas was set to 33-1/3 inches early in the 1900s.
- Virgate - An old English unit of area, equal to one quarter of a hide. The amount of land needed to support a person.
- Yard - Imperial = 3 feet. From old English gerd, or gierd (rod).

Standard Surveying Terms

- Aliquot** - The description of fractional section ownership used in the U.S. public land states. A parcel is generally identified by its section, township, and range. The aliquot specifies its precise location within the section, for example, the northwest quarter of the southeast quarter.
- Azimuth** - The number of degrees from north (or other reference direction) that a line runs, measured clockwise.
- Benchmark** - A survey mark made on a monument having a known location and elevation, serving as a reference point for surveying.
- Call** - Any feature, landmark, or measurement called out in a survey. For example, "two white oaks next to the creek" is a call.
- Chain carrier** - An assistant to the surveyor, the chain carriers moved the surveying chain from one location to another under the direction of the surveyor. This was a position of some responsibility, and the chain carriers took an oath as "sworn chain carriers" that they would do their job properly.
- Condition** - See Conditional Line.
- Conditional Line** - An agreed line between neighbors that has not been surveyed, or which has been surveyed but not granted.
- Corner** - The beginning or end point of any survey line. The term corner does not imply the property was in any way square.
- Declination** - The difference between magnetic north and geographic (true) north. Surveyors used a compass to determine the direction of survey lines. Compasses point to magnetic north, rather than true north. This declination error is measured in degrees and can range from a few degrees to ten degrees or more. Surveyors may have been instructed to correct their surveys by a particular declination value. The value of declination at any point on the earth is constantly changing because the location of magnetic north is drifting.

- First station - See Point of Beginning.**
- Gore - A thin triangular piece of land, the boundaries of which are defined by surveys of adjacent properties. Loosely, an overlap or gap between properties. See Strip.**
- Landmark - A survey mark made on a “permanent” feature of the land, such as a tree, pile of stones, etc.**
- Line Tree - Any tree that is on a property line, specifically one that is also a corner to another property.**
- Mete - A limit point or mark. To butt up against.**
- Metes and Bounds - An ancient surveying system that describes a parcel of land in terms of its relationship to natural features and adjacent parcels.**
- Merestone - A stone that marks a boundary. See Monument.**
- Monument - A permanently placed survey marker, such as a stone shaft sunk into the ground.**
- Point of Beginning - The starting point of the survey.**
- Plat - A drawing of a parcel of land.**
- Range - In the U.S. public land surveying system, a north-south column of townships, identified as being east or west of a reference longitudinal meridian. For example, Range 3 West. See Township.**
- Searles Spiral - A surveying technique used by railroad surveyors in the late 1800s and early 1900s whereby they approximate a spiral by use of multiple curved segments.**
- Section - In the U.S. public land surveying system, an area one-mile square. See Aliquot.**

- Strip** - A rectangular piece of land adjoining a parcel, created when a resurvey turns up a tiny bit larger than the original survey. The difference is accounted for by temperature or other effects on measuring chains. See Gore.
- Tie line** - A survey line that connects a point to other surveyed lines.
- Township** - In the U.S. public land surveying system, an area six miles square, containing 36 sections. The townships are organized in rows and are identified with respect to a reference latitudinal baseline, for example, Township 13 North. See Range.
- Traverse** - 1) any line surveyed across a parcel, 2) a series of such lines connecting a number of points, often used as a base for triangulation.
- Witness Tree** - Generally used in the U.S. public land states, this refers to the trees close to a section corner. The surveyor blazed them and noted their position relative to the corner in his notebook. Witness trees are used as evidence for the corner location.

Surveying Slang

Surveying, like any profession, has its special terms and slang. Some are just humorous, some help distinguish similar sounds (e.g. eleven and seven), and some are just plain strange!

- Balls** - Slang for numeric .00, as in 4-balls (4.00).
- Beep** - Verb. To use a magnetic detector to look for iron pipe, etc.
- Boot** - To raise the level rod some number of inches so as to be visible to the instrument man, e.g. "Boot 6!" means "raise it 6 inches."
- Bullseye** - Zero degrees of inclination.
- Burn** - See Shoot.

- Burn one** - Measure from the one-foot mark on the tape rather than from the end of the tape in order to increase the accuracy of the measurement.
- Cut line** - To clear vegetation for a line of sight between two survey control points.
- Double nickel** - Slang for .55, as in 6-double nickel (6.55).
- Dummy or dummy-end** - The base or zero end of a tape or chain, as in "hold dummy at the face of the curb."
- EDM** - Electromagnetic Distance Measurement device; the instrument used by modern surveyors that replaces the use of measurement chains. It determines distance by measuring the time it takes for laser light to reflect off a prism on top of a rod at the target location.
- Ginney** - A wooden dowel 6-9 inches in length with a sharpened end. Set in the ground to mark survey points.
- Glass** - The EDM prism.
- Gun** - Originally a transit, but potentially any measurement instrument in use, e.g. theodolite, EDM, or Total Station.
- Hours – Degrees**.
- Hub and Tack** - A 2 ft. by 2 ft. stake that is set in the ground and that contains a nail ("tack") that precisely marks the point being set.
- Legs – Tripod**.
- Pogo** - Prism pole.
- Punk** - See Railroad.
- Railroad** - Slang for 11, as in 42-railroad (42.11).
- Rodman** - The person holding the rod with the EDM prism. This person is the modern version of a chain carrier or chain man.
- Shoot** - Measure distance with an EDM.

- Spike - Usually a 60-penny nail used to mark survey points in hard ground.
- Tie - To locate something with the transit or other measuring device.
- Top - Slang for 11. See Railroad.
- Trip - Slang for triple digits, as in trip5 means 555, and 43trip7 means 43.777.
- Turn - The rodman is told to stay in place while the gun or level is moved to a new location.
- Zero - Zero degrees, minutes, and seconds. A perfect zero.

Surveying Glossary

- Accuracy - Degree of conformity with a standard. Accuracy relates to the quality of a result, and is distinguished from precision, which relates to the quality of the operation by which the result is obtained. See Precision for further information.
- Easement - Areas of land owned by the property owner, but in which other parties, such as utility companies, may have limited rights granted for a specific purpose.
- Encroachment - A structure or part of a structure that occupies the property of another.
- Encumbrance - An interest or partial right in real property which diminished the value of ownership, but does not prevent the transfer of ownership. Mortgages, taxes and judgments are encumbrances known as liens. Restrictions, easements, and reservations are also encumbrances, although not liens.
- Error - The difference between a measured value and the true value. Error in measurement is inherent, but is separate and distinct from a blunder (a mistake).

- ❑ **Exception** - From a title insurance policy, portions of the land containing encumbrances and in which free and clear title is subject to certain conditions. from a legal description, portions of land which are included in the description of a larger parcel of land but then excluded from it by a subsequent legal description.
- ❑ **Improvement** - Usually some sort of manmade structure, although perhaps not always a literal "improvement".
- ❑ **Legal description** - A method of describing a particular parcel of land in such a way that it uniquely describes the particular parcel and no other. A legal description may be a simple reference to a lot as shown on a subdivision plat or be described by metes and bounds. To be adequate, it should be sufficient to locate the property without oral testimony.
- ❑ **Measurement** - An estimated value that is, by its nature, subject to error. A person can count (an absolute value) one hundred beans and get the same quantity as someone else counting one hundred beans. However, if two people each measure (an estimated value) a cup of beans, it is likely that they will have a different quantity of beans. Two surveyors measuring the same distance may obtain different values. Both of the values should be similar, but they will only approach the true theoretical value through repetition and statistical analysis.
- ❑ **Monument** - An object placed to mark the physical location of a position. A property corner monument is often a length of iron rod driven vertically into the ground so that the top is at or below natural grade. A cap identifying the registration number of the surveyor responsible for placing the monument may be placed atop the monument.
- ❑ **Offset** - In boundary: a point located at the extension of a line and marking the direction of the line. An offset monument may be placed on the extension of a line because the offset position can provide a more durable monument. A common practice is to place offset monuments in a sidewalk or curb head, as these monuments are less likely to be disturbed than a monument marking the actual position. in construction: a short distance

usually measured at a right angle to a line, to preserve the position of the line when it is anticipated that points marking the line itself would be disturbed.

- Precision** - The degree of refinement in the performance of an operation, or the degree of perfection in the instruments and methods used when making measurements. An indication of the uniformity or reproducibility of a result. Precision relates to the quality of an operation by which a result is obtained, and is distinguished from accuracy, which relates to the quality of the result. See Accuracy and Precision for further explanation.
- Right-of-way** - A parcel of land granted by deed or easement for construction and maintenance according to a designated use. This may include highways, streets, canals, ditches, or other uses.
- Subdivision plat** - A legal instrument intended to take a large parcel of land and divide it into smaller parcels of land. A subdivision plat may also create public rights-of-way or easements and is usually filed with the public real estate records of the county.
- Surveying** - A blend of several disciplines, from mathematician and law scholar, to expert measurer and translator. By interpreting the legal description and applying the science of measurement, the surveyor translates a legal description or construction plans into tangible positions on the ground. These positions then become the basis for construction or for the establishment of a particular location, possibly to show lines of ownership or to document change over time.
- Title commitment** - A commitment to provide title insurance to a parcel of land. The surveyor is interested in the legal description and the exceptions.
- Tolerance** - A mathematical term indicating the allowable variation from a standard or from specified conditions. It is an indication of the accuracy and the precision of a measurement.
- XYZ coordinates** - A grouping of three numbers which designate the position of a point in relation to a common reference frame. In common usage, the X

and Y coordinate fix the horizontal position of the point, and Z refers to the elevation.

Standard Surveying Abbreviations

- You might find the following corner descriptions on a plat drawing:
 - FD - Found
 - IPF - Iron pipe found
 - IRF - Iron rod found
 - L.O.D. - Limit of Disturbance. The area to be cleared, graded, etc.
 - PK - Point known
 - PK nail - A surveyor's nail that marks a survey point
 - SR - Steel rebar
 - SRS - Steel rod set (rebar or other steel)

Surveying Water Terms

- Bank - Edge of a stream.
- Bed and banks - For property lines that cross a body of water, this term is used to explicitly refer to the bottom of the water.
- Bottom - Land along a river.
- Branch - Small stream.
- Brook - Small stream.
- Creek - Small stream.
- Drain - Small dry stream or gully.
- Drean - See Drain.
- Ford - Shallow part of a stream or river where one could cross.

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- Fork - Meeting point of two streams. "In the fork of" means between two branches.**
- Gut - A narrow passage between hills. A stream in such a passage. A drain.**
- Head - The source of a stream.**
- Headwaters - The smallest streams that combine to make a larger stream.**
- Kill - (Dutch) Creek.**
- Lower - Toward the mouth of a stream. Further down along its course. Opposite of upper.**
- Meander - "With the meanders of the stream" means the survey line follows the twists and turns of the stream.**
- Mouth - The place where a stream enters another, larger stream.**
- Narrows - Narrow part of a stream.**
- River - Large stream.**
- Run - Small stream.**
- Shoal - Shallows.**
- Spring - A pool or other source of water that feeds a stream.**
- Swamp - In the southeastern U.S., a stream, particularly one that has swampy parts. A marsh.**
- Upper - Toward the head of a stream. Further up along its course. Opposite of lower.**
- Vly - (Dutch) Swampy lowland.**
- Waters ("waters") of - In the drainage of.**