Common Land Surveying Terms

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A Primer on Land Surveys

Fundamental knowledge of land surveying should include these topics:

A. Definitions of Common Land Surveying Terms
B. What is land surveying and what purpose does it serve?

A. Definitions of Common Land Surveying Terms:
(reference: *Definitions of Surveying and Associated Terms, revised edition)*
Following are common land surveying terms and their definitions:

- Adjoiner: A parcel of land that shares a common boundary with another. An adjoiner can refer to a parcel or person.

- Angle: The measure of the relationship of two intersecting lines.
- Azimuth: The direction of a line expressed as a clockwise angle between 0 and 360 degrees from a reference meridian (i.e., 'True North', 'North Pole' or 'Magnetic North).

- Balancing a Traverse: A procedure, or procedures, for distributing the accumulated measurement errors of a traverse among the observed values in order to obtain computational consistency.

- Baseline: A surveyed line established with more than usual care, to which surveys are referred for coordination and correlation. When referring to the Public Land Survey System, this is the east-west reference line for locating townships and ranges.

- Bearing: The direction of a line expressed as either a clockwise or counterclockwise angle between 0 and 90 degrees from either pole of a reference meridian.

- Benchmark: An object in a relatively stable location that is at a known elevation relative to a particular vertical datum.

- Blunder: A mistake or an incorrect assessment of a measured value associated with a gross misinterpretation of the facts.

- Boundary Line: The invisible limits of the rights of real property.

- Chain: (1.) The length of measure equal to 66 U.S. Survey feet; (2.) a surveyor's measuring tape.

- Contour: A series of lines on a map connecting points of equal elevation.

- Coordinate System: A method of identifying a particular point in two or three dimensions by a systematic listing of the distances from defined baselines or origins.

- Corner: A point of intersection of real property boundary lines, which may, or may not, be monumented.

- Course: The direction of a line segment.

- Datum: A basis or measurement foundation on which a location can be defined or referenced either vertically, horizontally, or both.

- Deed: A written instrument that conveys rights or interests in real property.

- Easement: A right held by one party to the land of another.

- Elevation: The distance, above or below, a vertical datum.

- Error of Closure: The failure of the result of a set of measured values to agree mathematically with the theoretical result.

- Field Notes: The written notes, sketches, and computations of a surveyor taken during and at the site of a survey.

- Grade: The slope of the surface of a structure.

- Land Surveying: The art and science of measuring, marking, recovering, and mapping the relative positions or locations of terrain features and real property boundaries.

- Legal Description: The description of a real property parcel sufficient to identify that parcel uniquely without oral testimony.

- Latitude: The distance along a meridian.

- Longitude: The distance between two meridians.

- Map: A graphic, two-dimensional representation of the surface of the earth.

- Mean sea level (MSL): The average elevation of the sea over a 19-year period. MSL is often confused with the National Geodetic Vertical Datum (NGVD) or the North American Vertical Datum (NAVD). MSL is generally close to, but not exactly equivalent to the NGVD or NAVD datum.

- Measurement: An estimation of a quantity or a distance based upon the systematic application of a standardized procedure or device.

- Metes and Bounds Description: A description formed by sequentially reciting the courses and adjoiners of a real property parcel.

- Meridian: A north-south line used to reference lines of a survey.

- Monument: The physical object that indicates the location of a point, station, or real property corner.

- More or Less: A phrase indicating a crude or uncertain value for a quantity; used to notify the reader that the quantity is not exact.

- National Geodetic Survey (NGS): The agency of the U.S. government that is responsible for the development and maintenance of benchmarks and stations for navigation and mapping

- National Geodetic Vertical Datum (NGVD): The vertical datum established by the National Geodetic Survey that defines elevations

published for use on federal maps and regulations. The most recent vertical datum is the North American Vertical Datum 1988 (NAVD 88). The initials 'NGVD' usually refer to a previous datum, NGVD 29.

- North: Aligned with the axis of the earth's rotation and in the direction of that particular pole designated as "north"

- Plat: A map, prepared by a land surveyor, usually for a specific legal purpose.

- Platted Subdivision Description: A description based upon a map or plan, usually recorded, identifying a real property parcel by the letter or number designation found on that map or plan.

- Point-of-beginning: The first point encountered in the narrative portion of a deed description, especially a metes and bounds description, which is a part of the real property boundary itself.

- Random traverse: A traverse in which the location of stations is chosen for accessibility and intervisibility and does not have a constant relationship to any real property boundaries.

- Right-of-way: Land granted (usually to the governing authority) by deed, servitude, or easement for the construction of an infrastructure. Rights-of-way may grant limited property rights or full property rights.

- Spot elevation: A point on a map or chart whose height above a specified reference datum is noted, usually by a dot or a small sawbuck and elevation value.

- Traverse: A systematic series of stations in which the direction and length of line segments formed by consecutive stations are measured.

B. What is land surveying and what purpose does it serve?

Land Surveying is the art and science of measuring, marking, recovering, and mapping the relative positions or locations for terrain features and real property boundaries by locating the positions of points on or near the surface of the earth. Surveyors, therefore, make measurements on or near the surface of the earth. Surveying is essentially the art and science of measuring and mapping land.

When most people hear the term "land surveying" the concept of a boundary survey in real estate transactions comes to mind (the definition of boundary surveys will be discussed further in the next section). *"What Every Lawyer Should Know about Title Surveys"* (Williams and Onsrud, Real Property and Trust Law Section, American Bar Association, 1986, 1987) makes the following statement regarding the importance of land surveys:

> "A complete and accurate land survey is of fundamental importance in nearly all real estate transfers. A comprehensive land survey and physical inspection of the property is the only efficient and reliable means of delineating the physical limits of the property and locating the improvements on it. Yet land surveys are one of the least understood and most frequently overlooked elements in a real estate transaction."

Williams and Onsrud go on to list five fundamental reasons for requiring land surveys in real estate transactions:

1. The existence of the Property. A deed used to convey property must contain a description of the property. An adequate description is often determined upon whether a knowledgeable land surveyor can interpret the property description to reasonably locate the property physically on the ground.

2. The Relationship of the Property to Adjoining Properties. All parcels of land exist in relation to the parcels surrounding them. If an error was made in the creation of these parcels, gaps or overlaps of the boundary lines could occur. An accurate survey will note any conflicts between the adjoined property lines.

3. Relationship of Occupied Lines to Recorded Lines. It is not unusual for the boundary lines as physically occupied by an owner to differ from the location of the deed lines. These discrepancies can be minor (a fence meandering along the property line) to severe (a multi-story building built over the property line). A land survey should always show the occupied lines, the deed record lines, and the extent of any mismatch.

4. The Location of Physical Improvements. Surveyors are often requested to locate all the physical improvements of the property to help determine the value of the property and to discover if those improvements conform to local zoning ordinances.

5. Unrecorded Easements and Other Facts not of Record. Unrecorded rights not discovered in a title search but identified by an inspection of the property such as power lines, drainage ditches, sanitary sewer lines used by others besides the landowner can be shown on a survey. A survey is required by a title company to remove the exception of the title policy regarding "Any discrepancy, conflict, access … or other adverse circumstances affecting the Title that would be disclosed by a current inspection and accurate and complete land survey of the Land."

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