

*Land Surveys:
An Introduction*

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What Every Lawyer Should Know About Title Surveys

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Mitchell G. Williams
Harlan J. Onsrud

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. This article outlines the basic reasons for obtaining an accurate survey, discusses various types of land surveys, presents an example of how a surveyor might evaluate field and record evidence in accomplishing a property line survey, and then concludes with some suggestions for lawyers and title insurers to assure that an adequate survey is obtained.

I. What Is a Survey?

The word *survey* is derived from an old French word meaning “to look over” and refers to the process of evaluating real property evidence in order to locate the physical limits of a particular parcel of land. The real property evidence considered by the surveyor typically consists of physical field evidence, written record evidence, and field measurements. The surveyor, having made an evaluation of the evidence, forms an opinion as to where he believes a court would locate the boundary lines of the property. The typical modern-day surveyor sees himself as an expert evaluator of evidence and would expect to

arrive at the same opinion of boundary location regardless of who commissioned the survey. The surveyor's opinion is founded on experience and applicable legal precedents; unlike an attorney, the surveyor does not see himself primarily as an advocate for his client.

The surveyor then prepares a "map or plot of survey" to communicate his opinion to others. The map or plot is colloquially known as the survey. It is important to remember, however, that the map and accompanying notes represent a report of the survey, with the survey itself being primarily a measurement and evidence evaluation process.

While land surveying is often associated with engineering, the two professions are distinct. The evaluation of land surveying evidence is not a "science" in the sense that there is one procedure to follow which will yield the "correct" result. Surveyors occasionally disagree on the proper location of a boundary line—not necessarily because one surveyor measures better than the other, but more commonly because each surveyor has weighed the evidence differently and they have formed different opinions. Just as two lawyers may draw different conclusions from the same line of cases, surveyors may disagree about the appropriate location for a boundary. Because a survey is a professional opinion, it is subject to review by a court in the event that a boundary dispute reaches litigation. For the same reason, attorneys should remember that a survey and supporting documentation provided by one professional surveyor may be far superior or far inferior to that provided by another. Almost any field technician with basic training can make measurements with an acceptable degree of precision and replicability. In those instances in which locating the bounds of a land parcel requires an extensive amount of evidence evaluation, an individual with the requisite amount of education, knowledge, and experience should be employed to accomplish the survey with competence.

II. Why a Survey?

There are six fundamental reasons for requiring land surveys in real estate transactions:

1. *The Existence of the Property.* Nearly all titles to land in the United States depend on an original grant or patent and subsequent conveyance instruments. Each of these instruments contains descriptions of the land conveyed. It is a fundamental principle that for a deed to be valid it must contain a sufficient description. Whether a metes-and-bounds description or a description by reference to a parcel on a map is sufficient to transfer the property often depends upon whether a knowledgeable surveyor can interpret the description to reasonably locate the property physically on the ground. In determining whether the land description is sufficient, the surveyor determines whether the description forms a mathematically

- closed figure and whether the description reasonably conforms to the physical evidence on the earth's surface. The first determination is done by numeric calculation, the second by physical measurements in the field.
2. *The Relationship of the Property to Adjoining Properties.* Merely locating the lines described in a deed on the ground is not adequate to establish the physical limits of a property owner's interest. All parcels of land exist in relation to the parcels surrounding them. Surrounding parcels may include privately or publicly owned lands, rights-of-way, easements, roads, streams, and other bodies of water. At some point in the past, all adjoining land parcels were held in common by a single grantor. Over time, parcels were partitioned off or subdivided to arrive at the current ownership configuration. As a general rule, the description in a senior deed or prior conveyance controls over any discrepancy in a later one. If the drafter made an error or created an ambiguity in describing a parcel being partitioned off from a larger parcel, or made an error in a later attempt to "correct" or refine an earlier description, the legal descriptions of adjoining parcels may be inconsistent. The two descriptions of their "common" boundary may in fact either overlap or have a gap between them. Failure to discover overlaps may leave the holder of the junior deed owning much less property than the junior deed on its face would indicate. The presence of gaps or gores also poses problems when attempting to consolidate several adjacent parcels under a single owner for development purposes. When consolidation is attempted, one must definitively establish ownership to these leftover land strips. If a gap or gore exists along a street line or right-of-way, it has the potential of creating a landlocked parcel.
 3. *The Relationship of Occupied Lines to Record Lines.* Not infrequently, the boundary lines of a parcel as physically occupied or possessed by its owner differ from the distances and direction or the monuments called for in the deed. Discrepancies between possession and the record deed lines may range from minor variations in fence line locations to substantial encroachments of multistory buildings. A land survey should always show the occupied lines together with the deed record lines and the extent of any mismatch. Significant mismatches may suggest potential claims of ownership by senior right or adverse possession or a change in a boundary line by mutual agreement and acquiescence. To cut off any potential rights of another to a claim of adverse possession, the property owner may want to record an appropriate document confirming his claim of ownership or seek a change in possession to match the record lines.
 4. *The Location of Physical Improvements.* This reason for requiring a survey is related to the previous one, but deals with the relationship of all physical improvements on the parcel to the boundary lines of the parcel, not just those improvements near the exterior limits of the parcel. Features that surveyors are often requested to locate include fences, walls, driveways,

pavements, buildings, structures, utilities, wells, and natural features such as streams and ponds. This information is necessary to determine the presence of features that may limit the value or use of the property, and to determine conformity to setback lines contained in recorded documents and with local zoning ordinances regarding minimum building setbacks. It is also necessary to confirm that the improvements do not encroach upon easements or rights-of-way. When most attorneys and laypersons think of a survey, this is the type of information they expect to see on the surveyor's final survey map.

5. *Unrecorded Easements and Other Facts Not of Record.* There are numerous unrecorded rights that can affect title to land which may not show up in a title search but will become obvious upon an inspection of the property. The right of a neighbor to use utility lines, drainage ditches, sewer lines, and unrecorded travel easements across the property may have arisen by prescription or other methods of unwritten land transfer. A visual inspection of the property will usually give some physical indication as to whether such adverse rights may exist; for example, the presence of manholes or vent pipes suggests underground sewers or other utilities. Typically, only a survey in which unrecorded physical features are referenced to the property lines will induce a title insurance company to remove its exception in regard to "any state of facts an accurate survey might show."
6. *Water Boundaries.* Water boundaries are a complex subject, and details of ownership, usage rights, and location vary from state to state. These issues can only be dealt with briefly in an article of this scope. In general, a boundary defined by a body of water—for example, a creek, river, bay, or oceanfront—moves with changes in the course of the creek, river, or high-water mark over time, provided that the change is gradual; changes due to sudden causes, such as severe flooding or hurricanes, or changes due to actions by the property owner, whether gradual or not, such as building a dam, dredging, or filling, do *not* result in the movement of the boundary. It can be difficult to determine what caused a change in the course of a stream or in the high-water mark without historical research into old maps, deeds, and surveys. If the water in question is "navigable," a number of additional issues arise. A body of water is navigable if it in fact can physically be used for commerce or navigation, e.g., a river or a lake connected to other navigable waters, or if it is subject to the ebb and flow of the tide, e.g., oceanfront or bayfront property and tidelands. The title to land underlying waters that were navigable at the time of a state's admission to the Union was reserved to the state. The federal government, however, under the commerce clause, retained a "navigable servitude" over all waters that are presently, have been in the past, or may be in the future susceptible to use for purposes of interstate or foreign commerce. As a practical matter, this means that any portion of a body of water that was

navigable when a state was admitted to the Union and which has since been filled in, whether or not the fill was done with the permission of, or a license from, the Army Corps of Engineers or other governmental authority, is still “navigable” and subject to the federal navigable servitude.¹ The federal government can require that the fill, together with any improvements, be removed if it is necessary to improve navigation. This is not a taking or an exercise of eminent domain, and no compensation is required to be paid. This can be a major concern for marinas and other waterfront properties, many of which have significant improvements on filled-in land. In such circumstances, it would be prudent for a purchaser or lender to have the surveyor show, to the extent determinable, the location of the high-water mark at the time the applicable state entered into the Union, as well as any evidence of any filled-in lands. A title policy issued for such properties will contain an exception from coverage for “the rights of the federal government to enter upon and take possession without compensation of lands now or formerly lying below the high-water mark.”²

III. Types of Surveys

The above six reasons for obtaining a survey are fundamental in the case of a title survey. There are, however, many types of land surveys: boundary surveys, title surveys, topographic surveys, plot plans, subdivision maps, “as-built” surveys, and so forth. Each serves a different purpose, and they are not interchangeable. Typically, a boundary survey will only show the record boundaries and improvements and evidence of possession that are close to the actual record lines; a title survey will typically include all significant improvements and features on the property as described above. A subdivision map will show existing boundary lines of record and proposed lines for new parcels; it would not show any improvements or evidence of possession at all. Plot plans and site plans typically show record lines and the proposed location of new construction and the approximate locations of existing improvements to help an architect or engineer locate and design the proposed construction. A topographic survey usually indicates the contour, shape, elevations, and physical features of the ground within certain boundaries; like the plot plan, it is designed to aid an architect or engineer in the design and layout of a building, not to give a professional opinion on the location of the boundaries. Some attorneys believe that if they acquire an “as-built” survey, they have acquired the highest quality survey available. An “as-built” survey,

1. It requires an act of Congress to release a body of water from the federal navigable servitude.

2. A “navigable servitude” endorsement is available which will insure against the forced removal of any such improvements as a result of the exercise of the navigable servitude. The issuance of that endorsement is an underwriting issue for the title insurers.

however, is merely a detailed map of a new building or other improvement and its relation, as built, to the *plans* from which it was built. It may appear complex and comprehensive to laypersons, but its preparation does not typically address boundary or title concerns. The purpose of an “as-built” survey is to determine if the completed project accords with previously approved plans and specifications. Absent some statement to the contrary, these types of survey do not address the location of the boundary lines, their relationship to buildings and improvements, or adjoining lots. An attorney who uses one of these types of survey to advise a client about boundary and title questions flirts with malpractice.

IV. The Presumed Priority of Conflicting Title Elements that Determine Boundary Location

A surveyor looks to legal principles as a guide in evaluating the evidence for a boundary line location. One such principle is the presumed priority of conflicting title elements that determine boundary line location. A right of ownership can arise from two sources: by written means (such as a deed or written boundary line agreement) or by unwritten means (such as adverse possession). The resolution of conflicts between written and unwritten rights is one of the most difficult problems for both surveyors and lawyers. As the resolution is usually dependent on the particular facts in each case, it is beyond the scope of this article. But even within a deed or other written conveyance, there frequently are conflicting terms that the surveyor must resolve.

When such a conflict occurs, it is necessary to decide which terms were intended to control and which terms were informational. Which term is controlling generally depends upon its order of importance as determined by courts. One summarized listing of a judge-made priority ranking among the terms of a deed is as follows:

1. Call for a specific survey
2. Call for monuments
 - a. Natural
 - b. Artificial
 - c. Record boundaries (in the event of a gap)
3. Calls for directions and distances
4. Calls for directions
5. Calls for distance
6. Call for coordinates
7. Call for area

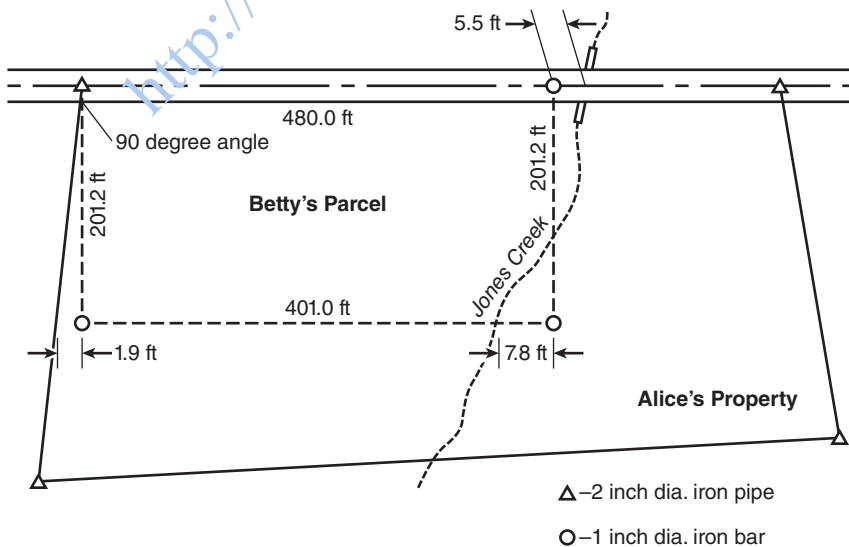
If the results obtained by adhering to the above ranking are clearly contrary to the overall intent expressed in the deed, however, the intent expressed in the deed will control.

The above priorities are based upon assumptions about the relative certainty of each type of evidence. The presumption that directions should control when in conflict with distances is based on the assumption that one can determine angles and bearings more precisely than distances. In some jurisdictions, however, directions were historically observed with an imprecise magnetic compass and distances were measured with a precise steel tape; in these jurisdictions, courts held that distances should control over directions when in conflict. It makes sense that when the reasons for adhering to the presumed priority ranking no longer exist, the presumed ranking should fail and the best available evidence should prevail.

V. Sample Evaluation of a Property Line Fact Situation

In order to illustrate the land surveyor's use of the foregoing rankings in arriving at an opinion as to where property ownership lines are likely to lie, we present the following hypothetical facts. Alice owns the large parcel of land shown in figure 1. The parcel was surveyed and corners monumented in 1932. There are no conflicts between Alice's lines and those of her neighbors. Alice sells a portion of her parcel to Betty in 1960. The land description in Betty's deed from Alice reads as follows:

Beginning at the NW corner of Alice's property as marked by a 2" iron pipe; thence East along the centerline of White Road 400 feet to the center of the Jones Creek culvert; thence South 200 feet along Jones Creek; thence West 400 feet; thence North 200 feet to the point of beginning.



The information shown in figure 1 reflects the state of facts disclosed by a field survey. There are no fences, tree lines, hedges, or evidence of possession along

the lines of Betty's parcel. There is no field or record evidence to suggest that Jones Creek has significantly changed its course since 1960.

How might a surveyor reasonably evaluate this evidence? One of the surveyor's obligations in accomplishing a land survey is to locate the title lines and then locate occupation lines with respect to those title lines. Under the given facts, it is proper to consult only the terms of Betty's deed description in locating the title lines.

- The call for the 2-inch iron pipe is a call for an artificial monument, and if the surveyor can establish that the iron pipe actually found is the pipe called for in the deed, it fixes the location of the point of beginning. The found 1-inch diameter iron bars shown in figure 1 are not called for in the deed and, therefore, are not legally artificial monuments. There is nothing to suggest that they were set during a survey, except that the bars are of a material and size typically used by surveyors in marking property corners and are in the approximate locations where a current survey would place Betty's property corners. These uncalled-for monuments should be accepted as marking the southerly line of Betty's parcel only if the lines of this parcel are so uncertain that most surveyors would not locate the title lines in the same locations.
- In the first course, the call "to the center of the Jones Creek culvert" is controlling as a natural monument called for in the deed. The 400-foot distance called for is informational. It provides an approximate distance to aid in finding the called-for physical corner.
- In the second course, the creek as a natural monument that is explicitly called for in the deed delineates the property line. Thus, the eastern line of Betty's parcel is synonymous with Jones Creek. If the called-for distance of 200 feet is accepted as controlling, it would be necessary to trace the sinuosities of the center of the creek to find the southeast corner of Betty's parcel. However, that distance may not necessarily be controlling when considering the overall intent of the deed. Further analysis is required.
- The call "thence West 400 feet" does not additionally say "to the east line of Alice's property." It appears unreasonable to assume, however, that Alice had intended to retain the small sliver of land that would result if the uncalled-for monument in the southwest corner is held as controlling. Additionally, when measured along Betty's southerly line, the creek is less than 400 feet away from Alice's west property line. Therefore Betty's parcel appears to be defined on its west end by Alice's west property line.
- The only side of Betty's parcel that has yet to be located is the southerly boundary. When considering the overall written intentions of the parties to the deed, it appears that the parties intended to partition off a parcel in the northwest portion of Alice's property bounded by Jones Creek on

the east, bounded by Alice's west property line on the west, and having dimensions of approximately 400 feet by 200 feet.

- The sequence of calls in a description is generally held by the courts to be immaterial. Therefore, reading the description backwards, one possible location for Betty's southwest corner is at a distance of 200 feet from the point of beginning along Alice's west property line. It would then appear reasonable to define the southerly line of Betty's parcel by a line extended from this monument and running easterly parallel to White Road. This would result in a configuration for the parcel in close agreement with the overall written intent of the parties.
- In the alternative, the court might find the southerly line of Betty's parcel to lie a perpendicular distance of 200 feet from and run parallel with the centerline of White Road. Because the grantor had the responsibility for making the description clear and failed to do so, any ambiguity in the description should be resolved in favor of the grantee. This configuration also closely agrees with the overall written intent of the parties. This is the solution that a large number of surveyors would probably reach.
- In some eastern states, particularly in rural areas, uncalled-for monuments tend to carry substantial weight in the courts. In such jurisdictions, the court would probably hold a straight line passing through the two 1-inch diameter bars as defining Betty's southerly property line. Due to the inconsistency in the dimensions between the monuments along the east and west bounds, however, it appears unlikely that a surveyor set the bars. They probably were set by a layperson to mark the approximate locations of the property corners and never intended to mark the precise actual locations of the corners. Under these facts, the 1-inch iron bars should not be held as marking the location of Betty's southerly line.

The primary purposes in presenting the preceding example are to illustrate the thought processes that a surveyor goes through in evaluating property line evidence and to stress that the location of property lines is more often a matter of legal opinion than scientific fact. The fact situation presented here is very simple in comparison to the fact situations actually encountered in practice. Surveyors can, and not infrequently do, come to different conclusions in evaluating property line evidence. It is important to reemphasize, however, that surveyors act primarily as expert witnesses and not as advocates. As an expert in evidence evaluation, the surveyor expects to arrive at the same conclusions from the evidence regardless of whether his client is Alice or Betty. The lawyer, on the other hand, represents exclusively his client's interests and advocates his client's side of the story to the very best of his abilities.

If a court upheld the surveyor's evaluation of the evidence in the example, it is because the surveyor arrived at a comprehensive and well-reasoned answer

rather than because he arrived at the theoretically correct answer. Again, there are no “true” answers waiting to be discovered, only well-reasoned answers.

The preceding example has illustrated possible difficulties in locating the exterior bounds of a land parcel. The land surveying work product requested by the land owner or his attorney typically contains far more than a schematic diagram of the property lines and an opinion as to how the surveyor located the exterior bounds of the property. The more information requested from the surveyor, the more complex are the surveyor’s tasks of research, measurement, legal evaluation, and reporting.

VI. Survey Certifications

How is a lawyer or title company to know if a surveyor has actually considered all those matters that are of concern to the lawyer and whether the surveyor’s conclusions represent a “well-reasoned” answer to the boundary location questions? All too often the survey delivered says no more than “Survey of . . .” or “Map of Property at . . .,” perhaps with a legend “certifying” to specific parties that an actual field survey has been accomplished. The lawyer should insist that the surveyor specify the code of practice or standards to which the survey was made. Customary standards of practice and written standards of practice vary considerably among the states and within each state. If the lawyer is providing advice in a transaction prior to the ordering of a survey, he should contractually obligate the surveyor to a particular desired set of standards and required certifications.

It is important for the lawyer to examine any code of practice used in order to determine if it adequately deals with the five major concerns listed in this article. If it does not, then the lawyer should ask the surveyor to address those concerns by carrying out any additional tasks required and adding specific certifications to the survey map. If a surveyor’s contract did not obligate him to provide certain certifications, the surveyor may contend that he was not required to carry out the work that would allow him to make the requested certification. He justifiably may request further compensation in order to accomplish the additional work. In addition, there are many matters to which a surveyor should not be requested to certify. These include matters beyond his capable knowledge, such as whether underground encroachments of foundations exist. He also should not be requested to certify to matters that rightfully fall within the responsibility of the title insurance company, such as certifying that all easements have been shown on the survey regardless of whether disclosed by the title insurer or evident on the ground.

Codes of practice are most commonly promulgated by state surveying societies and by state licensing boards. In some states, there are codes of practice set forth in state law that a surveyor must follow. Within a state, there may be more than one professional society and, accordingly, multiple codes. The lawyer

representing a client should be familiar with the code commonly used in the state. Some codes of practice deal purely with technical standards of precision in measurement and do not discuss what the survey should show, such as the Standards for Boundary Surveys in the State of Ohio (OHIO ADMIN. CODE ch. 4733-37). At the other end of the continuum are standards that treat at some length the issues of what research is required, what the survey should show, and what technical standards of measurement must be met, such as the joint ALTA/ACSM Minimum Standard Detail Requirements for Land Title Surveys, the most recent version of which was adopted in 2011 (the ALTA Code).

It has become common to ask for a “national” standard for land title surveys. Some have advocated the ALTA Code as a set of standards that could fulfill this need; however, an attorney should not blindly accept a survey certified in accordance with the ALTA Code. A client may require numerous items (e.g., flood zone, parking, and utility locations) that are not part of a standard ALTA survey but are listed in the ALTA standards as “optional,” and must be specifically requested. Familiarity with the ALTA code and the client’s needs are essential.

VII. Conclusions and Recommendations

This article is intended to explain to the attorney why a proper and current land survey is important for the typical real estate transaction. This article has illustrated some of the intricacies of the land surveyor’s reasoning process in the evaluation of boundary line evidence. Awareness of the complexity of a surveyor’s task in accomplishing a land survey leads to the conclusion that, in contracting with a surveyor to carry out a survey, we should perhaps resort to published surveying standards to define the extent of the work to be accomplished. However, we have also illustrated that the lawyer must use published standards of practice with caution. Even state codes required by statute or the most widely accepted standards and codes of practice, such as the recent ALTA Code, will not meet the needs of all clients at all times.

We have suggested a few additional matters of survey that may concern your clients and that may be handled through the use of appropriate certifications. These are but a few of the many surveying matters attorneys must be aware of. To better address the concerns of their clients, attorneys must be aware of the purpose of each survey and must have an understanding of the proper limits of the surveyor’s evidence evaluation, research, and measurement processes.

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