

BOUNDARY SURVEYS

■ 21.1 INTRODUCTION

The oldest types of surveys in recorded history are boundary surveys, which date back to about 1400 B.C. when plots of ground were subdivided in Egypt for taxation purposes. Boundary surveys still are one of the main areas of surveying practice. From Biblical times¹ when the death penalty was assessed for destroying corners, to the colonial days of George Washington² who was licensed as a land surveyor by William and Mary College of Virginia, and through the years to the present, natural objects (i.e., trees, rivers, rock outcrops, etc.) and man-made objects (i.e., fences, wooden posts, iron, steel or concrete markers, etc.) have been used to identify land parcel boundaries.

As property increased in value and owners disputed rights to land, the importance of more accurate surveys, monumentation of the boundaries, and written records became obvious. When Texas became a state in 1845, its public domain amounted to about 172,700,000 acres, which the U.S. government could have acquired by payment of the approximately \$13,000,000 in debts accumulated by the Republic of Texas. However, Congress allowed the Texans to retain their land and pay their own debts—a good bargain at roughly 7.6 cents/acre!

The term *land tenure system* applies to the manner in which rights to land are held in any given country. Such a system, as a minimum, must provide (1) a means for transferring or changing the title and rights to the land, (2) permanently monumented or marked boundaries that enable parcels to be found on the ground, (3) officially retained records defining who possesses what rights to the land, and (4) an official legal description of each parcel. In the United States

¹“Cursed be he that removeth his neighbor’s landmark. And all the people shall say Amen.” Deut. 27:17.

²“Mark well the land, it is our most valuable asset.” George Washington.

a two-tier land tenure system exists. At the federal level, records of surveys and rights to federal land are maintained by the U.S. *Bureau of Land Management (BLM)*. At the state and local levels, official records concerning land tenure are held in county courthouses.

Land titles in the United States are now transferred by written documents called *deeds (warranty, quitclaim, or agreement)*, which contain a description of the property. Property descriptions are prepared as the result of a land survey. The various methods of description include (1) metes and bounds, (2) block-and-lot number, (3) coordinate values for each corner, and (4) township, section, and smaller subdivisions of the U.S. *Public Land Survey System (PLSS)* commonly referred to as the *aliquot part*. Often a property description will combine two or more of these methods. The first three methods are discussed briefly in this chapter; the PLSS is covered in Chapter 22.

■ 21.2 CATEGORIES OF LAND SURVEYS

Activities involved in the practice of land surveying can be classified into three categories: (1) *original surveys* to subdivide the remaining unsurveyed U.S. public lands, most of which are in Alaska, (2) *retracement surveys* to recover and monument or mark boundary lines that were previously surveyed, and (3) *subdivision surveys* to establish new smaller parcels of land within lands already surveyed. The last two categories are described in this chapter; the first is discussed in Chapter 22.

In establishing new property lines, and especially in retracing old ones, surveyors must exercise acute judgment based on education, practical experience, and knowledge of land laws. They must also be accurate and articulate in making observations. This background must be bolstered by tenacity in searching the records of all adjacent property as well as studying descriptions of the land in question. In fieldwork, surveyors must be untiring in their efforts to find points called for by the deed. Often it is necessary to obtain *parol evidence*, that is, testimony from people who have knowledge of accepted land lines and the location of corners, reference points, fences, and other information about the correct lines.

Modern-day land surveyors are confronted with a multitude of problems created over the past two centuries under different technology and legal systems that now require professional solutions. These include defective compass and chain surveys; incompatible descriptions and plats of common lines for adjacent tracts; lost or obliterated corners and reference marks; discordant testimony by local residents; questions of riparian rights; and a tremendous number of legal decisions on cases involving property boundaries.

The responsibility of a professional surveyor is to weigh all evidence and try to establish the originally intended boundary between the parties involved in any property-line dispute, although without legal authority to force a compromise or settlement. Fixing title boundaries must be done by agreement of adjacent owners or court action. Surveyors are often called upon to serve as expert witnesses in proceedings to establish boundaries, but to do so they should be registered.

Because of the complicated technical judgment decisions that must be made, the increasing cost of land surveyors' professional liability insurance for "errors and omissions" has become a major part of operating expenses. Some states demand that a surveyor have it for the protection of all parties.

■ 21.3 HISTORICAL PERSPECTIVES

In the eastern part of the United States, individuals acquired the first land titles by gifts or purchase from the English Crown. Surveys and maps were completely lacking or inadequate, and descriptions could be given in only general terms. The remaining land in the 13 colonies was transferred to the states at the close of the Revolutionary War. Later this land was parceled out to individuals, generally in irregular tracts. Boundary lines were described by *metes and bounds* (see Section 21.4).

Many original transfers and subsequent ownerships and subdivisions were not recorded. Those that were usually had scanty or defective descriptions, since land was cheap and abundant. Trees, rocks, and natural landmarks defining the corners, as in the first example metes-and-bounds description (see Section 21.4), were soon disturbed. The intersection of two property lines might be described only as “the place where John killed a bear” or “the bend in a footpath from Jones’s cabin to the river.”

Numerous problems in land surveying stem from the confusion engendered by early property titles, descriptions, and compass surveys. The locations of thousands of corners have been established by compromise after resurveys or by court interpretation of all available evidence pertinent to their original or intended positions. *Squatters’ rights*, *adverse possession*, and *riparian changes* have fixed other corners. Many boundaries are still in doubt, particularly in areas having marginal land where the cost of a good retracement survey exceeds the property’s value.

The fact that four corners of a field can be found and the distances between them agree with the “calls” in a description does not necessarily mean that they are in the proper place. Title or ownership is complete only when the land covered by a deed is positively identified and located on the ground.

Land law from the time of the Constitution has been held as a state’s right, subject to interpretation by state court systems. Many millions of land parcels have been created in the United States over the past four centuries under different technology and legal systems. Some of the countless problems passed on to today’s professional surveyors, equipped with immensely improved equipment, are discussed in this chapter and in Chapter 22.

Land surveying measurements and analysis follow basic plane surveying principles. But a land surveyor needs years of experience in a given state to become familiar with local conditions, basic reference points, and legal interpretations of complicated boundary problems. Methods used in one state for prorating differences between recorded and measured distances may not be acceptable in another. Rules on when and how fences determine property lines are not the same in all states or even in adjacent ones.

The term *practical location* is used by the legal profession to describe an agreement, either explicit or implied, in which two adjoining property owners

mark out an ambiguous boundary, or settle a boundary dispute. Fixed principles enter the process and the boundary established, called an *agreed-upon boundary*, can become permanent.

Different interpretations are given locally to (1) the superiority or definiteness of one distance over another associated with it, (2) the position of boundaries shown by occupancy, (3) the value of corners in place in a tract and its subdivisions, and (4) many other factors. Registration of land surveyors is therefore required in all states to protect the public interest.