Chapter 7:
Land Descriptions

An * in the left margin indicates a change in the statute, rule or text since the last publication of the manual.

I. Introduction

While the location of land is commonly referred to by street number and city, it is necessary to use the legal description in the preparation of those instruments relating to the title and use of real estate. Numerous methods of description have been developed for the purpose of achieving greater accuracy and precision in identifying the land. The more common methods of land description are:

1. United States Governmental Survey System (GSS), also known as the "rectangular survey system,"
2. Metes and bounds,
3. Recorded subdivision plat,
4. Colorado Coordinate System

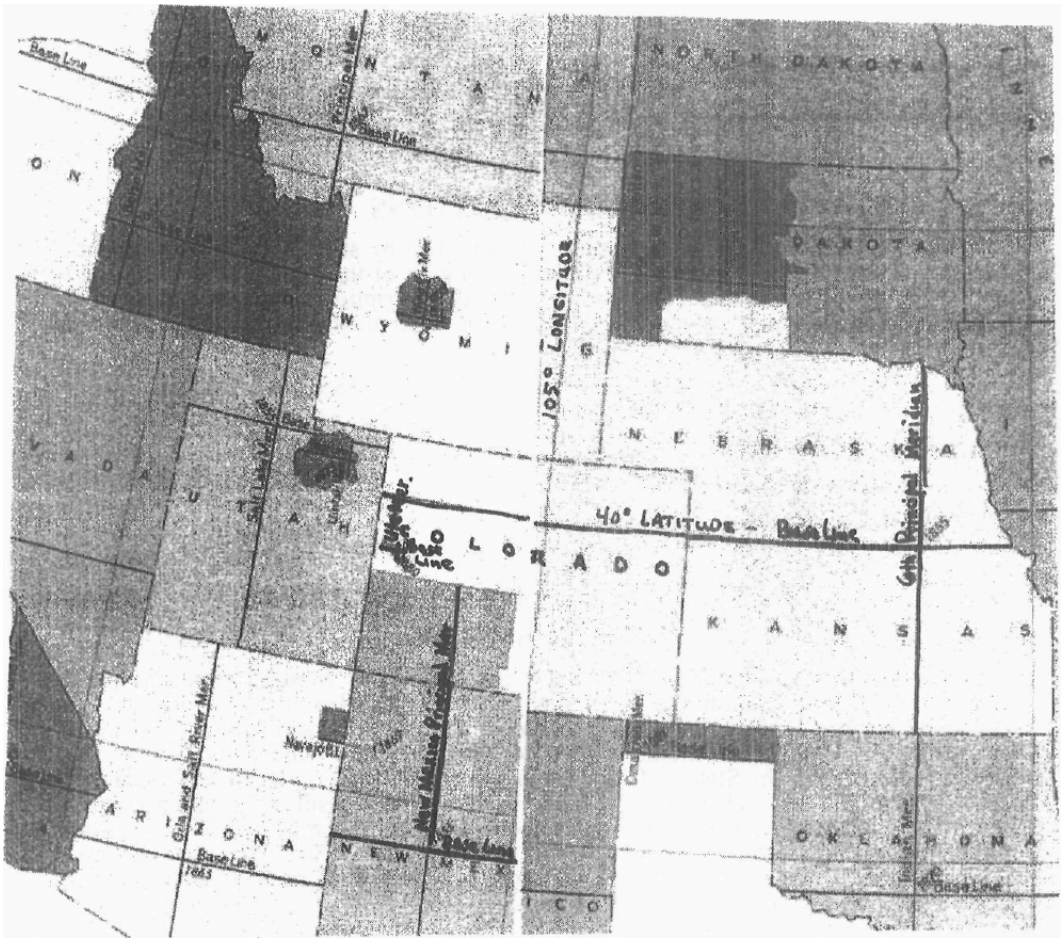
II. The United States Governmental Survey System

Soon after the Revolutionary War ended and new areas were added to the public domain, it became apparent to our government's leaders that a plan must be worked out for selling and locating lands in the western territory. Thomas Jefferson authored a plan that was adopted by Congress in modified form on May 20, 1785. Under this law, the first surveys took place in the State of Ohio. Ohio was the testing ground for the rectangular survey system and some changes were made in the law as a result of experience gained there. The second survey started in Indiana about 1810. By this time the system was well established; it now extends westward to the Pacific Ocean. This system was not used within the area of the original colonies in America, where land locations were made in irregular form and without any orderly plan.

The object of the government survey was to create a checkerboard of identical squares covering a given area. The largest squares measure 24 miles on each side and are called **"quadrangles."** Each quadrangle is further divided into 16 squares called **"townships"** whose boundaries each measure six miles. Columns of townships are called ranges, and are numbered sequentially east or west of one of 36 **principal meridians**. In most of Colorado, ranges are numbered west from the 6th principal meridian, located near Lincoln, Nebraska. The centerline of Colorado Boulevard in Denver is exactly 402 miles west of the 6th principal meridian. An east-west row of townships is a **"tier"** or township and is numbered sequentially north or south from its baseline. In most of Colorado, the main baseline lies approximately on the 40 degree parallel or line of latitude. This line is an extension of the Kansas-Nebraska border, and runs just north of the city of Brighton in Adams County.

Most of Colorado was surveyed in relation to the 6th principal meridian and 40 degrees latitude baseline. However, several counties in Southwestern Colorado were surveyed using

the New Mexico principal meridian and the New Mexico baseline as a starting point. Also, certain portions of Mesa and Delta Counties in Western Colorado are measured from the Ute Meridian (located just east of Grand Junction) as the north-south survey line and an arbitrary baseline. These non-standard reference lines were implemented to expedite a survey in support of a plan to settle Ute Indians in and around what was later to become the city of Grand Junction. Because no surveys at that time had been extended west of the Continental Divide, a new meridian and a new baseline were established with no connection to the GSS.



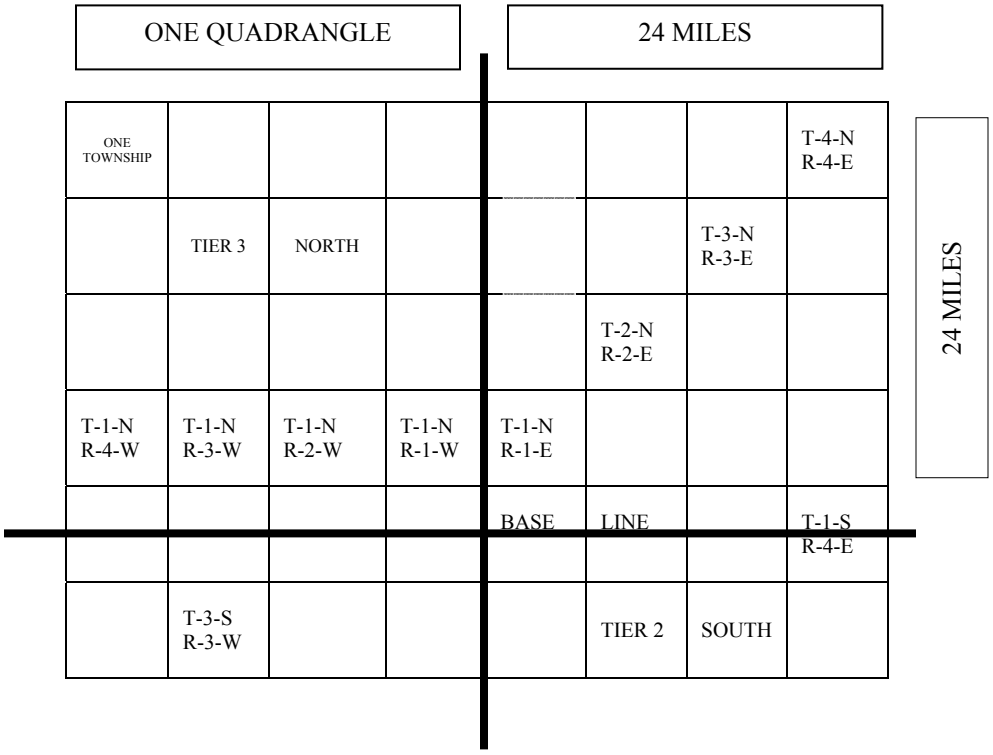
Because of the curvature of the earth, the meridians and north-south ranges converge as they extend toward the North Pole. To maintain a precise six-mile width, and to preserve the square shape of a township, range lines jog outward at each quadrangle (24 miles) so that they are again six miles apart.

The north and west tiers of sections of the township are closing sections. Discrepancies of closure between the interior section line and exterior boundary line surveys are adjusted. These sections usually contain more or less than the 640 acres in a normal section.

A township is six miles square (6 mi. x 6 mi. = 36 square miles). Each square mile is called a **"section,"** and contains 640 acres. Within each township, Sections are numbered from 1 to 36 beginning in the northeast corner, counting west to Section 6, then down to Section 7 and back east to Section 12, following a back and forth course to Section 36 in the southeastern-most corner of each township. For purposes of legal description, sections are further divided into fractions, such as half-sections (320 acres), quarter-sections (160 acres),

etc. Legal descriptions are then made in a building-block fashion from small to large, for example, referring to the southwest quarter of the northeast quarter of Section XX, Township XX North (of a particular base line), Range XX West (of a particular meridian).

A section is the smallest subdivision usually surveyed by government surveyors, marked at each section corner with a "survey monument."



The above sketch shows ranges (numbered east and west of the 6th principle meridian), and townships (numbered north and south of a baseline). There are two quadrangles, one on either side of the 6th principal meridian above the base line. A portion of two additional quadrangles is shown below the base line. A tier is a horizontal row of ranges.

SIX MILES

		31	**32**	**33**	**34**	**35**	**36**	**31**	**32**
2	**1**	**6**	**5**	**4**	**3**	**2**	**1**	**6**	**5**
11	**12**	**7**	**8**	**9**	**10**	**11**	**12**	**7**	**8**
14	**13**	**18**	**17**	**16**	**15**	**14**	**13**	**18**	**17**
23	**24**	**19**	**20**	**21**	**22**	**23**	**24**	**19**	**20**
26	**25**	**30**	**29**	**28**	**27**	**26**	**25**	**30**	**29**
35	**36**	**31**	**32**	**33**	**34**	**35**	**36**	**31**	**32**
2	**1**	**6**	**5**	**4**	**3**	**2**	**1**	**6**	**5**

SIX MILES

Township map showing 36 numbered Sections as connected to sections of adjacent Townships

<table>
<tr><td>NW 1/4
of
NW 1/4
40 ac.</td><td>NE 1/4
Of
NW 1/4</td><td colspan="2" rowspan="2">NE 1/4=
160 acres</td></tr>
<tr><td>SW 1/4
of
NW 1/4</td><td>SE 1/4
of
NW 1/4</td></tr>
<tr><td colspan="2">N 1/2
Of
SW 1/4</td><td rowspan="2">W 1/2
Of
SE 1/4</td><td rowspan="2">E 1/2
Of
SE 1/4
80 acres</td></tr>
<tr><td colspan="2">S 1/2
Of
SW 1/4</td></tr>
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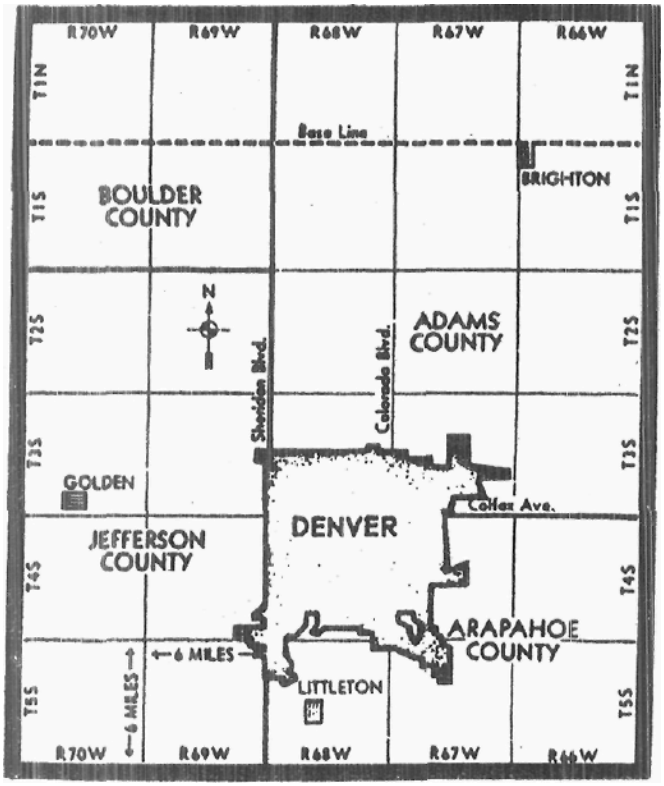
Example of a fractional breakdown of a Section (640 Acres) of Land



Map showing Denver and Vicinity in terms of the actual Townships, (tiers) and Ranges

II. Metes and Bounds Descriptions

When land cannot be identified by the governmental survey system, it is described by metes and bounds. Metes means measures of length and bounds means boundaries. The United States and Canada are the only countries in the world using the GSS. In all the rest of the world, tracts of land are surveyed and described by metes and bounds—usually by identifying a point of beginning and the boundaries in relation to a recognized marker or monument or to natural features such as streams, bridges, piles of stones, trees, etc.

Metes and bounds are used in Colorado when it is necessary or desirable to describe a tract with irregular boundaries not conforming to the GSS. However, such a survey or description rarely or never relies on natural features for location. As used in this state, metes and bounds surveys and descriptions are irregular parts of a section or some subdivision of a section. They always tie to some established comer or line of the GSS or to a recognized point on a recorded subdivision plat. Professional land surveyors establish metes and bounds, and are the only persons qualified to sanction “official” surveys.

A. Bearing System

Metes and bounds are expressed in bearings and distances. The direction of a line—its **bearing**—is always stated in terms of its angle from north-south (expressed in degrees (°), minutes (') and seconds (")), followed by its direction east or west of that north-south line, (e.g. N 70 degrees, 19 minutes E., or S 24 degrees, 10' W). A cardinal direction of due north, south, east or west is expressed as such.

In unsurveyed areas, meridians were established by compass or astronomical observations and calculation. In almost all cases now, bearings are determined from an already established line, such as a section line.

It is important when describing land by bearings and distances to state the source of information such as grant, survey, or deed records.

Degree numbering in the four quadrants.

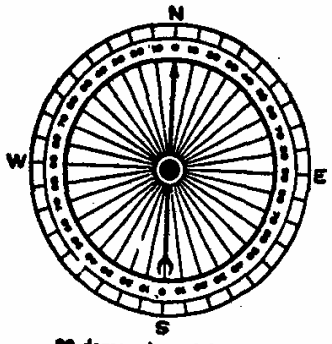
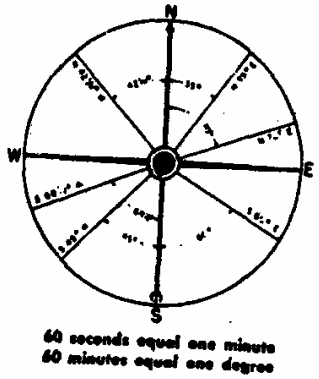
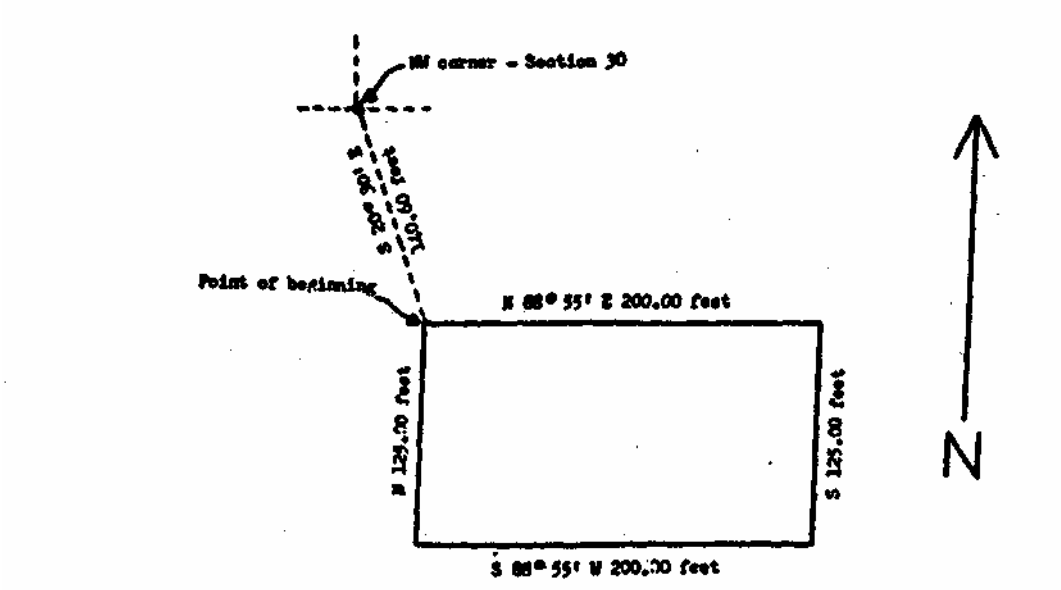


Illustration of description using the bearing for directions.



Example of Metes and Bounds Legal Description

A tract of land in the Northwest one-quarter of the Northwest one-quarter (N/W 1/4, NW 1/4) of Section 30, Township 1 South, Range 60 West of the 6th P.M., described as follows: Commencing from the Northwest corner of said Section 30; thence South 20 degrees 30 minutes East 140.60 feet to the point of beginning (POB); thence North 88 degrees 55 minutes East 200.00 feet; thence South 125.0 feet; thence South 88 degrees 55 minutes West 200.00 feet; thence North 125.00 feet to the POB, County of Adams, State of Colorado.



B. Azimuth System

The Azimuth system differs from bearings in that it expresses all directions in terms of the clockwise angle from North from zero (North) through 360 degrees (also North), instead of being broken into four quadrants. Thus, instead of N 70 degrees W, the azimuth system would refer to that same boundary as "290 degrees," moving clockwise from due North as the starting point, through 180 degrees (due South), then 270 degrees (due West). Surveyors often use it in their work but generally convert it to the usual bearing description. It is seldom used in legal descriptions.

III. Recorded Subdivision Plat

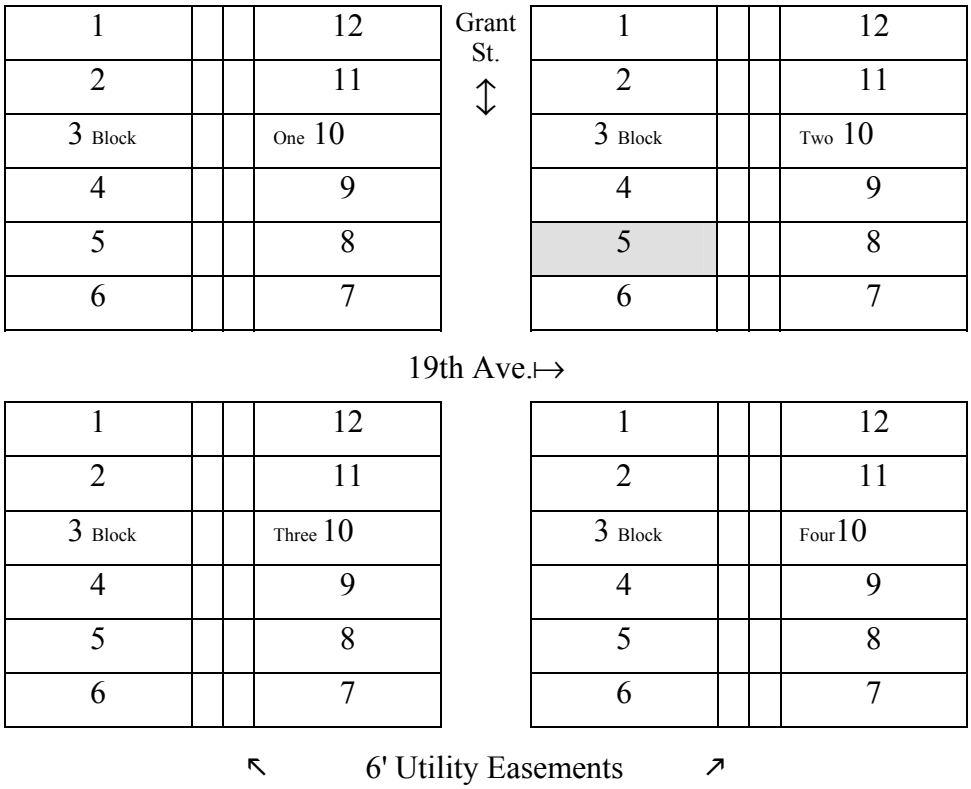
A single large tract of land is typically developed into subdivisions. The small parcels of land within a subdivision are called lots and blocks. Subdivisions usually propose streets, alleys, public utility easements and such other information that the owner and local government desire to include as part of the development plan. A survey is conducted and a map called a subdivision plat is made. Plats must then be recorded in the office of the county clerk and recorder. Recording enables permanent description of a parcel of land as a certain lot and block of the recorded subdivision map, instead of by metes and bounds. The plat map itself shows the boundaries and specific measurements of each lot.

In most cases it is unlawful for any subdivider or agent of a subdivider to transfer title or sell any subdivided land before a final subdivision plat of the subdivided land has been approved by the county board of commissioners and recorded or filed with the clerk and recorder. Violations carry a penalty for each parcel sold. (30-28-110, C.R.S.).

Also, the boundaries of a subdivided block on which a lot is located must be visibly marked before a contract for sale is signed. Lot boundaries must be staked within one year from the effective date of the contract. The burden is on the seller of the subdivided lots to provide for this surveying, unless a block is sold as a unit, in which case the burden is on the subsequent seller. (C.R.S., 38-51-105(3)(a) & (5)).

The legal description of the shaded site in this illustration would be written as follows:

Lot five (5), Block two (2), Capitol Hill Subdivision, an addition to the City and County of Denver, State of Colorado, according to the recorded plat in the office of the County Clerk and Recorder of said county.



IV. Surveys and Certificates

There are many methods and purposes for describing and identifying property that the real estate licensee will encounter and with which he or she should be familiar.

The **land survey** plat includes a scale drawing of the boundaries of a parcel of land, which is compiled by a series of exact and precise linear and angular measurements taken from a known point of origin developed by mathematical principals of surveying. The purpose of the land survey plat is to determine, locate and or restore real property boundaries. The land survey plat will also indicate any conflicting boundary evidence and any recorded and/or apparent rights-of-way or easements.

The **improvement survey** plat is comprised of the same precise information as is the land survey plat mentioned above, and in addition indicates the location of all structures (improvements) on the parcel of land. The improvement survey plat also shows visible encroachments and any fences, hedges, or walls on or within two feet of both sides of all boundaries. The improvement survey plat details all visible above-ground utilities, and all underground utilities for which there is visible surface evidence.

An **improvement location certificate (ILC)** is another method of describing and approximately locating property, and is often required by lenders and insurance companies. It offers certain reasonable assurances regarding potential boundary or encroachment problems that may affect their interests. It also illustrates the location of improvements and conditions of the property. However, it is based on assumptions regarding boundary location and is not a precise survey. An ILC is typically used in the single-family residential transactions for property located within a subdivision. It is a method of depicting property to which most real estate licensees will have the most exposure. A licensee should be familiar with the differences between land and improvement surveys, and an LC.

An ILC is:

1. a representation of boundaries and improvements based on a surveyor's general knowledge in a given area.
2. a depiction of the property boundaries showing the size and shape of a parcel which is based on the legal description provided in the warranty deed.
3. a document signed and sealed by a professional land surveyor who has certain professional responsibilities for its accuracy.
4. a representation of the location of improvements, encroachments and easements based on their relationship to a reasonable estimate of the location of property lines.

An ILC is not:

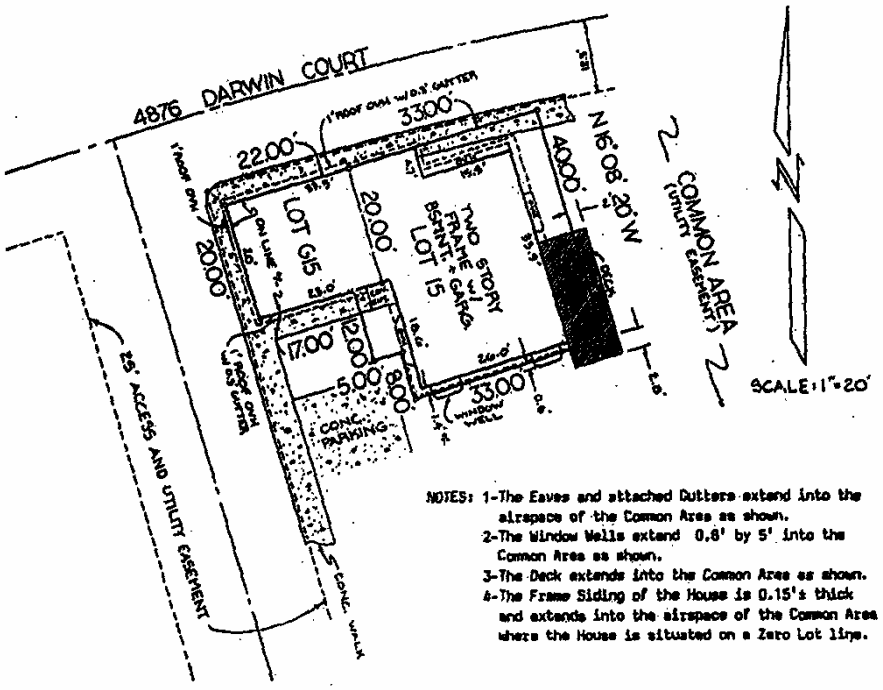
1. a survey.
2. evidence of exact boundary location.
3. a precise property corner locator.
4. to be legally relied upon for locations of property lines or future improvements.

Sometimes an ILC will indicate a possible encroachment or other evidence of a boundary dispute. In this case, a true survey (i.e., improvement survey plat or land survey plat) would be required to clarify or resolve any discrepancies. A real estate licensee should never represent that an improvement location certificate is a survey.

The following is a sample improvement location certificate:

LEGAL DESCRIPTION

Lots 15 and 15G,
Block D,
PLUM CREEK THREE,
County of Boulder,
State of Colorado.



NOTES: 1-The Eaves and attached Gutters extend into the airspace of the Common Area as shown.
2-The Window Wells extend 0.8' by 5' into the Common Area as shown.
3-The Deck extends into the Common Area as shown.
4-The Frame Siding of the House is 0.15's thick and extends into the airspace of the Common Area where the House is situated on a Zero Lot line.

FLOOD INFORMATION
The subject property is located in Zone C, the area of minimal flooding according to the FEMA Flood Insurance Rate Map; Community-Panel No. 080024-0120-D, dated August 4, 1986.

COLORADO REGISTERED CAM BRUCE BUTLER 16406 PROFESSIONAL LAND SURVEYOR

John B. Guyton, Colorado L.S. #16406

IMPROVEMENT LOCATION CERTIFICATE

TO_____ AND TO _____

I hereby certify that the improvements on the described parcel, except utility connections, are entirely within the boundaries of said parcel, except as shown, that there are no encroachments upon the described premises by improvements on any adjoining premises, except as indicated, and that there is no apparent evidence or sign of any easement crossing or burdening any part of said parcel, except as noted. I further certify that this improvement location certificate is not a land survey plat or improvement survey plat, and that it is not to be relied upon for the establishment of fence, building or other future improvements lines.

V. Colorado Coordinate System

The Colorado Coordinate System became effective July 1, 1967 under Title 38 Article 52 C.R.S. This statute is permissive in nature and is not mandatory.

The system is based on defining a point by its distance from two perpendicular baselines (i.e., one north-south axis and an intersecting east-west axis). The intersection of such defined lines in each Colorado coordinate zone then serve as the beginning points of a legal description.

The survey divides Colorado into roughly equal horizontal zones North, Central and South. Counties located in the northern one-third are designated "Colorado Coordinate System, North Zone", and the same applies to Central and South zones When a tract of land overlaps two zones, it may be described with reference to either one, and names the zone from which its measurement originates in the legal description.

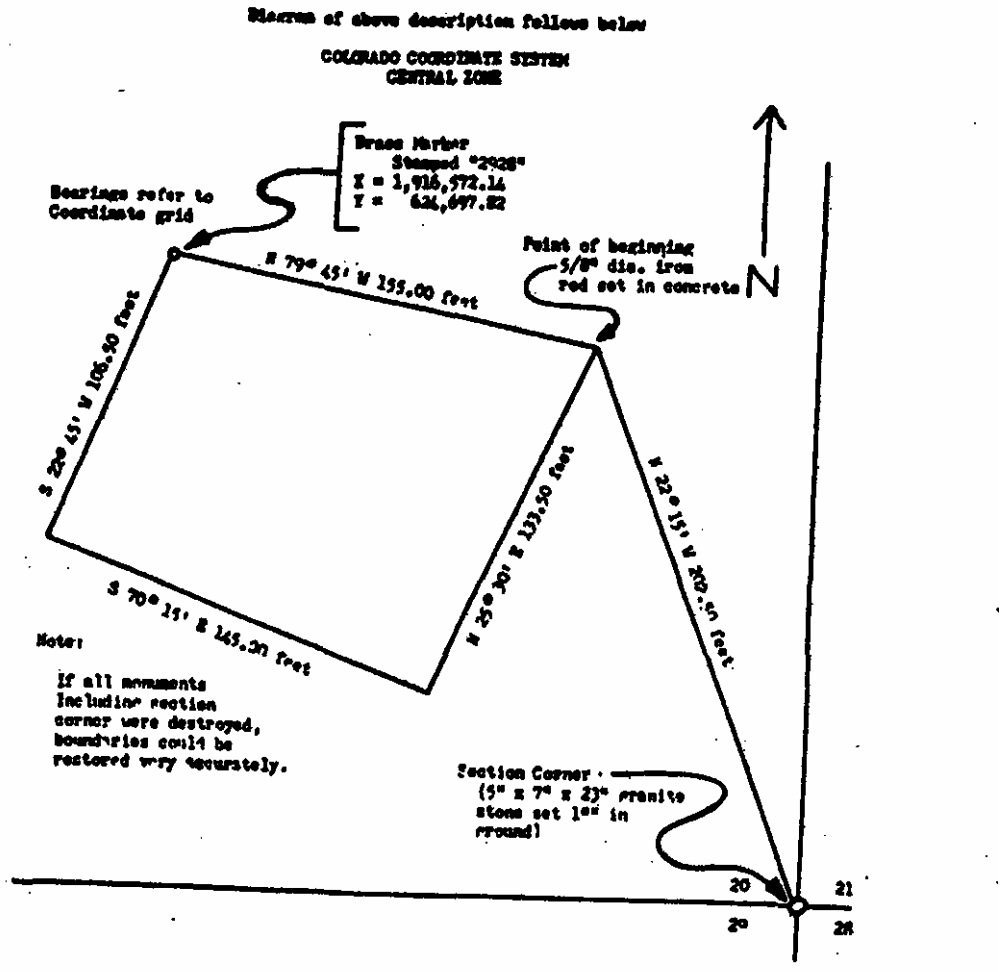
The coordinates used to express a point in any zone of this system are two distances, expressed in number of feet, measured to two decimal places. The east-west direction is known as the "X-coordinate" and a north-south direction is known as the "Y-coordinate." These coordinates conform to those on the "Colorado Coordinate System" of the National Geodetic Survey within the State of Colorado.

Whenever the "Colorado Coordinate System" is used to describe a tract of land in a document that also legally describes the same tract by reference to a subdivision, or to the GSS, the Colorado Coordinates shall be supplemental to the other description. In the event of a conflict between two descriptions, the GSS description shall prevail over the Colorado Coordinates unless such coordinates are upheld by adjudication.

Further information on the Colorado Coordinate System of land description, refer to the statute or consult a professional land surveyor.

Example of a Metes and Bounds Description Using Colorado Coordinate System as Supplemental Information

Commencing at the corner of Section 20, 21, 28 and 29, T 4 S, R 75 W, 6th P.M. and bearing North 22 degrees, 15 minutes West 202.50 feet to the point of beginning which is marked by a 5/8" diameter iron rod set in concrete; thence bearing North 79 degrees 45 minutes West 155 feet to a brass marker set in a granite ledge and stamped "2928," said brass marker having grid coordinates X = l,916,572.14' and Y = 624,697.82' on the Colorado Coordinate System, Central Zone; thence South 22 degrees 45 minutes West 106.50 feet; thence South 70 degrees 15 minutes East 145 feet;, thence North 25 degrees 30 minutes E 133.50 feet to the Point of Beginning.



Any description is legal and valid if it unquestionably identifies the property. The phrase "legal description" refers to one of the types of land description explained in this chapter. These types of descriptions are more precise and accurate than informal description such as street addresses.

Table Of Land Measurement

LINEAR MEASURE	
7.92 inches	= 1 link
12 inches	= 1 foot
3 feet	= 1 yard
25 links	= 1 rod
100 links	= 1 chain
16 1/2 feet	= 1 rod
5 1/2 yards	= 1 rod
40 rods	= 1 furlong
8 furlongs	= 1 mile
66 feet	= 1 chain
80 chains	= 1 mile
320 rods	= 1 mile
8,000 links	= 1 mile
5,280 feet	= 1 mile
1,760 yards	= 1 mile

SQUARE MEASURE	
144 sq. in.	= 1 sq. foot
9 sq. feet	= 1 sq. yard
30 1/4 sq. yards	= 1 sq. rd.
16 sq. rods	= 1 sq. chain
1 sq. yard	= 272 1/4 sq. ft.
1 sq. chain	= 4356 sq. ft.
10 sq. chains	= 1 acre
160 sq. rods	= 1 acre
4,840 sq. yards	= 1 acre
43,560 sq. ft.	**= 1 acre**
640 acres	**= 1 sq. mile**
1 sq. mile	**= 1 section**
36 sq. miles	**= 1 township**
6 miles square	**= 1 township**
1 sq. mile	= 2.59 sq. kilometer

VI. Metric System

Most of the world does its measuring in metes. The metric system is called the International System (IS) of Units, and it is the measurement standard in nearly all countries of the world. The United States is slowly moving toward the metric system.

The metric system progresses logically in units of 10. Measurement prefixes have the same meanings whether measuring length, volume or mass, the most common being, micro-(one-millionth); milli-(one-thousandth); centi-(one-hundredth); deci-(one-tenth); mega-(1,000,000 x the base); kilo-(1,000 x the base); hecto-(100 x the base); deka-(10 x the base).

The basic dimension of the metric system is the meter (approx. 3.28 feet). All dimensions of length may be expressed as variations of a meter: millimeter (mm), centimeter (cm), meter (m), or kilometer (km). To convert between the units, you need only move the decimal point to the right or left.

The basic metric unit of land measurement is the hectare (abbreviated as ha.) a square with each side 100 meters long, covering an area of 10,000 square meters. A hectare is equivalent to 2.471 acres.

U.S. TO METRIC		**METRIC TO U.S.**	
LENGTH			
1 inch	= 25.4 millimeters (mm)	1 millimeter (mm)	= 0.04 inch
1 foot	=0.3 meter (m)	1 meter (m)	= 3.28 feet
1 yard	=0.9 meter (m)	1 meter (m)	= 1.09 yards
1 mile	=1.6 kilometer (km)	1 kilometer (km)	= 0.62 mile
AREA			
1 sq. inch	= 6.5 sq. centimeters (cm2)	1 sq. centimeter	= .16 sq. inch
1 sq. foot	= .09 sq. meter (m2)	1 square meter	= 10.76 sq. feet
1 sq. yard	= .84 sq. meter (m2)	1 square meter	= 1.2 sq. yards
1 acre	= .4 hectare (ha)	1 hectare	= 2.471 acres
1 sq. mile	= 2.6 sq. kilometers (km2)	1 sq. kilometer	= .39 sq. mile

Metric System			
Unit	Abbreviation	Number of Meters	Approx. U.S. Equivalent
Length			
Myriameter	mym	10,000	6.2 miles
Kilometer	km	1,000	.62 miles
Hectometer	hm	100	109.36 yards
Decameter	dkm	10	32.81 feet
Decimeter	dm	.1	3.94 inches
Centimeter	cm	.01	.3973 inches
Millimeter	mm	.001	.04 inches
Area			
Square Kilometer	sq. km or km	1,000,000	.3861 square miles
Hectare	ha	10,000	2.471 acres
Are	a	100	119.6 square yards
Centiare	ca	1	10.76 square feet
Square Centimeter	sq. cm or cm2	.0001	.155 square inches