

**MODEL MINIMUM STANDARDS
FOR THE
PRACTICE OF LAND SURVEYING**

DECEMBER 1993

PREAMBLE

To comply with the purpose of the (identify state, registration statute) which is to safeguard life, health, and property, to promote the public welfare, and to maintain a high standard of integrity and practice, the (identify state board, registration statute) has developed the following "MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING." These standards shall be binding on every person holding a certification of registration to offer or perform land surveying services in this state. All persons registered under (identify state, registration statute) are required to be familiar with, and adhere to, the registration statute and these standards. The "MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING" delineate specific obligations the registrant must meet.

The practice of professional land surveying is a privilege, as opposed to a right. All registrants shall exercise their privilege of practicing by performing services only to the extent of their competence and only then by meeting or exceeding these technical standards.

The "MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING" as promulgated herein are enforced under the powers vested in (identify state enforcing agency). In these standards, the word "registrant" shall mean any person holding a license or a certificate to practice land surveying issued by (identify state registration agency).

Minimum Standards for the Practice of Land Surveying

1. Authority:

Appropriate state code, statute, rule or regulation.

2. Purpose:

The purpose of these standards is to establish minimum technical criteria to govern the performance of surveyors when more stringent specifications are not required by other agencies, contract, etc. Further, the purpose is to assure that the inhabitants of the jurisdiction are provided with competent surveying for the protection of the public welfare.

3. Procedure and Standards:

Whenever a surveyor conducts a land survey of properties a plat showing the results shall be prepared and a copy furnished to the client.

The plat shall conform to the following requirements and shall include the following information:

- A. The plat shall be drawn on any reasonably stable and durable drawing paper, vellum, linen, or film of reproducible quality. No plat or map shall have dimensions of less than 8 1/2 x 11 inches.
- B. The plat shall show the written and graphic scale, acreage, and classifications of the survey (A, B, C, or D). These classifications are based upon both the purposes for which the property is being used at the time the survey is performed and any proposed developments which are disclosed by the client. This classification must be based on the criteria in Attachment A, and the survey must meet the minimum specifications set forth on Attachment B. The scale shall be sufficient to show detail for the appropriate classification.
- C. The horizontal direction of all boundary lines shall be shown in relationship to grid north, state coordinate system, or in lieu thereof to true north, or to such other established line or lines to which the survey is referenced. The horizontal direction of the boundary lines shall be by direct angles, azimuths, or bearings. A prominent north arrow shall be drawn on every sheet. The description of bearing reference system along with the method of obtaining the bearing reference shall be clearly given. (Such as north by Polaris observation; grid north from azimuth mark at station Minter; north by compass using six (6) degrees variation or assumed north based on...).
- D. All monuments natural and artificial (man-made) found or set shall be shown and described on the survey plat. The monuments shall be noted as found or set. All monuments set shall be ferrous metal or contain ferrous metal not less than 1/2 inch in diameter and not less than eighteen inches in length, except however, a corner which falls upon solid rock, concrete, or other like materials shall be marked in a permanent manner and clearly identified by the plat.

Monuments shall be set at all corners of all surveys as required by these standards. Witness corners shall be set whenever a corner monument cannot be set or is likely to be disturbed. Such witness corners shall be set as close as practical to the true corner and shall meet the same physical standards that would be required for the true corner where it is set. If only one (1) witness corner is set it must be set on the actual boundary line or prolongation thereof. Otherwise at least two (2) witness corners shall be set and so noted on the plat of the survey. Monuments shall be identified with a durable marker bearing the surveyor's registration number and/or name or company name.

- E. The plat of a metes and boundary survey must clearly describe the commencing point and show the point of beginning for the survey. The commencing point is a well defined monumented point referenced to the U.S. Public Land (GLO) Survey system or other recorded reference system compatible with appropriate statutes for recording land ownership that is used in a metes and bounds description. The point of Beginning is a well defined monumented point referenced to the U.S. Public Land Survey system or other system compatible with appropriate statutes for recording land ownership that is used as the beginning and ending point in a metes and bounds land description.
- F. Any discrepancy between the survey and the record description, and the source of all information used in making the survey shall be indicated. When an inconsistency is found including a gap or overlap, excess or deficiency, erroneously located boundary lines or monuments, or when any doubt as to the location on the ground of the true boundary or property rights exists, the nature of the inconsistency shall be clearly shown on the drawing.
- G. A description and location of any physical evidence of occupation found along a boundary line including but not limited to fences, walls, buildings, or monuments.
- H. The horizontal length (distance) and direction (bearing or azimuth) of each line as specified in the legal description and as determined in actual survey process.
- I. At least three (3) elements of all circular curves shall be shown. When intersecting boundary lines are nonradial or nontangential, at least the delta, radius, arc, and chord bearing and distance shall be shown.
- J. All information used by the surveyor in the property description shall be clearly shown on the plat including the point of beginning, course bearing, distance, monuments, etc.
- K. The lot and block or tract numbers or other designations, including those of adjoining lots and tract if the survey is within a recorded subdivision. The name and deed references of all adjoining.
- L. Visible encroachments onto or from adjoining property or abutting streets with the extent of such encroachments.
- M. All public and private rights-of-way or easements which are known or observed adjoining or crossing the land surveyed.

- N. Location of all permanent improvements pertinent to the survey, with reference to the boundaries.
- O. A plat or survey shall bear the name, address, date of survey, and signature and seal (either embossed or stamped) of the registered surveyor in responsible charge. This signature and seal is certification that the survey meets minimum requirements of the Standards for Land Surveyors as adopted by the State Board of Registration. Other regulations including the Manual of Instructions for the Survey of U.S. Public Lands and all subdivision laws and regulations of State, Commonwealth, or territory shall be followed.
- P. The following information shown on the plat must be included in a written description to be included with each survey.
 - 1. The commencing point and point of beginning.
 - 2. Sufficient caption to connect the plat and description.
 - 3. Length and direction of all lines.
 - 4. Curve information as described in paragraph I.
 - 5. Type and size of all monuments noted as found or set.
 - 6. Basis of bearings.
 - 7. Surveyor's name, registration number, and date of writing and/or survey.
 - 8. The area of the parcel.
 - 9. The class of the survey.
 - 10. Reference to recorded deed or plat.

4. Definitions:

Definitions will be as listed in the current "Definitions of Surveying and Associated Terms" published by the American Congress on Surveying and Mapping.

5. Standards for Horizontal Control:

- A. Definitions for specific types of horizontal control surveys, along with standards and procedures may be found in National Geodetic Survey (NGS) publications.
- B. Control Surveys that are used to determine boundary lines, including developing coordinates for existing boundary corners, shall meet the Standards contained herein.
- C. Land Information Systems/Geographic Information Systems (LIS/GIS) maps should be built on a foundation of coordinates obtained by an accurate survey.

6. Enforcement:

Surveyors failing to meet these minimum standards will be subject to appropriate disciplinary action by the Registration Board.

Attachment A
Classification of Surveys

- A. Class A Surveys: Surveys of extensively developed properties which require maximum surveying accuracy. This includes but is not limited to surveys of urban business district properties and highly developed commercial properties.
- B. Class B Surveys: Surveys of properties which are subject to costly improvements and justify a high degree of surveying accuracy. This includes but is not limited to, surveys of commercial properties and higher priced residential properties located outside urban business districts and highly developed commercial areas.
- C. Class C Surveys: Surveys of residential and surrounding areas which are apt to increase rapidly in value. This includes, but is not necessarily limited to, surveys of residential areas which cannot be classified as Class A or Class B surveys.
- D. Class D Surveys: Surveys of all remaining properties which cannot be classified as Class A, B, or C surveys. This includes, but is not limited to, surveys of farm lands and rural areas.

CONDITION	D	C	B	A	
	RURAL	SUBURBAN	URBAN	URBAN BUSINESS	REMARKS AND FORMULA
Unadjusted closure (Minimum)	1:5,000	1:7,500	1:10,000	1:15,000	Loop or between control monuments
Angular closure (Minimum)	$30''\sqrt{N}$	$20''\sqrt{N}$	$15''\sqrt{N}$	$10''\sqrt{N}$	N=Number of angles in traverse
Accuracy of bearing	± 5 Min.	± 3 Min.	± 2 Min.	± 1 Min.	Relative to source
Accuracy of distances	0.10 ft. + 200 ppm	0.07 ft. + 150 ppm	0.05 ft. + 100 ppm	0.03 ft. + 50 ppm	100 ppm = 1:10,000
Elevations for boundaries controlled by tides, contours, rivers, etc. accurate to:	$\pm .30$ ft.	$\pm .20$ ft.	$\pm .10$ ft.	$\pm .05$ ft.	Based on NGVD
Location of improvements, structures, paving, etc. (tie measurement)	± 2.0 ft.	± 1.0 ft.	± 0.2 ft.	± 0.1 ft.	
Positional error in map plotting not to exceed: (applies to original map only)	25 ft. 1" = 1000'	10 ft. 1" = 400'	5 ft. 1" = 200'	2 ft. 1" = 100'	Generally 1/40 th inch (National Map accuracy calls for 1/50 th inch)