

# ARIZONA BOUNDARY SURVEY MINIMUM STANDARDS

## Definitions:

**“Arizona Boundary Survey” means any one of more of the following:**

- (a) The marking of boundaries, the setting of monuments, or the restoration or rehabilitation of any monument marking a corner or line that controls real property.
- (b) The determination of the location, on the ground, of any appurtenance which may potentially affect the rights and/or the enjoyment of real property.
- (c) The determination of the position of any monument, reference point, or any other mark, when such monument or mark controls the location of boundaries or rights of ownership in real property.
- (d) The presentation of any type of survey drawings, maps or plats, and/or reports-of-survey or any other documents as related to land boundary surveying, for the purpose of identifying the location of real property.

## Land Surveying Minimum Standards

A land surveyor registered pursuant to the Act shall observe these minimum standards of practice as well as the applicable statutes and regulations of the Board.

1. There shall be a scope of services determined for every surveying engagement.
2. The land surveyor shall obtain and examine the record documents needed to perform the survey as described in the scope of services.
3. If the subject property is described as an aliquot part of, or as a fraction thereof, or referenced to the United States Public Land Survey System, the surveyor shall consult the pertinent United States Public Land Survey System source documents.
4. The land surveyor shall search for physical evidence that could affect the location and/or placement of boundary lines and property corners of the subject property.

5. The land surveyor shall determine the appropriate accuracy and make the required measurements necessary to adequately relate the positions of all apparent evidence pertinent to the boundary of the property. In no case shall the accuracy standard have a relative positional tolerance of more than 0.25 feet, plus 100 parts per million (PPM) with the accuracy given at the 95 per cent confidence level. Positional tolerance is the maximum acceptable amount of positional uncertainty for any physical point on the boundary survey relative to any adjoining physical point on the survey, including the lead-in courses. Positional uncertainty in location, due to random errors in measurement, of any physical point on a boundary survey, based on the 95 per cent confidence level.
6. The land surveyor shall retain documentation necessary to adequately convey the methods and results of any land boundary survey where such results-of-survey were not publicly recorded.
7. In the event of a disagreement with the measurements and/or monumented corner positions of another registrant, the land surveyor must make and document all reasonable efforts to contact the other registrant in an attempt to resolve the disagreement. The other registrant(s) shall make all information relevant to the disagreement available, to explain objections, and afford an opportunity for discussions, explanation and corrections necessary.
8. The land surveyor shall represent the locations, consistent with the best evidence available, of corner positions and boundary lines, as follows:
  - A. If the land surveyor rejects an existing monument the land surveyor shall create a results-of-survey drawing that discloses the evidence, and shall explain in detail, the reason(s) for not accepting the monument. The surveyor shall file the drawing in the office of the county recorder, and provide a copy of the "record of survey" to the client.
  - B. When accepting a found monument of the surveyed property that does not have any record or physical evidence identifying its creator, then where practicable to do so, the surveyor accepting the monument shall affix his/her registration license number to the existing monument.
  - C. In no instance shall the surveyor be required to remove existing monuments unless the installation of a new monument is necessary to preserve the position of the corner. Existing monuments so replaced shall be noted in the field notes, and on the results-of-survey drawing or plat map, and where practical, shall be buried as a memorial alongside or beneath the new monument.
  - D. These minimum monumentation standards are not meant to apply to natural boundaries. These standards recognize that there are land surveys where the placement of monuments is not normally required, such as easement determination surveys.
  - E. Any land boundary survey performed as the basis for any division or partition of land shall cause all boundary corners to be monumented.

9. The following standards apply to establishing, replacing or setting boundary monuments:
  - A. If the monument is at either a Public Land Survey System section or  $\frac{1}{4}$ -section corner, refer to applicable state statutes relative to monumenting those positions.
  - B. All new monuments, including the surveyor's Arizona registration number thereon, shall provide a degree of permanency, consistent with that of adjacent terrain and physical features.
  - C. Whenever and wherever practicable, new or replacement boundary monuments, and witness corner monuments set shall satisfy the following minimum criteria:
    1. The body of the monument shall be of metal or other such durable material.
    2. The body of the monument shall be at least 16 inches in length.
    3. The body of the monument shall be at least  $\frac{1}{2}$  inch in diameter.
    4. The surveyor's Arizona registration number shall be affixed to or clearly stamped into the body of the monument.
    5. The monument shall be magnetically detectable.
  
10. Where the point for a corner monument is such that, for all practical purposes, a permanent corner monument is not established, then at least one of the following two alternative monumentation procedures shall be used:
  - A. **Witness Corner Monument:** Such a monument is used where the boundary corner position cannot be occupied. Such a monumented surveyed point is set on the surveyed boundary line, or a prolongation thereof, and it shall be stamped "WC".
  - B. **Reference Markers:** Where a corner position is impractical to monument directly, or a witness corner cannot be set as described above, the surveyor shall cause to be set at least two Reference Markers. These are not set on the boundary lines and are to be identified as "RM".

11. In addition to sufficient mathematical ties to the controlling monuments of the survey, which enable the survey to be retraced by another surveyor, the surveyor's drawing must also show, as a minimum, the following items:
  - A. A basis of direction or bearings.
  - B. The surveyor's Arizona RLS stamp, with signature and date.
  - C. The surveyor's statement that the survey was performed either by the surveyor or under the surveyor's direct supervision.
  - D. A legend or table that identifies and explains all symbology and abbreviations used.
  - E. A list of pertinent reference documents that were used as a basis for the survey.
  - F. When setting a monument is impractical, the recorded results-of-survey drawing shall detail the reason for not setting the monument and show bearings and distances to the nearest corner, witness corner(s) or reference marker(s).
  - G. A north arrow.
  - H. The scale of the drawing.
  
12. The following criteria shall be adhered to when the surveyor includes any of the following as part of the results-of-survey drawing(s):
  - A. Horizontal and/or vertical control data, when used, shall be noted in detail. Where vertical data is referenced, the surveyor shall also include information about the controlling benchmark(s) and its (their) elevation(s).
  - B. Curve data shall be stated, as a minimum, in terms of radius, central angle, and length of curve, and as otherwise specified by local ordinance. In all cases, the curve data must be shown for the line(s) affected.
  - C. All non-tangent curve data shown must have sufficient additional information to allow them to be verified through mathematical analysis.

- D. When any coordinates are shown on the drawing, such as those relating to the Arizona State Plane Grid Coordinates, Universal Transverse Mercator, or to any modified, or local coordinate system, then the following information shall be included:
1. The data on which the coordinates are based.
  2. The zone(s) if applicable.
  3. Modifications.
  4. The coordinate basis of bearings.
  5. The adjustment factors.
  6. The source data of the coordinates.

13. The land surveyor shall ensure that the appropriate survey drawing(s) is(are) recorded whenever any of the following conditions are encountered:
- A. Any land boundary survey monument found, and incorporated into the new survey, where that monument is not referred to in or by any previously recorded public record instrument.
  - B. Any existing land boundary monument, or found monument, referenced in a previously recorded public document, when the public document fails to adequately identify said monuments.
  - C. Any land boundary monuments are set in conjunction with the new survey.
  - D. Any new land division as defined under state statutes.
  - E. Any difference as measured between the land boundary or property corner monuments, where the new measured distance, as compared to a previously determined (“record”) distance, where such difference exceeds +/- 0.25 feet, plus 100 parts per million (PPM), of the overall distance between the points.

14. When created by a land surveyor, a written property description of a surveyed tract of land must provide information to properly locate the property and distinctly set it apart from all other property.

When the surveyed property's dimensions, boundaries and area are in substantial agreement with an existing recorded written description, then that existing recorded description shall be used.

For new descriptions, the following items and format apply:

- A. The description shall contain, where applicable, a caption, a body, and qualifying clauses.
- B. A metes, a bounds, or a metes and bounds description of an existing aliquot description, is as an additional description of the existing, precedent aliquot description, and shall be so noted as such.
- C. Every Public Land Survey System aliquot description shall contain the applicable county, meridian, township, range and sectional information.
- D. Every platted subdivision lot description shall contain the lot, block, unit (if applicable), name of the subdivision, city (if applicable), county, and recorder's document number.
- E. Every written property line boundary description shall contain the applicable portions of the following:
  - 1. The first part, called the caption, shall contain the applicable information from 14.C and/or 14.D.
  - 2. The second part, called the body, shall contain all of the following attributes that apply:
    - a. A clearly stated basis of bearings, referencing two controlling monuments, which were physically existing at the time the property was surveyed.
    - b. All controlling monuments, noting their physical description, and whether found, set or replaced.
    - c. Sufficient data to enable a mathematical verification of the property being inscribed by the body of the description.
    - d. Where described, curved property boundaries shall contain sufficient information to allow verification of the data by mathematical analysis. Curves are presumed to be circular, tangent curve, all other non-tangent, and/or non-circular curves must be so noted in the description.

- F. Inclusion of complete citations to maps, plats, documents, and other matters of record, which are to be incorporated into and made a part of the description by reference thereto.
  
- G. The description shall be sealed with the surveyor's Arizona RLS stamp, with signature and date.