

Missouri GLO

Missouri Society of Professional Surveyors
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Speaker

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Missouri RSMO Chapter 60

Resurvey of United States land survey--rules.
 60.305. In the resurvey of the lands of the United States public land survey, the surveyor shall observe the following rules:
 (1) The boundaries of the United States public land survey in Missouri are unchangeable;
 (2) The original township, section, quarter-section and other corners established by the original government survey must stand as the true corners which they were intended to represent, regardless of the location indicated by the field notes and plat;
 (3) These corners must be restored at the identical spot where the original corner was located by the government survey, when this can be determined;
 (4) When this cannot be done, the corner is said to be lost and it must be reestablished in accordance with the provisions of this chapter.

Missouri RSMO Chapter 60

Corners original position to be determined.

60.311.

The restoration and utilization of the existent corners of the United States public land survey is a prime objective of every survey. Every means shall be undertaken to determine the position of the original corner before deciding that the corner is lost.

Missouri RSMO Chapter 60

60.315. Lost corners reestablishment — rules.

The following rules for the reestablishment of lost corners shall be applied only when it is determined that the corner is lost: (The rules utilize proportional measurement which harmonizes surveying practice with legal and equitable considerations. This plan of relocating a lost corner is always employed unless it can be shown that the corner so located is in substantial disagreement with the general scheme of the original government survey as monumented. In such cases the surveyor shall use procedures that produce results consistent with the original survey of that township.)

Missouri RSMO Chapter 60

60.315. Lost corners reestablishment (continued)

(1) Existent original corners shall not be disturbed. **Consequently, discrepancies between the new and record measurements shall not in any manner affect the measurements beyond the existent corners; but the differences shall be distributed proportionately within the several intervals along the line between the corners;**

(2) **Standard parallels shall be given precedence over other township exteriors, and, ordinarily, the latter shall be given precedence over subdivisional lines; section corners shall be located or reestablished before the position of lost quarter-section corners can be determined;**

Missouri RSMO Chapter 60

60.315. Lost corners reestablishment (continued)

(3) Lost township corners common to four townships shall be reestablished by double proportionate measurement between the nearest existent corners on opposite sides of the lost township corner;

(4) Lost township corners located on standard parallels and common only to two townships shall be reestablished by single proportionate measurement between the nearest existent corners on opposite sides of the lost township corner on the standard parallel;

Missouri RSMO Chapter 60

60.315. Lost corners reestablishment (continued)

(5) Lost corners on township exteriors, excluding corners referenced in subdivision (3) of this section, whether they are standard or closing corners, shall be reestablished by single proportionate measurement on the line connecting the next nearest existent standard or closing corner on opposite sides of the lost corner;

(6) A lost interior corner of four sections shall be reestablished by double proportionate measurement;

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Single Proportionate Measurement

7-16. The term "single proportionate measurement" is applied to a new measurement made on a line to determine one or more positions on that line.

By single proportionate measurement, the position of two identified corners controls the direction of that line. The method is sometimes referred to as a "tway" proportion, such as a north-and-south proportion or an east-and-west proportion. Examples are a quartersection corner on the line between two section corners, all corners on standard parallels, and all corners occupying intermediate positions on a township boundary line.

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Single Proportionate Measurement

7-17. In order to restore a lost corner on a line by single proportionate measurement, a retracement is made connecting the nearest identified corners on the line. These corners control the position of the lost corner. The lost corner is then reestablished at proportionate distance on the line connecting the recovered corners. Proper adjustment is made on an east and west line to secure the latitudinal curve. Any number of intermediate lost corners may be located on the same plan.

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Single Proportionate Measurement

7-18. Restorations of lost corners of a standard parallel are **controlled by the regular standard corners**. These include the standard township, section, quarter-section, and sixteenth-section corners and meander corners. **Also included are closing corners that were originally established by measurement along the standard line as points from which to start a survey and other corners that have been established by measurement in a retracement or dependent resurvey along the standard line.**

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Single Proportionate Measurement

7-18. Lost standard corners will be restored to their original positions on a base line, standard parallel, or correction line, **by single proportionate measurement on the line connecting the nearest identified regular standard corners on opposite sides of the lost corner or corners.**

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Instructions 2009**

Township Boundaries

7-20. All lost section and quarter-section corners on the township boundary lines will be restored by single proportionate measurement between the nearest identified corners on opposite sides of the lost corner north and south on a meridional line, or east and west on a latitudinal line.

**Manual of Surveying
Instructions 2009**

Closing Corners

7-41. A lost closing corner will be reestablished on the true line that was closed upon, and at the proper proportional interval between the nearest regular corners to the right and left. Restorations of lost closing corners are controlled by the regular corners. These include the corners that were originally established by measurement along the line and other corners that have been established in an obvious careful resurvey or retracement along the line.

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Instructions 2009**

Closing Corners

7-42. Where a single set of corners was established in the survey of a line and closing corners were subsequently established at intersection of section lines on one side, the corners first established generally will control both the alinement and the proportional measurement along the line. The original quarter-section corners nearly always referred to sections on only one side of the line after the closing corners were established from the other side (figure 7-6).

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Closing Corner

Sec. 33 80.00 N. 89° 55' W. 80.00 Sec. 34
 6.50 5.87 6.14
 C C C C C C
 Sec. 4 Sec. 3

Figure 7-6. A single set of corners established the line and subsequent corners were established at intersections.

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Closing Corners

7-43. Where there has been extensive loss of corners, and particularly of the senior corners, the existent or obliterated closing corners may constitute the best available evidence of the line itself. In such a case they should exercise control for both measurement and alinement.

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Closing Corners

7-44. A lost closing corner on a standard parallel or other controlling boundary will be reestablished on the true line that is closed upon by using single proportionate measurement between the nearest regular corners to the right and left of the lost corner. The position of a restored closing corner should be verified by a retracement of the line for which it was designed to mark its terminus.

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Closing Corners

7-45. In **older surveys** the usual policy was to establish closing corners without a retracement of the line closed upon. The corners were established with a tie in one direction only and set at record bearing. In these cases, a recovered closing corner not actually located on the line that was closed upon will determine the direction of the closing line, but not its legal terminus.

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Closing Corners

7-45. (continued)
The new monument in those cases where it is required will be placed at the true point of intersection. An off-line monument in such cases should be marked AM (for amended monument), inverted and buried in place, if practicable, and will be connected by course and distance.

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Closing Corners

7-45. (continued)
The field notes of the closing line must include a full description of the old monument as recovered and a clear statement that the new monument is set at the true point of intersection.

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Closing Corners

7-45. (continued)

When an original closing corner is recovered off the line closed upon and the new monument is established at the true point of intersection, the original position will control in the proportionate restoration of lost corners dependent upon the closing corner.

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Closing Corners

7-45. (continued)

In a like manner the positioning of sixteenth-section corner(s) or lot corner(s) on the closing line, between the quarter-section corner and the closing corner, will be based on the measurement to the original position of the closing corner.

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Closing Corners

7-46. **The quarter-section corners for sections on the side to which the closing corners refer were often not established in older surveys.** The correct positions are as protracted on the plat of those sections. When a new monument is to be established at the protracted quarter-section position, the original position of the section closing corners will control in the establishment.

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Closing Corners

7-46. (continued)

The proportionate measurement position between the original positions of the section closing corners will be moved in a cardinal direction, north or south on a latitudinal line, or, east or west on a meridional line, to the true point on the line.

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Closing Corners

7-46. (continued)

This true point for the quarter-section corner will control the location of the legal subdivisions for the section on the side to which the closing corners refer. These procedures may need to be modified if gross distortions in position or measurement are involved.

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Township Boundaries

7-47. A closing corner established without a retracement of the line closed upon ordinarily is not used as a control corner in restoring a lost corner of the line closed upon. However, where an obviously careful retracement of a line has been made and the field notes state clearly that new monuments were set at the true points of intersection, the monuments become the best available evidence of the position of the line.

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Township Boundaries
7-47. (continued)
In such a case the closing corners will exercise control for both measurement and alinement of the line to the same extent as corners of a junior survey (section 7-23).

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Township Boundaries
7-20.
An exception to this rule will be noted in the case of any exterior the record of which shows a deflection in alinement between the nearest identified corners on opposite sides of the lost corner (section 7-51). (For another exception see section 7-34.)

The control for either restoration should not extend beyond the township corner. If the controlling township corner is lost, that corner will be reestablished first.

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Modified Single Proportionate Measurement
7-34.
An exception to the usual application of single proportionate measurement is occasionally important. There may be persuasive proof of a deflection in the alinement of the exterior, though the record shows the line to be straight.

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Modified Single Proportionate Measurement
7-34. (continued)
For example, measurements east and west across a range line, or north and south across a latitudinal township line, counting from a straight-line exterior adjustment, may show distances to the nearest identified subdivisional corners to be substantially long in one direction and correspondingly short in the opposite direction.

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Modified Single Proportionate Measurement
7-34. (continued)
This condition, when supported by **substantial evidence**, would warrant an exception to the straight-line or two-way adjustment because under the rules for the acceptance of evidence, the evidence outweighs the record. The rules for a four-way or double proportionate measurement would then apply here.

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Irregular Boundary Adjustment
7-51.
Some township boundaries are not established as straight lines and are termed "irregular" exteriors. Parts of the boundaries were surveyed from opposite directions and the intermediate portion was completed later by random and true line, leaving a fractional distance. Such irregularity involves some material departure from the basic rules for the establishment of original surveys.

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Irregular Boundary Adjustment

7-51. (continued)

A modified form of single proportionate measurement is used in restoring lost corners on such boundaries. This is also applicable to a section line or a township line that has been shown to be irregular by a previous retracement (figure 7-7).

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Irregular Boundary Adjustment

7-51. (continued)



Figure 7-7 - Irregular section resulting from the geometrical survey of a township line.

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Senior-Senior Corners— Hiatus, Overlap, or Angle Points

7-32.

On rare occasions the second surveyor patently established a completely separate line creating a hiatus or overlap. Each set of corners then control only its respective line. Where complications develop, the surveyor will report to his or her supervising office the identity and correlation of corners or other evidence recovered before restoring the lost corners.

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Senior-Senior Corners— Hiatus, Overlap, or Angle Points
7-32. (continued)

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Index Correction
7-15.
An index correction for systematic error in measurement should be made in applying the record measurements for two or three-point control (section 7-57) if it is obvious that a more harmonious relation to the representations of the approved plat or plats would be thus accomplished.

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Index Correction
7-15. (Cont.)
Experience and good judgment are required in applying an index correction. If the original survey was carelessly executed, no definite standard of length or direction of lines can be set up as representing that survey. On the other hand, the work may have been reasonably uniform within its own limits, yet inaccurate with respect to exact base standards.

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Index Correction

7-15. (Cont.)

It is only a demonstrable and consistent excess or deficiency of the original work, determined within practical limits, that can justify the application of an index correction. **If such consistency is not established the only rule that can be applied is that a record of 80.00 chains in distance means just that by exact standards, true horizontal measurement.**

Missouri RSMO Chapter 60

60.315. Lost corners reestablishment (continued)

(7) All lost quarter-section corners on the section boundaries within the township shall be reestablished by single proportionate measurement between the adjoining section corners, after the section corners have been identified or reestablished; and

(8) Where a line has been terminated with a measurement in one direction only, a lost corner shall be reestablished by record bearing and distance, counting from the nearest regular corner, the latter having been duly identified or reestablished.

Missouri RSMO Chapter 60

60.321. Lost corners, monumentation, procedure — violation deemed misconduct.

For the purpose of perpetuating the corners of the United States public land survey, every surveyor who reestablishes a lost corner or restores an existent corner shall monument the corner and shall file an instrument showing such reestablishment or restoration with the Missouri department of agriculture, in accordance with the specifications and procedures adopted by the Missouri department of agriculture. Any surveyor who willfully and knowingly fails to perpetuate corners in accordance with this section is guilty of misconduct in the practice of land surveying.

Missouri RSMO Chapter 60

60.326. Law not to affect previous surveys.

This chapter shall in no way be construed either to affect the legality of surveys legally made and recorded prior to September 28, 1979, or to prevent surveyors from taking advantage of any corners legally established prior to September 28, 1979.

Missouri RSMO Chapter 60

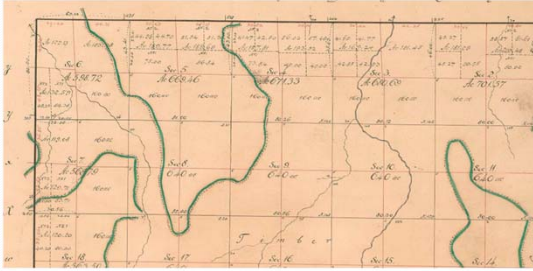
60.331. Quarter-sections, how established.

In subdividing a section into quarter-sections, the land surveyor shall run straight lines from the established quarter-section corners to the opposite quarter-section corners. The point of intersection of the lines thus run will be the corner common to the several quarter-sections, or the legal center of the section.

Missouri RSMO Chapter 60

What happens when this is not possible?
Let's look at the township Plat for T48N, R3W

Missouri RSMO Chapter 60



Missouri RSMO Chapter 60

60.335. Quarter-quarter sections, how established.

In subdividing a quarter-section into quarters, the land surveyor shall:

- (1) First, establish the quarter-quarter, or sixteenth-section corners at points midway between the quarter-section and section corners or the center of the section, except on the last half mile of the lines closing on township boundaries, where they should be placed by proportionate measurement, as shown on the official government plat;
- (2) Second, the center lines of the quarter-section will be run straight between opposite corresponding quarter-quarter, or sixteenth-section corners on the quarter-section boundaries. The intersection of the lines thus run will determine the legal center of the quarter-section.

Missouri RSMO Chapter 60

60.341. Fractional sections, how established.

In subdividing a fractional section or quarter-section, the land surveyor will run his lines from properly established quarter-section or quarter-quarter-section corners, as the case may be, with courses governed by the conditions represented upon the official government plat, to the lake, watercourse, grant boundary, state line or other irregular boundary which renders such land fractional.

Missouri RSMO Chapter 60

60.345. Corners of quarter-sections south of township line, east of range line, how established.

The quarter-section corners of sections south of the township line and east of the range line, and not established by the original government survey will be established according to the conditions represented upon the official government plat using single proportionate measurement **between the section corners belonging to the same section as the quarter-section corner being established**, the section corners having first been identified or reestablished. The proportional position shall be offset, if necessary, in a cardinal direction to the true line defined by the nearest adjacent corners on opposite sides of the quarter-section corner to be established.

Evidence

Existent, Obliterated and Lost Corners

Obliterated Corner

An obliterated corner is an existent corner where at the corner's original position, there are no remaining traces of the monument or accessories, but at whose position has been perpetuated, or the point for which may be recovered, by substantial evidence from the acts or reliable testimony of the interested landowners, competent surveyors, other qualified local authorities, or witnesses, or by some acceptable record evidence.

An obliterated corner position can be proven by substantial direct or collateral evidence. When there is both direct and collateral evidence the direct evidence will be given more weight.

Evidence

Existent, Obliterated and Lost Corners

Existent Corners (cont.)

The evidence should be looked in light of:

- (1) The charter and dimensions of the monument in evidence should not be widely different from the record.
- (2) The markings in evidence should not be inconsistent with the record.
- (3) The nature of the accessories in evidence, including size, position and markings, should not be greatly at variance with the record.

Keep in mind:

- (1) Allowance for ordinary discrepancies
- (2) Look for patterns of discrepancies.

Evidence

Existent, Obliterated and Lost Corners

Existent Corners (cont.)

(3) Evidence of less than workmanlike care in the original survey in compiling the record.

- Erroneously recorded dimensions
- Transposed or interchangeable directions or distances
- Misidentified tree species or monument type
- Inconsistencies in reporting topographical features

No set rules can be set down as to what is sufficient evidence.
All means should be exhausted in regard to restoring the corner.

Evidence

Existent, Obliterated and Lost Corners

Lost Corner

Only when every means of identifying the original position of a corner has been exhausted shall a corner be considered to be lost. A lost corner is one whose original position cannot be determined by substantial evidence, either from traces of the original marks or from acceptable evidence or reliable testimony that bears upon the original position and whose location can be restored only by reference to one or more independent corners.

If substantial evidence of the position of the original corner exists, it is an existent or obliterated corner. If the corner is truly lost then it must be properly reestablished.

Evidence

Topographic Calls

Topographic Calls

The proper use of topographic calls of the original field notes may assist in recovering the locus of the original corner. This evidence may merely disprove other questionable features or be a valuable guide in arriving at the immediate vicinity of a line or corner. At best a topographic call or calls can verify or disprove questionable evidence of the original monument or its accessories. In rare cases, they may serve as substantial evidence to fix the position of a point, line or corner. Topographic calls may be poorly recorded or fabricated.

Evidence

Line Trees

Line Trees

Under the law (federal and Missouri), a definitely identified line tree with the distinguishing marks is a monument of the original survey. It is properly used as a control point in the reestablishment of lost corners by the appropriate method of proportionate measurement and treated as a recovered corner. It becomes an angle point on the true line.

Problems can arise where line trees were improperly established on a random line and recorded in the field notes rather than on the true line. Having said this, the most probable location of the true line is on a straight line between the corners.

Evidence

Collateral Evidence

Collateral Evidence

It is generally held that the claimant, entryman, or owner of lands has located his or her lands by the good faith location rule if such care was used in determining the boundaries as might be expected by the exercise of ordinary intelligence under existing conditions. Local monuments must be analyzed for good faith location. Lack of good faith is not necessarily chargeable if the entryman has not located himself according to a rigid application of the rules laid down for the restoration of lost corners where:

Complicated conditions involve a double set of corners, both of which may be regarded as authentic.

There are no existing corners in one or more directions for an extensive distance.

Evidence

Collateral Evidence

Collateral Evidence (cont.)

Existing marks are improperly related to an extraordinary degree.

All evidence of the original survey or prior resurvey that have been adopted by the entryman as a basis for his or her location have been lost before the resurvey is undertaken.

Acceptance of a local point by neighboring claimants used for the control of the location of claims very often carries with it the necessity for a consideration of its influence in the matter of the acceptability of such locations under the good faith rule.
