

THE PURPOSE OF MEASUREMENTS IN BOUNDARY SURVEYS  
(THE ETERNAL SURVEY QUESTION: HOW CLOSE IS CLOSE  
ENOUGH?)

By

**Norman Bowers, P.S. & P.E.**

**Steven S. Brosemer, P.S.**



**Figure 1**

Surveyors are all about measurements. We are presumed by almost everyone to be expert measurers. Our field crews spend most of their time measuring whether construction staking, topographic or boundary surveys. Since measuring is such a

big part of surveying, it is easy for a surveyor to over emphasize measurements when evaluating evidence. This article concerns the role and function of measurements in boundary surveys.

When surveyors talk at conferences it is not unusual to be discussing acceptance of existing bars and hear the question “How close is close enough?” or “What is the acceptable difference between recorded and measured distances that a monument will be accepted?” or “How far off is too far?” If you have always wondered about how close is close enough this article will give you that answer.

As professionals we are required to know and follow laws, regulations and rules that apply to a particular surveying situation. In this case we are looking for guidance on accepting and rejecting existing monuments. Surveyors should first look to statutes for guidance. There is problem though, as Kansas statutes offer no guidance on measurement tolerance. Next we look at our minimum standards. Kansas Minimum Standards only specify an accuracy standard for the measurements we make, and nothing is mentioned about measurements as it relates to acceptance of existing monuments. Lacking statutes and standards, we must then turn to legal precedent in case law for guidance. Case law is hard for a surveyor to check, so we will first check some surveying texts.

*On Surveying and Boundaries* by Clark there is no mention of measurement tolerances. In *Boundary Control and Legal Principles* by Brown there is no mention of measurement tolerance. However, in *Evidence and Procedures for Boundary Location, 5<sup>th</sup> Edition* by Robillard, Wilson, and Brown, Chapter 6 concerns itself with measurements as evidence. In Chapter 6 there are nine principles listed and although none of the principles list measurement tolerance there is some guidance in Principle 1 and Principle 6. PRINCIPLE 1. *By law, either by statute or by case law, there is **no error** in an original measurement that created the original line or bearing.* PRINCIPLE 6. *Measurements **may** be used to prove the validity of corners and monuments. Such monuments, to be acceptable, should be **within reasonable proximity** of the record measurements.* In explaining Principle 6, it is stated: “Measurements may be used in conjunction with other forms or classes of evidence to prove and then accept or reject found monuments. Although survey law does permit the total reliance on measurements in the event that a surveyor determines that a corner is a lost corner, surveyors should also realize that **measurements are but one form of evidence** and should be used in conjunction with all other found evidence.....A surveyor who needs his or her ego deflated need only reflect on the fact that in the matter of interpreting deeds the courts have placed measurements very low on the evidence scale.” No answer on how close is close enough was found in surveying text.

Boundary disputes seem fairly common so a surveyor might think that courts have decided how close is close enough. Well, if you are looking for distances in court cases the smallest dispute to reach the Kansas Supreme Court was 26” on a city lot in Oskaloosa (30 Kan 537 Critchfield v Kline), but this wasn’t even a case involving surveying. Court cases are all about evidence used to establish facts. In boundary cases measurements are just one form of evidence. We could not find one Kansas Supreme Court case where the accuracy of measurements was an issue.

It is fair to say that there is no numeric distance in the surveying literature that attempts to quantify how close is close enough. How close is close enough is not a question that the surveyor should be asking anyway because it misses the essence of boundary surveying. How close is close enough infers that you are just a measurer finding how good the previous surveyor measured, and if it wasn’t good enough then you feel justified in rejecting their work. That is not boundary surveying.

How close is close enough to reject a bar, is the wrong question. The basis for the rejection of any monument is that it is not at the original location of the original monument. If, after considering all the evidence, we are unable to determine the original location we are then to consider the reputation of the bar. Have the land owners accepted the bar by erecting improvements based on the location? Perhaps other surveyors have accepted the bar and established other lines based on the existing bar. If you reject a bar and set another marker, you need to ask yourself a few questions. How will I get surveyors to use my bar? How will I get land owners to accept my bar? Do I really want to make the surveying profession look silly (see figure 1)?

We agree with this quote by John Stahl: *“The decision to reject a monument position is not dependent upon the method used by the surveyor who placed it or its proximity to the “true” or “mathematical” or “correct” corner position. Its reliability and its dependability are measured by the amount of reliance or the number of dependents who have actually utilized the monument. It depends upon the amount of faith placed upon that monument by the landowners. It depends upon the stability of the lines intentionally created in reliance upon the monument. These factors are not ones of measurement or quantity. These factors are ones of **intent and purpose.**”* One of the key points in this quotation is the reliance of the land owners on the monument. We should always be careful when we reject a monument that has been relied on by land owners, and be careful in accepting a monument that has not been relied on. Justice Frank Clark, in his book *On Surveying and Boundaries*, said it this way: *“Where a survey is once made and **parties have acted on the strength of the surveyor’s lines**, property rights have arisen which cannot be taken away without the consent of the owners, regardless*

*of the errors committed by the original surveyor. It is the extensive duty of the retracing surveyor to see what the first surveyor did, not what he should have done. No matter how inaccurate the original survey may have been, it will be conclusively presumed to be correct, and if there is error in the measurements or otherwise, such error is the error of the last surveyor. Hence, the surveyor will, at all times, keep this presumption in mind and conform his acts thereto.*” This is the same as Principle 1 in Chapter 6 of Robillard, Wilson and Brown’s book cited earlier.

There are so many court cases that tell surveyors not to reject monuments based on measurements that it is hard to pick out one for this article. Since so many surveyors incorrectly want to re-subdivide a section that has already been subdivided we chose an Oregon court case dealing with a center of section that was not set in accordance with statutes. The Oregon court looked to Michigan law and the case of Adams v Hoover and quoting the Michigan court with approval, the Oregon court stated: The court began its analysis by stating that *“public policy clearly favors consistency in ascertaining boundary lines, especially where, as here, a multitude of boundaries have been established in reliance upon the [center post set in the 1950 survey].”* It then quoted the generally recognized principle that *“the original survey in all cases must, whenever possible, be retraced, since it cannot be disregarded or needlessly altered after property rights have been acquired in reliance upon it.”* The court effectively regarded the county’s survey as the first to locate the center of the section, and as such, to be an original survey making the post marking the center to be an original monument. Consequently, to locate the center of the section, the same rule applied that would apply to relocating a “lost” monument: *“The question is not how an entirely accurate survey would have located the lots, but how the original survey stakes located them.”* Citing the *“public’s need for finality and uniformity of boundaries and land titles”* and observing that any other approach *“could unsettle boundaries throughout the entire Section[,]”* the court held that the 1950 survey *“should be left in repose”* and given legal effect. *Dykes v. Arnold, 129 P.3d 257 (Or. Ct. App. 2006).*

We now need to discuss the proper role of measurements. There is no doubt that the measurements that we make performing a boundary survey should comply with the minimum standards. Quoting from the minimum standards: *“The relative precision shall meet or exceed the following: The true horizontal distance between any two points whose positions are stated relative to each other, whether directly or indirectly by calculation, shall not differ from the reported distance by more than 1 part in 10,000 plus 0.10 feet.”* Measurements are used to determine where to look for monuments and determine if the monument has been displaced or moved (that does happen). Measurements alone are not used to reject or find fault with a

previous survey but to accurately show by today's measurements the location of the monuments. We illustrate this on the plat by showing the measured and record measurements. The last surveyor will never exactly agree with the original surveyor's distances and bearings, and so the current measurements will never exactly match the legal description or plat. However, it is still the retracing surveyor's job to stake the boundary set by the previous surveyor if relied on by the land owners. One exception (and possibly the topic of another article) is the bona fide prior rights of an adjoiner. The late J.H. Brosemer, KS PS 82, used to ask: "Do you have bad ground or bad paper?" One question we would like to ask in closing: Are you a Professional Surveyor or a Land Description Staking Technician?