

# Results of Survey of Section 12, Township 4 North, Range 1 East

## AVAILABLE WRITTEN AND RECORD DOCUMENTATION

The Manual of Instruction for the Survey of Public Lands - 1973, provides that certain procedures must be followed in determining whether a Corner location is properly represented by an object, or monument. An Existing Corner is one that can be verified by the monument, its accessories, description, position or other evidence, as to be the original monument to the corner.

Within Section 12, Township 4 North, Range 1 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona, only the Southwest Corner appears to meet this criteria.

With regard to other corners within Section 12, though evidence of the original monument has been obliterated with time and as a result of various improvements, their location lays without apparent dispute, and, as will be shown, all fall within relatively reasonable tolerances when compared to the original measurements from the Original Government Record.

In verifying the location of a corner, it is first necessary to determine about where that corner would be found. It is reasonable to assume that any given Surveyor, regardless of equipment, would be relatively consistent in his measurements. There are, of course, anomalies, such as exceptionally long measures for given lines when obstructions, such as dense brush, boulders or hills, prevent a direct measurement. The first consideration, however, would be that all measurements were direct and unimpeded.

One of the factors that must be considered in an error analysis is the length of the chain, or the measurement distance of the original Surveyor. A comparison can be made of the measurements of record for each mile and/or half-mile with those measured with current accurate measures, made with modern equipment. In this instance, a GPS system was utilized omitting the need for any consideration of obstructions. The following table demonstrates the original measurements and those made in conjunction with this Survey.

Line - Identifies the Sectional Line of the Section;  
Government Notes - the Record Distance, as measured by the Original Government Surveyor;  
Measured Length - Length of Line Measured by this Survey;  
Chain Length - Measured Length divided by Record distance - resulting in what the apparent length of the Original Chain measured.

Line	Government Notes	Measured Length	Chain Length
South Line	80.04 chains (5282.64 feet)	5267.72 feet	65.81 feet
West Line	80.00 chains (5280.00 feet)	5278.93 feet	65.99 feet
North Line	80.09 chains (5285.94 feet)	5271.83 feet	65.82 feet
East Line	80.00 chains (5280.00 feet)	5279.94 feet	66.00 feet

The greatest variation of the record length of the mile versus the measured length is 14.92 feet. This is a variation of the length of a 66 foot standard Gunter's Link Chain which is in error 0.19 feet (2 1/2-inch) in its length. The maximum discrepancy could be anticipated, barring other influences, that the greatest error that would be encountered would be 14.9 feet in a mile, or 7.5 feet in a half mile. This, then, would become the standard by which a first analysis of any corner would be made. Anything within this range would not induce concern, at least in terms of measurement. Anything outside of this range would, of course, raise a question and impose a necessity to substantiate the corner by other means of corroboration.

Based upon the field portion of this Survey, all section corners and 1/4 corners fall within this criterion, with a single exception, which deviates only 0.1 feet (approximately 1 1/4-inch). The deviations from the anticipated measurements are as follows:

Line	Government Notes	Measured Length	Chain Length
East half of South	40.02 chains (2641.32 feet)	2634.02 feet	65.82 feet
West half of South	40.02 chains (2641.32 feet)	2633.70 feet	65.81 feet
South half of West	40.00 chains (2640.00 feet)	2639.55 feet	65.99 feet
North half of West	40.00 chains (2640.00 feet)	2639.28 feet	65.98 feet
West half of North	40.05 chains (2643.00 feet)	2635.33 feet	65.80 feet
East half of North	40.04 chains (2642.64 feet)	2636.50 feet	65.85 feet
North half of East	40.00 chains (2640.00 feet)	2636.31 feet	65.91 feet
South half of East	40.00 chains (2640.00 feet)	2643.63 feet	66.10 feet

It can be concluded that all of the monuments recovered, and accepted, provide a reliable indication of the location of the Corners established in the original government Survey.

### The North Quarter Corner

There is another monument at the North Quarter Corner that has existed for some time and has been assumed, by some, to mark the location of said North Quarter Corner. Previous calls or descriptions of this corner refer to "stone", this approximate location is marked, as of the date of the field portion of this Survey, with an iron rod with a cap marked "LS 21081".

A comparison of the measurements to this location yields a set of values that fall well outside of that which should be considered acceptable.

The measurement of this nominal mile indicated that the original chain calibrated to 65.82 feet. This would leave a potential discrepancy at about 14 feet.

### Repeating the above comparison:

Line	Government Notes	Measured Length	Chain Length
West half of North	40.05 chains (2643.00 feet)	2635.33 feet	65.80 feet
East half of North	40.04 chains (2642.64 feet)	2636.50 feet	65.85 feet

And, substituting the values to the "stone", the results now become:

Line	Government Notes	Measured Length	Chain Length
West half of North	40.05 chains (2643.30 feet)	2612.02 feet	65.22 feet
East half of North	40.04 chains (2642.64 feet)	2659.81 feet	66.43 feet

This leaves a substantial disparity in a line that was measured two times during the course of the original Survey, and the North Quarter Corner set at a mid point on the line with a difference of over 48 feet between the lengths of the two supposed equal lines. The actual values are well outside of the anticipated error.

In order to ascertain which corner, or corners were being utilized to conduct surveys within the Section, an effort was made to collect all Survey (LS) numbers indicated on all of the corners bearing such number which were located during the field portion of the Survey. A search of the Public Record developed a number of Recorded Surveys, some were Record of Survey maps, and others were Minor Lot Divisions.

An attempt was made to contact as many as possible of the Surveyors identified by either numbers acquired from set corners during the field portion and those who had prepared any of the Recorded Surveys.

All of the Surveyors contacted were willing to discuss the apparent problem within the Section. Of these, however, only one had seen the stone that has been described as the North Quarter Corner. This Surveyor stated that he did not take notice of any markings on the stone.

Other Surveyors admitted perplexity over which was the correct corner. As at least two stated, it was easier to go along with the flow and utilize the Stone and the Center of Section location that is currently marked with the Cotton Picker handle. Some offered that they had first considered using the correct corner, then, realizing that a number of recent Surveys had been conducted using the Stone, opted to be consistent with the apparent majority.

Of all of the Surveyors spoken with, none acknowledged comparing their measurements with the Government Record. Only the Surveyor who performed Surveys in Section 1 had consulted the original record.

The earliest Survey, within the extent of this research, was a Survey dated November 18, 1980, by J. D. King. This Survey was of a portion of Section 1, and which included the entire boundary of Section 1, which South line is common to the North line of Section 12. This Survey indicates "S 1/4 Corner, Section 1, Found Stone (1.5' Below) used by William Bartlett, March 1954." This Survey also shows "Found 1" Pipe on line & 23.7' E. of the S 1/4 Corner." It appears that Bartlett, and King, determined the Westerlymost corner (Stone) to be the Quarter Corner. This Survey also indicates that the Center of Section 1 is marked by a "stone", and that there is another "stone" 12.25' East of this "stone". The center of Section never having been set as a part of the Government Surveys lends as much credibility to the "stone" at the South 1/4 Corner as it does to the two stones at, or near, the Center of Section. Likewise, at the Northwest Corner of Section 1, this Survey shows a 1/2" iron pipe marking the Corner, and a "stone" 26.4 feet West of the iron pipe. There is no description of any markings on the stone, or any other evidence that would induce one to conclude that any one stone should have weight over another. This seems to establish that the mere existence of a "stone" is, in no way, indicative of a "stone" set by the original Government Surveys. Nothing hereon would approach satisfying the direction provided by the "Manual" with regard to restoring corners in their proper location.

At this time, there are two corners marking the location of the North Quarter Corner:

January 26, 1987 - Sunrise Land Surveying Co., Inc. "Results of Survey for Jerry & Sandy Rogers", Book 307, Page 16, M.C.R. shows "1" Pipe at South 1/4 Corner, shows Southeast Corner "Brass Cap in HH", shows East 1/4 Corner "Brass Cap", shows Northeast Corner "Brass Cap in HH", shows West 1/4 Corner "Brass Cap", shows Center of Section at 3/8" RBR. The corners are shown by symbol only. No call is made for either of the monuments in these locations. The dimension from West 1/4 Corner, East 1/4 Corner and Northeast Corner reflect, within very reasonable tolerances, position consistent with the Easterlymost (2" iron pipe) Center of Section and North 1/4 Corner (City of Peoria Brass Cap). The Southwest corner describes original government corner, "Fd. Painted Stone w/ chiseled mark buried in sand". Note on Survey reads, "Basis of Bearing USGLO Plat as officially filed on May 20, 1895 East line of Sec. 12, T4N, R1E, G6SRBM". This is the only survey found that makes any reference to the original Government Survey, and the only Survey that describes, in any detail, a recovered "stone". This is the only Survey that indicates that he researched the original Government Record.

1995, May 6 - Bravo Alpha, Inc., "Lot Division & Record of Survey", Book 397, Page 43, M.C.R., calls Center of Section 12 "Fnd. 3/4" I.P.", being the Westerlymost corner. No call to 2" iron pipe. No reference to Original Government Survey.

1995, September - Alcocer Land Surveyors - "Minor Lot Division", Book 405, Page 45, M.C.R., shows, at the Center of Section, "Fd. 3/4" Pipe, 0.63' S" and "Fd. 2" Pipe 12.11' E, 0.10' N.", shows, at the "N 1/4 Cor. Sec. 12, Fd. Stone". No reference to Original Government Survey.

At this time, the 2" iron pipe appears in the written record.

1995, September - Alcocer Land Surveyors - "Minor Lot Division", Book 419, Page 13, M.C.R. shows "Fd. 3/4" Pipe, 0.63' S" and "Fd. 2" Pipe 12.11' E, 0.10' N. No call for North 1/4 Corner. No reference to Original Government Survey.

1995, October 31 - Alcocer Land Surveyors - "Minor Lot Division", Book 405, Page 45, M.C.R. shows "N 1/4 Cor. Sec. 12, Fd. Stone". No reference to 1" iron pipe, at Center of Section, shows "Fd. 3/4" Pipe, 0.63' S" and "Fd. 2" Pipe 12.11' E, 0.10' N. No reference to Original Government Survey.

1996, January 12 - Clouse Engineering ALTA Survey indicates South quarter corner Section 1 at distances comparable to the Easterlymost (1" iron pipe) North Quarter Corner, which was subsequently replaced with the City of Peoria Brass Cap. No reference to Original Government Survey.

1996, April 5 - The Harrison Group, William B. Showers, Job 96022, "North Quarter Section Corner Section 12, Found 1" iron pin." At the Center of Section, a symbol is shown but no call for any found evidence. Dimensions along East-West mid-section line support the location of the 2" iron pipe. No reference to Original Government Survey.

1997, September 17 - Southeastern States Surveying - "Minor Land Division Map", Book 450, Page 06, M.C.R., shows "N. 1/4 Cor. Sec. 12, Fd. Stone" at Westerlymost location. No reference to the 1" iron pipe at North Quarter Corner, shows "Cen. Sec. 12, Fd. 3/4" Pipe", at Westerlymost location. No reference to 2" iron pipe at Center of Section. No reference to Original Government Survey.

1997, December 2 - Plat for TerraMar, Book 455, Page 41, M.C.R. - Coe & Van Loo - Shows "Fd. 3/4" Iron Pipe" as South quarter corner Section 1, Township 4 North, Range 1 East. Line West calculates to 2635.44'. Line East shows as 2636.51'. This agrees with Clouse Survey (January 12, 1996, above) for location of corner. No reference to Original Government Survey.

1998, October 30 - Martin Engineering & Surveying, Inc., "Minor Land Division Map for S 1/2, NW 1/4, SE 1/4, Section 12, T. 4 N., R. 1 E.", Book 483, Page 47, M.C.R. Note on face of Survey says, "The Metes and Bounds information shown around the SE 1/4 of the Section was obtained from the Harrison Group, (Job Number 96065, dated 9/30/96) and was field verified by Martin Engineering & Surveying, Inc." Shows "Center Section 12 (Nothing Found)", and "Found 2" Iron Pipe on & 11.90' East", and, "Found 1/2" Iron Pipe (Loose) approximately 1' South & 0.20' West". No reference made to either corner at North Quarter Corner. No reference to Original Government Survey.

1999, March 31 - The Harrison Group, Ronald G. Reimer, Job 96022, Ambiguous note: "Found BCH NB9'52'42"E, 23.77' from Stone, previously found & Accepted on Original of Record." It is not clear whether this corner currently existed, was perpetuated or was found on other surveys. No reference to any corner existing at point indicated, at the Center of Section, the notes reflect "Found 1/2" Rbar 1.19' S & 0.17' W" and "Found 2" Pipe 0.02' S & 11.97' E". East-West center section line distances differ from Survey of April 5, 1996 (West 2622.18' & East 2647.06'). No reference to Original Government Survey.

1999, April 15 - Superior Surveying Services, Inc., "Minor Land Division Map", Book 499, Page 09, M.C.R. - shows "N. 1/4 Cor. Section 12, Fd. S.L.D. Stone" No reference to 1" iron pipe. Also shows "Center of Section 12, Fd. 1" Pipe 1.10' S, & 0.12' W". No reference to 2" iron pipe. No reference to Original Government Survey.

1999, May 27 - The Harrison Group, Ronald G. Reimer - "Results of Survey", Book 503, Page 10, M.C.R. shows "N 1/4 Cor. Sec. 12, Fnd. Stone". No reference to 1" iron pipe. At Center of Section, shows "Fnd 1/2" RBR 0.25' E", and "Fnd. 2" I.P. 0.02' S & 11.90' E", and "Fnd. 1/2" I.P., 1.19' S & 0.18' W". No reference to Original Government Survey.

### EVALUATION OF THE WRITTEN RECORD

By the record above, it would appear that, if the recorded or otherwise sealed surveys are a reflection of all of the facts, research and evidence of the preparation of the documents, there was a failure to conduct as thorough an investigation as is required by the "Manual". It is apparent, by the record, that a 1 inch iron pipe existed at the North Quarter Corner since before 1980. Likewise, the existence of a 2" iron pipe has existed at the Center of Section since before 1995. The material utilized for this corner, i.e. 2" iron pipe, would indicate the likelihood of the corner being more than twenty years old.

A failure to be more specific in the identification of the "stone" at the North Quarter Corner leaves little in the written record which might help to establish why this monument should be accepted as the North Quarter Corner. As stated in the "Manual", "the need for corroborative evidence is therefore in direct proportion to the uncertainty of any feature in doubt or dispute."

It is understood that, should proper identification of this stone be made, the stone may be accepted as the North Quarter Corner, exclusive of other inconsistencies. It was necessary to attempt to recover the stone and determine if the identifying marks could be discerned.

### NORTH 1/4 CORNER FIELD INVESTIGATION

A more thorough investigation was made in an effort to locate the "stone" at the North 1/4 Corner of Section 12, Township 4 North, Range 1 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Having gathered available documentary and verbal evidence as to the location, a field investigation of the North Quarter Corner was made on March 30, 2000.

Still in place was the Brass Cap, marked "City of Peoria", which is set in concrete base just under 2 feet in diameter. The concrete is scribed with lines running away from the Brass cap in each of the cardinal directions.

To the West, at 23.31 feet, and lying 0.06 feet South of a line to the Northwest Corner of Section 12, is an iron rod with a cap marked "LS 21081".

Both corners are located approximately ten feet South of the South edge of pavement for Happy Valley Road. The ground at this location appears to be very close to natural ground level, though the earth has been modified as a result of the construction of the paved roadway.

The January 1996 Clouse Survey (Job 950111) indicates a dirt roadway with the South 1/4 Corner of Section 1 (North 1/4 Corner of Section 12) situated in the center of a dirt roadway. This would suggest that an excavation might yield evidence of that dirt roadway. With this in mind, the existing iron rod (LS 21081) was properly referenced and an excavation commenced to determine if the stone called for, or any evidence of that stone, was still in existence.

The excavation was conducted in cuts of approximately two inches. At each level the strata was evaluated and a search made for any evidence of previous material marking this Corner location.

At just below two inches, the top of a 60d nail, with its head bent, was found situated abutting the iron rod.

At from 4 to 8 inches, a change in material was encountered. Large stones (approximately 1/2 inch to 1 1/2 inch in size), along with pieces of asphaltic material. This evidence what was probably near surface at the time of the dirt road (i.e. 1996). The iron rod being at 23.3 feet west of the Brass Cap, the center of the excavation was located about 0.4 feet west of the location of the iron rod. The excavation was approximately 0.75 feet East and West of this center (1 1/2 foot across) and 0.5 feet North and South of this center (1 foot across) and was rectangular in shape.

At approximately 14 inches the strata could be identified as being very consistent, with no evidence of previous excavation and backfill (no conical strata lines indicating backfill). However there were smaller white particles which may have been backfill from a larger excavation.

At about 18 inches, the material changed to a soft sandy-clayey material, very consistent and very easily excavated. There appeared to be no irregularity to the surface of this strata which might indicate previous excavation. The appearance was that this material had remained undisturbed. At this point, the iron rod was removed. It measured 18 inches in length.

The excavation continued to a depth of approximately 26 inches (18 inches below the apparent dirt road - natural level). The excavation was clean and another evaluation of strata did not provide any indication of irregularity which might indicate previous excavation, or the existence of backfill material which would be expected if a larger stone were removed and natural filling were to occur.

It was concluded, as a result of this excavation, that there is no evidence remaining of a stone at this location. It is inconclusive as to whether a stone ever existed at this location.

The stone, as described in the Government Notes, was marked "40.04 Set post 3 ft long 3 ins. square with mkd. Stone 12 ins. in the ground for 1/4 Sec. Cor. mkd. 1/4 S. on N. face, dug pits 18 x 18 x 12 ins. S. & W. of post 5 1/2 ft. dist. and raised mound of earth 1 1/2 feet high 3 1/2 ft. base around post.", it is not quite clear what the markings on the stone were.

### SOUTHWEST CORNER FIELD INVESTIGATION

To ascertain whether the original Surveyor did, in fact, mark the stones as described, a visit was made to the location of the only remaining original Corner stone, the Southwest Corner of the Section. This Corner was described as follows:

"80.00 Set post 4 ft long, 4 ins. sq., with mkd Stone 12 ins. in the ground for Cor. to Secs. 11, 12, 13, 14, mkd 1.4M. S. 12 on N.E., R. 1E. S. 13 on S.E., S. 14 on S. W. and S. 11 on N.W. faces, with 4 notches on S. and 1 Notch on E. edges. Dug pits 18 x 18 x 12 ins. in each Sec. 5 ft. dist. and raised a mound of earth 2 ft high 4 1/2 ft base around post."

In this instance, the stone has been accepted, without question, in all of the Surveys reviewed. The stone sits, as described, atop the West bank of the New River. It is visible from some distance, and, having been turned on end (an unnatural position), was quite evident of a stone NOI in its natural setting.

A partial excavation was made to expose a portion of the side of the stone. It appears that the stone is set about 1 foot into the ground, as described. The top of the stone is about 8 inches out of the ground. Though you have to look closely at the notches described on the South edge of the stone can be clearly discerned. The single notch on the East edge, though not distinct, in itself, is ample corroboration that this stone is not a natural stone lying in situ, rather is erected by an act of man and marked to make it unique and identifiable. It is apparent that, even in the absence of a description of the markings this stone would be identified, under the most casual observation, as having been erected and marked by the hand of man. The purpose of the instructions, which is to erect a stone with markings, is to establish a unique and identifiable mark to set it apart from natural stones. Absent this unique and identifiable mark, there is no way to distinguish between a stone in a convenient location from that that is intended to mark the Corner, as established by the original Survey. To accept a stone without determination of its unique character is invalid in terms of retracing the steps of the original Surveyor.

### CONCLUSIONS

An evaluation of the above information supports the conclusion that the position currently marked by a City of Peoria Brass Cap, set in concrete, at the location of the North Quarter Corner of Section 12, Township 4 North, Range 1 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona, is, in fact, the best current representation of the true location of said North Quarter Corner.

The inconsistency of measurements between the "stone" and the Section Corners, and the consistency of measurements between the Brass Cap and the Section Corners, leads one to conclude that the Brass Cap satisfies the conditions established in the "Manual".

However, with a discrepancy being apparent, an effort had to be made to resolve, if possible, the discrepancy. A review of the record, and request for information from the Surveyors who have worked the area, failed to yield any competent evidence to establish the validity of the "stone". All that could be determined from this review is that there has been a tendency to avoid disagreement and minimize the risk.

Looking at the nature of the property and improvements within the Section, it is apparent that the nature of the land is still rural or agricultural. Expecting that less than reasonable diligence has been applied in such low order Surveys, this does not alleviate the responsibility to apply all of the tools of the profession in determining the correct location of the North Quarter Corner. Though the standards are less for rural surveys than for suburban surveys, the obligation to establish the correct location of the Corner, barring mitigating circumstances, cannot be reduced by requirement for a lesser degree of accuracy. It is incumbent upon every Professional Surveyor to endeavor to establish the Original Corners in their proper location. There is no alternative to acceptance of the City of Peoria Brass Cap as marking the correct location of the North Quarter Corner.

BOOK 531 PAGE 44  
OFFICIAL RECORDS OF  
MARICOPA COUNTY RECORDER  
HELEN PURCELL  
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Sheet 2 of 2 Sheets

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