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CURRENT PROBLEMS IN PROPERTY LOCATION<sup>b</sup>

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**EVERETT D. MORSE**,<sup>15</sup> F. ASCE.—The argument that unqualified people are widely engaged in property surveying is one that an experienced surveyor would find hard to refute. Anyone with a background in boundary work should agree that what constitutes a property boundary is primarily a legal matter, and that a competent practitioner must understand what makes up valid legal evidence. It is also unfortunately true that many surveyors with an engineering background and only a perfunctory knowledge of the legal principles of boundary establishment are substituting accurate measurements for accurate boundary retracement. Part of the blame for this condition can be assessed against the civil engineering segment of the engineering profession. Many with a civil engineering education and inadequate training in boundary establishment tend to oversimplify boundary work and treat it as if it only involved making careful measurements.

<sup>14</sup> "Survey Notes," *City Limits*, City Employees' Monthly, Hayward City, Calif., December, 1955, p. 13.

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There has also been widespread misuse of coordinates in legal descriptions. In the writer's opinion, no property description in a conveyance should be made or accepted when sole dependence is placed on coordinates. In many states such a description would not be regarded as valid. The authors are to be commended for calling attention to inappropriate uses of state plane coordinates for legal descriptions.

However, strong exception can be taken to the conclusion that it is inappropriate to use state plane coordinate systems in legal descriptions. Tying a property survey to the national survey network can provide a means of retracement and recovery not otherwise obtainable. Misuse of this valuable adjunct to boundary retracement by a few provides no more justification for its abandonment than for banning the use of a transit in the retracement of a compass survey, or substituting English units of measure for the original, whether Spanish or French.

The state plane coordinate systems were devised and computed in the 1930's by the United States Coast & Geodetic Survey (USC&GS) to meet the demand for simple plane-rectangular coordinates in the utilization of the

national geodetic control survey net. It was not intended that these systems would replace the standard legal descriptions, rather they would supplement and strengthen them. The Texas Coordinate System, enacted in 1943, contains the proviso, under Section 7: "The sole and only purpose of this Act is to recognize the above system for use in the State of Texas as definitely ascertaining positions on the surface of the earth . . . and nothing in this Act shall be construed to set aside or disturb any corner or survey now already established."

It has been contended by some that it is not necessary to recite state plane coordinate values in legal descriptions to reap the benefits,—the ability to re-establish a boundary corner later where such coordinate values are used in the re-establishment. However, unless the coordinates of a point are made a part of the legal record at the time of conveyance, they can be given little or no legal weight when reliance on coordinate values alone is necessary for the restoration of a destroyed boundary corner, or of several related corners. Of course, the mere recital of coordinate values for a boundary corner provides no assurance at all that the true and correct title position is being designated,—any more than would the setting of a new and virtually immovable monument.

Since 1946, the writer's firm has incorporated state plane coordinates in the legal descriptions of nearly all of the many thousands of tracts of land in its thirteen-county service area. This has entailed some additional expense for more ties and greater precision than what would have been required to meet minimum legal needs, possibly by as much as 15%. This additional effort has, we feel, yielded worthwhile and lasting benefits, not only for mapping purposes but for retracement purposes as well. A legal description is typically begun as follows:

"All that certain parcel or tract of land in \_\_\_\_\_ County, Texas out of the \_\_\_\_\_ Survey, Abstract No. \_\_\_\_\_, said tract being the same land described in deed from \_\_\_\_\_ to \_\_\_\_\_ dated \_\_\_\_\_ and recorded in Volume \_\_\_\_\_ Page \_\_\_\_\_ of the \_\_\_\_\_ County Deed Records, said tract called to contain \_\_\_\_\_ acres but found by resurvey to contain \_\_\_\_\_ acres. The tract herein conveyed is described by metes and bounds as follows, all coordinates and bearings being referred to the Texas Plane Coordinate System, South Central Zone, as established by the U. S. Coast and Geodetic Survey in 1934 and based on the positions of U. S. C. & G. S. Triangulation Stations \_\_\_\_\_ 19\_\_\_: X = \_\_\_\_\_; Y = \_\_\_\_\_; and \_\_\_\_\_ 19\_\_\_: X = \_\_\_\_\_; Y = \_\_\_\_\_:

"BEGINNING at a 4-inch iron pipe with coordinate X = \_\_\_\_\_; Y = \_\_\_\_\_ at the \_\_\_\_\_ corner of the \_\_\_\_\_ League, Abstract No. \_\_\_\_\_, and an interior corner of said \_\_\_\_\_ Survey as defined in decree of District Court of \_\_\_\_\_ County, Texas in cause No. \_\_\_\_\_, dated \_\_\_\_\_ and recorded in Volume \_\_\_\_\_, Pages \_\_\_\_\_ of the District Court minutes, etc. said iron pipe being also located (ties to landmarks).

"THENCE from the point of beginning with the northerly line of said \_\_\_\_\_ League and the southerly line of said \_\_\_\_\_ Survey N \_\_\_\_\_ E (called N \_\_\_\_\_ E in the aforementioned decree and deed descriptions) \_\_\_\_\_ feet to a copper rod set in concrete for corner, etc." (Remainder of description conventional and no more coordinates given for corners.)

In legal descriptions it is proper to use corrected ground distances rather than the grid distances adjusted to sea level.

Increased urbanization and the attendant destruction of property markers (no matter how substantial), of line and witness trees and the realignment of



streams make it all the more important to perpetuate boundary corners with every means available to the modern surveyor. State plane coordinate systems are destined to play an increasingly important role in the preservation of property boundaries. With chain saws, bulldozers, and agricultural machinery rearranging the landscape how else can property corners be preserved? Hundreds of examples of the effectiveness of state plane coordinates could be given in which they have been used for the recovery or replacement of old monuments that had been integrated with the national control net sometime in the past and would otherwise have been lost. In this connection, the practice of some well-intentioned road contractors of moving and resetting property and control monuments when roads are widened and realigned is widespread enough to be a continuing source of confusion.

Tillotson and Snyder object to the use of grid bearings in legal descriptions as they may vary from true bearings by several degrees. The same may be said of old "handed down" deed bearings, many of which may even have been derived from magnetic readings taken as much as 100 yr before. Of course a proper grid bearing can, by application from simple tables of the "theta angle," be readily converted to an accurate true bearing at any given point. And, unlike true bearings that change from point to point for long east-west courses, grid bearings remain unchanging and consistent.

As an alternate to coordinated property corners, the authors propose the adoption of a master plat system for acreage tracts whereby legal descriptions can be made by references to lot and tract numbers. For this system to work properly, as it apparently does in parts of Europe, would require a prodigious amount of accurate retracement surveying as well as the monumenting of corners, something that could, to use the authors' comparison, exceed the cost of the Interstate Highway System. Plats of acreage tracts, unless thoroughly and expensively monumented, can be just as productive of boundary disputes as can a random arrangement of tracts defined only by metes and bounds descriptions. Much of Texas coastal plain is covered by such platting, which may range in age from 50 yr to 100 yr. Surviving authentic monuments are rare indeed for these old plats.

The contention is made that "coordinate descriptions are absolutely uncheckable by anyone other than the surveyor who calculated them." It is true that some difficulty would be experienced by a surveyor with no knowledge at all of the state plane coordinate systems in checking the results of a survey which has been incorporated into such a system. However, the field notes and calculations should be made available to anyone desiring proof of the adequacy and accuracy of ties to coordinated control points.

The writer agrees with Tillotson and Snyder that engineers, land surveyors, and the public must be educated to the importance of law and of legal precedent to land surveying. However, it does not follow that such education should result in the abandonment of the use of state plane coordinate systems to supplement legal descriptions. The engineer or surveyor whose client, agency, or company is willing to have the additional time and effort expended to relate new or re-established boundaries reliably to the national survey control network can be sure the established corners and boundaries will have a better chance for permanency than would any independent system of monumenting he could devise.

HUBERT L. MORGAN,<sup>16</sup> F. ASCE.—The authors' point that law is an integral and inseparable part of property surveying and is as important to surveying as the science or art of measurement, is well taken. However, the

inference that a surveyor should know the law to pass judgment on questions of ownership is incorrect.

The chief points of interest in any survey of an existing description are usually title certainty and the physical location of the lines on the ground. Ideally, ground location and the record description coincide. However, in those cases where they do not, it is the function of the surveyor simply to show the relationship between the two. This may be done on the ground, on paper, or both. It is not his function to determine ownership. That is a privilege reserved by the courts. Even title insurance companies do not do this. They merely pass judgment on a given situation for their own benefit and gamble that they are correct.

For example, Jones agrees to sell Smith all that part of a tract of land lying north of a line between two stakes, the location of which is mutually agreeable to them. A mistake is made in the preparation of the legal description of the tract with the result that if the line is located according to the recorded description, it will be 20 ft north of the line upon which Smith and Jones agreed. Smith builds a house 5 ft north of the line and applies for a mortgage. The mortgage company requires a certified survey so Smith retains a surveyor to make an improvement location survey.

The concept of the surveyor's role as depicted by the authors would have the surveyor show the house as simply 5 ft from the line agreed on by Jones and Smith, because Jones would stand little chance of establishing ownership of the 20-ft-strip in court. But it is the contention of the writer that the surveyor should confine his role to that of supplying information and advice. He should show the facts of the situation on a map that shows both lines and the relationship of the house to the lines. Then he should advise Smith that

16 Owner, H. L. Morgan, Civ. Engr. & Land Surveyor, Oak Harbor, Wash.

the simplest way to clear his title to the 20-ft strip would be to obtain a quitclaim deed from Jones using the correct description. If Jones should be reluctant to sign, he should be advised that the normal course of action for Smith to take would be to initiate a quiet title suit in court and that Jones would undoubtedly lose if he contested the action. At this point, the surveyor should leave the matter in the hands of the owners and their attorneys. Any further action on his part without invitation would be presumptuous.

WINFIELD H. ELDRIDGE,<sup>17</sup> M. ASCE.—The authors describe a problem that has been growing in seriousness over the years. The blame should not be placed on the state plane coordinate systems, or the engineering schools as they suggest, but society and the surveying community must share in this responsibility.

*Surveying Education.*—The schools have not "entirely abandoned courses in property boundary law" as Tillotson and Snyder contend, for such courses have not been available until recently. At present, there are about eighteen schools where the principles of boundary location are treated as a course or part of a course. Until recently, there were only three schools where such course material was available. During the 1965 Geometrics Institute, sponsored by the National Science Foundation for college teachers of surveying, and conducted at Purdue University, this subject was offered as a graduate-level course under the instruction of Curtis M. Brown. There is generally more awareness now among the colleges and universities of the importance of legal principles to boundary location than there has been previously. But where are the students? Only about 5% of the civil engineering graduates go



into property surveying and such courses cannot be required for the other 95%.

It must be noted that even the civil engineering graduate who has become expert "at measuring" will have been subjected to at least one more course in law (engineering law) than the surveyor who does not have the advantage of an engineering degree.

It is true that, in the past, institutions of higher learning did not provide considerable instruction in the specific area of property surveying, but these schools cannot be blamed entirely for this situation. The blame is also on the land surveyors themselves who have not provoked sufficient incentive and motivation in their younger members to seek out such instruction. In several universities where courses in land surveying are offered, little interest has been shown by the college students, probably because they are not convinced that college training is useful preparation for a career in land surveying.

It appears that there will be a thrilling change in surveying education within the next few years as surveying organizations now desperately need college-trained personnel to move into positions of responsibility. The California Council of Civil Engineers and Land Surveyors is one state organization that is taking positive action in this direction and is studying the feasibility and implementation of a degree program specifically designed for land surveyors.

**State Plane Coordinates.**—The state plane coordinate systems, now in their 33<sup>rd</sup> year, have done more to aid in the perpetuation of title identity of property ownership than they have caused the harmful effects cited by the authors.

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It must be conceded that in the hands of neophytes, any device may be misused. This is true of photogrammetry as well as state plane coordinates and in one state, values are scaled from a mosaic for the preparation of land descriptions as stipulated in the following instructions:

**Photogrammetry.**—Recent Cartographic development in Photogrammetry for design and construction is now utilized in many instances in the establishment of property lines. The centerline of the highway is superimposed on an aerial mosaic and the occupation lines such as fences, trees, etc., are assumed as property lines and the measurement of their points of intersection with the centerline of the highway and the angle of skew are made by protractors and scales. The limits of the Right of Way are then established and the area to be acquired is calculated to hundreds of an acre which indicates accuracy of the same.

In other instances, the location of property lines are accomplished by superimposing the centerline of the proposed highway on the property map constructed from either tax maps alone or graphic plots of the deeds on record, and the intersection of property lines and their angle of skew, measured by scale and protractor and calculated as previously stated. (Taken from instructions issued to consulting firms performing right-of-way surveys for the highways of an eastern state.)

State plane coordinates should never be used to replace physical monument calls or record calls, but should be regarded as locative information leading the surveyor and the public to the place where the monument was originally placed. In the event the called-for monument has been destroyed or removed, then the coordinates may become "best evidence" in the same manner as distances and bearings. State plane coordinates are more certain than distances

and bearings and are not as dependent upon local features. There should be no cause for confusion in their use when properly identified and recognized by the jurisdiction in control.

Coordinates are no more subject to uncheckable errors than any other geometrical data. Actually, a stranger to a parcel of land can determine many things about its location and quantity with only the coordinates. This information may not be ascertainable if only courses and distance are available. There is, as Tillotson and Snyder note, an opportunity for typographical blunders when coordinates are used, but perhaps no more so than has existed through the years with the township and range type of descriptions or metes and bounds descriptions that call for distances and bearings. The fact remains that a call for state plane coordinates will provide locative assistance from every monumented position in the area. There is no quarrel with the thesis that property ownership is related to physical monuments, but these monuments need to be located when obscured, they will need a means of positive identification when found, and some means of restoration when lost. State plane coordinates can and have performed in these functions.

The use of coordinates as the sole call for the limitations of property ownership can be challenged on the question, "How can this be the intent of the parties to the conveyance?" Many new conveyances are written each week that are not based on survey, on monuments, or on other facts that the grantor and grantee could be knowledgeable of. Some state highway organizations are writing descriptions with the computer, and though these may have a unique paper location, they may not be consistent with the intent of the parties, be correct in respect to the senior titles, or faithfully describe where the highway is, in fact, constructed.

Great improvement will come from the recent legislation such as the recordation act of Montana, the "Record of Survey" law in California, and the "Filing Law" of Oregon. More states should study these acts and consider legislation that will help solve the problems in their respective jurisdictions.

The authors' solutions to the problem are good, but in themselves raise many new questions. "Education in property law for surveyors" is good, but how is this education provided if there are no students? The registration acts in the various states have been greatly improved in the last few years, but legislation is never completely successful for curing such deep-rooted ills. In addition to the authors' seven points, the following two should be added: (8) increased motivation for young persons to seek higher education before entering into property surveying; and (9) a halt to the random fashion by which highway property is currently being described in most of the states.

JOHN G. McENTYRE, 18 F. ASCE.—A thoughtful and straight-forward examination concerning the status of property surveying in the United States is presented. The statement "It is safe to predict that the final result will cost the taxpayer and the litigants untold millions of dollars" is a realistic conclusion. The fact that this conclusion is realistic indicates that it is necessary to achieve either of the following objectives: (1) The present system should be strengthened and reinforced; or (2) the present system should be revised. Because "untold millions of dollars" of expenditures could result if the present status of affairs is continued, relatively large expenditures, if necessary, could be justified to achieve the desired results. This paper basically proposes Solution (1).

The authors stated that "The solution to our problem might be summed up as education in property boundary law and legislation by the states requiring:

1. Education in property law for surveyors;



2. registration boards to make sure the surveyor applicant is thoroughly knowledgeable in property law with suitable experience before licensing;
3. legal description of new tracts to be by metes and bounds description that refers to plat or by tract number on a master plat;
4. permanent monumentation of all new property corners;
5. perpetuation of all old property corners by surveyors coming in contact with them;
6. monumentation of new property corners and perpetuated old corners by uniform, exclusively identifiable, stamped, and permanent monuments so that the public can be educated to recognize and respect these corners; and
7. systematic recordation of all pertinent facts on monumentation and perpetuation."

Point (1) requiring the education of surveyors in the principles of property law is most desirable. A surveyor cannot perform adequate and accurate surveys for his clients if he does not have a good basic knowledge of engineering measurements and property law. Civil engineers, state licensing

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boards, land surveyors, and planners of technical school, college, and university curriculums should be made cognizant of this fact. Furthermore, lawyers who direct their principal efforts to transactions in land should be required to have a fundamental knowledge of engineering measurements. Achievement of this goal, that is, the requirement that a land surveyor have a basic knowledge of the principles of property law and that an abstractor have a basic knowledge of the principles of engineering measurements, would considerably improve the line of communication between the abstractor and the land surveyor and would lead to more reliable results for their clients.

Point (2) requiring registration boards to assure the fact that the surveyor has adequate knowledge of property law with suitable experience is a logical specification. The accomplishment of this is necessary to assure the achievement of point (1). Registration boards should assure themselves that all applicants for a land surveyors license have a basic knowledge of property law and suitable experience in the application of the principles of property law before a license is issued.

Points (4), (5), and (6) will be considered together. The requirements that all corners should be permanently monumented, that surveyors should perpetuate all old property corners, and that all new corners and perpetuated old corners should be marked by uniform, exclusively identifiable, stamped, and permanent monuments are essential to a fundamentally sound land system. An existent corner, or the evidence of one, is the most conclusive evidence of the true position of a corner; land surveyors and courts accept this fact. The loss of a corner monument and its subsequent relocation is the cause of many boundary disputes. The fact that a uniform, simple to identify, and stamped system will probably lead to proper education of the public as to the importance of monuments is a valuable by-product of a planned monumentation system.

Point (7), which suggests systematic public recordation of all pertinent facts on monumentation and perpetuation, is a necessary aspect of any land system. It is assumed that systematic here includes the requirement that the information filed is readily available to those who may have need for it in the future. A suggested state administrative system that could effect this result has been proposed.<sup>19</sup>

Point (3) emphasizes the fact that the authors are opposed to the use of a state plane coordinate system such as the one made available by the United

States Coast and Geodetic Survey (USC&GS). They state: "One of the most distressing problems is the continued insistence of many civil engineers and surveyors on the adoption of the state plane-coordinate system at the expense of adequate monumentation, perpetuation, and recordation." It is felt that the last part of this statement is inaccurate. Engineers and land surveyors who favor the use of a state plane coordinate system are not opposed to permanent monumentation, in fact the opposite situation is probably true. However, many engineers do feel that the application of the method of plane coordinates with the use of modern measuring devices, developed and to be developed, will be the most accurate method to relocate lost corners in future years.

The paper quoted an author who opposed the use of the state plane coordinate system because it would be too costly to establish an adequate system of

<sup>19</sup> McEntyre, John G., and McNair, Arthur J., "Land Surveying and Land Registration," Journal of the Surveying and Mapping Division, ASCE, Vol. 89, No. SU1, Proc. Paper 3437, February, 1963, pp. 69-72.

control points for such a system. The premise ". . . the final result will cost the taxpayer and the litigants untold millions of dollars" is already accepted; thus this objection is partly contradicted. The question to be debated is what method best achieves the objectives of accurate descriptions and reliable land boundaries for the least cost? Permanent corners plus metes and bounds to other corners is one solution; permanent corners plus the use of a state plane coordinate system is another solution. The assumption that we will ever attain the complete ideal of permanent corners is wishful thinking. The use of the principles of a state plane coordinate system with an adequate control system, plus the use of modern measuring devices, should produce more accurate and consistent relocation of lost corners than the use of metes and bounds. Descriptions written by the use of coordinates should be easier for the public to understand, especially when a plat is used; the knowledge of coordinate systems is partly present in the mind of the average citizen. Relocation surveys based on a coordinate system should also be easier to explain to a client. The coordinate system would lend itself well to the subdivision of larger land tracts. One solution as to how to initiate the coordinate system within a governmental district such as a state has already been proposed.<sup>20</sup>

The authors also note that the courts have established definite policies relative to land boundaries and that coordinates, newly established, would be used if, and only if, other accepted procedures failed. It does not appear logical, or ethical, that if a basis for a plane coordinate system is readily accessible and more precise measuring devices are available these items will be rejected simply because the present system of land management came into being before these advances. Progress would be impossible in any field if this type of reasoning prevailed. As early as 1914, the definite possibility that state plane coordinates could control metes and bounds descriptions in certain cases was admitted by a member of the law profession.<sup>21</sup> If a better system of property description is available, the law and surveying professions, in the interest of the public welfare, should find a means to incorporate it into the land control system. A proper application of resurveys and new statutes could solve this problem. Methods have been proposed to effect the transition into the use of state plane coordinates for land descriptions.<sup>22</sup>

The authors imply that certain terms used in the state plane coordinate system as proposed by the USC&GS are confusing to land surveyors. The coordinate system as suggested by the Geodetic Survey is clearly explained in one of their publications.<sup>23</sup> The principles of the application of the system should be easily comprehended by any land surveyor who can meet the qualifications required by a state board responsible for the licensing of land



surveyors.

It is believed that legal descriptions of tracts of land should not be based on metes and bounds as proposed by the authors but should be based on the state plane coordinate system as made available by the USC&GS. It is agreed, however, that the final solution to the problem of land boundaries and descrip-

20 *Ibid.*, pp. 65-67.

21 *Ibid.*, p. 64.

22 *Ibid.*, pp. 65-70.

23 Mitchell, Hugh C., and Simons, Lansing G., "The State Coordinate Systems (A Manual for Surveyors)," Special Publication No. 235, Coast and Geodetic Survey, U. S. Dept. of Commerce, Washington, D. C., 1945.

tion and the method to initiate it should result from intelligent discussion among land surveyors, abstractors, civil engineers, and educators in the field of land surveying.

PHILIP KISSAM,<sup>24</sup> F. ASCE.—This paper is the kind that should be published frequently. It correctly stresses the following points: (1) The supreme importance of monumentation; and (2) the importance of a thorough understanding of the law affecting boundary location by land surveyors.

The paper hints that state coordinates should not be used. This is erroneous. Moreover, it fails to give references to the recommendations of ASCE, which should be followed implicitly by conveyancing lawyers and land surveyors.

*Two Points of View.*—Problems in property location are of great importance as they affect practically the entire wealth of the United States. The paper has the advantage of having been written jointly by a lawyer and a land surveyor and thus it coordinates the two approaches to the subject.

Fundamentally, the lawyer must determine who owns the land and the conditions of ownership. He needs a description written so that the land can be identified in the various documents that affect title.

Conversely, the surveyor needs a description that details the angular and linear measurements by which the monuments that mark the land can be found, identified, and proved to be in the positions indicated by the intent of the parties to the agreement, the court order, or the will that establishes them. Both the lawyer and the surveyor need an index to the public records based on the actual land rather than the names of the grantor and the grantee.

As these requirements of either the lawyer or the surveyor are seldom satisfied (particularly the monumentation), a great body of law has built up to remedy the difficulties. Thus, it is essential that the surveyor be thoroughly grounded in this body of law and that the lawyer should be thoroughly grounded in the problems that confront the surveyor and the procedures he uses to solve them.

Without this mutual understanding, the two viewpoints sometimes conflict, as they do in the paper. In addition to the conflict concerning state coordinates which the paper introduces, other conflicts of opinion occur. For example, most lawyers like to have the same description used for any parcel throughout every transfer of title so that the identity of the parcel is clear. The surveyor knows that it is often impossible to use an old description. The surveyor finds that the trees, field stones, stakes, and what not, called for in the deed have long disappeared; the adjacent public right-of-way has widened an indeterminate amount by prescription so that the lengths of the boundaries measured from it are no longer of use; fences, long established, are incorrectly located according to the description; over hills, straight lines change direction and measured lengths are too great.

Some of the Causes of these Difficulties.—Usually the original survey, or any survey made some time ago, was made when the land was cheap so that

only a rough survey could be afforded or was necessary. Such a survey is usually too inaccurate for present-day land values. To protect the extent of ownership, a new survey, new monumentation, and a new description are essential. Difficulties arise when the surveyor fails to add to the new descrip-

<sup>24</sup> Prof. of Civ. Engrg. (Emeritus), Princeton Univ., Princeton, N. J.; and Land Surveyor, New Jersey, license no. 1696.

tion, "being the same land" with the proper reference inserted or even the old description.

Many lawyers feel that the bearing and length of the closing line in a description should be omitted. Instead, it should read, "Thence along the line of Tom Jones to point and place of beginning," so that no redundant, and hence conflicting measurement is included in the description. This practice eliminates the possibility of checking the description for errors and thus introduces another unknown into the surveyor's problem.

Frequently, a property location laid out according to the description is too large to fit between well established adjacent parcels, and finally, many descriptions contain errors accumulated through mistakes in copying or blunders in the original survey.

*Solution.*—It is clear that, if the surveyor is to perform his function—the function he is paid to perform, which is to mark and describe the parcel—he must have available in the deed all possible data that aid him in arriving at a correct solution of his problem, a solution that will stand up in court, if the adjoining bring suit.

*State Plane Coordinate Systems.*—The state coordinate systems originally established by the United States Coast and Geodetic Survey (USC&GS) at the suggestion of a state highway engineer is designed to make available geodetic triangulation markers for survey control. The positions of these markers are given in terms of geodetic latitude and longitude. The state coordinate systems are really transformations that make it possible to compute and use plane coordinates for these positions. Control surveys tied to these markers can then be reduced by plane trigonometry and thus serve as control for highway surveys, railroad surveys, pipeline surveys, in fact every type of large survey required and as a means of connecting surveys otherwise separated.

Since state, county, and town boundary monuments are often lost, as are monuments of large and small public and private tracts of land, the writer wrote the first Enabling Act (New Jersey Ch. 116, P.L. No. 1935) which made it possible to use the New Jersey coordinate system in land descriptions. Whenever they are used, the monuments become permanently identifiable and recoverable; the same line in adjoining parcels is instantly recognizable; the relative position of parcels can be immediately established, overlaps and gores can be immediately recognized; parcels on rural highways can be identified and, in fact, the system provides the surveyor with a further source of information which can be accurately checked against errors and which is presented in its most useful form.

The paper eulogizes European land surveying practice which is based on systems exactly like the state coordinate systems.

It is probable that the criticism in the paper directed toward the state coordinate systems is based on the following misconceptions: (1) That monumentation is being neglected by responsible surveyors; and (2) that the state coordinate systems tend to increase this neglect.

It is, of course, true that property owners and their lawyers tend to ask for inexpensive surveys. This often results in surveys made without regard to surrounding land descriptions or marked boundaries and the use of stakes instead of monuments. It creates the trend, so well expressed in the paper,



toward reliance on recorded measurements rather than monuments.

The writer feels that the criticism of the state coordinate systems which, wherever they are available, provide one of the finest means of avoiding errors and perpetuating monuments, should be directed toward cheap surveys and inadequate descriptions.

*References.*—An ASCE report<sup>25</sup> giving a sample of the type description recommended clearly shows how state coordinates should be used when available and the obvious methods of checking them for errors. Also available is the article by the writer<sup>26</sup> which proposes and makes the reasons for six rules for standardizing descriptions:

Rule 1.—Each description in a recorded deed should bear the name of the person responsible for the description.

Rule 2.—All recorded descriptions should include the date when the person whose name appears upon it was assured of its accuracy.

Rule 3.—The source of survey data on which the description is based should be definitely stated. For example, in an extreme case, the wording might be: "From computations" by Richard Roe, Land Surveyor, license 1501, based on survey by John Smith, Land Surveyor, license 1502, made January 1938, description by Mary Jones, Real Estate Broker, license 1503 February 1939.

Rule 4.—The identity of the property must be clearly stated. For example, "Being the same tract, or part of the same tract, conveyed to A by B by warranty deed dated June 1934, and recorded in Book 100, page 100, July 1934."

Rule 5.—The description should include survey ties to at least two durable monuments . . . The state system of plane coordinates offers the most perfect system of monuments; in many localities such monuments have been established along streets and highways, ready for immediate use . . .

Rule 6.—All dimensions of property lines and all bearings should be stated, and no "more or less" distances shall be used. All dimensions shall be based on a closed survey which has been checked by latitudes and departures.

These six rules can be carried out with little change in present methods of writing descriptions. Nearly all of them have been customary from time to time. They could be adopted at once without disrupting present practice.

*Summary.*—Greater emphasis should be placed on monumentation for property corners, street lines, highway rights of way, and state coordinates; descriptions should be written with great care and supplemented or supplanted by dimensioned plans; and both surveyors and conveyancing lawyers should have a thorough understanding of the problems and solutions with which the other profession is concerned.

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<sup>25</sup> "Land Surveys and Titles," 2nd Progress Report of the Joint Committee of the Real Property Div., Amer. Bar Assn. and the Surveying and Mapping Div., Proceedings, ASCE, Vol. 67, June, 1941, pp. 1065-1079.

<sup>26</sup> Kissam, Philip, "Proposed Standards of Land Description in Civil Engineering," Civil Engineering, Vol. 10, No. 11, November, 1940, pp. 696-697.