

ALTA/NSPS Land Title Surveys
- A Field Perspective -
~ 2016 Standards ~

Maryland Society of Surveyors

Hunt Valley, Maryland
October 6, 2017

Presented by
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Exhibits

- Exhibit 1 *Thoughts on Relative Positional Uncertainty and A Simulation Study in the Precision Criterion for the 2011 ALTA-ACSM Land Title Survey Standards* by Charles Ghilani and Ian McAllister, reprinted with permission from Surveying and Land Information Science, Volume 71, Number 2 (June 2011)
- Exhibit 2 A large, national lender's survey requirements (as of June 2016)

Acknowledgements

The author would like to recognize many persons for their contributions to this document including, and especially, Mr. Robert Foster whose original document a number of years ago formed the strong foundation for my subsequent versions.

Also, appreciation is extended to the many persons who contributed to the effort of developing the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys. In particular, special thanks to those who participated in the joint ALTA/NSPS committee meeting held in August 2015, being - from NSPS - Judy Beale, PS (VA), Paul Burn, PS (NV), Todd Rakstad, PS (AZ), Malcolm Shaw, PS (NY), and Curt Sumner, PS (VA), and - from ALTA - Gene Aalseth, Esq. (CA), Richard Bales, Esq. (IL), Daneece Berge, Esq. (TX), Brian Blackman, Esq. (AR), Todd D'Amico, PS (OK), Justin Earley (CA), Mike Waiwood (OH), Paul McNamara, Esq. (MA), Jack Zachow (FL), and Kelly Romeo, ALTA Staff (Washington, DC via NV).

Special recognition is reserved for Mr. Malcolm Shaw, PS who contributed significantly to 2016 Standards and for Mr. Paul McNamara, Esq. who made thoughtful and valuable contributions to the ALTA/ACSM and ALTA/NSPS Standards for many years. Mr. Shaw passed away in the weeks following adoption of the 2016 standards and Mr. McNamara passed away in January 2016.

Gary R. Kent, PS

Introduction

For years, the surveying profession entertained an on-going debate over the “Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys” (the “Standards”). Much of that seems to have finally abated through extensive and on-going continuing education efforts and – perhaps more likely – to extensive and continuous refinements in the Standards.

The Standards have been said to be: too loose, too restrictive, an intrusion on the surveyor’s professional responsibility and a good, but all too isolated, example of the types of standards needed by the profession. In the words of one writer from a number of years ago, the Standards are “*a bureaucratic, self-serving, counter-productive sort of rip-off...*” An ALTA official at one time, having attended several meetings and panel discussions with surveyors around the country, and having heard comments about the Standards ranging from “*terrible*” to “*wonderful*,” commented that, given such a diversity of opinion, we “*must have gotten it just about right.*”

The purpose of this seminar is to examine the Standards from all sides, and to explore their real purpose and value - not only to the title insurance industry, but to the surveying profession and its clients, as well.

Land title insurance is unlike other types of insurance in several respects. A writer of health, homeowners and auto insurance policies pretty much *expects* to pay – or at least has an understanding that they *may* have to pay - on the policy at some time in the future. A writer of life insurance *knows* they will pay on the policy. The title insurer, however, intends to *never* have to pay on a title insurance claim. Title insurance has been called risk elimination insurance. The insurance company examines the title to the land to the extent required to mitigate its risk to an acceptable degree, and in the process identifies issues which may be defects leading to diminution in value. It eliminates those issues from coverage, one way or the other (by exception or by mitigation), and issues a contract that provides two types of protection; a duty to indemnify the policy holder for any undiscovered issues, and a duty to defend title from unwarranted claims.

If the title insurance company does a thorough job, and all issues have been identified (and either excepted from coverage, or otherwise mitigated), the company never has to pay on a claim. But doing a thorough job involves more than merely examining the title to the property. There are issues that can be identified only by a physical examination of the property, and that is where the surveyor comes into the picture.

Title insurance policies are often written with survey exceptions. That is, without a current, accurate survey of the property, the insurer will except from coverage any title defects that might otherwise have been discovered by such a survey. In order to have the survey exception removed from the policy, a survey will often be ordered (there are other ways that the survey exception can be removed, but they are beyond the purpose of this program). So ... a survey is to be ordered, but then come the questions.

- What kind of survey is required by the title insurer?
- What must be included in the survey?
- What standards should apply?
- What about lenders and buyers who are scattered across the country, what will they expect?

Because of the wide variety of surveys performed by surveyors (cadastral, topographic, construction, control, hydrographic, etc.) and the broad differences in levels of accuracy and precision applied in different circumstances, people ordering surveys for title insurance purposes felt the need for a formal, printed standard.

There is also, regrettably an inconsistency in the quality of service provided by the surveying profession. This inconsistency occurs not just from region to region, but also *within* each region of the country. Two different surveyors practicing within a few blocks of each other may deliver surprisingly different levels of quality of survey. The purchaser of a surveying service needs some assurance of the quality to be expected. That is where standards become necessary and appropriate. (That is also, incidentally, where the ‘protection of the public’ can become part of the consideration when states adopt their own minimum standards.)

A fair question is this, *‘Why should a professional, who knows his or her field, and knows better than anyone else what kind of survey is required for a specific purpose, be confronted with standards of any kind - especially those presented by a client?’* One answer to the question is that there is obvious disagreement among surveyors about the quality and contents of surveys required for any specific purpose. The purchasers of surveying services report widely varying levels of quality of surveys with inconsistent presentation of the information. The purchasers of surveying services for title insurance purposes insist on and deserve a set of standards that will assure them of the value of the services both as to accuracy and content - regardless of where in the United States the survey is performed.

Standards have a leveling effect on the profession. Practitioners are apt to deliver services of unequal quality when they are all performing to a standard devised in each of their own minds and as a result of each of their own impressions of what is required. Surveyors presented with a request for proposal for a survey can be more assured that their competitors are playing by the same rules when there is a set of concise, comprehensive standards included with the Request for Proposal.

It is well to remember that most purchasers of surveying services have little or no understanding of surveying procedures and practices; Surveyors’ work is ‘out of the view’ of their clients. Standards make it clear both to the purchaser and the deliverer of services what is being required and what will be expected in the final product. One of the most frequent causes of disputes over fees between professionals and their clients is a poorly defined scope. A carefully drawn scope of work defined by well-prepared standards minimizes confusion at the contracting stage of a project as well as at the bill-collecting stage.

Some have argued that printed standards increase a surveyor's liability. That can be true, but only if the practicing surveyor is not conversant with the standards which apply to a specific project. The surveyor who, through ignorance or incompetence, fails to perform up to a standard will eventually be brought to task. Otherwise, well-developed standards will actually limit a practitioner's liability because they will clearly define the scope and accuracy requirements – to the benefit of the client and the surveyor. A client will be unable to successfully claim surveyor misfeasance or nonfeasance when the surveyor's work was demonstrably performed to a printed standard agreed upon by both client and practitioner.

Printed standards can assist in establishing the normal standard of care in an occupation. In professional liability cases, one of the first questions to be dealt with is with regards to the standard of care that should have applied in the subject case. The normal standard of care is usually established through testimony, through an examination of similar cases and through a review of common law edicts.

Printed standards necessarily establish certain minimums below which a professional's performance may not fall for that type of survey. But they do not necessarily set the normal standard of care performed by the profession for all types of work. The concern being addressed by the ALTA/NSPS Standards is very narrow: surveys for title purposes. Having printed standards assists in defining a minimum performance level for a particular type of survey; the normal standard of care for that type of survey must be at least that level - and may be above it.

There are at least four general types of standards: precision, accuracy, content and performance. They may be defined as follows:

- *Precision* is the degree of refinement in the performance of an operation, or the degree of perfection in the instruments and methods used when making the measurements. It is a measure of the uniformity or reproducibility of the result.
- *Accuracy* is the degree of conformity with a standard of accepted value. Accuracy relates to the quality of the result, and is distinguished from precision which relates to the quality of an operation by which the result of obtained.
- *Content standards* in the context of surveying refers to the features, both natural and man-made, that are to be measured and reported on the final survey plat.
- *Performance standards* define the steps to be followed in an operation and may go well beyond the purely technical operations of a survey.

Standards have also been described as being either *technical* or *conceptual*. Precision and accuracy standards fall within the technical class of standards, while content and performance standards are conceptual in nature. Clients are generally more interested in conceptual standards, finding the technical class of standards abstruse. Technical standards included in a document like the ALTA/NSPS Standards have more meaning for the practitioner. Regardless, conceptual standards establish the scope of work for both practitioner and client.

Finally, with regard to the 2016 ALTA/NSPS Standards...

There was a tremendous amount of buzz in the title and lending industries when the 2011 Standards were adopted and enacted. That was the first complete rewrite of the standards in nearly 50 years. The 2016 version is the first modification of the 2011 standards.

A number of the issues that arose as a result of the 2011 standards might be termed unintended consequences. These included the providing of adjoiner deeds to the surveyor (pursuant to the Section 4 Records Research provisions); the providing of zoning information to the surveyor (pursuant to Table A Item 6); and Table A item 19 dealing with Wetlands. Other clauses and requirements were eventually found to be vague, confusing or problematic for surveyors. Those concerns that the ALTA and NSPS committees felt were sufficiently concerning have been addressed in the 2016 Standards.

Surveyors need to work to spread the word and educate others about the standards. Take the initiative and contact your local title agencies and law offices – volunteer to come in and talk about the standards.

Thank you and please let me know what you hear about the 2016 Standards and if you see or hear of anything that we need to address the next time around.

The 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys

The preamble to the 2016 standards speaks for itself.

NOTE - Attention is directed to the fact that the National Society of Professional Surveyors, Inc. (NSPS) is the legal successor organization to the American Congress on Surveying and Mapping (ACSM) and that these 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys are the next version of the former Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys.

Section 1 – Purpose

Members of the American Land Title Association® (ALTA®) have specific needs, unique to title insurance matters, when asked to insure title to land without exception as to the many matters which might be discoverable from survey and inspection, and which are not evidenced by the public records.

For a survey of real property, and the plat, map or record of such survey, to be acceptable to a title insurance company for the purpose of insuring title to said real property free and clear of survey matters (except those matters disclosed by the survey and indicated on the plat or map), certain specific and pertinent information must be presented for the distinct and clear understanding between the insured, the client (if different from the insured), the title insurance company (insurer), the lender, and the surveyor professionally responsible for the survey.

In order to meet such needs, clients, insurers, insureds, and lenders are entitled to rely on surveyors to conduct surveys and prepare associated plats or maps that are of a professional quality and appropriately uniform, complete, and accurate. To that end, and in the interests of the general public, the surveying profession, title insurers, and abstracters, the ALTA and the NSPS jointly promulgate the within details and criteria setting forth a minimum standard of performance for ALTA/NSPS Land Title Surveys. A complete 2016 ALTA/NSPS Land Title Survey includes:

- (i) the on-site fieldwork required pursuant to Section 5,
- (ii) the preparation of a plat or map pursuant to Section 6 showing the results of the fieldwork and its relationship to documents provided to or obtained by the surveyor pursuant to Section 4,
- (iii) any information from Table A items requested by the client, and
- (iv) the certification outlined in Section 7.

The Standard Survey Exception

Title policies normally contain coverage exceptions in addition to the standard coverage exclusions. The exceptions are generally set forth on Schedule B of the policy and can consist of standard printed exceptions (which differ regionally) and specific additional exceptions based on relevant facts.

One standard exception, which may be removed, insured over or modified if a current survey (or in certain cases, relevant affidavits or other documents) is provided, is the “survey exception.” The standard survey exception negates insurance for encroachments, overlaps, boundary line disputes or other matters which would be disclosed by an accurate survey or inspection of the premises. The precise wording of the standard survey exception differs from region to region and from insurer to insurer, but typical language might be: *“Rights or claims of parties in possession, boundary line disputes, overlaps, encroachments, and any matters not shown by the public records which would be disclosed by an accurate survey and inspection of the land described in Schedule A.”*

A shorter form of exception might be: *“Encroachments, overlaps, boundary line disputes, or other matters which would be disclosed by an accurate survey and inspection of the premises.”*

If an older survey is provided, the insurer may rewrite the exception as: *“Such state of facts occurring subsequent to [date of prior survey] as would be disclosed by a current accurate survey and inspection of the premises,”* although it is becoming more frequent that lenders put pressure on title companies to remove exceptions to matters that occurred even *after* the date of a survey.

If a current acceptable survey is provided, the insurer will replace the standard survey exception with language keyed to the survey, such as: *“Matters shown on survey of the premises prepared by [Surveyor] dated [Date].”* A better and more frequently used approach is for the insurer to review the survey and write specific exceptions for each potential title problem revealed on the survey, for example: *“Encroachment upon the insured premises of garage along the west line as shown on survey prepared by [Surveyor] dated [Date].”*

The best approach for the insured is to have the survey exception deleted in its entirety if there are no apparent problems disclosed by a survey.

The relationship between Surveyors and the Title industry

Because title companies rely on ALTA/NSPS Land Title Surveys to be of consistent quality and completeness, it is important that the surveying profession and the title industry work together to achieve their common goals. In order to do this, surveyors and title professionals need to understand each other’s roles, obligations and challenges.

It is this writer’s opinion that Surveyors and title professionals should take every opportunity to dialogue about their common interests, expectations and needs. Surveyors would be well-served to hand-deliver Land Title Surveys to title companies so they can sit down and go over the results, particularly when the survey has any complexity to it.

What constitutes a complete ALTA/NSPS Land Title Survey?

Items i through iv in Section 1 of the 2016 ALTA/NSPS Standards (see above) identify the specific performance items for the surveyor. These items were reworded and specifically

numbered in the 2016 Standards in order to very explicitly lay to rest any misconceptions about the surveyor's responsibilities and to, in a sense, put a ribbon around the entire set of the 2016 ALTA/NSPS Minimum Standard Detail Requirements.

Section 2 - Request for Survey

The client shall request the survey, or arrange for the survey to be requested, and shall provide a written authorization to proceed from the person or entity responsible for paying for the survey. Unless specifically authorized in writing by the insurer, the insurer shall not be responsible for any costs associated with the preparation of the survey. The request shall specify that an **"ALTA/NSPS LAND TITLE SURVEY"** is required and which of the optional items listed in Table A, if any, are to be incorporated. Certain properties or interests in real properties may present issues outside those normally encountered on an ALTA/NSPS Land Title Survey (*e.g.*, marinas, campgrounds, trailer parks; easements, leases, other non-fee simple interests). The scope of work related to surveys of such properties or interests in real properties should be discussed with the client, lender, and insurer; and agreed upon in writing prior to commencing work on the survey. The client may need to secure permission for the surveyor to enter upon the property to be surveyed, adjoining properties, or offsite easements.

The order for an ALTA/NSPS Land Title Surveys may come from a title company, attorney, owner, buyer, real estate broker or other interested party. In any event, it is incumbent on the surveyor to identify who is actually responsible for payment and to secure a contract with that party. This section of the 2016 Standards specifies that there shall be a written authorization - and the best form of that is a written contract.

While many surveyors perform surveys without benefit of a written contract, surveyors would be well-advised to recognize that *every* project they undertake involves a contract. They should understand, however, that if a problem is encountered, without a *written* contract, (1) a judge will be the one who interprets what the surveyor's responsibility was under the oral contract, and (2) the statute of limitations under an oral contract may differ from that under a written one.

The contract or correspondence regarding the request shall specify that an ALTA/NSPS Land Title Survey is being requested and which of the optional items listed in Table A, if any, are to be incorporated. It is strongly encouraged that the client be actively involved in the selection of the Table A items. In this way, the client will have a better sense of the standards, and this also affords the surveyor an opportunity to make a connection between Table A items and the fee for the survey. Some surveyors even analyze the costs associated with each Table A item for a given survey and, when they provide Table A for the client's consideration, the associated costs are already itemized. More discussion is provided on contracts in subsequent sections of this handout.

As spelled out in Section 2, certain properties like trailer parks, marinas and campgrounds, and

non-fee interests like leases and easements present issues that fall outside the realm of those normally encountered on an ALTA/NSPS Land Title Survey. The 2016 Standards suggest that the scope of work related to such properties should be discussed with the client, lender and title insurance company, and agreed upon in writing prior to requesting the survey. For example, trailers themselves are generally (but not always) personal property, not real property. Do any of the parties have an expectation that the surveyor will be locating and showing all of the trailers?

Section 3 – Surveying Standards and Standards of Care

Section 3.A. - History and Development

The 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys are effective February 23, 2016. As of that date, all previous versions of the Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys are superseded by these standards.

There has been a succession of “*Minimum Standard Detail Requirements for Land Title Surveys*” beginning in 1962, published jointly by the American Land Title Association (ALTA) and the American Congress on Surveying and Mapping (ACSM). The standard was revised unilaterally by ACSM in 1979, with joint revisions by ACSM and/or NSPS, and ALTA in 1986, 1988, 1992, 1997, 1999, 2005 and 2011. With the 1999 version, the National Society of Professional Surveyors took over responsibility for the standards on behalf of the surveying community from ACSM. Unfortunately, the land title industry is not uniformly aware of the revisions and surveyors are still occasionally asked to work to the 1999 standards or any of the more recent versions, and to execute a certification accordingly.

The 1962 ATA/ACSM (the American Title Association, later changed its name to the American Land Title Association) standards made reference to exactness in surveys. Exactness, perfection, and “error-free results” are words and phrases inappropriate to a description of the surveyor’s work. There is no exact, perfect or error-free measurement. Furthermore, this document required the surveyor to report “maximum positional tolerance of corners.” The document did not define the term nor is it found in standard surveying texts and books of definitions. The “Allowable positional tolerance of corners” was required to be not more than 0.02 foot in urban areas or more than 0.04 foot in suburban areas. In the final statement of the preamble it was stated that the title insurance industry was entitled to rely on the “highest professional quality both as to completeness and accuracy,” a standard well beyond the normal standard of care required of professionals by law.

In 1979 ACSM revised the document but the 1979 version was acted upon only by ACSM, and never became a jointly published standard.

In 1986 a new “*Minimum Standard Detail Requirements for Land Title Surveys*” was jointly adopted and published by ALTA and ACSM, rejecting many of the more objectionable items of the earlier version and introducing, among other changes, the concept of ‘classes’ of surveys

(Urban, Suburban, Rural and Mountain/Marshland). The 1986 standards also brought the first appearance of the *Table of Minimum Angle, Distance and Closure Requirements* as the criteria for the measurement standard

At the request of the Lenders Council of ALTA, the standards were revisited and revised again in 1988 resulting in a 'Table 3' being added. Table 3 (later to become known as Table A) contained a laundry list of 16 additional items that clients could select from to be included in their Land Title Survey.

Once again in 1991 and 1992, the ACSM committee examined the Standards due to surveyor concerns. There were problems with interpretation and application and there were criticisms of inconsistency and redundancy through the body of the Standards, especially in regards to the additional survey requirements of Table 3 (now Table A). A revised set of Standards was brought to the Board of Direction of ACSM and the ALTA membership, and approved in the fall of 1992.

In about 1994, a series of meetings between ACSM/NSPS, ALTA, the ALTA Lenders Council and representatives of the U.S. Department of Housing and Urban Development were held with goals of addressing some concerns, developing a new set of measurement/accuracy standards and addressing the needs of HUD. The resulting standards, which were jointly adopted by ACSM and ALTA in late 1997, incorporated the items necessary for HUD to subscribe to the standards.

In an attempt to quell concerns that the measurement standards were too rigid and inflexible and an impediment to the use of new technologies, the 1997 Standards introduced the option of using positional tolerance as the measurement standard rather than applying the *Table of Minimum Angle, Distance and Closure Requirements*.

Two years later, a 1999 revision to the ALTA/ACSM Standards resulted primarily in changes to Table A, in the elimination of the classes of surveys and, except in specific circumstances, the mandatory use of positional tolerance as the measurement standard.

The standards were revisited again in 2005 with an effective date of January 1, 2006. The 2005 version contained a number of significant improvements including the clarification and addition of some Table A items. With regard to zoning, surveyors were no longer required to graphically plot zoning setback lines. Also, there was an allowance for the use of alternative technologies and tools in Table A, item 15.

The measurement ("accuracy") standards portion of the standards was significantly revamped in the 2005 revision. The measurement standard adopted with the 2005 standards came, with minor modifications, from the standards for boundary surveys adopted by the NSPS in 2003 (which used the term "relative positional accuracy"). It also eliminated, once and for all, the remnants of the old *Table of Minimum Angle, Distance and Closure Requirements*.

Also in the 2005 Standards, the certification wording was simplified which, with the introduction of the new measurement standards, resolved a problem in that nearly all surveyors routinely misapplied the bullet points in the 1999 certificate.

The 2011 Minimum Standard Details Requirements for ALTA/ACSM Land Title Surveys were effective February 23, 2011. The 2011 standard was the first complete rewrite of the ALTA/ACSM Standards since their inception in 1962 and was well-received by the surveying profession. Among the many improvements and modifications to the standards was a requirement that the certificate contained in the standards be the only certificate appearing on the face of the plat /map and that it be unaltered (other than as required by law).

Section 3.B. – Other Requirements

Many states and some local jurisdictions have adopted statutes, administrative rules, and/or ordinances that set out standards regulating the practice of surveying within their jurisdictions. In addition to the standards set forth herein, surveyors shall also conduct their surveys in accordance with applicable jurisdictional survey requirements and standards of practice. Where conflicts between the standards set forth herein and any such jurisdictional requirements and standards of practice occur, the more stringent shall apply.

Most, but not all, states have adopted either statutes or administrative rules setting standards that regulate the practice of surveying in those states. Additionally, there are some local jurisdictional requirements that are relevant. The 2011 standards also mentioned federal regulation of the practice of surveying, but because surveying is regulated on a state and/or local level, reference to federal standards regulating the practice was removed in 2016.

As an example of the application of Section 3.B., many states require that all boundary corners be monumented, but some do not. Likewise, some states burden the surveyor with conducting some title/deed research, but some do not.

Notwithstanding the ALTA/NSPS Standards, the surveyor must understand and account for the various requirements that he or she may be operating under, and assure that the most stringent of those has been met. When a state or local requirement exceeds that required under the ALTA/NSPS Standards, the surveyor will need to meet the jurisdictional requirement even if is higher than that required under the ALTA/NSPS Standards.

Section 3.C. – The Normal Standard of Care

Surveyors should recognize that there may be unwritten local, state, and/or regional standards of care defined by the practice of the “prudent surveyor” in those locales.

Surveyors are advised to remember that, notwithstanding the written ALTA/NSPS Standards,

they also operate under a normal standard of care based on the practice of the prudent surveyor in their localities as of any certain date.

For example, in Section 5.E.ii. of the 2016 Standards, surveyors must show “*evidence of easements or servitudes ... not disclosed in the documents provided to the surveyor, but observed in the process of conducting the fieldwork....*” Perhaps there was some improvement or feature on the property that the surveyor did not observe and that was, therefore, not shown on the survey. If, however, that feature turned out to be evidence of a prescriptive easement its nondisclosure on the survey may have resulted in a title claim. In defense of the survey, the surveyor might testify that his or her field crew did not “observe” that feature; however, a judge, weighing the survey against the normal standard of care, might rule that the surveyor should have seen the feature and was therefore responsible for the omission.

There are a number of places in the 2016 Standards where the written standard is clear, but the where the surveyor’s *performance* under that standard could be dictated by the normal standard of care. It is therefore very important that surveyors be very familiar with surveying practice in those areas in which they may find themselves working.

Section 3.D. – Boundary Resolution

The boundary lines and corners of any property being surveyed as part of an ALTA/NSPS Land Title Survey shall be established and/or retraced in accordance with appropriate boundary law principles governed by the set of facts and evidence found in the course of performing the research and fieldwork.

Until 2011, the ALTA/ACSM Standards were silent on the topic of retracement or establishment of boundaries – apparently leaving it to the professional’s judgment. Many persons felt this had always been a shortcoming of the ALTA/ACSM Standards; they were very specific as to measurement precision, but that they were silent on the issue on the integrity of the boundary resolution. That was a valid concern and for that reason, Section 3.D. was written into the 2011 ALTA/ACSM Standards.

The wording remains unchanged in the 2016 ALTA/NSPS Standards. The surveyor is specifically charged with understanding the applicable boundary law principles and applying those accordingly to the set of facts and evidence when establishing or retracing a boundary.

Section 3.E. – Measurement Standards

The following measurement standards address Relative Positional Precision for the monuments or witnesses marking the corners of the surveyed property.

Section 3.E.i. – Relative Positional Precision

“Relative Positional Precision” means the length of the semi-major axis, expressed in feet or meters, of the error ellipse representing the uncertainty due to random errors in measurements in the location of the monument, or witness, marking any corner of the surveyed property relative to the monument, or witness, marking any other corner of the surveyed property at the 95 percent confidence level. Relative Positional Precision is estimated by the results of a correctly weighted least squares adjustment of the survey.

Section 3.E. spells out the various facets of the measurement standards for ALTA/NSPS Land Title Surveys. Accuracy is a term related to the closeness to a true value; but the true value of a survey measurement cannot be exactly known since all measurements contain some level of uncertainty or uncontrollable error, albeit it minute in many cases. Thus the measurement standard is, and always has been, related to the *precision* of a measurement – its uniformity or reproducibility.

The definition of Relative Positional Precision specifies that the length of the semi-major axis of the relative error ellipse is the essential calculation. (See further discussion on this topic under Sections 3.E.iv. and v. below).

Sections 3.E.ii. and 3.E.iii. – Uncertainties in Boundary Locations

3.E.ii. Any boundary lines and corners established or retraced may have uncertainties in location resulting from (1) the availability, condition, history and integrity of reference or controlling monuments, (2) ambiguities in the record descriptions or plats of the surveyed property or its adjoiners, (3) occupation or possession lines as they may differ from the written title lines, or (4) Relative Positional Precision. Of these four sources of uncertainty, only Relative Positional Precision is controllable, although, due to the inherent errors in any measurement, it cannot be eliminated. The magnitude of the first three uncertainties can be projected based on evidence; Relative Positional Precision is estimated using statistical means (see Section 3.E.i. above and Section 3.E.v. below).

3.E.iii. The first three of these sources of uncertainty must be weighed as part of the evidence in the determination of where, in the surveyor’s opinion, the boundary lines and corners of the surveyed property should be located (see Section 3.D. above). Relative Positional Precision is a measure of how precisely the surveyor is able to monument and report those positions; it is not a substitute for the application of proper boundary law principles. A boundary corner or line may have a small Relative Positional Precision because the survey measurements were precise, yet still be in the wrong position (*i.e.*, inaccurate) if it was established or retraced using faulty or improper application of boundary law principles.

In the process of conducting a boundary survey, a variety of conflicts between deed descriptions, plats, surveys, and even facts on the ground, will inevitably be found. An explanation of the

causes of these discords is warranted. And since many disagreements between legal descriptions have their genesis in the surveys that were performed in the creation of those descriptions, a look at the sources of uncertainties in boundary determinations is necessary.

There are four potential sources of uncertainty in boundary locations. These result from (1) uncertain, indeterminate or conflicting reference monuments; (2) inconsistent or erroneous or conflicting legal descriptions and survey plats or maps; (3) lines of occupation or possession that differ from the lines of title described in the deed; and (4) the inherent imprecision in any measurement.

Reference/Controlling Monumentation

Any boundary survey must begin at, or be based on, at least two known “control” or “reference” points (or, in some cases, as we learned in geometry, a point and a ray (direction/line)). Boundaries are not established out of thin air, they must relate in some way to other known locations, such as street rights of way, subdivision corners, section lines, or grant corners.

Reference monuments can take many forms other than those mentioned above since there are many points and lines referenced in any given description on which the boundary may be dependent. The location of each of these dependent points or lines must be recovered, established or otherwise determined in order to retrace the boundary properly and with integrity.

Frequently, however, the referenced point or line is not well-documented. For example, a description may call for a line to run parallel with a railroad right of way line. If that particular railroad was abandoned 30 years ago, determining exactly where that right of way line was may be problematic.

Likewise, a description may commence at the intersection of the centerlines of two old county or township roads. The surveyor may find few if any records related to that location. The field investigation may or may not reveal any marker at that location, in which case the location must be re-established – often based on conflicting, old and incomplete records and evidence. The resulting location will not have as high a level of “confidence” as it would have had the original marker been found.

Different surveyors may interpret the records and evidence differently thereby coming up with their own differing locations of the same point. Obviously, surveys utilizing different beginning points will result in boundary corners and lines that are in conflict.

Record Documents

Another source of boundary conflicts lies in the records themselves. Many boundary lines

where one would expect neighboring properties to share “common” lines, in fact, have gaps and overlaps between parcels. The exact source of these variances can sometimes be found and sometimes not. They may be result of unqualified persons writing descriptions, descriptions that were written without benefit of a land survey, or even poor surveys.

Sometimes these problems are simply the result of mistakes that occurred in the transcription of a deed and were perpetuated through the years in a series of deed descriptions. Sometimes they are the result descriptions based on conflicting surveys (e.g. as discussed above under “Reference Monumentation”). And conflicts in the records can simply be the result of poor survey work in the first place.

In any event, in a boundary survey, it is important to recognize that conflicts will occur in the records and this is not unusual or unexpected.

Lines of Possession or Occupation

It is not unusual in the process of performing a boundary survey to find lines of occupation such as fence lines or tree rows near, but not exactly on the actual boundary line. Sometimes, these lines will be significantly different from the line as described in the deed. This is important to recognize since great weight is often placed on lines of occupation – sometimes justifiably, sometimes not.

Often fence and tree lines are reliable evidence of where a boundary may lie. But sometimes, they differ significantly from the line described in the deed. These differences may be evidence of the movement of lines by unwritten means such as adverse possession; alternately they may be the best evidence of the original lines, when no other is available.¹ And, of course, sometimes a fence is just a fence.

Generally for possession to be considered evidence of original survey lines:

- There must have been a controlling survey that, if located, would control the lines between the adjoiners
- Lines of possession are along the lines surveyed or presumed to have been surveyed by the original surveyor
- A series of possessions in agreement with one another tend to substantiate one another
- The possession is of a former generation (ancient) or testimony can be taken as to its origin

¹ Michigan Supreme Court Chief Justice Thomas M. Cooley, in his famous 1881 treatise The [Quasi-] Judicial Function of Surveyors stated “Occupation, especially if long continued, often affords very satisfactory evidence of the original boundary when no other is attainable...” and “...in a legal controversy the law as well as common sense must declare that a supposed boundary long acquiesced in is better evidence of where the real line should be than any survey made after the original monuments have disappeared.”

- Possession has the reputation of being on the correct survey lines.²

Measurement Uncertainty

As noted above, and as all surveyors know, there is no such thing as a perfect measurement. No matter what type of measuring device is used, the “true” length of anything is unknown – at least within the tolerance of the measuring device being used. Surveying is no different.

Surveyors have many highly accurate measuring devices such as electronic total stations, EDM, lasers and GPS. But none are perfect and all result in some level of uncertainty in the measurement. When current technologies are applied in land surveys to retrace boundaries that were originally surveyed with a compass and chain in the mid 1800’s, these measurement issues can become significant.

These issues can be the source of conflicts that occur in modern surveys and descriptions as they fit with or relate to older parcels.

Interestingly, of these four sources of uncertainty in boundary location, only the last one – measurement uncertainty – is controllable by surveyor, yet it cannot be eliminated, only minimized. The other sources – reference monuments, records and occupation/possession – are part of the evidence that the surveyor uses in forming an opinion about where a boundary line or corner should be placed.

Section 3.E.iv. – Measurement Technology and Procedures

For any measurement technology or procedure used on an ALTA/NSPS Land Title Survey, the surveyor shall (1) use appropriately trained personnel, (2) compensate for systematic errors, including those associated with instrument calibration, and (3) use appropriate error propagation and measurement design theory (selecting the proper instruments, geometric layouts, and field and computational procedures) to control random errors such that the maximum allowable Relative Positional Precision outlined in Section 3.E.v. below is not exceeded.

When it comes to the actual measuring, surveyors are, and have always been, charged with making sure that their staff is appropriately trained and equipped. Surveyors also know that they must compensate for systematic errors in their measurements, including those associated with instrument calibration, or their results will not be precise. They know that they must use appropriate error propagation and measurement design theory, which, in part, involves selecting the proper instruments, geometric layouts, and field and computational procedures so that the random errors that are inherent in any measurement are controlled to the

² Evidence & Procedures for Boundary Location, 5th Edition, Brown, Robillard & Wilson, p. 111

extent possible and practicable.

Section 3.E.v. - Relative Positional Precision

The maximum allowable Relative Positional Precision for an ALTA/NSPS Land Title Survey is 2 cm (0.07 feet) plus 50 parts per million (based on the direct distance between the two corners being tested). It is recognized that in certain circumstances, the size or configuration of the surveyed property, or the relief, vegetation, or improvements on the surveyed property, will result in survey measurements for which the maximum allowable Relative Positional Precision may be exceeded. If the maximum allowable Relative Positional Precision is exceeded, the surveyor shall note the reason as explained in Section 6.B.x. below.

The ALTA/NSPS Standards address measurement uncertainty through the concept of Relative Positional Precision (RPP). As noted above, Relative Positional Precision is defined in Section 3.E.i. of the 2016 Standards as *“the length of the semi-major axis, expressed in feet or meters, of the error ellipse representing the uncertainty due to random errors in measurements in the location of the monument, or witness, marking any corner of the surveyed property relative to the monument, or witness, marking any other corner of the surveyed property at the 95 percent confidence level.”*

In order to eliminate any confusion, reference to “two standard deviations” in earlier versions of the Standards has been eliminated in the 2016 Standards (the 95% confidence level is actually 1.96, not 2, standard deviations).

Following is a brief explanation of a logical approach to computing relative positional precision.

If an adjustment is not properly weighted, the resulting uncertainty estimates in coordinate locations may not be valid. In order to properly weight a least square adjustment, one must (1) know what the primary sources of measurement uncertainty are for any given measurement, and (2) determine reliable estimates of the magnitude of the uncertainty from each of those contributing factors (at the 95% confidence level). Exhibit 1 of this handout contains some example information in this regard. As demonstrated in Exhibit 1, estimates of those uncertainties can be obtained collectively from textbooks, field testing and instrument manuals.

Once reliable estimates of the various sources of uncertainty have been determined, those numbers are used in the least squares adjustment to assure proper weighting of the various measurements.

Every physical point located or set on a survey has an uncertainty in its location that can be represented by an error ellipse. The size (length of the semi-major and semi-minor axes) and orientation of the error ellipse for any point is a function of the uncertainties in the measurements that were made in the determination of that point's location.

For example, if a point was located based on an angle and distance made from only one point, the resulting error ellipse at the first point will have one axis that is along the line measured (the length of which is a function of the uncertainty in the distance measurement); and one axis that is perpendicular to the line measured (the length of which is a function of the uncertainty in the angle).

In the case of Figure 1 below, the uncertainty in the angular measurement was greater than in the distance measurement. Figure 2 further below demonstrates the opposite - where the uncertainty in the distance measurement was greater.

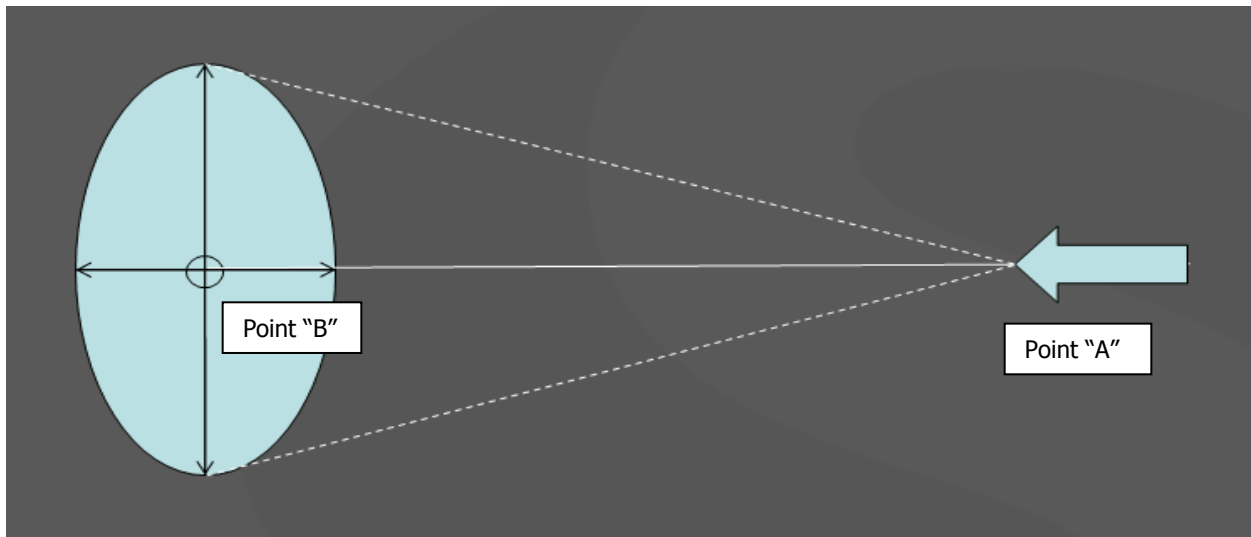


Figure 1

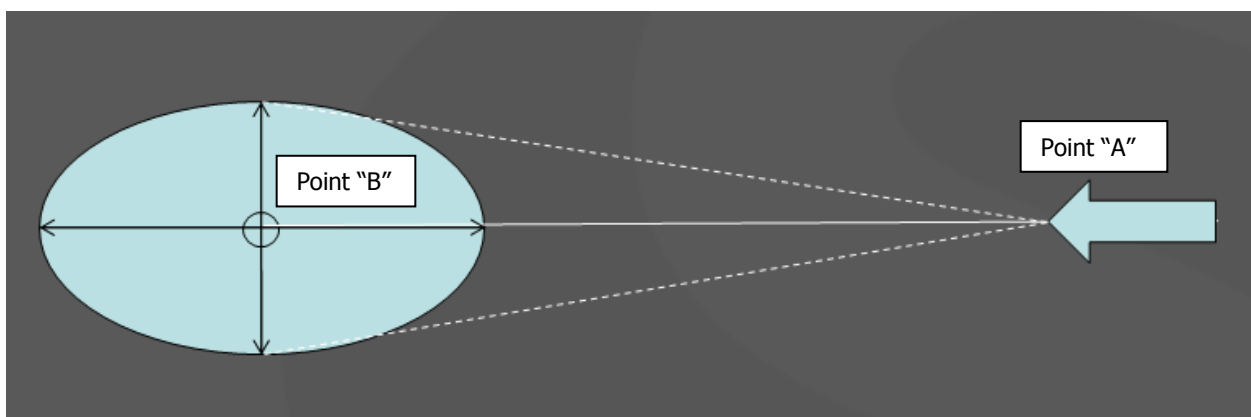


Figure 2

If Point 'B' was, however, located based not only on that one set of distance and angle measurements from Point 'A,' but also redundantly, using an angle and distance from Point 'C,' then the resulting error ellipse at Point 'A' will have a different size and orientation because it will be a function of two error ellipses – one based on the measurements made from Point 'A' and one based on the measurements made from Point 'C.' Generally, because of the redundant measurement, the size of the combined error ellipse will be smaller (the respective lengths of its two axes will be shorter). Also, its orientation will no longer simply be along and perpendicular to the measurement from Point 'A' because it will obviously also be affected by the set of measurements made from Point 'C' (see Figure 3 below).

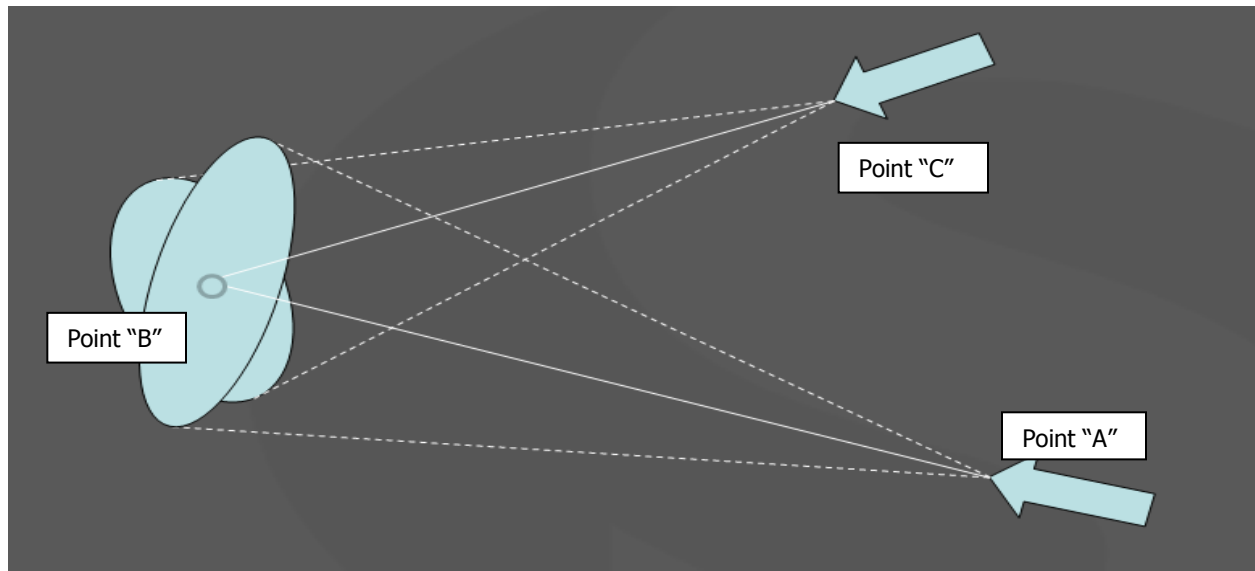


Figure 3

The RPP for any point is then compared to the allowable RPP which is 2 cm (0.07 feet) plus 50 ppm, with the 50 ppm being based on the length of the line directly connecting the two points being tested. If the RPP exceeds the allowable 2 cm and 50 ppm, then the survey will need to be looked at and probably some targeted redundant measurements made, or higher precision equipment utilized in order to decrease the size of the relevant error ellipses.

Section 4 – Records Research

It is recognized that for the performance of an ALTA/NSPS Land Title Survey, the surveyor will be provided with appropriate and, when possible, legible data which can be relied upon in the preparation of the survey. The request for an ALTA/NSPS Land Title Survey shall set forth the current record description of the property to be surveyed or, in the case of an original survey prepared for purposes of locating and describing real property that has not been previously separately described in documents conveying an interest in the real property, the current record description of the parent parcel that contains the property to be surveyed.

In order to complete an ALTA/NSPS Land Title Survey, the surveyor must be provided with complete copies of the most recent title commitment or, if a title commitment is not available, other title evidence satisfactory to the title insurer. In addition, the surveyor must be provided with the following:

- (i) The following records established under state statutes for the purpose of imparting constructive notice of matters relating to real property (public records):
 - (a) The current record descriptions of any adjoiners to the property to be surveyed, except where such adjoiners are lots in platted, recorded subdivisions;
 - (b) Any recorded easements benefitting the property;
 - (c) Any recorded easements, servitudes, or covenants burdening the property;
- (ii) Any unrecorded documents affecting the property being surveyed and containing information to which the survey shall make reference, if desired by the client.

Except, however, if the documents outlined above in (i) and (ii) of this section are not provided to the surveyor or if non-public or quasi-public documents are required to complete the survey, the surveyor shall be required to conduct only that research which is required pursuant to the statutory or administrative requirements of the jurisdiction where the property being surveyed is located and that research (if any) which is negotiated and outlined in the terms of the contract between the surveyor and the client.

In order for the surveyor to meet the needs and expectations of the title industry regarding the location and existence of easements, the relationship with adjoiners, the width and locations of rights of way, etc., the American Land Title Association has, since 1962 by adoption of the ALTA/ACSM (or ALTA/NSPS) Standards, understood and agreed that the insurer (title company) should provide the appropriate documents to the surveyor for use in preparing the survey. However, an ALTA/NSPS Land Title Survey is performed pursuant to a contract (preferably written, but an unwritten contract is just as valid), and that contract cannot impose any responsibilities on third parties. So, contractually the responsibility for providing documents falls to the client, but from a practical standpoint, everyone knows and understands that the title company will be the entity that provides them.

The request for an ALTA/NSPS Land Title Survey is to include the current record description of the property to be surveyed or, in the case of an original survey,³ the current record description of the parent parcel that contains the property to be surveyed. The provider of this information is not specified, but contractually it is the client.

In the 2016 Standards, the term '*Record Documents*' which had been used in every version of the

³ For clarity and to draw a distinction from original surveys of the public lands performed by or for the Bureau of Land Management, when performing an ALTA/NSPS Land Title Survey an "original survey" is defined in Section 4 as a "survey prepared for purposes of locating and describing real property that has not been previously separately described in documents conveying an interest in the real property."

Standards since 1992 has been deleted in favor of simply referencing the documents that are to be *'provided to the surveyor.'*

The range of those documents has not been expanded with the 2016 Standards, but responsibilities have been clarified, particularly when those documents are, in fact, not provided.

Normally there will be a title company involved and someone will provide the surveyor with a copy of the title commitment. There are, however, occasions when someone simply decides they want an ALTA/NSPS Land Title Survey even though there is no pending conveyance or financing, and in that case, there may *not* be a title company. Nevertheless, ALTA and NSPS agreed in 2011 that title work needed to be provided to the surveyor or an ALTA/ACSM Land Title Survey could not be performed. The wording in the 2011 Standards, however, was a bit narrow and the 2016 Standards now state that the surveyor must be provided with *'the most recent title commitment, or if a title commitment is not available, other title evidence satisfactory to the title insurer.'* Thus, between the client and the surveyor, some sort of resolution to the title work will need to be negotiated because a Land Title Survey cannot be completed without title work. Worst case, the surveyor could perform a survey to the 2016 Standards, but he or she could not entitle it an "ALTA/NSPS Land Title Survey" and neither could the ALTA/NSPS certification be used or other reference to the Standards made.

Other than title work, the documents to be provided to the surveyor include certain documents such as record descriptions of adjoiners (except when in platted, recorded subdivisions), easements benefitting the property being surveyed, easements, servitudes and covenants burdening the property being surveyed, and unrecorded documents to which the survey is to make reference.

Prior versions of the Standards purposely ignored what to do if those documents were not provided, under the presumption that Section 3.B. would provide the necessary guidance. With the 2016 Standards, in order to prevent any confusion and to provide better guidance to surveyors, this issue has been specifically addressed. The 2016 Standards state that if the listed documents are not forthcoming, or if there are other non-public or quasi-public documents required to complete the survey, the surveyor's responsibility is limited to the statutory and administrative requirements of the jurisdiction where the property being surveyed is located and any other research that may have been negotiated in the contract between the surveyor and client.

Surveyors should note that there is nothing in the 2016 Standards to suggest that these documents need to be provided at no cost. Most abstractors/title companies will, but some may want to charge a fee.

Also, surveyors should be prepared to deal with the fact that – particular in urban areas – title companies may not want to provide adjoiner descriptions. This is due primarily to liability concerns and the practical aspects of searching title with a computerized title plant. Surveyors will need to determine (or likely have already determined) what documents the title companies

they deal with will provide, and what documents they will not, and be ready to address that in their contract.

Some surveyors think the requirement as to adjoiner deeds requires a title search of each adjoiner. There is, however, no such wording in the Standards and this is not contemplated by the Standards. The requirement simply says “current record descriptions of any adjoiners.”

Section 5 – Field Work

The survey shall be performed on the ground (except as otherwise negotiated pursuant to Table A, Item 15 below, if selected by the client). The fieldwork shall include the following, located to what is, in the surveyor’s professional opinion, the appropriate degree of precision based on (a) the planned use of the property, if reported in writing to the surveyor by the client, lender, or insurer, or (b) the existing use, if the planned use is not so reported:...

ALTA/NSPS Land Title Surveys are to be based on field work conducted on the ground, unless Table A item 15 has been selected by the client and there has been an understanding in that regard arrived at between the client, the lender and the title company (see discussion on Table A, item 15 later in this document).

Section 5.A. – Monuments

Section 5.A.i. – Monuments Found

The location, size, character and type of any monuments found during the fieldwork.

Section 5.A.ii. – Monuments Set

The location, size, character and type of any monuments set during the fieldwork, if item 1 of Table A was selected or if otherwise required by applicable jurisdictional requirements and/or standards of practice.

Any monuments found during the fieldwork must be shown and adequately described on the face of the plat/map. Surveyors all know that they are to “*follow in the footsteps of the original surveyor*,” but if surveyors do not leave good evidence of their work by virtue of substantial monumentation on the ground and clear descriptions of those monuments (whether found or set) on their plats/maps, then following in their footsteps becomes a challenge at best and impossible at worst.

Pursuant to Section 3.B., if jurisdictional requirements require monumentation, then the client’s wishes do not matter. The client may not want to pay for monuments, but surveyors are bound by law to conduct their practice pursuant to the statutes and administrative rules/regulations of

their state. So, if monuments are required by the state, the surveyor may as well check off make a habit of checking Table A Item 1.

Section 5.A.iii. – Controlling Lines and Monuments

The location, description and character of any lines that control the boundaries of the surveyed property.

Monuments or lines that control the boundaries of the surveyed property generally fall into one of two categories. The first are those monuments called for directly in the description, or indirectly (e.g. by virtue of reference to a subdivision plat) and which therefore control the perimeter boundary of the surveyed property itself.

The other category includes those monuments or lines that control the boundary by reference. Examples include:

- If the description commences at a remote corner and then runs one or more courses to the point of beginning, that remote corner may control the location of the point of beginning even though it is not actually on the perimeter of the surveyed property.
- If a part of the boundary of the property runs parallel with, for example, a railroad right of way line, that right of way line is a controlling line even though it is not itself part of the boundary of the surveyed property.
- In the U.S. Public Land Survey states where the surveyed property is described, for example, as a quarter-quarter or half-quarter section, the monuments forming *the entire quarter section* would typically be part of what controls the smaller aliquot part actually being surveyed.

There are innumerable other examples, but in all cases, the 2016 Standards require that the location, description and character of such lines and monuments be included as part of the survey (and, of course, shown on the plat/map).

Section 5.B. – Rights of Way and Access

Issues of access are of paramount concern to title companies. Surveyors performing ALTA/NSPS Land Title Surveys would be well-advised to know that, based on input from the title industry, this is an area where surveyors often do not do a good job of accurately and completely reporting the access situation on the ground.

Section 5.B.i. – Distance to nearest right of way line

The distance from the appropriate corner or corners of the surveyed property to the nearest right of way line, if the surveyed property does not abut a right of way.

It is of potential concern to the title company when a property appears to be land-locked or has access to a public road only by virtue of an easement. Thus, in such cases, the field work is to include a measurement to the nearest right of way line from the appropriate corner or corners of the property.

“Appropriate corner or corners” means that, for example, if the nearest right of way line is to the east of the property, the surveyor does not need to make or show a measurement to that right of way line from corners on the *west* side of the surveyed property.

Section 5.B.ii. – Name, width and location of abutting right of way

The name of any street, highway, or other public or private way abutting the surveyed property, together with the width of the travelled way and the location of each edge of the travelled way including on divided streets and highways. If the documents provided to or obtained by the surveyor pursuant to Section 4 indicate no access from the surveyed property to the abutting street or highway, the width and location of the travelled way need not be located.

Where the surveyed property abuts an existing public or private way, the name of that way must be identified. Where a way exists only by virtue of a prescriptive right, the location of the traveled way can be particularly important because in some states, the prescriptive width extends only to include the traveled way. In those cases, if the boundary of the surveyed property does not reach the traveled way, there may be an access issue.

But even when the width of the right of way is known and documented, the parties may be very interested in knowing the width and location of the traveled way (even on divided streets and highways because of access from the other side of the road).

As implied above, being able to assess the condition of access to public and private ways is critically important. Claims related to access (or, more accurately, lack thereof) are not uncommon. See more discussion related to this issue under Sections 5.B.iv. and vi. below.

When there is no access to the abutting street from the surveyed property is indicated in the documents provided (e.g., the right of way is limited access), the width and location of the traveled way need not be determined.

Section 5.B.iii. – Visible evidence of access

Visible evidence of physical access (*e.g.*, curb cuts, driveways) to any abutting streets, highways, or other public or private ways.

The surveyor is obligated to identify the visible evidence of physical access (such as curb cuts and driveways) to any street, highway or other public way that abuts the surveyed property. This gives the title company yet more information as to the exact access situation affecting the property.

Note that this is the only place in Section 5 of the 2016 Standards where the term “*observed in the process of conducting the fieldwork*” is not used to describe the surveyor’s obligation. Access is such an important issue that surveyors must specifically look for visible signs of physical access.

Section 5.B.iv. – Access by other than the occupants

The location and character of vehicular, pedestrian, or other forms of access by other than the apparent occupants of the surveyed property to or across the surveyed property observed in the process of conducting the fieldwork (*e.g.*, driveways, alleys, private roads, railroads, railroad sidings and spurs, sidewalks, footpaths).

Vehicular, pedestrian or other forms of access to or across the surveyed property by other than the apparent occupants of the surveyed property may be evidence of a prescriptive easement. The location and character of such uses must be shown. For 2016, the examples provided have been extended to include railroads and railroad sidings and spurs in addition to driveways, alleys, private roads, sidewalks and footpaths.

In the case of, for example, sidewalks and driveways, the title-based concern is not with regard to regular visitors who might access the property or building via a driveway to the parking lot or a sidewalk to the building, but rather joiners or members of the general public who use or cross the property for general access purposes.

Section 5.B.v. – Potential encroachments of ways of access

Without expressing a legal opinion as to ownership or nature, the location and extent of any potentially encroaching driveways, alleys, and other ways of access from adjoining properties onto the surveyed property observed in the process of conducting the fieldwork.

Notwithstanding the fact that surveyors often give opinions and make general statements using the word “encroachment,” whether or not a physical condition represents a true encroachment is a *legal* determination, not a matter of survey. An encroachment can be defined as an ‘illegal

trespass' neither of which words falls under the definition of the practice of surveying. Thus, this section begins with the phrase, "*Without expressing a legal opinion as to ownership or nature...*"

In any event, the surveyor must carefully look for potentially encroaching ways of access from adjoining properties, and locate and measure the extent of any such condition. Again, these conditions tie to potential claims of prescriptive rights, and the title company needs to be made aware of their existence so appropriate exceptions can be written.

Section 5.B.vi. – Widths of abutting rights of way

Where documentation of the location of any street, road, or highway right of way abutting, on, or crossing the surveyed property was not disclosed in documents provided to or obtained by the surveyor, or was not otherwise available from the controlling jurisdiction (see Section 6.C.iv. below), the evidence and location of parcel corners on the same side of the street as the surveyed property recovered in the process of conducting the fieldwork which may indicate the location of such right of way lines (*e.g.*, lines of occupation, survey monuments).

When surveyors are provided documentation (see discussion under Section 4 above) regarding the location of rights of way abutting, on or crossing the surveyed property, that information must be reflected on the survey. However, when no such information was provided, the surveyor needs to check with the controlling jurisdiction for any available information (see also the discussion below under Section 6.C.iv.).

When no information was provided by the client or obtained through the jurisdiction, the legal width of the right of way obviously remains in question. This section requires that the surveyor look for and report evidence along the same side of the street (for example, fences or survey monuments) that might represent someone's opinion of the right of way's width and location. As with the other items under Section 5.B., such information helps the title company understand and evaluate the access situation.

Section 5.B.vii. – Water access

Evidence of access to and from waters adjoining the surveyed property observed in the process of conducting the fieldwork (*e.g.*, paths, boat slips, launches, piers, docks)

In many cases, property adjoins a waterway or pond/lake. In most states, this is of particular and very significant value. Water access also typically carries with it certain riparian and other rights, which are, in some cases, shared with others.

In some states like Maine, water access carries a particular importance because property owners there cannot obtain an easement by necessity if their property has access to navigable waters. As

a result of these types of issues, evidence of access to water is of particular interest to the title company, and the surveyor must locate and show the related improvements such as boat launches, piers and docks.

Locations of the water features themselves are discussed below under Sections 5.G. and 6.B.vi.

Section 5.C. – Lines of Possession, and Improvements along Boundaries

Potential encroachments, claims of adverse possession, acquiescence and prescriptive rights are examples of potential title or boundary conflicts that could affect title and result in title claims. As a result, title companies must be aware of their existence.

Section 5.C.i. – Evidence of possession or occupation

The character and location of evidence of possession or occupation along the perimeter of the surveyed property, both by the occupants of the surveyed property and by adjoining, observed in the process of conducting the fieldwork.

Lines of occupation and/or possession are usually an indication of the respective owners' opinions as to where they believe their property lines are. When those lines differ from the line established pursuant the written title, there is the potential for a boundary dispute or claim of unwritten rights. The surveyor must locate and identify the character of the possession or occupation and show it on the plat/map. The title company will likely write an exception for any conflicting claims associated with those lines.

Typically, such lines are represented by improvements like fences, walls, buildings and landscaping, but the surveyor should also watch for less overt features such as brush or tree lines. In some states, a mow line may be considered enough of an occupation on which to base a claim of unwritten rights. In other states, adversely occupying a portion of a parcel can result in a valid claim of adverse possession against the entire parcel. In any event, the surveyor should assess the magnitude and significance of such conditions, and locate and show them if there is any question.

Section 5.C.ii. – Improvements within 5 feet of the boundary line

Unless physical access is restricted, the character and location of all walls, buildings, fences, and other improvements within five feet of each side of the boundary lines, observed in the process of conducting the fieldwork. Trees, bushes, shrubs, and other natural vegetation need not be located other than as specified in the contract, unless they are deemed by the surveyor to be evidence of possession pursuant to Section 5.C.i.

Title companies have an interest in the character and location of any improvements within five feet of each side of the boundary lines. Features such as neighboring buildings or manholes near

the line may end up being significant, for example, in the development of a property, so the surveyor must locate and show such improvements on the plat/map. This is independent of the issue of a line of occupation or possession covered in Section 5.C.i.

If the surveyor is unable to access the area 5 feet from the boundary lines, Section 6.B.xi. requires a note to that effect.

Section 5.C.iii. – Potential encroachments over boundary lines

Without expressing a legal opinion as to the ownership or nature of the potential encroachment, the evidence, location and extent of potentially encroaching structural appurtenances and projections observed in the process of conducting the fieldwork (e.g., fire escapes, bay windows, windows and doors that open out, flue pipes, stoops, eaves, cornices, areaways, steps, trim) by or onto adjoining property, or onto rights of way, easements, or setback lines disclosed in documents provided to or obtained by the surveyor.

As with Section 5.B.v., notwithstanding the fact that surveyors often give opinions and make general statements on encroachments, whether or not a physical condition represents an actual encroachment (i.e., an “*illegal trespass*”) is a legal determination, not a matter of survey. So, again, similar to Section 5.B.v. this section begins with the phrase, “*Without expressing a legal opinion as to the ownership or nature of the potential encroachment....*”

The surveyor must carefully assess the property for potential encroachments, which can take many forms, particularly in downtown and urban areas. The location, extent and nature of any potential encroachment observed must be noted and shown on the plat or map in relation to the impacted boundary or any affected right of way, easement or setback line for which documentation was provided or obtained pursuant to Section 4.

As with Section 5.B.v., the title company will typically write a Schedule B exception for the potential encroachment.

Section 5.D. – Buildings

The location of buildings on the surveyed property observed in the process of conducting the fieldwork.

All buildings observed in the process of conducting the fieldwork must be located. Section 6.B.ix. explains how buildings are to be dimensioned on the plat/map.

Section 5.E. – Easements and Servitudes

Section 5.E.i. – Evidence of easements or servitudes disclosed in the Record Documents

Evidence of any easements or servitudes burdening the surveyed property as disclosed in the documents provided to or obtained by the surveyor pursuant to Section 4 and observed in the process of conducting the fieldwork.

When surveyors are provided copies of easements and servitudes any evidence of those encumbrances observed in the course of performing the fieldwork must be located. Such evidence would be that consistent with the purpose of the easement (e.g., a manhole for a sewer easement, a utility pole or transformer for an electric line easement, a drive for an access easement)

If such documents are not provided, surveyors may have to obtain them themselves, but only if jurisdictional requirements or standards put such a burden on surveyors. Notwithstanding that, however, Section 5.E.i. applies only when the documents were provided.

Section 5.E.ii. – Evidence of easements or servitudes not disclosed in the Record Documents

Evidence of easements, servitudes, or other uses by other than the apparent occupants of the surveyed property not disclosed in the documents provided to or obtained by the surveyor pursuant to Section 4, but observed in the process of conducting the fieldwork if they appear to affect the surveyed property (e.g., roads; drives, sidewalks, paths and other ways of access; utility service lines; water courses; ditches; drains; telephone, fiber optic lines, or electric lines; or water, sewer, oil or gas pipelines on or across the surveyed property and on adjoining properties).

As with Section 5.B.iv., the gist of this section has to do with the possibility of prescriptive easements. The title company is relying on the surveyor to be its eyes in observing evidence of possible prescriptive easements or servitudes that may exist without benefit of a supporting record document.

This writer once gave a deposition in a federal lawsuit against a surveyor's insurance company claiming over \$1 million in damages due to a manhole not having been shown on an ALTA/ACSM Land Title Survey. The manhole turned out to be observable evidence of a large, old, brick combination sewer which cut right through the surveyed property, and for which there was no record easement.

Likewise, this writer is familiar with a \$60,000 claim for damages resulting from a gate in a fence that had provided long-time access by an adjoiner across the surveyed property. The fence was shown on the ALTA/ACSM Land Title Survey, but the gate was not.

Both of these cases involved claims of prescriptive easements that resulted in valid title claims. And in both cases, the surveyor clearly had a responsibility to have observed and shown the conditions.

Observable evidence of easements and servitudes can take many forms as noted in this section of the Standards. It would be advisable for surveyors to train their field technicians on the nature of prescriptive easements and what features might constitute evidence of one.

It should be noted that some utility installations may be evidence of an easement or prescriptive easement, while other features may not. As a result, Section 5.E.iv. has been added for 2016 (see below).

Section 5.E.iii. – Underground easements and servitudes

Surface indications of underground easements or servitudes on or across the surveyed property observed in the process of conducting the fieldwork (*e.g.*, utility cuts, vent pipes, filler pipes).

As with Section 5.E.ii., surveyors and their field technicians should be familiar with what might constitute, in this case, evidence of underground easements and servitudes. When in doubt, it is likely better to err on the side of caution and show any questionable features. For 2016, examples have been added.

Section 5.E.iv. – Evidence of use by others

Evidence on or above the surface of the surveyed property observed in the process of conducting the fieldwork, which evidence may indicate utilities located on, over or beneath the surveyed property. Examples of such evidence include pipeline markers, manholes, valves, meters, transformers, pedestals, clean-outs, utility poles, overhead lines and guy wires.

Utility features might or might not be evidence of an easement. If they are not, then pursuant to the 2011 Standards, they did not need to be located and shown. But if they were evidence of an easement, then they did need to be located and shown. Should the surveyor or field crew make a wrong determination, the result could be financially painful.

Since many times, utility features are, in fact, evidence of easements, the ALTA and NSPS committees decided to mitigate this conundrum by simply requiring that the observed evidence of utilities (formerly Table A item 11(a)) become a mandatory part of the standards.

Section 5.F. – Cemeteries

As accurately as the evidence permits, the perimeter of cemeteries and burial grounds, and the location of isolated gravesites not within a cemetery or burial ground, (i) disclosed in the documents provided to or obtained by the surveyor, or (ii) observed in the process of conducting the fieldwork.

The title industry knows it is unreasonable and impossible to ask surveyors to identify ‘all’ cemeteries, burial grounds and gravesites on the surveyed property. Thus, the burden on surveyors with regard to cemeteries, burial grounds and gravesites is limited to when documents have been provided indicating their existence or when they were observed in the process of conducting the fieldwork.

The 2016 Standards have clarified an unintended consequence of changes made in 2011 by requiring that the perimeter of cemeteries and burial grounds be located, but not the ‘perimeter’ of isolated gravesites – only their locations.

Section 5.G. – Water Features

Section 5.G.i. – Springs, ponds, lakes, streams and rivers

The location of springs, ponds, lakes, streams, rivers, canals, ditches, marshes, and swamps on, running through, or outside, but within five feet of the perimeter boundary of, the surveyed property, observed during the process of conducting the fieldwork.

The various water features and courses that border on, run through or are within 5 feet of the perimeter boundary of the surveyed property need to be located and shown on the plat or map.

The extent of this effort, and the precision with which these features need to be located and shown, is dependent on a variety of factors.

Section 6 begins with the statement “The fieldwork shall include the following, *located to what is, in the surveyor’s professional opinion, the appropriate degree of precision based on (a) the planned use of the property, if reported in writing to the surveyor by the client, lender, or insurer, or (b) the existing use, if the planned use is not so reported.*” (See more on section 6 below.) This is particularly relevant with respect to water features. Being armed with what the planned use of the property will be helps the surveyor determine the effort necessary to meet the client’s expectations and needs.

Reference in the 2011 Standards to wetlands locations in this item has been deleted for 2016 in favor of a more clear explanation of what the surveyor will do regarding wetlands in Table A item 18. (Discussed below in the section on Table A.)

Section 5.G.ii. – Water Boundaries

The location of any water feature forming a boundary of the surveyed property. The attribute(s) of the water feature located (*e.g.*, top of bank, edge of water, high water mark) should be congruent with the boundary as described in the record description or, in the case of an original survey, in the new description (see Section 6.B.vi. below).

The surveyor must locate any water feature that forms a boundary of the surveyed property. Studying the record documents will help identify what feature of the water boundary actually forms the legal boundary (*e.g.* the ordinary low water line, the bank, the edge of water).

While it is acknowledged that the lines and points located by the surveyor will not be the actual limit of title due to the meandering, irregular nature of most natural water boundaries, the locations obtained (and shown on the plat/map) should bear some relationship to the legal boundary or, if a new boundary is being created, to that described boundary. If this cannot be done (*e.g.* when the boundary is the center of a river or out in a lake), there should be a note on the survey explaining this fact.

This section must be taken together with Section 6.B.vi. for a more complete understanding of the ALTA/NSPS Standards' requirements regarding natural water boundaries.

Section 6. – Plat or Map

A plat or map of an ALTA/NSPS Land Title Survey shall show the following information. Where dimensioning is appropriate, dimensions shall be annotated to what is, in the surveyor's professional opinion, the appropriate degree of precision based on (a) the planned use of the property, if reported in writing to the surveyor by the client, lender, or insurer, or (b) existing use, if the planned use is not so reported.

Similar to the introduction to Section 5, surveyors are to dimension features on their plats/maps commensurate with the planned uses of the properties if reported to them in writing.

Section 6.A. – Evidence and locations outlined in Section 5

The evidence and locations gathered, and the monuments and lines located during the fieldwork pursuant to Section 5 above, with accompanying notes if deemed necessary by the surveyor or as otherwise required as specified below.

The plat or map must obviously reflect the data gathered in the fieldwork outlined in Section 5 (otherwise, why did we bother locating it?!).

Section 6.B. - Boundary, descriptions, dimensions and closures

Section 6.B.i. – Descriptions

- (a) The current record description of the surveyed property, or
- (b) In the case of an original survey, the current record description of the parent tract that contains the surveyed property

As has been required for the past few versions of the ALTA/ACSM Standards, the record description of the surveyed property is to appear on the face of the plat/map. The committees understand that this is not the typical practice in some areas, but feel it is appropriate so the parties relying on the survey know exactly what real estate parcel was the subject of the survey.

If the survey is an original survey (defined in Section 4 as one “*prepared for purposes of locating and describing real property that has not been previously separately described in documents conveying an interest in the real property*”), then the description of the parent tract is to appear on the face of the plat/map.

Section 6.B.ii. – New Descriptions

Any new description of the surveyed property that was prepared in conjunction with the survey, including a statement explaining why the new description was prepared. Except in the case of an original survey, preparation of a new description should be avoided unless deemed necessary or appropriate by the surveyor and insurer. Preparation of a new description should also generally be avoided when the record description is a lot or block in a platted, recorded subdivision. Except in the case of an original survey, if a new description is prepared, a note shall be provided stating (a) that the new description describes the same real estate as the record description or, if it does not, (b) how the new description differs from the record description.

When the surveyor and the title company deemed it appropriate, and a new description was therefore prepared, that description is to also appear on the plat or map - *with an explanation as to why the new description was prepared.*

Generally speaking, preparing a new description for a property that was otherwise adequately described in the record is not necessary, appropriate or even desirable. Additionally, it is usually inappropriate, unnecessary and even confusing to the chain of title to prepare a new description when the record description is a lot or block in a platted, recorded subdivision, thus surveyors are advised to resist such requests.

When a new description of an existing parcel is prepared, it is necessary that the title company know if that description describes exactly the same real estate as the record (i.e, the surveyor merely “modernized” it), and, if it does not, then it needs to know how it differs. For example in

a development situation, the client may wish to quitclaim away an area of overlap along a boundary line in order to eliminate the possibility of a problem.

Section 6.B.iii. – Dimensioning

The point of beginning, the remote point of beginning or point of commencement (if applicable) and all distances and directions identified in the record description of the surveyed property (and in the new description, if one was prepared). Where a measured or calculated dimension differs from the record by an amount deemed significant by the surveyor, such dimension shall be shown in addition to, and differentiated from, the corresponding record dimension. All dimensions shown on the survey and contained in any new description shall be ground dimensions unless otherwise noted.

To assist in the review of a survey, especially the boundary, all distances and directions identified in the record description need to appear on the plat or map. If a new description was prepared, those dimensions need to be shown also. This makes it easier and less confusing for the person reviewing the survey.

When the calculated or measured dimensions differ from the record, those shall be shown and differentiated from the record dimensions; but only if the surveyor deems the difference to be significant. What difference surveyors deem significant will differ from state to state, perhaps even from locale to locale within a state, and even from surveyor to surveyor. This is a professional judgment on the part of the surveyor. One obvious criteria would be the relative positional precision. For example, if the allowable relative positional precision between two points was 0.22 feet, and the measured dimension between those points was 0.15 feet different from the record, it seems to this writer silly to show a difference.

Having said that, there are some states where surveyors believe their standards and/or their registration boards require that the surveyor report exactly what was measured, which is one reason why different surveyors will look at this issue differently.

The point of beginning and points of commencement need to be shown on the face of the plat/map. In most cases, the property is directly dependent on those points, so they need to be located in order to conduct a proper survey anyway.

In order to address a frequent question, the standards state that dimensions shall be reported on surveys and in descriptions as ground distances unless otherwise noted.

Section 6.B.iv. – Closure and Basis of Bearings

The directional, distance and curve data necessary to compute a mathematical closure of the surveyed boundary. A note if the record description does not mathematically close. The basis of bearings and, where it differs from the record basis, the difference.

The plat or map must show the dimensional data (including elements of any curves) necessary to compute a mathematical closure of the boundary as surveyed.

The basis of bearings of bearings on the survey shall be identified and, where the basis used on the survey differs from the record, the difference shall be indicated. Note that the difference between basis of bearings could differ on different lines of the parcel.

Section 6.B.v. – Depicting the Remainder of a Parcel

The remainder of any recorded lot or existing parcel, when the surveyed property is composed of only a portion of such lot or parcel, shall be graphically depicted. Such remainder need not be included as part of the actual survey, except to the extent necessary to locate the lines and corners of the surveyed property, and it need not be fully dimensioned or drawn at the same scale as the surveyed property.

When the survey is of only a *part* of a larger lot or tract, the plat/map must show the remainder of that larger tract. This is *not* to say that the remainder must be included as part of the survey; only that there be a graphic depiction that shows where the surveyed property lies within the larger parcel. There are a variety of ways that this can be accomplished.

Section 6.B.vi. – Water Boundaries

When the surveyed property includes a title line defined by a water boundary, a note on the face of the plat or map noting the date the boundary was measured, which attribute(s) of the water feature was/were located, and the caveat that the boundary is subject to change due to natural causes and that it may or may not represent the actual location of the limit of title. When the surveyor is aware of natural or artificial realignments or changes in such boundaries, the extent of those changes and facts shall be shown or explained.

Where the surveyed property includes a boundary defined by a water feature (e.g., river, stream, lake), the plat/map must include a note explaining when the boundary was measured and what attribute(s) of the water feature was/were located. A caveat including the words indicated in this subsection above must also appear explaining the nature of water boundaries.

When the surveyor is aware that realignment or changes in a water boundary occurred in the past, those facts are to be shown or explained.

Section 6.B.vii. – Relationship with Adjoiners

The relationship of the boundaries of the surveyed property with its adjoiners (*e.g.*, contiguity, gaps, overlaps), where ascertainable from documents provided to or obtained by the surveyor pursuant to Section 4 and/or from field evidence gathered during the process of conducting the fieldwork. If the surveyed property is composed of

multiple parcels, the extent of any gaps or overlaps between those parcels shall be identified. Where gaps or overlaps are identified, the surveyor shall, prior to or upon delivery of the final plat or map, disclose this to the insurer and client.

Where the relationships of the boundaries of the surveyed property with its various adjoiningers can be determined from the record documents and/or from the field work performed as part of the survey of the property that is the subject of the ALTA/NSPS Land Title Survey, these relationships must be identified.

Additionally, if the surveyed property is composed of multiple parcels, any gaps or overlaps between those parcels shall be identified.

Where gaps or overlaps are identified, the surveyor shall disclose this information to the title company and client prior to or upon issuance of the final plat/map.

Gaps between multiple parcels, overlaps on the perimeter and significant gaps on the perimeter are of particular concern to the title company, the owner, and the lender because of the potential for third parties to have a claim over a part of what the buyer/lender believe to be “theirs.” Normally, the title company will write a Schedule B exception for such conditions (“*as shown on the survey...*”) unless the lender can convince them – or they can convince themselves – that the risk of a claim is minimal, in which case they may take the risk and insure over the condition.

Section 6.B.viii. – Explanatory Notes (Boundary Resolution)

When, in the opinion of the surveyor, the results of the survey differ significantly from the record, or if a fundamental decision related to the boundary resolution is not clearly reflected on the plat or map, the surveyor shall explain this information with notes on the face of the plat or map.

As with Section 6.B.ii. above, we know that the results of many boundary retracements will differ from the written record dimensions, sometimes significantly. If it is the surveyor’s opinion that the differences are, in fact, significant, a note shall appear on the plat/map explaining the differences.

For example, a description in the public land states that runs from section corner to quarter corner and calls the distance to be 2,640 feet, was obviously written by someone who knows no better. The actual length of the quarter line will most assuredly not be 2,640 feet and, in fact, it could vary significantly from that. A brief explanation would help the title company understand the source of the difference.

Likewise, a description calling 250 feet to the center of stream which has slowly and imperceptibly moved further way by accretion may be found by survey to now be 325 feet. This is easily explained with a note that will help the reviewer of the survey understand why such a

difference exists.

As noted in 6.B.ii., what is deemed “significant” will differ from surveyor to surveyor.

Finally, in order that the resolution of the boundary on an ALTA/NSPS Land Title Survey be documented for reference by future surveyors and surveyors of adjoining properties (who *should* be interested in following the previous surveyor’s footsteps), when a fundamental decision related to that resolution (e.g. how a controlling monument applied or how an apparent conflict in the record description was resolved) cannot be clearly explained by virtue of the drawing on the plat/map, the surveyor shall provide a note or notes to explain these facts.

Section 6.B.ix. – Building Locations

The location of all buildings on the surveyed property, located pursuant to Section 5.D., dimensioned perpendicular to those perimeter boundary lines that the surveyor deems appropriate (*i.e.*, where potentially impacted by a setback line) and/or as requested by the client, lender or insurer

How building locations should be dimensioned has been an on-going and difficult issue to address. What the 2016 Standards do is have surveyors use their professional judgment and dimension the building from those perimeter boundary lines that are most appropriate. Typically, these would be the boundary lines with related setback lines that have the potential to impact a building’s location. This is the title company’s concern when they are asked to provide a 3.1 (existing structure) zoning endorsement; they are insuring that there are no violations of the setback lines.

If a zoning setback requires an interpretation, surveyors do not need to make that interpretation (see the Table A, item 6 discussion later in this handout). Surveyors are generally well-versed in the potential impact of setback lines on building locations; they can figure out which boundaries are important in that respect. If they are not sure, it is usually wise to err on the side of caution and perhaps provide extra dimensions “just in case.”

Until the 2005 version of the ALTA/ACSM Standards, the Standards had never addressed the precision with which the physical building setback distances should be shown. The preamble/introductory sentence to Section 6 now addresses that issue, and it is particularly relevant with respect to building locations.

Section 6.B.x. – Explanatory Notes (Relative Positional Precision)

A note on the face of the plat or map explaining the site conditions that resulted in a Relative Positional Precision that exceeds the maximum allowed pursuant to Section 3.E.v.

As explained in Section 3.E.v., there may be site conditions (e.g, size, configuration, vegetation, relief, improvements) that prevent the surveyor from achieving the specified Relative Positional Precision (2 cm and 50 ppm). If that is the case, the surveyor shall provide a note explaining those site conditions.

Section 6.B.xi. – Explanatory Notes (access to areas along the perimeter boundaries)

A note on the face of the plat or map identifying areas, if any, on the boundaries of the surveyed property, to which physical access within five feet was restricted (see Section 5.C.ii.).

Section 5.C.ii. requires that surveyors note improvements within 5 feet of the perimeter boundaries of the surveyed property. When access to certain those areas is restricted (e.g., by privacy fences, walls, buildings), rather than leaving the reviewer in the dark, a note to that effect shall appear on the plat/map.

Section 6.B.xii. – Explanatory Notes (source of title work)

A note on the face of the plat or map identifying the source of the title commitment or other title evidence provided pursuant to Section 4, and the effective date and the name of the insurer of same.

The plat/map must identify the title commitment/policy number or whatever other title work was provided pursuant to Section 4. The effective date and name of the insurer are valuable information for the reviewers of the survey and provide protection for the surveyor in the event someone claims that he or she did not show some particular easement, but, in fact, it did not appear in the title work provided.

Section 6.C. – Easements, Servitudes, Rights of Way, Access and Record Documents

Section 6.C.i. – Documentation of Plottable Rights of Way, Easements and Servitudes

The location, width, and recording information of all plottable rights of way, easements, and servitudes burdening and benefitting the property surveyed, as evidenced by documents provided to or obtained by the surveyor pursuant to Section 4

Easements that *benefit* the surveyed property are typically listed in Schedule A of the title commitment as an interest that the title company is insuring. Thus, the location, width and documentation for such easements must be shown on the plat/map if the information is provided.

Likewise, the title company will typically take exception to easements that *burden* the property being surveyed and list them in Schedule B2 of the title commitment. The location, width and recording information of those easements also need to be shown on the plat/map.

It is important to note, however, that a title commitment is *not* an abstract of title, so it does not necessarily represent the actual condition of title to the surveyed property. What a commitment is *actually*, is an *offer* to insure title to property subject to certain conditions. As such, it is not particularly unusual that an easement may affect a particular property, and yet not be listed in Schedule B2. This happens when the title company makes a business decision (typically at the ‘encouragement’ of the lender) to essentially pretend that an easement doesn’t exist and remove it from Schedule B2. If a claim ends up occurring related to that easement, the title company will have to defend title or indemnify according to the terms of the policy.

As noted previously (see Sections 3.B. and 3.C.), laws or standards in some states and regions may require such information be shown regardless of whether or not the documents were provided. In addition, if surveyors are aware of easements that they believe burden the property, yet not listed in Schedule B2, they should contact the title company to inquire. Normally one of three things has occurred in such situations. First, the title company may have agreed to insure over the easement as described above and should be able to tell that to the surveyor. Second, the title company may have simply missed the easement in its search, in which case they will appreciate the surveyor bringing it to their attention. Lastly, the title company may have information related to a release of that easement, in which case, a copy of that document can be provided to the surveyor to for his or her documentation.

If the title company made a business decision to insure over an otherwise valid easement, surveyors need to recognize that this does not mean the easement is no longer legally in effect and burdening the surveyed property. This can become an issue when a lender contacts the surveyor and requests that a particular easement be removed from the plat/map because it no longer appears in Schedule B2 of the title commitment. If the easement in question was merely insured over, it may still be a valid, legal easement and because the surveyors is aware of its existence he or she may have an obligation to show it. This can lead to a contentious situation pitting the lender’s wish to reflect a title company’s business decision against a surveyor’s possible obligation to show valid encumbrances.

Note that this section does not require that Schedule A easements actually be surveyed as if they were part of the fee parcel. They simply need to be shown and identified. Only if Table A item 19 has been selected, is the easement subject to all of the terms of Sections 5 and 6 of the Standards.

Section 6.C.ii. – Explanatory Notes (Easements and Servitudes)

A summary of all rights of way, easements and servitudes burdening the property surveyed and identified in the title evidence provided to or obtained by the surveyor pursuant to Section 4. Such summary shall include the record information of each such right of way, easement or servitude, a statement indicating whether or not it is shown on the plat or map, and a related note if:

- (a) the location cannot be determined from the record document;

- (b) there was no observed evidence at the time of the fieldwork;
- (c) it is a blanket easement;
- (d) it is not on, or does not touch, the surveyed property;
- (e) it limits access to an otherwise abutting right of way;
- (f) the documents are illegible; or
- (g) the surveyor has information indicating that it may have been released or otherwise terminated.

In cases where the surveyed property is composed of multiple parcels, indicate which of such parcels the various rights of way, easements, and servitudes cross or touch.

The 2016 Standards require that the surveyor provide some sort of organized summary of the easements burdening the property when documentation was either provided to the surveyor or otherwise obtained pursuant to Section 4. Such a summary is very helpful to the reviewer and should result in fewer calls to surveyors asking for clarification on easement matters.

The summary needs to provide the recording information for each easement and indicate whether or not the easement is shown on the plat/map. In addition, certain conditions – see subsections (a) through (g) above - related to the easement must be identified. Again, this information is exceptionally helpful to the title company and others reviewing the survey who need to understand exactly what the situation is related to each easement. Again, thorough notes should result in fewer unnecessary (at least in the surveyor’s eyes) phone calls and emails asking for clarification on easement issues.

Note that subsection (d) avoids the use of the phrase “affects the surveyed property.” This is probably the most commonly used term that surveyors use when providing information relating to easements. However, surveyors would be well to remember that whether or not an easement “affects” a property is a matter of title, not a matter of survey. ‘Where the easement is’ is the survey issue, whether or not that easement “affects” the property is not a matter of survey.

Section 6.C.iii. – Explanatory Note (Physical Access)

A note if no physical access to a public way was observed in the process of conducting the fieldwork.

As previously mentioned, access is a very important issue to title insurers, thus, if no physical access was observed while conducting the survey, the surveyor must provide a note to that effect.

Section 6.C.iv. – Width of Rights of Way

The locations and widths of rights of way abutting or crossing the surveyed property, and the source of such information, (a) where available from the controlling jurisdiction, or (b) where disclosed in documents provided to or obtained by the surveyor pursuant to Section 4.

Again, emphasizing the importance of access issues, the plat or map of the survey shall document the width and location of the rights of way abutting or crossing the surveyed property where they were disclosed in documents provided to or obtained by the surveyor pursuant to Section 4. If no such documents were provided or obtained, the surveyor needs to contact the controlling jurisdiction to see if such information is available.

In some areas, a “Thoroughfare Plan” documenting existing rights of way may be published. In many areas, though, the jurisdiction may be unable to document rights of way, or may even decline to provide such information. The surveyor could readily document his or her investigation by disclosing any conversations had, requests made or searches undertaken.

Section 6.C.v. – Identifying Titles and Recording/Filing Data of Referenced Documents

The identifying titles of all recorded plats, filed maps, right of way maps, or similar documents which the survey represents, wholly or in part, with their recording or filing data.

The titles of any documents represented by or on the survey, such as those listed in this subsection, together with their recording or filing data, must be identified on the plat or map. As with a number of other Section 6 subsections, this helps any reviewer of the survey to more readily understand what is represented.

Section 6.C.vi. – Adjoiners

For non-platted adjoining land, recording data identifying adjoining tracts according to current public records. For platted adjoining land, the recording data of the subdivision plat.

Where adjoiners are non-platted properties, the recording data (from current public records) for those adjoiners is to be provided on the plat/map. Where adjoiners are parts of a subdivision plat, only the recording data for that plat, not for individual lots within the plat, need be provided.

Surveyors should note that with the 2016, the names of adjoiners is no longer required, although some states’ standards may require them (refer to Section 3.B.).

Section 6.C.vii. – Setback Lines

Platted setback or building restriction lines which appear on recorded subdivision plats or which were disclosed in documents provided to or obtained by the surveyor pursuant to Section 4.

Where setback or restriction lines are identified on recorded subdivision plats or in documents provided to the surveyor, such lines shall be depicted on the plat/map.

Section 6.D. – Presentation

Section 6.D.i. – Size and Scale

The plat or map shall be drawn on a sheet of not less than 8 ½ by 11 inches in size at a legible, standard engineering scale, with that scale clearly indicated in words or numbers and with a graphic scale.

Section 6.D.ii. – Drafting Standards

The plat or map shall include:

- (a) The boundary of the surveyed property drawn in a manner that distinguishes it from other lines on the plat or map.
- (b) If no buildings were observed on the surveyed property in the process of conducting the fieldwork, a note stating *“No buildings observed.”*
- (c) A north arrow (with north to the top of the drawing when practicable).
- (d) A legend of symbols and abbreviations.
- (e) A vicinity map showing the property in reference to nearby highway(s) or major street intersection(s).
- (f) Supplementary or detail diagrams when necessary.
- (g) Notes explaining any modifications to Table A items and the nature of any additional Table A items (*e.g.*, 21(a), 21(b), 21(c)) that were negotiated between the surveyor and client.
- (h) The surveyor’s project number (if any), and the name, registration or license number, signature, seal, street address, telephone number, company website, and email address (if any) of the surveyor who performed the survey.
- (i) The date(s) of any revisions made by the surveyor who performed the survey.
- (j) Sheet numbers where the plat or map is composed of more than one sheet.
- (k) The caption *“ALTA/NSPS Land Title Survey.”*

As Section 1 stated, title companies and others reviewing and relying on surveys have the right to expect some level of standardization on ALTA/NSPS Land Title Surveys and the accompanying plats and maps. Subsection 6.D.ii. outlines a number of drafting standards aimed at accomplishing that standardization.

Several items are brought to the surveyor’s attention in particular.

- Subsection (a) requires that the boundary be drawn in a way that is distinctive from other lines shown on the plat/map.
- Subsection (b) requires a note if the surveyor did not observe any buildings on the surveyed property.
- Subsection (e) requires a vicinity map

- Section (g) requires an explanation of any Table A items that were negotiated or qualified in a manner that differentiates them from how those item were represented in Table A. It also specifies that any extra Table A items also be explained and that such items must all fall under an item 21. If there is more than one additional item, they shall be identified as sub-items 21(a), 21(b), 21(c), etc., not as 21, 22, 23, etc.
- Subsection (h) also has a new requirement (company website, if any)

Section 6.D.iii. – Recordation

When recordation or filing of a plat or map is required by law, such plat or map shall be produced in recordable form.

If the jurisdiction will require recordation of the plat/map of an ALTA/NSPS Land Title Survey, the plat/map delivered to the client and title company shall be produced in the form required for recordation. The client should not expect an additional fee for the preparation of a second plat/map.

If the size of the plat/map required for recordation is not conducive to or in accordance with the client’s requirements, that issue should be addressed during the negotiations and contracting stage of the project.

Section 7 – Certification

The plat or map of an ALTA/NSPS Land Title Survey shall bear only the following certification, unaltered, except as may be required pursuant to Section 3.B. above:

To (name of insured, if known), (name of lender, if known), (name of insurer, if known),
(names of others as negotiated with the client):

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items of Table A thereof. The fieldwork was completed on _____[date].

*Date of Plat or Map:_____ (Surveyor’s signature, printed name and seal with
Registration/License Number)*

Section 7 of the 2016 ALTA/NSPS Standards has maintained the specification first adopted in 2011 that that only the unaltered certificate contained in Section 7 may be placed on the face of the plat/map. In addition, as in 2011, it includes a date of fieldwork. The “date of plat or map” is at the discretion of the surveyor: some prefer to date it the same as the fieldwork, some date it as of the day they sign the plat/map, and others, no doubt, use some other date significant to them. The important date from the standpoint of the title company and from the standpoint of the

surveyor's liability, is the date of the fieldwork.

Notwithstanding the fact that this writer continues to see lenders' certificates that include wording regarding the measurement standard, such wording has not appeared in the certificate since the 2005 Standards. The reference to the overall set of standards in the certificate make any additional reference to the measurement standards unnecessary and redundant.

Pursuant to both the 2011 and the new 2016 Standards, the only certification allowed on the face of an ALTA/ACSM(NSPS) Land Title Survey is the certification in Section 7, except – pursuant to Section 3.B. - as required by *jurisdictional* laws, regulations or standards of practice. Some state surveying boards, for example, require specific wording for certifications. There continue to be a very few lenders who ignore this requirement – probably out of ignorance.

The Section 7 “short-form” certification typically covers every issue that the surveyor can factually and honestly certify to by stating that the survey was conducted in accordance with the Standards. When it does not, however, cover some esoteric issue that the lender is concerned about, usually a simple statement or note on the face of the plat will suffice.

For those lenders (and a few clients) who absolutely insist, it is permissible to negotiate to provide an additional certification, but it must be on a separate sheet of paper and cross-referenced to the survey. They could put it on the face of the plat/map, but if so, the title ALTA/NSPS Land Title Survey may not be used.

An important note regarding lenders' certifications is this: this writer has, to his recollection, never seen a lender's certificate that did not contain unconditional warranties or guarantees. So if surveyors decide they do need to provide the lenders' “long-form” certificate – albeit on a separate sheet – they need to review the certificate carefully and make the necessary modifications to prevent themselves from taking on unacceptable, unnecessary and dangerous liability.

Some lenders claim that Section 3.B. allows the use of alternate lenders' certifications on the face of the plat/map, but it does not. Section 3.B. specifically addresses statutes, rules or ordinances, from jurisdictions that regulate the practice of surveying. Lenders, and even HUD, Fannie Mae and Freddie Mac, do not fall in that category no matter what the attorney claims.

Most lenders fell into compliance with Section 7 fairly quickly following its initial adoption in 2011. Some still want their own certificate, but those are far fewer than pre-2011.

Surveyors need to read and educate themselves on the new Standards, and be confident in what they say regarding the Section 7 certificate. Then, they will be in a position to educate others (clients, employers, lenders, title companies and other surveyors) on certifications. Remember, many, if not most, attorneys and title people have not read the standards (not just the 2016 Standards - ANY of them!).

The “only” and “unaltered” wording in Section 7 is a reaction to the fact that lenders routinely abused, belittled, threatened, and mislead surveyors on certification issues. Every single lender’s certification that this writer has ever read (which numbers in the hundreds), contained express guarantees and warranties which surveyors could not ethically or, in many cases, even lawfully sign under their respective state registration laws because they would be making statements on matters of which they could not possibly have first-hand knowledge (e.g., ‘all utilities [or easements] are shown’) and that, in many cases, even fall outside the realm of their lawful practice (e.g., ‘there are no violations of setbacks’).

It is particularly important that surveyors understand if they provide an unconditional warranty and guarantee, it will invalidate their professional liability (E & O) insurance coverage.

Every competent surveyor in the United States knows these things to be true, and it is a huge issue in the surveying profession. Yet many surveyors feel they 'must' sign these certificates as presented because they are brow-beaten by lenders' attorneys.

A true story in this regard that this writer has told in many of his seminars bears repeating. One lender’s attorney told a gathering of surveyors a number of years ago that he does all of those things listed above (abuse, belittle, threaten, and mislead) - and more - to get surveyors to sign his certificate. And yet his exact comment was “*Any surveyor who signs this thing is crazy!*” When asked why he does this, he said because 85% of surveyors crack under the pressure and go ahead and sign it as is.

The change represented by the wording in Section 7 starting with the 2011 Standards was essentially a statement from (1) the title industry that it can, in fact, provide lenders the title insurance coverage they want and need without these burdensome certificates, and (2) from the surveying profession that it is long past time for lenders to actually learn what is in the ALTA/ACSM(NSPS) standards.

HUD

HUD has at least two sets of survey requirements.

The first are the HUD LEAN 232 standards which cover nursing home-types of facilities. In response to the 2011 Standards, they came out with a set of requirements effective February 22nd of 2011 that reflected essentially the Section 7 certification and the 2011 standards.

The second are the HUD Multi-family standards (form HUD-92457 et seq.). Unfortunately, despite some advocates for the short-form Section 7 certification inside HUD in 2011, the HUD attorneys decided they did not trust surveyors and stuck with requiring their own completely redundant certificate wording in their new requirements. Although their certification wording is generally acceptable as written, it is contrary to the Section 7 requirement as to the required certification. It is well-documented; however, that some HUD offices will bend and be practical

and flexible on the certification issue; others will not – so the surveyor should not give up immediately.

Despite threats from attorneys to the contrary, there is a HUD website that states that it is, in fact, acceptable for HUD Multi-family to be provided their certification on a separate sheet (e.g., company letterhead) and cross-referenced to the survey. See

http://portal.hud.gov/hudportal/HUD?src=/program_offices/general_counsel/mffaq/surveys

A copy of that HUD page as it appeared live on September 8, 2015 can be found at:

https://web.archive.org/web/20150908110244/http://portal.hud.gov/hudportal/HUD?src=/program_offices/general_counsel/mffaq/surveys.

The new Multi-family requirements referencing the 2011 ALTA/ACSM Standards were fully in place as of September 1, 2011.

An interim set of HUD Multi-Family Housing survey requirements accommodating the 2016 ALTA/NSPS Standards was released in March of 2016. See

http://portal.hud.gov/hudportal/HUD?src=/program_offices/general_counsel/mffaq/surveys#Q9 for more information in that regard.

A revised HUD-91073M (Survey Instructions and Surveyor's Report) accommodating the underlying changes to the new ALTA/NSPS standards is available on HUD's website.

The survey instructions now require use of the ALTA/NSPS Section 7 certification wording. The Table A items required include 1, 2, 3, 4, 6a, 6b, 7a, 8, 9, 10a, 10b, 11, 12, 13, 16, 17, 18, and 19.

HUD has also recommended the following transition and implementation guidance (this guidance was originally suggested by Gary Kent):

- If you are under contract prior to Feb. 23, you could use the 2011 Standards - even if the survey is not completed until after the 23rd.
- If you are under contract prior to Feb. 23 and you know the survey will not be completed until after the 23rd, it would be logical, but not required to go ahead and contract to use the 2016 Standards.
- "Updates" must be to the 2016 Standards if they are contracted after Feb. 23. The only exception to that might be if you contracted to do a 2011 survey before Feb. 23 and, for some reason, the closing was delayed so long that they wanted the survey "updated" before closing. In that case, you might be able to do that update to the 2011 Standards; not for a new conveyance but for the delayed conveyance.

HUD also provided the following guidance in the event of a new construction or sub-rehab project that had a 2011 ALTA/ACSM Land Title Survey performed for initial closing, yet will

not have its final as-built survey completed until a year or more after February 23, 2016.

- Under that scenario - a year or two later - the final survey would need to meet the 2016 Standards. The surveyor should know, however, that they will need to consider - in particular - the changes to Table A between 2011 and 2016.
- It might be able to posit that if the final survey is a logical extension of the initial survey AND the timeframe between initial and final survey is short, one could continue with 2011, but if we don't draw a line, it just goes on and on.

HUD will further consider the 2016 ALTA/NSPS survey requirements when the Multi-Family closing documents next undergo the OMB/PRA renewal process within the year. HUD will determine at this time whether or not to make substantive changes to the HUD-91073M form as a result of the new ALTA/NSPS document.

The HUD Section 232 LEAN program will issue separate guidance on the 2016 ALTA/NSPS Standards.

General Comments on Certifications

Surveyors are frequently called upon to provide certifications with their work. Some surveyors feel that their seal and signature should be sufficient to indicate that they stand behind their reports and statements, but to many clients and agencies a certification is necessary as a specific statement that the surveyor did, in fact, perform the survey pursuant to a specific set of standards.

In the case of an ALTA/NSPS Land Title Survey, the surveyor's work is, to a great extent, a matter of reporting facts (e.g., improvement locations) rather than supplying opinions (as to the boundary location). Clients, title companies and lenders all typically want some type of certification by the surveyor attesting to the integrity of his or her work and to assure that, in fact, the survey was conducted in accordance with the written ALTA/NSPS Standards.

Black's Law Dictionary says that a certification is "*the formal assertion in writing of some fact.*"

According to Webster's New World Dictionary, the word certify means "*To declare a thing true, accurate, certain, etc. by formal statement, often in writing; verify attest.*" Black's Law Dictionary says certify is "*To authenticate or vouch for a thing in writing. To attest as being true or as represented.*"

Clearly, a certification in this context does not involve a statement of opinion. A surveyor is a reporter of facts when certain features of a parcel of land are measured and reported on a plat/map of the site. When an opinion is offered as to the reliability of the evidence determining the boundary lines of the parcel, the surveyor is no longer just a reporter of facts. Such a statement of opinion should not be in the form of a certification.

Certifications can present an assortment of problems and liabilities for surveyors ranging from slight to excessive. Some are statements of fact. Others require certification on the basis of an opinion or on the basis of facts not knowable by the surveyor and should be avoided. The following discussion examines a few of the related issues.

The Long-Form (Lender's) Certification

Fortunately, with the adoption of the 2011 ALTA/ACSM Standards, requests from lenders wanting their own “long-form” certifications have diminished, although many still want them. As noted above, they can be provided, but (1) must be on a separate sheet of paper and (2) the surveyor must watch carefully for express guarantees and warranties and negotiate acceptable alternate wording.

Exhibit 2 contains an example of current (as of June 2016) survey requirements from a well-known national lender. Fortunately, this lender has recognized the Section 7 certification, although it is seemingly requiring some “notes” that are, at best, redundant in the context of the ALTA/NSPS Standards.

Certifications - Liability

Lawyers and professional liability insurers who deal with surveyor liability issues advise against the execution of certifications containing problematic language. They also advise that certifications should only be furnished when they:

- are consistent with contractual duties,
- do not create guarantees or warranties,
- do not create unacceptable or uninsurable exposures to liability,
- do not create statements beyond the professional's personal knowledge, and
- do not claim standards higher than the normal standard of care.

Surveyors should learn to be as conservative in such matters as the people who advise them, and the companies that insure them.

Surveyors should be aware of the fact that many lenders' attorneys are fully cognizant that their own certifications are unreasonable and create excess and unacceptable liability for the surveyors who sign them. If surveyors would routinely question the wording in these certifications – or even the need at all (suggesting the use of the Section 7 certificate) – lenders would be less inclined to ask for them.

The author is aware of one national lender who, in the last few years, had a meeting regarding their own long-form (and to surveyors, unacceptably burdensome) surveyor's certification wording. They concluded that they will continue to use it simply because not enough surveyors had complained about it.

The certification contained in the 2016 Standards, and the 2016 Standards themselves, have been reviewed by Joe Jones of Victor O. Schinnerer Company a large provider of professional liability insurance for surveyors (and which has been the commended program for ACSM and NSPS for decades). Mr. Jones comment was that he does *“not see any issue that would affect professional liability coverage or present a heightened exposure to the risk of a claim.”*⁴

Certifications - Certified Parties

Frequent questions arise over requests for surveyors to certify to “successors and assigns,” especially when the lenders’ certificates list all of the parties they want the survey certified to followed by “their respective successors and assigns.”

The following comments are offered:

1. Title companies do not need certification to successors and assigns.
2. It is difficult to envision a situation where a surveyor would want to certify to the successors and assigns of the owner/buyer.
3. Lenders may need a certification to successors and assigns because they may be selling the mortgage on the secondary market.

As related to the lender, surveyors need to recognize that they are liable to the lender on an ALTA/NSPS Land Title Survey for as long as the loan is outstanding. On commercial loans, this might typically be something on the order of 7 years. If the lender were to sell the loan, its terms do not change and pursuant to “successors and assigns” the surveyor is still liable to a lender for the remainder of the term of the loan. Attorneys from professional liability management firm Victor O. Schinnerer Company have stated that they are not concerned about certifications to successors and assigns of lenders as they affect surveyor liability.

Section 8 - Deliverables

The surveyor shall furnish copies of the plat or map of survey to the insurer and client and as otherwise negotiated with the client. Hard copies shall be on durable and dimensionally stable material of a quality standard acceptable to the insurer. A digital image of the plat or map may be provided in addition to, or in lieu of, hard copies pursuant to the terms of the contract. When required by law or requested by the client, the plat or map shall be produced in recordable form and recorded or filed in the appropriate office or with the appropriate agency.

⁴ Excerpts from an email from Joseph H. Jones, Jr., Esq., AIA, Victor O. Schinnerer & Company, Inc. to Gary R. Kent (chair of the ALTA and NSPS Committees that deal with the Standards) dated September 10, 2015.

ALTA and NSPS decided in 2011 that the plat/map of an ALTA/NSPS Land Title Survey needs to be provided to – at a minimum - the client and the title company. Other copies may obviously be provided either at the surveyor’s discretion or in accordance with the terms of the contract. The 2016 Standards set out this same requirement.

A digital image may be provided in addition to, or in lieu of, hard copies if so negotiated (understanding that in some states, the only valid copy of a survey is one with an original seal and embossed seal).

As noted above under Section 6.D.iii., if the plat/map must be recorded or filed pursuant to a law, or when requested by the client, it must be produced in recordable format and recorded/filed accordingly.

Table A – Optional Survey Responsibilities and Specifications

The twenty (20) items of Table A may be negotiated between the surveyor and client. Any additional items negotiated between the surveyor and client shall be identified as 21(a), 21(b), etc. and explained pursuant to Section 6.D.ii.(g). Notwithstanding Table A Items 5 and 11, if an engineering design survey is desired as part of an ALTA/NSPS Land Title Survey, such services should be negotiated under Table A, Item 21.

If checked, the following optional items are to be included in the ALTA/NSPS LAND TITLE SURVEY, except as otherwise qualified (see note above):

Table A items are, by definition, optional and negotiable. They are to be requested by clients when surveys are ordered, so surveyors have the opportunity to associate additional fees with the items requested and, when deemed necessary, to negotiate the exact performance specifications.

For example, if Item 7(c) is checked, will the surveyor be expected to access and go onto the roof of a tall building in order to measure to the top of the elevator shaft, or is a survey measurement to the parapet sufficient?

In order to end the confusion created by companies that specify additional Table A items (as is allowed pursuant to Item 21), all such items shall be identified as 21, using 21(a), 21(b), etc., when there are multiple additional items.

The last sentence clarifies for clients that ALTA/NSPS Land Title Surveys, even when they include certain Table A items, are not engineering design surveys. Such services may be negotiated under Table A item 21.

Item 1 – Monuments

Monuments placed (or a reference monument or witness to the corner) at all major

corners of the boundary of the property, unless already marked or referenced by existing monuments or witnesses in close proximity to the corner.

Many, but certainly not all, states require the monumentation of boundaries at least to some extent. If the surveyor and surveyed property are in one of those states, he or she must monument (see Section 3.B.); Table A item 1 is not optional. For the rest of the states, monumentation is an option.

It has been reported that some surveyors have been skirting compliance with this item by relying on distant buildings or other features not near the corner as witnesses. To this writer, this is a sham, inconsistent with what any set of requirement considers a valid witness to a corner. The 2016 Standards call for witnesses to be in close proximity to the corner.

Item 2 – Addresses

Address(es) of the surveyed property if disclosed in documents provided to or obtained by the surveyor, or observed while conducting the fieldwork.

If the surveyor observes addresses while conducting the survey (e.g. on buildings, mailboxes, signs) or if the addresses are otherwise provided in documents provided to the surveyor, those addresses are to be reported on the plat or map.

Item 3 – Flood Zone

Flood zone classification (with proper annotation based on federal Flood Insurance Rate Maps or the state or local equivalent) depicted by scaled map location and graphic plotting only.

The surveyor's responsibility regarding flood zones is to scale the location off the appropriate Flood Insurance Rate Map (FIRM) and, if appropriate, show the line on the plat/map. This item does not contemplate completing elevation certificates or conducting topographic surveys, either of which could be negotiated separately or under Table A item 21. A topographic survey could also be negotiated pursuant to Table A item 5.

Surveyors would be well-advised to have a note on their plats/maps regarding map scale uncertainty on the location of a flood line. Many FIRMs were developed for a printed/plotted scale of 1 inch equals 1000 feet. Surveyors would routinely transfer that line to a map/plat drawn at perhaps 1 inch equals 50 feet. *In such a case, the uncertainty in location of the flood line as shown on the survey might be something on the order of 20 feet.*

Item 4 – Land Area

Gross land area (and other areas if specified by the client).

The surveyor must provide the gross land area of the surveyed property. If other areas are required (e.g. net of right of way, net of setback lines, net of easements) those must be specifically requested by the client.

Item 5 – Topography

Vertical relief with the source of information (e.g. ground survey or aerial map), contour interval, datum, and originating benchmark identified.

Item 5 is an excellent example of a Table A item that needs to be negotiated with the client. What is needed and/or expected? To what purpose will they be putting this information? Depending on the answer, this might involve a ‘full-blown’ topographic survey of the property being surveyed, or it might involve something considerably less. In any case, the information specified in Item 5 must appear on the face of the plat/map as appropriate.

Item 6 – Zoning

Zoning issues have remained high on the list of problematic issues even after changes made in the 2011 Standards. With the 2016 Standards, the committees worked very hard to find common ground that was acceptable to both the title companies and the surveyors.

Zoning issues vis-à-vis ALTA/NSPS Land Title Surveys are widely misunderstood in the surveying and lending communities. Many, if not most, lenders believe that the surveyor needs to show the zoning setback lines (and, in many cases, certify to compliance with zoning setbacks) in order that the title company can issue a 3.1 Zoning Endorsement (which insures, among other things, that the buildings on the property do not violate the zoning setbacks). Adding to the confusion is that some title companies in fact, do rely on surveyors’ depictions of such lines, while others do not.

It is the opinion of the ALTA and NSPS that the client must provide a zoning letter or report outlining the appropriate zoning requirements of the property in order for the surveyor to address either Items 6(a) or 6(b). There are firms that make a business of providing such zoning reports. In some cases, the jurisdiction itself may provide the client a report or letter. Of course, there is nothing to prevent surveyors from negotiating to obtain this information themselves if they would like.

Item 6(a) – Zoning Requirements Listed

If set forth in a zoning report or letter provided to the surveyor by the client, list the current zoning classification, setback requirements, the height and floor space area restrictions, and parking requirements. Identify the date and source of the report or letter.

In order to relieve the surveyor from having to research what are often complex zoning ordinances and to determine what is applicable to the property, item 6(a) requires – as noted above - that such information be provided to the surveyor by the client in the form of a zoning report or letter detailing the desired information.

The surveyor will then copy that information onto the face of the plat/map and note the source of the information.

Item 6(b) – Zoning Classification and Setback Requirements

If the zoning setback requirements are set forth in a zoning report or letter provided to the surveyor by the client, and if those requirements do not require an interpretation by the surveyor, graphically depict the building setback requirements. Identify the date and source of the report or letter.

When the client wants the setbacks graphically depicted on the face of the plat/map, again, a zoning letter or report must be provided to the surveyor by the client.

Importantly, if – as is the case in most large (and perhaps even in medium-sized cities) –an interpretation is required by the surveyor as to the application of certain setbacks, then the surveyor may not be able to comply with this item.

Item 7(a) – Building Dimensions

Exterior dimensions of all buildings at ground level.

Table A, item 7(a) is a straightforward matter of taking additional measurements in the course of performing the survey. Some surveyors are concerned over whether the dimensions should be to the foundation or face of wall; it is suggested that they pick one and note on the survey where dimensions were taken.

Item 7(b)(1) – Square Footage of Buildings

Square footage of: (1) exterior footprint of all buildings at ground level.

In order to meet this requirement, the surveyor will need to calculate the square footage encompassed by the ground level perimeter of the building.

Item 7(b)(2) – Other Square Footage of Buildings

Square footage of: (2) other areas as specified by the client.

Starting with the 2011 Standards, the ALTA/ACSM standards no longer offered the “gross floor

area” as an option under Table A item 7. That item would often be checked off by clients and when asked what exactly they were looking for, lenders were often very cavalier in insisting that the surveyor should simply “know” what the item meant. In order to alleviate confusion on this issue, Table A, item 7(b)(2) in 2011, and again in 2016, requires that clients specify what areas they want calculated.

Item 7(c) – Height of Buildings

Measured height of all buildings above grade at a location specified by the client. If no location is specified, the point of measurement shall be identified.

Again, this item is related to the 3.1 zoning endorsement, whereby the title company is being asked to insure that the height of the buildings do not violate that allowable. If the client does not specify where the measurement should be made, the surveyor would be well-served to know what the zoning ordinance says with regard to what part of a building is the defining element in the determination of the height restriction.

Item 8 – Substantial, Visible Features

Substantial features observed in the process of conducting the fieldwork (in addition to the improvements and features required pursuant to Section 5 above) (e.g., parking lots, billboards, signs, swimming pools, landscaped areas, substantial areas of refuse).

Table A, item 8 is a ‘catch-all’ whereby significant features not otherwise required to be located pursuant to the mandatory parts of the standards need to be included in the survey and shown on the plat or map.

Examples are given in the item with “*substantial areas of refuse*” having been added for 2016. This is to balance the elimination of what had been a Table A item in past versions of the Standards (“*Observed evidence of site use as a solid waste dump, sump or sanitary landfill*”). That item, which was a HUD induced item introduced in 1997 was eliminated in 2016 due to the fact that virtually all commercial properties being bought, sold or financed are the subject of Phase One Environmental Assessments which is where responsibility for such determinations should lie. However, surveyors still need to watch for and note any “substantial areas of refuse” that they observe.

To what degree of precision these features should be located, and how or if they are to be dimensioned, is a matter of the surveyor’s judgment as specified in the introductory comments to Sections 5 and 6 of the Standards.

Item 9 – Parking

Number and type (e.g., disabled, motorcycle, regular and other marked specialized

types) of clearly identifiable parking spaces on surface parking areas, lots and in parking structures. Striping of clearly identifiable parking spaces on surface parking areas and lots.

This item is another 3.1 Zoning Endorsement issue. Under that endorsement, title companies are also insuring that there is sufficient parking on the real estate pursuant to zoning requirements. The surveyor should provide only factual information in this regard and resist any attempts by the lender to certify compliance with the ordinance or even certifying how many spaces are required.

With the 2016 Standards, the requirement has been clarified to specify that striping must be clearly identifiable and that it need not be shown inside parking structures (although the type of spaces and the parking space count needs to be all encompassing, including those in parking structures).

Item 10(a) – Division and Party Walls

As designated by the client, a determination of the relationship and location of certain division or party walls with respect to adjoining properties (client to obtain necessary permissions).

If clients wish to have determinations made regarding party or division walls, they need to specify what information is required, and where, and provide for access if necessary.

As with other Table A items in the 2016 Standards, the phrase “As designated by the client” has been moved to the beginning of the item to emphasize that this is not just a check-off item; clients need to specify exactly what their concerns are.

Item 10(b) – Plumbness of Walls

As designated by the client, a determination of whether certain walls are plumb (client to obtain necessary permissions).

As with item 10(a), if clients wish to have determinations made regarding plumbness, they need to specify what walls are of concern and provide for access.

In some cities, surveyors routinely provide some such measurements without specific request by the client, thus the surveyor needs to be aware of the normal standard of care in that regard.

A logical way to report on this item would be to create a table or otherwise clearly label on the drawing where the measurements were made and give the relationship of the location of the wall at different locations and heights to some vertical reference plane.

Item 11 – Location of Utilities

Location of utilities existing on or serving the surveyed property as determined by:

- observed evidence collected pursuant to Section 5.E.iv.
- evidence from plans requested by the surveyor and obtained from utility companies, or provided by client (with reference as to the sources of information), and
- markings requested by the surveyor pursuant to an 811 utility locate or similar request

Representative examples of such utilities include, but are not limited to:

- Manholes, catch basins, valve vaults and other surface indications of subterranean uses;
- Wires and cables (including their function, if readily identifiable) crossing the surveyed property, and all poles on or within ten feet of the surveyed property. Without expressing a legal opinion as to the ownership or nature of the potential encroachment, the dimensions of all encroaching utility pole crossmembers or overhangs; and
- Utility company installations on the surveyed property.

Note to the client, insurer, and lender - With regard to Table A, item 11, source information from plans and markings will be combined with observed evidence of utilities pursuant to Section 5.E.iv. to develop a view of the underground utilities. However, lacking excavation, the exact location of underground features cannot be accurately, completely, and reliably depicted. In addition, in some jurisdictions, 811 or other similar utility locate requests from surveyors may be ignored or result in an incomplete response, in which case the surveyor shall note on the plat or map how this affected the surveyor's assessment of the location of the utilities. Where additional or more detailed information is required, the client is advised that excavation and/or a private utility locate request may be necessary.

Utilities may have supplanted certifications as the greatest source of consternation and liability of surveyors on ALTA/NSPS Land Title Surveys. As a result, a number of changes have been made to this item.

First, the reader will note that there is no longer an 11(a) and 11(b). As noted under Section 5.E.iv. above, the *observed evidence of utilities* has been moved into that mandatory section of the 2016 Standards. This was to alleviate the very common problem whereby a utility feature did not need to be located because the client did not request Table A items 11(a) or 11(b), but it did need to be located pursuant to Section 5.E.ii. because it was evidence of an easement.

Secondly, railroads and associated siding and spurs have been removed from Table A item 11 as examples of utilities and included in the main part of the 2016 Standards at Section 5.B.iv.

Thirdly, the responsibility for attempting to obtain plans and for ordering a utility locate – which had never been specifically addressed the past – has been placed with the surveyor.

Finally, the ‘Note’ has been rewritten and added to in order to emphasize to clients what they can *reasonably* expect – *and what they cannot expect* - from a surveyor when it comes to utilities.

Surveyor still need to show observed utility poles within 10 feet of the boundaries of the property being surveyed and where utility pole cross members may encroach, the surveyor shall give dimensions of overhangs.

Item 12 – Governmental Agency Requirements

As specified by the client, Governmental Agency survey-related requirements (e.g., HUD surveys, surveys for leases on Bureau of Land Management managed lands).

As surveyors know, there are some governmental agencies that have their own sets of survey requirements. As with all Table A items, the client is to select this item when ordering the survey so the surveyor can take into account any issues that may impact costs or liability related to such requirements.

As mentioned above, in order to emphasize that clients are to specify what requirements they wish the surveyor to follow, the phrase “*as designated by the client*’ has been moved to the beginning of the item.

Item 13 – Names of Adjoiners

Names of adjoining owners according to current tax records. If more than one owner, identify the first owner’s name listed in the tax records followed by “et al.”

Item 13 has been modified in the 2016 Standards to provide an option to include what used to be mandatory on an ALTA/ACSM Land Title Survey which were the names of the adjoining owners. It specifies that this information is to come from current public records and explains how to address multiple owners.

Item 14 – Nearest Intersecting Street

As specified by the client, distance to the nearest intersecting street.

There may be reasons that a client or lender is interested in knowing how far it is from the surveyed property to the nearest intersecting street. If this item is selected, the surveyor should inquire as to the purpose and what is expected (scaling or pacing to the nearest intersection is an entirely different exercise from determining to the nearest 0.01 feet how far it is to the right of way line of that intersecting street).

As mentioned several times above, “As specified by the client” has been moved to the beginning of the item to emphasize clients’ roles in explaining what they are looking for.

Item 15 – Use of Other Technologies

Rectified orthophotography, photogrammetric mapping, remote sensing, airborne/mobile laser scanning and other similar products, tools or technologies as the basis for the showing the location of certain features (excluding boundaries) where ground measurements are not otherwise necessary to locate those features to an appropriate and acceptable accuracy relative to a nearby boundary. The surveyor shall (a) discuss the ramifications of such methodologies (e.g., the potential precision and completeness of the data gathered thereby) with the insurer, lender, and client prior to the performance of the survey, and (b) place a note on the face of the survey explaining the source, date, precision, and other relevant qualifications of any such data.

Table A, item 15 is an opportunity for the client to perhaps save some time and/or money when, with the concurrence of the title company, lender and client, alternative technologies or procedures can provide the detail and completeness necessary on the survey. This could include, for example, mobile scanning, rectified orthophotography and photogrammetric mapping. Remote sensing has been added as an example in the 2016 Standards.

There must be a definitive understanding and agreement ahead of time with respect to the precision and completeness of the data to be gathered, and appropriate notes on the face of the plat or map, so there is no misunderstanding later, or by third parties, as to the source, date, precision, etc. of the associated data.

Item 16 – Evidence of Recent Earth-moving or Construction

Evidence of recent earth moving work, building construction, or building additions observed in the process of conducting the fieldwork.

This item originated in the 1997 standards, along with what is now Table A item 17 and former item 18 as items required by the U.S. Department of Housing and Urban Development (HUD) in order for them to be able to subscribe to the ALTA/ACSM Standard rather than continue to have their own separate and distinct requirements.

Several modifications have been made in the item since 1997 with the latest in 2016 being the use of the word “recent” which replaces the 2011 word “current” and is close to, but not exactly how the item was written in 2005.

Item 17 – Proposed Changes in Street Right of Way Lines

Proposed changes in street right of way lines, if such information is made available to the surveyor by the controlling jurisdiction. Evidence of recent street or sidewalk construction or repairs observed in the process of conducting the fieldwork.

Again, this is a HUD item that originated in 1997. As with Item 16, there have been some modifications in wording since then, including the 2011 elimination of reference to changes in right of way lines “*either completed or proposed.*” This change was made since any completed changes to a right of way line would, presumably, appear in the title commitment.

Similar to Section 6.C.iv. this item puts a burden on the surveyor to contact the controlling jurisdiction – in this case, for any available information on proposed changes in right of way lines.

Item 18 – Wetlands Locations

If there has been a field delineation of wetlands conducted by a qualified specialist hired by the client, the surveyor shall locate any delineation markers observed in the process of conducting the fieldwork and show them on the face of the plat or map. If no markers were observed, the surveyor shall so state.

This item is a reworded and clarified form of what had been Item 19 in the 2011 Standards. The wording used in the 2016 Standards clearly expresses the original intent of the 2011 wetlands item, which was to limit the surveyor’s role to locating and showing delineation markers set by qualified wetlands specialists (who are almost never surveyors). It is hoped that this new wording will alleviate the impression that clients and lenders have had that by checking this item, the surveyor will be responsible for locating the wetlands.

As mentioned above under Table A item 8, former item 18 had been in the standards in one form or another since 1997. With the 2016 Standards, ALTA and NSPS felt that the issues raised in this former item are more properly addressed by Phase One Environmental Assessments, not by surveyors. With its elimination, what had been Item 19 has moved up to Item 18.

Item 19 – Offsite (Appurtenant) Easements

Include any plottable offsite (i.e., appurtenant) easements or servitudes disclosed in documents provided to the surveyor as a part of the survey pursuant to Sections 5 and 6 (and applicable selected Table A items) (client to obtain necessary permissions).

This item was Item 20 in the 2011 Standards, although it has been reworded and clarified in order to better express its intent which is that the surveyor will include the offsite easements as part of the survey just as if they were fee parcels. These easements will be listed in Schedule A

of the title commitment.

Indications are that in the past and in most cases around the country, lenders, title companies and clients expected, and surveyors provided, merely a graphic representation of off-site (appurtenant) easement lines on the plat/map without locating the improvements therein. This item was introduced in 2011 (as Item 20) creating an option whereby a client could have the surveyor locate the improvements observed in the process of conducting the survey within appurtenant (offsite) easements that were identified in the title commitment.

The item has become one that is frequently requested by clients and lenders; however, they often do not recognize the ramifications when the project involves, for example, an outlot to a mall with cross parking and access easements across the entire mall. Such a situation could obviously drastically increase the cost of the survey, so the surveyor needs to clarify this ahead of time. And, if the item has been checked before surveyors have a title commitment, they need to qualify their proposals until they can review title commitments for any offsite easements.

As with other items, the client may need to arrange for access since the fee ownership of offsite easements will not be in the client. For that same reason, what had been Table A item 20(b) in the 2011 Standards (monumenting those easements) has been eliminated.

Item 20 – Professional Liability Insurance

Professional Liability Insurance policy obtained by the surveyor in the minimum amount of \$_____ to be in effect throughout the contract term. Certificate of Insurance to be furnished upon request, but this item shall not be addressed on the face of the plat or map.

Table A, Item 20 (Item 21 in the 2011 Standards) allows the client to assure that the surveyor conducting the ALTA/NSPS Land Title Survey has professional liability (errors and omissions) insurance at a specified level.

When Item 20 mentions “*in effect throughout the contract term*” that deals only with *the length of time that the professional liability coverage needs to be maintained by the surveyor*. It has nothing whatsoever to do with liability. It is well-understood in the insurance industry that reference to the “contract term” in this context is – in the case of surveyors – a reference to the *contract between the surveyor and his or her client*. Thus, if selected, Item 20 requires that the surveyor maintain professional liability coverage during the time that the contract between the surveyor and client is in effect. This is normally just a few weeks – from the date the contract is signed (or agreed upon, in the case of an unwritten contract), to delivery of the survey and subsequent payment.

This is entirely independent of how long the surveyor is liable for his or her work. That is a function of state law and depends on the state’s statutes of limitation and repose. Where

surveyors have the benefit of a statute of repose, there is a set time period after which a claimant is prohibited from making a claim. In states where surveyors do not have a statute of repose, the statute of limitations (and length of time of discovery) controls the length of time of the surveyor's liability.

Some lenders have tried to insist that surveyors indicate the extent of their professional liability insurance coverage on the face of the plat or map. This is entirely inappropriate, and in response to such requests, the 2016 Standards state that this item shall not be addressed on the face of the plat/map.

Questions from attorneys related to the appropriate amount of insurance have been addressed by suggesting that the client consider the type, location, and improvements on the real estate, the potential effect of an error, and the statutes of repose and limitations that relate to the professional services contracted.

Victor O. Schinnerer Company (a large professional liability manager and commended of ACSM and NSPS for decades) helped ALTA and NSPS with the wording of this item when it was introduced it in 2011, so the wording is – from a professional liability standpoint – exactly as it should be.

Item 21 – Client Option

Table A, item 21 is provided as an open-ended option for the client to request their own specific requirement(s). As with all Table A items, it is important that such items be requested with the order so the surveyor has the opportunity to consider the request and to negotiate the scope and fee ahead of time. In order to prevent confusion, when there are multiple additional items, they must be identified as 21(a), 21(b), 21(c), etc., not as 21, 22, 23, etc.

Negotiating a contract to perform an ALTA/NSPS Land Title Survey

A surveyor is often informed of the need for an ALTA/NSPS Land Title Survey for title insurance purposes in one of several ways:

- By the client, who has some idea of what a Land Title Surveys is - at the beginning of the job,
- By the client who has no idea what an ALTA/NSPS Land Title Survey is - after the surveyor has already quoted the project and/or begun work.
- By the client's attorney - after the survey is well underway -- or finished.
- By some other third party (e.g. a realtor, purchaser or lender)

Section 2 of the 2011 Standards makes it clear how and when the surveyor should be notified of the need for an ALTA/NSPS Land Title Survey, but it doesn't always happen that way. Difficulties arise when a client is told what such a survey will cost, especially if the survey is

already underway and the surveyor must go back to the beginning to meet all of the requirements of the Standards. When the surveyor is told that the ALTA/NSPS Standards are to apply to the survey, the surveyor should immediately contact the client – *being the party who is ultimately responsible for payment* -- to explain the process and the requirements. It is not usually enough that a third party is representing the client; the client must be informed of the cost of the undertaking, and the reasons for what will, no doubt, be seen as an unexpected expense.

The surveyor is encouraged to engage the client in the process as contemplated by the Standards. Send Table A to the client to make them select the items they want included. This will force them to become more educated about the standards and the process, and to respect that fact that the more items they check, the higher the cost will be.

Scoping the Survey

Ordering an ALTA/NSPS Land Title Survey can be like ordering a new car; all the extras look good until their cost becomes apparent. Classification of surveys by the Standards used to be in order of A, B, C and D. Most people, however, wanted a “Class A” survey regardless of the location and value of the site. In any case, the Classes were eliminated in the 1999 standards.

People may add unnecessary items from Table A. A professional surveyor should take some responsibility for explaining the significance of all these items and for advising the client of the real need for them after understanding the client’s intent and reviewing any lender requirements. Some surveyors even attach a value to each Table A item when they send it out for the client’s consideration.

It may be that a prospective purchaser has informed the surveyor’s client that contours ought to be included in the survey even though there is no need for contours from the title insurer’s point of view. This is an opportunity for the surveyor to inform the client of a way to limit the cost of the survey by specifying only those items needed by the title insurer. On the other hand, the performance of an ALTA/NSPS Land Title Survey gives the surveyor an opportunity to market additional services when a significant parcel of land is the subject of the survey and when the sale of the parcel is for development purposes.

Whoever is buying the land may have a need (or think they have a need) for many, if not all of the items of Table A. The addition of Table A items will increase the cost of the survey, but also the value of the survey to the purchaser. The surveyor has an opportunity to enlarge the scope of services while advising the client and the purchaser of the division of the added expenses. In any case, an ALTA/NSPS Land Title Survey is comprehensive -- exceeding the detail of most generic retracement surveys, and should be valued accordingly both by the purchaser of services and the surveyor.

Following is an example of the wording that the surveyor might consider for the scope for a 2016 ALTA/NSPS Land Title Survey. This scope somewhat arbitrarily includes Table A items 6, 11

and 18, since those should probably trigger some comments the scope. Additional Table A items might trigger other additional clarifying wording.

Conduct a survey pursuant to (a) [your state's standards, if any] and (b) the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, including Table items 1-4, 6a, 6b, 8, 11 and 18 of the 51.5957 acre tract described in a Quitclaim Deed to DeVaney/Emhardt Farms, LLC dated April 9, 2014. The certificate will be as specified in Section 7 of the 2016 ALTA/NSPS Standards and certification will be made to the buyer, title company and lender. Additional parties may be certified to for an additional fee and an additional "lenders certificate" may be provided on company letterhead and cross-referenced to the survey at an additional fee, although exact wording will be negotiated to the surveyor's satisfaction.

The fee quoted below includes 4 prints (and/or a black and white or color PDF) of an unsigned, pro forma version of the plat of survey, one set of revisions based on the consolidated comments of the interested parties, and 4 prints (and/or a color or black and white PDF) of the final signed /sealed plat of survey. The final signed/sealed plat of survey will not be provided until the consolidated comments are reviewed and the most recent title commitment is provided along with copies of any easements, covenants and other servitudes.

Regarding Table A items 6a and 6b, note that the client must provide a zoning letter or report to the surveyor. With regard to Table A item 6b, due to the necessity of interpreting the zoning ordinance with regard to setback requirements, zoning setback lines will not be graphically depicted.

Regarding Table A item 11, it should be noted that source information from plans and markings will be combined with observed evidence of utilities pursuant to Section 5.E.iv. of the 2016 ALTA/NSPS Standards to develop a view of the underground utilities. However, lacking excavation, the exact location of underground features cannot be accurately, completely, and reliably depicted. In addition, in some jurisdictions, 811 or other similar utility locate requests from surveyors may be ignored or result in an incomplete response, in which case the surveyor will note on the plat or map how this affected the surveyor's assessment of the location of the utilities. Where additional or more detailed information is required, the client is advised that excavation and/or a private utility locate request may be necessary.

Pursuant to Table A item 18, if wetlands are a concern, the client must arrange for a field delineation of any wetlands on the property to be conducted by a qualified specialist prior to the survey fieldwork. Any delineation markers observed in the process of conducting the survey fieldwork will be located and shown on the face of the plat.

Defining the Survey

It is a fact that most title insurance policies are lender's policies rather than owner's policies. Therefore, it is usually the lender who is requiring the survey; and if there is a conveyance of land involved, the lender's relationship is with the purchaser, not the seller. If the seller is the surveyor's client, as is often the case, it may be that the surveyor ends up negotiating with a party who has no interest in the actual survey. This arrangement makes it doubly difficult to convince the client to pay for an expensive survey -- especially if a basic retracement survey has already been completed. In such situations the surveyor's best talents of negotiation and diplomacy are brought to the fore.

The Certification

Reference is made to the section of this handout that addresses Section 7 of the 2016 ALTA/NSPS Standards and to Exhibit 2 which shows the current (as of June 2016) requirements from a well-known national lender.

Having defined the survey and set the scope, it may seem to the surveyor that the rest will be straight-forward. Many surveyors, however, have been surprised at the eleventh hour to be presented with a certification statement that goes well beyond the content of the certification in the ALTA/NSPS Standards. Professional surveyors have the right -- and responsibility -- to write certification statements acceptable as to professional practice and liability risk, and should not be reluctant to revise the language of certifications presented by lawyers. Note, however, that the 2016 Standards do not allow for any certification on the face of the plat or map of an ALTA/NSPS Land Title Survey *except that specified in Section 7 of the standards* (and as may be required pursuant to jurisdictional requirements --see Section 3.B).

If the surveyor is inclined to bend to the lender's wishes and provide some form of lender's certificate, as discussed above under the Section 7 discussion, it will have to be provided on a separate sheet of paper (e.g., company letterhead) and cross-referenced to the survey.

Unfortunate delays may be avoided by confronting the issue of the certification at the beginning of the job rather than at the eleventh hour. This, too, is a matter of negotiation between the surveyor and the client and lender. In the scope of work detailed in the contract between the surveyor and client, there should be an acknowledgment of the certification to be executed by the surveyor, and that certification should be described as the certification appearing in the Standards. The surveyor is then in a solid position to deny executing the eleventh hour version presented by an attorney for the bank, the title insurer or the purchaser of the property. The contract should also specify the parties to whom the surveyor will certify, if possible.

"Updating" or "Recertifying" the Survey and Certification

Property sales and loan closures are often delayed well beyond the date of the surveyor's plan and certification. Surveyors have experienced repeated returns to their work as new dates were set and missed by the parties involved (seller, buyer, lawyers for seller and buyer, lenders, title

insurers, lawyers for lenders and title insurers). Each time a new date for conveyance approaches the surveyor may be asked to update the survey and certification. It goes without saying that with every “update” the surveyor’s liability exposure is renewed.

Surveyor and others routinely refer to these “updates,” but in reality they are new surveys every time the surveyor applies a new certification date. This is one reason why this writer avoids the use of the term “update” altogether when dealing with clients and lenders.

The same care must be applied in reviewing the condition on the ground at the time of the “update” as at the time of the original survey because the surveyor is certifying that what is represented on the face of the plat/map is, in fact the current condition on the ground and that the requirements contained in the standards have been met. It is also true that during long delays the *record* can change, so it is not unlikely that if the delay is long enough, updated title work may be forthcoming. Eminent domain proceedings can change the configuration of the property; negotiated easements may appear in the record, even when not evidenced on the ground. Owners have even been known to convey away a portion of a site without thinking to alert the surveyor. Upon a request to update, the surveyor must make a careful examination of the record as well as the site.

As noted above, this writer prefers to avoid the use of the terms “update” and/or “recertify” as they also tend to imply to the client, attorney and title companies that they are somehow less important (and less expensive, and will take less time) than a “new” survey. The fact is that a recertification or update IS a new survey; the only issue is, in the professional surveyor’s opinion, what effort needs to go into the new survey given that fact that he or she has performed the survey previously. This will be a function of a variety of factors such as the age of the prior survey, who worked on it, how good is the documentation, how much has changed on the site, whether or not adjoining properties have changed hands, whether or not additional right of way has been taken, etc.

Case Law

There have been a few of oft-cited cases related to surveyor liability. They include those listed below.

Surveyor may be held liable to third parties Rozny v. Marnol, 43 Ill. 2d 54, 260 N.E.2d 686 (1969)

Plaintiffs were subsequent owners of property surveyed under contract between previous owner and defendant surveyor. Survey was inaccurate; damages were suffered by subsequent owner. Court found that surveyor knew or should have known that subsequent owner (third party) would use and rely on the plan and that the surveyor therefore had a duty to the third party and liability for any negligence. The court determined that action was not barred by the absence of privity of contract; the innocent reliant party should not have to carry the burden of the surveyor’s negligent work.

Comment: Privity of contract was formerly a defense in such cases. Courts have, however, in recent years recognized the professional's responsibility to whomever might use the product of the professional's service. The test is "foreseeability". In *Rozny v. Marnol* the court determined that the surveyor, knowing that others in addition to his client would subsequently use the survey, was liable for loss due to his negligence.

Surveyors are held to a standard of care as established regionally
McKinnon v. Batte, 485 So.2d 295 (Miss. 1986)

Jury instructed that surveyor *"need only to have possessed and to have exercised that degree of skill and care of surveyors engaging in the practice of surveying in the Jackson, Mississippi area in December 1978, under the same or similar circumstances as the engagement (of the surveyor of the plaintiffs) in this case..."*

Crawford v. Gary and Associates, 493 So.2d 734 (La. App. 1986)

"Surveyors are expected to perform with the same degree of care and skill exercised by others in the profession in the same general area..."

Surveyors held to a standard of care established nationally
Bell v. Jones, 523 A.2d 982 (D.C. App. 1986)

"(W)e hold that the standard of care by which the professional acts of surveyors are measured is a national standard, not a local or regional one."

Comment: The normal standard of care for surveying has historically been held by the courts to be established locally or regionally. The growth of technology, standardization in the education of surveyors, the association of professional surveyors through the National Society of Professional Surveyors and the spread of printed standards of practice among state association of surveyors suggest that surveying is becoming standardized on a national level. In *Bell v. Jones*, the court recognized the trend and cited the ALTA/ACSM Minimum Standard Detail Requirements as a specific standard to which surveyors are bound not just locally, but nationally.

Surveyors Certification
Bell v. Jones, 523 A.2d 982 (D.C. App. 1986)

Jones' certification stated *"I certify that I have carefully surveyed the property as shown and described hereon, in accordance with D.C. Surveyor's records, and have located all of the existing improvements thereon by transit and tape survey, and that the corners have been found or placed as shown, and that there are no encroachments either way across the property lines except as shown."*

Jones later admitted, however, that he had not carefully surveyed the property, but instead had performed "spot checks" which he conceded were not the same as carefully

surveying the property. Furthermore, the property lines were shown on the plat of survey as due north, due east, due south and due west, which indicated to Bell that the corners were all 90 degree angles. In fact, two of the angles were 90 degrees and 51 minutes, which caused Bell's architectural drawings to be substantially inaccurate. The evidence showed that Jones knew the angles were 90 degrees and 51 minutes.

"In this case the evidence established that Jones certified he had done something that he had actually not done. Bell's expert witness, Mr. Hansell, testified that a reasonably prudent surveyor in similar circumstances would not have made such a certification. On this record, we affirm the trial court's finding that Jones negligently certified the plat of survey which he gave to Bell."

Surveyor Negligence

Walker Rogge, Inc. v. Chelsea Title & Guaranty Co., 116 N.J. 517, 562 A.2d 208 (1989)

The trial judge was able to determine, based on expert testimony, that the Duffy survey was most accurate, thereby implicating the finding that the (defendant surveyor's) survey was inaccurate. He was not willing, however, to take the further step of equating this inaccuracy with negligence, in the absence of expert testimony. Based upon the evidence showing that the surveying of this particular plot was extremely difficult we are unable to say that the judge was incorrect in finding plaintiff's negligence claim required expert testimony to support it. The trial judge stated: *"If this court learned nothing else during the trial of this matter, it learned that surveying land can be a rather imprecise art in some cases."* This observation supports his determination that a valid judgment on the issue of defendant's negligence could not be formed by the application of common judgment and experience. For the same valid reason, the trial judge was unable to conclude whether the occurrence of an inaccurate survey *"ordinarily bespeaks negligence,"* thereby precluding the application of res ipsa loquitur.

Comment: The doctrine of res ipsa loquitur (the thing speaks for itself) suggests that alleged negligence may be inferred by the fact, in this case, of the less accurate survey. The trial court judge, however, decided that in light of the complicated issues in the case, the defendant's surveyor was not negligent simply because he came to a different conclusion than that of the plaintiff's expert.

Statute of Limitations; Discovery

Martin v. Crowley, Wade & Milstead, Inc., 702 S.W. 2d 57 (1985)

In 1973, home builders had a surveyor survey the lot and plot the location of the house they would build. The surveyor got it wrong and the house was, therefore, placed incorrectly. The error was not discovered until 1981 when the plaintiff had a resurvey done to settle a boundary dispute with a neighbor. Under the statute of limitations, the cause of action did not accrue until the damage was "sustained and capable of ascertainment." The Missouri Supreme Court held that the statute was not tolled because

until a subsequent survey revealed the problem, there was no reason for the plaintiffs to have questioned the surveyor's work.

**MINIMUM STANDARD DETAIL REQUIREMENTS FOR
ALTA/NSPS LAND TITLE SURVEYS**
(Effective February 23, 2016)

***NOTE** - Attention is directed to the fact that the National Society of Professional Surveyors, Inc. (NSPS) is the legal successor organization to the American Congress on Surveying and Mapping (ACSM) and that these 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys are the next version of the former Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys.*

1. Purpose - Members of the American Land Title Association® (ALTA®) have specific needs, unique to title insurance matters, when asked to insure title to land without exception as to the many matters which might be discoverable from survey and inspection, and which are not evidenced by the public records.

For a survey of real property, and the plat, map or record of such survey, to be acceptable to a title insurance company for the purpose of insuring title to said real property free and clear of survey matters (except those matters disclosed by the survey and indicated on the plat or map), certain specific and pertinent information must be presented for the distinct and clear understanding between the insured, the client (if different from the insured), the title insurance company (insurer), the lender, and the surveyor professionally responsible for the survey.

In order to meet such needs, clients, insurers, insureds, and lenders are entitled to rely on surveyors to conduct surveys and prepare associated plats or maps that are of a professional quality and appropriately uniform, complete, and accurate. To that end, and in the interests of the general public, the surveying profession, title insurers, and abstracters, the ALTA and the NSPS jointly promulgate the within details and criteria setting forth a minimum standard of performance for ALTA/NSPS Land Title Surveys. A complete 2016 ALTA/NSPS Land Title Survey includes:

- (i) the on-site fieldwork required pursuant to Section 5,
- (ii) the preparation of a plat or map pursuant to Section 6 showing the results of the fieldwork and its relationship to documents provided to or obtained by the surveyor pursuant to Section 4,
- (iii) any information from Table A items requested by the client, and
- (iv) the certification outlined in Section 7.

2. Request for Survey - The client shall request the survey, or arrange for the survey to be requested, and shall provide a written authorization to proceed from the person or entity responsible for paying for the survey. Unless specifically authorized in writing by the insurer, the insurer shall not be responsible for any costs associated with the preparation of the survey. The request shall specify that an "ALTA/NSPS LAND TITLE SURVEY" is required and which of the optional items listed in Table A, if any, are to be incorporated. Certain properties or interests in real properties may present issues outside those normally encountered on an ALTA/NSPS Land Title Survey (e.g., marinas, campgrounds, trailer parks; easements, leases, other non-fee simple interests). The scope of work related to surveys of such properties or interests in real properties should be discussed with the client, lender, and insurer; and agreed upon in writing prior to commencing work on the survey. The client may need to secure permission for the surveyor to enter upon the property to be surveyed, adjoining properties, or offsite easements.

3. Surveying Standards and Standards of Care

- A. **Effective Date** - The 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys are effective February 23, 2016. As of that date, all previous versions of the Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys are superseded by these standards.
- B. **Other Requirements and Standards of Practice** - Many states and some local jurisdictions have adopted statutes, administrative rules, and/or ordinances that set out standards regulating the practice of surveying within their jurisdictions. In addition to the standards set forth herein, surveyors shall also conduct their surveys in accordance with applicable jurisdictional survey requirements and standards of practice. Where conflicts between the standards set forth herein and any such jurisdictional requirements and standards of practice occur, the more stringent shall apply.
- C. **The Normal Standard of Care** - Surveyors should recognize that there may be unwritten local, state, and/or regional standards of care defined by the practice of the "prudent surveyor" in those locales.
- D. **Boundary Resolution** - The boundary lines and corners of any property being surveyed as part of an ALTA/NSPS Land Title Survey shall be established and/or retraced in accordance with appropriate boundary law principles governed by the set of facts and evidence found in the course of performing the research and fieldwork.
- E. **Measurement Standards** - The following measurement standards address Relative Positional Precision for the monuments or witnesses marking the corners of the surveyed property.
- "Relative Positional Precision" means the length of the semi-major axis, expressed in feet or meters, of the error ellipse representing the uncertainty due to random errors in measurements in the location of the monument, or witness, marking any corner of the surveyed property relative to the monument, or witness, marking any other corner of the surveyed property at the 95 percent confidence level. Relative Positional Precision is estimated by the results of a correctly weighted least squares adjustment of the survey.
 - Any boundary lines and corners established or retraced may have uncertainties in location resulting from (1) the availability, condition, history and integrity of reference or controlling monuments, (2) ambiguities in the record descriptions or plats of the surveyed property or its adjoiners, (3) occupation or possession lines as they may differ from the written title lines, or (4) Relative Positional Precision. Of these four sources of uncertainty, only Relative Positional Precision is controllable, although, due to the inherent errors in any measurement, it cannot be eliminated. The magnitude of the first three uncertainties can be projected based on evidence; Relative Positional Precision is estimated using statistical means (see Section 3.E.i. above and Section 3.E.v. below).
 - The first three of these sources of uncertainty must be weighed as part of the evidence in the determination of where, in the surveyor's opinion, the boundary lines and corners of the surveyed property should be located (see Section 3.D. above). Relative Positional Precision is a measure of how precisely the surveyor is able to monument and report those positions; it is not a substitute for the application of proper boundary law principles. A boundary corner or line may have a small Relative Positional Precision because the survey measurements were precise, yet still be in the wrong position (*i.e.*, inaccurate) if it was established or retraced using faulty or improper application of boundary law principles.
 - For any measurement technology or procedure used on an ALTA/NSPS Land Title Survey, the surveyor shall (1) use appropriately trained personnel, (2) compensate for systematic errors, including those associated with instrument calibration, and (3) use appropriate error propagation and measurement design theory (selecting the proper instruments, geometric layouts, and field and computational procedures) to control random errors such that the

maximum allowable Relative Positional Precision outlined in Section 3.E.v. below is not exceeded.

- v. The maximum allowable Relative Positional Precision for an ALTA/NSPS Land Title Survey is 2 cm (0.07 feet) plus 50 parts per million (based on the direct distance between the two corners being tested). It is recognized that in certain circumstances, the size or configuration of the surveyed property, or the relief, vegetation, or improvements on the surveyed property, will result in survey measurements for which the maximum allowable Relative Positional Precision may be exceeded. If the maximum allowable Relative Positional Precision is exceeded, the surveyor shall note the reason as explained in Section 6.B.x. below.

4. **Records Research** - It is recognized that for the performance of an ALTA/NSPS Land Title Survey, the surveyor will be provided with appropriate and, when possible, legible data which can be relied upon in the preparation of the survey. The request for an ALTA/NSPS Land Title Survey shall set forth the current record description of the property to be surveyed or, in the case of an original survey prepared for purposes of locating and describing real property that has not been previously separately described in documents conveying an interest in the real property, the current record description of the parent parcel that contains the property to be surveyed.

In order to complete an ALTA/NSPS Land Title Survey, the surveyor must be provided with complete copies of the most recent title commitment or, if a title commitment is not available, other title evidence satisfactory to the title insurer. In addition, the surveyor must be provided with the following:

- (i) The following records established under state statutes for the purpose of imparting constructive notice of matters relating to real property (public records):
 - (a) The current record descriptions of any adjoining lots to the property to be surveyed, except where such adjoining lots are lots in platted, recorded subdivisions;
 - (b) Any recorded easements benefitting the property;
 - (c) Any recorded easements, servitudes, or covenants burdening the property;
- (ii) Any unrecorded documents affecting the property being surveyed and containing information to which the survey shall make reference, if desired by the client.

Except, however, if the documents outlined above in (i) and (ii) of this section are not provided to the surveyor or if non-public or quasi-public documents are required to complete the survey, the surveyor shall be required to conduct only that research which is required pursuant to the statutory or administrative requirements of the jurisdiction where the property being surveyed is located and that research (if any) which is negotiated and outlined in the terms of the contract between the surveyor and the client.

5. **Fieldwork** - The survey shall be performed on the ground (except as otherwise negotiated pursuant to Table A, Item 15 below, if selected by the client). The fieldwork shall include the following, located to what is, in the surveyor's professional opinion, the appropriate degree of precision based on (a) the planned use of the property, if reported in writing to the surveyor by the client, lender, or insurer, or (b) the existing use, if the planned use is not so reported:

A. Monuments

- i. The location, size, character, and type of any monuments found during the fieldwork.
- ii. The location, size, character, and type of any monuments set during the fieldwork, if item 1 of Table A was selected or if otherwise required by applicable jurisdictional requirements and/or standards of practice.
- iii. The location, description, and character of any lines that control the boundaries of the

surveyed property.

B. Rights of Way and Access

- i. The distance from the appropriate corner or corners of the surveyed property to the nearest right of way line, if the surveyed property does not abut a right of way.
- ii. The name of any street, highway, or other public or private way abutting the surveyed property, together with the width of the travelled way and the location of each edge of the travelled way including on divided streets and highways. If the documents provided to or obtained by the surveyor pursuant to Section 4 indicate no access from the surveyed property to the abutting street or highway, the width and location of the travelled way need not be located.
- iii. Visible evidence of physical access (e.g., curb cuts, driveways) to any abutting streets, highways, or other public or private ways.
- iv. The location and character of vehicular, pedestrian, or other forms of access by other than the apparent occupants of the surveyed property to or across the surveyed property observed in the process of conducting the fieldwork (e.g., driveways, alleys, private roads, railroads, railroad sidings and spurs, sidewalks, footpaths).
- v. Without expressing a legal opinion as to ownership or nature, the location and extent of any potentially encroaching driveways, alleys, and other ways of access from adjoining properties onto the surveyed property observed in the process of conducting the fieldwork.
- vi. Where documentation of the location of any street, road, or highway right of way abutting, on, or crossing the surveyed property was not disclosed in documents provided to or obtained by the surveyor, or was not otherwise available from the controlling jurisdiction (see Section 6.C.iv. below), the evidence and location of parcel corners on the same side of the street as the surveyed property recovered in the process of conducting the fieldwork which may indicate the location of such right of way lines (e.g., lines of occupation, survey monuments).
- vii. Evidence of access to and from waters adjoining the surveyed property observed in the process of conducting the fieldwork (e.g., paths, boat slips, launches, piers, docks).

C. Lines of Possession and Improvements along the Boundaries

- i. The character and location of evidence of possession or occupation along the perimeter of the surveyed property, both by the occupants of the surveyed property and by adjoining, observed in the process of conducting the fieldwork.
- ii. Unless physical access is restricted, the character and location of all walls, buildings, fences, and other improvements within five feet of each side of the boundary lines, observed in the process of conducting the fieldwork. Trees, bushes, shrubs, and other natural vegetation need not be located other than as specified in the contract, unless they are deemed by the surveyor to be evidence of possession pursuant to Section 5.C.i.
- iii. Without expressing a legal opinion as to the ownership or nature of the potential encroachment, the evidence, location and extent of potentially encroaching structural appurtenances and projections observed in the process of conducting the fieldwork (e.g., fire escapes, bay windows, windows and doors that open out, flue pipes, stoops, eaves, cornices, areaways, steps, trim) by or onto adjoining property, or onto rights of way, easements, or setback lines disclosed in documents provided to or obtained by the surveyor.

D. Buildings

The location of buildings on the surveyed property observed in the process of conducting the fieldwork.

E. Easements and Servitudes

- i. Evidence of any easements or servitudes burdening the surveyed property as disclosed in the documents provided to or obtained by the surveyor pursuant to Section 4 and observed in the process of conducting the fieldwork.

- ii. Evidence of easements, servitudes, or other uses by other than the apparent occupants of the surveyed property not disclosed in the documents provided to or obtained by the surveyor pursuant to Section 4, but observed in the process of conducting the fieldwork if they appear to affect the surveyed property (e.g., roads; drives, sidewalks, paths and other ways of access; utility service lines; water courses; ditches; drains; telephone, fiber optic lines, or electric lines; or water, sewer, oil or gas pipelines on or across the surveyed property and on adjoining properties).
 - iii. Surface indications of underground easements or servitudes on or across the surveyed property observed in the process of conducting the fieldwork (e.g., utility cuts, vent pipes, filler pipes).
 - iv. Evidence on or above the surface of the surveyed property observed in the process of conducting the fieldwork, which evidence may indicate utilities located on, over or beneath the surveyed property. Examples of such evidence include pipeline markers, manholes, valves, meters, transformers, pedestals, clean-outs, utility poles, overhead lines and guy wires.
- F. Cemeteries**
As accurately as the evidence permits, the perimeter of cemeteries and burial grounds, and the location of isolated gravesites not within a cemetery or burial ground, (i) disclosed in the documents provided to or obtained by the surveyor, or (ii) observed in the process of conducting the fieldwork.
- G. Water Features**
- i. The location of springs, ponds, lakes, streams, rivers, canals, ditches, marshes, and swamps on, running through, or outside, but within five feet of the perimeter boundary of, the surveyed property, observed during the process of conducting the fieldwork.
 - ii. The location of any water feature forming a boundary of the surveyed property. The attribute(s) of the water feature located (e.g., top of bank, edge of water, high water mark) should be congruent with the boundary as described in the record description or, in the case of an original survey, in the new description (see Section 6.B.vi. below).
- 6. Plat or Map** - A plat or map of an ALTA/NSPS Land Title Survey shall show the following information. Where dimensioning is appropriate, dimensions shall be annotated to what is, in the surveyor's professional opinion, the appropriate degree of precision based on (a) the planned use of the property, if reported in writing to the surveyor by the client, lender, or insurer, or (b) existing use, if the planned use is not so reported.
- A. The evidence and locations gathered, and the monuments and lines located during the fieldwork pursuant to Section 5 above, with accompanying notes if deemed necessary by the surveyor or as otherwise required as specified below.**
 - B. Boundary, Descriptions, Dimensions, and Closures**
 - i. (a) The current record description of the surveyed property, or
(b) In the case of an original survey, the current record description of the parent tract that contains the surveyed property.
 - ii. Any new description of the surveyed property that was prepared in conjunction with the survey, including a statement explaining why the new description was prepared. Except in the case of an original survey, preparation of a new description should be avoided unless deemed necessary or appropriate by the surveyor and insurer. Preparation of a new description should also generally be avoided when the record description is a lot or block in a platted, recorded subdivision. Except in the case of an original survey, if a new description is prepared, a note shall be provided stating (a) that the new description describes the same real estate as the record description or, if it does not, (b) how the new description differs from

- the record description.
- iii. The point of beginning, the remote point of beginning or point of commencement (if applicable) and all distances and directions identified in the record description of the surveyed property (and in the new description, if one was prepared). Where a measured or calculated dimension differs from the record by an amount deemed significant by the surveyor, such dimension shall be shown in addition to, and differentiated from, the corresponding record dimension. All dimensions shown on the survey and contained in any new description shall be ground dimensions unless otherwise noted.
 - iv. The directional, distance and curve data necessary to compute a mathematical closure of the surveyed boundary. A note if the record description does not mathematically close. The basis of bearings and, where it differs from the record basis, the difference.
 - v. The remainder of any recorded lot or existing parcel, when the surveyed property is composed of only a portion of such lot or parcel, shall be graphically depicted. Such remainder need not be included as part of the actual survey, except to the extent necessary to locate the lines and corners of the surveyed property, and it need not be fully dimensioned or drawn at the same scale as the surveyed property.
 - vi. When the surveyed property includes a title line defined by a water boundary, a note on the face of the plat or map noting the date the boundary was measured, which attribute(s) of the water feature was/were located, and the caveat that the boundary is subject to change due to natural causes and that it may or may not represent the actual location of the limit of title. When the surveyor is aware of natural or artificial realignments or changes in such boundaries, the extent of those changes and facts shall be shown or explained.
 - vii. The relationship of the boundaries of the surveyed property with its adjoiners (e.g., contiguity, gaps, overlaps), where ascertainable from documents provided to or obtained by the surveyor pursuant to Section 4 and/or from field evidence gathered during the process of conducting the fieldwork. If the surveyed property is composed of multiple parcels, the extent of any gaps or overlaps between those parcels shall be identified. Where gaps or overlaps are identified, the surveyor shall, prior to or upon delivery of the final plat or map, disclose this to the insurer and client.
 - viii. When, in the opinion of the surveyor, the results of the survey differ significantly from the record, or if a fundamental decision related to the boundary resolution is not clearly reflected on the plat or map, the surveyor shall explain this information with notes on the face of the plat or map.
 - ix. The location of all buildings on the surveyed property, located pursuant to Section 5.D., dimensioned perpendicular to those perimeter boundary lines that the surveyor deems appropriate (i.e., where potentially impacted by a setback line) and/or as requested by the client, lender or insurer.
 - x. A note on the face of the plat or map explaining the site conditions that resulted in a Relative Positional Precision that exceeds the maximum allowed pursuant to Section 3.E.v.
 - xi. A note on the face of the plat or map identifying areas, if any, on the boundaries of the surveyed property, to which physical access within five feet was restricted (see Section 5.C.ii.).
 - xii. A note on the face of the plat or map identifying the source of the title commitment or other title evidence provided pursuant to Section 4, and the effective date and the name of the insurer of same.
- C. Easements, Servitudes, Rights of Way, Access, and Documents
- i. The location, width, and recording information of all plottable rights of way, easements, and servitudes burdening and benefitting the property surveyed, as evidenced by documents provided to or obtained by the surveyor pursuant to Section 4.

- ii. A summary of all rights of way, easements and servitudes burdening the property surveyed and identified in the title evidence provided to or obtained by the surveyor pursuant to Section 4. Such summary shall include the record information of each such right of way, easement or servitude, a statement indicating whether or not it is shown on the plat or map, and a related note if:
 - (a) the location cannot be determined from the record document;
 - (b) there was no observed evidence at the time of the fieldwork;
 - (c) it is a blanket easement;
 - (d) it is not on, or does not touch, the surveyed property;
 - (e) it limits access to an otherwise abutting right of way;
 - (f) the documents are illegible; or
 - (g) the surveyor has information indicating that it may have been released or otherwise terminated.

In cases where the surveyed property is composed of multiple parcels, indicate which of such parcels the various rights of way, easements, and servitudes cross or touch.

- iii. A note if no physical access to a public way was observed in the process of conducting the fieldwork.
 - iv. The locations and widths of rights of way abutting or crossing the surveyed property, and the source of such information, (a) where available from the controlling jurisdiction, or (b) where disclosed in documents provided to or obtained by the surveyor pursuant to Section 4.
 - v. The identifying titles of all recorded plats, filed maps, right of way maps, or similar documents which the survey represents, wholly or in part, with their recording or filing data.
 - vi. For non-platted adjoining land, recording data identifying adjoining tracts according to current public records. For platted adjoining land, the recording data of the subdivision plat.
 - vii. Platted setback or building restriction lines which appear on recorded subdivision plats or which were disclosed in documents provided or obtained by the surveyor.
- D. Presentation**
- i. The plat or map shall be drawn on a sheet of not less than 8 ½ by 11 inches in size at a legible, standard engineering scale, with that scale clearly indicated in words or numbers and with a graphic scale.
 - ii. The plat or map shall include:
 - (a) The boundary of the surveyed property drawn in a manner that distinguishes it from other lines on the plat or map.
 - (b) If no buildings were observed on the surveyed property in the process of conducting the fieldwork, a note stating "No buildings observed."
 - (c) A north arrow (with north to the top of the drawing when practicable).
 - (d) A legend of symbols and abbreviations.
 - (e) A vicinity map showing the property in reference to nearby highway(s) or major street intersection(s).
 - (f) Supplementary or detail diagrams when necessary.
 - (g) Notes explaining any modifications to Table A items and the nature of any additional Table A items (e.g., 21(a), 21(b), 21(c)) that were negotiated between the surveyor and client.
 - (h) The surveyor's project number (if any), and the name, registration or license number, signature, seal, street address, telephone number, company website, and email address (if any) of the surveyor who performed the survey.
 - (i) The date(s) of any revisions made by the surveyor who performed the survey.
 - (j) Sheet numbers where the plat or map is composed of more than one sheet.
 - (k) The caption "ALTA/NSPS Land Title Survey."

- iii. When recordation or filing of a plat or map is required by law, such plat or map shall be produced in recordable form.

7. **Certification** - The plat or map of an ALTA/NSPS Land Title Survey shall bear only the following certification, unaltered, except as may be required pursuant to Section 3.B. above:

To (name of insured, if known), (name of lender, if known), (name of insurer, if known), (names of others as negotiated with the client):

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items _____ of Table A thereof. The fieldwork was completed on _____ [date].

Date of Plat or Map: _____ (Surveyor's signature, printed name and seal with Registration/License Number)

8. **Deliverables** - The surveyor shall furnish copies of the plat or map of survey to the insurer and client and as otherwise negotiated with the client. Hard copies shall be on durable and dimensionally stable material of a quality standard acceptable to the insurer. A digital image of the plat or map may be provided in addition to, or in lieu of, hard copies pursuant to the terms of the contract. When required by law or requested by the client, the plat or map shall be produced in recordable form and recorded or filed in the appropriate office or with the appropriate agency.

TABLE A

OPTIONAL SURVEY RESPONSIBILITIES AND SPECIFICATIONS

NOTE: The twenty (20) items of Table A may be negotiated between the surveyor and client. Any additional items negotiated between the surveyor and client shall be identified as 21(a), 21(b), etc. and explained pursuant to Section 6.D.ii.(g). Notwithstanding Table A Items 5 and 11, if an engineering design survey is desired as part of an ALTA/NSPS Land Title Survey, such services should be negotiated under Table A, Item 21.

If checked, the following optional items are to be included in the ALTA/NSPS LAND TITLE SURVEY, except as otherwise qualified (see note above):

1. ☐ *Monuments placed (or a reference monument or witness to the corner) at all major corners of the boundary of the property, unless already marked or referenced by existing monuments or witnesses in close proximity to the corner.*
2. ☐ *Address(es) of the surveyed property if disclosed in documents provided to or obtained by the surveyor, or observed while conducting the fieldwork.*
3. ☐ *Flood zone classification (with proper annotation based on federal Flood Insurance Rate Maps or the state or local equivalent) depicted by scaled map location and graphic plotting only.*
4. ☐ *Gross land area (and other areas if specified by the client).*
5. ☐ *Vertical relief with the source of information (e.g., ground survey, aerial map), contour interval, datum, and originating benchmark identified.*
6. ☐ *(a) If set forth in a zoning report or letter provided to the surveyor by the client, list the current zoning classification, setback requirements, the height and floor space area restrictions, and parking requirements. Identify the date and source of the report or letter.*
☐ *(b) If the zoning setback requirements are set forth in a zoning report or letter provided to the surveyor by the client, and if those requirements do not require an interpretation by the surveyor, graphically depict the building setback requirements. Identify the date and source of the report or letter.*
7. ☐ *(a) Exterior dimensions of all buildings at ground level.*
☐ *(b) Square footage of:*
☐ *(1) exterior footprint of all buildings at ground level.*
☐ *(2) other areas as specified by the client.*
☐ *(c) Measured height of all buildings above grade at a location specified by the client. If no location is specified, the point of measurement shall be identified.*

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8. _____ Substantial features observed in the process of conducting the fieldwork (in addition to the improvements and features required pursuant to Section 5 above) (e.g., parking lots, billboards, signs, swimming pools, landscaped areas, substantial areas of refuse).
9. _____ Number and type (e.g., disabled, motorcycle, regular and other marked specialized types) of clearly identifiable parking spaces on surface parking areas, lots and in parking structures. Striping of clearly identifiable parking spaces on surface parking areas and lots.
10. _____ (a) As designated by the client, a determination of the relationship and location of certain division or party walls with respect to adjoining properties (client to obtain necessary permissions).
- _____ (b) As designated by the client, a determination of whether certain walls are plumb (client to obtain necessary permissions).
11. _____ Location of utilities existing on or serving the surveyed property as determined by:
- observed evidence collected pursuant to Section 5.E.iv.
 - evidence from plans requested by the surveyor and obtained from utility companies, or provided by client (with reference as to the sources of information), and
 - markings requested by the surveyor pursuant to an 811 utility locate or similar request
- Representative examples of such utilities include, but are not limited to:
- Manholes, catch basins, valve vaults and other surface indications of subterranean uses;
 - Wires and cables (including their function, if readily identifiable) crossing the surveyed property, and all poles on or within ten feet of the surveyed property. Without expressing a legal opinion as to the ownership or nature of the potential encroachment, the dimensions of all encroaching utility pole crossmembers or overhangs; and
 - Utility company installations on the surveyed property.
- Note to the client, insurer, and lender - With regard to Table A, item 11, source information from plans and markings will be combined with observed evidence of utilities pursuant to Section 5.E.iv. to develop a view of the underground utilities. However, lacking excavation, the exact location of underground features cannot be accurately, completely, and reliably depicted. In addition, in some jurisdictions, 811 or other similar utility locate requests from surveyors may be ignored or result in an incomplete response, in which case the surveyor shall note on the plat or map how this affected the surveyor's assessment of the location of the utilities. Where additional or more detailed information is required, the client is advised that excavation and/or a private utility locate request may be necessary.
12. _____ As specified by the client, Governmental Agency survey-related requirements (e.g., HUD surveys, surveys for leases on Bureau of Land Management managed lands).

13. _____ *Names of adjoining owners according to current tax records. If more than one owner, identify the first owner's name listed in the tax records followed by "et al."*
14. _____ *As specified by the client, distance to the nearest intersecting street.*
15. _____ *Rectified orthophotography, photogrammetric mapping, remote sensing, airborne/mobile laser scanning and other similar products, tools or technologies as the basis for the showing the location of certain features (excluding boundaries) where ground measurements are not otherwise necessary to locate those features to an appropriate and acceptable accuracy relative to a nearby boundary. The surveyor shall (a) discuss the ramifications of such methodologies (e.g., the potential precision and completeness of the data gathered thereby) with the insurer, lender, and client prior to the performance of the survey, and (b) place a note on the face of the survey explaining the source, date, precision, and other relevant qualifications of any such data.*
16. _____ *Evidence of recent earth moving work, building construction, or building additions observed in the process of conducting the fieldwork.*
17. _____ *Proposed changes in street right of way lines, if such information is made available to the surveyor by the controlling jurisdiction. Evidence of recent street or sidewalk construction or repairs observed in the process of conducting the fieldwork.*
18. _____ *If there has been a field delineation of wetlands conducted by a qualified specialist hired by the client, the surveyor shall locate any delineation markers observed in the process of conducting the fieldwork and show them on the face of the plat or map. If no markers were observed, the surveyor shall so state.*
19. _____ *Include any plottable offsite (i.e., appurtenant) easements or servitudes disclosed in documents provided to or obtained by the surveyor as a part of the survey pursuant to Sections 5 and 6 (and applicable selected Table A items) (client to obtain necessary permissions).*
20. _____ *Professional Liability Insurance policy obtained by the surveyor in the minimum amount of \$_____ to be in effect throughout the contract term. Certificate of Insurance to be furnished upon request, but this item shall not be addressed on the face of the plat or map.*
21. _____

Adopted by the Board of Governors, American Land Title Association, on October 8, 2015.
American Land Title Association, 1800 M St., N.W., Suite 300S, Washington, D.C. 20036-5828.
www.alta.org

Adopted by the Board of Directors, National Society of Professional Surveyors, on October 9, 2015.
National Society of Professional Surveyors, Inc., 5119 Pegasus Court, Suite Q, Frederick, MD 21704.
<http://www.nsps.us.com/>

Thoughts on Relative Positional Precision

I. Comments on Precision and Accuracy

1. High precision does not necessarily translate to higher accuracy.
2. Higher precision is achieved by using more precise equipment, utilizing an appropriate survey design and making redundant measurements.
3. Accuracy is possible through the application of appropriate knowledge, trained staff and skilled techniques
4. In most cases true accuracy cannot be ascertained, but we hope that precise measurements combined the application of knowledge, skill and trained staff that will result in acceptable accuracy.

II. Blunders and Errors

- A. Blunders = mistakes
- B. Errors
 1. Systematic
 - a. Of predictable sign and quantity
 - b. Can be corrected for, but there is some accidental error introduced by the correction. Such residual error is generally small enough to be ignored.
 2. Accidental
 - a. Random : Of unknown quantity; having an equal chance of being + or -.
 - b. Constant : Of unknown quantity; always having the same sign.

III. Estimates of Uncertainty due to Accidental Errors cannot be made by casual guess

- A. Surveyors must understand (1) the primary sources of accidental errors in their measurements and (2) the magnitude of those errors. This cannot be credibly done by casual guess.
- B. The standard deviation of all of the accidental errors in a measurement is the square root of the sum of the squares of the standard deviations of the individual accidental errors introduced by various sources.

IV. Identifying Primary Sources of Accidental Error in Angular Measurements and Estimating their Magnitudes

- A. **Pointing:** Sources of pointing error include telescope optics, target design, and atmospheric conditions. Brown and Eldridge in *Evidence and Procedures for Boundary Location* say pointing errors can be considered insignificant if the operator is skilled. Mikhail and Gracie in *Analysis and Adjustments of Survey Measurements*, on the other hand, estimate the standard deviation of a single pointing (σ_p) to be 1 to 4 seconds of arc. The standard deviation of the error in pointing for a measured angle ($\sigma_{\theta p}$ in seconds) is:

$$\sigma_{\theta p} = \sigma_p / (n)^{1/2}$$

where n = the number of pointings made in the observation of the angle.

- B. Centering of the instrument:** Brown and Eldridge suggested that errors due to miscentering of the instrument can be considered insignificant if the operator is skilled and the equipment is in adjustment. Mikhail and Gracie, however, estimate the standard deviation in centering of the instrument (σ_C) to be 0.5 to 3 mm. The standard deviation of the error in a measured angle due to instrument centering ($\sigma_{\theta C}$ in radians) is:

$$\sigma_{\theta C} = (\sigma_C D_3) / (D_1 D_2)$$

Where D_1 = the length of the backsight

D_2 = the length of the foresight, and

D_3 = the distance between the backsight and foresight or

$$(D_1^2 + D_2^2 - 2D_1 D_2 \cos \alpha)^{1/2}$$

Where α = the angle between the backsight and foresight

- C. Centering of the target:** Mikhail and Gracie estimate the standard deviation in centering of the target (σ_T) to be 0.5 to 5 mm. If the same type of equipment (tribrach) is used on the target setup as on the instrument setup, the estimate of the standard deviation in instrument centering (σ_C) could be used. However, if the target is a prism on 8 feet of range pole, for example, the estimate must be rethought. The standard deviation of the error in a measured angle due to target centering ($\sigma_{\theta T}$ in radians) is:

$$\sigma_{\theta T} = \sigma_T (D_1^2 + D_2^2)^{1/2} / (D_1 D_2)$$

- D. Instrument axial error:** Can be disregarded if proper procedures are used (direct and reverse for non-electronic theodolites), or if electronic total station is used.

- E. Reading:** Mikhail and Gracie state that the standard deviation of the error in the reading of a repeating instrument is:

$\sigma_{\theta R} = \sigma_R / (n(2)^{1/2})$ Where σ_R is the standard deviation of a single sighting (this is NOT the number provided by the manufacturer, which is typically the standard deviation of a set of direct and reverse measurements] and where n is the number of readings made in the observation of the angle.

The standard deviation of the error in the reading of a direction instrument is:

$$\sigma_{\theta R} = \sigma_R / n^{1/2}$$

Mikhail and Gracie suggest that the range of values for σ_R varies from 1 to 10 seconds depending on the instrument used.

- F. The combined standard deviation in the measurement of a horizontal angle** (in angular units) is the square root of the sum of the squares of the contributing elements:

$$\sigma_{\theta} = (\sigma_{\theta P}^2 + \sigma_{\theta C}^2 + \sigma_{\theta T}^2 + \sigma_{\theta R}^2)^{1/2}$$

Each factor must be in the same units (all in radians or all in seconds, etc.)

V. Identifying Primary Sources of Accidental Error in Distance (EDM) Measurements and Estimating their Magnitudes

- A.** σ_C (instrument centering error) [not $\sigma_{\theta C}$ which was the standard deviation in the angle due to instrument centering error]
- B.** σ_T (target centering error) [not $\sigma_{\theta T}$ which was the standard deviation in the angle due to instrument centering error]
- B.** The standard deviation in the actual reading of an EDM measurement is:

$$\sigma_S = (a^2 + b^2 S^2)^{1/2}$$

Where a and b are provided by the manufacturer, and
S is the length of the distance measured

- C.** The combined standard deviation in the measurement of a an EDM distance is the square root of the sum of the squares of the contributing elements:

$$\sigma_{\theta} = (\sigma_C^2 + \sigma_T^2 + \sigma_S^2)^{1/2}$$

VI. Relative Positional Precision

- The parameters determined in the types of analyses made above are input along with the field measurements into a least squares adjustment in order to obtain a correctly weighted adjustment.
- RPP means the length of the semi-major axis, expressed in feet or meters, of the error ellipse representing the uncertainty due to random errors in measurements in the location of the monument, or witness, marking any corner of the surveyed property relative to the monument, or witness, marking any other corner of the surveyed property at the 95 percent confidence level (two standard deviations. The maximum allowable Relative Positional Precision for an ALTA/NSPS Land Title Survey is 2 cm (0.07 feet) plus 50 parts per million based on the direct distance between the two corners being tested.

A Simulation Study in the Precision Criterion for the 2011 ALTA-ACSM Land Title Survey Standards

Charles Ghilani and Ian McAllister

ABSTRACT: When performing an American Land Title Association–American Congress on Surveying and Mapping (ALTA–ACSM) field survey, professional land surveyors must meet a precision criterion based on error ellipses from least squares adjustments. A simulation of a least squares adjustment was performed on four lots of varied size commonly found in practice. An analysis of the feasibility of meeting the precision criterion was conducted. Based on this simulation, recommendations are given as to the type of equipment and field procedures required to attain the ALTA–ACSM precision criterion for these surveys.

KEYWORDS: ALTA–ACSM survey standards, precision criterion, simulation study

Introduction

The purpose of this paper is to explore the 2011 American Land Title Association–American Congress on Surveying and Mapping (ALTA–ACSM) precision criterion for boundary surveys and verify whether they can be reasonably met using standard field procedures. The fact that some corners are witnessed by monuments that exceed the precision criterion is not addressed. To check the feasibility of meeting the precision criterion, we simulated surveys for four parcels with sizes commonly found in boundary work. One of the parcels was a 50-ft by 100-ft lot, another was 150-ft by 300-ft, and two were 10-acre parcels with one having clear sight lines and the other being wooded. Each simulation consisted of a traverse survey using conventional instrumentation and commonly used field procedures.

The *Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys* (ALTA/ACSM 2011) are the rules that professional surveyors are required to follow when performing ALTA–ACSM land title surveys. These rules encompass everything from precision criterion to working with clients/adjacent neighbors, rights of access, and the final products the surveyor must supply to the client when work is completed.

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As defined in the 2011 version of the ALTA–ACSM Survey Standards, measurements must hold *relative positional precision* for the monuments or witnesses marking the corners of the surveyed property. As a note to the standards, the maximum allowable relative precision has not changed from the previous version of the standards. However, a method of assessing whether or not the standards are met has been added:

“Relative Positional Precision” means the length of the semimajor axis, expressed in feet or meters, of the error ellipse representing the uncertainty due to random errors in measurements in the location of the monument, or witness, marking any corner of the surveyed property relative to the monument, or witness, marking any other corner of the surveyed property at the 95 percent confidence level (two standard deviations). Relative Positional Precision is estimated by the results of a correctly weighted least squares adjustment of the survey.

The maximum allowable Relative Positional Precision for an ALTA/ACSM Land Title Survey is 2 cm (0.07 feet) plus 50 parts per million (based on the direct distance between the two corners being tested). It is recognized that in certain circumstances, the size or configuration of the surveyed property, or the relief, vegetation or improvements on the surveyed property will result in survey measurements for which the maximum allowable Relative Positional Precision may be exceeded”. (ALTA/ACSM 2011)

Note that the standards do not state how the allowable precision is to be calculated. Using standard statistical procedures, the proper computation

of the maximum allowable semimajor axis for the 95 percent error ellipse is based on the sum of the squares of the two error components as shown in Equation (1).

$$S = \sqrt{0.07^2 + \left(\frac{50}{1,000,000}D\right)^2} \quad (1)$$

where D is the distance between the two stations being checked against the ALTA-ACSM Survey Standards.

In Equation (1), the 0.07 ft is the fixed component of the error and the 50 ppm is the scalar component. Some will note that this differs from the equation often supplied by manufacturers of electronic distance measuring devices. To simplify the field computations, manufacturers often state that the error in a measured distance is computed as:

$$S = a + (ppm \times D) \quad (2)$$

where a is the constant error in the observed distance and ppm is the scalar error.

Equation (2) is theoretically incorrect often providing larger uncertainty than is warranted. This implies that the precision of an electronic distance meter (EDM) is better than that being estimated and is thus not considered to be a problem. This notwithstanding, Equation (1) is the proper expression to use with regard to the 2011 ALTA-ACSM Survey Standards.

Table 1 shows the maximum allowable precision for various distances between stations. The values in the column labeled (1) are based on Equation (1) and those in the column labeled (2) are based on Equation (2). Note that the theoretically correct values in column (1) are significantly smaller for longer sight distances, which becomes important when executing a survey that meets the 2011 ALTA-ACSM Survey Standards. In other words, the scalar error does not affect the precision of typical distances observed in surveying, but it may play a more significant role if the distance D is based on the total length of the traverse even though the standards clearly state that this is not the case.

Components of a Least Squares Adjustment

The postadjustment statistics, which include error ellipses, are based on the inverse of the normal matrix, which is computed as $A^T W A$. The A matrix is often called the *design* matrix since it

Distance (ft)	(1) S (ft)	(2) S (ft)
50	±0.070	±0.073
100	±0.070	±0.075
150	±0.070	±0.078
200	±0.071	±0.080
250	±0.071	±0.083
300	±0.072	±0.085
350	±0.072	±0.088
400	±0.073	±0.090
450	±0.074	±0.093
500	±0.074	±0.095
550	±0.075	±0.098
600	±0.076	±0.100
650	±0.077	±0.103
700	±0.078	±0.105
750	±0.079	±0.108
800	±0.081	±0.110
850	±0.082	±0.113
900	±0.083	±0.115
950	±0.085	±0.118
1000	±0.086	±0.120

Table 1. Maximum allowable error based on distance between stations and equation number.

is based on the coordinates of the stations, and thus the geometry of the stations. The W matrix is the weight matrix and is based on the estimated errors in the observations. The weight matrix will be discussed in more detail later. For now, the focus is on the design matrix. The equations for the distance, angle, and azimuth observations that are part of a conventional survey are linearized using a first-order Taylor series approximation since the equations representing these observations are nonlinear. The linearized equations relate the observations to the final coordinates of the survey stations. In fact, the design matrix is determined using only the coordinates of the stations. Thus the makeup of the design and normal matrices are dependent on the geometry of the survey. Using this fact, the precision that will be achievable in any survey can be predetermined by using approximate coordinates for the stations. This is one of the strengths of a least squares adjustment. That is, the precisions of the final results can be determined before the field survey is ever conducted, which allows one to check the feasibility of meeting certain requirements.

The weight matrix W used in the normal matrix is based on the estimated precision of the observations. This part of the adjustment is known as the

stochastic model. The role of the W matrix is to determine the distribution of errors in the survey. This explains why the ALTA-ACSM standards state that the error ellipses are derived from a "correctly weighted" least squares adjustment. The last statement should raise some concern amongst practitioners who are unfamiliar with least squares and equally unfamiliar with proper weighting techniques.

As previously stated, the weight matrix determines how the errors in the survey will be distributed. If the weights are incorrect or unjustified, then the distribution of the errors in the adjustment will also be incorrect. However, it is this distribution of errors that is the strength of least squares. When using an arbitrary adjustment method such as the compass rule adjustment, the angular misclosure is often equally distributed amongst the angles. However, in practice it is common to note that angles with shorter sight distances have more error than angles with longer sight distances. This increase in angular error is caused by the uncertainty in setting the instrument and target over a point. While one's ability to set over a point should not vary from station to station, the error this causes in the angles becomes greater with shorter sight distances. Table 2 shows the relationship between setup errors and sight distances in a single pointing using the formula:

$$\text{error}'' = \pm \frac{S}{R} 206,264.8'' \quad (3)$$

radian

where S is the error in the setup and R is the length of the sight.

The headings in columns labeled (1), (2), and (3) show the amount of setup error for the three scenarios. Recognize that every angle involves two sights on stations, and thus the errors in the angles will be larger. Based on Table 2, it can be seen that setup errors over stations can create more error in angles with shorter sight distances and thus should result in more of the angular misclosure error going to these angles. A correctly weighted least squares adjustment will place more of the angular misclosure error into the angles with shorter sight lengths based on the estimated errors of the observations. A more complete formula for computing the estimated error in an angle is:

$$s'' \sqrt{\left(\frac{2 \times DIN}{\sqrt{n}}\right)^2 + \left(\frac{\sqrt{D_1^2 + D_2^2}}{D_1 D_2} S_i \rho\right)^2 + \left(\frac{D_3}{D_1 D_2} \frac{S_i}{\sqrt{2}} \rho\right)^2} \quad (4)$$

where DIN is the DIN18723 standard for the digital theodolite; n is the number of repetitions of the angle; D_1 , D_2 , and D_3 are the lengths of the backsight, foresight, and between the two sighted stations, respectively; S_i and S_i are the estimated errors in the setup of the targets and instrument, respectively; and ρ is a conversion factor of 206,264.8''/radian, which is the conversion from radian units to arc seconds.

Note that Equation (4) does not contain an error component for a leveling error. According to Ghilani (2010, p. 115), "This error is generally small for traditional surveying work when normal care in leveling the instrument is taken." However, if steep sights are involved in the survey, this error component should be added to Equation (4). A complete discussion on the computation of estimated angular errors is discussed in Chapter 7 of *Adjustment Computations: Spatial Data Analysis* (Ghilani 2010).

Simulation

The new standards require that a least squares adjustment be performed on the observations to analyze the error ellipses in the post-adjustment statistics. Because the post-adjustment statistics are a function of the stochastic model and the

Distance (ft)	(1) 0.005 ft	(2) 0.01 ft	(3) 0.02 ft
50	±20.6"	±41.3"	±82.5"
100	±10.3"	±20.6"	±41.3"
150	±6.9"	±13.8"	±27.5"
200	±5.2"	±10.3"	±20.6"
250	±4.1"	±8.3"	±16.5"
300	±3.4"	±6.9"	±13.8"
350	±2.9"	±5.9"	±11.8"
400	±2.6"	±5.2"	±10.3"
450	±2.3"	±4.6"	±9.2"
500	±2.1"	±4.1"	±8.3"
550	±1.9"	±3.8"	±7.5"
600	±1.7"	±3.4"	±6.9"
650	±1.6"	±3.2"	±6.3"
700	±1.5"	±2.9"	±5.9"
750	±1.4"	±2.8"	±5.5"
800	±1.3"	±2.6"	±5.2"
850	±1.2"	±2.4"	±4.9"
900	±1.1"	±2.3"	±4.6"
950	±1.1"	±2.2"	±4.3"
1000	±1.0"	±2.1"	±4.1"

Table 2. Error in angle due to setup error and sight distance.

geometry of the traverse, the size of the error ellipses can be estimated in simulated adjustment. A simulated adjustment is created by establishing approximate coordinates on all the traverse station locations. Additionally, the estimated errors in the observations, which comprise the stochastic model, can be generated following procedures discussed previously. Using these two items, the post-adjustment statistics obtained from the least squares adjustment will closely approximate what would be obtained from an actual field survey. Again, this is due to the fact that the post-adjustment statistics are a function of the geometry of the fieldwork and the estimated uncertainties in the observations. Because manufacturers supply the estimated errors in the observations in their technical specifications for each instrument, the estimated errors in the field observations can be computed. Thus, it is possible to simulate the fieldwork and estimate the post-adjustment statistics (which include the error ellipses) before ever taking an actual observation.

To properly test that the ALTA-ACSM precision criterion can be achieved using commonly practiced surveying techniques, four simulations are covered in this paper. The first deals with a 50-ft $\times$ 100-ft lot found typically in urban areas. The second is a 150-ft $\times$ 300-ft lot found in suburban areas. The other two simulations were conducted with two 10-acre square parcels (one with normal topography and the other in a wooded area), which will require shorter sight distances.

The Urban Lot

Figure 1 depicts a rectangular 50-ft by 100-ft urban lot used in this study. It is assumed that each property corner can be occupied and that clear sights are available along each boundary, resulting in only four setups. Additionally, it is assumed that observations will be made with an instrument with a DIN18723 angular accuracy of 5" or better and an EDM accuracy of 5 mm (0.0164 ft) $\pm$ 5 ppm or better. This study assumed instrument and target setup errors of 0.005 ft, which means that the targets are required to either be on a tripod with tribrach and optical plummet or a prism pole with a bipod/tripod support. This alleviates the errors caused when holding a prism pole by hand. It is assumed that distances were observed only one time. Some of these assumptions will change as we progress through each parcel.



Figure 1. A typical 50-ft by 100-ft lot outlined in yellow (Image from PA Department Conservation and Natural Resources-PAMAP/USGS).

Table 3 shows the largest semimajor axis of the 95 percent error ellipses in the parcel using digital theodolites with DIN18723 standards of 1", 3", and 5". In the adjustment, the first station was held fixed, and thus it was assumed to have no error in its coordinates. This assumption is valid because the remaining coordinates were all relative to the first station, as allowed by the standards. The row labeled "50 by 100" in Table 3 shows that the error ellipses are all below 0.07 ft. According to the ALTA-ACSM precision criterion, the allowable tolerance for a traverse that has a distance between stations of only 50 ft in length is ± 0.070 ft, which is computed as shown in Equation (5).

$$\sqrt{0.07^2 + \left(\frac{50}{10^6} 50\right)^2} = \pm 0.070 \text{ ft} \quad (5)$$

Thus given the stated conditions and careful observations, the ALTA-ACSM relative precision criterion should not pose an obstacle to completing this survey. It should be noted that smaller error ellipses could be obtained by repeating the angle more times or by observing each distance more than once. However, assuming a target setup error of ± 0.01 ft resulted in a survey that would not meet the 2011 standards. Thus to meet the criterion in the standards it is recommended that all targets are carefully placed over each corner using a tripod with tribrach and optical plummet or prism pole with bipod/tripod support.

The Suburban Lot

In the study of the 150-ft by 300-ft suburban lot shown in Figure 2, it was assumed that while

Lot	1"	3"	5"
50 by 100 ft	±0.0677	±0.0679	±0.0681
150 by 300 ft ^a	±0.0689	±0.0695	±0.0668 ^b
150 by 300 ft ^c	±0.0466	±0.0474	±0.0490
10 ac open ^c	±0.0596	±0.0637	±0.0706
10 ac wooded ^{c,d}	±0.0573	±0.0604	±0.0661

^a EDM had a reported accuracy of 3 mm (0.01 ft) + 3 ppm.

^b Angles were observed 4 times and averaged.

^c Distances were observed from both ends of the line.

^d Setup errors were less than 1 mm; EDM accuracy was 3 mm + 3 ppm; angular horizon closure was required at each station.

Table 3. Largest 95 percent error ellipse semimajor axis versus DIN18723 standard of theodolite.

it may be possible to view the entire 300-ft distance from one setup, an intermediate station may be required for the 300-ft boundary lines, making the longest sight distances only 150 ft. This assumption introduces more error into the survey because shorter sight distances result in lower-quality angles, as shown in Table 2. Addi-

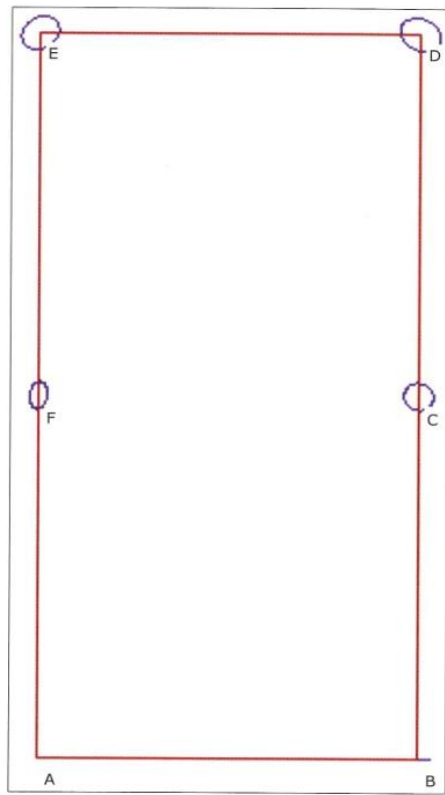


Figure 2. Stations in a 150-ft by 300-ft lot.

tionally, errors in computed station coordinates will increase due to the additional setups required to complete the survey. Thus, the study is assuming a lower-quality survey. The study used the same instruments and setup errors of ±0.005 ft as for the 50-ft by 100-ft urban parcel. However, we found that no matter the DIN18723 accuracy standard for the digital theodolite, a 3 mm (0.01 ft) + 3 ppm EDM was required to meet the precision requirement for the suburban lot. Additionally, a digital theodolite with a DIN18723 accuracy of 5" could not meet the standard when the angles were observed only twice. However, if the angles were observed four times and averaged, the standard could be met with the largest semimajor axis from a 95 percent error ellipse being ±0.0668 ft.

Another option was to observe the distance both forward and back. This procedure would not require any additional setups because total stations can observe the distance on both the backsight and foresight pointings thereby providing two independently observed distances for each course. The simulation with angles observed only twice but distances doubled resulted in the largest semimajor axis with the 95 percent error ellipses of only ±0.0490 ft for the 5" instrument. Row 3 in Table 3 shows the largest semimajor axis for each simulated adjustment. Note that the maximum size for the semimajor axis of an error ellipse conforming to the 2011 precision criterion is only ±0.070 ft. The computation is shown in Equation (6).

$$\sqrt{0.07^2 + \left(\frac{50}{10^6} 150\right)^2} = \pm 0.070 \text{ ft} \quad (6)$$

The 10-Acre Open Lot

The 10-acre, square, open lot shown in Figure 3 had sides of 660 ft in length. Because this lot presented few obstructions, its boundary was observed with six stations with sight lengths of

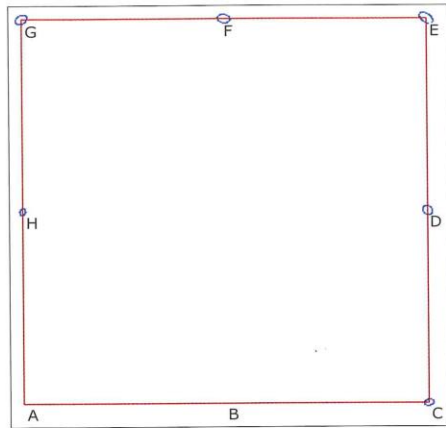


Figure 3. Stations in a 10-ac open lot.

approximately 330 ft in length. The simulation took into account setup errors for the instrument and a target of ± 0.005 ft, and it was assumed that the angles would be observed twice and averaged. An EDM with an accuracy of 5 mm (0.0164 ft) + 5 ppm was used. It should be noted that this parcel required that all distances be observed from both ends of the line to meet the ALTA-ACSM Survey Standards.

As previously noted, this procedure does not require any additional setups. The largest semimajor axis of a 95 percent error ellipse allowed by the 2011 ALTA-ACSM Survey Standards is ± 0.072 ft for a sight distance of 330 ft, as computed in Equation (7). Table 3 shows that the largest semimajor axis for the error ellipses was ± 0.0706 ft.

$$\sqrt{0.07^2 + \left(\frac{50}{10^6} 330\right)^2} = \pm 0.072 \text{ ft} \quad (7)$$

The 10-Acre Wooded Lot

From Figure 4 one can see that unlike in the open lot, the sight distances in the wooded lot are 165 ft in length. These shorter sight distances resulted in greater uncertainties in the angles (Table 2). Initially, this simulation used the same instrumental and target setup errors of ± 0.005 ft. However, because of the shorter sight distances, several more stations were required to complete the survey. The additional setups introduced additional setup errors into the survey. In fact, the 2011 ALTA-ACSM Survey Standards precision

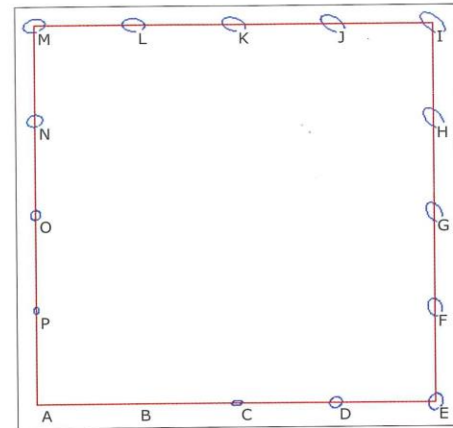


Figure 4. Stations simulated in the 10-ac wooded lot.

criterion could only be met by assuming instrument and target setup errors of 1 mm (0.003 ft) and an EDM accuracy of 3 mm (0.01 ft) + 3 ppm. Additionally, it was required to close the angular horizon at each station and observe each distance from both ends of the line. As shown in Equation (8), the maximum semimajor axis of the error ellipse allowed by the standards is ± 0.070 ft for the 165 ft distance between adjoining stations.

$$\sqrt{0.07^2 + \left(\frac{50}{10^6} 165\right)^2} = \pm 0.070 \text{ ft} \quad (8)$$

An attempt was made to provide a cross tie for the traverse (see Figure 5) in the hopes of reducing the size of the error ellipses while using setup errors of 0.005 ft. A cross tie was also provided for the traverse running in the north-south direction going from station C to K. In both attempts the largest semimajor axis of the error ellipses exceeded ± 0.070 ft. While a single Global Navigation Satellite Systems (GNSS) baseline vector across the survey may not be possible because of canopy conditions, GNSS cross ties between stations A and I and E and M were attempted, as illustrated in Figures 4 and 5. However, these additional observations did not improve the semimajor axes of the resulting error ellipses unless the setup errors was estimated as 1 mm or 0.003 ft.

It is interesting to note that this survey could not meet the ALTA-ACSM Survey Standards precision criterion with any quality instrument including a 1" instrument without closing the

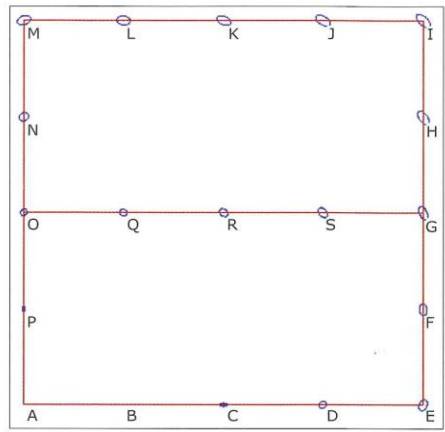


Figure 5. Heavily wooded 10-ac lot with cross-tie.

horizon on the angles and assuming instrument and target setup errors of only 1 mm (0.003 ft). This was due to the short sight distances, which increase the number of stations present in the traverse, and thus the propagation of the setup errors from each station. A surveyor could avoid this complication by clearing more lines to increase the sight distances. This may however require more field time than simply closing the horizon on the angles at each station and using extreme care in setting up instruments and targets.

Guidelines for Meeting ALTA-ACSM Surveys Precision Criterion

The final size of the semimajor axis in a 95 percent error ellipse in any traverse is dependent on the geometry of the network, the precision of the instruments used in the survey, and the abilities of the field personnel. It would be foolish to assume that every survey could meet the 2011 ALTA-ACSM Survey Standards precision criterion. It is also impossible to provide guidelines that can be implemented in the field and guarantee that the standards can be met for every survey. However, from the simulations, some recommendations can be made to aid the practitioner in meeting the standards.

For example, because setup errors of the targets and instruments are crucial to meeting the 2011 ALTA-ACSM Survey Standards precision

criterion, it is of utmost importance that optical/laser plummets and all level vials be calibrated before the survey, and that they be regularly checked. Likewise, it is important that field personnel know how to correctly setup an instrument and target so that the latter is truly over the station. Furthermore, targets must be placed in tribrachs on tripods or on prism poles that are supported by bipods or tripods. Properly aligned targets should be sighted, and no reflectors should be sighted when observing angles because a misalignment of the prism with the line of sight will cause the sight line to be off-center, which will introduce larger setup errors. It is always important to use the "angel face" target meant for angle pointings when turning angles.

Distances should always be observed from each end of the line and recorded. Because distances are independently observed, they can be entered into the least squares adjustment as separate observations. A total station can do this without any additional setups. Avoid the temptation to average these distances (as is done when performing a compass rule adjustment). While not required for all surveys, it is wise to always close the angular horizon at each station. The additional observations will require slightly more field time, perhaps an additional minute or two at each station when targets are fixed, but the extra angles provide a field check at each station before the setup is moved as well as providing additional observations for the adjustment. The total station should have a digital theodolite with a DIN18723 standard of 5" or better and an EDM with an accuracy specification of 3 mm + 3 ppm or better.

Finally, it is recommended to reduce the number of stations required to complete the survey. This means longer sight distances, which will increase the angular precision and reduce the propagation of setup errors in a survey. Thus, plan your survey by walking the property, placing stations at locations that maximize sight distances and reduce the number of setups. This procedure may require extra time before the first angle or distance is measured but it can also reduce the number of observations taken and thus save time.

Conclusion

In all four simulations the precision requirements in the 2011 ALTA-ACSM Survey Standards were met using typical field procedures. However, for the 10-acre wooded lot, the standards could only be met if the setup error was 1 mm.

On a 2-m prism pole this means that the level vial must be within ± 1.7 min. This level of accuracy requires that all levels used in the survey be calibrated and adjusted before starting the survey, and that they are properly centered before the first observation is taken. However, if the surveyor takes sufficient care in their fieldwork and uses an instrument having a DIN18723 accuracy standard of at least 5" and an EDM accuracy of at least 3 mm + 3 ppm using tripods or bipods to hold targets, it should be possible to meet the relative precision criterion in the 2011 ALTA-ACSM Survey Standards. This notwithstanding, every survey is unique, and so the ability to meet or not meet the precision requirements can only be determined by testing this with a correctly weighted least squares adjustment.

REFERENCES

- ALTA /ACSM. 2011. Minimum standard detail requirements for ALTA/ACSM land title surveys. American Land Title Association and American Congress on Surveying and Mapping. [http://www.acsm.net/_data/global/images/PDF%20Documents/ACSM/20110223ALTAACSMLandTitleSurveyStandard2011.pdf; accessed May 10, 2011].
- Chilani, C.D. 2010. *Adjustment computations: Spatial data analysis*, 5th ed. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Dummy1. 1994. Some thoughts on boundary survey measurement standards. *Surveying and Land Information Systems* 54(3): 161-7.
- Dummy2. 1990. A surveyor's guide to practical least squares adjustments. *Surveying and Land Information Systems* 50(4): 287-97. ■

[A Big Lender's] SURVEY REQUIREMENTS

The survey must comply with both the Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys and the additional requirements specified below. The survey must be performed and certified by a surveyor who is licensed or registered where the Property is located.

All final surveys to be submitted in connection with the closing of real estate loans must meet the following requirements:

1. Be prepared by, or under the direct supervision of, a Registered Land Surveyor with his signature and seal affixed and dated. The survey should bear a date which is on or about the closing date of the loan, but no later than thirty (30) days prior to the closing. Minimum survey plan scale shall be sufficient to clearly show all required details, typically 1" = 30'. All the following items noted as "included" or "identified" shall be located on the survey plan.
2. Include, on the plan, a full legal description for each parcel and sub parcel by the following, as available:
 - a. Street, address, block, and lot;
 - b. Metes and bounds;
 - c. Coordinate values for each corner;
 - d. Township, section, and smaller subdivision;
 - e. Reference to book and page or document number of public records.
3. Identify all perimeter property lines for each parcel.
4. Identify all points of beginning and corners. Note whether corners are found, placed, or to be placed and nature of monumentation at each point.
5. Indicate names of all recorded adjacent property owners, reference book and page of document number of adjacent parcels.
6. Identify and certify the number of square feet and acres contained in each parcel.
7. Identify all streets adjacent to the property and further identify the R.O.W. lines.
8. Identify all curb cuts, driveways, fences and access routes from the property to public streets.
9. Identify all easements affecting the property and identify them by title, purpose and dimension. Also indicate book and page or document number of instrument creating the easement. Prepare a summary table of each of these easements.
10. Identify perimeters of all existing or proposed structures or improvements thereon, including sidewalks, stoops, canopies, loading docks, party walls. Identify the gross square footage of all structures, the number of stories of all structures, and the perimeter measurements of each building.

11. Identify all utility lines, active and abandoned, public and private, which service or cross the property and improvements. Underground utilities correctly noted on "As Built" plans need not be additionally shown on the survey. Utilities to be shown shall include but are not limited to: sanitary and storm sewers, pump stations, retention and treatment facilities and discharge points. Specifically identify all discharges onto and from the property and easements required therefor. Also identify water, gas, electric and telephone services, traffic signals, and light poles and railroad tracks and sidings.
12. Identify required building setbacks from property lines and identify length of actual building setbacks.
13. Identify limits and areas of all encroachments both on and by the subject or certify that there are no encroachments.
14. Zoning Table. Provide a "Zoning Table" which identifies the zoning classification of the property, any required parking ratios under zoning laws, zoning density or height requirements, and whether the use of the property is consistent with such zoning classification. Identify parking spaces and paved areas. Summarize the actual vehicle parking space count and note any limitations pertaining to easements.
15. Flood Zone Designation. Include a specific reference to the Property's designation within one of the applicable flood zone designations based on Federal Flood Insurance Rate Maps ("FIRM"), by scaled map location and graphic plotting only. If the Property resides in two or more zones then the survey shall clearly display the limits of each zone by graphically transposing each zone line from the FIRM to the survey. The flood zone statement as shown in No. 17.D. below must be completed and appear on the face of the survey.
16. Survey Certificate Requirements:
 - A. The survey must be certified to: [Big Lender], its successors or assigns, [Attorneys], [Borrower] and _____ Title Insurance Company.
 - B. The survey certificate must provide as follows:

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys" jointly established and adopted by ALTA and NSPS and includes Items 1, 2, 3, 4, 6(a), 6(b), 7(a), 7(b)(1), 7(c), 8, 9, 10(a), 11, 13, 14, 16, 17, 18, 19 and 20 of Table A thereof.

Date of Plat or Map: _____(Surveyor's signature, printed name and seal with Registration/License Number)

Professional Land Surveyor No. _____
[Seal]
17. Notes Upon Survey: The following provisions shall appear as notes upon the survey:

- “A. This survey correctly shows the size, location and type of all buildings, structures and other improvements, and visible items on the Property and that all buildings and improvements are within the boundary lines and applicable setback lines of the Property.
- B. All utilities serving the Property enter through adjoining public streets and/or easements of record; that except as shown, there are no visible easements or rights of way across said Property.
- C. Except as shown, there are no visible (a) improvements, easements, rights-of-way, party walls, drainage ditches, streams or conflicts, (b) party walls or encroachments on adjoining property, streets, alleys, or rights-of-way by any of such buildings, structures, or other improvements, (c) encroachments on the Property by buildings, structures, or other improvements situated on adjoining property, or (d) encroachments on any easement, building setback line or other restricted area by any buildings, structures or other improvements on the Property.
- D. Said described property is located within an area having a Zone Designation _____ by the Federal Emergency Management Agency, on Flood Insurance Rate Map No. _____, with a date of identification of _____, for Community Number _____, in _____ County, State of _____, which is the current Flood Insurance Rate Map for the community in which said Property is situated;
- E. The property has direct physical access to _____, a public street or highway;
- F. The number of striped parking spaces located on the subject property is _____, and to the extent possible, are graphically shown hereon.
- G. All set back, side yard and rear yard lines and requirements shown or set forth on all recorded plats and documents, and those set forth in applicable zoning ordinances, are plotted hereon and are noted hereon in tabular form.
- H. The undersigned has received and examined a copy of Title Insurance Commitment No(s). _____, dated _____, 20____, issued by _____ Title Insurance Company for the Property as well as a copy of each easement, covenant and restriction listed therein, and the location of any matter shown thereon, to the extent it can be located, has been plotted on the Survey or otherwise noted as to their effect on the subject property, and the property described hereon is the same as the property described in said Title Insurance Commitment.”

18. NOTE TO SURVEYOR: IF ANY IMPROVEMENTS ARE LOCATED WITHIN ANY SPECIAL FLOOD HAZARD AREA (A OR V), SURVEYOR MUST COMPLETE, EXECUTE AND RETURN AN ELEVATION CERTIFICATE (FEMA FORM 81-31).