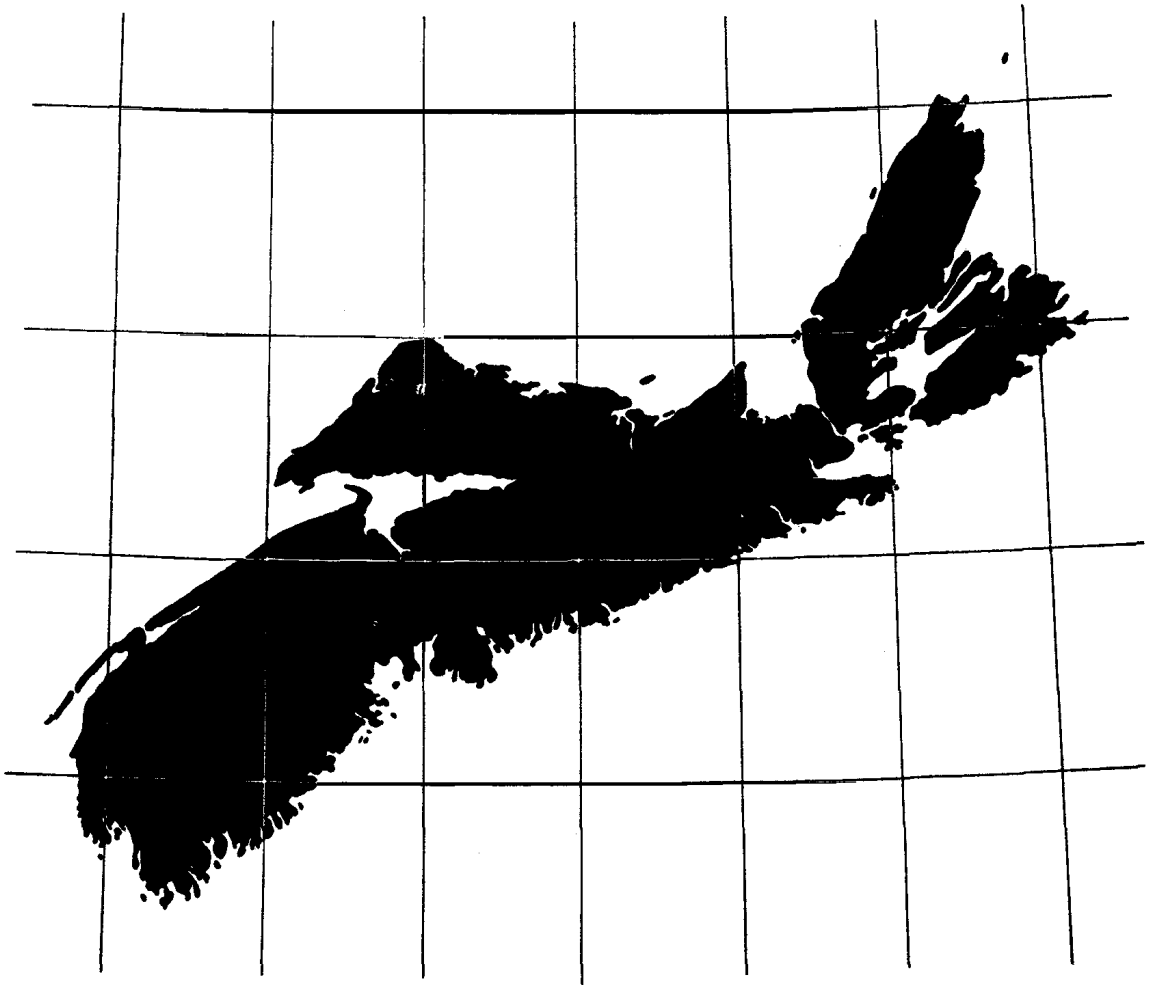


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SHELBURNE LOYALISTS WOULD HAVE HUNG TOWN'S SURVEYOR

Chronical Herald, Tuesday 16th June, 1964

By DON W. THOMPSON

The descent in 1783 of United Empire Loyalists from New York upon Shelburne, formerly Port Roseway, on the southeast tip of Nova Scotia, is one of the most impressive occurrences in the long history of Canadian land surveys and settlement. Some 10,000 or more took part in that first influx of refugees. Many professions and trades were represented among the newcomers.

There were judges, physicans, lawyers, surveyors, bakers, silversmiths, wine-merchants, wigmakers and barbers. There were ladies in silk and in home spun, there were the dignified and the flippant, the useful and the ornamental. But one consuming ambition all the men held in common. All wanted a surveyed plot of land, with title, and they wanted it in a hurry.

It is not entirely clear just what factors dictated the choice of the Shelburne area for this early Canadian experiment in town planning. The surrounding land was not generally of a quality to sustain a metropolitan type of urban development. But hopes and enthusiasms, as well as tensions, ran high.

On April 28th, 1783, Benjamin Marston was appointed chief surveyor of the new settlement by the Surveyor General of Nova Scotia. With one assistant, Marston arrived on the ground early in May. In his diary Marston reports on May 9th: "According to the determination of Thursday, (1) laid out centre street of the new town and the people began to cut down trees cheerfully, a new employment for many of them."

Pressures continued to mount and the surveyors were badgered to complete the survey of lots with the utmost speed. There was a natural and widespread desire to erect dwellings and to finish same before winter set in.

FIRST LOCATION

The first location of people on town lots took place on May 23rd, 1783. The Marston diary on May 24th forecasts impending trouble: "People drew their town lots. . . Some grumbling, some are pleased with their allotments. The idea of owning land is somehow or other exceedingly agreeable to the human mind. Some whose lots have fallen to them in not so pleasant places are much out of temper . . . Come home late in the afternoon, smutty and fatigued."

Shelburne continued to expand rapidly and no amount of dedicated surveying could possibly keep up to the pressing demand. The growing influx of people made Shelburne, at that time, one of the largest British towns in North America. It was exceeded in total population on this continent only by Philadelphia, New York and Boston.

Within a year of its founding Shelburne equalled in population Montreal, Quebec and Three Rivers combined, and was considerably larger than Halifax, Saint John and Charlottetown taken together. At one-stage of its fantastic growth, in fact, Governor John Parr of Nova Scotia, seriously considered the prospect of transferring the seat of provincial government from Halifax to the booming settlement.

Basic conflicts between ambitions, and resources available to satisfy them, began to undermine the whole zealous project. The resulting crush of opposing pressures finally burst the glorious expanding bubble of progress. The wrath of the disappointed inhabitants was turned upon the chief surveyor. Marston gloomily notes on May 26th, 1784: "Great riot today. The disbanded soldiers have risen. . . ." And on May 27th: "Rioting continues. . . in the afternoon I took passage for Halifax. . . If I had ever been caught, I would have been hung, from all I have heard."

Canadians then, as now, have not been notably generous in their appreciation of land surveyors.

At the height of the real estate development extravagantly expensive structures had been constructed, quite out of keeping with the ability to maintain them. Fortunes were invested in property and soon lost. Newcomers, for the most part, were unfit for the two basic types of employment open to them in that region, namely, fishing and farming.

Thus this first Canadian venture in large-scale town planning proved none too successful. Marston, unappreciated in Nova Scotia travelled to New Brunswick where he succeeded in winning the esteem of the authorities. Eventually, when the new province was formed across the Bay of Fundy, Marston was made Sheriff of Northumberland County. Surely this is the only example of a Canadian who managed to escape the noose in one province, only to be made a sheriff in another province!

TWO SOLICITORS EXAMINE MUNICIPAL AGREEMENTS ON SUBDIVISION WORK

1 — LEGALITY

From The Daily Commercial News and Building Record, December 4th, 1964

Mr. C. E. ONLEY, Deputy Solicitor, Scarborough Twp., Ont.

(To City Engineers' Association 5th annual workshop.)

Subdividers say, with some justification, that municipal subdivision agreements place onerous burdens upon the developer. Historically, it was the land developers who were in the driver's seat particularly since they usually had an army to back up their proposals.

One of the first recorded instances of a subdivision was in an eastern Mediterranean country where a developer proposed to divide a fairly large tract of land into some 12 blocks.

The subdivision had approval from an unimpeachable source and today's subdividers would well envy the Supreme authority establishing the legality of that subdivision.

The developer apparently didn't have to put in any services and even so he decided not to enter on the land himself but turned it over to his successors.

A subdivider today would be quite happy if he could complete a subdivision by only having one more river to cross.

A few centuries later, a group in the central part of Italy engaged in a large land assembly project with a considerable degree of success.

Again, they were in the driver's seat with their army but a group of interlopers came from the north and expelled them and possessory title passed to various groups of squatters and the whole project declined and fell.

Until the advent of the industrial revolution, wealth was almost solely represented by land ownership but only a miniscular portion of the population could ever own land and there was thus very little division of land.

In addition, of course, there were virtually no services required to be installed. The law of the land commonly known as the Common Law placed few, if any, restrictions on a person dividing land for sale in the sense of subdivision lots.

Registered plans as such predated the necessity of the installation of services as we know them today. About the only requirement was the road allowance for access.

Registered plans became common in the 19th century and until the early part of the 20th century they amounted to little more than surveying into lots and registering the plan.

Legislation dealing with planning and development as we know it was first introduced about 1918 under The Planning and Development Act.

The heading on the statute was "Surveys and Plans" and this indicates that even then it dealt more with the surveying and registration than much else.

What we know as the Official Plans were dealt with in a very minimal manner under what were called Urban Zones.

There was a lot levy of 5c per foot for the approval of subdivisions in an urban zone. This sum seemed pretty steep so in 1939 it was reduced to 3c per foot.

Services were paid for by the municipality financing their installation under The Local Improvement Act.

Since development continued at a slow pace, at least until the late 20's, this could be accommodated within prudent borrowing limits.

Even this was placing a heavy burden on municipalities and in the early part of the Depression the heavy burden of carrying charges on debentures generally and local improvement debentures in particular was one of the reasons for many municipalities going into default.

The whole picture changed dramatically at the end of the war due to two compounding problems.

Firstly, there was a need for housing which really dated back to the Depression and with more money in people's pockets meant customers to buy the housing.

Secondly, there was an increase in both the number and kind of municipal services required for the lots including sewers to meet health requirements, roads to carry the cars and the like.

The problems were simple and the solution practical. Municipalities did not have the financial resources to borrow the monies necessary to put in the services under The Local Improvement Act.

The subdivider was faced with the choice of either not developing the land except after a long delay waiting for local improvement financing or financing the services himself temporarily and adding the cost of such services to the sale price of the house.

The end result was that each homeowner paid for his own services by financing their cost in the purchase price of the house.

Considering the tremendous increase in the quality and quantity of services and in the main, better houses than were built before the war, it is to the great credit of the subdividers and all those concerned with subdivisions that the cost of a "low cost" house has not increased to anything near the rate that the cost of living has increased.

This has meant that by far a greater proportion of the population is able to purchase a home than ever has been the case before.

The present Planning Act was first passed in the year 1946 replacing the former Planning and Development Act.

This new statute for the first time referred to services as such including those well known phrases dealing with the adequacy of highways, utilities, etc.

There was a sharp difference of opinion as to the legality of subdivision agreements providing for a subdivider to install services. Practical subdividers and councillors alike met this matter in a most pragmatic way by proceeding with subdivisions and subdivision agreements on the basis of them being legal.

In 1959, The Planning Act was amended to provide that "every municipality may enter into agreements imposed as a condition to the approval of a plan of subdivision."

As you know, one of the standard conditions of approval by the Minister is for satisfactory arrangements to be made with the local municipality for the provision of services.

Just before this amendment was passed, a case was heard in The Supreme Court of Ontario specifically dealing with the legality of subdivision agreements.

This case was eventually appealed to The Supreme Court of Canada and its name was Beaver Valley vs. North York and the only report of the decision is the Court of Appeal reference in 23 DLR (2nd) 341.

In this case, the subdivider had the usual subdivision agreement and had installed all the services but claimed that he didn't have to pay the trunk sewer charges since the subdivision agreement was not legally enforceable.

The Supreme Court of Canada said that this argument would fail quite apart from the amendment to The Planning Act which amendment took place after the judgment at trial saying the subdivision agreement was valid.

In delivering the judgment of the Supreme Court of Canada Mr. Justice Locke stated "I agree with the learned trial Judge that the power of the Township to enter into such an agreement was undoubted."

The situation, therefore, at the present time is that municipalities may enter into subdivision agreements with developers. The limitation on this is to the extent that the matters dealt with in the agreement should be those of a municipal concern over which the municipality has authority.

For example, a municipality has authority to construct roads and sewers and it therefore has the power to enter into agreements providing for such services to be installed.

It is also necessary to distinguish a Subdivision Agreement from such types of by-laws passed by municipalities dealing with requirements on division of lands, etc.

There was a recent case in Brantford where the Council passed a by-law requiring frontage charges and provision for road widenings, etc., on Consents.

The Court properly held that this was not a proper by-law for Council to pass since Consents were within the jurisdiction of the Planning Board. Some years ago there was a case setting aside a by-law which said that when lands are dedicated for roads on subdivisions that the person dedicating the road should install street lighting, etc.

In this case, the Court held in substance that there is a direct method for dedicating roads and such direct methods provided in The Municipal Act didn't include attaching such a condition.

A distinction between such types of by-laws and a Subdivision Agreement is one that does not have much difference in the view of many people.

However, the situation is simply that the legislature has authorized entering into agreements on subdivisions and such things as frontage charges and street lighting are items that the Minister has considered proper.

It would seem to us that the recourse for a developer is that if there is a particular item that he does not agree with he should have the approval referred to the Municipal Board.

Subdivision Agreements are here to stay at least for the foreseeable future and they are a satisfactory device provided they are used for the purpose for which they are intended, namely, the installation of services or payments to provide for such installation.

Where difficulties arise, they are usually as a result of either a particular type of service not being considered at the time the Agreement was negotiated or where municipalities are endeavouring to get into areas of requirements not related directly to the development of the property.

2 — SUBSEQUENT OWNERS OF LAND

By E. G. McNeeley, City Solicitor, Oshawa, Ont.

(To 5th Annual Workshop of City Engineers Association).

As to registering Subdivision Agreements against title, it was held on a Motion before the Master of Titles at Toronto some few years ago that a Subdivision Agreement does not affect the title of land and is therefore not registerable as such.

The same applies to subsidiary agreements that are made that might deal with such things as special grading problems and low lying properties.

Without going into the legalities of this in detail, the substance of it is that the Courts have long held that for a document to bind subsequent owners of a property it must be the sort of matter that is related to an easement conferring a benefit on a 'dominant tenement'.

The matter was gone into in some detail in the case of Regina vs. York Township Ex Parte 125 Varsity Road, 1960 O.R. 238.

A subdivider had an agreement with the Township that he would obtain approval of certain abutting owners to the removal of a ridge of earth along the rear of certain lots on the registered plan and that if such approval could not be obtained he would not build on it.

A subsequent owner demanded a building permit without complying with this restriction and the Court concurred that this was not the type of agreement that should bind the title to land.

There are several cases, however, when it is probably a good idea to register documents on title to cover the specific problems as a warning to a subsequent owner.

The main thing, however, is to make sure that the subdivision agreement is an enforceable one and if there are major problems there be some specific remedy provided for.

If there is a drainage problem or a grading problem it is far better to have this bonded in a subdivision agreement than work on some pious hope that somebody in the future might do it.

3— ALLOCATION OF FINANCIAL PAYMENTS

Under the general authority in The Planning Act authorizing entering into agreements with a municipality it would seem to include provisions for financial payments.

Section 299 of The Municipal Act provides that where a contribution is received by a municipality with respect to expenses incurred or to be incurred by the municipality as a result of the subdivision such contribution shall be used only to meet expenditures for the work done within the subdivision or for the benefit or use of the occupiers or subsequent occupiers of the lands or to meet expenditures incurred wholly or in part by reason of the subdivision and if a contribution is for a specific purpose it shall be used only for such purpose.

The wording would seem to be sufficiently wide to cover trunk sewer payments being used for sewage treatment plants or for trunk sewers outside the limits of the subdivision. Therefore, if the monies are related to a subdivision service or a service required as a result of the subdivision they are validly dealt with.

Although we cannot imagine a situation occurring you might note that there is provision in Section 299 for a situation where the municipality does not require all of the money which it has received.

We would imagine that if that event were to occur there would also be three moons in the sky and in case you don't spend all the time looking at the three moons, look at this subsection.

Briefly, it says that with the approval of the Department of Municipal Affairs it can be used for other purposes and who knows, it might even be refunded.

4 — CONDITIONS ATTACHED TO REZONING

Aside from Subdivision Agreements there are developments that take place which put pressure on municipal services and in particular on underground services where there is no subdivision involved.

A typical case is a land assembly and an application for rezoning for high rise apartments. The City of Ottawa has obtained special legislation authorizing them to impose charges on apartment and office buildings and it is quite probable that this will come in as part of general legislation in the next year or so.

Many municipalities at the present time impose requirements for pavements, road widenings, etc., as a condition of re-zoning of lands.

If there is an agreement entered into with the developer it would seem that he is bound by it.

However, if the builder is on firm enough ground that he thinks he can get the re-zoning put through the Municipal Board without entering into an agreement and thus having the opposition of the municipality he can of course, take the matter to the Municipal Board.

The Municipal Board is in the position that it would have to consider the availability of services and we doubt that they would refuse a re-zoning simply because a developer did not wish to pay money for additional services unless, of course, it could be validly said that the land should not be re-zoned until such additional services are, in fact, installed. In that case the Municipal Board would merely dismiss the application.

In principle, an apartment project is merely a vertical subdivision and you could have the anomalous situation where one developer could avoid having to have a Subdivision Agreement or a Consent because he was assembling land and the man next door would require a Consent under The Planning Act or possibly a Subdivision Agreement because he was separating off the parcel.

5 — CONSENTS

Under Section 26 of The Planning Act there is provision for Consents to divide land.

In principle, these are subdivisions of land and the only difference is that it is not a new registered plan.

There is a delightful phrase in the Section saying that in considering such Consents "regard should be had to matters that are to be had regard to . . ." on a plan of subdivision.

This would seem to envisage agreements in appropriate cases and provisions for road widenings, etc.

In short, the same consideration should apply in both cases and the municipalities' authority to require conditions to be complied with is valid.

6 — CONCLUSION

There will be certainly more Subdivision Agreements before there are less Subdivision Agreements.

They are a very workable device to cover a fairly complicated situation.

It is necessary to always exercise care to insure that provisions in agreements are related to subdivision works and services.

A perusal of Subdivision Agreements from various municipalities indicates a fairly high degree of variety.

This is not necessarily a bad thing because problems vary from one municipality to another.

If the agreement you have in your municipality is working well we don't see any particular reason why you should drastically alter it.

LANDING SURVEYING — A VERSATILE PROFESSION

By WILLIAM C. WATTLES, L.S., C.E., California

Presented at the 7th Annual Convention of the Florida Society of Professional Land Surveyors, October 11, 1963

PREFACE

This paper will present various aspects of the work of the land surveyor, with a general discussion of procedure. The field is too great to examine all phases: the application of principles must be left to the individual judgment and experience of the surveyor.

No comments on or examination of practices developed in other branches of the surveying profession will be made, other than to make brief references for the purpose of associating these branches with land surveying practice.

INTRODUCTION

“Surveying” is a generic term embracing many branches or specialties of the profession developed over the centuries for the purpose of defining and maintaining dimensional relations of and between areas of the earth’s surface, in the air, and under the ground.

The profession is sui generis, and not to be included in or subordinated to so-called civil engineering. The latter is also a generic term, although generally considered as a multiple creature of human devices in construction and building. Surveying, of course, enters into practically all civil engineering projects, but as an associate practice, not as a subordinate one.

The branches of surveying are many, all possessing similar basic procedures in equipment and instrument use, similar concepts, and means of perpetuation. Each specialty requires, in addition, a specific formulation to promote the work more efficiently for the project.

Survey specialties embrace structural alignment; road development in alignment, grade, drainage; topographic surveys and maps for various projects requiring area and elevation data; photogrammetric processes for mapping and ground location of natural and artificial objects; geodetic determination of areas and dimensions on the earth’s surface related and referred to a theoretical spheroid approximating the shape of the earth; cartographic maps, developed from geodetic data; navigation and aerial surveys; hydrographic surveys; mineral and mining surveys; and most important and versatile of all, the land survey, also known as the property survey.

Land surveying requires an understanding and fair working knowledge of all the above named branches, as well as training and ability in the particulars of its own field. These latter embrace research of old and modern data of record for confirmation and correspondence with physical location of the area under consideration; correlation of ground area with title as determined through documentary record and legal requirements of ownership; discovery and relocation of lost or obliterated boundaries; and re-monumentation and perpetuation of corners with corresponding documentary description and mapping for permanency or record. Land surveying further requires sound judgement and interpretative faculties together with effective field and office procedures.

The variety and broad scope of land survey problems, together with the frequent spot variations vital to proper location necessitating expert analysis, express the versatility of the professional performance demanded of the land surveyor.

RESEARCH AND EVALUATION

The first task undertaken in a project is gathering information. The general nature of the problem, instructions from the client, physical examination of claimed or desired boundaries, all these together give a base of operation. Data must be obtained covering older surveys, deeds, maps, field notes, oral testimony, court decisions, tax descriptions, title guarantees or policies, local practices of location and monumentation, topographic and photogrammetric sources, or other matters available for relocation.

Acquisition of such material and comparison of facts, both chronologically and physically, together with compiled maps (work sheets, including overlays), will develop a working plan which can easily be followed in the field, and the results projected on other work sheets. The analysis and final decision may then be made and the project completed.

Relocation of boundaries not defined or created by the Rectangular system, such as ranch, grant, or subdivision, is generally simpler and less complex but still requires careful and complete examination by the surveyor.

The big problem in subdivision boundary is accurate location of adjoiner areas and title lines; this is necessary for safety in ownership, specific allocation of taxes, assessment limits, and road alignments and dedication. Every lot within the subdivision, and especially those on the boundary lines, are affected by any change or error in the exterior boundary. The map should be precise dimensionally, and the field survey should traverse well within the limits of standards. The accuracy of field measurements and the corresponding dimensions of the map, derived from balancing the field traverse, will permit a legitimate use of prorating for unset or destroyed corners, and will allow title insurance to accommodate.

Caution! City street center lines are located to fix the position of the area of strip accepted or assumed for public use, and may not be the center lines of the streets dedicated for such use by the subdivider. Surveys will show whether the city lines are coincident with subdivision lines or not. Many center lines split curbs rather than follow property stakes. If a street is widened on one side, the "center" line loses its name and becomes either a "transit" line or an "offset" line. Many descriptions are misconstrued by ignoring these distinctions.

Similar care must be taken in subdivisions, or even in acreage parcels in sections, in locating section or "subdivision of section" boundaries, and particular attention must be paid to the description. "The N 40 ac. of the W. 80 ac.," is not the same as "the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of a section," except in theory; the manner of location differs, and the descriptions are not interchangeable for title or conveyance accuracy.

Although the basic plan of the Rectangular System as defined by the laws creating it is geodetic, the development as provided in the Manuals, except for the boundaries of Townships, is primarily and practically planimetric.

The Manual refers to methods and usages of both systems without distinction. Particular care and analysis are needed to interpret the Field Notes and Plats to make proper application of the dimensional data therein.

MAPPING & DESCRIPTION

The survey and monumentation of a parcel of land furnishes visible evidence of claim and ownership, but the surveyors' work is not completed until proper maps and descriptions confirming such evidence are prepared, approved, and filed for record in a public depository. Thus the maximum measure of position maintenance, security, and perpetuation, is obtained for those often slippery, changing, physical boundaries.

The results of usual mapping practice are often incomplete and uninformatinal, showing area boundaries by dimension only, occasionally noting a pipe or stake with no identity indicated, an adjoining street with maybe a distance to a block corner, a North point, scale and surveyors' name, possibly a fancy title, and, of course, the all important (?) acreage correct if the survey is correct and the traverse closes (?).

In addition to good drafting and the notation of bearings and distances on boundaries, there are other vital items such as deed references to associate data of land adjoiners; any conflict or gap with adjoining property; building or other structureal overlap or encroachments; description of all monuments found or set, with notation "found" or "set", as the case may be; designation by note that the monuments used or accepted are specific corners of adjoining areas; ties to any object or monument having pertinent connection with the area in question into the net of dimensional positioning; topography if essential; record and nonrecord easements affecting the property; street boundaries with ties and references thereto; and any other matters necessary to recover or recreate the physical and/or record boundaries. The title or caption of the map should be specific enough to identify the general area of the survey and immediate surroundings, but let the map itself identify the particular area of the project. Unless a whole unit is considered and surveyed, the caption may state "— being a portion of the NW $\frac{1}{4}$ —"; and the body of the map shows details. There will be a North point, a scale drawn or stated, a certificate of survey by the surveyor, certificates of ownership, taxes, dedications, recording reference, and any other matters pertinent for the record. And don't forget a statement of base of bearings; it is as important as scale of length.

Limitations of Coordinates

The value of determining coordinates for corners and showing them on the map and in the description is debatable. If properly done and thoroughly checked for accuracy and referred specifically to the grid monuments and azimuths and lengths both on the map and in the description, the information will prove valuable for precise relocation in the event of destruction of the physical monuments. Failure to develop precision loci and correct notation thereof is very dangerous. The use of coordinates, particularly in description, is confusing and misleading unless the document shows and states the variance of dimension between the normal and legal measurement planimetrically and the coordinate or geodetic measurements. Coordinates are tools of surveying, not products or results.

Description

The map should be so constructed that the intent to establish the boundaries is clear and unequivocal; the description also should agree fully even though the wording is different in form. Any variation in meaning or substance between word and map will give precedence to map data if it is shown that the parties acted with reference to the map. Extraneous or parol evidence may show the contrary if the court so decides.

Descriptions are the vital contact between the physical boundary and the permanent documentary record. Their value therein, clearly defining the intent and design expressed by the physical boundaries giving such recitals, ties, and dimensions which will identify the area in question as a parcel distinct and different than any other land area.

In practice, certain form and phrasing is employed. but the essance of specific and unambiguous statement must not be disturbed. Legal terms are to be used with

caution and with full understanding of the variance in definition and application of such terms between normal usage and legal interpretation.

Multiple ties or calls, in the attempt to make a corner certain in its association with others, must be used with caution and with particular note of precedence of the call; Otherwise the uncertainty of the corner will be greater than its certainty.

Dimensions without qualification are dangerous because of uncertainty of measurement practices, disturbance or shift in monuments, and destruction of them. If there are no record adjoiners of the area, the given dimensions may become definitive providing the traverse of the boundary is correct and no accidental error appears; in such cases, proportions may be used in retracement for missing corners between existing monuments.

The base or unit of dimension must be definite and common to all measurements of the survey, except that reference of possible use of the terms of another system must be clearly shown and proper coordination developed in that change.

Survey of a specific area can not be made without a description written, sketched, or verbally stated. Relocation must be preceded by a description in some form and be dependent thereon; it follows, then, that the more particular the description the safer the interpretation and the more accurate the relocation.

RECORD

The perpetuation of boundary is a double issue: the maintenance of physical monumentation; and the creation of documentary record made available to any interested party.

Because of the impermanence of physical monuments, in spite of efforts to protect and reference them, the method of the written record is safer and more lasting, providing such records are accurate and conformable with the physical location, and providing such records are maintained in a public depository. Such records allow relocation and reestablishment of the physical positions of the boundaries regardless of natural or artificial disturbance.

It is possible to create and perpetuate a specific boundary in an area without any field monumentation. With the record data of such boundary, a correct survey and placement of line and corner monuments may readily be made.

A sound and well-determined record seldom needs further research except for items affecting the vicinity recorded subsequent to the senior record.

An accurate record for an area with physical boundaries existing and in place requires a full field survey, necessary research for verification, a correct description and map, and recording in a public office.

TITLE

Ownership and transfer of land area is generally identified and supported by a properly recorded map and/or description, together with legal documents carrying such data or reference thereto, and such other matters that are pertinent to the transaction, such as encumbrances, leases, easements, vested interest, etc.

As a financial safeguard and for claim of title protection, the ownership may carry title insurance, a form of policy issued by title companies insuring the owner, or other interests, as to the sufficiency of those matters affecting the described property, noting exceptions, if any, of items or areas adversely affecting or lying outside the

title of the vestee even though within the description area of insurance. Exceptions may cover roads granted in fee to the public, ground water or water service equipment of a service company, mineral rights, areas already passed from ownership of the vestee, infringements of adjoiners, or other items affecting title.

Because of the insurance risk or of matters affecting the transfer of ownership or encumbrance, a title policy may use a different description than the one submitted for insurance. This is done to modernize or correct an erroneous original description, or eliminate recital of unwanted or uninsurable areas. The surveyor must be aware of such changes and reasons therefor, and act accordingly in his survey or new description. He must adjust his work to conform with the desire of his client as far as legal and title interpretation will permit.

INTERPRETATION

A land surveyor is not a lawyer or a court and, therefore, is barred from drawing conclusions as a witness. He is a fact finder, and his privilege is to demonstrate by testimony, description, and delineation, his opinion, and reason for the course and positions considered in his investigation. The court's decision or the title company's willingness to insure rests on favorable acceptance of the demonstrated accuracy of the surveyor's fact showing, and the consistency of his explanation or conformity with legal and title principles. Such facts and opinions are acceptable and successful only when the research is exhaustive, the analysis thorough, and interpretation corroborative.

LOCATION AND RELOCATION

These terms define procedures of boundary and corner determination on the ground either prior or subsequent to the research of the record.

Location involves discovery of original monuments or verifiable replacements, in original and undisturbed position.

Relocation involves remonumentation or realignment of boundary in substantial conformity with record position.

Procedures in both instances require intense examination and search for signs of the original work, using every artifice from pick and shovel to statement of knowledgeable parties, to "following the footsteps" of the surveyor by way of his notes, maps and reference ties, climaxed by a critical analysis of the facts discovered to determine a position most nearly conformable with the record.

The use of aerial photographs and photogrammetric maps, adaption of topographic maps and calls in notes as accessory items of location, and USGS quadrangle maps and Township Plats also help.

Familiarity with the methods of the original surveyor in his line running, monument building, and compilation of field notes into the required form of the Manual, often give a hint as to any irregularity or error existing between the actual original work and the final record as presented for approval.

The requirement of the Manual as to use of standard form of presenting notes and plats creates, on occasion, certain variances and distortions which arise in the necessity of performing the original ground work in a different manner than standard; and although the Manual provides for showing such variances, it is rare to find any reference to more than token use of such provision. Original, unsubmitted field notes, well informed testimony, and known pattern of performance of the original surveyor will aid in discovery of monument positions.

Relocation of section lines and corners is regulated by provisions of the Manuals of Instruction issued by the Bureau of Land Management. For special problems, additional or particular instructions are issued supplementing or supplanting the Manual.

RESURVEYS

Resurveys or retracements made by the surveyors of the Public Survey Office are bound by Manual and supplemental provisions. Surveyors in private practice are not bound to follow strict procedures, but the location of a corner position which has not been monumented (the center of a section, for example) must be made under Manual rules. If relocation according to original survey is the problem, the approved Field Notes and Plat must be followed as closely as possible in harmony with actual field data. If retracement is involved, the rules of the Manual should be followed in compliance with the Manual of the era and year in which the original survey was made, since there have been changes in regulation from time to time. State law and court decision may affect the Manual provisions. If the survey instructions require a location of existing monumentation per se, the surveyor must for his client's and his own protection, develop, position, and correlate the physical existing monuments, the original corners or positions, the relocation positions as determined by survey and analysis and conformity with legal principles, and positions acceptable to title practice.

Methods of restoring lost and obliterated corners as defined in the Manual must be examined critically before adopting. The definitions of "lost" corner, "obliterated" corner, etc., are not fully supported by the rules given for restoration. The proportion method appears to be applicable to nearly all cases of missing corners or positions; strict interpretation indicates that the only uses of proportion are in the case of placement under circumstances where there is NO other means of determining a reasonable or logical position, or use in office examination of dimensional relations between known and unknown positions. Error in field or office is NOT proratable.

LAND SURVEYING: A MULTI-SIDED PROFESSION

The versatility of procedures, and necessity of correlating old records and practices with modern usage, legal and title methods, makes the profession of land surveying a complex vocation. The day of the rule-of-thumb surveyor is gone. In his place is the professional land surveyor, educated in the principles of modern field and office analysis and practise, use and adaptation of modern equipment, trained in legal and title application to land problems, and able to exercise the faculties of sound judgment and experience.

SUMMARY

The role of the land surveyor is most demanding by reason of its scope, variable application of basic principles, and particular attention to analysis and interpretation.

Too much research is hardly possible, but too little is dangerous. Only judgment and experience will determine the proper level. Occasionally, after the preliminary work, more avenues of exploration will appear, sometimes changing the whole complexion of the scheme. After all, the intent of the parties, and the proper execution of the survey to conform, is the solution sought.

LEGAL SURVEYS AND ACCURACY SPECIFICATIONS

From Vol. XVIII, Dec. 1964, No. 5 — The Canadian Surveyor

Comments by Curtis M. Brown

Vice-President, American Congress on Surveying and Mapping

San Diego, California

Question: Should accuracy specifications adopted in legal surveys depend upon land characteristics (e.g. value) or not?

Most arguments are caused (1) by a lack of understanding of the meaning of words used, or (2) by lack of knowledge. Within certain understood meanings of the question, the answer is definitely yes; within certain other meanings, the answer is definitely no.

The first question is, "What are you trying to accomplish on a legal survey?" Are you trying to determine the location of the property corners or are you trying to determine the measurements (bearing, distances and area) of the property? Client Jones says, "Show me my corners". Client Johnson says, "I know where my corners are. How much land do I have?"

Client Jones owned a section (one square mile) of land; originally eight corners were set by the original surveyor. You take your pocket compass, a topography map and your two legs. By skillful use of the map, by accurate pacing and by accurate use of your pocket compass (accurate within the limits of the instrument), you are able to relocate the precise position of every original monument by the physical appearance of the monuments themselves. Since the original positions of the original monuments are by law the exact location of the land, you have performed an accurate location of the boundaries. To be sure, the measurements cannot be claimed to be accurate; but who cares? The farmer erected his fence accurately; the surveyor collected his modest fee, and everyone was happy.

When surveying for client Johnson you go upon the land, examine the corners as pointed out, you accurately measure all the courses, and you accurately compute the acreage. By your analysis, using least squares, you conclude that the error is probably less than 1:50,000. An excellent job well done! Three months later, the neighbor comes back from an extended vacation in California and lets out a howl! He employs another surveyor who examines a witness tree and finds the original scribe marks on the tree. In court he proves that Johnson picked up the stone bound and moved it 200 feet in his favor. While the survey was accurate from the standpoint of measurements, it was totally inaccurate with respect to bounds. From these two cases, it is obvious that without further definition of words, it is possible to have an accurate inaccurate survey, or an inaccurate accurate survey.

In San Diego there are many downtown blocks that are long or short. Originally only the block corners were set. Since no lot corners existed and since lots were listed as being equal in size, each lot is entitled to a proportionate share of whatever exists within the block. In most cases, there are six lots (claimed to be 50 feet each) between cross streets. If the intervening space is divided into six equal spaces, it is completely immaterial whether the dividing was done with an accurate calibrated tape or a broomstick. Proportional parts can be obtained by many methods wherein no standard length is needed. An accurate location can be made without accurate standard distances.

One other case will conclude these hypothetical situations. Client Smith has a deed that commences at a definite corner, goes due east (astronomical) 100 feet to the point of beginning; then proceeds 100 feet east (astronomical); 100 feet north; 100 feet west;

100 feet south to the point of beginning. You locate the monument called for; take a star observation (accurately); precisely and accurately measure the bounds, and set corners. After the fence and house are erected, you discover that the beginning monument used was the wrong one; it should have been a similar monument 200 feet west of the one used. This survey was entirely accurate with respect to measurements made; it was entirely inaccurate as to correct location.

When we speak of the accuracy of a particular monument, are we not referring to the position it is occupying as compared to where it theoretically belongs? If a corner is physically represented by an original undisturbed monument set by the original surveyor, can there be an error of position? Is the corner accurately located even though the measurements originally reported are inaccurate?

The standards for resurveys and for original surveys must be based upon different premises. Original surveys to create new parcels should report accurate measurements as commensurate with value or use. Where zoning laws exist, most residential areas have sideyard setbacks. Measurement errors in setting residential monuments are not as significant as in a commercial area where a party can build exactly on the property line. The intended use of the land (sideyard clearance, etc.) is probably more important in determining accuracy than is value.

Most countries have a "bureau of weights and measures" to see that a butcher delivers one pound of meat when he claims one pound. This is relative. The one pound does have some error. When a person buys land and is told the measurements, he should be entitled to receive that amount within certain tolerances of error. Accuracy costs money. There must be some compromise between money and accuracy; value of land is one consideration and intended use is another.

Assuming that the term "accuracy" as used in the original question was meant to be "measurement accuracy", the discussion can be shortened. But too many are prone to think of "accuracy" as applying only to measurements (especially those trained in engineering surveying instead of property line location procedures). Accuracy in a survey (legal) to me, is overall accuracy. How closely did you set the corner monument as compared to the correct legal position that it should occupy? This concept involves (1) evaluation of measurements and (2) evaluation of evidence (fences, property monuments, witness objects, oral testimony, etc.). When we specify accuracy, should we not be more concerned with positional error (.01 feet or .10 feet or 1.00 feet) rather than 1:5,000? Does 1:5,000 tell the client anything?

One of the easiest ways to dodge a question is to ask another question. Frankly, that is what I have done. We in the United States should never be so presumptive as to tell someone else what they should do. Our laws and conditions are not the same as those existing in Canada.

A casual glance at the map of Canada discloses numerous lakes; numerous lakes must mean good fishing; that is for me; it must be a great country.

COMMENTS BY J. W. WRIGHT

Directorate of Overseas Surveys, Tolworth, England

There must clearly be some sort of relationship between the accuracy of cadastral surveys and the value of the land being surveyed as there must also be between the accuracy of an engineering survey and the importance and size—and consequently the cost — of the project for which the survey is required. The cost of any survey will inevitably be related to its accuracy, and it is clearly absurd that, for example, the unit cost of a survey should be more than the unit value of the land, or that the surveys for a project should cost more than its design and construction.

There are, however, a number of factors which have to be taken into consideration.

In the first place, it is generally true that the sizes of individual parcels are related to the value of the land, and it is often the sizes of the smallest parcels that influence the choice of scale of the final map. This, in turn, where only graphical methods are used, will have a lot to do with the accuracy with which individual boundaries are shown. The map will have to be on a large enough scale to allow room in each parcel for its number, and while the actual surveyed map can be enlarged for this purpose, there are limits to this, unless the errors are allowed to exceed the thickness of the boundary lines on the published scale. This is generally regarded as undesirable.

A second important factor is the nature of the boundaries. In England for example, the largest scale maps, commonly used for registration, are on 1:1,250 scale. This does not cause difficulty because the map indicates the actual walls or fences and, even in central London, is accurate enough to identify these without the necessity of stating exactly where the theoretical boundaries lie inside them. As is generally known, this is expressed by saying that we use 'general boundaries'.

A third factor is the use being made of the land. Dowson and Sheppard state the principle that, in agricultural land, the accuracy of the boundary needs to be related to the kind of crop being grown and quote examples from Egypt and Zanzibar. In the former, cotton was planted in rows 50 cm apart and so ± 25 cm became the accuracy necessary to define ownership of the last row on each plot, while, in Zanzibar, what mattered was the ownership of the clove trees spaced 21 feet apart, and here a distance of ± 3 feet was sufficiently precise to define ownership. In the grazing lands of Australia, or in the oil concessions of the Libyan desert accuracies may be measured in hundreds of yards, and, for the latter, maps have certainly been accepted for some years, based on photo mosaics controlled by astrofixes.

However, there is always the possibility of such land becoming really valuable and, even in the last example, the position of an oil well may require definition to a high degree of accuracy once it starts to gush! In fact, this is usually dealt with nowadays by having the position of the concession boundary accurately identified on the photographs and legally defined by these — which of course show actual ground features — and not by its geographical coordinates. These may only be a guide to its position on the ground and not the ultimate definition of it.

In our opinion, this question of the changing value of land is best taken care of by a change in the frequency or intensity of the control framework, rather than by the accuracy of the actual boundary surveys. Initially, in undeveloped country, there need only be the primary framework on which 1:50,000 or 1:100,000 maps can be based. Later, as development proceeds, this will have to be broken down to a secondary or tertiary network, and, if a town is laid out, it will require a fourth order network of traverses, with points only a hundred yards or less apart. But the accuracy has not changed, because, in fact, the breakdown is less accurate, in proportional terms, than the primary framework; what has changed is the intensity of the control.

What is important, therefore, is to put in a primary framework, observed to a high degree of accuracy and permanently marked by substantial monuments, once this is done over the whole country, the cadastral survey requirements of any part of it can be met, at any time, with relatively little extra work. It is on this principle that the field work of this Directorate has been based from its inception. The invention of electronic forms of distance measurement has, of course, made both these tasks very much easier than formerly, and there is no reason why any country need now take more than a few years to have all areas of potential development covered by at least a primary framework. It is also very much easier, with this technique, to put the secondary and lower order points where they can be most useful, and not on the inaccessible hill tops and to maintain a high standard of accuracy throughout the breakdown.

At a meeting of the Board of Examiners held at 4 p. m. Friday, March 26th, 1965, the Board:

(1) In concurrence with Colonel G. E. Streb, Principal of the Nova Scotia Land Survey Institute set the dates Tuesday, May 11th, Wednesday, May 12th and Thursday, May 13th, 1965, for the Sitting of the Association of Provincial Land Surveyors Examination both at the Nova Scotia Land Survey Institute, Lawrencetown, and the Sir James Dunn Science Building, Dalhousie University, Halifax.

(2) Accepted with regret the resignation of Mr. V. P. Harrison, P.L.S., as a Member of the Board due to his no longer being permanent employee of the Department of Lands and Forests. To him the Board extends a vote of thanks and appreciation for the timeless amount of work and effort in the carrying out of the secretarial duties of the Board, which he did with the best interests of the Board in mind.

(3) Accepted the recommendation by Dr. G. W. L. Creighton, Deputy Minister of Lands and Forests, on behalf of the Minister, that J. F. Archibald be appointed to the Board, to fill vacancy made by Mr. Harrison's resignation.

(4) Members of the Board of Examiners for 1965 are as follows:

**Chairman, Professor A. F. Chisholm, C. E., P. L. S.,
Department of Engineering, Dalhousie University.**

Dr. G. W. I. Creighton, Deputy Minister, Department of Lands and Forests

Robert D. Fitzner, C. E., P. L. S., Department of Highways.

**Errol B. Hebb, P. L. S., President of the Association of Provincial Land Surveyors
of Nova Scotia**

J. R. Chisholm, P. L. S., Department of Lands and Forests.

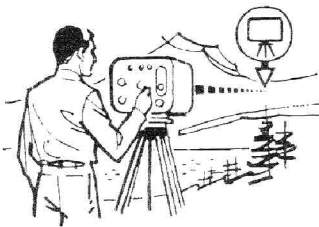
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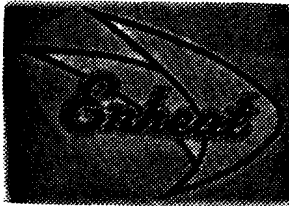


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