The Management Handbook for Land Surveyors

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A common sense guide to managing a land surveying enterprise in the 21st century

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PREFACE

Who is this Beardslee guy and what makes him think he knows so much?

"I believe in looking reality straight in the eye and denying it."

Garrison Keillor

My study of business practices as applied to Land Surveyors began quite by accident – quite like my surveying career. I quite accidentally graduated from college with a degree in business management, as well. I started out wanting to be a biochemist, but quickly discovered I was better suited to business and economics, and besides, that was much more interesting, not to mention that I was really pretty immature and didn't have a clue what I wanted to do with my life.

During the summers of college, I happened to get a job on a county survey crew, and found that work fascinating. I'll never forget the first hour of the first day on the job as a rear chainman. We were laying out a road centerline, and the concept of "stationing" was completely captivating, and the idea that we could make those measurements and come up with some design for a new road was equally captivating. So I spent those summers finding the work very interesting (actually quite a bit

more interesting than college), and meeting new challenges and learning more and more about surveying techniques every day.

By my third summer I was promoted to instrument man, learning to operate a K&E Paragon transit, and learning also how much one of those monsters weighed when packed around on one's shoulder. This was also the period (the middle 60's) when electronic measuring instruments were just beginning to be widely available, and I learned a whole lot about packing Tellurometers up vetch-covered hillsides in the hot sun in rural Eastern Washington State.

My mentor was the local County Engineer, but he was also a licensed Land Surveyor and he really liked the surveying, I think, better than the engineering.[1] I recall many enjoyable hours winding up angles with an Askania 1" theodolite, the first optical reading instrument I had seen. There was also the fun business of finding GLO corners and all that goes along with that.

So when I graduated from college without the prospect of a job related to my education, and being quite broke, it was quite natural to keep on surveying. When I was offered a job at $600 per month as a surveyor, I eagerly accepted and went to work. I worked for county government for a

[1] Ralph Waldo Emerson Main, PE, PLS, was his name and he mentored many land surveyors and engineers in his thoughtful, humorous way. It was my great honor to act as a pallbearer, along with others he had mentored along the way, at his funeral a few years ago. As you might expect, it was a day marked by half-rain, half-snow, and we slogged through the slop with our dress shoes on to his final resting place, cursing him all the way and each of us thinking to ourself that he was probably smiling in that casket, having drug us out in such miserable conditions one last time.

couple of years and then was recruited by a private firm. By that time I was pretty disillusioned with working for government. While working for the county, every day I could see better ways to do things, and sometimes that sort of free spirit is not well accepted in many bureaucratic environments. I felt like I was being asked to check in my brains when I came to work, and the idea of working for a private firm was entirely tantalizing.

I accepted the position with the private firm, of course. Working as a survey tech, it wasn't very long before I started wondering why things were done the way they were, particularly with respect to client relations and business practices. After about two years on the job, I reached the point (and developed the courage) to approach one of the partners and suggest that there might be a better way of doing business. This particular partner was (to my great benefit) a pretty free spirit, and always looking for a way to make a few bucks. To my great surprise, he was quite open to my suggestions and within another couple of years, I found myself in the position of partner and General Manager of the company.

It was about this same time that I became acquainted with Ted Madson, who at the time was giving seminars all over the country, including one about business practices. I went to Ted's seminar and was amazed to hear someone saying the very things I had been thinking, but didn't express because they were so different from the traditional ideas and business practices. After some time visiting and getting acquainted, we agreed to write a book on the subject. The book was whimsically titled "Beyond the Traverse Point," an allusion to there being more about surveying than

measurement. Now there are many opinions about Ted Madson and his teachings, but whatever you think of him, it is beyond question, at least in my mind, that he was (and probably still is) a man way ahead of his time. His thinking at the time was so advanced as it relates to business practices that most of us had a hard time understanding the concepts since they were so foreign to our pre-formed thought processes, as passed along through generations of land surveyors. A real iconoclast, Ted has influenced many with his unconventional thinking.

As these events began to converge, I became intensely interested in learning more about how to do business in a sensible way, and even more interested in finding a way to show other surveyors how, with very little effort, the entire profession could be made much better.

You might expect that a guy with these kinds of drives would soon be opening his own business, and the recession of 1980-1982 provided the opportunity to do just that. The company I was with at the time relied heavily on land development, and those of you who were around during that time know that housing and land development was brutally hit by rising interest rates. Our company went from 28 employees to 9 in a period of a few months. Many lessons were learned from that experience, some of which will be touched on later in the book, but looking back, it was somewhat to my benefit as it provided the perfect time to start my own business.

I wanted to start my own business, anyway, because although my partners were fairly cooperative, there was so much more I wanted to do, business-

wise, and I wouldn't need consensus to do them. Many of the techniques you'll find described here are the result of taking that bold step at a very bad time. It worked out fine, but it was pretty scary to begin with.

In the ensuing 20 years, I have written articles in magazines, lectured all across the country, and generally been a pain in the neck to the profession, continually harping about better ways of doing business.

One of the very enjoyable aspects of land surveying is the elegant simplicity of survey systems. The Public Land Survey System, for example, is beautifully thought out, but quite simple in concept. Likewise, the rules of excess and deficiency, paramount title, and location by common grantor, for example, seem complicated on the surface, but if one understands the concept behind them, they are based on clear thinking and common sense.

Business matters, to me, are much the same. While we can bury ourselves in the intricacies of accounting and analysis, the fundamental ideas are just good old-fashioned common sense, and can be applied by anyone, anywhere.

Why I'm writing this book.

It wasn't long after I got interested in business matters that I found land surveyors, as a group, regarded the topic as some sort of taboo. While I was excited about the topic and eager to share what I had learned, the profession as a whole was still more interested in deed interpretation, the

laws of adverse possession and intricacies of measurement. I wanted to offer seminars on the subject, but to my surprise found that the subject was way down on the list of priorities with surveyors' associations and individual surveyors, as well.

I came to find out that most surveyors (whether they would admit it or not, and mostly they were not) were embarrassed about their inability to conduct their practices in a sensible manner. As with most behaviors we find embarrassing, we are reluctant to discuss them, especially with someone who might challenge them. And if they are challenged in an open forum (e.g. a seminar setting), wounds are opened, egos are damaged, and the teacher is seen as a pariah.

Rather than open a dialogue about business practices, surveyors would prefer to find weaknesses in the presenter's material and find ways to justify the status quo. A book, which can be reviewed in the privacy of one's own time is a different matter, I hope, and can be viewed objectively, read thoughtfully, and the concepts considered carefully – and – just maybe, some of them will be put into action.

It has been my experience that surveyors as a group exhibit poor business practices. There are certainly exceptions, but my opinion is that poor business management has been the only reason that land surveying has not risen to the level of other professions in eyes of the public. There is no reason, after all, why surveyors should be considered with less regard than engineers, lawyers, or dentists, except for one thing – money. Engineers, lawyers, and dentists are all regarded, in general, as being better off

financially than we are, and are therefore placed higher in the social stratum of society. If surveyors were perceived as being as well off, they would, over time, be held with similar esteem. We have only ourselves to blame for this fate, and good, common sense business decisions can help us elevate ourselves.

In the past 25 years, I have learned so much about the subject, and been able to share so little, it's time to put some of this learning into words and try and share some of this with you. There have been a few pioneers[2] trying to improve the way we do business, but the topic has largely been intentionally ignored. Maybe I can be an iconoclast too.

All of us of have made huge mistakes in running our businesses, and I'm right there with you in that regard. But if one can learn a little, and adapt, those mistakes can be turned into assets.

If you can find a way to use some of the ideas expressed in this book and better your business affairs, it will help you in many ways. When you are making money, business is a lot more fun. Surveying, by its very nature, is an enjoyable pursuit, and it's even more enjoyable if you can make a dime doing it. Beyond that, if we could, as a group, become more financially successful, we would be competing with the other professions for the bright young talent entering the work force. Since surveying is so much fun, what do you think it would be like if it were financially rewarding as well?

[2] Ted Madson, Milton Denny

I have never found lecturing to be a very effective way of getting the ideas of good management across to surveyors. Perhaps it was my expectation that I could make great changes, which has since been tempered by the wisdom of the passing years. As Garrison Keillor observed, "It's disappointing to become a leading authority in the field when you still have so much you want to learn." One person trying to achieve the reeducation of a profession is not likely to succeed. The audience is so limited that only a few people can be reached, and they are the most likely to already have good practices in place. Like most topics related to land surveying, it is very difficult to reach those who need help the most. They don't show up at conferences or seminars. However, they do read, and my hope is that some of them will pick up this work and get some benefit.

Like most surveyors, I tend to be analytical and precise. I have tried to write this little handbook so it's easy to read, the points are precisely made and if I have done it right, you will spend little time trying to figure out esoteric concepts. Many management ideas are fairly abstract, and I won't go there. We're a rational bunch with pretty practical ideas. I hope you find my ideas to be that way.

INTRODUCTION

"Fortune knocks but once, but misfortune has much more patience. "

Dr. Laurence J. Peter

What has happened in the last 25 years?

Wow! What hasn't happened to our profession in the last 25 years?

Twenty-five years ago, some states didn't license surveyors. There were few states with recording acts, and even fewer with minimum standards of practice.

We've gone from steel chains to electronic measurement and GPS. We now do hardly any drafting by hand, and electronic calculators have revolutionized computations and mapping. Hardly anyone can hand draft a map or throw a chain anymore. (I tried to throw a chain last year, and was embarrassed to find I had forgotten how.) Data collectors are almost a requirement, now, and robotic instrumentation is commonplace.

Many locales have GIS systems in place and State Plane Coordinates and good survey control is often readily available.

Of course none of this is news. You all know it. The reason I remind you is to ask you to think about who has benefited from all these changes, particularly the technological ones.

I remember thinking in the late 70's how electronic measurement was such a benefit. No more dragging chains across roads or having to traverse around lakes and ponds or spending many hours going around a canyon. We could measure quicker, more precisely, and do our work in much less time, meaning more efficient. Then along came total stations, and even more efficiency was added.

But did we, as a profession, take advantage of this technology? I think not. The surveys we were doing with the new gear were worth just as much as before, and arguably more, since we could complete them in less time with more predictable results. But did we charge more? No – in fact, we generally charged the same old rates as before, and our costs increased (on an hourly basis) because the new equipment was much more expensive than the old.

Not only did we not charge more for an improved service, the costs of providing the service increased and we had to go out and find more jobs to do because they took less time to complete. In order to realize the same gross revenue, we had to find more clients and more jobs, do them for less and still pay more for our advanced technology.

It should have been the other way around. We should have charged more for the improved service, and we should have been doing more jobs in less time for more money.

It's typical that we are smitten with new technology and other than the fun of using it, we forget what it means from a business sense. The

introduction of electronic measurement, and more particularly the total station, was a seminal event in the history of land surveying. It completely reshaped the way we did our work.

Now GPS has arrived and we have a similar opportunity. Those of you who have invested know that GPS is very expensive, and because it's so expensive, it has been my experience that a majority of surveyors are actually CHARGING for it. That tells me that surveyors have gotten a lot wiser in the intervening years, and I call that good news.

I hope we don't make the same mistakes we did with the advent of the original electronic instrumentation, and the trend towards charging extra for GPS services tells me that we are trending the right way.

I hope so – the profession will be immeasurably better for it.

Recent trends

A great deal has changed. Surveyors now communicate much more than they used to, thank goodness. We actually even talk among ourselves about business practices, which simply didn't happen years ago.

Survey recording acts across the country have contributed as well, forcing surveyors to consider the work of preceding surveyors, and even talk to them on rare occasions. In years past, it was normal to never record a boundary survey, and rathole all kinds of survey records as proprietary

information. In most parts of the country, this simply can't be done anymore.

But the biggest contributor to open communications has been the Internet. Now, not only is it convenient to talk with those in our own region we can reach across the country and the world to visit with other surveyors.

Those of us who have been teaching around the country for years know that there are huge differences between different regions of the United States. The way surveyors are perceived by the public varies wildly and the surveyors' perception of themselves is equally diverse. It's equally true that business practices vary dramatically from region to region.

The first time I traveled out of my own region (the Pacific Northwest) to the southeast region of the United States, I was astonished at the difference. It took a while to comprehend. Now, however, we can all freely communicate and discuss all kinds of survey-related matters. The result will inevitably be that we will each take advantage of good ideas used in other regions. Perhaps we will all become better business people, as a result. The trade magazines even have columns and articles about business these days.

Refreshingly, it is the younger surveyors that are most rapidly grasping the concepts of good business and good surveying. While I am not happy in some ways, with the course content of the surveying schools, they are at least available, and there are people actually setting out to be surveyors, which was a rare exception years ago. Most folks just fell into the

profession by accident, like me. I know my best students, over the years, have been youngsters. They tend to have open minds and are not carrying around the bruised and battered baggage of past generations.

I have noticed that, during seminar sessions, it's usually the younger folks who are paying the most attention. I remember doing a seminar in Grand Junction, Colorado, about 15 years ago. In the audience was a young married couple, both surveyors from the Rocky Mountain region of the state. They were paying close attention, asking clarifying questions[3], and although I had their attention, they were really getting my attention. I didn't write down their names, and I haven't heard anything about them since, but I hope they are doing well and I would be surprised if they weren't. It's folks like that who keep me interested in teaching this stuff.

I wouldn't be surprised to find that the surveying curriculums someday soon add business practices, particularly as applied to land surveying, to their coursework. We can require four-year degrees, gripe about the public's perception of us, and complain about our financial plight, but nothing will really happen in the court of public opinion until we are financially successful. That can happen only when we understand what business is all about. We can improve our lot in society by ourselves – by being shrewd business people.

[3] As opposed to the older surveyors, who generally asked questions not very cleverly disguised as challenges to the ideas I was presenting.

CHAPTER ONE

FOR THOSE JUST STARTING OUT OR THINKING ABOUT IT

Who hasn't thought about starting your own surveying business? The thought strikes us all at one time or another. Once we get our license, it's probably the first thought that occurs. Some act on the idea and most do not. There is no question it's a monster step in a surveying career and it's not always the best step. Some folks are better able to succeed than others for a wide variety of reasons.

Some of us have the right personality for it, and others do not. Others who have the right mindset and ability are trapped by circumstance and find the risk unacceptable. Others simply like life as employee in a private firm or are better suited to situations presented in government jobs.

A complete book could be written on starting out in business in our profession. There are many, many things that can be done early on that will have a lasting impact on the business. It is undeniably true that there are considerable risks involved, but there can be great rewards, as well, and a lot has to do with the individual.

There are a few basic requirements for those starting out who intend to be successful; they are:

- ✓ The willingness to work very hard.
- ✓ A good idea of what you want to do.
- ✓ A basic grasp of business principles.

- ✓ The financial means to make it happen.
- ✓ A little bit of sales ability.
- ✓ An enthusiasm for land surveying.

You must be willing to work very, very hard. The first few years in business are the toughest in all respects. You can expect to work very long hours with little reward early on. If for any reason you cannot make this sacrifice, a private practice might not be a good fit. This single factor deters a good many from going forth.

Many of us, by the time we get our license to practice, have also gained a wife and family, and it is a huge burden for you to frequently spend 12 to 16-hour working days. Sometimes, depending on where you live, it may be necessary to be gone for days at a time. Remember that early on in developing your business, you are likely to have to do everything, including the accounting, ordering materials and supplies, paying the bills, cleaning the office, and everything else, besides doing some surveying. You'll have to keep the crew rig repaired, the instruments in adjustment, and the computers working.

You should be financially able to get by without a regular paycheck for at least a year. At the end of the first year you will know whether your practice is going to work or not. It may be a few more years before you actually achieve a degree of success, but by the end of the first year you will have an idea as to whether you're going to make it or not. If you try to make your new enterprise support you and your family in the first year or two, you are not likely to have the capital to acquire the basic things

you need to grow your business. In all but the rarest of cases, it's going to be a financial struggle for a while. The good news, of course, is that when you do get it all together it can be a terrific experience.

If you do not have an understanding wife and family, this may not work. Or if you simply have other things you want to do that demand free time, you can forget them for a few years. If you do all the things right, after a couple of years you can taper off a little with the work, but don't count on really having any appreciable free time for about 5 years. This is a huge commitment, but it can be well worth it.

You also have to be able to make a plan and stick to it. Before you ever start out in business, or if you have just started (that is, you have been in business less than 3 years), you need to make a plan. See Chapter 13. If you have no idea where you want to be, it's unlikely you'll ever get there. Planning is difficult, but necessary.

You should think about a plan in broad terms before you ever even try to launch an individual enterprise. You'll need to develop a business plan, but even before you do that, you must consider what, in general terms, you're trying to accomplish. You should consider just what is motivating you to start your own practice, for instance. Are you just frustrated with your current job? If that's the situation, you need to give it more thought. Many a surveyor has started his or her own practice for all the wrong reasons. Be honest with yourself. Do you want to get your own show going as an ego trip? Are you thinking about starting the business

because you would rather be known as a business owner instead of an employee? If you are, that's a better reason not to do it.

Do you want to set a standard in your community for good service and professionalism? Now that's a pretty good idea and a good basis for starting your business. You'll need to think about what you're trying to accomplish. Are you going to try and grow a business into a substantial enterprise or do you plan to stay a small company? If you plan on growing into a larger firm, your planning horizon must be much farther out, and you can expect to sacrifice for more years than you might imagine. Growing a business is an expensive proposition and takes enormous resources. If you plan to stay small, you can expect to be an "on the ground" surveyor for a lot longer, but that just might suit your style.

Whether your business is large or small will have nothing to do with how much money you make in the end. Some of the most profitable businesses are very small operations, and some of the largest companies are the least profitable. However, larger enterprises have the ability to acquire large jobs that the smaller operation may not be able to acquire, plus they have the ability to diversify where the small company cannot. On the other hand, when your business grows, you will have to put up with personnel matters and you better believe that dealing with employees may be the hardest thing you have ever dealt with. A small operation is usually almost completely reliant on the principal (you) and if when the company is reliant on you as its sole source of income, you don't have the time to get sick or have other things happen that might affect your ability to

produce. When you are not there, nothing happens and no revenue is generated, so keep that in mind.

Before you start out, get a basic grip of business principles. Go to seminars, take a class, read books – do something to get a grasp of fundamental functions of business. You will need to get a fair idea of how bookkeeping works, as well as other management principles. You will be particularly surprised at what it costs to do business. Many of us make mental calculations that show big profits in private practice, but the reality is usually much different. There are all kinds of taxes and costs you have probably not thought much about, so go through the basic cost analyses offered in Chapter 7 and get some idea of what you're up against.

Just because you are a smart, seasoned land surveyor does not mean you will be good at managing a land surveying enterprise. This is sort of left-brain / right-brain sort of thing. Very few land surveyors who are excellent technicians ever make the shift from technical considerations to the esoteric nature of management. It's like asking a musician to be a carpenter or an artist to be a mechanic. While land surveying as a profession involves many technical considerations and a flair for math, business matters often involve planning, dealing with people, and decisions that just can't be made on the basis of quantitative analysis. You should be prepared to find many frustrating situations that defy your technically oriented logic. You will have to deal with these situations on a completely different level and according to rules that might not make any sense at all to your analytic mindset. Don't be afraid to ask for advice. You can get help from your accountant, attorney, colleagues who have

been in business for a while, other business people, and anyone who has specialized knowledge can be a big help. You shouldn't be afraid to admit that you don't know much about being a businessperson. Nobody expects that of you, except maybe yourself, so go seek help where you can.[4]

You wouldn't go to a surveyor to diagnose a tumor and you wouldn't go to a management expert for a survey. Get professional help because you will undoubtedly need it, and it will be one of the best investments you will ever make. Sure, you need to invest in equipment, but without a good business plan to use that equipment, you might be wasting your money.

Overlooked by most of us planning on starting a surveying enterprise is our need to be sales people. You must be outgoing in nature and come across as a friendly soul, or you will not succeed. Every word you say and every action you take is a marketing act. Hiring a surveyor is based more on perception than you might imagine and you'll read about that in Chapter 13. Pay attention; it can make or break your operation.

Having an enthusiasm for land surveying is probably not a consideration in the case of most folks – it's a given. Surveying tends to be a seductive, interesting, lifelong pursuit for most of us. If you think, however, that

[4] You'll hear this theme throughout the book. Many, many surveyors have made the mistake of thinking they know something about management when they know practically nothing at all. This is extremely important, because the few fundamental business decisions you make as a practitioner are thousands of times more important than all the surveying decisions you will make over your career. Fifteen minutes of thoughtful business planning can outweigh a thousand surveying jobs and the thought that goes into them. It's a matter of priority.

surveying is just a means to pursue a financial end, you are likely to be disappointed.

It takes a fair amount of money to start up a surveying practice, and too many times that very fact gets in the way of starting the right way.

Too many surveyors start their practice with too little capital. They start working from their house, with maybe their spouse helping out, or their kids. In my opinion, this is a bad idea. While you may be able to survive in this mode, you are working at a disadvantage from the get-go. Surveyors who work out of their basement or garage are generally perceived (by the public and other surveyors) as the bottom feeders of the profession.[5] In other words, home shop surveyors are expected to produce the least expensive surveys and to be the least capable of complex work. They are also expected to work at below-market rates because of their limited overhead. If that's what you want, fine, but if it's not, be aware that it's likely that's how you will be perceived. If you have limited capital, you may want to consider waiting until you can acquire the resources to open your business otherwise.

Too many times I have seen surveyors starting out with limited resources become victimized by the way they start their enterprise. There is a certain group of clients who prey on unsophisticated surveyors just setting up shop. You have all seen them. They are the ones that don't pay, are a pain to work with, and will immediately victimize someone else when the

[5] If you are one of these folks, don't take this personally. Many excellent surveyors work out of their house, but it's my belief that the perception is generally unkind. Don't blame me. I didn't make it that way.

opportunity arises, getting rid of you like a dirty sock. When you set up your home business, you might as well send these sleazeballs an engraved invitation, because they will be calling you as soon as they find out you might be a target.

The new business starting out with an attractive storefront, a nice-looking survey rig and some basic materials - such as business cards and maybe even a web site - will have a decided advantage over the home based operator. The public will have a different perception – one of being in business seriously and meaning to be around for a while. They will also not expect to be paying discounted rates at a "real" surveying store and they will generally expect a higher quality survey product.[6] The net result is that you will attract the right kind of clients – those who are willing to pay a premium price for a premium product delivered on time and on budget.

Are you starting to think, "I know this stuff intuitively? It's just common sense." It wouldn't be surprising. Good management is often just good common sense. Someone just needs to point it out.

Plan, manage, work, but do it effectively.

[6] Not that many clients know the difference between a good survey and a bad one. Read more about that in Chapter 14

CHAPTER TWO
FOR THOSE WHO HAVE BEEN IN BUSINESS FOR YEARS

At every seminar I've ever done there are always a few surveyors who have been in business a good while and are simply there to punch holes in the material I present. It usually goes something like this: "Mr. Beardslee, I have been in business for 25 years, done none of the things you suggest, and have made a real decent living for my family. I have no intention of changing at this point."

Since I have no intention of being baited by this kind of response my question is: What is he doing here, if he already knows the answers? Moreover, why would he want to argue with me?

Because I know so many surveyors all over the county, I also get the distinct feeling (no evidence – just a feeling) that there are a lot of experienced surveyors and business owners that are not present who would greatly benefit from changing a few things about the way they do business. I think they are not there for two reasons: 1) they don't want someone examining the way they do business and exposing weaknesses, and 2) they feel it's a sign of weakness to seek education on the subject of business.

There is a great reluctance in almost all of us to make changes. Change by its very nature is threatening and the status quo is almost always most comfortable. The surveying profession has been around for hundreds of years and many, many surveyors have made their way with no attention

paid at all to good business practices. That doesn't mean there aren't a better ways of doing things.

At one time, I thought I could provide a business consulting service to land surveying companies. What I soon found out was that the companies that needed the most help could afford it the least, and were also the most reluctant to admit they needed help. That's a vicious cycle if there ever was one. Because they don't make good business decisions, they suffer from poor returns; and because they suffer from poor returns, they can't afford to seek counsel and because they can't afford to seek good counsel, (or won't admit they need it), they continue to make poor decisions and the cycle continues.

Even though business advice would have been the best investment they ever made, they didn't invest. They didn't get where they were, after all, by making shrewd investments and wise decisions.

As I've often told people, a few seconds spent making a well thought out business decision can offset years of toil trying to make a nickel with a bad business plan, or more likely no business plan at all. For the time spent, a little understanding of good business principles is a far superior investment when compared to buying equipment or hiring staff.

You should always be looking for better ways of doing things. Most surveyors are quite anxious to adopt new technologies and buy new equipment, but few are willing to change the way they do business. This is just the opposite of what makes sense. Since a small change in the way

you do business can have huge impacts on your net revenue, it would seem a much better thing to do than buy new equipment and technology. New equipment and technology are exciting and fun, but without a sound underlying business strategy, they are not likely to make you any money.

Keep an open mind. Make changes that make sense.

CHAPTER THREE
GENERAL ADVICE FOR EVERYONE

If you are serious about doing better in business the most important thing you can do is learn something about business. Even more importantly, you can pave the way to learning something about business by opening your mind to new and better ways of doing things.

Too often we get stuck in a particular mindset and can't seem to break free to look at things a different way. Sometimes it takes a nudge to get your head pointed in a direction where you can see things from a different angle.

I often see this at seminars. I'm busy addressing an audience and I see a lot of body language that tells me "I'm hearing you speak, but I'm not listening. I'm really looking for ways to sanctify the status quo." They are not listening because they don't want to hear that I'm telling them they've been doing business the wrong way. I understand this – no one wants a mirror held up that shows his or her warts. On the other hand, if you see those warts, you may realize that although they look bad, they can be removed, and the world suddenly looks a lot brighter. So don't be afraid to look for ways to improve what you're doing.

As Pogo said: "We are confronted with insurmountable opportunities." Keep looking for ways to improve. Don't be afraid to experiment.

One of the great turning points in my professional life had nothing to do with surveying. At one point in my career, I was frequently asked to represent clients at land-use hearings. I was incredibly shy and the idea of public speaking was terrifying, as I'm sure it is for a lot of people[7]. As a result of those fears, I joined a local Toastmasters club. I learned how to speak before an audience, but more importantly, I learned that my fears were common fears, and through the Toastmasters program, I was able to understand there are all kinds of unfounded fears just like public speaking. In doing so, I became a much more confident person in almost every aspect of life, including business.

Now I don't generally hold myself out as an example, but in this case, the results were so dramatic I think it's appropriate. Toastmasters is not the only avenue for self-improvement, of course. Organizations such as the Dale Carnegie Institute, Creative Solutions, Inc., and others have excellent programs that will make you better able to think clearly and be a better business manager – not in terms of technical skills, but in terms of having the confidence to make good, sound business decisions without all the baggage and impediments that go along with being stuck in a rut. These programs will help you think in a different way. At some point you are finally able to admit to yourself that the decisions you make are being made for all the wrong reasons. Maybe ego was at play. Or maybe you felt embarrassed to take a particular course of action, based on unjustified fears.

[7] It has often been reported that the fear of public speaking is the most common phobia of mankind.

I know several brilliant surveyors who are their own worst enemies when it comes to managing business relationships, simply because they won't recognize their own shortcomings and do something about them. These fears and irrational actions become ingrained over time, so the sooner you do something about dealing with them, the better off you will be. Many surveyors go through their entire careers, often achieving some measure of success, without addressing these concerns – even though they are well aware of them. You can get by this way, but if you really want to excel, you will need to address the whole array of issues that you're faced with and deal with them. This includes personal shortcomings and built-up defenses. It is remarkable what can be achieved when you come to grips with your own personal demons.

Admit you are a human with human shortcomings and go out there and do something about it.

CHAPTER FOUR
THE GOSPEL ACCORDING TO DAN

Several years ago, I thought I would compress the most important parts of what I had learned in 20+ years of studying into a few rules. I organized them into a group of theorems and corollaries and called it the "Gospel According to Dan." These rules have been widely distributed now and are found at several Internet sites. Here I will expand on them in hopes of providing a better understanding of each and how they relate to one another.

If you read nothing else in this book, read these rules.

Remember that this collection of rules is the result of years of thinking about business management for surveyors and experimenting with unconventional methods. You may think that some of the rules are repetitive or redundant, but they are not. Some have common themes but there are subtle differences that I'll try to explain.

It's also important to remember that these rules are a package and all interrelated. You can't pick and choose among which of these rules you like. You will have to apply all of them, or you won't realize the benefits of all the thought that has gone into their creation.

What I'm going to do here is state the rule, give you analysis of the thinking that went into it, and then restate the rule in different words to try and reinforce the idea. (Just like an old time preacher – "tell 'em what

you're going to tell 'em; tell 'em; tell 'em what you told 'em.) Always remember that these rules are all interdependent; you'll need to apply them as a comprehensive approach to doing business.

You will find more written in the pages that follow about each of these subjects.

Rule No. 1: If your customers are not complaining, you're not charging enough.

How often have you given someone an estimate and have them say, "That sounds fair, when can you get started?" If you're like me you get this uneasy feeling that something was left on the table. There is no moral, ethical, or rational reason for charging less than the product is worth.

Let's say, for instance, that you are surveying the boundaries of a lakefront home valued at a million dollars. Let's further assume that you have surveyed lots of property in the area and have good control and the survey will really be pretty easy. Does that make it worth less? Everyone would agree that it's not. So why do we typically charge as if it were? We almost all do it because we fear that someone else will if we don't. But that doesn't make sense.

Remember that no one wants to hire a surveyor, just like no one wants to hire a dentist or a lawyer – we're just a necessary evil. In property boundary surveying we are nothing more than an insurer. We are paid to

accept liability, and nothing more. If folks knew where their property boundaries were, they could set monuments themselves.

We are, in fact, a single premium, lifetime (of the surveyor), unlimited liability insurer[8]. That sounds like it should be worth something doesn't it? And it sounds even more valuable for a valuable piece of realty. And of course it is. So charge for it.

One of the most common themes I see on discussion groups among surveyors is the concept of charging a percentage of the value of the property, much as one would expect to be charged by a realtor, a title insurance company, or a casualty insurer. Maybe someday that will happen, but that's a way down the road.

For now, I see have no better way of testing the market than to make sure that our clients squirm when they hear the price. Sure, some of them complain whatever the price, but I'm talking in overall terms. Watch how your clients react to your pricing and make sure that a good number of them complain. Sure, you'll lose a few clients, but you will anyway, and it's worth it to get an adequate fee. How else can you test the market?

Remember, it is impossible to charge too much. If a client accepts your price, it must be worth it.

Make your customers complain - it won't hurt them, and it will help you.

[8] Since the "discovery rule" generally applies to negligence lawsuits, it's fair to assume you, as land surveyor may be liable for any errors made many years after they were made. Further, we generally do not contract liability limitations, and our E&O insurance is commonly a "claims made" policy.

Rule 2: If you have so much work you can't get it done as soon as your customers would like, you're not charging enough.

In any professional service business, clients tend to come in bunches. Just when you think you're getting caught up, the phone will ring off the hook. The object of being in business is not to do a lot of work, however, it is to make a profit. That may seem like an old-fashioned idea, but it's still a good one. Sure, we like our work and want to stay busy, but we are still in business and should act like it.

If you are constantly behind, that is, not able to get work done in a timely manner, it is most likely symptomatic of a poor pricing structure. Unless you are just poorly organized and inefficient, you should be able to turn work around quite quickly, because that is what will set you apart from other surveying firms in your market area. If you are reasonably efficient in doing your work, and you can't get it done, your prices are probably too low.

Raise your prices and see what happens. Usually, when I suggest this to someone, I get a response like "I'll be out of business in 30 days, it's so price competitive around here." In my experience "around here" is anywhere and it's pretty much the same one place as another. Some markets are more price-sensitive than others, of course. If you happen to be in the "mortgage survey" business, price competition is fierce, because this type of service is generally regarded as a commodity and one surveyor is just as good as another for that particular sector of the market. But for

most surveying services, it's simply not the case, regardless of the irrational fears of some land surveyors.

Consider this: What would happen if you doubled your rates and did half the work? Would you make more or less money? The answer of course, is that you would make nearly twice as much money. You would have the same amount of revenue and somewhat more than half the cost. No one is willing to bet his or her business on such a tactic, of course, but the principle is sound. Test the market by raising your rates 10%, then 20% and give it a try.

What would happen if this tactic were successful? The first thing, logically, is that you would lose some accounts. That's to be expected, inasmuch as there is some price sensitivity in the market for land surveying services. But the market doesn't always behave logically – sometimes a higher price is perceived as associated with a better service.

The second thing that would happen is that, because you have less work, you can get it done faster, and thereby improve your market position. A reputation for fast delivery will spread quite rapidly and may result in enough additional requests for work to offset those lost due to the price sensitivity of your market.

The third thing that will happen is, because you're making more money (net that is), you'll be in a position to invest in new equipment and hire better employees (or retain the best you have) and further improve your market position.

In the end you may be perceived as the best, fastest, and most expensive surveyor in town. I wouldn't think that's all bad.

Don't be afraid to raise your prices and do less work. It might work out for the best.

Rule 3: If you're not making money, you're not charging enough.

When I talk of making money, I'm talking of making a profit. It took me quite a few years to understand that surveyors often confuse revenue and profit. I would be leading a discussion about "making money" and everyone but me thought we were talking about gross revenue, instead of profit. I now try to make that distinction clear. So when I say "making money," remember that I'm talking about making a profit.

In my travels and discussions it has become clear that surveyors are generally afraid to charge enough for their services, and that is the single most important reason why few make money.

The most common excuse is the worry that they will price themselves out of the market. However, upon close examination, no one really knows what the market will bear because no one has ever tested the market. The only basis for comparison is a perception of what other surveyors are charging.

If you aren't making money, it's a lot more likely that you are charging too little. I have never heard of an instance where a surveyor has complained about making money because they charge too much. Have you? It's very common to hear complaints about other surveyors charging too little, however.

Whenever I do a seminar, I often get the opportunity to talk with surveyors and the most common thing I hear goes something like this: "I'm the highest priced surveyor in the valley. I just don't understand how these other hacks can charge so little." Interestingly I never hear from the folks who price their services on the low end. Why do you suppose that is? I suppose one reason is that the lowball firms never attend educational functions, but the most likely reason is that no one wants to admit that they are responsible for low prices.

Those who price their services low are running multiple risks. One – they are unlikely to make any money. Two – they are likely to be perceived as discount (read cheap) surveyors. Three – they will never attract the best help. Four – they will be sought out by the most aggravating of clients – the bottom feeders.

Have some courage – charge like a professional would charge.

Rule 4: If your rates are the same as everyone's, you're not charging enough.

The ironic thing about adjusting rates to the perceived market (i.e., what everyone else is charging) is that they are probably doing the same thing. In other words, they have probably considered your rates when setting theirs.

Now typically, surveyors don't publish their rates for everyone else to scrutinize. We do, however, convey our rate structure to our clients, who do compare and eventually pass that information along, in one form or another to other surveyors. Employees gossip, and in one way or another we are able to compare our rates to market rates in the area.

But setting your rates based on what other surveyors charge is not a rational way of pricing. Market rates are logically based on two things – cost and value. You as a surveyor know, or should know what the cost of surveying is, but the value is another matter. You don't know the value of your service and the only way to determine that is to test the market.

Basing your rates on what your competitors are charging is not addressing either cost or value. It's simply a reaction to the perceived market force of competition, and a completely illogical means of establishing rates, especially when you consider that they are probably basing their rates on yours.

The effect of all this volleying is that rates tend to stagnate. I set my rates somewhere near yours, and you set your rates somewhere near mine, and both of us complain about the competition's rates being too low.

Don't set your rates based on what others are doing because they're probably doing the same thing.

Rule 5: If your rates are the same as everyone's, you're making a big mistake.

Since rates are based on cost and value, it's poor practice to try and mirror the market. There is probably no reason to believe that surveyors in your area are making money and you should take a business approach that will make you some money. So completely ignore what other are doing in terms of pricing.

That sounds like a terrible strategy on the surface, because this is a free market with free market forces, but more than likely, as you will find out as you read on, clients perceive surveyors' pricing structures completely different than we do.

For the last twenty years, I have been told again and again that setting rates at the levels I proposed would ruin my business and I would have no work. Guess what? Those high rates have had nothing but a positive effect on my business and the businesses of those I have advised to do the same.

The simple fact is that surveyors seldom even begin to test the market. There are exceptions, but for the most part, we price our services well below what the market would readily accept.

Test the market – it might surprise you.

Rule 6: If you don't have much work, it's not because you charge too much.

I can't tell you how many times I've heard surveyors complain that things are slow and if they charge more, they will have no work at all. That, I suspect, is just an excuse and a rationalization for other management problems.

As far as I know, no surveying company has ever priced itself out of the market. The market for surveying services is cyclical in certain segments, such as construction and land development, but the market for other segments, such as environmental services and boundary surveying, is quite stable. There is nothing we can do about market forces that restrict the demand for certain surveying services, but we can position our surveying companies to be prepared for such market fluctuations.

I fully suspect that almost all surveying companies that complain about lack of work have underlying problems unrelated to the price of their services. It has been my experience that more low-priced surveyors fail in the marketplace than the higher-priced firms. The reason, usually, that they are low-priced firms to begin with is that that's the only way they feel

they can compete. The low-priced firms are typically unresponsive to client needs and find they acquire only the clients that are looking for the cheapest surveyor. This is a vicious cycle and can lead to the destruction of the firm

Most folks who read this book have experienced the loss of work to lower priced surveyors. It's a frustrating experience at times, but over the long term it tends to take care of itself. Once we get in the mindset that we don't want or need all the work, it's a lot easier to deal with. The low-priced surveyors got that way because they couldn't compete on qualifications or reputation for delivering a quality product on time.

A quality practice will survive the turmoil of the marketplace and prosper over the long run. Price may be a factor, but it's unlikely that a quality practice will be a cheap practice. Look around your market area and see that it isn't true.

Look deeper into underlying problems before you decide your prices are too high. Do you deliver consistently on schedule? Do you always communicate effectively with your clients? Do you perform as you promised? Do you treat your clients as you should – that is, the source of your entire revenue stream?

Ask all these questions before you decide low prices are a good idea.

A lack of work is probably not a result of high prices – find the real problems and fix them.

Rule 7: Don't worry about the firm down the street – make them worry about you.

As already observed rates for surveying services tend to be set at the rate perceived to be the "going rate" for the area. Sure, there will be small variations, but generally speaking, surveyors are very sensitive to what "the other guy is charging."

The paradox here is that rates tend to ratchet one way or the other, depending on which firm in a given area is perceived as a leader. You need to be a leader, not a follower. There are followers and there are leaders, and leaders prosper while followers wallow. Someone once observed that there are people that make things happen, those that watch what happens, and those who wonder what happened. Those who make things happen in the surveying profession are the leaders to which every other firm in the area looks to set the fee standard. They may not have the courage to accept the standard, and often will intentionally price themselves below the standard – but they are definitely aware of the standard.

I was once told by another firm that if I charged a certain rate, there was no chance I would ever do business in our market area. Guess what? They were wrong. The price increase, if anything, increased business. We'll get into that later on, but prices for professional services often have illogical affects.

Since prices tend to ratchet towards those of the leading firm in a given market, why not be that leader? You don't have to be the biggest firm to be the leader. A small successful practice can often set the standards. Wouldn't you rather have firms reacting to your pricing moves than have to react to theirs?

Be a leader, the pack will follow.

Rule 8: Bad situations don't get better by themselves, and they won't go away.

In business, things don't always go smoothly. For whatever reason there are times when fate just conspires to create problems.

In a land surveying business there are innumerable opportunities for problems, and they will all happen eventually. For the firm that wants to set itself apart from all the rest, one way is to recognize a problem and not ignore it. It is much easier to ignore problem situations and hope they will go away, but hoping problems will disappear is simply wishful thinking.

Let's say, for instance, that you are doing an ALTA survey on a tight deadline. What could go wrong? The utility markups might be late. The party chief you have assigned to the job comes down with pneumonia. The title report has errors. Your equipment fails. The computer crashes. The opportunities for problems are endless, and they aren't always your fault, but the clients aren't interested in fault, they are interested in results, and with a real estate closing at hand, they need your work completed.

There are two general ways to handle this sort of situation. You can complain that circumstances have not permitted you to meet the deadline, and simply wait for the deadline to come and not produce the results, or you can aggressively pursue solutions to the problems and find answers and get the job done on time.

The latter approach is much better, of course, but harder to achieve. It may be that even if you give it your best effort, you can't produce the desired result, but that should not stop you from trying. Even if you can't get the problems solved, give your best effort and communicate that to your client. If you do your best, your client is likely to understand. You do have to communicate that effort, however. If you don't, they'll just assume you're not trying hard enough. If you try, your client will understand, but if you don't, and write it off to bad luck, that client will probably not be back.

Deal aggressively with problems.

Rule 9: The sooner you fix a problem, the better off you will be.

The easiest thing to do is ignore a problem, and hope it will go away, and the hardest thing to do is deal with it immediately. There are always more pleasant things to do than deal with a problem. Clients tend to be pretty patient and understanding about problems, because they have their own, but they are particularly appreciative if a problem is dealt with immediately, even if the end result is not perfect. However, if you ignore a

problem, or if you make excuses for not dealing with it, clients tend to be much less patient.

Let's say, for instance, that you have an equipment breakdown during a critical construction project. You can make excuses and wait for the equipment to be repaired before you return to the project, or you can go out and rent a replacement and be only slightly behind schedule. Your client will be much more cooperative if you do the latter.

Problems can't be fixed soon enough. The faster they are dealt with, the better will be the result. Once a problem has been identified, it should be dealt with immediately.

Find problems, and fix them immediately.

Rule 10: Call them before they call you.

If there is one rule among all these rules that will make a huge difference for you, it is this one. Carry this rule around with you at all times and always, always obey it.

A rule this important requires some explanation, of course.

Let's take an example: You contract with a client to perform a topographic survey, and although you do not contract for a specific date of delivery, the client has some general expectations that it will be done in about 2 weeks, and that expectation has been conveyed to you one way or

another. Now at about the same time, there is a rush of other work you contract for. Three weeks go by and you haven't started this client's job.

The typical way of dealing with this is to wait for the client to call, and hope they don't before the job gets under way. On the other end of this relationship, the client is thinking, "I thought this job was going to take two weeks, and I haven't heard a peep from that surveyor." When he finally decides to call and see what's going on, he's already upset and displeased. You would be, too.

A much better way of handling this situation is, once you find out the project is going to be delayed, get on the phone and contact your client to tell him. He will most likely understand, and give you a break, but if you wait, he won't. Over the years this simple rule has saved innumerable client relationships.

There doesn't even have to be a problem to make this rule pay off. For instance, call clients just to let them know you're working on the project and give them a status report. Clients will be surprised and pleasantly so. If you have any inkling whatever that a client may not know what's going on, or might be unhappy, get in touch. There is nothing like a happy client.

So whether you have good news or bad, get on the phone, send email, do whatever you have to do to stay in contact with your clients. They will appreciate it, and other surveyors will wonder why your clients are so loyal.

You will also have a much lower stress level, because waiting for those unpleasant calls that you know will come is a good way to get an ulcer.

Always, always, call them before they call you.

Rule 11: When you offend someone in a business situation, you offend 250 other people as well.

It's well to remember that people talk to other people. That's a big downside to offending someone in a business situation.

Let's say, for instance, that you promised a job complete on November 30 and didn't deliver the job until December 30, and in the meantime, you failed to stay in touch with your client, and the client made repeated calls which you never returned. Furthermore, you charged the client more than you quoted, citing difficult title conditions or something to that effect. An extreme example, perhaps, but consider the consequences.

Let's call your client Mr. Jones. Mr. Jones is disappointed with you in particular and the surveying profession in general. He is probably thinking that the whole industry is a bunch of goons with no business sense or commitment to their clients. So Mr. Jones goes to church that Sunday (or it might be many Sundays later) and after the service the subject of property boundaries and surveyors comes up. One of his friends is considering having some property surveyed and asks if anyone has any experience or recommendations. You can be sure that Mr. Jones will condemn not only you, but also the profession in general. And don't

be surprised if the experience is embellished, as bad news often is. If five people hear his story, each one tells some of his or her friends and each time the story is retold the story is embellished, the facts distorted and your reputation is besmirched.

And that's not the end of it. Mr. Jones has friends at work that will pass along the same story, and Mr. Jones goes to his bridge club and repeats it at the local service club and at the bar or wherever he goes. It doesn't take long for the story to reach a lot of people, all of whom are negatively impressed.

Bad news travels a lot faster than good news, but had you done a good job for Mr. Jones, you would at least have done no damage, and you might have had a referral or two down the road. Land surveying business is almost always by referral; a client that had a good experience is your very best advertisement. Of course a bad experience is your worst advertisement and reaches a whole lot more potential clients.

You simply can't afford to offend clients, and the easiest way to offend them is to provide poor service.

Act as if you are communicating with 250 people when you don't perform – because you are.

Rule 12: When a surveyor get hired, someone has to not trust someone; either you work and hope you will get paid or you get paid and the client hopes you will work.

Of all the problems that surveyors have expressed to me over the years, the most common is probably "how do I get paid?" Or "If I could just collect what was owing, I would be in good financial shape."

Traditionally, surveyors have the notion that they should work and get paid when they are done. When you think about this, it doesn't really make sense. Why should surveyors be less trustworthy than their clients? In other words, wouldn't it be a better idea for the client to give you some money before you go to work?

Thirty years ago it was unheard of for a surveyor to request a retainer. Twenty years ago a few surveyors asked for retainer. Ten years ago, asking for a retainer was an accepted practice, and today, almost all surveyors ask for one. That's a nice trend, but why not get all the money up front?

In a recent poll taken on an Internet discussion board the question was asked: "Do you collect all or a portion of your fees up front?" The answers were as follows:

- Yes, always: 3
- Yes, more than 50% of the time: 3
- Yes, less than 50% of the time: 8
- No 22
- Yes, 50% for new clients 5

So you can see that fully 54% never collect any part of the fee up front and only 7% always collect some or all of their fee up front. The rest are somewhere in between. This was by no means a scientific survey, but probably pretty representative of how many land surveyors are willing to trust their clients to pay.

The usual argument is that you don't want to come across as not trusting the client. But that's a weak argument, too. If the client is unwilling to front the money he must not trust you to do the work to the same degree you don't trust him to pay.

If you want to make your business a cash business, get paid before you work, not after.

Let your clients trust you, so you don't have to trust them.

Rule 13: Receivables may not be receivable at all.

There's no mystery here. Almost all surveyors have accounts overdue by 90 days, 180 days, or more. The fact is that many of these accounts will never be collected. You'll simply write them off.

In the meantime, you have paid all the expenses associated with doing the work – you paid your office rent, you paid your employees and paid their taxes, you paid for you equipment and all the other expenses. So essentially you have given this client money. It's one thing to lend money by giving credit, but just giving away money is completely foolish.

The idea of being in business is to take in money, not give it out. Remember that.

An account you show as an asset may be a fantasy.

Rule 14: You don't need or want all the jobs.

It's really hard to say "no." I know that, you know that, and everyone knows that. But sometimes we need to discipline ourselves to do it.

We have all had clients who are simply not good clients. They are slow to pay, or chisel every dime they can, or are just hard to work with. Sometimes they are unbearably demanding or just won't recognize that you have other clients besides them.

In all of these cases, we would be much better off letting someone else do their work. You don't need to finance your clients, and there is no reason to put up with unreasonableness.

If you send them away, they will hire someone else in your service area that is not so disciplined. You can do this automatically in some cases by obeying rules 2 and 12. If you price your services on the high side, and require up front payment, the kind of client you need the least will probably not want to deal with you. There are plenty of surveyors in every market who are willing to finance their clients and will work on the cheap.

Once you are rid of these customers, you can provide a better service to your more desirable clients, and that effect tends to improve your business geometrically. You will have good clients who are willing to pay a premium price for a premium service, and understand the cash flow requirements of your business.

You have to perform that premium service however. Remember what I said about these rules all being related. You cannot expect clients to pay a premium price for ordinary service.

Give your cold to Contac.

Rule 15: For clients, delivery is the most important part of a survey.

Always remember that you are selling something invisible – a service.[9] Clients generally have no idea whether you are providing a good survey or a bad survey – they don't know the difference. While you may think they are buying your expertise, that's not really true, because your expertise is assumed. You are, after all, a licensed professional, and the presumption is that your work will be satisfactory[10]. That presumption is necessary because clients have no way of evaluating your work. It's also the fundamental underlying proposition underlying the laws of licensure.

[9] Read Harry Beckwith's books – *Selling the Invisible* and *The Invisible Touch.* Both are excellent.

[10] If you have ever testified as an expert witness, you are familiar with this concept. Generally, if you are licensed as a professional land surveyor, a judge will consider you an expert and thereby able to give "expert testimony."

Sure, a nice looking map may be impressive, and a well monumented property line looks good, but what really counts is the relationship you build with that client.

Clients may not know the difference between a good and bad survey, but they sure know whether it was delivered on time. That's why delivery is so important. It is perhaps the best way most clients can evaluate your service. Beyond that, they know if they are treated respectfully, calls are returned, they are kept informed of the status of their project, and if you appear to care about your work and your relationship with them.

After you negotiate a contract with a client, all that is left is to do the work. Do your work well, of course, but remember that in your clients' eyes, delivery is more important than a technically correct survey.

Get the job done on time.

Rule 16: If you do what you contract to do, you deserve to be paid a fair fee.

One obvious corollary here is that you don't deserve to be paid if you don't perform.

Once again, you don't know what a fair fee is. The marketplace determines value, and your clients will tell you whether your fee is a good value or not. A fee that is determined by the market may not seem fair to you. It sometimes happens (at least in the rural west where I practice) that

the cost of the survey may approach or exceed the value of the property. In such a case no deal will be struck between client and surveyor. There will be no meeting of the minds.

Once there is a meeting of the minds, however, you deserve to be paid – but – you must perform. Don't expect to be paid if you don't. Remember that you are selling a relationship as well as a survey, and if you don't do what is expected of you, you shouldn't expect to be paid.

The other obvious corollary is that there must be a contract. Preferably a written contract. That way each party to the transaction knows what's expected of them. In addition, if you are complying with rule 12, you will certainly be expected to provide a written contractual guarantee that you will perform the work requested. Also, if a written contract is executed, then each party knows what the other is expected to do. An oral contract on the other hand is subject to the vagaries of memory and innuendo.

Always have a contract, and perform.

Rule 17: If you promise to do something DOIT!

I think DOIT should be a word – single word, all caps, because it is so important.

How many times has this happened? You enter into an agreement with a client and the expectation is that you will have the work done in two weeks. (Often this deadline is not spelled out in the written contract, but it

is very often understood between client and surveyor) Nearing the end of two weeks, you have not completed the survey and are rationalizing that there really isn't a fixed deadline, and hoping the client won't call to remind you. Sure enough, at the end of the two weeks the job is not done, and the client hasn't called.

Refer to rule 10.

When he does call, he is already angry and you have no good excuse. The relationship with this client proceeds downhill from there.

If you can't DOIT for whatever reason, let the client know. More than likely he will understand. But if you promise to DOIT, DOIT! No excuses, no rationalizing, just perform.

This requires discipline, of course. If you aren't disciplined enough to live with this rule, get some discipline. Get it however you can, but get it!

DOIT!

Rule 18: Hourly rates with an estimate seldom make money.

Remember that when I'm talking of making money, I'm talking about profit, not revenue.

Twenty years ago, a typical situation went something like this: A client would come into the surveyor's office and request an estimate for a

survey. The surveyor would provide an estimate and the client would inquire as to how close that estimate was. The surveyor would tell her that he would let her know if the costs would exceed his estimate. (Of course, there is no way of knowing the estimate will be exceeded until it already has been exceeded.)

The surveyor would proceed to do the work, and at the end of the month tally up the charges, and find that the estimate was exceeded by 40%. What to do? The usual routine was to send the bill and hope she would pay the full amount – after all, it was only an estimate. (The surveyor rationalizes this decision, because from time to time it has worked, but he really knows that most clients won't be happy with this and will object.)

Sure enough, when the client gets the bill, she objects, stating that the surveyor was supposed to let her know if the estimate was exceeded. The surveyor admits that he should have let her know, but makes a lame excuse (such as "I don't get all the time posted to the job until the end of the month") as to why he didn't. The client and the surveyor end up negotiating a settlement, usually somewhere near the original estimate.

If the surveyor had any profit built into his rates (highly unlikely), that profit is now gone and, in fact, the project probably ends up losing money for the surveyor. He would have been better off financially and otherwise had he not done the work at all.

Remember Rule No. 11? The surveyor offended 250 people and none of them will be business prospects in the future. The sad part is the next client that came along was probably treated the same way.

Surveyors are more sophisticated these days, but I fully suspect that this scenario is replayed all over the country on a daily basis.

Stay away from hourly rates when possible – they can kill you.

Rule 19: Lump sum fees are the only way for a surveyor to make an extraordinary profit.

Some might argue that making an extraordinary profit is not ethical behavior for a surveyor. I completely disagree. For the good of the profession and the good of the surveyor, profits are OK. This is still a free-market economy, in principle.

Remember the situation I was addressing earlier where a surveyor can accomplish a survey of some very valuable property very easily. The liability he incurs is proportional to the value of the property, but the work might not be. I think he is entitled to an extraordinary fee in such a situation. That's only one example, of course, and there are many more, but it will serve to illustrate the rule.

If the surveyor, in the situation illustrated, charges his normal hourly fees, he will be reimbursed only for the actual work done, not for the value of the work.

However, if the surveyor had quoted a fixed fee, well in excess of the cost of the work required, he could have realized a tidy profit on the job. Moreover, assuming he performed as he should have, he would not have alienated the client or any of the 250 other people alienated with the hourly rate proposal.

If you want to make money, use lump sum fees.

Rule 20: Being busy is just doing a lot of work.

Every time I go to a surveyors' convention and get to visiting with my surveyor friends in private practice, the first question asked is always predictable: "Are you busy?"

The question is well intentioned, of course, and is really asking, "How has business been?" The two questions are quite different, however. Being busy has nothing at all to do with success in business. If you don't charge enough for your services, you can busy as a bee, but make no money. If you charge a lot for your services and do a few jobs, business can be very good.

Don't confuse being busy with success. Go back and read the rules that precede this one to help understand why.

The logical extreme would suggest that you should not charge at all for your services, if you want to be as busy as possible. You can't do this, of course, because it costs you money to do surveys. The other logical

extreme would be to do one job each year and charge a zillion dollars for it, take the rest of the year off and sun in the Caribbean. Neither extreme is realistically possible, but they illustrate the point.

Don't worry about being busy, worry about making money.

Rule 21: Competition is a state of mind.

There's an old story about two hikers who come upon a hungry cougar. One fellow immediately sits down to tie his shoes. The friend says, "We'll never outrun that cougar." The other guy says, "I'm not interested in outrunning the cougar. I just want to outrun **you**!" You need to identify your competition.

For a practical guy like me, this is sort of a metaphysical concept.

We are always thinking of what the competition is up to. We hope they are thinking about us. When we think of the competition, we are thinking of other surveying firms, aren't we?

But should we be? Are we really competing with other surveying firms? We might be if we are reacting to their strategies in terms of product and price. If you can implement all the ideas in this book and the foregoing 20 rules, you won't have to worry about that competition.

I think the real competition is with ourselves, and maybe even our clientele.

You are also competing for the client's dollars with his other needs, whatever they may be.

How could we be competing with our clientele, you might ask. Before they become clients, they are prospects. It is our job to persuade them to hire us to do their work. Sometimes we need to convince them that a survey is needed when they think perhaps a survey is not needed. (This is very often true with folks in the real estate professions.) Sometimes a prospect is not wondering whether to hire one surveyor or another, he's trying to determine whether to hire a surveyor at all.

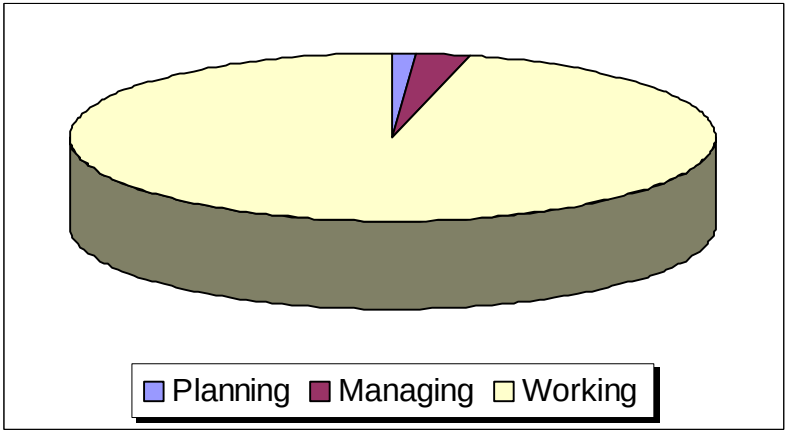
Your real competitor might be sitting in your chair, or across the desk from you.

CHAPTER FIVE
THE INVERTED MANAGEMENT PARADOX

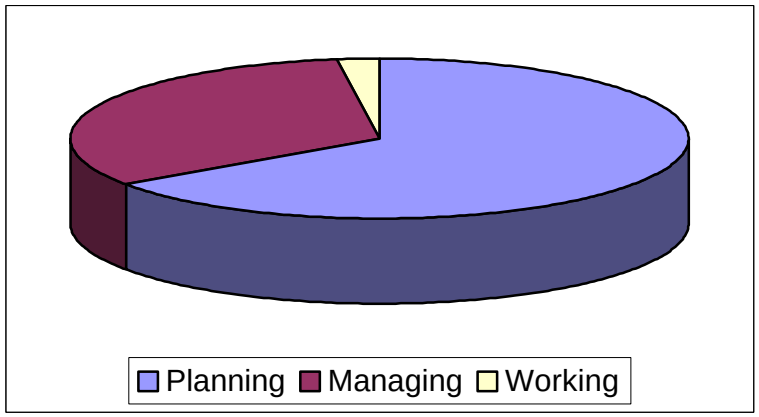
As you have already read and will continue to read, the efforts spent on making business decisions will have a colossal impact on what happens to you regardless of what surveying decisions you make or what surveying techniques you use.

It's important to manage projects effectively, and most of us get pretty good at that during the course of our surveying careers, but managing your business is a completely different matter.

But we are surveyors, after all, and we know how to do that. We seldom know much about making business decisions, so they get delayed, postponed, put off, or ignored.



The above chart illustrates in a general way the relative amounts of effort we surveyors typically spend on each task.



The above chart illustrates the relative effects of those efforts.

While the values are relative, the concept should be clear. Without a doubt, planning has a far bigger impact on your business than managing, and managing has a huge impact compared to the actual work of surveying.

Regrettably, most surveyors do almost no planning, very little managing, and lots of work. Most survey firms have no business plan or management plan, but they do a lot of work. This is no surprise. We are trained as surveyors, not managers. We like to survey, we do not like to plan or manage.

Fortunately, planning doesn't take a lot of time, and if you plan with management in mind, management won't take too much time, either. You can do exactly what you want, if you do just a little planning. Take a little time to understand fundamental business planning and business management, and your company can prosper as a result of the work you

do. Your stress levels will go way down, your employees will be happy, you'll make more money and have fun being a surveyor.

Fail to plan, and expect hassles, stress, poor employee morale, and other problems. Running a company without specific goals and plans is like walking a tightrope with stilts. It's tough to do.

If you expect to engender employee loyalty and keep your best employees working for you, you had better have a plan and communicate that plan to them. Without knowing where the company is trying to go, what it is trying to accomplish, and how, the employees are left adrift to draw their own conclusions. This is an open wound that will be infected by gossip and innuendo, and they are likely to recognize that there is no future for them in your company for them and move on. Nothing will stifle your growth more effectively than high employee turnover engendered by poor morale. Usually, a clearly thought-out business plan, conveyed to the employees will go a long way towards retaining key employees. By the time you have started your own business, you have probably been on the receiving end of bad planning or lack of planning, so you should be able to recognize the consequences.

Likewise, good day-to-day management decisions will make life a lot more tolerable, and allow you to be the excellent surveyor you really are. Management takes time, but as you make more and more good management decisions, the time spent solving management problems will decrease exponentially. Dig yourself a management hole, however, and

expect to spend a lot more time digging yourself out than you spent making the hole in the first place.

I suspect that most land surveyors see management of the company only as financial management, but there is much more to it than that.

You'll need to know some very basic concepts about finances, business plans, and marketing, but only the very basics. Ours is not a complicated business, but it can be made complicated by lack of planning, poor management, and inattention to business details.

Plan, manage, and be a surveyor – in that order.

CHAPTER SIX
A BRIEF INTRODUCTION TO FINANCIAL STATEMENTS AND THEIR USE

A basic understanding of common financial statements is necessary in order for you to plan your business affairs and manage them. The better your statements, and the more accurate, the better you will be able to plan and manage.

There are a few basic statements and reports that are necessary for business[11].

- ✓ The Balance Sheet
- ✓ The Income Statement
- ✓ A cash flow report or statement
- ✓ A cash worksheet or pro forma cash budget

All of these statements will help you plan for and manage your business and will be essential if you plan to seek financing (which you undoubtedly will) or sell your business. The more consistent you are with the format of the statements and reports, the better it will be because your financials will show you trends, among other things. Trends can tell a lot about how well you are doing over time, and perhaps what's working for you and what is not.

[11] All of the sample statements and the numbers in them are complete fabrications and should not be used as templates or as a guide to actual values a firm might experience. Use the numbers and the accounts that apply to your individual situation.

For those of you just starting up a practice, I would urge you to immediately get your books organized. There are many inexpensive accounting programs that will do all that a small enterprise needs.

Let’s take a look at these basics.

SAMPLE BALANCE SHEET FOR PHANTOM LAND SURVEYING

ASSETS	
Current Assets	
Cash	15,000
Marketable securities	25,000
Accounts receivable, net	45,000
Prepaid expenses	2,000
Other	
Total Current Assets	87,000
Long-Term Assets	
Property, vehicles, and equipment	150,000
Less accumulated depreciation	35,000
Net property, plant, and equipment	115,000
Other long-term assets	25,000
Total Long-Term Assets	140,000
Total Assets	**227,000**
LIABILITIES AND OWNER'S	
Current Liabilities	
Short-term debt	5,000
Accounts payable	7,500
Income taxes payable	15,000
Other	2,000
Total Current Liabilities	29,500
Long-Term Liabilities	
Long-term debt	75,000
Deferred income taxes	12,000
Other long-term liabilities	
Total Long-Term Liabilities	87,000
Owner's Equity	110,500
Total Liabilities and Owner's Equity	**227,000**

The Balance Sheet

The balance sheet is simply a statement of a company's financial worth at a given point in time. Essentially it is a statement of assets, liabilities and owner's equity. The assets are generally broken down into current assets and long-term assets. Liabilities are also generally broken down the same way. The owner's equity is simply the difference between total assets and total liabilities. The value of owner's equity is often referred to as "book value."

The balance sheet shown is simplified and might be typical of a very small land surveying company. All of the categories are rather straightforward, except possibly the depreciation account.

In the accounting process, some property is referred to as capitalized property. This means that it has a useful life that can be predicted and the cost of that purchase is amortized (depreciated) over the life of it. Since the depreciation is treated as an expense (for accounting purposes), it is a generally accepted practice to deduct the accumulated depreciation from the purchase price of the asset to arrive at a book value. It may or may not be a true statement of the fair market value of the equipment at the time the statement is made, but it is accurate from an accounting standpoint.[12]

Accounts receivable are shown at their actual value, and it may be that some of those accounts are more receivable than others. If, for instance,

[12] Determining the actual marketable value of the business for sale of the business or for other reasons such as stock dilution or financing is a process of appraisal.

you go to the bank to borrow against your accounts receivable[13], they are likely to be discounted by the lender because some may not actually be collectible, or the debtor may get a discount as an incentive to pay the account.

If you are contemplating selling your business, the balance sheet might have to be adjusted to reflect actual values of receivables and depreciated assets, in order to arrive at an actual marketable value of the company.

Remember that this is simply a snapshot in time and one statement is interesting, but a series of statements over a period of time is a much better indicator of the ongoing value of an enterprise. The balance sheet will not tell you how you are doing over a given period of time, but a series of balance sheets can indicate trends in company value and yield some interesting information.

There are certain ratios of balance sheet accounts that can be compared over time and form the basis for financial operating decisions.

CURRENT RATIO:

Current ratio = current assets ÷ current liabilities. It is an expression of the capability of the company to meet its current obligations. Usually this ratio should be 2 or more. In other words you should have twice as much in current assets as current liabilities.

[13] This process is called “factoring.”

DEBT TO EQUITY RATIO:

Debt to equity ratio = total liabilities ÷ owner's equity. This a rough measure of the company's ability to pay its debts and a ratio greater than 1 is generally considered unfavorable. If this ratio is very low, it may be an indicator that the company can incur more debt in order to improve its profitability.

You'll find your banker and accountant particularly interested in these ratios, and even more interested in the change in them over time.

SAMPLE INCOME STATEMENT FOR PHANTOM LAND SURVEYING

Income Statement	
Revenue	
Professional fees	**620,000**
Other	**1,153**
Total Sales	
Gross Profit	**621,153**
Operating Expenses	
Salaries and wages	**329,000**
Employee benefits	**38,710**
Payroll taxes	**43,264**
Rent	**14,400**
Utilities	**2,640**
Repairs and maintenance	**5,000**
Insurance	**8,000**
Travel	**1,200**
Telephone	**1,200**
Postage, shipping, recording	**600**
Office supplies	**3,600**
Field supplies	**4,800**
Advertising	**900**
Marketing/promotion	**1,000**
Professional fees	**24,000**
Training and development	**2,400**
Bank charges	**500**
Depreciation	**63,540**
Fuel	**4,200**
Other	**9,560**
Total Operating Expenses	**558,514**
Operating Income	**62,639**
Interest income (expense)	**4,500**
Other income (expense)	**(4,500)**
Total Nonoperating Income (Expense)	**0**
Income (Loss) Before Taxes	**62,639**

The Income Statement

An income statement is a statement of the results of operations for a given period of time. The sample statement might be typical of a small land surveying company.

For the period, revenues are totaled and expenses are totaled. Expenses are deducted from revenue to obtain profit. Most small land surveying firms do not pay income taxes, so that expense is not shown in the statement. Usually the expenses are categorized into a "chart of accounts," and any bookkeeper can help you with setting that up.

Again, consistency is important here. Try to set up your initial chart of accounts to take in all the expenses you can possibly imagine. If they are not used, you can always delete them, but a bigger problem arises when you decide to break a given account down into separate accounts and then try to compare income statements from different periods to look for trends. It can get pretty complicated, and you might lose sight of the big picture for worrying about details.

Capital expenditures generally do not appear on the income statement as expenses, because they are expensed (depreciated, or amortized) over a specified period of time. In other words, if you spend $35,000 for a new instrument, the cash outlay will not generally appear as an expense on the income statement. Rather, because the useful life of the equipment - and the investment in the equipment - extends over a period of years from an

accounting standpoint, this expense must be spread over the life of the equipment.

Unlike the balance sheet, the income statement is reflective of operations over a given time span.

Accrual vs. Cash accounting

At some point you will need to know the difference between accrual and cash accounting in order to understand balance sheets and income statements.

In accrual accounting, revenue occurs when it is billed (accrued) whereas in cash accounting, revenue does not occur until the bill has been paid (cash received). Similarly, an expense occurs in accrual accounting when the bill is received (accrued), and an expense occurs in cash accounting when the bill is paid (cash paid out).

The argument is made that accrual accounting gives a more accurate picture of the financial condition of the firm, as compared to cash accounting, because all work is billed, and all payables are accurately accounted for.

On the other hand, some argue that cash accounting is more accurate because not all receivables will be collected, or some will be discounted. Payables, as well, may be discounted or not paid for a variety of reasons.

Since surveyors, as a general rule, often have a large accounts receivable balance as compared to other enterprises, cash accounting may indeed give a more accurate picture. Further, with accrual accounting, you may be paying tax on moneys not yet received.

Take your pick. Talk with a good accountant. For some purposes, accrual accounting may be better and in other instances, cash accounting may better serve your purposes. For the purposes of managing your financial affairs, you need only know what system is being used and for what purpose.

Looking at the balance sheet and income statement together can yield some more ratios that can be enlightening.

RECEIVABLES TURNOVER RATIO:

Receivables turnover ratio = net sales[14] ÷ accounts receivable.

This ratio indicates the relative time it takes for the firm to convert its receivables into cash. A high ratio indicates cash flow is very strong, which is very good. A low ratio means you are not getting paid for your work on time, and you need to take measures to do better. You don't need to be lending money to your clients.

[14] Net sales in the accounting sense are generally gross sales less returns, so for a service business it's usually total sales.

You can further break this down into what's know as the average collection period as follows:

365 (days in a year) ÷ receivables turnover ratio = average collection period (in days)

This is particularly useful as an indicator of how you are managing your cash flow. Based on the statements used as examples, we would arrive at the following:

$475,000 (sales) ÷ $45,000 (receivables) = 10.55 (receivables turnover ratio), and

365 (days per year) ÷ 10.55 (receivables turnover ratio) = 34.6 (average collection period in days)

RETURN ON INVESTMENT:

Commonly abbreviated as ROI, this is a measure of the company's ability to make money for its owners. Taken over time, this can be very revealing.

ROI = net income ÷ owner's equity

In the example statements shown above, the ratio would be as follows:

$19,600 ÷ $110,500 = 0.18

For the period examined, the owners are earning an annualized return of 18% on their investment as expressed by owner's equity.

I wouldn't want you to dwell too heavily on these ratios, however. We surveyors are tempted to like measurements because, after all, that's what we do. These measurements, however, are not like surveying measurements. They are only indicators, and the important thing to look for is trends or horrible deficiencies. The deficiencies will be intuitively apparent, because the ability of the company to conduct its affairs will be seriously hampered by a lack of cash.

This brings us to the last statement – the cash flow statement. Cash is the fuel that keeps the company engine running, so it's important to have a fuel gauge.

CASH FLOW WORKSHEET / BUDGET

Sample cash flow worksheet and budget

Cash Flow Worksheet / Budget						
Month:	**Pre-Start**	**1**	**2**	**3**	**4**	**5**
Receipts						
Professional fees		39,000	45,000	25,000	26,000	45,000
Loans					25,000	
Other		500	500	500	500	500
Total Receipts	**0**	**39,500**	**45,500**	**25,500**	**51,500**	**45,500**
Payments						
Salaries and wages		22,917	18,456	16,500	22,917	21,600
Employee benefits		3,333	3,333	3,333	3,333	3,333
Payroll taxes		4,583	4,583	4,583	4,583	4,583
Rent		1,083	1,083	1,083	1,083	1,083
Utiltities		400	400	400	400	400
Repairs and maintenance		417	417	417	417	417
Insurance		125	125	125	125	125
Travel		125	125	125	125	125
Telephone		150	150	150	150	150
Postage		25	25	25	25	25
Office supplies		500	500	500	500	500
Field supplies		417	417	417	417	417
Advertising		167	167	167	167	167
Marketing/promotion		167	167	167	167	167
Professional fees		333	333	333	333	333
Training and development		167	167	167	167	167
Bank charges		42	42	42	42	42
Fuel		750	750	750	750	750
Owners' draws		3,000	3,001	3,002	3,003	3,004
Loan repayments						
Tax payments		780	900	500	520	900
Capital purchases		1,500	1,500	1,500	1,500	1,500
Other		100	100	100	100	100
Total Payments	**0**	**41,080**	**36,740**	**34,385**	**40,823**	**39,887**
Cashflow Surplus/Deficit (-)	**0**	**(1,580)**	**8,760**	**(8,885)**	**10,677**	**5,613**
Opening Cash Balance	**21,000**	**21,000**	**19,420**	**28,180**	**19,294**	**29,971**
Closing Cash Balance	**21,000**	**19,420**	**28,180**	**19,294**	**29,971**	**35,584**

The cash flow worksheet is a terrific tool for day-to-day management of financial affairs in a surveying enterprise. Simply described, a cash flow worksheet begins with the current cash balance on hand, adds cash inflow, subtracts cash outflows, and reports the ending cash balance. It can be designed for daily, weekly, monthly or yearly use. A series of cash flow

statements kept over a period of time is an excellent tool for predicting future cash flows.

Surveying businesses, particularly in the more temperate parts of the country tend to have seasonal cash flows. Those firms that rely on construction surveying tend to be even more seasonally sensitive.

For these reasons, the company managers must keep a close eye on the cash flowing in and out of the company and plan in advance for fluctuations. The cash flow worksheet will allow you to do that.

The worksheet is similar to the income statement in that it includes revenues and expenses. Usually, the cash expense categories are the same as those cash accounts appearing on the chart of accounts. However, additional items are included that affect the flow of cash, such as loans and payment of loans. The worksheet will also include capital purchases that do not show up on the income statement because they are amortized (depreciated) over time.

Most businesses, surveying and otherwise, have borrowing needs from time to time. The smart manager will develop a cash flow budget to help predict the amount of borrowing that will be required in an upcoming period, say, a budget year. Believe me, your banker will appreciate your advance planning.

It is also an excellent tool for planning equipment (capital) purchases. With a little advance planning, purchases can be timed to coincide with

cash flows that support the purchase. Again, your banker will be most appreciative.

A growing company can rarely finance that growth through cash flow. Growth is expensive and gobbles up cash in order to generate cash later. In order to grow you must buy new equipment and hire additional personnel and it's usually a while before these investments start returning cash flows. So if your business plan calls for growth, expect to either borrow money or attract investors to fuel the cash needs of that growth.

The cash flow worksheet can be readily designed in Microsoft Excel or any other spreadsheet. I strongly recommend that any manager get real familiar with spreadsheet development. As you will see, spreadsheets can be a great management tool.

CHAPTER SEVEN
ANALYZING THE COST OF DOING BUSINESS

You will recall that the market rates for surveying services are a function of two things – cost of the service and value to the clientele.

We have no control over the value of the service, and we would have a tough time analyzing value. The only real way is to test the market with rates. On the other hand, we can get a grip on costs, and determine what rates must be charged to cover our costs.

From the income statement in Chapter 6, we can obtain our annualized costs of doing business. At the end of our cost analysis, we are going to derive a rate that must be charged for each individual in the company, based on the hours that each individual will be productive. Therefore, the costs must be broken down more than as shown on the income statement. In particular, the salaries of each individual must be determined, and the costs associated with that individual need to be analyzed, as well.

For the sake of simplicity, and because most land surveying firms are fairly small operations, I have developed a hypothetical cost analysis based on what might be a typical small land surveying enterprise.

In the example, the firm consists of a principal (or owner), a senior associate land surveyor, an office tech, three field crew members and an administrative assistant. The numbers might represent a typical ongoing

surveying concern that provides basic benefits, such as annual leave, sick pay, a 401(k) retirement plan, and medical insurance for the employees.

For ongoing enterprises, you can enter the real numbers, and for those of you thinking about starting a surveying business, the form may be useful, but be sure and plug in the realistic figures that are likely to represent actual costs.

Cost analysis worksheet for a small land surveying company

Raye Clossburg, Admin. Asst.	$2,333	$28,000		
				AVERAGE SALARY
				$3,046
Total Wages and Salaries	**$27,417**	**$329,000**		
PAYROLL COSTS				
Matching FICA	$2,097	$ 25,169	0.0765	X wages
Unemployment Tax	$685	$ 8,225	0.0250	X wages
Labor and Industries Tax	$823	$ 9,870	0.0300	X wages
Total Payroll Costs	**$3,605**	**$43,264**		
FRINGE BENEFITS				
Medical Insurance	$1,855	$ 22,260	$ 265.00	per person per month
Annual Bonuses	$548	$ 6,580	0.020	of annual salaries
Matching 401k	$823	$ 9,870	0.030	employer match
Total Fringe Benefits	**$3,226**	**$ 38,710**		
OPERATING EXPENSES				
Office Supplies	$300	$3,600		
Field Supplies	$400	$4,800		
Automobile Insurance	$100	$1,200		
Professional Liability Insurance	$542	$6,500		
General Liability Insurance	$125	$1,500		
Accounting and Legal	$2,000	$24,000		
Auto Fuel	$350	$4,200		
Auto Maintenance	$200	$2,400		
Advertising	$75	$900		
Dues and Subcriptions	$15	$180		
Office Rental	$1,200	$14,400		
Utilities	$220	$2,640		
Continuing Education	$200	$2,400		
Travel	$100	$1,200		
Software	$250	$3,000		
Computer equipment (expensed)	$300	$3,600		
Postage, shipping, and recording	$50	$600		
Reprographics	$25	$300		
Miscellaneous	$100	$1,200		
Total Operating Expenses	**$6,552**	**$78,620**		
DEPRECIATION				
Field Equipment	$2,750	$33,000	$110,000	
Office Equipment	$855	$10,260	$45,000	
Rolling Stock	$1,690	$20,280	$65,000	
Other Depreciation			$12,000	
Total Depreciation	**$5,295**	**$63,540**		
TAXES				
Excise or B&O Tax		$2,180	0.02	of total revenue
Personal Property Tax Estimate	$208	$2,500		
Real Estate Taxes	$58	$700		
Total Taxes	**$267**	**$5,380**		
TOTAL EXPENSES	**$46,361**	**$558,514**		

Starting with this worksheet, we can arrive at the total annual operating costs of the enterprise. The only difference between this cost analysis and the expenses stated on the income statement is that a more detailed breakdown is shown.

Here we look at individual salaries, which will eventually lead us to a charge rate. We also look at the detailed costs of benefits and other expense items. This is not a cash flow statement, however. We are attempting to look at an annualized cost of doing business, so that can be converted into a rate structure that will cover those costs. For that purpose, the accrual income figures are more appropriate.

The entries should be self-explanatory. I am assuming that you will develop this as a spreadsheet, and I have therefore highlighted the cells that will require your input, assuming the spreadsheet is properly designed.

CHAPTER EIGHT
CONVERTING COSTS TO RATES

Once the cost of doing business has been determined, the problem becomes how to translate those total costs into hourly rates. (This is not to suggest that you should be charging hourly rates for your surveys. Hourly rates have their place, as will be discussed.) This exercise is designed to develop hourly charge rates for each employee so that you can use them to estimate the cost of performing a survey. We start out with the total cost of operations as determined before.

In the land surveying industry as with other professional services it is generally assumed and expected that the rate charged for a licensed professional, the owner of the firm, will be higher than rates charged for associates and employees. The logic underlying the analysis that follows is that the compensation received by each individual should be in proportion to the rate charged for that individual as compared to rates for other individuals in the firm. The rates will then be adjusted to make sense in the marketplace.

This exercise is completely related to the costs of doing business and has nothing at all to do with market perceptions of what rates should be.

The first step, then, is to determine the costs of doing business as outlined in the previous chapter. This is the basis for an analysis that will suggest what rates must be charged for each individual in the organization in order to recover enough fees to adequately support business operations.

After determining the costs of doing business, we then must figure out how many hours are actually available to be billed by each employee or principal. Although there are 2080 hours in a work year, not all of them can be billed because there are holidays, time off, unproductive hours and some hours that are written off for one reason or another.

ANALYSIS OF BASIC RATES NEEDED TO MEET OPERATING COSTS

In this analysis, we start with the total hours available for a year. 52 weeks x 40 hours = 2080 hours.

From this total amount we must subtract vacations and holidays, which are presumed to be the same for everyone. For the sake of the analysis, we will assume that each individual will take 15 days off during the course of the year for leave and sickness. We will further assume that this company allows eight paid holidays. So (15+8) x 8 hours per day = 184 total hours per employee.

TOTAL REVENUE NEEDED TO MEET COSTS $558,514

Hours chargeable contributed by various employees

	Available Hours	% on projects	Write Offs	Actual	Revenue Hours
John R. Roe, LS, Owner	1896	50%	10%	45%	853
James D. Baker, LS, Associate	1896	70%	10%	63%	1194
Phil Blivens, LSIT, Tech	1896	85%	5%	81%	1531
Jake Levitz, Party Chief	1896	90%	5%	86%	1621
Bill Evans, Instrumentman	1896	90%	5%	86%	1621
Larry James, Rodman	1896	90%	5%	86%	1621
Raye Clossburg, Admin. Asst.	1896	20%	10%	18%	341
Total Billable Hours					8783
Average Hourly Rate to Achieve Cost					$ 63.59 (Unity)

	Ratio to average salary	Prelim. Rate	Adjusted Rate	Actual hours	Raw Total Revenue	Adj. Total Revenue
John R. Roe, LS, Owner	2.280	$144.96	$102.21	853	$123,679	$87,209
James D. Baker, LS, Associate	1.824	$115.97	$81.77	1194	$138,521	$97,674
Phil Blivens, LSIT, Tech	1.520	$96.64	$68.14	1531	$147,957	$104,328
Jake Levitz, Party Chief	1.337	$85.04	$59.97	1621	$137,861	$97,209
Bill Evans, Instrumentman	1.155	$73.45	$51.79	1621	$119,062	$83,953
Larry James, Rodman	1.033	$65.71	$46.34	1621	$106,529	$75,116
Raye Clossburg, Admin. Asst.	0.851	$54.12	$38.16	341	$18,469	$13,023
					792078	$558,514

We started then, with 2080 hours available – 184 hours not worked, or 1896 available hours.

Now additional deductions must be made from the working hours available. Each employee will have time spent not working on projects. The boss must spend time planning for and managing the company. The administrative assistant is unlikely to spend much time actually working on project work, and the crew members have a certain amount of time spent adjusting instruments, cleaning the crew rig, and doing other non-project things. So in order to come up with a realistic number of hours that will be spent working on projects, we have to make an estimate of

how much time should be deducted. Those of you who have been in business for a time can derive this information from historic time sheets, and those just starting up will have to make an estimate.

The numbers I have used in the sample spreadsheet might be somewhat realistic, but use the best numbers you have. And be realistic. In setting your rates, this may be the most important factor. If you have historic data, spend all the time it takes to assemble several years worth of information. The more accurate the input, the better you will be able to analyze your rate structure. After you have gone through this exercise once, you can proof it against the actual values you incur and make your next year's calculations better.

In addition to time not spent on project work, we must deduct any hours that might be written off (not billed) for each employee. For various reasons throughout the year, some hours spent on a project will not be billed. Mistakes made, weather delays, vehicle breakdowns, and the like cannot be legitimately charged to job. Likewise, cost overruns or negotiated fee reductions will result in hours spent on projects and not billed. In the spreadsheet, I have simply assumed some percentages for this purpose. These assumptions are different for every firm and every circumstance, so again, be as realistic as possible.

Preliminary Rate Calculations

After this is all done, we come up with the total hours that will generate revenue for the firm and a breakdown of those total hours by employee. If

we now divide the total revenue needed to meet costs by the total available hours, we can derive an average hourly billing rate that would result in realization of the necessary fees. Having done so, we can proceed with determining individual billing rates.

One way would be to simply charge the same rate for everyone. That doesn't seem realistic, however, since a licensed surveyor should be charged out at a higher rate than a technician. Also, the basic unit of work by a field crew involves a team working together and is usually billed at an hourly rate per unit of teamwork.

What I have done in this analysis is take the average hourly rate needed to achieve costs and called it unity. Then for each employee, I have developed a factor relative to unity based on the ratio of that employee's salary to the average salary for the firm. That factor is then multiplied by the average hourly rate that was previously derived. This results in a preliminary hourly rate figure that, when multiplied by the available project hours, will result in an approximation of revenue that should be close to the total cost of doing business.

It will not be exact, however, because of the variation in the hours billable by different employees. The next step is to adjust these rates so they equal the total cost of the enterprise.

To do this, I have simply multiplied the preliminary rates by the project hours available, made a ratio of this product to the actual anticipated costs and adjusted the preliminary rates up or down by this factor to achieve

rates that result in a revenue figure equal to the projected total operating costs.

Having done this we might be happy, except for two things. Rates are likely to be skewed in a way we are not pleased with, and we have forgotten to add anything for profit. This leads us to the last step in the rate analysis.

	Calculated Rate Suggestion	Hours Available	Final Billable Rate	Revenue from Adjusted Rate
John R. Roe, LS, Owner	102.214	853	**$115.00**	$ 98,118
James D. Baker, LS, Associate	81.771	1194	**$95.00**	$ 113,476
Phil Blivens, LSIT, Tech	68.143	1531	**$85.00**	$ 130,137
Jake Levitz, Party Chief	59.966	1621	**$65.00**	$ 105,370
Bill Evans, Instrumentman	51.789	1621	**$55.00**	$ 89,159
Larry James, Rodman	46.337	1621	**$45.00**	$ 72,949
Raye Clossburg, Admin. Asst.	38.160	341	**$35.00**	$ 11,945
				$ -
Total revenue from adjustment				**$ 621,153**
	The final billable rates are as adjusted up or down from calculated rate suggestion to more properly reflect market conditions and still satisfy revenue requirements.			
Total Revenue Needed				**$558,514**
Gross profit from operations before income taxes				**$ 62,639**
Gross profit expressed as a percentage of revenue				**10.08%**

Final Rate Calculations

Here is where a good dose of experience and common sense needs to be exercised. In the model, rates have been adjusted to reflect market expectations (or more probably, surveyors' expectations) and allow for a profit. The purpose of the exercise here is to adjust the final billable hours in such a way as to make a rate schedule you find acceptable and that provides a profit you are comfortable with. The easiest way is to construct

a self-calculating worksheet that will allow you to play “what if?” games with the final rates. Once you have developed this spreadsheet and have a consistent chart of accounts, you can use it year after year and get progressively more accurate numbers. It’s often a good idea to come up with a schedule of rates that approximate your expected costs and then add a profit factor after that.

This part is not by any means rocket science, and the more experience you have the better you will be able to make the rates work for you.

Even more important than the rate schedule you finally develop is the exercise of the analysis. Most surveyors, it has been my experience, develop their rate structure by the seat of their pants with no analysis at all. Simply going through this exercise may be very enlightening. Like many of these analytical tools, the exercise is often more important and enlightening than the result. You may have been wondering why you don’t make money, or you may have been wondering why you are doing so well. This may provide some insight in answering those questions.

As a general rule, surveyors price their services well below what any reasonable analysis would suggest they must, and then blame market forces and competition for their failure to be profitable. An analytic approach is a far better way of managing your business.

"Management" means, in the last analysis, the substitution of thought for brawn and muscle, of knowledge for folklore and superstition, and of cooperation for force.

Peter F. Drucker, People and Performance

So what do you do if you find that the rates you have to charge to make things work for you are above what you perceive the going rates in your area to be? What choice do you have? You either charge the rates that cover your costs or you lose money.

Be realistic, and make a fair profit.

CHAPTER NINE
MAKING ESTIMATES

After you have gone through the exercise of establishing your rate schedule, the next step is to put that to work and make some estimates.

Since we have now determined the billing rates for the employees of our phantom company, estimating is just a matter of multiplying the rates by the estimated hours to derive an estimate of the cost to do the job. Here's an example of a spreadsheet that might be used to make this task easier.

CLIENT:	Wal-Mart of Pinedale
DESCRIPTION	Topographic survey for site design
PREPARED BY:	John
DATE:	

DESCRIPTION OF WORK	TYPE OF WORK	HOURS	HOURLY RATE	ITEM COST	COMMENTS
FIELD WORK					
Horizontal and vertical control	Jake and Bill	8	$120	$960	Get BM and mon. data from County
Topographic work	Jake, Bill and rodman	20	$165	$3,300	Assume good weather
Return to pick up misses	Jake, Bill and rodman	3	$165	$495	
TOTAL FIELD WORK				**$4,755**	
OFFICE WORK					
Research and estimate	John Roe, PLS	2	$115	$230	
Setup for crew	James Baker, LS	4	$95	$380	
Crew supervision	James Baker, LS	3	$95	$285	
Reduce notes and plot	Phil Bivens, LSIT	12	$85	$1,020	
Drafting	Phil Bivens, LSIT	16	$85	$1,360	
Office supervision	John Roe, PLS	2	$115	$230	
TOTAL OFFICE WORK				**$3,505**	
ADMINISTRATION				**$826**	
TOTAL ESTIMATED COST				**$9,086**	Round up to $9500 for contract

With a little effort this estimating worksheet can be made to work almost automatically. Using Microsoft Excel, as an example, you can take advantage of the "data validation" parameter and the "vlookup" function to make the calculations automatic once you put in the hours needed for a given task. How to construct such a template is beyond the scope of this book, but suffice it to say, the survey manager would be well advised to understand spreadsheet software very well. It will make you job a lot easier.[15]

Remember to be realistic. We are often far too optimistic when making our estimates. We think, "If my crew can't get that done in 2 days, I'll kick their butts." In reality we are thinking that it will really be a three-day job, and we're just finding a way to rationalize a lower estimate in fear of not getting the job by estimating too high. It's a common fault. The tendency is to have a final figure in mind and manipulate the estimate to satisfy the preconceived figure. It's a dangerous trap so don't fall into it.

Note in this worksheet, a factor of 10% is added for project administration.

For my part, I'm no spreadsheet wizard, but I have been able to set up an estimating template that not only produces the estimate but writes the contract at the same time, so it's just a matter of printing the contract,

[15] An old friend had what might be a better idea of how to estimate a job. He said, "Take the time you think it will take and convert the units to the next higher time unit (hours to days, days to weeks, etc.) – then double the result."

providing you want to offer the calculated fee to your client. Spreadsheet macros can save you a lot of time.

Now what if the amount proposed by the spreadsheet is less than what you perceive the market value to be? This could occur, for instance, if the property is very expensive but easy to survey. The situation might arise where you have done many surveys of property in the area, and it's quite a small matter to survey this property.

But while it is an easy survey from a technical standpoint, your liability is the same as if you had to take extraordinary measures to accomplish the work. Remember that you are being paid for assuming liability, not for working.

Regrettably, there is no way to adequately factor in your liability exposure in a comprehensive way. Each firm and each locale will have variations that make local knowledge and experience the most important factors in sizing up the liability exposure of the firm for any particular survey. After a few years in business, you should have a very good feel for this value vs. effort ratio. Make whatever adjustments you think are necessary to your work estimate to get the final fee.[16]

Say, for instance, that you are asked to do an ALTA update for some commercial property you did a few years ago. Because you live in the area and are familiar with the property, you know that this will quite easy

[16] Remember that this can be a doubled-edged sword. There are instances where the effort expressed by hourly rate fees will far exceed the value. You don't have to do the job, but there may be instances where you will want to.

because there are essentially no new improvements that will substantially change your original survey. Should you charge what the survey is worth to your client, or for the time it would take you to do the job? Some say that it would be unethical to charge more than what it would take, based on your normal hourly rates, to do the job. I think that's a pig-headed way of thinking. That kind of thinking completely ignores the liability issue, as well as the market value issue.

Remember that our liability is very long-lived because of the "discovery rule[17]," there is essentially no upward limit, and we can't get paid for it after the certification is made.

With regard to market value, do you think it's unethical for Bill Gates to charge hundreds of dollars for a CD, just because it has the Microsoft operating system on it? It costs him only a few pennies to produce the CD, but he sells it for hundreds of dollars. It's no more unethical for Microsoft to do that than it is for you to charge for all your accumulated years of study and knowledge.

There's an old story oft repeated in business school that goes something like this. Thomas Edison had done some design work for a large manufacturing concern. After his retirement, the company had a recurring problem that was costing them huge sums of money, and their best

[17] Courts have generally held that even if there is a statute of limitations on liability, the statutory period does not begin to run until the error has been discovered. Land surveying mistakes might only be discovered many years after the survey was complete.

engineers could not come up with a solution. Try as they might, they just couldn't figure out what was wrong. Mr. Edison was called in as a last resort to try and resolve the problem. He sized up the problem, and within a few minutes, made an "X" on a wall and told the company that if they would look there, they would find their problem. Sure enough, when they opened the wall, they found the problem and it was easily fixed. Mr. Edison sent the company a bill for $10,000. The company called Mr. Edison and asked him to break down the bill, because it seemed like an awful lot for a few minutes work. Mr. Edison replied as follows: "The bill breaks down this way -- $5 for making the "X" and $9995 for knowing where to put it."

Whether the story is really true or not is not nearly as important as the principle. It's pretty much analogous to surveying. We don't really get paid for driving stakes in the ground; we get paid for knowing where to put them.

Estimate carefully, and get paid for what the work is worth.

CHAPTER TEN
THE CAPITAL PURCHASE DECISION

Remember the discussion back in the Introduction about the advent of electronic measuring equipment, and how we as a profession failed to take advantage of the technology? Why was that the case? I think it was largely due to the general lack of knowledge among surveyors about how to make rational business decisions, particularly with respect to large capital purchases. Had we been more alert, or more astute, we might have taken advantage of the technology from a business standpoint, rather than passing along all the savings from efficiency to our clientele.

We are now in the first phase of a transition to new technologies such as GPS, laser scanning, reflectorless measurement, digital leveling, GIS systems, digital data collection, and other advanced technologies. Some of these technologies are already fairly mature, but others are just beginning to see some use.

The first step in avoiding the mistakes we made with the transition to total stations is to understand how a rational spending decision should be made. Just because the state of the art technology is exciting and increases efficiency does not necessarily make it a good investment. An investment, from a business standpoint, must make an adequate return, or it's simply not a good investment. Just like you invest your cash in things other than survey equipment, such as mutual funds or real estate, you expect a decent return.

If the increased efficiency is passed along in terms of cost savings to our clients, then we have not gained anything business-wise. If we can deliver our service to our clients in a timelier manner with excellent precision and accuracy, is it not worth more to them? The liability will remain the same, so if we can deliver the same product in less time, it should be more valuable.

How do we go about making a rational capital purchase decision then?

Let's make an example of purchasing GPS equipment. First we must determine what an adequate return is. Refer to that as the opportunity cost. What kind of return could you get with this investment money otherwise? In other words, if you are going to invest $50,000 in GPS equipment, how would that compare to putting the same amount in a mutual fund?[18]

The returns from your investment in the GPS equipment will be spread out over the useful life of the equipment, and at the end of its useful life, the equipment will have some salvage value. It is important to recognize that income received sometime in the future is not worth as much as income received today, and the farther out in time that income is received, the less it is worth. In other words, if you had $10 today, you could invest that and at the end of 5 years it would be worth more than the $10. Similarly, $10 received 5 years from now is not worth as much as $10 today. To make $10, 5 years from now, we would invest something less than $10 today.

[18] It doesn't make any difference, by the way, whether you purchase with cash, pay for the equipment over time by installment, or lease. The effects will be the same.

The same is true for expenses. Those incurred in future years can be reduced to today's dollars for analysis.

So in order to compare apples and apples, or dollars to dollars, we need to reduce future returns and expenses to today's values.

In order to analyze our investment decision, we need to determine what the opportunity cost might be. Again, what kind of return could you realize by investing the same amount elsewhere?

Once again, a spreadsheet becomes a very useful tool. The following worksheet will help you make the capital spending decision.

This worksheet assumes an expense of $50,000 to buy GPS equipment and an opportunity cost of 10% per year. It further assumes some upgrades will be required during the useful life of the equipment and that the equipment will have a salvage value of $5000 at the end of its useful life of 10 years.

INVESTMENT ADVISABILITY CALCULATOR

OPPORTUNITY COST 10%

YEAR	CASH OUT	CASH IN	FACTOR	PV OF CASH IN	PV OF CASH OUT	REMARKS
0	$50,000		1.00		$50,000	Purchase price
1		$10,000	0.91	$9,091		
2		$10,000	0.83	$8,264		
3	$15,000	$10,000	0.75	$7,513	$11,270	Upgrade costs
4		$10,000	0.68	$6,830		
5		$10,000	0.62	$6,209		
6		$10,000	0.56	$5,645		
7	$20,000	$10,000	0.51	$5,132	$10,263	Upgrade costs
8		$10,000	0.47	$4,665		
9		$10,000	0.42	$4,241		
10		$15,000	0.39	$5,783		Income + salvage value
TOTALS				**$63,373**	**$71,533**	
DIFFERENCE BETWEEN PRESENT VALUE OF CASH IN AND CASH OUT					**($8,159)**	

The worksheet reduces future returns and future expenses to present values and then compares the results to see if the investment makes sense. In the example above, it turns out that the present value of the cash flows out exceeds the present value of all cash flows in, based on a presumed opportunity cost of 10% per annum. It is not, therefore, an investment you should make, given the criteria you have established. Said another way, you could do better investing your money elsewhere.

However, the result is only as good as the assumptions. What if you change the amount the equipment will earn, or what if your opportunity cost is something else? How will that effect the investment decision?

The beauty of spreadsheet software is that you can play "what if" games and try different opportunity costs and projected returns. The end result is that, after you have determined what opportunity cost is acceptable (what return you could otherwise earn with the investment), you can play around with what the investment must earn in order to consider it a good investment. In the example above, I assumed that the equipment would earn $10,000 per year.

How much would it have to earn per year to make it a good investment, then? With a little trial and error, it can easily be determined.

INVESTMENT ADVISABILITY CALCULATOR

OPPORTUNITY COST 10%

YEAR	CASH OUT	CASH IN	FACTOR	PV OF CASH IN	PV OF CASH OUT	REMARKS
0	$50,000		1.0000		$50,000.00	Purchase price
1		$11,328	0.9091	$10,298.18		
2		$11,328	0.8264	$9,361.98		
3	$15,000	$11,328	0.7513	$8,510.89	$11,269.72	Upgrade costs
4		$11,328	0.6830	$7,737.18		
5		$11,328	0.6209	$7,033.80		
6		$11,328	0.5645	$6,394.36		
7	$20,000	$11,328	0.5132	$5,813.06	$10,263.16	Upgrade costs
8		$11,328	0.4665	$5,284.60		
9		$11,328	0.4241	$4,804.18		
10		$16,328	0.3855	$6,295.15		Income + salvage value
TOTALS				**$71,533.37**	**$71,532.88**	
DIFFERENCE BETWEEN PRESENT VALUE OF CASH IN AND CASH OUT					**$0.49**	

By changing the earnings from the equipment to $11,328 per year, we find that the present value of the cash out and the present value of the cash in are almost equal, again based on the 10% assumed opportunity cost.

Obviously, any of the parameters can be tinkered with to satisfy whatever assumptions you think are reasonable.

Let's say, for instance, that you don't feel you could earn 10% on your investment dollars otherwise invested. Let's say you felt 7% was a more realistic return. What would the equipment have to earn, then to satisfy that changed parameter?

When we make that adjustment, the revenue required from the equipment is significantly reduced. Making that adjustment reduces the annual revenue required to $10,273.50.

OPPORTUNITY COST 7%

YEAR	CASH OUT	CASH IN	FACTOR	PV OF CASH IN	PV OF CASH OUT	REMARKS
0	$50,000		1.0000		$50,000.00	Purchase price
1		$10,273.50	0.9346	$9,601.402		
2		$10,273.50	0.8734	$8,973.273		
3	$15,000	$10,273.50	0.8163	$8,386.236	$12,244.47	Upgrade costs
4		$10,273.50	0.7629	$7,837.604		
5		$10,273.50	0.7130	$7,324.864		
6		$10,273.50	0.6663	$6,845.667		
7	$20,000	$10,273.50	0.6227	$6,397.819	$12,454.99	Upgrade costs
8		$10,273.50	0.5820	$5,979.271		
9		$10,273.50	0.5439	$5,588.103		
10		$15,273.50	0.5083	$7,764.273		Income + salvage value
TOTALS				**$74,698.51**	**$74,699.46**	
DIFFERENCE BETWEEN PRESENT VALUE OF CASH IN AND CASH OUT					**($0.95)**	

After you have determined the advisability of the investment from an analytic dollars-and-cents standpoint, how will you put it to work for you to realize the returns you have projected?

Obviously, if you are going to realize any return, the equipment will have to be charged just like your employees' time. If you charge hourly rates, you will have to add the equipment charge. In the last worksheet, you

could figure that the equipment would be used something like ½ the available time, or 1040 hours per year. Translated into an hourly charge, that would be $10,237.50 / 1040, or about $10 per hour, or $80 per day.

If you fail to add the equipment charge to your hourly rate schedule, you will reduce your income by a similar amount, and that clearly does not make good business sense. That was the problem we didn't deal with as a profession when electronic measurement first became practical.

This same analysis can be used for any investment. It doesn't just apply to equipment purchases or other investments that can be charged to clients directly. For instance, a technology purchase that improves productivity can be analyzed the same way. As an example, consider the purchase of a widget that improves efficiency of your employees. Rather than creating revenue, it saves you money by getting more work done with less time and

INVESTMENT ADVISABILITY CALCULATOR

OPPORTUNITY COST 8%

YEAR	CASH OUT	HOURS SAVED / YEAR	COST PER HOUR SAVED	CASH IN	FACTOR	PV OF CASH IN	PV OF CASH OUT	REMARKS
0	$20,000.00				1.0000		$20,000.00	Purchase price
1		80	$45.00	$3,600.00	0.9259	$3,333.333		Increased efficiency
2		80	$45.00	$3,600.00	0.8573	$3,086.420		
3	$2,000.00	80	$45.00	$3,600.00	0.7938	$2,857.796	$1,587.66	Upgrade costs
4		80	$45.00	$3,600.00	0.7350	$2,646.107		
5		80	$45.00	$3,600.00	0.6806	$2,450.100		
6		80	$45.00	$3,600.00	0.6302	$2,268.611		
7	$2,000.00	80	$45.00	$3,600.00	0.5835	$2,100.565	$1,166.98	Upgrade costs
8		80	$45.00	$3,600.00	0.5403	$1,944.968		
9		80	$45.00	$3,600.00	0.5002	$1,800.896		
10		80	$45.00	$8,600.00	0.4632	$3,983.464		Income + salvage value
TOTALS						**$26,472.26**	**$22,754.65**	
DIFFERENCE BETWEEN PRESENT VALUE OF CASH IN AND CASH OUT							**$3,717.62**	

effort. Those savings can be quantified and analyzed the same way.

This example assumes the investment will save your company 80 hours per year at an average cost of $45 per hour. This is just the same as revenue received because it will either save you that much direct cost or allow your employees to do more in less time, thereby increasing efficiency by a measurable amount.

The important point of this exercise is to persuade you to look at your investments analytically, rather than by some seat-of-the-pants method that may or may not give you good answers. Equipment purchases, particularly for new technology like GPS, are easily rationalized. The technology is exciting and fun, so it's easy to make excuses to rationalize the purchase.

Look at investments as investments.

CHAPTER ELEVEN
PRICE POSITIONING AND STRATEGY

THE WONDERFUL ILLOGIC OF PRICING

The pricing of products and services defies logic. Pricing of services, in particular, often seems to run counter to our basic understanding of economic principles. We have been led to believe that as price decreases, demand increases, and as supply increases, prices fall. Such is often not the case however. Money talks, but the message is sometimes the opposite of what you might expect.

It's important to understand that demand for surveying services is determined by market forces, and we generally cannot stimulate the demand. Folks who buy land surveying services do so because they have to, not because they want to. We're like lawyers or dentists in that regard, so creating a market is well nigh impossible.

Surveyors do not determine the value of their service. It is a function of cost and perceived value. While you may not determine value, you may very well create a perception of value by your pricing strategy.

To the buyer of professional services, the perception of value is the reality of value. Very often, higher priced services are perceived as better values, even though there may be no perceptible difference in real value.

The examples of the counterintuitive nature of service pricing are legion, and each of us individually has probably been a victim.

The American Express Card is a great example. Here is a card that charges a high annual fee, must be paid monthly, and offers no perks like frequent flier miles or points toward auto purchases. There are hundreds of Visa Card and MasterCard providers that will offer many more benefits and the cards work just as well -- maybe even better. You would logically assume that American Express would have a very small market and not be able to compete with the others. But it is enormously successful. It is successful because it creates a perception of value by suggesting that cardholders are members of an "exclusive" club. They neglect to mention that the club is many millions strong.

The drug companies know all about this perception. You can buy a generic brand of aspirin or buy a name-brand aspirin that is chemically identical for twice the price. You can buy all sorts of over-the-counter remedies that are sitting side by side with identical products at half the price. You would think that the higher-priced products would be tough to sell, but they are not. They are perceived to be better products because they cost more.

So to most of us, the more it costs, the better it seems, or at least we're tempted to think that. In the professional service business, we are selling a relationship, and the more expensive that relationship, the more likely the client is to feel the relationship is valuable. It's even true that this perception lasts after the premium price has been paid. Some people are

quite proud to have paid a handsome price and might even feel quite smug about it.

And this illogic works the other way as well. If you price your services low, you may find you attract all the wrong clients. Those prospects looking for a discount will be drawn to you, and along with them will come all the problems they bring with them. Those clients who associate low prices with value are the most likely not to pay, they are the most likely to continue to chisel your fees, and they will drop you like a used Kleenex as soon as they find someone who is even cheaper.

So you have essentially three pricing strategies available:

- ✓ Price your services on the high side
- ✓ Price them in the middle
- ✓ Price them on the low side

Pricing your services on the high side will attract the clients who perceive value in high prices and are willing to pay them, and your margins will be the best. You will also have clients who are proud to have paid a premium price for a premium relationship.

Pricing your services in the middle will appeal to no one.

Pricing your services on the low side will garner lots of work for bottom feeders and/or poor paying clients and won't make much money.

The argument is often made that pricing services beyond what they cost, plus a reasonable profit, is unethical. That's for each of you to decide individually, but I personally think of it this way: it's impossible to charge too much, because if they're willing to pay for it, it must be worth it.

Then, too, there is the problem of liability. We are, after all, being hired for the sole purpose of accepting liability. Is it unethical to charge more for a survey that involves more liability and little work as compared to a survey that requires the same amount of work but much less liability? Would a million-dollar waterfront home survey be worth the same as the survey of a much less expensive lot that requires the same amount of work?

You decide.

You can take advantage of the market or let the market take advantage of you.

CHAPTER TWELVE
ENHANCING YOUR BUSINESS, SCATTERING YOUR EGGS, HAVING FUN, AND MAKING A LITTLE MORE MONEY
THE OPTION GAME

There are a number of opportunities that come to you as a land surveyor in private practice, and you should take advantage of them.

Depending on the kind of work you do, those opportunities will vary so let me suggest a few I have had the opportunity to explore.

If you are heavily involved with land development, as many surveyors are, there will come a time when you have an opportunity to be involved directly, rather than as just a consultant to the land developers. Since you are dealing with the industry all the time, there will undoubtedly be times when you become aware of a property that is suitable for development and available at a reasonable price. If your focus is truly on land surveying, and you rely on developers as clients, you shouldn't be competing with them. But there are a few ways you can help them and help your business.

There are generally three risks in land development:

- ✓ Market risk
- ✓ Development risk
- ✓ Political risk

The market risk is related to the demand for the developed project, and there is not much you can do about that.

Development risk is the risk that the cost of developing the project will be more than the market value, or at least so high that the project is not worth doing.

Political risk is really the biggest risk of all. That's the risk of getting the project approved by all the agencies and overcoming the objections to the project by environmental groups, neighbors, and others. If this risk can be taken out of a proposed project, most developers are more than happy to deal with the other risks.

Most surveyors in the land-development game must be intimately familiar with land-use regulations affecting the kinds of developments they work on. So why not take advantage of that expert knowledge, and help your development clients at the same time?

In the course of doing your business you are likely to come across a property that is suitable for development, but might need some special attention from a regulatory (political) perspective. If you take an option on that property, get the property approved for development, and then sell your option to one of your developer clients, there will be several benefits:

You will take the political risk out of the project for your development clients.

You will create a project for yourself and the fee for that project can be added to the option price, which the developer will more than willing to pay. More than likely, you can get paid more than the cost of doing the work (as reflected in your normal fee schedule), because political risk is so important.
You will be virtually guaranteed that the survey work for the development will be yours, and in fact you can make that a condition of the option sale.

The only downside is that you will be out the cost of the option and the cost (just the cost, not foregone fees) of the work you do on the project and that will be your risk. You should be in a position to carefully select a project that you know will be saleable once you have acquired the approvals, however, and in fact, you may be able to pre-negotiate the sale before you even take on the project.

DIVERSIFYING

If you rely on one segment of the market too heavily, it's easy to find your company fighting dramatic swings in business levels. It's very hard to keep you staff intact and ratchet up and down with wild business swings. This is particularly true of land surveying companies that rely on land development for their revenue. Housing typically leads us in and out of recessions because it is so interest-rate sensitive, so depending on land development becomes as risky as the development game.

How can we as land surveyors diversify, then? One way is to work with real estate options, but that doesn't get you out of the cyclic nature of land development. There are other routes available, however.

Today, the GIS business is a logical extension of your land surveying business. Instead of fighting the battle of who should control GIS projects (land surveyors vs. GIS professionals), you can take control directly by offering the service. GIS is a natural extension of land surveying and mapping services, and we surveyors already have a good understanding of the underlying theories, if not the detailed technology. Having headed down this road a few years ago, I can offer you some tips, based on my experience. First, since this is essentially an entirely new business enterprise (a profit center, if you will), make a business plan, as described in Chapter 13. Make realistic projections of revenue and expenses, and also a realistic guess of how long it will take to develop the business. I would plan on at least three years before you see a positive cash flow, but that might be different for your enterprise. The point is that you should be realistic.

The second thing you should do is hire an individual with good technical skills and the right personality to sell the GIS services. Expect to pay a fair salary, say, comparable to your best-paid technician. You will need to acquire GIS software, which can be pretty expensive, and have a pretty hot workstation to run it. The great thing about adding GIS services is that you are already close to the market and it's a natural extension of what you already do.

Consider adding civil engineering to your product mix, particularly if you are in the land development market. Developers are often hesitant to hire two firms to take care of the design and surveying work for their project. It's a lot more convenient to have all that under one roof.

What else could you do to diversify? Depending on the market you are in and the staff you have, the possibilities can be many. How about web site design, or network administration, for instance? Use your noggin and keep an open mind.

Take advantage of opportunities and diversify.
It could save your neck.

CHAPTER THIRTEEN
ELEMENTS OF A BUSINESS PLAN

Someone once said that if you don't know where you're going, you'll never know if you get there[19]. That's one reason why you need a business plan, among a whole host of other reasons.

Unless commitment is made, there are only promises and hopes . . . but no plans.

Peter Drucker

There are all kinds of guides to writing a business plan. Some are free and some are not, but for your particular application, you should search the Internet and find an outline for a business plan that suits your needs, or purchase software that will help you with the effort.

Generally speaking, a business plan should be prepared before the enterprise is launched, but I suspect that most readers are already in business, or work for a business. There is no reason not to develop a business plan for an ongoing business, however, and the reasons to develop one are many.

Here is one typical scenario. A land surveyor starts a surveying company, and as the years go by, it continues to grow. She is a good surveyor, but doesn't know much about management, but through sheer good sense and

[19] Or – you'll probably end up somewhere else.

being in the right place at the right time, the company prospers. As it grows, she sees that she cannot do it all. She turns to her employees to help her with management decisions. The employees want to help, and may be very capable of helping, but if no plan for the business exists, they don't know how to frame their decisions. For instance, the question arises: "Should we add GIS services or civil engineering to our product mix?" How do the employees who are asked to advise the boss evaluate such a question without knowing where the company is supposed to be heading?

Another situation might arise where the company has earned a reputation for good work and has the opportunity to make a proposal on a large project that will require additional employees and investment in equipment. Should she go after the project, or not? If a business plan were made, it would be a much easier decision.

Plans do not have to be static, however, and should be reviewed at least annually to reflect the current thinking and take advantage of opportunities that might be available. They do need to be made however. Without some direction, in the form of a business plan, the company and its staff will flounder. With a plan, everyone in the enterprise has a direction.

Plans can be formal or informal, detailed or quite basic. It depends on your individual situation. If you intend to borrow money, a business plan is almost essential these days. A lender will want to know where you're going with your business, which, in turn, will tell him how you intend to pay back a loan and in what time frame.

More importantly, the exercise of making a business plan will make you a better manager. Instead of coming to work and doing whatever happens to cross your mind, having developed a business plan, it will always be in the back of your mind and guiding your day-to-day decisions. Without it, you have no framework for making decisions that influence the direction your business is headed.

Keep in mind that a business plan without a commitment is just a plan. Action and results rely on a commitment to a plan, not just a plan.

ELEMENTS OF A BUSINESS PLAN

In general a business plan should give a clear direction of where the company is heading and include at least the following:

- A description of the business: land surveying. It should include what kind of surveying you do or intend to do and whether or not you anticipate adding other products and services.

- A description of the market. Are you catering to landowners and business, or are you after the construction market? Do you expect to do only ALTA, surveys or will you be doing land development projects? You will need to describe your perception of the size and extent of the market.

- A description of your competition: what firms are already in your market and how do you think they are perceived?

- A statement of how you intend to penetrate the market – your sales strategy.

- Existing financial statements and pro-forma projections: if you are just starting the enterprise, all statements will be pro-forma, of course.

- For startups, a breakeven analysis

- Your expected borrowing needs: how much money will you need to start or expand your firm, where will it come from, and how will you pay it back?

- A description of how you will get the work done: who comprises your existing staff, or whom do you plan to hire? What management skills have you demonstrated that suggest you have the ability to manage a staff of professionals?

- A description of the plant and equipment needed to run the firm: what tools do you have or intend to acquire? Do you plan to add new technologies? You will need to describe why they are needed and how you expect them to pay for themselves.

- A statement of how often you plan to update your plan.

- A description of how you plan to manage your business affairs if the assumptions in your business plan are not accurate.

The following sample business plan is designed assuming the company is looking for financing or investors. It can easily be modified to suit your internal needs.

PHANTOM LAND SURVEYING, INC.

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GEOGRAPHIC INFORMATION SYSTEMS

AN OPPORTUNITY TO DEVELOP AND DOMINATE AN EMERGING LOCAL MARKET

WHAT IS GIS?

GIS is an abbreviation for "Geographic Information System." So what is a "Geographic Information System?" In the broadest sense, a geographic information system is a combination of spatial and alphanumeric materials that provide information to an organization.

A common example is a set of city or county maps that are connected to a dataset that contains information about the features of the map. More specifically, the map set might be the County Assessor's maps with tax parcels identified, and those parcels (through the use of GIS) are related to a database with information about those parcels, such as owner's name and address, valuation, etc., or it might be a City map attached to a set of tabular information about city facilities such as storm water, sanitary sewer, water systems, addresses, accident scenes, 911 calls, or an almost unlimited amount of other information. The end use of such a system is to allow managers to make decisions with a wealth of information readily available. For instance, a City Manager may be wondering how to best develop a budget for sewer improvements over a certain period. The GIS would allow that manager to bring up a map on the screen showing the sewer system of the City, and by analysis, find out where and to what extent sewer mains of a certain construction type are over 20 years old. In another instance, a

County Assessor might bring up a GIS map and click on a particular parcel to find out when it was last appraised, under what zoning classification, and then bring up an aerial photo overlay to see if any new structures have been built since the last appraisal, and then bring up the current zoning overlay to compare with the zoning in place at the time of appraisal. While some applications of GIS require high precision, other do not. However, it has been learned that it is much easier, much more cost effective, and much more efficient to have the base mapping started as accurately as possible. The alternative, which is to start with rough data and try to tighten it up later as needs dictate is highly inefficient and very cost ineffective.

Enter Phantom Land Surveying.

Our firm acquired GPS (Global Positioning System) technology several years ago, when it first became practical for the surveying profession. There is a long, steep learning curve and also a steep obsolescence curve with respect to this technology, and we have stayed on the curve throughout, so today we have high confidence levels with our work in this arena and can execute that work efficiently. This technology is ideally suited to GIS development. An almost universal feature of a good GIS is aerial photography. We can now get this product in digital format, and manipulation of that data is very easy. In order for aerial photography to be accurate, it must be correlated to

ground points that have known positions, and those positions must be known with high precision. GPS is ideally suited for this purpose, and the availability of our GPS technology, combined with our mapping expertise, makes a combination virtually directing Phantom Land Surveying, Inc. to enter the GIS market.

TARGET MARKET

Small municipalities comprise our initial target market.

The applications of GIS technology are many and varied. Some markets we may try to penetrate as the product matures could include:

- ✓ Irrigation Districts
- ✓ Municipalities
- ✓ Multiple Listing Services
- ✓ Counties
- ✓ Reclamation Districts
- ✓ Hospital Districts
- ✓ Fire Districts
- ✓ 911 Emergency Service Providers
- ✓ Planning Agencies
- ✓ Tribes
- ✓ Title Companies
- ✓ Appraisers

- ✓ Utility companies

Some typical and obvious examples of the use of GIS technology include:

- ✓ Tax parcel mapping tied to valuations and other attributes
- ✓ Facilities management for public agencies
- ✓ Environmental planning and land use planning
- ✓ Real estate management
- ✓ Agricultural and horticultural management

MARKETING STRATEGY

We have a 5 step plan in mind for penetrating this market:

1. Interview and hire a GIS coordinator.
2. Develop a pilot project.
3. Develop a management strategy for the pilot projects.
4. Present the developed GIS to our target market to provide more input on what the product should ultimately look like and how it should perform.
5. Develop sales.

MARKET ANALYSIS

We are targeting small municipalities because we feel this market is under-served and generally overlooked. While most mainstream GIS providers are targeting cities with populations over 50,000, and counties, we feel that small cities and towns with populations down to 5,000 can also be served with GIS services and find it an attractive investment.

The municipalities market is confined by some readily ascertainable conditions. Most importantly, it is our perception that, while city managers and planners will rapidly endorse our product, selling the same to a city council will be another matter. As we envision it, a city council of a small municipality is generally very conservative fiscally. When city staff brings "big ticket" items to it, there had better be a plan for paying for it. Realistically, the city staffers know this very well, and a presentation would never be made without a plan for payment, as well as justification for the expense. We have no intention of asking a city staff to present a $150,000 project (to pick a number) to the town council without both a payment plan and a cost/benefit analysis. We plan to present our product in a manner that will allow the city staff to present a plan that has a low initial outlay, can be amortized over a fairly long period, and for which benefits should outweigh the costs, both long term and short term. Our plan would be to offer to develop the GIS with a small initial capital outlay by the city, with the development costs amortized over time by writing them into the city's annual

administrative budget as a line item, including an annual GIS maintenance budget. This makes a project such as we propose much more palatable to the city councils and allows the real burden of the decision to be borne by staff.

BENEFITS TO OUR CUSTOMERS

We feel that our customers in the small municipalities sector will derive benefits that outweigh the costs by being able to make knowledge-based management decisions with respect to their municipal operations. In order to sell this product to the small municipal market, it will be imperative that we develop a cost/benefit analysis that the city staff can present to the council for approval. We intend to develop such an analysis, and refine it over time. Initially, we see some of the benefits as follows:

Utility revenue can be closely monitored and compared with actual hookups. Industry studies have shown that cities that have implemented a GIS have increased utility revenues by approximately 20%. A city of 7000, for instance, might provide water, sewer, and other utility services to 3000 customers. If these 3000 customers typically pay $600 per year, per customer, for those services, that is $1,800,000 annually, and an increase of only 5% in revenues would amount to $90,000 per year. The GIS could be paid for out of this revenue alone.

Mapping projects are constantly required by agencies that oversee municipal activities. Once the GIS is in place these mapping activities become very inexpensive. Examples of mapping projects would be: wetlands inventory, soils mapping, comprehensive plan mapping, and storm water management, among others.

Capital projects (for example, a sewer main extension) generally require expensive ground surveys for design work. With the GIS in place, these surveys would be largely eliminated, providing a savings of substantial sums on each project.

Staff time in decision-making would be greatly reduced. Capital facilities plans and other plans are now required under Washington's Growth Management Act. With a managed GIS in place the development of these plans would be much less expensive.

Under our plan, cities would send us building permits, land use actions, subdivisions, utility installations, surveys, and the like on regular basis, and we would update the GIS accordingly. This would eliminate the need for city staff to provide these functions.

In a small town, records are commonly fragmented or simply non-existent, and every time staff is replaced or changed, the record-keeping system has to be reinvented. This is obviously

inefficient, and the GIS would provide quantifiable cost savings. Every time a record of a utility location is gathered, for instance, it would be placed in the GIS, rather than filed in some unknown location and require repeat location every time it was necessary.

A TYPICAL PROJECT

A typical project for a municipality would be something like this:

- ✓ Negotiate agreement with town.
- ✓ Control survey for aerial photogrammetry (GPS)
- ✓ Aerial orthophotos
- ✓ Tabular data acquisition
- ✓ Data conversion and spatial data acquisition
- ✓ Compilation of data and input into GIS
- ✓ Training of town staff
- ✓ Implementation

PRICING TARGET AND STRATEGY

Since our assessment of the market suggests this product is highly desirable, we expect to price our services slightly ahead of surveying services, which have provided the majority of income for Phantom Surveying, Inc., over the years. We expect to bill most services (other than surveying services) and base our fees at the high end of our hourly rate schedule. This rate should give us multiplier of about 5 compared to direct salary

costs. The surveying industry typically operates at a multiplier of about 3.2. The proposed fee structuring should provide a suitable margin and help defray the venture risks inherent in startup projects.

STRATEGIC ALLIANCES

We expect to enter into a long-term agreement with Topside Aerial Surveys for the aerial mapping work necessary for GIS projects. We have worked with this firm for many years and have a high confidence level in their work. We expect to realize cost savings through an exclusive-use agreement with this firm. We also will work with Digital Associates of Washington in the software arena. This firm has taken a leadership role in our area and has been positioning itself as a strong player in the GIS software business. It has a good training program and seems to be very progressive. A critical element of the whole plan for this product is a strategic alliance with a financial institution. As discussed, "big ticket" items, such as this product are a hard sell to small municipalities, when they are faced with paying for such an item as a lump sum. When they can spread the cost over a number of years, and fold the costs into their annual operating budget, the sell is much easier. We will need financing to pull this off, and we expect to enter into contracts with these towns and cities, which will essentially become the collateral for the financing.

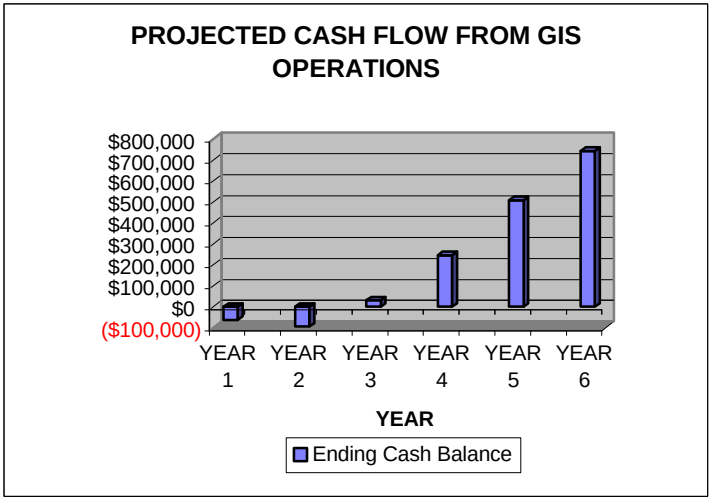
PROJECTED CASH FLOW

(Refer to Charts Attached)
The basis for the cash flow analysis is as follows:

Year 1 – Little or no revenue. In this period we will develop one or two pilot projects and get them operational so we have an actual product to demonstrate to our clients. This should take the better part of a year and towards the end of that year, we expect to be negotiating with towns and cities and possibly enter into service contracts for the following year.
Year 2 – We would expect to have one or two projects under way.
Year 3 forward. We expect to have two projects per year under development, and ongoing maintenance of completed GIS products.

Cash Flow Budget Worksheet
Phantom Surveying, Inc. -- GIS Operations

	YEAR 1	*YEAR 2*	*YEAR 3*	*YEAR 4*	*YEAR 5*	*YEAR 6*	*Total*
ginning Cash Balance	0	($61,490)	($94,490)	$31,010	$245,510	$510,010	
sh Inflows (Income):							
Sales & Receipts	10,000	50,000	195,000	325,000	375,000	375,000	1,330,000
Loan							
							0
							0
Total Cash Inflows	$10,000	$50,000	$195,000	$325,000	$375,000	$375,000	$1,330,000
ilable Cash Balance	$10,000	($11,490)	$100,510	$356,010	$620,510	$885,010	
sh Outflows (Expenses):							
Advertising	5,000	5,000	5,000	5,000	5,000	5,000	30,000
Marketing efforts	5,000	5,000	5,000	5,000	5,000	5,000	30,000
Payroll	37,000	40,000	45,000	85,000	85,000	105,000	397,000
Payroll Taxes	3,700	4,000	4,500	8,500	8,500	10,500	39,700
Professional Fees	10,000	10,000	0	0	0	0	20,000
Opportunity Costs*	5,590	3,000	0	0	0	0	
							0
							0
							0
Subtotal	$66,290	$67,000	$59,500	$103,500	$103,500	$125,500	$516,700
ıer Cash Out Flows:							
Hardware Purchases	2,000	8,000	4,000	3,000	3,000	8,000	28,000
Software Purchase	2,000	5,000	3,000	1,000	2,000	5,000	18,000
Education	1,200	3,000	3,000	3,000	2,000	2,000	
Loan Payback							
							0
Subtotal	$5,200	$16,000	$10,000	$7,000	$7,000	$15,000	$46,000
Total Cash Outflows	$71,490	$83,000	$69,500	$110,500	$110,500	$140,500	$562,700
Cash flow for year	($61,490)	($33,000)	$125,500	$214,500	$264,500	$234,500	
ding Cash Balance	($61,490)	($94,490)	$31,010	$245,510	$510,010	$744,510	


PROJECTED CASH FLOW FROM GIS OPERATIONS
$800,000
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
($100,000)
YEAR 1
YEAR 2
YEAR 3
YEAR 4
YEAR 5
YEAR 6
YEAR
Ending Cash Balance

CHAPTER FOURTEEN
MARKETING YOUR SURVEYING SERVICES

Forget the notion that marketing is a business *function*. Marketing is much more than that – it is the very essence of the service you provide. Everything you do, every statement you make, every letter you write, and everything any of your employees do – they're all marketing.

Remember that surveying is a service practically no one wants. Clients hire us only because they have to. It's almost impossible to create a market for an undesirable service, such as land surveying. Sure, folks sometimes like to have their property boundaries marked so they can build a fence or a house, but they don't *want* to hire us. If they could do it themselves, they would. They do want us to be responsible if the fence gets built in the wrong location or the house encroaches on another property owner's land. That's the real product you provide, not the marking of the property lines, and the service you provide is a relationship. Always remember that.

Your marketing efforts will not stimulate the public to buy your services, so those efforts need to be directed toward prospects that are already in need of surveying services. You want the good prospects to take a look at your firm. You will need to build relationships with clients or prospects that result in referrals to you.

How does a typical client become a client? It might go something like this: Client calls on phone to inquire about estimate for surveying;

surveyor asks client to bring in legal description and go over the project; client and surveyor meet; surveyor prepares contract and mails to client; client signs contract, and calls surveyor to tell him the contract is on its way and inquires when the work will be done; surveyor does the job while the client observes the staking; surveyor prepares report or map; surveyor sends map and final bill to client; client pays bill.

Each of these actions is a “point of contact” with your client. Your client gets an impression at every point of contact. Your receptionist, you as a surveyor, your survey crew and equipment, your office and everything else the client sees and hears is a point of contact. All these points of contact add up to a general impression of your company.

Your prospects, in almost all cases, are not buying expertise. Expertise is assumed. They don’t know the difference between a good and bad survey and never will. The assumption is that, because you are licensed professional, you can adequately perform a survey. Understand that you are dealing with a person with human sensibilities and you must do your best to satisfy her or him. You need to concentrate on your relationship with that person.

Often an early contact with a prospect may not result in a job for your firm. It might be that you can show them that a survey is not really required or that the problem they are dealing with can be resolved by another means. You are still building a relationship, however, so it needs to be a good experience for that prospect, whether he turns into a client or not.

The total effect of all these points of contact forms a relationship. The relationship will flower if the initial contact is pleasurable. At every point thereafter, there is an additional opportunity to improve upon that relationship and ultimately make a statement to the client that you are truly a high-class professional firm.

This important knowledge must be passed along to your employees, because every act of every employee is an act of marketing. Every client or prospect will form an opinion based on the totality of these acts and that opinion will be passed along to many others. And a bad impression will travel 10 times as fast as a good impression.

Make every employee a marketer. It should be a primary company strategy. However, don't confuse strategy with execution. Just because you want them to make a good impression, don't assume they will. Observe, educate, compliment, encourage and gently criticize – all the time. Nothing is more important to the success of your company – not technical expertise, not new technology, nothing.

Build relationships – they are your key to success.

So what can you do, specifically as a surveyor to market your otherwise undesirable business?

Here are a few ideas.

- ✓ Make sure you, your office, and your employees are neat and pleasant.
- ✓ Have a good storefront.
- ✓ Keep your vehicles clean and attractive and clearly identified.
- ✓ Don't even think of fooling people.
- ✓ Set monuments that people notice.
- ✓ Make good-looking maps.
- ✓ Show off your technology.
- ✓ Have a web site.
- ✓ Treat your clients as if they were your only source of income.

A PROFESSIONAL APPEARANCE

Nothing is more of a first-impression killer than an ugly office. A nice, tidy office gives prospects the impression of quality. If you expect to charge a premium fee for your services, your clients expect an appearance that would suggest a premium firm. I used to think that it was important to wear a suit and tie to the office every day, and that may be true in some instances. But wherever you work, there is a standard of dress that implies professionalism, and whatever that standard is, you probably know it. So comply with that standard. Everyone knows what a neat, tidy office looks like, so make sure you have one.

AN ATTRACTIVE STOREFRONT

It's always good to have an attractive, highly visible storefront. The location itself can say a lot about your firm. The most important thing about a storefront, however, is visibility. Land surveying is such an obscure service that hardly anyone knows what land surveying firms are in a given community. A strategically placed sign will let everyone know you are there and in business, and if it's a good-looking sign on a good-looking storefront, the first impression is already made.

SURVEY CRUMMIES AS ADVERTISING

The most obvious advertising you do is often with your vehicles. They run all over your service area and are seen by thousands daily. Have nice vehicles with your firm name and logo clearly present in big, bold letters. Keep them clean and tidy. Survey vehicles, as a general rule, are old beat up affairs, and if yours are reasonably new and clean, another positive impression can be made on your prospects even before they become real prospects. Take a tip from Shelby Griggs of Bend, Oregon. Shelby had the good sense to invest a fair sum of money in a quality, attractive,

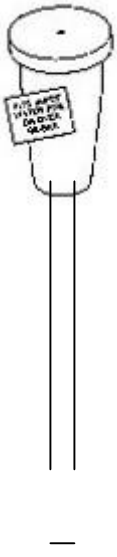
attention-getting rig that prospects take notice of, and is the envy of other surveyors. The envy of other surveyors, by the way, is one way of saying that those other surveyors react to what he does, and he is not reacting to them. A fancy surveying truck won't get you all the clients or make all surveyors react to you, but it's one factor.

TRICKY ADVERTISING

A lot of advertising is consumed with trying to fool people. "You have won a million dollars!" "New and improved!" These are examples. Don't ever, ever try to fool people about your professional service. Put your best foot forward and the rest will take care of itself.

THE MONUMENTATION EDGE

What's the standard property corner where you work? Iron pipe, iron rod, rebar and caps? To me, one of the easiest ways to impress your clients and prospects, and set yourself apart from the crowd, is to set good monuments. Nothing is more unimpressive to me than a ½" rebar sticking 6 inches out of the ground with a phony-baloney plastic cap stuck on top. Not only are they poor monuments, they give a very poor impression of your service. When folks are paying thousands of dollars for a service they really don't want, it seems that they deserve better. So why not give it to them?



Which of the above seems to be a more professional corner monument?

The interesting thing about setting real monuments is that in addition to providing your clients with a better service, you can make a little more on the survey. These monuments aren't really very expensive in relation to the total fee charged for a survey, and you can pass that cost along to your clients along with a profit on the sale of the monument. Everyone expects that products are marked up from their cost and you are doing nothing more than what a retailer does – buy at cost and sell a higher price, thus creating a margin.

Here's how to go about it. Have a selection of monuments at your office, from the basic rebar and cap to a quality cast monument with cap. After you have discussed the price of the survey, without regard to the type of monument to be set, ask your prospective clients how they would like to have the corners marked, and refer them to the various monuments, explaining the difference in price. The client will invariably prefer the fancier monuments. Why? Because compared to the cost of the survey, the monumentation cost is miniscule.

There is also a side benefit to setting quality monuments. Surveyors have an interesting built-in perception about monuments. There is a definite hierarchy of respect. PK nails are not accorded the same respect as iron pins. A concrete monument is given more dignity than a hub and tack. Well-set monuments (such as a cast aluminum monument and inscribed cap) are considered very seriously when evaluating what to hold for a particular survey. While a rebar and cap is generally considered just another opinion of where a property corner might be, a serious monument is given much greater weight.

As a result, you may have three advantages in your marketplace:

- ✓ You will be providing a superior service for your clients
- ✓ You might a make a few dollars on the sale of the monuments
- ✓ Following surveyors will treat your corner sets with more respect than they might otherwise

HANDSOME MAPS

With today's technology, it is easy to make very impressive maps. CAD-drawn maps are very attractive, when compared to most hand-drawn maps. In addition, raster images can be added to make quite an impression on clients. For instance, a topographic survey map can be enhanced with digital photo images of the site to both aid the client in the use of the map, and make a more attractive and attention-getting map.

Consider using something other than a standard font, by the way. There are all kinds of fonts available, and most are much more attractive than the default fonts of most CAD programs.

TECHNOLOGY

I'll always remember when I got my first real plotter, back about 1982. It was a Houston Instruments, single-pen plotter hooked up to a CPM-80 Osborne computer. That equipment now is of museum quality, but at the time it was very impressive. I had one client in particular who was very impressed with the ability to actually plot points and draw lines rather than having to do it by hand. He told everyone he knew about this cool plotter I had, and it resulted in some business for me. I didn't consider it a big deal, but the client did. It was a lesson.

Show off your technology. It is very impressive to prospects and clientele. The fact that you can get centimeter accuracy with your GPS is tantalizing to lots of folks. Take the time to explain how the equipment works. We

have a wide variety of interesting technology these days, from CAD and raster imaging, to total stations (reflectorless or otherwise), GPS, GIS, robotic instrumentation, laser scanning instruments, data collectors, metal detectors, and all kinds of other tools. Many people don't know about these things, and it will pay you to tell them about them.

Service clubs are a great venue for showing off technology. They often run out of ideas for programs and welcome almost anything, so getting on the floor is not a problem. Make a nice presentation, and you'll build some nice relationships. The service club members are there for many reasons, and often because they like to socialize with peers and see programs such as what you might put on as a surveyor. Take along a GPS unit or a data collector and show them how it works. If you have a laptop, make a short PowerPoint presentation and show how you can manipulate an aerial photo raster image. If you have a robotic instrument, show them how that works – it's pretty fascinating to the most folks. You might even want to take along some old equipment to make the comparison. These clubs can be great marketing opportunities, because you can reach a lot of folks with a positive message.

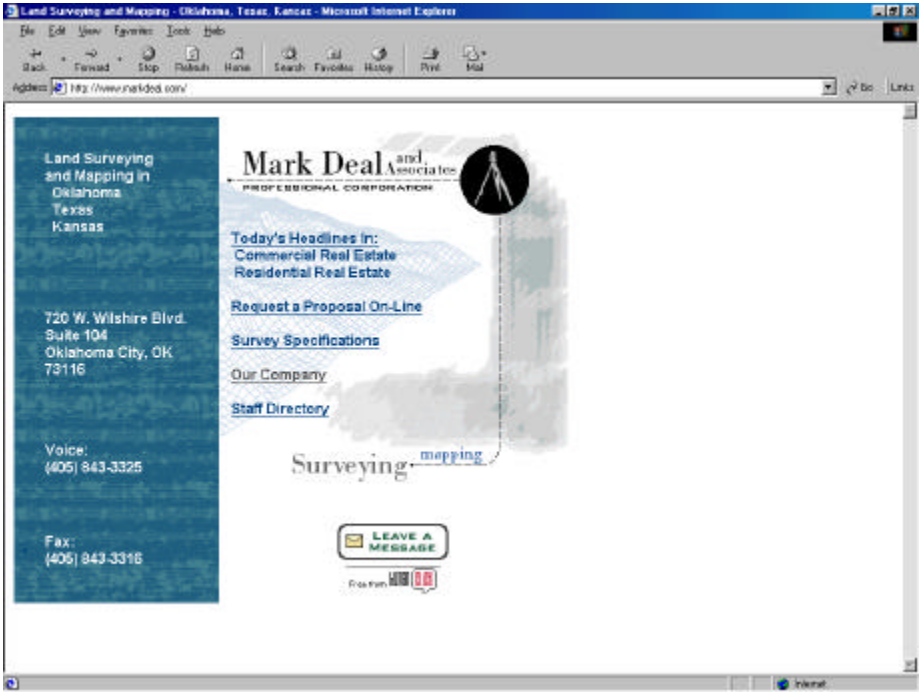
Talk to your local radio station or newspaper. They often do features on technologically-advanced firms and projects. Show them how you can create a contour map from field-collected data in just a short time, and contrast that with how it used to be done.

GIS technology is particularly interesting, and if you are doing that kind of work, the media will be interested.

Most of you have probably had people stop by when you were set up over a monument and ask about surveying their property. I know I have had that experience many times, and it's an opportunity you shouldn't pass up. It probably won't turn into a job most times, but you can hand them a business card and they might mention your name to someone who really needs some surveying. An old friend once told me that if times were slow, I should just take my level and set it up at a busy intersection.

BE A DOT COM

These days if you don't have a web site, you will not be perceived as being a technologically-advanced firm. A web site is inexpensive and while it may not yet be a very effective marketing tool, it is a necessity.



Beyond just having a web presence, a web site can provide benefits. For instance, many people these days first look to the Internet to provide service providers. If you are not there, you won't be found. Also, whenever you are talking to a prospect, especially someone who can't readily come to your office, you can refer them to your web site to find out more about your firm or your services. It also provides an avenue to contact you through email, if further inquiries are made. Make sure you have a reliable email server, because there is nothing so inhuman as an auto-responder. Also make sure you respond to emails promptly – it will be an indication of your firm's overall responsiveness and an indication of how you treat your clients.

What should your web site include? It should include all the things that you would include in any statement of qualifications: experience, individual qualifications, staff experience, client referrals, sample projects, your particular expertise, and the like.

I would suggest getting a professional web site design firm to develop your web site, if you don't have someone in-house who can do a good job of it. A poorly designed, unattractive web page may be more of a liability than an asset. Also keep it up to date. Out-of-date web sites are a turnoff for most people, and suggest you don't really care that much about your Internet presence.

TAKING CARE OF THE GOOSE

There is no such thing as an ordinary client. They are all special and you would be well advised to treat each as if she were your only client. This is a matter of attitude. An attitude that exudes good will and the desire to perform a truly outstanding service for each client is infectious. It spreads through your client base and your prospective client base, just as importantly it infects your employees and their relationship to the clientele. When your clients are treated as royalty throughout the project life and throughout your firm, as they should be, they will most likely return the favor by either being repeat customers, or at least passing along a favorable impression to people they contact.

You as the business owner must start this process and lead by example.

Remember the Goose.

WRITE A BOOK

About twenty years ago, it occurred to me that I had to do something to set my company apart from all the others. Like many of you, I practiced in a town where it seemed there were just too many surveyors. There were those who operated out of their garage, while they worked other jobs, cut-rate operators who were marginal surveyors at best, bigger companies with large client bases, and on and on. It's the same everywhere.

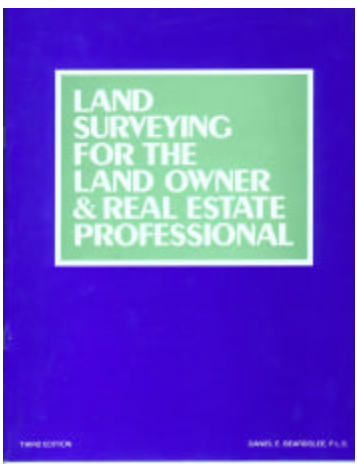
I was unwilling to compromise quality and didn't want to compete on a price basis, so what could I do? For the clients that I knew and I had worked for, it wasn't a problem. They knew that I delivered a quality

product (what they really knew was that I provided a comfortable relationship) on time and on budget. That wasn't the problem.

What I needed to do was convince prospects who didn't know me that I could do better job for them than the other surveyors in the market. Prospects, as discussed earlier, assume all surveyors are technically capable of doing the work, and they generally have no reason to pick one surveyor or surveying company over another.

When a potential client called or wrote asking for a survey proposal, I often had the sinking feeling that price was going to be the only consideration. I needed to find a way to make my proposal different. A better business card wasn't the answer, and nice stationery likewise wouldn't do the job.

The idea of just tooting one's horn isn't a very good one, although in the end that's what needs to be done. It must be done subtly, of course.



I finally decided that I would write a book, and it turned out to be one of the best things I ever did to market my services and make my company distinguishable from all the others. It isn't much of book – more of a book-let only 40 or so pages, but the effect was terrific. It has turned out to be a very effective marketing tool.

It was titled Land Surveying for the Land Owner and Real Estate Professional. I had it professionally published and sent it out with all my contracts. It's still in use today and I update it periodically. I still send it out with almost every proposal. I've included the text of it here in a form only roughly formatted, and you may want to use it as a guide for developing your own.

The prospect receiving this booklet as an enclosure with the proposal is now facing something completely different from the usual letter and contract.

First, the opening part describes my qualifications and me. (It could also describe your firm and your firm's qualifications.) So I get a chance to toot my own horn in a sort of a benign, subdued manner.

Second, even if the prospects don't read the material (which I think is usually the case), they should perceive that there is something quite professional, and decidedly different, about you and your company when compared to the other proposals they might receive. Even if you aren't hired, they will remember the difference and possibly pass it along to others. It's entirely possible that they will make a selection on price alone, and you might lose out that way, but that's the worst that can happen, and you would have been in the same boat with or without the booklet.

Third, if they do read the material, they will be inclined to believe a good portion of it, especially when it's professionally presented. They are likely to feel some guilt it they don't hire you! Read the section on "How

to Hire a Surveyor." Human purchasing psychology is very interesting, and as earlier discussed, often takes unpredictable turns.

Put yourself in the place of the prospect. Most individuals rarely if ever hire a surveyor. They have no idea how to evaluate one. The little booklet offers instructions on how to do so, and they are obviously going to be swayed your direction if any of the information presented sounds at all reasonable to them.

Again, the typical surveying proposal is simply a letter and a proposed contract or work order (sometimes a copied – copied – copied – sloppy-looking thing) that does nothing to persuade the prospect that there is anything special about the surveyor making the offer. Since prospects often never meet a surveyor face to face until after the surveying agreement is made, they have little to judge your company by, save the proposal. Why not set yourself and your company apart from the crowd?

It's a relatively inexpensive tool and very effective.

LAND SURVEYING FOR THE LANDOWNER AND REAL ESTATE PROFESSIONAL

BY DANIEL E. BEARDSLEE, PLS

ABOUT THE AUTHOR:

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Dan is the President of Beardslee Land Surveying Services.

Dan has authored many articles in surveying publications, has co-authored two texts on land surveying, and is a Past President of the Land Surveyors' Association of Washington. He has also received numerous state and national awards for excellence in Land Surveying.

THE NEED TO KNOW

The ability to have a working knowledge of land surveying and property boundaries can be very useful to any landowner and all real estate professionals. As with similar technical subjects, many people outside the land surveying profession believe they know some rules about boundaries when, in fact, most of the rules of thumb and commonly-held beliefs are totally incorrect or at least misunderstood.

Those of us who work with property boundaries on a daily basis can tell innumerable stories of unpleasant situations that have arisen because of misunderstandings related to poor information or understanding of the subject. Neighbors have ended up hating neighbors over boundary

problems that probably never would have arisen had they understood the underlying principles that govern the location of property lines.

Usually the land surveyor ends up as the messenger, and although in an adversarial situation one or the other of the parties to the disagreement is paying the surveyor, that surveyor is almost always totally neutral as to the position of a particular boundary. So don't shoot the messenger. Although it may seem like a non sequitur, land surveyors don't really care where boundaries are located. More correctly, they don't care where they are with respect to the landowners' expectations. If a line doesn't fit an existing fence or runs through someone's house, that fact by itself is not particularly important. The real issue that concerns the surveyor is whether or not the lines that get reproduced on the ground accurately reflect the legal descriptions that are being surveyed. Of course, to the landowner(s), the location of the line, especially with respect to site improvements, is of utmost importance.

What we feel is important for clients to understand is the mission and duty of the land surveyor. The primary role of the land surveyor in determining boundaries is to interpret the deed descriptions and produce a representation of those descriptions on the ground. The surveyor's experience, education, and judgment are all involved in making those determinations, and for those reasons, all states require licensure to perform land surveys. The requirements for licensure are usually several years of professional-level responsible experience, recommendation by peers, and the passage of a very difficult exam. Licensure in one state is usually not transferable to another state without examination on the laws

relating to property boundaries in the state for which licensure is requested.

The land surveyor does not have the ability to alter boundaries based on landowners' expectations, or determine issues of unwritten title. Those are legal matters, and again, the land surveyor is the expert messenger that provides the data necessary to factually analyze the boundaries in question and allow the legal system to make determinations of disputed claims.

THE MYTHS ABOUT LAND SURVEYING

MYTH NO. 1

SURVEYING IS AN EXACT SCIENCE (or there is only one proper place for a surveyor's stake)

Land surveying is plagued by a number of factors that unfortunately make this impossible. This is much to the chagrin of the professional who tries to explain it to clients, or more often an affected third party who doesn't understand why two surveyors' stakes aren't in identical positions, or why a new survey stake doesn't match an old survey stake, or most commonly the individual's expectations.

It is quite possible for two competent surveyors to survey the identical piece of property, using the same theory and identical equipment, and come up with different positions for the corners. In fact, it would be extremely unlikely that they would ever agree exactly. This is true more

for large parcels of land than for city lots, but in degree only. This is not to say that the surveyor is incapable of properly surveying any tract of land. It is important, however, to understand that because of a number of factors, two surveys shouldn't be expected to be precisely the same.

Why is this the case then?

For one thing, not all surveyors are alike. This will be discussed in more detail later, but it should be understood that as in any other profession, there are good surveyors and bad surveyors, and the full gamut in between. Some use a high standard of care and some work carelessly. Some are experienced and some are less experienced. Some are familiar with the specific area and some are not. Add to these factors the problem that surveying is often judgmental in nature. In most instances, each unique survey has its own problems, and it requires individual judgment to interpret legal descriptions and their intentions, consider evidence of past surveys and monumentation, and translate all that into a modern, reliable survey. Just as one doctor may say "leave it in," and the next may say "take it out," the surveyor is often faced with paradoxical questions that have no definite answer, but must be dealt with using experience and good judgment to complete a survey. This leads to differing locations for property lines and boundaries.

If cadastral (boundary) surveying were more akin to engineering disciplines, the problems would be fewer. Engineers (not to be confused with land surveyors) generally solve the problems by resorting to mathematical analysis. They can go look up a formula to determine the

load bearing capacity of a beam, for instance. While the land surveyor must be very adroit mathematically, most situations do not lend themselves to fixed rules. In almost every boundary problem, the surveyor must usually make a judgment call.

The intent of deed descriptions is often a matter of judgment as to the intentions of the grantor and grantee. People other than land surveyors have written many descriptions and surveyors are charged with the responsibility of locating those descriptions on the ground. The people who wrote those descriptions were not concerned with the plight of the land surveyor, and the result is that different interpretations result in differing ground positions. There are volumes of books written for the land surveyor advising him how to exercise judgment in specific instances, but any surveyor who has any amount of experience knows that there are many situations for which no rule has been set down and a judgmental determination must be made.

The standards of precision imposed upon the land surveyor are another source for conflict. These generally held standards are really not that rigorous. The courts have generally held that the land surveyor in surveying a rural acreage tract must "close" by one part in five thousand. (Expressed as 1:5000) This means that for every five thousand feet of surveying, one foot of error is allowed. This is really a rather relaxed standard. It is however, the standard prescribed by law in some states for residential plats!

By way of example, let's say that two surveyors survey a 40-acre parcel. That should be about a mile around the perimeter. The surveyor staking that parcel is required only to be within one foot of the starting point after surveying around the entire parcel. That one foot may be a series of small incremental errors or it may be in one spot, or it may even be a series of compensating errors, but as long as the standard is met, the prescribed standard of care has been satisfied. This means that at any one corner of the property, the two surveyors' stakes could be as much as two feet apart, and each would have met the standard. (One foot of error for each surveyor totals two feet of difference.) This standard, although it is generally observed as being adequate, is in practice usually exceeded by competent and responsible surveyors. Most land surveyors would expect a closing error of less than 1/2 foot in a forty-acre tract. Even so, this could lead to an one-foot difference in positioning of each corner, even though both surveyors have performed their work responsibly and professionally. Generally, higher standards of accuracy are required for surveying in high-density urban areas than in rural areas. This is as it should be, because the parcels are normally smaller and of higher unit value, and should be located with more precision.

There are a number of reasons why measurements can't be made with absolute certainty. Measuring equipment can be developed that measures with high precision, but even the best measurements will not be perfectly accurate. Up until recent years, the surveyor used the standard transit and steel chain. This equipment has largely been replaced by electronic measuring equipment. Whatever the equipment, the surveyor is at the mercy of the manufacturer with regard to the quality of the gear he is

using. It is simply impossible to measure an angle exactly, for instance, but the reliability of the measurement is directly related to the quality of the measuring equipment. Even if the equipment used for measuring angles and distances is of high quality manufacture, it must be properly calibrated to perform correctly. This is an area of constant attention for the land surveyor. Periodic tests of equipment against a known standard are required in order to maintain the proper precision.

The steel chain, as an example, is like any other equipment in that conditions change and so does the calibration of the equipment. The chain, because it is metal, expands and contracts with changes in temperature. This is quite significant on hot and cold days, and it must be continually monitored and the surveyor must make the necessary compensations in his reported measurements. Such compensations cannot be made exactly, so an element of error creeps into the survey. This type of error is called a "systematic" error.

One of the most frustrating aspects of the land surveying business is the frequent lack of research data available. The land surveyor must often trace the history of a particular parcel of property back to when it was patented (passed into private ownership from the government). In doing so, many of the old records are unavailable or nonexistent. This is particularly true of surveying data. Old surveys often disclose some methodology or intent on the part of the conveying parties, and if this information is incomplete or lacking, the surveyor is working with a handicap from the outset. Only in recent years have states begun to require

that property surveys be recorded with a public agency so that there is a continuum of information.

The surveyor is charged with performing his duty "to a standard of care that would be exercised by a reasonable and competent surveyor under similar circumstances." That means thorough research is required, and every available scrap of evidence must be considered that would have an impact on the location of boundary lines. What happens, though, when important information becomes available only after the survey is completed?

Several years ago, this almost caused catastrophic results. In this case, we were in the process of trying to restore a boundary line that had been established in the 19th Century. We had the original field notes, but all physical evidence of the original corners had apparently been lost through the passage of time. To complicate matters, two fences approximately 15 feet apart had at one time or another each been recognized as being on the original survey line. We went to all the trouble of finding and interviewing old people who had the earliest knowledge of the property line, and this involved many months. After determining that all the evidence we could gather in this manner was conflicting, we set out to make an excavation of the general area for which we expected to find the corners, similar to an archeological dig, and met with similar results - nothing! We were about to throw up our hands, when in walked our client with a map she had found in her attic, and asked if it might be of some use. If she had produced that map at the outset, she would have saved countless hours of effort on our part. The map was of a 1906 survey and showed the

relationship of the corners to the still-existing structures! From that map it was a simple matter to reconstruct the original survey and carry on with our work.

The point of this story is this -- in many instances such evidence as that lady's map is somewhere, but unavailable, and in some cases, such evidence will be produced after the survey and will completely alter the boundaries, even though the surveyor had carried out the survey in a reasonable and prudent manner. In the case just discussed, had the lady produced the map after we had established the lines by some theoretical means, we might have been forced to re-stake the entire property. In that case we were lucky.

Field conditions are another reason why surveying is not totally exact. Land surveyors are generally regarded as a hardy breed, and rightfully so, for they must try to accomplish very precise work under some very unfavorable conditions. Those very conditions alter the calibration of the gear, as well. Surveying a flat, open field on a pleasant day with no wind or rain is certainly more likely to produce an accurate representation of the property than surveying an alligator-infested swamp in a hurricane. The results are rather predictable. To produce the same accuracy under poor conditions requires more time and expense. Surveying the Alaska pipeline at 60 degrees below zero was a tedious task, at best.

Not only does the weather affect the surveyor, but the terrain and ground cover come into play. It is much easier to make a precise survey on even ground than on broken ground. The more rugged the terrain, the more

difficult it is to perform a survey with suitable precision. Likewise, it is a much more palatable task to survey a field of daisies than it is to brush through a snake-infested grove of devil's club, each plant concealing a bee's nest. Once again the precision of the results is directly proportional to the challenge of the conditions.

One other factor is important to recognize. There are people involved in land surveying, as there are in many other businesses, and they are subject to normal human failings. No matter how competent the surveyor, hired personnel have to provide certain information, and that information must be accurate for the survey to be correct. Unfortunately, it is very difficult to manage quality control in the surveying business, particularly with a large staff. The competent land surveyor usually sets up a system of random redundant checks, but even so, the idiosyncrasies of human nature can thwart the best intentions of the best surveyor.

MYTH NO. 2

ALL SURVEYORS ARE THE SAME

Not all surveyors are alike! There are as many kinds of surveyors as there are kinds of doctors or lawyers or real estate professionals. In this regard we're not talking of surveying disciplines or fields we are talking about competence.

Most registered professional land surveyors are truly professional and carry out their work with a high standard of care. However, as with any

profession, a few bad apples can creep in. The problem with this is that you, as a real estate professional or landowner, can't tell the difference. One property corner looks pretty much the same as another, and you can't tell whether it's right or wrong. When doctors make a mistake, people die, and when lawyers make a mistake, you lose the case, but with land surveyors, mistakes look just the same as good work. One stake generally looks just as good as another, and without having the property surveyed by another surveyor, you can't tell whether the stakes are in the right place or not. There are simple and cheap ways to perform surveys, as you might expect. Just as with anything else, there is a right way and there is a cheap way, and the cheap way to survey results in cheap, inaccurate results. The problem is that you may not know about the quality of the survey for a long, long time. This is a particular problem during times of economic difficulty. The land surveying business is cyclical because of the relationship to housing and real estate, and in tough times, some surveyors tend to lose sight of ethics and professionalism, compete on a price basis, and the results are predictable. Even when times are good, there is a temptation to cut corners and do a cheap survey, especially in highly competitive areas. Since you cannot tell a good survey from a bad survey, all kinds of problems can arise. Most commonly, a bad survey is discovered some years later by a good survey being conducted on property next door. The aggrieved party certainly has legal recourse against the offending surveyor, but as you might expect, those who practice in a less than ethical manner or are less than competent are generally never in a financial position to be responsive to a lawsuit, and so the burden becomes the landowner's.

Most land surveyors are responsible, however, but as the old adage goes -- it takes only one rotten apple to spoil the whole barrel. Fortunately, the profession has recognized this, and the surveyors' associations have set up procedures to deal with such individuals, once they are discovered. In addition, the licensing authority for surveyors can suspend or revoke licenses and impose fines for improper work. In recent years the professional associations such as the Western Federation of Professional Land Surveyors, The National Societies of Professional Surveyors, and state societies have experienced a rapid increase in membership and an equally rapid increase in participation by the members. This has resulted in increased awareness of professionalism within the discipline, and it will hopefully result in a higher overall standard of surveying in the long run. In Chapter Five, you will find advice on how you should go about hiring a land surveyor so that you can best protect yourself and your clients.

MYTH NO. 3

TRUE NORTH (Or -- bearings are bearings, aren't they?)

Probably the least understood and most often misinterpreted aspect of land surveying is direction. By direction, we mean "bearings" used by the surveyor, and published on maps and in legal descriptions.

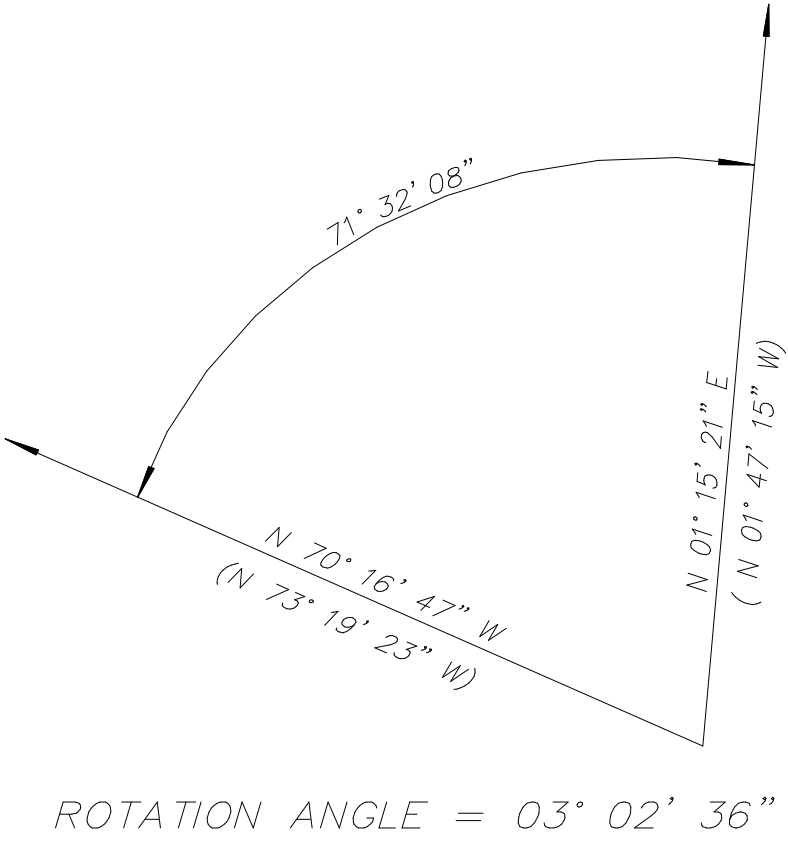
Most people seem to think that a bearing (direction) is an absolute quantity -- in other words "NORTH" is a specific direction, and "EAST" is a specific direction, and N 47 degrees E is some specific direction

This simply is not the case. Bearings are only a relative measure of direction. NORTH can be defined in many ways:

- ✓ Magnetic North
- ✓ Astronomic North
- ✓ Geodetic North
- ✓ Geographic North
- ✓ Plan North
- ✓ Solar North
- ✓ Assumed North

All of these are adequate in their own right, and each has its own use. The land surveyor normally uses some approximation of Geodetic North or Astronomic North, but not necessarily. There is no uniformity whatsoever in bearing systems. Actually, since bearings are only relative measures of direction, the only reason for using them is to have a uniform basis of measurement. What is important, however, is that the land surveyor must know the direction of a line relative to the direction of all the other lines that have an impact on the survey. The following illustration will demonstrate the concept. In this illustration, we see that each line forming an angle is given two values, one in parentheses and the other without.

The bearings in parentheses are related to one system, and the other bearings are related to another system. The angle formed by the intersection of the two lines is the same with either system, but depending on the system chosen, each line has a different value.



The important concept is that the angle is important, not the bearings. The bearings are only values assigned to the lines, and not a fixed direction. You could call the lines anything you want, so long as the angle remains constant.

It is because of this anomaly that a good deal of confusion is created by survey maps that are related to different bearing systems. Just because one map or legal description assigns a bearing to a line different from that assigned on another map or legal description does not mean that either one is wrong or right. The calculation of the angles is the important point, and any land surveyor deals with this concept on a daily basis.

It is also because of this misunderstanding that so many legal descriptions are written poorly! People, other than surveyors, don't generally understand the relationship of bearings and directions as they apply to the description and definition of properties, and we strongly urge anyone who wants to prepare a legal description to talk to a surveyor. It might save a lot of grief.

MYTH NO. 4

40 ACRES IS 40 ACRES (If a section contains 640 acres, it must contain 640 acres.)

This is another area (no pun intended) that has caused a good deal of confusion. The simple facts of the matter are that a quarter-quarter of section rarely, if ever, contains exactly 40 acres, and likewise, a section very rarely, if ever, contains exactly 640 acres.

This is so because many years ago, it was established that the original government surveys were to be held, whether they were performed correctly or incorrectly. This means that the original points set by the government surveyors, prior to the passage of title to individuals, are to govern all subsequent surveys.

The government surveyors were, indeed, instructed to lay out sections that were one mile square, and thus 640 acres, but there were many, many reasons why they did not carry out the surveys with much care. As a result, the following surveyors (today) find that the sections were laid out

somewhat carelessly, and because the law says that the points set by those government surveyors are sacred, even if in the wrong place, the sections are larger or smaller in area than 640 acres when measured carefully. There are many reasons why the inaccuracies occurred, but one of the contributing factors was the policy of paying the government contract surveyors by the mile. It didn't take too much figuring to figure out that the faster they could survey, the more money they would make in less time. At the time the surveys were carried out, in the nineteenth century, most of the West was frontier, land wasn't worth much, and nobody was going to check the surveyor's work, so speed became much more important than accuracy, in many instances. In some cases, the really unscrupulous individuals would falsify portions of their field notes and not perform the survey at all. The complications that this causes the modern-day surveyor are manifold. In all fairness, most of the surveyors of that era were reliable, and although they were working with instrumentation that was crude at best, they did a remarkable job of the surveying of the public lands. You would be well advised not to put too much faith in published areas of particular parcels. The actual areas can vary considerably from what was supposed to exist and can be determined only by a modern, accurate survey.

MYTH NO. 5

SURVEYORS SERVE THEIR CLIENTS

While it is true that our primary obligation is to our clients at any given time, boundary lines, by definition, necessarily entail more than one

property owner, and possibly many, so that in the end a surveyor may serve many masters. Consider for a moment what the land surveyor is actually doing when a property line is surveyed. Putting stakes in the ground is the physical evidence of an insurance policy. That policy is, in fact, a single premium, unlimited term, zero-deductible boundary insurance policy. To top that off, the policy is not only for the surveyor's client but for anyone that could reasonably rely on the survey, and that obviously includes future owners and owners of adjacent properties. The courts have consistently held that there is no privity of contract between the surveyor and client. This means that the surveyor is liable not only to clients but to third parties who could reasonably rely on the results of the survey.

The courts have also consistently held that surveyors are not subject to statutes of limitation. They are liable for their work forever! There is also no corporate veil to protect them. If they incorporate their business, they will still be held personally responsible for any negligent acts. Even when states have adopted statutes of limitations for suits arising out of surveying malpractice, the courts have said that the statutory period does not begin to run until the aggrieved party discovers the error. This is commonly known as the "discovery rule." In other words, should a surveyor survey your property in error, and that error is not discovered until twenty years later, the surveyor is liable for the 20 years plus the statutory period, which is typically six years.

It has also been held that the surveyor is responsible for perpetuating the inaccurate work of another surveyor. This means that it is always unsafe

for the competent surveyor to accept the work of another surveyor without checking to see if it is correct. This is why you may be surprised at the expense of some particular survey when you know that there has been surveying of recent vintage in the immediate area. If the surveyor you are dealing with did not do that work the law, requires that the previous surveyor's work be verified as accurate. For these reasons, surveying is expensive. It is also expensive because of the costly nature of providing the service. A good "total station" surveying setup costs on the high side of $40,000 these days, for instance. Of course, to attract good people, substantial salaries are required, and this adds to the cost as well.
All in all, compared to other services, the going rates for land surveying these days are relatively inexpensive, considering the liability incurred by the professional land surveyor. Surveying today is actually a good value because we can do more work in less time with greater precision, and the value of the service is just as great as ever, compared to the value of real property, and surveys therefore cost proportionately less.

MYTH NO. 6

OLD MONUMENTS ARE GOOD MONUMENTS (Or-rusty pipes are more sacred than shiny pipes)

We've lost count of the number of times our surveys have been questioned because the corners we set don't agree with the old pipes (hubs, concrete monuments, rebar, angle iron, etc.) that someone claims are the true corners and have been for umpty-ump years. For some reason, old survey points tend to gather dignity with the passage of time. Logically speaking,

you would expect the opposite to occur, given the advances in technology, but such is not the case. Actually, in a very few cases, old monuments do have dignity. In the event the old monuments in question represent the location of original government survey corners, or in some instances subdivision corners, they may actually be the true corners, regardless of whether they were set where they were supposed to have been set. In this case, as described earlier, they are held above all other survey points, but this is the only instance in which age creates distinction. In all other cases, age has no bearing whatsoever on the quality of location. In some instances, corners may become corners through adverse possession or some other means of unwritten title transfer, but that has no relation to the quality of the old survey points.

The fact of the matter is that old monuments are just old monuments, nothing more, and they may or may not be in their proper position. Actually, with the advances in survey technology today, the newly positioned survey points are much more likely to be in the correct position.

A SHORT HISTORY OF LAND SURVEYING IN THE WESTERN UNITED STATES

Land surveyors, when talking among themselves, often refer to their discipline as the "second oldest profession." This is actually pretty close to the truth. Ancient hieroglyphics found in the pyramids have many references to land surveying. Since the domestication of man, there has been a need for the definition of boundaries, and thus land surveyors. In

the book of Genesis there is legally described a tract of land bought by Abraham for the burial of his wife, Sarah. In the Book of Numbers, 34:1-12, the Lord himself gave a legal description to Moses describing the land He wanted the nine and one-half tribes of Jews to conquer and possess in Canaan. This description, as you would expect, is flawless as to form.

Since biblical times, the need for the land surveyor has increased proportionally with the population. As more people demanded more real estate, so did they demand land surveyors.

In the United States, the federal government set out to settle the public domain by offering tracts of land to homesteaders and other entrymen. The object was to get the land into production and out of the public ownership. This meant, of course, that this land must be surveyed, and so the RECTANGULAR SYSTEM was adopted. Who actually designed the system is a subject for much debate. However, the system was used for surveying most of the United States outside the thirteen original colonies, and was used for surveying all of the Western United States, with the exception of Texas.

Thomas Jefferson was appointed in 1784 to chair a committee to prepare a plan for the disposal of the public domain, the profits of the sale to pay the public debt. The first act calling for disposal of the public lands, and referencing the rectangular system of land surveys (section, township, range), was the act passed by the Continental Congress in 1785, and titled "An ordinance for Ascertaining the Mode of Locating and Disposing of

Lands in the Western Territory." Subsequent to the passage of this act, the U.S acquired additional lands. Included were the huge Louisiana Purchase, State Cessions, the Oregon Compromise, the Gadsen Purchase, and others, including the Alaska Purchase, as recent as 1867. Edward Tiffin, Surveyor General in 1815, issued the first detailed written instructions for the survey of the public lands. These instructions have ever since prescribed the general method for the survey of the public domain, although they have been modified many times since. They called for the layout of townships six miles square, which would contain 36 sections, each containing a square mile, or 640 acres.

Most of the Western United States was surveyed at some time during the 19th Century, and much of this work was carried out in the latter half of that century. Since the beginning of the survey of the public lands, it has always been a hard and fast rule that the original survey points, whether they are where they are supposed to be or not, still will control, and are absolute. If the General Land Office (now Bureau of Land Management) sets them, the corners are in almost every instance absolutely and unquestionably correct. It is a good thing that this system was adopted, because in the land surveying business, something has to be absolute, and this provided a good basic rule for the following surveyor.

The procedures used by the GLO (General Land Office) surveyors go something like this: first, the principal meridians are run, then the standard parallels, then the township boundaries, and then the sections themselves. In surveying the sections in a township, the GLO surveyors started at the SE corner of the township and proceeded to lay out the sections from

South to North, with any error being distributed in the last tier of Sections on the North and West sides of the township. This is why government lots are designated along these two tiers of sections, as well as along broken boundaries of the sections such as watercourses and the like.

The original surveyors, unless guided by special instructions, surveyed only the boundaries of the section, setting points at one-half mile intervals. It is these original points that control all surveys today. It follows that it is important that these original points be preserved. The original surveyors actually did a commendable job of leaving enough evidence so that the following surveyors could find their original corners. They normally marked trees if they were available, and gave descriptions of the terrain in their notes. When there were no trees available, they would often make a series of pits and mounds at the site of the corner, and sometimes they would start a fire and leave charcoal as evidence of the location of the corners.

The surveyor today is charged with finding those original corners, and it is indeed a challenge. You can imagine the difficulties involved in finding a 4" by 4" post set in 1867 that appears to be located in an area that has been clear cut for logging, or falls in the middle of a 2000-acre plowed field. It isn't easy, but with modern techniques and instruments, many of these original corners are recovered.

Since the days of the original GLO surveys, most of the responsibility or the perpetuation of private boundaries has fallen on the shoulders of the Professional Land Surveyor in private practice. Most of the states have

registration laws that provide for licensing of the land surveyor. Generally, they require good moral character, six to eight years of professionally responsible land surveying experience, and successful completion of a 16-hour examination. These procedures, and the requirements, of course, vary from state to state.

HOW THE LAND SURVEYOR WORKS

Surveying, with exception of new innovations in equipment, has not really changed much over the centuries. The same mathematics are still used as were used in Biblical times. The methods and systems are much the same as they always have been. The surveyor's job is made much easier now with the advent of theodolites, electronic distance measuring equipment, and computers. However, hacking a line through the brush is still hacking a line through the brush. No one has yet invented a tool that will alleviate this drudgery. The modern surveyor's biggest technological advance has probably been the electronic distance meter (EDM). This device allows measurement from mountaintop to mountaintop, across canyons, over water and impassable ground. It also has many advantages over the old standard steel chain or tape. Long distances can be measured with much more precision and much more quickly. It is especially handy in heavily traveled areas such as city streets, where dragging a 300-ft. chain around is especially hazardous due to automobile traffic. Now, instead of dragging that chain around, the electronic equipment is set up and the surveyor can begin work without interference. No longer do we suffer the torment of cars and trucks continually trying to annihilate people and equipment.

Angles are still measured with a surveyor's instrument such as a transit or theodolite, although much advancement has been made in this field as well. The standard transit is read by observing a vernier that is marked off in some increment of a 360-degree arc, typically, one minute. The theodolite is normally an instrument that has an enclosed vernier, is easier to read, and requires less expertise to handle. Most instruments on the market today have digital readouts that require no interpolation whatever, and these are a great advancement in terms of precision.

The typical instrument of today is called the "total station" or some similar term. These devices measure both distance and angle, and have many, many features that make them extremely efficient surveying tools. Many have data collectors that interface directly with computers and virtually eliminate the need for recording measurements in the field. This is important since they eliminate one source of error in the process of surveying.

The most recent important advance in field technology is called GPS, short for GLOBAL POSITIONING SYSTEM. This method of surveying involves the observation of satellites placed in particular orbits by the Department of Defense. The technology was created to allow precise positioning for military purposes, but surveyors now routinely use this technology for certain applications. The equipment and training is expensive, but the results are very impressive, and this technology will play a more and more important role as time goes by.

In the office, the surveyor has all types of devices that allow dramatic improvements in efficiency. There are computers of course, and they save thousands of hours of time compared to even 20 years ago, when the standard calculator was a mechanical rotary type and had no memory whatsoever. Most of the surveyor's work involves trigonometry, and just the computer's ability to automatically compute trig functions has enormously increased the ability to make swift and accurate calculations. Today most drafting is done electronically, although the same skills and techniques that made a good draftsperson before are still applicable today. There are many types of computer-driven plotters on the market that do a great job of producing maps. All this equipment is expensive, of course, and many prefer the manual methods of surveying. The new equipment does not, of course, relieve the surveyor of interpretive duties. Decisions must still be based on experience and good judgment, weight of evidence, location of old corners, interpretation of old surveys, document research, and the general exercise of professional judgment. These things cannot be computerized and that's probably for the better. Let's take a look, then, at how the surveyor goes about performing a property survey. Assuming that a 2.5-acre tract that is to be surveyed is described as a portion of a section by subdivision, we will follow the procedure generally required to accomplish the task. We will occasionally find a problem, as well. Some crazy problem always crops up during the course of a normal boundary survey, for which there is no written solution, and which the surveyor must solve without reference to rigid laws or guidelines. The first things the surveyor must do, of course, is come to terms with the client, and determine each party's respective responsibilities. This is best done by written contract. This way the possibility of confusion by either party is

mitigated or eliminated, depending on the detail contained within the contract. Having come to an agreement, the surveyor can then set out to actually perform the survey. While it may seem of minor importance in the overall scope of things, the contract is of particular importance.

Traditionally, surveyors have relied on handshake agreements and verbal understandings. This informal approach is now recognized as inadequate, because of the complexity of the arrangements and the need to adequately define both the surveyor's and the client's responsibilities.

After entering into the agreement, the surveyor must acquire copies of the client's deed description and those of all the adjoining property owners. The adjoiners must be examined to determine if there is the possibility of an overlap or a gap (hiatus). Often the deeds of parcels that are nominally adjacent are conflicting. To what extent this might occur must be examined in detail. Generally, if there is a deed description overlap, examination of the history of the segregations of the property will sort out the matter. However, in some instances, such discrepancies must be taken care of by actual field observation to determine the intentions of the parties to the conveyance. In some instances, the surveyor cannot possibly determine the actual boundaries, and the matter must be left either to agreement between the adjoining parties, or to the courts for interpretation. Obviously, the surveyor does not have the power to determine conflicting boundaries, as this would constitute a taking of property without due process of law.

In most cases, there will be no conflict, especially when dealing with large parcels of property, which are generally described as aliquot parts of standard section or government lot.

Once the title boundaries of the property have been determined by examination of record legal descriptions as described above, the surveyor then sets out to begin the actual physical survey of the property.
In order to carry out the actual placement of the property corners, it is obvious that a starting point or points must be found. The surveyor cannot magically set corners. Somehow, a beginning point represented by a physical object on the ground must be related to the survey of the property in question. Another corresponding point must be found to give a direction. Since all of the properties in the Western United States have been related in one form or another to the original Government Land Office surveys, it is clear that the parts of that original survey that control the particular parcel in question must be relocated or discovered.

Generally speaking, when dealing with a subdivisional piece of property, the surveyor must locate and measure the position of at least five exterior corners of the section within which the property is located.

The original surveyors set monuments every half-mile around the perimeter of each section. The corners of the section are referred to as "section corners," and the half-mile markers between them are called "quarter corners," because they define the boundaries of one quarter of the section. The center of section is determined in most instances by intersecting lines drawn from opposite corresponding quarter corners.

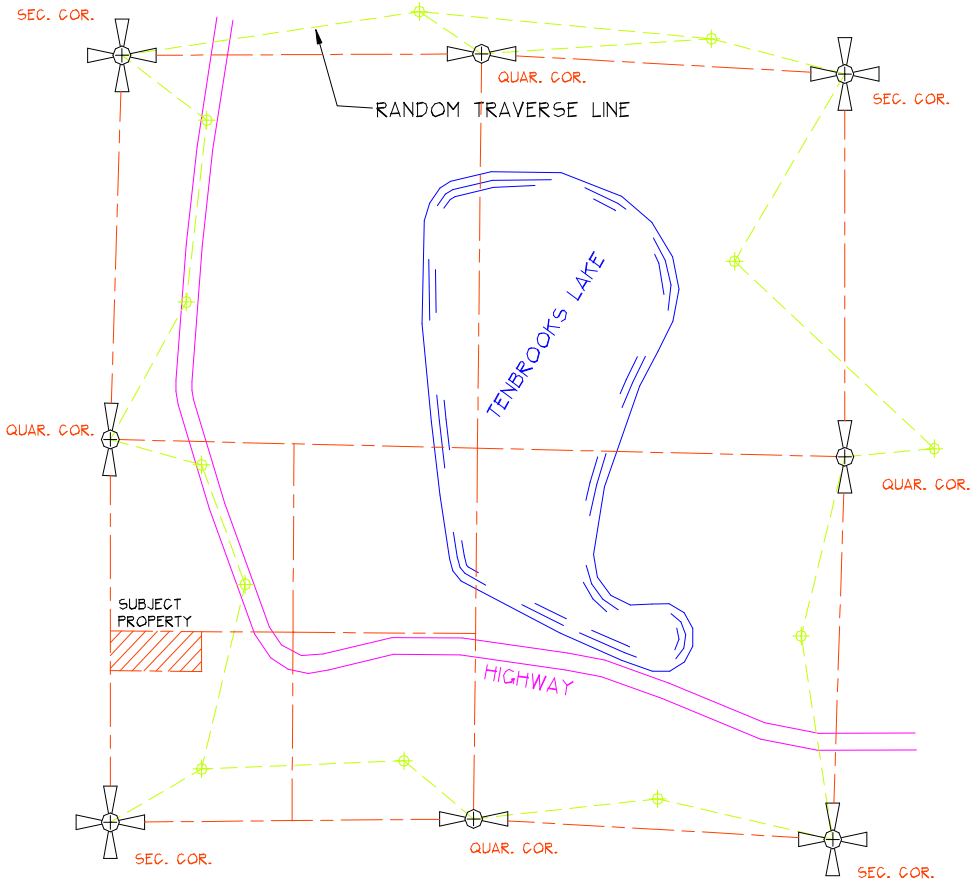
Unless the original surveyors, under special instructions, actually set the center of section, this method is almost always used.

There is a good deal of confusion between landowners and surveyors regarding the center of section. For some reason, many surveyors, when finding a monument (not original) nominally at the center of the section, which has been used as a property corner for many years, will use that monument and call it the center section, whether it is in the proper position or not. This is generally a mistake. While it may make the survey better fit long continued occupation, it may be very wrong from a technically correct surveying standpoint. If you happen to be involved in the survey of a property dependent on the center of section, it would be good advice to question a survey that holds an old monument as the center of section. It may be right and it may be wrong, but as previously discussed, old monuments are just old monuments. They have no prestige because of their age.

Since the surveyor must establish the relative position of the exterior corners of the section, and most often they are not intervisible, some method must be used that will allow measurement indirectly. In cadastral surveying the most common technique is called the "random traverse." As shown in the accompanying sketch, this involves setting points at random intervisible points that interconnect with one another and with the section and quarter corners.

The surveyor occupies each "station" (point) of the random traverse and, with surveying instruments, measures the horizontal distance to the adjoining points and the angle between them. Once each station in the traverse has been occupied and measured, calculations are made relating each individual point to all others, and a coordinate is established for each station. The precision of the measurements in the traverse is calculated and the error is the "closing" error. Since no measurement can be made with absolute precision, there is always some mathematically determinable

TYPICAL RANDOM TRAVERSE



error. Closing is the term applied to the precision and accuracy with which the measurements are made. In the figure shown on the accompanying sketch, the surveyor might expect a closing error of one foot or less.

Having calculated this closing, and finding it acceptable, the error will be mathematically distributed throughout the traverse using a model that distributes the most error in the most likely place of occurrence. This is mathematically acceptable, since the source of the error is assumed to be universally and equally distributed throughout the traverse. This is called "balancing" the traverse. A number of methods are used, most commonly compass rule, transit rule, or least squares. Once this adjustment is complete, the relative positions of both the section corners and quarter corners and the random traverse points are known. By calculation all of the sudivisional parts of the section can be determined according to the rules of surveying as provided for by the federal statutes. This then allows calculation of the corners of the property being surveyed and the relative positions of those corners compared to the random traverse points. Once this has been done, it is a relatively simple matter to stake the property by running from the random traverse points to the property corners. Often, the surveyors' clients will see the surveyors working a goodly distance from the target property and wonder why. They might wonder what in the world they are doing so far from the actual property and the answer in most cases is that they are trying to establish or reestablish the horizontal control and are conducting a random traverse to do so. Once a random traverse has been established within a section or other government allocation, then that traverse can be used again and again, as long as the points are not disturbed or destroyed. Landowners and real estate

professionals should recognize this and discourage disturbance of these points, because they directly impact the work of the surveyor and thereby the cost.

For the same reason, it is often true that several adjoining tracts of land can be surveyed much more economically (on a per-tract basis) than just one piece. It is also the reason why the initial survey in any given section is more expensive than following surveys in most instances. While the liability of the surveyor does not appreciably change, the costs involved in actually accomplishing the survey are noticeably decreased upon establishment of horizontal control by random traverse.

The corners of the property can be marked using any number of different materials. Since the expense in establishing the corners is significant, it seems to us that the corners should be marked by something that is durable and recoverable, although it is amazing how many of the surveyor's clients tend to scrimp at this stage. The cost per corner differential between a durable monument and something less is relatively small, so it seems logical to go with the best possible markers.

Property corners are typically marked by:

- ✓ Wood stakes
- ✓ Re-bar
- ✓ Iron Pipes
- ✓ Concrete Monuments
- ✓ Aluminum Monuments

The least durable of these is the wood stake. They tend to rot (depending on the climate) within a few years and are gone. The best of the lot is probably the aluminum marker. These are very durable, and although they are not ferrous material, and therefore can be located by metal detector, they normally have implanted magnets to circumvent this drawback and actually provide better detector response. The aluminum monuments are durable, difficult to remove from the ground, and the surveyor likes them because of their light weight and hence portability.

The next best marker is probably the concrete monument. These should have re-bar in them to allow for location by metal detector. Iron pipes are all right, but they tend to be more easily removed and tend to be disturbed easily, and because they do not have the visible impression of more substantial monuments, they are generally paid less regard. Depending on your needs, the type of marker set for the property corners should be carefully considered prior to the survey.

This is obviously a tremendously simplified overview of the general nature of a cadastral survey. Clearly, many, many complications arise during the typical survey, and 98% will not be as simple as the situation described here. However, the general procedure is always the same - find the controlling corners (original or perpetuated), establish horizontal control by random traverse, calculate the relationship of the property boundaries to the horizontal control, and set the corners of the property in question.

Let us digress for a moment and discuss the subject of original GLO corners. As previously discussed, these were set by the original government surveyors and control all surveys today. In finding these corners, which may have remained untouched for over 100 years, the surveyor actually becomes a sleuth. Evidence, which is often scarce and poorly documented, must be accumulated and evaluated, and by reference to the original field notes and by disclosing physical evidence in the field, the surveyor must determine the original location. Quite often, the original monument (stone or stake) has disappeared due to the passage of time. However, the "corner accessories" may still remain. If trees were available, the original surveyors usually marked them with blazes and gave their position relative to the actual corner. These trees are called "bearing trees" and it is a federal crime to disfigure or damage these objects.

Marking these bearing trees was actually very farsighted. As the tree heals from the blaze mark, it actually grows around the wound and covers it up. As long as the tree is sound, and the scar around the blaze can be found, the tree can be opened up and the original blaze recovered, even though it is completely covered by new growth.

Most states now require that, once a cadastral (property) survey has been conducted, the surveyor place a map on the public record disclosing said survey. This is a valuable aid in perpetuating the survey of the lands, as it discloses a historical record of survey data. Up until the time such statutes were enacted, much valuable survey data were lost simply because of the lack of such publicly recorded information.

There are, of course, many different types of surveys performed by the practicing surveyor. In addition to cadastral (property) surveys, they are called upon to conduct topographic surveys, construction surveys, control surveys, hydrographic surveys, serve as expert witnesses, and provide a host of other services related. Topographic surveys are performed to determine the physical nature of the property. Differences in elevation are determined, physical features such as trees and buildings and fences are located. This type of survey is valuable to architects, loggers, land-use planners, engineers, and others who must have graphic representation of the land in order to carry out their work. Construction surveys are performed to allow contractors to build correctly. The surveyor is called upon to survey roads and streets, buildings, sewers and other utilities, and any number of other types of physical improvements. The surveyor's role in such projects is that of expert measurer, allowing builders and contractors to complete projects correctly. Control surveys do not necessarily have any relationship to property boundaries and are very precise in nature. Cartographers (mappers) are dependent on control surveyors, because they cover wide ranges with great precision, and that is requisite for accurate mapping. The control surveyor typically uses the most sophisticated and precise equipment. Photogrammatrists rely on the control surveyor to establish points on the ground to allow scaling of aerial photographs. Other areas of control surveying include energy projects, route surveys, geodetic engineering, and geographic information systems for planning. Most of these disciplines are of only passing interest to the real estate professional or landowner. The property surveyor is the person you are normally interested in.

HOW TO HIRE A COMPETENT PROPERTY SURVEYOR

As stated earlier, all surveyors are not alike. They are as unlike as any other group of professionals. There are good surveyors and bad surveyors and everything in between. It is not easy to tell the difference between a good and bad surveyor. It is even more difficult to tell the difference between a good and bad survey. In fact, a bad survey may look better than a good survey. The worst kind of quack surveyor is the one who surveys to existing fence lines or some other kind of occupation line, knowing that it is going to cause the least fuss, because it always fits acknowledged property lines. This kind of survey always looks good until a competent surveyor comes along and finds the error. Real estate professionals and land owners should constantly remind themselves and their clients that a good survey and a bad survey may look the same. It is the integrity and competence of the surveyor that can be somewhat judged, and thereby relied upon.

If you can't tell the difference between a good and a bad survey, how do you tell the difference between a good and bad surveyor? There are a number of points to be considered:

Is he (she) licensed by the state? In all 50 states of the union, land surveyors must be licensed to practice. Any boundary staked by an unlicensed person is fraudulent, illegal, and completely without value. Make sure your surveyor is licensed.

Are they members of the State Surveyors' Association? Every state has an association of professional land surveyors, and any professional surveyor should belong to and be active in the Association representing surveyors' interest. This is a standard professional measure for any discipline. In addition, the true professional should be active within the association, either on a local, state, or national level. It is a professional responsibility to contribute to the betterment of the profession, and is indicative of a responsible, up-to-date professional.

Does the individual appear competent? This is certainly a subjective area of measurement, but an important criterion. Look around at the office, the personnel, the equipment, and the demeanor, and get an overall impression. The competent surveyor has a professional aura that is obvious. The competent surveyor acts like it. As a result, those individuals who are at the top of their careers are successful and generally financially secure, meaning that if something does go wrong, there will be adequate resources to cover such a contingency. The successful surveyor will be around year after year in good times and in bad. It is important that the business be around many years down the road, for that is most likely the time for any survey work to be challenged. Are the services expensive? Now this may seem at first blush to be an anomaly. Obviously it behooves you to spend your dollars wisely, but it is easy when hiring a land surveyor to be penny rich and pound foolish. It obviously irresponsible not to get the most economical deal you can. This being the case, why should you ask such a question? The reason is that while an expensive survey may not guarantee quality, a cheap survey is very likely to be just that - cheap, and bad! You should keep in mind that it is very

important that the surveyor do a thorough and competent job in surveying any property boundary, and to do so requires a budget of sufficient caliber to allow for a complete job. It is also unethical for a surveyor to compete on price basis. It is easy to see why. The less- than-competent (responsible) surveyor will lower prices in order to acquire work and will be forced by the sheer nature of the situation to cut corners and do a less than adequate job of surveying. You certainly are not advised to simply hire the highest-priced surveyor in town. This by itself would be irresponsible. You should consider this aspect, however, as one measure of the surveyor's image of competence. Do not consider it by itself, however. Make sure all the tests of competence are in place. In some cases, the best surveyor may even be the least expensive, but the overall pricing structure is what you want to look at. It's just like hiring a lawyer or a doctor - when important matters are at stake, you do not hire the cheapest professional, you hire the best.

Beyond these subjective observations, there are certain elements of property surveying that you can identify and make sure that your prospective surveyor includes them in his services. (For this list of items, we are partially indebted to "Tiny" Tillotson, his book acknowledged in the bibliography at the end of this book)

The competent surveyor should include the following in the standard package of services:

1. Be willing to take full responsibility for securing all the records necessary for the survey, whether deed records, original survey notes and

plats, retracement survey records, or court actions. These records should be both for the property being surveyed and for the adjoining properties.

2. Be willing to perpetuate and record all the corners used as control in the survey.

3. Be willing to take full responsibility for the survey by filing in the official records a plat containing all necessary information to generate and perpetuate the survey. Often these requirements are spelled out in statutes, and the surveyor is obligated by law to include them as a part of the record.

4. Be willing to accomplish a survey that will be defensible in court. This is the strongest test of competency.

You should enter into a written contract with any surveyor you retain. This contract should include all of the above items, either by reference or by explicit language. The contract is a two-party document, and it should spell out exactly what the surveyor's responsibilities are, as well as those of the client. Make sure you have written agreement that is satisfactory to both parties. Such a valuable and expensive service as property boundary insurance should never be left to the whims of an oral agreement.

Additionally, it is important that you have an agreement that can be referred to at a later date, should a question arise as to any responsibility of either party to the contract. It is also a pleasant way of doing business.

The pricing strategy for surveying services is a subject of continuing debate within the land surveying profession. There are generally two schools of thought: One is that you cannot accurately estimate the cost of doing a boundary survey because of all the unknowns, e.g., existence of original survey monuments, historical surveys, encroachments, terrain, weather, research data, etc., and therefore it is best to just give clients an estimate of the cost and proceed with the survey on the basis of an hourly rate charge, the total being the rate times the number of hours incurred in completing the survey.

While this argument has merit in some instances, we would argue to the contrary. A lump-sum agreement is the best arrangement because the client knows from the outset what the charges will be and there is complete agreement on fees before the project starts. While it may well be difficult to estimate the cost of a particular survey, it is not impossible and we figure that you can estimate within 80%, 80% of the time, and that's good enough. Besides, you tend to underestimate under an hourly-rate system and in most cases, experience has shown, will end up with a final figure higher than the estimated cost. With lump sum pricing, you get only one shot, and it had better be right. This is reason to watch out for cheap prices - the cheap hourly-rate estimate is likely to end up substantially higher than the expensive lump-sum fee. In any case, lump-sum pricing is more beneficial to the client and the profession. A true professional, who knows what he or she is doing, can accurately estimate the cost of survey and give you a lump-sum price.

With the above information in hand, you should be able to responsibly choose a competent land surveyor. If not, you should ask about his reputation among people you trust. Also ask for references. You might even go so far as to check with the Board of Registration and see if the surveyor is in good standing with the licensing authority. This should not be necessary, however, because the competent surveyor will proudly display licenses to practice and be well known and highly regarded in the community.

A few additional thoughts: In the written agreement, asks the surveyor to include a description of how your corners will be marked. This is, in the end, is what you are paying for, and they should be durable and capable of being relocated many years hence. Get your surveyor to commit to at least an estimated time of completion. In times of heavy survey activity, the surveyor tends to prioritize on some rather strange basis. Be prepared to pay all or some of the cost of the survey prior to commencement of survey work, but make sure you are protected by contractual agreement if such is the case. (Some of the most respected surveyors ask for most of the money up front; it gives them a nice cash-flow position and allows them to survey, not collect past-due receivables.)

The contract included here is not a caveat, but is typical of a professional agreement that might serve to meet the ends described above.

PROBLEMS INVOLVING UNWRITTEN TITLE

Between landowners and real estate professionals, there is often a good deal of confusion about the subject of unwritten title. This is not at all unexpected. A good deal of confusion exists within the land surveying profession as well. It is a complicated subject, and one that is more in the realm of the attorney than the land surveyor or the real estate professional. However, a working knowledge of the fundamental elements is essential in the real estate business in order that you avoid misrepresentations due to lack of understanding of the common law and statutory law surrounding the subject of unwritten title.

Unwritten title is just that - title to property that passes without benefit of a written instrument. There are several broad categories. Namely:

- ✓ Location of Common Grantor
- ✓ Estoppel in Pais
- ✓ Parol Agreement of Adjoining Owners
- ✓ Mutual Recognition and Acquiescence
- ✓ Adverse Possession
- ✓ Prescription

While it is not within the scope of this book to provide a detailed analysis of each of these categories, a broad-brush look at each of them will allow you to at least recognize the existence of each, should it arise. One thing is certain -- do not believe for an instant that you have suddenly become well versed in this complex subject. Ira Tillotson, in his book referenced in the bibliography, put it succinctly: "The main thing that landowners and surveyors and lawyers should know about unwritten title is that there is a vast body of law in this field about which they know very little." We

heartily concur. Just when you have decided that you know something of how the courts treat this subject, after many years of professional practice and observation, they will issue forth a ruling that seems counter to all you have learned. With that in mind, let's take a cursory look at some of these subjects. A cautionary note - you are advised to check your own state statutes regarding this subject because each state differs slightly with respect to the legal requirements regarding each aspect of unwritten title.

Location by Common Grantor

This concept generally refers to a case where one party sold one or more adjacent parcels of property (normally, a first subdivision of property) to two or more separate owners, and one owner disputes the claim of another as to the location of their common boundary line. Usually, if certain conditions are met, the court will hold that the actual boundary line is the line intended by the Grantor. In Kay Corp. vs. Anderson (72 Wn. 2d 879), a line which was located on the ground and accepted by a grantor and grantee as dividing the property which the grantee was purchasing from that property being retained by the grantor, was binding upon those persons notwithstanding that the agreed-upon line was at variance with the deed executed by the grantor, where the grantees and their successors occupied and claimed to the line fixed by the grantor in a manner and character visible to anybody looking at the property.

For a boundary line to be fixed by a common grantor, the land must have been sold and purchased with reference to the boundary, and there must

have been a meeting of the minds as to the identical tract of land to be transferred by sale.

The courts have held that a line established by survey at the time of sale, and recognized as the dividing line, will be held as such and be binding upon predecessors in interest.

Estoppel

Estoppel is a legal principle that sometimes makes unwritten agreements effective. Estoppel is a bar or preclusion to one's alleging or denying a fact because of his own previous actions. To prove estoppel, a number of elements must be demonstrated. Generally the doctrine prevents one from misleading another and later refuting those acts or omissions.
In terms of unwritten boundaries, a hypothetical example might be the instance where Smith deeds to Jones a parcel of property, and points out that a fence is the true property boundary between them, a fence that Smith knows is in error. If Jones relies on Smith's statement and constructs improvements and occupies to the fence, Smith is estopped from claiming the property as his own.

Parol Agreement of the Adjoining Owners

Adjoining land owners may locate a boundary line by oral agreement and not have such agreement invalidated as being within the purview of the Statute of Frauds, if the agreement is followed by actual or constructive possession by each of the owners up to the line so agreed upon, and the

proper location of the line is uncertain or in dispute. In order for such an agreement to be valid, there must be a bonafide dispute as to the location, the owners must arrive at an express meeting of the minds as to the specific location of the boundary, and they must take actual occupancy of the land.

The actual rules for unwritten agreements vary widely from state to state, but the general concepts as outlined will apply in most cases. The necessity of actual possession varies widely from state to state. If there is no dispute, the unwritten boundary prevails, and if the described line is known, another line agreed upon by parol means is not binding. In Aldrich v. Brownell (45 R 1 142), the court held that "The fact that a line is capable of being located by a competent survey does not void an unwritten agreement; the line merely need be unknown to the adjoiners and in dispute.

Mutual Recognition and Acquiescence

If two parties mutually recognize a line as a property line over a period of time, particularly a statutory period, and acquiesce as to that location, then an agreement as to the location of that line may be inferred and the line will become the boundary in fact. In most cases, a fence or some other physical barrier is involved. A physical barrier erected only for that purpose, however, and not intended to mark the boundary can never become the boundary through the doctrine of acquiescence. This doctrine is very similar to estoppel, and elements of each may be involved in a particular instance.

In Rosen vs. Ihler (267 Wis 220, 64 NW 2d 845, 1954) the court said that where there has been long acquiescence in a recognized line with undisputed possession for a long time, the presumption that this was the true line is not overcome by a fact that a survey follows another line.

Adverse Possession

The doctrine of adverse possession is not infrequently referred to when some of the above doctrines would better apply. Adverse possession does not involve agreement among parties, and by its very title suggests hostility and lack of recognition of boundaries. Adverse possession is a doctrine whereby a legal right is obtained by action, which, by definition, must be wrongful. As you might expect, under such circumstances, the tests to prove adverse possession are rigorous. Based on consideration of public policy that title of land should not long be left in doubt, and that society will benefit from the use of land left idle by the owner, the doctrine of adverse possession will bar a true owner of property from the right to recover all or a portion of his land that has long been occupied by another. The states all have statutes regarding this subject. In Washington State, for instance, there are two statutes providing for a specific time period (seven and ten years, under certain circumstances).

This is probably the most complex of the unwritten title doctrines. In order to prove adverse possession, the occupation must be:

- ✓ Actual and Uninterrupted
- ✓ Open and Notorious
- ✓ Hostile and Exclusive
- ✓ Under Claim of Right Made in Good Faith, and sometimes with Color of Title

All of these tests must be met before the court will award actual title by adverse possession

Actual and uninterrupted means that the land must actually be occupied either personally or by some representative of the claimant. This can mean that the land is farmed or put to some use, but in all cases there must be actual physical possession of the land. It must be a continuous occupation as well. Any interruption of occupation, no matter how insignificant will end the continuity of possession and restart the statutory period.

Open and notorious means that the possession must be for all eyes to see, including the actual title owner of the property. The occupation cannot be clandestine or secretive, but must be in such a fashion as to give constructive notice that the land is actually being adversely occupied. In other words, the possession must be such that the actual owner of the property is given a chance to know that he is in danger of losing title.
For the possession to be hostile and exclusive, it must be demonstrated that the claimant intends to occupy to the claimed boundary to the exclusion of the actual boundary, and that possession must be to the exclusion of all others. It cannot be a class-action occupation. Hostility

does not mean animosity; but rather it is a term of art which means that the claimant is in possession as owner and not in a manner subordinate to the title of the true owner. This concept is at the very heart of adverse possession and is one of the most important tests.

Claim of right made in good faith is quite similar to "hostile" and some jurisdictions treat it as the same. Basically, it means that the adverse holder must have a bona fide belief that he is the true owner in order to acquire title.

Some jurisdictions require that the adverse possession must have color of title. This means that there must be something that appears to give the claimant title, but in fact does not. A fraudulent or inaccurate deed is an example. An instrument such as a void tax deed would also suffice. The instrument must actually portend to convey the title, and parol (oral) testimony cannot be added to support the contention of conveyance. Adverse possession cannot be claimed against any governmental agency.

Prescription

The doctrine of prescription generally refers to specific rights rather than actual passage of title by unwritten means. An easement by prescription can occur after long periods of usage of a property, by someone other than the owner, for certain purposes. If, for instance, Smith was to use Jones's property for the installation of a water line for a long period of time, the court, under certain circumstances, would rule Smith's use had ripened into an easement, the dimensions and uses and locations determined by the

court. The same thing applies to roads, irrigation canals, power transmission lines and the like.

THE SURVEYORS' DUTIES WITH RESPECT TO UNWRITTEN TITLE

The land surveyor, with respect to matters other than adverse possession, is usually in a position to offer advice and encourage the owners to reduce an unwritten agreement as to boundaries to writing. If either party disputes the agreement, the surveyor becomes merely a fact collector and an observer of deed lines by description. The land surveyor is not duty bound, nor privileged, to establish unwritten title lines. That is a matter for the courts. The surveyor is obligated to note any encroachments and make a full disclosure as to the conditions of occupation with respect to the title lines.

With respect to matters of adverse possession, where there is by definition hostility and disagreement, the surveyor's role is to act as observer and adviser. The surveyor is charged with the duty of noting encroachments on record title but is not authorized to settle disputes, unless the parties to the dispute have made arrangements for a mutual agreement. The legal system has definite procedures and policies for settlement of boundary disputes, and it is the surveyor's role to act as expert witness in such matters, and be of service to the legal profession in helping settle such matters. Once again, this is a very complicated area of real-property law, and the few tidbits of information here offered are just scratches on the

surface of the subject. Readers are strongly urged to consult an attorney with respect to such affairs.

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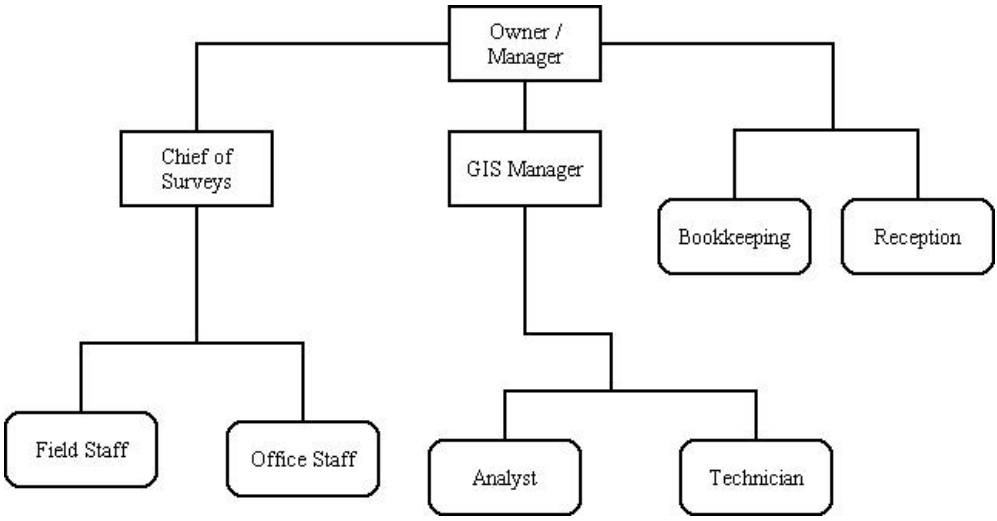
CHAPTER FIFTEEN

A FEW WORDS ABOUT PERSONNEL MANAGEMENT



TYPICAL ORGANIZATION OF A SMALL SURVEYING ENTERPRISE

"So much of what we call management consists in making it difficult for people to work. "

Peter Drucker

The above organization chart is a highly simplified version of what a small surveying company's structure might look like. While it may seem that an organization of fewer than 30 people or so would not need an organization chart, there are many good reasons for constructing one. Making an organization chart is similar to building a business plan. The exercise is likely to be of more benefit than the result. Some companies that have not

thought about the structure of their organization may find that it is very difficult to build the organization chart because, over time, so little attention has been paid to the flow of authority and responsibility. Try to build one for your company, or if you're just starting out, build one that you think makes sense. It might be surprising what you find out.

Generally speaking, since most surveying companies are not managed analytically, but by the seat of the pants, the exercise of drawing lines that show who reports to whom and who is responsible for what can be a challenge. Often these lines of communication are quite fuzzy and disjointed. One thing to keep in mind when constructing such chart is this: in most cases, if a line of communication doesn't branch, something is wrong – either someone is duplicating a job or someone is not doing his or her job. Give it a try – the results just might give you a clue as to where to look for areas of improvement.

This book is not going to go into depth in this area, simply because a couple of principles and a dose of common sense will get you through most organizational problems that might arise in a surveying enterprise.

The first thing to keep in mind is that you are dealing with a group of professionals. These are not factory assembly line workers who are doing rote work. You have hired these people and spent time training them for this very reason. These professionals, licensed or otherwise, have professional sensibilities and needs that are quite different from laborers. For that reason, you should forget about most of what you have read in textbooks relating to personnel management. Most of these books are

written with a management vs. workers paradigm in mind, and those rules simply don't apply to a professional firm.

Most professionals genuinely care about their work. Sure, they care about their paychecks, but what makes a professional a professional is a dedication to what he or she is doing. They need to be treated differently, simply because good ones are so hard to find and even harder to replace. They need to be treated as well as your clients.

Pay is one thing, of course. You should reward them as handsomely as you can, but it takes more than a paycheck to make a satisfying, long-term professional job. A happy professional is challenged intellectually, stimulated professionally, and working in an environment that allows the achievement of professional satisfaction. Professionals who find themselves in a situation that is frustrating to work in because of poor management will find employment elsewhere and even if they don't, you will not get the most from them.

I have seen two situations that are particularly detrimental to creating a harmonious working environment within a surveying firm: the first arises when an employee is asked to serve two or more masters, and the second is the failure to understand how to delegate properly.

SERVING TWO MASTERS

The examples are limitless of situations that create this vexing problem, but here are a couple of typical examples that I have seen in land surveying companies.

One situation develops something like this. The professional surveyor negotiates a deal with the client as to price and delivery time. The project is handed over to a subordinate who is charged with doing the work, and introduced to the client. "Mr. Client, this is Melissa Spears who will be handling your project. She is a good hand, and I have gone over the project requirements with her, so give her a call if you have any questions." Now Melissa is quite anxious to please her boss and equally anxious to stay within the budget, get the job done on time, and satisfy the client. Two things happen now. The boss gives her two more clients with promises attached, and Melissa finds out that the boss's budget is unrealistic once she gets into the project. She can't keep the boss happy because she can't get both jobs done in the time frame expected, and the client is unhappy for the same reasons. Melissa had nothing to do with the negotiations with the client, and has no idea what expectations were planted in the client's mind. Further, she is now expected to communicate with the client and respond to his desires, as well as satisfy the boss.

Melissa now has two bosses – the clients and her employer - both competing for her time and attention. Melissa has been put into a position that is uncomfortable and frustrating, and if it keeps up, she will be looking for work elsewhere. The employer meant no ill will and felt like

he was doing a good job of management by giving authority and responsibility to his employee thus allowing her to grow professionally. What he overlooked is that we cannot very long tolerate serving two masters, each with conflicting desires. It's simply too frustrating to be in that position.

This is not the same thing as having a whole bunch of plates in the air, however. All of us must manage competing interests every day, but they must come from one source to make it fair. The professional who has 25 projects ongoing at the same time is not in the same situation as Melissa. He has asked for all these jobs and they are simply competing for time. Melissa is being pulled two different directions and has agony coming from each. If the boss would simply make priority decisions for her, and take the responsibility of dealing with the clients on that basis, her problems would be greatly diminished. Too often, we bosses, because we have that power, make life miserable for our staff without intending too, or even knowing we are doing it. You need to be in tune with what your employees are experiencing, and if you put them in untenable positions like Melissa's, you are being unfair and creating a poor working environment.

DELEGATING THE RIGHT WAY

There is one simple rule that you should always remember: Delegate authority and responsibility in equal measures. Do that and everything else will be much easier.

What does this rule mean? Allow me to explain this by example.

Example 1:

You as owner of a land surveying firm have experienced enough growth that you need some standardized procedures for making your maps. You need drafting standards and it occurs to you that one person should be in charge of this, because that way there is a lead person everyone can turn to when questions arise. It further occurs to you that this one person should be charged with recommending software and a process for upgrading that software on a continuing basis. So far, so good. That all makes sense.

So you pick your head of drafting, Mike. Mike must still earn his keep as a draftsman, but you understand that he must be allotted some time to carry out this important management function. That makes sense to you, and Mike thinks that makes sense as well and accepts the new responsibility with some enthusiasm, because he has been harboring all these nifty ideas and can now put them in place with his new position.

At this point, Mike has been delegated the responsibility of doing the drafting manager's job. Unfortunately, this is where the delegation usually ends. No authority, or very little has been delegated. Too bad, because without authority commensurate with his responsibility, Mike is a dead duck. He will be frustrated, and the boss's idea of a drafting manager will effectively be dead as well. Everyone thought it was a great idea, but it will fail because of the lack of understanding of how to delegate effectively.

In this little scenario, everyone in the company knows that Mike has no authority to set standards, because that authority, if it were intended, was not delegated to Mike, and notice of that delegation conveyed to other staff members. Moreover, everyone knows that the boss still calls the shots, and Mike is just a pawn. The result is that the staff (his peers, for whom he is honestly trying to do a good job), ignores Mike's attempts to impose standards and the boss is frustrated because Mike isn't getting those standards in place like he wants. It's not Mike's fault, though – it's the boss's. Both are very frustrated, but neither is really completely aware of why.

The reason this plan didn't work is because the boss delegated only the responsibility, and didn't delegate the necessary authority for Mike to do the job. It's like asking a carpenter to build a house without tools. The tool Mike needs is the authority to impose standards (without the staff having recourse to the boss), and that authority needs to be clearly conveyed to the people Mike has to work with.

To make this delegation work, the boss should have given Mike the authority to make decisions with a guarantee that, except in the most egregious situations, Mike had the say-so with respect to any issues related to drafting within the company. Mike would then have an opportunity to show his stuff – not only as a good draftsman, but also as a leader. He would have to bring all the players together to get his job done, and that's what being a leader in a company is all about.

Example 2:

John is given the job of taking care of the company vehicles. He is sort of a motorhead anyway, so it's a natural for him. He is asked to make sure the vehicles are maintained and repaired, and to set up a good plan for managing those vehicles, including a replacement plan. John eagerly sets out to show how clever he is at doing this job for the company. He creates an elaborate database that prompts him automatically when servicing needs to be done, directs him to the right web site to acquire parts or accessories, and provides detailed data to help him manage his fleet. He even has a plan to track warranties and recommend vehicle replacements based on projected wear and tear. His software solution is so cool it even analyzes the break-even point where a vehicle should replaced because it is starting to cost more money than buying a replacement vehicle. John is a sharp, analytical guy and gets pretty excited about this new responsibility and really wants to do a good job of it.

Just about the time John really gets going on this project, a transmission in one of the primary crew rigs fails. Analysis and planning is one thing, but a major repair is another. Should John send it out for repair? Or is this the straw that broke the Suburban's back and means the vehicle should be replaced? Tough decision, but John is up to it. He analyzes the situation and determines the rig should be replaced.

But – oops! – the boss didn't tell him he could make that decision, did he? The boss didn't give John a budget to work with and the authority to manage the budget – he simply made him responsible. John still has to go

ask the boss if he can do what needs to be done. Like Mike, John doesn't have the tools he needs to do the job he was asked to do. He doesn't have the authority that goes along with the responsibility.

As a result, he goes to the boss and asks if he can get this vehicle replaced. The boss says no, he thinks the transmission should be fixed. John is frustrated because he thought that was his job, and his enthusiasm takes a big hit. Why, after all, should he do all this planning and analysis if the boss is just going to overrule him? Pretty soon John says to heck with it and does very little toward managing the fleet. The boss is unhappy, John is unhappy, and neither is quite sure why the plan didn't work.

It didn't work because, although the boss had good intentions, he didn't delegate the authority to complement the responsibility.

The boss needed to give John a budget to work with. Without it, John has to ask the boss every time a decision is made. In that situation, the boss might as well do the job himself. John agrees, and since the boss is too busy with other things, the plan to manage the vehicles fails.

Example 3:

Nancy has been with the company for 8 years and has acquired her professional license. The boss values Nancy for all her hard work and dedication, plus the local knowledge she has, and besides, she is a really good surveyor. The boss, to her credit, realizes that Nancy needs to

advance her career, and if she can't do it within the company, she is likely to look for a place where she can.

So the boss, after consulting with Nancy, decides that a natural advancement would be to place Nancy in charge of subdivision surveys within company.[20] Nancy is pretty excited about this, because along with this new challenge comes a raise. She knows she can do a good job because of her years of experience and general ability to get things done.

The next time a subdivision client comes in and wants some work done, the boss refers him to Nancy. Nancy knows how to get things set up and going. She gets things set up to do the work and is busily going about doing a bang-up job for this client, knowing that this will be good for the client, good for her, and good for the boss.

Since the company does other work, there are other demands. There comes a time when Nancy is up against a deadline and needs her subdivision plan drafted. Unfortunately, the boss has made other commitments. And because the boss is the boss, her jobs get done first. Where does that leave Nancy? She has to explain to her client why the deadline hasn't been met. Further, when the client complains to the boss that the deadline hasn't been met, Nancy has a difficult confrontation with the boss that neither wanted to happen. The boss wants to know why Nancy's client hasn't been served right, and Nancy has to explain that it was the boss's fault because she trumped her request for drafting. This is

[20] For purposes of discussion, we will assume that this company does different kinds of work, including subdivisions, and that the boss managed subdivisions previously.

not a pleasant situation for the boss, for Nancy, or for the client. No one is happy.

What happened? Once again, while Nancy was given the responsibility to do a job, she didn't get the authority she needed to do the job right. Neither the boss nor Nancy thought the thing through. With a little foresight, this difficult situation could easily have been anticipated, and had the boss understood the need to delegate properly, she would have seen to it that Nancy didn't get out on this limb. When she was given the task of managing the subdivision jobs, it should have been understood that she would have the tools to get the job done, in this case, to have at least equal footing with the boss as to prioritizing work.

Nancy is now disillusioned with her new position, the boss is unhappy, and the client's work hasn't been done on time. All of this happened because of a lack of understanding of how to delegate.

Both of these common examples illustrate problems that result in a stressful working situation for both the boss and the employees. Oftentimes, neither party can identify just what the problem is, they just know that something is wrong and they are terribly frustrated. Although both mean well and would like things to work out, the result is not good.

The idea here is that any time a task or assignment, no matter how trivial, is delegated, enough authority to do the job must accompany it. Otherwise the job won't get done, and everyone will be stressed unnecessarily. In a land surveying firm, it's typical for a senior surveyor

to hand a project off to a junior member and say, “Here – manage this project.” What happens, though, is that the senior member still wants to make all the decisions on the job. NO GOOD! If he wants to make all the decisions, then he should manage the job. If he really wants the junior member to manage the job, then he should hand off the authority to make the decisions required of the job. This is not to say that the boss shouldn’t consult with employees, because usually the boss has more experience and can be very helpful, as long as the line of communications are not blurred or confused.

Someone once observed that the practice of establishing goals and then doing everything you can to thwart the achievement of those goals is the very definition of sabotage.

You can’t have it both ways as a business owner. If you want employees to have responsibility to achieve goals, they need enough authority as well – it won’t work over the long term any other way. Responsibility is easy to delegate; delegating the authority required to carry out the responsibilities is a bit more difficult. Think it through, and make sure adequate authority is attached to the responsibility.

Don’t be a saboteur – delegate and do it right!

CHAPTER SIXTEEN
CONTRACTS AND CONTRACTING

Most surveyors these days have heard that a contract should be written for every job. That's good advice, but why is it good advice? Perhaps it's worth reviewing.

For obvious reasons it's good policy to have a written contract with your clients if ever you have to sue to collect your fee. If you follow the advice in this book, you should rarely, if ever, find yourself in that situation. If you treat your clients right, you'll get paid and they'll be happy so a lawsuit should never be a bother to you.

When you enter into a written contract at the beginning of a job, it also allows you to write a bunch of protective clauses that could be helpful if a disagreement arises during the course of the project. Again, if you are treating your clients right, disagreements should be rare and these clauses, while useful, should rarely be a factor. There is certainly no reason not to protect yourself as much as you can, in the rare event it's needed.

In my opinion, the contract serves a much more useful purpose in the daily operations of a land surveying business. More important than being a legal instrument, the contract is a communication tool. As you have already read, communication is the key to good client relations, and the contract can be an integral part of that.

When a prospect calls about a job, we generally do some research and prepare an estimate. The next step is usually (or should be) to write a contract and send it to the prospect for signatures, thus binding the surveyor and client to an agreement. But there is a lot more going on than just shuffling paperwork.

First, the nature of the work to be performed, as discussed, is restated in the contract. Any misunderstandings can then be addressed. Perhaps the surveyor didn't understand what the client wanted, or maybe the client didn't understand what the surveyor said had to be done. It's therefore quite important that you state as clearly as possible the scope of the work. Try not to use obscure or esoteric surveying terms and explain the work in common terms as often as you can. It's often impossible to distill all the language to common use, but give it a try. Here's a sample of language that might be used for a property and topographic survey:

1. *Establish horizontal survey control and survey the boundaries of client's property setting monuments (Berntsen cast-aluminum magnetic monuments) at the corners thereof and setting iron pipes (driven flush with the ground and marked by wood stakes) at intervisible points along the property lines, or as directed by client on site*
2. *Establish vertical survey control and perform a topographic survey of client's property resolving contours at 2-foot increments, and including location of surface-observable features that might affect client's development plans for the property, including locations of existing sewer manholes, catch basins, power vaults,*

telephone pedestals, buildings, and other features that are apparent from surface observation. Manhole inlets and outlets will be measured to determine depth and elevation and the diameter of inlet and outlet pipes.

3. *Draft map depicting the boundary and topographic survey in accordance with minimum detail standards for boundary and topographic surveys as found in Section 35.29.060, Administrative Code of the State of Wisconsin. Up to 6 hard copy maps to be prepared for client's use.*

This kind of language is pretty simple and easily understood by most clients. You should encourage your clients to read the language carefully because it will form the basis for the work you perform, and if it doesn't properly reflect exactly what they want done, it can be modified.

Second, you have the opportunity to reinforce the need to get cash up front, if that is called for; if such an agreement is written into the contract, it is clear that the surveyor is not obligated to perform any work on the project until the property retainer is paid. Such language might take the following form:

> Lump sum fee: $8200, of which $4100 shall be paid prior to commencement of work by consultant, the remainder to be paid upon completion of field survey.

Notice that in the payment language, it is stated that the balance of the fee not paid up front (not that you shouldn't receive all the fee up front, mind

you) is due upon completion of the field work, not the delivery of the maps. This is done for two reasons: First, the final billing can be sent out in advance of the preparation of the maps, and second the final maps can be withheld if the client is not prompt with the payment. The latter should never really occur, because you should have better relationships than that, and as a practical matter, the maps should be finished promptly anyway, because that's what you agreed to do.

The contract will provide a means of objectively determining what the agreement between the surveyor and client is, should there be some question. In its absence, we are stuck with perceptions and imperfect memories, and it's quite common to find in discussing a project that the surveyor and client have widely divergent perceptions of what was said and/or intended. You should try to write a contract for every job for this reason alone. It can save a relationship that might otherwise have deteriorated simply due to poor communication, even if both parties to the agreement really want to work with one another.

In reality, in the day-to-day management of your business, there will come a time when you agree to do some small job for a good client, and you know that the hassle of writing a contract might be more than it's worth. That's just the reality, but remember to be very careful with your communications in such a situation, because that very valued client is the same one you want to treat with the highest regard, and having no written agreement opens the possibility of a misunderstanding.

The following contract form is one I have used (and updated periodically) for 20 years or so with good success. You should, however, definitely develop your own form for your own use that suits your own situation. Different states have differing laws, as well; so do not treat this contract as anything more than a model that can be adapted to your specific needs.

SAMPLE CONTRACT

BEARDSLEE SURVEYING SERVICES

CONTRACT FOR PROFESSIONAL SERVICES

THIS AGREEMENT entered into at Chelan, Washington, on the _____day of _____, 20__by and between, IVAN NEED, hereinafter called the "client," and BEARDSLEE SURVEYING SERVICES, hereinafter called the "consultant," is as follows:

CLIENT: IVAN NEED
ADDRESS: 400 E. CADASTRAL WAY, WAHLUKE, WA 98888
TELEPHONE: (509) 555-3456

The client and consultant, for mutual consideration hereinafter set forth, agree as follows:

Client is the owner or purchaser of property commonly described as:

[Description of property]

A. Consultant agrees to perform the following services:

[Scope of work]

B. Client agrees to compensate consultant for such services as follows:

[Fee arrangement]

C. The provisions of the attached exhibits are incorporated herein and made a part hereof.

IN WITNESS HEREOF, the parties hereto have accepted, made and executed this agreement upon the terms and conditions above stated and on the exhibits attached hereto, the day and year first above written.

CLIENT: CONSULTANT:

_____ _____

Name: IVAN NEED Name: DANIEL E. BEARDSLEE

BEARDSLEE SURVEYING

SERVICES

STANDARD PROVISIONS OF
CONTRACT FOR PROFESSIONAL SERVICES

Client and consultant agree that the following provisions shall be a part of their agreement:

1. Consultant shall not be liable for damages resulting from the actions or inactions of governmental agencies. Consultant shall act as an advisor only in all governmental relations.

2. In the event that client institutes a suit against consultant because of any alleged failure to perform, error, omission, or negligence, and if such suit is not successfully prosecuted, client agrees to pay consultant any and all costs of defense.

3. Should this agreement be placed in the hands of an attorney for collection, then all attorney's fees and litigation expenses shall be paid by the client.

4. All fees and other charges agreed to by the parties hereto will be billed when due, as determined by the consultant and payment will be due within 20 days of such billing unless otherwise agreed.

5. A late payment FINANCE CHARGE of 1% per month (12% per year) shall be applied to any unpaid balance commencing 30 days after the date of billing.

6. In the event that any staking is destroyed by an act of God or parties other than consultant, the cost of restaking shall be paid by the client, provided such work is authorized by the client.

7. The client shall be responsible for all governmental fees associated with the work performed under this contract and any other fees not specifically covered by the terms of this contract.

8. In the event of change orders authorized by the client, additional fees will be charged for extra work at the consultant's normal hourly rate.

9. Consultant makes no warranties and offers no opinions as to matters of unwritten title such as adverse possession, acquiescence, estoppels, etc.

_____

_____

Ivan Need Daniel E. Beardslee

There are certain features in this contract that should be included in the one you finally adopt for your use.

- Obviously, the parties to the contract must be specified.
- Make sure you adequately described the property. Although a full legal description is not always necessary (like an earnest money agreement), it's a good idea to identify the property should you ever have a disagreement, and especially if you ever have to file a lien against the property
- Again, make sure you adequately address the scope of work and payment terms. This is, of course, the fundamental heart of the agreement.
- In the standard provisions, certain clauses may prove useful:
    - If you do work involving submittals to government agencies, it's nice to mention that you are responsible for your work only, and not the actions or inactions of the agencies that you have to deal with. This kind of language can help prevent you from getting into a pickle because some agency has held up your client's project to his detriment.
    - The provision providing for attorneys' fees to be paid by the client should he unsuccessfully prosecute a suit against you is designed to prevent nuisance or spite suits. Of course, this should never happen, but it might, and your clients should have no objection to such a provision.

- You need to make sure your client pays any attorney's fees related to collection of past due accounts. In theory, you should not have problems with receivables, but in reality, you will, so this clause can provide a powerful incentive for clients with past due accounts to bring them current. Attorney's fees as everyone knows can add dramatically to the cost of their survey.
- It's worth stating that all billings are due with a certain time period. Left unsaid, it's up to debate.
- The "Finance Charge" provision is standard throughout modern commerce, but the terms must be stated to have effect. Make sure you do not violate any State or Federal usury statutes, but get the highest return possible, so an incentive to pay is created.
- Some mention should be made about restaking, particularly with respect to construction projects. Surveyors never expect to be restaking projects under the terms of the scope of work, but that's not always the expectation of the client, particularly inexperienced ones, so you need to mention that in your contract terms.
- Extra work beyond the scope of the contract is often required, especially for construction activities, so the terms covering that extra work must be stated. I have been told that, if you expect to charge for work on an hourly basis as this section states, a fee schedule should be attached to the contract to make the clause enforceable.

- If your work might involve other fees such as title company charges, government fees, or other charges, your client needs to be made aware that those fees will be in addition to those paid to you as the surveyor. Otherwise, who pays those fees might become a contentious issue.
- If you do boundary surveys, and almost every surveyor does, it's useful to include a caveat against matters of unwritten title. While this clause may not be enforceable, it can't hurt, so I always include it in boundary survey contracts.

I think it's a good idea to keep the contract as simple as possible, but still cover the necessary issues. Multi-page contracts full of fine print and legal mumbo-jumbo might put you on a slightly better legal footing, but are they worth doing? I don't think so, because you and I and all our clients are generally turned off by such things, so keep it simple in the interest of good client relations. In almost all instances, if you are doing your work and communicating with your client, the contract terms will never become an issue. I can think of only a few instances in all my years of private practice that the contract became important, and those were just minor issues that were easily resolved. The idea here is that the execution of the contract itself will help you avoid conflicts that might otherwise arise, so once the contract is executed, you are just left with doing the job, and the client just has to pay you according to the terms of the agreement.

CHAPTER SEVENTEEN
ONE LAST GOOFY IDEA

I have been a partner in a 25 - to 30-person firm, and I've worked for a firm owned by a sole proprietor with about the same staff. I've also been the owner of a small firm with only 5 folks. In all these firms, one issue is always hanging around – how to divest ownership and pass along management to younger professionals.

Owners are always vaguely aware on some level that an investment in a young professional takes a while to be realized, and they don't want that investment wiped out just when it begins to pay off. Most surveying companies are fairly small organizations, and a key player or two can make a big difference in the success of the operation. The problem in a lot of these firms is that the young surveyor who is motivated and a big asset to the firm quickly reaches a point where there is nowhere to go, and must either go to another firm to continue a career-advancement track, or start a new enterprise from the ground up. Either choice eliminates all the investment the firm, or owners of the firm, have put into training that individual, and makes the firm less efficient and profitable. It's a common problem.

How then do deal with this situation? Volumes have been written on the subject in generic business texts, but I believe the surveying profession is somewhat unique. It's more like the legal profession than any other, so what do you think about organizing a firm as a law firm would be organized?

I have been thinking about this for some years now and offer it to the readers of this book as a thought. I'm not advocating it, because I haven't tried it, but in purely academic sense, there seems to be some benefit. You might want to consider such an idea yourself. I am no authority on the organization of law firms, but I think I understand the general concept.

A law firm is typically started by one or maybe two lawyers (licensed professionals) just as most land surveying firms are. As the firm grows additional lawyers and staff are added. The new lawyers are called "associates" until they reach a certain level and then they are made "partners" in the firm and acquire an ownership interest. As the firm grows, additional "associates" are added and more "associates" become "partners." In addition to the lawyers, there are staff members such as paralegals, legal secretaries, etc.

Each "partner" and "associate" has his or her own clients, all contributing to the general revenue of the company. Each partner also has his or her own dedicated staff and there are also staff that take care of general administrative functions for the entire firm.

This sounds like a strategy that could be implemented in a land surveying firm. In most surveying firms that I've been around, all clients are customers of the "firm," not an individual surveyor. Why couldn't a land surveying firm be organized such that each individual land surveyor (licensed professional) has his or her own clientele, while sharing the resources of the firm? These would be little enterprises within the firm

and each could be its own profit center. In effect, each individual surveyor (licensed) could realize the benefits of a very small operation while sharing and having access to larger resources, thereby permitting greater flexibility and capability.

Small firms benefit from agility. Large firms benefit from greater resources. Small firms are very responsive to client's needs compared to larger firms as a general rule. Large firms can take on large projects because they have the resources to do so that small firms just can't muster. It seems to me if you were to organize your larger firm like a law firm, you might be able to realize the advantages of being a large firm while acting like a small firm.

Also, this type of organization might provide limitless potential for motivated young land surveyors. Depending on the details of the organization, each "partner" would be able to grow his or her own "firm within a firm" as they desired, sharing the results in such a way that they reflect the overall contribution to the firm, with due regard to senior partners, founders, specialists, and the like. They could really make a career at a given firm, which is a rather exceptional circumstance in the industry.
All of this takes some organization of course. How field crews are allocated, resources used, priorities established and allocation of other resources are all issues.

It might be argued that this sets up a situation where individual "partners" are competing with one another. I think a better way to look at it is that

each partner can specialize in certain areas that they know and like best. A law firm might be organized into specialties such as real estate law, criminal law, estate planning, etc. A surveying firm might be organized into boundary surveys, topographic surveys, construction projects, land development management, and hydrographic surveying, for instance. Each "partner" could practice his or her own specialty while drawing on the resources of the entire firm to accomplish complex projects.

In this paradigm, a "partner" who has a long-established client with a need outside his particular specialty could have that work done by the right specialist while still managing the client. Remember that hiring a land surveyor is really hiring a relationship, and that relationship can be nurtured under this system, because the client always deals with his trusted surveyor and friend that he is comfortable with, even though the work might be accomplished by others.

Overall management of the organization could be by the "partners" sitting as a committee (or board of direction) with particular aspects delegated to each partner. For example, such functions as marketing, planning, financial management, systems management, field functions, and others could all be divvied up among the partners and each partner could use his or her particular strengths where they would do the most good.

I think this concept is worth thinking about. How about you?