Schleifer's Manual of Construction Business Practices, 2018
Thomas C Schleifer, Ph,D.

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Brief Resume of Dr Schleifer

Tom Schleifer joined the construction industry at age 16 and brings more than 50 years of contracting and consulting experience to his research, writing and presentations. He has Bachelor of Science and Masters of Science degrees in construction management from East Carolina University, and a Ph.D., also in construction management, from Heriot-Watt University, Edinburgh, Scotland. Dr. Schleifer's experience includes serving as foreman, field superintendent, project manager, and vice president of a construction company which he owned with his brother. From 1976 to 1986 he was the Founder and President of the largest international consultancy firm serving the contract surety industry. During this period, he assisted in the resolution or salvage of hundreds of distressed or failed construction firms and projects.

This combination of practical, hands-on experience as a contractor and assisting financially distressed companies has given Dr. Schleifer a unique perspective on the causes of business failure and how to avoid them. He wrote the books *Construction Contractors' Survival Guide* and *Managing the Profitable Construction Business* which have been acclaimed by thousands of contractors and used as a text in numerous university graduate and undergraduate courses and for many years published *Schleifer's Construction Forecast* newsletter. Dr. Schleifer, sometimes referred to as a "turn around" expert because of the number of companies that he has rescued from financial distress, advises contractors on strategic issues such as: profitability, financial recovery, organizational structure, and business planning while he also writes, lectures, and teaches.

The importance of education in the construction industry is one of Tom Schleifer's favorite themes. He is a former chairman of the continuing education committee of the Associated General Contractors of America and has lectured extensively at universities, professional and trade associations, and authored numerous articles and publications on construction and business management. Dr. Schleifer has been listed in "Who's Who in Finance and Industry", "Who's Who in America and "Who's Who in the World." He was the first Eminent Scholar of the Del E. Webb School of Construction, Arizona State University.

Books by Dr. Schleifer include: Managing the Profitable Construction Business, RS Means-Wiley; *Construction Contractors' Survival Guide,* John Wiley & Sons; *ITI Supervisory Training Program*, International Training Institute; *Glossary of Suretyship and Related Terms,* CMA Press; *Schleifer's Construction Profit Series*, video and audio; *Schleifer's Construction Forecast newsletter*.

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Education and Training in Construction (Back to Table of Contents)

Historically continuing education and ongoing training where not regularly associated with the construction industry. Eventually they were considered nice but not particularly necessary. Today they are a critical component for success.

Research indicates that industrial skills (including management skills) have a half-life of five years which means that half the skills workers use to do their job will be obsolete to that job in five years and virtually all skills will need to be replaced with new skills every ten years. The construction industry lagged behind the continuing education and training thrust of the 90's and was late in recognizing that the skill levels necessary for executives, supervisors, managers, and the labor force to do their job are the responsibility of the company, not the employee. Inefficiency and unimpressive productivity improvements in the construction industry were tolerated behind the excuses that every project is different, there is limited control of the work environment, and the labor force is not consistent from project to project.

Because it was considered a custom product, construction used to enjoy sufficient margins to profit in spite of built-in efficiencies. However, as construction moves closer to becoming a commodity, efficiency and productivity is critical to profitability. Construction enterprises must become more efficient as the industry continues to consolidate. Larger companies are embracing training and education as a necessary cost of doing business and have an advantage with their size there is an economy of scale they can more readily provide the necessary resources and up-front costs. Small and mid-size organizations can accomplish the same thing through cooperation and through their associations, but time is short. Larger companies are moving more quickly and small and mid-size companies are not particularly known for collaboration and joint action.

Many contractors describe continuing education and training as expensive, but expensive of course is relative and research clearly indicates that training provides a superb return on investment. The rapidly changing business environment requires increasing sophistication and efficiency to remain competitive and most construction enterprises are playing catch-up to overcome skill deficiencies.

One reason company-supported training and education seems expensive to contractors is that it for many it is a new overhead line item which is now a regular cost of doing business. For example: Banks train employees to be bank-tellers because they don't expect people to come out of school knowing how to be tellers. Banks continue training on a regular basis as their systems, procedures, policies and regulations change and they continue to provide their employees with the education and information to advance within the company. Continuing Education and training are a normal cost of doing business and of succeeding in the construction business. The organization that delays or debates this reality will remain static as others advance. The resulting shift in competitive balance will impact the already high construction industry failure rate.

Why now? Construction is becoming a commodity which is structurally modifying profit potential while industry business risks remain constant and elevating the need for efficiency and

productivity from critical to survival level. Our industry has over-estimated on-the-job training and years of service. We over-value some people with 25 years of experience who actually have five years of experience and 20 years of repetition. An organization of people who do not regularly renew their skills and learn new things is destined to replicate itself indefinitely, miss opportunities for improvement, and fall behind the efficiency and productivity of more enlightened competitors. Large companies are not necessarily more enlightened, but seem to more fully recognize the necessity for employee skills development and enhancement, and are less reluctant to invest in education and training.

There is evidence that suggests that even modest education and training efforts provide huge returns in the form of performance enhancement, employee motivation, and improvements in productivity. Most companies invest in executive and management education first which does not offer direct measurements of field productivity enhancements such as improvements in unit cost. Therefore few companies have a baseline for quantifying changes resulting from training efforts, but all report recognizable improvement. My experience indicates education or training expenses applied to almost any area of a construction operation or organization are recovered rapidly and in a number of cases two and three times over. It also appears that many of the contractors who describe training as expensive have made that judgment on anticipation of costs never experienced; not on training undertaken.

The time for debating the relative value of continuing education and training in the construction industry has been overtaken by the rapid rate of change in the business atmosphere in which we operate. Owners have become more sophisticated and construction has been de-mystified to the degree that other parties to the construction process understand the methods, procedures, and information needed to produce the work. Well informed designers, owners, users, and inspectors provide an increasing challenge to construction professionals who have little choice other than to keep up, improve their skills, or fall behind. On-the-job training is not enough. Improvement and replacement of skill sets requires serious study, continuous education, and a commitment to life-long learning.

The construction industry is at a crossroads. We can continue to debate, or we can provide necessary education and training to overcome lost opportunity and keep up with the business environment. The question, “how much will it cost?” will inevitably be next. The answer is: “as much as an organization can afford”. There is a huge void and the first to improve will shift competitive balance and pick up a lead that will be hard for others to overcome. The reason is clear: Education and training pays immediate dividends in the form of increased profits. Contractors who invest will maintain or increase their lead by reinvesting profits resulting from education and training into additional education and training. The firms that have already invested in training have reinvested because early results have been so dramatic that additional effort and energy is being applied in the same direction.

There is tremendous opportunity in continuing education and training in our industry, in part resulting from the inescapable increase in the rate of change the industry is experiencing which is magnified by the neglect to date.

For many years construction has been described as an industry of brawn and determination. A reputation that stems from building custom products, with rudimentary equipment and limited technical support by an industry that resisted change, was slow to embrace technology and staked its reputation on a can-do attitude. New technology is upon us--driven more by the skilled labor shortage than a willingness to change. Innovative systems and processes have uncomplicated the production and organization of the work.

Construction is or will be a commodity and the production of commodities demand efficiency. Builders will either be numerous, well-educated and well trained small and mid-size construction companies as we have today, or fewer large regional and national organizations. The choice is for individual contractors and construction professionals to make.

Self-Directed Professional Development (Back to Table of Contents)

For those who do not have access to company-sponsored education programs but wish to advance in the construction industry there is an option: Self-Administered Professional Development. Professional development includes personal development because your people skills are as important as your business, management and technical skills. The approach recommended is a multi-year activity which you can develop on your own or preferably with the assistance of a mentor, successful friend or associate that can help your evaluate your current status. The next step is to identify subjects or areas that need improvement or should be learned. Then create a multi-year, preferably three year, Professional Development Plan and of course, diligently carry out the plan on your own. It is particularly effective to work with another or others who have the same ambition to advance. Studying and working with another or with a groups provides the opportunity to exchange ideas, learn from each other and encourage each other. A sample of such a plan is shown below.

Sample Self-Directed Professional Development Plan

Dates: Multi-year - from-to (lasting as long as five year)

Reading

Life-long learning is a commitment to continuous advancement in one's professional and personal life and is directly proportional to ambition. The world body of knowledge is captured in books and the ultimate recommendation is to create an attitude and/or change habits so that reading becomes a habit. Many people avoid reading non-fiction text material because they consider it boring or hard to get through. However, when something learned from a book avoids or solves a problem reading becomes easier. When the reading effort pays off it seems a lot less difficult. Serious managers and entrepreneurs read as many as 12 non-fiction books a year with six as an average. I recommend a minimum of three non-fiction books a year on appropriate topics (matched to your needs) in addition to miscellaneous reading required as part of the self-study section below. The first three books in order are: (these are suggested subject headings that may be altered to individual needs)

PERSONAL DEVELOPMENT: Book on body language or basis communication recommended.
LEADERSHIP: There is almost too much available.
MANAGEMENT: The One Minute Manager by Ken Blanchard or similar recommended.

Begin a personal reference library. Get into the habit of reading with a highlighter in hand and highlight phrases or sentences that interest you or facts you may want to remember or refer to later. Purchase the books if at all possible so you can make notes directly on the pages. Use a dictionary and lookup words you are unfamiliar with--a tremendous vocabulary-building method. We often think we will remember what is informative or interesting to us as we read, but it escapes us over time. Highlighted and marked up books that you have read are a tremendous resource in problem solving that you can refer to throughout your life to recapture information you can't quite remember, but know you have seen somewhere.

Another valuable source of information are trade magazines and journals. You do not have to read every one of them in their entirety, but can scan for articles and subjects that you find of interest. Even then the articles need not be carefully read if interest or time does not permit. Tear

them out and file under general headings like Marketing, Leadership, Customer Service, Management, Technical, etc. Use a system of file headings that make sense to you because it is your personal reference material. Take the materials out when working on a subject or problem and review them for information and insight into the topic at hand.

These are good habits to get into even if you can't see the value up front. They are proven techniques that work, but only after your reading habits change and you have collected some information in your files and on your book shelves. Start now and order the first three books and then others as you are ready for them. When you start the last of the three books decide on the next three so they will be there when you need them.

Self-Study
Communication skills can be advanced in self-study. After you read a body language or basic communication book put into practice what you learn. Become more conscious of studying people more thoroughly through their actions as well as their words when you interact. This is an excellent skill-set to perfect; valuable in marketing, negotiating and presentations. After you try this for six months, if the communication subject is more than a passing interest to you, include another book on it in the next selections and then move on to the study of group dynamics. A writing skills text might also be included in the next selection if that is an area where improvement is needed. Most business and technical subjects can be learned in disciplined self-study.

Seminars and Conferences
These are subject to your budget and should be selected as they become available on subjects that match your needs. It is recommended that you attend two a year if possible. Most are announced months in advance so it is an ongoing selection process.

Short Courses
These may or may not have a place in your plan and may depend on what is available in your area. There are costs involved but these can be effective and in multi-year plan.

Progress Reports
Measuring your own progress is an important element in sustaining motivation. It would be wise to find someone, like a mentor, your study partner(s) a friend or spouse who is willing to discuss your progress, options and to assist you in your professional development efforts.

A Continuing Process
A multi-year Professional Development Plan should be flexible because the pace of professional and personal development is set by the participant and the learning opportunities and bodies of knowledge change over time. The significance of multi-year reflects the length of commitment and investment you or your company is making. The plan should be updated annually preferably in consultation with a mentor who hopefully will be available throughout the year for assistance and consultation. Most of that interaction should be prompted by you as you see the need.

Continuing Education versus On-The-Job-Training:

It's a dog eat dog world out there for forty hours a week. But when you get to fifty, there aren't as many dogs. And when you get out to sixty or more it is down-right lonely! Long hours are common in our industry and generate a lot of work experience. However I have met some construction people who will tell you they have 25 years of experience when they actually have five years of experience and 20 years of repetition. Experience is not enough. You need to add some "new" information to on-the-job learning, to advance your professional development. You would not go to a doctor 25 years out of medical school if you knew he did not read medical journals and text books to keep up on the latest developments in his field. The same is true of construction professionals. Working long hours may help you keep up with the competition but to get ahead of the competition you need to add new information to your work experience. The process is called "professional development". The consequence of not using the latest information available is failure to accomplish what is expected of you.

As mentioned already, the cornerstone of professional development is reading, therefore knowing what to read is important to the busy executive. The initial subjects should include Management, Leadership, Business Development, Corporate Development, Economic Forecasting, Personal Development and Business Classics. Those interested in advancement should be reading a minimum of three non-fiction books a year as part of their professional and personal development and that more is better.

Basics of Construction Industry Success

What You Do Matters as much as What You Don't Do (Back to Table of Contents)

The construction industry has changed dramatically over the years and continues to become more sophisticated and to employ new technologies at an astonishing rate. Construction has also moved closer to becoming a commodity, which is the primary reason profit margins are low compared with historic norms. Lower margins increase risk allowing less room for errors. Profit enhancement in the future will depend primarily from productivity improvements and efficiency.

Management decisions alone determine succeed or failure in the construction business, however, many construction professionals believe they lose money or fail because of other reason; Labor problems, weather conditions, inflation, interest rates, cost of equipment, tightening or shrinking of the market, or simple bad luck. None of these are primary causes of contractor failure. They contribute to financial distress once a poor management decision is made, but are not the basic causes of failures. Failure is not a result of factors or conditions over which management has no control.

Surviving, even thriving, in the industry does not imply management can drop their guard. Growth or simply ongoing operations involve change and change has risks associated with it that can make or break an organization. Therefore past success is not an indicator of future success. When a company expands in size, takes on larger projects, or goes after projects of different kinds or in different territories, it requires good management decisions to reduce the risks inherent in such change. An enterprise may be doing fairly well, or even very well, however the stress to an organization of growth or change can cause weak components to become fatal components. Change itself has to be managed to minimize risk.

One problem is that construction professionals don't talk to each other or share information freely enough to create and share a body of knowledge on how to manage a construction business. They meet, converse, socialize, make jokes, and tell stories about each other but don't share how they run their businesses. They don't talk about mistakes that cost profits, missed deadlines, or much else about business strategies because there is a code among construction professionals. An unspoken code but virtually everyone knows it or learns it soon enough: Learn the essence of the industry, acquire the essential information not taught in classes and secure knowledge of the business on your own through personal experience. Once gained that information, is yours. You've paid for it. You've earned it. It's your personal property. Let others earn it and learn it the same way. Because of this attitude, the industry re-invents the wheel every day.

There is some logic for this behavior. Construction is a very horizontal industry. If you include those people involved in ancillary jobs or in the manufacturing and transporting of building materials, there are more people involved in producing the built environment in this country than in any other industry. It's a huge industry with over a million individual businesses. The turnover rate as companies go out of business and start-ups replace them is phenomenal. Construction is, may be the most highly competitive and high-risk industry in the United States. Consequently, if a construction professional can survive a mistake, correct it, and learn from it, they know

something their competitors might not know. This information gives them a competitive edge they do seem inclined to give away.

There are reasons for the code, but unfortunately it has some very negative spin-offs. Without cross-fertilization, sharing of essential information, and the collection of a body of knowledge available to the industry as a whole, there is a significant time lag between improvements and modernization within the industry and when that information becomes widely known. Better ways to operate and organize construction enterprises and improve management and production are usually closely guarded secrets for those who develop or discover them. We need methods to control the risks which allow construction professionals to take informed risks, and to allow managers to learn from the mistakes of others. Unfortunately major business strategy mistakes in the construction industry are often fatal to the enterprise, and until now, no one has collected sufficient data to provide the hard facts.

To put this in perspective, consider other industries that compare to construction in terms of their contribution to the gross national product---the automobile, steel, oil, and aircraft industries. All of them have extensive training programs to educate their personnel from entry to top-management levels; training programs that are ongoing and under continual review and revision. These industries have also developed a system of checks and balances on their decisions and strategies; they have boards of directors to ensure accountability and monitor managerial decisions and techniques. In contrast most construction professionals have learned how to run a construction enterprise by watching, by doing various jobs, and by working with someone who has been successful in the past. There is a lot of truth in the old construction story that all you need to start a construction enterprise is a pickup truck, a box of tools, a cast-iron stomach, a forgiving wife, and a bad temper. Many have started with less.

There are only a few ways to run a construction enterprise successfully but there seems to be as many ways as there are companies and each business develops its own style. In reality there are only a few ways to structure, operate, and manage a construction business successfully and to control business risks. Some believe that sheer energy, drive, ambition, know-how, and guts will get them through this high-risk industry and it will for a while. However, there comes a time when that energy and drive have to be organized, given direction, planned, and held to objectives. Without appropriate structure, proper organization, and risk recognition success is elusive.

Put simplistically, a construction enterprise has only three primary functions: getting the work, doing the work, and accounting for the work--marketing, operation, and administration. These three functions are separate and distinct but equal in importance and to be dealt with effectively they should be analyzed separately with time and energies budgeted to manage each function appropriately. It is imperative that one person have direct personal responsibility for each of these three functions. This can mean three different people or two or one. It is not unusual for a small enterprise to have one person handling the getting and accounting for the work while another handles operations. Neither is it unusual for one person to handle all three functions, however the functions remain distinct. The personal responsibility must be clearly recognized. Some may consider one more important or significant, but neglecting any of these functions is courting failure. They are equally essential to success.

Individuals who accept responsibility for one or more of the three primary functional areas of management are key to the organization whether or not they own a piece of the company. It is critical to success that the individual must believe they are ultimately accountable for the success of their functional area and accept responsibility personally, not as a functionary or an executive, but as a “principal” in the organization—with ownership or not.

Construction Contractors' Survival Guide; What not to do (Back to Table of Contents)

Understanding the reasons why construction businesses lose money is the best way to prevent unnecessary loss. The investigation and resolution of hundreds of construction company failures have generated a significant body of knowledge on the subject. The events and decisions that precede the failure of a construction business can be categorized and quantified in order to define the most common causes of these failures.

One of the most interesting phenomena revealed by this study is the fact that the events and decisions that cause or contribute to a construction business failure take place during the company's profitable years. To look for the causes within the difficult years when a company is losing money or breaking even is to study the result and not the cause. It is easy to be misled in a study of bad years because losing operations can generate unusual events and decisions even if the contractor is unaware of impending loss.

The events and decisions that precede a construction company failure generally take place during the one to three years prior to the first year the financial statements show break even or loss. A study of the events and decisions that caused hundreds of companies' difficulties identified five recurrent and industry wide elements of risk to potential profit or failure. The Common Elements of Business Failure are:

1. Increase in project size
2. Unfamiliarity with new geographic areas
3. Moving into new types of construction
4. Changes in key personnel
5. Lack of managerial maturity

Each of these will be briefly explored using very general examples of how these elements affect an organization and its ability to make a profit. For an in-depth presentation of each refer to the book: Managing the Profitable Construction Business, by Thomas C Schleifer, Ph.D.; published by Wiley, 2014. All of the decisions concerning these business activities are consciously made, and the events are clearly recognizable and usually appear to be routine business occurrences. Many contractors making a decision concerning growth or a decision to expand into unfamiliar locations or new types of construction do not see them as risky or dangerous and with proper planning and controls they don't need to be. There is no suggestion here that a contractor should fear growth or other changes. What is expressed is that at least one and usually two or more of these events or decisions preceded the failure of a large number of contractors and that there is inherent danger in these elements. A complete understanding of the risks involved is necessary when encountering them. When two or more of these business changes are undertaken at the same time, they are often lethal.

Increase in Project Size

By far the most common element among contractors who fail is a dramatic increase in the size of projects undertaken. The change to larger projects usually occurs during profitable years and problems sometimes develop even before the first of the larger projects is completed.

Undertaking larger projects is a natural part of the growth of a construction company; the order of magnitude addressed here, however, is two times or greater the previous largest project.

The size of a project relative to the size of the company and to the size of its normal or average projects has a definite and direct relationship to profit potential. When a construction enterprise is operating at a profit doing a certain average-sized project and a certain top size, there is absolutely no reason to believe that it will profit if it takes dramatically larger work.

A construction firm may actually be able to build a project two or three times larger than it normally does, however the issue is, can they build it at a profit. If a company can construct $1-million road projects or buildings it may be able to get and construct a $2 or $3 million road project or building and get the job done. But the critical question is: Will it make a profit?

Making a profit on a job twice the size of a company's previously largest project would be at best unlikely. Making a profit from a job three times greater than the largest ever built is almost impossible without both additional resources, financing and a tremendous amount of careful planning all of which is unlikely without outside help. Getting additional resources might be possible, but how would a contractor with no background on projects of such magnitude determine what resources would be needed? Without previous experience, how could they carefully plan the work? Contractors who normally do top-sized jobs of $1, $10, or $100 million would be working in an altogether different environment than the one they are equipped for if they took on a $2-, $20-, or $200-million job.

Case study: Let’s consider an example. A contractor's previous largest project is $1 million and they usually have two or three additional jobs at any given time of $300,000 to $1 million and a number of smaller jobs in the under $300,000 range. The company’s annual volume is $3 million and they are generating a comfortable profit. When work dried up and backlog fell of dramatically, they went after larger and larger projects. They were able to capture a $3-million project and in their estimation their problems were over for a while. In fact their problems were just beginning. Let's look at the impact on their organization. Previously projects took about a year or less to complete. On the average one of their larger projects started about the time another finished and a third was at its midpoint. On the project near completion they were out considerable retainage, but the one in the middle stages was generating large monthly payments and the one starting up was producing good cash flow through front loading. By handling jobs in sizes they were accustomed to which normally were in varying stages, they not only had a reasonable cash flow but also had the time and resources available to look after all of their small jobs and keep them profitable.

Contrast this with the one $3-million job. At first the front load was terrific but the retainage mounted fast and within six or eight months became a higher amount than the company had ever had out on all jobs combined. By the end of the job the amount was strangling the business, and the project took longer to finalize than anything they had ever undertaken. While the project was similar to the work the organization had done, they were surprised at the level of inspection and supervision they were subjected to by the architect or engineer.

On larger projects municipality, state, and lender inspections generally have more red tape than smaller jobs for the same clients which may be more than management is used to or than field staff can effectively handle. Work rules are often more comprehensive on larger jobs and security and safety requirements broaden.

The larger project, although similar to other jobs the organization had performed, was not within its experience or financial capability to finance. The company got the job done, but making a profit was another story and with losses out-of-pocket combined with huge retention outstanding the company could not pay its bills. They are no longer in business.

Unfamiliarity with New Geographic Areas

A change from the geographic area in which a contractor normally works is almost as common an element preceding failure as the change in project size A contractor's primary area maybe one county; half a state; three, five or 50 states. Primary area is that area in which the organization has normally operated, is comfortable with and has been profitable. While there are many good reasons for a company to expand into new geographic areas, such as normal growth, lack of work in primary area, and special opportunities, the risks must be recognized and planned for. Again, the question is not whether the organization can build a similar product in a different location. Rather it is whether a profit can be made at it?

An organization becomes very accustomed to working in an area and can easily assume that their type of work is done the same way everywhere. Yet the differences in customs, methods, procedures, regulations, work rules and labor conditions can be significantly different and expensive if not planned for. Examples are numerous: Merit shop contractor bidding outside their area without knowing in advance that the work would have to be performed union. In certain areas of the country it is common to install underground pipe practically underwater, while specifications in other areas require complete de-watering. In some states it is almost impossible to keep full crews during the first week of deer-hunting season. There are even some areas where local suppliers will give their best prices and service only to local contractors. Regulatory requirements and inspection may differ greatly from an inner city to the suburbs and may be completely reversed when county lines are crossed.

Without going into geological and weather conditions, there are enough potential differences to cause a prudent contractor to want to make certain they know what they are getting into when they take work outside their customary area. Local help, such as a joint-venture partner or new personnel, may be needed to facilitate the project. Compounding the problem, a contractor often takes a distant project that is also much larger than anything they have done in the past because it wouldn't pay to take projects of their normal size so far away which of course, magnifies the risk.

Moving Into New Types of Construction

For a variety of reasons, contractors sometimes change from one type of construction to another or add a new type of work to their existing specialty. Companies may change, for example, from highway work to sewage treatment plants; from heavy industrial to tunnel work; from low rise to high rise; or from office buildings to hospitals.

The need for research and planning before taking a new type of construction work is well recognized by contractors. What is very often underestimated is the entrance cost--the costs associated with the learning period during which an organization adjusts to performing a new type of construction work. Hiring a person who knows the new type of work inside and out may not be enough. Companies often complete one or more losing jobs before they can execute a new type of construction profitably. Unfortunately, some companies do not survive this change.

Most contractors are more specialized than they realize. Some construct several types of projects for instance but perform and profit better at one kind. They may call it luck but it's probably because they are better at pricing and constructing that type of project. Contracting organizations usually start out and remain with types of construction in which they have expertise, and their growth and success are based on the continued perfection of that expertise. Over time they become better able to estimate their kind of work and, therefore, become more competitive at getting it. They also become better at organizing and putting the work in place and become more profitable at doing it. Being able to plan and execute the construction of a bridge does not mean a person can profitably plan and execute a building.

A more subtle change in type of work is the change from public to private or from private to public sectors. This change, even when the project is a company's normal size and in their own area, has cost numerous firms a great deal of money. It certainly can be done with a healthy respect for the differences and risks involved and good planning, but the odds are worse if the firm has never done it before. Indeed many companies do both public and private work and have been doing so profitably for years. There is no suggestion here that it shouldn't be done, just a report that many contractors did not recognize the differences in advance and proceeded to price and produce the work for a loss. There are considerable differences between public and private work. Naming just a few:

- Qualifying for selection lists
- The criteria used for selecting the contractor
- The amount of collaboration between contractor, owner, and others
- The quality of work expected and delivered
- The amount of changes assumed to have been allowed for in the bid or expectations about change orders

Qualifying for bid lists works differently in the two sectors. In public work bidders may need to pre-qualify with the public body the state or other agencies, but these lists are often open to all contractors and in some cases any contractor can qualify with a little effort. A lot of start-up contractors achieve their growth within the public sector. Their size of project may be restricted at first by bonding requirements, but once they have pre-qualified they have a good source of work. This is one of the reasons public jobs usually have more bidders than private jobs.

Most private sector work on the other hand involve select lists that are more difficult to get on as owners or architects pick the preferred contractor, often in a less transparent manner. Few start-up contractors can find their way onto the better private-sector select lists where the number of proposers is usually fewer than on public projects of similar size. The number of perspective

contractors on a project statistically affects the number of projects a company has to go after to get one. This, in turn, impacts the cost of doing business, which affects profit margin.

While some public bodies are required by regulation to award all work to the low bidder, private-sector selection is usually made with as much concern for quality as for price. This type of public awarding allows only limited control over the bid list or who gets the work. The parties are often strangers, and the award of projects and the administration of them are at arm's length. A public project is usually administered "by the book." The contractor intends to perform according to the specifications and no more. The opposite is true of private work where the awarding party picks the proposers, may or may not open proposals publicly, and often ends up working with a known or at least pre-selected contractor. The owner, architect, and contractor are much more likely to collaborate on a private project.

Public work is sometimes bid at a lower go-in price than the same private work, and the number of change orders and extras may be greater on public jobs. The reasons are several. The lower price going in on public work allows little leeway to do minor changes at no charge, while on private work, with a team approach, minor changes in the work are often handled informally with no change orders.

On some hard bid public project, change orders may provide the only profit the job will make. Private work is often not priced as tightly because it is usually understood by all parties that a fair markup on the work is expected and numerous nuisance change orders are not. Contractors for private projects needs to preserve their relationship with the architect, engineer, and owner for future work and usually build a reasonable fee and profit into the price, anticipating the necessity for minor changes or incidentals.

When an organization that does exclusively public work prices a private job low and goes after extras they often run into problems. The architect and owner on private projects may not be used to this approach and feel mistreated. The process creates an adversary situation that often leads to disputes and claims. The differences in expectations on public and private work may not even be known by the parties to the extent that avoidable disputes result. Even when the contractor, owner, and architect conduct themselves in a proper business-like manner, disputes continue. This may be part of the reason select lists, more common on private work, are being used on some public projects.

Changes in Key Personnel

There are three primary functional areas of a construction business, and each must be adequately managed and supervised in a successful contracting enterprise. The primary functional areas are:

- Estimating and sales (getting the work)
- Construction operations (doing the work)
- Administration and accounting (managing the business)

In every successful construction enterprise, a top-level manager is responsible for each of these areas or, in many cases, one person is responsible for all of them or two people share the responsibilities.

If a company is making a profit, it is primarily, if not solely, because of the efforts or these individuals. If one of them leaves, there is by definition no track record of profitability for the new organization as it was configured. This is a simple reality in business and even more so in the construction business that is so often a closely held small or medium-sized company.

Some will point to a business with six or eight good project managers and say, "that's why this company makes money." But someone may also point to the person who is primarily responsible for construction operations and say, "this company has those six or eight good project managers because of him or her." The same can be said about two or three key estimators, and some will say the same about the person primarily responsible for getting the work. Successful companies relegate responsibility for primary functional areas of their companies to key people.

The loss of a profit-making top manager puts a construction company at risk. The top management team of a construction enterprise is small compared to other industries because the labor side of the business is field managed and some contractors even subcontract all field work. The corporate organization is separate and distinct from the field organization. The quality of field management often relies primarily on the quality of the key person or persons responsible for construction operations. If a key person in charge of construction in an organization leaves, the company is permanently changed and at risk until his or her replacement proves that they can do the work for a profit. Operations provide the entire cash flow for the company.

On the estimating/sales side of a construction business, one or more key persons will be responsible for the firm's pricing strategy. This manager(s) will usually take a first-hand part in bid preparations and will determine the final price. The takeoff and estimating staff may be a great asset to the company, but the top manager(s) put them together, and are ultimately responsible for the success or failure of capturing the work. If one of these people leaves the company, the organization no longer has a proven team that can get the work.

The areas of administration and accounting are much overlooked and underrated by contractors. If there are two top men in the organization who are responsible for the three primary functional areas of the business, one of them will be stuck with the administration and accounting functions; usually these fall to the person responsible for getting the work because sales and estimating are more of an office function than construction operations are. In smaller organizations it is sometimes difficult to determine who is in charge of administration and accounting because this function is often not recognized as a primary area important to a company's success. It is often relegated to middle managers even in medium and large-size companies.

This problem is most acute in growing, medium-sized firms. When the business is small, the contractor runs the entire business, including such details as signing the checks. They are therefore close to the accounting side if only by virtue of paying the bills and having a continuous knowledge of the bank balance. If borrowing is required, they are the one who explains it to the banker. Administrative needs are few. The small contractor may or may not keep minutes of important meetings, confirm things in writing, or even reply to all correspondence received. The small contractor is in continuous communication with the relatively few players on their work in progress, and as a result, the impact on the business of

poor paperwork and administration is reduced. As the company grows and the staff increases, administrative and accounting duties are often relegated to middle managers.

If a principal in a construction firm is not responsible for this important primary function, the enterprise is improperly managed. If a dedicated, capable manager who takes personal responsibility for the administrative and accounting functions cannot be identified, the company has a serious problem and is not organized for success. It would be no different from an army marching into battle with no one in charge of its supply line. It's a machine with pieces missing.

If the person ultimately responsible for the company's administration and accounting functions during profitable years is lost to the organization, it is at risk. The accounting staff, under new management, has no track record for monitoring the company's progress and developing accurate and meaningful financial information.

In summary, one cause of company failure is inadequate replacement of the person or persons responsible for one of the three primary functional areas of the construction enterprise. Typically the changes in key personnel that contributes to or causes problems take place while the business is profitable.

Lack of Managerial Maturity

This element of Contractor failure is widespread of all in that it is very often found in conjunction with one or more of the other elements and may actually be a contributing cause of all the other elements. Many construction organizations were founded by one person. The entrepreneurs who survive the high mortality rate for start-ups usually enter a growth stage. The qualities and abilities required for a contractor to succeed at a small construction business are not necessarily the same as those required for the success of a larger construction business. Confidence and independence, the very traits that cause entrepreneur to want to be in their own business to begin with can mask the risks of growth.

Many entrepreneurs assume, "If I succeeded at this volume, I'll do twice or three times as well at two or three times this volume." At some point in the growth of every enterprise, however, the organization must change; it must become more sophisticated. At these junctures more authority must be delegated, more complex systems and procedures will be required, and more sophisticated people may be needed to handle them. Most entrepreneur, founders seem to instinctively follow a command and control strategy, however, as an organization expands delegation is required and some command and control must be given up. Some founders have great difficulty with that. It would be easier if these changes evolved slowly over a growth period because they would be easier for the contractor to digest. But this is not usually how it works because you can't hire half of a person or put in half of a new system in place so these changes come is hard to absorb portions.

Knowing when and how to make organizational changes is an aspect of running the business that tests the true skills of the contractor in a growing firm. Organizational changes necessitated by growth need to be made during successful times to assure continued success. The key to success in management is not to eliminate all problems, but to focus on the problems of the present stage

of the organization's lifecycle so it can grow and mature to deal with the problems of the next stage.

The contractor who resists change until he has proof of the need for change by having a losing year may has waited too long and some of the organizational changes that may be required to expand are difficult to recognize and hard for some contractors to accept even. Delegating responsibility and authority, hiring outside top managers who may have to supervise long-time associates, friends, or family members, and sharing financial information with more people are a few of the difficult options a growing company faces. Even harder may be accepting concepts like open book management where each employee learns to understand the company's financial information, along with all other numbers that are critical to tracking the business's performance.

The term "Managerial Maturity" is used here to mean that a contractor's managerial abilities must mature as the business does. They must change from doing everything themselves to building an organization that can do everything as well, or even better, than they did. Contractors who are unable or unwilling to change their organizations to deal with their growth should either curtail their growth and level off or face the risk of the business outgrowing its own organization. Attempting to do $100 million worth of business with a $20-million organization is suicidal.

Other Industry Concerns

These are a number of miscellaneous areas of concern for construction organizations. Each of these has caused performance deterioration or worse for a number of companies and any of them un-addressed can induce financial distress. If an organization is suffering from any of the primary elements of contractor failure addressed earlier, these miscellaneous areas of concern amplify the problem. The categories are presented in no particular order, however the degree to which an organization experiences the concern influences the impact on the company. Some of these issues may appear minor if an organization is not suffering from them, however, any one of them can impair a company if they get out of hand. Some difficult to discern and can exist for many years unrecognized. For that reason these bear careful reading periodically by those responsible for the success and wellbeing of a construction organization.

Growth and Risk

In the volume-driven industry of construction that thrives on growth there are failures even among the older and well established firms. The words "growth" and "growing" recur in the study of the management of risk in the construction business because the business risks in construction are simply greater during growth phases. A construction company must be managed well to be successful, and in the best of times there is risk. A rapidly expanding construction company magnifies its risks even if it is closely and intensely managed. There is nothing wrong with building a bigger business. That is the American dream. But the increase in risk in the construction industry from growth alone cannot be understated and should not be overlooked.

Market Driven

The ideal construction company would be organized to be market driven and not volume driven. It would strive for carefully planned growth but be prepared to level off or cut back on volume if the marketplace tightens or shrinks. It would use its markup flexibly as a competitive tool but never take break-even work just to maintain volume. In a tightening marker (greater competition

for the same work) or in a shrinking marker (less work available) the ideal construction company would price more competitively than it would in a better market and at the same time concentrate on making more profit on less work. It would have some “flexible overhead” built into the organization that could be cut immediately and would not hesitate to cut permanent overhead when necessary. (For more detail see Flexible Overhead elsewhere in this manual)

The ideal construction company is willing to get smaller to survive when necessary. The down cycle will pass and they will be ready for the upswing, but only if they come through intact. The large failure rate in the this industry is driven in part by construction enterprises pushing full speed ahead during weak or down markets with desperation pricing in an attempt to capture work that their competition needs as badly as they do.

Controlling the Need for Volume

Overhead costs are difficult enough for a contractor to control when the company is not growing, but in a growing organization they pose two dangers. Because an organization cannot add a half-person or a half-piece of equipment, they are forced to put on overhead costs during growth in larger amounts than perhaps they would like. This can cause losses until the company grows into the overhead. Herein lies the double problem: Reducing profits or losing money for a length of time because of sudden increase in overhead to accommodate growth is dangerous, and needing additional volume as an absolute necessity to cover the increased overhead puts the company in double jeopardy.

As an organization attempts to increase market share price will suffer as it is always necessary to make at least temporary price concessions to take the market share away from competitors unless there is an exceptional boom market. Boom markets attract the attention of out-of-area companies who when they move in also make price concessions to take the work away from local contractors to get a foothold. While construction companies may not make a conscious decision to lower their price, when they must have the added volume or new work that is exactly what occurs. And when price suffers it is usually for all our new work not just part of it, so the company ends up needing even more volume than originally planned because margins are suffering. This can easily lead to a downhill profit spiral during rapid growth and often does because as an organization gets stretched, there is little time for anyone to see the problem coming.

The additional growth then requires more overhead, creating temporary losses and the immediate need for even more volume. This spiral has caused numerous construction business failures. Rapid growth will also put a strain on the company's key people and systems, and sustained growth doesn't allow for a reasonable training period. Of even greater concern, continued growth doesn't give a contractor a chance to test new people or systems before the next new people are put on and systems added. If performance or profit starts to deteriorate during growth, it is always discovered after additional volume and people are taken on, and corrective measures are more difficult with everyone already stretched out. Overworked managers will be coping with the largest volume the company has ever handled and some companies don't recover from this scenario. Some contractors have pursued continuous growth with no measurement of performance right up to failure.

Rate of Growth
Measurement of the performance of a construction company is complicated by differences in sales from year to year and requires careful attention to the impact that volume fluctuations have on financial performance. If a company's market is not growing, growth is obviously more difficult, but in a reasonable market construction companies are almost always growing at some rate. The author's research indicates that growth for a construction enterprise at a rate of more than 15 percent in a year should be considered substantial. Sustained growth over more than a couple of years compounds quickly. At 15 percent a company doubles in five years and triples in seven; at 25 percent it doubles in three years and triple in five; and at 50 percent it doubles in 20 months and is five times larger in four years.

Growth requires more resources in the way of people, systems, and money and success is measured in an organization's ability to find the necessary qualified people, have appropriate systems in place in advance of expansion, and finance the growth. Rate of growth obviously impacts the likelihood that an organization will be able to bring qualified resources to bear on the new work in a timely fashion. The alternative is to expect existing resources to do more, but few construction organizations are known for having underutilized resources or bench strength.

As volume increase, the expanded company is untested as an organizational unit. The only reasonable test is for the new organization to operate profitably and smoothly for a minimum of a year. Sustained growth creates a situation in which if the test proves unsatisfactory, new growth has already been added during the test year and the company is looking at second unsatisfactory year before they can roll back to their proven size and proven team. For many it is too late to retreat and recover.

Incremental growth instead of sustained growth may seem unnecessary even unnatural, but it is the best way to control the inherent risk in growth beyond 15%. With a series of: growth then test, then growth then test again; a company is able to reevaluate and recover after a failed test in lieu of constant growth until they encounter a bad year from which they may or may not be able to recover. This is simply prudent risk control. In sustained growth a company grows beyond its people and systems so often that they never really have the same organization long enough to truly test it, and are at constant risk with an ever changing team. In some cases it's just a matter of time.

Flexible Overhead
Flexible overhead is a new concept for the construction industry. The marketplace is so unpredictable and affected by so many variables that it is difficult to accurately forecast for even a few years. If an enterprise cannot be sure of a sustained growing market while allowing the businesses to grow, they can control risk by putting on overhead to deal with the growth that can easily be removed if the market turns down. With some of their overhead flexible the company does not become a slaves to their volume, and can fall back if necessary and concentrate on profit.

The method is to use temporary employee services for some clerical administrative and accounting functions. Use short-term rentals for some office and field equipment and short-term office leases, even temporary trailers, during growth stages until a new plateau of volume can be

reasonably assured. Even management people can be brought on with specific company growth and performance goals associated with their continued employment. This creates challenges for new people and refocuses the real risks associated with growth for existing management. The practices has been successful with established companies, start-up firms and is being embraced by a growing number of construction enterprises.

There may be costs associated with flexible overhead as lease and rentals may cost more than purchased equipment, temporary employees may cost more, and efficiency could suffer if not managed well. But the reduction and control of risk is well worth a modest additional expense. An added benefit is the motivation of existing management people who get involved and excited about this prudent, realistic and businesslike approach to growth. Existing managers can easily discern the positive impact flexible overhead has on their job security.

Flexible overhead may create cramped quarters and less creature comforts than privacy, plush offices, and the latest telephone systems, but those who use it to control risk during incremental growth phases say they sleep a lot better when they get home at night. Putting on permanent overhead in a fickle market is just too dangerous. Most who have tried the flexible overhead approach have been impressed with it to the degree that they put permanent overhead on even slower than would normally be considered safe. They are committed to keep some portion of their overhead flexible at all times as a hedge against a market slump and that portion seems to grow as they realize how easy and economical it is. The modest added cost is not unlike an insurance premium for protection from a known and measurable exposure. Companies that embrace flexible overhead manage their profit and not their volume.

Flexible overhead prepares a construction enterprise to do 25 percent less volume in any given and at the same time prepares it to do 25 percent more and have no permanent increase in overhead risk either way. An organization skilled in flexible overhead is able to gear resources up and down temporarily and more quickly and economically than an average construction company can secure permanent resources. I know this is a departure from the accepted norm, but it is clearly the profile of the successful contractor of the future.

Peaks and Valleys

There were always peaks and valleys in the construction marketplace and when things got bad in contractors' normal work area they had to stick it out and do the best they could. Not that long ago contractors stayed in their own backyards. Construction companies generally worked a lot closer to home because their businesses, employees and equipment were not as mobile as they are today. Short-term rental or leasing wasn't as prevalent, and travel and relocation were more difficult. When the market was good, construction companies and all their competitors had a seller's market. Because contractors were not that mobile, they didn't go into new areas in great numbers and impact the market, so there was greater opportunity for substantial profits during good times.

The expression, "They took the good with the bad" is appropriate here. The good years allowed for great earnings, and in a more conservative era some of these extra earnings would be put away as reserves against lean years. Reserved or not, when a seller's market developed, contractors were able to generate substantially greater profits than they could under normal

market conditions which is not the case today because of increased competition resulting from greater mobility. Now when a good market develops anywhere in the country, out-of-area contractors compete for a portion of that market preventing a seller's market from developing and driving down prices. Very mobile nationwide contractors are able to follow good markets as do contractors from any area where there isn't enough work if they are willing to travel.

Diminished Profits
The net effect of greater construction industry mobility is that profit peaks are taken out of the various markets while profit valleys remain. The opportunity for really big years is substantially reduced, and the average profit in the industry has diminished over time and shows every sign of staying down. Ease of mobility nationwide and internationally will continue to maintain competitive pressures which in turn keeps prices down.

What this means to the average contractor is that without the prospect of the peak years that our grandfathers enjoyed, there is less opportunity to make up for bad year so they must control their valleys. With typically limited cash reserves contractors can ill-afford to increase risks without controls and must manage their businesses cautiously if not defensively. Limited profit margins require grow with prudence, testing as you go, and being prepared to withdraw from bad decisions.

Employee Benefits and Compensation
The subject of employee benefits and management perks fits well after the considering flexible overhead and peaks and valleys. The general and administrative costs of doing business are as necessary to the running of a construction company as are the costs of concrete and steel. Controlling these costs is imperative. The overhead cost of benefits and perks must be treated cautiously, and the best way to do that, particularly in good years, is to be prudent in preparation for bad years.

The discussion of bonuses is an intricate part of the management of overhead costs. Performance bonuses are common in the construction industry, however many firms mismanage them. Performance bonuses, to be effective, must be part of a carefully considered compensation plan, which is fully understood by all of the participants. Random, unorganized, and separate deal bonuses common in the construction industry cause more problems than they are worth. Some companies have even fallen into the trap of giving bonuses each year regardless of company performance. Bonuses tend to become regarded by employees as part of their wages and that they are entitled to them. Bonuses must be tied to the performance of the employee or of the company, preferably both.

Random or unorganized bonuses add overhead costs spontaneously and haphazardly, and the benefits from them diminish rapidly over time. To be effective, bonuses must be part of a formal, overall compensation plan. They must be tied to each individual employee's performance, the profitability of the entire job, and the success of the entire company.

The cost of bonuses or unrealistic compensation packages established during good years has accelerated the decline of many companies when lean years hit. Luxury automobiles, club memberships, and pleasure trips are near and dear to anyone's heart and commonplace perks for

hard-working managers in many construction enterprises. The biggest problem with these overhead expenses is that the costs to maintain them keeps going up while loyalty and motivation resulting from them goes down because they become expected and are taken for granted.

A company car is a valuable perk often it is given in lieu of a $2000 or $3000 raise in a particular year even though it's worth much more than that. The problem is that two or three years later they are taken for granted by the valued employee who now only understands one thing, that they are underpaid by $2000 or $3000 compared with somebody else. Giving such perks is hard to avoid because so many organizations are doing it, but there is more value in having the highest paid people around with no perks than the lowest paid people with great perks. A construction organization with high pay and few perks keeps their employees longer and has no trouble getting new ones to quit their lower paid jobs to come to work for the company because in most cases they have lost sight of the real value of their perks. It's cost-effective in the long run and more professional.

Another problem with perks is they are often selected by the contractor as something they value, already have or would like to have. Perks are usually given to employees without offering an alternative for different benefits or wages. Common courtesy demands gratitude so the giver has no real test of the level of appreciation or the value the employee places on the perk. For example; a conservative employee provided a company car which is replaced every two to four years may very well prefer to drive an older more economical vehicle and have the cost of the company car added to his or her salary.

The author’s research confirms that employee perks provided by well-meaning construction companies are universally undervalued by employees; who when they learn of the cost to the company almost unanimously state they would prefer to revive the value in compensation. Unfortunately it is difficult for a contractor to test this among their own personnel because employees do not wish to appear ungrateful. Research confirms that employees respond very differently to their employer than they do to anonymous blind research.

Motivation and Loyalty

Many closely-held construction companies, particularly smaller and mid-size organizations operate in a family or club-like atmosphere that many contractors believe it generates loyalty and longevity. There is no credible research to suggest differently, but the practice can be expensive and inefficient, and in the current working environment is becoming more difficult to maintain. People are changing jobs with greater frequency than ever before and job security and loyalty aren’t the top concerns of today's work force. Multiple jobs is more common than remaining 15 or 20 years with the same company as in the past.

Managers should look back over their company’s history and recall who the key players were five or seven years ago. For many this is an ever-changing scene and may be more so in the future. A close-knit group working in a club-like atmosphere may comfortable, but if the players are ever changing a portion of the cost of maintaining the family atmosphere might better be spent on training replacements and reserved for recruitment. Well managed construction enterprise is professional and business-like with a certain amount of internal competition among

managers. The contractor of the future will develop long-range plans around on key positions, not key people.

Internal Company Disputes

The majority of construction firms are closely held or family businesses and internal disputes are not uncommon and can create discomfort and disruption. In a high-risk, low-margin industry where businesses are often operated high levels of intensity and energy, some conflict can be expected. Personal problems can impact performance and profits significantly. Some contractors expect more from family members and are more tolerant of non-relatives. The best defense against conflict is open and honest communication of all parties at all levels within the organization. If continuing disharmony affects performance after management has attempted to resolve it, professional intervention is essential. Unresolved friction can fester and degenerate beyond repair and has caused untold personal anguish and distress. It can distort a successful organization and render an under-performing organization no worth saving. These issues can effect succession of leadership even after a great deal of planning has gone into it.

Claims

Years ago construction professionals understood their areas of authority and responsibility without the need for arbitrators or judges. This has been all but lost to the industry. Contract documents get bigger, claims seminars get larger, and an entirely new group of services is offered to our industry--construction attorneys, claims consultants, and dispute resolution specialists. In today's contracting environment, with all parties in the construction process trying to relieve themselves of any and all liability, construction professionals are left with too few clearly defined roles. Claims consciousness can results in defensive activities, paperwork, and the expending of energy to the extent that there is less time to devote to running the work and making a profit.

We need a truce in the construction industry in which owners, designers, and contractors agree to their specific responsibility and liabilities instead of trying to avoid or pass them along to others. It probably won’t happen, but if the party who makes the mistake fixes it, there is no dispute. There will still be a cost to fix the problem, but without the cost of arguing about it. Contractors must recognize the inherent risk of disputes and develop methods in advance to avoid them. The best approach is speed and compromise over expanding minor disputes and direct discussions with the parties affected in lieu of outside intervention which seems to assure the problem will escalate. The potential for disputes can increase with changes in project size and when working in unfamiliar areas or with unfamiliar owners and designers. Adding this exposure to the others discussed in this book suggests strongly that business expansion and growth be looked at carefully and planned prudently.

When disputes do arise, they should be responded to quickly and if the fault lies with your organization it is usually cheaper to fix the problem than fight. When not at fault, be certain the solution doesn't cost more than the problem. Try dealing directly and fairly with the parties involved before expanding the dispute. If forced to litigate or arbitrate, try to limit the dispute to the original issues and claim only real costs. The ridiculous but popular theory of throwing in everything but the kitchen sink clouds the issues, complicates the process, and increases the cost of resolution. The idea of doubling everything because "they'll only cut it in half anyway" has

backfired on a lot of people. What it tends to do is double the cost of resolution because it takes twice as long to weed out the excess and get back to the real numbers. Too often the exaggerated amount is cut in half supporting and perpetuating the original theory.

A more serious exposures in protracted disputes is that the process distracts important people from their work and negatively impacts morale. There is also the outside chance that an off-the-wall verdict could break the company.

Debt

Construction companies use credit in many ways: secured loans to purchase equipment; lines of credit to fund working capital as-needed or to fund growth and surety credit to secure payment and performance bonds to name a few. Arranging credit is not an event, it's a process and the management of credit requires skill and attention. Borrowing is a planned event. Unplanned or unscheduled borrowing is often a warning sign. It is too common for a company to borrow for working capital unexpectedly and not fully understand why the need arose. Management should be aggressive in determining why the money is needed today when there was no anticipation of the potential need last month. If an organization is borrowing working capital unexpectedly, it signals the need for better cash flow planning or that profitability is falling off. A construction business operating without cash flow planning is out of control for the simple reason they never know when you are going to run out of money.

A large line of credit is no substitute for cash flow planning. A company with no debt still needs cash flow planning, but for a company that borrows some or all of its working capital, cash flow planning is critical. Not only is there the possibility of running out of both cash and credit, there are interest costs to be considered. Cash flow planning must be included in all decision-making processes. Primary considerations in every business decisions are profit and cash flow and some managers believe that cash flow is more important than profit. The question for every business decision is, will this change or project create a cash outlay or influx and how soon and at what risk?

Credit and borrowing are important to the security of the business, intricate to controlling risk and should be controlled by top management through careful planning that takes into account the amounts and timing of cash needs and sources and timing of payback. Unplanned borrowing should be cause for great concern because either the cash flow plan is wrong, profit is falling off or there is a problem somewhere. In any case, new planning is required and the new planning on short notice should be undertaken with the same diligence as the original effort.

Business Planning

Formal long-range and strategic planning are not high on the agenda of many contractors. That's not to say contractors can't express their objectives and the plans they have to achieve those objectives, but many don’t have a written guide—a detailed long-term business plan. Without a detailed plan you are forced to react on the spot to whatever comes your way instead of setting direction, controlling the business and measuring progress.

Short-and long-range formal written plans are the tracks on which a company runs and make managing a construction business so much easier. Developing and following strategic and long-

range plans is a proven and effective tool for success. The time spent in the planning comes back to the organization with incredible interest and dividends of time saved.

Planning should be done at a time set aside for just that purpose and outside the mainstream of daily activity. The owners and key managers of the firm should discuss and evaluate their individual and corporate goals and see how they fit. Not everyone wants to go to the same place, perhaps not even in the same direction, but everyone needs to get on the same page. All the company's resources should be realistically evaluated and measured against short- and long-range goals to see if they fit. By establishing clear goals and directions that are understood by everyone concerned, meeting these objectives becomes easier if only because everyone is thinking along the same lines and looking in the same direction.

Things certainly don't always go as planned, but much of a contractor’s business future is actually within their control. When things change, plans can be reevaluated and altered so that the organization is not reacting, but acting in a structured fashion. The plan provides a measure of movement. The importance of formal written, short and long-range, detailed plans cannot be overstated. A construction company needs a one year hard, or detailed business plan plus two more years of soft, or flexible plans. A shorter plan may be sufficient for a smaller or newer company. Long term business planning is the ultimate risk control tool for and contractors who make the effort, find that they can manage with fewer surprises, more confidence and defined purpose.

Recommendation

Recommendation to construction professionals: Be careful, prudent, businesslike, and professional as you manage your business. Treat employees, associates, and other parties in the construction process as you would like to be treated and you will be able to manage with confidence and put some enjoyment back into building.

Recognizing and Managing risk

Managing Risk in the Construction Industry (Back to Table of Contents)

Mitigating the Hidden Risks - In the "New Normal" Construction Environment
The construction industry, high risk to begin with, is operating in a new post-recession landscape, characterized by tighter margins and serious labor shortages with less room for error. The unprecedented market downturn has weakened some construction organizations to the extent that they may have difficulty financing the growth that comes with market recovery which, in turn, increases the potential for business failures and contract defaults.

Now more than ever, owners, contractors and designers need to increase risk awareness and risk protection. They should be concerned about the fact that construction business failures are far worse during market recoveries than during market slowdowns. At the beginning of a downturn the balance sheet blossoms as old receivables continue to come in and less money goes out for job costs when less work is performed. The opposite occurs during growth which eats cash, when spending for current work exceeds money coming in from the lesser amount of backlog. The sustained downturn has financially weakened some companies to the point that they will not be able to finance their increased workload. When this occurs, it is possible for contractors to "cash flow" themselves out of business.

There is risk in any commercial transaction, but the construction industry has more than its share. Much of the risk in the building process is poorly defined and often misunderstood with considerable ambiguity as to who is responsible for it. Designers avoid it, owners prefer to pass it along and contractors absorb it. To contractors, ***risk*** is not a dirty word. After researching the causes of contractor failure for more than thirty years, I have uncovered a noteworthy truth:

The assumption of risk is part of every successful contractor's DNA.
Today's construction risk environment is dramatically different than it was even ten years ago, and the attendant risk factors are mutating just enough to be almost unrecognizable. The inherent construction risks of changes in project size, type, geographic area, key personnel and/or managerial maturity were documented in my first book; Construction Contractors' Survival Guide (John Wiley & Sons) 27 years ago and are recognized by most construction professionals. The risks evolved over time and were updated in my latest book; Managing the Profitable Construction Business (Wiley RSMeans). However, there are developments in this new environment that will appreciably increase the risk of project and contractor failure. The obvious risks are skilled labor shortage, growth in general and subcontractor risk:

- **Shortage of Skilled Labor Risk**- Following the construction market collapse, a huge number of workers left the industry. Now that the industry is starting to grow again, companies who are short on skilled labor are already straining to complete quality work on time and on budget.
- **Company Growth Risk** – Since the recession, the market has begun to grow again. At such a time, growth is always welcome and rarely seen as a major cause of impending failure. However, research reveals that when a construction company expands in size it

requires careful management decisions to reduce the risks inherent in the change. Growth itself impacts failure and the potential for financial distress.

- **Subcontractor Risk** – Subcontractors are a fundamental part of the construction process and are subject to these same market changes. Each subcontractor is critical to project success, so it only takes one to disrupt the entire process, thus intensifying project risk.

There are other current industry developments that impact business and project risks:

- **Capital Risk -** Secured equipment loans and unsecured working capital lines of credit, as well as surety credit for bid, payment, and performance bonds are the vital to the growing construction enterprises. The length of the market downturn has financially weakened some companies and impacted their credit worthiness. A construction company may show positive income on its financial statement, yet suddenly have a financial crisis due to a lack of cash and limited borrowing power. A considerable number of construction companies exit the business yearly because they run out of credit.
- **Commodity Risk** – Construction is a custom service and product that owners are beginning to think is a commodity which causes them to believe that all construction companies perform alike. This in turn can cause owners to be less discriminate about contractor selection and to think price is all that separates them. This is one of the reasons profit margins are low compared with the historic norms of 10 and 20 years ago. When buyers of construction services believe a product is a commodity, they generally expect to pay less.
- **Contract Risk –** In this highly competitive new growth market, contract terms concerning the responsibility of each party to the agreement appear to be attempting to shift risk in varying, and sometimes unrecognizable, directions. At the same time case law (court rulings concerning construction disputes) seem to further cloud the issue of which party is responsible for what?
- **Change Risk**- When an organization expands in size it is, in effect, becoming a different organization. Change always has risks associated with it which can make or break a company. For example: growth related changes impact the amount of capital required; the time and attention management can spend on multiple projects; and the expertise required to complete new types of projects. Change can be threatening.

Advancements in field and office technology and developments in project funding methods introduce potential for risk. Selecting and implementing new technology consumes management time and if the selected technology does not perform as expected can be costly. Innovative project financing methods, combining private and public funding present risk simply because they are new and there is limited experience with them.

Dealing with all these changes, and with an industry that continues to evolve, demands considerable management attention and exposes the organization to increased, and sometimes unrecognized, risks.

***RISK* is not a dirty word:**
Designers avoid it, Owners prefer to pass it along, and Contractors absorb it

Management Risk. Management decisions will determine whether an organization will succeed or fail in this ever-changing construction business environment. The decision-making process begins with beliefs that must be regularly reexamined as the business environment evolves. Beliefs that were appropriate in the past may not be so in this new normal. Some unexamined beliefs in place for a long time are no longer valid such as: *growth is always good; having some unprofitable work is unavoidable; and past success implies future success.* These beliefs should be reevaluated because they are not true and cannot be embraced by the "Successful Contractor of the Future". (This term defines contractors who will react quickly to evolving market conditions as distinguished from those who will continue with business-as-usual.)

Thirty years of accumulated study as a contractor, work-out specialist, consultant, and research professor have verified the following realities about risk in the construction industry:

Construction is basically risk assumption.
Risk-taking is embedded in a contractor's DNA.
When a contractor signs a new contract it's like their first day in business again.
Every time a contractor starts a new project, he voluntarily assumes risks not fully defined.
Construction is a highly complex endeavor that is worked out over a relatively long period-of-time and whose success or failure is affected by weather conditions, labor problems, inflation, unexpected rises in interest rates, the high cost of equipment, a tightening or shrinking of the market, or simply bad luck. These combined with the risks detailed above makes measuring project risk in advance enormously difficult and requires considerable knowledge about the construction enterprise and the current construction environment—a specialized field in itself. Management can test their beliefs be seeking information and perspective from their internal and external accountants, attorneys and insurance and surety partners.

Risk and construction are synonymous. Risk cannot be eliminated, but it can be mitigated. However, risks cannot be mitigated until they are identified, measured and thoroughly understood. This is easier said than done because the various parties to the construction process see their respective roles in addressing risk differently. Many construction risks are attributed to more than one entity making identification difficult, elimination impossible, and mitigation the only viable alternative. The challenge for owners, contractors, sureties, bankers and designers is to:

- **Recognize and identify** specific risks in advance
- **Assess and quantify** their importance and the exposure
- **Mitigate and manage** their impact and cost

To accomplish this requires specialized knowledge, industry intelligence and experience with large numbers of similar projects. It is also necessary to have access to hard-to-find, and sometimes very confidential, information. The primary source for this information are sureties, who have extensive experience and data from prequalifying firms in all types of construction in various locations.

Mitigating Risk
The willingness to take risk is at the very core of the construction enterprise and it is unlikely that risk will ever be eliminated from the building process. The ability to recognize the true nature of risk, assess its impact on an organization, and take steps to mitigate that impact will be

a fundamental skillset of successful industry participants – owners, contractors, sureties, bankers and designers.

- Owners have the easiest mitigation as they can bond around their exposure and have a knowledgeable surety do the critical pre-qualification process; screening out ill-equipped enterprises; and covering the costs if it does not work out.
- The Contractor of the future needs to elevate risk management within their organization and embrace formal risk management processes, which fortunately, are becoming the construction industry's newest discipline.
- Sureties have an important role to play in the construction process and bring a unique perspective to contractor and subcontractor screening through the underwriting process along with financial capability when there is a problem.
- Bankers can have the same protection as owners by requiring payment and performance bonds on the projects they finance.
- Designers will want to assist clients with the selection of contracting methods and project participants, while encouraging collaboration among all parties to the construction process.

Hidden Risk

- Diligence is required because construction business risks and project risks are often not apparent and may be disguised in many forms. For example, top-line growth may appear to be an avenue to success, but can also lead to failure.
- More tightly drawn contracts pushing any-and-all risk to others may appear to be needed protection, but can create more problems than they solve.
- An expanding market looks like an opportunity, but can also be a mine-field.

The contractor of the future needs to learn an entirely new skillset to recognize risks hidden in the market, hidden in their own management decisions, and hidden in the economic climate. Too often what looks like good news has the potential to be hazardous.

Rate of Growth

Unfortunately, in the construction business, past success is not an indicator of future success. In fact, my research on the causes of construction business failures, indicates that every change in a successful organization, particularly growth, creates a period of risk in spite of all previous success. When a construction organization substantially increases in size, it is no longer the same company it was before growth, and often will not be successful if it maintains pre-growth management methods. A construction enterprise growing at what appears to be a modest rate of 15% per year is actually a significant rate if it is continuous because it compounds quickly. At 15% a company doubles in size in five years and triples in eight. The successful construction enterprise of the future will be organized to be market driven and not volume driven. It will strive for carefully planned growth but be prepared to level off or fall back on volume if the marketplace tightens or shrinks. It will use its markup flexibly as a competitive tool but not be forced to take break-even work to maintain sales. It would have some flexible overhead built into the organization that could be cut immediately when not needed and would not hesitate to cut permanent overhead when downsizing is necessary. The successful contractor of the future will be willing to reduce in size to survive.

Traditional Risk Management
Historically risk management was considered by many to be an insurance issue, however there are significant business risks that are not addressed by insurance. The hidden risks in market expansion such as; skilled labor shortage, limited access to capital, and the ability of management to keep up with a rapidly changing business environment have rendered traditional insurance tools and risk management approaches inadequate. The successful contractor of the future will develop internal risk management policies, procedures, and protocols throughout the organization. Some will engage or employ risk professionals.

Summary and Conclusion
Construction is a complicated business that should only be attempted by owners, contractors and subcontractors with strong capabilities in risk recognition, risk management, and mitigation; because the nature of construction risks are changing every day, increasing the potential for business and project failures. The dramatic swing in the marketplace since 2008 has challenged construction firms to manage fluctuating sales. The boom may be back but market conditions are very different in this growth cycle.

The skilled labor force was already being diminished when baby boomers began retiring at a rapid pace at the same time workers, laid off during the recession, found other employment and left the industry never to return. At a time when construction enterprises have been forced to downsize and had to spread their skilled labor force thin, they now need to hire new people who will be unfamiliar with their methods and systems and may have limited experience. Some firms will find that they have inadequate access to capital and that construction buyers have sharpened their contract negotiation skills as construction continues to be viewed as a commodity and contractors are in turn relegated to low margins—the “new normal”.

When the market changed from contraction to expansion, unexpected and unrecognized risks were introduced. In this environment, hanging on to old beliefs will be a dangerous mindset. There are few choices when it comes to risk: assume it, manage it or transfer it. The construction industry has not demonstrated proficiency at recognizing, managing and mitigating hidden risks which compounds problems and escalates the potential for business and project failures making the third-party screening and financial protection of surety bonds more critical than ever. Owners, will likely manage risk by increased bonding of prime contractors and Construction Managers who will in turn seek protection by increased bonding of subcontractors.

The successful contractor of the future will establish formal risk assessment processes and protocols; and adopt a strategy of flexible overhead that can easily adjust to a cyclical construction market that invariably presents new risks. The successful owner of the future may choose to transfer risk by relying more heavily on sureties to pre-qualify contractors and provide financial protection against defaults.

Evolving Market—Same Risks (Back to Table of Contents)

In good markets and bad construction enterprises fail. The explanation is complicated because it is the result of continuing industry changes some occurring simultaneously. Which of these changes or combination of changes is more or less to blame is not always clear. In addition, how to react to each enjoys little agreement among practitioners. A recent example demonstrates the complexity.

An underperforming general contractor was told that what he needed to do to reverse his decline was to get bigger or get smaller because the marketplace he served had changed dramatically over time. Unfortunately he could not be convinced. Over several years a number of his competitors had grown substantially or had merged with larger firms and at the same time quite a few of his steady customers had been bought by national firms and began to give their construction and maintenance work to larger, regional or national contractors. The market he dealt in was changing and work available to his size organization was shrinking.

With the contractor's limited resources, getting much bigger was unlikely and he was insistent that he did not put his entire life into building his company to get smaller now. His refusal to react cost him his business. Many are facing similar circumstances. The construction industry is undergoing such dramatic changes that some predict that many of today's midsize companies will merged, be acquired or otherwise cease to exist over the next 10 to 15 years.

Contractors are receptive to information about performance improvements and profitability enhancement, but almost universally resistant to research defining consolidation within the industry. It looks like most will not react until it is a certainty. The unwelcome news in irrefutable--construction is rapidly becoming standardized, technology is simplifying the process and growth in project size are just a few of the significant changes happening all at once.

To explain the impact on an industry of technology change a simple example is appropriate. Not that long ago contractors built wooden forms from scratch to custom designs for complex concrete projects. The competition was limited to contractors with people who knew how to do this work. But since then the process has been revolutionized by patented form systems that require much less skill to install—almost to the degree that anyone can do it. Standardization modifies an industry and encourages new entrants.

Economies of scale help lower costs using standardized processes. Unfortunately, most small and midsize construction companies lack the resources to reduce costs and schedules as fast as customers now demand. Larger enterprises are able to change and start-ups have no old habits to overcome.

Historically construction was a "can-do" industry of brawn and might, with a tradition of building projects with basic equipment and limited technical support. A lot of projects were built with a backhoe and a box full of tools. It has been said that all you need to be a contractor is pickup truck, a cast-iron stomach, a forgiving wife and a bad temper. The truth is that historically

success demanded a rare combination of talents, including the abilities to muster resources to build a project; putting an accurate price on the work in advance; managing labor, subcontractors, vendors and designers through a long and arduous process; and tolerating a high degree of risk.

Contractors of this breed had great success as long as their methods of bidding--and our costs for individual items of work--were closely guarded secrets, and as long as our production of complex projects remained a mystery. But all of that has changed. New technologies and wide access to information have demystified the processes of estimating, organizing and producing the work. And even facilities owners and designers have become quite knowledgeable about such processes and the underlying costs.

Construction was a custom effort. Double-digit profit margins compensated for the inefficiencies. Now contractors are working harder and making less money. Despite an exceptionally good economy, construction margins have slipped into the mid and low single digits and even lower for larger contractors. Structurally altered margins will not return to historic highs. Consequently, as construction becomes increasingly standardized, efficiency and productivity will become the major differentiators among competitors.

Some pass up the chance to become more efficient complaining that they can't afford to upgrade their people and are too busy for training. Low margins restrict resources, making it harder for small and midsized businesses to invest in increased efficiencies. Larger companies suffer the same low margins, but their size enables them to invest in production improvements, to satisfy the shifting demands of owners. Continuous improvement has become a necessary cost of doing business and is becoming critical to survival.

Ironically some small contractors will fare better than some midsized firms, because there will always be a place for niche players. Specialty contractors will enjoy relatively higher margins until consolidation moves into full throttle. Small and midsized firms may be able to accomplish large-scale efficiencies through cooperation, but their window of opportunity will be brief. Profitable well-managed enterprises will survive by becoming part of larger organizations, or by serving niche markets.

Are You Risking Your Company By Growing Too Fast? (Back to Table of Contents)

The Good News

In a growing market the good news is there is plenty of work, however, the bad news is there's plenty of work. Growth is a two-edge issue. Early stages of a recovering market offer more work, but little improvement in margins because everyone wants the newly available work. Profits eventually improve, but slowly as the industry approaches the size it was before the slowdown.

The Power of Negative Thinking

The construction industry is its own worst enemy, continually undermined by misinformation that leads to negative thinking. We move between there is not enough work to there is not enough labor. I have not experienced a time when anyone said there is just the right amount of everything. All indicators suggest as work increases it should be a seller's market, but it does not happen. The industry is fragmented with over a million construction businesses in the country to the extent that contractors cannot easily get an overview of how the industry as a whole is doing. As a result we tend to make pessimistic, short-sighted guesses.

In past cycles, during good years contractor opinion polls continually predicted a slowing construction market and during bad time the same polls predicted a slowing market. The consensus opinions appear to be more guesswork than research because the market indicators at the times of the surveys were quite different. Inaccurate forecasts create a problem because the sense that there may be less work in the near future causes contractors to price more aggressively, defeating any probability of market-driven margin increases. The industry suffers from a margins problem more than a market problem.

Margin Realities

While reduced profits may be expected in a down market an unfortunate number of construction companies experience adverse effects from good markets as well. In a growing market some organizations take on more work than they can efficiently handle and finance, suffering financial distress or worse. The difficulties in down markets is significant, but does not change as much as should be expected in a good market. During recoveries some contractors enjoying the rebound capture more than their share of the market and then falter from the overload. The casualties of a robust construction market suggests financial distress increases in direct proportion to market growth and well a market reduction.

It is extremely difficult for a closely held construction enterprise to project how much it can effectively perform and finance, every organization has a limit. The problem is that the surest way to discover that limit is to exceed it and even then because industry record-keeping can obscure problems for a long time the limit may not be obvious. Even profitable work puts a strain on cash flow, and few construction organizations can gear up quickly enough or solidly enough to hold profit margins during rapid growth periods, particularly given today's labor market.

Growth and Risk

The construction industry, historically volume-driven, thrives on growth. The words "growth" and "growing" recur in my research into the management of risk in the construction industry because the business risks in construction are magnified during growth phases. In the best of times there is risk, and a rapidly expanding construction company sustains increased risk even if closely and intensely managed. Contractors should not underestimate the magnitude of increased risk from growth in the closely held construction enterprise.

Overhead
Overhead costs are difficult enough for contractors to control when their companies are not growing, but in a growing organization managing overhead is a very real and hazardous problem. Because organizations cannot add a half-person or a half-piece of equipment, they are forced to incur overhead costs during growth in larger amounts than they would like. This creates losses until the company grows into the overhead. The problem is magnified when lagging profits create an absolute necessity to increase volume to cover the increased overhead, putting the company in double jeopardy.

Pricing Dynamic
As an organization attempts to increase market share, price suffers because it is always necessary to make at least temporary price concessions in order to take market share away from competitors. Although construction organizations may not make conscious decisions to lower their prices to capture added volume that is what occurs. And when selling price suffers, it is usually for all the new work, not just part of it. Therefore, the company ends up needing even more volume than originally planned. This leads to a downward profit spiral because when an organization gets stretched there is little time for anyone to see the problem coming. Additional growth requires more overhead, creating the immediate need for even more volume. This chain of events has caused numerous construction business failures.

Measuring Performance
Rapid growth also puts a strain on a company's key people and systems, and sustained growth doesn't allow for a reasonable training period. Of even greater concern, continued growth doesn't give an organization a chance to test new people or systems before the next new people and systems are added. If performance deteriorates as a result of growth it will only be discovered after the additional volume and people are taken on. Corrective measures are more difficult with people and systems stretched out and overworked managers are coping with the largest volume the enterprise has ever handled. Some companies can't recover from this scenario. Too many organizations pursue growth without measuring performance until it is too late.

Rate of Growth
Years of research indicate that growth for a construction enterprise of more than 15 percent annually should be considered substantial and adversely affects business risk. Sustained growth over more than a couple of years compounds quickly. At 15 percent a company doubles its size in five years and triples in seven; at 25 percent it doubles in three years and triples in five. And at 50 percent a company doubles in 20 months and will grow by 500 percent in just four years.

Growth requires more resources in the way of people, systems, and money. Success is measured in an organization's ability to find the necessary qualified people, put appropriate systems in place before expansion, and finance the increase. Rate of growth obviously affects an organization's ability to bring adequate resources to bear on the new work. The alternative is to demand more from existing resources. However, few construction organizations are known for having underutilized resources or bench strength.

As volume increases, an expanded company is untested as an organizational unit. The only reasonable test is for the new organization to operate profitably and smoothly for a minimum of a year. Sustained growth creates a situation in which, if the test proves unsatisfactory, new growth has already been added during the test year. The organization is then facing a second bad year before it can roll back to its proven size and proven team. For many it is too late to retreat and recover.

Limits of Expansion

Determining the limits of expansion is complicated. In fact, some highly respected management specialists don't believe there is a limit. A good number of construction companies that were well-known names in the industry have failed during meteoric growth suggesting that restrictive factors exist. Although critics may point to other reasons for failures during growth, the reality is that in and of itself rapid growth is dangerous—not always fatal, but always risky.

Fundamental financial constraints limit healthy and sustainable growth. The management of growth requires careful balancing of sales objectives with the firm's operating efficiency and financial resources. The trick is to determine what sales growth rate is consistent with the realities of the company and the marketplace. Companies have limits in abilities, resources, and capital. Each organization is capable of doing just so much. During periods of rapid growth, closely held construction companies are so changed that they really become new, untested organizations—right at a time when they have a lot more work to produce. The prior organization that was so successful is gone forever.

If growth is to be successful quality must be preserved, but growth usually dilutes quality unless expertly managed. It takes more time to grow management and supervision than it takes to capture more work, and most companies decide to grow management only after additional work is on hand—not before. Growth just for growth's sake is risky in any business, but growing in the construction business is far more complicated than is commonly believed.

Controlling the Risk

Incremental growth instead of sustained growth may seem unnecessary—even unnatural—but it is the best way to control the inherent risk in growth beyond 15 percent. With cycles of growth and testing, then growth and testing again, an organization can reevaluate goals and recover after a bad test instead of pursuing constant growth until hitting a bad year (from which the company may not recover). This is prudent risk control. In sustained growth, a company grows beyond its people and systems so often that it never has the same organization long enough to truly test it and ends up functioning at constant risk with an ever-changing team. In some cases, failure is just a matter of time. Prudent business management requires that contractors grow with care, test as they go, and be prepared to withdraw from bad decisions.

Summary
Growth eats cash primarily because construction enterprises put the work in place and wait for their money. If a company is continually putting more work in place in each subsequent accounting period, it will eventually run out of cash and credit. If more work is available, it is critical (and difficult) for contractors to accurately project how much they can effectively perform and finance. The appropriate measure is: Annual growth exceeding 15 percent increases risk to the extent that a contractor needs to think twice and plan well about how it will undertake the additional work and where the internal or external financing will come from to support it.

Construction professionals should understand that it is extremely complex to project how much their organizations can effectively perform and finance. Every organization has a limit. If the company is growing rapidly, it is at risk. Consider carefully how additional work will affect the organization and approach cautiously. If you are concerned now, measure the extent of your present risk. Calculate your RScore (measure of financial risk) for the past three to five years and determine if it is trending up or down. If it's up, scrupulously examine your exposure. (The Rscore formula has been around for a long time and can be found elsewhere in this manual.

Caution: Steep Grade
Managing a closely held construction company is like driving a truck up a hill. The steeper the grade, the more strain on the truck—on the engine, suspension, and drive-train—(or in the case of a company—on the employees, systems, and finances). A truck starting up a hill from a level roadway finds it easier than starting on the grade and increasing the slope. Separate short climbs are much easier than sustaining continuous uphill progress. We have all seen trucks attempting a very steep and long hill, slow to a crawl, labor to gain forward progress and some actually stop.

When a construction organization embarks on a steep climb at a growth rate of more than 15 percent, it will always experience a strain on its resources. During periods of continuous growth, the strain is sustained and magnified, sometimes to the breaking point. A truck advances much more efficiently up a series of modest grades than up a very steep hill or sustained climb. Managing strain on company resources increases efficiency, profitability, and risk control. Subjecting resources to severe or continuous stress encourages inefficiency, deterioration, and potential decline.

The New Rules of Risk

The unprecedented market downturn from which we are emerging has weakened some construction organizations to the extent that they may have difficulty financing the growth that will come with even a slow market recovery. That, in turn, may increase the potential for defaults. But some of the common ways of dealing with the risks may be self-defeating. Here's what I mean: General contractors and subcontractors have the same exposure—if either type of contractor fails, the entire project is disrupted, and all involved are exposed to disruption and loss.


SCHLEIFER

In my experience, many defaults are not a total surprise, with project owners, CMs, designers, GCs or subs expressing some variation of "I had a bad feeling about this for months" or "All the signs were there, but I was hoping for the best."

Some of the signs of trouble include complaints from suppliers or subs about unpaid invoices or partial or late payment; contractors asking for advance payment or help making payroll; unexplained cuts in crew size; declining work quality; overbilling of quantities or percentage of work completed; requests for payment of materials ordered or supposedly stored off-site.

Another sign is a change in foremen, supervisors or midmanagers. Long-term employees of an organization suffering financial difficulties often learn of, or sense trouble, early on and leave for other opportunities.

Protecting your organization against default is much easier said than done because many commonly recommended protections can cause as many problems as they are intended to prevent. For example, there is the adage "Don't take a low-ball price." Yet if a number in this market is on the street, someone else is going to use it, and you might not get the job. Even after a contractor has the job, if a low-ball price comes in, there is pressure to consider and possibly accept it—even knowing the risk. In good times, this is obviously less of an issue because aggressive pricing is not as prevalent, and if you don't get the job in question, there are others.

Surety Bonds, Costs and Prices

Bonding unfamiliar contractors is often the best advice, especially if their price is much lower than any of the others you have received. However, when a prime contractor tries to pass along the cost of a bond not required by specification, they risk outpricing themselves and not getting the job.

Prime contractors may also find that many low-ball offers are not bondable. I have experienced numerous cases when it was said "We tried to bond the contractor, but they could not get a bond" or "We were promised a bond, so we issued the contract," and then, after the work started, the contractor could not get a bond, and it seemed too late to change horses. There is also an unsettling increase in contractors having financial difficulties between pricing and negotiation—but before the award of contract. In these uncertain times, even the ability of a contractor to be bonded may be a diminishing indicator of a contractor's reliability.

Holding back payments is a common solution; however, it often compounds the contractor's cash-flow issues and accelerates the potential for default. Joint checks have the same impact.

In the past, the cost of a contractor default was primarily the payment of unpaid vendors and subcontractors. However, in these difficult times, that is changing with an increasing loss exposure from defective work. Organizations with serious quality-control processes and those that foster a culture of quality control may see earlier signs of contractor default that could assist in mitigating losses.

The common wisdom has been that contractors' financing deteriorates from poor management. The reality today is that the failure of one or more contractors on a project can have a significant impact on the financial condition of the other contractors on the job. Your contractor is, literally, only as good as their last job.

Even prequalification isn't an absolute guarantee against default. If the trend continues, contractors may need to learn a whole new skill set: how to manage defaults to minimize exposure. ▫

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Project Selection

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Profitable Project Selection (Back to Table of Contents)

Introduction

There are no bad projects—just bad matches of contractors to projects. The risk associated with project selection can be accurately measured in advance and is directly associated with to the construction organization experience with similar work. Therefor project risk differs for each contractor. The performance of an operating entity, such as manufacturing, improves with repetition. In contrast construction enterprises do not usually have enough repetition from project to project to experience much improvement because in almost all cases new projects differ in varying and measurable degrees from previous projects. The closer the new project represents the average of previous projects the more likely estimated performance will be achieved, simply because the planning and execution is more of the same as opposed to totally unique. The measurement of risk also depends on the experience of the team members involved. Experience is accumulated institutionally, but is captured individually so the number of members on a performance team with direct experience on similar previous projects impacts the likelihood of estimated or improved performance.

The aspects that impact anticipated performances (risk) are primarily, size; type; location; performance team, owner, and also include unusual features, shape, safety considerations and available room to work. These aspects can be measured and weighted to produce a numeric scale of risk projections and can also be updated to measure project performance. The depth of experience with similar projects the greater the likelihood of a successful estimate, production and completion at a profit. Experience with fewer similar projects translates to lower level of confidence (recognized or not) and presents greater risk.

To use an extreme example; if an organization has been successfully constructing relatively straightforward warehouses and strip shopping centers then attempts their first complex sewage treatment plant they would bring no institutional experience to bear and limited if any individual experience depending if any employee or manager had prior experience in treatment plant work. The likelihood of successfully pricing and producing the work would be very limited resulting in high risk compared to an organization that regularly builds treatment plants. The risk can be measured and will obviously be different for each construction organization perusing the work depending on the institutional and individual experience of each enterprise. Like type of work, any departure from the geographic area an organization is experienced in will generally involve a learning curve discovering potential differences concerning labor issues and skill levels; subcontractor availably, pricing, owner expectations; and other local customs that may impact how the work is managed or preformed.

Project Teams

As mentioned earlier, experience is accumulated institutionally, but is captured individually so the number of members on a performance team with direct experience with previous projects impacts the likelihood of achieving estimated or improved performance. Institutional experience does not automatically impart that experience to individuals who did not participate in attaining the experience. Therefore, if an organization has experience in all of the aspects discussed herein, such as size, type, location, etc.; but no project team member assigned to the work has direct, personal experience, the project risk is high, but slightly less because if things go bad there are at least others in the organization with the experience that can assist if they are brought to bear in time. A sub-set of project team experience is team members having previously worked together. If the project team has worked together the risk is further reduced. In the measurement of project risk, experience with the work and experience of team members working with each other are meaningful elements of risk.

Unusual project features such as curved wall, windows, roofs or unique elements outside of the experience of most organizations are obvious risk triggers. These projects can and will be built, but may have a steep and costly learning curve amplifying risk.

Conclusion

The biggest breakthrough in this study is the realization that few construction projects have built-in, inherent risk and that project risk is exclusively a measurement relative to the organization's experience. The project attributes discussed herein are being weighted and placed in a numeric formula that will provide an accurate measure of project risk providing an excellent tool to combine with a contractor's, subcontractor's or owner's selection process criteria.

The Science of Project Selection (Back to Table of Contents)

Introduction

The risk to a general contractor or subcontractor associated with a construction project can be measured in advance. However, the risk differs for each contractor because it is a direct relationship of the contractor's experience with all aspects of the project in question. The performance of an operating entity, such as manufacturing, improves with repetition. In contrast construction enterprises do not usually have enough repetition from project to project to experience much improvement because in almost all cases new projects differ in varying and measurable degrees from previous projects. The closer the new project represents the average of previous projects the more likely estimated or improved performance will be achieved, primarily because the planning and execution is more of the same as opposed to totally unique. Similar projects have less of a learning curve for the organization than projects that differ from prior experience and this also depends on the team members involved. Experience is eventually accumulated institutionally, but is captured individually so the number of members on a performance team with direct experience with previous projects being measured against impacts the likelihood of estimated or improved performance.

The aspects that impact anticipated performances (risk) are, but not limited to: size; type; location; performance team and unusual features, shape, safety considerations and available room to work. These aspects can be measured and weighted to produce a numeric scale of risk projections and can also be updated as a project progresses.

Size of Project

All construction organization produce projects of varying size, however experience indicates that the norm is a good number of small projects relative to their average and large projects; a reasonable number of mid-size or "average" size projects and a smaller number (less than mid-size jobs) of larger projects. The small projects, often performed as a service for good clients, are typically the highest profit as a percentage of sales, but numerically not enough to support the entire organization. Some contractors have referred to them as "nuisance work," and many say "small jobs help pay the rent."

Mid-size projects, which generally earn reasonable, but less profit as a percentage of sales than small jobs, are the projects the company survives on. Mid or average size projects can be described as the company's regular, undemanding even easy projects in that most estimators in the organization can price them, most Superintendents and Project Managers can build them and these projects almost always perform as expected. Because of the depth of experience in these size projects the level of confidence proposing on them is high and the anticipation of successful production and completion is equally high.

There are usually fewer large projects which earn less than the mid-size projects as a percentage of sales, but they help the company meet critical mass, they support growth appetites of contractors and/or management teams and support interests of key employees. These projects differ from mid-size projects in that not everyone can price them, top management takes an interest in preparing the estimate and pricing the work and there may be a long night the day before the estimate is submitted. The greater concern about proposing on a large job (compared

to mid-size) indicates recognition of the greater risk. What may not be clearly perceived is the greater concern is caused by the limited experience with these larger projects relative to the average size jobs the organization has successfully completed in the past. Even if projects of the size in question have been completed successfully there is simply not as many or as long a history as there is with mid-size or average size projects to cause high levels of confidence. The amount of similar experience with any project is directly proportional to the level of confidence in pricing and anticipation of success. Experience with fewer large projects translates to lower level of confidence, recognized or not, and presents greater risk.

Type of Project

Like size of project, prior experience with the type of project is directly proportional to the likelihood of successfully proposing and producing a project profitably, on time and on budget. To use an extreme example; if an organization has been successfully constructing relatively straightforward warehouses and strip shopping centers attempts their first complex sewage treatment plant they would bring no institutional experience to bear and limited if any individual experience depending if any employee or manager had prior experience in treatment plant work. The likelihood of successfully pricing and producing the work would be very limited resulting in high risk compared to an organization that regularly builds treatment plants. The risk can be measured and will obviously be different for each construction organization perusing the work depending on the institutional and individual experience of each enterprise.

As already discussed, most organizations have few large projects, more mid-size projects and a greater number of small projects, If most or all of the prior project are of similar types, the type of work would have little impact on risk which would then be impacted to a greater extent from size of project because experience with previous projects is defined by the number of successful projects—fewer large, greater number of mid-size, greatest number of small. In addition to experience, size impacts risk on a monetary scale. Small projects that do not do well or lose money are simply not in large enough dollar amounts to have much impact the company financially. A mid-size project that loses hurts, but by definition most do not fail which means there are a number of other successful projects to take up the slack. In contrast a large project that underperforms or losses money has the potential to have a material impact of the company's financial condition.

Geographic Area

Because construction work is produced slightly differently in different parts of the country and the world, experience working in an area impacts the likelihood of success or risk to the contractor. An extreme example would be a US domestic contractor attempting their first project in a foreign country. More subtle would be a contractor with exclusive experience in rural and suburban areas taking their first project in a large city or even the reverse. The project would obviously be well outside the organization's experience and would clearly present a learning curve. The likelihood of success would be problematic and a fundamental risk to profitability. Very much like type of work, any departure from the geographic area an organization is experienced in will generally involve a learning curve discovering potential differences concerning labor issues and skill levels; subcontractor availably, pricing and expectations; and other local customs that may impact how the work is managed or preformed.

Project Teams
The issue here was described in the introduction and is self-explanatory: Experience is eventually accumulated institutionally, but is captured individually so the number of members on a performance team with direct experience with previous projects being measured against impacts the likelihood of estimated or improved performance. Institutional experience does not automatically impart that experience to individuals who did not participate in attaining the experience. Therefore, if an organization has experience in all of the aspects discussed herein, such as size, type, location, etc.; but no project team member assigned to the work has direct, personal experience in any one of the aspects, the risk on that aspect is the same as if the organization had no experience on that aspect.

If a team is composed of individuals each of who has experience in one or more of each of the aspects addressed here and all aspects are covered the risk in significantly reduced. However, if the project team has actually gained the experience working together on projects in the past the risk is further reduced. A sub-set of project team experience is team members having previously worked together. If some of the team members have worked together in the past on dissimilar projects risk is reduced. If all of the team members have worked together in the past on dissimilar projects risk is further reduced. And if some or all of the team members have worked together in the past on similar projects the risk is even further reduced. In the measurement of project risk, experience with the work and experience of team members working with each other are meaningful elements of risk.

Unusual Project Features
Most buildings in the US are rectangular or at least straight lines. The largest portion of roads and highways run reasonable straight for much of their length and bridges and tunnels are straight to the extent possible. This is not to suggest there are no curved buildings roads, bridges or tunnels, but that there are simply fewer. Therefore the lion's share of experience collected by construction enterprises is with straight lines and generally conforming structures. Each construction organization has its own institutional and individual experience but it is safe to say that the collective experience of the construction industry is with "traditional" projects. Therefore, if a pending project has curved wall, windows, roof or unique elements it is outside the experience of most organizations and odds are that an organization with such experience, the experience will be limited at best. The same goes for out-of-the ordinary roads, highways, bridges, industrial projects, one-off projects or projects with matchless features. These projects can and will be built, however there is considerable project risk in proposing and producing them because there have been fewer such projects built than what may be described as "traditional" or usual projects. Therefore, if an organization has experience in similar work, and few do, such experience will be and is necessarily limited by the scarcity of uncommon projects. These projects do not have built-in or intrinsic risk because project risk is exclusively a measure of an organization's experience with similar projects which in the case of atypical projects is extremely rare.

Conclusion
The biggest breakthrough in the study of measuring the potential for success of a project in advance of proposing for it or contractor selection is the realization that construction projects have no built-in inherent risk as they stand alone. The risk of project success is a measurement

relative to the contractor and therefore of contractor selected. For example one might want to say that a totally unique, one of a kind, off the wall project is risky in-and-of itself. This is not the case? The contractor that has the closes experience to such a project would have risk, but smaller risk than another with less experience. If no contractor involved had any experience even close then the risk would turn solely on the size of project measured in dollars. The contractor for which the project in question is the smallest dollar value relative to the average size projects the contractor does would be the least risk simple because by size alone if the project failed it would not likely put the contractor out of business. The contractor may be hurt, but would most likely be financially able to complete its contract obligation.

Reiterating the introduction: The risk of success to an owner selecting a contractor or a general or subcontractor deciding on a project to be proposed on can be measured in advance. The project attributes discussed herein can be weighted, placed in a numeric formula and provide an accurate measure of project risk which would be an excellent tool to combine with an owner's, contractor's or subcontractor's selection process criteria.

Avoiding Losing Projects (Back to Table of Contents)

The construction business growth model that most of us grew up with is not working and is totally inappropriate in a cyclical industry. When I was learning the business I was often told "If you're not growing, you are going backwards". Most of the construction enterprises I am familiar with embrace or are strongly influenced by a business model driven by growth which puts much too much pressure on increasing sales; or at the least, to maintain volume for the sole purpose of covering overhead.

Industry Beliefs

There are well-established construction industry beliefs that need to be reconsidered. For example: *Growth is always good, Overhead is a symbol of success and not to be surrendered unless absolutely forced to; Cutting overhead is an admission of failure; Down times are bad news but a natural part of the industry; The industry is not necessarily cyclical; Unprofitable work is just part of the business.* These beliefs cause many to go after whatever projects are available in good times or bad whether or not their organization has experience with the work, the owner, the designer, the size of job or the geographic area. A lack of experience with any of these dramatically increases risk, but most of us refuse to give up hard-earned growth. Taking on work we have limited experience with can result in what I call the "80/20 problem".

80/20 Problem

From a study of hundreds of failed construction companies I determined that all of the financially distressed firms had an abundance of profitable work. Their problem was too much unprofitable work. It is fair to say that many, if not most, construction enterprises have occasional losing projects. As mentioned above, it is a well-established industry believe that "some unprofitable work is just part of the business". The companies that failed had on average 80% profitable work and 20% unprofitable work. The number of unprofitable jobs or size of the losses simply grew beyond what the profitable work could support. While the profit reduction was a major issue, overhead was often the larger problem. Let's look at an example:

Case Study

A contractor with $10 million annual sales has $1 million overhead (Not recommending 10% overhead—just easy math). Eighty percent of the work, or $8 million, is generating 13% profit or $1,040,000 of which $800.000 is the contribution to the 10% overhead and $240,000 is net profit. However 20% of the work, or $2 million, is generating a loss of -5% or -$100,000. This loss is offset against the $240,000 net profit earned by the 80% profitable work netting $140,000. However, the $2 million of unprofitable work contributed nothing toward the 10%, or $200,000, overhead anticipated to be earned from that work which now must be funded by the profitable work of which there is only $140,000 remaining which. This results in a -$60,000 loss for the year. If unprofitable work is just part of the business, (and I am not convinced of that) then at the very least, minimizing the amount of unprofitable work must be a priority focus of management.

No Bad Projects

I spent years studying, defining and measuring the causes of business failures which led me into research on how to revers or manage losing or failing projects while they are in progress. I confirmed that it is incredibly difficult to reverse troubled projects, hugely expensive to manage

them, difficult to eliminate the damage once done and impossible to minimize costs already incurred. What I did discover was that the primary cause of project failures is inexperience with the type of work, project, or process. I also discovered that gaining necessary experience is the problem—not the solution. Fast forward to the results: The only solution determined was PREVENTION—not taking the losing project. The research confirmed something else that I agonized over for years and refused to state in public until I confirmed it conclusively: There Are No Bad Projects--Just Bad Matches of Contractors to Projects. Project Failures don't just happen; they are jobs that are deliberately pursued and captured.

Project Experience

Experience is a "Paradox of Industrial Proportion" because it is fair to ask: "If experience is critical to success, how do I gain the initial experience?" This leads to another question: "Should a construction enterprise ever take on work they have never performed before?" This issue is a matter of risk tolerance and a decision about emphasizing profit or volume. It is clearly a contractor's choice to make. However decision-makers should understand that they buy experience. Knowledge and experience are purchased, never free, can be extremely expensive and there are serious risks associated with the process. A good thing to keep in mind would be to expect the unexpected. When work is attempted that an organization has limited experience with there are some guidelines that may help: Start small; Finish the first project completely before attempting another and Attempt only what you can afford to lose.

Measuring Pre Project Risk

When I set out to research pre project risk I discovered that there are three critical elements: Experience, Experience and Experience. I determined that quantifying pre-project risks is directly, and possibly exclusively, correlated with an organization's experience with similar work. Therefore pre project risk in a project is completely different for every contractor. The most important discovery was that pre project risk CAN BE MEASURED. Construction risks are unique; and unlike manufacturing, where improvements result from repetition, construction projects have limited repetition or duplication because most projects differ in significant ways. Limited replication confines experience to similar prior projects that have been priced, built and collected for at a profit. Therefore, direct experience with the size, location, type and design of the work is critical to success. The more similar a new project is to previous successful projects, the more likely estimated performance will be achieved. The reason of course is that planning and execution is more of the same as opposed to totally unique. Experience is accumulated institutionally, but captured individually, consequently the number of team members with direct experience on similar projects is important and can dramatically impact the likelihood of achieving estimated or improved project performance.

Project Selection program:

The research confirmed the need for a process to screen out losing projects at the pre project stage to enhance overall profitability? The development of the program took another year and a half and resulted in an easy-to-use tool that can also be used as a check list. The **Project Selection Program** has been put into the public domain and can be downloaded free at: <www.SimplarInstitute.com/ProjectSelectionProgram>. During beta testing numerous contractors ran the program on three completed projects—two successful projects and one project they wish they had not taken. They answered the 26 individually weighed questions

which gave them a numerical score that accurately measured how the firm's prior experience lined up with project requirements. The results were consistent: the program is a predictor of the potential success of the project. It is suggested that potential users of the program do the same three-project test to gain confidence in its use.

Impact on Overhead

It may be obvious, but worth exploring: If you screen out losers, sales will fluctuate, however profit and efficiency go up while business risks go down. While overhead should always be carefully managed because construction is a cyclical industry, fluctuating sales make this even more important. The successful contractor of the future will be profitable in good markets and bad by adding some science into the management of his or her business. The drive for size and growth will be substituted with a drive for prosperity--measured in profitability. This can only be accomplished by not taking losing jobs which is accomplished by prudent project selection which requires judicious management of overhead. For many this will be a paradigm shift because the current growth model supports growing overhead means growing capacity. Prudent project selection does not stunt growth is simply redirects focus on growth of profitability. It will be helpful to review the concept of Flexible Overhead

Managing Overhead

Flexible Overhead addresses the misconception that you can't get half a person, half a truck--or half of a piece of equipment. You can. The concept is to have 15% to 25% of all overhead expenses engaged in a way that they can be turned off within a week. This portion of general and administrative expenses (overhead) are not taken on as permanent expenses, but as flexible or temporary expenses utilizing rental, temporary personnel, interim office and/or shop space and other quick-response solutions. Further information can be gained through a review of ENR Viewpoint articles published in the last two years. Initial reactions may be to suggest: it is impractical; too expensive; temporary persons are less qualified; it is cheaper to own than rent; and so on. We can't keep going the way we are because too many construction enterprises give back in losses during bad years what they earned in good years. The extra costs of Flexible Overhead, if any, are simply low-cost insurance against times when overhead can't be reduced when it is not needed.

The Advantages

If you have control of overhead, you have the luxury to select only projects you are experienced with and to dramatically reduce the number and severity of losing projects while maximizing profits. Some projects just don't fit. A reality check: Is there one project from any prior year that you wish you hadn't taken? If the answer is "yes" you are, in effect, saying that your preference is to have a smaller size company that year with more profit. This makes it harder to argue against bringing more science into a construction enterprise.

Construction Market Cycles

Prospering in Cyclical Markets (Back to Table of Contents)

When a construction company's backlog falls off, the pressure is on and it feels like a recession regardless of the actual definition of the word. Prospering in cyclical markets and surviving a "recession" starts with recognizing what will happen in the marketplace as soon as a market softens. The result is totally predictable and has occurred without fail in every industry down-cycle for the last 70 years.

When there are fewer projects in any market, competition intensifies and prices and potential profits diminish. The ideal in a shrinking market would be for each contractor to accept proportionately less work so that market share of each business is maintained. However, there is a tendency in our industry to resist any reduction and to fight vigorously for the fewer available projects, driving down prices for everyone. Trying to maintain volume in a declining market is, in effect, an attempt to increase market share and any increase in market share is universally "bought" at a cost.

Contractors resisting a reduction in their sales will, in effect, "load up on cheap work" which increases their risk in an already difficult circumstance. Conversely, cooperating with the market and downsizing to align your organization with market realities is appropriate management of the risks imposed through an environment outside of your control. We cannot control the market, but we can control our response to it.

The potential for profit, measured as a present of sales, is almost the same during a down market as it is in an up market—just more painful. The contractor's responsibility is to react to and manage risks in either case. This includes taking the difficult steps to downsize including rapid reductions in overhead. Risk control mandates these steps be taken sooner rather than later. The largest by far of all overhead costs are employee salaries. While cutting back non-essential costs such as subscriptions, bonuses, travel and entertainment, etc., is appropriate because it signals to employees a new attitude, it never amounts to enough to really matter. Reduction in overhead requires a proportional reduction in management and administrative personnel.

I regularly hear from contractors: "I can't operate with 10% or 20% less work. I have a 'drop-dead' volume I have to maintain to be viable." My response is: "As you grew your business from five and $10 million on your way to $15 million were you profitable at five and $10 million?" Most contractors were. The point is, if you have to go back to one of those reduced volumes, you need to size and configure the organization to exactly what it looked like when it was profitable at that size. This also includes reducing equipment resources by selling; or mothballing them if sale is not practical, but costs associated with them must be minimized or eliminated.

There is a tendency to hold on to people and equipment in order to be prepared when the market returns. However, unless you expect a very short downturn, there is serious risk that resources will be retained at great expense only to be let go at a future date; or worse, that the drain on the organization may make it difficult or impossible to finance recovery when the market rebounds.

The market always returns but accurately predicting the length of a downturn is difficult, and the primary objective should be to profit during a downturn.

Capturing, training and retaining good people has been a major issue for many contractors during the recent good years and serious resistance to these suggestions is understandable. However, timing is critical because there are real and significant costs to reacting late. One consolation may be that during a downturn there will be a glut of equipment and people available, and if there is an early rebound, resources will be available.

Owners of construction enterprises must react to that which they cannot control with processes which they can control. Unfortunately, the appropriate reactions range from difficult to distasteful. It is difficult but necessary to keep emotions out of business decisions particularly because there is no minimizing the reality that someone has to look people in the eye when they lay them off. It might be well to remember that managing risks to the organization protects the jobs of the larger number of employees that remain. Downsizing also provides an opportunity to weed out weaker employees and profit from doing a reduced volume with an organization's best people. It is entirely possible to prosper during this down cycle and to maintain financial strength which will be critical when the rebound occurs.

No one Likes Recession - Some are going to Hate Recovery (Back to Table of Contents)

A study of the economic dynamics of prior construction market rebounds indicates the recoveries are a financial struggle for many contractors. The primary reason is that growth eats cash and many firms strain financially during downturns to the extent they have difficulty financing the growth of a recovery. The research is conclusive that during much of the recovery margins remain low because aggressive bidding continues until the appetite of construction organizations is satisfied. The research also confirms that the failure rate of construction enterprises is much worse during recovery than during the downturn. My study indicates that contractors need to understand how to approach recovery. I am afraid if some did not like recession they are going to hate recovery.

The length and depth of a market slowdown impacts aggressive pricing, changes in owner attitudes, and declining margins. Construction organizations need to manage cash flow judiciously during recovery to remain financially viable and credit worthy. Contractors need to develop effective strategies to deal with the significant cash flow demands of growth which requires the discipline to resist engaging in the "feeding frenzy" during early recovery. Comprehensive strategies are necessary to manage risk and avoid losses, deplete capital or diminish equity weakening the ability to share in recovery. Bonding capacity may also be affected creating barriers to fully participating in recovery.

Compounding the problem is the fact that in the three major construction market downturns in the last 70 years, aggressive bidding persisted until the market returned to prior size which, in the recent case, is $1.1 trillion. Continuing aggressive bidding compresses margins when they are needed most. Contrast this with the healthy growth market of 2005 through 2008 where the industry was able to finance the growth with profits. Absent the profit potential, the recovery growth will require outside financing which will be problematic for financially weakened firms. Add the uncertainty that the banking industry is ready to re-engage in construction lending, for some companies, it becomes the "perfect storm".

Prospering in cyclical markets and surviving both a recession and recovery in the construction industry starts with recognizing what is happening in the marketplace. The results are totally predictable and have occurred without fail in every industry cycle for the last 70 years. When there are fewer projects in any market, competition intensifies and prices and profit potential diminish. In a shrinking market the ideal would be for each contractor to accept proportionately less work so that market share of each business is maintained. However, there is a tendency in our industry to resist any reduction in sales, often strenuously, and to fight vigorously for the fewer available projects, driving down prices for everyone. The tendency persists, perhaps even stronger, through initial and intermediate stages of recovery when every project looks like the last project we may see. Trying to maintain volume in a declining market is, in effect, an attempt to increase market share and any increase in market share is universally "bought" at a cost. Trying to be the first business to return to prior size creates the same effect, limiting profit potential and magnifying risk in an already risky business.

This exposure is compounded by the fact that in each stage of recovery, particularly after a sustained downturn, inflation is common; caused by labor shortages and material cost escalation

and shortages. Some laid-off construction tradespeople and managers who have vacated the industry do not return or return only after confidence in a sustained recovery. Material manufactures and suppliers have suffered the same financial difficulties as contractors, forced to cut back capacity and unable to raise prices. Regaining the capacity requires investment and takes time causing material shortages that lead to rapid price increases.

If history repeats itself, contractors attempting to make up for lost ground in a downturn will load up on cheap work increasing their risk in already difficult circumstances. We cannot control the market, but we can control our response to it.

Downsizing: A Profitable Alternative in a Downturn (Back to Table of Contents)

In a country where bigger has always meant better, downsizing is loaded with negative connotations. Downsizing is simply a deliberate shrinkage of a company's overhead in anticipation of a decline in volume. Downsizing is the intelligent response to a tough economy.

Mobility Modifies Margin

Forty years ago the construction industry was fixed. People didn't come from other cities or states to help bid the work. When there was a lot of work locally, all area contractors reaped big benefits. When there wasn't, local and regional contractors still made money, just less of it.

Today, constructors come from all over the country to bid work. As a result, the margin, the mark-up on our work, goes down—the margin is controlled by a simply ratio: the available amount of work divided by the available number of bidders. In the non-mobile 1940s, 1950s, and less-mobile 1960s and 1970s, when there was more available work and a fixed number of bidders the margin went up; in times of less work when there was a fixed number of bidders the margin went down.

Today there is an unlimited number of bidders. If everyone would agree to stake out a territory and stay within it, the margin would go up. But, because this mobility trend is not likely to change, we need to look at the dynamics of what is taking place today, and respond to new realities.

A Third Technological Revolution

We may be going through a technological, economic revolution. The first was the industrial revolution in the mid-1800s when we went from water power to steam power. The second was the switch from steam to electro-mechanical power. Today we seem to be in another technological, economic revolution as we attempt to become a service economy.

Two factors are true of any technological revolution:

- **The revolution happens faster than we can react.** As a result, we are not able to make full use of the new technological ideas quickly enough to advance to the next level without major economic disruptions.
- **The change does not happen in the one-to-three years of an "average" recession.** The last two revolutions lasted 30 to 40 years—but the world was not as technically advanced at that time. The present revolution may be shorter—and we are already some years into it.

When the Numbers Don't Add Up

Construction industry margins are so tight that that one piece of bad luck on one job can use up the profit from two or three other profitable jobs. Some are beginning to wonder if it is worth the effort. We're not exactly working shorter hours; and we're going further in debt.

A careful study of the debt structure of our industry shows we're trying to borrow our future. I contend that the debt-to-sales ratio should be a constant. If you owe $1 million at a time, you do $10 million in volume, then when you're at $20 million in volume you shouldn't owe more than

$2 million. My experience is that our debt-to-sales ratio is going up, particularly for equipment-intensive contractors. This trend will threaten the stability of industry and if it continues will have the potential to lead to crisis proportion.

Planning for a Declining Market

While it takes a while to become good planners and trust your forecasting, it is important when predicting the market to guard against too much optimism and accept a downturn id that is what it looks like. We need to look at the potential for determining success or failure in our business during both growing and declining market and know how to downsize the organization. The options are fight for every job or reduce overhead and brace for the decline which can increase efficiency and productivity because you keep the best people. Top management, the contractor and partners get closer to the work when layers of people are reduced. We work long hours already so we need to be careful when downsizing that time is allocated appropriately. Fortunately downsizing generates cash because money comes in for the greater amount of prior work and spending is less for the lesser amount of current work

If we see poor market coming we might be decided it is healthier and safer at $15 million that at $20 million. We would then immediately reduce overhead to fit a $15 million company. Because is overhead is mostly people, the difficulty is determining who has to go and what equipment needs to be sold. Putting it up on blocks doesn't work well because of continuing insurance costs and depreciated. If we eventually go back to $20 million we may not want the same permanent overhead. The steps are difficult and can be painful, but many who refuse to downsize face serious risk of losses or worse.

Downsizing Can Lead to Success

While the economy may be improving, I believe the recovery is fragile. Any trouble in the financial markets could be serious enough to force the whole process to begin again. Whatever happens, contractors should realize that while they can't control the market, they can control their response, including making layoffs when needed.

Prospering in cyclical markets and surviving a downturn in the construction industry starts with recognizing what will happen when the markets soften and backlog falls off. The same thing has happened without fail in every industry down cycle for the last 50 years.


SCHLEIFER

The potential for profit, measured as a percent of sales, is almost the same during a down market as it is in an up market—it's just more painful.

The contractor's responsibility is to react to and manage risks and maintain financial strength and profit during the downturn to be ready for the rebound. The market always returns, but it is difficult to accurately predict when it will.

The Myth of 'Drop Dead' Volume

I regularly hear from contractors who say, "I have a drop-dead volume I have to maintain to be viable." My typical response is, as you grew your business from $5 million to $15 million, were you profitable at $5 million? Or to put it another way, as you grew your business to $100 million, were you profitable at $50 million and $70 million? Most contractors were, and they celebrated their success at those smaller volumes. The point is, if you have to go back to one of those reduced volumes, you need to size and configure the organization to exactly what it looked like when it was profitable at that size.

Reduce equipment fleets through sales or mothballing is one way. But there is a tendency to hold on to equipment (and people) with the idea of being prepared when the market returns. Sometimes these decisions can't be avoided, and risk-control mandates these steps be taken sooner rather than later.

The largest by far of all overhead costs are employee salaries. While it is appropriate to cut back non-essential costs—subscriptions, bonuses, travel, entertainment and so on—because it signals to employees a new attitude, those contractions never amount to enough to really make a difference. Reduction in overhead requires a proportional reduction in management and administrative personnel.

For a company to downsize 10%, it must eliminate 10% or more of overhead salaries, a move that also reduces the associated payroll, insurance and benefits costs. Managing risk protects the jobs of the larger number of employees who remain. Downsizing also provides an opportunity to weed out weaker employees and profit from a reduced volume with an organization's best people.

Capturing, training and retaining good people has been a major issue for many contractors during the recent good years, and serious resistance to these suggestions is understandable. However, timing is critical because there are real and significant costs to reacting late. However, if the market rebounds later rather than sooner, some organizations that have spent heavily to retain resources may eventually have to give them up anyway. That is the greater risk.

When there are fewer projects in a market, competition intensifies, and prices and potential profits diminish. Ideally, in a shrinking market, each contractor would accept proportionately less work; in that way, the market share of each business would be maintained.

However, there is a tendency in our industry to resist, sometimes strenuously, any reduction in sales, and to fight vigorously for the fewer available projects, which drives down prices for everyone.

Unless all competitors react by accepting and expecting proportionally less work, this is very unlikely. The result is that contractors resisting a reduction in their sales will "load up on cheap work," which increases their risk in an already difficult circumstance. Conversely, cooperating with the market and downsizing to align your organization with market realities is appropriate risk management. We can't control the environment.

Downsizing is difficult but necessary for contractors to prosper in cyclical markets. ■

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Managing Overhead

Flexible Overhead (Back to Table of Contents)

One of the things we do in this industry is put on permanent, full-time overhead for the new, larger company that we want to be. But the company that will be successful in the '90s and into the year 2000 has to be able to do less work in one year, more work in another year, and more work in the year after that. The successful company will be driven *by* the marketplace, not be demanding a steady volume of work *from* the marketplace.

We must think in terms of "flexible overhead" to deal with the reality of a cyclical market to avoid the desperate need for sales to achieve a drop dead number. To be flexible rent and lease equipment that goes back when the work slows down. Hire temporary office and accounting staff that you can lay off on short notice. Even if it seems a little expensive the differential in cost buys flexibility—survival insurance.

Avoid taking jobs that offend your plan. Don't knowingly embrace work that changes your flexibility. Shrink the work area where possible closer to home to allow you to watch it thoroughly to increase efficiency and profits. Those who embrace innovation in the field and in the office will get through this. Some have become office-centered to the point that they have little time for the work force. Some firms too many white-collar employees who do not build anything. They should have fewer desks, fewer telephones and turn off a few computers. It is possible to have too many people collecting and managing data that not one uses and that is not adding to production.

Some need to get back to basics; back to the way it was when you could turn your back on field forces and they would continue to produce. Absentee leadership cannot control the office or the field. Leadership is growing and enhancing people, not sales or company. In a down market you have a short-term problem that can be managed if you are willing to do a little less volume for a while. The choice is yours.

Overhead Reduction Industry Survey (Back to Table of Contents)

Background & Major Result

Construction researchers from Arizona State University conducted a survey of the industry on how they reduced various overhead expenses during the recent recession (2008 to 2013). A total of 480 construction professionals (about 450 construction entities) responded to the survey over two months (February to march 2015). The first part of the survey requested the respondent to classify their company's percentage reduction from a set of typical overhead categories. The second part of the survey collected demographic information about the respondents, including annual revenue, number of full-time employees, and business sector.

Significant results from the study include the following:

- 92% of all respondents cut overhead in one or more areas
- The largest cuts were in Bonuses, Company Functions, and Charity (73% of all respondents cut in these areas)
- The small reduction was in Business Development, with only 41% making a reduction
- Small companies had the largest reductions in overhead, with a quarter of them reducing it by about 30%. Likewise, more than half of large companies had minimal overhead reductions (less than 10%).

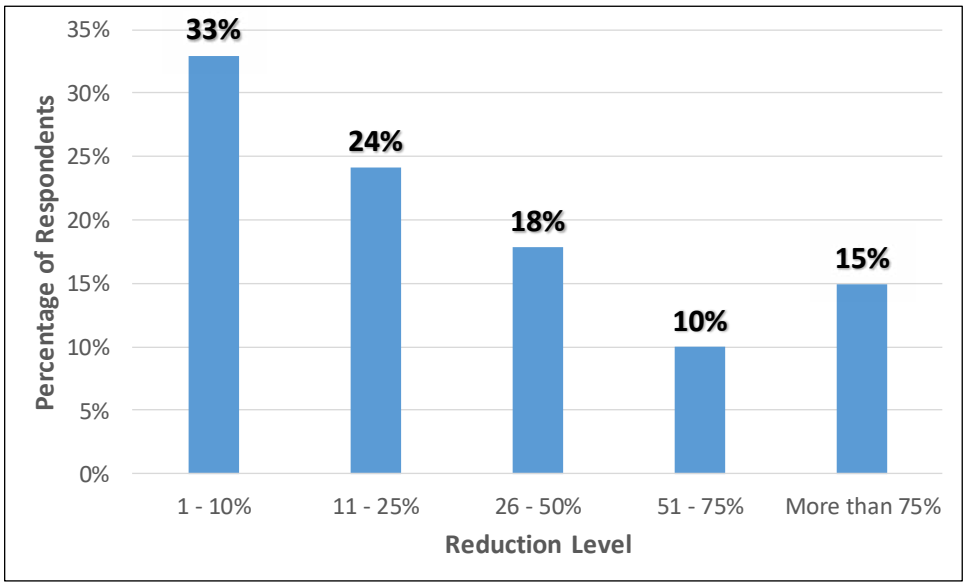

Figure 1. Distribution of Overhead Reduction levels (of respondents who reported reductions).

Details

Table 1 presents the overhead reduction by category and magnitude. The yellow highlight show areas with the largest reductions.

Table 1. Overhead Reduction by Magnitude and Category.

	0% (none)	1 - 10%	11 - 25%	26 - 50%	51 - 75%	> 75%
Bonuses	28%	16%	10%	14%	10%	**22%**
Company Functions	27%	17%	10%	**18%**	12%	17%
Charitable Gifts	27%	17%	**18%**	15%	11%	12%
Training / Education	55%	**14%**	12%	10%	5%	3%
Retirement Plans	57%	**22%**	6%	7%	3%	15%
Corporate Officer's Salary	50%	**17%**	**17%**	9%	4%	3%
Business Development	59%	**14%**	**14%**	8%	4%	1%
Travel	44%	**21%**	16%	10%	5%	4%
Home Office	75%	**13%**	7%	3%	1%	2%

Figure 2 presents distribution of the respondents' trade and overall number of company FTEs.

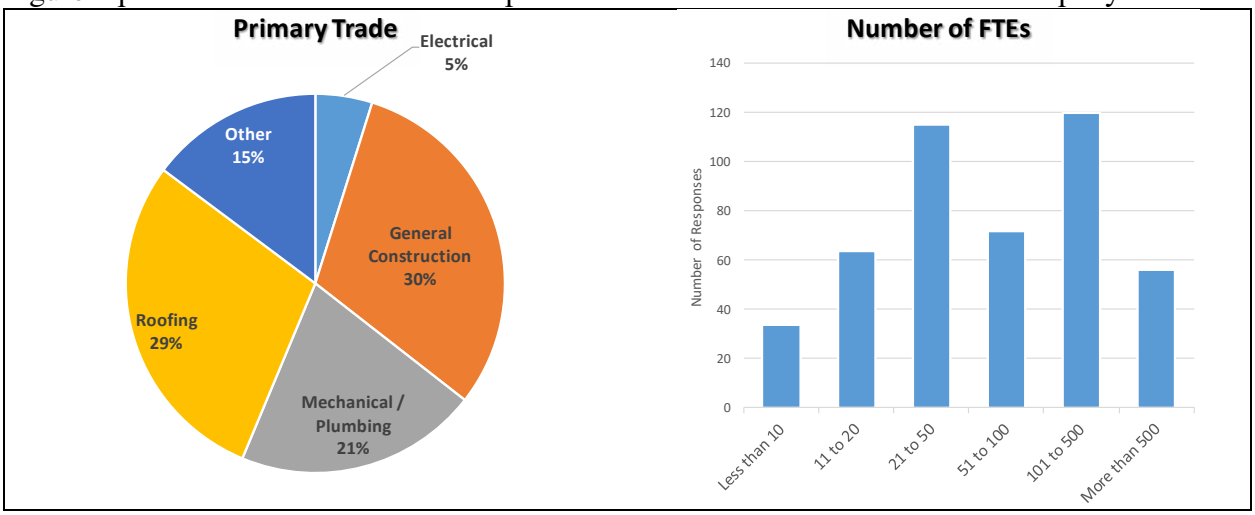

Figure 2. Distribution of Respondents' Trades and Number of Full-time Employees (FTEs).

Conclusion

The recession forced reductions in overhead, but they should have been sooner. Or put another way; if overhead reduction are a necessary defense, why not reduce overhead as soon as the market turns down?

Letting Go Of Overhead

Too many construction organizations become slaves to their overhead, their general and administrative expenses. Increased overhead usually equates to increased capacity and is common and appropriate during growth periods. Unfortunately, these expenses are much easier to put in place than to get rid of, and in a cyclical market they become a burden and create losses. This is especially true now that we have such a weak and slowly developing business upswing.

A common reaction in a declining construction market is to search for work in unfamiliar markets—new geographic areas and types of projects—in order to hold the gradually built organization together. This combination often cuts profits or leads to losses. A declining market obviously poses risk for a construction organization, but dealing in unfamiliar markets simply magnifies the risk. And it's dangerous to combat risk by taking on more risk.


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Think about how missing just a few consecutive ideal projects, which can happen even in a growth market, plus delayed project starts, can weaken your finances. Contractors are often tempted to look in other markets to maintain volume rather than cut overhead. Some have said they were forced into unfamiliar territory, when the reality is they never considered reducing volume (and capacity) to adapt to market realities.

A far superior and much less risky strategy is to chase and produce work within the organization's proven track record. When that type and location of work declines for any reason, reduce overhead in order to maintain continuous profitability. In this way you can manage your risk to achieve success rather than react to changes.

I fully realize this is a huge paradigm shift from the often-heard standards: "If you're not growing you're going backwards" or "I have got to keep my organization together for when the market comes back." My answer is, "At what cost?" This recent sustained, lengthy and painful down market has shed light on the reality that excess overhead costs have weakened numerous construction companies, which does little to prepare the company for when the market returns. The current weak recovery is just making it worse.

Flexible Overhead

The answer to this problem is a new strategy I call "flexible overhead." Some companies already use it although not necessarily under that name. These are firms that are smaller (in some cases a lot smaller) than they were four or five years ago, but have remained profitable. They obviously do not earn as much money as when they were larger, but they do not give any back either. There is a much larger group of firms that have lost money.

What I am proposing is not nearly as painful as downsizing. Under my concept of flexible overhead, contractors should engage a percentage of all overhead costs in such a manner that they can be turned off and the expense ceases in a week or less—in some cases, in a day. They are not taken on as permanent expenses but as rentals, temporary personnel, interim office space, etc. The percentage range varies up to 25% because each organization is different.

I have already heard complaints that this is impractical and too expensive, that temporary personnel are less qualified and it is cheaper to own equipment than to rent, and so on.

To this criticism, I say that the market we deal in is cyclical. Continuous growth in sales as a business model is impractical, high-risk and dangerous. A concentration on growth in profits rather than sales makes more sense. When maintaining size is the chief motivator, overhead tends to grow. When growth in profits is the primary focus, selection in projects shifts from a desperate need for sales to what the organization does best. Team members still have job security because flexible overhead will preserve the company and its staff. A company that concentrates on profitability, not size, has a totally different understanding of the market and its place in it. It still enters new markets, but with careful attention to how much it attempts, what the risks are and whether it can afford the learning curve. A new definition of the successful contractor of the future has evolved.

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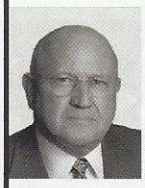
Overhead: A Silent Killer

As part of our research into the recent downturn, my Arizona State University colleagues and I surveyed U.S. construction companies to discover what overhead they chose to cut and when. The results are interesting because they can help your company to anticipate what cuts it may need to make in future market downturns. Construction companies traditionally have held to the belief that they had to keep together their entire organization during slow periods. Because it took so long to find and train their staff and get them to work as a team, contractors believed it would be impossible to replace those workers when the market rebounded.

Since, during the downturn, almost all construction organizations had to cut overhead eventually, the real question is whether they should have made the cuts earlier. Now that the market has begun to recover, the challenge is to determine what overhead to put back into place, in what order and when. Should this overhead have been added in the first place? Did it enhance efficiency and profitability, or was it just a way of maintaining a comfort zone or safety margin?



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I conducted the research project with Professor Kenneth T. Sullivan and Jake Smithwick, a PhD candidate at Arizona State University. As part of that research, we sent out questionnaires, and about 500 construction enterprises responded. The overwhelming number of respondents were contractors.

More than nine out of 10, or 92%, cut some overhead. Almost three out of four, or 73%, reduced bonuses, company functions and charitable donations. A sizable chunk, 41%, reduced business development.

Almost one out of four respondents, 24%, cut overhead by as much as 25%, and 15% of respondents cut overhead more than 75%. The respondents said they cut corporate salaries, training, education and travel. They also say they made large cuts in retirement plans. What do we learn from this?

General and administrative expenses, commonly referred to as overhead, are obviously necessary to the efficient management of an organization. For a cyclical industry such as design and construction, in which sales often fluctuate considerably, the question is how much overhead is necessary or appropriate relative to sales volume, which differs each year and sometimes each month?

A large percentage of overhead expenses are made up of salary and related costs, which are almost always considered permanent positions necessary to the management and potential growth of the organization. With so many small to midsize, closely held companies, construction contractors often run their companies as if they were a family, rather than a business. This approach is noticeable when it comes to bonuses and perks, especially during good years when profits often are shared more generously than in larger or publicly traded enterprises.

When the market slows, the reality sets in: It is much easier to put on overhead than to take it off. Many closely held enterprises simply accept the resulting poor performance, even losses, as a cost of doing business.

Every category of overhead expense should be scrutinized regularly, and overhead costs need to be adjusted at least annually in anticipation of next year's sales. Decreases should not be made after market downturns but in anticipation of downturns. U.S. company performance data from 2008 to 2013 indicate a serious and continuous reduction in sales and profitability across the industry—a clear sign that many design and construction enterprises should have cut overhead sooner.

I am convinced that the profitable contractor of the future will need to manage overhead through much stricter controls and ease the pain of cutting overhead by maintaining 15% to 25% of all overhead as "flexible overhead"—that is, overhead that can be turned off with a maximum of one month's notice or, in many cases, a week or less. A cyclical market such as construction practically demands that an enterprise be able to do what it considers "regular" volume one year, 120% of that volume another year, and 80% another year, rather than fill in the gaps with low- or no-profit work.

Looking back over the recession, the evidence is clear that the sacrifices in profitability could have been avoided by cutting overhead sooner. ■

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Construction Company Life Cycles

Stages of Growth (Back to Table of Contents)

Construction companies, like people, go through stages of growth in order to maintain success. To evaluate a closely held construction enterprise it is necessary to understand which stage of growth the company is in. A study of more than 1,000 closely held construction firms reveals that there are five distinct stages of growth: start-up, survival, success, growth, and maturity. It is critical to know what stage a firm is in because the elements needed for success in one phase can spell disaster in another.

The Start-up Contractor

A start-up construction company is generally run by a contractor/entrepreneur who does everything: bids the work, sells the work, supervises employees, and provides working capital.

The start-up lacks any assurance that it will survive the next fiscal year. This is not to say that it is in trouble, or that it is not making a profit. It simply has no track record. It has not proven its capability to get and produce work at a profit on a consistent enough basis to satisfy its owner and/or potential credit grantors.

A company may stay in the start-up stage for 10 years or more, though some firm's progress more quickly. Optimism and endurance are key ingredients to success during these years.

Survival Stage

In the survival stage, the company is stable and the founder and credit grantors believe that the enterprise is more or less permanent.

The company has discovered and exploited a business niche. It is still a one-person show, but the primary concern is no longer to get from one month to the next because it has grown to a sufficient size to generate enough revenue to solidify the organization. Cash flow is the bane of the survival stage contractor's existence. The contractor can borrow money because the company is relatively stable, but usually learns quickly that growth consumes cash and that more borrowing is necessary to grow. There is little organizational structure or control. Managers follow the very specific instructions of the founder.

Success Stage

A company in the success stage generates positive cash flow from its operations. If the company owes money, debt is being reduced or it may be debt-free.

The company is growing modestly (under 15 percent) or has fluctuating volume but is able to finance any growth internally. The company is large enough to maintain its position in the marketplace and earns at least average profits. The risk of failure is minimal and the personal assets of the owner are no longer the sole basis of credit.

Managers have responsibilities and are functioning at a high level, but the founder is still in charge, although does have some time to pursue personal goals if he chooses. There is a tendency to overspend, particularly on benefits and bonuses. The greatest risk the company faces is maintaining enough cash to deal with tough times if they develop.

Planning becomes more important in this stage and the contractor usually remains active in strategies, planning, and organizational issues and is committed to the established or stable demands on time and energy. Owner time and energy demands vary from organization to organization, but are usually less than during start-up or survival.

Employees may have difficulty advancing during this stage because the organization has leveled off, is stable with modest growth and profits are made by maintaining "business-as-usual."

Growth Stage

A company in the growth stage is increasing annual sales by 15 percent or more, in addition to inflation. It is usually profitable, but often at a lesser rate than when it was in success stage. It risks becoming not profitable at which point it would return to survival stage (whether it is recognized or not). The major issue is financing the expansion. Debt is almost always increasing, because growth consumes cash in the form of reduction in working capital and increases in retainage. Working capital can improve if growth stops at a plateau, but retainage doesn't level off unless volume decreases.

Cash in the growth stage is always a problem. For the entrepreneur that has spent time in the success stage, where cash is plentiful, it can be discouraging. There will be an increase in debt-to-equity ratio that can affect bonding and banking relationships.

The ability to delegate authority becomes critical, because in this stage there are more people to manage. This is a difficult transition for many entrepreneurs, particularly those who have not had to delegate in the past or have difficulty in doing it at all. They may place strict controls on those delegated to which limits the potential to take any of the load off the entrepreneur, who is often swamped during growth stage.

The "growth stage contractor" must begin to decentralize. Existing systems and procedures usually become strained; replacement systems often become overloaded before they are operational. Long-range planning is critical and must include the participation of key managers, but time for planning is usually in short supply. The company is still dominated by the owner but other key people have an important role in management, operations, and hopefully decision making.

At its best the growth stage is a difficult one. Demands on owner time and energy are high. Having enjoyed the cash flow and reasonable time demands of the success stage makes tight cash flow and high time and energy demands less palatable.

Mature Stage

A construction company seldom reaches maturity stage during the first generation of leadership. It is usually the second generation or later. The company has competent, self-reliant management and is large enough to dominate a market. Debt, if any, is modest and the company's course is charted through formal strategic planning. The management structure is clearly defined and most likely decentralized and/or departmentalized. Separate profit centers or operational units provide necessary opportunity and training ground for future managers of the company.

If a company in the mature stage begins to grow at a rate greater than 15 percent plus inflation, it shifts to the growth stage and the systems and controls relied upon in maturity will stifle expansion efforts. If the growth creates loss or substantial debt, the company may enter survival stage, regardless of its size and reputation.

The mature company's biggest challenge is to control its future without losing its spirit. Mature companies are not always the most profitable contractors in their market.

Market factors. Depending on the stage of growth, the same market factors competitors face could affect effects each company differently.

A favorable construction market may encourage growth, however, growth over 15 percent a year can easily shift a company from one stage to another. If management doesn't sense the shift, it may be relying on the wrong resource in decision making. For instance, a successful company in rapid growth may be forced to increase debt to finance the expansion and, as a result, shift from the success stage to the survival stage. Management may run into difficulty, because a company in survival stage should be managed quite differently than a company in the success or growth stage.

Organizations shifting from one stage to another without a change in resource allocation and a recognition of the necessary shifts in management practices, will have difficulty. Even modest or partial shifts form one stage to another create challenges if the change is not recognized, because an organization in transition may be in two stages at once, complicating the navigation of the business.

This may explain some industry confusion such as: Why some contractors need to work 15 hours a day to keep their business operating while others play golf and their business goes along on its own. And why some organizations manage without any formal systems or strategic planning and others rely heavily on planning and systems for their success.

For example long-range planning is essential to a company in maturity but is a distraction and waste of time to a start-up, where the contractor is living day-to-day and operating on instincts. If time is consumed in planning meetings there will be no business to plan for.

Business Resources

Every construction organization relies on business resources for success; however, the demand for resources varies dramatically depending on which stage of growth a company is in. These business resources are things such as:

Matching business and personal goals
Owner's ability
Cash and Credit
Owner's capacity to delegate
Quality and diversity of employees
Strategic planning
Systems and controls.
Business connections

Matching Business and Personal Goals

The start-up contractor usually has to put all personal goals aside except for the desire to succeed in business. When a contractor is unwilling to do that or their personal and business goals are out of alignment, there is limited potential for success, particularly in the start-up, survival, and growth stages.

In the success and mature stages, the time demands on the business owner are the least, making the matching of business and personal goals less important to success. In the success stage there is some freedom, but not if the company begins to grow at a rate in excess of 15 percent, as this may signify a shift into growth stage. In the mature company, matching owner business and personal goals is less important, but if a decision is made to expand again, the current principals must be prepared to set personal goals aside because of time demands of growth stage.

Owner's Ability

In the early stages of a business, the owner's ability to do whatever the company specializes in may be the only resource the company has. If the owner's ability is sufficient, the contractor is able to sustain a start-up company. It becomes less important in the latter stages of success and maturity when a skilled staff is necessary for survival.

A mature construction company can exist for generations absent strong owner ability, because qualified executives, appropriate systems, and adequate controls manage the business. However, if a company shifts from the success or maturity stage to growth or survival, the owner's ability and leadership, which may not have been called upon for some time, becomes critical to success.

Owner's Capacity to Delegate

During start-up and survival, contractors rely on themselves for success and delegate little true authority to others. There may be quality people in the organization during these stages, but the prosperity of the organization lies solely with the entrepreneur in most cases.

Observations of construction companies that failed during start-up and survival stages demonstrate that organizations run by unqualified owner managers or by non-owners were equally represented. In the later stages, the opposite is true.

The owner's inability or unwillingness to delegate authority to others may be the most common cause of business failure during the growth stage. It is ironic that the same attributes required for

success in start-up and survival may be disastrous during the growth and maturity stages, where it is impossible to succeed without delegation. The success stage can be achieved without delegation if the company plateaus at a size where the entrepreneur can manage everything. However, midsize and larger companies in the success stage require delegation to prosper.

Business Connections

All companies need business connections, sometimes referred to as business resources, such as a customer base, relationships with subcontractors and suppliers, and reputation in the marketplace. However, the importance changes as the company develops. Loss of even one customer can be devastating to the start-up or even the survival stage company with limited business connections. The success growth, or mature stage company is better able to withstand such losses, as it has multiple business connections and by definition is established and has some reputation in the marketplace.

Cash and Credit

Start-ups can't get enough cash and credit. In survival, the challenge is to generate or borrow enough cash to break even and cover the cost of replacement of equipment; and eventually to earn enough to finance growth to a size that provides an economic return on assets and effort. In the success stage enough cash is earned to reduce or eliminate debt, but overspending is sometimes a problem. And in the growth phase, cash is short again and there is a tendency to over-borrow. In the mature company, cash flow meets all business needs and there may or may not be some modest debt in the capital structure.

Managing cash flow is much easier if there is an understanding and anticipation of the different demands in the various stages of growth.

Quality and Diversity of Employees

From start-up through success stage, entrepreneur/contractors typically run everything themselves and it may be the best approach to success. They are overworked, have no free time at all, but it can't be helped because their success does not depend on their people—it depends on them.

Getting used to doing business this way, this type of business owner may have difficulty moving on to the growth stage which demands the ability and willingness to attract qualified people and delegate authority to them. In the growth stage, the quality and diversity of people becomes the most important resource for continued expansion and success. In maturity, the abilities of staff are critical and far more important than the abilities of the owner.

The mature company in financial difficulty re-enters the survival stage whether it recognizes it or not. In survival strong, independent is critical which is not the case in a mature company and not the way it has been operating. A strong leader is not required in a mature company and there may not be one, but if a strong owner or stakeholder does not step forward, the mature company will have difficulty re-entering survival stage.

Strategic Planning

The mature company relies heavily on long-range strategic planning for its success and stability. Management and owners have the time to devote to planning and it is usually a very formal process. In some cases it can be said that the business plan runs the company, or is at least a very strong guideline and control mechanism for management at every level.

Strategic planning is important for a contractor at the success stage if prosperity and stability are to be maintained over time as the organization becomes less reliant on the owner's ability. Planning is essential in the growth stage to manage the increasing number of people who will manage the expansion, but finding time to plan is usually a problem. A start-up or survival stage contractor who is doing everything by himself with limited resources will find little use for a long-range plan and can be very successful without one.

A mature company pushed back into survival for any reason will have little use for its long-range strategic plan because, by definition, a company in survival has limited assurance of a future. It would be a grave error to stick to the long-range plan because it will not contain the ingredients for survival management.

Systems and Controls

Systems and controls are how strategic plans are implemented. They are used, for the most part, to assure that what is agreed upon in the long-range business plan is executed. They are, therefore, of limited importance in the early stages of development such as start-up and survival, but become increasingly significant as a company progresses through the later stages of growth and success, and are critical in maturity.

They become burdensome, however, if a company finds itself back in survival where fast-moving decisions must be made and implemented by a strong leader, with limited consultation with others and without regard for processes or methodologies prescribed by existing systems and procedures.

Direction and Timing

Companies usually progress from start-up through survival, success, and growth to maturity. A construction company generally remains in the start-up stage for five to 10 years and either ceases to exist, as many start-ups do, or moves into the survival stage.

Survival can be passed through on rare occasions in a few years and on the other extreme an under-performing company may remain in survival indefinitely. From survival stage, a company moves to success stage. Key to moving on to the success stage is the reduction or elimination of debt. Therefore it is not possible to move from survival (where cash is scarce) to growth without an infusion of cash in the form of recapitalization, because growth requires cash which is earned in the success stage.

The success stage can be a launching place for growth or an organization can remain in success indefinitely. On rare occasions a company can pass from success stage to maturity without entering the growth stage. If a company remains in success for many years, it may slowly grow to a size where it has sophisticated systems and planning and becomes well enough established in its marketplace that it enters the maturity stage. It does not go through growth stage because the company never grows at a rate greater than 15 percent plus inflation and does not increase debt during its moderate growth rate.

A construction company seldom reaches the maturity stage before the second generation and it usually takes longer. Those that remain in maturity for very long periods of time are often not exceptionally profitable. The reason appears to be that companies managed for long periods of time under effective systems and controls do not need, and often do not have, strong leadership. Without strong leadership, spirit and enthusiasm can be lost and organizations begin to function rather than thrive.

Reverse Progression

Companies can go back into stages they have passed through. When a mature company undergoes growth greater than 15 percent and debt increases for a year or more, it re-enters the growth phase. A growth-stage company often returns to success stage after expanding for a time. If there is limited delegation or the organization is not managed through planning, systems, and controls there is a limit to growth potential.

If a success, growth, or mature-stage company encounters financial difficulty where equity is reducing rather than growing or debt spirals out of control, it re-enters survival stage. Whether management recognize the shift or not, it is very real, and absent an alteration in resource emphasis and a change in management practices, the company will have difficulty working its way out of survival.

It is obvious that organizations undergo changes as they develop from origination to maturity. What is less obvious is that the business resources and management practices necessary for success vary dramatically at different stages; and that certain business resources and management practices can do great harm when applied in the wrong stage.

An understanding of the stages of growth that a company goes through during its life cycle allows business owners and managers to identify the stage they are in and analyze the issues involved at each stage. In this way, they can enhance their potential for success by identifying shifts as they occur and anticipating the appropriate reactions to them.

Getting Paid on Time

Late Payments May Be Your Own Fault (Back to Table of Contents)

Not getting paid on time takes some of the fun out of the construction business. It also adds to the risk. Billing procedures in the construction industry are unique. The contractual arrangements guaranteeing and assuring the performance of the contractor and payment by the owner are one-sided, giving the owner more protection than the contractor. On public work and on a great deal of the larger private work, 100 percent and performance bonds are required. This effectively assures the owner that if the contractor is unable to finish the job at the agreed upon price, the bonding company will pay the difference.

However, the contractor on some projects has no assurance that the owner will have the money, or the inclination to pay in a timely manner. Public institutions have entered into contracts and then been unable to pay for them. And most contractors doing federal projects know of someone who performed signed change-order work and couldn't get paid because the owner or his representative didn't have the proper authorization.

Even with 100 percent surety guaranties, owners also withhold part of every payment as further guarantee that the contractor will do the job. Retainages of 10 percent are common, and only in recent years have some retainages been reduced to five percent, when a job is 50 percent completed (and acceptable). Finally, the federal government has begun to deal with the inequities of huge retainages on their projects.

Retainages are an expense to a contractor, which he, hopefully, passes on to the owner in his bid. But the assumption involved is that the contractor probably won't do his job unless he is forced to. Owners deny this. The authors of the contracts deny it. But no one wants to give up the practice. Its very usage sets the tone for the relationship between owners and contractors.

In the language of most contracts, and in the role (supposedly independent) of most designers in the construction process, there seems to be the assumption that the contractor isn't going to do the job he's agreed to do unless someone holds a gun to his head. The environment in which contractors work is one of mistrust on the part of the designers and owners. Retainage helps to perpetuate that environment. Trying to get retainage released at the end of a project from designers and owners who deny any built-in bias or mistrust further perpetuates the environment.

When a million dollars of retainage is held for months awaiting $50 thousand worth of punch list work, it becomes obvious that mistrust exists and that the contractual arrangements provide financial advantages to the owner. They're getting interest on the $1 million retainage while contractors are paying interest on loans to compensate for high retainage.

The environment causes many contractors to feel they have very little power as far as their payments are concerned and that entitlement to their money is somehow clouded. Contractors want their money and some really go after it, but often they don't seem to have a strong feeling of entitlement. This condition is reinforced by the practice of walking a site with a designer or his representative at the end of a month to agree on the percentages of completion of the various

line items of work. The designer's representative and the contractor's representative usually have a copy of the last month's payment requisition in front of them. They either agree, or debate and then agree, on what was done that month.

This practice is common on unit price jobs, but also very prevalent on lump sum projects. Some contractors don't do this. They send in their completed requisition, and if the designer disagrees, he sends it back marked with his changes (usually in red pencil), and the contractor retypes it, signs it, and sends it back to the designer. These practices demonstrate the payment environment in the industry and demonstrate, for me at least, a problem with entitlement. These practices put contractors in the passive role of taking what they can get rather than the active role of invoicing their customers for services rendered.

The very word "requisition" suggests that they can only ask for their money. Furthermore, it suggests that there is some question as to their entitlement to it. I have had contractors tell me time and again that "this cooperative approach is the smoothest and most expedient way to get the requisition approved and into the hands of the owner for payment". They usually add: "besides, the architect or engineer always treats me fairly." I suggest that in the name of fairness they have tolerated the attitude that they need to be controlled and that the designers have to protect the owners from them.

Fairness is a two-way street. It is not something that a party to a contract has to ask for or earn. If a contractor doesn't get it, it might be his own fault for not demanding what he is entitled to.

According to most contracts, the payment requisition is to be filled out by the contractor and approved by the designer. A contractor shouldn't need any help determining what work was performed during a month nor how much he wants to be paid for it. If the designer doesn't want to approve it, that's his prerogative. He can red pencil it and send it on to the owner along with the amounts he thinks should be paid. There's no need to retype it any more than a need to walk the site and bargain for the amounts. All that is established by doing those things is that the designer, and only the designer, decides what the contractor will be paid. Retyping means changing the request to say what the designer says it has to. What contractors do by these practices is place their monthly payment amount totally in the hands of the designer without even a right of appeal. Sure he can argue and cajole. But once he has agreed that only a clean, typed requisition can go to the owner, he must change his requisition to satisfy others.

Effectively what he has done is establish that he and the designer will agree on the amount before it is "approved" to be sent to the owner. This is ridiculous. It not only rewrites the payment provision of the contract, it leaves him in the one-sided position of trying to talk someone into agreeing on how much he should be paid. But the designers don't have to pay the suppliers, they haven't already paid for labor, and they aren't under any time constraints at all.

So why do some contractors get involved in these practices? Some have told me, "It's easier than arguing over payment, because arguing will only cause other problems with the designer." Others have said, "I don't want the owner to see a red penciled requisition, because he'll think I was asking for more than I should have." And still others say, "The owner's not going to pay except for what the designer approves anyway, so what's the difference?"

The difference is that the practice gives the designers a disproportionate amount of control over the contractor during the construction process. As long as a contractor intends to live up to his end of the contract (including every item in the plans and specs as most designers insist they do anyway) they have nothing to fear from the designer.

There is no need to shelter the owner from payment requests. He should have an active role in the construction process and one of the few things the contract says he has to do is to pay, and there's no harm in clarifying that for him by involving him in the payment process.

If this sounds like I'm not in favor of cooperation, that's wrong. I'm just in favor of cooperation on sensible and business like terms, not cooperation that is one-sided to the point of that the contractor keeps quiet so the owner is always happy and the designer's boat isn't rocked. But it happens.

It starts with the payment process when a contractor doesn't stand up for his rights under one of the few sections of the contract that are favorable to him. He is supposed to requisition for work performed, and the owner is to pay within a specified period of time. If the designer doesn't approve the full request, the owner only has to pay the approved amount.

The contractor, in requisitioning, is simply doing what the contract calls for, as is the owner, in paying only the approved amount.

The designer, on the other hand, has stuck his neck out. If there are any consequences to his action of reducing the payment, the owner will end up paying for it. And most owners know that. Basically, contractors seem to believe that they are powerless in the payment process.

I once returned to an architect a red-penciled requisition which he sent to me for retyping, with a note to send it on to the owner as it was. I got a call from an incredulous architect saying that the firm had never sent an owner anything but a clean typed requisition. It was the first requisition on the project and I could only assume that the architect had reduced most of the quantities, out of habit or perhaps because he thought he should. As the amounts were all correct or, if anything, understated, and one line item requested nothing where anyone could see that the work was obviously completed.

At any rate, he said that he wouldn't send the red penciled copy to the owner, and I would just have to change it, retype it and sign a new one.

I told him that I never retype a requisition and that I had sent the owner a copy of his penciled copy along with his letter telling me to change it and was waiting to see what the owner wanted to do.

The architect then proceeded to inform me that the contract stated that I could have no contact with the owner, except through the architect. I told him that he would have to explain that to the owner. He said, "What if I send the owner the copy of the marked up requisition and tell him not

to pay any of it?" Both he and I knew he would have a hard time explaining that, and it sounded too much like discipline for me to even answer.

To make a long story short, the owner was advised not to pay. When the time ran out according to the contract, I gave three day notice for non-payment. That brought everything to a head and to a meeting at which the architect said: "I'm not sure exactly what was done by the last day of last month," which ended that.

I was paid immediately and before the tenth of every month for the rest of the project. Was the inspection on the job any more difficult than usual? I'm not sure. But I was sure that I wanted to be paid the correct amounts on time.

Slow pay and retainage held too long are an increasing problem in the construction industry. Too many people are allowing it to get worse by saying, "We can't do anything about it." Each contractor has to decide for himself what his approach to this subject should be after considering the impact of slow pay on his business.

If we added the interest paid on lines of credit required because of over-held retainage, we would be astounded. If we had the interest we could earn if we were just paid for the work on time, we'd be overwhelmed and out of debt.

One of the first things a contractor can do to collect his money faster, if not on time, is to prepare and send out his requisition on time.

I see bills go out on the 5th and 6th, even the10th of the month when the contract specifically states: Bill for work completed as of the last day of the month, to be paid no later than the 15th, (20th, 25th or whatever) of the following month. You can't expect owners and designers to begin the payment process until you get the payment application to them.

Begin the billing preparation well before the last day of each month. Have a tentative requisition done by the 26th or 27th, anticipating work that will be completed by the last day, and verify it by phone. In that way the requisition can be sent by fastest method on the1st, even hand delivered, if practical. Phone to make sure the bill arrived and isn't sitting on someone's desk.

It's best to let people know that prompt and proper payment is important to you. They'll respect that. It's the sign of a good businessman. It's hard to change attitudes in mid-job after everyone's gotten used to a way of doing things. So you can't start pushing on existing projects, you need to start from the first requisition on the next job and be consistent.

There is nothing wrong with expecting to be paid for your work and asking for your money. Get it straight at the initial meeting. After everyone tells you what they expect or need, tell them what you need. Simply be up-front and say, "I want to talk about the payment process." It's not going to be important to anyone unless you make it important, unless you let everyone know you're not embarrassed about it and you expect it to be handled on time.

Payment is not a backroom discussion. Explain that your efficiency and productivity depend on paying your subs and suppliers on time and that you don't want to invest in the job—just build it. They should know that—they shouldn't need to be told, but they do. Remember, manage the process and keep it in the forefront of everyone's mind. No one else will do it for you.

After clarifying the payment procedures before the first requisition is due and making your needs and expectations known, it's a good idea to bill low at first. Submit a requisition for exact quantities of work completed. This way, if there is a problem with the designer, you can move with confidence right from the start, knowing he will be proven wrong if he red-lines your requisition. They'll get accustomed to taking your word for work completed. You'll get a reputation for fair rather than inflated requisitions. It's a fine strategy.

Almost all payment clauses say that payment is to be made by the15th, 20th, or such, but many owners take the attitude that it's not due until the15th or 20th. The immediate consequences of thinking payment isn't due until a certain date is to assume that it isn't overdue until some kind of grace period, like ten days after the date. There are a lot of owners who feel that way. "By" the 20th means just that. It will only continue to mean just that in the construction industry if we insist on it.

I talked to a public official once about getting payment for a job. He told me it was officially approved by the public body but that he did not have the authority to pay before it was due. We got the contract out and reviewed the payment section which said "By the 20th of each month". He said, "Then what is the due date?" I replied, "The payment is due upon approval of the designer, but no later than the 20th of the month." Without another word he authorized the check. I'm not suggesting that getting paid is easy by any means, but I am suggesting that we need to be aggressive in getting our money. Furthermore, we should read our payment provisions and explain them to the owners.

The cost of accepting late payments is obvious but the cost of late retainages may exceed even the interest we must pay for the wait. When a contractor gets stretched out and needs his retainage and when the amount of retainage far outweighs the value of the missing items, a lot of contractors give away the store to get paid. They either do work that they don't owe the owner or cut a deal forgiving part of the retainage in return for collecting the rest. The forgiven amounts are ostensible for work not done, but they are usually pure concessions.

This happens even on jobs where a contractor cooperates throughout the project. Consequently, I strongly recommend that you stand firm on all payment requirements from the first requisition. If you don't get treated in a businesslike manner when it comes to getting paid, it may be because you haven't acted businesslike, and therefore can't demand businesslike treatment.

Not getting paid in a timely manner takes some of the fun out of the construction business. It also adds to the risk.

Cash flow is always a concern, but when a contractor's marketplace weakens and his work slows down, cash flow problems can become critical very quickly. If all of a contractor's reserves are tied up in his receivables, he can be forced out of business. If many of the receivables are old

retainages and slow payments, the contractor has to shoulder part of the blame for not demanding what was rightfully his. If the owner doesn't fulfill his end of the contract, a completed building is excellent collateral so don't go under because someone is failing to honor a contract that you've completed.

Blame? Look In the Mirror

Late payment to contractors is an industry nightmare that violates contracts and multiplies risk. Worst of all, contractors allow it to happen. Having been paid late for so long, contractors think it's normal. Most feel they have no influence over the payment process. The reason is what I have called for many years an "entitlement" paradox.

In a commercial transaction, payment is earned, not bargained for. When contractors assent to not being paid in accordance with the contract, they share the blame by not demanding what they are entitled to.

Slow pay and retainage held too long are long-time problems in the construction industry. Too many people are allowing it to get worse by saying, "We can't do anything about it."

SCHLEIFER

The problem begins with construction billing procedures, which are unique. In them, one-sided contract terms provide designers and owners unreasonable control over the payment process. Most contracts direct that a payment requisition be filled out by the contractor and approved by the designer. If the designer doesn't approve the amount, the designer generally red-pencils the requisition and sends it back to the contractor to be retyped. There is no contract requirement to retype the requisition any more than there is a requirement to walk the site and bargain for the amounts. Retyping implies that contractors are overcharging and reinforces the proposition that the designer, and only the designer, will decide what the contractor will be paid.

The inequity of the payment process that has evolved in many building projects is that contractors are put into the one-sided position of trying to talk someone into agreeing about how much work has been completed and payment earned. Although the amount of work completed speaks for itself and is easily demonstrated, the designer doesn't have to pay the suppliers, hasn't already paid for labor and isn't under any time constraints to approve payment.

So why do some contractors get involved in these "bargaining" practices? Some say, "It's easier than arguing over payment, because arguing will only cause other problems with the designer." Others say, "I don't want the owner to see a red-penciled requisition, because they will think I was asking for more than I should have." Still others say, "The owner's not going to pay until the designer approves it anyway; so what's the difference?"

The difference is that having to bargain for payment is punitive, and in acquiescing to this practice, a contractor surrenders a financial advantage and inappropriate leverage to the designer and owner. Owners are earning interest on the funds withheld while contractors are paying interest on loans to compensate for late payment. There seems to be an attitude among contractors that fair treatment by designers and owners may be contingent on relinquishing payment decisions to others. As long as a contractor intends to live up to its end of the contract, including every item in the plans and specifications (which is required anyway), the contractor should have nothing to fear from designers and owners.

Contractors are not powerless in the payment process. Payment is not a backroom discussion, and it is not going to be important to anyone unless we make it important. Nothing is going to change if we are unwilling to let everyone know we are not embarrassed to say, "We expect to be paid in accordance with the contract." We need to make it clear that our efficiency and productivity depend on timely payment of labor, subcontracts and suppliers, and that we have no interest in investing in the project—just building it.

There is a cost to accepting late payments that exceed the interest expense. Cash flow problems have caused some contractors to do work not owed or to discount amounts in order to collect, particularly final payments. The forgiven amounts are ostensibly for work not preformed or accepted, but they are usually pure concessions.

I have experienced construction enterprises with so much of their reserves tied up in receivables that they could not pay their bills and were forced into the hands of their creditors. Much of the cause of financial distress is unpaid receivables, and contractors have to shoulder part of the blame for not demanding what is rightfully theirs. The problem can be rectified with a concerted, unified effort. ■

Thomas C. Schleifer, Ph.D., is a recognized turnaround expert who is conducting research into industry payment practices. He welcomes comments and examples of payment problems and solutions and can be reached at tschleifer@q.com.

If you have an idea for a column, please contact Viewpoint Editor Richard Korman at kormanr@enr.com.

There is a two hour seminar; "How To Get Paid On Time available

Measuring Financial Risk

The R-Score Formula (Back to Table of Contents)

Having spent 12 years assisting financially distressed construction companies, I am a strong advocate of recognizing and avoiding the causes of business failure. The construction industry has the second-highest failure rate in the country after the restaurant business. Many contractors who thought they had a cash flow problem were shocked to discover the depth and seriousness of their financial difficulty when it finally came to light.

The Industry Needs Warning Signs!

During research for the book, *Construction Contractors' Survival Guide,* which describes the 10 common causes of business failure, I became convinced that the warning signs (indicators of potential financial distress) must exist in the financial records of closely held construction companies.

I questioned why standard financial ratios did not provide a warning of deteriorating financial condition or increasing financial risk early enough to prevent most failures. During my research to discover the warning flags of potential failure, I discovered that profit is not the appropriate measure of success in the construction business.

Profit is a necessary ingredient for success, but it is not its measure. For example, a company with sales of $10 million annually that grows to $20 million in a year, without a corresponding increase in equity, may dramatically increase financial risk without realizing it, even if it maintains profitability.

To understand financial risk warning signs, we first need to differentiate between performance measures and financial measures.

The Problem with Performance Measures

Performance in the field—what your organization and crews accomplish—is gross profit. There is no standard for measuring gross profit because there is no agreement in the construction industry regarding which costs are to be charged directly to projects and which are general and administrative overhead costs. As a result, comparisons of gross profits cannot be used as accurate measurements of a construction company's financial performance.

Why Financial Measures Don't Tell the Whole Story

Net profit—gross profit after general and administrative costs—is not the measure of a company's performance; however, it is included in the measurement of financial performance with other important elements. Equity is a significant measurement factor anchoring the capital

structure that underpins the company and supports credit facilities that provide cash flow during peak needs.

The capital structures of construction companies differ significantly by type of work performed. Heavy and highway contractors who own their equipment have different capital structures than a building contractor who brokers a great deal of work.

Understanding the R-Score Formula

Thus, measuring financial performance and risk requires the use of indicators that cross these barriers and also allow for differences in record-keeping.

That is why I developed the R-Score formula, which measures:

- Financial performance and whether the company is getting better or getting worse,
- What the current financial risk is, and
- How this compares with past performance.

The following text explains the different elements of the R-Score Formula:

Sales-to-Total Assets. The turnover ratio is a measure of operational efficiency. The higher the ratio, the more efficient the utilization of assets. The ratio is a composite of receivables management, inventory management, fixed asset management and liquidity management. The ratio is the relative efficiency with which the firm uses its resources to generate output.

Net Profit-to-Sales. The net profit margin is a measure of operating efficiency after all costs and expenses have been taken into account. While both the sales-to-assets and net profit margin are affected by the external marketplace, they largely capture internal management efficiency.

Total Liabilities-to-Equity. This debt ratio tests long-term liquidity. This ratio is similar to debt-to-equity, but total liabilities (all debt) is used instead of long-term bank debt, because the latter can too easily be reduced temporarily at year-end by extending accounts payable or substituting short-term borrowing. The ratio is applied here as a measure of the firm's ability to sustain itself over the long term. This is a broad ratio that ignores most internal manipulations or differences in bookkeeping methods, because it captures all liabilities, and equity is not easily manipulated.

What Your R-Score Means

Test data suggest that R-Scores below 5 indicate low financial risk; above 7, they indicate that financial resources are stretched. Scores between 5 and 7 are moderate. Scores above 9 indicate high financial risk. If the R-Score is very high, the company is highly leveraged. An over-leveraged company cannot deal with a slow year or disruptions in receivables. The company may be profitable, but its financial condition is precarious. Operating profitably "on the edge" makes little sense for the closely held company for many reasons, not the least of which is that the principals are personably liable. There is too much at stake to allow high financial risk to continue once discovered.

Your R-Score trend is more important than the raw score. Determine what your R-Score was five years ago, four, three, two, and one. Or better yet, figure it for a year when you were happy

with your performance. If it was 6 in a good year and is now 8, there is a shift in risk in the wrong direction. If your R-Score was 9 or 10 in a year when you were satisfied with results and it's now 8 or 7, the trend is in the proper direction.

The Bottom Line

- The R-Score formula provides an easy-to-use, accurate tool for measuring financial risk and financial strength for the closely held construction company.
- A multi-year evaluation will provide a quick and accurate historical trend of financial performance and financial risk,
- The R-Score formula can be used as an internal self-evaluation tool for closely held construction companies or an external analysis tool for credit grantors.

The R-Score will help professionals in the construction industry better evaluate the financial risk of closely held construction companies. Several financial ratios are combined holistically to provide insight into the construction operation's financial activities. This helps contractors better understand the impact of operational changes on the financial health of a company.

Better control of financial risk will lead to reduced failures. A reduction in the extremely high failure rate in the U.S. construction industry will lead to lower construction costs, which will have a positive effect on industrial and social progress.

Indictors of Financial Distress (Back to Table of Contents)

There is a difference between "profit" and "available profit". Knowing the difference between the two could keep your company from going under.

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For a more detailed explanation of the RScore research see below.

Original RScore Research (Back to Table of Contents)

The following is not recommended for general information, but may be of interest to Academics or Accountants who wish to explore the original RScore research. This is a portion of the author's 1994 Ph.D. research theses; Indicators of Construction Business Financial Risks in the Closely Held Construction Company.

Abstract

The object of this study is to develop an improved method of measuring the financial risk and performance of construction companies in the United States. An assessment and analysis of the theories of construction accounting integrated with industry characteristics led to the development of the new theory and formula of Available Profit, the new concept and formula for Real Earnings Powers and the new financial performance measurement formula, the Financial Risk Factor Formula. The formula combines profitability, asset utilization, liquidity, and debt ratios to accurately measure the financial risk of the firm and establish financial performance trends. The formula can be used as part of a company evaluation process or as part of an ongoing self-assessment process.

Introduction

The primary purpose of this study is to develop an entirely new method of measuring construction company financial risk and performance in order to predict financial distress or failure earlier than current financial evaluation procedures.

A previous study of hundreds of construction industry business failures indicates that management errors and weaknesses are the primary cause—not inherent high financial risk. However, the ability to measure financial risk is critical to the control of financial risk. The accurate measurement of financial risk can provide early warning of financial difficulties or distress and potentially allow corrective action to be taken.

Studies indicate that corporate decisions and events that are common causes of construction company financial distress or failure precede the actual failure by two to three years and that modest changes in financial statement data and small changes in standard financial ratios do not appropriately announce deterioration in financial performance or possible increases in financial risk. The fast pace of the typical construction business and the fact that major projects can last for years make early detection of financial weaknesses difficult. This is especially true in a growing business, as growth tends to cover up poor performance.

This research focuses on the discovery of early warning indicators of deterioration of a construction company's financial performance well before normal financial reporting and standard financial ratios would display them. This is important because early detection of financial weaknesses would allow management time for appropriate defensive action to be taken and prevent business failures (assuming competent management). This study provides

construction company executives, entrepreneurs, and credit grantors with solid guidelines, organizational models, and a financial risk indicator to reduce business risks that previously have been accepted as inherent in the construction business or unavoidable.

Profit versus Value

Many contractors turn out to be watchers instead of managers of their financial affairs. They respond to things that happen, but do not have control over what is happening or going to happen because they do not have the appropriate financial information in the right place at the right time. Contractors need continuous analysis of historic financial data to have a rear-view perspective to plan by.

Analysis of financial statement data is conducted primarily to measure financial performance. However, there are conflicting views whether financial performance should be measured by profit or by an increase in the value of the firm. The ultimate measure of performance is not what is earned but how the earnings are valued by the investors. A firm's increase in value, not just its profits, is the true measure of company's performance. Therefore, it is necessary to measure the risk that the firm's value is put at in the pursuit of profit in order to measure its overall financial performance.

Financial Risk

Previous studies of business failures offer no early earning indicators of financial distress prior to failure. Bruno, Leidecker, and Harder (1987) studied why firms fail from a purely management viewpoint. They discuss the effect of assuming debt instruments too early but do not carry the point to a usual conclusion. Stiltner (1990) expresses belief that failures are recognizable and can be prevented if the symptoms are discovered early, but does not suggest how to detect the symptoms. These studies are consistent in that they offer no advanced indicators of pending financial difficulties.

The focus of this study is the measurement of financial risk and performance in the closely held construction company and to look for early warning indicators of financial distress. The approach adopted was to look for indicators exclusively within financial statement data because all construction enterprises keep financial records for government and credit purposes.

The risk formula, the subject of this study, is an original contribution that will enable contractors and credit grantors to evaluate a closely held construction company and accurately project the financial strength or weakness of the firm. The new concepts of available profit and real earning power provide a new approach to financial management of the construction enterprise. Uniquely, financial ratios are combined in a holistic manner that provides insight into interpretation of the financial activities of the construction operation. This allows better understanding of the impact of operational changes on the financial health of the company.

Methodology

The data utilized consists of 46 construction companies of various types and sizes that failed. Common ratios taken from financial statement data were tested for each of the three years prior to failure. The results were used to determine if they could predict financial difficulties or nonperformance at an early stage in its development.

This approach was adopted as a result of other research which indicated that the causes of construction business failures occurred two to three years before poor performance was noted in the financial reporting systems of the distressed companies.

Pilot Study

The financial statements of eleven financially distressed (failed) construction companies and eleven non-failed were examined in the pilot study. Financial statements for five years prior to failure were scrutinized. The standard ratios, statistically calculated to be most significant by Altman (1983), were tested for each of the years and none provided measurable indicators of financial distress. Several combinations of these ratios were experimented with including the Sustainable Growth Rate formula. The SGR formula, modified to account for the lack of dividend payment, appeared to have some promise but were subsequently found to be inconclusive.

Theory Development

Attempts to modify Altman's formula and the SGR formula, while unsuccessful, helped define the ratios that were most significant in determining the difference between financially sound, closely held construction companies and failed companies in the database. From this research the Available Profit Theory was discovered, which lead directly to the new formula for Real Earning Power.

After the pilot study, theory testing and validation were undertaken. Additional data was added and the Risk Factor formula was tested on a total of 46 failed and 53 no failed construction companies for three years prior to failure. A similar period was used for ongoing companies. The results were subjected to statistical tests and proved valid. Further validation was undertaken by calculating the Risk Factor for a year prior to the failure of 17 additional failed companies and for a corresponding year for 20 non-failed companies.

The Du Pont[1] (Block, 1989) calculation of return on equity and the standard earnings power formula were considered during the research, and modifying the ratio of earning power with the available profit element was a natural extension of the research. This led to the development of the modified ratio of Real Earnings Power.

The development of the available profit theory and real earning power concept led to the development of the financial Risk Factor formula. It was determined that an asset utilization ratio and debt ratio, properly combined with available profit and real earnings power, is the key. The broad ratios of sales to total assets and total liabilities to equity were applied to develop the final financial Risk Factor formula.

In the pilot study little change was noted in the standard and new ratios in years four and five prior to failure or in the new financial Risk Factor formula. It was determined that a three-year period prior to failure is the optimum length of time for meaningful comparison of financial data for construction companies. The three-year comparison was therefore selected for this study.

Data Selection Criteria

Data collection criteria for the financial statements used in the study were:
1. Audited financial statements by an independent outside accountant or accounting firm.
2. The statements prepared using the percentage of completion method of income recognition.
3. A minimum of three consecutive years of financial statements.
4. Financial statements from a recent time period ending in 1988 through 1992.

The data used was from closely held construction companies. Annual turnover for failed firms ranged from $1.6 million to $82.9 million in the most current year with an average of $13 million. Profit margins for failed companies ran from –6.2% to 2.5% with an average of –1.2%. Annual turnover for non-failed companies in the corresponding year ranged from $1.6 million to $50.7 million with an average of $11.5 million with profit margins of 2.9% to10.2% and an average of 2.4%.

A New Approach

The measurement of construction company financial performance and financial risk through the use of financial statement data is an important issue in the cyclical environment of the US construction industry. The large number of construction business failures is indicative of a tremendous need to integrate accounting theory financial analysis and accounting data into a cohesive and comprehensive performance measurement tool for practical use by managers.

A formula is needed that can provide a warning of any changes in the performance of closely held construction companies. A combination of ratios that crosses categories of standard ratios is needed to reduce or eliminate the impact of different accounting methods. A system that will measure accurately the performance of closely held construction companies, that is not too complicated or too labor intensive needs to be developed. Both financial and managerial organizational performance must be taken into consideration in an overall company evaluation. Organizational performance, for the purposes of this research, is defined as the ability of the company to produce its work at a profit. It is described by the firm's gross profit margin. Financial performance is the ability of the company to remain in business by utilizing its sources of funds. The efficient management and use of the firm's assets is impacted by both financial and operational performance. Sources of funds are used to acquire assets, a financial consideration, and the efficient use of those assets is a measure of operational performance; therefore, an overall company evaluation must address both.

Standard Ratios

Standard ratios are distinctly separated into the categories of profitability, asset utilization, liquidity, and debt utilization. Using these ratios to evaluate a company's performance is limited

to separate evaluations and does not provide an overall measure of performance or risk. The Du Pont Formula comes closest by combining the profit margin with return on assets, but still only provides a measurement of return on equity or investment. It does not indicate if the company is suffering financial difficulties. It is simply a calculation of the return generated on investment during the accounting period being studied.

Z and PAS Scores

The focal point of research of failure and predicting financial difficulty is Altman's (1977) ZETA Analysis. The scores were produced for manufacturers and retail companies and have not been effective in predicting financial distress in closely held construction companies. Professor Russell in a University of Wisconsin study (Russell, 1992) researched previous failure prediction work done by Altman and others and concluded, "A shortcoming of this research is that most of the models were developed for industries other than construction…Additionally, some of the models were not validated with data independent of the original data set, causing the validity and usefulness of the models to be suspect." In summary, the Du Pont formula, Z, and PAS scores have little to offer the construction financial analyst.

Compensating for Accounting Methods

Pratt (1981) reminds us, "within the framework of generally accepted accounting principles [sic] (GAAP) there is some latitude permitted in the preparation of financial statements." He goes on to say, "The financial analyst not only knows that the above is true but that it may be considered to be the understatement of the century". Rarely do two firms follow exactly the same set of accounting practices in keeping their books and preparing their financial statements, even within the broad confines of generally accelerated accounting principles [sic]."

The vastly different methods that construction companies use in their record keeping do not fully explain why standard financial ratios do not accurately portray a company's financial condition or predict pending financial distress. The relative significance of various ratios are different in each unique valuation situation. The analyst must apply judgment to each individual case to select and evaluate figures significant to the situation (Pratt, 1981). Current analytic tools used to interpret a construction company's financial statement do not always project or even relate to the firm's actual performance because they each concentrate on only one financial area without linkage.

Gross Profit Changes

Although total sales (volume) vary from year to year, gross profits as a percentage of sales should, theoretically, remain constant. Gross profit, the amount earned in the production of the work before general and administrative costs are deducted, is usually defined as a measure of a company's ability to do the work (performance). Gross profit is the measure of operational performance as opposed to financial performance, which is measured by net profit margin.

Gross profit is also affected by contract price. There is considerable variance in the amount a construction company marks up its work in the bid process or adjusts its fee in the negotiation

process, depending on competitive pressures at the time the contract is taken. The mark-up raises or lowers the anticipated profits before the work is started. Although many factors affect profits as the work is being produced, it is generally assumed that the larger the mark-up going into a contract the larger the profit coming out of the project at the completion of the work.

It is almost impossible to determine the amount of profit that is attributable to markup alone or to production efforts alone. The gross profit (or loss), for the purposes of this research, is therefore better described as: "the measure of a construction company's ability to get and produce the work."

Financial Performance

There is a significant difference between operational performance and financial performance. Operational performance (gross profit) relies primarily on the organization's skills, systems, and quality of people. These are supported and funded by the capital structure of the company, but function the same if the funding is borrowed or earned so are not directly affected by the capital structure. Operational performance cannot exist without the financial elements, and financial distress can hurt operational performance, but operational performance is independent of financial performance (except in the extreme mentioned below). For instance excellent organizational skills, systems, and people can produce profits that are then mismanaged and the financial performance of the firm deteriorates in spite of good operational performance.

Poor financial performance will affect good operational performance if working capital decreases for any reason such as owners taking too much money out of the company or over investment in assets. Working capital is a financial consideration and often a function of available credit. If it decreases dramatically, the work slows down. This happens because when capital is in short supply, the subcontractors and suppliers are not paid in a timely manner and do not perform as well. If accounts payable are extended as a method of financing (slow pay), it has the same effect—slowing the work.

Poor working capital or extending accounts payable is usually a result of diminishing gross profit. Profit is the only risk-free source of funds in the closely held company; other sources are forms of financing which affect risk. When poor operational performance impacts working capital which delays vendor payments, a negative cycle is created that continues to erode operational performance. If cash flow deteriorates to the point where labor cannot be timely paid, the work (operational performance) stops.

Financial performance (net profit), however, does "depend" on operational performance. Net profit is defined for this research as the operational performance of the organization adjusted by the first and variable general and administrative (G&A) costs of supporting the infrastructure to get and do the work. The fixed portion of general and administrative costs are costs that continue whether the company has any work or not. Variable G&A costs are generally categories of fixed costs that require expansion when sales volume, beyond the breakeven point for the company, is exceeded. G&A costs include the executive, accounting, marketing and human relations functions and the cost of capital.

Growth, Debt and Financial Risk

An immediate byproduct of growth is a decrease in working capital, which is usually overcome by increasing debt. Eiseman (1984) concludes that there are three scenarios for viewing debt. First he looks at debt with respect to asset growth. Initially, he evaluated the D/Eq ratio using total liabilities as the debt portion. He determined that "firms that grow at too rapid a rate find that internal financing is absorbed by asset expansion and no funds are available for term loan repayment. Loan liquidation can only occur if sales growth is less than the sustainable growth rate or if repayment occurs via refinancing."

In his second scenario debt growth is limited to the growth of the current liabilities (non-bank debt). The major non-bank liabilities that increase with sales are accounts payable and accruals. During growth, most closely held construction companies use a form of internal financing by extending the payment of accounts payable and minimizing accruals. This is often in combination with bank borrowing and tends to mask the "real" increase in debt and the increase in financial risk.

The third scenario allows current liabilities to grow only as fast as sales which lowers the SGR and term loan repayment prospects are improved.

Effects of Record Keeping on Ratios

A difficulty exists in the use of standard financial ratios as an accurate and timely measurement of company performance. A great deal of liberty exists in the manner and mechanisms which each construction enterprise is allowed in its financial record keeping. Financial reporting, while somewhat more standard, is still subject to some manipulation. Ratios are affected by legitimate internal changes in record keeping. Even if every standard ratio is cross checked performance may not be accurately projected or understood. Some people in control of financial reporting know which ratios certain credit grantors rely most strongly upon and adapt the record keeping accordingly.

Because firms may keep their books or prepare their financial statements in different manners, the calculation of overall risk should include the broadest or most general ratios that can be taken from annual financial statements. For instance, using net profit instead of gross profit because companies may differ on where they apply certain overhead costs which affects gross profit. Net profit reflects all recorded and audited cost. After net profit is determined, an analyst will be concerned about the financial risk of the firm.

Discussion of Risk in the Construction Business

The fundamental principle underlying the sustainable growth formula is that an increase in sales causes an increase in working capital assets and fixed assets (Higgins, 1977). The increased assets are funded partially by debt and partially by retained earnings. If the firm's sales grow at the sustainable growth rate, sources of funds equal uses of funds. When sales grow faster than the sustained growth rate, asset expansion exceeds the normal growth of internal funds sources; a financial shortfall occurs, and external financing must be increased to meet the need.

For a closely held construction company to grow in a balanced way it should not exceed its sustainable growth rate or it may lose its ability to finance itself. Therefore, its equity base must grow proportionally with sales, or debt will increase too rapidly, causing credit difficulties. If profit margins shrink, as they have over the last several years for many construction firms, it has the same effect on the capital structure of a firm because less profit means less internal funding is available and more external financing is required just to maintain the balance. This balance can be measured by the debt to equity ratio or, in broader terms, by the total liabilities to total assets ratio. When the balance changes, one or more financial ratios will change as the financial condition of the enterprise shifts. Therefore, the risk of the company changes. If outside debt goes up with no corresponding increase in assets, losses are indicated that can be hidden through misuse of the percentage of completion method and the firm is at greater risk.

Even profitable growth can increase financial risk. Although every dollar of sales adds a few cents to profits, growth also requires significant new investment in receivables, inventories and fixed assets (Higgins, 1977). These need to be financed internally or externally or with new investment by the owner(s) of the company. In the closely held company the sale of stock is not usually an option. Financing is limited to profits, bank borrowing, or extending accounts payable unless the owner(s) is willing to add personal money to the capitalization of the company.

Internal financing in the manner described above and outside financing in the form of borrowing are reflected in the Total Liabilities to Total Assets ratio. As debt increases disproportionately to assets the portion of the enterprise financed by the contractor and the portion financed by others gets out of balance. In the extreme case, outside lenders and creditors such as banks and trade creditors, whose payment periods have been extended, can actually have more of a financial interest (investment) in the company than the contractor. The question is: is the financing sufficient in the long run, giving the company the ability to pay it back, or is the financing just the down payment on a much larger obligation taken on by the company unintentionally. To answer this and other financial measurement concerns a new method of measurement is required.

A New Measure of Risk

The financial risk of the closely held construction company will change as annual sales (turnover) change unless the relationship of profit margin, assets, liabilities and debt remain the same. Measuring the changes in these relationships provides a measurement of change in financial risk. Using performance, efficiency, and debt ratios the financial risk of a company can be measured. To do this the appropriate ratios must be selected. The efficiency ratio of sales to total assets can be misleading when used to interpret a construction company's financial risk. If assets are reduced and sales remain the same, the company's turnover or efficiency ratio (S/A) goes up, or gets better. However, when the assets that a company has to support its bank and bonding credit are reduced, the company is at greater financial risk. The same relationship exists when liabilities increase in the total liabilities to total assets ratio of a company over that which they were during successful or profitable years. A company may continue to be profitable when its liabilities increased relative to its assets, but its financial risk increases.

By combining the efficiency or turnover ratio of a company with its debt structure it can be determined if they are in balance. The sustainable growth loop for publicly traded companies shows the relationship of the ratios used in the SGR formula. The closely held construction company cannot easily sell shares and, therefore, has less flexibility than the publicly traded company. A contractor's sustainable size is determined by certain internal financial realities. The firm operates in a closed system and has different sustainable size constraints. The profit margin and capital output ratio of the publicly traded company are affected by industry characteristics. For established, stable industries, dominated by large companies, industry characteristics are assumed to set very close parameters for profit margins and necessary capital output ratios. The profit margin and capital output ratio for the closely held company vary dramatically and are more a result of company performance and explained below.

Publicly traded companies are managed with target debt and payout ratios. These are set in advance as financial policies. Closely held construction companies usually discern their debt to equity and liabilities to asset ratios after the fact as a result of their performance—profit margin and how they manage their financial resources. The outside financing that a closely held construction company will be able to obtain is limited by debt and performance ratios set by banks and bonding companies which effectively form industry credit granting standards. A company with too much debt can find itself cut off by its lenders, which can cause immediate failure if an alternate source of financing cannot be arranged rapidly. A combination of performance, efficiency, and debt ratios are used to determine if a company is approaching that point. Debt to Equity and Liabilities to Assets combined with the performance indicator of Net Profit Margin can gauge the direction in which the firm is heading.

Profit margins and capital payout ratios are internal characteristics of the construction company. Profit margin is a measure of performance. Capital payout ratio is a measure of efficiency and if capital is short debt increases. Neither of these is easily changed for the individual firm as both are a direct result of the current performance of the company. The capital payout ratio of a company is also directly affected by its annual turnover and, if a firm's resources are stretched, will affect profit margin.

The capital payout ratio can be altered by reducing or increasing turnover. If a company is in financial difficulty and is able to reduce its turnover and maintain profit margins, its capital payout ratio improves. The lower turnover, a more sustainable size for the company, may enable it to reduce debt, which is usually a problem for a company in financial difficulty. If under the same circumstances the company were to increase turnover and grow, its capital output and debt ratios would deteriorate. Even if profit margin is maintained, it is likely the company will not remain credit worthy because capital is stretched. This will make debt payback difficult or impossible, creating a possible business failure scenario. If a firm's primary source of financing is retained earnings, as with most closely held construction companies with limited credit, sales and assets can grow no faster than retained earnings plus the debt that retained earnings can support.

In summary, standard ratio analysis does not provide an accurate measurement tool because of the way certain financial manipulations can occur in construction accounting methods. Standard

accounting procedures have not been developed to compensate for this. Therefore, a new formula using ratios not open to internal manipulation is necessary.

New Formula

As noted previously, changes in one financial ratio inevitably change other ratios. The inter-dependence of various ratios can be traced and used to develop a financial measurement formula. To evaluate a closely held construction company several variables must be considered. The problems of different bookkeeping methods and treatment of work in progress suggest that gross ratios rather than ratios found internally should be used. The significant standard financial ratio categories are turnover, profit, and debt ratios. Ratios are selected from these categories that are least affected by internal bookkeeping methods. These are explained below.

Sales to Assets: the turnover ratio is a measure of operational efficiency. The higher the ratio the more efficient the utilization of assets. The ratio is a composite of receivables management, inventory management, fixed asset management and liquidity management (Van Horne, 1989). The ratio is the relative efficiency with which the firm utilizes its resources to generate output.

Net Profit to Sales: the net profit margin is a measure of operating efficiency after taking into account all costs and expenses. While both the sales to assets and net profit margin are affected by the external marketplace, they largely capture internal management efficiency (Van Horne, (1989)).

Total Liabilities to Equity: a debt ratio that tests long-term liquidity. This ratio is similar to debt to equity, but total liabilities (all debt) is used instead of long-term bank debt because the latter can be too easily reduced temporarily at year's end by the extension of accounts payable or the substitution of short-term borrowing. This ratio is applied here as a measure of the firm's ability to sustain itself over the long term. This is a broad ratio that ignores most internal manipulations or differences in bookkeeping methods because it captures all liabilities and equity is not easily manipulated.

The above financial ratios are combined to develop a financial risk management formula. The concepts underlying the interrelationships between the elements of the ratios and the ratios themselves follows below.

Within the profitability ratios the term "profit" seems to imply that a firm can use the funds generated by profits for whatever purpose it chooses. This is not the case because it takes money to run the business. Put another way, the business captures and uses funds to operate and without these it cannot operate. The amount of money required to run a business varies by company and industry. A closely held construction company can cease operations very quickly if it runs out of cash and credit is unavailable. Predicting the risk of running out of cash and credit has, to this point, been based primarily on standard working capital ratios.

Funds generated from profits are not totally available for other uses because a portion of them is required for the next year's operations, replacement of assets not covered by inflation, and

obsolescence and productivity improvements to remain competitive in an ever-changing industry. Some of the profits earned are needed just to deal with the timing of receipts and retirement of liabilities. Each company has its own liabilities to assets ratio that does not necessarily relate to similar firms or industry standards. The balance of liabilities to assets is a measure of long term liquidity of the firm and a certain portion of profits are needed to replenish assets and retire liabilities in the near term to maintain the balance. The replenishment will vary depending on the liabilities to asset ratio unique to each company which is simply the financial makeup of the company or its financial foundation. This concept, which is referred to as "available profit" was developed in this research. The amount of funds generated by profits that will remain, more or less permanently, within the financial structure of the company can be measured to determine the "available profit".

Available profit is defined in this research as: the portion of profits that can be taken out of the company or applied to expansion of the business without materially affecting the financial foundation of the firm in its existing operations. The measurement is accomplished by reducing the total profits by the proportional amount of liabilities in the liability to asset ratio or the total liabilities divided by total liabilities plus assets. The formula, developed in this research for "Available Profit (AP)", is:

AP = (I – NP/S – (10 (TL/(TL + TA)) (NP/S)))

NP/S is Profit/Sales
(TL is Total Liabilities; TA is Total Assets)

One minus net profit to sales is used to deal with companies with negative profit (Loss) to create a positive number in this element of the formula. Sales to total assets and total liabilities to assets is generally a number greater than one. Therefore, the decimal place for the profit element is moved one place to the right to create an appropriate relationship with the other elements in the formula

The measurement of financial risk includes the earning power of a company. As described earlier, the earning power ratio is profit margin times sales to asset ratio. When "available profit" is substituted in the above, a different earning power, referred to as the "Real Earning Power (REP)" of the company, can be determined by multiplying the Available Profit by the asset turnover ratio of Sales to Assets (S/A). The formula is:

REP = (AP) (S/TA) where AP is Available Profit and S/TA is Sales/Total Assets

To determine the overall financial risk of a company its debt structure must be considered. Combining the firm's debt ratio of Total Liabilities to Equity with Real Earnings Power represent the financial risk of the company at the present time—referred to as, the financial "Risk Factor." The financial well-being of the company or risk is determined using the company's own financial performance, turnover rate and debt structure. The entire formula is:

R = (I – NP/S – (10 (TL/(TL + TA)) (NP/S))) (S/TA) (TL/E)

R = Available Profit X Real Earning Power x Debt Structure

R is Risk Factor TL/E is Total Liability/Equity

This research has produced a new formula that takes into consideration the performance, capital requirements and total debt of the individual company. The formulas for Available Profit and real Earnings Power are not used independently and are presented here to demonstrate the theory development.

Table 1: Failed Firms
Risk Factors for Failed Firms: Original Data

Year 1	Year 2	Year 3			Year 1	Year 2	Year 3	
5.19	6.66	1.98		High	938.15	39.93	42.16	High
26.48	13.67	16.89			1.06			
7.18	2.61	1.64			144.19	8.28	5.68	
19.03	15.36	15.01			6.03	5.13	3.81	
8.30	12.16	7.92			4.84	2.84	2.22	
5.37	6.08	7.69			9.86	2.13	2.64	
66.26	11.62	15.01			2.10	2.61	2.31	
10.48	5.06	4.52			8.47	4.56	10.46	
8.22	7.32	7.05			4.36	1.70	1.20	
24.91	54.50	21.89			17.11	11.22	10.21	
11.99	8.62	11.14		Low	0.48	1.32	0.67	
11.86	13.41	14.32			72.11	17.94	26.95	
23.29	7.56	11.44			15.09	15.25		
9.24	5.73	3.53			10.73	19.71		
44.92	5.20	6.21			7.98	20.94	12.22	
47.37	12.90	6.25			20.25	22.02	13.02	
154.38	0.96	0.66	Low		3.62	3.74	4.41	
7.68	2.11	5.19			22.24	15.61	13.36	
4.58	0.84	1.75			4.05	7.21	5.82	
6.27	11.45	1.70			31.98	5.51	5.01	
12.66	13.31	14.03			3.54	2.8	1.81	
44.24	17.93	10.13			8.15	1.51	1.35	

39.63	13.98	12.86			14.07	4.04	2.72	
				Averages				
			Year 1		42.39			
			Year 2		10.33			
			Year 3		8.53			

Risk Factor Scores

The "Risk Factor" scores (R Factor) were calculated for 46 failed contractors for the three years prior to failure. The results, presented in Table 1, were positive numbers from 0.48 to 938, with an average score of 42.39 three years prior to failure, 10.33 two years prior to failure, and 8.53 one year prior to failure.

The Risk Factor scores were calculated for 53 non-failed (successful) companies for the corresponding three-year period. The numbers were again positive, but much lower. They ranged from 0.01 to 24.49 with an average of 4.32. The scores for each of the three years presented in Table 2 averaged 4.37, 4.41, 4.18.

In 35 of the cases, 76% of the sample, the Risk Factor score was higher the year prior to failure than in either two or three years prior to failure. The R Factor scores for the 46 failed firms are shown in Table 1.

In the third year prior to failure the scores ranged from a low of 0.66 to a high of 42.16 with an average score of 8.53. In the second year prior to failure the R Factor scores ranged from a low of 0.84 to a high of 54.5 and an average of 10.33. In the year immediately prior to failure the scores ranged from a low of 0.48 to a high of 938 and an average of 42.39.

The R Factor scores for the non-failed contractors averaged 4.37 in year three, 4.41 in year two and 4.18 in year one, with an overall average of 4.32. There is no significance to years one, two or three. Therefore, they constitute a cross section of ongoing construction companies. They are the test group to determine if the average, ongoing closely held Construction Company has a different R Factor score than companies that have encountered financial distress and failed.

Table 2: Non Failed Firms

Risk Factors for Non Failed Firms; Original data

	Year 1	Year 2	Year 3		Year 1	Year 2	Year 3	

	1.13	0.44	2.21		5.77	3.85	3.49	
	1.47	1.34	0.17		4.69	3.71	3.05	
	2.39	2.96	2.36		5.70	3.59	3.00	
	2.67	3.00	3.93		1.57	0.35	0.80	
	3.35	3.30	2.28		4.46	2.97	2.26	
	0.15	0.17	0.12		4.06	4.83	3.37	
	0.64	3.38	0.76		6.67	8.69	11.31	
	6.70	13.34	15.75		12.66	10.12	10.77	
	2.24	4.68	3.90		5.95	6.93	6.95	
	3.91	4.82	6.32		3.33	2.29	2.22	
	3.50	1.93	3.23		1.58	4.09	1.87	
	11.12	11.18	11.96		1.16	1.32	0.70	
	2.44	2.10	1.35		1.80	4.01	0.00	Low
	2.27	6.23	5.00	High	24.49	25.34 `	23.12	High
	0.36	0.62	0.58		2.24	1.34	1.13	
Low	0.02	0.06	0.03		12.93	7.92	6.00	
	5.29	6.51	6.24		9.65	10.21	10.38	
	0.23	0.01	0.02		1.44	1.59	1.63	
	3.02	3.79	4.06		1.61	4.45	5.43	
	2.07	3.79	6.63		3.53	1.80	2.40	
	0.21	0.31	0.49		6.75	3.89	2.16	
	5.70	4.15	3.56		10.14	10.78	12.53	
	1.83	2.11	1.01		5.84	9.94	12.22	
	2.76	4.98	6.16		6.89	3.18	3.80	
	5.79	4.58	5.21		0.63	0.61	0.50	
	1.19	1.63	1.21		2.49	3.76	3.92	
	1.00	0.90	2.05					
				Averages				
			Year 1		4.18			

			Year 2		4.41			
			Year 3		4.37			

Discussion
The new formula provides a clear indicator of financial risk in a closely held construction company. It is a measure of financial distress.

The Risk Factor scores for companies known to have failed were consistently higher than the scores for the non-failed companies. The highest Risk Factor score for the control group of non-failed companies was 25.34, but the average was 4.32 while the failed companies averaged 42.39 in the year prior to failure and 8.53 three years prior to failure. In the year prior to failure only 4 of the 46 (9%) failed companies tested scored lower than 4.0, and only 5 (11%) scored lower than the average for non-failed companies of 4.32. Of the 53 non-failed companies tested for three years only 6 (11%) had a Risk Factor Score higher than 7.

The results establish that scores below 5 indicate a low risk of failure and he absence of financial distress within the company. Scores higher than 7 indicate that the company's financial resources are stretched compared with its current operating efficiency and the firm is at financial risk. The higher the score the higher the risk. Any score over 9 is considered high risk. Of the136 companies tested only 8 companies (5.8%), with a score higher than 9 did not fail and only two companies with a score higher than 13(1.4%) survived. Risk Factor scores between 5 and 7 are considered moderate financial risk.

The Risk Factor formula was developed in the pilot study and tested on 46 failed and 53 non-failed firms for which there was three years of data. It was then tested on 17 failed and 20 non-failed firms for which one year of data was available and the results were similar.

Trend Analysis
The raw scores of the Risk Factor are significant in themselves and can be used in the current year for evaluation purposes. The trend over two or three years is also a valuable indicator of the financial well-being or distress of a construction company and whether its financial risk is improving or deteriorating. A multi-year trend analysis strengthens the prediction or projections concerning the relative financial strength or risk that can be gained about a closely held construction company.

The failed companies tested had an average increase of 21% in their R Factor scores from year three to year two prior to failure. They had an average increase of 310 from year two to year one prior to failure.

Thirty-three (72%) of the failed companies tested had lower scores in years two or three prior to failure than in the year prior to failure. Whether a company's R Factor score is in the low risk

category, under 5; moderate risk, 5 to 7; or higher risk category, over 7; a calculation of the previous year's score will establish whether the company's financial risk is improving, constant or deteriorating. If, for instance, a company had an R Factor score of 6.5, and the prior year's score was 7 or 8, the financial risk is moderate, but the trend is improving. However, if the same company had the same score of 5.5, but the prior year's score was 4 or 5, the company still has a moderate financial risk but the situation is worsening. A look at the score three years back provides a longer trend and can give the evaluator an added sense of where the company is headed.

Why the Formula Works

The R Factor formula answers three questions:

1. Is the construction company's performance adequate considering its capital structure?
2. Is the company's Earning Power providing enough funds to maintain its Assets to Liabilities balance?
3. Is there adequate equity in the company's capital/debt structure to deliver the capital or credit necessary to underwrite operations and ensure against unforeseen losses?

Available Profit is a new theory and new term resulting from this research and is the first element in the Risk Factor formula. The following is an explanation of the concepts behind Available Profit.

The Concepts behind the Formula

A construction enterprise does not have the luxury to withdraw from its operations all of the profit that it earns in any given year because some is required to run the business. The portion that must remain in the business, to maintain the company's assets to liability balance, will vary between individual firms, but is approximated by subtracting from Net Profit Margin the proportion that liabilities represent in the Liabilities to Assets ratio. Simply put, if a firm's Liabilities to Assets are 1 to3, one-third of the profits must remain in the operation to support ongoing business. If more than that is taken out of the company or used for other than normal business activity, other funds will have to replace those taken. For the closely held company, that inevitably means borrowing. Borrowing increases liabilities with a resultant change in the Liabilities to Assets ratio. The amount of investment in the company held by outsiders goes up while the investment of the owners of the company goes down. The company is at greater financial risk because it is less self-sustaining. There is a difference between Net Profit and Available Net Profit.

Real Earnings power of a closely held construction company is an extension of the standard Earning Power ratio. A company's earning power can be calculated by multiplying its Net Profit Margin by its turnover ratio of Sales to Assets. The turnover ratio is a measure of the relative efficiency with which a firm uses its resources to generate outcome (funds). For a closely held construction company all of the Profit Margin is not available to apply to earning power in the short run. When Available Net Profit is used in the earning power formula the closely held construction company's "Real Earnings Power" is calculated.

Real Earnings Power combined with the company's capital structure determine its financial well-being. If there is too much debt in the capital structure, outsiders are too heavily invested in the company compared to equity holders. In which case, reserves may be limited or nonexistent

because there is a real cost of debt and few business people substitute debt if internal funding is available. The Debt to Equity ratio describes the amount of debt in the capital structure of the company and a measure of the prudence of the debt management of the firm. However, the total liabilities of the company represents what it owes to others or its "total debt."

A measurement of the financial risk or relative financial strength of a closely held construction company is achieved by combining in a logical manner its Real Earnings power with its ratio of total debt to equity represented by Total Liabilities to Equity. The financial Risk Factor formula utilizes Net Profit Margin Total Liabilities to Total Assets the Turnover Ratio and Total Liabilities to Equity in calculating the financial risk of a closely held construction company. The formula combines measurement of performance (NP/S) long term liquidity (TL/TA) resource utilization efficiency (S/A) and debt management (TL/E).

General Conclusion

The finical Risk Factor formula gives a numerical and accurate measurement of financial risk and provides an accurate measurement of financial strength or weaknesses which can provide early warning of financial distress and reduce the failure rate in the US construction industry. The following findings and conclusions are original contributions on this subject:

- Existing financial measurement tools such as standard financial ratios do not provide an easy-to-use accurate measurement of financial risk for the closely held construction company.
- Existing business failure formulas such as Z and PAS scores are not suitable for use with closely held construction companies.
- Development of the new theory and formula of Available Profit will provide a better insight into actual financial performance than the existing ratio of Profit Margin.
- Development of the new Real Earning Power theory and formula is a more accurate measurement than the currently used existing financial ratio of Earning Power.
- The financial Risk Factor formula provides an easy to use, accurate financial risk and relative financial strength measurement tool for the closely held construction.
- A multi-year trend evaluation, using the financial Risk Factor scores of closely held construction company will provide a quick and accurate trend of financial performance and financial risk.
- The Risk Factor formula can be used as a self-evaluation tool for closely held construction companies or as an external tool for credit grantors.

The new theories of Available Profit and Real Earning power open new avenues for research into the internal financial dynamics and realties of the construction enterprise which, when explored, could lead to different applications of the new theories and financial Risk Factor formula. A better understanding of the uniqueness of the construction business could lead to a complete rethinking of the closely held construction company and the approach to the financial management of it.

Better control of financial risk will lead to reduced failures. A reduction in the extremely high failure rate in the US construction industry will lead to a reduction in the cost of construction of the built environment, which will have a positive effect on industrial and social progress.

Liquidity Management

Liquidity Management – The Ultimate Risk Defense (Back to Table of Contents)

Conservative liquidity management provides fundamental protection from financial distress and should be included in the business philosophy of every construction company. It should be a part of a contractor's DNA. The idea of having some cash or credit reserved for a time when it may be unexpected, but critically needed is not a standard element in construction business accounting. However, for an industry with the second highest failure rate in the country, it should be. Many of the hundreds of failed construction firms analyzed would not be out of business if they had set aside a rescue fund to save their company from financial disaster.

This paper advocates liquidity reserves as a necessary element of risk control in the prudently managed construction business. The recognition, measurement and management of risk are critical skill-sets in this perilous business, however, even with consistent application of these skills, mistakes happen and things occur outside our control. Sometimes just bad luck results in financial distress or catastrophic losses. If all else fails, cash reserves are the only defense. If you would not go on a ship without life boats why would you operate a high risk business without some reserves?

Some will argue that warehousing liquidity will slow the growth of a company and would be better reinvested the business. However, total reinvestment means being continually one miss-step away from financial distress. It only takes one horrific job, mistake or unforeseen crisis to push the company close to the edge; or a market turndown when the company is over extended. The list goes on, and, if you have been in business a while, you already know of someone it happened to. Thinking it can't happen to you offers little protection.

If you welcome a chance to reduce the risks in your business consider the advantages of liquidity reserves. The primary considerations in the measurement of risk are the likelihood of the event occurring and the magnitude of the penalty if the event occurs. The likelihood is commonly measured in odds, such as it is a million to one to be hit by lightning. However, the penalty is huge so no one knowingly puts themselves in a position to be hit by lightning because while the odds are extremely in your favor, the penalty is too high. The odds on the flip of a coin are 50/50 which is pretty good so if you bet a dollar both the odds and penalty are reasonable, even safe. However if you bet a million dollars the odds remain reasonable but it is now a high risk that few would take.

You can't measure risk without evaluating the odds and the penalty or reward. For example, if the odds were six to one in your favor would you take the bet? This can't be answered without knowing what the event is. If it is a hundred dollar bet it is a good risk that most would take because of the excellent odds and nominal penalty or reward. However the same odds exist in a game of Russian Roulette. With one bullet in a six-cylinder revolver the game requires you to pull the trigger aimed at your head. Good odds but much too sever a penalty--so bad risk.

For the skilled construction professional the odds of mistakes, things occurring outside your control or just bad luck are fairly small. However, if anyone of these things happens in the

extreme, it could put a business into financial distress or worse which is obviously a serious penalty. In construction we face these risks every day and don't get to opt out of them, however, we do get to hone our skills at recognizing, measuring and managing risk and we are now being offered another risk control option--establishing liquidity reserves to counter the eventuality if all else fails. We can build a safety net, a protective shield against financial distress. Professional high-wire performers never intend to fall, but they have a net below them anyway. Contractors work without a net. Historically high margins (rewards) probably made that a good bet. However, today's slim margins have shifted the risk/reward balance to the extent that protection against failure is practically a necessity?

The amount of reserve will vary, depending on your appetite for risk and the amount of liquidity you are comfortable with (ability to meet short-term obligation). While it differs for each company, average comfortable liquidity is when Debt to Worth is around 1 to 1 or less while Net Quick is around 1.5 to 1 or more. For individual companies I use an average from the prior three year-end financial statements as a benchmark, assuming the company was profitable and increasing in value during those years. If not, I go backwards until there are three consecutive years of increasing value. When this occurs there will have been cash, cash-equivalents or unused credit available. The average of that amount over the three years is what I refer to as "Liquidity Reserves"; available to pay the bills in the event of unexpected financial difficulty. Most construction companies are liquid in good times, but only prudent contractors remains liquid in bad times. They can still pay their bills on time because they are failure protected--they have a net.

If the potential of a decision exposes your life's work and net worth to disaster, is that a risk you want to take? As you can imagine I am regularly accused of being risk adverse which is actually not the case. I just do not see any advantage in betting everything, or to playing Russian Roulette with your livelihood. Having seen too many contractors and their families lose it all I am certain that prudent management of liquidity is the best long-term strategy for the contractor of the future.

Using Financial Data—Trusting your CFO

The CFO—A Critical Voice: Listen to Your CFO (Back to Table of Contents)

Thirty years researching, identifying and cataloging the causes of construction business failures and participating in the resolution of hundreds of distressed firms I discovered a frightening truth. These failures were predictable; and in most cases the in-house accounting people saw it coming. The problem:

When the CFO of a construction company sounds the alarm: Does anyone listen?

One of the reasons some of these contractors got in trouble was that they did not listen to their CFO or accounting people who tried to sound the alarm.

Some CFOs are isolated or considered a necessary, but unimportant function of the business. I regularly heard from contractors: "They don't know anything about construction". A response might be: "And you don't know anything about accounting or finance". You don't have to know how a computer works to use it.

The reality: A Construction company has three primary functional areas: get the work, do the work and account for the work; and all three are critical to success. After you get the work, you still have to do it efficiently; and if you don't accurately account for the first two functions you won't be in business very long--in which case the first two won't really matter. Therefore accounting for the work is equally important as getting and doing the work. However, too few managers respect the accounting and administrative functions as the critical element it is to the firm's success.

Construction business failures don't happen overnight, but are years in the making and definitely foreseeable. In hundreds of the failures I worked on, the CFOs warned management: "We have some serious financial issues" or problems or exposures. Management's reactions were: "You don't understand" or "You don't know what you are talking about. It's just that one bad job"; or that unreasonable owner; or that unbuildable design. These contractors saw the problem as an "event" when it was actually a "symptom". In some cases, the accounting people believed the excuses for a while, but when the issues persisted they would sounded the alarm a second and third time which resulted in the rejections becoming more forceful.

It is like a person in the boiler room of a ship calling the Captain to tell him the ship is leaking and the Captain on deck saying "Everything looks good from here".

In more than half the construction failures I dealt with the CFO or in-house accountant told me: "I knew there was a problem" or "I knew we were in trouble" or something like that. My response was always the same: "Why didn't you tell them!?" The answers were: "I did, but they wouldn't listen" or something similar. In one case the answer was: "The CFO I replaced told them and got fired".

In the majority of failed companies the CFO was not on the organization's Executive Committee or even included in senior management team meetings. This is not uncommon in small and mid-size firms, but was also true in all the large company failures I handled.

In our industry the accounting function is not always given the status and significance it should have. One reason is that people who take the unbelievably difficult CPA Exams and those that study accounting and finance are generally different personalities than construction people. This complicates communication between them because they don't always converse the same way or use similar words; and one personality type has less patience than the other.

Construction professionals need to remember is that number don't lie. Numbers tell the entire financial story—they don't deal in "Yes-buts" and cannot be explained away. Words don't change mathematics. The failures that I experienced weren't caused by mistakes in accounting, just mistakes in the reaction to the numbers.

Our industry continues to become more complex which amplifies risk. To profit we need to do the work more efficiently than ever and we can't know accurately or timely if that is happening without greater attention to, and respect for, the accounting functions of our businesses and the people who carry them out. There is a lot of industry-talk about collaboration between the parties involved in the projects. We need more collaboration internally.

Preventing Business Failures (Back to Table of Contents)

Most, if not all, of the hundreds of failed construction firms I analyzed as a surety consultant could have been prevented if the contractors had listen to their CFO. The annual financial statements clearly indicated distress two or three years prior to failure so the CFOs knew of the pending exposure well in advance. Most understood the potential for a serious problem and reported that they advised top management of the danger. The question is why didn't they listen?

Research suggests that there are major communication barriers between the typical personalities of CEOs and CFOs. Readers are probably familiar with the standard DISC test that breaks personalities into four categories; Dominant, Inspiring, Supportive, Cautious. Observation of hundreds of CEOs indicates they are primarily Dominant with some Inspiring. CFOs are primarily Cautious with some Supportive. The differences are further complicated by some being people-oriented and others task oriented. It is generally accepted that people with similar personality traits communicate better with each other than they do with people with different traits. For example a Dominant will communicate fairly well with an Inspiring, less with a Cautious and even less effectively with a Supportive.

People also differ in how they process information, speech patterns, body language, and how assertive they are. These can create miscommunication, misunderstanding and even distortion of the message. Dominant usually place a lot of emphasis on what they consider more important while some Cautious place the same emphasis or lack of emphasis on both important and less important material. The Dominant personality can miss the seriousness of information that is presented without special emphasis.

There are also potential trust issues. It is human nature to trust people with similar personalities more than those with different personalities. Trust of a person with a different personality may not be immediate or may lack full confidence. My experience suggests that many CEOs do not have unconditional trust in the numbers they are given which suggests that they will make their own determination as to what the numbers are and what they mean. Less than 100% trust can exist without being recognized which makes solutions more difficult.

Both communication and trust may also be affected by the fact that the CEO is ultimately responsible and has greater authority than the CFO. It is fair to say that CEOs are successful because of their dominant or inspiring style and that CFOs are successful because of their cautious or supportive style. However, some CEOs considers the CFO in a "service" role and expect to receive the numbers with limited comment intending to determine the meaning themselves. This is a critical error in our industry which is too widespread to be ignored and a significant finding of this research.

The critical importance of the CFO in every size construction enterprise needs to be more fully understood, more clearly defined and elevated to top management (where that is not already the case). All complex organizations require three equal leadership disciplines to operate profitably. The complete management team is made up of:

- The Strategist: The big picture person, the visionary, usually the CEO.
- The Operator: The manager, the person who executes the vision, usually the COO.

- The Verifier: The person who measures the vision and the plan by reducing the business to financial statistics, usually the CFO.

Experience has taught us that no one possesses all three skill sets in equal measure and that the exceptional may possess two. It is a mistake to expect the CEO to interpret the numbers the same as it would be a mistake to expect the CFO to create the vision. The CFO is responsible to develop the numbers, produce the financial reports and should be the most qualified to interpret what the reports mean. Some CEOs argue that they should interpret the reports, but they usually evaluate the meaning of the numbers from an entirely different perspective than the CFO. I am not suggesting their interpretations are in error, just that they are not equal to the CFO's interpretation. The typical CEO evaluates financial reports as to their meaning about operations; while the CFO evaluates them as to their impact on the future financial health of the company. The numbers are historic FACT. The reports are mathematical FACT and the meaning is a financial issue. The future financial health of the company trumps everything else.

The CFO of the successful contractor of the future will be a senior top manager involved in all strategic decisions of the organization, a member of the executive committee and of the Board of Directors if there is one. (I strongly recommend Boards for any size contractor) The CFO will be the primary interpreter of the financial reports and respected by all concerned for his critical contribution to the company.

Subcontractor Management

Managing Subcontractors (Back to Table of Contents)

Managing subcontractors begins with the selection of the right company or supplier for the right job. The ideal selection process is presented here understanding that it will not always be possible to accomplish because of time constraints, availability of subcontractors in a given area, owner or designer preferences, preferences from top management, price constraints and many other reasons. It should go without saying that selecting the wrong sub for any reason has the potential for serious consequences. Many losing projects for GC's and the other subs have resulted from the non-performance or failure of one sub on the job. Needless to say it effects everyone so prudence dictates that careful selection is important, even critical.

The greatest potential for success is when the size of the contract to be let is the median size or less of projects in the subs history of five years or more. As projects approach the size of the largest project a contractor has performed they can be defined as a greater challenge for that organization than projects the size they consider median for them. By definition they have more experience with their mid-size work and it present a far less challenge for them to finance. To test this logic consider how you would feel about awarding a project larger than the sub has ever completed before—say twice as large. If that concerns you, and it should, how about 50% larger than or as large as anything they have ever done before. Size of project has serious risks associated with it.

For a more detailed study of this look up "Growth Risks" in this manual. The data suggests least risk at median size so as the size approaches the largest to risk increases. It is assumed that readers will push this limit and prudence will dictate how far.

Obviously the sub or supplier should have considerable experience in the exact type of work involved and be able to demonstrate that that to your satisfaction. This will present a greater challenge when working in an unfamiliar area with unfamiliar subs. How you accomplished this is dependent on your experience and skill sets. Sufficient to say that just because a contractor goes after a particular job, does not mean they are qualified to do it or have the financial capability to man it and finance it.

Size and type of construction will impact the likelihood the contractors will perform in accordance with your schedule. The best way to check that is through prior project performance which is time consuming and may be difficult to accomplish in available time. The closer the project is to their type of work in the median range of their experience the more likely they understand schedule requirements. What you can't know and they may not is what their work load will be during the life of your project.

It is as difficult to discover in advance the level of cooperation you can expect from an unknown contractors. It would be nice to know if they are known for working well with other subs, pay their suppliers on time, chance change orders, demand early payment and many other "cooperation" issues. Checking with prior owners or GCs is difficult and time consuming and time constraints matter.

When the performance risks are considered the median size and experience with the exact type of work begin to make more sense. Presumably a contractor will find it easier to man his mid-size projects than the largest one ever attempted; have equipment available and be able to accelerate a phase of the work if that became necessary. There are simply fewer challenges when the project is among the average of what they do every day.

Managing subcontractors is an important component when you have the right subs for the job and critical is one or more is struggling. What is lacking for the sub new to your organization is their level of expectations. If a sub know what is expected before the work commences they are better prepared to meet your expectation or to deal with any objections up front. I strongly recommend that each firm develop a subcontractor policy and provide it to subs pre-construction and even better pre-bid. It makes it easier for your field supervision management to lead and coordinate appropriately, and perhaps more important, consistently. A major complaint from subs is that they are often treated and managed very different from project to project with the same contractor. Efficiency and productivity are drastically effected by consistency in managing and supervising the work. In this regard a sample subcontractor management policy is below. It is an example that can be expanded or reduced to suite individual purposes. It is strongly recommend that some form of company-wide subcontractor management policy be instituted in every Contractor of the Future.

The bedrock of subcontractor management is to recognize and expect your subcontractors to make a profit and let them know you care about them. If that is not the case then a sub policy should not be undertaken. The introduction of the policy is for both your firm, your employees the subs, designers, owners and other. This is not a “secret” policy and depends on transparency for the parties concerned.

The second part of the policy is part of your corporate policies such as an employee handbook and is therefore for internal use. Not secrete, but not as widely distributed. It explains and teaches our supervisors and managers what the firm expects and is a “How-to” manage our subs and suppliers. It particularly addresses the equal treatment of subs and the necessarily strict coordination of the various companies involved.

Sample Subcontractor Management Policy (Back to Table of Contents)

Ok Construction, Inc. Subcontractor Management Policy

Introduction

Ok Construction Inc. believes that every subcontractor should make a profit. We recognize that we cannot build the work alone and respect and value the knowledge and talent that our subcontractors bring to our projects. We accept the obligation to coordinate the work so our subcontractors can produce their work efficiently and cultivate a team effort so they can help each other. To accomplish this, it is imperative that we require appropriate performance and adherence to the schedule by all subcontractors and vendors because lack of performance by one causes hardship and potential loss for others. We cannot allow exceptions for one subcontractor to cause problems for another. Therefore, we must demand appropriate performance and adherence to the schedule from all. We are entitled to this under our subcontract agreement, but our primary motivation is our obligation to manage our projects efficiently so that our subs and we can earn the profit to which we are entitled. The purpose of a subcontractor management policy is to be consistent in management and treatment of subcontractors so that they have a clear understanding of our intentions and their performance standards.

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Subcontractor Management Policy

It is our obligation to be certain that subcontractor foremen understand, in no uncertain terms from their first day on our project, what is expected of them; that they report to the OK Construction Superintendent; and are expected to comply with their directions. If they do not fully understand this, the Superintendent is to contact their office and/or the OK Construction Project Manager and get the issue resolved within the first week they are on site. As professionals and in a professional manner, the Superintendent must set the record straight at the beginning of the project so that he can require performance thereafter, as opposed to asking for it. We will not accept "I can't get done this week what I said I would last week because etc., etc., etc.," because 95% of the etc.'s can be overcome with agony and/or overtime and we are entitled to take the position: "It's not our problem, it's yours." Further, if other foremen see non-performance being accepted, they relax and an air of "everything can be worked out" takes over.

We will not accept a day here from one sub and a day there from another because eventually the schedule is driven by the performance of the trade foremen and not the Superintendent. This policy does not imply that we push people around (that always backfires). It does demonstrate our commitment to a high level of project control and leadership by our Superintendents. It is imperative that this policy be carried out professionally. Construction schedules today demand strong Superintendents who make and keep their commitments and demand that their subcontractors and vendors do also. This policy will benefit our subcontractors, gain the respect of their foreman and increases their profits.

Hoisting

Hoisting and handling subcontractors' materials will be carefully evaluated before award of subcontracts. Overall efficiency suggests that each contractor be responsible to hoist and handle their own materials, and if we agree to do it, we intend to make a profit. Our efficiency is

impacted when we hoist or handle for others, particularly when it is necessary to do it on overtime because we need the equipment during regular hours. We are not usually compensated for the premium time, and we lose operator efficiency when they work long hours.

Subcontracting
Wherever possible subcontractors will be awarded the full section of their specification because crew efficiency usually suggests work in specification sections should be performed by a single contractor. If work is taken back from a sub during buy-out, the purchaser must be certain it is appropriate and will create an overall savings. The Superintendent will be consulted about the efficiency and cost of the subcontractor's work he will be required to perform before it is taken back from the sub. If work is taken back from a sub, it will be clearly itemized and copied to the Project Manager and Superintendent to avoid time loss and confusion later through miscommunication.

This policy applies equally to other prime contractors on the project
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Change Order Management

Managing Change Orders (Back to Table of Contents)

Managing Change Orders begins with understanding that when there are changes to the work during construction it often disrupts production and schedule and seldom when paid for the changes does it seldom cover the actual costs and disruption. Most designers and owners consider COs a bad thing and too often blame the contractor for initiating the change when it is a result of changed conditions, the owner or designer changing their mind about some detail or the owner adding something to the project. Contractors are often accused on going after COs they are not entitled to, but my experience is that is the exception, not the rule. What does happen is a poorly managed project can result in cost overruns that an unscrupulous contractor may attempt to be paid for. This exception reflects poorly on the entire industry.

It is fair to say that contractors may also consider COs a bad thing for a number of reasons, not the least of which is that research indicates that overall performance is better on jobs with fewer COs than those with many. Obviously if there is a changed conditions or the owner adds work a contractor expects to be paid for it, however when this happens too often the cumulative production and schedule disruptions can get out of hand and even if costs for both are included in the COs the cumulative impact is most often not because it is almost impossible to calculate in advance and is actually unknown during the early COs. A poorly designed project or incomplete design at initial pricing will almost always result in multiple COs—a condition that may be blamed on the contractor and not the designer disrupting the relationship with the owner.

In my experienced projects with hundreds, sometimes thousands of COs consistently loss money and in a number of cases actually put the contractor out of business. In most cases as the number of COs mount it becomes harder and harder to negotiate the price and get them approved. Multiple COs are clearly not advantageous, therefore fewer is better and if that is the case then the enlighten contractor actually prefers that the reasons for them do not occur nor if they do that the cause not be blamed on them. In reality the cause of most COs is actually outside the influence of the contractor and there are few the contractor can prevent.

This does not mean that a contractor does not expect to compensate for work not included in the original contract. What it does mean is that the enlightened contractor knows in advance that multiple COs are not desirable and if this is made clear to designers and owners in advance their expectations can become more realistic and they will be more prepared to be made to understand the real cause of each CO as it develops. The contractor needs to be proactive in this regard which begins before construction is underway. It starts with having a company-wide Change Order Policy that is widely circulated to owners, designers and field and office employees. A sample plan is provided which is self-explanatory. It is recommended that every Contractor of the Future have such a policy which can be developed from the sample or developed internally. This facilitates the designer and owner understand how the process works and that the contractor's preference is to not have a lot of COs. It creates realistic owner expectations in advance which in itself assists in explaining cause as they develop. The sample policy below is a guide that can be customized as each see fit.

Sample Change Order Policy (Back to Table of Contents)

OK Construction, Inc. Change Order Policy

Introduction

There is a prevailing belief in the industry among owners and architects that contractors look for and cause change-orders as a source of income. OK Construction does not solicit change-orders or rely upon them as a secondary source of profit. It is our job to educate the owners, architects and their representatives of that reality and, further, to tutor them about the very real ramifications of multiple change-orders on our efficiency and schedule. When work is performed out of sequence, areas left uncompleted, or re-work caused by lack of owner decisions, it dramatically impacts our progress and productivity. Even when we are compensated for extra work by change-order, we cannot regain the loss of efficiency and productivity on our base bid caused by lack of decisions. We are seldom offered extensions of time or compensation for the delay and usually absorb overtime costs to maintain schedule. Contrary to popular belief, industry experience indicates that projects with large numbers of change-orders turn out worse profit and schedule wise than those with fewer. Experience also verifies that you can never be compensated enough for untimely, multiple changes to make up for the profit opportunity that exists if a project proceeds without delays or disruption.

Change-Order Policy

It is our policy to be actively and energetically proactive with owners and architects concerning the need for timely decisions to maintain schedule and avoid, to the extent possible, change-orders. Owners have a critical role in the construction process, and it is our responsibility to explicitly define that role for owners who do not clearly understand it. Absent this, we will appear to be responsible for delays when all we lack is timely owner decisions and direction. Owners often claim they rely on their architects for decisions that involve change-orders, but few give them the authority. We cannot manage a project efficiently with an uninformed owner.

The opportunity to become pro-active with an owner exists only at the beginning of a project which is where our Change-Order Policy is introduced. It is necessary for us to cause our owners to designate a responsible representative with change-order authority. It is our policy to copy the owner's representative and the owner with all correspondence that impacts, or potentially may impact, schedule or cost.

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Change Order Policy

At the very first project meeting (usually a pre-construction meeting), the OK Construction Project Manager will ask the owner directly, clearly and professionally about the handling of change-orders on the project utilizing the following procedure:

1. Direct the discussion to the owner, not the architect or engineer, but in the presence of the architect or engineer. It must be during the formal meeting while everyone is attentive–not a side conversation. The primary objective is to get the questions and answers into the meeting minutes.

2. Ask: ***"Who can authorize change-order work?"*** It is easily established that only the owner has FINAL and ULTIMATE approval. It should be clarified that the designer does not have final approval because if he did, it would be unnecessary for the owner to sign change-orders. Unless the owner states for the record that the architect's approval of change-orders is final and binding on the owner, ask***, "During the course of construction, should we proceed with change-order work without owner authorization?"*** The answer is invariably no. At that point, address the architect or engineer stating, ***"We will, therefore, wait for change-orders signed by the owner before proceeding with any extra work no matter who orders it."*** You need to establish that we cannot accept direction to perform extra work without an assurance we will be compensated for it. State that ***"We are commonly directed to perform work which is a change of scope when the designer says it is not. Then we are supposed to debate later –'with the same designer' to get paid."*** We must attempt to demonstrate to the owner the unreasonableness of the position we are put in if we are to present change of scope to the same person who declared it not extra work when they directed it to be performed. It is imperative that we demonstrate the absolute necessity of owner participation in disputed work from the onset. Otherwise, we state we will be unable to perform ANY of it even if it delays the project. The objective is to establish an expeditious, binding, owner involved change-order process in advance of construction, because it is in the best interest of the owner.

3. The process often does not include actual signed change-orders because the designer usually says the paperwork takes a long time. The object is to attempt to establish hand written change-orders and/or signed field orders by the owner's authorized representative as binding. No matter what the results, we establish that we intend to fax changes of scope to the owner and expect an immediate reply. If they DO NOT want us to proceed with the work they should say so. Owners often say they are unable to do this because they do not understand the nature of the work in question. This continues the discussion in the intended direction because it demonstrates that the owner MUST rely on their designer in technical areas. However, we do not intend to be directed by the designer if he has no authority to approve extra work. Our position is: If the owner does not understand a technical issue on a field order that we fax him, they can say so, and we will NOT proceed with the work until it is clarified to their satisfaction. This usually leads to a discussion of the necessity of a rational Change-Order Management Policy for the project.

4. Timing is crucial, so attempt to establish that ALL open change-orders be cleared at a monthly meeting which the owner attends (or every two weeks). Owners may say their representative does not have the authority to approve change-orders–which begins the discussion all over again. The entire communication is an attempt to clearly demonstrate that we do not want to be directed to perform extra work, while NO ONE with authority to approve compensation is available or even aware of the circumstance. Explain that this is a primary basis for disputes that is totally outside of our control without active owner participation and we should not be asked to participate in it. It is our position that the owner must be available for change-order approval, at a minimum monthly, or they must authorize someone to bind them. Often an amount is established where the designer can bind up to a limit, the owner's representative up to a limit, and only the owner after that. This is acceptable.

5. It is helpful to the designer for you to state that ***"If the designer gets some authority to pay for extras he is better equipped to manage the project in a fair and impartial manner, which is the basis of our contract with the owner."***

6. The meeting minutes, unless prepared by us, seldom include the detail necessary to clarify our position on change-orders and extra work. As soon as they are published, complete clarification of our position is to be sent to whoever wrote them and copied to the owner. This also demonstrates our intention to copy the owner on all money and schedule issues–no matter what!

7. Even when the discussion is not entirely successful in establishing a good change-order management process, it communicates and, hopefully, clarifies the construction process for the owner and helps establish that we are not the primary cause of extra work disputes.

8. Change order meetings schedule should be agreed on during this meeting.
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Organizational Structure

A Contractor's Guide to Functional Analysis (Back to Table of Contents)

Introduction

Hard times teach hard lessons. The great recession of 2008 has alerted the construction industry to the fact that it cannot rely on boom times and unlimited growth to insure profitability. Shrinking revenues over the past six years have inspired contractors to take a closer look at their management practices and search for ways to maintain profitability in the absence of top line growth.

During the decade preceding the recession of 2008, most construction contractors built efficient and professional home office organizations. When the market turned down most were reluctant to dismantle these carefully erected organizations and began searching for top line growth wherever they could find it. They were trying to preserve their organization for the inevitable return of good times.

Unfortunately, all top line growth is not created equal. Some contracts that specialty and general contractors pursued were not profitable. They either traveled too far from their normal base of operations or took work that was outside their area of expertise. In most instances they supported their overhead organizations but eroded profitability.
We asked this question: Is there a way to manage overhead in lean years without dismantling an organization?

The answer: We must learn to look at things differently. We must learn to manage organizations more efficiently beyond simply "cutting overhead". We need to view a company as an outcome produced by an arrangement of inputs?

By utilizing the principles of Functional Analysis, we were able to see clearly for the first time how a company actually accomplished its ends. We could see the sequence of activity and the building-block-nature of each function. Finally, we saw clearly for the first time exactly what outcome we were working for.

Functional analysis is a refreshing mental exercise that generates valuable insights beyond your expectations. It takes practice to get the most out of it. We recommend that you make it an essential part of your annual planning cycle.

Construction contractors have traditionally developed their organizations on an as-need basis. In a small or midsize organization when an owner can no longer do all the work themselves, they hire someone to help out. As the workload increases that person hires someone to give them a hand and so on down the line. Companies typically grow their organizations when an increase in work demands an increase in workers. Nothing could be more natural. We describe this as *organic* growth.

As long as an increasing workload compels the growth of the workforce, no one ever questions organizational growth. The workforce is always running to catch up with the volume of work and

remains naturally efficient as a result. This kind of natural organic growth seems both logical and compelling and is rarely conceptualized after the fact.

The Problem

Sooner or later, the overhead organization outgrows the workload. Department heads have hired and trained a staff that they believe can handle the existing work efficiently. Each department becomes the fiefdom of the department head, and they fight to preserve their organization at all costs. Research shows that at this juncture in a company's life cycle senior management's initial response is to chase new business to cover the overhead already in place. Top line growth as a solution to shrinking profitability has become a reflexive response. Senior executives across all of American industry fall prey to this reflex. Top-heavy organizations seek new, often marginally profitable or unprofitable, work to prop up their top-heavy organization. The need for ever increasing revenues to support existing overhead leads to poor pricing disciplines in the contracting business, that result in unprofitable contracts. Unprofitable contracts lead to an increased debt burden required to finance the bloated overhead, and profit is eroded further. Too often sustaining the overhead becomes the company's mission, not profitability.

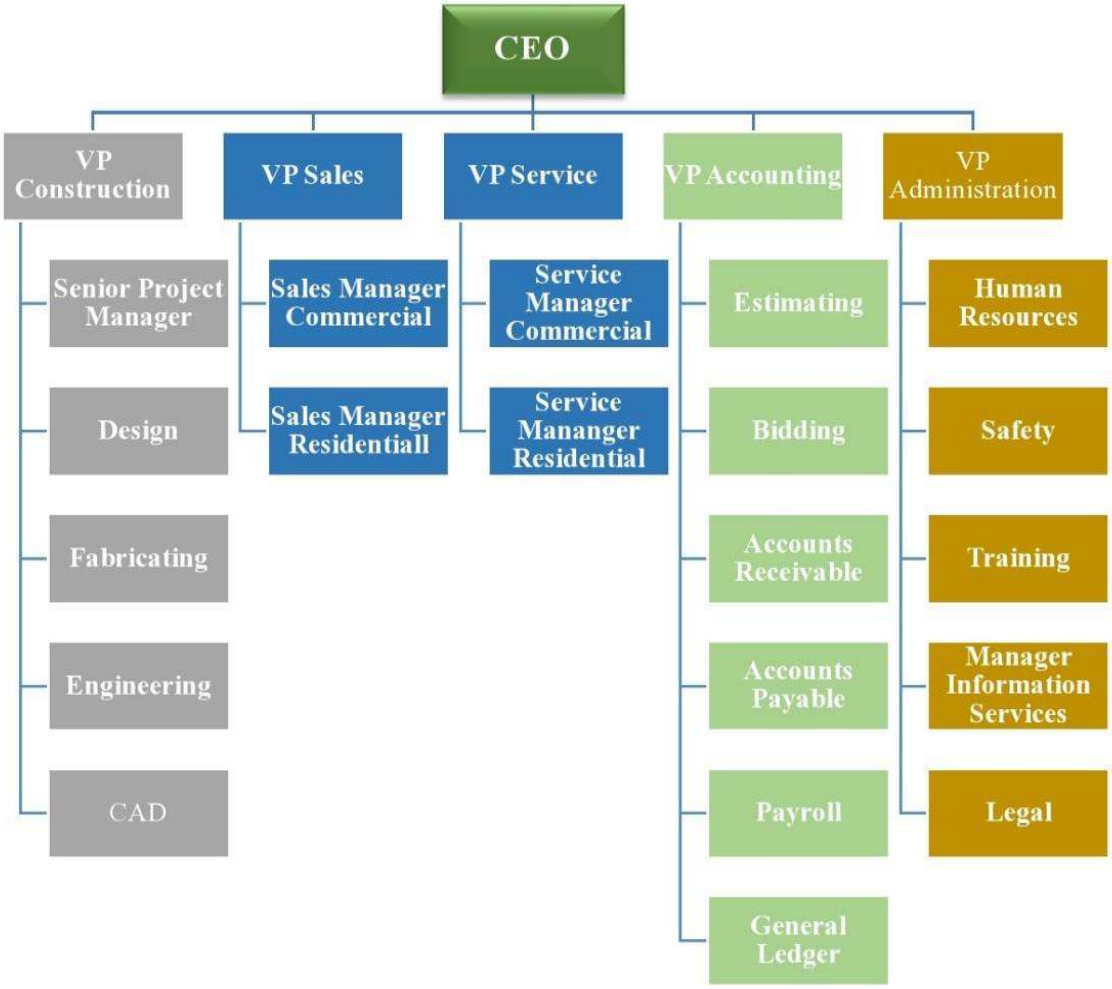
The top 25% of contractors surveyed by a specialty contractors association in 2012 reported a 4.7% decrease in revenue per employee. However, the median contractor, who did not grow as rapidly, reported an increase in revenue per employee of 3.1%.[i] As the companies grew bigger the revenue per employee actually decreased, a clear indicator that top line growth does not necessarily lead to increased profitability.

Overhead organizations initially grow in response to the demands of the workload, but once these organizations evolve into existence, executives are loath, or frequently unable, to "re-conceptualize" them. Rarely are overhead organizations designed specifically for the work that requires their existence. Therefore, the willingness and ability to "re-conceptualize" an organization chart is a critical step toward insuring the continued incremental growth of a contractor's profitability.

Traditional Organization Chart

The purpose of conducting a functional analysis is to create a dynamic, rather than a static view of an organization. In most companies the formal organizational structure is delineated by a chart (combined with additional verbal and written explanations). These representations usually focus on management levels, span of control issues, and who is responsible for decision making in each area of the business. Usually they identify the specific personnel occupying the positions. This tells us what a position is but does not identify what it does. It offers no insight into what contribution each position makes to the ultimate corporate outcome. Traditional organization theory divides corporate organizations into departments and assumes that the title of the department implies what it does. The inputs (functions) that generate outputs leading to the ultimate corporate outcome are only implied but not identified or measured. When you look at your static organization chart no management action is suggested. It is simply a picture of your organization at one moment in time. The traditional organization chart is an inert management report.

Figure 1. Sample Specialty Contractor Organization Chart



New Eyes
Organization charts, like balance sheets, are snapshots in time. They offer a picture of the extent and structure of the current overhead organization. They are not management tools unless management can examine them with new eyes.

Engineering theory utilizes a design approach called FUNCTIONAL ANALYSIS, described as the process of identifying design parameters that satisfy functional requirements.[ii]

Functional Analysis, when applied to designing organizations, is the discipline that analyzes the activities an organization must perform to achieve its desired outputs.[iii]

To analyze the efficiency of an organization:
- Functional Analysis starts with an empty organization chart.
- Identifies the ultimate desired output of the firm.
- Identifies inputs essential to achieving each area's output.
- Groups inputs into activity areas called functions.
- Charts work flow to reveal conflict and redundancy.
- Converts inputs to positions.
- Quantifies each position as an equivalent employee (EE).
- Assigns a cost to each equivalent employee (input).
- Calculates the cost of the resulting chart.

The resulting organization chart defines the manpower and financial budget required to achieve the desired output. By simply comparing the organization chart arrived at through a functional analysis with the existing organically grown organization, inefficiencies become immediately apparent. The functional analysis chart is the organization we ***should*** have to achieve our desired output. Our existing organization chart is simply the one we ***do*** have.

Why Functional Analysis
When conducting a functional analysis we view a corporate organization as a collection of inputs or "functions" that contribute to achieving the desired corporate outcome.
*A **function** is defined as a series of related activities, involving one or more entities, performed for the direct, or indirect, purpose of fulfilling one or more missions or objectives of the firm, generating revenue for the firm, servicing the customers of the firm, producing the products and services of the firm, or managing, administering, monitoring, recording, or reporting on the activities, states, or conditions of the entities of the firm.*[iv]

The Functional Organization Chart
A functional analysis creates a dynamic representation of what each position in the organization actually does to contribute to the corporation's ultimate outcome. It traces the work flow from the initial project concept to the ultimate outcome and evaluates the efficiency and cost of each contributing function.

A contractor needs to coordinate a wide variety of functions to create a single ultimate outcome. A functional analysis depicts the flow of these essential functions (inputs) across the different activity areas that contribute to the ultimate corporate outcome. The resulting chart reveals

inefficiencies, conflicts, blockades, and redundancies that have a negative effect on productivity and profitability.

Starting At the End

A functional analysis begins by identifying the ultimate outcome the company is trying to achieve. The ultimate outcome is not only “what” the company produces. It is also “why” the company produces the “what”.

Figure 2 is a dynamic representation of sequential inputs combining to create an ultimate corporate outcome. Each input or function is required at a specific stage of development, and every input builds on those that came before. The decision to seek any contract is assumed to be initiated by the owner or CEO (or someone assigned by them), financed by that office, and pushed into the first stage of the corporate pipeline. The functions (inputs) of creating, planning, financing, and controlling are all similarly initiated. The concept then moves through design and drafting to engineering and estimating before it can be priced for bidding and ultimately executed in the form of a contract bid. The sales department then joins with the legal department (if one exists) to turn the contract bid into a signed contract. A signed contract is nothing more than an authorization for fabricating, engineering, and installation to begin to add their inputs. Accounting begins to add its input by tracking expenses to measure if this contract will ultimately become a profitable contract. The fabricators add their input, along with the project managers and on-sight supervision, to ensure that the final element of "COMPLETED" will be added to "PROFITABLE" and "CONTRACT", to finally produce the ultimate corporate outcome.

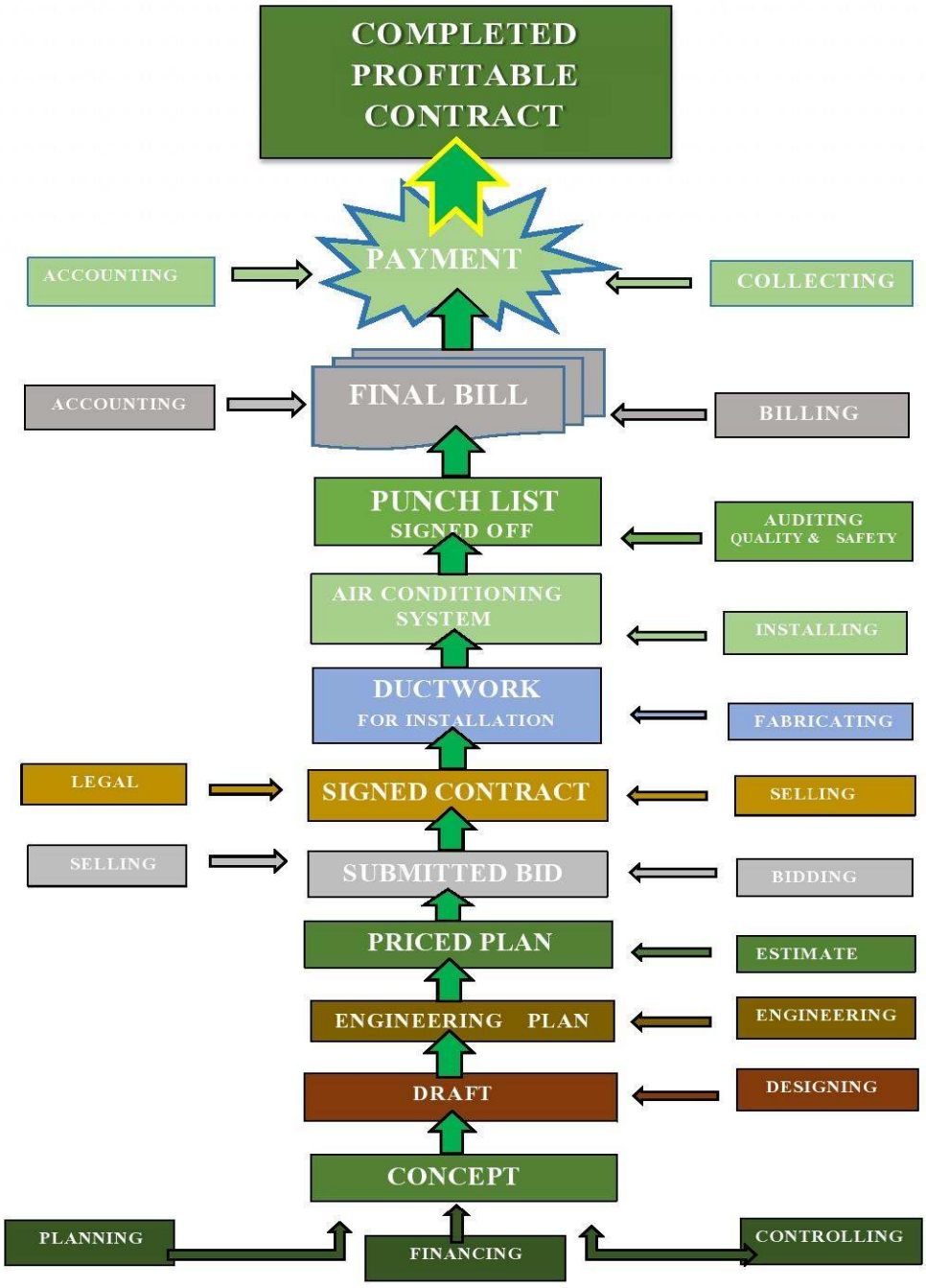


Figure 2. Typical Specialty Contractor Functional Analysis Chart

Step One: Identifying the Ultimate Outcome
If you don't know where you're going, you're probably not going to get there. **~** Ancient Chinese Proverb

One for All - All for One
Specialty contractors are generally single purpose organizations. The fabricators, however, probably believe that they produce a distinct product, (ductwork, architectural metal, roofing, etc.) that is sold to the client. The installers believe they provide a service (installed air conditioning or other systems) to the customer. Purchasing believes that when they deliver materials and equipment to the fabricators and installers, their job is done. The accountants see their product as accurate and current financial statements, and their customer is senior management. Once they deliver accurate reports when requested, their job is done. Lawyers work for the CEO to keep the company within specified legal boundaries. Everyone believes that they have a distinct product and customer.

This diversified view of products and clients held by most employees is common across all industries. A fragmented corporate self-image can lead to inter office politics, competitive conflicts, duplication of effort, and self-protective behavior that damages the efficiency of the organization and the quality of its intended outcome.

The Ultimate Outcome
The first step in a Functional Analysis is to identify the sole corporate purpose to which every position, function, activity, and input is dedicated. This is called the **Ultimate Outcome**. Identifying your company's ultimate outcome requires thinking beyond product to purpose. It requires seeing the *why* of a corporation beyond its *how*.

While preparing this paper, we conducted an anecdotal survey of stake holders in the Sheet Metal and Air Conditioning contracting industry. We asked one simple question without preamble or explanation: What is the purpose of your company? We received the following replies:
1. "To deliver Cool Air to the customer"
2. "To install Air Conditioning equipment"
3. "To manufacture and install high quality air handling equipment"
4. "To fabricate and install architectural metal."
5. "To fabricate and install metal roofing systems."
All participants correctly identified the products they sell. They did not identify their *Ultimate Corporate Outcome*.

The obvious purpose of a construction contractor is to *contract* to do something. If that were all, the contractor would need only a salesman and a lawyer, and he would be in business. However, the contract calls for a job-of-work that the contractor must perform. In other words, they must complete the contract. When they do, they will have satisfied the customer's purpose for entering into the contract. They have not, however, satisfied their purpose for entering into the contract. They want to make a living. They intend to have some money left over after paying all the expenses required to complete the contract. Their purpose is to make a profit.

The *ultimate desired outcome* for all contractors, therefore, is:
Completed Profitable Contracts

Step Two: Functions
After identifying the *ultimate desired outcome* of a company, a functional analysis goes on to identify the functions, or the well thought out collection of inputs, that produces, in the specialty contractor's case, a **Completed Profitable Contract**.

Traditionally, contractors view their overhead organizations through the use of charts that identify positions, reporting lines, and department groupings, but only imply what input each position contributes to the department's output. It is the *functions* that each position performs that functional analysis is concerned with.

What Is A Function?
Functions *are defined as collections of inputs necessary to create desired outcomes*.
Inputs are divided into collective activity areas that produce outputs. Each of these "activity areas", made up of a collection of diverse inputs, is called a *function*. When combined with other functions they collectively produce the *ultimate corporate outcome.*

A typical specialty contractor, for example, may need the input of the engineering and design department, the estimating department, the purchasing department, the fabrication shop, the project management office, the accounting department, and the legal department to produce a **Completed Profitable Contract.**

Essential Functions:
C.E.O. - (Planning/Financing/Controlling/Hiring/Training)
Designing - (Drafting)
Engineering - (Drafting) (CAD)
Estimating - (Purchasing-Accounting)
Bidding - (Estimating-Selling)
Selling - (Estimating-Bidding)
Contracting - (Legal-Selling)
Purchasing - (Procuring-Accounting)
Accounting - (Auditing)
Fabricating - (Supervision)
Installing - (Controlling)
Auditing - (Safety/Quality/Cost)
Billing - (Accounting)
Collecting - (Accounting)

Step Three: **First Day in Business Analysis**
When functional analysis planners analyze each contract they look at the company overhead as if it wasn't there. They begin only with the contract and decide which functions are required to sign the contract, complete the contract, and see that the contract supplies the company with a profit. Making a simple list of the inputs required starts the planning process. Next, they assign the inputs to functional areas and plot the flow of work from the early inputs through the interim

steps and out to the final outcome. Their experience will enable them to assign a cost factor to the inputs, and the result is an efficient chart of the work flow it will take to achieve the desired corporate outcome.

The purity of the thought process is what makes it so valuable. No personal considerations, emotional influences, traditional imperatives, or hubris is involved. Thinking only of the inputs it will take to achieve desired outputs casts a whole new light on organizational design.

Because it is impersonal and seems to put all positions at risk, this discipline has not achieved popularity. However, the "First Day in Business" approach is a must. It doesn't reflect on existing people, or history, or tradition. It starts from scratch. It's the zero-based-budgeting of personnel management.

Step Four: A Functional Organization Chart
Charting an organization by function rather than position offers a dynamic view of how a contracting company achieves its ultimate outcome. The essential inputs we identified in *Step Two* function in groups for control and cohesion. By turning the ultimate corporate outcome back into functions we can see how the inputs interact and flow toward the outcome. The resulting chart can reveal redundancy, improper coordination of efforts, conflicts of purpose, choke points, and inefficiencies that are easily corrected when finally noticed. A traditional organization chart tells none of this story.

Primary Functions
In the book, Managing the Profitable Construction Business, I identified the three primary functions of the construction business as: (1) Getting the Work, (2) Doing the Work, and (3) Accounting for the Work.[v] A functional organization chart begins with the ultimate outcome at the very top of the chart's hierarchy.

Completed Profitable Contracts
These are the essential elements of our ultimate outcome. The next question is, which inputs contribute to the three primary functions?
GETTING THE WORK-DOING THE WORK-ACCOUNTING FOR THE WORK
This is the beginning of a functional analysis. By listing inputs essential to SMACNA contractors under the appropriate primary function, you will begin to develop a picture of how the work of a SMACNA contractor should be organized. Then you will be able to chart the flow of work from one activity area to another, testing synergies, efficiencies, redundancies, and conflicts enabling you to design efficient work flow contract by contract.

Step Five: The Functional Chart
A functional analysis deals with the inputs of each function. It is designed to chart input activity, not positions or responsibility. A functional analysis is trying to identify the work inputs that create the outcomes. It is intended to show how the work of one function builds on the work of another until the goal is reached.

For example, it is possible that a Project Manager may not think the Accounting Department is there to help him or her. He or she may believe they are there to point up their mistakes and

report them to upper management. If, however, they understand that the Accounting Department is there to quantify the work in progress and alert them to waste, they accept how the contribution of each input or function supports the contribution of the other. Everyone is responsible for the entire ultimate outcome. Functions differ, but the outcome unifies all inputs. Introducing these concepts throughout the organization has huge benefits. Each employee, for example, is responsible to see not only that the work gets done but to see that the work is profitable. They not only insure that the contract is completed, but that it is a **Completed Profitable Contract**.

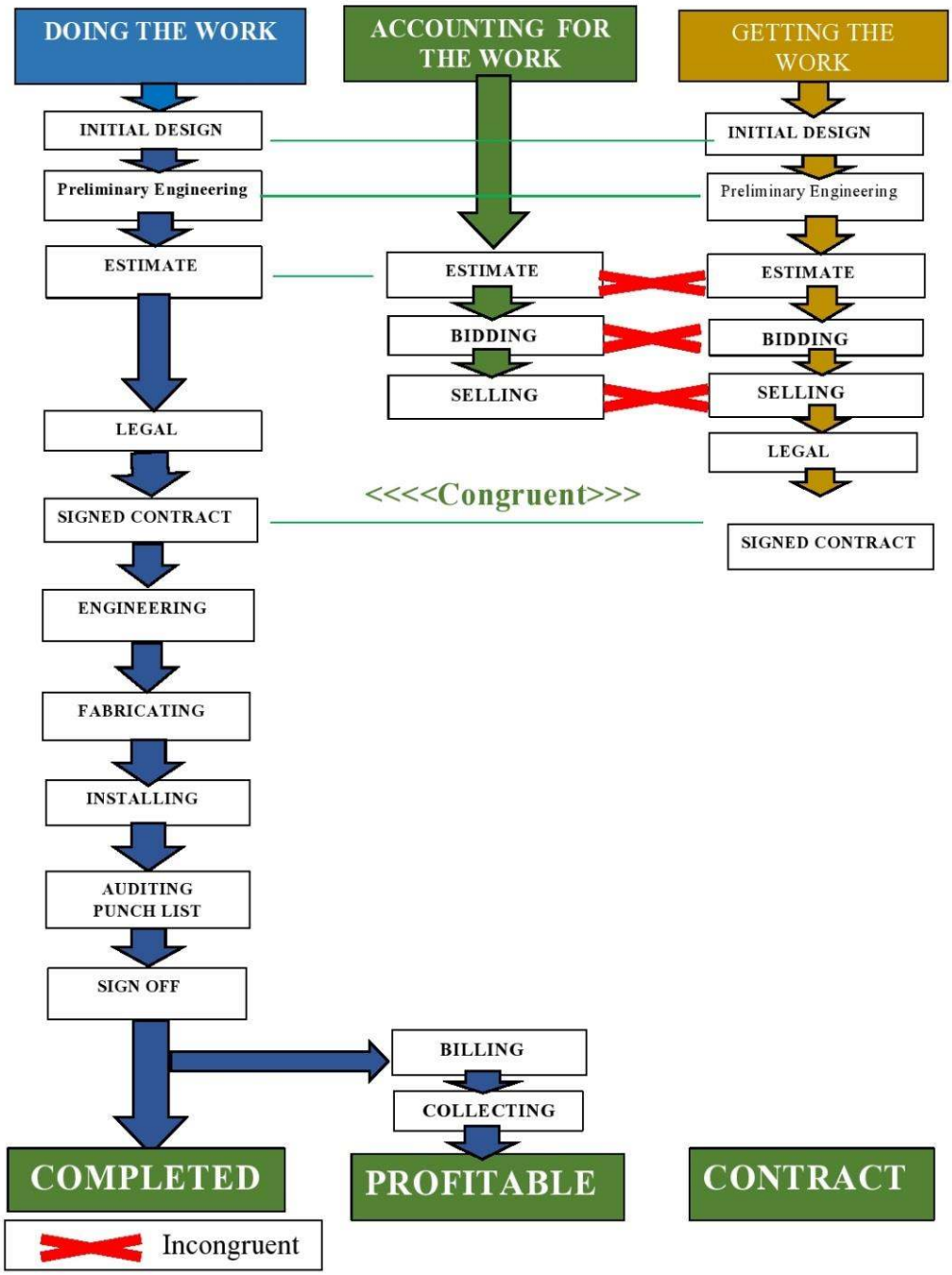


Figure 3. Sample Functional Analysis Chart

The sample chart lists the inputs under each primary function. Where horizontal lines connect two different functional areas, the inputs are shared and simultaneous. Where an input is repeated in more than one function, the input is shared but sequential. Where two inputs are connected by red crossed lines marked "Incongruent", it signifies that the same input could be asked to serve opposing purposes.

For example, when the Estimator is helping to prepare the bid for the Sales Department, they can feel pressure to estimate costs as low as they dare in order to ensure that the bid is competitive. However, when his input is being used by the Accounting Department, they may feel pressure to ensure that his cost estimates are more than ample and that the projected costs demonstrate substantial profit. This is obviously a huge balancing issue and it is important for top management to recognize these potential conflicts and reconcile the conflicting objectives carefully.

Again, the “getting the work priority” of the Sales Department can easily be is interpreted and in conflict with accounting’s objective of producing a profitable contract. This is an example of the conflicts that are revealed when a static organization chart is converted into a functional organization chart.

Step Six: **The True Cost of Overhead**
When an organization chart is recast as a functional chart, the functions (inputs) can be assigned a dollar value and the cost of the overhead organization can be applied to each contract at pricing and measured at contract completion. For the purpose of illustration, we will present a static organization chart of a sample SMACNA contractor generating annual revenues of $45 million. For simplicity our sample contractor has only three $15 million contracts to complete profitably in the following year.

This model identifies the typical SMACNA wage of the overhead organization, leaving fabrication and construction labor computed in the cost of goods sold.

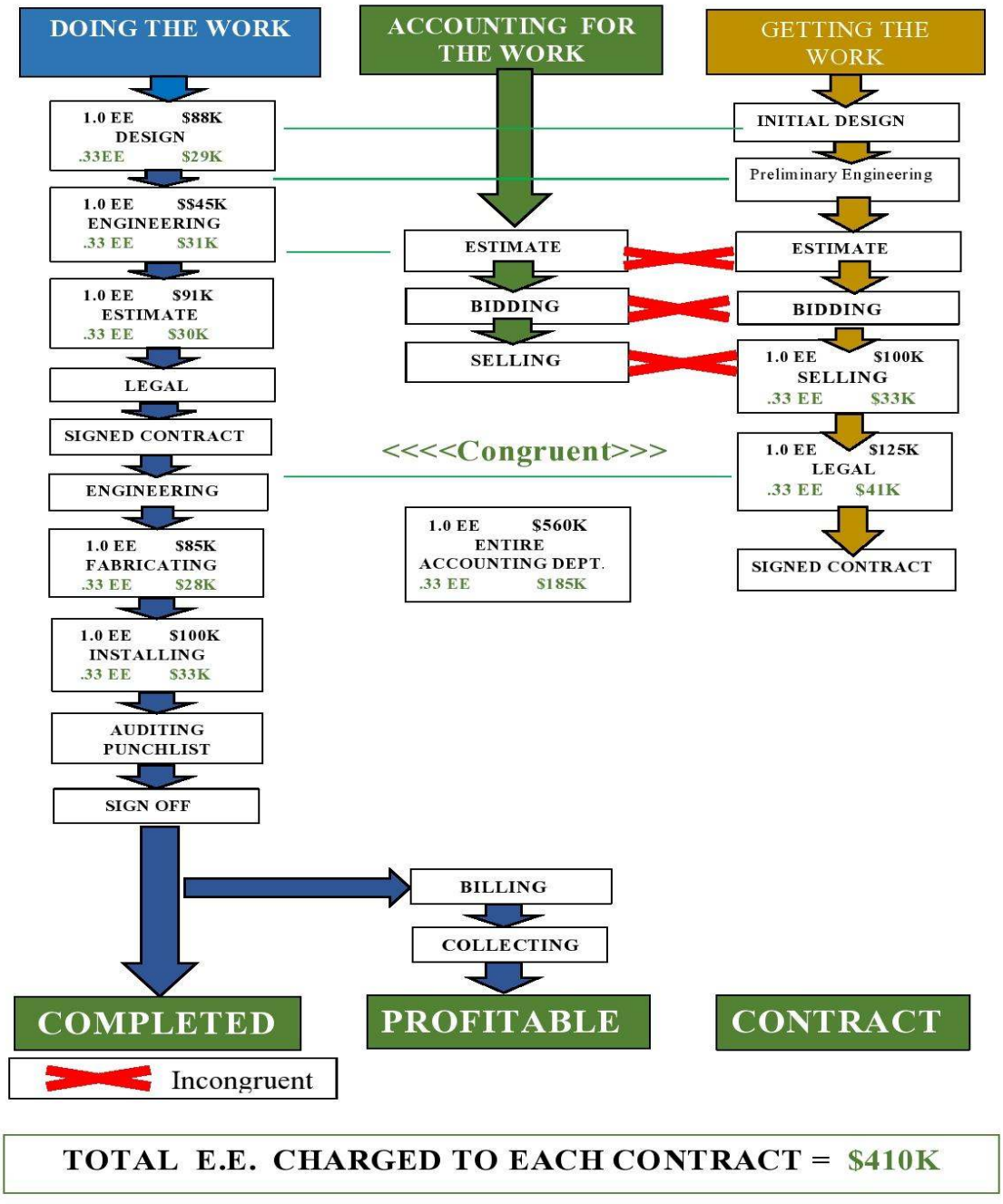


Figure 4. Contract Cost Functional Analysis Chart

When planners utilize functional analysis for designing overhead organizations, they assign an *Equivalent Employee* (EE) status to each full time employee needed to complete the planned contract. If one designer, for example, is needed on a full time basis to complete the designs for a given contract, planners will assign a 1.0 EE to that position. If, on the other hand, management

decides that the designs that are needed will only require half of a designer's time, that position is assigned a 0.5 EE and only half of his annual salary is charged to that contract.

Let's say, for example, that our SMACNA contractor will divide his annual revenues into three equal contracts. The entire Accounting Department is a 1.0EE and the department's total annual salaries carry that value. Therefore, the planner might assign a 0.33EE to each contract thereby amortizing the annual salaries of the Accounting Department across all three contracts. Of course, if the contracts are of different size and complexity, an appropriate formula is applied to properly cost the Accounting Department's input into a given contract.

Functions, therefore, are not always individuals, but are often whole departments. After you plan a contract on a functional basis for the first time, you will be surprised at how differently you see both the cost and the contribution of the various inputs that make up a function.

One of the most startling realizations that most contractors experience when they utilize functional analysis for the first time, is how burdensome overhead organizations can be when management attempts to sustain the status quo during periods of declining revenue. Only a carefully thought out functional analysis clearly reveals the true cost and impact of overhead.

Summary

The engineering definition of "Functional Analysis" is the discipline that addresses the activities that a system, software or an organization must perform to achieve its desired outputs; that is, what transformations are necessary to turn the available inputs into the desired outputs. Additional considerations include the flow of data or items between functions, the processing instructions that are available to guide the transformations, and the control logic that dictates the activation and termination of functions.[vi]

However, Functional Analysis of an overhead organization can also offer SMACNA contractors a tool for designing their organization going forward. It views a contracting company as a system of various inputs coordinated to create one desired outcome. Reorganization is not primarily a matter of better management of personnel, but more a careful structuring and measurement of the inputs needed to create the company's desired outcome. It is designed to reveal inefficiencies and conflicts that prohibit efficient work flow. It enables management to measure the true cost of overhead for each contract and decide how to adjust activity or personnel to create efficiency.

Unlike many organizational theories that focus largely on high level descriptions of "organizational forms", a functional analysis is prescriptive and provides conceptual and analytical tools that can be used to describe, analyze, and improve the architecture of specific organizations. A limitation of traditional organizational theories is that they usually omit the functions of an organization, or have treated functions and structure as equivalent to each other.[vii] They use organizational charts to describe the formal structure where, again, functions remain implicit. An organizational chart may show the composition of the structure but does not show a composition of the functions. This makes it hard to understand how an ultimate outcome has been translated into an organizational architecture.

When a contractor has seen his company grow over many years, he or she may look over the now complex organization and wonder how it all works. A functional analysis reminds you how the work gets done; how administration helps rather than inhibit progress; why the estimator has to balance getting the work with making a profit; how the project managers insure quality as well as efficiency. The accountants are making sure nothing falls through the crack while they are producing professional financial statements. Functional analysis depicts where and when everyone's input supports the company's goals and reveals when the structure is not serving efficient work of the highest quality and profitability.

Customer Service

How to Manage Customer Relationship (Back to Table of Contents)

Introduction

Customer service is a business's ability to satisfy its customers. Great customer service is *exceeding* the customer's expectations in all areas of contact.

We are in the midst of a revolution in business**.** Some call it a customer revolution; others a quality revolution; others a service revolution. Organizations are attempting to obtain increased customer satisfaction by focusing on the quality of their products and the service provided. This movement toward quality has produced significant benefits but just like other business evolutions, joining and adopting the revolution does not insure that the real objective of producing customer satisfaction will be obtained.

Customer Satisfaction is no simple matter for contractors.

A Variety of Customers

Contractors deal with a variety of customer types from general contractors and project owners to homeowners. These customers have different wants and needs that must be understood, appreciated and satisfied.

Intangible Nature of Product

Although a construction product is tangible, the process of getting it built on time, installed correctly, and then running smoothly involves a lot more than the generic tangible product itself. The intangibles aspects of the delivery process can make or break a company's success. Prospective customers can't properly evaluate in advance the intangible nature of the delivery process. There is no product until it is delivered, and the customer won't know how well it performs until it is put to work. Contractors can have all the tangible elements of customer service in place, from advanced technology to great engineering to efficient installation, but if customers are not satisfied with the way their transaction and interaction is handled, they won't be back.

The most important thing to know about intangible products is that the customers usually don't know what they're getting until they don't get it. Only then do they become aware of what they bargained for; only on dissatisfaction do they dwell on the process and related interactions. Satisfaction is as it should be, mute. Its existence is affirmed only by its absence. (Marketing intangible products and product intangibles, Theodore Levitt, Harvard Business Review, No. 81306) In the case of the contractor the involvement with a customer for the length of time it takes to complete a project provides an opportunity to do 99 things right and one thing wrong and be noticed and remembered for the one thing wrong.

Commodity Mind-Set

The "commodity mind-set" of customers is that we are merely performing a function—installing their system. Doing a good job is taken for granted by most buyers of construction services. They assume that all contractors would provide a similar quality system. However, the client has to live with our team for the life of the project; suffer the changes in design caused by *their*

selection of architects or engineers; endure the product as it develops compared with their expectations and pay invoices they often don't understand or necessarily trust.

Multiple Touch Points
Customer satisfaction in the construction business is as much perception as reality. The entire organization must "buy-in" to the importance of customer service, not just the company owner or the marketing executives. Project Managers, Superintendents, Foreman, designers, engineers, even tradesmen may be in contact with the customer over the life of the project. We can do a great job technically, but if the experience our customer has in dealing with each of these employees is not a positive one, the customer is going to believe we did not do a good job.

Every customer point-of-contact throughout the term of the project must be positive and cooperative (or at least neutral) or our customers will not be satisfied. Research suggests we are in an "experience economy" in which customers expect good products and services from everyone, but buy from purveyors that make the "purchase experience" (from qualifying for the project to closeout and balancing) a positive - even exciting experience. Sellers are encouraged to engage customers on an emotional, physical and intellectual level. The easiest way to turn a service into an experience is to provide poor service thereby creating a memorable encounter of the unpleasant kind.

Executives are finding that the winning differentiator is no longer product or price, but the level of customer engagement relative to the competition. (Rama Ramaswami, Senior Editor, Economist Intelligence Unit)

The Case Study Method of Learning
To more easily understand the multiple aspects of managing customer relations and creating a strong customer service perspective within your organization lets follow a specialty contractor through his discovery of the issues and the resulting customer service changes he made within his organization. Depending on the size of your company and individual needs you may want to adopt only some of the methods and processes from the case study and certainly alter and modify any of them to fit your particular needs. The reader should keep in mind that influencing anyone's, you're your own employee's, attitudes is not easy and takes time. The case study covers about two years of effort and ends with some additional items the organization intends to address. The customer service endeavor is well worth the time in that firms that improve customer relations improve profitability.

Case Study
The owner of a specialty firm was great at selling himself to all the GC's in his region. He contacted them frequently, played golf with them, and charmed their employees whenever he had the opportunity. However, he noticed that his business had not substantially increased annual revenues for the last couple of years. Over the same period, his costs naturally increased and his profits likewise diminished. He realized that although he worked hard to sell new business every year, he wasn't getting the repeat business he would expect from all his customer "friends" in the business. He decided to investigate why and set up a series of lunch meetings with key clients.

At first clients wouldn't say why they hadn't awarded him as many additional contracts. But after considerable cajoling, he found that one of his most profitable Project Managers was hard to work with as were some of his other employees. Some were reported to be rude to the GC's people or abrupt with the owner's representatives and others were said to be unprofessional with their second tier subs or vendors. Some of his people were said to have disregarded the needs of project neighbors or the general public.

The contractor explored this last complaint about project neighbors and the public further to discover that on various projects his employees had created noise dust or disturbance that the customer considered excessive or unnecessary in areas that project specification prohibited it. There were complaints of his people parking outside the areas allowed for construction use and in some cases even in the customer's reserved parking spaces or on grass or landscaped areas. The complaints ranged from trash blown over the customer's non-construction and occupied property to employees using loud, foul language in customer occupied spaces. The list was long and embarrassing. *(Author's note: Treat customers as you would like to be treated.)*

It became apparent from the above that the company's foremen and tradesmen had little guidance and there were even suggestions that some tended to be uncooperative with the other tradesmen on the job. This contractor discovered that even though he was a great salesman and spent quality time with all his customers, some of his employees had been turning customers off during construction and leaving owners, GC's and their personnel with a negative feeling about working with his company. Some customer representatives and even project owners reported that they sometimes minimized job site visits because they felt they were not welcome on their own project.

Our case study contractor knew he had a serious problem but wasn't sure where to begin. He asked himself the following questions:

- How do you change the ingrained culture of a company that you created and then launch it on a new mission?
- What is great customer service in our business?
- Exactly who really are our customer?
- What do they want?
- What are we delivering now?
- Where are we falling short?
- Is improved customer service going to make us money or cost us money?
- How do you improve customer satisfaction anyway?

Making a Start

Our contractor concluded that in order to make a start in changing the culture of his company he would need to:

- Ask his customers if they were satisfied with his work.
- Change his view of his company from just an efficient product producing organization and become also a customer-creating and customer-satisfying organization.

- Push this view into every nook and cranny of his organization and recreate his organization into one that thinks of itself, not as just producing products and services, but as satisfying customers.
- Become a company that can make people want to do business with it.
- Stop putting all his emphasis on efficiency and the bottom line and start adding some emphasis to constantly improving customer service.
- Change his own attitude by becoming a marketer rather than a seller and fully understand that selling focuses on the needs of the seller while marketing focuses on the wants of the buyer.
- Commit to make customer service a cornerstone and core ideology of his organization.

Leadership
He realized that a genuine commitment to customer satisfaction must begin with the company owner or CEO. And if the leader does not initiate, or at the very least "buy-in", to the importance of customer service as a key element in a contractor's success, no customer service improvement program will take hold.

He also realized that it would take a commitment on his part to communicate this reality to every member of the company and to see that every employee is trained in the mind-set and techniques required to insure a high levels of customer satisfaction.

The Customer Service Committee
Our contractor knew that change is never easy and that it would be difficult to get his employees to buy into a new approach unless they clearly understood the importance. To do this they would need to be part of the change process. He gathered together key employees of his company to discuss the problem and to help design the solution. His key people came to understand that the industry was evolving and that success would be determined by satisfied customers. The committee agreed that they needed to create a customer satisfaction program that would make customer service a cornerstone and core ideology of the organization. The contractor asked his key people to form a customer service committee to:

1. Redefine the traditional definition of customer service within the company organization.
2. Outline higher and more exacting standards of customer service for employees.
3. Create resources, tools, and support to promote success.
4. Establish a customer service program philosophy and values.

The contractor reasoned that all aspects of the company would need to be represented so the newly formed committee was composed of the VP Finance, VP Marketing, the Project Manager that was reported as hard to work with, an internal engineer, the shop foreman, and a field foreman. *(Readers should consider their own configuration within their unique organization.)*

Committee Organization and Duties
The initial charge of the Customer Service Standing Committee was to set performance goals, establish action plans, and install measuring devices.

The committee set itself the following tasks:

- Broaden the traditional definition of customer service within the Company organization.
- Design higher and more exacting standards of performance by employees.
- Provide resources, tools and support to promote success.
- Establish the program philosophy and values.

Performance Goals

The committee then set three simple performance goals.

1. Consistently give the highest level of service that the company is capable of providing.
2. Be recognized as the best customer service company in their market.
3. Be identified as a leader in customer service in their industry.

Objectives

The objectives of the program are only achieved when customers acknowledge that the company is the best customer service company in their experience as measured by improvements in periodic and post construction customer service evaluations.

The committee set a goal of a 10% annual improvement in customer satisfaction as measured by the number and severity of customer complaints recorded through the quality system complaint forms that they developed. *(Readers may want to consider a different percentage that they believe their organization can achieve.)*

Action Plan

After establishing the objectives, the committee settled on an initial plan of action to:

- Be responsible to place the customer service program into the culture and fabric of the Company within a target of two years.
- The VP of Sales would conduct before and after customer interviews to establish the customer's expectations and the committee would consider how those expectations could be met throughout the construction process. The initiative should result in an increase in the number of projects from repeat clients which will be tracked by the marketing department. This would be an ongoing process.
- Assure that customer service formats and checklists become part of the pre-planning process for each new project.
- Develop *toolbox talks* that address customer service issues. They would be used regularly to spread customer service information to the field and help institutionalize the initiative throughout the company.
- Conduct a cost-benefit analysis at the end of each plan year to determine if resources are being utilized as intended and if the program is accomplishing stated objectives.
- Design a reward process to celebrate individual and team customer service successes and advance the customer service program.

The Initial Steps

In the first year the committee took the following actions:

1. Prepared a customer service plan.

2. Included customer service education and training in company training programs and retreats.
3. Created progress benchmarks.
4. Evaluated actions, results, and cost-benefit objectives.
5. Established before and after customer interviews and learned from the results.
6. Implemented, monitored, and evaluated celebrations of service success.
7. Wrote the following mission statement:

We build and install systems for people not corporations, and we treat our customers as we would like to be treated. Our customers are always welcome on the job because it is their installation, and we appreciate the opportunity to show off the work we do on their behalf.

The Customer

The committee asked this question: **Who is our customer and what does he or she want?** General contractors are the most frequent customer of the specialty contractor. The owners of projects, however, are not only a simultaneous customers, but also a primary customer because they have to live with our installation for many years to come. If they are not satisfied, they complain to the general contractor who, in turn, sees our work as inadequate. Additional customers to be addressed are owners that we are prime contractor to, government agencies, homeowners, etc.

The General Contractor, for example, has unique *wants* and *needs*:

He *wants* the lowest price for an installation, but he doesn't *need* the absolute lowest price to complete the project.

He *needs* a completed installation that works or he won't get paid for the job.

He *wants* the highest quality installation he can get, but he could settle for a competently functioning system.

He *wants* the contractor to finish on time, but he will still finish the job if you're behind schedule.

He *wants* the contractor to work well with his other subs, but if tension arises on the job he is used to handling it.

The committee realized that not only did their company have a variety of customers, but that there was a difference between what each customer *needs* and what each customer *wants*. The committee concluded that their organization must try to satisfy the customer's *wants* not just what the customer *needs*. Unfortunately, they realized that their company often focused on what *needs* to be done to complete a job, but rarely sought to satisfy the *wants* of the various customers; General Contractors, owners, etc.

Customer Service Communication

The committee then created a two-part program to gather feedback on customer service activities and to check the ultimate execution of the program against the goals and objectives. They wanted to determine what behaviors motivate customers to be highly satisfied or highly dissatisfied. They wanted to develop valid processes that gather information from customers and ask the right questions of the right people to validate feedback.

Panel Discussion
The committee decided to bring in two or three clients for a short panel discussion on what the client expects of the PMs, foremen, engineering department, and tradesmen during the construction process. This simple idea was very effective because the committee members learned what matters to their customers. The clients were complimented by participating and left with a good feeling about the company. It was so successful they did it more than once.

Questionnaire
As mentioned, the committee initiated a program of pre-project and post-project customer satisfaction surveys. Here is the questionnaire they came up with: *(Readers should add to, remove or alter questions as they see fit.)*

Customer Pre-Project Questionnaire
Customer name: _____ Project: _____ Date ___
Please score each question from 1 to 10 based on your needs and wants.
(10 being most important to you)

1. Project comes in on or under budget._____
2. Installation is of the highest quality._____
3. Project comes in on time._____
4. Tradesmen cooperate with others on the job._____
5. Job site is kept clean and orderly._____
6. We are cooperative when executing change orders._____
7. The PM is highly skilled and easy to get along with._____
8. We communicate with you regularly over the term of the project._____
9. We always say yes._____
10. We are attentive to the owner's wishes._____

(As you work with your existing customers you will substitute other questions that are more germane to your clients. Your marketing executive should ask clients to answer the questionnaire after the contract is signed but before work has begun.)

Post-Project Questionnaire *(Please score 1 to 10 with 10 the highest)*
Customer name: _____ Project: _____ Date ___

1. The Company project team delivers on its promises, does not need reminders and never stonewalls an issue. _____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

2. The Company project team has respect for the owner (GC)._____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

3. Company placed a highly qualified Superintendent, General Foreman or Foreman on this project that takes charge and drives the job to completion. _____

Please name _____

4. If we make a mistake the Company team admits it without covering up or casting blame. _____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

5. The Company team is in the owner's corner and is a strong customer advocate._____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

6. The Company team has a can-do attitude and I can count on rapid and timely responses to my needs._____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

7. The Company team is consistent and treats me with openness and candor. _____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

8. The Company team is up-front with my questions. _____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

9. The Company team offers owner/GC participation in all aspects of the project from the beginning._____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Tradesmen ___ Other ____
Please name _____

10. The Company team provides the owner with choices whenever possible._____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

11. The Company team is straightforward and keeps the owner informed about the change order process._____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

12. The Company team is courteous and respectful of the needs of neighbors to the project._____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name _____

13. The Company team communicates effectively to the owner/GC.
_____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name_____

14. The Company team conducts efficient and informative meetings. _____
Please score individuals on the same question:
Project Manager ___ Superintendent ___ Foreman, Tradesmen ___ Other ____
Please name_____

(As you work with your existing customers you will substitute other questions that are more germane to your clients. Your marketing executive should ask clients to answer the questionnaire after the contract is signed but before work has begun.)

Customer Service in the Company Culture
The committee decided that keeping customers happy during construction is a huge issue because it affects the company's ability to avoid disputes, it sets the stage for argument-free and profitable change orders, and generates positive recommendations for future work.

It is clear that customers experience our company at multiple touch points throughout the duration of a project and, therefore, every employee of the company has to "buy in" to the importance of great customer service. Every PM, superintendent, Foreman, engineer, and tradesman must understand the difference between satisfying the customer's wants and simply doing what is necessary to get the job done. If the company is to improve its customer service scores steadily over time, the committee must infuse the company culture with the "just say yes" attitude of a company that "treats their customers as they would like to be treated."

Create a Customer-Centered Culture
The committee recommended the following steps to infuse the company culture with a "customer satisfaction" attitude.

1. Add customer service abilities to any compensation metrics.
2. Develop a customer experience strategy that aligns with the overall corporate strategy.
3. Share customer experience metrics with all employees.
4. Review customer experience project scores regularly.
5. Screen prospective employees for customer service values.

Think like The Customer
The committee decided that infusing the corporate culture with a "just say yes" attitude requires:

- Training new employees to understand and emphasize *who the customers are and what they want.*
- Putting more written materials in the voice of the customer.
- Being courteous and responsive in taking phone calls from customers and responding to calls in a reasonable time.
- Preparing an exhaustive list of the "negatives" in the construction process as perceived by GCs, owners and their representatives.
- Confirming and modifying the list through interaction and discussion with counterparts and associates on the GC and owner side.
- Mapping the customer's journey through the company, thereby defining what the company looks like from the customer's point-of-view.

Give Every Department a Role in Customer Service

To insure that every department of the company has a role in customer service, the committee created a "customer champion" in all areas of the business, not just the executive suite. The champion will be responsible to design countermeasures (fixes) for the negatives that can be controlled in his or her department. Each department was also asked to develop processes that would identify for the committee any customer perceived negatives that they believe are systemic in the design, fabrication, and installation process or that are outside of their department's control.

Define Customer Experience Success and Tie to Business Outcomes

Finally, the committee realized that the only way to create true believers in the executive suite was to tie customer experience investments to business outcomes. They would have to develop solid metrics and track them. Such as:

A. The enhanced reputation of the company leading to referrals.
B. The amount of repeat business.
C. Increased efficiency through the reduction of on-the-job conflicts.
D. Reduced litigation expense.
E. Expense savings and revenue gains from cooperative change order procedures.
F. Productivity enhancement through a positive attitude in all departments.

Summary and Conclusions

We can learn from a customer service survey conducted by Dimensional Research, an independent market research company. They surveyed over 1000 individuals who had extensive experiences with the customer service activities of mid-sized companies. The survey quantified the long term impact of customer service on business results.

Key Survey Findings

Customer service - both good and bad - impacts revenue.

- Participants ranked customer service as the #1 factor impacting vendor trust.
- 62% of Business to Business (B2B) and 42% of Business (direct) to Customer (B2C) customers purchased more after a good customer service experience.
- 66% of B2B and 52% of B2C customers stopped buying after a bad customer service interaction.

Customer service experiences have a long lasting impact.
- 24% continue to seek out vendors two or more years after a good experience.
- 39% continue to avoid vendors two or more years after a bad experience.
Customer service experiences are spread widely - especially bad ones.
- 95% share bad experiences and 87% share good experiences with others.
- B2B most likely to share their customer service stories.

DETAILED FINDINGS
What specifically made customer service interactions good?
-69% responded - "The problem was resolved quickly".
- 65% responded - "The person who helped me was nice".
- 63% responded - "The problem was resolved in one interaction - no passing around to multiple people".
- 47% responded - "The outcome was what I was originally hoping for".

Among participants that had experienced good customer service, most of them (83%) reported that their behavior changed in some way as a result. The most common way that their behavior changed was that they purchased more from that company (52%).
(Customer Service and Business Results: a survey of customer service from mid-sized companies. Dimensional Research, April 2013)

Make Great Customer Service Your Primary Product
Seeing your company as an organization that services customers rather than a company that builds and installs systems can really pay off. The construction industry has a "commodity mind-set" that sees the contractor as one more "sub" that needs to get in and out without causing any added cost or trouble. Contractors are sometimes considered pretty much the same in the minds of the general contractors who often go with the low bidder or the available contractor that's capable of handling the scope and complexity of the project.

In this market environment you need to know how to become the contractor of choice? How to stand out among all the rest when the time for inviting contractors to bid rolls around? How to make your company regularly come to mind when any construction project in your region is being planned? How to become the "contractor of choice"?

Most contractors are competent and just about all can do the work. It is almost impossible to display distinctive competence and distinguish your tangible system as technically more advanced or dramatically different from competitors. In technology, product differentiation is marginal at best.

And rarely does a contractor fail to complete a project. The ability to install systems that work is a baseline expectation. So what's the difference? Why is one contractor invited to bid and not another?

The contractor who creates a cooperative, positive, professionally respectful experience for the GC, owner, other trades, and project neighbors throughout the term of a construction project will just about always be on the preferred list of bidders.

Changing Your Beliefs
Most contractors spend time thinking about efficiency and quality and they should. However, if they believe that installing a system on time, on budget, and it functions as advertised, they should be the "contractor of choice" they have failed to consider the "commodity mindset" of the customer or to recognize the importance of the working *experience* during the term of a project.

Some contractors make an even greater error by considering the GC or the owner adversaries who are potential obstacles to the contractor's profitability. In the interest of not "wasting time" these contractors are often braced to resist inquiries or changes from the GC or owner. Every issue the GC asks about is seen as a threat or, at the very least, an imposition.

These are ill-advised "beliefs" that some consider the normal environment of the construction industry. Their only objective is getting a system installed as quickly as possible. It's not about cooperating with the GC, the owner, or the other trades to complete the overall project which should be the primary interest of all concerned.

In a New Business
It is all about cooperation. In this “evolving” business environment the future of our entire company has become dependent on our ability to cooperate and work as a team. We are no longer just in the construction business. To be successful we need to also be in the customer creation and customer satisfaction business. If we want to stay competitive and thrive as part of the new construction industry, it is critical that we change our beliefs and understand what business we need to be in.

The Entire Company
Once we have truly changed our beliefs, we need to change the beliefs of our *entire company*. The program outlined above is a beginning. Construction companies that have followed it have succeeded in changing the attitudes of not only their top management, but the entire organization.

It takes time to effect a change like this in an entire company's view of itself and its mission. The key to success is in the strength of your commitment. If you and your senior management truly believe that *servicing customer's needs* must be part of your new business, this program will imbed that belief in the entire company.

Business, Strategic, Long Term Planning

Introduction to Business Planning (Back to Table of Contents)

Introduction

A plan may be presented through a planning document but the business plan itself is A **Set of Management Decisions about What a Firm Will be Doing to be Successful.**

In its most basic form business planning is the process of deciding what a firm will do to achieve success and how it will do it. It helps provide a logical and rational sense of direction for a company. It also has internal and external uses. Internally it can improve performance by identifying both the strengths and weaknesses of the company's operation and potential or emerging problem areas. It should communicate to management and staff clear expectations regarding the company's performance and priorities and provide a solid base for measuring overall performance and that of individual units and managers. As new developments and opportunities arise a business plan provides a rational structure for evaluating the impact of the developments or opportunities on the operations and performance of the entire firm and on individual components.

Perhaps most important, a business plan and the process of developing it can be used to educate and motivate the key staff of a company. By analyzing past performance, evaluating the impact of trends and developments, and putting together action plans for the future, managers and other key staff tend to learn more about the total operation of the company and the relationship of their particular area of responsibility to the achievement of the firm's goals or success. This level of involvement and understanding almost always leads to increased commitment to achieving the company's goals and generates higher levels of motivation and excitement.

A business plan also has external uses with parties outside the firm. It can be used to educate outside parties like the bank or bonding company about objectives, structure and performance. This can be an important support for the financial and other non-financial information they receive. With this use in mind I have included a selling or complementary aspect to this draft which you may want to leave in or take out. I've tried to put in enough information so that an outsider could fully understand it and it contains the type of information and covers issues that sureties and bankers like to see.

I prefer a positive flavor and easy-to-read style so that key people in an organization can relate to the plan and feel a part of it. No matter what the size of the company or stage of development the real success lies in getting the key people to really pull together and get excited about what is right for the organization and their important role in it.

The reader should understand that the planning process is as important as the resultant plan. See below for additional information about the planning process and a sample

Practical Business Planning for Contractors (Back to Table of Contents)

Introduction

Many in the construction business are so involved in the planning of the work that they are distracted from, or lose sight of, the importance of planning for the business entity.

In an informal study of several thousand contractors of all sizes and types throughout the country, less than 40 percent claimed to do any type of formal corporate planning at all and many did not formalize their planning process with anything in writing. That percentage is dramatically improved in more recent years, but demonstrates that a lot of companies have not gotten the message—"long term business planning is essential to the continuing success of a construction enterprise." Planning is the ultimate risk control.

Long-term business planning is essential to the continuing success of a construction enterprise

Another informal survey of middle managers generated some disheartening information. One third of the middle managers questioned indicated that while their company had a formal written business plan, the organization did not follow it closely or the contractor changed direction from the plan without notice. Not following a plan is the same as not having one, although many surveyed said that the annual planning meeting had value even if the plan was not followed.

The most common reason given for not planning is size. Believing either that a smaller business does not benefit from a plan or that planning has little advantage for a mid-size or a larger, well-organized company is a serious business error.

Smaller companies often have limited resources and cannot afford a trial-and-error approach. There are over a million separate contracting companies in the United States, and the largest percentage of them is small businesses. In this tough and competitive industry, many contractors succeed by personally and aggressively driving their business forward. However, the importance of effective and efficient comprehensive corporate planning and its impact on the success or failure rate of construction businesses has been under-stated within the industry. It has been underestimated by contractors for too long. And while more companies are planning each year, the construction industry cannot count itself among mature, sophisticated industries until that number approaches 100%.

The construction industry is undergoing some dramatic changes, not the least of which is a realization among constructors that the "tried and true" old ways of running their contracting business will not suffice in this highly competitive and high risk industry.

There has always been a painful weeding-out process in the construction industry by which companies that don't keep up, fail. Others take their place, and some of them fail. Many assume that this is simply a fact of life in a high-risk, high-stakes business. After many years of working with distressed and failing contracting businesses, we have determined that the causes in most cases were management decisions alone.

The three primary functions of a construction business and how they related to organizing the business will be described in later chapters in further detail. In brief, they are: getting the work, doing the work, and accounting for the work. Once a construction business is broken down into these functions, and time and energies are budgeted to treat them separately and properly, the company is fairly well organized, and able to properly manage the organization (the day-to-day activities of the business).

The next step is to address the responsibility of top management for the longer range goals of the corporation--the wellbeing and success of the business. Properly managing the important day-to-day marketing, production, and administration areas of the business is not enough to assure success: short-term success in no way implies longer range prosperity.

Without some forecasting and planning, businesses can be driven in the wrong direction. To carry the driving analogy further, contracting businesses have no reverse gear. If someone drives too far in the wrong direction, they cannot simply back up and restart. Once the resources and company is committed in a certain direction, changing that direction drastically can be difficult, expensive, and may be too late.

The process of planning may be defined as deciding in advance what is to be done, when it is to be done, how it is to be done, and who is to do it.[1] Planning is not just an effective defensive tool; however, smaller businesses should embrace corporate planning for that reason alone. In addition to identifying future opportunities and threats to be exploited or avoided, effective planning provides a framework for better decision making throughout the company.

A business plan provides guidance to the managers of a company for making decisions in line with the goals and strategies of the business owners. It helps prevent piecemeal decisions and provides a forum to test the value judgements of decisions makers within the organization. Perhaps the most significant value of the well-organized planning process is the improvement in communications among all levels of management about goals and objectives, strategies to achieve them, and detailed operational plans. Planning is not making future decisions. Planning is concerned with making current decisions in light of their future. It is not what should be done in the future, but rather what should be done now to make desired things happen in the uncertain future. Decisions can only be made in the present. Yet, decisions cannot be made only for the present. Once made, the decisions may have long-term irrevocable consequences.[1]

When properly performed, the planning process creates a communications network within even the largest of companies that gets people excited about what's right for the company and how to achieve it. Planning also addresses an area that is sadly lacking in most small businesses today, that is, the "measurement of success." Establishing just a fundamental level of corporate planning in smaller contracting businesses has had profound effects on the outlook, attitude, and performance of employees and business owners alike.

One of the greatest selling points for comprehensive corporate planning is that it allows the contractor to simulate the future--on paper. If the simulation doesn't work out, the exercise can be erased and started again. In an exercise, decisions are reversible. Ideas may be tested without

committing resources to them or betting the entire company on them. Simulating various business scenarios encourages and permits management to evaluate many alternate courses of action. This could not happen in the real marketplace. Picking the "right" course of action becomes more apparent. There is also the possibility that the larger number of alternatives may produce ideas that would otherwise have been missed. If nothing else, the planning process brings more and better factual information to the table, with which management can make decisions.

The mere ability to experiment with different courses of action without actually committing resources encourages the participants in the process to stretch their creative skills in a safe environment. Models of real-world situations provide an opportunity to test different scenarios and their possible consequences.

While no one can predict the future 100%, the probability that certain events will have a predictable cause-and-effect relationship is strong. The more planners know about their business, marketplace, and competition, the greater is the likelihood that they can simulate quite accurately the outcome of certain moves. An individual's comfort and agility in planning increases over time and with experience in applying these planning principles in organizations. Planning can become a formidable tool and a competitive edge.

Corporate planning allows top management to accurately predict new opportunities with greater lead time. With more notice and a predetermined course of action, exploiting new opportunities prior to the competition is much more likely. Another side to this coin, and equally important, is that being better able to look ahead will reveal threats to the business before they arrive unexpectedly.

The days of assuming a business is helpless in the face of market forces are long gone. Contractors in great numbers today are realizing that their businesses need not react only to marketplace-created booms and busts that have plagued the industry for so long. They are embracing an approach that suggests they can determine their future direction with proper, proactive planning. They can be assured that their established objectives are met or they will at least know the exact reasons why not. It is the major responsibility of the chief executive (contractor) to see that the proper planning system for their company is developed and maintained.

Strategic Planning For Contractors Comes of Age (Back to Table of Contents)

Throughout history, men engaged in business have always planned. From ancient hieroglyphics we know of plans for the great structures of our earlier counterparts.

Perhaps in the building process we are so involved in the planning of the work that we have been distracted from, or have lost sight of, the importance of planning for the business entity. We certainly would not attempt the construction of a building, bridge cooling system, or pipe line without preconceived drawings plus a schedule for the timing, manpower loading and procurement of the work. With the amount of time and effort that we contractors put into planning our work and as familiar as we are with the necessity and value of good planning, you would expect that we would be among the first to understand and utilize comprehensive strategic planning in managing our business enterprises. It is simply not the case in the construction industry.

In a recent informal study of several thousand contractors of all sizes and type throughout the country, less than 10% claimed to do any type of corporate planning at all and less than half of them formalized their planning process with anything in writing.

The most common reason given for not planning was size. A belief that smaller businesses either don't need to plan or that it doesn't matter is a serious business error.

Smaller companies often have limited resources and cannot afford a trial and error approach. There are over a million separate contracting companies in the U.S. and the largest percentage of them are small businesses. In this tough and competitive industry, many contractors succeed by personally and aggressively driving their business forward.
The importance of effective and efficient comprehensive corporate planning and its impact on the success or failure rate of construction businesses has been understated within the industry. It has been underestimated by contractors for too long.

The construction industry is undergoing some dramatic changes, not the least of which is a realization among constructors that the "tried and true" old ways of running their contracting business are for the old days.

There's always been a painful weeding out process in the construction industry by which companies that don't keep up fail. Others take their place and some of them fail.

Many assume that this is simply a fact of life in a high-risk, high-stakes business. After ten years of working with distressed and failing contracting businesses, I've determined that the causes in 99% of the cases were management decisions alone.

In "A Contractor's Survival Guide", a book on this thesis, I describe the three primary functions of a construction business: getting the work, doing the work, and accounting for the work. I suggest that once your business and technical activities are broken down into these functions, and once your time and energies are budgeted to treat them separately and properly, you will be

organized and this will enable you to properly manage the organization. That refers to managing the day-to-day activities of your business.

The next step is to address the responsibility of top management for the longer range goals of the corporation; the wellbeing and success of the business. Properly managing and important day-to-day marketing, production and administration areas of the business is not enough to assure success—short term success in no way implies longer range prosperity.

Without some forecasting and planning our businesses can be driven in the wrong direction. To carry the driving analogy further, our contracting businesses have no reverse gear. If we drive too far in the wrong direction, we can't simply back up and restart. Once we have committed our resources, our company, in a certain direction, changing that direction drastically can be difficult, expensive and maybe too late.

I don't wish to imply that planning is just an effective defensive tool. However, even smaller businesses should embrace corporate planning for that reason alone. In addition to identifying future opportunities and threats to be exploited or avoided, effective planning provides a framework for better decision making throughout the company.

It gives guidance to the managers of a company for making decisions in line with the goals and strategies of top management. It helps prevent piecemeal decisions and provides a forum to test the value judgments of decision makers within the organization. Perhaps the most significant value of the well-organized planning process is the improvement in communications among all levels of management about goals and objectives, strategies to achieve them and detailed operational plans.

The planning process properly performed creates a communications network within even the smallest of companies that gets people excited about what's right for the company and how to achieve it.

Planning also addresses an area that is sadly lacking in most small businesses today and that is the "measurement of success."

Establishing just this fundamental level of corporate planning in smaller contracting businesses has had profound effects on the outlook, attitude and performance of employees and business owners alike.

One of the greatest selling points for comprehensive corporate planning is that it allows the contractor to simulate the future—on paper. If the simulation doesn't work out, the exercise can be erased and started again. In an exercise, decisions are reversible. Ideas may be tested without committing resources to them or betting the entire company on them. Simulating various business scenarios encourages and permits management to evaluate many alternate course of action. This could not happen in the real marketplace. Picking the "right" course of action becomes more apparent. There is also the possibility that the larger number of alternatives may produce ideas that would otherwise have been missed. If nothing else, the planning process brings more and better factual information to the table for management to make decisions with.

The mere ability to experiment with different courses of action without actually committing resources encourages the participants in the process to stretch their creative skills in a safe environment.

I hesitate to even use the word "model" for fear of turning someone off who may have read this far with interest. However, models of real world situations really do give us an opportunity to test different scenarios and their possible consequences.

While no one can predict the future one hundred percent, the probability of certain events having a predictable cause and effect relationship is pretty good. The more we know about our business, our marketplace and our competition, the greater is the likelihood that we can simulate quite accurately the outcome of certain of our moves. Add this to the fact that the more we plan the better planners we become, and you should begin to see that you may be able to learn a lot more about the outcome of your decisions in advance than you now do and that's a formidable tool and a competitive edge.

Corporate planning allows top management to accurately predict new opportunities with greater lead time. With more notice and a predetermined course of action, exploiting new opportunities prior to the competition is much more likely. Another side to this coin equally important is that being better able to look ahead may reveal threats to the business than if they arrive unexpectedly.

The days of assuming your business is helpless in the face of market forces are long gone. Contractors in great numbers today are realizing that their businesses need not react only to marketplace-created booms and busts that have plagued the industry for so long. They are embracing an approach that suggests they can determine their future direction with proper planning. They can be assured that their established objectives are met or they will at least know the exact reasons why not.

Sample Business Plan Document (Back to Table of Contents)

Introduction

There is no hard and fast rule about how a planning document should be presented. The plan and the plan document should reflect the size and stage of development of the construction company preparing it. A small organization might spend only 10 or 15 hours planning which may be present able to be presented in a few pages or just bullet points about what is expected of key people and what is intended to be accomplished. A very large organization may have a much larger document broken down into divisions and departments. Mid-size companies should have as much detail as the planner feel necessary to capture what they intend to do and who has to accomplish what by when. The importance thing is the plan should reflect the planner's decisions and be able to be understood by everyone in the organization. The plan is what counts. The plan document simply reflects that.

The following is a sample of what light be included in a written business plan. It is fairly inclusive for teaching purposes so the reader may use any parts they feel apply to their circumstance. The style of the writing is not important and the sample is simply one way to of doing it. Just using bullet points that the planners understand is also a reasonable approach, but may not be as easily understood by outsiders such as banks or bonding companies.

(Sample) Business Plan

OK Construction Business plan year ____ to _____ (typically Three Years)
Table of Contents

III. Organization and Management Plan
    1. General Philosophy
    2. Organization Structure
    3. Policies and Objectives
    4. Training and Development
    5. Compensation
IV. Operations/Production Plan
    1. Production Scheduling
    2. Production Standards and Costs
    3. Operating Policies
        A. Purchasing and Subcontracting
        B. Equipment Maintenance
        C. Equipment Management
        D. Facilities
    4. Estimating
        A. Price Catalog
        B. Estimating Department
        C. Quantity Takeoffs
        D. Pricing Reviews
        E. Back-up for Employee b
    5. Productivity Strategies
        (A) Superintendent's Field Time
        (B) Safety
        (C) Crew Size Analysis
        (D) Crew Communication and Goals
        (E) Record Keeping
        (F) Sub-Contractor Management
        (G) Project Manager Field Time
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V. Financial Plan
    1. Accounting Policies and Controls
    2. Pro-forma Statements - One Year
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Introduction

The owners of OK Construction decided to initiate formal long range planning as a method of managing their business. Owner 1 is President of the company and it's Chief Executive Officer. Owner 2 is responsible for Marketing and equipment management and also manages projects. Owner 3 will be assuming greater responsibilities for construction operations and will be totally responsible for field operations by the end of the third plan year. A planning group of key

individuals representing all functional areas of the company was selected and the planning process began. A three year plan was developed with a one year plan in greater detail. The plan covered marketing, organization, production and finance with short and long term goals and objectives established in each area. Strategies were formulated and specific actions scheduled to accomplish the goals and objectives. The planning group met quarterly to monitor progress and adjust the strategies to current situations.

The owners and the planning group are extremely pleased with the results of the planning process after one year. While volume goals were not met the percentage of gross profit exceeded the planned amount. The planning process helped focus the attention of the entire company on the bottom line. Overall corporate performance was excellent and the current Marketing looks favorable for continued growth and success.

A second three year plan has been developed by the same planning group; one year in detail and two years with less detail. A number of activities or objectives that were planned but not accomplished were restated for action this year and new objectives and strategies were added. The new one year plan, while similar to the previous one, is unique to this plan year and based on a careful evaluation of last year's performance and results. The plan was developed in a shorter time span than the previous one because the group has planning experience and an existing plan to work with.

The planning group elected a new member expanding the field representation to three with the addition of Employee a. Significant additions from last year's plan include:

Owner 3 will work with Employee b and by the end of the third plan year will become responsible for field operations.

The accounting systems will be integrated by the beginning of the next fiscal year so that monthly financial statements can be computer generated.

Establishing a better system of dealing with the billings for co-owned equipment from Subsidiary company and evaluation of both company's performance.

Putting in an equipment management system to schedule replacement as needed for growth or obsolescence and scheduling future financial needs.

I. Executive Summary

1. The Company and Its Environment
OK Construction is a building construction company working in three states with their home office and shop facilities centrally located in State. The company owns and operates its own heavy equipment including cranes and excavating equipment. Heath care facilities, industrial projects, commercial buildings and school construction are the primary markets. Jobs range in size from $1 million to $20 million with smaller work taken closer to Company location.

The company is owned and managed by Owner 1, Owner 2 and Owner 3. Annual volume has been steady for two years in excess of $30 million with profits at industry standards. With the current organization and equipment the company can produce $45 million annual volume with little or no increase in overhead.

The client base is made up of large industrial clients, private, commercial and institutional owners and public bodies such as school boards. Heavy industrial and complicated institutional and commercial projects are the primary target utilizing the cranes and equipment which the company owns and operates. Work of that type, while competitive, appears to be available for the plan period.

Goals

The owners intend to operate aggressively in owner 1 selecting, purchasing and production to maximize profits and minimize exposure in the challenging years to come. They control their business future by structuring and managing a highly efficient organization that fully employs the existing resources and is flexible enough to respond quickly to changes in the market place. Overhead is structured and controlled to minimize the effect of unforeseen downturns in the economy.

A growth to $39 million in annual volume in three years is intended with profitability over 3.5% after taxes, and a 10% annual increase in corporate net worth. Replacement of equipment as needed to remain competitive is planned with little increase in the number of machines during the plan period.

Strategies

A service mix of 40% health care facilities, 40% industrial work and 10% each of commercial and institutional projects is planned by the third year.

Work will continue to be obtained through negotiations and the competitive bidding process on select jobs with approximately 50% of each but with greater emphasis put on President selecting new industrial clients. Maintenance of existing clients will continue with VP Marketing coordinating the efforts. Selecting projects and clients and targeted President selecting efforts are intended to strengthen competitive advantage.

Favorable banking and bonding relationships exist and should continue through the period particularly with the planned growth in net worth.

The owners have solidified their organization and increased profits by carefully managing their work. Continued improvements in marketing and bidding strategies, equipment and purchasing management and production controls will allow them to continue to operate with security and less risk. Careful planning has positioned the company for future growth if the Marketing expands and allows for safe retraction if the Marketing declines. The owners believe that careful planning prepares them to operate profitably if the Marketing increases or decreases.

II. Marketing Plan

(1) Marketing philosophy: OK Construction has been serving their marketing for four generations and enjoys an excellent reputation for quality construction on schedule. The company has earned the respect of architects, engineers and owners by providing their services in a highly professional manner and is client centered in their delivery of the work.

(2) Sales and revenue objectives: The owners believe the Marketing will develop favorably over the next three years. Sales goals are $34 million for the first plan year (April 1, 1990 to March 31, 1991) after adjusting for the impact of the large management job which will cause actual volume to be $48 million, $37 million in the second year and $39 million in the third year. Profit objectives are 9% plus before general and administrative expenses.

(3) Product line strategies: With an increase in competition in the commercial and institutional markets anticipated, a change in service mix of the company is warranted; 40% industrial, 30% health care projects and 30% commercial and institutional buildings will be sought. The company's primary geographic area includes the surrounding states which will not change during the plan period.

(A) Target projects: Projects to be pursued will be categorized by type of work rather than by client. Continuing emphasis will be placed on selecting projects to fully utilize company owned equipment. Additional local industrial work will be sought within a 40 mile radius of Company location because of the profit potential from these jobs and the fact that they can be easily managed from home office. Projects over $5 million will be targeted with consideration given to the availability of superintendents qualified for the particular type of work.

(B) Market analysis: Study of available work will continue so that projects which are of particular interest to the company can be targeted and a focused Marketing approach can be developed to capture them. VP Marketing will continue to prospect for projects in the planning stage and pursue targeted industrial clients within a 40 mile radius. This will enable management to know with greater lead time what projects will be available to bid on and to make selections in accordance with desired service mix and available superintendents. It will also be used to identify project opportunities for negotiations which may otherwise have been put out for bids.

(C) Bid strategy: A more formal method of identifying primary and secondary competitors and tracing their work loads and need for work will be developed in the first year and refined in the second and third years. Evaluating the competition's need for work at a given point in time helps measure competitive pressure on projects being bid and can improve success ratio and narrow bid spreads. Data collection will begin immediately for use in an organized manner next winter. President and VP Marketing, and Employee b will be involved in the selection of projects to be bid and will work with the estimators on pricing. Final pricing will be based on current need for work of a particular type, the amount of similar projects available, and an appraisal of the other bidders' perceived need for the job. Project selection and pricing will be driven by company needs and requirements to the extent that choices are available.

(4) Marketing activities: The marketing department conducts a number of activities to keep the company in the minds of prospective clients in a positive way.

(A) The company newsletter is sent to clients and prospects three times a year. The mailing list is managed by the Marketing Department and all key employees are encouraged to submit names that they think are appropriate.

(B) Equipment and job site signs are considered an integral part of the company's image. All trucks, office trailers and larger company owned equipment that is exposed to the public view will be similarly lettered with the OK Construction and kept reasonably clean and neat. Signs on all projects where permitted and appropriate will be displayed with the OK Construction.

(C) Press releases are prepared and distributed to appropriate publications on all items considered newsworthy that place the company or its key personnel in a positive light. To maximize these efforts suggestions from key employees are sought.

(5) Current year marketing strategies: To capture the number and size projects within the pre-determined service mix management targets specific projects, and the broader categories of work and potential customers. VP Marketing is responsible for getting the work. The President will spend a minimum of 20% of his time in marketing and VP Marketing will spend 100% of his time.

(A) A system of recording all marketing contacts by phone, mail or personal has been developed. Information about the potential client's needs, his or her likes and disliked, significant comments and what the prospect was told and given in writing will be captured to coordinate the repeat calls on a client which in some cases will be made by different people and even at different levels within the organization.

(B) Repeat business is considered a primary source of work and a systematic contacting of clients the company has worked for in the last ten years has been undertaken and will continue.

(C) To increase the company's market share of industrial work in the area a list of 40 potential clients within a 40 mile radius has been developed and a number of contacts made. This list will be refined to 10 or 15 good prospects that will be intensely pursued by VP Marketing and Marketing VP. The initial jobs may be smaller and success may require repeated efforts for a year or more but two to five new industrial clients are anticipated within 18 months.

(D) Specific client maintenance strategies have been developed to maximize repeat business from existing clients. Marketing at more than one level within the client's organization is done where appropriate. Specific activities are agreed upon including who will carry them out, how often and who will coordinate the effort. Client maintenance programs have been developed for large client a, large client b and large client c and others will be added as appropriate.

(E) Target projects are regularly isolated that are of particular interest to the company. A detailed strategy is developed for each outlining exactly what activities will be undertaken by whom, and when to maximize the probability that the company will get the job. Target projects should be added to the list as they develop and all key people within the company should know about them. Anyone hearing anything about a target project should let VP Marketing know

about it.

Iii. Organization and Management

PLAN
(1) General philosophy: The owners of this closely held company have a high level of concern and respect for their key employees and feel strongly that this group of people and the company will grow together. This nucleus has the potential to manage the $34 million dollar target volume and more. The group is managed in an atmosphere of mutual respect and informal lines of communication are encouraged. The present comfortable working environment will be maintained but growth and efficiency will require the more formalized reporting chain that has been developed. There is accountability at all levels of the organization.

(2) Organization structure: The organizational structure of the company is shown with reporting chain and lines of authority in Attachment A. The marketing and equipment departments report to VP Marketing. Field Operations and Estimating report to Employee b. Field Superintendents are responsible for labor costs, safety and training and report to the project managers. The project manager is responsible for the profitability and success of the job. On technical issues the superintendents and project managers may receive guidance directly from Employee b who will be spending 20% of his time on operations and production. Owner 3 will assist Employee b full time in production and field operations. He will assume more responsibility during the three year plan period with a target of full field responsibility by the end of the plan period. A specific course of action will be developed by President and Employee b including seminars and equipment demonstrations to be attended and learning activities to accelerate the training process.

(3) Policies and objectives: The owners will continue to encourage the individual initiative of key personnel within their areas of authority and remain open to suggestions and recommendations on all subjects. It is the collective knowledge of construction, bidding and administration of key personnel that make OK Construction the dynamic successful organization that it is. Providing for the continued growth of its personnel in a safe, healthy and stimulating working environment is an important ingredient to the future of the company.

(4) Training and development: All employees are encouraged to improve their skills with on-the-job training and working with others who may know more about particular aspects of the business or possess skill levels greater than their own. Persons who feel they can do more or wish to advance within the company should make it known to the owners. Independent training or education in skills and knowledge directly related to the employee's job or advancement are encouraged and on a case-by-case basis may be paid for by the company. Periodic work related and personal development opportunities will be available. Group learning and social events throughout the year will provide opportunities for employees to exchange ideas and interact with middle and top managers on an informal basis.

The identification and training of potential foremen, field superintendents and project managers is an important aspect of the company's future success. Key employees are encouraged to point out capable employees who could be considered for advancement and try to determine their level

of interest in moving up within the company. After discussions with the appropriate managers the selected candidates will understand that they are being considered and will be assigned to work under key company people who have agreed to teach and train them. Periodic reviews keep the process on track. At those sessions outside reading or specific instruction or training may be recommended. The candidates will be encouraged to understand that the company is willing to invest in them if they are willing to invest in the company. One new project manager will be hired during the first plan year.

(5) Compensation: The Company's union workforce is compensated in accordance with local agreements. Salaried personnel are paid locally competitive wages to maintain the best available people. Management staff are compensated for their knowledge, efforts and loyalty on an individual basis and the owners concern themselves directly with this issue. President will review each key person annually and discuss the subject personally and frankly with them. Increases are based on merit and subject of salaries should be treated confidentially.

Iv. Operation/Production Plan

(1) Production scheduling: Employee b in consultation with others will schedule all construction operations and assign owned and rental equipment to projects. Planned production rates and methods will be discussed with the on-site project supervisor and the project manager agreed upon and measured. Meeting or exceeding planned production rates is what the entire field organization is all about. Every employee, whether moving a piece of equipment or managing the largest project needs to remember that his actions as part of the team effort can make the difference between profit and loss on a phase of the work or an entire project. The company relies exclusively on field operations for all of its cash flow and profits and the efforts of each employee are important even critical to the company's success. This message will be highlighted at all employee meetings and promoted on a continuing basis by all management personnel.

(2) Production standards and costs: OK Construction will maintain its current high standards that foster its reputation for high quality work on schedule. Further the cost of re-work or removal of substandard work makes high quality standards the most efficient and economic approach to produce construction projects at a profit. The current methods of recording and measuring production costs will continue for the first year of the plan but may change in year two as a result of changes being made in the accounting department. All employees should concern themselves with the accurate reporting of requested information on time and field supervisors are relied upon for the accuracy of the data reported. Management must receive accurate project information continuously to effectively control the work and provide the resources necessary to optimize field production.

(3) Operating Policies:
(A) Purchasing and subcontracting: Employee b has overall responsibility for purchasing and subcontracting and project managers will handle all purchasing on their jobs in consultation with him. Field supervisors may purchase minor miscellaneous supplies but should clear major purchases with the office. Common sense is to be used when any purchase is necessary to keep a job moving.

(B) Equipment maintenance: VP Marketing is responsible for equipment maintenance throughout the company. Field maintenance is a project responsibility but will be carried out in accordance with schedules and criteria established by shop management. Schedules for the renewal, overhaul or upgrading of equipment will be prepared for a three year period with most major work done in the winter. Supplies and spare parts inventories will be planned and maintained by shop management to minimize down time exposure particularly at peak periods. The proper operation and maintenance of equipment is an important cost factor and every employee is expected to understand their part. This will be stressed at job site and safety meetings.

(C) Equipment management: During the first year an equipment management plan will be developed for integration with the maintenance procedures in which the useful life of each piece of equipment will be considered. The projection and control of lifetime equipment costs will provide an additional tool in selecting projects most compatible with company equipment and the selection of equipment suitable to changes in future markets. An overall equipment management plan is consistent with the owners' desire to anticipate future financial needs.

(D) Facilities: The Company's home office and shop facilities are capable of accommodating growth well in excess of the plan period. No changes are anticipated.

(4) Estimating: Employee b is responsible for the estimating department and certain activities have been targeted during the plan period to enhance efficiency.
(A) The unit price catalog will be updated.
(B) The possibility of establishing a separate estimating department will be explored during the first plan year.
(C) A target of zero errors in quantity takeoffs is to be strived for and estimators need to be alert to special condition's situations such as areas where a machine or crane cannot reach, or loads too heavy or too far. The constructability of a project should be considered by everyone working on an estimate.
(D) The estimators will attend all pricing review meetings for training and input.
(E) During the plan period a backup person will be sought for Employee b's position. By the end of the plan period a person will be selected and in training to eventually head the department.

(5) Productivity strategies: In order to achieve the overall goals of the company the gross margin or job profit before general and administrative expenses is paramount. A target of 9% has been set by the planning group. To do this a number of practical activities have been planned.
(A) Field superintendents will spend a minimum of three hours of their day outside of the field office directly supervising the work. To the extent paperwork, sub-contractor coordination or other activities interfere with this policy they are to notify management for immediate resolution of the conflict because the planning group is convinced that the profit is made or lost in the field.
(B) The superintendent as the senior full time representative of the company is responsible for safety. The company is dedicated to providing a safe working environment and targeting zero accidents on all projects. The superintendent must be aware of all aspects of the company's safety policies.

(C) The superintendents will analyze crew sizes, particularly on major activities, before starting the work and periodically during each activity to maximize output. If the crew size or makeup is changed from the estimated makeup it should be to improve productivity and the results should be reported to Employee b for possible future use. The estimate is based on crew sizes historically proven to produce a known quantity of work at a certain price. To remain successful we must be able to consistently meet or exceed our estimated labor costs and management should be advised immediately when this isn't happening for any reason.
(D) To manage labor and maximize productivity the superintendent should communicate to the field force what the short and long term schedule for the work is and what goals and objectives he is trying to meet. The crews should know what they are trying to accomplish and by when--and how that fits into the overall project. Most people prefer to be involved in a successful project and successful project makes money. Making a fair profit on the work can be discussed with field people as a measure of success. They understand that or at least they should. "Profit's not a dirty word"--it is what keeps their industry going.
(E) The superintendent should understand the need for appropriate record keeping in the field and provide accurate and timely information and reports requested. The non-performance of sub-contractors or suppliers should be noted on daily reports and the project manager advised so action can be taken early on.
(F) Sub-contractor performance can critically impact a project and the management of sub-contractors is primarily the project manager's responsibility. It begins with the selection of the sub and care will be taken by management to get the best available contractors for the work. This isn't always possible in a competitive world and for us to remain competitive a sub-contractor's price is of paramount importance. The project manager should find out as much as he can about a new sub by asking for a list of previous contractors he has worked for and making direct inquiries. Subs we have worked with before successfully and those believed to be good performers will require less attention than any we believe to be questionable. To balance our time we should more carefully monitor the performance of questionable subs until they have proven themselves. Financial information should be gathered on new subs and any that are weak financially will need to be managed carefully to see that they do not get ahead of us on payments. It is appropriate to get a breakdown of second and third tier subs and suppliers from a financially weak sub-contractor in advance of the work. Advice the sub that proof of payment to each of these for the prior month will be required before payment is made and where questions arise you will make direct inquiries regarding payment or may issue joint checks at your discretion.

Performance of all subs and suppliers is to be monitored closely and written notice given to them for any area of nonperformance. As soon as it is believed that a sub or supplier will delay a job or cost us money the project manager will notify senior management. Continued nonperformance will result in a meeting of senior people involved in the project to determine the appropriate action to be taken.

The project manager is responsible for getting the sub to the project and ultimately for the performance of the sub. He should monitor performance through the superintendent and/or directly and failure to report consistent nonperformance to management will not be accepted. The first issue in sub-contractor management is to get the subs to perform and keep them on notice of your needs and their response. The second issue is to get help if you need it. Do not

wait until a sub has done your project harm before advising management. At a more senior level in the company different actions can be taken. We must cultivate an attitude that we will succeed on a project with or in spite of the subs.

(G) Project managers will visit the projects they are responsible for at a minimum of once a week. The time spent in the field may vary with the stage of the project and coordination and paperwork are a critical and important part of managing a project but the work is built in the field. The project manager is responsible for the construction of the work at a profit. As soon as it appears that isn't going to happen on any project senior management is to be notified. Working as a team can bring the right talent to bear on a problem and turn it around before it gets serious but only if we are skilled at spotting little problems early on and reacting as if they were already serious ones. In this business there is no such thing as over reacting. It just seems like it sometimes because the serious problem is prevented from developing.

(H) Preplanning of all projects will take place prior to the start of the work. The project manager and superintendent with the help of Employee b will work out the details and schedule of each project and the project manager and superintendent will present them to management for discussion. The plans need to have some flexibility but a greater level of commitment to the original plan is desired. Too often changes made in haste for short range gains are not advantageous in the long run. The project manager should analyze carefully any departure from the original plan and discuss any major changes before they are made.

(I) Descriptions of the reporting chain and levels of responsibility are intended to clarify who is responsible and accountable for building the work at a profit. Management focuses the company's energy directly on field operations and the production of successful and profitable projects. Recognizing the importance of accounting, Marketing, estimating and administration to the success of the company these functions revolve around and support the primary objective of the enterprise--building for a profit. This concentration on construction operations by everyone in the company can put the excitement back into our work.

(6) Supervisory personnel: Identifying and training good foremen, superintendents and project managers is important to the long range growth and success of the company.

(A) Project managers and superintendents should bring to President's attention anyone that they think should be considered for advancement.

(B) A list of people being considered for advancement has been developed and a systematic review of their progress will be undertaken at least once a year.

(C) By the end of the plan year the number of new foremen, superintendents and project managers that will be needed in the next three years will be established and compared to the number in training. Recruitment or new hires will be planned if necessary to keep up with the demand for qualified construction people to run the work.

(D) In the second year of the plan a more formal method of indoctrinating and training foreman, superintendents and project managers will be explored.

V. Financial Plan

(1) Accounting policy and controls: CFO will be responsible for accounting. All record keeping tying into the general ledger will be done in accordance with generally accepted accounting practice in cooperation with the firm's outside independent auditors who will report directly to the owners. Changes are planned for certain new or expanded accounting controls. No additional accounting personnel are anticipated and planned growth should be absorbed by automation.

Existing monthly management reports may be altered next year to be automatically adjusted for over and under billings or a monthly cost control system may be considered that would be independent of the general ledger and tied to the original bid quantities and prices. Selected work items would be tracked and reported by field management, processed by the accounting department and evaluated by management to get quick and accurate measurements of project performances earlier than the complete statement information generated monthly.

(4) Current year activities: The short term activities for improvements in the accounting functions of the company are:

(A) CFO will produce quarterly financial statements for management until systems integration is accomplished.

(B) The accounting systems will be integrated by the beginning of the next fiscal year. A Product name billing system will be purchased and put into use immediately. A Product name payroll system will be evaluated starting in September. If it is not selected the payroll figures will be put into the general ledger by category weekly. Equipment costs will be applied to each job as they are incurred monthly. Over and under billings will be applied monthly.

(C) A reduction of 25% in the cost of outside accounting services used by the company is targeted.

(D) The handling of material, truck, auto and equipment charges between the company and Subsidiary company creates a certain amount of confusion for those not closely involved with the transactions. Clarification of the process or a new procedure will be undertaken by President and CFO with a target for resolution of the situation by the close of the fiscal year. Changing the fiscal year for Subsidiary Equipment Company to match OK Construction will be considered so that combined statements can be produced. This will enable management to better evaluate the cost of equipment ownership and its impact of profitability.

Plan Distribution

Historically secrecy has been popular in the construction industry, however, transparency is a valuable asset in today's business environment. While it may not be preferable to share the plan with your composition the only way to assure that is not is to share it with no one. It may also be asserted that there is very little a competitor could with your plan short of seeing how well managed your company is. To not share the plan with employees is to forgo a huge motivational

opportunity. Employees like to know that the company they are with will be successful into the future and a multi-year business plan suggests the firm is well managed and knows where it is going and how it is going to get there.

To those who do not chose to share their plan widely it is strongly recommend that the plan be shared as broadly as you are comfortable with. Many exclude the financial section of the plan other than to their bank and bonding company. If it is your intention not to share the plan it is highly recommend that you draft a summary of the plan that excludes any areas of concern and then circulate that at least to key employees or better yet to all employees.

Suggested draft of memo to permanent employees - perhaps included with payroll checks.
Date:
To: OK Construction Employees
From: Company President
The success and growth of OK Construction is something that we can all be proud of. To prepare for continued growth and the future challenges in this exciting and ever-changing industry, three owners brought together a number of OK Construction people to do some long range planning. The planning group which is made up of people from different areas of the company consists of list of five employees and three owners. We have scheduled four all-day meetings to discuss long range goals and objectives, marketing strategies and operations issues. All of us are excited about the prospects for the future and I'm confident that the efforts of this group will result in sound strategies and recommendations. We will be working hard in the weeks to come and I look forward to keeping you posted as our efforts progress. Careful planning will enable us to grow with confidence and provide greater opportunities for our most important asset--you.

Equipment Management

Equipment Cost Management (Back to Table of Contents)

Ownership Costs

The use and ownership of equipment affects every type of Construction Company and accurately accounting for actual costs is a complex process and has caused problems for many. The process of evaluating and accounting for all costs associated with equipment usage and ownership is complicated by the fact that some costs do not appear on invoices and, in fact, aren't incurred in the course of operations. These costs, while not easily recognized, will eventually have to be paid. Although various formulas are used to cope with equipment costs, the total costs of ownership are sometimes misunderstood. All costs, including those hidden, must be recognized and planned for in advance.

Contractors face many equipment concerns, for example: whether to buy or lease, which equipment to invest in, and when to invest. Equipment-intensive contractors, like road builders, landscapers, sheet metal contractors, and others have to make these decisions often, and they have a long term and profound effect on success. Other contractors have the same concerns, but less effort may be put into these decisions because equipment isn't a big part of their business. Debt service and maintenance costs may exist for contractors who own very little equipment, but these costs usually exist in a big way for equipment-intensive contractors. This chapter discusses problems primarily facing equipment-intensive construction businesses, but the principles apply to all construction companies that own equipment.

How Much to Own

The first step in controlling equipment costs is to control the amount of equipment owned. The decision to purchase new equipment is made for basically two reasons: to replace aging equipment or for expansion. Both reasons are certainly valid business reasons. Nevertheless, both reasons must be considered judiciously because the company is usually committing a great deal of their money with limited assurance of future work.

In replacing equipment, management must weigh very heavily whether the new equipment is really more productive than what they have, and if so, by what margin? Is that difference worth the investment? If the existing piece of equipment is a maintenance headache, should the company invest in a complete reconditioning and get three or four more years out of it or replace it? Are the next two to five years of work a certainty? Is the marketplace growing or shrinking, or is it likely to change soon in either direction? Of course, no one can answer these questions with certainty.

The decision to purchase new equipment, which must produce profits over a period of years or be a financial liability, is not an easy or simple one. The decision to buy means taking on additional costs and creating a necessity to get at least enough work to keep the equipment busy. Too often, contractors “want” to buy newer and bigger equipment rather than “need” to buy it. When they need a replacement, some assume that bigger is better.

Reasons to Buy

The decision to buy additional equipment for expansion is usually made for one of two reasons: new work is already contracted and there is no owned equipment available to do work, or the contractor is in an expanding marketplace and wants to have the equipment on hand to do the anticipated greater volume.

If the marketplace is getting stronger and is growing, it may be reasonable to assume that the company will get their share of the growth and therefore greater volume. The problem with buying or committing to more equipment in advance of getting the work is, as already mentioned; the company MUST then get more work just to keep the equipment busy and to justify the investment. Equipment can run a contractor instead of the other way around.

Competitive Position

One of the difficulties in getting this new amount of work is that the company's competitive position relative to their marketplace may not stay the same when the marketplace grows. Their regular competition may also have a bigger appetite and may be going after the work more aggressively than they did in the past. Another situation that often develops when a marketplace gets stronger is the influx of outside competition. When out-of-area contractors are drawn to a strong or growing marketplace, they need to get a foothold and often bid very tight to get the first job or two. Local contractors may react by bidding even more aggressively. New equipment becomes a real burden when it forces the organization to go after a greater amount of work at a time when they must bid work at a lower markup in order to get it.

Even if a company has contracted for more work than their current equipment will bear, the conditions of an expanding marketplace still make purchasing risky. Once the existing work starts to finish up and the equipment used on those jobs becomes available, the company may have idle machinery. Increasing inventory of equipment should be very carefully thought out, not only as it relates to the work, but also as it relates to the marketplace, the company's competitive position, and resources to do the additional work at a profit. Many successful contractors have loaded up on equipment in good times only to be forced into severe difficulties by the very same equipment when the marketplace went back to normal. The equipment begins to run these contractors instead of the other way around.

Calculating Equipment Costs

The subject of calculating and accounting for owned equipment cost is one that is ignored by some organizations or lost sight of by others who believe their accountants are taking care of it. To estimate work and bid a job, a contractor needs to know exactly how much equipment is going to cost per unit time, and has to include all maintenance and replacement costs to do that. A contractor must have this information to accurately price the work at a profit and to know whether on-going jobs are profitable. The basic concept for costing of equipment is quite simple, but calculating it can be another story.

The basic objective of operating a business is to produce net income, which results from receiving more from a customer for services rendered than the total expense of producing the service. As assets such as equipment are used in operations, they lose part of their service value, or "depreciate. This is an element of expense, called depreciation expense.[viii] A portion of the actual cost of the asset (equipment) expires in each accounting period during the useful life of the

equipment. This periodic cost requires no periodic cash outlay, but, nevertheless, is a continuous expense of operating the business.[ix] There are a number of methods that may be used in calculating depreciation by GAAP rules, but all are based on the purchase cost of the asset (equipment). Although depreciation is an estimate,[x] it cannot be based on replacement cost of the equipment, which presents a serious problem for the equipment-intensive contractor.

Time and Usage

The cost of owning equipment is a function of both time and usage. Some equipment may be busy all the time under normal one-shift-per-day conditions, for example, a rock crusher. The example works for 12-months or seasonal businesses. The company owns the rock crusher when it starts on a particular job and the machine is intended to operate all day, every day. It was purchased new. The direct costs to the company during the first month of operation, assuming mobilization is charged separately, are fuel, insurance, and regular maintenance. These costs are fairly easy to track monthly because they will be incurred during each month of operation. However, as there may be major maintenance as the project progresses and spare parts required, an allowance for this must be included in the equipment costs.

The allowance for maintenance and parts is an estimated cost that should be tracked and corrected occasionally to reflect what actually occurred. The allowance should be treated as an actual (if not incurred) cost because in several months, the crusher may need new belts and bearings, and the cost for these are not correctly chargeable to the month incurred. The belts and bearing were consumed over several months, and this maintenance cost should be charged in a timely manner by estimating it in advance in an attempt to reflect reality. These very real costs must be captured in a timely manner to account for the true cost of ownership of the equipment, but because some of these costs are yet to be incurred, they cannot be arrived at from the company's accounting records. They must be estimated

Estimated regular and extraordinary maintenance costs are very real and should be included in the unit cost of owned equipment because they are necessary to keep the equipment operable and in the condition it was when it was purchased. If these costs are not charged to the unit costs and charged against the work, then the cost of some maintenance will come out of profits. The estimated cost should be applied to cost control the same as incurred costs to ensure monthly costs are accurate. Estimated maintenance costs should be updated periodically (usually annually). If the equipment will need major overhauls such as engine replacements after two or three years, these costs have to be factored into the estimated maintenance and accounted for from the first month the equipment is put into service. If this is not done, the company will be overstating their real profit by not charging the wear of the equipment to the jobs that caused it. It creates a false economy.

Replacement Costs

In order for equipment-intensive contractors to enable their companies to replace their machinery, they must charge a replacement cost to the unit costs. The replacement cost should not be confused with the purchase price used in depreciation calculations. Furthermore, these charges should be applied to the cost control system hourly, weekly or monthly as a true (actual), if not incurred, cost. The replacement value is calculated by determining the useful life of the equipment and estimating the replacement cost, less salvage at the end of its useful life. The

replacement cost is divided by the useful life to get the monthly cost that will be incurred. In this calculation the number of hours, weeks or months the equipment is anticipated to work per year is used. The replacement cost represents the cost to the company of using up or consuming the piece of equipment. If an organization uses the purchase price and not replacement costs as many do, and divides by the useful life, they will not collect the replacement cost of the equipment during its use because of inflation.

A contractor may ask, "Do you really want me to charge my clients for next year's inflation when I'm only working for them this year?" The answer is, "No. You can always pay for it yourself." If an equipment-intensive contractor does not charge replacement cost, they are paying for the privilege of being in business. They are consuming equipment at rates that are intended to repay the company for the amount they paid for the machinery. However, when the equipment is replaced, for example in five years, the company will need more than what was originally paid for the equipment to replace it. To be self-sustaining, an operating business must replenish or regenerate itself from operations and total cost of ownership. It is an economic reality that inflation is a cost of doing business and for an equipment-intensive contractor, this means charging replacement cost to the unit costs of equipment as it is used.

Economic analyses supporting a decision on equipment replacement are aimed at determining the equipment replacement interval that will yield the maximum on the equipment investment. The period of equipment ownership that yields the maximum profit on the equipment investment may be considerably shorter than the economic life of the equipment. Equipment ownership costs, as the term implies, represent the cost of owning the equipment. Although these costs are usually prorated on an hourly basis for estimating and accounting purposes, they represent costs that would be incurred whether the equipment is actually used or not.[xi]

Equipment Costs Charged To Projects

The purpose of charging all equipment costs to the jobs and applying these charges monthly as costs are incurred in a cost control system is to give the contractor a realistic picture of whether the company is making or losing money in time to do something about losing situations. Equipment is not an overhead cost any more than moving equipment back to the yard stops ongoing costs.

Consider the heavy equipment contractor during a slow period. The company can either charge more of the equipment costs to fewer jobs or consume the difference. During a slow period, there will be no fuel cost, and maintenance can be suspended, but the insurance cost goes on as does replacement cost. Replacement is a function of usage, age and obsolescence. It is often obsolescence that causes replacement, so the timing of replacement isn't only affected by usage. If a contractor believes that downtime will extend the useful life of the equipment, then they can adjust the replacement cost as long as they factor in an amount for deterioration from storage and non-usage. Deterioration can be a costly factor because most construction equipment wears better in use than out of use. Taking work just to break-even is never justified except for survival.

Idle Equipment

The alternatives open to a contractor whose equipment is idle because of an inability to capture profitable work are not encouraging. To take work in other geographic locations (see Chapter 4) or on a tight schedule isn't good business because the company takes on too much risk just to keep the equipment working. To take highly competitive work just to break-even is rarely justified, except for survival. Liquidating some equipment is an alternative, but must be considered in the context of the overall business, including new work anticipated. There is seldom a profit to be made in liquidating used construction equipment, although liquidation can reduce losses caused by the ongoing cost of idle equipment. Leasing out idle equipment is a favorable alternative, but this is usually difficult to do if there is a general slowdown in the market.

If nothing can be done to mitigate the loss from idle equipment, it should be left on the last job it worked on and the real costs of owning it charged monthly to the job. This serves as a reminder that the equipment is idle, and management, who should have anticipated when the equipment would be free, will be encouraged to get everyone talking about where it should go next. It also tends to discourage project people from always asking for more equipment than they really need.

If idle equipment makes one or more jobs show losses by the month, it simply points out the real costs being incurred. If idle equipment is not charged to projects, it is possible for all jobs to be showing a profit on paper. However, the real picture for the company is not as good as the paperwork is showing. Positive cash flow that can be mistaken for profit.

Cash Flow

Cash Flow is equal to the sum of earnings (after taxes) and depreciation.[xii] Taxes on earnings are paid in cash reducing the company's cash flow, but depreciation is a non-cash expense and thus contributes to cash flow.

The majority of the cost of equipment ownership does not occur concurrently with the equipment's usage, thus equipment intensive-contractors usually have a positive cash flow that can be mistaken for profit. Even if an organization accepts these concepts and accounts for all of the costs as described above, the company's cash flow will be greater than their real profit. If the replacement charges and extraordinary maintenance charges are not accounted for and actually placed in reserves, then funds won't be there when needed. During slow periods with a lot of idle machinery, an equipment-intensive contractor could be showing losses on all jobs, but still have a positive cash flow and is therefore able to weather the storm well. If the company uses some or all of the funds reserved for equipment replacement and if they are not replenished out of future profits, there isn't going to be enough money to replace the equipment when the time comes.

Because most equipment is purchased not with cash but on credit, the equipment is expected to be paid off from future work. The example used above was for equipment purchased for cash because it makes the concepts easier to relate to and follow. For equipment purchased on credit, there is a slight change in the proposition. Interest costs are added to the formula as an expense similar to fuel and insurance. Since both interest and principal must be paid concurrently with usage, cash flow during slow periods is affected. During idle time or when losses occur for any reason, there may be a loss with a negative cash flow. Depending on the length of a slow down or loosing period, there may not be enough cash flow to make the equipment payments.

Equipment Obsolescence

Equipment-intensive contractors have another exposure in the equipment area that is not as apparent and often not planned for, and that is equipment obsolescence. Companies incur a great deal of cost in replacing equipment as it wears out. Broken-down equipment delays jobs, hinders progress and costs money.[xiii] However, obsolescence can occur well before machinery reaches its useful life. The productivity of equipment dramatically affects the profitability of equipment-intensive contractors and is part of their competitive edge. Equipment productivity is critical to making a profit and to bidding and getting the work. As newer and more productive equipment comes into the market and a contractor's competitors buy it, the contractor can be forced into equipment replacement earlier than planned just to remain competitive. Equipment obsolescence prior to useful life is a difficult issue because it is almost impossible to predict and consequently to plan for. It is therefore a risk of doing business for equipment-intensive contractors

Equipment Obsolescence Case Study

This case study is about a well-established specialty contractor with aging duct-making machinery that faced new and unexpected competition from a start-up contractor who had the latest technology equipment. The productivity of the new equipment allowed the start-up contractor to bid lower on every job of any size that came out during their first year in business, until the established contractor had hardly any work. The established contractor decided the only way to remain in business was to replace their equipment with the more productive machinery their competition was using. Like most contractors, they had not reserved money for equipment replacement or, for that matter, even accounted for it. The company's current financial statements reflected a bad year because of the new competition, and the established contractor was unable to purchase the new equipment because they could not secure the financing. In fact, the new equipment was so expensive that their last five years' total profit wouldn't have paid for it.

The contractor was very aware of potential equipment obsolescence and the benefits of new technologies, keeping abreast of the latest developments in their field such as computer operated duct fabricating machinery. In fact, they knew that eventually some or all of their equipment would need to be replaced, but felt that it still had a lot of good years left in it. However, replacement costs were not included anywhere in their cost accounting. By ignoring the real cost of replacing his equipment, the company was enjoying a "false profit." Had the contractor accounted for realistic replacement reserves, they would have seen that their real profits weren't what they thought they were. Additionally, had they considered obsolescence, they may have planned for continual upgrading of equipment or at least measured how far the company was falling behind technology and quantified the risk and cost to the business.

Contractors must understand that competition is a strong force in the construction industry, including specific construction disciplines and sub-disciplines. The notion that the established contractor could not have foreseen the eventuality of the start-up company entering the marketplace is not the issue. New businesses with better ideas are a reality in any industry, existing competition may gear up and tool up at any time to increase their market share, and out-of-town contractors are always on the lookout for new areas to expand into, particularly if existing competition appears weak or less productive. An equipment-intensive construction

enterprise that does not concern themselves with the effect of obsolescence on their business and with remaining at least as productive as industry averages nation-wide, is a business that is at great risk.

Simply reserving the anticipated cost of "keeping up" is not enough because a company may not be able to gear up fast enough if the their competitive balance shifts rapidly. It is necessary to also spend the reserves and keep up with national standards, not just local standards, because the industry is mobile and unanticipated competition can originate from anywhere.

Replacement Cost Incurred Daily

The entire future replacement cost of equipment, including the costs due to inflation, obsolescence, and wear, necessary to remain in business will become due whether or not it is accounted for or reserved by contractors. Replacement cost is a very real cost of doing business, and is a cost that is incurred each day, not only at replacement time. Following is a simplistic example.

A contractor decides to go into the dirt-moving business and buy a $100,000 bulldozer, how shall they account for the ownership of this piece of equipment in years to come? Let's say they buy it for cash from personal savings and that it will last for five years, at which time it will be worn out. For this example, we'll assume zero salvage value. There are a number of ways to account for depreciation, and we'll select straight-line depreciation over five years or depreciation of $20,000 a year.

The new business recovers all other usage costs during that five years and charges only $20,000 depreciation in their accounting for equipment ownership, where will they be in five years? They will no longer have their $100,000 because they spent it to buy the bulldozer in the first place. They won't have the bulldozer because it is worn out and has no salvage value, and they won't have a job because they don't have the piece of equipment. What happened to the $100,000? It has been consumed by the business. Sure, they made profits during those years and the depreciation allowed them to have $20,000 of the profit without corporate tax, but the $100,000 was after-tax dollars. They spent the company's profits on salary and operating costs. A new bulldozer today costs more than the $100,000 it cost five years ago, say, $150,000. To stay in business they need to borrow the $150,000. In this situation, the contractor is not only short the $100,000 that they started with five years ago, but they are also in debt another $150,000.

While the example is simplistic, it provides good food for thought. Of course, replacement costs to be incurred five plus years in the future would be calculated at the present value of the future cost and tax considerations would impact the calculations. Nevertheless, replacement costs will become due at some point and will almost always be more than the original purchase price, so one cannot rely on allowable depreciation alone to accurately account for the cost of ownership of equipment. If the company buys equipment on credit and replaces it with credit, as most contractors do, the company will go deeper into debt by at least the rate of inflation the longer it remains in business. Equipment replacement costs won't be incurred for five or more years which are not a big problem unless you intend to be in business longer than that.

Summary

When a company does not account for the real replacement cost of equipment, profits are exaggerated, which gives a false picture of where the organization is and certainly of where they are headed. While the IRS does not allow funds reserved for equipment replacement costs to be tax free, they are clearly a cost of doing business. There is a lot of debate on this subject from accountants and tax experts, and it would be beneficial to unite and determine what the optimal method is for all parties considered.

Industry economic conditions raise the question of whether a fleet of equipment is a liability or asset.[xiv] Ignoring the real replacement cost of equipment necessary to remain in business can influence an organization to operate in a false economy, go farther into debt over time, and for many contractors create serious long-term financial problems. Costs that are incurred and due in the current accounting period are no more real than costs that will definitely be incurred in the future and will become due in a subsequent accounting period; it is just harder to recognize them and account for them. In the example provided, equipment replacement costs won't be incurred for five or more years, which is not a big problem unless you intend to be in business longer than that.

Succession Planning

Basics of Succession Planning (Back to Table of Contents)

Introduction

When key people leave a closely held construction enterprise unexpectedly, as in illness, or expectedly, as in planned retirement, some of the 'essence" of the organization is lost. A closely held company is defined at any given point in its development as **the sum and substance (S&S) of its experience** and almost all of that S&S is created by and resides in people, particularly and proportionately in its senior key managers.

Some of the S&S becomes institutionalized--such as: attitudes towards customers, work ethics, values, etc. because the key people have woven them into the "fabric" of the organization by example, mentoring and training. A portion of the S&S can be transferred from one person to another with deliberate and diligent effort--such as: customer relationships, union contacts, production and process knowledge, etc. However, a considerable portion of the S&S cannot be institutionalized, is not transferable and in spite of best efforts is forever lost to the organization when a key person leaves--such as: insights into business or project risks; the development of innovative process, policies and actions born out of years of company-specific experience; masterful hiring selections and solutions to personnel issues made with an ability to read between the lines or "hear" what is not said using an innate talent honed over decades; and much more.

The steps necessary to minimize the loss of S&S to the organization are generally referred to as a succession plan. They are:

1. Discovering, evaluating and delineating exactly what S&S is captured in a key person well before they leave the organization.
2. Determining which of these are truly institutionalized and outlining steps to be taken to assure that they are "in fact" firmly engrained into the "fabric" of the organization.
3. Identify the S&Ss that can be transferred to another person, determine who they should be transferred to and devise a metrology for deliberately and effectively transferring them over time—scheduling by-who, by-when. This usually takes three to five years depending on how senior the person leaving is.
4. Establish which S&S are not transferable and will be forever lost to the organization and minimize the resulting impact by recognition that the particular talents will not be applied to certain decisions. Realize that in each instance management will need to evaluate the impact the missing ingredient may have on the risks associated with the decision and attempt to compensate for the increased risk by introducing additional people into collaboration before making the decision.
5. Cultivate the same or similar talents, to the extent practical and possible, in the person(s) succeeding the key person who is leaving through a carefully developed and diligently pursued multi-year Professional Development Plan (PDP).

To accomplish the above it is best to have several years to enact the process for middle managers who leave an organization. Unfortunately there is often no notice when this level of person leaves as it is usually unexpected. For key senior management departures five years of preparation is appropriate. When there is uncertainty about when a person may leave such as: an

intention to retire in a non-specific length of time like two to three years; or sometime after five years; or depending on health issues; it is prudent to plan to the shortest time and if the person stays longer all the better.

The more senior the person or the greater the amount of S&S is presumed to be lost, the greater the effort and resources that should be applied to the succession planning.

For more detailed information about succession planning see Introduction to Succession planning.

Introduction to Succession Planning (Back to Table of Contents)

Introduction

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To accomplish the above it is best to have several years to enact the process for middle managers who leave the organization. For key senior management departures five years of preparation is appropriate. When there is uncertainty about when a person may leave such it is prudent to plan to the shortest time and if the person stays longer all the better. The more senior the person or the greater the amount of S&S is presumed to be lost, the greater the effort and resources that should be applied to the succession planning.

Measuring Succession Plan Progress

After several months into the succession plan it is appropriate to measure progress to. One method of self-evaluation and a measurement of progress by management is to use the following short questionnaire. Those intended to advance in their responsibility and those in training to do so will fill out the questionnaire. Below is a sample memo to managers who will be evaluated.

The company is investing heavily in assisting you to accelerate your growth to fill big shoes of those who will be retiring so please take the time to think these questions through. Your thoughts and feelings in each area are critical to the evaluation process and will form the basis for you and management to discuss changes or improvements to you professional development to accommodate your requirements. (*If a Professional Development Plan* (PDP) *has been created for this employee it would be mentioned here and the manager or consultant who developed it would be included in the evaluation. A sample Personal Development Plan can be found further in this section. This memo may include: "To be effective these plans were custom to your needs so evaluation of progress at this stage will influence on where we go from here.*) Please answer the following questions on a scale of 1 to 10 with one being little progress 5 being some progress and 10 being excellent progress. Feel free to add comments that you feel apply.

Please return the completed form by

1 2 3 4 5 6 7 8 9 10

Little progress some progress excellent progress

___ Progress in being introduced to client contacts
Comments:
___ Your progress in establishing relationships with new clients
Comments:
___ Your progress in managing and improving existing client relationships
Comments:
___ Progress in being introduced to engineers
Comments:
___ Your progress in establishing and improving relationships with engineers
Comments:
___ Progress in being introduced to vendors
Comments:
___ Your progress in establishing and improving relationships with vendors
Comments:
___ Progress in attendance at association meetings, golf outings, vendor events, etc.
Comments:
___ Progress in being introduced to union contacts
Comments:
___ Your progress in establishing and improving relationships with union contacts
Comments:
___ Your progress in understanding how to assign superintendents—what to consider
Comments:
___Your progress in understanding mobilizing and moving equipment effectively
Comments:
___ Progress in Participation in regular ride-alongs with senior managers
Comments:

___ Progress in interactions in field decisions to gain understanding of management's thinking
Comments:
___ Progress in twice-a-month 2-hour training and Q&A sessions with supervisors
Comments:
___ Progress in being included in interactions with candidates for employment, interviews and hiring
Comments:
___ Progress in being instructed in production and process knowledge
Comments:
___ Progress in being instructed in project risks
Comments:
___ Progress in being instructed in hiring selections and solutions to personnel issues
Comments:
___ Progress in being instructed in pre-bid evaluation, pricing and risk assessment
Comments:
___ Your progress in understanding how to mentor superintendents
Comments:
___ Your progress in understanding issues of micro-managing superintendents or projects
Comments:
___ Your progress in managing moral and effective team building
Comments:
___ Your progress in becoming a safety champion
Comments:
___ Your growth towards understanding a company-wide view over consideration for just your area of responsibility
Comments:
___ Your growth towards understanding the skills required to be an outstanding manager
Comments:
___ Your understanding of areas you need to improve in—list in comments below
Comments:
___ Your progress in knowledge growth through your PDP learning activities
Comments:
___ Your progress in mastering negotiation skills
Comments:
___ Relevance of the subjects included in you PDP to date
Comments
Include here subjects or activities you would like included in your PDP the future

Boards of Directors

The Need for Boards of Directors (Back to Table of Contents)

Two Hats Are Better Than One - But a Smart Owner Will Wear Only One at a Time.
Why it's critical to separate the roles of owner and manager in the closely held business.

Introduction

Closely held or family businesses have some unique problems that do not seem to affect businesses in which the owner and top management are separate or where top management does not own a controlling interest in the company. The roles of a business owner and the management of a business are separate and distinct and equally significant to the success of the enterprise. In the closely held of family business, the roles are usually performed by the same people.

Manager and Owner

While it is possible to wear both hats, few business owners seem to realize that they simply cannot wear both at the same time. The role of owner and role of manager are different enough that critical decisions by management for short-range gain are often opposed to the long-range interest of the owners. As a result, many closely held businesses suffer from a clack of clearly defined objectives or from no long range strategy at all. They tend to be forced in whichever direction their management decisions take them.

It is the responsibility of the business owner to establish goals and objectives for the company and to discipline the performance of the management of the enterprise toward attainment of those goals. A critical ingredient in the formula for success of any size company is measurement of the performance of the management of that business. A critical analysis of the efforts of management toward the achievement of predetermined attainable goals is sadly lacking in most closely held businesses. Many owners believe that as long as everyone works hard, puts in the long hours, and seems really to care about the success of the business, things are fine and management is doing its job. Loosely translated, this means that management "job" is to work long hours and to care, which is not the case.

Management Organizes

Management is supposed to organize the resources of the organization to achieve attainable goals and objectives as set out by the owners or stockholders of the company and be prepared to explain in factual detail why that cannot or has not been done.
When the owner and management are the same people, realistic goal-setting is often supplanted with "we'll push as hard as we can and then measure the effort," which, of course, is impossible because it becomes, "This is where we are at, so it's where we should be."
Many owners of closely held businesses refuse to have their performance measured, contending it is nobody's business how they run their business. Few who feel that way realize that a fundamental definition of "running a business" includes setting objectives and measuring the performance of those charged with attaining the objectives. To so less is to invite disaster by simply continuing to work hard until something goes wrong or by allowing a business to grow until it self-destructs from its own lack of direction.

Owners Direct
The problem is easily corrected. Once the differences I the roles of the owner and manager are recognized, and the fact that you can't wear both hats at the same time is accepted, the rest is easy!

Owners of closely held businesses need to set aside time at least three or four times a year to take off the "management" hat and perform the important functions of a business owner:

- Establishing and updating the short-and long-range goals and objectives of the organization.
- Reviewing and recommending policies for the enterprise, and
- Objectively measuring the performance of management (i.e., themselves) in accomplishing clearly defined milestones and objectives.

Where the Rubber Meets the Road
All knowledgeable parties with an ownership interest, whether active in the business or not should be restricted to owner concerns and not to the everyday management issues of running the business. To avoid mixing the two, these periodic sessions should be isolated from the daily business concerns by taking place away from the office. The can take place in the office after hours, or when no interruptions are likely, because that helps facilitate objectivity and neutralize rank and title difference among owners.
When there is only one owner, the process is more difficult, if not impossible. An alternative here is to develop a planning committee and recruit knowledgeable, trusted people from within the company. The committee can help establish what is right for the company in attainable goals and develop ways to measure the performance.

A planning group can include top management only but you will have better results in most organizations if middle management and even field management and labor are represented. Top managers are beginning to include labor and first line supervisors in business planning. With exciting results. The people who do the work often know a lot more about the strengths and weaknesses of manpower resources, the potential of field organizations, the quality of technology and what's right for the company than they are given credit for. Whether you choose a few trusted senior managers or include others from within the organization, the group should develop – and long-range goals for the enterprise completely independent from their day-to-day roles within the organization. Establishing even a fundamental business planning process has had a profound effect on owners and employees of closely held businesses. It gets people excited about what is right for the company and how to achieve it.

A Board of Directors Can be an Important even Critical Business Tool
Perhaps the best way to correct the unique problems of the closely held business is to establish an active, independent board of directors. The board of directors takes the owners' role as the representatives of the stockholders. Some closely held businesses have active boards, but many are not effective because they are not independent of management. Boards made up only of insiders-managers of the company; family members; or people closely associated with the business, like the company accountant, lawyer, or banker-are usually too close to the everyday

operations of the company and not objective enough to accomplish the tasks of setting attainable goals and measuring and disciplining management's performance in the pursuit of them.
THz most effective board for a closely held or family business would have several truly independent outsiders is preferred for a truly independent board, but two or more can be extremely helpful to owner who is not ready for that much "outside help."

How to Choose Board Members
Selecting outside board members is not difficult. Any person who is, or has been, successful in business is an appropriate candidate and need not know anything about your type of business. In fact, that may be preferable, as the role off the board is not to interfere in the running of the business. They expect management to do that. It is usually not hard to find successful people in your business community who would be flattered to be considered to serve on your board in this capacity.

You can seek nominations from your managers, associates, and friends. You should interview candidate without obligation to find people you trust, and with whom you would be comfortable working. They should be owners or senior managers of successful businesses who have had profit and loss responsibilities. Preferably they have been responsible for making payroll at some point in their careers.
The size of the candidate's business is not critical; but if it is too much larger than yours, they may not consider their appointment as important as you do. The owner of a growing printing business or successful service station may be an ideal candidate. Bankers with whom you are not doing business make good board members. If you are weak in marketing, an advertising or public relations executive would be a good addition to our board.

What to Pay Them; When to Meet
Outside board members are paid for their efforts and the compensation will depend upon the size of your company. For small companies there needs to be some compensation to establish the professional nature of the relationship. For firms up to about $10 million in sales a nominal amount of a several hundred dollars per meeting may be acceptable. For companies between $10 and $50 million, $1,000-$1,500 per meeting might be appropriate. Some larger companies pay an annual board fee of $10,000 and more plus an additional amount per meeting. A board should meet no less than two time per year or it becomes too far removed from the business to be effective. It should meet no more than six times per year or the members almost become insiders and lose objectivity. Three to four times per year is effective, unless there are numerous changes going on within the organization or its environment. Five to seven members for companies of $10 million or more is a common board. Some prefer to start with fewer until they see how it works. Three members works as long as two are outside independent board members which means not employees or service providers to the firm. While an odd number of members is standard, there is more discussion than voting on the boards of closely held companies, so an odd number is not imperative.

An active, independent board of directors may be the single most important choice the owners of a closely held or family business can make in ensuring their future prosperity, managing their business risks, and gaining control of their two-hat responsibilities. It also brings in the independence and objectivity so vital to the leadership of the closely held business.

Closely held or family businesses have some unique problems that do not seem to affect businesses in which the owner and top management are separate or where top management does not own a controlling interest in the company.

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Industry Consolidation

Prepare for a Huge Die-Off (Back to Table of Contents)

In a recent turn-around effort in the Midwest, I tried to convince an underperforming general contractor that his market had changed dramatically. Several of his steady customers had been bought by national firms that were giving their "local" work to regional and national contractors, and several of his competitors had grown substantially or had merged with larger firms. What he needed to do was get bigger or smaller.

But with his limited resources, getting bigger was not going to happen. And as he told me. "I didn't put my entire life into growing this company to give up now." His refusal to react appropriately cost him his business. Others may face a similar fate. Tens of thousands of today's midsize construction companies will cease to exist within the next 20 to 25 years, if not sooner.

In my work, I counsel construction firms about making performance improvements and profitability enhancement. I see that it will be more difficult to advise them as consolidation unfolds, because most will not react until it is a certainty. As a past chairman of the Continuing Education Committee of the Associated General Contractors of America. I know the difficulties in educating contractors about the implications of consolidation. But the unwelcome news in irrefutable, and the cause, simple. Construction is rapidly becoming standardized.

When I was an apprentice, we learned to build wooden forms from scratch, and to custom design for complex projects. The competition was limited to contractors with people who knew how to do that. But since then, the process has been revolutionized by patented form systems that require much less skill to install.

Economies of scale help lower the costs using standardized processes. Unfortunately, most small and midsize construction companies lack the resources to reduce costs and schedules as much as customers now demand.

Commodities

I remember my father's comment when a chain store opened in our town: "They'll never make it. A person needs to know his grocer." I hope that contractors' customers are more loyal. But when the products of other service businesses such as groceries, gas stations, and farms became commodities, consolidation immediately followed.

In every case, consolidation of entire industries took less than 25 years. However, to date in the U.S., the amount of construction provided by large publicly traded corporations has been inconsequential compared to that put in place by more than 1 million separate and independent small-to-large contractors.

When I joined the industry at age 16, construction was a "can-do" industry of brawn and might, with a tradition of building projects with basic equipment and limited technical support. My brother and I built a lot of buildings with a backhoe and a box full of tools. I've heard it said that

all you need to be a contractor is pickup truck and a cast-iron stomach, a forgiving wife and a bad temper. The truth is that, back then, success demanded a rare combination of talents, including the abilities to muster resources to build a project; putting an accurate price on the work in advance; managing labor, subcontractors, vendors and designers through a long and arduous process; and tolerating a high degree of risk.

Contractors of this breed had great success as long as our methods of bidding--and our costs for individual items of work--were closely guarded secrets, and as long as our production of complex projects remained a mystery. But all of that has changed. New technologies and wide access to information have demystified the processes of estimating, organizing and producing the work. And even facilities owners and designers have become quite knowledgeable about such processes.

When I went into business in 1961, construction was a custom effort. Double-digit-percent profit margins compensated for the inefficiencies. Now I constantly hear, "I'm working harder than ever and making less money." Despite our current, exceptionally good economy, construction margins have slipped into the mid and low single digits and even lower for larger contractors. Structurally altered margins will not return to those of the 1970's and '80's. Consequently, as construction becomes increasingly standardized, efficiency and productivity will become the major differentiators among competitors.

Too Busy for Training

Some will pass up the chance to become more efficient. Contractors often tell me, "I can't afford to upgrade my people. Besides they are always too busy for training." Low margins restrict resources, making it harder for small and midsized businesses to invest in increased efficiencies. Larger companies suffer the same low margins, but their size enables them to invest in production improvements, to satisfy the shifting demands of owners. When I speak to trade associations, I regularly say, "Continuous improvement is a necessary cost of doing business." As a result of consolidation, it is now critical to survival.

Ironically, some small contractors will fare better than some midsized firms, because there always will be a place for niche players. Specialty contractors will enjoy relatively higher margins until consolidation moves into full throttle. Small and midsized firms may be able to accomplish large-scale efficiencies through cooperation, but their window of opportunity will be brief.

How may will disappear in coming years? From my study of other industries, I predict more than 100,000 mostly midsize contractors—20% of today's number of substantial mid-size construction enterprises. The profitable well-managed ones will survive only by becoming part of larger organizations, or by serving niche markets.

Cyclical Market—Same Risks (Back to Table of Contents)

Introduction

There are a number of industry changes occurring simultaneously and determining which of these changes or combination of changes to react to first is a complicated question. In addition, how to react to each enjoys little agreement among practitioners. A recent example demonstrates the complexity.

A large specialty subcontractor in the South was in serious financial trouble after several years of decline in sales as his market grew, but larger competitors moved in and began to capture most of the larger projects. Over several years a number of his competitors had grown substantially or had merged with larger firms and at the same time quite a few of his steady customers had been bought by national firms and began to give their construction and maintenance work to larger, regional or national contractors. The advice he received to reverse his decline was to merge with similar companies to get bigger or reduce his size and continue to capture only the smaller jobs in his marketplace. Unfortunately he could not be convinced and eventually went out of business.

His refusal to react cost him his business. Many others are facing similar circumstances. The construction industry is undergoing such dramatic changes that some predict that many of today's midsize companies will merge, be acquired or otherwise cease to exist over the next 10 to 15 years.

Contractors are receptive to information about performance improvements and profitability enhancement, but almost universally resistant to research defining consolidation within the industry. It looks like most will not react until it is a certainty. The unwelcome news in irrefutable--construction is rapidly becoming standardized, technology is simplifying the process and growth in project size are just a few of the significant changes happening all at once.

To explain the impact on an industry of technology change a simple example is appropriate. Not that long ago contractors built wooden forms from scratch to custom designs for complex concrete projects. The competition was limited to contractors with people who knew how to do this work. But since then the process has been revolutionized by patented form systems that require much less skill to install—almost to the degree that anyone can do it. Standardization modifies an industry and encourages new entrants.

Economies of scale help lower costs using standardized processes. Unfortunately, most small and midsize construction companies lack the resources to reduce costs and schedules as fast as customers now demand. Larger enterprises are able to change and start-ups have no old habits to overcome.

Historically construction was a "can-do" industry of brawn and might, with a tradition of building projects with basic equipment and limited technical support. A lot of projects were built with a backhoe and a box full of tools. It has been said that all you need to be a contractor is pickup truck, a cast-iron stomach, a forgiving wife and a bad temper. The truth is that historically success demanded a rare combination of talents, including the abilities to muster resources to build a project; putting an accurate price on the work in advance; managing labor,

subcontractors, vendors and designers through a long and arduous process; and tolerating a high degree of risk.

Contractors of this breed had great success as long as their methods of bidding--and our costs for individual items of work--were closely guarded secrets, and as long as our production of complex projects remained a mystery. But all of that has changed. New technologies and wide access to information have demystified the processes of estimating, organizing and producing the work. And even facilities owners and designers have become quite knowledgeable about such processes and the underlying costs.

Construction was a custom effort. Double-digit profit margins compensated for the inefficiencies. Now contractors are working harder and making less money. Despite an exceptionally good economy, construction margins have slipped into the mid and low single digits and even lower for larger contractors. Structurally altered margins will not return. Consequently, as construction becomes increasingly standardized, efficiency and productivity will become the major differentiators among competitors.

Some pass up the chance to become more efficient complaining that they can't afford to upgrade their people and are too busy for training. Low margins restrict resources, making it harder for small and midsized businesses to invest in increased efficiencies. Larger companies suffer the same low margins, but their size enables them to invest in production improvements, to satisfy the shifting demands of owners. Continuous improvement has become a necessary cost of doing business and is becoming critical to survival.

Ironically some small contractors will fare better than some midsized firms, because there will always be a place for niche players. Specialty contractors will enjoy relatively higher margins until consolidation moves into full throttle. Small and midsized firms may be able to accomplish large-scale efficiencies through cooperation, but their window of opportunity will be brief. Profitable well-managed enterprises will survive by becoming part of larger organizations, or by serving niche markets.

Subcontractor Bid Listing

Exploring Subcontractor Bid Listing (Back to Table of Contents)

Introduction

The issue of listing subcontractors has been around for a long time and while there are pros and cons, the big questions is: "Does it do any good? Does it serve a purpose?" Its origin is that bid listing was proposed to stop bid shopping, something that in itself is controversial. While the term "bid-shopping" has also been around for a long time, we don't seem to be able to identify it clearly. There is no industry-wide accepted definition. If we can't define it, we can't solve it. Therefore, it might be fair to say that bid listing is proposed to prevent an undefined activity.

There seems to be general (if not universal) agreement on the definition of "bid listing" as: the prime contractor being required to list in their bid proposal the major subcontractors that will be engaged to perform the work. We should all understand that this has a substantial impact on prime contractors' subcontractor selection and management processes. This should concern all construction professionals because it is a step in the direction of having those who define the work we will be doing (owners and designers) telling us "HOW" to do it. Owners and designers should be concerned about it because if they tell us "what to do and how to do it", it has the potential to confuse the issues of who is liable for the results. There are admittedly pros and cons to bid listing, however, attempting to identify them may be putting the cart before the horse. We should probably agree on what we are trying to prevent before we launch the preventer. Otherwise we may end up with a solution looking for a problem to correct.

In exploring this topic it may be helpful to review prior inquiries into the subject. Bid listing and bid shopping have been addressed by the federal government numerous times over the years; most recently in a January 2015 Government Accounting Office (GAO) report which states: *GAO was not able to determine if bid shopping occurs or does not occur…, but found that the selection process could lead to subcontractors' perception of bid shopping.*

…officials of [the] agencies reviewed stated they were not aware of bid shopping occurring on their contracts… [and] contractors said [it] occurs, but could not furnish evidence of specific instances…Past analyses found it adversely affects the timeliness and cost of contract performance and increases the government's administrative expenses.

The report continues: *Our discussion with prime and subcontractors indicates that some subcontractors may have a perception of bid shopping…Most of the subcontractors stated that they had not experienced [bid shopping] for themselves. Almost all of the prime contractors and subcontractors…told us that [bid shopping] would alienate subcontractors, and a few added that prime contractors would eventually not be able to find subcontractors willing to work with them.*

In a section of the report headed: *Subcontractor Buyout Process May Create Impression of Bid Shopping,* it says: *…a subcontractor may erroneously believe that its bid is being bid shopped, when in fact negotiation is part of the normal buyout process.* The report also states that the General Services Administration (*GSA) testified in 2000 that bid listing would create more harm than benefit and strongly opposed bid-listing…GSA dropped bid listing in early 1980s and one of*

the 12 states that has bid listing in now considering dropping it. The report ends with: *...we are making no recommendations.*

It is prudent to be cautious of remedies suggested to correct industry problems that invite third parties into our business decisions and that impact the working relationships between prime and subcontractors which may influence other business practices. Stopgap regulations have the potential to do as much harm as good. It may be well to remember how frustrated all of us get when a government regulation complicates our businesses without doing any apparent good. If there is a solution to bid shopping, is bid listing it?

We are not going to settle the question here, but a first step may be to consider the impact of our actions on the construction industry as a whole.

Bid Listing of Subcontractor Scrutinized (Transcript of a presentation) (Back to Table of Contents)

There are 1.3 million of us (contractors) and the least of our problems is that we don't get along. The real problem is we don't even try to get along. We are one industry, subcontractors, GCs, vendors, etc. and if projects don't run smoothly, we all suffer.

We are not going to solve bid listing here, but a first step is to consider the impact of any of our actions on the whole. If we all look out for ourselves without concern for the efficiency of the entire construction process it will backfire in the long run.

The bid shopping issues has been around for as long as any of us can remember, but is an issue that has never been defined, let alone actually addressed and if we can't define it we can't solve it.

Let's relax a minute and do a little role playing. You are the owner of this project. You are a large private organization that offers entertainment in a park-like setting. You are expanding and have gone out for bid for a small, but complicated building project on your site which has a critical schedule. The bids have come in--not a public opening, just you.

This was in the worst of the recent downturn and you received 25 bids. There are six bids around $3 million; a cluster around $6 million; and about six around $9 million. Which do you choose? Better yet, what do you think is the correct price for this project? Is it a 3 mil, 6 mil or 9 mil project?

The director, building committee and designer were baffled. Why? Why didn't they just take the low bid and move on? You need to decide—in this exercise you are the owner. And it is not unlikely that where you live you could be on the building committee.

This is a local non-profit who askes successful business-people like yourselves to serve on their boards and some of you are already serving in those capacities so you understand that you need to make a recommendation.

For those of you who will award it to the low bidder, your work is done—you can relax. For any of us that have concerns about these bid spreads and are not ready to make a decision just yet, what are you going to do? Would you wonder if some made a mistake? What could cause this illogical bid spread?

Do you want additional information? Do you think you need additional information to make an informed decision in you professional role as director or building committee member. Some might say you have a fiduciary responsibility to gather more information.

What would you ask? Do you need more detail? Would you want to know if the several low bidders have included the entire scope of the project? Would you ask about their schedule or how they plan to deliver on time?

The real question for us today is if you make any inquires at all, are you bid shopping? Unless every one of us in this room would immediately award this project to the low bidder than we reinforce what the reality that there is no industry-wide, agreed upon definition of bid shopping.

We are here to discuss bid listing of subcontractors for the purpose of preventing an undefined activity.

Most of us do agree on the definition of bid listing and most also acknowledge that bid listing affects selection and management processes industry wide. There are admittedly pros and cons to bid listing, however identifying them is putting the cart before the horse.

Let's agree on what we are trying to prevent; before we launch the preventer. That would be too much like what the government sometimes does: put regulations in place looking for a problem to correct.

These topics: bid shopping and bid listing, have been studied to death. Noe one has more money to invest in studies than the federal government so look at their latest investment in these issues. My guess is just counting the pages is they spent $10 million or more so we should at least give it a few minutes.

GAO-Government Accounting Office, January 2015 Report addressing subcontractor selection.

First page-*Why GAO did this study: Subcontractors have alleged that bid shopping leads to poor quality construction.* Now it is my understanding that we don't want to shopped and we don't want to be asked to lower our price, but when we through in that it leads to poor quality of construction it waters down the argument.

It may even be true, but in my research for this presentation I could not fine one subcontractor that said bid shopping leads to poor quality and when I suggested it, the answer was no—that's not an issue.

The opening line of the report under the heading: *What GAO Found* says: *GAO was not able to determine if bid shopping occurs or does not occur…, but found that the selection process could lead to subcontractors' perception of bid shopping.*

…officials of [the] agencies reviewed stated they were not aware of bid shopping occurring on their contracts… [and] contractors said [it] occurs, but could not furnish evidence of specific instances.

Past analyses found it adversely affects the timeliness and cost of contract performance and increases the government's administrative expenses.

On page 7 in a section heading: *No Conclusive Evidence on the Use of Bid Shopping on Federal Construction Projects:* is says: *Our discussion with prime and subcontractors indicates that some subcontractors may have a perception of bid shopping…*

In a section addressing evidence it says: *Most of the subcontractors stated that they had not experienced [bid shopping] for themselves.*
Almost all of the prime contractors and subcontractors…told us that [bid shopping] would alienate subcontractors, and a few added that prime contractors would eventually not be able to find subcontractors willing to work with them.

On page 8 there is a section heading: *Subcontractor Buyout Process May Create Impression of Bid Shopping: Several…subcontractors…stated that a subcontractor may erroneously believe that its bid is being bid shopped, when in fact negotiation is part of the normal buyout process.*

On page 18 the report continues: *GSA testified in 2000 that bid listing would create more harm than benefit and strongly opposed bid-listing…*

The report covers sate bid listing indicting: *…one state reviews bids from subcontractors and then tells the prime contractor which subcontractor to include in its proposal to the state rather than the prime contractor selecting its own subcontractors.* To the extent any of us here agree with that we are, in effect, saying it is aright with us if the GC tells us which suppliers and subcontractors we can us.

As far as state regulations go states that: *GSA dropped bid listing in early 1980s and one of the 12 states in now considering dropping it.*

The report ends with: *…we are making no recommendations.*

The report addresses last minute bids from subs and suppliers, mentions chaotic proposal preparation efforts, scope, schedule, financial and practical capability so no need to go into what we all already know.

We need to be careful of the remedies we suggest. They need to improve our entire industry, our working relationships and business practices. Piecemeal, stopgap regulations may backfire on us and most have as much chance of doing harm as doing good.

The issue of listing subcontractors has been around for a long time. There are pros and cons on both sides. The question is: “Does it do any good. Does it serve any purpose? GCs don’t like it because there is never enough time to prequalify subs they don’t know who submit bids they did not expect. And impossible to check scope and exclusions when most of the subcontractor bids come in two hours before the proposal is due.

It is fair to say that it’s not our problem, but before we do; let’s consider how frustrated we get when some government regulation complicates our business without doing any apparent good. If there is a solution to bid shopping is this it?

When you buy a car have you paid the first price quoted? Have you ever bought a car before checking the price with more than one dealer or source? Do you buy a car without asking what accessories are included?

Have you ever asked a material supplier if delivery was included or if the price was picked up from their warehouse? Do you ask your window subcontractor if they have everything in their bid? Have you ever cut a deal to use a contractor's crane, hoists, personnel elevators, access, clean up, trash removal? List them and then find out they have safety issues.

One GC I know has already had five subcontractor defaults this year.

Rules don't make dishonest people honest.

On design build need to show all bids to owner. Does the owner of a project have the right to choose? Ever not bought a car from a dealer because you had bad service from them? Do you have the right to choose who you buy from? Ever select a supplier because they give you good service or because you trust them. Have you ever offered the work to one sub or supplier? Have you the right to do that? Do we agree that the lowest price should get the job period?

Has anyone in the room ever given a different price to different GCs? Have you ever asked who of the GC's people will be running the project?

How to you screen phone bids? You have no idea if scope is complete.

Bid listing as it is currently used is totally inequitable and one sided. The GC is required to name the sub and then use them, but the sub can back out of the bid without penalty.

Other issues to consider: Long lead items and special materials; It takes weeks to buy out a job; Bid listing may impacts the GCs ability to manage the project.

Danger of Distractions

Deadly Distractions or too Much of a Good Thing (Back to Table of Contents)

Introduction

Everyone reacts differently to success and self-made prosperity can have unexpected side effects. Entrepreneurs can get totally immersed in building a business, but some have a difficult time when they find themselves with less to do and extra disposable income after success. Some have become distracted from their businesses with disastrous results. Numerous construction businesses have failed after the founder/contractor was distracted from or lost interest in the business. Common distractions include golf, sailing, gambling, politics, affairs, etc. One instance included a contractor who became so caught up in a business organization that he spent as much as 50% of his time at retreats and other activities with the organization (almost a cult-like attraction). Predicting who this might happen to is extremely difficult if not impossible and it sometimes occurs to those least expected.

The Contractors

The typical casualty were self-made, hard-driving, type A personalities who spent most of their early life building their businesses at the sacrifice of family and/or social activities. Most had little in the way of financial advantages early in life. The distraction from the business as the center of their life started as they accumulated, for the first time in their lives, considerable disposable income with limited time to enjoy it. The ages were mid-40's or older.

Hypothesis

Hard driving at work lead to hard playing at some activity like golf, gambling, politics, etc. that became addictive, much like a mid-life-crisis, and began to supplant the business as the primary focus of the their life. Most did not notice the obsession and/or believed it was not affecting their business. Self-made success seems to convince people that they can do both exceptionally well.

The Reality

The small and mid-size construction enterprise is a complex, high-risk business demanding a unique set of skills found in the successful entrepreneur/contractors. This is confirmed by the huge failure rate in the construction industry where those lacking the skills, drive and willingness to work around the clock are weeded out while other sacrifice everything for the business. The high failure rate following succession emphasizes the critical importance of the founder/contractor to the success of a construction enterprise. In the cases of failure following succession it is speculated that the successor lacked one or more of the critical ingredients of skill, drive or commitment that the founder had.

The Result

When time and attention are directed towards the new activity it affects concentration while working on business issues. Attention to detail appears to be affected and inadvertent or deliberate delegation too often generates inappropriate or unfavorable results. If the detraction from the business comes about slowly the impact is less noticeable and sometimes difficult to detect. However, where the distraction is rapid, massive, and quite noticeable to others, it is not

perceived by the contractor who shuns the advice of subordinates concerning it. In the book, Construction Contractors' Survival Guide this common element of construction business failure comes under the heading of "Lack of Managerial Maturity".

Prevention

Prevention of this phenomenon is difficult because predicting who might be susceptible is complex and challenging. Convincing strong-willed entrepreneurs that they are at risk from this is almost impossible and intervention once the distraction occurs will be aggressively resisted. Small and mid-size contractors have little accountability to anyone so the institution of a Board of Director or Advisers may help. An independent Board may be in a position to observe changes sooner, and if trusted and relied upon, may be in a position to affect the outcome.

Financial Distress - Turnaround Management

Warning -- Financial Distress in Good Times (Back to Table of Contents)

The Good News

The good news is there's plenty of work. The bad news is there's plenty of work creating growth problems for some contractors.

Introduction

The construction industry has always been cyclical and always will be. Construction is a lag industry that it follows the US economy up and down, but lags behind the economic cycle by 12 to 18 months. Most people understand that the industry suffers in down cycles for obvious reason that have been address else were in this manual. Less understood is why many construction enterprise suffer is up cycles. Part of the explanation is that when the economy turs up the construction industry continues to go down for 12 to 18 months causing some to suggest that the industry is suffering during an up market.

It may be semantics, but the economy begins to recover or goes up, the construction market is lagging and remains down for 12 to 18 months. Therefore the industry may be thought to be suffering in an up economy when in fact the construction market is still down. However when the construction market finally turns up (begins to recover) after the lag period of 12 to 18 months the margins or profits do not recover for at least another 12 to 24 months and following a long downturn it may be much longer. Margins do not recover until well after construction put in place measured in dollars returns to at least 50% of the amount it was prior to the downturn.

There are other issues to consider in recovery which are mainly growth related. During recovery by definition construction businesses are growing back to the size they were and beyond. There are serious risks associated with growth and rate of growth. This paper discusses industry difficulties and risks during the early and mid-recovery periods following a downturn.

The 2017 Recovery

The construction economy is finally keeping pace with the general economy and in some areas exceeding it. Industry margins have improved in most areas of the country, but not nearly as much as they should be. Current increases in construction industry margins should actually be in proportion to the favorable market we are enjoying and are not because some contractors continue to price work as if there were no other jobs coming along. Others are trying to grow at a rate that they need to capture so much work it forces them to remain aggressive.

All indicators suggest it should be a seller's market, however, in this regard, the construction industry is its own worst enemy. Because the industry is so fragmented, with so many separate construction enterprises, a seller's market has not developed. Contractors, generally considered optimists, appear pessimistic and short sighted when it comes to forecasting their market. When contractor opinions were sought by various groups over the past several years to develop consensus forecasts of the construction market, contractors predicted a slowing construction market prior to each of the past several very good years. The consensus opinions appear to be

more guess work than research as the market indicators were quite positive. Inaccurate negative forecasts create a problem because suggestion that there may be less work in the future has the effect of causing contractors to bid more aggressively, defeating the probability of market driven margin increases.

THE BAD NEWS

An unfortunate a number of construction companies are experiencing adverse effects during a good market. There are a considerable number of small and mid-size organizations taking on more work than they can efficiently handle and finance, suffering financial distress or worse. Difficulties in several of the largest, oldest and most sophisticated construction companies in the world have made the press with one article stating "If they can get into trouble anyone can." The number of contractors in claim situations with their sureties has increased out of all proportion to the good construction market we are enjoying. In almost every case the contractors had been growing rapidly over recent years. Those not enjoying the rebound in margins are typically trying to capture more than their share of the market. The casualties of the robust construction market are contractors growing beyond their organization's capability". It is extremely difficult for a closely held construction enterprise to project how much they can effectively perform and finance, but for certain, every organization has a limit. Unfortunately industry record-keeping can shield problems for a long time. Even profitable work puts a strain on cash flow and few closely held construction companies can gear up quickly enough or solidly enough to hold profit margins during growth periods, particularly in today's labor market. If our industry sustains these disasters in good times what will happen when the next slowdown occurs?

Growth and Risk

The construction industry, historically volume-driven, thrives on growth. The words "growth" and "growing" appear often in my research into the management of risk in the construction industry because the business risks in construction are magnified during growth phases. In the best of times there is risk and a rapidly expanding construction company sustains increased risk even if closely and intensely managed. Contractors should not underestimate the magnitude of increased risk from growth in the closely held construction enterprise.

Overhead

Overhead costs are difficult enough for contractors to control when their companies are not growing, but in a growing organization managing overhead is a very real and hazardous problem. Because organizations cannot add a half-person or a half-piece of equipment they are forced to incur overhead costs during growth in larger amounts than they would like. This creates losses until the company grows into the overhead. The problem is magnified when lagging profits create an absolute necessity to increase volume to cover the increased overhead, putting the company in double jeopardy.

Growth Dynamics

As an organization attempts to increase market share, price suffers because it is always necessary to make at least temporary price concessions in order to take the market share away from competitors. While construction organizations may not make a conscious decision to lower their prices to capture added volume, it is what occurs. And when selling price suffers it is usually for all the new work not just part of it. Therefore, the company ends up needing even more volume

than originally planned because margins are suffering. This leads to a downhill profit spiral because when an organization gets stretched there is little time for anyone to see the problem coming. Additional growth requires more overhead, creating the immediate need for even more volume. This chain of events has caused numerous construction business failures.

Rapid Growth

Rapid growth puts a strain on a company's key people and systems, and sustained growth doesn't allow for a reasonable training period. Of even greater concern, continued growth doesn't give an organization a chance to test new people or systems before the next new people and systems are added. If performance deteriorates as a result of growth it will, by definition, only be discovered after the additional volume and people are taken on. Corrective measures are more difficult with people and systems stretched out and when overworked managers are coping with the largest volume the enterprise has ever handled. Some companies can't recover from this scenario. Too many organizations pursue growth without measuring performance until it is too late.

Rate of Growth

In a reasonable market companies will be growing at some rate. Years of research indicate that growth for a construction enterprise of more than 15% annually should be considered substantial and adversely impacts business risk. Sustained growth over more than a couple of years compounds quickly. At 15 percent a company doubles its size in five years and triples in seven; at 25 percent it doubles in three years and triple in five. And at 50 percent a company doubles in 20 months and will grow by 500% in just four years.

Growth requires more resources in the way of people, systems, and money. Success is measured in an organization’s ability to find the necessary qualified people, put appropriate systems in place in advance of expansion, and finance the increase. Rate of growth obviously impacts the likelihood and timeliness that an organization will be able to bring qualified and adequate resources to bear on the new work. The alternative is to expect existing resources to do more, however, few construction organizations are known for having underutilized resources or “bench strength”.

As volume increases, an expanded company is untested as an organizational unit. The only reasonable test is for the new organization to operate profitably and smoothly for a minimum of a year. Sustained growth creates a situation in which, if the test proves unsatisfactory, new growth has already been added during the test year. The organization is then facing a second bad year before they can roll back to their proven size and proven team. For many it is too late to retreat and recover.

Limits of Expansion

Determining the limits of expansion is complicated, in fact, there are some highly respected management specialists who don't believe there is a limit. However, there are enough companies that no longer exist, that were household words in the industry during their meteoric growth stage, to suggest there are restrictive factors. While critics may point to other reasons for failures during growth, the reality is, that rapid growth itself is dangerous--not always fatal, but always risky.

Financial Constraints
There are fundamental financial constraints to healthy and sustainable growth. The management of growth requires careful balancing of sales objectives with the firm's operating efficiency and financial resources. The trick is to determine what sales growth rate is consistent with the realities of the company and the marketplace. Companies have limits in abilities, available resources, and capital. Each organization is capable of doing just so much. During periods of rapid growth, closely held construction companies are so changed that they really become new, untested organizations--right at a time when they have a lot more work to produce. The prior organization that was so successful is gone forever. If an organization is to grow, its management must grow and growth must be qualitative, not just quantitative. Qualitative organizational growth takes time and needs to occur prior to sales growth. It takes more time to grow management than it takes to capture more work and most companies decide to grow management only after additional work is on hand--not before. Growth just for the sake of growth is risky in any business, but growing in the construction business is far more complicated than it is given credit for.

Controlling the Risk
Incremental growth instead of sustained growth may seem unnecessary--even unnatural, but it is the best way to control the inherent risk in growth beyond 15%. With a series of: growth, then test, growth and test again; an organization is able to reevaluate and recover after a bad test in lieu of constant growth until a bad year is encountered--from which the company may or may not be able to recover. It is prudent risk control. In sustained growth a company grows beyond its people and systems so often that they never really have the same organization long enough to truly test it, and are at constant risk with an ever changing team. In some cases it's just a matter

Summary
Growth eats cash primarily because construction enterprises put the work in place and wait for their money. If a company is continually putting more work in place in each subsequent accounting period, they will eventually run out of cash and credit. With so much work available, it is critical (and difficult) for contractors to accurately project how much they can effectively perform and finance. The appropriate measure is: Growth in excess of 15% annually increases

Construction professionals should understand that it is extremely complex to project how much their organization can effectively perform and finance. Every organization has a limit. If the company is growing rapidly it is at risk. Consider carefully how additional work will impact the organization and approach cautiously. If you are concerned now, measure the extent of your present risk. Calculate your RScore (Measure of Financial Risk) for the past three to five years and determine if it is trending up or down. If it's up, scrupulously examine your exposure. (The RScore formula can be found in the February, 1996, issue of Constructor.)

The construction industry should not be looking at another round of business failures during one of the best construction markets in years.

Sidebar
Managing a closely held construction company is like driving a truck up a hill. The steeper the grade the more strain on the truck—on the engine, suspension and drive-train. Or in the case of a company: the employees, systems and finances. A truck starting up a hill from a level roadway

finds it easier than starting on the grade and increasing the slope. And separate short climbs are much easier than sustaining continuous up-hill progress. We have all seen trucks attempting a very steep and long hill slow to a crawl. Laboring to gain forward progress. Some actually stop.

When a construction organization embarks on a steep climb at a growth rate in excess of 15%, there will always be a strain on its resources. During periods of continuous growth the strain is sustained and magnified, sometimes to the breaking point. A truck advances much more efficiently up a series of modest grades than up a very steep hill or sustained climb. Analogous to a construction organization: Managing strain on company resources increases efficiency, profitability, and risk control. Subjecting resources to severe or continuous stress encourages inefficiency, deterioration, and potential decline.

A Fiscal Check-up For Construction Companies (Back to Table of Contents)

The construction market is on a rebound after years of difficult market conditions. Tough years have placed a financial strain on construction companies large and small. For some, slimmer returns will continue into the recovery. It depends on an organization's "come-back" ability. When a company has suffered poor-performance for a time during a downturn, it often experiences decreased equity, not just profitability and increases in borrowing to the extent that credit worthiness is threatened. Rushing back into a good market without a fiscal check-up can be a mistake. An organization needs to be properly postured to grow again after a stressful period because growth eats cash that can strain a company to the breaking point

The Manifestations of Distress

Cash Flow Problems: Most construction companies that get into serious cash flow problems do not see it coming. Financial stress during either downturn or growth periods needs to be addressed quickly. A simple check-up test may be in order. A company enduring any three of the items listed below is probably stressed. It may not be financial distress yet, but in the closely-held construction enterprise, any drop in performance erodes financial strength and increases the financial risk the company is at.

Disproportionate increases in overhead: Companies that are increasing in overhead often claim, "It's because we're growing." However, a further check indicates that last year they did $20 million with a certain overhead. This year overhead is up 30 percent, but volume is only up 20 percent. It can be worse when downsizing if sales are down 20% percent with little or no change in overhead.

Increase in turnover in personnel: Unexplained departure of people "in the know".

Late accounting information: When the accounting information does not come out on time it is often because the numbers are not adding up, and the preparers are looking for more data, or massaging the data.

Late financial information: Most of the information we get in our industry is a little later than we wish it was, but if it is later than usual, stress may be indicated.

Unexpected borrowing: All borrowing, whether for working capital equipment or expansion, should be predictable well in advance. Unexpected borrowing is an absolute indicator of financial distress.

Increase in internal disputes: Under-performance breeds discontentment.

Decrease in the quality of the work: During financial stress the work suffers, the stress shows.

Too many excuses. If more things are going wrong and fewer people can provide the reasons, performance is slipping.

Departures in the accounting staff: Of the hundreds of companies in jeopardy studied, more than 40 percent had the CFO or the second down in the accounting department leave within three years prior to failure. It is fair say that if the CFO leaves, there is a good chance that there is difficulty within the company.

Inadequate time to do anything well: Everything is done just to catch up. This does not mean that working six days or long hours are unusual. However, not having time to get bases covered because more time than usual is spent with our attorneys, outside accountant's or chasing money may mean there are problems.

Measuring the elements of construction company financial performance
There are means of quantitatively measuring the elements of our business: **Debt-to-equity should be a constant.** If we look back three years at our financial records and find that our debt-to-equity ratio is deteriorating, then performance may not be what it should be.

For example, let's look at a company doing $20 million a year with profits after tax of $500,000. If they do not take the profit out of the business equity goes up. To produce $20 million, they carry $2 million in secured equipment debt and $1 million in unsecured working capital. This hypothetical company has equity of four million and debt of three million. Then they grow to $22 or $23 million the next year, adding the million to equity. The company had $3 million in debt before, and equity of $4 million, which is a 3:4 ratio. But now they leave in another $500,000, increasing equity to $4.5 million. To hold the 3:4 ratio, they can safely increase debt by only $375,000. If debt increases any more than that in the following year, irrespective of growth, financial strength has weakened and financial risk increased.

Relationship of total assets to total liability. When the liabilities-to-asset ratios start to shift in under-performing companies, they shift to the negative. That is, the ratio of liabilities to assets is greater than when the company was performing well.

For example, your books and records show that you made $100,000 this year. Theoretically, you could write yourself a check for $100,000, however, the money may not be in cash, or available. But you take $50,000 out of the business. Within months, typically one quarter, liabilities will build up some. If the $50,000 was not available profit, then it will be immediately replaced with debt. Some say, "Well, I didn't borrow any money." Payables just went up $50,000. The balance between total liabilities and total assets is shifted which means the company is a little weaker financially.

Appropriate Reactions
If you are not satisfied with your organization's performance, action is necessary. Too many managers are content with marginal performance, particularly after difficult periods. You need to look at the orders of magnitude and start trying to differentiate between slipping a little and being in jeopardy of serious financial distress. If you are slipping a little, you can take some action. But if you are in jeopardy, you need to take drastic action. In the most severe case, you may even need to go into survival mode.

Construction business Basics
An understanding of the dynamics of the construction business is a prerequisite to taking corrective action to unsatisfactory trends. There are three functional areas to consider:
1. Marketing and sales - getting the work. In survival, we put this on the back burner.
2. Operations or production - doing the work. In survival this is all that matters.
3. Administration and accounting - measurement of performance. In survival, do not worry about this function because there is no need to invest in the measurement of non-performance.
To reverse unsatisfactory performance timing is critical so work on operations because it is the only area that can provide cash flow and hopefully profits. Profits for the closely held construction company are directly proportional to the attention paid to field operations.

Manage Volume
Understanding your organization's optimum volume is critical to success. When the market rebounds, too many companies take more work than they can handle, get stretched thin and actually make less money rather than more. An honest appraisal of an organization's optimum capacity and capabilities is necessary to determine how much work the company can effectively manage while maximizing profits. When existing, trusted and proven field supervision is fully employed a construction organization is at capacity. When more work requires untested people be moved up or new hires begin to run work an organization exceeds its capacity and undertakes some performance risk. Managing that risk is important to consistent performance so rate of growth becomes a factor.

Volume Management
The new concept of "volume management" suggest that management is responsible to control sales within pre-set, self-imposed guidelines based upon management's appraisal of optimum volume measured in dollars or number of projects. A company may grow by taking more projects of the same size or number of projects remains constant while project size increases or a combination. With more projects a company growing by 25% or 50 % in a year or two will have a quarter or half of its production in the hands of untested field management. If the projects are simply larger field management may find themselves a little over their head. Either way, it is not business as usual. There is additional performance risk compared to when all work is controlled by known and tested employees, which we all know is not risk free to begin with.

Measuring Performance Risk
It is difficult to quantify the performance risk resulting from untested field management so the risk control method becomes one of balance and risk assumption in proportion to one's ability to withstand the downside. The risk of under-performance is the loss of a portion of bid profit or the failure to exceed bid profit if the opportunity existed. The farther field management is stretched, the greater the risk of under-performance. Therefore risk goes up as volume increases. In my experience, up to 15% growth per year, excluding inflation, has modest or little risk. Growth over that rate increases exponentially to the extent that 50% growth in one year is considerable risk and 100% or more is severe risk. A company that doubles its size in one year is literally not the same company and its risk of failure is close to if not equal to that of a start-up organization.

Managed Sales
Many companies have the attitude that they can and will produce as much work as they can procure, but the true test is can it be built at a profit and at what risk. Few contractors are willing to walk away from additional work during a growth market, but if the question were: more work or more profit they might think about it twice. Growing the profitability and value of the company should be the primary goal and where value is concerned, risk must be considered. Risk increases as volume grows so the value conscious contractor should be anxious to analyze capacity and manage sales as a method of risk control.

Conclusion
The ultimate measure of performance is not what is earned but how the earnings are valued by the investors. The broad goal of every firm should be to maximize the wealth of the firm's

shareholders through achieving the highest possible value for the firm. A firm's increase in value, not just its profits, are the true measure of company's performance. Therefore, it is necessary to measure the risk that the firm's value is put at in the pursuit of profit in order to measure its overall financial performance.

There are serious drawbacks to profit maximization as the primary goal of a firm because a change in profit can also represent a change in risk which directly affects the value of the company. For example, a conservative firm that earned $100,000 in a year may be a less desirable investment if its earnings per share increased to $125,000 but the risk inherent in the operation increases substantially (reducing the firm's value). Managing financial risk and financial performance is the key to survival for the closely held company. Remaining in business relies more on long-range value issues than shorter range profit concerns. Profit planning relies almost entirely on assumptions about the future while the longer term approach of maximizing the value of the business relies very strongly on the control of risk and the measurement and protection of existing value.

Managing a Financially Stressed Company (Back to Table of Contents)

How do you turn around an under-performing company, particularly when under-performing to the extent of financial distress? There are degrees of difficulty, however, when a company has under-preformed for a year or more with a decrease in profitability and equity and an increase in borrowing to the extent that ratios are threatening credit worthiness, then degrees of difficulty no longer matter because the company is in jeopardy of failure.

Most companies in financial distress did not see it coming, however, they only needed to look at the **Manifestations of Distress** in the above article: **A Fiscal Check-up For Construction Companies** to have known in advance. Any three of the manifestations in one company is an indicator that the company is stressed. It may not be financial, but any distress typically becomes a financial problem: (See above)

Risk Analysis Based on Assets. Our credit-granting system is heavily based on assets and to a lesser extent on performance. Consider a good performing, low-asset company where the income and revenues compare favorably to assets. Such a company lacks staying power because of limited reserves of cash or credit. It does not have large assists to borrow against or sell. Therefore, it is at higher risk than a similar firm with more assets.

Survival Mode
You need to differentiate between slipping a little and being in jeopardy of failure. If you are slipping a little, you can take some action. But if you are in jeopardy, you need to take drastic action which means going into survival mode.

Bankruptcy
Bankruptcy is a huge step. The up-side to filling for bankruptcy is an opportunity to cleanse past mistakes. It may work for huge corporations, but is a difficult vehicle for closely-held construction enterprises. A Yale Law School journal said that 80 percent of the companies that enter Chapter 11 fail. A University of Wisconsin law professor stated that fewer than 20 percent of smaller companies who enter bankruptcy even survive.

Contractors have an emotional attachment to their companies and a propensity to delay the admission of financial distress and unlike most public corporations do not have serious assets to borrow against or sell. They also have a tough time persuading lenders or investors to put up more capital. Bankruptcy drags on for years, can be an incredibly expensive process and too many small companies don't survive the effort depleting what they might have had in liquidation. My experience is that it has not been a viable option for small and mid-size construction enterprises.

Banks
It can be tough to get money out of banks, although they are work-out conscious. Getting new money after financial distress is a problem. There seems to be a big-borrower syndrome that if you owe a bank $1 million, you have a problem. If you owe a bank $100 million, the bank has a problem. And, in most cases contractors are not big enough and don't owe enough to threaten a bank. If we do, and the big-borrower syndrome sets in, then there are some reasonable work-

outs. However, all do not survive that bank work-outs which usually depend on showing favorable results in the first year and turning around an under-preforming construction company is somewhat like turning and ocean liner—it takes some time from initial action to noticeable results.

Bonding Companies
It is fair to say that sureties provide bond credit to successful construction enterprises and few would take on a new account that was under-preforming. If an underperforming contractor has a long-term relationship with their surety workout is possible, but not guaranteed. It can only be learned by talking with the surety about the financial distress, but there is no guarantee what the reaction will be. Obviously turnaround requires continuing bond credit so advising surety early rather than when disaster strikes is the best route to staying in their good graces. It is critical to have a viable, detailed plan on what actions will be taken to accomplish the turnaround at the initial meeting with surety including where any required funding will come from. Relying on surety for finding is not a viable because in most cases if surety funds a contractor to complete bonded work new bonds should not be expected. The odds of being bonded by another surety after your surety has incurred a loss are close to zero. So what do we do?

Curing Company Madness
Individual imprudence is rare, but for groups, nations, or companies in survival, it is the rule. In survival it is critical to keep control of emotions and come to grips with the difficult decisions required to turnaround a financially distressed organization. This includes partners and top managers. Actions necessary for turnaround will appear exactly opposite to what you consider normal business practice, which is why it is so difficult for normal business people to digest. For this and other reasons it is probably best to rely on outside advice. Board members or business associates may have some experience with turnaround, but if not consultant advice will be needed.

Re-engineering
An understanding of the dynamics of the construction business is a prerequisite to taking corrective action to unsatisfactory trends. There are three functional areas to consider:
1. Marketing and sales - getting the work. In survival, we put this on the back burner.
2. Operations or production - doing the work. In survival this is all that matters.
3. Administration and accounting - measurement of performance. In survival, do not worry about this function because there is no need to invest in the measurement of non-performance. In survival, because time is critical, we work on the middle area, operations. Survival time for a company that is in jeopardy of failure is eleven months or less. It is the period between today, the day we make the decision, and the close of the fiscal year. It is a seven-month plan, a four-month plan, an eight-month plan, because banks and bonding companies are merciless when it comes to under-performing companies. During survival time it is critical to:

Serve the financial statement. When business is going well we do not run our company to serve the financial statement. In survival, we reverse that and work for it. If the company is under-performing, the liabilities are already out of balance to assets. We are not going to be able to correct that in a short-term plan for the next fiscal year, so we are going to work the first fiscal year to show a profit or break-even. To do that, we operate the work in a suicidal manner. We

drive profit, not long-term value. That is, we consume equipment: we use the wrong equipment for the job because we own it as opposed to renting it. We fall short of cheating on materials, but ratchet quality down to the least acceptable level.

Reduce Volume. We plan for the year after the close of the fiscal year to operate at a volume of 25 to 50 percent of normal volume. Drastically cutting volume improves our balance sheet because as we complete the backlog we will not be replacing receivables the same rate we have in the past because of the reduction of work put in place. We will also be spending less on the reduced amount of new work.

Reduce Overhead. While reducing volume we immediately cut overhead ending up with the best people and the best equipment. We reduce equipment payments and slow them until or unless it is ready for repossession. Put a moratorium for an additional 30 days payables except the phone company, and even there we can squeeze another 45 or 60 days.

By enacting a 30-day moratorium, we are immediately borrowing one-twelfth of our payables. In effect, we have a ten percent loan to improve working capital.

Build Cash. Survival activities put bank credit in jeopardy, so cash needs to be protected. One step may be to reduce deposits with banks owed to and place new funds with an institution where there is no debt. This is a short term crisis plan that will not please the bank if/when they become aware. Additional bond credit may not be available, but will not be needed for a while as backlog gets completed without immediate replacement.

Reduce staff. However, do not lay off the field people because the backlog has to be completed. So who does get laid off? There will be no new work until we reduce to the new size so overhead staff is cut immediately. With work to finish and reduction is size fewer marketing people are needed so they will have to hammer, weld, or leave. Morale will be an issue and needs to be shored up. It is critical that the principle(s) be present in the field as well as the office to explain how the recovery plan will work so that those who remain feel secure.

Assets. There may be the inclination to sell off the old equipment, however, it generates less because of its lower value. Because the newer equipment carries the major secured debt, it may be wise to sell the newest pieces or those with the highest debt on them. If liabilities are trimmed, asset-to-liability balance improves and, to the extent that some high-debt pieces are required to complete backlog, it will produce some cash flow through delayed payments. Replacing sold equipment with leased or rental equipment improves the balance sheet and cash flow. These are desperation moves, but selling assets generates cash, reduces debt or both.

Union Issues

If the company is union consider visiting the business agents, advise them of the problem and attempt to negotiate improved work rules during the recovery. This is not always done and may depend on relationships and how strong the unions' area are in the area worked in.

Conclusion

The attempt is to get to the close of the first fiscal year and show positive results on the annual financial statements. It is difficult to improve asset-to-liabilities a lot, but hopefully debt to equity is improved. Showing the predicted even modest performance is important to demonstrate that the recovery plan shown to the surety was accomplished which makes that early plan critical. If the turnaround process can be verified there is a possibility that the reduced amount of bond credit will be available.

No one ever goes through survival twice. They do it once and, if it works, they never again get caught in under-performance. If it does not work after performing all of the above activities the company would not likely have survived anyway, because every one of the above actions produces either cash or profit or reduced liabilities the outflow of cash. None of these can hurt a healthy organization, however the methods of attaining them are painful.