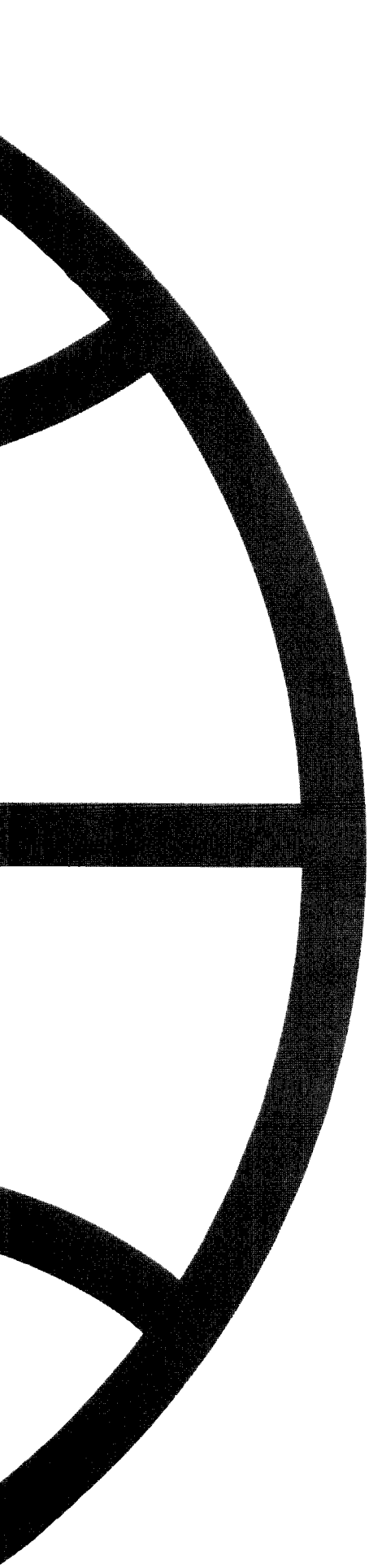

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RISK MANAGEMENT MANUAL

DPIC Companies
Orion *Capital*

1997

Fédération Internationale des Ingénieurs-Conseils
International Federation of Consulting Engineers
Internationale Vereinigung Beratender Ingenieure
Federación Internacional de Ingenieros Consultores

Risk Management Manual

DPIC Companies
Orion *Capital*

1997

Acknowledgment

This Manual has been prepared by the Risk Management Committee of the International Federation of Consulting Engineers for the benefit of members of member Associations of the Federation.

The Manual is based substantially upon the publication "Lessons in Professional Liability" prepared in 1994 by DPIC Companies Inc. of Monterey, California, USA. The availability of this excellent document has greatly reduced the work that would otherwise have been necessary to produce the Manual.

The aim of the editing process has been to create a Manual that would be useful in all countries in which members of Member Associations of FIDIC operate, irrespective of legal codes, applicable legislation and state of development of the construction industry. Accordingly, as much as possible of the DPIC publication has been preserved while adjusting some terminology and aspects specific to US construction practises, industrial and professional organisation, legislation and legal codes.

The Executive Committee and the Risk Management Committee of FIDIC acknowledge the considerable contribution of the DPIC Companies Inc. to the creation of this Manual and express sincere thanks for their enthusiastic agreement to making the resource, "Lessons in Professional Liability", available to FIDIC.

Outline of contents

Introduction

The recent decades have seen increasing worldwide incidence of liability actions within the construction industry. As a consequence design professionals risk the possibility of claims on every commission they undertake.

A liability claim, even if successfully defended, can prove a huge distraction and even disastrous for a design practice.

The deterioration in this working climate has occurred for many reasons. Important among these have been a marked change from a one-on-one client-consultant relationships to the committee client with attendant bureaucracy, rapid advances in technology, greatly increased statutory requirements with complex approval processes, and active community concern about preservation of our environment.

It is in the interest of the community as a whole to reverse adverse trends in the liability scene. Participants in the construction industry can assist this process, and themselves, by practising sound risk management procedures.

Risk management in construction work occurs at several levels:

It is one of the major purposes of professional education and qualification to provide a pool of people with the technical knowledge and skill to assess and minimise the risks inherent in construction.

It is the major purpose of quality management - the monitoring of the processes by which design and other professional tasks are carried out by design professionals, construction is carried out by contractors and materials and components are manufactured by suppliers, and which should also regulate all the peripheral tasks required for successful construction.

Systematic risk management involves identification, assessment and mitigation of risk, minimisation of potential damage and the setting up of realistic mechanisms to finance the residual risk on a project by project basis.

Risk management also embraces the management of society and government expectations of design professionals and other specialists who provide the essential services on which modern living depends. While these specialists offer technical expertise, they do not normally possess the financial resources necessary to absorb their clients' financial troubles.

Within this broad context risk management focuses on the management of relationships between individual clients, the design professionals and other participants in the construction process. This procedure involves reconciliation between legal relationships and the practical implementation of those legal obligations.

This Risk Management Manual touches on all the issues listed above, but deals especially with the management of practical relationships between design professionals and their clients.

To provide a ready checklist for day-to-day use the main conclusions of each chapter of this Manual have been grouped from the following page into brief Risk Management Guidelines.

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Risk Management Guidelines

This manual discusses in detail and at length the many aspects which should be kept in mind and suggests sound management procedures which should be followed in a professional practice to minimise risk exposure.

To provide a convenient ready checklist for day-to-day use the following major conclusions from each chapter are here summarised as a series of Guidelines:-

Chapter One - Professionalism

- As a professional, you have earned the right to practice your profession. Along with this right, however, come certain obligations to society, including the duty to protect public health, safety and welfare.
- As a professional, you also are expected to perform to a certain standard of care and to uphold the standards of your profession.
- To compete in today's market and to avoid claims, you need to master skills in business as well as maintain technical competency.
- Many claims against design professionals stem from the non-technical aspects of a design practice.
- It is fundamental to satisfactory project outcomes, and therefore to risk management, that the client, his professional advisers and all contractors involved in the project apply themselves to creating trust and partnership to prevent misunderstandings and conflicts between them.
- It is important that the public learn more about the design professions. Each practitioner has the opportunity - and responsibility - to enhance his or her profession.
- Design professionals have rules of conduct and codes of ethics which they are required to follow. Noncompliance is grounds for disciplinary action by the practitioner's professional society.

Chapter Two - Communications

- Many claims against design professionals result from a breakdown in communication between parties to the construction process.
- Written communications should be prepared with the receiver in mind, anticipating likely questions and providing appropriate answers. Avoid indiscriminate use of standard letters and check all wording before transmission.
- To prevent confusion, it is important to avoid using extreme words, words of promise, ambiguous words or jargon.

- To improve the quality of your firm's written communications, make it a point to have a principal, project manager or department manager review all correspondence before it leaves the office.
- Do not rely on memory. Maintain clear and accurate records.
- Keep close contact with your client. Never make the mistake of believing a client understands your duties and procedures. It is far better to continue communicating with him or her throughout the life of the project.
- To keep the lines of communication open and to handle problems as they arise, make certain you meet regularly with other parties to the project.
- Document all discussions that may concern or influence a project.

Chapter Three - Avoiding and Managing Disputes

- Every project experiences problems, but not every problem evolves into a dispute and not every dispute grows into a claim. In many cases, project participants can anticipate and avoid potential problems.
- If parties to a conflict anticipate a long-term relationship, the likelihood of cooperation in solving problems is much greater.
- Some design firms are entering into partnerships with clients or subconsultants in order to promote quality, productivity and loyalty from all parties.
- Project partnering can reduce claims and cost and schedule overruns, and can enhance the quality of the project.
- It is important to anticipate and plan for problems before they occur. Have in place a mechanism by which disputes can be reported, addressed and resolved as soon as possible.
- An established in-house crisis management procedure will let all personnel in your firm know what they must do or not do in the event of a problem.
- To avoid a claim and possible litigation, make every effort to settle a dispute at the job site and as quickly as possible. Such constructive action not only will save money but is likely to instil confidence between all concerned.
- Dispute review boards have an advantage over other dispute resolution methods in that they are set up at the beginning of a project and continue throughout the project's life-time. Other dispute resolution methods usually start close to or after the project has been completed.
- With negotiation, you may need to give up something in order to resolve the matter to everyone's benefit.
- Litigation should be avoided if at all possible. Instead, rely on one or more of the several other dispute resolution methods available.

- The business side of a design firm requires just as much attention and expertise as the technical side.
- Learn to identify and manage all your potential risks on a project.
- All the various risks inherent in the project should be properly assessed and allocated at the outset. The guiding principle should be that each risk is accepted by that party able to most efficiently and economically control that risk. The individual contracts should reflect these obligations.
- Client evaluation is a key risk management exercise. Check each potential client's general reputation, relations with other design professionals and contractors, financial security and performance on previous projects.
- Insist on a fair fee for your services.
- The best method of procurement for design services is qualifications based selection.
- Make certain your firm has the capability to provide the services for which it advertises and contracts.
- Work with your client at the outset to develop a carefully defined scope of services that sets forth those services you will provide, as well as those you will not. This brief should be reviewed regularly with the client as the work proceeds, and adjusted for any change.
- A well-drafted, fair and reasonably protective contract is absolutely essential when providing design services.
- Limit your obligations to the provision of service using reasonable skill, care and diligence. Do not give absolute warranties of outcomes.
- Try to include a limitation of liability clause in every contract.
- Make sure your contract with your client is clear on how and when you will be paid, as well as your rights in the event of nonpayment; be diligent about invoicing and follow-up.
- Prepare and maintain realistic work programmes.
- Providing cost estimates or promising to deliver plans and specifications by a certain date often give rise to claims. Estimates should be concise, with clear indications of their purpose and limitations, the assumptions on which they are based, and should list any exclusions.
- Both prime and subconsultants need to carefully evaluate each other before entering into a contract.
- The selection, training and retention of good quality personnel is one of your firm's most important management issues.
- Maintain adequate resources to support commitments. Many successful firms hire business managers to help them address contractual, financial and personnel issues.

Chapter Five - Technical Procedures

- The success of your practice rests on the commitment to quality at every level of your firm. This philosophy must be driven by your firm's principals, who should urge employees to strive to do the job right the first time.
- The potential for errors and omissions is always present in design work. The prudent design professional, therefore, provides himself or herself with "safety nets" to make sure mistakes are caught and corrected before they cause major difficulties.
- Do not make decisions that should be your client's. The design professional's responsibility is to present the client with relevant information concerning the various options available so that he or she can make an informed decision, particularly where innovative procedures or materials are under consideration.
- Document all your design decisions and recommendations, as well as the decisions of others.
- Give special attention to the materials and products you specify.
- Make certain your client understands that oversights or errors will occur, and that you will work together to correct them as quickly and inexpensively as possible.
- Have in place a procedure for responding to requests for clarification from tenderers during the bid phase.
- Ensure that your scope of services allows you to perform construction phase services, including construction observation. It is the best way to assure yourself that the project is being built in general conformance with the contract documents and according to design concept.
- Make sure the contractor and your client understand your duties and the purpose behind your review of shop drawings and submittals. Have in place strict schedules and procedures that both you and the contractor are expected to follow.
- Stress to those responsible that adequate time must be allowed for testing and commissioning of all project services before occupancy.
- Maintain an interest in the project and contact with the owner after its completion.

Chapter Six - Professional Liability Insurance

- Insurance may appear complicated, but your broker and your insurance company are available to help you understand how it works.
- It is important to understand the extent and limits of your coverage. Take the time to learn certain basic concepts about professional liability insurance and then review your own policy.

- A number of factors determine the price of your professional liability insurance, such as your discipline, your geographic location, your range of projects, your work volume, your claims history and the level of "deductible" that you are accepting.
- Remember that most professional liability insurance policies are written on a "claims made" basis. The policy wording must afford cover for the period when the services were rendered (retroactivity), and the policy must be in force when the actual claim is made.
- Notify your insurer immediately a claim is made against you, or when circumstances occur that appear might lead ultimately to a claim.
- A project policy offers many advantages to the design team and the owner of a project. It can reduce your risk and that of your client, is generally non-cancellable, and can result in fewer disputes on the project.
- Insurance cover to meet statutory requirements, business and personal risks must be arranged under other policies.

Chapter Seven - Where to Get Help

- Professional liability is a complex business. There is no reason, though, that you should have to know all the answers yourself or have to find them alone.
- Your insurance company, your specialist agent or broker, your lawyer, your accountant, your business manager and your professional association - all are available to help you have the most enjoyable, profitable and trouble-free practice possible.

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Professionalism

What does it mean to be a professional today? Historically, the mark of a professional has been the mastery and use of a specialized body of knowledge. The meaning of *professional* has stayed essentially the same; only the body of knowledge has mushroomed and the movement from knowledge to application has become more structured, more complex. Under standards, ensured by your profession, your knowledge has been acquired through a rigorous and specialized education, applied in practice and tempered by experience. You and your colleagues have earned — and society acknowledges — the right to practice your profession.

With this right comes certain obligations to both the public and your profession. You are charged with the responsibility to protect public health, safety and welfare and to put society's needs before your own. You are expected to uphold the integrity of your profession and to contribute, through experience and research, to the base of knowledge from which other members will draw.

With greater responsibility comes greater risk. There is a standard of care to which you and other members of your profession are expected to perform. Society requires that those who are providing professional services will do so in a reasonably careful and prudent manner, as tested or established by the actions of their own peers under similar circumstances. Although you do not have to be perfect (at least the law doesn't require it; your client may have different ideas), you are expected to uphold the professional standard of practice or risk legal sanctions.

A Professional Practice

It takes more than an education in engineering to be a professional. The word professional also connotes the skills you bring to your practice. To serve society and your clients — and to survive in today's competitive market — you need two separate sets of skills. You must have both technical and business expertise.

First, you must have the basic technical competency that is acquired through formal education and initial training. Over the years, you are expected to build on that foundation by keeping current with developments in your discipline.

There is more to a successful design practice than producing superior designs, plans and specifications. In earlier times, an aspiring novice learned from close daily contact with an established professional. The professional oversaw almost every aspect of the student's life, conduct and goals, cultivating professional qualities by daily example and instruction. This sort of relationship is virtually nonexistent in the modern world. Today,

individual courses required for a technical degree are taught by people who are experts in those courses. Relationships between practicing professionals and students are more distant. As a result, most university education processes can provide only the technical ABCs.

Yet a design student needs to understand the conditions of his or her chosen profession and its real opportunities and responsibilities. Design professionals must be able to analyze, evaluate, choose and compete. Today's designs are judged not only on appearance or function but also on feasibility of construction and lifecycle cost. Design professionals must understand *"how things get built."*

Second, no matter how creative or talented you may be, you also need a thorough grounding in business skills in order to function professionally in the real world. Clients are becoming increasingly sophisticated. Many are highly experienced in construction projects; others have degrees in business or law. Then, too, many projects involve collaboration between a variety of specialists, increasing the need for sophisticated project management. To stay competitive, design professionals must be able to respond to their clients' higher expectations and to handle the demands of working effectively with many other parties. They must hone their communications skills in order to market their services and lessen their risk exposure. They need to learn the basics of financial management, contract formation and negotiation, human resources management and insurance management. They also need to learn to anticipate and then resolve the disputes that will surely arise.

In short, today's design professionals must devote the same level of energy and attention to the business side of their practice as they do to the preparation of plans and specifications. If you doubt the importance of this, understand that many professional liability claims stem from the non-technical aspects of a design practice, such as acceptance of onerous contract terms and conditions, poor communication, careless selection of projects, failure to record all significant decisions and lax fee-collection practices.

A Professional Public Image

Over the last few decades there has been a growing mistrust in institutions, government and authority figures in general. Without a doubt, this suspicion extends to some of the professions. While almost everyone has a doctor and many have an accountant, the average citizen may never use the services of a design professional and, therefore, has little knowledge of the discipline. Because of this, many people base their opinions about design professionals on what they read in newspapers or see on television — and that publicity has not always been favourable. Headlines about the rare but spectacular building failure are what people remember.

Many people have no idea what design professionals do for a living. There may be a vague

understanding that architects build buildings, whatever that means. As for engineers, few really know what engineers do, besides drive trains.

But does it really matter that the Public do not appreciate the subtleties of your profession? The answer is a resounding *Yes!* This lack of understanding makes you and every other design professional more vulnerable to claims from clients as well as the public. If people do not know what you do, then they also do not know what you do not do. They may believe, for instance, that you are responsible for the accident at the job site or that you personally tested the roofing system for the new school.

It falls to each design professional to enhance public understanding of his or her profession. People base their ideas of your profession on their perception of your actions. Hence, the technical and aesthetic competence you show, coupled with an environmental sensibility, a fairness of judgment and a good sense of public purpose and duty, will help them define the profession as well as your place in the profession.

You can go a step further by working to educate the public. Take an active role in your community. There are so few design professionals in public office that it is little wonder that the needs of those professions are often not met. Involve yourself in community activities, run for the city council. As a professional, you can provide valuable expertise to your community — and inform others about your job.

The better you tell your story, the better you serve your profession. If you explain the merits of project partnering, qualifications based selection or limitation of liability at a Rotary or Chamber of Commerce luncheon, *someone* important might hear you. If you tell a career day assembly full of school students about what a geotechnical engineer does, some of them might take an interest in science and maths. In a few years, one of them may even become an employee in your firm. If you write or, better yet, visit your politicians to urge action on legislation that will help your profession, you might just be heard. If fifty colleagues from your district do the same, someone in government is going to sit up and take notice.

As you work to educate the public about the value and role of your discipline, you may be pleasantly surprised to find that such an effort is an effective marketing tool. Even more important, you will be helping to reduce professional liability claims against design professionals and taking steps to shore up the erosion of public confidence in the profession.

Professional Conduct and Ethics

Most people do not know that design professionals have rules of professional conduct and codes of ethics they must follow and that violation of these rules is ground for disciplinary action. These rules of conduct are important reasons why design professionals have earned the right to be called professionals. Professional societies develop and enforce

their own standards of ethical behaviour. Violations of these rules of conduct can result in admonition, censure, suspension or termination of membership.

Post a copy of your professional association's code of ethics in your office and remind your employees that they are expected to abide by it. There is no clearer way of emphasizing to your clients — and to your employees — that you believe in maintaining those levels of conduct.

Communications

No matter how much you might wish you could work alone on a new design, you do not have that luxury. Today's construction projects can be extremely complex, often requiring the input of dozens of specialists, all of whom need to communicate with each other. You must interact daily with diverse personalities in order to develop clients, present proposals, listen to subconsultants, deal with public officials, respond to contractors and resolve inevitable conflicts. The truth is that any or all of these people can be the source of a claim against you.

A large number of claims made against design professionals result not simply from technical errors or incompetence but from a breakdown in understanding between parties — either in the written definitions of the project itself (the contract documents) or in the day-to-day communications between the parties to the construction process.

This need not happen. You can anticipate and deal with many of these problems by considering the factors that may lead to misunderstandings between the members of the construction team.

The Importance of Communications

Effective verbal and written communication does not come naturally for most people. Some who are adept at the spoken word may have trouble writing a clear, concise letter. Others can write a beautifully constructed manuscript, yet have difficulty in communicating the same ideas in speech.

People often feel they understand one another perfectly, when, in reality, they do not. They are operating in what psychologists call "pseudo-communication." They use the same words and phrases but interpret them differently depending upon their own background. National origin, gender, culture, education and past experiences all play a role in the "understanding" reached.

The Words We Use

Communication failures often are at the center of lawsuits. A primary culprit is the language we use in our written communication, including correspondence, specifications and contractual agreements.

No matter what you intended to say, when such a claim arises, the courts are called upon to decide what the language communicated, based on case law. For instance, regardless of your interpretation of the word *inspection*, the plaintiff's lawyer may argue that there is no reason to debate the meaning of the word, saying, "It was decided in the

case of State Farm Mutual v. Rickhoff that it means "...to examine carefully or critically, investigate and test officially, especially a critical investigation or scrutiny."

Avoid using:

Extreme words, such as *final, all, complete* or *best*

Words of multiple meaning, such as *inspect* or *estimate*

Words of promise, such as *guarantee* or *certify*

Have you been asked to sign an agreement with a clause such as the following?

The Design Professional shall assist the Owner in applying for and obtaining from ALL applicable public agencies, ANY permits, approvals or waivers required by law.

If you have seen a clause like this, your clue to possible trouble is the frequent use of extreme words. It is important to try to delete or change them. Often, you will find that the owner does not intend to impose the impossible conditions that such words imply and would not object to your modifying the clauses.

As the preceding clause now reads, you could be held responsible for obtaining every conceivable permit necessary for others to do their work. It establishes an absolute condition that may be impossible for you to meet. You cannot know at the beginning of a project what permits might be required, but if you accept such a clause, you are agreeing to an open-ended requirement for any new approvals that might be imposed in the future. Instead, you could modify the clause to read:

The Design Professional shall assist the Client in applying for those permits and approvals typically required by law for projects similar to the one for which the Design Professional's services are being engaged. This assistance consists of completing and submitting forms required for the performance of certain work included in the Scope of Services.

Most of us tend to use extreme words. For example, we frequently agree to *maximize, minimize* or *optimize* without thinking twice. We often employ words of totality such as *any, all, none, full* or *equal* without qualification in our brochures, contracts or proposals.

In addition to extreme words, words that have multiple meanings cause problems for the design professional. Simple words sometimes have dozens of meanings. For example, look up the words *run, top* and *get* in your English dictionary. Seeing the variations of meaning for these three-letter words might make it easier for you to believe that the 500 most commonly used words in the English language have more than 14,000 meanings!

Inspect and *supervise* are two words that mean something different to design professionals than to laypersons. In fact, the word *supervise* should be avoided, or used with extreme caution. Note how a judge or jury might conclude that *supervise* is synonymous with *control* from the following definitions:

> The words *supervise*, superintend and *oversee* in ordinary use and common acceptance have substantially the same meaning.

Control is the "power or authority to manage, direct, superintend, restrict, regulate, govern, administer or oversee."

The terms *direct* and *administer* are synonymous. Both mean "to manage, control and *conduct* affairs of business."

Clearly, these definitions overlap; at least ten words are listed as synonymous with *supervise*. For a design professional, this is treacherous ground. In the construction industry, the individual who has *control* of a job site generally has the responsibility for the means, methods, sequence, procedures, techniques or scheduling of construction. This responsibility and control of the project site carries with it the responsibility for safety of workers and the public on or about the site. Carelessly using the word *supervise* could lead you into the muddle of safety responsibility, a responsibility that rightfully belongs to the contractor.

The word *inspect* is also greatly misunderstood and misused. Generally, a design professional *observes* the construction as part of his or her construction phase services; *inspection* implies a much more detailed examination, such as a government-required inspection of certain structural elements of a building, with a comprehensive brief and extraordinary contractual protection.

Optimism is often reflected in the things we say and do. In fact, optimistic words (*better* instead of *worse*, *advance* rather than *retreat*) are used much more frequently than their antonyms. In the design professions, however, optimism can be a liability trap. To protect yourself, it is wise to avoid words of promise like *guarantee, warrant, certify, ensure, assure* and *insure*. Unless you can absolutely state or promise something without qualification, you must refuse to assume the role of risk taker.

Your choice of words should correctly describe your intent. *Will* or *shall* are words of positive affirmative action — a promise that the act will definitely happen. Use them only when they are actually intended. If you can't be that definite, *may* or *endeavour to* would be wiser choices.

Two techniques may prevent your becoming entangled in lawsuits over word meanings.

First, find more exact words. If you are an average person using English as your working language, you use about 2,000 words in your day-to-day conversation. If that seems a lot, consider this. There are about 600,000 English words. The King James Bible uses about 8,000. Highly intelligent people have vocabularies approaching 15,000. Shakespeare used 34,000 different words in his works! Make the effort to broaden your vocabulary and discover more precise words for what you want to say.

Second, seek feedback. Since most English words have varying connotations, a good method for testing communication is to have listeners feed your communication back to you in their own words. Engineers, architects and contractors, as members of a team effort, must think and act as a unit. Any ambiguities or misunderstandings that exist within this team can lead to errors, delays, disputes and even litigation.

Do contractors routinely seek clarification and direction after receiving your documents? If so, this may indicate that your plans and specifications contain ambiguous directions.

For example, how often do you use the words *furnish, install* and *provide* interchangeably, intending that they all mean the same? Check their meanings, though, and you will discover considerable differences. In the dictionary you will find that *install* means to "set in position and connect or adjust for use"; *furnish* means to "equip with what is needed"; *provide* means to "furnish, supply...to make available." As you can see, the words are not synonymous. *Install* does not convey the meaning that the item to be installed is to be supplied by the same party installing it. Similarly, the words *furnish* and *provide* do not connote that after an item is supplied, it will also be fixed in place. It is important to be precise.

Design professionals use many words that have very special and limited meanings to others within their field. The average layperson finds it almost impossible to understand this jargon, especially since there is no one standard definition for most of it. An understanding of meaning is acquired only through long experience and exposure to the working vocabulary of the construction industry.

To further complicate matters, even the same disciplines located in different geographical areas assign different meanings to the same words. A phrase such as "all standard options as required for satisfactory performance" may have a much different meaning to a contractor in the UK than to one in the USA.

Some words are so susceptible to misinterpretation and so difficult to explain to a contractor (or, worse, to a judge or jury) that you need to substitute another word or phrase to describe a particular activity.

Consider these examples:

Engineering Jargon	**Use These Words Instead**
Approve	Work is in general conformance
Inspection	Construction observation
Or equal	Or equivalent
Satisfactory operation	Operation as specified

If we take a closer look at two of these words, we can see why they can cause problems for incautious design professionals.

Approve

The design professional intends the word *approve* to mean to give limited, conditional or qualified permission to use material, equipment or methods, and interprets the word to mean that the submittal or construction referred to should be in general conformance with construction document requirements.

The dictionary, on the other hand, says that *approve* means "to sanction, consent to, confirm, ratify" or "to be favourable toward, think or declare to be good." The layperson may interpret *approve* as unqualified acceptance.

The professional liability implications of the word *approve* can be significant. In fact, even using the word *approval* and placing limitations on it might be hazardous. Judges and juries have a tendency to view limited approval with suspicion and have, on occasion, considered it a waiver of the original standards required of the design professional and have disregarded the intended limitations.

Or Equal

The design professional intends the phrase *or equal* to mean that an item should possess the same performance qualities and characteristics as the one specified, and fulfil the function without any decrease in quality, durability or longevity. There is no implication that items must be identical in all respects if these general requirements are satisfied.

The dictionary defines *or equal* as "of the same quantity, size, number, value, degree or intensity."

The layperson may interpret *or equal* to mean the items are identical in all respects without any difference.

Instruct your specification writers and checkers to watch for words that have more than one meaning. If there is any doubt about the meaning, choose a different word or define the word in a glossary or specification definition section.

Be especially cautious with words you use to outline the scope of a contractor's responsibility. Remember, contractors who understand your specifications can sharpen their tender prices. On the other hand, contractors who are forced to guess your intent may pad their bid to protect themselves against uncertainties, real or imagined. They may assume the worst case and bid accordingly, or they may install the least expensive items inferable from your ambiguities.

Finally, review the specification yourself before it is issued, remembering that any portion of a specification that has more than one interpretation is incorrectly written.

Dangerous Words

Think twice before you use any of the following words in your contracts. There is almost always a better choice available to you.

administer	advise	all	any	approve none	assure
best	certify	complete	control	direct	ensure
equal	estimate	none	every	final	full
guarantee	inspect	insure	maximize	minimize	optimize
oversee	periodic	safe	shall	sufficient	suitable
supervise	will				

Your Correspondence

In addition to the general communication rules already suggested, there are other, more specific procedures you can use in your office to improve your written communication and help prevent misunderstandings.

First, try to have all external correspondence that concerns projects or plans reviewed by a senior member of your firm — a project manager, department manager or principal — before it is sent out. Careful use of the written word takes experience and most principals and managers have developed this skill. Their review of correspondence will provide a cross-check to discover misstatements and avoid misunderstandings.

The result should be:

Correspondence of a higher quality

If employees are aware that letters will be reviewed, letters will be written more carefully.

Absence of *ambiguous, imprecise or extreme language*

Elimination of errors

Letters with errors in basic language, grammar, spelling or punctuation are evidence of sloppiness and can only hurt the design professional's image.

Reduced *risk of defamation suits by eliminating inflammatory or derogatory statements*

Communicating with Your Client

It cannot be said too many times: Never make the mistake of overestimating a client's knowledge of your duties and procedures. Just as the public may not fully understand the role of an engineer, so a client may not understand the limitations of your profession. It is your job to explain to him or her just what it is you do and what it is you do *not* do.

It may seem inconceivable to you that a client could think that you are responsible for a perfect set of plans and specifications, have detailed knowledge of every item you specify or participate in actual performance testing before you write your specifications. Even so, claims are often made against design professionals regarding specifications of products or systems, often after the standard guarantee periods given by the contractor and equipment manufacturer have expired. A client who does not grasp your professional obligations may allege that you were negligent in specifying an item or that you should have personally tested the system before you specified it. Make sure you provide your clients with the information they need to understand your responsibilities and limitations.

For instance, assume you made the decision, after some deliberation, to omit an item from the drawings or specifications for a project. As construction progresses, circumstances

change. It now seems reasonable, in your judgment, to add the item to the project as extra work.

When you made your original decision, it was reasonable and within the legal standard of care, and you probably saved the owner some money. Now, however, the owner, faced with a change order and the resulting increased cost, decides to "misunderstand" your duties. One basis of the owner's complaint will likely be that you were negligent in not specifying the item originally. Another allegation may be that you implied a warranty that the drawings would be complete and sufficient for the purpose intended.

Neither of these allegations may be true. Yet, somewhere along the line you failed to let your client know exactly what to expect from you or your drawings. Your client should have been prepared to expect changes as a normal part of the construction process. Instead, because your professional role was misunderstood, you face litigation.

Another misunderstanding surfaces in actions arising from persons injured at the construction site. Again, it is often believed that you have an active role in determining the contractor's safety procedures and programs. Your contract and the general conditions of the contractor's contract should be perfectly clear on this issue.

A third area that frequently confuses clients concerns your opinions of probable construction cost. Each time you use the phrase *cost estimate* with a client, you might run the risk of a claim. Why? Because what you intended may be misunderstood. The client may believe that your estimate is a guaranteed maximum figure and will budget accordingly. If the final costs exceed your estimate, the client may argue that he or she properly relied on your expert evaluation. Instead, when you are required to provide information on the expense of an item or project, it is better practice to use the phrase *opinion of probable cost.* This correctly conveys the idea that ultimate costs may — and often do — vary from your opinion and gives you valuable flexibility in defending your efforts.

The solution to many of these problems is to talk to your client. From the earliest conceptual meetings, through the refinement of your brief and negotiation of your contract, during the development of your design and into construction, make sure your client is informed every step of the way. Explain the kind of problems that can — and will — occur during design and construction. And at all times, be very clear about your role and limitations in the process.

Communicating During the Project

Some design professionals do not take the time to sit down with other parties to a construction project. Often this is simply an oversight. Most design professionals are quite willing to answer any reasonable direct question a contractor may have. It would be rare to find a design professional who would not welcome the opportunity to

discuss with a client the relative merits of one type of system as compared with another. Yet, unless you initiate regular discussions with these individuals, they may get the impression that you are too busy or too important to be bothered.

To keep the lines of communication open and to enhance feedback, try to meet regularly with other parties to a construction project. On large projects, schedule project review meetings on a weekly basis among representatives of the contractor, the client and the design consultants involved. These sessions can often pinpoint construction problems before they occur or become serious, and permit solutions that are satisfactory to everyone in a non-crisis atmosphere.

Plan internal conferences weekly on a formal or informal basis for each project. Make it mandatory that project team members recount their progress over the past week, list problems that still need solutions and make requests for whatever information is necessary but has not been received. Reports of this type also serve as a diary of project progress.

Written progress reports to clients are valuable, too. As part of a client communications program that includes personal visits and progress review meetings, they can help form a bond that will keep you and your client working together even if adversity strikes. Nothing demonstrates a professional approach as effectively as well-planned, timely transmission of clear information.

Documentation

Design professionals often expect to remember the details of important telephone discussions or conferences concerning an active project without the help of notes or other memory tools. Memory failure or incomplete understanding on the part of the practicing design professional can cost huge sums of money and precious time if litigation results.

No one remembers everything. It is important to record all your discussions which may in any way concern or influence a project. Diarize meetings and telephone conversations with clients, subconsultants and contractors. As a matter of routine, require that all discussions involving design decisions be documented by brief memoranda. A written record helps jog the memory and enhances communication; it may also prove important in the event of a claim. These memoranda and logs are particularly useful if, for some reason, the principal project professional cannot continue and another professional unfamiliar with the project is required to take over and complete the work.

You cannot avoid conflict. The construction project does not exist that hasn't seen some kind of misunderstanding, disagreement, problem, unforeseen event, design error or construction defect. Not all of these situations evolve into disputes, however, and not all disputes become claims or lawsuits.

There are many reasons why problems can get out of hand. First, the construction industry has grown so large and complex that many participants in a project do not know each other and may not expect to work together again. They may feel that they have no stake in developing or maintaining good relationships. Besides, owners may be highly leveraged and/or underfunded. This can give rise to scheduling and budgetary pressures that strain what may already have become adversarial relationships. Then, too, parties to a project may simply fail to communicate effectively with each other. Many design professionals, for instance, are hesitant to discuss issues with their clients. Then, when a problem inevitably surfaces, the client may feel angry or betrayed and a claim may result.

There is still another reason. Many involved in construction today are so alarmed by the possibility of litigation that they may approach each new project with a defensive attitude. Some design professionals, clients and contractors are advised by their lawyers to begin to build a legal file from day one of the project. Yet, expecting and preparing for litigation may encourage the other parties to act in a similar manner. In the meantime, a grim truce is sustained between the parties, who continue to expect the worst from each other. With this attitude, the worst is usually what they get.

There are no real winners in a construction lawsuit — except the lawyers. For the rest, the costs are simply too high.

Planning for Problems

Many disputes are cumulative. Unresolved small problems create antagonisms between the parties and make it more difficult to resolve new conflicts as they arise. It is not uncommon for parties to wait until the end of the project to address all of the unresolved disputes that have arisen. While they are waiting, though, their unstated expectations continue to go unmet, and the level of antagonism rises. In a vicious circle, as relationships deteriorate, the cooperation so vital to the success of a project also erodes. Mistrust may begin to cause delays and disruptions, which in turn cause added costs that then breed still more problems.

Against this volatile background, the stage is set for a serious dispute. When the final straw, perhaps an error occurs, serious but otherwise forgivable, it may be too late for negotitions.

The longer the resolution of a problem is put off, the more expensive it is to correct. As time goes by, what might have required only a quick and relatively inexpensive solution becomes a difficult and costly defect to remedy. It costs money to remove and reinstall work. It costs a lot more money when you put the dispute in the hands of lawyers.

Perhaps the best and least expensive way is *to have a project-wide commitment that at the first indication of a problem, participants will work together to resolve it and not allow it to escalate into a dispute where third-party resolution is required.*

The Role of Relationships

Let us begin by considering one conflict and how it might be handled. Two days before substantial completion, an owner discovers cracking in the support columns of her underground parking structure. She communicates this fact to the architect and the contractor. The architect, in turn, talks to the structural engineer. A meeting is arranged.

The stage for conflict is set if each party fears being forced to shoulder the cost of repairs. Each party has an individual interest. As long as any party advocates a condition or position that is contrary to anyone else's, there will be attempts to win, causing others to *lose.*

Imagine, however, that the contractor and the design professional have worked together on several jobs in the past. What if they like working together? Would this change the outcome of their meeting?

Common sense, and the findings of social scientists, indicate that it would. Bonds of loyalty and cooperation built up over time do not dissolve during a crisis. In fact, successful resolution of difficult situations tends to cement these bonds — and creates *trust.*

The guidelines for establishing trust are relatively straightforward. To begin with, trust requires at least one person willing to risk something. During our underground garage meeting, for example, the structural engineer might propose that an expert, agreed upon by all, be hired to study the situation and evaluate the cause of the cracking. This indicates that he is willing to put his fate in the hands of an impartial third party.

Trust also demands open and unbiased *communication.* One way to do this is to try to put yourself in the other parties' places. Several things are accomplished by this exercise. First, you may discover another party is, in fact, right. Second, you may discover another party has been making decisions based on incomplete or faulty information. Third, although another party may be wrong, at least you may demonstrate that you understand that party's point of view.

Parties who are aware that their relationship will be of brief duration are more likely to resist agreement. Say the contractor in the preceding scenario is working outside his normal geographic area of operations. He has not worked with this project team in the past, and is unlikely to do so in the future, and might be considered an "outsider".

Regardless of the other factors bearing upon this particular meeting, there is a possibility that he will be asked to shoulder the consequences. His resentment could very well block a peaceful resolution.

On the other hand, if all parties to the conflict have had or anticipate a long-term relationship, cooperation is more likely, if only because they fear that the tables may be turned in the future or that not cooperating means not working with the others again.

Accordingly, some firms enter into long-term *strategic partnerships.* This kind of alliance may take many forms. But in general, *strategic partnerships* refers to agreements between companies to cooperate in order to achieve their separate but complementary objectives.

Strategic partnerships make a great deal of sense. For one thing, these alliances promote better quality and productivity from all parties. They develop an understanding of each other's requirements and procedures so that communication is enhanced. Disputes are more easily resolved. Finally, because it is in the interest of all parties, they tend to have equitable agreements that properly allocate the risks borne by each.

Project Partnering

In looking for ways to avoid the litigation trap, we often find ourselves turning to the "old timers" of the professions for some answers. These are the design professionals who have stubbornly insisted all along on dealing with other parties to the project by treating each other fairly, with respect, and by *talking* to each other.

Today's construction project participants are coming to realize this. Many owners, contractors and design professionals are putting a new name to old behaviour and calling it *project specific partnering* or simply *partnering.*

The concept behind today's partnering is to dispel the adversarial "us-versus-them" approach often found on today's construction projects and to promote "let's-all-pull-together" attitudes. The goal is to create a shared vision of the project. While the actual steps may vary, the process usually involves team-building activities to help define common goals, improve communication and cultivate a problem-solving attitude among key representatives of the design and construction team, *before* work on a project begins.

Typically, partnering involves a series of workshops with representatives from all parties to the project. A facilitator conducts team-building activities aimed at achieving mutually agreed-upon goals. These usually address such concerns as scheduling issues, job site safety, issue resolution procedures and the budget. Keys to successful partnering are the progress checks as well as a final evaluation after project completion.

For partnering to work, it must be owner-driven and have the full backing of the top management of all participating team members. The owner must be committed to the idea and must take the necessary steps to ensure that the process begins at the outset of the design phase.

The benefits of partnering can be significant. The quality of the project is improved. The workplace tends to be safer. The designers' roles in the problem-solving process may be enhanced and their participation in construction phase services is more likely. Partnered projects tend to be brought in on time or even ahead of schedule and the process typically helps reduce cost overruns. Best of all, there is a reduced exposure to litigation for all parties to the project.

Partnering does not guarantee that disputes will not arise — modern construction is too complex and involves too many parties to eliminate disputes altogether. Rather, it is a way to manage and resolve the disputes that do come up. An essential element of partnering is deciding upon procedures to resolve those disputes.

Partnering has had great success and holds even greater promise for the future. It is a straightforward and proven mechanism to handle construction disputes as they were once handled.

Job Site Dispute Resolution

You, the owner and the contractor should decide at the beginning of your project what steps you will take during construction to resolve problems as soon as they arise. There are several techniques to accomplish this. Two of the most effective — step negotiations and dispute review boards — are often implemented together.

Step Negotiations

Step negotiations amount to a commitment to solve a problem as soon as possible at the lowest possible level of management. If parties directly involved cannot resolve a problem at the job site, their supervisors then meet to work out a solution. If they, in turn, cannot agree, then the problem will be passed on to higher management in both organizations, and so on. Often each of these parties is identified at the beginning of the project and there may be a predetermined time limit for resolving an issue at a given level. For instance, if a problem cannot be fixed in two days at the first level, then it is passed to the next decision-making level, which meets and has four days to find a solution. Because passing on a problem to one's boss means having to report a failure, there is incentive to settle disputes very quickly.

Dispute Review Boards

Many parties to construction projects have adopted a "standing neutral" concept. This is an agreement between the owner, contractor and the design team to mutually select one or more independent dispute resolvers to be at call throughout construction. Generally consisting of one or more industry experts, this resolver is sometimes known as a *dispute review board.*

Dispute review boards have several advantages over conventional dispute resolution processes. Dispute review boards are set up at the beginning of a project and continue throughout the project's lifetime. Because the board frequently visits the job site, there is continuity and familiarity with the parties and the specific job at hand. Disputes are often resolved quickly and fairly while the facts are still fresh in everyone's mind. Complaints without merit are discouraged. Everyone involved on the project is encouraged to communicate fairly and to resolve problems on-site and at the lowest possible decision-making level. In fact, parties to projects where dispute review boards have been established have found that the very existence of a board tends to encourage participants to resolve problems themselves, through step negotiations or similar mechanisms, before referring them to the board.

When a Problem Arises

Your goal should be to build dispute prevention mechanisms into every one of your projects by obligating the various parties to report problems as soon as they are noticed. With these mechanisms in place, you can work together to mitigate a problem quickly.

If your project does not have a formalized dispute prevention and resolution system in place, you need some kind of plan to deal with problems or incidents as they arise.

Everyone in your firm should know what to do, and not do, when there is trouble. Many design firms have developed their own early action procedures.

What to do if a problem arises

Remain calm.

Report the incident immediately.

Keep seeking alternatives and solutions.

Do not automatically assume you are responsible, no matter what the facts first seem to indicate.

Communicate.

Document and photograph.

Try to resolve the conflict with the others involved. If direct negotiation fails, seek mediation by a third party.

If you are developing your own crisis management procedures or need guidelines for handling problem situations, keep the following suggestions in mind:

Remain calm

When an accusation is made by a client or contractor, many design professionals feel angry. Your response may be to retaliate by countering or striking out at the party making the claim. Do not do it. Examine any accusation calmly and objectively.

Authorities on dispute handling recommend that you assume a neutral attitude, and seek to understand the other party's position. A good response would be:

"Please let me have the details. I would like to make notes. I want to be sure I fully understand what you are saying. Let me get this straight. You feel that our documents were lacking in what way?"

This is much more productive than a quick and heated denial.

Report The Situation Immediately

Do not wait until someone has made a formal claim against you. If you recognize an incident or potential claim situation as soon as it occurs and act to resolve it quickly, you may be able to forestall a claim or lawsuit. Be sure that your staff understands that reporting such a situation is positive behaviour to be rewarded, not punished. All personnel in your firm should know whom to contact — perhaps your project manager or another designated member of management — as soon as they become aware of a problem. That party, in turn, should investigate and notify your professional liability insurance representative at once. These individuals can provide guidance and even help diffuse the problem before it escalates.

Sometimes there is a reluctance to report a problem to an insurance company because of the misconception that once a potential claim is reported, costs begin to mount. Actually, the longer a problem is ignored, the more expensive and difficult its resolution is. The time to bring expert loss prevention resources to bear is when they can be most effective — as soon as there is *any* indication of a problem.

Sometimes you may not even know what the problem is, but you are aware of disquieting signs. Suddenly, your client stops speaking to you. Or you learn of a project meeting from which your firm has been excluded. Or you hear that another design professional has been on site. If your sixth sense is telling you something is wrong, report it.

Keep Seeking Alternatives And Solutions

Often, parties to a dispute overlook the obvious — the need to remain flexible and continue to seek solutions to a conflict before it escalates into a major lawsuit. This is no time for a "bunker" mentality. Allow yourself and your associates the freedom to keep generating ideas for solving the problem. Discuss these initiatives with your insurer. Together, you may be able to come up with a creative solution that will work for everyone.

Do Not Automatically Assume You Are Responsible, No Matter What The Facts First Seem To Indicate

One reaction to an accusation is anger. Another is guilt. When confronted with a failure, admission of "wrong" flows either from a sense of guilt (*Did I do that?*) or a desire to mask it over (*What can I do to make this go away?*).

Sometimes, a design professional assumes the blame — and the liability — by asserting, *"It was my fault. I'll take care of it. I'll make sure it's fixed."* A more thorough examination at a later date may prove this assumption of responsibility totally misplaced, since the fault lies elsewhere or alleged damages did not occur.

It is almost impossible to undo the damage done when you mistakenly assume responsibility and communicate it to the other parties connected with the loss.

It is important that you recognize that perfection is impossible. No matter how much you might wish otherwise it is close to certain that some time you will make minor errors. If you acknowledge this from the beginning of the project and explain it to your client, you will not raise false expectations or set standards you cannot reach. Remember, any loss situation involves many factors; do not try to rush to a verdict before all the facts have been evaluated.

Communicate

Although you should not automatically assume responsibility, do not cease communicating with others. Keep talking and listening. If you keep up the dialogue, you may learn important facts that can help determine what really happened. Certainly, continued communication will help preserve your relationships with your client and others and may motivate everyone to resolve the dispute quickly.

Document And Photograph

You need to record the facts. All data and correspondence relating to the dispute should be documented. Write down the duties, responsibilities and performance details of the parties involved while they are fresh in everyone's minds. Keep detailed notes on all communications. Never rely on memory.

When a dispute arises, study the plans and specifications and the contract documents. Note those sections that refer to the problem or that specify the duties of the parties to the dispute. If a product is involved, obtain the manufacturer's or supplier's warranties and specifications available while you were developing the plans and specifications. If shop drawings are involved, examine those that pertain to the claim.

Notes and records not only help clarify the issue but will also be needed by any lawyer who may come to your rescue in the event of a suit. Bear in mind, though, that materials you gather may later be subpoenaed, so it is important to stick to the facts and avoid unnecessary and unfounded personal comments.

"A picture is worth a thousand words" still holds true in potential professional liability claims situations. Photographing or videotaping the disputed subject matter is an excellent way of preserving the record for the future. Audio recordings describing visual observations are valuable for refreshing memories and documenting facts as they existed.

Try To Resolve The Conflict With The Others Involved. If DirectNegotiationFails,Seek Nonbinding Mediation.

Responsibility for failure often belongs to several parties. In these "multi-party" disputes, it is important to communicate with everyone involved. Sit down and talk to the other parties. As soon as possible, try to find a solution you can all live with. If informal negotiations fail, with the consent of your insurer, invite a neutral, experienced mediator to help you reach a settlement. Even if nonbinding mediation is not specified in your contract, any party can suggest it at any time. If these processes fail, or are not attempted, the dispute could escalate into binding arbitration or multiple-party litigation.

Working It Out: Negotiation

Once a conflict arises, make every effort to settle it at the job site and as quickly as possible. Even if you don't have a conflict resolution system in place, try to work things out before resorting to more formal measures. Although emotions may be running high and you believe you are completely (or mostly) in the right, keep in mind the enormous costs that would result should the conflict escalate into a lawsuit. Remember, too, that about 95 percent of all lawsuits are eventually resolved through negotiation, but many take months or years of expensive legal manoeuvring before the parties arrive at the bargaining table.

It is important to bring everyone involved to the negotiating table. Some of the parties to a conflict may not join in a negotiation because they believe that the others will solve the problem. Resolution, however, is much more likely if there is active participation by all parties.

Remain flexible. Negotiation may well mean that you will need to give up something in order to resolve the matter to everyone's benefit. The outcome of any conflict depends on how well all parties understand and coordinate their actions. You can never abdicate your responsibility to attempt to resolve a problem or expect to come out unscathed, even though you think you are not involved. In conflict situations, a decision to select the most favourable outcome for one person can result in distressing results for others. On the other hand, a decision to select a somewhat less favourable outcome by one party may result in a positive outcome for all.

There are three general choices that affect the final result of any conflict. First, you may decide to maximize your own outcome. Second, you can decide to place the blame on another. Third, you can make an effort to optimize the results for all parties to the conflict.

With the consent of your insurance carrier, you may note that sharing responsibility, at least at the beginning, will represent a minor expense compared to the cost and disruption of protracted litigation.

All participants in such a negotiation should have the authority to make decisions. Representatives who are instructed to act cooperatively perform better in this type of meeting than those who are told to maximize their own organizations' positions.

Formal Dispute Resolution

If all efforts to resolve a conflict by negotiation fail, you will have to resort to more structured methods of dispute resolution. This does not mean, however, that your only option is a lawsuit. On the contrary, because of the huge costs in time and money, litigation should be considered a last resort.

FIDIC believes that it is far better to rely instead on one or more of the *dispute resolution* techniques available. While a common term for this is *Alternative Dispute Resolution* or ADR, we like to think of it as DR. Litigation is the *alternative* — and a poor one at that. On the other hand, some authorities define ADR as *Appropriate* Dispute Resolution, and this seems logical. The goal of ADR is to give opposing parties the opportunity to settle disputes quickly, at relatively low cost and with a minimum of emotional involvement and stress. Most ADR methods allow for creative problem solving and help maintain goodwill between the parties — in short, they create a win-win situation for all concerned.

FIDIC has published the following documents to assist members of its Member Associations in the use of ADR processes:-

Amicable Settlement of Construction Disputes (1992);
Mediation of Professional Liability Claims (1993);
Mediation – Explanation and Guidelines (1993).

You and your client should agree in advance that you will try dispute resolution methods before turning to litigation. That means that your contract should address the issue and provide you with the flexibility to use one or more forms of ADR as appropriate to your situation. Keep in mind that if you use a standard professional service contract form, you may need to amend the document, since many such agreements specify binding arbitration as a first step in resolving a claim.

There are several ADR approaches in use today. These range from consensual, nonbinding procedures to binding procedures. *See Exhibit 1.*

First try to resolve your dispute through one or more of the *non-adjudicative* ADR procedures. These include mediations, minitrials and advisory arbitrations. In these procedures, *participants work to solve their own problems* rather than place their collective fates in the hands of someone else.

Mediation

Mediation offers many advantages over litigation or arbitration. Relatively quick and inexpensive, mediation can also help the parties settle their disputes while preserving their working relationships.

Mediation is a sophisticated form of negotiation, distinguished by the participation of a neutral third party who helps the parties come up with their own solutions to the problem. The mediator acts as a facilitator in the discussions, asking questions and keeping face-to-face negotiations moving. The options available as solutions are limitless — anything decided upon by the parties involved.

Usually a voluntary, nonbinding consensual procedure, mediation can be thought of as a three-stage process. In the first stage, negotiations are used to start or improve communication. Ideas and options are explored without requiring commitment. During this stage, the mediator often meets individually with the opposing parties. These discussions are confidential; however, the mediator may be able to use the privileged infor-mation, without violating confidences, to advance the dialogue. Many disputes are resolved at this first stage.

If the problem cannot be resolved in the first stage, the next stage is designed to clarify facts, sometimes with the help of a neutral expert agreed to by the parties, and to determine costs of settlement.

If necessary, the mediation continues on to a third stage, where the parties may choose another way to settle the dispute: another ADR approach, arbitration or litigation.

Very often, a mediated result can be obtained in a matter of one or two days. Even if mediation is not successful, very often it clarifies the facts in a dispute and narrows the issues that remain to be solved. Mediation is always worth considering.

FIDIC believes that every design professional's contract should call for mediation as the first dispute resolution option, before resorting to other ADR procedures. Some insurers offer financial incentives to policyholders if they resolve their disputes through mediation.

Minitrial

This is a dispute resolution procedure having some favour in the USA, The term *minitrial* may be misleading. More a private nonbinding settlement procedure than a trial, this ADR technique allows the legal counsel for the disputants to briefly present his or her case before a panel of top management representatives of each party and, usually, a neutral advisor, often a retired judge or lawyer, in a confidential trial-like setting. Management can then hear both sides of the issues, see the strengths and weaknesses of their respective cases and obtain a sense of the likely outcome of litigation.

Often this persuades both sides to settle their differences rather than move on to litigation. For this reason, it is important to select management representatives who have full settlement authority and who were not directly responsible for the project.

The minitrial is fast and relatively inexpensive.

Other Dispute Resolution Techniques

A number of other methods have been developed to resolve disputes. Some of the more popular are discussed below:

Mediation/Arbitration

Mediation/arbitration is a combination of mediation and arbitration. The technique requires one person to act as both mediator and arbitrator. The person, agreed upon by the project parties before construction begins, is selected on the basis of his or her objectivity, honesty and knowledge of the industry.

If a dispute arises, the parties involved attempt to solve it on their own. Failing that, the mediator/arbitrator is brought in to mediate the dispute. If these efforts fail because the parties cannot reach their own solutions, the mediator/arbitrator then reverts to the role of arbitrator and issues a binding decision based on his or her findings. Because the parties may be required to use the mediator/arbitrator throughout the project on additional disputes, the range of conflict usually narrows, and the entire resolution process can be accelerated significantly.

Like any consensual method, for mediation/arbitration to be effective, all parties to the project — owners, designers, contractors and subcontractors — must be committed to the process. This commitment can be hard to obtain. Some critics of mediation/arbitration point out that, whereas mediation is a conciliatory process, during which the parties specify *the least they will take*, arbitration is an adversarial process, during which the parties ask for *the most they can get.* Some also object to the fact that the mediator/arbitrator learns proprietary information during the mediation process that prevents the parties from maximizing their outcome. Proponents argue that the knowledge gained actually permits the mediator/arbitrator to construct an equitable solution should arbitration be required. They also note that resolution comes more quickly and the gamesmanship often associated with selection of an arbitrator is eliminated.

Mediation-Then-Arbitration

Mediation-Then-Arbitration is very similar to mediation/arbitration, except that the arbitration following mediation is conducted by a different neutral who has also been preselected but does not participate in the mediation discussions. This sidesteps some of the drawbacks of the mediation/arbitration method but requires that two individuals be agreed upon.

Voluntary Nonbinding Arbitration

This technique, also known as *advisory arbitration*, is typically used to stimulate agreement before parties resort to a more binding ADR procedure. Advisory arbitration is most successful when the resolution of a claim is riding on only a few critical issues. Disputants can make their own rules. They can hear for themselves the decision of a neutral party and discover how their testimony and experts might hold up in court or another forum.

Arbitration

Although arbitration might be slightly less costly, and sometimes though not always, quicker than litigation in certain situations, it is rarely preferable to mediation. Compared to mediation, arbitration can be time consuming and expensive, and sometimes results in unjust decisions which are not normally subject to appeal. It is important to remember that arbitration, like litigation but unlike mediation, is an *adversarial* form of dispute resolution; a third party makes the decision for the disputants. Parties who arbitrate their differences often emerge with their relationship damaged beyond repair.

An arbitration is less formal than a court trial, although the parties involved are often represented by lawyers. Contracts, documentary evidence and other materials are presented to the arbitrator, witnesses are examined and cross-examined and, since the usual civil rules of evidence are not used, participants are free to argue about the relevance of the evidence. The arbitrator is obligated to consider any evidence that bears on the case, giving appropriate weight to that which is more substantiated and reliable. After both sides have had an equal opportunity to present their evidence, the arbitrator declares the hearing closed. The arbitrator is not required to write an opinion explaining the reasons for the decision.

For design professionals, there are some limited situations — small and very simple disputes and disputes in some unique jurisdictions in some countries — where arbitration may be appropriate. Broad reliance on arbitration, however, is not recommended. Keep in mind that if you sign a contract with a binding arbitration clause, you are agreeing to submit any and all disputes to arbitration. While this may seem like a good idea, it means that you give up flexibility in choosing more appropriate ways to resolve disputes.

There are other potential problems. If you sign a contract in which arbitration is specified as the sole remedy, you may be unable to draw a third party, who is your best defense, into the arbitration proceedings. For example, suppose you specify a type of material or equipment and it fails. If your client calls for arbitration, as you agreed in your contract, you would have no way to make the manufacturer or supplier a part of the proceedings other than as a witness. Your only resort would be to attempt to recoup your losses by a separate court action against the manufacturer. This will cost you additional money and time, and the matter may not be resolved in your favour.

Another problem with arbitration is that you may not be able to conduct necessary *discovery* proceedings. In a court of law, you can examine your opponent's files; in arbitration, this is usually not possible. It is difficult to prepare properly when you are denied access to evidence your opponent is planning to present to the arbitrator.

In addition, because both parties can present any type of evidence in an arbitration hearing, complicated technical issues sometimes lead to a snowstorm of data that needlessly prolongs and confuses the proceedings.

Under most arbitration rules, if you receive what you believe to be an unfair decision, you cannot appeal it unless you can show misconduct or gross irregularity on the part of the arbitrator. This can be a real disadvantage if you are clearly in the right, because sometimes arbitrators decide disputes by compromise in order to settle the case and close their files.

Private Litigation

Rent-a-judge, a form of private litigation sometimes used in the USA, refers to procedures in which a retired judge is retained to preside over a faster, more confidential proceeding than regular litigation. Retired justices may also be willing to preside over many other types of ADR proceedings.

The Breakdown of Communication: When Litigation Becomes Inevitable

If you are able to implement partnering and dispute review boards and/or make use of some of the available alternative dispute resolution procedures, you may be able to avoid litigation altogether. It's a worthy goal. Being involved in a lawsuit is one of the most traumatic and unnerving experiences a professional in private practice can have. It is financially and emotionally draining and can damage both personal integrity and professional reputation. That is why it is so important to try to resolve crises before they become claims or lawsuits.

Although only a small fraction of all lawsuits filed actually go to trial, those that do typically involve three to five years of complaints and cross complaints, depositions and interrogatories, and motions and counter motions. The final decision is then left in the hands of a judge, a person who is often not completely familiar with the complex practices of modern construction.

The decision to litigate should be made with great care. Your lawyer and insurer will consider and discuss the options with you. If no other dispute resolution method seems viable, then litigation may be the answer. When the stakes are very high, important principles are involved and all other avenues for peace are exhausted, sometimes you have little alternative.

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Business Practices

There is a direct connection between your approach to professional practices and your exposure to professional liability claims. That is why your loss prevention efforts must extend to your business practices and why the management of your firm requires just as much attention and expertise as the design of its projects.

Think about your business operations. If you try to incorporate innovative techniques and materials in your design services, why rely on outdated business practices? When you take a businesslike approach to your practice, you can manage it more effectively and reduce much of your risk. Please refer to the FIDIC publication "Client/Consultant Model Services Agreement"

Project Selection

It isn't always easy to pick and choose your projects. Yet careful selection is essential because accepting the wrong assignment almost guarantees professional liability problems. In making your selections, you need to weigh every aspect of your potential projects.

Several factors have an enormous impact on your risk exposure. Claims are much more likely when you ignore the warning signs in one or more of these areas: *the type of project you choose, the kind of client you work for, the adequacy of the project funding, your scope and fees, your firm's capabilities* and *the fairness of your contract.* Each of these is just as important as the preparation of your plans and specifications.

Consider the example of a mechanical engineer in a small town who was asked to design air conditioning system modifications for an old building to which a new addition was being attached. No reliable record drawings of the original system were available.

The owner vetoed tearing into the walls or ceiling to map the existing system as "too expensive" and asked the engineer to base his recommendations upon a visual inspection only. He did so, but failed to take steps to protect himself with appropriate disclaimers in his contract and in his final report. Later, during construction, when the system's components, ductwork and piping were exposed, they were found to be in poor condition and inadequate for the new addition. To make matters worse, asbestos was discovered in the insulation. To deal with these conditions, the engineer made additional recommendations which required costly modifications.

The owner had used the engineer's original report as the basis for the works contract. The owner accepted the engineer's modifications as necessary, but because the engineer had not included this information in his original report, the owner made a claim for the additional cost, alleging "errors and omissions."

What went wrong? The design professional seemed to have acted in a perfectly reasonable, ethical and professional manner. If we look at the entire transaction and

the decisions within the engineer's control, however, we can see the mistakes that led to this claim.

The engineer did not recognize clear danger signals when considering the *risks of the project.* When he was informed by the owner, for instance, that insufficient funds were available for conducting exploratory demolition to determine the condition and location of the existing system, he should have detected the signs of a poorly financed project.

Furthermore, the engineer should have included in his contract and report a precautionary statement indicating that no design or construction budget involving renovation of existing structures and systems should be based on the preliminary information provided, and that additional expenditures might be necessary after the existing structure was opened up.

He should have anticipated the possibility that asbestos would be present in an older building. The liability implications here are so great that on *any* remodelling or restoration project, the agreement should contain language noting that if asbestos or other hazard-ous materials are discovered, the design professional is not responsible for any claims resulting from the existence of the materials, or for the removal or additional costs the removal will necessitate.

Had the engineer been alert to potential problems, he would have spotted the warning signs. Even if he had elected to proceed with the assignment, he could have substantially protected himself by informing the client of the risks and by arming himself with special provisions in his contract.

Assessing the Risks of a Project

Some projects are so litigation-prone that only the most foolhardy design professional would dare accept them. Even if desperate for assignments, few designers would be likely to take on the classic designer's nightmare: a conversion to strata ownership of a thirty-year-old cliff-hanger apartment house adjacent to a hazardous waste dump site on an earthquake fault line, recently purchased by a group of financially over-leveraged neurosurgeons and their lawyers.

While the above cliché may be overly obvious, there are other high-risk projects that should be almost as easy to spot. These may involve troubled sites, hazardous waste, asbestos, underfinanced clients, amusement parks, prisons, highly controversial projects and litigious clients.

Sometimes claims-prone situations are not easily identified. These could include fast-track projects, which can involve substantial modifications to plans and, thus, big change order expenses and irate owners. In this situation, very unsophisticated clients can be a big problem. They rarely comprehend your role as a design professional or the construction process. They will not expect or understand changes and, most likely, will

not understand the need to have sufficient contingency reserves set aside in their project budgets. Assignments that would omit your construction phase services or, conversely, require construction observation on someone else's design should also give you serious pause.

Then there is the "contractually hazardous" project. This could be *any* type of project, even a simple assignment, for which the client issues a contract containing such unfair or onerous provisions that you could wind up accepting most or all of the client's risks. Typically, the client issues a purchase order or similar contract form, which is thoroughly inappropriate for engaging a design professional's services. Such a project is probably the riskiest of all because you have none of the standard contractual provisions a professional needs for protection.

Project selection is rarely a cut-and-dried, yes-or-no affair. For most design professionals, potential projects usually contain two or more secondary risk factors that, considered separately, might be acceptable, but together could add up to a big liability headache. Take, for example, a well-financed but naive client who wants to build an apartment complex as a speculative project. You might be able to educate an unsophisticated client, you tell yourself, and perhaps negotiate a solid contract. But can you protect yourself from the subsequent purchaser of the complex? What could you do if the apartment complex becomes condominium in a few years and the complex suddenly has 300 new owners?

Your best course is to learn to identify all the potential risks on a prospective project. Some design professionals use a Project Evaluator like that shown in *Exhibit 2* to evaluate both their clients and their projects before submitting a proposal or negotiating an agreement. This can save a lot of time and money spent chasing projects you really should not accept, but it is usually very difficult to assemble all the desired information.

Next, determine how the risks you have identified might be managed. You can transfer some risk to another party, such as an insurer, or to your client through contractual provisions. You can minimize some risk by educating your clients, by providing more comprehensive services and by insisting on qualifications based selection and negotiation with a competent contractor. You can significantly reduce your risk by developing a contract that is fair and precise, that accurately defines the intent of both parties and that includes a *limitation of liability* clause.

You and your client have to take a good, hard look at the risks you cannot prevent or control. Understand that on a high risk project, the risk must be borne by the party best able to control it. If no one can control a risk, then it must remain with the project owner. If the owner refuses, you should decline the project.

The risks that remain with you — those that cannot be otherwise transferred or managed — will require a hard-headed business decision. Is the fee or fame incentive so attractive that you can afford to take the chance? Making that determination may be the biggest gamble you take.

Evaluating Your Client

It is extremely important to know who your client is and what kind of business he or she runs before agreeing to accept an assignment.

You should know the answers to these questions:-

Does the client have a realistic budget and programme?

Is sufficient funding available? What is the source of the funding?

Is your client going to be the owner and user, or is the project being developed for speculative resale? Are the end-user's requirements known?

Will the contractor be selected on qualifications or on price alone?

Does the client understand the construction business?

Does the client have the ability to manage the project?

Will you be working with people who have the authority to make the decisions you need?

What is the client's experience with this type of project?

Does the client have a history of claims and litigation?

What is the client's reputation for integrity and honesty?

How did the client get your name? Why were you selected by the client?

Is the client willing to adopt mediation or other dispute resolution techniques?

Is the client willing to institute partnering on the project?

Is communication with the client clear and direct?

Is the client's personality compatible with yours?

Has the client shopped around for a low fee? Does the fee allow you to provide services that are sufficient to protect your professional integrity and do a reputable job?

Does the client have a reputation for slow payment or nonpayment of fees?

Is a good contractual relationship possible with the client, or is the client rigid and uncompromising?

Are the client's program and quality expectations achievable? Are they achievable within the agreed-upon budget estimates?

Your relationship with your client has a great deal of influence on the likelihood of a lawsuit. It may be impossible to have a good relationship if you have fundamental disagreements with your client about the way business should be conducted. Determining this before the project begins may save you a lot of trouble. If you sense your client does not measure up on the important issues, do not become involved.

A Matter of Money

An astonishing number of claims against design professionals can be traced, at least in part, to the fact that the owner did not ensure that sufficient funds were made available

to do the necessary work. You would think that this problem should concern only the owner, the contractor and their respective financial institutions, and not you, the design professional. Not so. When the inevitable unanticipated costs and extras arise, you will find yourself vulnerable to a desperate owner or contractor who, midway through construction of the project, is looking for scapegoats and money from any available source — including your pocket or your insurer's.

For example, consider the owners who have committed all their resources to a large project. Midway through construction, the owners discover that the cash flow demands are mounting beyond their capacity. The slightest delay or unanticipated expense magnifies the problem. In a desperate attempt to keep their heads above water and fend off impending foreclosure, they adopt a typical tactic. Payments to the contractor and you, the design professional, are slowed or stopped, and the blame is placed on you. The contractor has a better bargaining position than you do, because the owners need the contractor to finish the job. You, however, have rendered most of your services, and are just waiting to be paid, very likely including payment for your additional services.

The slightest ambiguity in the contract documents is made to order for a claim against a design professional. The all-too-common reaction of over-stretched owners is to refuse to pay you, claiming faulty performance of your duties. The scenario goes something like this. As you press for payment, the finger pointing begins. You claim breach of contract and sue for collection. The owners countersue or may even have initiated a preemptory claim against you to discourage your collection efforts. In either case, they say that the cost of extras and the resulting delays are due solely to your negligence in not providing sufficiently clear drawings and specifications, in delays and errors in shop drawing review, and in whatever other reasons a fertile imagination can invent.

The fact that the owner's claim is eventually found to be without merit is of little consolation when you consider the not-so-hidden costs of having to defend yourself. These hard dollar costs, such as your insurance deductible, your time and that of your staff in defending against the claim, and possible loss of revenue due to bad publicity, as well as the months and years of resulting stress, can take a terrible toll on you and your firm.

Therefore, routinely check the financial capability of each client for every project before you agree to commit your services. After all, you are about to invest your operating expenditure up front in the expectation that you will be fully and promptly paid for these services. You should not have to wait weeks or months to discover the client cannot pay you. On a project with a public owner, make sure that the project has been authorized and that enough money has been appropriated or otherwise set aside to complete the project.

You should also explain to every client that unexpected needs will arise during the project and that the client must maintain an adequate contingency fund throughout the course of construction to meet these needs. You are entitled to see some assurances that the client has budgeted for this contingency or otherwise has the necessary funds available, such as a commitment from lenders.

Checking a Prospective Client's Financial Condition

There are five basic tools you can use to evaluate a potential client's financial condition. All of these steps should be taken after securing your client's permission in writing:

- Review of the client's financial statements
- Review of the client's credit history
- Information from the client's bank
- Review of public records
- Discussions with other design professionals who have worked for the client

A review of the financial statements will indicate the client's liquidity, assets and debts. Don't be shy about asking for such statements. Clients often ask you for this information; you are entitled to the same privilege. You should ask to see current statements as well as from previous years. Your firm's chief financial officer or your outside accountant can assist in analyzing these statements.

Credit rating agencies or credit bureaus gather and disseminate information about the credit worthiness of individuals and businesses. You may subscribe to the services of these credit organizations and order their reports.

Credit reports typically give, among other data, the following information on all credit transactions:

- Date of last payment
- Highest credit given
- Current balance owed
- Times past due by category (30-45 days past due, for instance, or 45-60 days past due)

A bank will generally confirm that an individual or company has an account; but will not indicate the specific balance. It may indicate when the account was opened.

Public records contain transactions involving real estate. They also contain attachments on real estate, such as liens, mortgages and judgments. Does your client have a history of projects that were liened by contractors or other design professionals? If so, consider that client risky. Does the project have a list of mortgages in excess of the value of the land or, worse still, in excess of the completed project? If so, you probably won't want that client.

Perhaps the best way to get a sense of how a potential client views financial obligations is by talking to other design professionals who have worked with him or her. Ask your client for the names of design firms used in the past, then contact these firms to ask if payment was prompt. If there were problems, try to learn what happened. This will help you decide whether it is worth investing your valuable time in the client.

If you decide to proceed with the client, you are entitled to adequate contractual terms regarding billing and payment of your fees, no matter how credit-worthy he or she appears to be. You need the contractual right to suspend your services and to withhold

your plans unless you are paid. Your contract must contain clear provisions regarding your remedies if you are not paid on time. Interest, the right to lawyer's fees, lien rights if available, termination — all of these measures can put teeth into your contract and help you collect your fees.

Your Professional Fees

You are entitled to a fair fee for your professional services. When a prospective client attempts to induce you to work for a fee you consider inadequate, you should be prepared to refuse the project. Before you do, though, investigate whether the prospect's attitude concerning your fee comes from insufficient information. Educate your client by advising that a reduction in professional fees may actually result in a higher cost of construction or operations or in the assumption of great risk by the client.

If you approach the discussion of your fees in a straightforward and professional manner, you can often obtain the work you want without sacrificing your interests or increasing your exposure to liability. Some clients can be naive. They may appreciate such a professional inquiry.

Even if a client is informed, just by addressing these issues you show that you understand both the client's and your risks in the project and that you care about the project's success.

Many successful design firms steadfastly refuse to negotiate fees. Instead, when faced with a client who wants them to lower fees, they turn to their scope of services and ask the client to choose which service he or she wants to omit. Without increasing their risk, the design firms are sometimes able to reduce or delete a particular service or portion of the project. If the client tries to reduce the scope of services and related fees to a level that is insufficient to do the job properly, these firms have the professional discipline to decline the project.

Here, again, careful project selection comes into play. Learn to consciously analyze the risks on a prospective project and to balance them against the reward you stand to gain. If the risks are substantial, the rewards must be, too. Recognize that the risk of a dispute is not the only risk you face. There is also the risk of increased insurance premiums because you are taking on a high-risk project or because a claim will have resulted from that project. In an extreme situation, you may even be risking your future insurability!

Price Only Selection

The design professional often encounters two types of bid situations. In the first, fee is the sole criterion used by the client in selecting a design professional. It may become obvious when you receive a set of requirements and a request for a written bid or when the client says he or she intends to hold a price-only negotiation.

The connection between price-only competition for design services and professional liability claims is clear. Projects awarded to design firms on the basis of the lowest bid are often subject to costly claims. The scope of design services for such projects may be pared down to below the normal standards of professional care, with inadequate or nonexistent construction phase services.

In a typical price-only scenario, prospective clients wish to retain your firm to perform design services. During discussions, the clients carefully emphasize such considerations as the prestige of the project, the public relations value of having one's name associated with such a project and the likelihood of additional, more profitable work in the future if all goes well. The prospective clients then tell you that you are not the first firm with whom they have worked, and that there has been dissatisfaction with past services performed by one of your competitors. You are told that the clients would be willing to consider retaining you, provided your fee is "reasonable". They point out the relative simplicity of the design proposed for the particular project, implying that nominal effort would be needed to perform the services.

The clients then go on to say, "One of your competitors who did our work previously charged us x percent of the actual construction costs for their work even though the projects were not complicated. If you will agree to design the building for half that price, we have six more buildings coming up in other cities which will need to be designed."

When faced with this type of bid situation, try to change your potential client's way of thinking by pointing out the misplaced emphasis on low-cost design. Explain that if the client is willing to pay for better quality through more comprehensive services, you may be able to reduce the life-cycle costs of the project, thereby saving him or her a great deal of money in the long run.

In the second type of situation, the client tells you that your fee is being evaluated, along with other criteria such as expertise, references and qualifications. In this situation, you need to decide the minimum amount for which the project can be competently completed, using your best estimating and prior project cost experience, while allowing for contingencies that may increase that cost both in professional services and construction. You must then sell that figure, *as part of a complete package of design experience and skill,* to the client.

Qualifications Based Selection

The method of procurement for design services that makes the most sense is *qualifications based selection.* This is the traditional method by which a client identifies and selects the design professional who is best qualified for a project. The client and professional then discuss the project and develop a brief. The design professional's fee is determined by that brief. This method recognizes the fact that designing is a highly subjective and creative process, and encourages design excellence and innovation. It

also enhances communication between the design professional and the client. This is in everyone's best interest, designer and owner alike. Alternative selection methods usually mean a unilaterally developed scope of services, either by the client or the design professional. If a brief is not developed jointly, there is a risk that each party will proceed under differing assumptions and expectations. A client and design professional working at cross purposes or with differing expectations is a claim just waiting to happen.

Instead, help your clients understand that qualifications based selection will, in the long run, save money and lower everyone's risk, especially theirs. For the same reasons, you should practice what you preach and use the same criteria for selecting *your* subconsultants. The U.S. Army Corps of Engineers and the General Services Administration, were instrumental in pushing the Brooks Bill through Congress in 1972, mandating qualifications based selection in design service procurement by all federal agencies. Since then, most US states have enacted similar legislation that requires qualifications based selection in state agency contracts with design professionals.

Qualifications based selection is strongly advocated by FIDIC and its member Associations. FIDIC has just issued it's own QBS document.

You may be tempted to work for a fee lower than you feel is appropriate, reduce the scope of your services or participate in a bidding situation. If so, stop for a moment and weigh the expected benefits and "promises" of future rewards against your liability exposure — your risk. The future of your practice could well rest on this decision.

Your Firm's Capabilities

Some firms submit proposals for specialized projects despite the fact that no principal or employee within the firm has the necessary knowledge or experience for such a project. This often leads to a frantic search for qualified personnel if the firm is awarded the project, or the temptation to try to muddle through somehow, turn out the best design possible under the circumstances and hope. Consider, for example, the firm trying to move into larger work and finally succeeds in landing its first high-rise building services project. The firm immediately begins the design, assuming it has enough knowledge to deal with the special demands of a high-rise structure. The professional liability risks created by working beyond capabilities can be immense.

No doubt this would not happen in your office. The example, however, shows a weakness of some professionals: the inability or unwillingness to recognize their own limits and their firm's true capabilities.

Take the time to review your firm's capabilities. Are there sufficient personnel with appropriate expertise for your normal workload? Are back-up personnel available if a highly skilled person or someone with unique experience were to leave your firm?

Evaluate the quality and number of substitutes available should a key player become unavailable. Before accepting new projects, review your personnel and check their academic and professional experience. Never commit yourself to an obligation you are unable to fulfill. Remember, too, that even if you have the personnel, they may be fully committed to other projects. Which of those projects will you deprive to staff the new assignment? Can you justify these decisions to your existing clients?

A related area of concern is the misrepresentation of professional capabilities. Some design professional firms overstate their qualifications in advertisements, directories, brochures and proposals. These firms often use extreme words and phrases, such as *best, most qualified* or *expert* to describe their practice. At the very least, injudicious wording can set the stage for unrealistic client expectations.

Other firms inadvertently misstate their firm's capabilities. Your firm's qualifications, for example, may be listed in a brochure that is out of date, and apply to personnel who are no longer with the firm. However innocent, this might be considered misrepresentation. Some countries have laws under which this kind of fraudulent misrepresentation can be prosecuted in court.

Prudent firms keep their statements of qualifications up-to-date. Brochure formats that permit the removal of obsolete data and the insertion of current data will give you the flexibility you need to avoid misleading statements.

Ask yourself, "If there were a lawsuit involving claims of professional negligence, have I made any statement in a brochure, proposal or presentation that would overstate or mislead anyone about our present capabilities?"

If you are sued, your performance will be judged by the professional standard of care; that is, did you measure up to the level of skill, care and judgment normally exercised by other professionals in the community practicing the same discipline under similar circumstances? If you have any doubt about your current ability to perform the services you are proposing in a competent and professional manner, you would be far better off refusing the assignment.

Your Professional Services Agreement

Oral agreements are a thing of the past — or they should be. It is rare today to find a construction project free from controversy. In the event of a dispute, you must be able to establish your rights and obligations. This will be much easier if your part of the bargain is set out in carefully defined terms that do not rely upon the faded or biased memories of the parties involved. Although this point may seem obvious, amazingly, some design professionals still provide services on the basis of a handshake.

The need to establish your rights in the event of a dispute is not the only reason to put your agreements in writing. Negotiating a written contract gives you and your clients a

chance for careful consideration of such issues as the allocation of risk, the duties of each party and a detailed scope of services. In the negotiation process, your clients may discover that their understanding of the extent of the agreement is quite different from yours. This provides the opportunity for further discussion and clarification until you can both agree on the terms and conditions. Without a written agreement, defining your scope of work may eventually be left in the hands of a court and you may discover that the court thinks you agreed to do much more than you ever intended!

A one-sided contract, however, can be as bad or worse than no contract at all. A contract that is written by a client's over-zealous lawyer may be so onerous that it places you under an unreasonable burden of performance and obligates you to assume most or all of your client's risk on the project. *Exhibit 3* sets out some basic points which you should keep in mind.

Agreements for professional services come in all shapes and sizes. Many design professionals prefer to use the standard contract forms developed by their professional organizations. These forms are excellent starting points, but as these organizations point out, the documents will need to be adapted to your situation. You should review the circumstances of each potential project and then strengthen or supplement the standard forms as necessary. Be careful, though. The standard contract forms have been carefully developed and are coordinated with other documents (the General Conditions and subcontracts, for instance). If you plan to amend the standard forms in any way, be sure to use the services of a knowledgeable adviser.

Many firms have developed their own standard contracts. This is an excellent idea. It is far better to have your own well-worded, reasonably protective agreement on tap for a potential client than to wait for the client to offer his or her favourite form. Generally speaking, the party who gets its contract on the table first — or whose draft contract is the basis for negotiation — is the party who will get more of its desired language in the final document. Again, in developing or customizing an agreement, review the language with a lawyer and make any necessary amendments to fit your particular project.

Clients will often ask that you use their agreements. These may run the gamut from relatively benign preprinted professional service agreements to more onerous standard purchase order forms or even a modified general construction contract. In reviewing these documents, you must be particularly wary of attempts to transfer the client's risk to you. Talk to your lawyer and try to modify as much of the more onerous provisions as possible. Remember, your client may not really intend that you take on all of his or her risk and may be willing to modify the language so that it is more equitable. On the other hand, if he or she does intend that you shoulder all or most of the liability, is this really a client you want?

When reviewing a contract drafted by a client, you may discover that your own duties and obligations are quite extensive and set out in great detail, but those of the client are

quite limited or ambiguous. Be concerned, but don't panic. Most contracts are, in fact, somewhat one-sided when first drafted and will require modifications in order to be acceptable to both parties. It is natural and expected that both parties will make changes, perhaps several times, before the agreement is finalized. Therefore, it is important to take the time to review a proposed contract with care.

Your lawyer's advice is extremely important. An experienced lawyer who is knowledgeable about construction law is a valuable advisor. With your assistance, he or she can suggest modifications that may protect your interests and will be acceptable to your client. This preventive legal review has paid for itself time and time again. The more familiar your lawyers are with your practice and your prospective contractual commitments, the more effective they can be in steering you through the dangerous waters of liability.

Don't overlook the contract review assistance your professional liability insurer or broker can offer. Often, they are well-versed in contract review and are willing to help you spot and modify those provisions that could expand your liability or be difficult to insure.

Your Scope of Services

One of the best ways to avoid misunderstandings about a project is to make sure both you and your client have a clear picture of the other's expectations and assumptions. A client who agrees up-front on which services you will and will not provide is a client who is less likely to be confused about your responsibilities should a problem develop later.

Work with your client to develop a well-defined scope of services that clearly sets forth those services you *will* perform as part of your basic services, those services you *can* perform as an additional service, those services you *will not* provide and those services your client understands must be provided but *by someone else.* This last point is very important. You can be liable for failing to perform a service, even though you were not hired to do it, if you should have informed your client of the need to have the service provided by someone else. Talk to your client about services he or she has decided to exclude and come to a definitive agreement on who will provide them. Besides being good loss prevention, this discussion often gives you the opportunity to outline other services you offer of which your client may be unaware.

You should keep in mind that it is risky to take any type of assignment that reduces the scope of services below that which is normal and usual for your profession. For example, agreeing to perform design without the construction phase services may be unwise. To do so denies you the opportunity to clarify minor errors or ambiguities in your plans and specifications or to answer questions that will, inevitably, arise in the field during construction. What is more, a court may decide that, although you did not contract to provide construction observation services, a reasonably prudent design professional would have.

To help you think about all the possible services for a particular type of project, it is a good idea to use a scope of services checklist. You could use the checklist for a structural engineer shown at *Exhibit 4* as a basis for developing your own. Your chart should be specific to the services that are normal and customary in your discipline and for the type of projects you perform. Such a checklist can be used as a planning device to ensure that all possible services are considered, which could then be a guide in estimating your proposed services. The same checklist or a derivative thereof could then become a part of your proposal to your client. Bear in mind that if the checklist becomes a part of your proposal, it may likewise become part of your contract by reference or incorporation.

It is also an excellent idea to list those services that are not included, such as for example soils engineering, surveying, hazardous waste removal., providing record drawings or detailed cost estimates.

Onerous Clauses

Beset by runaway construction costs, poor results and frequent claims, owners, too, have sought to defend themselves. Unfortunately, they have sometimes overcompensated by adding onerous clauses to their contracts, often in the form of one-sided indemnities, warranties or liquidated damages provisions. While at one time these defensive provisions were limited to contracts between the owner and the contractor, increasingly they are finding their way into contracts between the owner and the professional.

What should you do if your clients stand firm on a contract that contains one or more of these undesirable provisions? First, find out if your clients truly intend to have you assume unreasonable liability. If they do, then you must stand firm, too. Explain that what is being asked of you is beyond the scope of your responsibility and is not insurable. Frequently your insurance coverage is not broad enough to protect you against the liability you are being asked to assume in an unreasonable contract clause and, therefore, you or your firm are at risk if you agree to the client's provisions. This should be of concern to you *and* your client. If your client persists in being unreasonable and refuses to delete or change language that would place you in an untenable position, then *you must walk away from the project.*

Bear in mind that a clause can be made unacceptable by the addition of a single word. Chapter Two explained how some words used in an agreement can expose you to far more liability than you intended to accept. Words such as *any, all* and *every*, or *inspect* and *supervise* can be as hazardous as the most one-sided indemnity.

The following examples illustrate a few of the more onerous clauses you may encounter in client-proffered contracts. The list is by no means comprehensive.

Indemnities

Look carefully at any contract your clients ask you to sign. Often, this document will contain the words *save harmless, hold harmless* or *indemnify* somewhere in the provisions. Make no mistake, if clients ask you for an indemnity, they are probably asking you to assume some of their liability — to shift their risks to you. In fact, it is likely that you are being asked to take on more liability than required by law or custom and consequently may not be covered by your professional liability insurance.

In particular, watch out for indemnities that would have you:-

Indemnify the client for the client's own negligence or that of the contractor or subcontractor

Indemnify the client totally for claims caused only in part by you

Indemnify the client against allegations, demands, suits or claims of your negligence

Defend the client i.e., to provide a lawyer for the client's defense

Indemnify other inappropriate parties, such as a client's agents, contractors or lawyers

In fact, beware of any provision that asks you to indemnify the client for anything other than your proven *negligent* acts, errors or omissions.

When confronted with an indemnity, your best course is to eliminate the provision altogether and explain that the law requires you to perform in a non-negligent manner anyway. If your clients insist on some sort of indemnity, try to persuade them to agree to a mutual indemnity in which each of you indemnifies the other for your own negligent acts. If that is not possible, you may have to unilaterally agree to indemnify your client, but do so only for that portion of the damages that arises from your negligence.

Most insurance underwriters are extremely cautious about the type of indemnity agreements they will insure. They do not ask you to shirk your legal responsibility, but they are reluctant to insure any assumption of liability that properly belongs with someone else. Before you agree to any indemnity, review the language with your lawyer and your professional indemnity insurer or broker.

Liquidated Damages

A provision for liquidated damages is a perfect example of an onerous clause that has no place in a professional services agreement, yet often appears in owner-drafted documents. While common in owner-general contractor agreements, this provision is inappropriate in professional contracts. Liquidated damages are a specified amount agreed upon in advance to represent damages to the owner, usually because of delay, when it may be difficult to compute the actual damages. For instance, if each day's delay is agreed to represent a loss of $500 to the owner, then a delay of 10 days means that the owner is due $5,000 in liquidated damages.

Because you cannot control the many unknowns of performing a unique design service for a particular project, you cannot assume responsibility for delays that may occur, unless you are negligent. If you are proved negligent, you are liable for only the actual,

provable damages caused by your negligence. Get rid of any liquidated damages provision and, if your client objects, explain that the clause is not insurable under your professional liability insurance and is inappropriate for your type of contract.

Certifications, Guarantees and Warranties

Some owners try to include *certifications, guarantees* and *warranties* in their contracts. All three of these terms are a type of promise — you are promising your client that a certain result has been reached, a standard has been met or a statement or condition is true, correct or perfect. These provisions were originally intended to address dissatisfaction with construction or manufacturing workmanship, but they are now creeping into professional service contracts. A warranty may be fine for a television set, but not for your services.

A clause like this can create serious professional liability insurance problems. You are hired because of your professional knowledge and skills, and the skill level at which you should perform is governed by the ordinary standard of care of your profession. Under that standard, you are not expected to be perfect and you do not have to guarantee your work or the work of others. If you certify or warrant your services, you are promising perfection and you assume a level of responsibility far beyond the normal standard of care and that is not insurable. If you guarantee someone else's work, you are assuming that person's liability as well, another uninsurable action.

You may have encountered a clause like this one:

At the completion of the project, the Design Professional will certify that all of the work has been performed in strict accordance with the Design Professional's plans and specifications.

If you agree to the above clause, you are really promising your client that you will make certain that the contractor has completed every bit of his or her work according to your design. Unless you have someone standing next to *every* worker *every* single day observing *every* aspect of the work, you cannot possibly know such a thing, let alone guarantee it to your client.

Delete any clause that requires you to certify, guarantee or warrant anything you cannot know for certain and explain to your client that such language is uninsurable.

Convincing Your Client

What if otherwise good clients want you to provide a warranty, certify your work or indemnify them? Each situation will, of course, have to be treated individually. Personalities play an important part. Nonetheless, a good client should be willing to listen, and will usually accede to your wishes if you explain in logical terms why you cannot extend your liability.

This delicate subject was successfully handled by one firm with a letter:

> We notice that this purchase order form has been specifically designed for the purchase of materials and equipment, and that some of the terminology is not normally contained in an Architect/Engineer agreement. We make particular reference to Paragraph 6, which suggests a warranty that the services provided by us will be free of design defects. We are, of course, prepared to state that our design and specifications will be prepared in accordance with generally accepted architectural practices. A statement that they would be free of design defects is unrealistic.
>
> We have similar reservations about Paragraph 9, which deals with indemnification. We believe it may be appropriate to provide an indemnification clause for the areas in which we are immediately concerned, relative to negligent acts, errors or omissions on our part. However, in the broadest sense in which Paragraph 9 could be interpreted, it would be, for example, an indemnification against elements such as breach of contract or certain intentional torts. We do not believe it is your intent to include such considerations.

Another firm in the same situation obtained the desired effect by the following letter, which proposed a trade-off:

> We note that your contract of hire contains a hold harmless and indemnity clause. We feel this should be omitted, for several reasons.
>
> Our services require that our people be on your construction site, where we have no control over safety.
>
> We will be subjected to operations in connection with the contractors you have hired, who are answerable only to you as to the safety of the job site.
>
> Further, we will be exposed to lawsuits by the contractor's workers if they are injured, in their mistaken belief that we have some voice in job site safety.
>
> For these reasons, it seems more proper for you to hold us harmless and indemnify us while we are performing services on your behalf. We recognize that such an idea might not be in keeping with your "standard form of agreement" so we will not insist upon this, but we must request that you, at least, delete the hold harmless and indemnity clause from the contract.

This letter made a lot of sense to the client, with whom, incidentally, the design professional had excellent rapport. The better you have educated your client, the easier this kind of agreement is to achieve.

On the other hand, if your client is not willing to negotiate and modify these troublesome clauses, you need to consider if you really want to work with this type of client.

A Limitation of Liability Clause

Limitation of liability offers one of the most effective ways for you to control your professional liability risk, by allocating that risk properly between you and your client.

Who should be responsible for how much risk on a project? This is always a difficult

question. Historically, risk has not been assigned equitably in the construction environment. Design professionals bear far more of the risk than their participation in a project warrants.

Limitation of liability is a contractual way of allocating risk in proportion to the design professional's participation in the project. The design firm says, in effect, "We will provide you with our services at a stated fee, providing you agree we will not be liable for an unlimited amount of money." In other words, the design firm and the client can work together to set some reasonable limit based on the amount of risk the designer is willing to retain. Often that limit is set at an amount proportional to the design professional's fee or some other equitable amount.

The intent is not avoidance of responsibility. Design professionals take pride in the quality of their work. They expect to accept a reasonable level of responsibility for whatever project they undertake. Limitation of liability allows for the acceptance of responsibility but limits that responsibility to a monetary amount and for a given period agreed to by the design professional and the client.

Some owners resist the idea of limitation of liability, but many design professionals are now routinely obtaining client acceptance of such clauses. They are educating their clients about risk allocation. They are explaining that design professionals are often brought into costly suits even if they are not at fault. They are demonstrating to their clients that it is unreasonable for clients to ask professionals to assume unlimited risk. Most of all, they are simply asking for limitation of liability clauses in every single contract they sign.

You and your lawyer should work together to come up with a limitation of liability provision that is suitable for your project and jurisdiction. You will need to make clear in the clause that you and your client reached agreement on it, and that the monetary amount was negotiated.

Even though you may not obtain limitation of liability in every one of your contracts. In time, if you put forth the effort to educate your clients, you will succeed with many of them.

Opinions of Probable Cost

When you present a design for a project to a client, invariably the first thing he or she asks is, "How much is it going to cost?" The moment you give a figure, you create the potential for a claim. Most clients do not know the difference between a contractor's tender sum and a design professional's cost estimate. Many fail to appreciate that your opinion of the costs is not a guarantee of a final project cost. They may not understand that the many factors affecting construction costs are beyond your control, making it impossible for you to do anything other than render a professional opinion. This misunderstanding often gives rise to disputes. If you give your clients an estimate that is off

by more than a few percentage points, and your clients mistakenly think your estimate was carved in stone, they may claim that critical decisions on financing, timing or feasibility were based on your figures.

Still, clients must have some idea about costs in order to set their budgets. What can you do to fulfill this need and yet comply responsibly? The best advice is to suggest that if your clients want a highly accurate, reliable estimate, they should hire a professional cost estimator. If you explain the liability issues involved, your clients should understand. If they demur, you could, of course, hire an estimator yourself, although you would still have risk because the estimator would be a subconsultant for whom you are responsible. The cost of hiring an estimator is an issue you and your client would have to work out.

If you must provide the cost estimate, your figures should be conservative and as thorough as possible. Apply the same care and skill to the preparation of your cost figures that you devote to preparing your designs and specifications.

Design professionals are often unduly optimistic when they give cost estimates. In fact, the frequency of cost estimate problems has been so high and the impact on professional liability claims so significant that some insurers exclude such claims. If you provide estimates, make certain you are insured for this type of claim.

One way to improve the quality of your estimates is to have someone in your firm other than the person preparing the design develop the estimates. Some firms have a second person merely check the designer's computations. This is not as reliable, because the checker typically does not share the designer's sense of responsibility since it isn't his or her own work. Other firms hold meetings to discuss cost estimates. The person who computes the figures must explain the reasoning behind the numbers to senior members of the firm. This puts added pressure for accuracy on the estimator and adds importance to the function. It also requires the firm's manager to be directly involved in the estimating process.

In a small firm if it is impossible to hold conferences or have different individuals compute the cost estimates, the best course is the second-look approach. We have all heard the adage, "Better sleep on it." A second look after a day or two, even by the same person, is a valuable professional liability loss prevention technique.

Regardless of your past success in predicting costs, the next time you are asked to make a cost estimate, carefully review its purpose with your client. Take extraordinary care to explain what these figures represent — a very general and approximate opinion of cost, which the client can consider, along with other information, to arrive at a preliminary budget for the project. Tell your client what the cost estimate is *not* intended to be. It is *not* a guaranteed maximum figure. The terminology you use is also important — not only in your contracts, but also in your correspondence, memos and the forms you use to give your figures. To avoid misunderstandings, you may want to use the term *opinion*

of probable construction cost, which more accurately describes the intent of those figures. Don't forget to include a contingency factor in your opinion of probable cost to deal with the unexpected requirements that inevitably arise. Think twice about working with an owner who refuses to include a contingency fund — he or she may cause big trouble when extras or overruns occur.

Promising Delivery of Your Plans and Specifications

After asking about cost, the second question a client typically asks is, "When will your documentation be ready?" Each time you agree by contract to deliver the documents on a specific date, you run the risk of being held responsible for costly delays that may result from changes or unavoidable difficulties. Clients frequently make claims against design professionals alleging breach of contract for failure to complete plans and specifications in the agreed upon time. Indeed, agreeing to a specific programme may be one of your most perilous professional acts.

It is almost impossible to tell at the outset of a project just how long you will need to complete your services. Clients do not tell their dentist how long she should take to fill a tooth, nor do they tell their accountant how long he has to complete an audit. The work of a professional does not lend itself to precise time schedules or firm completion dates. Unanticipated situations invariably arise, many of which are beyond your control, often due to the client or other members of the project team. If possible, it is best not to agree in your contract to a specific programme. If a completion date is required, however, be certain any timeline is reasonable and has an adequate safety margin built in. Furthermore, do not accept responsibility for delivery on a specific date without providing for excusable delays and provisions for extensions of the deadline. Your contract should include a clause excusing you from damages caused by delays in performance that arise out of events beyond your reasonable control.

Remember, however, that even with this provision, you still face the possibility of delay claims caused by factors that *are* within your control.

Many professionals tend to underestimate time requirements. You may be tempted to shorten your schedule to try to accommodate your client's needs, hoping every possible break will come your way. Even if it means risking the loss of the project, you are better off refusing to commit to a too tight schedule than to wind up in a lawsuit because you failed to make timely delivery.

Working feverishly "around the clock" to meet a deadline can reduce the efficiency of your most competent employees to the point where errors creep into the drawings and specifications. Consider, for example, the design professional faced with a deadline that is virtually impossible to meet. Reacting to extreme pressure from the client, he issues incomplete drawings and specifications with the notation that changes will

follow. He then makes a desperate attempt to complete the design and communicate new information to the contractors before the tenders are due, but the addenda are not transmitted in time for the contractors to assemble accurate figures. In order to cover the cost of contemplated additional work that might be required when the ambiguous documents are clarified, the tenderers quote substantially higher figures than they would otherwise have done. In an even more likely development, the successful contractor makes expensive claims to correct the omissions and ambiguities that occurred because the design professional did not allow sufficient time to carefully check the drawings and specifications. In either case, the owner discovers that the budget is exceeded. The result is a claim against the design professional for delays or cost overruns, or both.

As with cost estimates, having someone other than the project's designer develop projections of the time needed for project delivery can control the tendency to over-promise. Although the designer understandably feels in the best position to know the nuances and ramifications of the design and the time necessary to produce it, he or she should understand that when an uninvolved design professional prepares the programme, this will often generate an independent and realistic opinion.

It is easier to follow a realistic programme than an overly optimistic one. Exceeding a programme from time to time is normal. But failing to complete a significant proportion of your projects on time should alert you to the fact that you are being consistently unrealistic. Before you agree to a programme that is too tight, study the risks involved. By accepting only those projects where there is sufficient time to do a good professional job, you reduce your exposure to professional liability claims. Here, again, your clients must be educated to understand that good plans and well-written specifications do not happen in a day.

Remember, too, that when you agree to a tight or unreasonable programme, you are committing your subconsultants to the same timetable and that can be treacherous. Quality work takes time, and there must be allowances for unforeseen events arising during a project that can hold up progress and wreak havoc with the best of programmes.

Collecting Your Fees

Design professionals often have difficulty obtaining prompt payment for their services. The problem is so common that the average firm carries its receivables for two months or more. Add in another fifteen to thirty days' lag time between payroll and billing, and a firm's cash flow is easily stretched to the limit. Collecting your fees is a process that requires a delicate balance of resolve and tact. If you press too hard for payment, you may lose a client; if you are not diligent, the client may continue to delay payment.

A substantial number of professional liability claims result from design professionals' attempts to collect their fees. When pressing a client for payment, many architects and engineers get their answer in the form of a threat or lawsuit alleging errors or omissions in design services.

The practicing professional, with a reputation at stake, is particularly vulnerable to a client who chooses this all-too-common business tactic. It is a frustrating situation, but there are measures you can take to forestall the problem. It means, however, that you must be tenacious and thorough in handling the billing and payment side of your business.

As always, your best route is prevention. Earlier in this chapter, we discussed how important it is to choose clients who have a history of paying their bills on time. If you check the credit and payment histories of prospective clients, you can spare yourself a lot of problems later on. You still need to make certain your contracts are very clear on the details of how and when you will be paid and what your rights are in the event of nonpayment. What's more, if your agreement has a provision stating that the prevailing party in a lawsuit is entitled to recoup his or her legal expenses from the loser a client may think twice about threatening litigation as a way of delaying payment. Your contract should also contain provisions that allow you to suspend or terminate your services in the event of nonpayment. Finally, if you have any questions about a prospective client's financial well-being, consider requiring a retainer up-front.

Mail your monthly invoices promptly. Some firms bill even more frequently. In addition, you should police the aging of your accounts receivable. A long-delayed payment is a red flag — do not ignore it. It is important to follow up quickly to determine why payments are not being made and to resolve the problem before the project is complete, preferably before you release your plans. If payments are still not forthcoming, invoke your Suspension of Services or Termination contract provisions.

As soon as a project has been completed, when the client's sense of satisfaction and accomplishment is highest, send a final bill and follow up to obtain payment as quickly as possible. You might want to offer a prompt payment discount.

Subconsultants

Even though multiple prime projects, in which project owners contract directly with other consultants, are more prevalent now, it is still common to see the more traditional method of contracting, in which the prime consultant subcontracts with numerous subconsultants. Today, it is not unusual for a single large project to involve ten or more subconsultants. Whether your project requires the services of two or twenty subconsultants, these relationships require special attention.

Select your subconsultants as carefully as you select your clients. Choose your subconsultants on the basis of their qualifications, just as you expect your clients to use qualifications based selection to choose you.

Meet with your subconsultants to get a sense of your similarities and differences. Are your standards of integrity and honesty the same? Are your working styles compatible? Is your design judgment similar? Find out about the subconsultant's staff. Has the project been delegated to senior designers or to inexperienced personnel?

It makes sense to include subconsultants in early project discussions. If the subconsultants understand the client's expectations as well as the budgetary and programming parameters, they can provide vital assistance and a unique perspective during the proposal and design phases.

All projects should have written subcontracts. A surprising number of subconsultants still provide services on the basis of a handshake, at least until they are involved in their first claim.

Whether you are the prime consultant or a subconsultant, you should select with extreme care the firms with whom you will be working.

When you are the prime consultant, consider the following:

Does the subconsultant have a proven track record with this type of project? Are adequate personnel and facilities available?

Is the subconsultant familiar with the latest technology pertaining to this project?

Does the subconsultant have adequate insurance? Have you received all required Certificates of Insurance?

Have you checked the subconsultant's references and talked to people who have worked with the subconsultant in the past?

Have you carefully reviewed your contract with the subconsultant? Will the subconsultant indemnify you for his or her own negligence? Ownership of the subconsultant's instruments of service (plans and specifications) should be negotiated and addressed in your agreement. The subconsultant's scope of work should be consistent with your agreement with your client.

Will the subconsultant subcontract any services? If so, you may want to approve those subcontractors and make certain the subconsultant indemnifies you for those services.

When you are a subconsultant, consider these points:

Is the prime consultant qualified for this project? Check to see if the prime consultant has performed similar services to the proposed project.

Who is the client? Is there adequate funding? What are the client's financial qualifications?

How early in the project are you being brought in? Will you have the opportunity to develop your scope of work and budget before they are set?

What is the fee payment schedule? Will the payment of your fees depend on payment by the client to the prime consultant? If so, how soon after the prime consultant is paid will you be paid? If not, how soon will you be paid?

Is the design programme realistic? Is there adequate time in which to do your work? Does it allow for a thorough coordination check?

Will you have access to the client to obtain needed information?

Is the prime design consultant's proposed contract with the client fair and reasonable? Does it call for dispute resolution? Does it contain a limitation of liability clause and are you included? If there is an indemnity from the client, is it passed down to you? Are any other obligations imposed on you?

How will shop drawings and submittals be handled?

Will you be allowed to provide construction observation on your portion of the project? If not, who will do so and what are their qualifications?

Who will retain ownership of your plans or specifications? How are your designs protected?

Will this be a "partnered" project? Is a dispute review board in place?

Does the prime consultant carry professional liability insurance? How much? What are the limits? Have the owner and prime consultant looked into project insurance?

A good way to take a lot of the uncertainty out of subconsulting is to foster long-term relationships with firms with whom you prefer to work. You both learn how the other works; you can readily communicate with each other. You understand the other's expectations and can depend on the quality of each other's services. You can establish ongoing master contracts which reflect your mutual understanding of the general terms and conditions, and will require only a service order and scope of work for each new project. When both the prime and subconsultants know that each can rely on the integrity and professionalism of the other, they have even more reason to work out any problems that arise.

Project Evaluation

The most effective means of improving the quality of your services is to conduct an ongoing evaluation of performance. It is important to have in place a formalized procedure to review and evaluate each of your projects upon completion. Project review meetings can assess client satisfaction, the adequacy of the time schedule and budget, and the performance of project management, consultants and the project team. Be sure to assess the client, too, to determine if you want to pursue further projects with him or her. You should review in detail what problems were encountered during the course of the project, how effectively they were resolved and how similar problems can be avoided in the future. Many firms have standard project evaluation forms for this purpose. *Exhibit 5* shows such a form.

Of course, the ultimate judges of your performance will be your clients. Asking for their evaluation is the best way to determine if you have lived up to their expectations. Upon completion of each project, arrange for a meeting between a principal of your firm and

the client. (You may or may not want to include the project manager in this discussion; sometimes the client will be more candid if the project manager is not present.) Some firms ask the client for a verbal assessment; others believe it is more worthwhile to have the client fill out an evaluation checklist. In any case, you will want to know if the client feels you understood the project requirements and if you communicated effectively with him or her. You will want to know if you met the client's expectations on time schedule and budget. You will want a frank assessment of the quality of your work, your strengths and your weaknesses. It is important that you listen carefully to the evaluation, answering questions without becoming defensive and noting any problems that need correction — with a promise to respond appropriately.

Personnel Management

A firm's greatest assets are its employees. Above all else, human resources will determine the success or failure of an enterprise. The kind of people you have working for you, their skills, attitudes and training, and your personnel policies can have a tremendous impact on your firm's risk management profile. How surprising, then, that all too often so little planning goes into selecting, training and retaining the people upon which a firm's reputation and future depend.

Finding the right people is the product of a strong personnel policy. Such a policy doesn't have to be complex to be effective. In fact, it should be simple, answering the basic question: Where is your firm headed and who will help you get there?

Start by thinking about your firm's short-term and long-term goals. What kind of work do you expect to do, now and in the future? Do you have enough people with the proper expertise to tackle tasks at hand as well as anticipated work? What standards of service, quality and ethics do you want to maintain? Having a clear picture of the answers to these questions will guide you in selecting the right professionals to meet your organizational needs.

Your employees are a large part of your firm's public image. Think hard about the calibre of the people you want representing you to your clients. If you seek high-quality professionals, and you should, create high standards. If you want imaginative people who can grow and change as your firm grows and changes, create the kind of environment that will satisfy and nurture them. Only planning and foresight will make that happen. Once you determine what you, as a firm, represent, and the kind of people you need, employee recruitment and selection will be easier.

Recruitment and Selection

When a clear job description is in place, you can begin your search for qualified candidates. Recruitment techniques vary. You can find good people through advertising, referrals from your peers, recruiting firms and University recruitment services. Many firms find that the

most effective way to identify likely candidates is through referrals from their staff, and they create incentives for such referrals.

Before you interview, make certain you are current on employment laws and regulations. Your responsibilities as an employer are far-ranging, encompassing wages, equal employment opportunity, affirmative action, immigration, fair labor standards and other issues. Make someone in your firm responsible for keeping up-to-date on human resources regulations. If you do not have the expertise in-house, your lawyer or professional association can steer you in the right direction.

Once you have solicited resumés and narrowed down the field of candidates, an interview will allow you to ask the questions mere resumés and letters can't answer. During the interview, you have the opportunity to go beyond technical qualifications and find out about the applicant's interests and motivations. Is he the type of individual who will work well with the other members of your firm? Is she flexible and open to feedback? Can he cope with changes and the complexities of the job? Is she sincerely interested in your firm and its goals? Is he just looking for another job or does he want the opportunity to make a substantial contribution to your firm? Does she have the interpersonal skills necessary to work with your clients and other members of your team? Evaluate each candidate on the basis of all the factors you consider necessary to successfully fill the job. It is helpful to use a matrix or scoring sheet to organize your questions, especially when you are interviewing several candidates for a position.

A successful hiring decision is a two way street: the employee gets a chance to select you, too. Be certain to explain the requirements of the position you are trying to fill. Be prepared to talk about what your firm has to offer. Whether it is growth potential, challenging projects or more individuality and creativity, pinpoint what makes your firm special and why you are an attractive employer. Allow candidates to tell you what they're looking for. Will your organization meet their needs?

Check your candidates' references. You can verify what you have learned about the prospective employee by telephoning former employers and associates. While people are often reluctant to put negative information on paper, they may be willing to tell you about a candidate's competency in a telephone conversation. This is also a good time to confirm some of your initial impressions. Ask open-ended questions; these individuals may have just the information you need to make the right decision.

Every hiring decision is a calculated risk. You can never be sure that the screening, interviewing and selection process will produce a successful on-the-job professional. The odds are in your favour, however, if you manage to keep a balanced, objective perspective.

Employee Orientation

Because your firm operates like no other, a new member to your firm, no matter how experienced, will need some basic orientation to your organization. His or her future effectiveness can depend on a clear understanding of your firm's policies and procedures.

Explain to your new employee how he or she will fit into your organization. Prepare a simple company handbook for all your employees that explains the firm's history, organizational procedures, employee benefits, lines of communication and other important details. In addition, you will want to familiarize your new employee with your clients and their concerns. Pass along any information that will help the newcomer perform more effectively.

This too, is the time to have new employees review the loss prevention strategies discussed in this book. In particular, have them review the sections that deal with professionalism, effective communication with clients and their duties in the event of a conflict or incident. Make certain your employees understand safety procedures and their job site responsibilities.

Finally, early in new employees service, check the quality and competence of their work, particularly technical work, to ensure that they in fact have the required skills and knowledge.

Professional Development

No two design professionals, presented with the same complex design problem, will produce identical solutions. Although both solutions may be workable, carefully drafted and unambiguous, there may be distinct differences between them from a professional liability standpoint. One of the designs may be far more likely to cause a claim. Obviously, the competence of the contractor can make a big difference. But, to a great extent, design judgment, or the lack of it, determines the degree of claims exposure encountered on a project.

What constitutes good design judgment? It is sometimes defined as the ability to evaluate alternatives and recommend an optimum solution to a design problem, not only from an artistic or technical point of view, but from a practical standpoint as well — constructibility, project cost, operating cost, sustainability and maintainability.

How can you help your employees improve their design judgment? Solid academic training plays a large part in developing sound design judgment. But so does a wide range of on-the-job experience, particularly when combined with in-house education. A very valuable form of in-house education is a *mentorship*, in which a relatively inexperienced project staff person is coached by a more experienced design professional in a one-on-one relationship. Some firms hold in-house meetings in which seasoned veterans relate their experience of design problems or professional liability claims for younger professionals in the firm. Other firms like to conduct regular project evaluations or case studies to illustrate what went right and, just as importantly, what went wrong with an assignment. Many firms offer in-house programs that include seminars led by senior principals, subconsultants, lawyers, insurers, management consultants or product representatives.

There are also many opportunities for continuing education outside the firm. Those with

weak technical education will need more formalized help, since their lack of skills may lead to persistent technical errors. Some design professionals pursue advanced or additional university degrees. Professional societies have also developed numerous seminars and courses to help their members keep up with new technologies and business practices. Information from these societies as well as professional journals can be extremely helpful. Establish a system to make such information available to your staff. Often, design firms encourage their employees' efforts to enhance their skills by paying for all or part of tuition or seminar fees.

The quest for new technical knowledge should never stop. Because design professionals are expected to remain reasonably informed about the technical developments in their discipline, on-going education and the encouragement of high quality design judgment might be a matter of professional survival.

Employee Motivation

Good firms foster good feelings among their people. The surest way to have a staff functioning at its best is to create an environment where everyone has the opportunity to succeed. This means allowing your firm's professionals to set goals and find their own ways to achieve them. Nothing motivates like feeling in control of the decision-making process. Whenever possible, provide your professionals with the autonomy they need to do their work to the best of their abilities. Challenge them, but provide a context in which they can safely meet these challenges. Trust the talent, intelligence and expertise of the people you hire, and you will probably get the results you want.

Even in the most positive environment, individual efforts will vary. What motivates people to give their best differs from person to person. For many, financial compensation is not enough. Most people need recognition, too, in the form of a promotion, praise, peer recognition or challenging assignments. Some want the chance to contribute to the community or to enhance their professional reputation. Some need to work alone; many want to work on a good team.

In general, a firm that wants to motivate its employees encourages new ideas, pays a fair salary with competitive benefits, acknowledges and rewards individual contributions, encourages employees to see the "big picture" and provides for professional growth. It "plays fair" with its employees and doesn't subject them to the whims of a capricious management. It works hard to discover the employees' gifts and individual needs and, in so doing, helps them get all they can out of their careers.

A firm that truly motivates its employees refuses to squander their talents and resources. This is also an important loss prevention measure. Occasional overtime or a crisis deadline for which everyone must pull together to get the job done is expected in professional service and can be a healthy, team building experience. When crash projects and excessive overtime become the norm, however, employees become fatigued

begin to make errors. Tempers flare and attention to quality begins to slip. The result can be omissions, oversights, failures, claims and the loss of a valuable employee who views constant pressure as a sign of poor management.

Instead, learn to use your firm's personnel effectively. Make certain you schedule your projects efficiently and, if the workload is occasionally too heavy but does not warrant additional hires, bring in contract workers or temporary employees to handle the extra work rather than wear out your firm's best assets.

Keep your ear to the ground. Encourage your employees to tell you how they feel about the level of effort you ask of them, their fatigue factor, their health and their attitudes about their assignments. If your interest is sincere, your employees will appreciate your concern and you just might learn a great deal about managing your firm.

Moonlighting Employees

Do any of your employees hold a second job with another design firm or perform professional work for others on the side? This could lead to serious trouble. Almost without exception, employees who accept outside work do not bother to carry professional liability insurance and are often unaware of the risks of liability, both to themselves *and* their employers.

Why do employees moonlight? The major reason is financial — to supplement their basic salary. Since most projects that involve moonlighting have limited scopes and budgets, the possibility of litigation is extremely high. Because you, the employer, usually have greater assets, it would not be unusual for an enterprising lawyer to include you in a lawsuit as a deep pocket. Unfair as it sounds, plaintiffs have used the argument that the moonlighter's employer derived some benefit from the employee's moonlighting, since the firm would not otherwise be able to afford the employee. A damaged plaintiff could also claim he or she thought the employer was involved or at least condoned the moonlighting. Since the plaintiff would call the employee at his or her regular job with questions or receive some sketches that were on company letterhead, it appeared the company was fully knowledgeable and was a party to the work. Although you might not be brought into the litigation, the employee is subjected to the mental and emotional anxiety of a lawsuit which will most likely interfere with productivity.

Even if no lawsuit is pending, there is always the risk of deterioration in the quality and amount of work a moonlighting employee can perform during the regular working day. Psychologists tell us that the average individual is capable of a limited amount of productivity in any given time span. If this productive effort is expended on something other than regular employment, the employer is deprived of the employee's best efforts. Usually, fatigue results and the probability of mistakes increases.

Moonlighting by your employees should be prohibited by written company policy. Many firms' policies prohibit moonlighting without the express consent of a managing principal and consent is rarely given. This policy is agreed to and signed by all employees.

It may be that your employees are unaware of the risks involved with moonlighting. It is up to you to explain why it is unacceptable. If they understand that they put not only themselves but their jobs and their employer in jeopardy by accepting outside work, they may be less tempted to agree to design that recreation room for their brother-in-law's friend.

Business Management

Of all the skills expected of design firm managers and entrepreneurs, many design professionals find they are least prepared for the business side of their practice. Yet these skills are every bit as important as their technical competence. Often, the best solution to management shortcomings is to hire a professional manager. A business manager can add needed expertise in such areas as contracts, negotiations, expense control, collections monitoring and capital management. Combining business talent with technical competence creates an extremely efficient decision-making team.

The positioning of the business manager within the firm is very important. Firms dominated by technical or production-oriented people often founder, while those that position their business managers on the same organizational level as their technical and production personnel are more successful. Remember that the successful business is a multi-dimensional unit. All dimensions must be in balance if that unit is to remain stable. The design firm that emphasizes design aspects to the detriment of business considerations of the practice is not well-balanced.

The professional firm that is too small to afford a full-time manager should consider employing a part-time business manager. If this is not possible, the firm must ask its principals to assume the additional responsibilities. They will find themselves managing personnel and accounting, developing new business, attending professional society seminars and dealing with equipment repair persons. Each principal should assume the staff functions most compatible with his or her personality and abilities.

The principals should also try to obtain proper training in basic business principles. This takes commitment in a busy practice, yet to maximize profit and reduce risk of professional liability claims they must spend time developing the skills needed to make appropriate business decisions. In most countries, several organizations provide help in developing management skills.

A superb way to constructively examine the management and business operations of your firm is through an organizational peer review. The review should provide a confidential look at the general management, professional development, project management, human resources management, financial management and business development of each firm. Firms which have participated in a peer review are overwhelmingly positive about the experience.

Technical Procedures

During the last few years, there has been a great deal of effort given to quality improvement methodologies. However varied and complex some of these methods may be, they share a common theme. It is simply this: The success of your practice rests on the commitment to quality at every level of your firm. All your employees must understand that the firm's livelihood, and consequently their own, depends on delivering high-calibre service that meets the client's expectations while earning the firm a fair income.

A Commitment to Quality

Such a philosophy must be driven and inspired by your firm's principals. They, in turn, must instill in employees the importance of striving to do the job right the first time; they must lead the effort for constant quality improvement. Regardless of the size of your firm, the fundamentals do not change. On every job, an emphasis on teamwork and communication, a clear definition of project requirements and the use of standard, well-conceived procedures will produce a higher quality of service and enhance your client's satisfaction.

The commitment to quality that you bring to the technical aspects of your job directly affects your firm's exposure to risk. The attention you pay to details, in your strict procedures for specification checking, for instance, and in your handling of the tender period and construction phase services, can make all the difference between a practice that is successful and a practice that is constantly fending off claims.

The Design Phase

Drawings

One of the primary means of communicating with the contractor is through your drawings. Of all the design documents, the drawings are referred to most frequently; they are the graphic representation of your instructions to the contractor and must be as complete, coordinated, easy to follow and as error-free as possible. Often, the construction worker at the job site is given a set of drawings but never sees the specifications. Even if specifications are available, a worker usually prefers the visual plan of work — the drawings.

Drawings should be neat, legible and arranged in logical sequence. Scaling and dimensioning should be appropriate. Some firms show dimensions, quantities or capacities in only one place on the drawings. That way, necessary changes are made just once and the likelihood of conflicting information is reduced.

Notes and symbols clarify your drawings. There are many standard symbols, but if your firm develops its own or uses variations of the standard symbols, be sure to explain their meaning both in a symbol legend on the drawings and in a standard definitions section of the General Conditions. In general, limit the notes on the drawings to the minimum necessary to show your intent. References to quality and workmanship belong in the specifications.

The relationship of the drawings to the specifications must *always* be considered — the two documents should supplement and reinforce each other. Coordinate designations on the drawings with those used in the specifications. Check for and eliminate conflicts between the drawings and the specifications.

To check their drawings, many firms use design checklists. These most often take the form of a list of categories or processes applicable to a particular design specialty. They contain items common to every project using that particular design, and other items less frequently used but of importance to some specific projects. If used properly, design checklists make it less likely that you will omit a required item.

In addition to having consistent checking methodology, firms that have fewer claims tend to use *design manuals.* Although you can find general information about a particular type of system or method in industry reference materials, manufacturers' bulletins and test data, an office design manual gives you a step-by-step description of the design methods used to develop the drawings for a specific type of system and reflects the special preferences of your firm.

Create a design manual by having your most qualified people outline the best procedures used in designing a system or method. You should include standard calculation forms and samples of actual calculations performed on a project, as well as items or procedures repeatedly encountered on projects where this particular design is used. When a design manual is completed and in use, it should be considered a "living" document. Each project manager, in turn, should note design improvements, field problems and corrections, or other helpful information gained through experience, and have the information promptly added to the manual. Some firms keep their design manuals on computers, making it easier to call up the firm's latest standard design procedures and make necessary revisions. If your manual is not on computer, make sure that updates are issued regularly to all manual users. See *Exhibit 6* for a sample page of a design manual.

Some firms develop standard details that show their preferred methods of assembly or arrangement and reproduce them on transparent stick-ons, which are then attached to the final drawings. These firms reason that since standard details typically show their best design solutions, using them saves design and drafting time and, more importantly, limits the possibility of drafting errors.

You must, however, exercise caution and professional judgment when using standard

details. Although useful and efficient, standard details can be troublesome. Sometimes they are improperly used, or errors or omissions result when they are tied to the rest of the design. If you use standard details, apply them *only* when they are appropriate. *Never* alter your design requirements to fit a standard detail. Properly applied, standard details can serve you well; misapplied, they can get you into a lot of trouble.

Today, almost every design firm has some computer-aided design and drafting capability. Such systems can reduce the risk of conflicts, errors and omissions, ensure standard dimensioning and lettering throughout the document and produce clear, easy to read drawings. CADD software requires a good deal of training for your firm's staff, though, and it is important to understand that these programs are not foolproof. Because something is computer-generated does not mean it is correct. Make certain an experienced staff member reviews any new CADD software and, once it is installed, reviews all your CADD-generated documents. Remember, as advantageous as CADD is, it is not always an appropriate substitute for manual drafting. There are still many instances where circumstance, time, money and aesthetics call for a human touch.

Specifications

Specifications depict in words the requirements for the materials, construction systems, equipment, standards and workmanship necessary to construct what the designer has drawn. Combined with drawings and other contract documents, including the tendering requirements, contract forms, and the general and special conditions of the contract, specifications enable contractors to develop offers for submission to the owner.

Of all the sections of the contract documents, specification sections are probably the least respected by professionals and contractors alike. Many professionals devote too little time and care to their development. Perhaps this is because designers often regard specification writing as a nuisance and prefer the more creative work involving calculations and drawings or because too few are really comfortable with the special skill necessary to write accurate specifications. Regardless, design professionals must understand that *specifications are every bit as important as drawings.* Keep in mind that should you be involved in litigation arising from one of your projects, the courts will be more likely to refer to your specifications than to your drawings to discover your intent, simply because it is easier for a layperson to understand written descriptions than graphic depictions.

A significant number of professional liability claims can be traced back to faulty specifications. The culprits tend to be ambiguous text, lack of coordination and the failure of some specified items to meet performance or design requirements.

Effective specifications writing requires the skill of well-qualified personnel who adhere to proven methodologies and conventions. An inconsistent, hit-or-miss approach to

specification writing can easily lead to conflicts among the various sections of the specification and drawings or to omission of items critical to the project.

We have explained the importance of using precise language in specifications. Make certain that the words you use to describe a specific item are the same throughout the documents. This consistency is particularly important when you are trying to establish a relationship between requirements in the specifications and the same item on the drawings. Use only recognizable symbols and numerals. Avoid abbreviations and acronyms, unless they are widely accepted and defined in the documents. Remember, to people outside the construction industry, and even to some within it, the words that designers use can seem like a foreign language. Therefore, include a definition of terms section in every set of specifications or in the General Conditions. Define all words, terms or acronyms that have a special meaning or more than one meaning.

A good way to avoid specification omissions is to use a specification checklist and a drawing coordination checklist. Often, design professionals use a *master specification* and modify it for each project. Many rely on published master specifications. Most master specifications are organized in a way that allows them to be used with word processing software. Whatever checklist your firm decides upon, be sure it is used consistently and thoroughly; it is useful only if it is completely filled out and reviewed.

All too often, the writing of specifications begins too late in a project. It is best to begin developing the specifications during design development. Then, by the time the drawings are developed, the specifications are fairly well thought out. Many firms believe that the person selecting the materials, products or systems for the project should be involved in developing the specifications. If the person doing the design is not adept at specification writing, then, at the very least, have the designer and the specifications writer work closely together.

Some firms prefer to rely on specifications consultants. Such consultants can be valuable because of their extensive technical knowledge, their expertise in the conventions of specifications writing and their familiarity with materials and systems. Unfortunately, specifications consultants are often retained too late in the design process and are forced to develop the specifications when the drawings are complete and the schedule is too tight. The result: an increased likelihood that an important detail will be over- looked. If your firm retains specifications consultants, they should be brought in no later than the early stages of the construction documentation phase.

Specifying Materials and Products

Architecture and engineering are not exact sciences. Although you specify what you believe are the best or most appropriate components, trouble sometimes occurs. If a claim arises from the failure of a material or product, the injured party usually

sues the design professional along with the contractor and the manufacturer. People unfamiliar with the construction industry often think you have complete knowledge of the manufactured products you specify. They may assume you research and test each item or system before specifying its use. If such a case goes to trial, you will have difficulty proving that you were not negligent when you specified an inappropriate or faulty product. After all, a jury may reason, you are the *professional.*

Many projects you design have an innovative or even experimental element to them, because the exact combination of systems and materials probably has never been designed and built before. This aspect of the profession makes it hazardous enough; do not place yourself at further risk by specifying unproven new products or familiar products in untried applications. Whenever possible, make it a practice to specify products or components that have been thoroughly tested and have been tried and proved effective in your particular application.

If you are determined to specify new materials or components that are untried in your application, you must do your homework. You are expected to be at least reasonably knowledgeable about new technology and developments in your profession. Research the latest information on all materials you specify and document your research efforts. Contact the manufacturer to get details about other projects in which the product has been used and ask for all technical data, warranties and product literature. Do not rely on promotional or marketing brochures. Inform the manufacturer — in writing — how you intend to use the product and, if appropriate, require the manufacturer to warrant in writing that the product is appropriate for the intended application. You may even want to require a representative of the manufacturer to be on site during installation to be sure the product is properly applied or installed.

If your clients insist, against your better judgment, that you specify materials you are uncertain about, take strong precautions. If the product is experimental in nature and successful performance is questionable, persuade the owners to inspect other, similar installations and/or agree to a test program. Make your clients an integral part of the process and make them assume the risk involved. Ask the advice of your lawyer regarding contractual protection from the risks of being directed to specify untried materials or products.

You should never agree to specify a product you believe represents a potential risk to public health or safety. If your clients insist on something you feel is unsafe, document your objections in the strongest terms possible, and, if they are still insistent, walk away from the project.

Between conservatism and highly experimental design lies safe ground. Look for it as though your future depends on it. It does.

Documenting Your Design Decisions

As mentioned in Chapter Two, it is important to document in writing the details of any meetings or discussions held regarding the project. The same holds true for your design decisions. What were the circumstances or factors that led you to a given decision? For the purposes of checking and backchecking and in the event of a question later on you should be able to show the assumptions underlying your design, the criteria you used and the calculations that were performed.

You will also want to document the various design alternatives available and the reasons you selected one over another. Under the professional standard of care for your discipline, you may well have a duty to investigate or discuss those alternatives with your client. Also keep track of the decisions, directives or requests of others. It is important to be able to show the recommendations of a manufacturer or a code interpretation by a public official.

Finally, carefully track your clients' role in the decision-making process, especially those decisions that conflict with your recommendations. If your clients do not agree with your aesthetic judgment, that is one thing; you may just have to bite your tongue and let the clients have their way. You cannot, however, knowingly violate building codes, even at your clients' request. No matter where you practice, your duty to safeguard the public overrides any obligation to the client. You must advise your clients of the situation in writing and if they fail to take appropriate action alert the relevant authorities.

Coordinating the Documents

The coordination of the documents of all your subconsultants and the other design disciplines is a critical task and should be assigned to highly skilled and experienced employees.

The point of interface between two or more disciplines is the source of many design errors and omissions. Establish a careful, systematic approach to this effort in order to ensure a fully coordinated and consistent set of construction documents. You need to review the documents to make certain that all items shown on the drawings are specified and that the engineering systems will fit in the physical areas designed for them. Details, schedules, elevations and sections must agree with each other.

Do not wait until the last minute to consolidate drawings from other disciplines. The result can be too little or no coordination review and possibly a claim.

An Aggressive Approach to Error Detection

Even in the most quality oriented firm, plans and specifications can contain discrepancies or deficiencies that will lead to requests for information or require corrections or change orders.

Inexperienced owners may expect design professionals to produce flawless design documents. Design professionals know that there is no such thing as a perfect set of

documents, but hesitate to raise this issue with the owner. For your protection, however, this discussion *must* take place.

One large firm handles the issue in this way: It begins with the realistic premise that construction documents *will* require further development that *will* cause change orders to be written and create additional project costs. It explains this to the client and secures the client's acknowledgment. The firm calls attention to the fact that good practice allows for a certain amount of leeway in development as the project moves from final design toward actual construction. It explains to the owner that the project will not be final until after construction is completed — that the project *will evolve and improve* as time passes.

The firm also makes a commitment to identify and address conflicts, omissions, code violations, errors and inappropriate use of materials as early as possible. It mitigates such problems by contractually obligating all participants in the construction process — suppliers, subcontractors and contractors — to advise the owner and the design firm of any deficiency they know about. The firm specifies a date, before work commences, for contractors, subcontractors and vendors to file a notice describing any discrepancies they have discovered and their suggested solutions.

Although the majority of discrepancies will be discovered during construction, these procedures also help provide early warning signals of potential problems. Timing is critical. The sooner a discrepancy can be identified, the sooner it can be remedied and the less it will cost to correct.

During the construction phase, this same firm holds weekly project meetings to review the construction schedule and the submittals needing review and clarification. The agenda always includes the reiteration that one of the purposes of the meeting is to identify at the earliest moment conflicts, errors, omissions, code violations or improper use of materials. This creates a receptive climate that is effective in stimulating early and cost-effective problem resolution. Such a discussion helps to get individual egos out of the way and fosters an atmosphere in which everyone wants to help solve problems. It is refreshing, contractors and clients say, to have people admit they are not infallible.

Finally, but most importantly, the firm discusses with the owner the inevitability of changes in the design and asks that a realistic contingency fund be set aside to cover the cost of these changes. This is confirmed by including an appropriate clause in the contract.

By following these steps, this design firm ensures that the owner has realistic expectations about the potential costs associated with design oversights or omissions.

With realistic expectations, early error detection, good project team communication, a receptive attitude and an appropriate contingency provision for design problems, difficulties rarely escalate into conflicts, disputes or claims.

The Construction Tender Period

The way you respond to requests for clarification by tenderers just before bids are due is particularly important. Although few problems arise when there is sufficient time to issue a written addendum and to make sure it reaches everyone involved, costly complications can result if you depart from this well-established procedure.

Telephone information given to contractors during bidding is a continuing source of claims. Instruct your personnel to refrain from giving verbal interpretations of drawings or specifications, even if the contractor points out an obvious error. Instead, send written addenda to all contractors bidding — if there is time before bids are due. Spell out methods in the tender documents by which the contractor may qualify the tender if clarifications by addenda are unavailable. Then, when questions do arise, you can refer the contractor to the tender documents for the proper procedures to use. Subconsultants should be instructed *not* to answer tenderers' questions directly. Information must pass from the subconsultant to the prime design professional, who can then pass it on to tenderers. The prime consultant must maintain control of and document all information given to tenderers.

No matter how you decide to handle tender period procedures, discuss the matter with your lawyer in the event that case law or statutes in your jurisdiction require special protections.

The Construction Phase

One of the most potent loss prevention measures at your disposal is the scope of with the construction documents, to review shop drawings and other appropriate submittals, to provide interpretation of the plans to the contractors and, if necessary, to be involved in suggesting ways to mitigate any problems arising in the contract documents.

Of course, construction phase duties can differ from project to project and discipline to discipline. If you are the prime design consultant on a project, you may be called upon to provide a more comprehensive construction contract administration service, to process contractor requests for payment and to administer the completion and finalisation process for the owner. If a continuous on-site presence is required, a full-time project representative might be in order. On the other hand, it is just as important for subconsultants to provide construction phase services that relate to their portion of the design.

Whatever construction phase duties you and your client agree upon, make certain that your scope of services is very clear and that you will be paid for the services you provide. It is also a good idea to specify in your contract what services you will *not* be providing — those services to be excluded. Make sure, too, that your responsibilities and those that will remain with the contractor or someone else, are reflected in the General Conditions of the owner's agreement with the contractor.

Construction Observation

The best way to assure that the project is being built in general conformance with the contract documents and according to the design concept is to visit the project site. Design questions or ambiguities in the plans or specifications can be interpreted in the field and problems can be caught and resolved early, at minimum expense.

Construction observation should be included in your scope of services for every project. Your contract should provide for visits at appropriate intervals to the project site to conduct visual observation of materials and completed work and to determine if the work is proceeding in general conformance with the information given in the contract documents and with the design concept.

The design professional's "observation" role on the project site is often misunderstood, however. Many clients do not understand that, unlike inspection, construction observation is quite limited in scope and purpose. The difference between inspection and observation can be crucial. For instance, it is a common misconception that the purpose of your observation is to "inspect" the contractor's work to uncover any code violations or defects in the construction. "Inspection" implies that you will monitor all the contractor's work in detail and it extends your liability to undetected errors and omissions that may subsequently lead to building failures. Unless you truly intend to perform inspection, with all the depth of detail and inherent liability this entails, do not use the term carelessly. In fact, avoid the words *inspection* and *supervision* in your contract, your correspondence and other documentation. You should also include a well-worded definition of what construction observation does and does not include, in either the workscope or definitions section of your agreement.

Keep comprehensive records of what is observed on your job site visits. Your firm should establish a field manual with proper procedures; then make sure that field personnel follow those procedures when performing construction observation. Document each visit, using logs, reports and photographs. Many firms make videotapes to document their site observation. Still others have their field people dictate an audio tape, either while walking the site or immediately thereafter, for file purposes.

Construction observation is not a job for junior staff, unless accompanied by a senior staff member. In fact, many firms insist that their most experienced professionals conduct project site activities.

Keep in mind that construction observation by the design professional does not relieve the contractor of his or her obligations under the construction contract, particularly for the means and methods of construction and responsibility for job site safety. This distinction should be clearly set out in your contract and reflected in the contractor's General Conditions.

Resist the temptation to eliminate construction observation services in exchange for a lower fee. If an owner absolutely refuses your construction observation services, you

must obtain very strong contractual protection for claims that arise due to the lack of coordination or the lack of professional interpretation of the construction documents during the construction phase. If the client refuses this protection, consider refusing the commission.

No matter how detailed or near perfect you believe your plans to be, they will require some interpretation. By conducting construction observation, you can help make sure that construction is proceeding as it should. To protect your interests and those of your client, it is important to make sure that any needed clarification or interpretation is provided by those best qualified: those who prepared the documents in the first place.

Shop Drawing and Submittal Reviews

Because of the increasing complexity of construction, the review of shop drawings and submittals often results in claims against design professionals.

Part of the problem is that parties to construction often do not understand that the purpose of your review is to check for conformance with the design intent, not for accuracy or completeness of details or quantities and procedures. Another problem may be that the design professional may not have in place a good system to track shop drawings and submittals from the contractor. As a result, submittals can be lost. Then, too, if the design professional has not established and adhered to and insisted the contractor adhere to a strict programme of submissions, some contractors will overwhelm the design professional with countless shop drawings to review at the last minute. Any of the above situations may lead to major problems for the contractors and, in turn, for the design professionals. Because the contractor would normally wait to order some particular materials until after the shop drawings have been reviewed, any delay in processing shop drawings may affect the contractor's scheduling and could result in a claim for extra costs, if a submission and checking program has not been agreed and adhered to by all parties.

Sometimes design professionals are tempted to review details they do not need to see, or to review aspects of the drawings that should remain the responsibility of the contractor or others. This may involve the design firm unnecessarily in delay or negligence claims.

Problems also arise when the review task is assigned to personnel who are not the best qualified for the job. Shop drawing and submission review should be given to experienced people in your firm. Many firms believe the original designer or project manager should review submissions. Some also have a second member of their firm double check the review before it is returned to the contractor. Remember, there is no substitute for careful and complete shop drawing review.

To manage shop drawings and submittals more efficiently:

Make certain your contract clearly defines your duties and purpose in reviewing submissions, as well as what you will not be responsible for, such as quantities and dimensions, or the techniques of construction. Likewise, make sure that the General Conditions of the contractor's contract with the owner makes clear the purpose of your submissions review.

Identify ahead of time the submissions you will review. Request a schedule of those submittals from the contractor and insist the contractor adheres to it. Never review submissions that concern the actual means, methods or sequences of construction. These are the contractor's responsibility.

If you receive shop drawings or submissions you did not request, stamp them "Not Required for Review" and return them to the contractor.

Do not accept submissions directly from a subcontractor or vendor, and reject shop drawings or samples you believe have not been properly reviewed by the contractor prior to transmittal. Return such submissions at once to the contractor with a letter of explanation and ask that the appropriate steps required in the contractor's contract be taken before you review them.

Date stamp each submission as soon as it is received and log it in. See *Exhibit 7* for a sample shop drawing log. Instruct employees who receive and record the submissions to deliver them to the proper person immediately after logging them in.

Designate the maximum number of working days you need to process submissions and do not exceed that maximum. Assign a responsible employee to maintain a file of all submissions being processed. Make this person responsible for follow-up at appropriate intervals until the shop drawings leave the office. If problems prevent completion of the review within the designated period, notify the project manager.

Use a shop drawing checklist. See *Exhibit 8* for an example.

Use a shop drawing stamp to indicate you have reviewed the submissions. To prevent misunderstandings of the intent in your review, choose the language on your stamp carefully. The wording should reflect your contractual scope of work concerning the purpose of your review. Many people outside the construction industry assume *approved* means "unqualified acceptance." Some firms seek to solve this problem by using on their shop drawing stamp phrases such as *no exceptions taken, furnish as submitted* or, when modifications are needed, *furnish as corrected or revise and resubmit.* Regardless of the words you decide to use on your stamp, they are no substitute for a careful review of the submissions by qualified checkers. See *Exhibit 9* for a sample shop drawing stamp. It is a good idea to review your

stamp, compare it with the samples and, if necessary, develop appropriate wording with your lawyer.

Make certain the General Conditions of the contractor's contract provide that, although some errors may be overlooked in your review, this does not grant the contractor permission to proceed knowingly in error, and that regardless of *any* information contained in the shop drawings, the requirements of the contract documents are not waived or superseded in any way by the shop drawing review. Furthermore, never use the shop drawing review to change the requirements of the contract documents. Use other means, such as change orders, to alter the contractual obligations of the contractor.

Working With Contractors

Your firm's contacts with contractors are of critical importance. Whether you use specially designated employees to handle all field review or you require each of your project managers to conduct construction observation on his or her own projects, personnel who go into the field should be required to follow established procedures. These procedures, when prepared by personnel with substantial experience on the project site, can reduce your exposure to claims significantly.

Some special problem areas that should be addressed in your procedures are:

Arguing — Statements made in anger inevitably increase hostility and reduce the level of cooperation between the parties involved. Getting angry interferes with your ability to work together in the future. Discussion of problems should be postponed until issues can be discussed rationally.

Trading — Never induce a contractor to perform extra work, made necessary by an omission or error in the drawings and specifications, by allowing the contractor, in return, to omit another specified requirement. This practice is unethical and the owner suffers a disservice by such bargaining.

The gratuitous undertaking — Do not let your field personnel give the contractor more information than required. This "volunteered" sharing of the contractor's problem- solving task may lead to a sharing of liability for the contractor's performance. The normal function of your employees does not include advising about the actions or directing of the contractor or his or her workers in any way. Although a cooperative relationship between the contractor and your employees is always desirable, stick to your own defined tasks during the construction process.

You may eliminate some of the problems mentioned above by stipulating that your firm's construction review personnel have no authority to make changes to the contract documents, and that changes, without exception, must be channelled through the client.

Some design firms require the general contractor to acknowledge in writing that the design professional's field representative has no power to authorize changes. A copy of the signed letter is sent to the client. Some firms feel that this procedure has avoided misunderstandings.

Post Construction

A frequent source of owner and operator dissatisfaction with a completed project can be perceived of real short-comings in details or in the performance or maintainability of systems such as electrical, mechanical, vertical transportation or hydraulics. Where these occur, they are often the result of inadequate commissioning by the contractors, on occasion because time programmed for this work was used as "float" to offset construction delays. This results in the project being occupied prematurely, with attendant inconvenience while the project is commissioned, or worse, in this work being poorly performed. This situation must never be allowed to occur.

In addition to his contract obligations, it is a wise step for the design professional to maintain a relationship with the client beyond project completion to ensure that the project continues to perform in accordance with design intent and meets expectations. This need not be particularly time consuming, but should maintain a valued relationship, help to solve minor problems before they become major and allow the design professional to apply any lessons learnt to future work.

Professional Liability Insurance

Please refer to the FIDIC publication "Professional Liability Insurance – A Primer", published in 1991, for discussion of various aspects of professional liability insurance as a vehicle for consulting engineering firms and other design professionals, either active or retired from practice, to protect themselves against catastrophic losses arising from present or past work.

The document also outlines additional insurance cover which should be considered by the design professional. It includes a glossary of insurance terms and sample professional liability insurance policies for both Common Law and Civil Code jurisdictions.

A professional liability insurance policy may seem intimidating at first glance. Nevertheless, we highly recommend that you carefully read yours. Your insurance coverage is an important part of your overall risk management strategy. You need to understand the protection you have and, if you hope to reduce your professional liability loss exposure, you must learn to recognize which of your professional activities are not or cannot be insured. You can use this knowledge to choose your projects and clients more carefully, to define the services you will perform or not perform, and to persuade the other parties in negotiations to accept reasonable provisions in your contracts. Just as important, you need to be able to recognize insurance requirements from your client that are impossible or too costly to meet.

An agent or broker can help you to understand a great deal about insurance. Find one who specializes in serving design professionals and take advantage of his or her expertise. It costs no more to use a knowledgeable broker who is capable of properly analyzing your coverage needs and problems than to use an amateur. He or she will help you compare differences in the coverages offered and identify the best insurance programme available. A skilled broker's analysis could help you avoid decisions that might cost you dearly in the long run. A broker can also assist you in evaluating your risks and the available means for transferring, funding and retaining risk. Together, you can decide whether your deductible is appropriate, whether you need higher or lower limits, whether there are alternatives to standard insurance policies that will better fit your situation and whether you need other types of coverage.

Where to Find Help

It is an old truism that the wise person may not know all the answers but knows where to find them. After reading this far, you probably have some questions about applying the lessons in this manual to your everyday practice. You do not need to try to figure it out alone, though. There are professionals who are well-equipped to help you answer those questions.

Legal Counsel

Every firm, large or small, needs legal advisers in whom it is confident that they are familiar with the construction industry and the role of a design professional in their field of activity.

The two types of lawyers most often used by design professionals are trial lawyers, known as barristers or advocates in some jurisdictions, and business lawyers, attorneys or solicitors. One person is rarely skilled in both disciplines, and in some legal systems is allowed to practise in only one.

You should search carefully for a "general practitioner" specialized in your field who can help you prevent claims and legal problems. This type of lawyer can help you review and negotiate contracts, examine your in-house loss prevention measures and advise you on how to keep problems from developing into disputes.

When faced with legal action you should select a trial lawyer who understands and is prepared to adopt alternative dispute resolution methods whenever appropriate.

A Legal Checkup

Every engineering firm should have a lawyer perform a thorough review of its contracts and practices, as well as a legal review after any significant change in operations. The assignment should be to review and make recommendations about:

Your firm's professional agreements

Your firm's documentation and internal record keeping procedures

Your firm's negotiating practices on contracts, including "best case" preferred wording, fall-back positions and onerous clause issues for a given project

Personnel, corporate and partnership agreements, ownership transition plans, multi-state and multi-national practices, licensing and other matters

The question of the fee for this consultation should be raised with the lawyer prior to the meeting, as the time and expense involved will vary widely among firms. Keep in mind that the fee you pay will probably save you time and money in the long run.

Unfortunately, the need for legal advice will not go away just because you have had a comprehensive review. You will need to be able to call your lawyer at a moment's

notice for help on a tough contract or in a situation requiring legal expertise. The important thing is to establish a relationship with a good lawyer *before* you need him or her. If a problem arises, you should have someone to call who knows you and your firm.

Finding a Lawyer

In selecting a lawyer, use the same methodology you want clients to use when searching for an engineering firm. Ask other design professionals, your professional society and your professional liability insurer and broker for the names of at least two or three lawyers who have experience in your field. The law firm you select must be experienced in working with design professionals and in the type of work you want done.

Invite each recommended lawyer to meet with you to talk about suggestions for your firm. Before you set up this meeting, ask if there will be a fee. Many lawyers consider such a meeting part of their marketing program and may not bill you for it unless you discuss a specific case or problem with them.

Do not be afraid to ask how much the lawyer charges. Generally, lawyers are not reluctant to let you know the basis of their fees. Keep in mind, however, that hourly area of law — is more important. A low-fee lawyer might take twice as long as a more expensive specialist to do the same work.

You will also want to ask if or how the lawyer charges for travel time and disbursements. This will be important if the lawyer has to travel to a remote site or some other city on your behalf.

Ask the lawyer for the names of several design professionals for whom he or she has worked and whom you may call for references. If the lawyer is a good one, he or she will respect you for your thoroughness and by following up with the references you gain further insight into his or her competence.

Once you have selected a lawyer, be cooperative and open. He or she cannot be expected to be an instant expert in your particular practice, but should be a fast learner. You will have to provide details and confidential information about your problems, but your lawyer needs to be fully informed to help you. You are, of course, protected by lawyer-client privilege. What you disclose usually cannot be revealed by discovery procedures in litigation.

Other Sources of Advice

In addition to lawyers, you will probably want to take advantage of the many other resources available. These include accountants, insurance experts, business management consultants, professional association services, and do-it-yourself books and seminars.

Hiring a Staff Lawyer

If your firm is large and has many and varied prime contractual relationships, you may consider adding a lawyer to your staff. If your firm is self-insured, has very large insurance deductibles or pays significant amounts in legal retainer fees, you should consider this option. Even in the largest and most sophisticated firms, there is still great debate on whether to have in-house legal staff, outside counsel or a combination of both. If you are seriously considering hiring a staff lawyer, you should talk to the management of several design firms your size with in-house lawyers. Talk to their lawyers, if possible. Also discuss the pros and cons of having a staff lawyer with your current outside counsel. Make your decision only after you have looked at all aspects of the matter.

Your Insurance Company

Some insurance companies simply provide you with an insurance policy. Insurers with an ongoing commitment to design professionals, however, will go much further in helping you improve your practice and lessen your risk. They will provide newsletters and other materials to help improve your practice. They will be active with the professional societies and knowledgeable about the legislative affairs in your location. In addition, their underwriters, claims staff and legal counsel will be available to you for questions and problem resolution. Good insurance companies want to be of service to you. When you need help, feel free to contact them directly.

Specialized Insurance Agents and Brokers

Insurance agents and brokers who are knowledgeable about the design professions can be worth their weight in gold. These men and women have been trained in the issues that affect design professionals and have seen first-hand how design professionals get into trouble and how these situations are resolved. They offer you the benefits of this experience as well as their familiarity with the scope and nature of your insurance coverage.

Specialized insurers and brokers can offer advice and opinions on the insurability of your contracts. They can assist you on insurance matters raised during contract negotiations. They can help you convince your clients on concepts such as limitation of liability and part-nering, and on the benefits of using project professional liability insurance. They will also keep you abreast of new options and developments from your insurance company.

Management Consulting Firms

There are many recognized management consulting firms and individuals who specialize in the business problems of design professionals. The efforts of these consultants are directed toward solving organization, staffing and marketing problems. But you will also find their expertise useful in evaluating professional liability and loss prevention practices. Their services can enhance the quality of your services, help you maximize your relationships with clients and reduce your vulnerability to professional liability lawsuits. Ask your peers and your professional society for the names of firms they recommend.

Professional Societies

Professional societies and associations are often overlooked as resources. Their assistance is far-ranging and they have a lot more to offer than many design professionals realize.

National professional associations serve as your advocates with all levels of government in each country and carry out many activities designed to enhance the professions and improve the level of practice and fees. They also act as the watchdogs of the professions, fighting legislation that would put you and your colleagues at a disadvantage.

These organizations provide valuable tools, including literature, standard forms and agreements, and up-to-date information on changes in codes and laws. They can help you gain insight into your business practices through peer review programs. Perhaps best of all, they give you the opportunity, through their meetings and seminars, to talk with other firms who have problems just like yours.

Exhibit 1: Construction Dispute Resolution Steps

Exhibit 2: Evaluation of Risk Checklist

Prepared By: _____ Date: _____

Project: _____

Location: _____

Client: _____ Owner: _____

Type of Contract: _____ Estimated Fee: $ _____

Project Team Members

	Owner		Architect		C/M	
	Yes	No or Don't Know	Yes	No or Don't Know	Yes	No or Don't Know
1. Does this project team have sufficient experience for this type of project?	___	___	___	___	___	___
2. Is this party financially stable and/or do they have clear credit rating?	___	___	___	___	___	___
3. Does this party have a relatively claims free history?	___	___	___	___	___	___
4. Does this party have a good reputation in the community?	___	___	___	___	___	___

Project Considerations

	Yes	No or Don't Know
5. Does our firm have a proven track record with clout?	___	___
6. Is the fee determined by negotiations rather than bidding?	___	___
7. Are there adequate human resources?	___	___
8. Is there adequate scope of services?	___	___
9. Is construction review included?	___	___
10. Is the project free of unfamiliar code requirements?	___	___
11. Is the project located in a geographic area where we have experience?	___	___
12. Is the schedule realistic?	___	___
13. Will the project design be completed before construction begins?	___	___

Funding

	Yes	No or Don't Know
14. Is this project adequately funded?	___	___
15. Are funds for unexpected contingencies included?	___	___
16. Can this project be realistically designed within budget?	___	___

Exhibit 2: Evaluation of Risk Checklist (continued)

Knowledge of Prime Contract with Owner	Yes	No or Don't Know
17. Is a mediation clause included?		
18. Is a Limitation of Liability clause included?		
19. Are any clauses with special insurance requirements reasonable?		
20. Is there a requirement for subs' insurance?		
21. Are the end-user requirements clearly stated?		

High Risk Projects	Check the type of project that apply.
22. a Condominiums	
b Production housing	
c.Developer Project Commercial building over nine storeys	
d Commercial building, over nine storeys	
e Renovation project	
f For inspection only	
g Municipal building	
h New technology is needed	

Risk Identification Results

Section	Number of Checks Under "No or Don't Know"
Project Team Members (1-4)	
Project Considerations (5-13)	
Funding (14-16)	
Knowledge of Prime Contract (17-21)	
	Number of Checks:
High Risk Projects (22)	
Total	

Considering your score, if you have a check in any category, carefully consider if you should:

1. Take the project as offered
2. Take the project only after negotiating any mitigating factors.
3. Turn down the project.

Use the section below to provide an explanation of the ways any identified risks will be mitigated.

Comments: _____

_____

_____

Signed (Evaluator)

Exhibit 3: Your Contract

When negotiating agreements for professional services, keep these points in mind:

Your agreement should be written clearly and should carefully spell out the duties and obligations of both you and your client.

Your agreement should be consistent throughout in its use of terms. Ambiguous terms should be defined. The agreement should be complete and integrated with all supporting exhibits and addenda.

Your agreement should contain a well-defined, mutually developed scope of work that spells out both the services you will and you will not provide.

Your fee should be adequate to cover the services defined in the scope of work, including those of your consultants.

The project programme should allow adequate time for you to perform all of the contemplated services in a competent and professional manner.

Your agreement should be purged of overreaching and unfair provisions that increase your liability and jeopardise your insurance. If you cannot delete unfair provisions, at least modify them so they are acceptable.

Your agreement should specify how and when you will be paid and what happens if you are not.

Your liability should be limited to an amount that is fair and acceptable to both you and your client.

Your agreement should state that you and your client will avoid litigation and use mediation and/or other dispute resolution techniques if you cannot resolve disputes on your own.

Both you and your client should have the right to terminate the agreement if necessary.

Exhibit 4: Scope of Services Checklist

Basic Services	Included	Not Included	Remarks
Project Development Phase			
1. Define Scope of Structural Services			
2. Assist in Development of Schedule			
3. Assist in Determining Channels of Communication			
4. Assist in Determining Responsibility for Dimensions			
5. Assist in Determining Drawing Standards and Specifications Format			
6. Assist in Determining Number of Meetings and Number of Site Visits			
7. Negotiate Fees and Payment Schedule			
8. Execute Contract			
9.			
Schematic Design Phase			
1. Attend Meetings		Max of	
2. Establish Structural Design Criteria			
3. Prepare Studies of Alternative Structural Systems		Max of	
4. Assist in Selection of Structural System			
5. Provide Structural Criteria for Geotechnical Consultant			
6. Assist in Determining Need for Special Studies			
7.			
Design Development Phase			
1. Attend Meetings		Max of	
2. Prepare Preliminary Foundation Drawings			
3. Prepare Preliminary Structural Design calculations for Typical Elements			
4. Prepare Preliminary Framing Layout Drawings			
5. prepare Typical Detail Sheets			
6. Identify Pre-Engineered Structural Elements			
7. Prepare or Edit Outline Specifications for Structural Items			
8. Assist Preparing Preliminary Opinions of Cost of Construction			
9. Review Results of Special Studies			
10. Coordinate Structural Design with Special Design Criteria			
11. Submit Design Development Documentation for Approval			
12.			
13.			

Exhibit 4: Scope of Services Checklist (continued)

Contract Documents Phase

	Included	Not Included	Remarks
1. Prepare Structural Design of Primary Structural System	____	____	____
2. Designate Elements to be Designed by Specialty Engineers, and Specify Structural Criteria for Specialty Engineers Design of Pre-Engineered Structural Elements	____	____	____
3. Review Effect of Secondary or Non-Structural Elements Attached to Primary Structural System	____	____	____
4. Attend Meetings	____	____ Max of	____
5. Assist in Coordination with Building Code Officials	____	____	____
6. Complete Structural Calculations	____	____	____
7. Complete Structural Drawings	____	____	____
8. Prepare or Edit Specifications for the Primary Structural System	____	____	____
9. Assist in Establishing Testing and Inspection Requirements	____	____	____
10. Perform Checking and Coordination of the Structural Documents	____	____	____

Construction Administration Phase

1. Bidding and Award			
a Assist Evaluating Bidder's Qualifications	____	____	____
b Provide Structural Addenda and Clarifications	____	____	____
c Assist in Bid Evaluation	____	____	____
2. Pre-Construction Services			
a Attend Meetings	____	____ Max of	____
b Assist in Establishing Communications Procedures	____	____	____
c Assist in Establishing Procedures for Testing and Inspections	____	____	____
d Assist in Confirming Submittal Agency	____	____	____
e Assist in Selection of Testing Procedures	____	____	____
f Advise Client and Contractor Which Structural Elements Require Construction Observation	____	____	____
g Respond to Building Department and Peer Reviewer Comments	____	____	____
3. Submittal Review			
a Review Specified Submittals for Items Designed	____	____	____
b Review Submittals for Pre-engineered Structural Elements	____	____	____
4. Site Visits			
a Make Site Visits at Intervals Appropriate to the Stage of Construction	____	____ Max of	____
b Prepare Site Visit Reports	____	____	____
5. Materials, Testing and Inspections			
a Review Testing and Inspection Reports	____	____	____
b Initiate Appropriate Action to Those Reports, if required	____	____	____

Exhibit 5: Completed Project Evaluation Form

Instructions

1. The attached COMPLETED PROJECT EVALUATION FORM should be filled out by the principal and project architect in a joint meeting. Other key staff may assist if required.
2. The following questions should be answered in writing. If additional space is required use separate sheets and attach.
3. If problems or discrepancies in our professional services are discovered, they should be discussed in detail and methods implemented to avoid these problems in the future.

Project: _____ Date _____

Location: _____ Project Manager: _____

Comm. No.: _____ General Contractor: _____

Client: _____ Completion Date: _____

	Yes	No	Unk
1. Was the client happy with the final results of the project?	_____	_____	_____
2. On a scale of 1 to 10, 1 being poor and 10 being excellent, rate how we perceive the client's satisfaction	1 2 3 4 5 6 7 8 9 10		
3. Will this client use us again in the future?	_____	_____	_____
4. Will this client recommend us to others?	_____	_____	_____
5. Was the firm happy with the final results of the project?	_____	_____	_____
6. On a scale of 1 to 10, rate how satisfied the firm was with the project.	1 2 3 4 5 6 7 8 9 10		
7. Is this project worthy of publication and/or suitable to be photographed and displayed in our office gallery?	_____	_____	_____
8. Was the firm happy with engineer/client relationship?	_____	_____	_____
9. Did the client pay his bills on time?	_____	_____	_____
10. Would the firm want to do work with this client again?	_____	_____	_____
11. Was the staff strained to meet deadlines?	_____	_____	_____
12. Did the staff enjoy working on the project?	_____	_____	_____
13. Was this project completed within the allotted time schedule?	_____	_____	_____

Exhibit 5: Completed Project Evaluation Form (continued)

	Yes	No	Unk
14. Was the project profitable to the firm?	____	____	____
15. Was the performance of the outside consultants satisfactory?	____	____	____
16. Rate the consultants used on a scale of 1 to 10 in reference to their performance:			
A. Structural	1 2 3 4 5 6 7 8 9 10		
B. Mechanical	1 2 3 4 5 6 7 8 9 10		
C. Electrical	1 2 3 4 5 6 7 8 9 10		
D. Civil	1 2 3 4 5 6 7 8 9 10		
17. Was the contractor's performance satisfactory?	____	____	____
18. Rate the contractor's overall total job performance on a scale of 1 to 10.	1 2 3 4 5 6 7 8 9 10		
19. Could the firm recommend this contractor to future clients?	____	____	____
20. Did the contractor try to generate unnecessary change orders?	____	____	____
21. Did the contractor try to shift any of his responsibility to the architect?	____	____	____
22. Did the contractor submit shop drawings that were not required by our specifications?	____	____	____
23. Did the contractor ever try to bypass the engineer's authority by going to the owner directly with proposed substitutions or design changes?	____	____	____
24. Did problems arise on the job that the staff can now learn and benefit from and not repeat in the future?	____	____	____
25. Did any ambiguities in the contract documents develop that can be avoided in the future?	____	____	____

Exhibit 6: Design Checklist Sample Page

Design Checklist

3. Outdoor Conditions - Cold Weather Design
   Rain and Snow Design - Ventilation Louvres

ITEMS (continued)

Checked by:

c. Are the outside air intake louvres located above normal snow collection or drift line? _____

d. Are the "storm-proof" louvre blades specified on outside air intake louvres? _____

e. Is a proper drainage method shown on drawing detail to permit moisture carry-over to drain from louvre and from any connecting ductwork? _____

f. Does the outside or intake louvre specified have low enough air velocity at design air quantity to prevent moisture carry-over? _____

g. Are the outside air intake and exhaust air louvres located other than facing into prevailing wind? _____

h. Check air friction pressure drop across all louvres at design air quantities and design velocities. (File copy of catalogue selection chart of each manufacturer specified and mark design point on chart or curve). _____

Exhibit 7: Shop Drawing Log

Category: _____

Log In Date	Req'd Log-Out	Trans No	Shop Drawing Title	Sent to Cnsltnt	Rec'd Cnsltnt	File No.	Log-Out Date	Time Elapsed

Exhibit 8: Shop Drawing Checklist

Project: _____ Submittal Description (Manufacturer, etc.)

Client: _____ _____

Project Location: _____ _____

Date: _____ _____

General Items	1st Checker	2nd Checker
1. Item manufacturer submitted was one specified		
2. Item manufacturer submitted a substitution not specified		
3. Item mode/type submitted is that specified		
4. Item submitted has performance (capacity) specified		
5. Item motor electrical data submitted matches electrical service to motors		
6. Item motor type matches that specified		
7. Item pressure ratings match specified		
8. ASME codes and rating match specified		
9. Item optional accessories submitted match those specified		
10. Specified certificates of testing submitted		

Exhibit 9: Shop Drawing Stamp

- ☐ Approved
- ☐ Approved as Corrected
- ☐ Rejected
- ☐ Revise and Resubmit
- ☐ Submit Specific Item

This review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with the requirements of the plans and specifications. Approval of a specific item shall not include approval of an assembly of which the item is a component. Contractor is responsible for: dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work of all trades; and for performing all work in a safe and satisfactory manner.

(Name of Firm)

Date: By:

Additional reading

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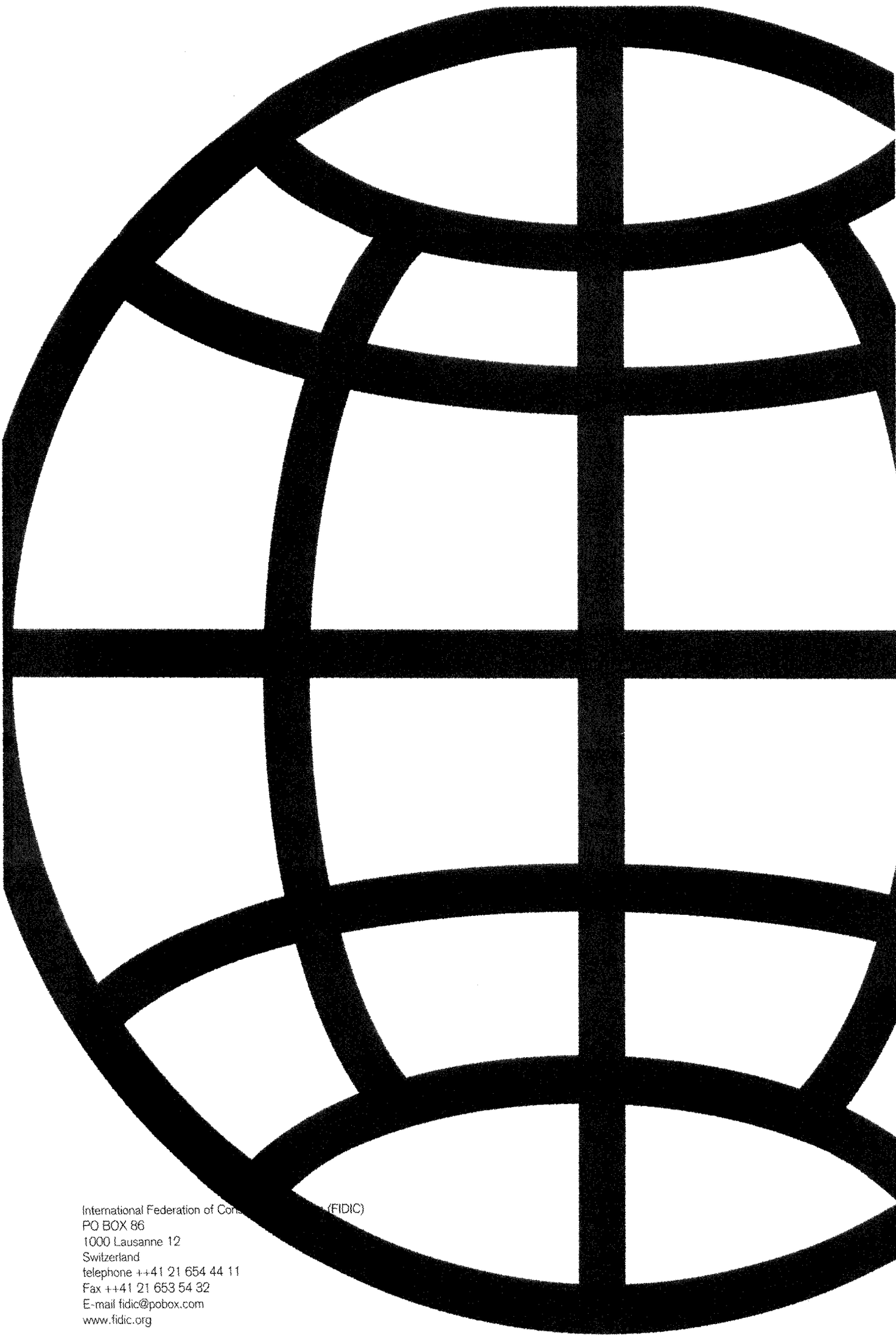

International Federation of Co (FIDIC)
PO BOX 86
1000 Lausanne 12
Switzerland
telephone ++41 21 654 44 11
Fax ++41 21 653 54 32
E-mail fidic@pobox.com
www.fidic.org