TRANSFERRING RISKS IN CONSTRUCTION CONTRACTS

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I. INTRODUCTION

Risk and conflict are inherent characteristics of the construction industry. Conflict usually results from the allocation of risk on construction projects between the major parties; whether that risk is shared equitably or on the basis of the relative strengths and bargaining power of the parties. Ultimately, all of the major parties to the construction process become involved in claims to some extent or other, and so it behoves them to devise procedures for claims-avoidance. This can best be done by better governance and allocation of construction project risks.

In preparing this paper, the writer has assumed that there will be a direct relationship between the severity of project risk and the likelihood that claims or other project-debilitating issues will arise which will adversely affect the efficient progress and completion of construction projects. It therefore becomes a matter of common interest for all of the major parties to reduce claims and to equitably distribute risk amongst themselves to diminish the incidence and severity of risk-related claims.

While each project risk may have uncertainty associated with it regarding the degree that a particular risk will manifest itself on a given project, the identification of major project risk factors is a relatively advanced science. The identification of construction risks and dealing with and/or providing for those risks in construction or design contracts is critical to the ability to reduce the frequency of claims among owners, contractors and design professionals.

This paper will discuss various contracting strategies, risk identification, allocation and mitigation alternatives, as well as various project delivery methods which can be employed to reduce the effect of risks that exist on every construction project.

The paper will also review the use of design and construction contracts as the optimum method for transferring risks in the construction industry which can have the effect of reducing acrimonious and costly disputes. Contracts are the most powerful and effective method for reducing claims. Contracts are all-powerful in defining the relationships between the parties and in governing their future interactions with one another, provided that they are drafted and
negotiated by parties who understand the process and the means by which contracts may be used to facilitate the resolution of disputes or to avoid the occurrence of disputes in the first place.

In the construction industry, contracts define the roles, relationships, rights and obligations of the parties to one another, and can be used as an innovative tool to foresee likely problems inherent to particular project types and to provide formulae for the resolution of those problems. Accordingly, contracts provide a rare means by which construction claims, disputes and issues may be significantly reduced and defused through the negotiation of risk transfer terms and conditions.

II. INITIAL PROJECT REVIEW, RISK IDENTIFICATION AND DEFINITION

In construction, owners, contractors and design professional architects and engineers are required to deal with common recurring project risks which affect all of them on almost every project. Some risks may be common to all projects, and some risks may be unique to some. The major risks that have been identified which pertain to most design and construction contracts include such things as the design and construction term, environmental concerns, financial requirements, cost and quantity estimates, design errors and omissions, construction defects and deficiencies, site location, access issues, geotechnical concerns, delay in performance, extra work or additional services, decreased productivity, effect of authorities having jurisdiction and force majeure conditions.

All of the above risks occur, more or less, on almost every construction project. It is therefore incumbent on the parties and, in particular, the Owner and the design professionals preparing packages of contract documents for tendering purposes, to identify the risks most likely to rear their heads on particular projects and to provide methods for dealing with those risks within the contractual framework of contract documents.

The methods devised for dealing with the various risks enumerated above will, in large measure, determine the success or failure of a project in terms of its adherence to stipulated time lines and cost constraints. It is essential that the Owner and his design professional review every aspect of
the project at hand so as to ascertain those project risks which are most likely to arise and which require to be dealt with in the contractual context. The Owner will usually rely on his design professional to perform this analysis and to devise or specify a form of construction contract between the Owner and the Contractor which will take these project risks into account and provide for an equitable and efficient method for dealing with them.

In performing this function, the design professional will have to determine if there are elements of risk which are unique to the project at hand and which may require innovative contractual terms to deal with their likely effect should they arise in the course of the construction work. While it is not an easy task to determine all risks which are likely to arise on a particular project, the design professional’s experience on projects of similar nature will serve him in good stead in foreseeing the advent of likely problems and in devising contractual methods for dealing with them.

In preparing his project risk analysis, the design professional will require to differentiate between design and construction risks, and will accordingly be charged with the responsibility for devising appropriate contractual provisions to deal with each. This process will inevitably lead to risk allocation considerations which will translate into future significant monetary consequences for the Owner and the Contractor.

III. CONTRACT RISK ASSESSMENT AND ALLOCATION CONSIDERATIONS

Once the initial project review, risk identification and definition phase has been completed, critical decisions require to be made regarding allocation of risks to one party or the other in the construction contract. These risk allocation decisions will have a dramatic effect on the cost of the project, the construction methods employed to build it and the efficiency of the entire construction process, from commencement of the work through to completion.

The successful construction project will benefit from workable, commercially-viable and cost-effective risk sharing. Given the differing interests and objectives of the parties involved,
effective risk allocation will be an essential part of the drafting of the project documents and an integral part of the project’s success.

Risk is the probability of an event occurring and the consequences of its occurrence. The risk events which require consideration in the context of a project will generally have a negative effect on projects, either increasing cost, delaying completion, reducing performance or possibly rendering the project itself impractical. Risks cannot be ignored, and should be managed as efficiently as possible at the time of structuring the contract.

Various methods and theories for transferring risk are often employed on construction projects. It is often thought that risks should be transferred to the party best able to manage them. By the same token, project risks should be managed in a reasonable manner, and should be allocated in an equitable fashion, and not just based upon a hierarchy of power, with the Owner and his design professional unilaterally apportioning all substantial project risks to the construction Contractor. Inequitable risk allocation will inevitably result in unnecessary increases in project cost.

Several principles are often employed in the analysis of and management of risk. A party to a contract should generally bear a risk where:

(a) the risk is within the party’s control;

(b) the party can transfer the risk (for example, by insurance), and it is most economically beneficial to deal with the risk in this fashion;

(c) the preponderant economic benefit of controlling the risk lies with the party in question;

(d) to place the risk upon the party in question is in the interests of efficiency, including planning, incentive and innovative efficiency;
(e) if the risk occurs, the loss falls on the party in the first instance, and it is not
practical or there is no reason under the above principles to cause expense and
uncertainty by attempting to transfer the loss to another.

The above view of risk assessment and allocation can be broken down into three questions:

1. Who can manage the risk most cheaply, efficiently and easily?
2. Who benefits most from its management?
3. Who has the greatest incentive to manage it?

Risk tends to be allocated on the basis of commercial and negotiating strength. Although not
always the best way to proceed, the stronger party will often allocate risk that it does not want to
bear to the weaker party. This scenario does not necessarily provide the most effective and
efficient risk management process. Improperly-allocated risks will have an impact on the entire
project and may affect the stronger party as well as the weaker. Allocation of risk to the party
best able to manage it efficiently, inexpensively and easily will generally result in a more
successful and profitable project and will benefit all of the parties concerned.

IV. PREPARING THE RISK ALLOCATION PLAN

The decision as to where risks are to be allocated on a construction project will not be an easy
one. As stated previously, such decisions will inevitably impact upon the cost of the project and
the ability of the parties to complete it according to the Owner’s cost and time requirements.

The likely effect of risk allocation intentions must be researched and reviewed with the Owner
before the preparation of the tender set of Contract Documents, failing which the Owner and the
design professional may be unpleasantly surprised by the reaction of the contracting community
to the risk allocation measures adopted. One of the first tasks for the design professional,
therefore, is to determine the particular sensitivities of the Owner, and those areas of contract
responsibility where the Owner effectively has no negotiating room, either because of lender’s
requirements or because of his own completion time or project cost constraints. By the same
token, the design professional will have to examine the project in detail, its location, environmental considerations, site access problems, geotechnical difficulties, potential problems with Authorities having jurisdiction and the likelihood of such things as changes occurring during the course of the work, in devising his overall risk allocation plan. In preparing his plan, the architect/engineer will have to consider appropriate methods for dealing with risk through avoidance, mitigation and management techniques.

Risk avoidance can be achieved by allocating risks to one party or another, depending upon whether a particular party is capable of bearing that risk. Or, as seen earlier, risks can be allocated simply because of the strength of a particular party in the negotiation process. Strength and power, however, do not always provide the final answer for the Owner. Since the Owner, through his design professional, is usually the author of the contract document package, including the allocation of risk, the Owner will be in the optimum position to decide upon risk allocation criteria. As stated earlier, the strength of the Owner’s position must be tempered by an understanding of the adverse consequences of unilaterally assigning risk where such risk assignment might lead to such an increase in cost that the project is no longer financially viable.

In certain cases, risks may be allocated based upon the ability to mitigate the effect of the allocation in a given situation. One such form of risk mitigation is the use of various forms of construction insurance. Construction bonding and insurance are available to provide additional security, primarily for the performance of the Contractor. The Owner must be comfortable that the Contractor is able to assume its project obligations as set out in the construction Contract. The Owner will often require to review the credit risk of the various potential Contractors. Where the Owner is not comfortable with the credit risk of the Contractors, various methods are available to the Owner in order to enhance its position, including obtaining bonds and guarantees from the Contractors. The Owner will typically look to construction bonding as a method of securing appropriate performance.

Typically, the obligations of the Contractor to the Owner to perform would be guaranteed through the requirement for the Contractor to supply a Performance Bond. This bond is typically written for 50% or 100% of the contract price set out in the construction Contract, and guarantees
that the Contractor will promptly and faithfully perform the construction Contract in strict accordance with its terms and specifications. Performance bonds minimize the financial risk to the Owner, both during construction and during the maintenance period thereafter. Prudent Contractors will also reduce their risk by requiring their subcontractors and suppliers to provide performance bonds.

Other forms of risk management may include inserting either positive or negative reinforcement into contracts as a way of motivating a party (usually the Contractor) to achieve certain time, cost or production criteria, failing which the Contractor will suffer a detriment by way of liquidated damages or, in the case of positive reinforcement, incur a benefit by way of a bonus.

By assigning risk for time and cost of completion, the Owner and his design professional will have to decide between the advantages and disadvantages of positive versus negative reinforcement for the construction Contractor, depending upon the type of contract under consideration.

If the Owner is very time-sensitive and instructs his design professional to set an unrealistic contract completion period, with severe penalties in the form of liquidated damages for failure to perform, the Owner is likely ensuring future claims from the Contractor as to the source of project completion delays. In addition, the Owner is probably guaranteeing significant increases in construction cost beyond what he would otherwise have been expected to pay but for the insertion of such onerous contract requirements.

Contracts also often contain stringent acceleration provisions which give to the Owner’s architect/engineer draconian powers to make determinations as to the source of project delays and also provides the Consultant with the power to order acceleration of the work at the cost of the party determined to have been the source of the delay.

Much has been written about the effect of negative versus positive reinforcement on construction projects. The writer tends to side with positive reinforcement management techniques, with the theory being that stressing the positive side of contract completion and cooperation ultimately
leads to more cooperation and less confrontation which in turn provides the Owner with a better chance of achieving an optimum result in terms of his project cost and time goals.

V. TRANSFERENCE OF RISK VERSUS OPTIMUM PROJECT COST

As stated earlier, decisions made by the Owner and his design professional as to which risks will be transferred to the Contractor will have a significant effect on the ultimate cost of the project as the Contractor will, in most cases, endeavour to level the playing field based upon his perception of the project risks he has undertaken by ensuring that he is appropriately compensated for accepting those risks. Of course, in each tendering situation, the Contractor will have to decide if the additional money which he may attempt to charge through to the Owner is worth the risks that have been allocated to him in the contract documents.

An excellent example of transference of risk can be seen in public private partnerships or P3 projects. These projects typically involve a number of separate contractual relationships, and it is incumbent on the parties to foresee the most likely project risks to be encountered by each of the project participants and deal with these appropriately in the individual P3 contracts.

An example of typical P3 contracts which are affected by distribution of risk include the Concession Agreement – the agreement between the public sector Owner and the private sector project company by which the project concession is granted. There is also usually a Design/Build construction contract between the private sector project company and the Design/Build Contractor to design and build the project. In addition, there is an Operation and Maintenance contract between the project company and the Operator/Manager to operate and maintain the project during part or all of the P3 concession period.

P3 contracts illustrate the transference of risk as well as the necessity for project participants to tailor their contracts to the project under consideration, and not vice-versa. There is no one standard contract form that can fit every permutation and combination of contract contingencies. Each contract must be drafted to meet the requirements for each individual project, and this includes the allocation of risks between the contracting parties. These risks should be allocated
to the parties who have the best ability to bear them, keeping in mind the need to optimize the project results for the Owner from a cost and time point of view.

In the P3 example, the assessment of which parties will be affected by a particular element of risk, and in what way, will be complicated and difficult to clarify since the project participants typically assume several different roles. For example, the Design/Build Contractor may also be one of the shareholders of the project company and/or the Operator. In most P3 projects, risk allocation factors such as the following will operate:

- Market risk will be assumed by the project company.

- Design, construction and commissioning risk will be assumed by the Design/Build Contractor.

- Operation and maintenance-related risks will be assumed by the Operator.

- The majority of any political risk and delays by authorities will generally be allocated to the public sector Owner through the Concession Agreement between the Owner and the project company.

- Any residual risk will be borne, in the first instance, by the project company, who will frequently attempt to transfer this risk to the Owner.

Provisions that deal with risk allocation between the project Owner and the Design/Build Contractor and the Operation and Maintenance Contractor may be drafted so as to mirror the language of the Concession Agreement between the project Owner and the project company.

A practical solution to potential ambiguities between the various contracts often includes the use of “if and when” language in the Design/Build construction contract, for example, stating that the Design/Build Contractor is entitled to extensions of time under certain circumstances if and when such extensions are granted to the project company under the Concession Agreement with the Owner. The project company may also wish to see an overriding provision in the Design/Build
Contract such that the Design/Build Contractor is under an obligation to perform so that the project company is not in breach of its obligations in the Concession Agreement.

Completion risks, containing elements of design, construction and commissioning risk, as well as other residual risks, will be a factor for all of the principal project participants. Certain parties will typically bear the greatest level of such risk, in particular, the Design/Build Contractor.

Ultimately, decisions made by the project Owner and his advisors, be they architects, engineers or project managers, in the initial stages of contract tender preparation, will have a major effect in setting the tone for the future construction relationship between the parties. While it is important to appreciate that principles of equity and fairness should apply in allocating risk in contracts, simply allocating risk to the weaker party who is less likely to present a strong bargaining position in the negotiation process risks an unnecessary escalation in the cost of the project, as the so-called weaker party will perceive project risks as being onerous and will build such risks into its cost projections for delivering services.

Unequal or overwhelmingly one-sided contracts, throwing all of the major risks on to the Contractor, can result in a breakdown of relationships during the course of a project, rather than making for a smooth cooperative process throughout the term of construction. This will ultimately translate into acrimony, claims and difficulty in achieving an overall successful project, as one party or the other perceives that it is being taken advantage of and that it has signed a less than fortuitous contract.

VI. DEALING WITH RISKS THROUGH PROJECT DELIVERY MECHANISMS

Contracts are an early opportunity to anticipate, define and deal with potential issues and thereby avoid disputes. Essentially, the contracting process is where the parties attempt to determine what may go wrong, what issues may arise, and the best way to resolve those issues by informed and enlightened risk allocation. The entire process of contract risk allocation through delineation of appropriate project delivery mechanisms involves foreseeing risks and the project-related
factors affecting the contracting parties, and dealing with those risks in the most constructive, equitable and problem-solving manner possible.

In order to perform this function, the requirements of each project and the role to be played by each of the project participants must be assessed. Since contracts are the medium within which project risks are allocated and dealt with, the form of contract used for each project is critical to the potential for optimum performance and production.

Typically, the major sources of dispute on construction projects include incomplete scope definition, inappropriate contract type, poor communications and uncertainty and unrealistic expectations. The need to properly assess and allocate construction risks arises out of the inherent nature of construction. Conflict-prone construction projects are usually the result of the incompatibility of the parties’ initial intentions and objectives. Incompatible project objectives between the project Owner and the project Contractor are responsible for most of the disagreements on how to approach and complete a project. Obviously, on most construction projects, the Owner wishes to obtain maximum quality, functionality, aesthetics and capacity at minimum cost, and the Contractor seeks to achieve its financial goals by expending the minimum resources required to meet a minimum scope of work.

In order to be successful, therefore, project delivery mechanisms must be devised to maximize the potential to develop a joint creative effective approach for dealing with and resolving conflicts before they lead to disputes. Contracts can be used under these circumstances to achieve dispute prevention through equitable risk-sharing which overrides the strong versus weak negotiation scenario in favour of realistic attribution of roles and responsibilities on projects which are related to the ability of the parties to perform.

In terms of equitable risk sharing, the guiding principle of risk allocation should be that the different parties involved should seek a multi-beneficial distribution of risk. Successful risk allocation is based on having fair project contracts which are understood by everyone. As a method of promoting the equitable distribution of construction project risk, the following contract ideas are put forward for consideration:
(a) ECONOMIC PRICE ADJUSTMENT: Allows for controlled price escalation during the life of the project. Keeping in mind that fixed price contracts are prone to the most claims, particularly for complex design projects which are in excess of three years in duration, this contract could set a limit on the price escalation to be carried by the Contractor, leaving anything above that amount to the Owner. In this way, if costs increase significantly during the life of the project, the contract contains a formula and the conditions for compensating the Contractor, potentially limiting or reducing the need for claims.

(b) NEW BIDDING METHODS FOR EARTHWORK AND TUNNELLING PROJECTS: Involve a negotiated process whereby the bidding/selection system divides the contract award into three stages. First, there is a selection of contractors whereby the Owner and his Consultant qualify interested contractors. Following that, joint decisions are taken where selected contractors meet with the Owner and the Consultant to jointly decide on the best type of equipment and other issues critical to the execution of the project. At that time, geotechnical reports would be reviewed and jointly interpreted by all of the parties. Each contractor would then present a bid based upon the criteria agreed on in the previous step of the process, with the Owner then awarding a contract to the successful contractor. Such a three-step bidding system would provide a more balanced distribution of project risks, since some of the equipment and other uncertainties would be reduced. The joint decision aspect allows for significant savings during submittals and start-up for all parties. It would limit problems associated with equipment, productivity and schedule sequence risks during construction.

(c) PROCUREMENT, ENGINEERING AND CONSTRUCTION PROCESS: This is a response to the increasing role major suppliers of equipment and materials are playing in the construction process. In this process, the expertise of key suppliers would be utilized in all phases of the project life cycle by developing an advanced procurement strategy and by reaching a full commercial agreement with suppliers of strategic procurement items or systems prior to the principal engineering
activities. In other words, critical pieces of equipment and materials are negotiated and procured before the engineering takes place, based upon conceptual designs and the Owner’s detailed performance requirements. With the suppliers on board, the engineering design process incorporates their input, special requirements and experience into the design. Such a system would provide an improved quality of detailed design, improved system and facility performance, more equitable allocation of risk, improved use of supplier expertise, reduction or elimination of redundant work and would reduce the need for Owners and Contractors to maintain areas of expertise that are more cost- and time-effectively maintained and delivered by suppliers.

(d) BRIDGING THE DESIGN/BUILD GAP: The use of the design/build delivery system has grown significantly, both in private and public sector projects. A single source of project responsibility and single point of communication make the design/build method an attractive one.

(i) Projects associated with the design/build project delivery system are characterized by the Owner’s loss of control over the design which generates a gap between the Owner’s objectives and the design process run by the design/build Contractor. To correct these problems, the use of an Owner’s Consultant is proposed to bridge the gap between the Owner and the design process run by the design/build Contractor without losing the advantages of the design/build project delivery system.

(ii) With the bridging Consultant, the Owner retains control of the portions of the design which are usually of more importance to him, that is, the schematic and conceptual design. Through his own Consultant, the Owner maintains direct communication with the design process. The Owner’s bridging Consultant can be selected, taking his qualifications into account. The conceptual and schematic design benefits as the goals and the objectives of the Owner will be properly translated into the final design for construction by the design/build Contractor. The production of a
conceptual design which is more compatible with the Owner’s objectives will result in proposals from design/build Contractors that are easier to compare and select, taking price, design, materials, technical solutions and future operating costs into consideration.

(e) INCENTIVE PROGRAMS: Performance incentive programs, rather than negative disincentives, strengthen the project team members’ commitment to speed the project towards completion. Incentive programs such as bonuses for early completion or for coming in under an agreed construction cost assist in aligning the Contractor’s motivation and performance with the Owner’s objectives. The Owner must devise attainable and challenging goals for the construction team.

(i) The Owner must continually evaluate the performance of the Contractor against a set of objective goals to ascertain if the Contractor has earned the incentive, and that the overall project goals will be achieved based on progress made to that point in time.

(f) CONSTRUCTABILITY ANALYSIS: Often referred to as value engineering, this is a way of reducing disagreements and disputes based on contract ambiguities. This analysis is performed during the planning, design and procurement phases and can mitigate problems and claims during construction. It can identify errors, omissions and impractical design details which, if later uncovered by the Contractor or supplier, would result in additional costs and delays to the project.

(g) COST AND SCHEDULE CONTROLS: The control of costs and schedule remains one of the most difficult goals to accomplish on any construction project. One technique is the requirement that contractors report (with their monthly invoices) any claims regarding the performance of the work in connection with cost and schedule changes during that monthly period. Every month, before payment is made by the Owner, the Consultant completes a report based on the work performed during that month. That report becomes the monthly progress
certificate, and is given to the Contractor for review and approval. If the Contractor does not report a claim that has become apparent during that period, it loses its right to make that claim in the future. In every monthly report, the Contractor must report any new claims as well as any outstanding ones from previous months. This forces the parties to acknowledge the existence of any outstanding issues every pay period and forces them to address the matter promptly.

(h) AS-BUILT SCHEDULE: Owners may require the Contractor to submit an as-built schedule every month before issuing a certificate for payment as well as before releasing the final payment. The as-built schedule will become the basis for review of any after-completion claims. By submitting a schedule that reflects the actual construction sequence and total duration, this will discourage the submission at a later date of delay claims that were not previously shown. The as-built schedule can be required by the Owner to be submitted monthly during the course of the work since the schedule itself is a summary of all of the construction activities and their duration throughout the project.

(i) FORWARD-PRICE CHANGE ORDERS: Impact or indirect costs, like home office overhead, field staffing or overtime work, represent change order work beyond straight hard costs. In order to reduce disputes, Owners and Contractors can agree in their contract on the guidelines and methods for determining impact costs. A series of impact factors and formulae can be developed for issues like the timing of changes, number of trades involved, effect on the schedule, effect on office and field staffing and the cumulative nature of disruptions. Subsequently, when change orders are priced and negotiated, Owners and Contractors will be in a position to incorporate both hard costs and impact costs, and they will be able to more easily settle on a final adjustment to the contract value.

(j) IMPACT CLAIM DEADLINES ON CHANGE ORDER COST QUOTATIONS: When Contractors price change orders, they usually include reservation of rights language to allow themselves the opportunity to make future claims for additional
time or money to complete the job. A disclaimer is often used by the Contractor in the change order quotation to allow for further review in order to assess the impact the change order will have on the construction schedule sequence of activities and the project duration. This is reasonable, since in most cases the Contractor will not have had an opportunity to complete a total assessment of the time and cost implications of the change order.

(i) A compromise may be to allow the Contractor a reasonable identified period of time after the change order is signed to analyze and predict its cost and time impact on the overall project. The Contractor then informs the Owner about its conclusions and the Contractor’s claims are then crystallized and dealt with.

(ii) The period for the Contractor to analyze, formulate and transmit its claims to the Owner may vary with the type and magnitude of the project, but it could range from one to six months. If the Contractor does not inform the Owner within the designated period of the cost and time impact of the change order, the Contractor then waives the right to any additional time or cost resulting from the change order. If the monthly as-built schedule procedure described earlier is employed, this will assist the Contractor to formulate its impact claims arising from project change orders.

(k) ENSURE THE ADEQUACY OF PROJECT FUNDING: It is in everyone’s interest to ensure that there will be sufficient funds to design and construct the project. Owners as well as Contractors need protection against the risk of running out of money. Owners need to understand that changes and cost increases are virtually inevitable on construction projects of any size and complexity. Accordingly, a reasonable contingency should be incorporated into the budget to deal with inevitable changes and unexpected omissions in the design.

(l) OBTAINING AND PRODUCING MORE GEOTECHNICAL INFORMATION: Owners should not be reticent about providing Contractors with full and complete
geotechnical information relating to the site at which the project will be constructed. Reverse onus provisions requiring the Contractor to make detailed geotechnical site analyses at the last minute prior to submitting its tender are both unrealistic and short-sighted. Owners should invest more money during the project planning and design phase for geotechnical advice, which should be provided in its entirety to the bidding Contractors.

(m) SETTING REALISTIC CONTRACT PERFORMANCE TIMES: If the contract performance time is insufficient, either it will cost more to do the work or the Contractor will finish late. Either scenario is disadvantageous to the Owner. Owners would be well advised to avoid these problems by obtaining Contractor input on setting realistic times to allow for construction of projects.

(n) PRE-PLAN FOR PERMITS, UTILITIES AND ZONING: Given the various regulatory requirements that have to be complied with in the course of designing and constructing a project, if these requirements are not known and considered in advance, delays will result. To avoid this, Owners and their design professionals should specifically identify permitting requirements in advance of bidding and signing contracts and obtain as many of these requirements as possible ahead of time.

VII. CONCLUSION

The overriding conclusion in reviewing project risks and allocation theories is that proper risk identification and equitable distribution of risk is the essential ingredient to increasing the effective, timely and efficient design and construction of projects. If the parties to the construction process can stop thinking in an adversarial manner and work in a cooperative effort towards obtaining an equitable sharing of risks based upon realistic expectations, the incidence of construction disputes will be significantly reduced. Project delivery systems must be employed to effectively utilize contracts which are appropriate to individual project requirements. Within those contracts, reasonable and equitable risk avoidance, mitigation and management techniques should be utilized.