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IDENTIFYING THE RISK IN COST REIMBURSABLE CONTRACTS

A Thesis in

Civil Engineering

by

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God bless.

ABSTRACT

The primary goal of the research is to assess risk elements in cost reimbursable contracts. There is a notion that these contract types serve little risk to a contractor. Nine total contracts were read and, using a standard definition for risk; risky clauses were selected and evaluated. The contracts were all from large industrial projects with large owners. The clauses analyzed were broken down into smaller categories such as entitlement and rights and responsibility. The clauses were then ranked as low risk, intermediate risk and a high risk. Stripping all superfluous language from the clause, specific risk factors were identified for each category. This provided a table where risk factors and level of risk were shown, which allows for comparison to any contract when assessing contractual risk. Furthermore, other risk aspects were discovered when reading the contracts. Contract coordination, overall contract tone and excessive referencing were some of the other non-clause related risk factors identified in the contracts. The result of the research identified that even in cost reimbursable contracts there will be risk for the contractor. The owner includes specific clauses to shed risk to the contractor, the more clauses are included the more risk can be identified. The term cost reimbursable does not always include all the aspects of a job and will have disallowed costs, which must be carefully managed.

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1. INTRODUCTION

Design and construction contracts are an integral aspect of the delivery process. Contracts assign responsibility, describe procedures, and define specific rights to all parties. That said, before committing to a contract, one must thoroughly read and understand all areas of a contract. The contract's language is of utmost importance as it is strictly interpreted in a court of law.

There are many types of contracts, with different elements meant to serve different components. A modern-day cost reimbursable contract is no different than any other contract in the sense of the risk associated with it. This contract structure defines the agreed upon allowable costs, with a typically enforced Ceiling Price clause also. A contract may define a Target Price, also called an Estimated Price, which is the predetermined cost estimate for construction services. In theory cost reimbursable contracts were thought to be more risky for owners. This stems from the fact that the owner covers costs. This was not the case in industrial contracts.

Quasi cost reimbursable contracts have the same structure as a cost reimbursable contract with some added components to serve a specific purpose. Both quasi and cost reimbursable contracts have defined allowable costs, a target price and a Ceiling Price (cost reimbursable contracts omit this ceiling agreement). The difference between the two is the added agreement as a form of an incentive. Some contracts deviate from the standard cost reimbursable contract style to the "quasi" form by adding a Savings-Sharing agreement to the contract structure or by adding a Cost-Sharing agreement and the GMP. To be clear, for the purpose of the research a cost sharing agreement is a sharing mechanism that describes the sharing of the cost of the work over a predetermined price and at a predetermined split with the owner. The contracts are essentially meant to serve the same purpose but the variability comes from the added comfort of the extra agreements for the owner.

Typically in industrial projects the contract format used is an EPC (Engineering, Procurement and Construction) contract. The Construction contracts tend to be cost reimbursable contract structure. The contracts analyzed all stem from large industrial projects and are unique to typical commercial contracts.

Objective

The purpose of the research is to provide a framework to evaluate levels of contract risk for contractors in industrial cost reimbursable contracts. In this respect, the various risk bearing clauses in the general conditions are described illustrating that the risk allocated is a function of how the clause is written. Examples of low, intermediate, and high risk clauses will be given from the industrial cost reimbursable contracts reviewed. This process identifies clauses, which are more opportunistic for negotiation. Other contract risks are also discussed, for example, contract integration and excessive referencing.

Scope

The risk elements identified are limited to construction contracts for industrial facilities and examine risk in clauses, fee structures and other risk factors. Not all risk bearing clauses are mentioned in the thesis; rather, the main clauses, which are more common, are analyzed. An important aspect to understand is that risk is relative and, because this thesis is geared to the contractor's perspective, it depends on what a specific contractor may determine as risky and is not a complete guide to analyze risk. In that respect, risk bearing clauses will be described. Examples of low, intermediate and high risk clauses are given, with the risk factors of the specific examples identified and explained. No recommendations are made relative to which clause to choose; instead it is only a means to identify theoretical contract risk.

2. METHODOLOGY

Literature Review

A literature review of domestic and international sources was conducted using the Pennsylvania State University Libraries and law forums using the World Wide Web. Few technical articles were identified that specifically discussed contract risk in cost reimbursable contracts. Most of the articles seemed to be from international sources and had some language differences. Various Construction Industry Institute (CII) reports that discussed contract risk were also identified.

Review of Contracts

With the help of a CII research team the general conditions for cost reimbursable contracts were provided from team members. The team provided eight construction contracts and one engineering contract. The general conditions were reviewed and risky clauses were identified. The risky clauses, which seemed to be more common, were of particular interest.

Preliminary Analysis

In order to fully understand the way clauses were analyzed this methodology section illustrates by example the method used for analysis.

1. A number of contract clauses of the same type (indemnification, termination, etc) were reviewed from the various contracts. The more risky clauses were selected for further consideration. Clauses that were included in only one or two contracts or if there was little diversity in the way the clauses were written were not included on the list. This list was consolidated with a similar list of risky clauses produced by the CII RT 210 team. A third list of frequently negotiated clauses produced by the International Association of Contracting and Commercial Management was also consulted. The consolidated list of clauses from the three lists resulted in 23 clauses and is as follows:

No Damages for Delay

Consequential Damages

Indemnification

Force Majeure

Schedule Acceleration

Cumulative Impact of change orders

Insurance Allocation

Differing Site Conditions

Design Responsibility

Waiver of Claims

Standard of Care

Site Investigation

Termination (default and for convenience)

Responsibility to Rectify Loss Damage

Correction of Certificates

Suspension of Work

Limitation of Liability

Price/charge/ price changes

Intellectual property

Warranty

Payment

Delivery/ acceptance

Confidential information/data protection

This list was further reduced to eliminate clauses where the risks were minimal, where there was little variation in the way the clause may be written between the eight contracts provided by the CII task force, and where the clause was infrequently used. This yielded the final list of clauses that were examined. The list included 17 clauses as follows:

No-Damages-for-Delay

Consequential Damages

Cumulative Impact of Change Orders

Differing Site Conditions (DSC)

Force Majeure

Indemnification

Schedule Acceleration

Insurance Allocation

Standard of Care

Design Responsibility

Responsibility to Rectify Loss Damage

Warranty

Site Visit

Termination

Suspension of Work

Waiver of Claims

Correction of Certificates

2. The above identifies inherently risky clauses. As an example, consider a DSC clause which in its entirety is written as:

(b) In the event Supplier encounters preexisting: (i) subsurface or latent physical conditions at the Site differing materially from those indicated in the Agreement; or (ii) unknown physical conditions at the Site of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in performance of the Services or Work, Supplier shall promptly (but not more than five (5) days after the first observance of the conditions and before such conditions are disturbed) notify (the Owner) in writing. (The Owner) shall promptly investigate such conditions, and if it determines that such conditions do materially differ and cause an increase or decrease in Supplier's cost of, or time required for, performance of Services or Work, an equitable adjustment shall be made and the Agreement modified in writing accordingly. No claim of Supplier for adjustment hereunder shall be allowed unless it has given notice as herein required.

3. The risky clauses were stripped of superfluous language leaving an abbreviated clause containing the risk factors. For the DSC example, The abbreviated version is as follows:

> (b) In the event Supplier encounters preexisting: (i) subsurface or latent physical conditions at the Site differing materially from those indicated in the Agreement; or (ii) unknown physical conditions at the Site of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in performance of the Services or Work, Supplier shall notify (the owner) within five (5) days in writing.

4. The elements of risk were identified uniquely for each clause by reviewing the abbreviated version of the clause. For the DSC clause, the risk factors were:

- Promise to pay for conditions that differ materially from those indicated in the agreement or are usual
- Notify how quickly?

5. Review other DSC clauses to identify additional elements of risk.

6. Develop a matrix relating the level of risk to the risk factors. The matrix for the DSC clause is given below.

Risk Level	Criteria
Low risk	Promise to Pay for conditions that differ materially from those indicated in the agreement or are usual
Intermediate risk	No promise to pay for certain items, for example the clause may be limited to only geotechnical issues
High risk	No DSC clause, therefore no promise to pay

Table 1. Risk Table Example

7. Review the contracts to identify examples of high, intermediate, and low risk clauses. Identify key words or phrases that alter the risk bearing characteristics of the clause. For the low risk DSC clause below, the key words and phrases are in italics.

> (b) In the event Supplier encounters preexisting: (i) *subsurface or latent physical conditions at the Site* differing materially from those *indicated* in the Agreement; or (ii) unknown physical conditions at the Site *of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in performance of the Services*

or Work, Supplier shall promptly (but not more than *five (5) days* after the first observance of the conditions and before such conditions are disturbed) notify (the Owner) in writing. (The Owner) shall promptly investigate such conditions, and if it determines that such conditions do materially differ and cause an increase or decrease in Supplier's cost of, or time required for, performance of Services or Work, an *equitable adjustment* shall be made and the Agreement modified in writing accordingly. No claim of Supplier for adjustment hereunder shall be allowed unless it has given notice as herein required.

8. Develop commentary as an aid to understanding.

Identify Other Risk Aspects of Contracts

After reading the provided cost reimbursable contracts, other risk factors appeared which were not directly related to the contract language. This identifies risk aspects in regards to the general tone of the contract, the intent of the owner, and coordination. These aspects were discussed separately.

3. LITERATURE REVIEW

There has not been much literature written specifically about contract risks in cost reimbursable contracts. Most of the literature is from articles, which pertain to commercial cost reimbursable contracts. Furthermore, the articles related to this area are based on the theoretical notion that the owner incurs most or all of the risk. In exchange, the contractor loses the ability to charge high premiums or fees (Smith, 1997). The main issues in the literature on cost reimbursable contracts, identified bellow, in regards to risk are: alignment of interest between the parties, extensive owner involvement, and the lack of incentives, Ceiling Price, Disallowed Costs, and Risk Allocation. These are discussed separately:

Important topics within literature

Extensive Owner Involvement

Ward (1994) discusses various factors in relation to cost reimbursable contracts. Specifically, the owner assumes all the risk, contractors cannot earn excessive profits from high-risk premiums, and there may be a lack of incentives for the contractor to be cost effective. Ward also describes risk factors associated with the contract structure. He explains that an area of concern is agreement and the documentation of allowable costs between the owner and contractor. Areas of dispute seem to be overhead and managerial costs if they were not clearly defined in the contract. Ward states that the most effective risk management practice when using cost reimbursable contracts is identifying both owner and contractor controlled risks and uncontrolled risks in order to fully decide how to control each of the factors. This means the owner must actively discuss specific content to mitigate the chance for dispute.

Berends (2000) identifies some of the same factors as Ward. Further, Berends also states that, although extensive owner involvement is required for cost reimbursable contracts, some owners lack the resources to do so. The potential risk associated with the inefficient decision making is of great concern to the owner.

Alignment of Interest

Perry (2000) describes the importance of alignment of both motivation and interest within the cost reimbursable contract structure. Both the owner and the contractor must be equally motivated and be primarily concerned with the project's success seeing that the owner may collaborate with the contractor daily. Ultimately, both parties' goals must be the same for successful interactions throughout the life of the project.

Moeller (2002) identifies further examples of how alignment of interest is of great importance for project success. The cost reimbursable structure, which requires more involvement from the owner, allows the owner to discuss requested changes with the contractor and to identify areas where conflict may arise (with Change Orders).

Smith and Moeller (1997, 2002) describe how the bidding process has shifted, completely eliminating the low bid tendency of fixed price contracts. Results have shown that the bidding process relies on subjective factors, such as company and team member's experience, reputation, interviews, and presentations (Smith, 1997). This process helps to align the needs of the owner with the interest of the contractor, potentially producing a strong relationship throughout the project life cycle (Moeller, 2002).

Al-Subhi (1998) examines incentive fee cost reimbursable contract structures. Although the findings of his research seem to provide a review of most of the literature available, examples and conclusions are derived using the utility theory, which identifies statistically derived graphs that map a specific contractor's attitude to risk. Through this, Al-Subhi identifies what would be the most likely cost sharing mechanism for a specific contractor depending on their attitude toward risk. Furthermore, the sharing mechanisms were also categorized as high, intermediate, or low risk to the contractor and owner. For example, a Cost-Sharing Scheme of 90% covered by the contractor and 10% covered by the owner represents a high-risk scenario for the contractor seeing that the contractor would cover 90% of cost over the target price.

Lack of Incentives

Smith (1997) states that the largest reported problem with using cost reimbursable contracts is that the contractor has no motivation to decrease cost below the maximum. Some studies show that scope and cost must be defined and explained very clearly in the contract to indicate clear entitlement (Smith, 1997). Furthermore, to stop the "cost plus mentality," specific budgets for specific sections of work must be clearly defined and understood during the competitive proposal phase (Smith, 1997). The only way to gain a solid working relationship is by requiring and enforcing cost effectiveness by following the clearly defined budgets (Moeller, 2002). This indicates that Moeller may have a naive perspective on contractor behavior. Even if all work is budgeted there is always a possibility for charging disallowed cost under other allowed cost budgets. This defeats the purpose of budgets for maintaining cost effectiveness.

There have been documented attempts to solve the lack of incentive by contractors using incentive schemes. Traditionally, incentive schemes have included “bonus” payments for early completion (awards) and other expressed incentives (meeting safety strategies, standards, quality, etc.) (Moeller, 2002). Unfortunately, some contractors offset awards lost due to poor quality finishes with the early completion awards (Moeller, 2002). Also, traditional incentives seem to still neglect the fundamental need for cost effectiveness when still below the maximum budget (Smith, 1997). Research has proposed new incentive schemes that use a new mindset on construction. For example, a proposed new incentive scheme is to have periodic quality and “care” checkups that consist of large checklists of expectations ranging from safety expectations to quality finishes (Moeller, 2002). This is initially written by the owners and then discussed with the contractor to ensure agreement with expectations. Furthermore, rewards are based on contractor behavior by evaluating whether the contractor is proactively looking to create a better overall project (i.e., thinking about operational benefits) (Moeller, 2002).

A British company added two new clauses in their contract, which were specifically designed for cost reimbursable contracts. These clauses, required the contractor to perform beyond the scope of work and think ahead for any amendments that would improve the project (Davis, 2008).

> Clause 3.5 b includes an obligation for the contractor to notify the project manager if he or she can see changes to work, design, or the method of operation of the plant that would improve operating or lifecycle costs. (Davis, 2008)
>
> Clause 3.6 states that the contractor’s obligation to provide adequate resources for the proper and timely execution of the work which include competent, appropriately experienced, and physically capable staff (Davis, 2008). Davis did not discuss the effectiveness of these two clauses.

Ceiling Price

There is ample literature describing specific factors of ceiling price clauses. However, there is disagreement over whether the ceiling price is considered a GMP and is a unique form of contract or just an adaptation of a Cost Reimbursable Contracts (Davis, 2003)—specifically, whether a GMP is a completely different contract (Boukendour, 2001) or whether it is a clause added to a cost plus contract (cost reimbursable) (Davis 2003 and Chance, 2006). Furthermore, the meaning of the phrase GMP has not been standardized (Longworth and Davis, 2003) although there are published standard forms of agreement from agencies such as AIA, DBIA and AGC, which have produced standard definitions for a GMP containing contract. Some literature indicates that the meaning of the phrase is that, regardless of changes (be it only minor changes), the GMP represents the highest price that will be paid (Hendrickson, 1998). This may strike most people as unbelievable due to the fact that it would be unwise for the contractor to sign a contract that did not cover changes. However, other literature indicates that the GMP represents a cap that changes as scope changes or via a change order (Chance, 2006), which is more common and believable. Another major area which identifies a lack of understanding between literatures is Davis (2003) and Hendrickson (1998) state that GMP contracts are to be used when scope is extremely clear, whereas the remaining documents state that the purpose of a GMP clause/ contract is for a quick start prior to the completion of scope or documents.

In the AIA standard Form for GMP Cost Reimbursable contracts, the GMP is a figure not to be exceeded, but is subject to changes via formal change orders at the approval of the owner. Furthermore, a provision is provided indicating what a disallowed cost is and is not covered directly under the GMP clause. This sheds light on the specific area of GMP risk, which is a significant topic within the study of risk in Cost Reimbursable Contracts.

GMP as a Cost Reimbursable Contract

Chance (2006) describes a GMP as added clauses to a Cost Reimbursable contract, which is simply a monetary value that caps payments to the contractor. Furthermore, usually the GMP clause is accompanied by exclusive remedies to prevent the contractor from filling claims in respect to damages and payment. Also, the GMP clause should be subject to adjustment in circumstances broadly comparable to those in a lump sum contract (Chance, 2006). A contract read states that the definition of a Guaranteed Maximum Price is:

> "A cost-type contract where the contractor is compensated for actual costs incurred plus a fixed fee subject to a ceiling price. The contractor is responsible for cost overruns, unless the GMP has been increased via formal change order. Savings resulting from cost underruns are returned to the owner" (Chance, 2006).

GMP as a Hybrid Contract Structure

Boukendour (2001) explains the two categories of contract structures: the fixed price category and the cost reimbursement category. Boukendour illustrates how some contracts do not fit in either category as some aspects represent both categories. Boukendour claims that the GMP contract structure is a hybrid of both, because the owner covers cost and the fee while the contractor guarantees that the cost plus the fee won't exceed the maximum. Boukendour claims that because the GMP is fixed and cannot be exceeded the owner is at a greater advantage due to the contractual agreement. The advantage arises from the resemblance of a financial Call Option, which is only exercised only when at an advantage. Therefore, Boukendour defines the GMP contract as a combination of a cost reimbursement contract and an option–like clause, which serves as a call option on a fixed price contract. This option is only exercised if the contractor exceeds the GMP and therefore is left to cover the cost.

GMP as a Lump Sum Contract

Davis (2008) identifies a lack of common understanding of GMP and the need for a standard definition. Davis discusses the misconception that the GMP is the maximum price which will be paid regardless of changes, which produces serious disputes (McNally, Davis, 1997)—. One disadvantage of using a GMP contract cited by Gander is that there is no standard form of a contract for GMP which leads to a greater possibility of errors and misunderstanding of liabilities between parties which leads to conflict (Gander, 1997). This issue has been resolved my groups like AIA, DBIA and AGC who have since developed standards forms of agreement.

Gogulski (2002) also states that GMP contracts are not to be confused with Cost Reimbursable contracts and that GMP and lump sum contracts are identical and can be priced the same. While they may be priced the same way, Gogulski fails to recognize that the rights and entitlements are different from the fixed price contract. Such as, the owner retains all savings under the GMP and there is an open book partnership under the project. Furthermore, Gogulski claims that the GMP is final and cannot be exceeded by the contractor and that this contract type is only recommended for owners willing to fully participate in the administration of the project and have day-to-day influence on the work. This is not true since above GMP entitlement is fully dependant on contractual language.

Disallowed Cost

Not much is mentioned in the literature about disallowed costs within the GMP or Cost Reimbursable contract structure. However, all literature indicates that GMP and Cost Reimbursable contracts become more risky when specific disallowed costs are identified. However another risky scenario is when only allowable costs are identified, as this may indicate that anything not written as an allowable cost will not be paid for. Therefore, the contract risk is directly related to what the contract states. Courts may argue that, although disallowed costs are specified, an incurred cost could still be covered under allowable costs if related to the scope of work.

CII Risk Allocation Papers

CII has published 3 reports that have referenced contractual risk and its allocation to parties under contract. The most relevant report is the 210.3: Equitable Risk Allocation, A Legal Perspective. This report identifies the most important factor in determining what judges may rule is common law and precedence. Furthermore the report identifies 14 "hot button" risks, which were identified as the most commonly disputed clauses or misallocated risks. The 14 were disputed clauses are:

1. No Damages for Delay
2. Consequential Damages
3. Indemnity
4. Ambiguous Acceptance Criteria
5. New or Unfamiliar Technology
6. Force Majeure
7. Schedule Acceleration
8. Cumulative Impact of Change Orders
9. Owner-Mandated Subcontractors
10. Insurance Allocation
11. Differing Site Conditions
12. Design Responsibility

13. Waiver of Claims
14. Standard of Care

Although the 14 risks above are discussed throughout the documents, the papers also identify ten frequently negotiated clauses. It is interesting that, when comparing the two lists, it appears that only two clauses are common on both lists (Indemnification and Termination). The reason for this is unknown; however the clauses were produced from primary sources. This may identify a lack of understanding of the misallocated risks as most clauses are not negotiated

4. BASIC CONCEPTS ABOUT RISK IN COST REIMBURSABLE CONTRACTS

Risk in cost reimbursable contracts as identified in Table 1is directly related to whether compensation is likely or easy and depending on how many risk factors a clause contains. That said, risk within a contract is complicated and, may be identified in other aspects of the contract and not just from the clauses. There are specific items that may spread risk more effectively and these are important to discuss.

Risk Shedding Strategies

A common misconception is that in industrial projects a cost reimbursable contract is a "no-lose" proposition for a contractor, meaning there is little contractual risk for the contractor to bear. In reality, owners on large industrial projects seem to successfully shed a portion of their risk onto the contractor. Typical strategies identified through the study of the General Conditions and discussions with a Research Task Force are:

- Ceiling Price
- Disallowed Cost
- Cost Sharing

When these are applied the contractor usually retains some risk.

Cost Definitions

In order to fully understand the contractual structure, Figure 2 illustrates three cost values used when discussing cost reimbursable contracts. The estimated cost is provided by the contractor through the bid process. The Ceiling Price which is the price that cannot be exceeded and provided for by the owner. Finally, the last cost value to define is the actual cost, which is the cost of the project upon completion. In Figure 2, the actual cost falls between the estimated cost and the Ceiling, the difference is saved by the owner. However, depending on the contractual agreement, some contracts include a clause to share the savings with the contractor by a predetermined percentage or by another agreement.

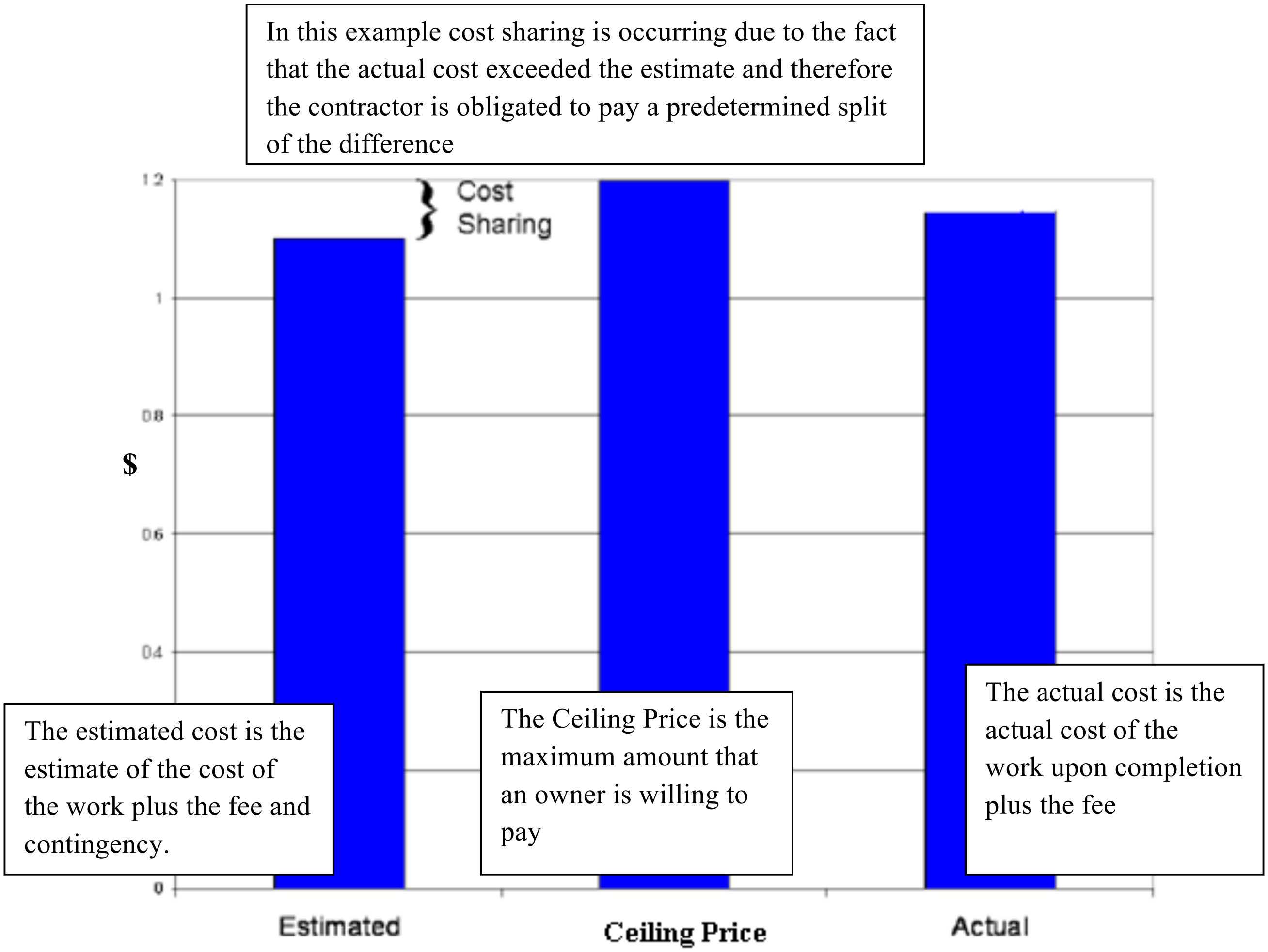

Figure 1. Cost Elements in Cost Reimbursable Contracts

Ceiling Price

A ceiling price may be seen as similar to a fixed price contract because it states a final figure of compensation. In a fixed price scenario, the contractor is typically not obligated to show the owner the accounting books of the project and reveal how much profit was made. However, in a cost reimbursable contract, the contractor discloses the actual allowable cost and is only reimbursed for that amount. The fee, which is usually separate and predetermined, contains the contractor's profit.

Ceiling prices in cost reimbursable contracts are established as a GMP or through specific contract language. The owner contractually states that the contractor will be paid for all allowable cost, but will not be paid over the Ceiling Price. Therefore, the contractor assumes the risk when actual cost exceeds the agreed upon Ceiling Price. Furthermore, the contractor bears the risk of a faulty (low) or overly optimistic estimate, which, in turn, lowers the estimated cost which lowers the ceiling price. The ceiling price can be established by the owner as a percent over the estimated price.

Ceiling prices may also be established through contract language. An owner may state affirmatively that the contractor will not be compensated above a certain amount. A ceiling has been established even though no mention of the terms "ceiling price" or "GMP" exists.

Disallowed Cost

Owners can alter the risk assigned to the contractor by increasing the number of disallowed costs. As the owner adds more disallowed costs the risk for the contractor increases. For example, suppose an owner signals the intent not to include acceleration cost as a part of the allowable costs. The contract will have a significant increase the risk.

Saving-Sharing and Sharing of Cost

Figure 2 conceptually shows a scenario when the actual cost to be paid by the owner is between the estimated cost and the Ceiling Price. Typically Owners want the actual cost to be close or below the estimated cost and as far away from the initial determined ceiling as possible because, all the money saved can be retained by the owner. However, there seems to be little incentive for a contractor to remain below or close to the estimated cost because the contractor's fee is usually a percentage of cost, the higher the better. Therefore, as an incentive a contract may include a saving- sharing provision. This provision usually states that if the actual cost remains under the estimated cost the owner will share the savings with the contractor at a predetermined split. However, some owners also add a Sharing of cost provision which pushes the contractor to control costs further because if the actual cost becomes higher than the estimated cost then the contractor is liable for a percentage of the difference, which is determined in initial negotiation. This provision increases a contractor's risk and forces the contractor to provide a careful bid to ensure an accurate estimated price.

It is important to note that in some cases, such as government projects savings may not want to be retained and reinvested into the project. This does not alter the risk involved however it doesn't allow much for an incentive scheme.

Fee Structure

In the industrial contracts covered the fee is not included as part of the contract and is determined by separate agreement. However, there are many types of cost reimbursable contracts. Some of the more common ones are:

- Cost plus fixed fee

- Cost plus percentage fee
- Cost plus variable fee

With these types of contracts, the main differences are in the way the contractor's fee is determined. For instance, the fixed fee is a set amount, the percentage fee would be a percentage of the work and the variable fee may be different depending on specific goals set by the owner.

Other types cost reimbursable contracts are:

- Cost Sharing Contracts
- Cost-Plus-Incentive-Fee Contracts
- Cost-Plus-Award-Fee Contracts

The main difference between each of these types is the way the contractor's fee is determined and what the fee is, in award fee contracts the owner is awarded more work for successful completion of contract. The most common type studied from the contracts reviewed was the cost-plus-fee contract structure. The fee may be fixed, determined as a percentage or on a scale. Owners must be careful with their choice of fee setup as some may be more burdensome when trying to control cost. As for the contractor the fee setup must be negotiated to provide a good opportunity to be profitable and curtail risk.

Role of General Conditions

The general conditions represent that initial point of contract negotiation. Some people believe that a contract which arbitrarily allocates risk to the contract is irrelevant because the negotiation phase allocates risk more equitably. This view doesn't recognize that usually the contractor's estimate arises from the general condition's risk allocation. Furthermore, since the fee and any sharing or incentive provision is based around the initial estimate understanding the contractual risk within the general conditions is of great importance to the contractor as it may determine many of the goals set by the owner.

5. CONTRACT STRUCTURE

The way a contract is written can describe the intention of one party by the allocation of various risks to the other party. Contracts are used as risk allocation mechanisms and require due diligence from both parties for successful competition.

Contract risk can also be viewed as a continuum dependent on type of contract. Figure 3 illustrates the type of contract, describing specific properties and placing a contract on a contract risk continuum. Fixed price contracts allocate the cost risk disproportionately to the contractor, whereas a cost reimbursable contract allocates the cost risk to the owner, holding all other variables constant (document quality, site conditions). However, in reality and through the contracts studied it is rare to find a completely plain form of a cost reimbursable contract without any disallowed costs, sharing mechanisms and/ or a ceiling price. Furthermore, once a contract adds certain mechanisms and agreements such as a cost sharing provision or a ceiling price, this reallocates some of the cost risk back to the contractor and shifts the contract down the continuum.

A commonly referenced contract is a GMP contract. From the research a GMP contract is considered a form of cost reimbursable contract, as it is unlikely that scope changes will not alter the ceiling.

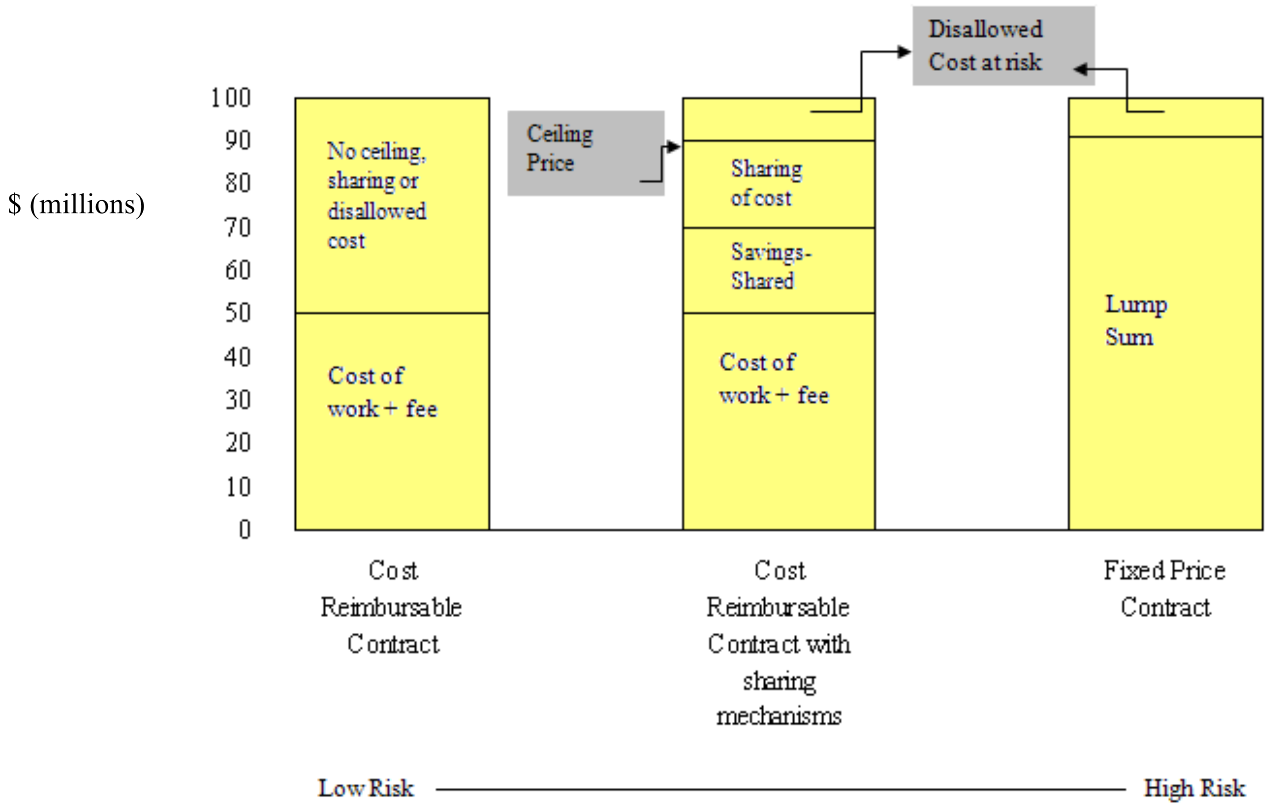

Figure 2. Comparison of Risk and Cost Elements between Cost Reimbursable Contracts and Fixed Price Contracts

Issues in Risk Allocation

There are two issues that increase the risk, shifting the contract to the right of the continuum. These are: how the GMP is treated and disallowed cost.

Ceiling Price in Risk Allocation

In the cost reimbursable contracts review, three terms are used interchangeably: target price, estimated price and budget price. Each term does not describe how the fee is handled; the specific contract language is relevant in that respect.

A ceiling price is the maximum price an owner will pay to the contractor. There are two methods by which a ceiling price and be established. Using Black's Law Dictionary, a guarantee is an assurance that a contract or legal act will be duly carried out (Garner, 2009). Therefore a guarantee carries the weight of a promise in the court of law. Therefore one method is to state that the Ceiling Price is X amount. The second way a ceiling can be established is through contractual language by having an affirmative statement that the owner will not pay the contractor over a certain amount. The use of the definition a ceiling price is not necessary. The contract may also define a budget or an estimated price. This is always less than the ceiling, but when cost passes a target price, depending on contract language, a cost sharing scheme might be triggered automatically.

It is helpful to review a single contract to understand how the issue is addressed. In the contract section on compensation, the contract states:

> Each Short Form Agreement shall contain an *estimated* price ("the *budget*") for XSupplier's entire compensation for the Project . . .
>
> And
>
> If XSupplier later believes that the Project cannot be completely performed without exceeding one or more of the budgets, XSupplier will curtail its work to mitigate further cost to (the owner) . . .

The Contract uses the terms "*budget*" and "*estimated* price" interchangeably.

Without definitions to the contrary, the terms mean one and the same.

In another part of the same section, the contract says:

> In no event does the owner have any responsibility to pay XSupplier any compensation in excess of the *estimated* prices established in the Short Form Agreement.

When the contract is read as a whole, the contract ultimately states that the contractor is going to provide an estimated price and the owner will pay only up to that estimate. The contractor has no right to collect above that price. Furthermore, since the contract states that the payment is going to cover the estimated price and nothing above, this provides that the fee will be covered under the estimated cost. Therefore, the estimate would contain the fee, profit, overhead and contingencies. This may be considered as relatively risky when compared to a traditional cost reimbursable contract which doesn't state a limit on reimbursement. The risk is shifted solely to the contractor.

Owners need to be cautious when payments are made. If a payment is made over the ceiling price this may be viewed in court as a waiver of the ceiling price. This will expose the owner to additional costs filed by the contractor (Lazer v. Long).

Whenever a ceiling price is established, both parties incur unintended risks. The contractor assumes the risk that the estimate submitted is accurate and the owner assumes risk that the estimate is not inflated and only includes contingencies that are relatively predictable.

A very important issue raised in Chapter two addresses whether scope changes lead to an increase or decrease in ceiling price. If the answer is no, this would provide tremendous risks for the contractor unless the scope is very well defined and simple. Fortunately, this type of contract language is rarely found.

GMP risk is an external risk factor, which is not related to the contract clause language. The GMP must be understood as it can pose significant risk to the contractor as explained.

Disallowed Cost in Risk Allocation

Disallowed cost, as mentioned before, is a cost that is strictly non reimbursable under the contract. Disallowed costs are created by clauses by stating that a specific item will not be billed to the owner and does not have to be under the title of a disallowed cost. As more disallowed costs are created, there is more risk to the contractor. The contractor, depending on the disallowed cost will immediately react and add more “contingencies” in the fee price inflating the price to cover the added risk of incurring that cost. The relationship between contingencies and Fee is linearly increasing as shown in figure 5. However, depending on the extent of the disallowed cost the gradient will increase depending on the severity/ expectations of that specific item being a disallowed cost.

Understanding how disallowed costs are handled by AIA A102 can help identify some of the standards in commercial cost reimbursable projects (American Institute of Architects, 2007). This standard form of cost reimbursable contract for commercial jobs lists specifically what will not be reimbursed. The list is relatively standard and includes, among others:

- Salaries of home office personnel
- Home office expenses
- Overhead and general expenses
- Capital expenses

Depending on the contract language some of these costs may be included in the fee, although this is not clear. For the contracts analyzed there is much to be negotiated or clarified between both parties seeing that the size of the work provides for many cost burdens for the contractor that may need to be reimbursed, when, in smaller projects might be overlooked. Therefore, the contractor's risk is that a disallowed is not anticipated and overlooked. As there is more uncertainty or disallowed cost, the fee value increases.

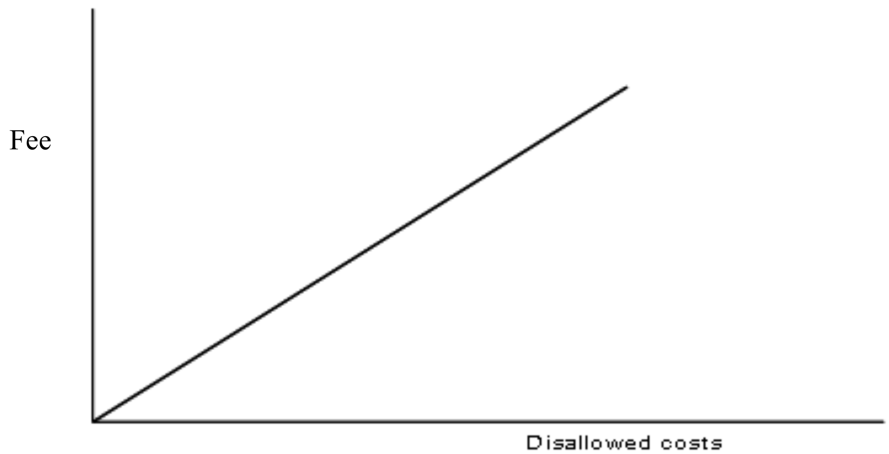

Figure 3. Conceptual illustration of Fee vs. Disallowed Cost

Fees and Risk

Fees tend to be handled different depending on the owner, as it depends on the contract language. From the contract shown above, it seems relatively clear that the contractor's fee is covered under the estimated price. The contract states the estimated price is the "entire compensation" for the project. Thus fees and incentives are included. Some owners rather enforce a separate arrangement where the fee is separate and will cover either profit and overhead or profit only. This depends entirely on what the contract states.

There is risk when discussing fee arrangement. The more sharing provisions the more the contractor is inclined to reduce or control cost. This, depending on the fee arrangement may reduce the entitled fee. Therefore, this arrangement is important and must be studied to ensure profitability and reduce risk.

Incentives and Risk

To understand the sharing mechanisms between an owner and a contractor, consider this example. A contractor submits an estimated price of $400 million. The following parameters apply:

Estimated price: $400 million

Ceiling Price: $420 million

Cost sharing/ Savings shared: 50%-50% (estimated price- actual price or actual-estimated)

Scenario 1

Actual allowable cost: $410 million

In this case there would be no saving sharing but since the contractor went above the estimate, there will be cost sharing. Therefore the contractor will be responsible for 50% of the overage. This would mean the contractor is liable for $5 million.

This is the scenario that a contractor would rather not participate in, and depending on the size of the project may potentially be extremely bad for a contractor. This is where the risk is evident.

Scenario 2

Actual allowable cost: $380 million

In this case there would be a saving scheme, since the actual cost fell under the estimated cost. With the agreed saving scheme, the contractor would get a bonus of $10 million dollars. This provides for a great incentive to remain cost effective, be it under the estimate or over the estimate.

Discussion

The owner can earn a bonus depending on how much under the estimate for which the contractor can finish the work. Furthermore, the maximum penalty the contractor is responsible for sharing (under the GMP) is only $10 million. The bonus can be thought of as profit since it is not tied up to any cost or work. The risk for the contractor is if the estimated price is low; this provides for a higher probability of not being below that number and probably even costing more. Furthermore, if there are many disallowed costs which are likely to be encountered during their work, it makes it more likely that they will not be covered by the "profit" made on the project further reducing the profit margins. The contractor may then inflate the estimated price and mischarge disallowed cost into allowable accounts. Lastly, an important issue that poses great risk is the ceiling price: as soon as the cost is above that price the contractor is liable for all cost which would be very high in some circumstances.

The issues of a ceiling price, disallowed cost, fees and incentives force the contractor into making tough business decisions. How much contingency needs to be added, the likelihood of disallowed cost, what is the likelihood of keeping the actual costs below the ceiling price, and what price will it take to get the project. There is considerable risk for the contractor.

6. ANALYSIS TO IDENTIFY CLAUSE RISK

Construction contract clauses distribute risks depending on the language used. Therefore it is imperative that the contract is read carefully. In this chapter a number of contract clauses that relate to allowed and disallowed cost are reviewed. The more disallowed cost, the higher the contractor risk. The clauses are not necessarily all the clauses that impart risk to the contractor or engineer, but rather the more common ones that were identified in industrial projects. These clauses define procedures that may preclude payment and rights and responsibilities that may yield no entitlement. Entitlement clauses define allowable costs. Thus it is not correct to say that there is no risk to a contractor in a cost reimbursable contract.

TYPE OF CLAUSES

The clauses reviewed in this chapter can be categorized as follows:

<u>Entitlement</u>

No-Damages-for-Delay

Consequential Damages

Cumulative Impact of Change Orders

Differing Site Conditions (DSC)

Force Majeure

<u>Rights and Responsibilities</u>

Indemnification

Schedule Acceleration

Insurance Allocation

Standard of Care

Design Responsibility

Responsibility to Rectify Loss Damage

Warranty

Site Visit

Procedures

Termination

Suspension of Work

Waiver of Claims

Correction of Certificates

The analysis will follow the methodology and produce risk factors, a risk table and examples of levels of risk from the contracts analyzed.

ENTITLEMENT CLAUSES

No-Damages-for-Delay

Risk Factors.—The no-damages-for-delay clause signals that the owner does not intend to compensate the contractor for delay damages; all that he/she is willing to do is give the contractor a justified time extension as provided for in other parts of the contract. This clause allocates considerable risk to the contractor. Consider the following simplistic example. Suppose the contractor rents a large crane for use in erecting selected equipment. The day the crane arrives on site, the owner decides to delay the erection because of possible engineering problems. The work is delayed a week. With a No-Damages-for Delay clause, the contractor cannot recover the cost of crane rental or idle equipment, but is only entitled to a five day extension of time.

Thus, the main risk factor is:

- Does the contract include a No-Damages-for-Delay clause?
  Contract clauses can be categorized in the following way:

Low risk	No clause (The owner promises to pay)
Intermediate risk	There is a No-Damages-for Delay Clause that limits recovery of monetary damages to certain types of delays
High risk	There is a No-Damages-for Delay clause that gives a time extension only regardless of the type of delay

Table 2. No-Damages-For-Delay Risk Table

Judicial Attitude.—The No-Damages-for Delay clause is not favored by courts, but is nevertheless enforceable in states where it is not against public policy (in some states it is not enforceable). The only way around the No-Damages-for Delay clause is for a contractor to prove that the type of delay was not contemplated by the contract (very hard to do) or to demonstrate than the contractor was hindered or interfered with by the owner. This action is a breach of contract and there needs to be an act of bad faith. It may not be a question of whose fault it is for the delay. Contractors should be wary of this clause as it is difficult to avoid the harsh consequences (Kalish-Jarko v. City of New York). A lengthy and nasty court battle is likely to ensue; not a desirable conclusion to the project.

The clause may also include a requirement for the level of proof needed to demonstrate a delay or it may specify how monetary damages are to be calculated. Certain elements of cost may be excluded, for example, profit and certain overhead cost elements.

For some contracts, there may be language that provides for an equitable adjustment. There may be a fixed $/day set for owner induced delays. This rate may be well below the actual damages. These provisions are nevertheless enforceable.

Low Risk.—There is low risk to a contractor when there is no clause.

Intermediate Risk.—There is an intermediate risk to the contractor if monetary recovery is excluded for delays of a certain type but allowed for others. An example clause is given below. The contractor may recover monetary damages if the delay is not the contractor's fault. This clause is limited to suspension under Para. 19 only.

> 19.2.2 Suspension under this Section shall not automatically entitle XSupplier to additional time for performance under this Agreement or to a change in Compensation. However, if the suspension *is not due to XSupplier's fault or negligence*, the completion dates for XSupplier's performance of the suspended Services may be reasonably adjusted to reflect the delay due to the suspension,
>
> and, (the Owner) may reimburse XSupplier for the reasonable and direct additional costs incurred by XSupplier as a result of the suspension . . .

High Risk.—An all encompassing clause follows:

Contractor agrees to assume all risks of delays in the progress, performance and completion of the Work and agrees that it shall have no remedies for delays except only delays as the result of, or on account of, the specific causes set forth in paragraph 33.2. With respect to those specific causes, the only remedy available to Contractor shall be an extension of time equal to that period of time lost as a direct result of the delay

In this clause, reference is made to para. 33.2, which lists the justified reasons for a time extension. In no case can the contractor recover delay damages.

Differing Site Conditions (DSC)

Risk Factors.—The main risk factors related to differing site conditions clause are:

- Promise to pay for conditions that differ materially from those indicated in the agreement or are usual
- Notify how quickly?

The various clauses are categorized as follows:

Low risk	Promise to pay for conditions that differ materially from those indicated in the agreement or are usual
Intermediate risk	No promise to pay for certain items, for example the clause may be limited to only geotechnical issues
High risk	No DSC clause, therefore no promise to pay for conditions that are materially different. (do not fall under allowable costs)

Table 3. DSC Risk Table

Judicial Attitude.—The DSC clause is enforceable. However its reach is limited to hidden physical conditions at the site. It may cover items other than geotechnical, but does not cover Acts of God like excessive rainfall.

The key operative word in most DSC clauses is “indicated.” If indicated is the standard, the condition found need not be affirmatively stated in the contract, only suggestive to a reasonably prudent bidder and not negated by a prudent site visit. When indicated is used, the contractor can rely on what is written in the contract documents.

If the word “stated” or “anticipated” is used in lieu of “indicated,” then the entire meaning of the clause may be altered. Thus, a careful reading of the clause is paramount.

If the contract contains no DSC clause, the owner is signaling his/her intention not to pay for any differing conditions. The contractor assumes all the risk. This can be a particularly risky situation for the contractor as it limits the allowable cost. However, with a cost reimbursable contract, the owner may be obligated to pay. Other clauses in the contract would need to be consulted.

The normally encountered situation is that the DSC clause is limited to latent or subsurface physical conditions at the site. The interpretation of the typical clause is that it is not limited to geotechnical issues unless specifically stated. The contract language is particularly important in retrofit or modernization projects.

A five day notice period is rather short as the differing condition may not be noticeable at first. Some contracts give the contractor as much as 21 days. Generally, courts seem reluctant to rigidly apply the time limitation provision. If the contractor notifies the owner in six or seven days, a claim will probably be allowed so long as the Owner has not lost the opportunity to control his/her liabilities.

> **Low Risk Example.—**In the event Supplier encounters preexisting: (i) subsurface or latent physical conditions at the Site differing materially from those *indicated* in the Agreement; or (ii) unknown physical conditions at the Site of an *unusual nature* differing *materially* from those ordinarily encountered and generally recognized as inherent in performance of the Services or Work, Supplier shall promptly (but not more than *five* (5) days after the first observance of the conditions and before such conditions are disturbed) notify (the Owner) in writing. (The Owner) shall promptly investigate such conditions, and if it determined that such conditions do materially differ and cause an increase or decrease in Supplier's cost of, or time required for, performance of Services or Work, *an equitable adjustment* shall be made and the Agreement modified in writing accordingly. No claim of Supplier for adjustment hereunder shall be allowed unless it has given notice as herein required.

This above clause is a low risk clause because it promises an equitable adjustment. The wording "indicated in the Agreement" is used, so the contractor can rely upon the contract documents (provided there is adherence to the site visit clause). The clause is not limited to any one type of hidden condition. The five (5) day provision does may not pose overly high risk.

> **Intermediate Risk.—**In the event Supplier encounters preexisting: (i) *subsurface conditions* at the Site differing *materially* from those *indicated in the Agreement*; or (ii) unknown physical conditions at the Site of an *unusual nature* differing materially from those ordinarily encountered and generally recognized as inherent in performance of the Services or Work, Supplier shall promptly (but not more than *five* (5) days after the first observance of the conditions and before such conditions are disturbed) notify (the Owner) in writing. (The Owner) shall promptly investigate such conditions, and if it determines that such conditions do materially differ and cause an increase or decrease in Supplier's cost of, or time required for, performance of Services or Work, an equitable adjustment shall be

> made and the Agreement modified in writing accordingly. No claim of Supplier for adjustment hereunder shall be allowed unless it has given notice as herein required.

This clause poses intermediate risks because the "promise to pay" is limited to subsurface conditions. If the project is for retrofit or modernization work, the risk of hidden conditions other than geotechnical may be significant, and these conditions are not covered.

High Risk.—A high risk situation occurs when there is no DSC clause. In this situation, the owner is signaling that he/she does not intend to make any adjustment to the ceiling price on account of hidden conditions. The contractor bears all the risk for that cost increase depending on connecting clauses such as site investigation. The risk is in the ceiling not being altered.

Force Majeure (Time Extension)

Risk Factors.—The main risk factors with the time extension clause are:

- What are the allowable reasons for a time?
- Does the clause contain encompassing language

Low risk	Includes broad encompassing language, specifically "events beyond the contractor's control"
Intermediate risk	Includes mixed language, specifically "events beyond the contractor's control that are not foreseeable or cannot be avoided by the contractor"
High risk	Does not include encompassing language, just list events for which an extension of time will be given

Table 4. Force Majeure Risk Table

Judicial Attitude.—The time extension clause is enforceable. An extension of time is done through the change order process or in the same manner as increases or decreases to the ceiling price. Time extension clauses are rather generic in the way they are written. But they may not be as broad sweeping as they seem. To be an excusable reason, the cause of a delay must be similar to the reasons enumerated, and the contract must contain language like "and other similar events." Further, the cause is usually required to be beyond the control of the contractor. Fortunately, the above aspects of the time extension clause are seldom the center of an argument.

Encompassing language is important. If the contract states "and events beyond the contractor's control," then a contractor is entitled to a time extension for events other than those listed, provided the event is similar to those listed (low risk). If the clause adds the phrase "events beyond the contractor's control that are not foreseeable or cannot be avoided by the contractor" additional risk is added as it could be argued than some events could have been foreseen and avoided (intermediate risk). The most risk occurs when there is no encompassing language (high risk). The contractor is entitled to a time extension only for those events listed.

Sometimes an extension of time is only allowed if the delay is a controllable activity. It is important to define controllable before the contract is signed, as controllable can mean different things to different people. If critical activity is used, one needs to be sensitive to changes in critical activities.

It may be argued if a time extension is justified. This issue is important as it relates to timely completion and liquidated damages. Some courts have affirmed that owners cannot issue changes that prevent the contractor from timely completion and then assess liquidated damages. Also, owners may not allow the contractor to work beyond the completion date, encourage completion, and then terminate the contractor for not completing the project on time. The practice of delaying the granting of time extensions until the job is finished to see "if the contractor needs it" is also viewed negatively. In some courts, these practices are viewed as acts of bad faith (Alexander & Shankle, Inc. v. Metropolitan Government of Nashville and Davidson County 2007, Banks Building Company, LLC v. Malanga Family Real Estate Holding, LLC 2006).

Consequential Damage

Monetary losses due to consequential (indirect) damages can be quite significant. For an owner, consequential damages may include loss of revenue or profit. These types of damages are often difficult to recover. The potential losses are sometimes incorporated into liquidated damage amounts. Generally, if a liquidated damage amount is specified, the owner is precluded from seeking actual damages.

For a contractor, consequential damages may include loss of potential business or bonding capacity and business reputation. These losses are very hard to recover. Of course, there are many other types of consequential damages.

If there is no Consequential Damages clause, either party can make claims for consequential damages, provided these owner damages were not incorporated in the liquidated damages amount. The problem is he/she must prove that the damages incurred were somehow related to the contract. Some claims are very speculative (loss of business reputation) whereas others may be easily proven. If there is a breach of contract by the other party, consequential damages are sometimes considered as punitive and allowed. Each case is different.

Impact damages may or may not be considered a consequential damage. The impact from numerous changes is not consequential if it can be proven to be a direct outcome, such as causing out of sequence work. If an impact damages claim includes a loss of anticipated revenue, it would most likely be considered consequential.

Work pushed from one season to another with more adverse weather conditions would be seen as constituting a change, not a consequential damage. Again, documentation would be necessary to prove the difference.

Risk Factors.—The main risk factor for this clause is:

- Is the contractor permitted to seek consequential damages?

Consequential damages can be quite significant, so it is important that a contractor has the right to seek these damages. The levels of risk due to consequential damages are defined in Table 5.

Low risk	No clause
Intermediate risk	Clause excluding some consequential damages
High risk	Clause excluding all consequential damages

Table 5. Consequential Damages Risk Table

Judicial Attitude.—This specific clause has not been the focus of litigation from which any unique judicial attitude can be readily determined. According to Black's Law dictionary, consequential damages are defined as "those damages or those losses which arise not from the immediate act of the party, but in consequence of such act; such as if a man throws a log into the public streets and another falls upon it and become injured by the fall; or if a man should erect a dam over his own ground, and by that means overflow his neighbor's, to his injury (Garner 2009)." Contractors should be wary of this clause, as there may be many cost elements that may be included in this definition. To a layperson, the definition may very broad. A No-Damages-for-Delay clause may be relevant as may be a Schedule Acceleration clause.

Low Risk.—There is low risk to a contractor when there is no consequential damages clause. Both parties can seek consequential damages.

Intermediate Risk.—Some consequential damages may be excluded and others allowed. The exact wording of the clause is very important. In the following clause, consequential damages relating to confidential information, personal information or intellectual property rights are permitted, but others are excluded.

> Neither party (nor any of its Affiliates) *is required to pay*, or to indemnify any Person for, indirect, incidental, *consequential*, punitive or special damages, including loss of revenues and lost profits, arising from or relating to any breach of any provision of this Agreement, except any provision relating to Confidential Information, Personal Information or Intellectual Property Rights.

High Risk.—There is high risk to a contractor when he/she cannot seek consequential damages. The following is a high risk clause because it excludes all consequential damages:

> MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES**:** Owner and Contractor *agree to waive all claims against each other for any consequential damages* that may arise out of or relate to this Agreement. Owner agrees to waive damages including but not limited to Owner's loss of use of the Project, any rental expenses incurred, loss of income, profit or financing

> related to the Project, as well as the loss of business, loss of financing, principal office overhead and expenses, loss of profits not related to this Project, or loss of reputation. Contractor agrees to waive damages including but not limited to loss of business, loss of financing, principal office overhead and expenses, loss of profits not related to this Project, loss of bonding capacity or loss of reputation. . . .

This clause is perhaps misleading in that many of the owner's consequential damages may be factored into the liquidated damages amount. If so, this can be a very one-sided clause.

Cumulative Impact of Change Orders

Risk Factors.—A Cumulative Impact from Change Orders clause is similar to the consequential damages in that the main risk factor is:

- Does the contract allow the recovery of impact damages due to excessive changes?

Contract clauses are categorized as follows:

Low risk	No clause excluding impact damages
Intermediate risk	Clause excludes some impact damages
High risk	Clause excluding all impact damages

Table 6. Cumulative Impact of Change Orders Risk Table

These damages can be quite significant. When a clause excludes the recovery of impact damages, the contractor must resort to inflating the cost of individual changes and the owner will likely counter by negotiating the price downward. Many negative consequences can be envisioned.

Judicial Attitude.—This specific clause has not been the focus of litigation from which any unique judicial attitude can be determined. However, it is likely it will be enforced. Therefore, contractors should be wary of this clause, as impact costs accumulate rapidly. Consequential damages and no-damages-for delay clauses are highly relevant.

Low Risk.—A low risk situation for a contractor occurs when there is no clause precluding the recovery of impact costs. In this case, the contractor can seek recovery of impact damages from changes.

High Risk.—The following is a high risk clause from an engineering contract:

> Engineer agrees that any Change Order *executed by Owner and Engineer constitutes its full and final adjustment for all delays, disruptions, inefficiencies, accelerations, schedule impacts, or other consequences arising from the change* in question, or from any claimed cumulative effect of changes made to the date of (but not after) the Change Order, and that no further adjustments in compensation or time shall be sought or made with respect to such changes, events and circumstances.

The problem with cumulative impacts is that they are usually not recognized until long after the change is finalized. Unless a statement is included on the change paperwork to reserve the right to claim impact damages at a later time, the contractor is probably precluded from seeking impact damages. With a clause like the one above, the contractor may be precluded from seeking impact damages under any circumstances.

RIGHTS AND RESPONSIBILITIES

Indemnification

Risk Factors.—The main risk factors are:

- Who is indemnified?
- What is the extent of indemnification?
- Role of negligence?

It is standard language for a contractor to indemnify the Owner, Engineer, Engineer's consultants, and agents and employees of any of these. Others may be included. The extent of indemnity usually include*s* bodily injury or death, or destruction of tangible property. It may also include sickness, disease, and attorney fees. The contractor may be responsible for events where he/she bears sole responsibility or he/she may be required to indemnify various parties if the owner is solely responsible. The latter situation poses significant risks and insurance coverage may not be available. This clause poses limited risk to the contractor because most of the losses are covered by insurance and this is a reimbursable cost item.

The levels of risk are:

Low risk	Indemnify if contractor is solely responsible
Intermediate risk	Shared indemnity if shared responsibility
High risk	Indemnify regardless of who is responsible, unless the owner is solely responsible (the contractor may not be able to secure insurance coverage)

Table 7. Indemnification Risk Table

Judicial Attitude.—The indemnification clause is primarily intended to cover third party claims resulting in injuries and property damage. The owner expects the contractor to cover these losses with insurance. The clause is therefore enforceable.

Low Risk.—The following is a low risk clause.

(a) To the extent of Contractor's insurance coverage(s) as set forth herein, the Contractor shall indemnify and hold harmless *the Owner, Engineer, Engineer's consultants, and agents and employees* of any of them from and against *claims, damages, losses and expenses, including but not limited to attorneys' fees*, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to *bodily injury, sickness, disease or death, or to injury to or destruction of tangible property* (other than the

> Work itself), but only to the extent caused by the *negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable*, but in no instance shall Contractor be responsible for any indemnified party's sole negligence and/or intentional acts or omissions.
> (b) In claims against any person or entity indemnified under this Clause 20.3 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Clause 20.3(a) shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts, but *shall be limited to the extent of Contractor's insurance coverage(s)* as set forth herein.

This clause is viewed as a low risk clause because the persons covered are few. While the extent of coverage includes sickness and disease, these risks are not viewed as being particularly risky. One of the main reasons for low risk is the statement about the contractor's insurance, which states that liability is limited to the extent of Contractor's insurance coverage(s). Presumably, if the contractor is unable to secure insurance coverage, then the clause does not apply.

Intermediate Risk.—The following clause represents intermediate risk to the contractor. This clause represents more risk than the previous clause because now the contractor must indemnify the owner unless the owner is solely responsible.

> It is expressly understood and agreed that the Contractor shall be responsible for *any and all damage to property and any and all injury, damage and disease to or death of any person arising directly or indirectly* from or in connection with work performed or to be performed under this contract, including extra, additional, and subcontracted work, *unless due to the sole negligence of the Owner or Owner's representative*, and shall indemnify, defend and hold harmless the Owner and Owner's representative from and against any and all claims, loss, suits, damages, costs, and expenses, *including attorney's fees*, arising out of, in connection with or based upon such *injury, damage, disease, or death*. In addition, and without limiting the effect of the foregoing sentence, it is agreed that the responsibility of the Contractor shall extend to any such injury, damage, disease, or death and he shall indemnify, defend, and hold harmless the Owner and Owner's representative from any such claims, etc., which are made against the Owner or Owner's representative pursuant to the provisions of any state or provincial laws providing for the protection and safety of persons in and about the construction, repair, alteration, or removal or buildings and other structures, regardless of whether such injury, damage, disease or death or said claims, etc., resulting there from are alleged to arise in part out of the action or failure to act of the Owner, the Owner's representative, or its employees.

This clause represents intermediate risk because the contractor is not responsible only where the owner is solely responsible. The contractor is responsibility where the negligence is shared and where the contractor is solely responsible.

High Risk.—A high risk clause is given below.

> To the maximum extent permitted by law, contractor hereby assumes the entire responsibility and liability for any and *all damages (direct or consequential) and injury (including death), of any kind or nature whatsoever, to all persons*, whether or not employees of contractor, and to all property and business or businesses, caused by, resulting from, arising out of, or occurring in connection with (i) the work; (ii) the performance or intended performance of the work; (iii) the performance or failure to perform the contract; or (iv) any occurrence which happens in or about the area where the work is being performed by the contractor either directly or through a subcontractor, or any subcontractors equipment or personnel in or about said area.
>
> *Except to the extent, if any expressly prohibited by law, should any such damage or injury referred to above be sustained, suffered or incurred by Owner, Developer, Architect/ Engineer, or Contractor or should any claim for such damage or injury be made or asserted against any of them, including any alleged breach of any statutory duty or obligation on the part of Owner, Developer, Architect/Engineer or Contractor, contractor shall indemnify and hold harmless* Owner, Developer, Architect/Engineer and Contractor, their offices, agents, partners, employees, affiliates and subsidiaries (hereafter collectively referred to as Indemnitees"), of, from and against any and all such damages, injuries and claims and further from, and against any and all other loss, cost, expenses, and liability, including without limitation, legal fees, and disbursements, that any Indemnitee may directly or indirectly sustain, suffer or incur as a result of such damages, injuries and claims; (…) In event of any such claim, loss, cost, expense, Liability, damage or injury sustained, suffered, or incurred by or is made, asserted threatened against indemnitees, Contractor shall, in addition to all other rights and remedies, have the right to withhold from contractor an amount sufficient in contractor's judgment to protect and indemnify the indemnitees from and against any such claim, loss, cost, expense, liability, damage, or injury, including legal fees and disbursements; . . .

This Clause is high risk to a contractor because he/she must indemnify the owner for any third party claim.

Acceleration

Risk Factors.—There is but one risk factor with the acceleration clause, which is:

- Can the contractor recover acceleration damages?

Low risk	Contractor can recover damages and the owner does not reserve the right to accelerate
Intermediate risk	Contractor can recover some damages and the owner reserves the right to accelerate
High risk	Contractor is not entitled to recover damages and the owner reserves the right to accelerate

Table 8. Acceleration Risk Table

Judicial Attitude.—If the owner reserves the right to accelerate the schedule, he/she is still obligated to pay acceleration damages. If the owner seeks to limit what he/she is obligated to pay, such as saying he/she will only pay the overtime premium, then the contractor is exposed to significant acceleration costs. The contractor's risk is that his/her only recourse is to inflate the estimated cost and charge disallowed acceleration expenses to other allowable accounts. Acceleration expenses accumulate rapidly. The contractors allowable cost may quickly approach the ceiling cost and thus reduce the cost sharing (if there is a cost sharing clause). The owner has risks too. If the owner does not reserve the right to accelerate, then he/she may be exposed to a breach of contract which can expose the owner to unexpected costs. There may be a constructive acceleration. In most contracts, the owner will reserve the right to accelerate.

The requirements for constructive acceleration (not issuing a change order covering cost and schedule issues) are:

1. There is a legitimate reason for a time extension
2. The contractor gave timely notice
3. The owner denied the request for an extension and ordered an acceleration
4. The contractor actually accelerated and suffered harm

Other contract clauses need to be reviewed. These include the time extension clause and other clauses that may limit the contractor's opportunity to recover damages. For example, it is not uncommon for the owner to promise to pay only premium time costs associated with scheduled overtime. The owner may also seek to limit its exposure to impact costs and consequential damages. The contractor needs to proceed cautiously because unrecovered labor costs incurred during acceleration can be quite significant and careless actions can preclude the opportunity to recover damages.

Low Risk.—With this clause, the Engineer is entitled to recover acceleration costs.

> If Owner directs acceleration of Engineering Services to overcome delays due to Change Events, or accepts Engineer's recommendation to accelerate the performance of Engineering Services to overcome Change Events, Engineer shall be paid the reasonable costs of the acceleration. ..

High Risk.—In the following clause, the owner agrees to only pay the overtime costs.

> If the owner, through no fault of Supplier, requests, in writing, work in excess of the workweek specified, Supplier shall pay the straight time portion of wages plus applicable taxes and owner shall pay the premium time portion plus applicable taxes. No overhead or profit may be added to premium time. Insurance may be added only in states where insurance premiums are payable on overtime.

Site Visit

Risk Factors.—The main risk factor relative to site visits is whether the contractor is required to perform his/her own independent site investigation. If yes, this clause should be read along with the differing site conditions clause to determine the extent of the investigation (geotechnical, hydrologic, environmental, etc.). Thus the risk factors can be summarized as

- Is an independent site investigation required?
- If yes, what is the extent of this investigation?

The risk level is:

Low risk	No independent site investigation is required
Intermediate risk	Contract language is unclear as to whether an independent site investigation is required or a limited investigation is required
High risk	Unlimited independent site investigation is required

Table 9. Site Investigation Risk Table

Judicial Attitude.—The judicial attitude is that an independent site investigation is not required of the contractor unless the contractor is expressly told to perform such an investigation. Unless told to do so, the elements observed during the visit are limited to those that are readily obvious. Contractors that do not perform a site visit will likely find it difficult to recover damages. Sometimes, the contract language is vague, and it is not clear if an independent investigation is required. Contractors should inquire prior to submitting a bid if one is required. Otherwise, if a dispute arises, a court or jury may have to decide.

Low Risk.—An independent investigation is not required in the clause shown below:

> (a) Supplier shall be afforded a reasonable *opportunity to examine the site* at which Services and Work are to be performed in order to *acquaint* itself with local conditions. It is understood, however, that failure of Supplier to acquaint itself with any applicable condition shall not relieve it from the responsibility for properly estimating either the difficulties or the costs of successfully performing the Services and Work. Supplier accepts all conditions at the Site as of the date of its proposal and no allowances will be made afterward for any error or negligence by Supplier in this connection

This is a low risk clause because it does not require a site investigation.

Intermediate Risk.—The contractor is exposed to more risk because this clause is not entirely clear. Clauses such as this one can be easily overlooked. The investigation is limited to subsurface issues.

> 1.2.11 Familiarity with the Work
>
> Owner assumes no responsibility whatsoever with respect to ascertaining for the Contractor such facts concerning physical characteristics at the site of the project. Contractor agrees that he will make no claim for additional payment because of any misunderstanding of the contract, or of any failure to fully acquaint himself with all conditions relating to the work.
>
> 1.2.12 Subsurface Conditions
>
> *Bidder is obligated to make his own investigations of subsurface conditions*. Any subsurface conditions provided by the Engineer may be available to bidders, but are not warranted to show the actual subsurface conditions. Contractor agrees to not make any claims if he finds out that the actual conditions encountered do not conform to those indicated on the borings. (Sasso v. State of New Jersey)

High Risk.—

Contractor represents and *warrants* that it has examined the Contract Documents and has satisfied itself as to their adequacy for the complete performance of the Work; that it is fully aware of work to be performed by other contractors in connection with the Project and elsewhere on the Project Site; that it is experienced and competent to perform and complete the Work; *that it has visited the Project Site and has made all investigations of the Project Site*, the surrounding area and all conditions relative to the Work which are necessary for a full understanding of the difficulties which may be encountered; and that it has satisfied itself as to all such matters and any other matters which can in any way affect the performance of the Work. Contractor further represents that it *understands and accepts the existing conditions, to the extent such conditions are known or should have been known by Contractor*, and knows the progress and status of the Project at the time of entering into the Agreement, and that it is aware that certain portions of the Work are dependent upon the present and future progress of work performed by others. Contractor acknowledges that it is in a better position than the owner to recognize and appreciate hazards and risks that are peculiar to the Work. Contractor represents that it has examined the Project Site for hazards and risks and agrees that Contractor shall have an *ongoing obligation to conduct such inspections*. *The owner shall be deemed to have warned Contractor of all risks and hazards relating to the Project Site*. Contractor shall have the duty to inform all Contractor Personnel of risks and hazards at the Project Site.

> Contractor assumes all the risks and hazards in connection with the foregoing conditions and, regardless of such risks, hazards and conditions and not withstanding any variances between actual conditions and the conditions as shown or represented in the Contract Documents, Contractor agrees that it will complete the Work for the Contract Price and in accordance with the Project Schedule. No claims for additional compensation will be considered when additional costs result from conditions made known to, discovered by or which should have been discovered by the Contractor prior to signing this Agreement.

These three clauses pose a high risk to the contractor because the general tone of these clauses seems to be that the owner intends to shed all responsibility for hidden site conditions. The contractor warrants that he/she has visited the site and has made all investigations of the Project Site, accepts existing conditions, has an obligation to conduct ongoing investigations, has been warned of all risks and hazards, and assumes all risks and hazards even if the Contract Documents say otherwise.

As a general rule, a contractor should be cautious of contracts containing the words “warrants”, “guarantees”, “investigations”, “promises”, or “inspections.” Contractors should make a habit of inquiring during the prebid period.

Insurance Allocation

In this clause, the party that will obtain the Builder's Risk Insurance Policy is specified. It can be the owner or contractor. If it is the contractor, then this is usually a reimbursable item. The contractor may be responsible for the deductible. Who pays if the claim is above the policy limits should also be specified. Overall, there is limited risk to the contractor from this clause.

Standard of Care

The standard of care clause is closely related to the materials and workmanship warranty. It poses limited risk to the contractor.

Design Responsibility

This clause covers errors, omissions, ambiguities, and rework. Normally, in a cost reimbursable contract, the owner bears responsibility for these elements of cost. However, the contract may state that the contractor is obligated to carefully study and compare the Contract Documents and to check and verify certain figures and to take field measurements of existing facility conditions for the purpose of identifying errors, omissions, and ambiguities. Contractors should be alert to such language as it may preclude recovery for certain mistakes. If expressly told to check and verify certain figures and to take field measurements, the contractor may find it difficult to recover damages that are the result of obvious errors and omissions.

Therefore the risk element is whether the contract states the extent which the contractor must ensure the documents are correct.

Responsibility to Rectify Loss Damage

This clause poses limited risk to the contractor as the events that would invoke this clause are generally covered by insurance. The only caveat is whether the clause states sole negligence or regardless of negligence. The indemnification clause is relevant, and the two should be compatible. A typical clause reads in part:

> If any loss or damage happens to the Work, or any part thereof, or materials or Plant for incorporation therein, if caused by the sole and gross negligence of the Contractor, . . . , the Contractor shall, at his own cost, rectify such loss or damage so that the Permanent Work conforms in every respect with the provisions of the Contract to the satisfaction of the Engineer. .

This clause pertains to direct damages, whereas the indemnification clause relates to third party claims and damages, leaving the contractor liable for the claims.

Warranty

There are two forms of warranties: general and equipment specific.

General.—The general warranty is typically found in the general conditions and poses little risk to the contractor. The warranty clause requires the contractor to use new materials and good workmanship. The warranty usually lasts for one year, although longer periods can be required.

Specific.—Specific warranties may be found in the technical specifications. These may apply to specific pieces of equipment, components, or systems. These warranties may pose greater risks than general warranty clauses. Language such as the following have been determined to have shifted the risk to the contractor to make sure something is satisfactory or works, even if the specifications or design is defective.

> By submitting a bid, the bidder agrees that he has examined the site and the specification and drawings, and where the specification requires in any part of the work a given result to be produced, that the specification and drawings are adequate and the required result can be produced . . . No claim for any extra work will be allowed because of alleged impossibilities in the production of the results specified or because of inadequate or improper plans and specifications and whenever a result is required, the successful bidder shall furnish any and all extras and make any changes needed to produce, to the satisfaction of the local authority, the desired results (Philadelphia Housing Authority v. Turner Construction Co. 1942).

and

> The contractor shall guarantee the satisfactory operation of all materials and equipment installed under this contract, and shall repair or replace . . . any defective materials, equipment, or workmanship which may show itself within one year after the date of final acceptance (Shopping Center Management Co. v. Rupp 1959).

Contractors should be particularly cautious whenever they encounter words like guarantee or promise. In both the above situations, the adequacy of the design was shifted to the contractor therefore shifting the risk.

PROCEDURES

Termination

Risk Factors.—There are few risk factors imbedded in the termination clause. The ones identified are:

- Which parties have the right to terminate?
- Is there a cure notice period?
- Is there a provision for "termination for convenience?"

The risk level of various clauses is

Low risk	Contractor has limited rights to terminate
Intermediate risk	Contractor has no rights to terminate
High risk	Contractor has no rights to terminate; contract contains a termination for convenience clause

Table 10. Termination Risk Table

Wrongful termination is a concern for all parties. All contracts give the owner the right to terminate for cause. Sometimes, the contractor or engineer is given limited rights to terminate, say for an extended project suspension or for nonpayment. Termination for convenience means no cause needs to be specified. If terminated for cause, it is common for there to be a cure notice period. Five (5) days is standard. During this period, the party being terminated has a limited amount of time to begin to correct the cause(s) of the termination. When terminating, the terminating party must follow the procedures specified in the contract verbatim. Otherwise, the termination may be viewed as wrongful.

A condition sometimes found in cost reimbursable contracts is a "termination for convenience" clause. This clause allows the owner to terminate the contract without cause. There is no cure notice period. This clause adds significant risk to the performing party.

Judicial Attitude.—The parties to the contract must follow the termination procedures stated in the contract verbatim, otherwise the termination can be viewed as wrongful. Wrongful termination can have serious consequences for the terminating party.

When the termination for convenience clause is invoked, a cure notice period is not normally included. But some legal jurisdictions may insist that a cure notice period be included, but this requirement is unlikely to be universally applied.

Low Risk.—

Upon seven (7) days' written notice to the Owner, Contractor may terminate this Agreement if the Work has been stopped for a thirty (30) day period through no fault of **Contractor** for any of the following reasons:

1. under court order or order of other governmental authorities having jurisdiction;

2. As a result of the declaration of a national emergency or other governmental act during which, through no act or fault of Contractor, materials are not available.

17.4 In addition, upon seven (7) days' written notice to the Owner, Contractor may terminate the Agreement if Owner:

1. Fails to furnish reasonable evidence that sufficient funds are available and committed for the entire cost of the Project in accordance with Paragraph 7.1, or

2. Assigns this Agreement over Contractor's reasonable objection, or

3. fails to pay Contractor in accordance with this Agreement and Contractor has complied with t he notice provisions of Paragraph 14.5, or

4. Otherwise materially breaches this Agreement.

Upon termination by Contractor pursuant to this Agreement, Contractor shall be entitled to recover from Owner payment for all Work executed and for any proven loss, cost or expense in connection with the Work, including all demobilization costs plus reasonable overhead and profit.

This is viewed as a low risk clause because it gives the contractor limited rights to terminate.

Intermediate Risk.—

Upon receipt of notice from the Owner to terminate under this Section, Supplier shall immediately discontinue the terminated Services and Work and the placing of orders for materials, facilities, supplies and services in connection with the performance of such terminated Services and Work. Supplier shall cancel all existing orders or contracts upon terms satisfactory to the Owner. Supplier is only permitted to perform Services and Work that the Owner deems necessary to preserve and protect Services and Work already in progress and to protect material, equipment and the Services or Work at the site or in transit thereto and there from.

1. Upon termination under this Section, a mutually satisfactory settlement shall be made. If, however, the Parties fail to agree on the amount of the settlement, Supplier shall be compensated for Services and Work satisfactorily performed under the Agreement prior to the effective date of termination as follows:

2. For Services or Work performed on a lump sum basis, an amount based on that percentage of the total Services or Work that was physically complete as of the effective date of termination, less payments made by the Owner prior to the effective date of termination, plus any amounts withheld by the Owner from those prior payments.

3. For Services or Work performed on a unit price basis, the amount determined in accordance with the Cost Of Work Section for the actual number of units of Services or Work performed as of the effective date of termination, less payments made by the Owner prior to the effective date of termination, plus any amounts withheld by the Owner from those prior payments.

4. For Services or Work performed on a time and material basis, the amount determined in accordance with the Cost of Work Section less payments made by the Owner prior to the effective date of termination.

In no event, however, shall total payments made to Supplier under the Agreement exceed the total contract price if such has been established.

In this example, the contractor or consultant has no right to terminate the contract. Because of the language of the clause, this clause may be viewed as a termination for convenience clause. The clause does not discuss reasons for termination, nor does it provide for a cure notice period. Contractors and Consultants should be wary of clauses similar to this.

High Risk.—

The Owner shall have the right to terminate this Agreement for its convenience, in whole or in part, at any time by written notice. In the event of such termination, Contractor or Consultant shall promptly comply with the directions contained in such notice and shall, subject to direction, take action as may be necessary to terminate the Services and minimize its costs and liability with respect to the terminated Services. An equitable adjustment in the price of this Agreement for additional costs incurred by the Contractor or Consultant as a direct result of such termination will be negotiated.

This is a "termination for convenience" clause. There is no reason to state a cause for the termination, so there is no cure notice period. The Contractor or Consultant has no rights.

Suspension of Work

Owners may reserve the right to suspend all or part of the work. Owners may choose to abandon the project for a variety of reasons.

Risk Factors.—There are relatively few risk factors in a Suspension clause. An important concern is an indefinite suspension. The risk factors identified are:

- Will the suspension revert to a termination after a specified period of time?
- Are suspension costs reimbursable?

The criterion for defining the risk level of a clause is:

Low risk	Provision for automatically reverting to termination
Intermediate risk	NONE
High risk	No provision for automatically reverting to termination

Table 11. Suspension of Work Risk Table

Provisions for compensation of suspension cost are not included as a risk factor because suspension costs are universally allowed.

Judicial Attitude.—This clause is enforceable.

Low Risk.—A low risk clause permits a suspension to automatically revert to a termination after a specified period of time. Consider the following:

> Upon seven (7) days' written notice to the Owner, Contractor may terminate this Agreement if the Work has been stopped for a thirty (30) day period through no fault of Contractor.

High Risk.—A high risk clause contains no provision for automatic termination. A contractor could be in limbo due to an indefinite suspension.

Waiver of Claims

A waiver of claims provision is often inserted to protect the owner from surprise claims arising after the project is complete. Sometimes, the clause states that by accepting the final payment, the contractor waives all future claims unless previously asserted (not submitted). Sometimes a time period is specified. Contractors should be aware that such provisions are enforceable. The clause usually poses limited risk to the contractor

Correction of Certificates

This is generally standard language that states that a payment does not constitute acceptance of the work. A contractor is obligated to follow the contract documents, even if paid. There are few risks associated with this clause.

OTHER CONTRACT ISSUES

After reading the contracts and analyzing clauses it was evident that there were several general contract issues, which do not specifically relate to contract structure or clauses that impart risk on the contractor. Since these issues are not specific they can only be included as hazards to consider.

Contract coordination

Usually the general conditions are well coordinated. However, in some circumstances there can be ambiguity between the contract clauses and the contract documents. In this contract structure this would typically raise minimal concern, due to the fact that the contractor is reimbursed for the work under the scope. However, if the ambiguity pertains to change order criteria or allowable scope of work there is risk. If the ambiguity involves substantial monies that may not be reimbursable this would push the contractor away from the proposed estimate. The contractor's risk is that there is less saving to share or more cost to share if there are sharing provisions and that the work performed is considered a disallowed cost.

Overall contract tone

The contractor must read the contract as a whole, assessing the intentions of the contract. The reader must step away from the details of contract clauses and focus on the contract in general. The question must be asked, "Does it seem one-sided, biased of unfair?"

This seems to be a subjective evaluation, but the first impression is usually closest to reality. Therefore, the contractors should be cautious of signing an unbalanced contract because they may have burdensome procedures, which may make compensation difficult. The overall tone of an unbalanced contract usually reflects the owner's views about the contractor's work and the project.

As an example, after reading a contract of a large convention project, the payment clause contained usual language about invoice directions. The clause also contained multiple reasons how the contractor would not get paid for a portion of work. In looking at the contract from a distance, it seemed as though the intention of the owner was to not pay the contractor. As the project progressed, the contractor had great difficulty in getting paid. Negotiating for more favorable contract language may be worth the effort.

Excessive Referencing

Referencing in technical specification is common and widely acceptable. The referenced parts are applicable to the references made. However, the problem that arises through excessive referencing is when the parts referenced are not materially or physically compatible or desired to the initial reference. An example of excessive referencing occurred on a $1.5 billion wastewater plant where a reference was applicable to cold-rolled steel only, but the location where it was reference was referring to hot-rolled steel. This is impossible to apply. The consequence was that about $200,000 was withheld from the next payment since the owner did not get what was asked for, even though it was impossible.

8. CONCLUSIONS AND SUMMARY

From the preliminary research there were 22 clauses identified as risky by the CII documents. Using these documents and 9 industrial cost reimbursable contracts, risky clauses were identified and listed depending on the language of the clause. After considering all the clauses the list was consolidated into seventeen risky clauses among them were Indemnification, Site investigation and differing Site Conditions. These seventeen clauses were analyzed and produced specific risk factors, which were the operative words/ phrases which shed risk. According to those factors a matrix to identify high, intermediate and low risk clauses of the same type was produced. The framework was compared to common law applications and a discussion illustrated the importance of certain phrases and words.

Core Contribution

From the work above there were three contributions made to the subject matter. The first contribution was an identification of contractual risk in seventeen clauses in industrial cost reimbursable contracts. Second, from the framework provided, a method to evaluate the level of contractual risk from specific clauses was described and illustrated. Lastly, a better understanding of cost reimbursable contracts within industrial projects was provided seeing that there was much confusion from literature found.

Summary

There is no standard form of cost reimbursable contract for industrial projects. Each user specifies disallowed cost and writes clauses to their own liking. This means that there is a wide range of disallowed cost strategies for relatively few standard disallowed costs and harsh clauses that are unexpected. AIA A102 is a standard form of agreement for commercial projects.

There are many contractor risks in cost reimbursable contracts. Risk is created by establishing a ceiling price, and specifying various disallowed costs. Risks can also be created through fee structure arrangements and cost savings-sharing arrangements.

As risks increase (by establishing a ceiling price and specifying more disallowed costs), so does the possibility that the bid price will become inflated.

Where the bid price is inflated and there is a cost/savings-sharing clause, the owner may share more savings with the contractor. The contractor can use the sharing component to cover any disallowed costs. However, there is the same likelihood that cost is shared. Where there are many disallowed costs and/or the opportunity for cost/saving-sharing amounts is small, the contractor is at risk for losing money. The likelihood that the contractor charges disallowable costs to allowable accounts increases and is very hard to manage.

The contractor bids on the general conditions of the contract. Negotiations to yield a less risky contract for the contractor occurs after the bid is submitted, this illustrates the disadvantage for the contractor. For an owner to obtain a less inflated bid, risks must be removed from the general conditions to allow the contractor to truly assess the value of the work.

There is risk in the way clauses are written. In some situations, the mere presence or absence of a clause imparts risk. Each clause is treated differently. Fortunately, most principles that apply to the interpretation of fixed price contracts also apply to cost-reimbursable forms. There is a large body of knowledge to aid in interpretation, so outcomes of many disputes are reasonably predictable.

Future Research

Continuation of this research within the topic of contractual risk seems to be limited due to the fact that standardization of industrial clauses will occur. This may relieve the contractor from dealing with excessively harsh language and identify the specifics on ceiling price and disallowed cost. However, an interesting continuation would be a cross comparison of cost reimbursable contracts from many types of projects along with comparisons to fixed price contracts. This would identify key differences between projects and contract types and may identify where these contracts fit best for specific types of projects.

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