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**The American University in Cairo**

School of Science and Engineering

**Common Conditions of Construction Contracts in Egypt**

A Thesis Submitted to the Department of Construction and Architectural  
Engineering

In Partial Fulfillment of the Requirements of the Degree of Masters of  
Science in Construction Engineering

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Words cannot sufficiently describe achievements. Writing this last page of my research fills me with the most pleasant achievement feelings which I cannot describe, but the least I can do is to acknowledge those who have been supportive and helpful allowing me to reach this point in my life. My deep gratitude to God, who is always supportive to his people in such important and critical situations.

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This research is dedicated equally to the closest persons to my heart, whom without their support I would have not been able to complete this research, my parents, brother, wife and my daughter, Layla, who brought happiness to my life since she came out to the world.

## **ABSTRACT**

Construction is known to be one of the riskiest industries as it can be affected by many foreseeable and unforeseeable circumstances and events leading to turning a project from a profitable status to incurring losses and vice versa. Such circumstances and events can include economic crisis, political decisions, wars, unforeseen ground conditions, unassigned responsibilities, flawed designs and many others. A well drafted construction contract reduces the effects of such uncertainties to a great extent by addressing as many potential risks as possible. In order to achieve such an aim, various international institutions have formulated international contract standards, which are used as general conditions to construction contracts in different areas in the world. Such conditions are complemented with particular conditions by contracts' practitioners who would consider the specific natures of their projects as well as the countries and relevant laws of the destinations of the construction projects in hand.

Despite the fact that the aim of particular conditions is to address the specific nature and circumstances of construction projects, the result can be otherwise or not as effective as expected. A major reason is the insufficient experience of a contract drafter which may not be inclusive to account for all scenarios and risks that may take place.

This research aims at investigating the major risks facing construction projects as reflected through the particular conditions of a number of construction contracts, and presenting the top common conditions that are deemed to be of high importance for the consideration of contracts' practitioners during the contract drafting process. While the research contributes in drafting particular conditions, it is not the objective of this research to create an ideal

form of particular conditions. However, the main objective is to highlight the top particular conditions that have been already identified in construction contracts, literature review and experts' opinions. Reaching such an objective would assist contract drafters in preparing adequate contract conditions and hence reducing the probability of disputes between projects' parties if the herein findings are considered.

The research mainly focuses on the analysis of the particular conditions of 28 construction contracts in order to understand the common considerations and risks. The outcome includes the top 30 common particular condition clauses that are recommended to be addressed within the particular conditions of new construction contracts, with details as to the specific provisions that are of significance under each clause. It should be noted that each of the top 30 conditions was included/addressed by more than 50% of the analyzed contracts. The methodology of the research mainly incorporates undertaking a literature review, executing a comparison and analysis of particular conditions, verifying analysis' findings through experts' surveys and presenting the findings. The findings of this research shows that 102 provisions relevant to 30 particular clauses are of significant importance to be considered while drafting new construction contracts.

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# **CHAPTER 1: INTRODUCTION**

## **1.1 Overview**

Throughout the past few decades, construction contract formulation and administration have become an important stage in the phases of construction projects, leading to occupying a considerable share of project managers' attention. Many standards of construction contracts have been formulated and made available in most of the different regions of the world for project managers to choose whichever is suitable and convenient for their construction projects. Despite the fact that such standards have eased the contract formulation process and contributed to avoiding construction disputes, the standard general conditions of such forms are made to be generic and requires the formulation of particular conditions that suit every project and area. This has led to the necessity of modifying the general conditions of contracts or the formulation of particular conditions, which are made to serve the purposes and natures of different construction projects. Since different contract specialists and practitioners have different experiences with projects that are unique, they may not be able to cover all the causes of disputes and risks through the formulation of particular conditions, leading to many inevitable construction disputes that would exhaust projects' resources. This research aims at identifying the most common/important clauses and provisions of particulars conditions that suit the nature and circumstances of construction projects in Egypt, and avoid potential disputes and potential risks. The main objectives of this research are pursued by comparing and analyzing different construction contracts in order to understand the differences between similar clauses of the particular conditions of contracts, and examine the intended purpose behind them. Although such an

analysis helps and contributes to understanding the concerns of contracts' specialists and practitioners, it should be noted that there are no certain forms of particular conditions that would fully and completely cover the needs and concerns of employers and the associated various circumstances, variables and natures of all projects. This research covers the known major concerns and issues that are existent at the time of conducting this research, which would be a good reference for understanding and reducing the risks that may affect construction projects in Egypt.

## **1.2 Problem Statement**

As conflicts and disputes are largely developing and growing due to the increasing complexity of projects, searching for reasons of disputes and solutions to reduce them is necessary. International standard general conditions of contracts massively contributes to the aimed reduction of disputes; however, poor drafted particular conditions still make considerable room for conflicts due to the lack of addressing many of the potential causes of disputes. This research investigates the most common considerations of contract drafting and current causes of disputes that can be avoided through a well drafted contract, and conducts an extensive analysis to a number of major contracts in Egypt. Such an investigation and analysis will assist in reaching an optimum form of particular conditions, including the most common/important ones, considering previous researchers' recommendations and the available solutions derived from the analyzed contracts through this research.

## **1.3 Objectives**

This research generally aims at presenting a solution for employers to reduce the occurrence of disputes in projects due to flaws within particular conditions. Such flaws

would take place for many reasons including the incorporation of unnecessary particular conditions within a contract that would create a room for disputes rather than avoiding them. It may also include missing certain provisions relevant to common causes of disputes that if addressed and agreed upon prior to executing a contract, such causes would be avoided. Thus, the basic principles are to understand the common practices and considerations of contract drafting and to identify the dispute causing factors and common risks as practicably as possible. This is covered through the literature review and the analysis executed within this research, and will be resembled in the form of a list of significant provisions that is produced as a part of this research.

### **1.3.1 Objective 1: Understanding Current Practices and Considerations of Contract Drafting**

The first objective includes reviewing literature in order to understand the current practices and considerations of contract drafting and identify the main causes of disputes for considering related resolutions within particular conditions. This objective will be reached upon creating a list of the main considerations and risks that are to be considered while drafting construction contracts in Egypt.

### **1.3.2 Objective 2: Analysis of the Particular Conditions of Contracts and Verification of Results**

The second objective incorporates an analysis to the particular conditions of a number of construction contract throughout grouping and comparing similar conditions in order to identify the most significant particular conditions within construction contracts. Significance of conditions is measured by considering the number of times a certain

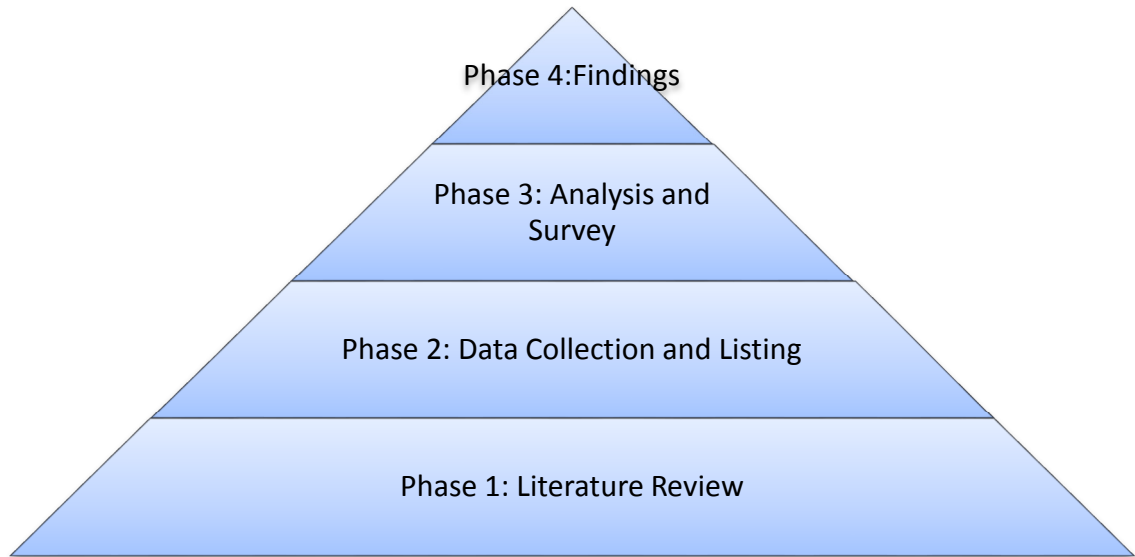
condition is addressed through the analyzed contracts. This objective would be completed by listing and verifying the top common particular conditions which are deemed to be of high importance to be considered by contracts' drafters, and recording the clauses and provisions that are of lower significance. The verification process will mainly include an experts' survey in order to ensure that the significant provisions are solely retained in the findings of the research. The list of the top common conditions will be compared to the list created in objective one above.

#### **1.4 Scope of Work**

The Scope of Work includes an analysis to the particular conditions of construction contracts of recent projects, related to both private and public sectors, in Egypt. The related projects are of medium to large size projects of the values starting from 9 Million USD up to 413 Million USD. The type of the projects includes residential, commercial, retail, industrial, hospitals, plants, roads and infrastructure. FIDIC 1999 is used as the main standard form for general conditions in this research and any comparisons relevant to particular conditions will be made in respect to it. Contracts are mostly addressed from the perspective of owners since owners are the party which formulates and issues contracts. The study incorporates a thorough analysis of the provisions stipulated within the top 30 analyzed clauses, which are addressed by at least 50% of the analyzed contracts, while the remaining of lower importance will be recorded without further analysis. Each of the top 30 clauses may include a number of provisions, which shall all be considered in the analysis and included within the expert's survey for validation.

## 1.5 Methodology

The methodology considers the data acquired through the literature review and professional's opinions and comprises four phases, being literature review, data collection and listing, analysis and survey, and findings..



*Figure 1: Phases of the Research*

### 1.5.1 Phase 1: Literature Review

- 1- Research and obtain information regarding the common practices and considerations related to contract drafting
- 2- Research and obtain information regarding the causes of disputes and the related contracts' flaws that led to such disputes.
- 3- List all important considerations and risks in a list.

### **1.5.2 Phase 2: Data Collection and Listing**

- 1- Collect construction contracts from different owners/developers in Egypt.
- 2- List all of the particular conditions of the obtained contracts in a comparison form grouping similar clauses together.
- 3- Sort all the clauses based on frequency of inclusion and obtain the top 30 significant clauses.

### **1.5.3 Phase 3: Analysis and Survey**

- 1- Analyze and extract the provisions identified within each of the top 30 significant clauses.
- 2- List all of the identified provisions under each of the 30 clauses.
- 3- Create a survey including the list of provisions derived from the analysis.
- 4- Send the survey to experts in order to validate the data and understand the importance of the identified provisions through the analysis, and obtain the results.

### **1.5.4 Phase 4: Findings of the Research**

- 1- Use the checklist created through Phase 1 (Appendix A) to identify whether the contents have been covered through the provisions derived from the analysis.
- 2- Conclude the findings showing the provisions recommended to be considered during the formulation of new construction contracts adding the provisions identified through the literature review.



## **1.6 Thesis Organization**

The first chapter of this research aims at providing an introduction on the topic of the thesis, defining its need, problem statement, objective, scope, methodology and organization.

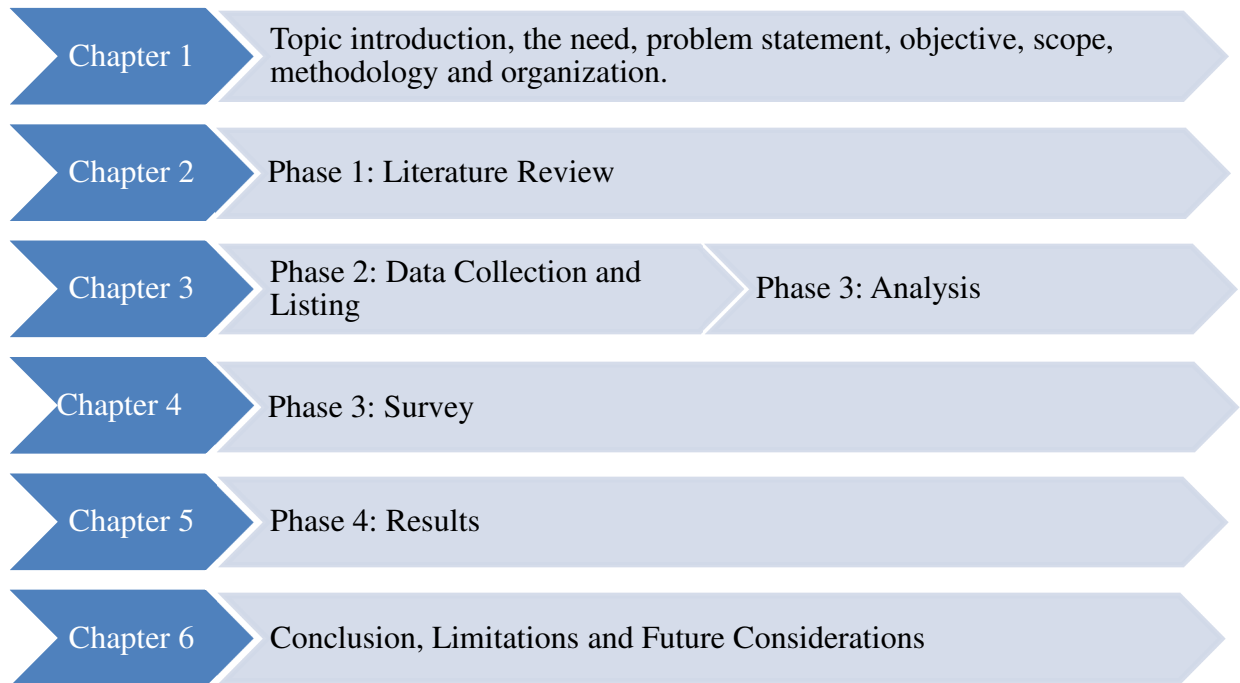
The second chapter of this research presents a literature review on common practices and considerations of contract drafting and the common causes of disputes. Chapter 2 is concluded with a checklist that includes all the outcomes of the literature review in order to be compared with the derived results of the analysis. This will be covering phase 1 of this research as set out in the methodology explained above under point 1.5.

The third chapter incorporates the analysis of 28 construction contracts. The chapter includes a thorough analysis of the top 30 significant clauses as well as the provisions underneath each of them. It will be concluded by having a list of the most common and significant provisions as identified through the analysis. This chapter covers phase 2 and part of phase 3 as set out in the methodology explained above under point 1.5.

The fourth chapter incorporates the experts' survey for data verification, which is divided into two stages due to the massive number of identified provisions through the analysis. This chapter covers part of phase 3 as set out in the methodology explained above under point 1.5.

The fifth chapter includes the findings derived from the literature review, analysis and survey. This chapter will cover phase 4 as set out in the methodology explained above under point 1.5.

The sixth chapter aims at setting out the conclusion, limitations of the researches as well as the future recommendations.



*Figure 2: Contents of Research Chapters*

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Chapter Introduction**

This chapter addresses the main aspects related to the process of contract drafting and what major causes of disputes are being recognized of which risks would be mitigated if addressed through contracts. This will present an overview on how such disputes may be avoided throughout the particular conditions.

Disputes in the construction industry are known to have high cost and time impacts when they are not settled in a reasonable time. A reasonable time may be referred to as the time by which negligible costs are experienced. Many researchers have researched and identified various ways for dispute resolution by creating dispute resolution systems and models. However, there have not been simplified solutions for the process of contract formulation that would fulfill the need of avoiding disputes as practicably possible.

El Nemr (2013) suggested unified general conditions to be used in Egypt for industrial construction projects that would be enforced by a related professional authority. This was in attempt to overcome specific disputes within the Egyptian construction industry. Although this might be a good solution; however, it raises concerns regarding the fine line between what is general and what is particular, and to what degree would the conditions be deemed as general before they become particular. As many standard forms of general conditions are available throughout the World, which are presently used in the Middle East generally and Egypt specifically, El-Nemr (2013) implied that the present general conditions are not serving the needs of the addressed Egyptian sector. Thus, he highlighted the existence of a need for making available a standard form of less general or particular conditions that would relate to real existing projects within the area. As much as

such a form would suit the professionals' needs within the large scale developers of the targeted regions, it would furnish the opportunity for middle to small size developers and employers and those who lack a sufficient contractual experience to entrust such a form. This is due to comprising the knowledge and experience of other related large projects within such a form.

Many field-related professionals have addressed the significance of considering the most common risks within the process of contract drafting. However, there has not been a practical solution that would address the core of the problem by collecting all risks in one simplified form and defining solutions. This has raised the need of analyzing the current practices and risks whether through literature or through analyzing the particular conditions of contracts and put the findings into one form. Studying the main causes of disputes throughout the literature review would allow reaching conclusions regarding what causes require consideration within the particular conditions and whether the recent contracts have addressed and resolved them. Such resolutions along with the common practices and considerations of contract drafting could form the basis on which a standard form of particular conditions should be formulated or at least the core of the particular conditions of construction contracts.

Attempting to reach such an aim, the following sections focus on understanding the main causes of disputes and the considerations of the process of contract drafting.

## **2.2 Causes of Disputes in the Construction Industry**

Many causes of disputes are existent in the construction industry most of which result from a limited number of major factors. Many researchers have reached similar conclusions

to the main causes of disputes for one of them may be broken into several causes that are more specific. The main three global causes of disputes are as follows:

- Project Uncertainty
- Contractual Issues / Interpretation / Language
- Opportunistic Behavior , Gaps and flaws

### *2.2.1 Project Uncertainty*

Project uncertainty is a fact affecting every construction project due to the inevitable existence of risks. According to Mitropoulos and Howell (2001), project uncertainty, relates to the inability of attaining and knowing all the project details and problems before work has already started since there is always a high margin of uncertainty and unknown in construction projects, especially the highly complex ones. In this regard, Mitropoulos and Howell have stated that a high rate of uncertainty will most probably lead to various modifications in the drawings and specifications of a project, for project members to carry the burden of handling and dealing with such troubles. Scott and Haris (2004) studied four uncertainty concerns in the UK, being “the treatment of exceptionally adverse weather, dealing with early completion schedules, quantification of the prolongation costs associated with an approved extension of time, and concurrent delays”. The first concern is about how disputes may arise over the definition of adverse weather and when it is not deemed to have been accounted for in a contractor’s schedule considering the fact that weather can usually be anticipated. The second concern is about what happens when a Contractor submits an early completion schedule, but encounters delays by the Employer; the question would be whether the Contractor should be granted an extension of time with prolongation costs or without. The third concern is about whether prolongation costs should

be calculated from the time by which a delay event has occurred or by the extended time at the end of the project, as further illustrated through Figure 3. The fourth concern is about how concurrent delays are to be handled and dealt with whether by considering delays in a critical path, parallel critical paths, delays occurring at the same time, or something else. This may affect the decision of the associated prolongation costs payment.

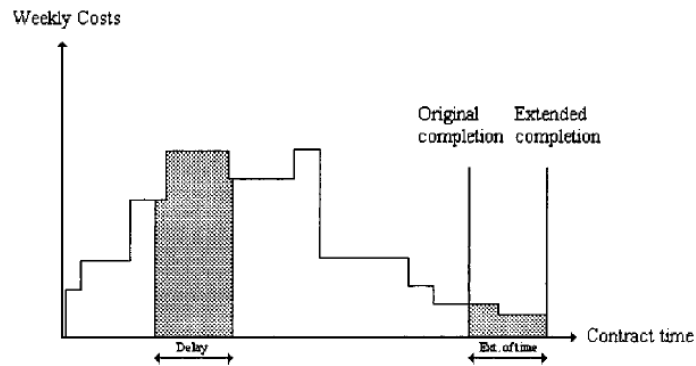


Figure 3: Contractor's Overhead Costs (Scott and Haris, 2004)

### 2.2.2 Contractual Issues / Interpretation / Language

Contractual problems relates to the problems that may arise from contracts and agreements due to the different perspectives and misinterpretation concerning the allocation of risks between owners and contractors (Mitropoulos and Howell, 2001). It is crucial that obligations and liabilities should be free of ambiguities and written into a language that is understandable by all parties in order for risk to be allocated to parties as agreed and intended. Iyer et al. (2008) have stated that the contract language and its complexity is one of the reasons for disputes, for which Indian courts may take “normally between 5 and 15 years after it has passed through the arbitration trial”. This shows how “clarity, common sense, and precision should be employed in the drafting of contract language” since such an aspect would help reducing relevant disputes (Babel, 2004).

Merwin et al. (2014) highlighted the different perspectives between owners, contractors and subcontractors in relation to a number of critical clauses of construction contracts ascertaining that the parties intend to reflect their perspectives through contracts during the negotiation stage. These clauses include description of work under contract documents and the meaning of “reasonably inferable”, site conditions and change orders, consequential damages, right to withhold payment, delay claims, indemnification, termination of contract and warranty. Merwin et al. (2014) entailed that the parties would attempt to satisfy their perspectives with favorable contract language through the contractual clauses. For example, the said authors highlighted that an owner’s perspective in relation to the “description of work under contract documents and the meaning of reasonably inferable” would be represented in requiring the contractor to satisfy certain requirements as reasonably inferable from the contract documents. In other words, if the aim of a project is to fully construct an operational power plant, but some discrepancies were identified, then the contractor would be obligated to reach such aim and get the plant operational disregarding the existence of such discrepancies. This is arising from the fact that no contract documents are flawless. In this regard, the authors recommends the use of provisions that resolve discrepancies between the drawings, specifications and other contract documents, which would help in reducing the probability of disputes resulting from different interpretations. On the other hand, the authors highlighted the contractor’s perspective which would be represented in “complete, constructible contract documents” in order for the contractor to properly execute and complete the works. Otherwise, the contractor would attempt to pursue compensation for delays and other costs incurred due to discrepancies in contract documents. It is evident that as long as the allocation of risks

is well considered through contracts in a clear language that does not allow different interpretations, the probability of disputes arising from such risks would be significantly reduced.

### 2.2.3 *Opportunistic Behavior / Gaps and flaws*

Opportunistic behavior, relates to the opportunity that a party may take an advantage of as a result of the changing nature of construction projects. This results from the fact that “gaps in contracts are unavoidable” and that “in the absence of opportunism, the gaps could be filled as they arose” (Mitropoulos and Howell, 2001). The same authors have shown how disputes may arise from the lack of enough information and ambiguities regarding design, specifications and the like at the planning phase of projects, changed conditions, and performance. A key question that arose was about the responsibility of risks and which party should bear consequences, being a question that is raised whenever a contract has not covered an event that has taken place during a project without having accounted for its occurrence. According to Sertyesilisik (2010), “fuzziness” is a main reason for disputes for he has advised that contractors should address fuzziness within contracts in order to make sure that the purpose and meaning of conditions are clear and meeting agreements.

As the above causes are merely a high level representation of the main causes of disputes, many sub-causes can be related to them. EL Nemr (2013) has focused on the management of change order claims in the Egyptian industrial Construction sector in which he has stated that 70% of the claims in Egypt were arisen due to additional scope of work. This is due to several reasons of which the quantification of change orders is the major. Considering the fact that change order claims can potentially become disputes due to



disagreement on quantification, EL Nemr has suggested a solution to reduce their effects through unifying the methods of quantification of change orders. In this regard, El Nemr has referred to Fourie's article on "Quantifying Costs Due to Change" (2003) in which the costs of a change order were categorized into "method-related costs, costs related to activity duration, and quantity-related costs", for each change order would be following certain related procedures. Furthermore, El Nemr (2013) has referred to Veenedaal (1998) in which they proposed relating the effect of a change order to time, disregarding money. Many other authors have made such suggestions by which specifying formulas for the quantification of variation orders was also an option. In addition to the change order claims, El Nemr (2013) has listed other major cause of claims that were identified by many other researchers, including but not limited to, severe weather conditions, restricted access and acceleration.

Iyer et al. (2008) have identified critical clauses that lead to disputes, arranged in priority, being:

- Final and binding power
- Time delay and extension
- Termination of contract
- Pricing of deviation and extra items by owner representatives
- Deviation limit/scope of work
- Price escalation

Although delays may be defined differently on several occasions as being excusable or non-excusable, Iyer et al. (2008) have classified some delay events as shown in Table 1.

*Table 1: Excusable and Non-Excusable Delays (Iyer et al., 2008)*

<b>No Excusable delays</b>	<b>Excusable delays</b>
1. Ordinary and foreseeable conditions	1. Labour disputes
2. Subcontractor's delays	2. Force majeure
3. The contractor's failure to adequately manage and coordinate the project site	3. Unusual delay in deliveries
4. The contractor's financing problems	4. Unavoidable delays
5. The contractor's failure to mobilize quickly enough	5. Unforeseen delays in transportation
6. Delay by the contractor in obtaining materials	6. Other unforeseeable causes
7. Poor workmanship	

Studying arbitration cases and literature review, Iyer et al. (2008) have identified the seven causes of delays that eventually lead to disputes. The first being the handing over of site where delays can lead to idling the Contractor's equipment and/or affecting the works' progress. The second is the release of the mobilization advance of which delay can jeopardize the cash flow of the contractor and direct the progress of works to disruption, in addition to potential claims over interest payments due to delays. The third is late receipt/checking of drawings considering that delays in producing or issuing drawings may be accompanied with delays in reviewing and approving such drawings. Such kinds of disputes are affected by many parameters that govern entitlement to the affected parties, such as the responsibility of drawings, the delaying party and whether the delay is sole or concurrent. The fourth cause is accidents which can take place due to force majeure, actions not following safety norms, substandard work, error in the design/drawings, actions of a subcontractor and use of a facility before its handing over to the employer. The fifth cause is temporary stoppage/suspension which can take place due to delayed payments resulting from any party's default, non-availability of specialized equipment, material or other resources, subcontractor abandoning the work without prior notice and accidents on site.

The sixth cause is rework due to defective work not meeting a project's standards and specifications or due to variations. The seventh is extra work due to subsurface conditions or owner's changing requirement.

Sertyesilisik (2010) has studied 85 disputes handled by the Courts of Cessations in Turkey, for the major three types were financial, temporal and compliance. Financial issues typically resembles additional works or variations to the original scope of works, payments, shortage of financial resources, guarantees, bonds, currency, etc. Temporal issues mainly relates to possession of site matters, approval duration on drawings, inability of a contractor to terminate a contract in public works in case of an employer's risk takes place, weather conditions, contractor's delays and schedule matters. Compliance issues relates to those arisen from lack of clarity or defects within specifications, materials, workmanship, changes, progress, care of works, application of works, communication and others.

Causes of disputes are many and unexpected; however, it appears that they all emerge from a countable number of main causes that are being mostly repeated within the available studies within this field. This part of the research concludes that most disputes can be related to the three herein discussed main causes of disputes. To further demonstrate, force majeure and variation orders may be related to "project uncertainty". A delay in possession of site depends on the nature of a related dispute, which may be related to "project uncertainty" if a certain obstruction was encountered on-site. If this was the case, then the responsibility of this risk (obstruction) may be subject to "contractual issues / interpretation / language" or if the responsible party is clearly identified, then the non-responsible one may adopt an "opportunistic behavior". Using the same approach, other disputes may be related to the said three causes.

## **2.3 Common Practices and Considerations of Contract Drafting**

This part of Chapter 2 addresses the most common global practices and considerations of contract drafting. It is crucial to understand what aspects are considered by contract specialists and practitioners while drafting contracts in order to make assessments and relate to the analysis of this research. Studying such a topic will certainly serve understanding whether the analyzed contracts have undergone similar practices and considerations. Common practices relate to what practices are majorly adopted which could be positively or negatively affecting the quality of contract drafting in terms of addressing risks. The considerations of contract drafting are those which are important to be considered and addressed by contract drafters while drafting new contracts in order to reach better formulated contracts in terms of risks coverage.

### *1.4.1 Common Practices of Contract Drafting*

Contracts drafters and practitioners may use different language of expression while drafting contracts, for all what matters is to be having a clear understandable demonstration of the true meaning and purpose of the drafted conditions. The inclusion of specific conditions that may relate to different construction natures and sizes may vary as well; however, few studies and sources have analyzed the general practices of international contract drafting and presented the most common considerations practitioners have made.

Fontaine and De Ly (2009) have studied a number of the characteristics within law and the practice of international contracts. The two authors have made valuable conclusions and observations regarding the features of international contracts. One of such features is recitals, where they have observed that most international contracts have involved recitals within the first parts of contracts, where parties usually make statements that might be very

effective and governing. These recitals are described, by the two authors, to be affecting “the rules concerning reality of consent, the determination of the basis of the contract, the intensity of respective commitments.” Such effects may reach the extent of extending or reducing obligations and liabilities of a certain contract unintentionally. This demonstrates the extent of the required care and attention that should be allocated to recitals while drafting. Another observation is that drafters usually aim to “minimize the uncertainties resulting from the applicable law and the interpretation by the judge or arbitrator” (Fotaine and De Ly, 2009). This shows that the common practice is not simply to relate to applicable law, but a process that would include modifications, which may comprise “ingenious and sometimes controversial solutions” (Fotaine and De Ly, 2009).

Common practices have revealed the use of expressions that would dictate various levels for how an obligation would be binding. An example of such a practice is the use of expressions such as “to exert one’s *best efforts*, act with all *due diligence*, perform with *reasonable care* or in conformity with *industry standards*” (Fotaine and De Ly, 2009). Such un-defined expressions would lead to disputes as it allows a room for different interpretation that would affect the original constitution of the obligations and rights of a contract.

Confidentiality clauses has become a condition that is commonly involved in contracts. It affects the entities and individuals who may be allowed to have access to information within the contract. It may also regulate the amount of information that would be permissible for sharing or exposing. Such condition may reach the extent of defining damages in case it was not met by an obliged party. In this regard, Fotaine and De Ly

(2009) have stated, “a secret can never be absolutely preserved, but a well drafted clause will reduce the risks to a significant degree”.

Liquidated damages clause is another condition that has been commonly used in contracts. Fotaine and De Ly (2009) have ascertained that such a condition is usually “stipulated at the obligor’s initiative” in an attempt to reduce damages and consequences of a breach. This leads to another common aspect, which is limitation or capping of liabilities by, for example, imposing a maximum amount for liquidated damages, or whenever a default takes place. A limitation of liability “establishes the maximum liability that a contractor will face if there is a claim resulting from the project” (Rubinstein and Crawford, 2011). Although owners usually use such a tool for their favor in order to transfer liabilities to contractors, “an owner should favor efficient allocation of risk between parties to a project that simultaneously reduces risk and improves project performance” (Zaghloul and Hartman, 2002). This condition of liability limitation is used through disclaimer clauses, through which several risks may be allocated to one party in case of certain causes take place. Despite the fact that risks should be allocated as they are inevitable events that take place in projects in different forms, parties should clearly understand the extent of liabilities in case of occurrence.

Many other common conditions were addressed by Fotaine and De Ly (2009) such as, force majeure, hardship, termination and post-contractual obligations, all of which have become very important within the process of international contracts drafting. The two authors have made many conclusions regarding the practice of international law, among which the following were part of them:

- International contract practice is not “autonomous” from domestic legal system. However, this depends on the degree drafters are able to create new strategies and keys which would be lying within the boundaries of law.
- “Autonomy in international contract drafting may be driven by different objectives” (Fotaine and De Ly, 2009). Contract drafting may aim into addressing issues that do not have solutions or have not been addressed within domestic law, for which examples could be hardship and severability clauses. This relates to one of the main causes discussed above within this Chapter, “Gaps”.

#### *1.4.2 Considerations of Contract Drafting*

Rubinstein and Crawford (2011) have defined some of the most important elements that every contract should address within its conditions, being the scope of engagement, payment and billing terms, limitation of liability, suspension and termination, and dispute resolution. Scope of engagement refers to the scope of the works to be undertaken, which were advised to be clear and specific; otherwise, they may lead to extended liabilities that may become an effective cause of disputes. Rubinstein and Crawford have broken down the payment and billing terms as to time, materials, milestones, time when payment is due and failure to a scheduled payment. As herein above explained, a limitation of liability refers to the damages’ limit a contractor would bare due to failure(s) to comply with the conditions of the contract. Suspension and termination relates to the procedures and reservation of rights when such occurrences take place. Rubinstein and Crawford have stated that suspension and termination include “uncured material breach, a party’s bankruptcy or assignment for benefit of creditors, substantial change in conditions, or in

some instances convenience.” Concerning dispute resolution, the main aim of practitioners is to avoid reaching litigation and arbitration through other processes that would allow settling disputes amicably.

Babel (2004) had defined six aspects that should be considered and addressed within contracts in order to avoid disputes, namely a fair allocation of risk, reasonable interpretation of the contract, a clear scope of work, acknowledgment of responsibility, acceptance of change and good faith cooperation between the parties. Although the six aspects are important and deeply addressed by many other studies in more details, Babel stressed more on the importance of a clear scope of work ascertaining that such a point would be a key to success for design/built projects and to avoiding disputes.

Zack (1993) highlighted further considerations addressing a number of claims’ causes, for if addressed within the contract drafting process, the likelihood of experiencing relevant disputes may be reduced. It should be noted that claims may not be considered as disputes, but potential causes of disputes if the assessment of such claims is not agreed between the parties. Claims in a construction contract is a compensation means for certain identified events that may occur during the execution of a contract. They are associated with procedures that would be followed if such events take place. However, disputes are disagreements between the parties that may or may not be settled amicably. Although the causes identified by Zack were addressed in 1993, some twenty years ago, they evidently constitute some of the most common causes of disputes nowadays. Zack has presented such causes under the title of “Claimsmanship: Current Perspective”, for he has defined the term “claimsmanship” as “the art or practice of making and winning claims by questionable expedients without actually violating the rules”. Such definition implies the ability of



creating and winning claims without breaching any of the agreed conditions. This idea may raise questions regarding the concepts of “good faith” and “unjust enrichment”; however, the purpose behind Zack’s presentation to such tactics or behaviors is to provide “some of the more common aspects of both the negative and positive sides of claimsmanship as practiced by contractors and owners” (Zack, 1993). Accordingly, it is worth studying such tactics and causes of claims for a probable consideration within the process of drafting the particular conditions of contracts. Zack has addressed many causes for which some have been addressed from the perspective of a contractor while others from the perspective of an owner, including but not limited to, the following:

Contractor’s Claimsmanship:

1. Reservation of Rights (Settle everything at end of job)
2. Project float claims
3. Loss of productivity/efficiency claims
4. Total cost claims

Owner’s Claimsmanship:

1. Waiver-of-Claim language
2. Concurrency of delay
3. Time-Impact-Analysis Requirement

The idea of “Reservation of Rights” revolves around the ways a contractor may “take advantage of any losses and delays” by reserving its rights during the Project, and only submitting a claim at the end of the project (El Nemr, 2013). A contractor may adopt this strategy in order to increase its profits at the end of a project by filing disruption claims in a retrospective manner when it is in a better position of understanding the circumstances

of a project while only reserving its rights during the project duration without undergoing any type of analysis or effort. Zack (1993) has presented a solution to avoid such a situation by introducing a clause of “no-reservation-of-rights” which would add an obligation to settle all claims at the time by which they have arisen. Many standard general conditions of contracts, such as FIDIC, have included provisions for notices and particulars to be submitted by contractors within a specified period from the time of which an event associated with impacts has taken place; however, the meaning of detailed and full particulars is still incomprehensive. Notices would usually entail the “reservation of rights” while particulars would entail the full and particular details that have led to a certain impact. The argument would be how detailed should it become. When such provisions are generic, many arguments may arise as such.

Project float claims, a major cause of claims and disputes nowadays and one of the cores of disruption claims, is an important point for consideration while drafting contracts. It is not widely common that standard forms of contracts include a provision that defines the ownership of floats. Float may be referred to as the period of time that may be consumed by a delayed activity (i.e. exceeded its original duration) before which it would impact the completion date of a project. This entails that a total float for a critical activity of a project would equal to zero or less depending on the number of days an activity has been delayed. While non-critical activities have floats that allow planned dates to be missed without affecting completion dates of projects, thus, leading to no need of requesting extension of time, arguments may arise on whether a contractor should be entitled for a compensation when a planned date has been missed for an employer’s delay event. This arises from many contractors’ belief that float is owned by them as they create schedules, and certainly

disputes take place in this regard when no related provisions have been accounted for within contracts addressing such an issue. Zack (1993) has suggested that a “joint-ownership-of float” clause to be included within contracts with the requirement of a time impact analysis to be implemented for every variation event. In this regard, The Society of Construction Law Delay and Disruption Protocol (2002) – hereinafter “SCL Protocol” – has advised that such an issue should be attended to within contracts, stating that “float is not time for the exclusive use or benefit of either the Employer or the Contractor”. Furthermore, the Protocol has ascertained that should a contractor wish to account for his own delays, he should not depend on floats, but on the durations within its programme.

As much as it is hard to prove the “Loss of Productivity/Efficiency of Claims”, it is still an exercised technique for requesting compensation. The difficulty comes from the fact that there are no tangible facts that can be used to support and prove such claims, as to ascertain that a certain event has impacted the productivity of part(s) of works, when it may have been impacted by several others. Zack (1993) has stated that such types of claims are “hard to prove with any degree of precision” and suggested that a provision of a “measured mile” to be introduced within contracts as requirement, attempting to end the disputes that may arise as a consequence. The SCL Protocol has referred to a “measured mile” as “the most appropriate way to establish disruption” which “compares the productivity on an un-impacted part of the contract with that achieved on the impacted part.”

Total cost claims, one of the most widely used compensation techniques, refer to the submission of total actual costs incurred by a contractor by the end of a project claiming that employers’ acts have resulted into such costs. Zack (1993) has suggested that good records is a key element in this type of claims and that contracts should include

requirements for “cost-loaded construction schedules, project trending, and earned value analysis on a routine basis” in order to defend owners against such claims. This also allows for a fair compensation to contractors based on factual information and real incurred damages.

Waiver-of-Claim Language, being a strategy adopted by some employers, does attempt to avoid the accumulation of disputes until the completion of a project. The concept is mainly based on including provision(s) within contracts that would apply an obligation to settle and agree on impacts of variations by the time they arise, to be considered as a waiver by contractors against any future impacts. Although this criterion allows agreeing and negotiating compensation of impacts by the time all related information are available concerning variation orders, it requires a considerable level of attention from the management of a project.

Concurrency is a very significant tool used by many employers to counter-argue contractors’ claims and waive liability. SCL Protocol (2002) has defined a true concurrent delay as “the occurrence of two or more delay events at the same time, one an Employer Risk Event, the other a Contractor Risk Event, and the effects of which are felt at the same time.” Although the definition may seem clear and simple, it is not a simple exercise to identify concurrency and to apportion delays to the responsible party. Although seemingly there is an agreement between most professionals within this field that concurrency would not compromise the entitlement of a contractor to time, disputes usually take place over cost entitlement, if any. In this regard, Zack (1993) has advised that parties should undergo a thorough analysis to schedules to separate between concurrent and sequential delays, for

if there is a true concurrency, no cost compensation should be allowed to neither parties. Otherwise, the schedule analysis would determine the relevant entitlement.

Zack (1993) has suggested that a Time-Impact-Analysis to become a requirement to be implemented by the time a variation order is issued in order to avoid claims emerging by the end of a project. Time-Impact-Analysis is one of the methods of delay analysis, being the most recommended method by the SCL Protocol (2002), having stated that it is “based on the effect of Delay Events on the Contractor’s intentions for the future conduct of the work in light of progress actually achieved at the time of the Delay Event”. Time impact analysis is simply a procedure that would divide the timeline of a project into smaller portions, for each portion would be separately assessed considering an employer’s delay event along with a contractor’s progress. Although this method serves demonstrating concurrency, disruption and others, it relies on the amount of available records and on a high level of analysis. Deeming such an exercise as a requirement within conditions of contracts would certainly contribute to resolving disputes when they are addressed by the time of occurrence of any change. However, the implementation of such an exercise, especially within complex projects that undergo several changes, would be exhaustive requiring a great deal of attention from projects’ management. Notwithstanding the correctness of such an ascertain, which may be arguable, resolving disputes as they arise would cause less negative impacts than resolving them at later stages when information may not be available or insufficient for analysis.

In addition to the above considerations, Donohoe (2011) highlighted the significance of the “conditions precedent” used in contracts, for parties should be mindful regarding the use of such conditions, which include words, such as “if”, “provided always

that” and the like. “Surveyors and others should recognize that where a condition precedent is clearly expressed and is reasonable then it will be enforced in the courts”. This implies that the wording within contracts should be clear and definitive regarding the intended meaning and purpose of using such type of conditions in order to avoid the development of related disputes.

Definition and allocation of risks has become an important consideration as well, since it much contributes to avoiding disagreements when a certain risk takes place. Recently, the inclusion of risk sharing provisions has increased with a higher allocation of risks on employers; “this helps to reduce abuse, but it does place higher demands particularly on the engineer and the architect to address compensation events due to changed conditions” (Haidar, 2011). Reducing the impacts of risks can be briefed as follows: (Haidar, 2011)

- For insurable risks, the contract is ought to properly define the risks that are to be insured by a certain party.
- The criteria of risk allocation is “neither necessarily consistent nor readily compatible”. This means that the responsibility and impacts of a certain risk event may be allocated to one party, but another may look after the management of such an event, such as unforeseeable ground conditions.
- Sharing risks allows the introduction of abuse, while allocating them may not lead to such a result.

Accordingly, it is crucial that risks are clearly defined within the provisions within contracts to avoid unfavorable consequences, such as abuse and other damages.

Although this part of the research has highlighted many of the most considerations used by practitioners for drafting contracts, many others are existent based on the different natures of projects and regional characteristics. This part of the research has mainly intended to address the most common considerations that are shared by most of the researchers related to this topic.

## **2.4 Conclusion and Checklist**

This part of Chapter 2 concludes the results driven from the Literature Review, comprising the considerations of contract drafting and the causes of disputes, hereinafter “Risk Factors”, that are specific enough to be looked after and checked for within the contracts subject to the herein analysis. Defining the word “specific” will be governed according to whether a certain Risk Factor can be related reasonably to a provision within a contract. For example, the term “project uncertainty” is too general and may be applicable to every provision within a contract; however, “total floats” and “liquidated damages” may be reasonably related to provisions within contracts.

A checklist, herein enclosed within Appendix A, will be used to find out whether the Risk Factors were addressed or not within the analyzed contracts.

The Checklist comprises the following identified Risk Factors that were derived throughout the Literature Review:

- Variation / change orders
- Exceptionally adverse weather
- Early completion schedules
- Time delay and extension
- Quantification of prolongation costs

- Concurrent delays
- Termination
- Price escalation
- Handing over of site
- Release of mobilization advance
- Late/receipt/checking/approval duration of drawings
- Force majeure
- Suspension
- Payments and delay of payments
- Dispute resolution
- Reservation of rights
- Time Impact Analysis Requirement
- Loss of Productivity/Efficiency claims
- Total cost claims



## **CHAPTER 3: ANALYSIS**

Analyzing of the particular conditions of current construction contracts is crucial in order to understand what conditions have been considered as significant. While Chapter 2 of this research has identified the major practices and considerations of contract drafting as well as the causes of disputes, this chapter provides a thorough analysis as to what has been actually considered within the analyzed executed contracts. This is achieved through analyzing a number of 28 construction contracts for projects in Egypt of which identified conditions are arranged in order based on their significance measured by the frequency of being addressed by the analyzed contracts.

### **3.1 Sample Size of Analyzed Contracts**

The sample size of the analyzed contracts is based on the “grounded theory” of which sampling criteria is based on “where to go to obtain the data” as quoted and explained by Gentles et al. (2015). The grounded theory is one of the methods of sampling in qualitative research defined as “the selection of specific data sources from which data are collected to address the research objectives” (Gentles et al, 2015) The construction contracts’ sample is obtained from reputable well established construction companies (i.e. grade 1) and developers for medium and large size projects in Egypt, being the specific data source meeting the grounded theory criteria. In accordance to Gentles et al. (2015), a sample size of at least 25 would suffice to reach saturation being “the proposed criterion for determining when sufficient sample size has been reached.” Theoretical saturation would take place when no new information or data are derived as explained by Gentles et al. (2015). Morse (2015) has suggested that a “sample size for a good grounded theory

may have a sample size of approximately 30 to 50 participants, depending on the topic and the scope of the inquiry. Accordingly, the sample of 28 construction contracts meets the criteria suggested by Gentles et al (2015) as well as Morse (2015) with a consideration of a margin error of around 6.5% between the utilized 28 sample size and the suggested minimum of 30.

### **3.2 Analyzed Contracts' Related Information**

Table 2 below shows the information relevant to the analyzed contracts. It should be noted that the names of the projects will not be mentioned in the research for confidentiality restrictions. The table includes the type of each project, signing year of the contracts, related international standard form of general conditions if applicable, contract price in USD, language of contract and the related sector. The analyzed contracts are either originally drafted in the English or Arabic languages, noting that the Arabic ones were translated by the author of this thesis. The majority of the analyzed contracts are related to residential and commercial buildings forming around 46% of the contracts, in the percentages shown in Figure No. 4. The years of signing the contracts lies between 2007 and 2013. Most of the analyzed contracts used the FIDIC as a standard for the general conditions, for which 36% have used the fourth edition of FIDIC 1987 – Conditions of Contract for Works of Civil Engineering Construction (Red Book), 21% have used FIDIC 1999 – Conditions of Contract Construction for Building and Engineering Works Designed by the Employer (Red Book), while 4% have used FIDIC 2010 – Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer (Red

Book), as shown in Fig. No. 5. It has been observed that 39% of the analyzed contracts have used ad-hoc contracts.

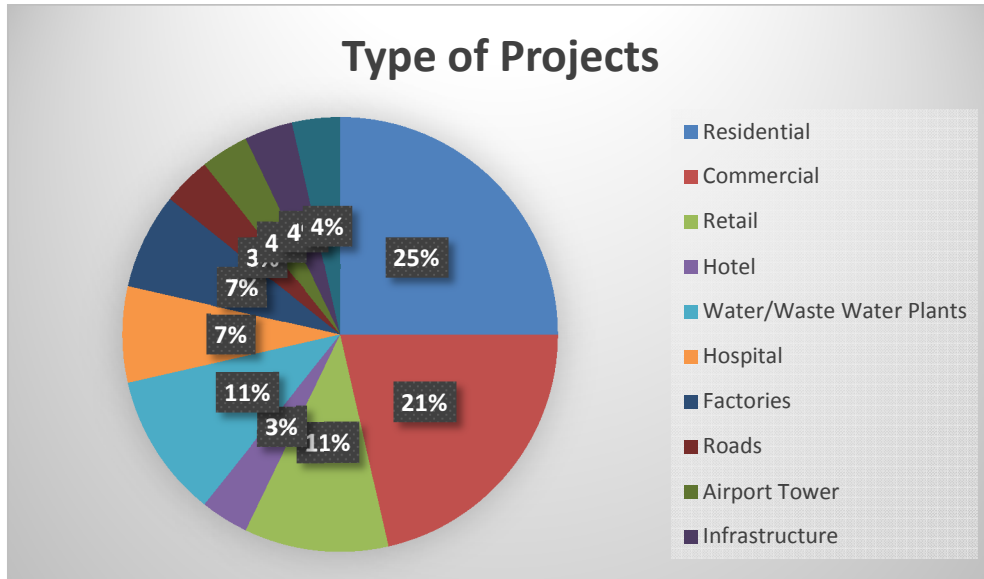


Figure 4: Types of Projects

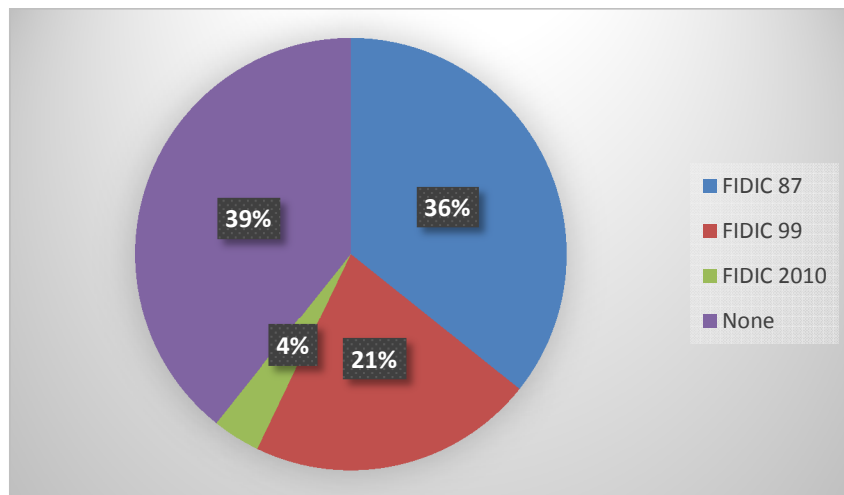
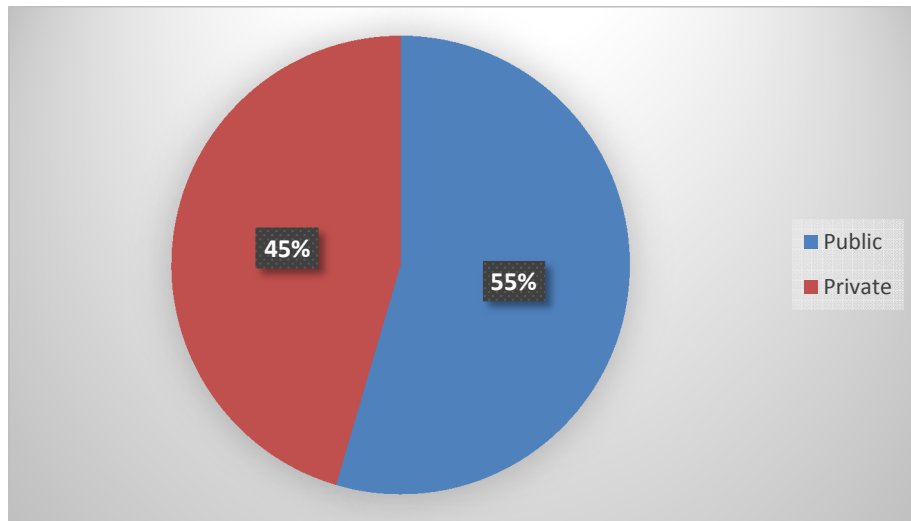


Figure 5: Used International Standards

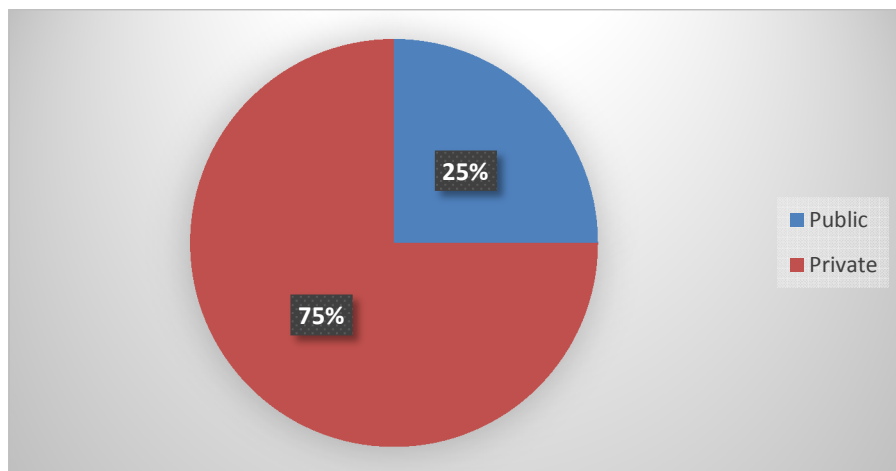
Table 2: Analyzed Contracts' Related Information

Ref.	Type	Date	International Standard General Conditions, if any.	Price in USD (Approx.)	Language	Sector
C1	Residential	2010	FIDIC 87 4 <sup>th</sup> Edition	54 Million	English	Private
C2	Residential	2007	FIDIC 99 1 <sup>st</sup> Edition	12 Million	English	Private
C3	Residential	2013	FIDIC 87 4 <sup>th</sup> Edition	55 Million	English	Private
C4	Residential	2013	FIDIC 87 4 <sup>th</sup> Edition	9 Million	English	Private
C5	Residential	2011	FIDIC 87 4 <sup>th</sup> Edition	35 Million	English	Private
C6	Residential	2008	None	22 Million	English	Private
C7	Residential	2011	None	17 Million	English	Private
C8	Commercial Building	2010	None	35 Million	Arabic	Public
C9	Commercial Building	2010	FIDIC 87 4 <sup>th</sup> Edition	11 Million	English	Private
C10	Commercial Building	2010	None	67 Million	English	Private
C11	Commercial Building	2011	FIDIC 87 4 <sup>th</sup> Edition	40 Million	English	Private
C12	Commercial Building	2007	FIDIC 87 4 <sup>th</sup> Edition	31 Million	English	Private
C13	Commercial Building	2013	FIDIC 99 1 <sup>st</sup> Edition	27 Million	English	Private
C14	Retail	2009	FIDIC 87 4 <sup>th</sup> Edition	285 Million	English	Private
C15	Retail	2007	FIDIC 99 1 <sup>st</sup> Edition	29 Million	English	Private
C16	Retail	2012	None	340 Million	English	Private
C17	Hotel	2010	FIDIC 87 4 <sup>th</sup> Edition	12 Million	English	Private
C18	Water Booster Station	2010	None	35 Million	Arabic	Public
C19	Waste Water Plant	2009	None	90 Million	English	Public
C20	Waste Water Plant	2009	None	32 Million	Arabic	Public
C21	Hospital	2011	FIDIC 99 1 <sup>st</sup> Edition	12 Million	English	Private
C22	Hospital	2011	FIDIC 87 4 <sup>th</sup> Edition	13 Million	English	Private
C23	Bar Mill (Factory)	2009	FIDIC 99 1 <sup>st</sup> Edition	45 Million	English	Private
C24	Pharmaceuticals plant	2009	FIDIC 99 1 <sup>st</sup> Edition	19 Million	English	Private
C25	Road	2009	None	100 Million	Arabic	Public
C26	Airport Tower	2007	None	22 Million	English	Public
C27	Infrastructure Works	2008	None	29 Million	English	Private
C28	Cultural Building	2012	FIDIC 2010 (June)	413 Million	English	Public

As shown in Figure No. 6, it is noted that 55% of the contracts that have not been related to international forms are related to the public sectors, while 45% are related to the private sector, resembling a nearly equal percentages to the choice of not using international forms between both sectors. Figure No. 7 shows that 75% of the analyzed contracts are related to the private sector while 25% are related to the public sector.



*Figure 6: Sectors (private Vs. Public) in Ad-Hoc Contracts*



*Figure 7: Sectors (Private vs. Public)*

### 3.3 Criteria of Listing and Data Preparation

An analysis sheet is prepared for the purpose of incorporating the particular conditions of the 28 analyzed contracts in table form so that similar clauses related to different contracts would be listed within the same row, as shown in the below Figure No. 9. The main topics are listed in the first column followed by the provision names falling under each topic and the exact wording of each of the 28 analyzed contracts, which are abbreviated as C1, C2, C3 ... C28. (See Figure No. 9)

No.	Group	Clause	Particular Conditions of Contract Ref. C1	Particular Conditions of Contract Ref. C2
101	Securities, Bonds, Guarantees	Performance Security	Modifications to Sub-Clause 10.1: Add the following: "Without limitation to the provisions of the preceding paragraph, whenever the Engineer determines an addition to the Contract Price, by means of interim gross certification of measurement of the estimated quantities set out in the Bill of Quantities and/or as a result" of the total cost of Variations, amounting to more than 25% of the Contract Price, the Contactor, at the Engineer's written request, shall, within 15 days, increase the value of the performance Security by an equal percentage of its original value. "	Modifications to Sub-Clause 4.2: At the end of the second paragraph insert the following: The Performance Guarantee shall be in the form of a bank guarantee, issued by an Egyptian bank in a form acceptable to the Employer.
102	Securities, Bonds, Guarantees	Advance Payment		Modifications to Sub-Clause 14.2: Add the following paragraph to Sub-clause 14.2: The advance payment shall be released to the Contractor in two instalments. The first instalment shall be released upon the Contract Commencement date and the second instalment shall be released upon the Contractor performing the following work to the satisfaction of the Engineer: (a) submittal and approval of its Construction Programme; (b) completion of the Employer facilities; (c) submittal and approval of its Safety Programme; (d) submittal and approval of its Organization Chart; and (e) submittal and approval its construction method of statement, Quality Control and Quality Assurance Programme.

Figure 8: Snapshot of analysis table - Appendix B

The following points were considered as the criteria for listing and data preparation:

- The contracts that are originally drafted in the Arabic language were translated into English by the author of this research, and the relevant particular conditions are inserted in English in the Analysis Sheet.
- FIDIC 99 is considered as the main standard form of general conditions to the particular conditions identified within the analysis of this research. Any identified condition through the analysis that carry the same content/meaning as the General Conditions of FIDIC 99 as in basically a rewording of such conditions is not considered as a particular condition and thus ignored. (See process flowchart – Figure No. 10)

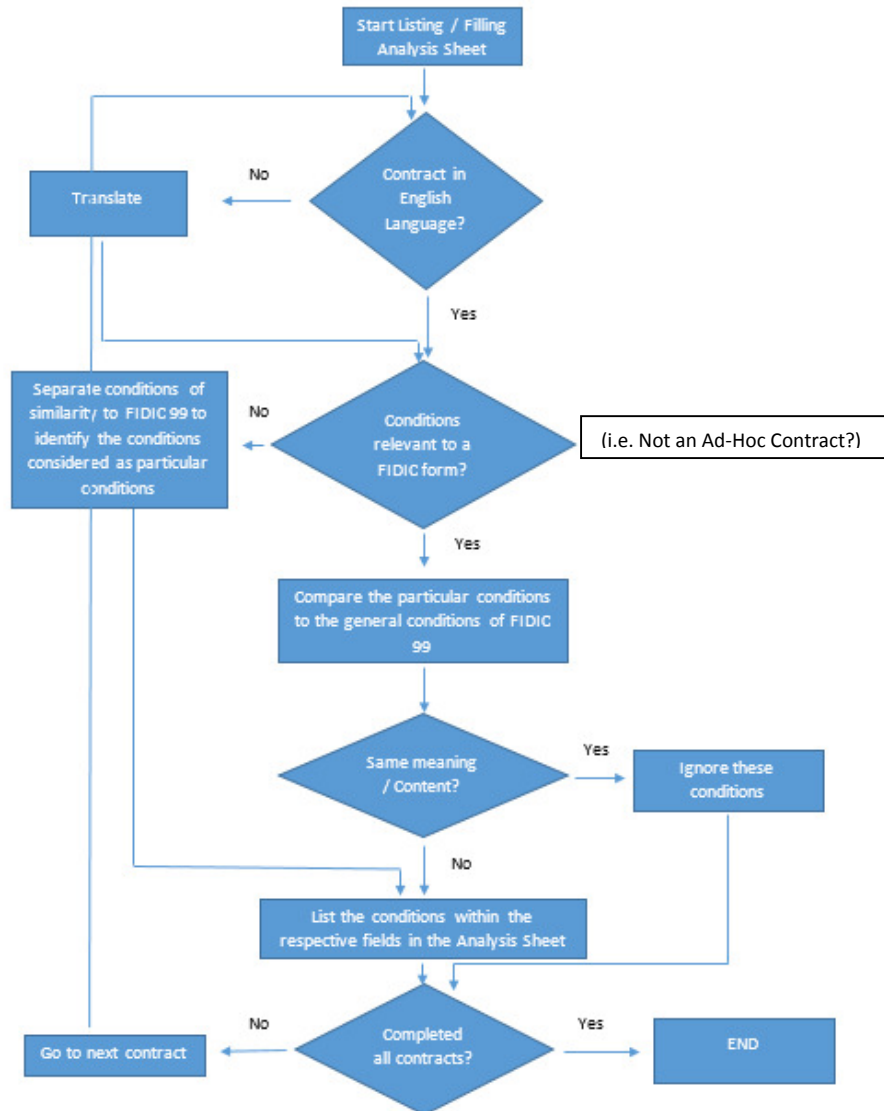


Figure 9: Flow Chart Showing the Listing Criteria

- For the ad-hoc contracts, all included conditions are checked disregarding whether they lie under the general or particular conditions of these contracts to ensure that all differences to FIDIC 99 are incorporated within the analysis as particular conditions. (See process flowchart – Figure No. 10)



- Since some of the conditions of the analyzed contracts include names of the parties involved, due to confidentiality obligations, such names were replaced with the symbols XXX.
- Some Particular Conditions within the analyzed Contracts have collectively addressed various provisions under one Sub-Clause, which have been differently addressed through FIDIC 87 and/or FIDIC 99 under one or more Sub-Clauses. Such provisions, for the sake of this research, have been broken down reasonably for easier analysis, and with consideration to the break-down used within FIDIC 99, being the form of application of this research. For example, C10 has addressed “Programme to be Submitted”, “Revised Programme” and “Rate of Progress” within one Sub-Clause; however, the herein analysis has collectively addressed “Programme to be Submitted” and “Revised Programme” into one Sub-Clause while “Rate of Progress” remained separate, which is similar to the criteria of FIDIC 99.
- Any particular condition within the analyzed contracts that re-states a general condition from FIDIC 99 with minor additions such as information of values that are usually included within the Appendix to Tender is excluded from the analysis. An example of such cases is the amount of performance security, insurances, etc.
- All of the conditions of the 28 contracts subject to analysis will be inserted within the table, as shown through Figure No. 9, and in accordance with the criteria herein explained.

### 3.4 Identifying Significance of Clauses and Top 30 Conditions

- It should be noted that each of the top 30 conditions were addressed by more than 50% of the analyzed contracts while the remaining 133 conditions, which are not considered in this analysis, were addressed by 50% or less of the analyzed contracts.
- The significance of a certain clause is determined as to the frequency of its modification among the 28 contracts. For example, if the 28 contracts out of 28 have incorporated a particular condition for the “Programme of Works”, then this would be of the highest significance. If 27 out of 28 have addressed a certain condition, then its significance would come after the “Programme of Works” and so on.
- Once the Analysis Sheet is completed, it was sorted with respect to priority so that the top 30 common/significant clauses are identified. The Analysis Sheet is herein included in Appendix B including all the identified clauses of which total is 163 clause.
- The following table shows the top 30 conditions along with the frequency of occurrence within the 28 contracts as identified and considered within the analysis after having met the criteria set within this Chapter.

*Table 3: Top 30 Common Particular Conditions*

No.	Group	Condition Name	Frequency
1	<b>Securities, Bonds, Guarantees</b>	Performance Security	26
2	<b>Time</b>	Programme of Works / Revised Schedule	26
3	<b>Certificates, Payment and Contract Price</b>	Contract Price / Customs / Taxes	25
4	<b>Language and Law</b>	Language/s and Law	25
5	<b>Priority of Documents</b>	Priority of Contract Documents	25

6	<b>Safety, Security, Health, Environment</b>	Safety, Security and Protection of the Environment / Safety Procedures / Pest / Health	24
7	<b>Variations</b>	Instructions for Variation / Right to Vary / Procedures of Variations / Valuation	22
8	<b>Certificates, Payment and Contract Price</b>	Interim/Monthly Payments	22
9	<b>Insurance</b>	Insurance / Scope of Cover	22
10	<b>Time</b>	Extension of Time for Completion	22
11	<b>Disputes</b>	Arbitration	21
12	<b>Responsibilities, Duties, Obligations</b>	Engineer Duties and Authority	21
13	<b>Securities, Bonds, Guarantees</b>	Advance Payment	21
14	<b>Miscellaneous</b>	Confidential Details	21
15	<b>Drawings</b>	Drawings	20
16	<b>Certificates, Payment and Contract Price</b>	Monthly Statements	19
17	<b>Change in Cost</b>	Increase or Decrease in Cost	19
18	<b>Currency</b>	Currency of Account and Payments / Currency Restrictions	18
19	<b>Risks and Damages</b>	Employer's / Contractor's Risks / Forcemajeure / Special Risks	18
20	<b>Subcontractors</b>	Sub-Contractors / Subcontracting / Subcontracting Additional Requirements	18
21	<b>Taking Over</b>	Taking Over / Taking Over Certificate / Final Taking Over	18
22	<b>Liquidated Damages</b>	Delay/Liquidated Damages (LDs) / Reduction of LDs	17
23	<b>Responsibilities, Duties, Obligations</b>	Contractor's General Responsibilities/Obligations	17
24	<b>Commencement of Works</b>	Commencement of Works	16
25	<b>Contractor's Personnel</b>	Contractor's Superintendence / Representative / Employees	15
26	<b>Working Hours</b>	Restrictions on Working Hours	15
27	<b>Termination</b>	Termination by Employer	14
28	<b>Cash Flow</b>	Cash flow estimate to be submitted	14
29	<b>Equipment, Materials, Plant, Temporary Works</b>	Contractor's Equipment, Plant, Temporary Works, and materials / Re-export of Equipment / Disposal of Equipment	14
30	<b>Subsequent Legislation</b>	Subsequent Legislation	14

While the top 30 common/significant clauses have been identified, it must be noted the remaining identified should be looked at and considered based on the natures and types of different projects.

### **3.5 Criteria of Analysis of Contracts' Conditions**

- For each of the top 30 conditions, a comparison between the respective conditions of FIDIC 1987 – Conditions of Contract for Works of Civil Engineering Construction (Red Book) and FIDIC 1999 – Conditions of Contract Construction for Building and Engineering Works Designed by the Employer (Red Book) was made in order to understand the purpose and basis of additions. FIDIC 2010 – Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer (Red Book) was not considered in the comparison as it was merely used by one contract of the twenty eight analyzed contracts.
- The significance of the conditions was assessed through calculating the number of times a certain condition was addressed by the analyzed contracts. To highlight the difference between a condition/clause and a provision as well as the analysis process, the following example is hereby furnished.

Example:

- “Programme of Works / Revised Programme” is modified from the wording, content and/or meaning of FIDIC 99 in 26 out 28 contracts deeming it one of the most significant clauses to be analyzed. “Programme of Works / Revised Programme” is herein called as a “condition” or a “clause”.

- This condition has incorporated various new additions/modifications to FIDIC 99, such as, ownership of floats, planning software and others. These additions/modifications are called “provisions”.
- Within the 26 contracts that included particular conditions for “Programme of Works/Revised Programme”, ownership of float was addressed by 3 contracts and planning software was addressed by 5.
- Although the frequency of using a certain condition among the analyzed contracts shows its importance, the survey, which is conducted as a part of this research, would further verify the importance all of the identified provisions.
- The comparison between the relevant Sub-Clauses of FIDIC 87 and FIDIC 99 for each of the 30 top clauses is furnished through Appendix C.

### **3.6 Findings of the Analysis of the 30 Top Clauses**

The provisions identified under each of the 30 top clauses are furnished herein below, noting that some of these provisions were not taken to the next stage being the verification process through the survey. This is due to the fact that some provisions are already deemed as significant through the literature review; thus, there is no need to verify the same through the survey. Another reason could be that the provision is addressed elsewhere in the herein analysis or is actually reflecting the same meaning of a condition within FIDIC 99. The ineligible/disregarded provisions are listed along with the analysis of each of the 30 top clauses herein below.

### 3.6.1.1 Performance Security

Twelve additional provisions/modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Condition Precedent to Tender Acceptance: Deeming the formation of the Performance Security as a condition precedent to the full acceptance of the Tender.
- Performance Security requirements: Identifying the requirements acceptable to the Employer (i.e. form, value, bank, etc.) in relation with the Performance Security.
- Consequences of Failure to Comply: Identifying the consequences of failing to submit/re-submit the Performance Security in the required manner or within the specified time frame.
- Value Increase: Requiring the Contractor to increase the value of the Performance Security whenever an addition to the Contract Price is determined.
- Payment of Interests: Waiving the payment of interests on the amounts of guarantee.
- Maintaining Full Value: Requiring the Contractor to maintain the Performance Security in its full agreed amount subsequent to the Employer's liquidation to any sums in accordance to his rights under the Contract.
- Consequences of Failure to Maintain Full Value: Identifying the consequences of failing to maintain the Performance Security in its full agreed amount.
- Issuance Costs: Specifying the party responsible for the costs associated with issuing or re-issuing the Performance Security.

- Extension of Validity in Accordance to the Engineer's Advice: Authorizing the Engineer to extend the validity of the Performance Security until it advises that the Contract has been fulfilled and completed.
- Apportionment: Apportioning the Performance Security to each Section or Portion of the Works.
- Value Reduction: Specifying a certain reduction in the value of the Performance Security upon issuance of the Taking-Over Certificate.
- Conditions of Replacement: Specifying the conditions that would require the Contractor to replace the Performance Security.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "6,8%" signifies that 6 contracts out of 28 have addressed the subject matter provision representing 8% of the total identified provisions relevant to performance security.

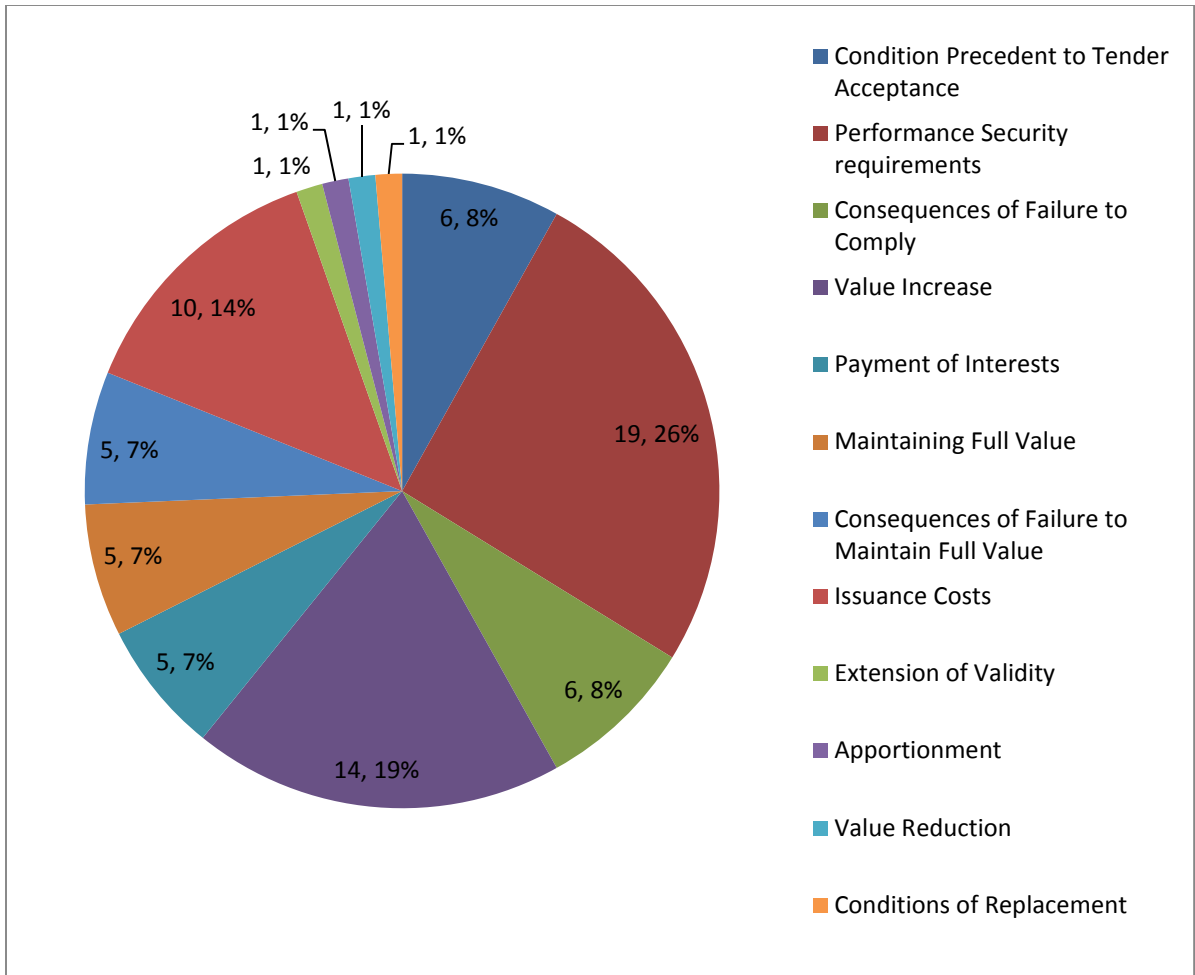


Figure 10: Performance Security

### 3.6.1.2 Programme of Works / Revised Programme

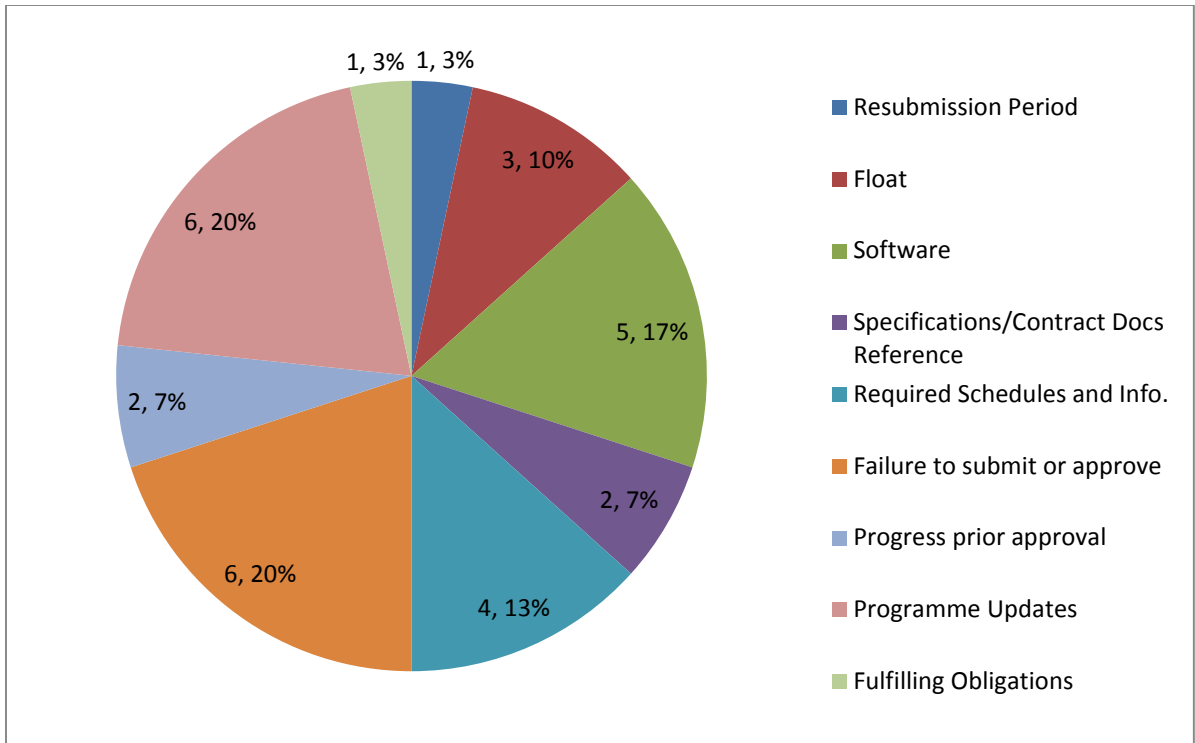
Nine additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Resubmission Period: Specifying a period of time to be taken by a contractor for re-submitting a programme that was not accepted or was rejected with comments.
- Float Provision: Identifying the ownership of floats on a project's activities.
- Planning Software: Specifying a certain software for producing a programme.



- Reference to programme requirements within Specifications/Contract Documents: Including a reference to detailed programme requirements within the Specifications or other Contract Documents of a contract. This allows the incorporation of the desired requirements of a programme in extensive details.
- Specific required schedules and information: Detailing the requirements of the schedules that constitute the Programme of Works and/or requiring information related to certain schedules.
- Failure to submit or obtain approval to programme: Defining the consequences of such failure.
- Work progress prior to programme approval: Setting a strategy to progress works prior to reaching an approved programme.
- Submission of periodical programme updates: Requiring the contractor to submit periodical programme/progress updates.
- Responsibility of Contractor to fulfil obligations: Requiring the contractor to fulfil its obligations in accordance to the contract disregarding obtaining the approval on the programme of works.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “6,20%” signifies that 6 contracts out of 28 have addressed the subject matter provision representing 20% of the total identified provisions relevant to Programme of Works / Revised Programme.



*Figure 11: Programme of Works / Revised Programme*

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- **Float Provision:** This is related to specifying the ownership of floats on a project’s activities.
  - **Reason:** This is recommended to be considered within the conditions of construction contracts as demonstrated through the herein Literature Review. Therefore, there is no need to verify its importance as it is already verified through the Literature Review.

### 3.6.1.3 Contract Price, and its relation to Customs, Taxes, Duties, etc.

Eleven additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Sales Tax: Identifying the party responsible for the sales tax payment.
- Employer's Assistance – Clearances: Specifying the Employer's assistance in relation to obtaining clearances related to the customs of Contractor's equipment, materials and others related to the Works.
- Customs Duties: Identifying the party responsible for paying custom duties and other import charges.
- Fluctuations of Taxes and other charges: Adjusting the Contract Price in accordance to any increases or decreases that may take place affecting taxes, duties and other fees.
- Failure to Pay Taxes and Others: Identifying the consequences of failing to pay taxes and other charges imposed by law.
- Social Insurance: Identifying the party responsible for social insurance payment.
- Customs Payment Time Frame: Specifying a time frame for paying custom duties.
- Failure to Register with Social Insurance: Identifying the consequences of failing to register with the social insurance office.
- Defining Types of Taxes: Specifying and defining each of the types of taxes required to be paid by the Contractor.

- Excused Taxes/Charges: Entitling the Employer to get reimbursed any costs related to taxes and other charges that the Contractor becomes excused of.
- Contract Agreement Charges: Identifying the party responsible for paying the fees/charges related to entry into Contract Agreement.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “8,13%” signifies that 8 contracts out of 28 have addressed the subject matter provision representing 13% of the total identified provisions relevant to Contract Price and its relation to customs, taxes, etc.

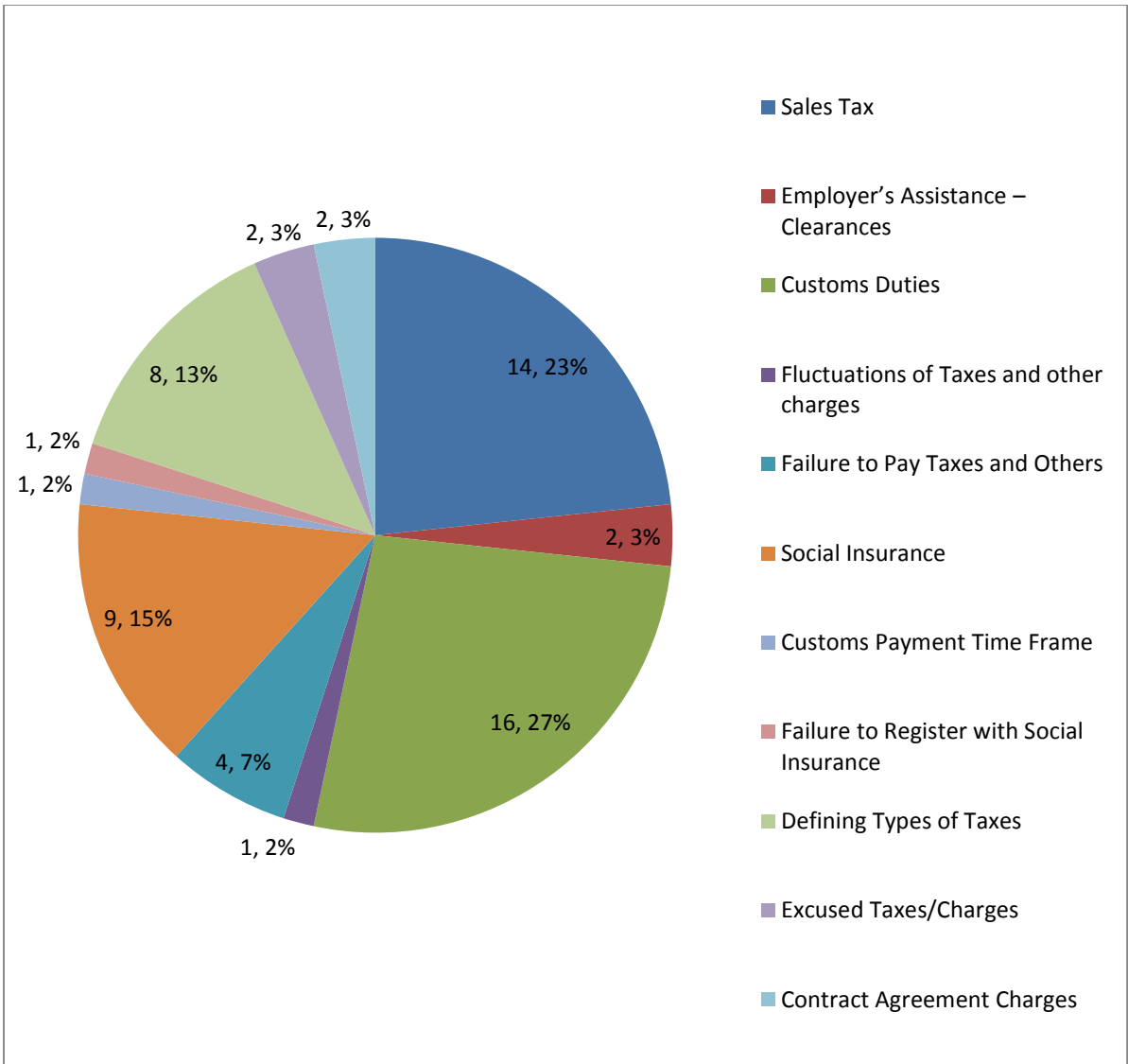


Figure 12: Contract Price - Taxes - Customs

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Fluctuations of Taxes and other charges: This is related to adjusting the Contract Price in accordance to any increases or decreases that may take place affecting taxes, duties and other fees.
  - Reason: This is addressed through Sub-Clause 13.7 (Adjustments for Changes in Legislation) of the Conditions of FIDIC 99.
- Contract Agreement Charges: This is related to identifying the party responsible for paying the fees/charges related to entry into Contract Agreement.
  - Reason: This is addressed through Sub-Clause 1.6 (Contract Agreement) of the Conditions of FIDIC 99.

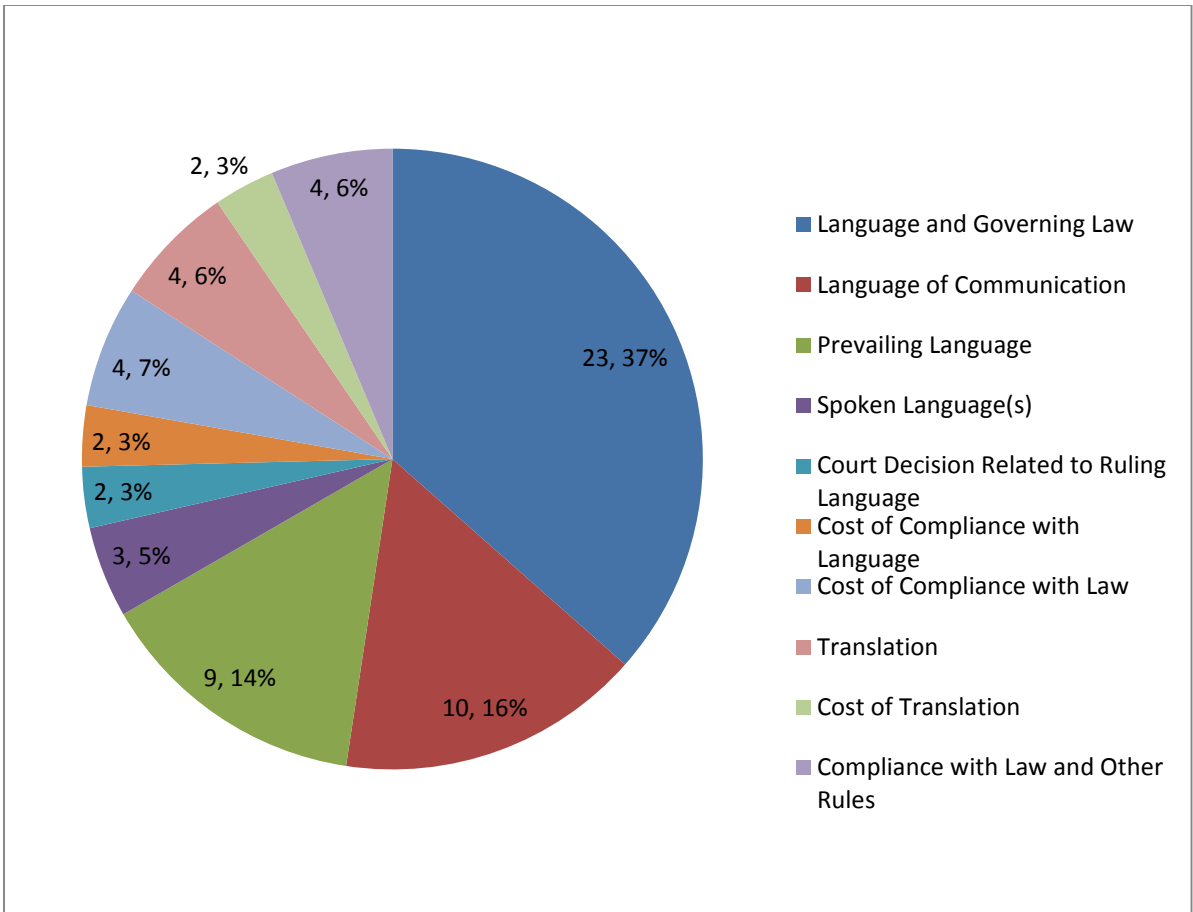
#### 3.6.1.4 Language and Law

Ten additional provisions/ modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Language and Governing Law: Specifying the language and the law governing the Contract through the Particular Conditions rather than the Appendix to Tender.
- Language of Communication: Specifying the language(s) of correspondence and other documents related to the Contract.
- Prevailing Language: Prioritizing a certain language over another generally or whenever a conflict is experienced.
- Spoken Language(s): Requiring certain Contractor's Personnel and/or Subcontractors to be fluent in certain languages.
- Court Decision Related to Ruling Language: Requiring the reference to the Ruling Language as an assisting tool for interpretation whenever a competent court decides that another language version should prevail.

- Cost of Compliance with Language: Identifying the party responsible for any costs that may be incurred for complying with the language requirements in dealing with authorities and others.
- Cost of Compliance with Law: Deeming the Contract Price inclusive of complying with the requirements of the Law of the Country, including the event when a conflict is identified between the Contract Documents and Law.
- Translation: Requiring the Contractor to submit translated versions of any document that was originally made in another language.
- Cost of Translation: Identifying the Party responsible for any costs that may be incurred for translation services.
- Compliance with Law and Other Rules: Requiring the Contractor to comply with laws, statutes, ordinances, regulations, etc.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “23,37%” signifies that 23 contracts out of 28 have addressed the subject matter provision representing 37% of the total identified provisions relevant to Language and Law.



*Figure 13: Language and Law*

*Disregarded Provisions from Survey*

A number of provisions have been disregarded from the analysis for the relevant below-stated reasons.

- **Language and Governing Law:** This is related to adding a provision specifying the language and the law governing the Contract through the Particular Conditions rather than the Appendix to Tender.



- Reason: This can be specified through the Appendix to Tender as followed through FIDIC 99.
- Language of Communication: This is related to adding a provision specifying the language(s) of correspondence and other documents related to the Contract.
  - Reason: This is addressed through Sub-Clause 1.4 (Law and Language) and Sub-Clause 4.1 (Contractor's General Obligations) of the Conditions of FIDIC 99.
- Prevailing Language: This is related to adding a provision that priorities a certain language over another generally or whenever a conflict is experienced.
  - Reason: This is addressed through Sub-Clause 1.4 (Law and Language) of the Conditions of FIDIC 99.
- Cost of Compliance with Law: This is related to adding a provision that deems the Contract Price inclusive of complying with the requirements of the Law of the Country, including the event when a conflict is identified between the Contract Documents and Law.
  - Reason: This is generally addressed through Sub-Clause 1.13 (Compliance with Laws) of the Conditions of FIDIC 99.
- Compliance with Law and Other Rules: This is related to adding a provision that requires the Contractor to comply with laws, statutes, ordinances, regulations, etc.
  - Reason: This is generally addressed through Sub-Clause 1.13 (Compliance with Laws) of the Conditions of FIDIC 99.

### 3.6.1.5 Priority of Documents

Ten additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Re-arrangement of Contract Documents: Re-arranging the priority of Contract Documents.
- Equal Priority: Deeming no priority of a Contract Document over another.
- Drawings and Specs Vs. BOQ conflicts: Clarifying the accepted interpretation in case a contradiction between (Drawings and/or Specifications) and the Bill of Quantities was identified.
- Drawings Vs. Specifications conflicts: Clarifying the accepted interpretation in case identifying a contradiction between Drawings and Specifications.
- Contract Documents Conflicts: Deeming the higher standard between two documents of same priority as the binding one.
- Contractor's failure to identify discrepancies: Identifying the consequences of the Contractor's failure to identify discrepancies between Contract Documents within certain time duration.
- Entirety of Requirements: Deeming any requirement within certain Contract Documents as required by all of them.
- Engineer's Determination in case of Conflicts: Deeming the Engineer's determination whenever a contradiction is identified between certain Contract Documents as binding.

- Engineer’s Failure to Determine: Identifying the consequences of the Engineer’s failure to give instructions/clarifications whenever a conflict between the Contract Documents is identified.
- Cost of Conflicts: Identifying the party responsible for incurring the costs resulting from a conflict between the Contract Documents.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “14,44%” signifies that 14 contracts out of 28 have addressed the subject matter provision representing 44% of the total identified provisions relevant to Priority of Contract Documents.

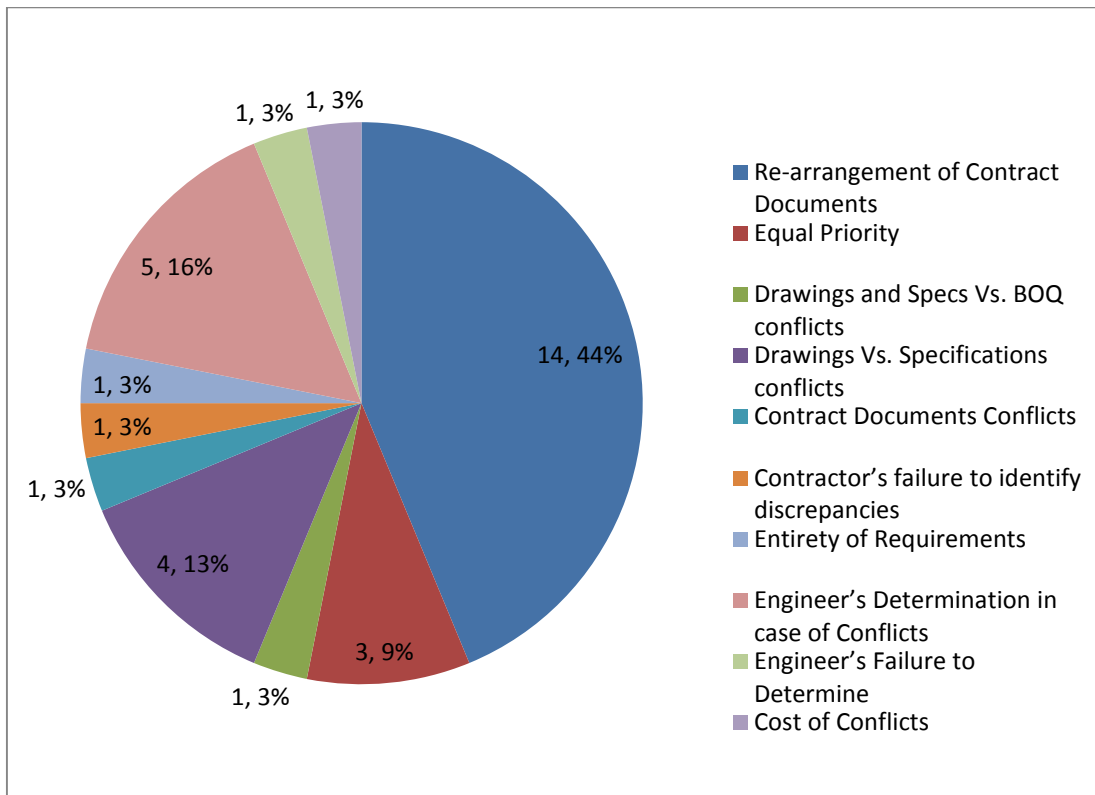


Figure 14: Priority of Contract Documents

### *Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Re-arrangement of Contract Documents: This is related to adding a provision re-arranging the Contract Documents.
  - Reason: The priority of Contract Documents is expected to be arranged differently within each contract depending on the nature and importance of each of the elements forming the Contract Documents as well as the criteria relevant to their preparation.

#### 3.6.1.6 Health, Safety and Environment

Twelve additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Detailed Safety Regulations: Referring the Contractor to separate schedules and/or Specifications of the Contract through which the safety regulations are detailed.
- Submission of Safety Measures: Requiring the Contractor's submission of safety procedures/plan.
- Submission of Environmental Measures: Requiring the Contractor's submission of environmental procedures.
- Costs of Safety Measures: Identifying the party responsible for the costs related to safety measures.
- Failure to Fulfil Obligations: Identifying the consequences of the Contractor's failure to fulfil his obligations in relation to Health, Safety and/or Environment.

- **Costs of Failure to Fulfil Obligations:** Deeming the Contractor responsible for the costs incurred, if any, resulting from the consequences of his failure to take all measures necessary to implement safety and/or accident program prevention.
- **Epidemic:** Requiring the Contractor to comply and carry out such regulations, orders and requirements as may be made by the local authorities in the event of any outbreak of illness of an epidemic nature.
- **Accident Notification:** Requiring the Contractor to notify the Engineer of any accident or fatality that may occur within a certain duration and through certain means depending on its significance.
- **Pest Control:** Requiring the submission of health measures against pests.
- **Avoidance of Water Pollution:** Requiring the Contractor to avoid polluting streams and underground water.
- **Waste Disposal:** Identifying the accepted method(s) related to waste disposal.
- **Fire Hazards:** Detailing the measures required to be taken against fire hazards.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “5,11%” signifies that 5 contracts out of 28 have addressed the subject matter provision representing 11% of the total identified provisions relevant to Health, Safety and Environment.

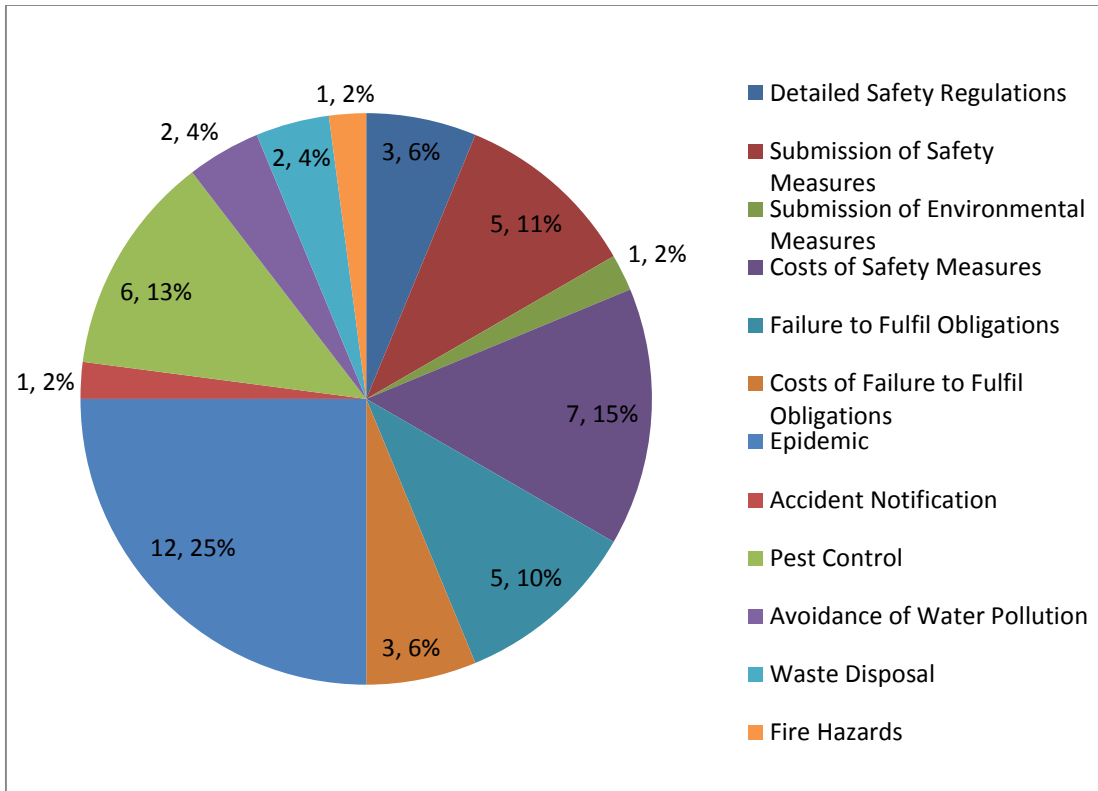


Figure 15: Health, Safety and Environment

### 3.6.1.7 Variations

Eleven additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Proceeding with Variations: Obliging the Contractor to proceed with instructed variations regardless of whether an agreement on price has been reached or not.
- Cost of Proposals: Identifying the party responsible for the costs relevant to requested/submitted proposals.
- Particulars of Variations: Requiring the Contractor to submit particulars related to variations in certain times.

- Time for Completion as a Variation: Deeming advancing or postponing the Time for Completion or any Section as an item that could be instructed as a variation.
- Loss of Profit: Addressing loss of profit due to variations.
- Overhead and Profit: Identifying the percentage of overhead and profit to be used for evaluation purposes.
- Other Costs: Identifying the margin cap related to “other costs” related to valuation of variations.
- Omission Due to Default: Allowing the Employer/Engineer to omit work and award it to others in the event that such a decision was arisen due to a Contractor’s default.
- Agreement on Rates/Prices: Specifying a certain period within which the Contractor and the Engineer shall agree on the prices or rates related to variations.
- Engineer’s Decision on Rates/Prices: Deeming the Engineer’s decision as final and binding whenever they fail to agree on prices or rates related to variations within a certain duration.
- Cost Management Resource: Requiring the Contractor to hire cost management recourse to serve valuations, for which duties are detailed.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “6,21%” signifies that 6 contracts out of 28 have addressed the subject matter provision representing 21% of the total identified provisions relevant to Variations.

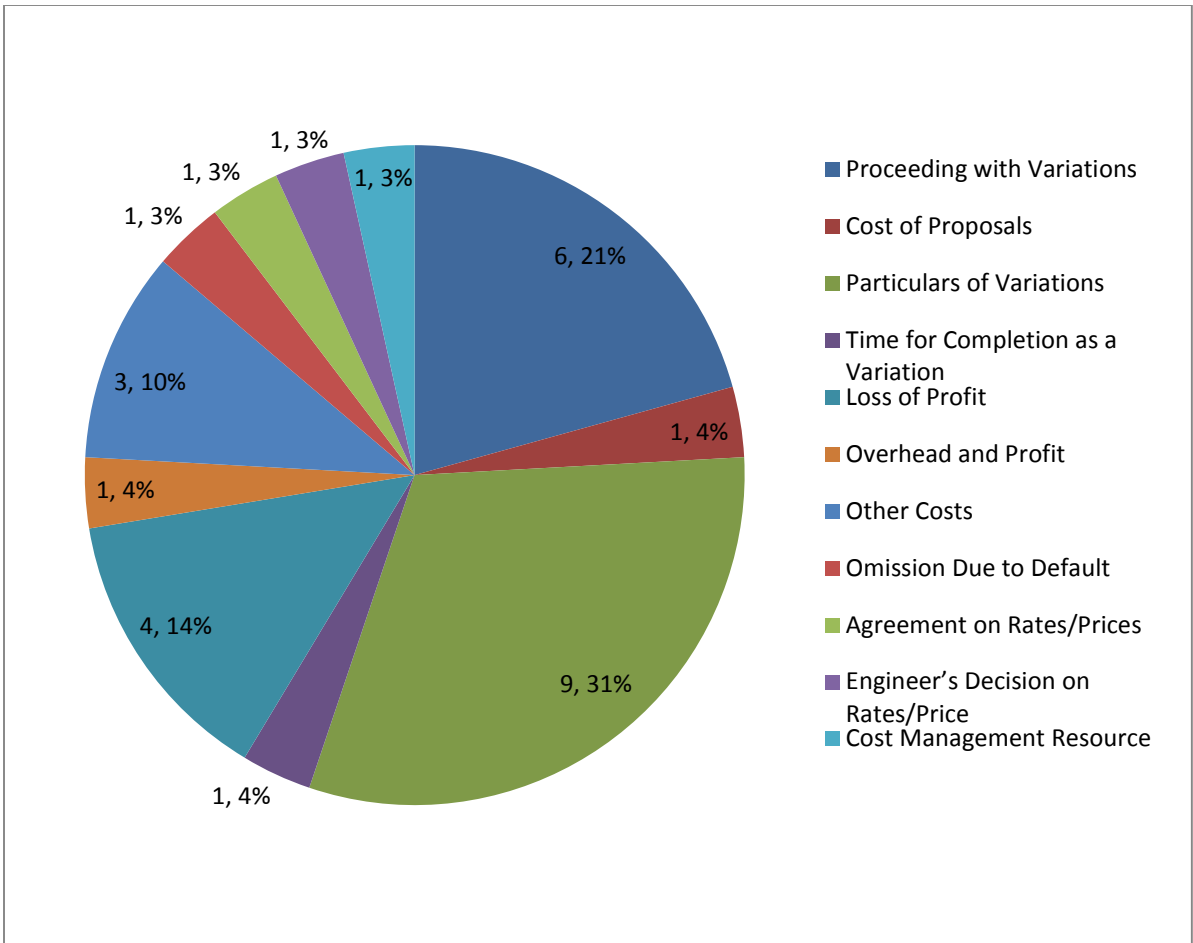


Figure 16: Variations

### 3.6.1.8 Payment

Ten additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Engineer's Decision: Deeming the Engineer's opinion/decision binding (or an exercise of his right) whenever a discrepancy/conflict was identified within monthly statements, and/or any other relevant matter up to the Engineer's satisfaction.



- Acceptance of Certificates: Deeming the Contractor's signature on monthly payment certificates as an acceptance by him on all matters related to these certificates.
- Right to Object: Allowing the Contractor to provide reasons of objection on payment certifications within a certain duration, by which elapse would waive such a right to object.
- Failure to Provide Supporting Documents: Identifying the consequences of the Contractor's failure to provide all supporting documents related to payment certificates.
- Right to Withhold Payments: Allowing the Employer to withhold all or some amounts of the interim payment certificate approved by engineer until the Contractor submits certain documentation/information.
- Direct Cost delivered to Site: Entitling the Contractor of a certain percentage of payment against the direct cost delivered to Site
- Payment to Subcontractors: Requiring the Contractor to present evidence of payment to subcontractors prior to receiving payments related to them.
- Right to Pay Subcontractors: Awarding the Employer the right to directly pay Subcontractors and suppliers should the Contractor fail to pay them, unless the Contractor provides reasonable evidence entitling him to such an act, up to the Engineer's satisfaction.
- Suspension Notification: Requiring the Contractor to notify the Employer within a certain time duration prior to suspending the Works in case of the Employer's failure to make the Contractor's payment within the agreed durations.

- Milestones' Payment(s): Entitling the Contractor to receive payments against certain agreed Milestones rather than as stipulated within FIDIC 87 and/or 99, for which terms of achievement are defined within the Contract Documents.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “8,29%” signifies that 8 contracts out of 28 have addressed the subject matter provision representing 29% of the total identified provisions relevant to Payment.

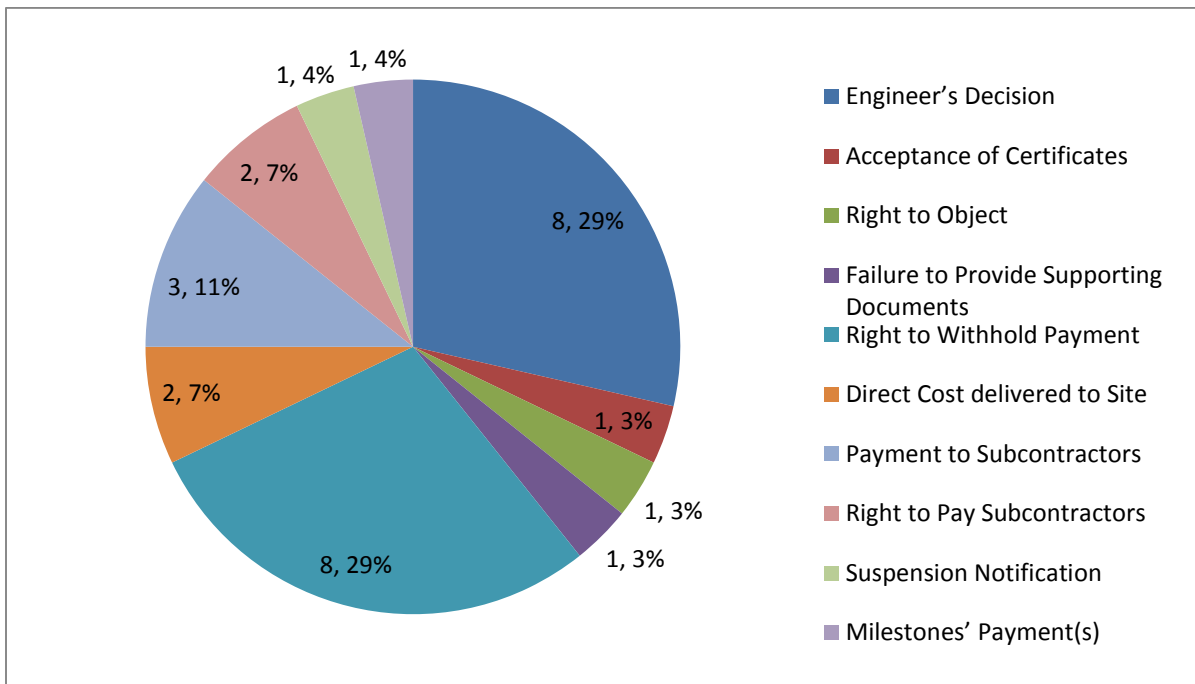


Figure 17: Payment

### 3.6.1.9 Insurance

Nine additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Failure to comply by Policies' Conditions: Indemnifying the Employer against all losses and claims arising from the Contractor's failure to comply by the conditions imposed by the insurance policies.
- Global Insurance: Requiring the insurance of any of the Contractor's Equipment, Materials and any other thing brought onto the Site by the Contractor to be covered for insurance anywhere in the world even when they are in storage or in transit.
- Plant Prior-Delivery Insurance: Addressing the type of insurance required in case of loss or damage to any Plant prior to its delivery and during its unloading to Site.
- Automobiles Insurance: Requiring the Contractor to insure third party automobiles, including but not limited to, death, injury, etc.
- Waiver of Subrogation: Requiring the Contractor to obtain a waiver by the insurers of any and all rights of subrogation they might be able to exercise against the Employer or any of its consultants, servants, employees or agents.
- Insurers' Change Notice: Entitling the Employer of a notice from the insurers prior to cancellation, termination, alteration of cover or failure to renew policies.
- Waiver of Right to Avoid Insurance: Requiring insurers to waive their right, if any, to avoid the insurance cover on the grounds of any non-disclosure, mis-description or misrepresentation in any information relevant to the risks insured under the insurance policies.
- Insurance Details: Detailing each of the required insurances' covers.
- Payment Notice: Requiring the insurance companies to notify the Employer of any proceeds paid to the Contractor within a certain time frame.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “6,25%” signifies that 6 contracts out of 28 have addressed the subject matter provision representing 25% of the total identified provisions relevant to Insurance.

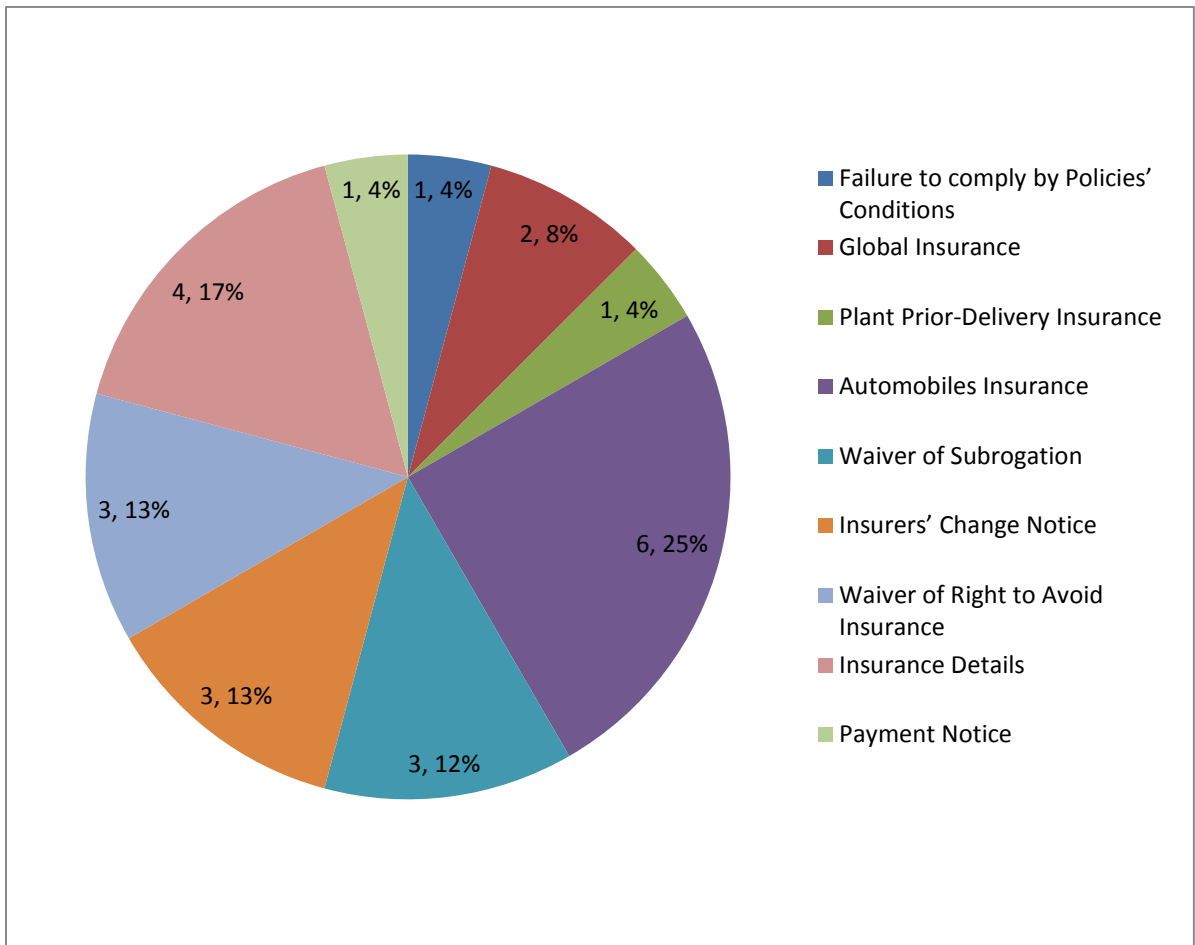


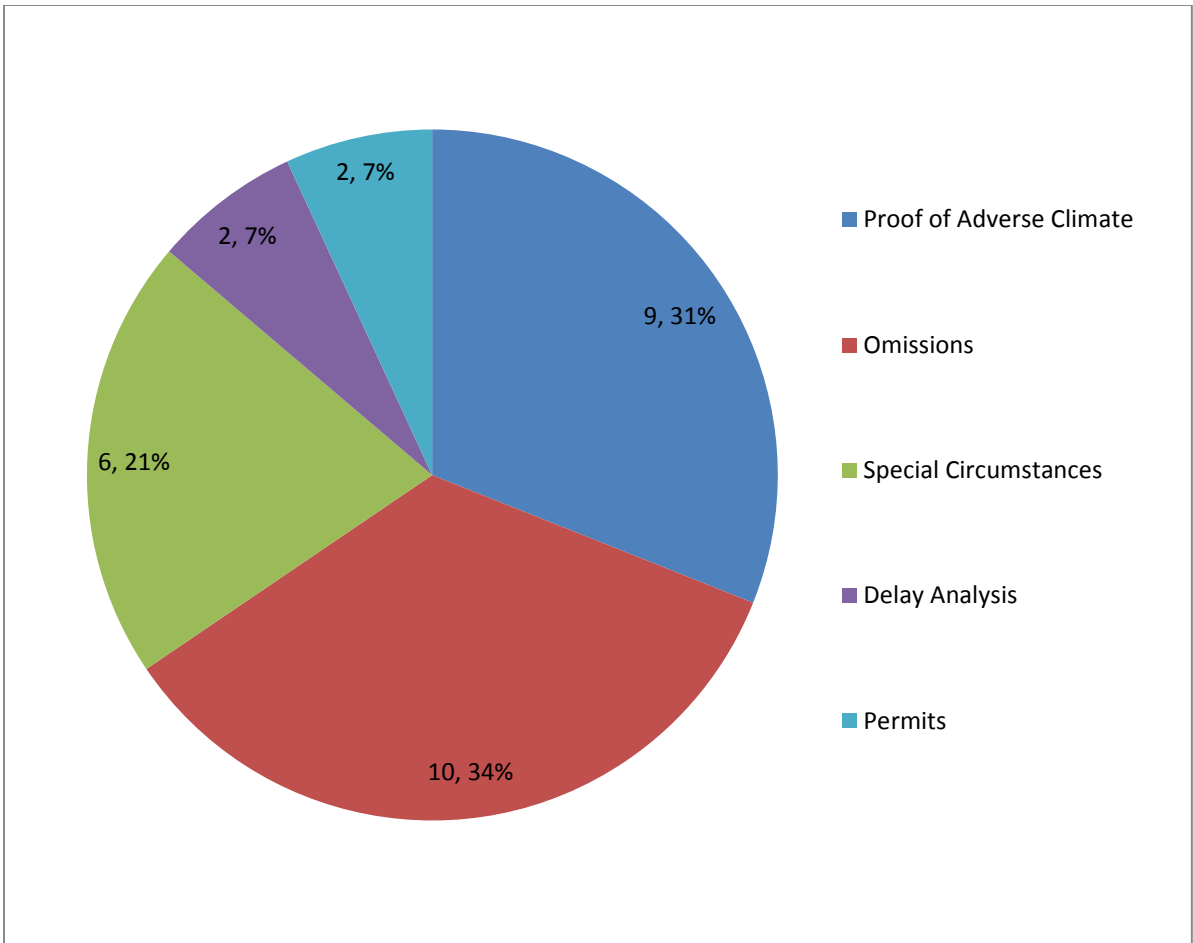
Figure 18: Insurances

### 3.6.1.10 Extension of Time for Completion

Five additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Proof of Adverse Climate: Requiring certain proofs with regarding to deeming the climate as exceptionally adverse for entitling the Contractor to extension of time.
- Omissions: Entitling the Engineer to take account of any omitted works when determining an extension of the Time for Completion, with the consideration of certain relevant conditions.
- Special Circumstances: Entitling the Contractor extension of time as a result of experiencing special circumstances, for which causes do not lie under the Contractor's responsibilities, as opposed to FIDIC 99 which has not allowed for undefined special circumstances.
- Delay Analysis: Identifying the required delay analysis as a condition precedent to determining an extension of time.
- Permits: Awarding the Contractor's the right to request an extension of time should the Employer fail to provide the Contractor a required permit to enable the Contractor to proceed with the Works in the times agreed through the approved programme.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "9,31%" signifies that 9 contracts out of 28 have addressed the subject matter provision representing 31% of the total identified provisions relevant to Extension of Time.



*Figure 19: Extension of Time*

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Permits: This is related to adding a provision giving the Contractor's the right to request an extension of time should the Employer fail to provide the Contractor a required permit to enable the Contractor to proceed with the Works in the times agreed through the approved programme.

- Reason: This is an act of prevention that is covered under Sub-Clause 8.4 entitled “Extension of Time for Completion” of the Conditions of FIDIC 99.
- Delay Analysis: This is related to adding a provision identifying the required delay analysis as a condition precedent to determining an extension of time.
  - Reason: This is recommended to be considered within the conditions of construction contracts as demonstrated through the herein Literature Review. Therefore, there is no need to verify its importance through the survey.

#### 3.6.1.11 Arbitration

Ten additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Arbitration Centre: Naming a certain International Arbitration Centre to be used for arbitration purposes.
- Selection Criteria: Stating the criteria related to selecting arbitrators.
- Costs of Arbitration: Identifying the party or parties responsible for the costs related to arbitration, or the criteria to be used in this regard.
- Arbitrators’ Decision: Deeming the decision of the arbitrators as final and binding on which basis judgment may be entered to the court of jurisdiction to be enforced.
- Expiry/Termination of Contract: Allowing the survival of the arbitration upon the expiry or termination of the Contract.
- Language: Identifying the language to be used for arbitration.

- Commencement of Arbitration: Identifying the time or conditions by which arbitration may commence.
- Time for Final Award: Setting a duration within which the arbitral tribunal is required to deliver its final award.
- Law: Identifying the law to be used for arbitration.
- Confidentiality: Addressing the confidentiality of the arbitration proceedings and disclosures.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “18,25%” signifies that 18 contracts out of 28 have addressed the subject matter provision representing 25% of the total identified provisions relevant to Arbitration.

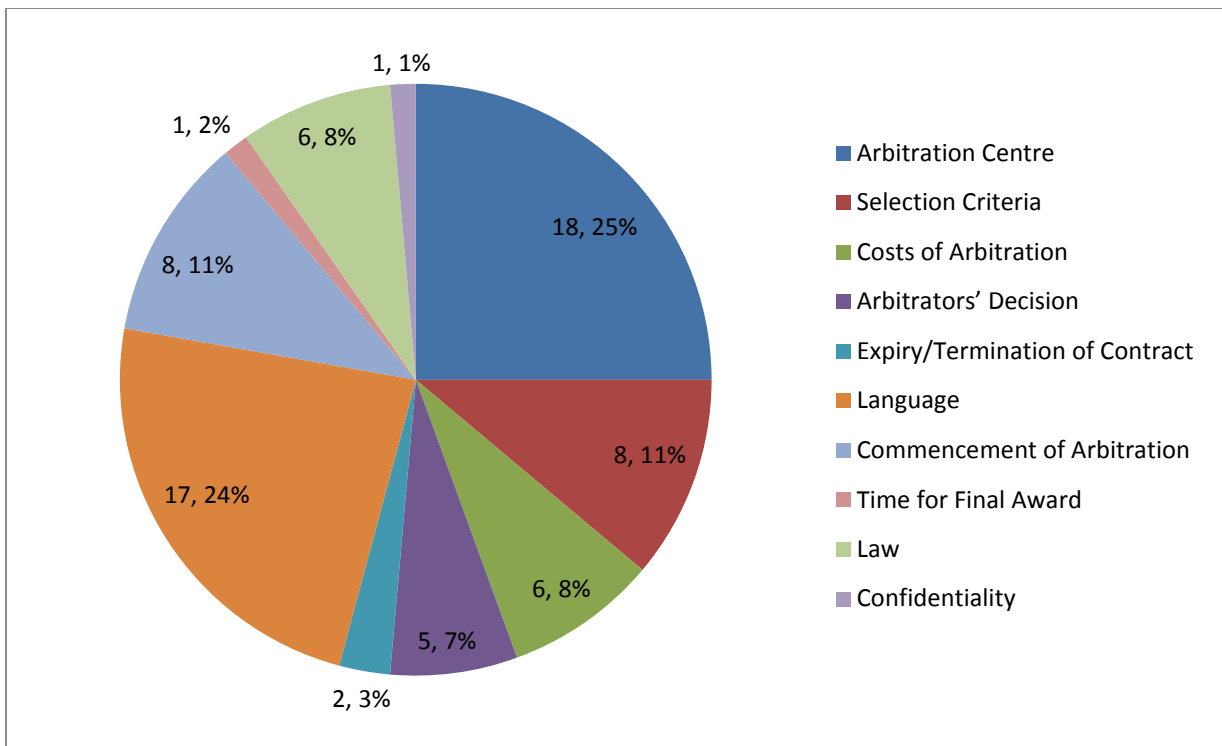


Figure 20: Arbitration



### *Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Language: This is related to adding a provision identifying the language to be used for arbitration.
  - Reason: This is addressed through Sub-Clause 20.6 (Arbitration) of the Conditions of FIDIC 99.
- Law: This is related to adding a provision identifying the law to be used for arbitration.
  - Reason: This is addressed through Sub-Clause 20.6 (Arbitration) of the Conditions of FIDIC 99.

#### 3.6.1.12 Engineer's Duties and Authority

Eight additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Required Approval(s): Identifying the matters that require the Employer or Employer's Representative's approval.
- Emergencies: Allowing the Engineer to give instructions to the Contractor in the absence of the Employer's approval whenever an emergency occurs affecting the safety of life or of the Works or of adjoining property, for which the Contractor shall forthwith comply.

- Claims/Disputes Indemnification: Indemnifying the Engineer against any liability by reason of any claim or dispute or otherwise between the Employer and the Contractor resulting from the Engineer's actions.
- Progress: Requiring the Engineer to keep the Employer updated of progress.
- Coordination Liabilities: Requiring the Engineer to facilitate coordination between contractors.
- Construction Operations Related-Matters: Waiving the Engineer's responsibility with regards to the construction means, methods, techniques, sequences or procedures, and/or for safety precautions and programmes in connection with the Works, being the sole responsibility of the Contractor.
- Communication: Specifying that all or certain communications shall be through the Engineer.
- Records: Requiring the Engineer to maintain at the Site for the Employer one or more record copies of certain Contract Documents.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "15,42%" signifies that 15 contracts out of 28 have addressed the subject matter provision representing 42% of the total identified provisions relevant to Engineer's Duties and Authority.

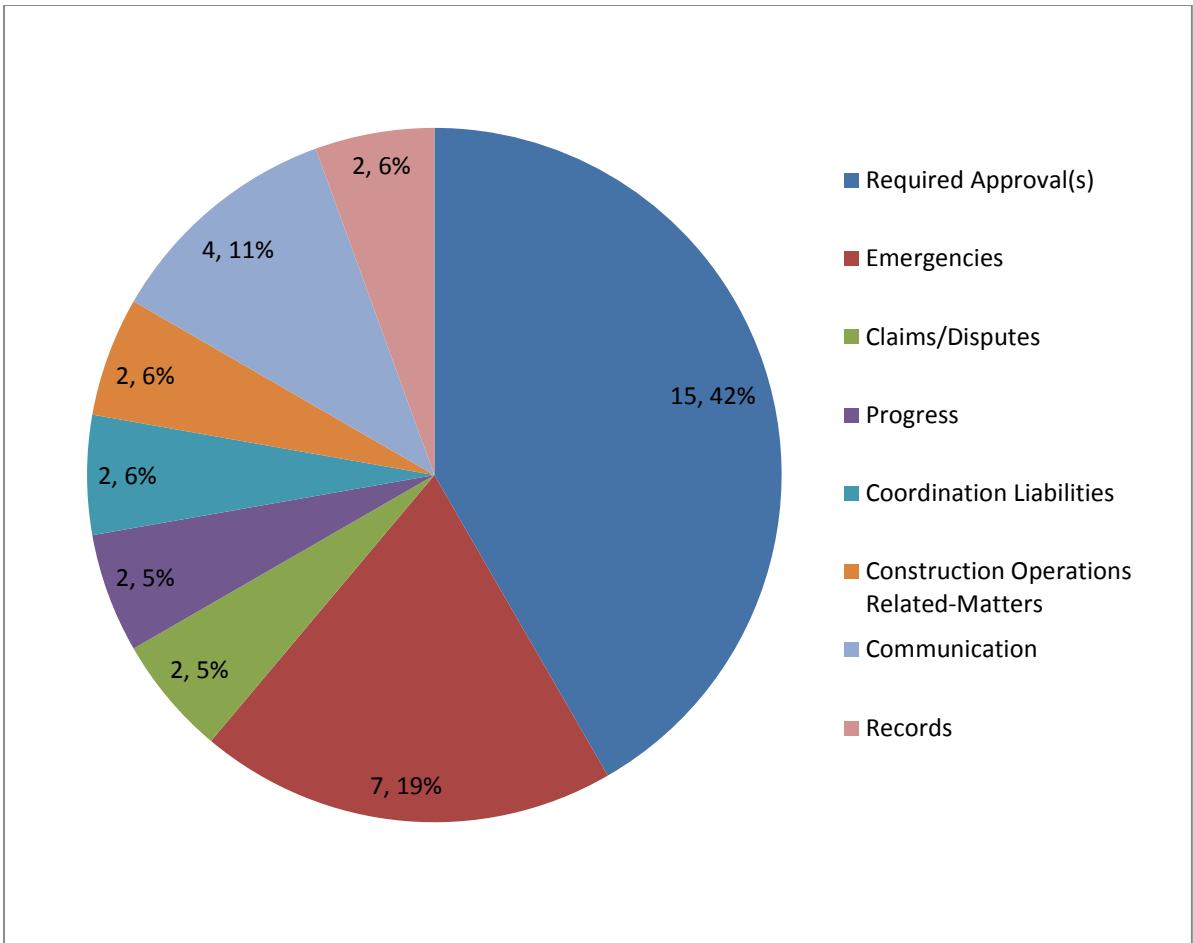


Figure 21: Engineer's Duties and Authority

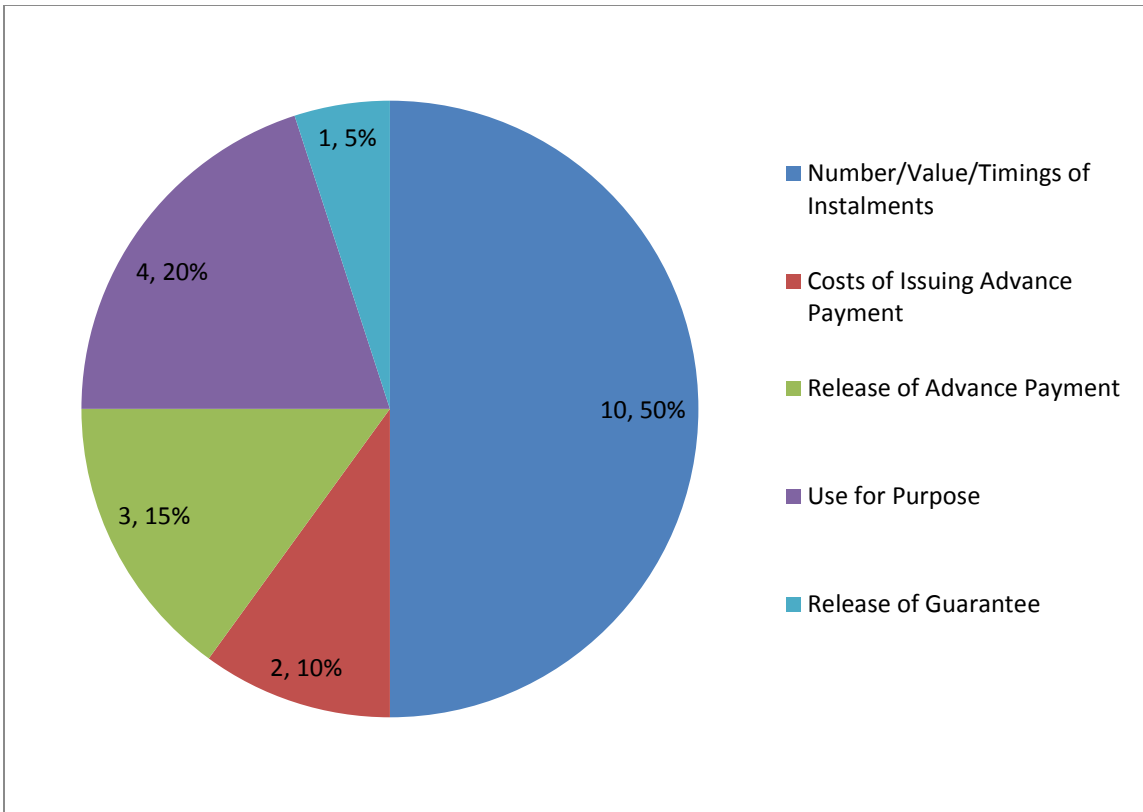
### 3.6.1.13 Advance Payment

Five additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Number/Value/Timings of Instalments: Identifying the number, value and/or timings of instalments.
- Costs of Issuing Advance Payment: Identifying the party responsible for the costs related to issuing the advance payment bond.

- Release of Advance Payment: Identifying the required actions/submissions for the release of the Advance Payment to the Contractor.
- Use for Purpose: Specifying the purpose behind issuing the Advance Payment, being mobilization, for which failure to adhere to may entitle the Employer to an immediate recovery to such amounts.
- Release of Guarantee: Entitling the Contractor to request the release of the guarantee prior to the Completion of the Works and upon full repayment of its amount.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “10,50%” signifies that 10 contracts out of 28 have addressed the subject matter provision representing 50% of the total identified provisions relevant to Advance Payment.



*Figure 22: Advance Payment*

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Release of Advance Payment: This is related to adding a provision identifying the required actions/submissions for the release of the Advance Payment to the Contractor.

- Reason: This is recommended to be considered within the conditions of construction contracts as demonstrated through the herein Literature Review.

#### 3.6.1.14 Confidential Details

Seven additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Confidential Details (Contractor): Requiring the Contractor to treat all details of the Contract as private and confidential with certain limitations.
- Confidential Details (Employer): Prohibiting the Employer from disclosing any confidential financial information related to the Contract without the prior approval of the Contractor.
- Disclosure of Information: Disallowing the Contractor from disclosing, using, reproducing or disclosing any part of the Contract Documents and/or information related to the Works without obtaining a written approval from the Employer.
- Ads/Placards: Prohibiting the Contractor from erecting advertisements and/or placards near to the Site without a prior approval from the Employer.
- Employer's Decision: Deeming the Employer's decision final whenever a dispute arises as to the necessity of any disclosure related to the Contract.
- Failure to Comply: Identifying the consequences of failing to comply with the confidentiality requirements.
- Staff: Requiring the staff of the Contractor and Subcontractor(s) to sign confidentiality agreements.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “19,44%” signifies that 19 contracts out of 28 have addressed the subject matter provision representing 44% of the total identified provisions relevant to Confidential Details.

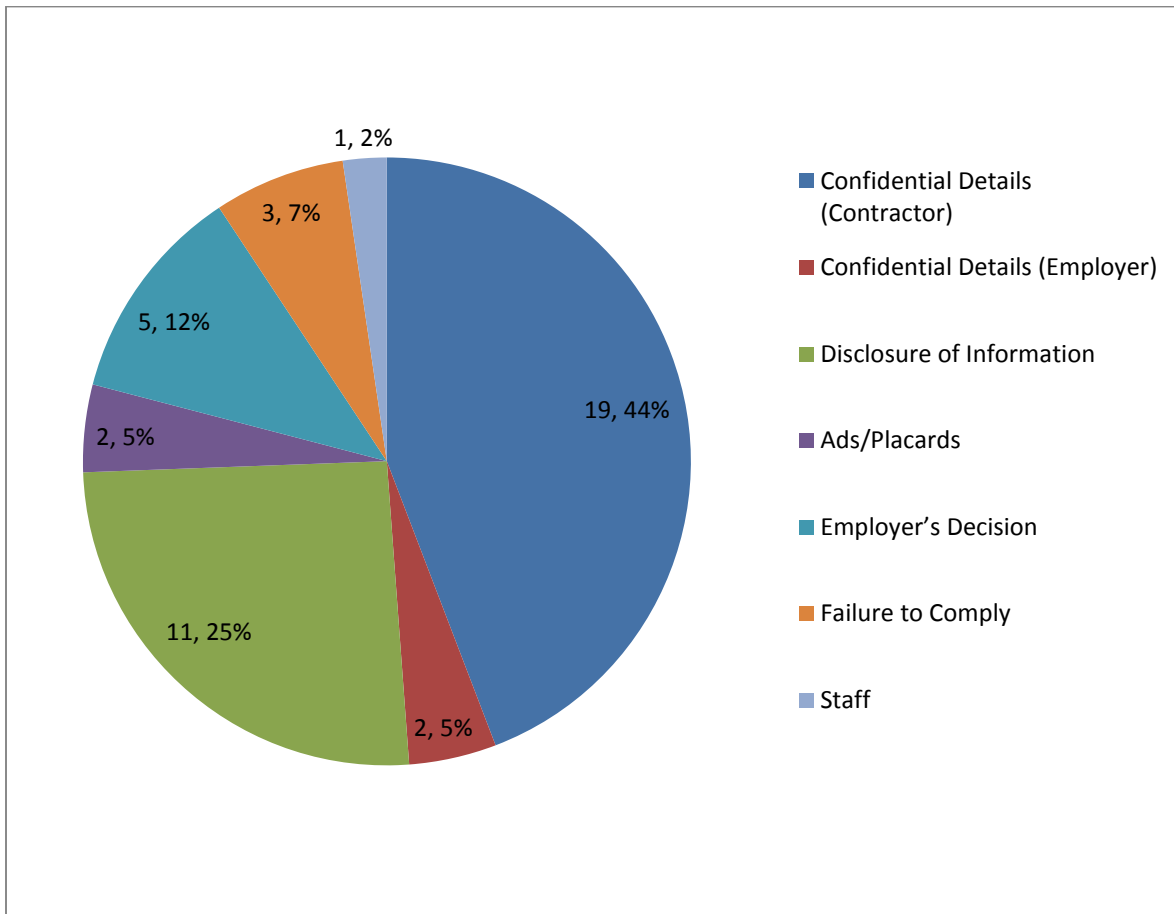


Figure 23: Confidential Details

### 3.6.1.15 Drawings

Twenty additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- **Correction of Errors/Defects:** Entitling the Employer/Engineer to correct any error or omission in any description or plan supplied by him, being a circumstance that shall not entitle the Contractor to any compensation or time unless the Contractor proves its impacts.
- **Errors/Defects Check:** Allowing the Contractor to examine and check all drawings submitted to him for errors or defects within a certain duration, after which the Contractor shall be deemed responsible for any error or defect that may be discovered at a later point of time.
- **Improvements/Modifications:** Permitting the Contractor to propose any improvements or modifications within a certain duration with the inclusion of relevant justifications, for which acceptance shall not diminish the Contractor's responsibility in anyway.
- **Requirement of Approval:** Requiring the Contractor to obtain approvals on his submissions prior to proceeding with related works.
- **Proceeding without Approval:** Identifying the consequences of the Contractor's proceeding with the Works without obtaining the required approvals on his submissions.
- **Specification's Reference:** Including a reference to a part of the Specifications where the time frames related to submissions and approvals have been detailed.



- Drawings' Production Schedule: Requiring the Contractor to submit a schedule of drawings' production for the Whole or Part(s) of the Works within certain time frames in accordance to the approved Programme of the Works.
- Requirements of Drawings/Submittals: Detailing the requirements to be fulfilled by the Contractor within his shop drawings and/or other submissions. (i.e. dimensions, positions, measurement system, etc.)
- Submittals' Procedures: Detailing the procedures related to submissions.
- Issuing Costs: Identifying the party responsible for the costs related to issuing drawings and/or other submissions.
- Required Drawings by Employer: Listing and explaining the drawings required to be submitted by the Employer to the Contractor.
- Submission of As-Built Drawings and Others: Requiring the Contractor to submit As-Built Drawings, operation and maintenance manuals and/or others.
- Failure to submit As-Built Drawings and Others: Identifying the consequences of the Contractor's failure to submit As-Built Drawings, operation and maintenance manuals and/or others.
- Coordination: Requiring the Contractor to implement coordination between different trades within his shop drawings and/or other submissions.
- Responsibility of Errors/Defects: Deeming the Contractor responsible for any errors, defects and the like within his submissions, for which impacts shall be borne by the Contractor.
- Coordination Personnel: Requiring the Contractor to hire coordination personnel, whose duties were detailed.

- **Costs of Re-submissions:** Deeming the Contractor responsible for any costs that may be incurred due to re-submissions of shop drawings and/or other documents resulting from errors or defects therein.
- **Status/Level of Detail of Design:** Stating the status and level of detail by which the design Works have reached.
- **Acceptance of Shop Drawings and Others:** Entailing that the acceptance or approval of the contents of shop drawings and/or other submittals shall not constitute an authorization for any increase in the Contract Price or Time for Completion.
- **Changes' Records:** Requiring the Contractor to keep records of all changes made to drawings and other submittals during the course of the project.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “5,10%” signifies that 5 contracts out of 28 have addressed the subject matter provision representing 10% of the total identified provisions relevant to Drawings.

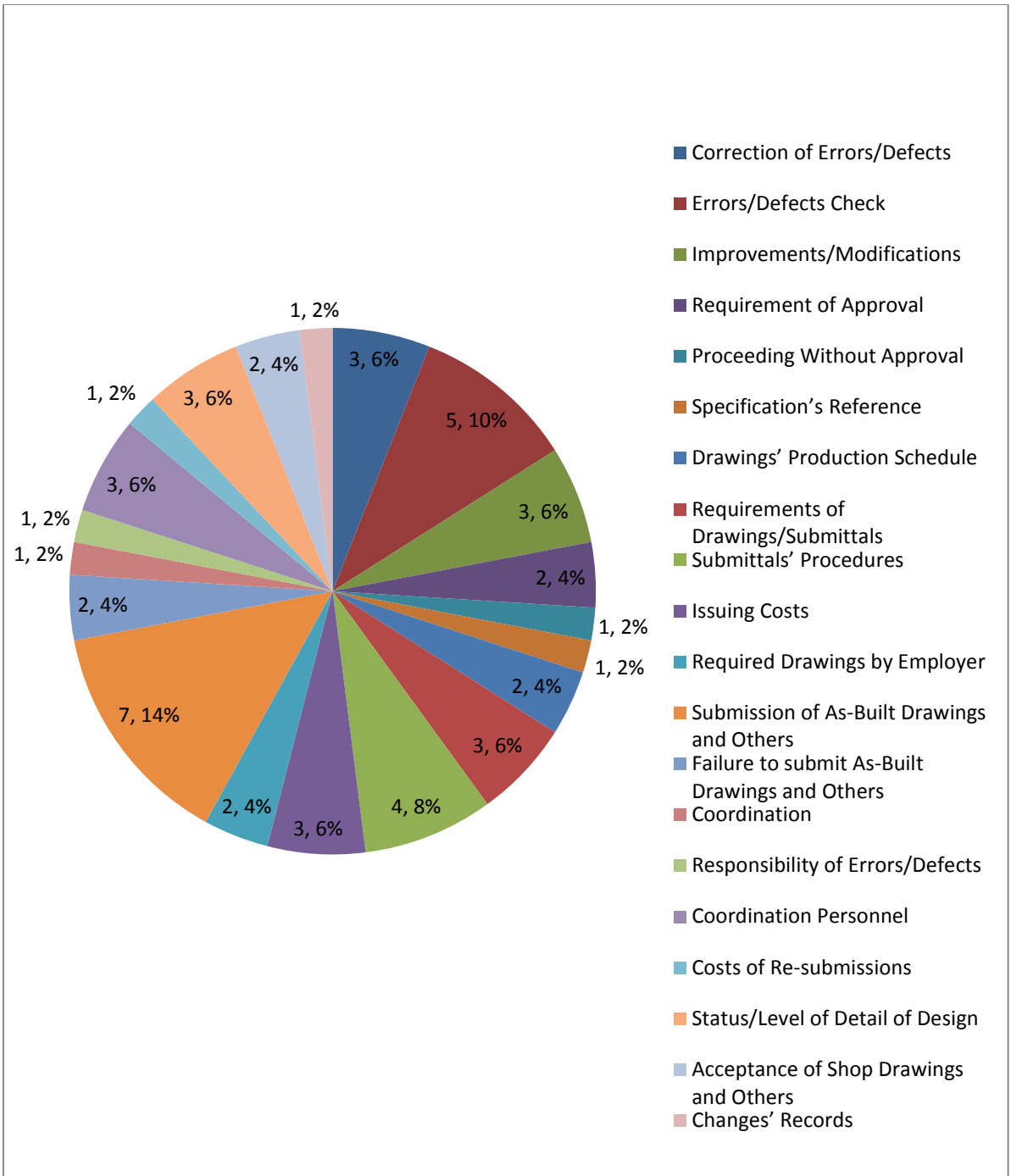


Figure 24: Drawings

### *Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- **Acceptance of Shop Drawings and Others:** This is related to adding a provision entailing that the acceptance or approval of the contents of shop drawings and/or other submittals shall not constitute an authorization for any increase in the Contract Price or Time for Completion.
  - **Reason:** This is addressed through Sub-Clause 3.1 (Engineer’s Duties and Authority) of the Conditions of FIDIC 99, which has stated “any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances.”
- **Errors/Defects Check:** This is related to adding a provision allowing the Contractor to examine and check all drawings submitted to him for errors or defects within a certain duration, after which the Contractor shall be deemed responsible for any error or defect that may be discovered at a later point of time.
  - **Reason:** This is addressed elsewhere through the herein analyzed provisions related to “Contractor’s General Obligations”
- **Submittals’ Procedures:** This is related to adding a provision detailing the procedures related to submissions.

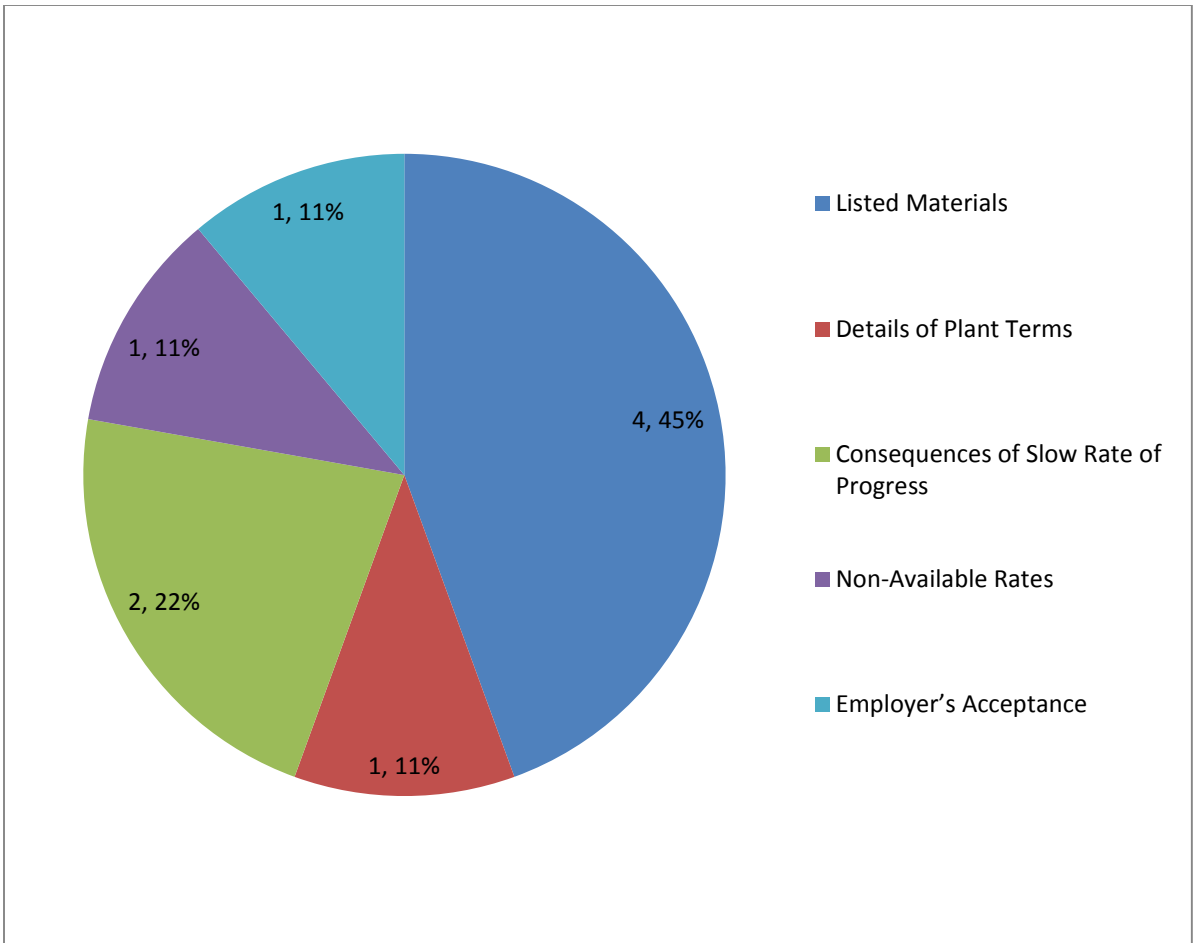
- Reason: This is addressed elsewhere through the herein analyzed provisions related to “Contractor’s General Obligations”
- Coordination: This is related to adding a provision requiring the Contractor to implement coordination between different trades within his shop drawings and/or other submissions.
  - Reason: This is addressed elsewhere through the herein analyzed provisions related to “Contractor’s General Obligations”
- Requirement of Approval: This is related to adding a provision requiring the Contractor to obtain approvals on his submissions prior to proceeding with related works.
  - Reason: This is recommended to be considered within the conditions of construction contracts as demonstrated through the herein Literature Review.
- Proceeding without Approval: This is related to adding a provision identifying the consequences of the Contractor’s proceeding with the Works without obtaining the required approvals on his submissions.
  - Reason: This is recommended to be considered within the conditions of construction contracts as demonstrated through the herein Literature Review. Therefore, there is no need to verify its importance.

#### 3.6.1.16 Payment Certificates

Five additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Listed Materials: Identifying the nature and/or conditions of the listed materials that would entitle the Contractor for payment upon delivery.
- Details of Plant Terms: Detailing the information that are required to be included within the interim certificates in relation to the Plant.
- Consequences of Slow Rate of Progress: Identifying the consequences of experiencing slow rate of progress in relation to the certification of the amounts stated within the monthly statements.
- Non-Available Rates: Detailing the actions to be followed whenever certain rates related to the executed Works are not available within the Contract Documents.
- Employer's Acceptance: Confirming that the inclusion of any work or materials delivered to the Site within the statements does not constitute the Employer's acceptance nor does it affect his rights under the Contract.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "4,45%" signifies that 4 contracts out of 28 have addressed the subject matter provision representing 45% of the total identified provisions relevant to Payment Certificates.



*Figure 25: Payment Certificates*

### 3.6.1.17 Adjustments for Changes in Cost

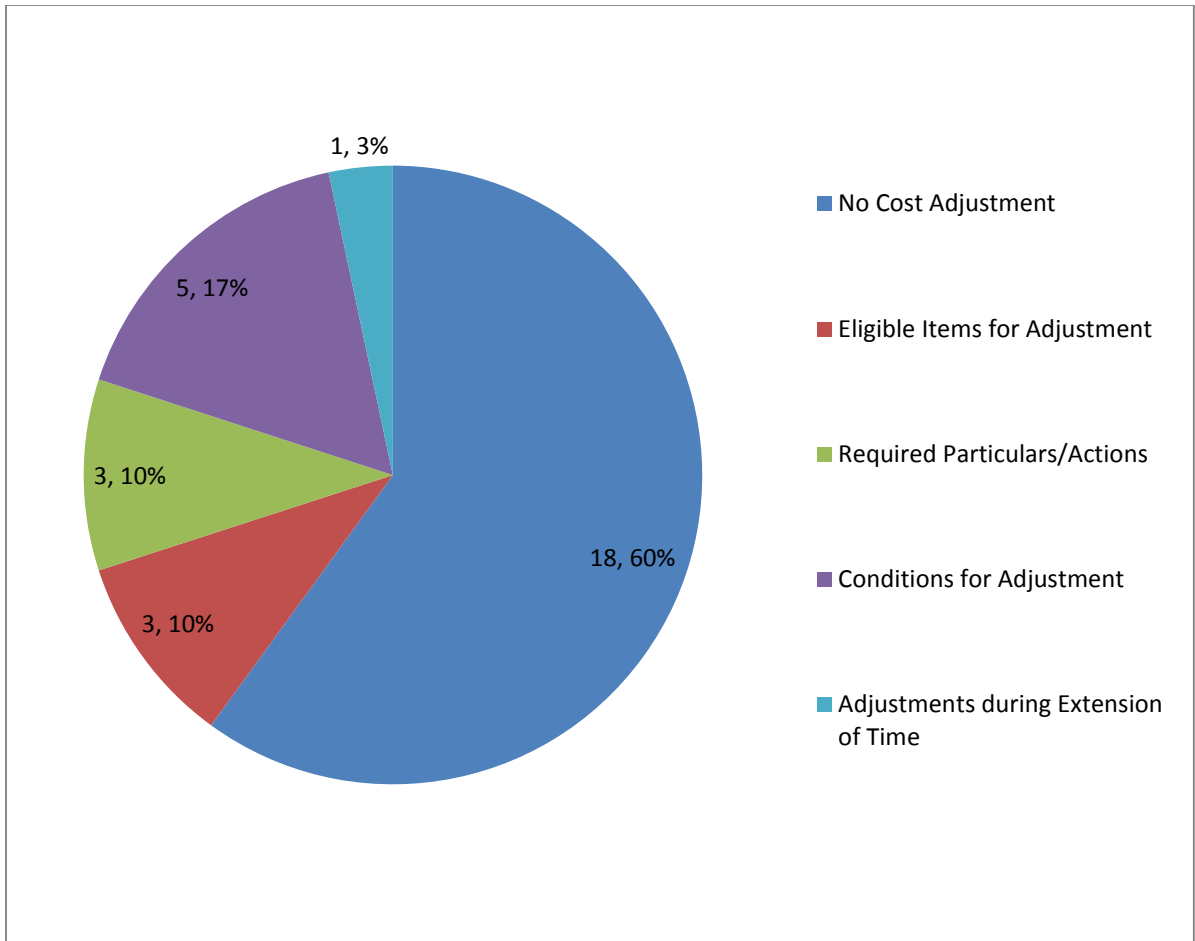
Five additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- No Cost Adjustment: Disallowing any change to the Contract Price due to rise or fall of labor, goods, and/or others.
- Eligible Items for Adjustment: Identifying the materials for which cost may be adjusted in a certain criteria that is stated.

- Required Particulars/Actions: Specifying the particulars required and/or actions to be taken in order to determine any adjustment to cost, deeming this a condition precedent to any adjustment.
- Conditions for Adjustment: Stating the condition(s) for any cost adjustments to take place.
- Adjustments during Extension of Time: Addressing cost adjustments during a period that was awarded an extension of Time for Completion.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “18,60%” signifies that 18 contracts out of 28 have addressed the subject matter provision representing 60% of the total identified provisions relevant to Adjustments for Changes in Cost.





*Figure 26: Adjustments for changes in cost*

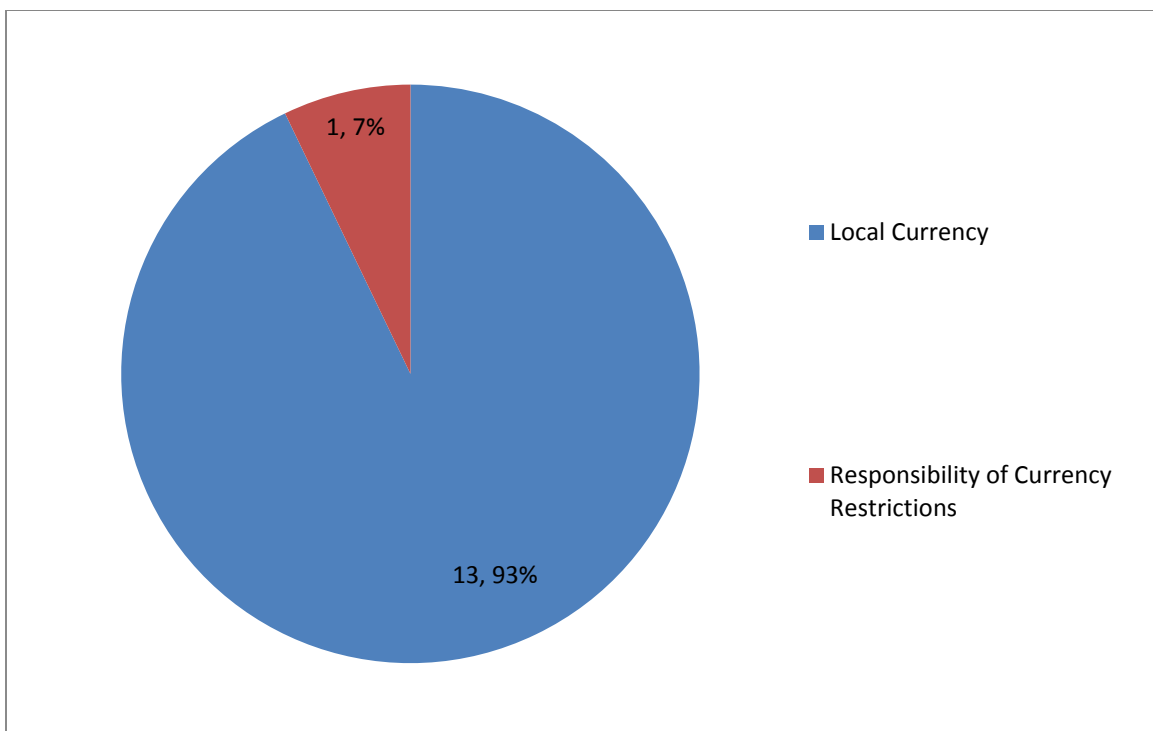
### 3.6.1.18 Currencies of Payment

Two additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Local Currency: Specifying the currency of payment as the local currency.
- Responsibility of Currency Restrictions: Stating that the Contract Price is inclusive of all costs that may be incurred in the event that currency restrictions take place

and deeming the Contractor responsible for any related losses or damages that may arise.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “13,93%” signifies that 13 contracts out of 28 have addressed the subject matter provision representing 93% of the total identified provisions relevant to Currencies of Payment.



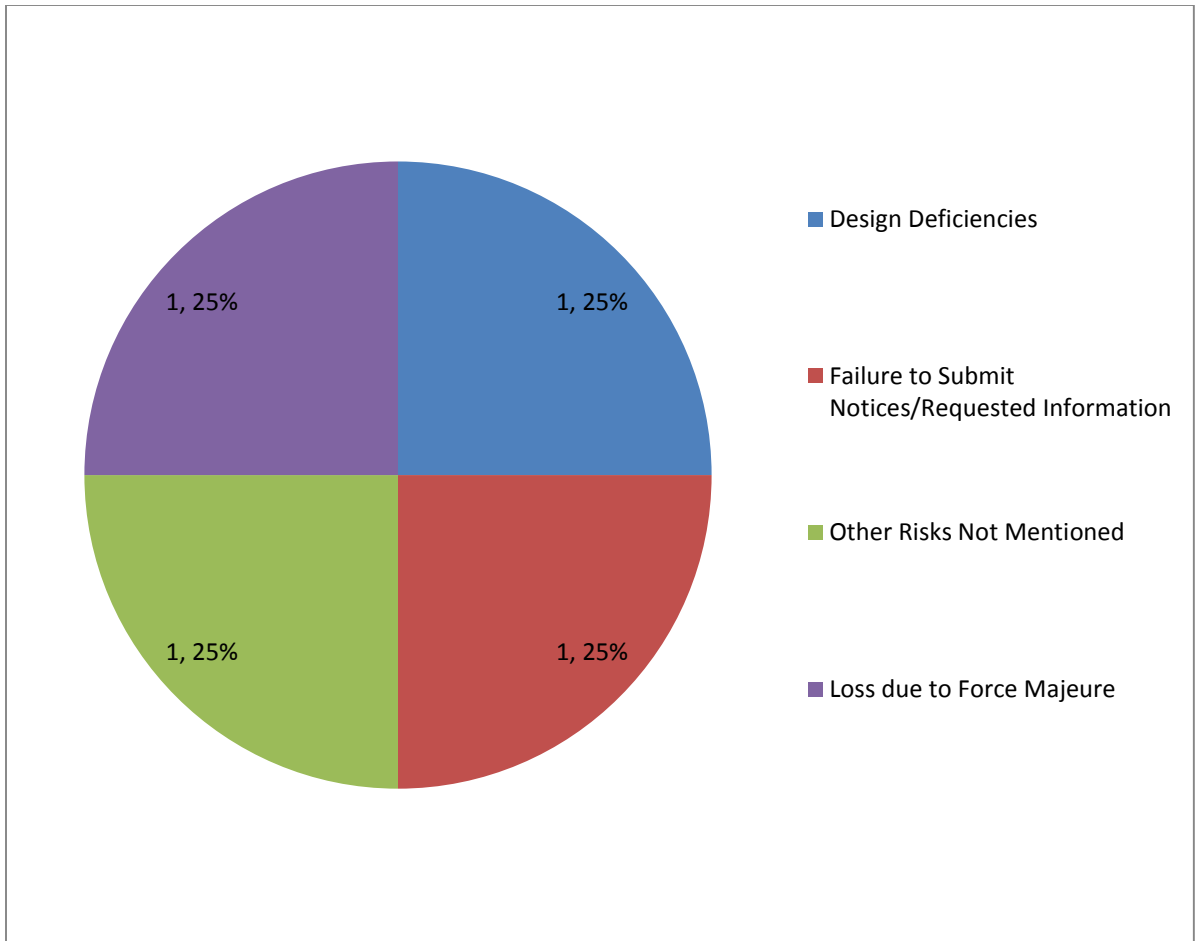
*Figure 27: Currencies of payment*

#### 3.6.1.19 Risks/Force Majeure

Four additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Design Deficiencies: Deeming the Contractor responsible for deficiencies within design with certain limitations.
- Failure to Submit Notices/Requested Information: Identifying the consequences of the Contractor's failure to submit notices after the time by which a Force Majeure event has ceased to have effects and/or failure to submit evidence of the efforts made to prevent or minimize such effects.
- Other Risks Not Mentioned: Deeming the Contractor responsible for any risk that was not mentioned as an Employer's risk.
- Loss due to Force Majeure: Specifying that each party shall not be entitled to claim any loss from the other due to a default arising from Force Majeure events.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "1,25%" signifies that 1 contracts out of 28 have addressed the subject matter provision representing 25% of the total identified provisions relevant to Risks / Force Majeure.



*Figure 28: Risks and Force Majeure*

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Other Risks Not Mentioned: This is related to adding a provision deeming the Contractor responsible for any risk that was not mentioned as an Employer's risk.
  - Reason: Sub-Clause 17.3 (Employer's Risks) of the Conditions of FIDIC 99 has identified the Employer's Risks; accordingly, any other risks that are

not mentioned within the said Sub-Clause are deemed to be lying within the Contractor's responsibility.

#### 3.6.1.20 Subcontractors

Thirteen additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Requested Information Prior to Appointment: Requiring the Contractor to submit certain information related to the proposed Subcontractors prior to their appointment within certain times.
- Failure to Obtain Approval: Identifying the consequences of failing to obtain the Engineer's approval related to Subcontractors.
- Right to Remove Subcontractors: Entitling the Engineer to remove incompetent Subcontractors and/or related personnel from Site, after the submission of relevant notices to the Contractor.
- EOT Resulting due to Removal: Entailing that the Contractor shall not be entitled to extension of time resulting from the dismissal or removal of Subcontractor from the Site by the Engineer.
- Interim Required Information: Requiring the Contractor to submit certain information related to Subcontractors on interim basis.
- Failure to Comply with Assignment Agreements: Identifying the consequences of assigning the Whole or part of the Contract Works to Subcontractors contravening the relevant conditions agreed through the Contract.
- Compliance by Law: Requiring the Contractor to comply with the relevant law of the Country.

- Engineer/Employer and Subcontractor Contractual Relationship: Specifying that the Employer and the Engineer shall not be deemed as a party related to any subcontract, for subcontractors may not raise any claims against the Employer, being a condition that shall be included within each subcontract.
- EOT Resulting from Engineer's Actions: Entailing that the Contractor shall not be entitled to extension of time resulting from the Engineer's actions under this Sub-Clause.
- Amendment of Subcontract Conditions: Entitling the Engineer to amend the conditions of subcontracts.
- Proposed Sub-Contractors' Requirements: Detailing the minimum requirements to be fulfilled in relation to the proposed Subcontractors.
- EOT Resulting due to Absence of Approval: Entailing that the Contractor shall not be entitled to extension of time resulting from the Contractor's failure to obtain approvals related to Subcontractors.
- Contractor and Subcontractors' Relationship: Prohibiting any subsidiary or related corporation to the Contractor to engage directly or indirectly in the Works without the prior consent of the Engineer.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "9,18%" signifies that 9 contracts out of 28 have addressed the subject matter provision representing 18% of the total identified provisions relevant to Subcontractors.

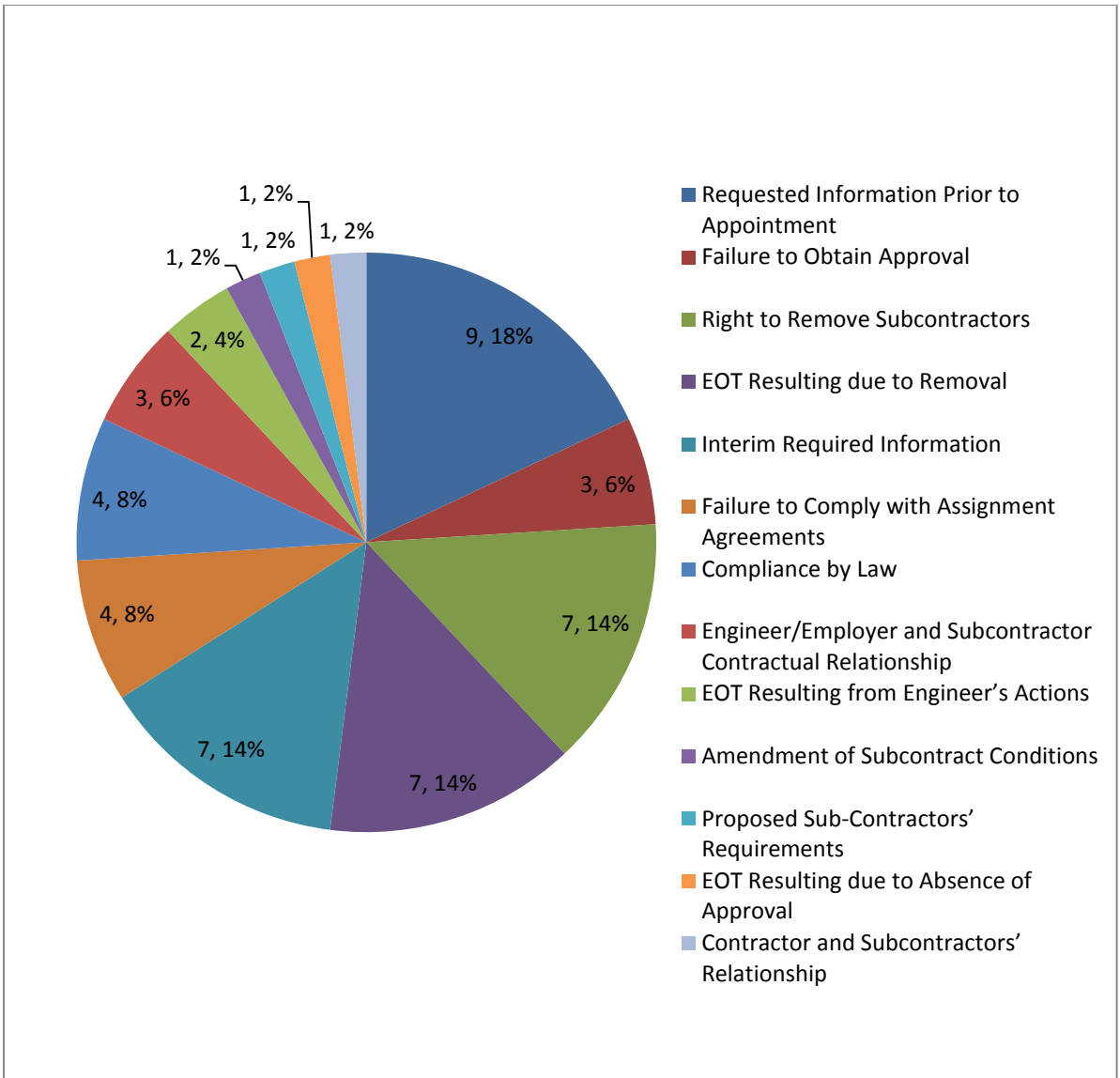


Figure 29: Subcontractors

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Compliance by Law: This is related to adding a provision requiring the Contractor to comply with the relevant law of the Country.
  - Reason: This is generally addressed through Sub-Clause 1.13 (Compliance with Laws) of the Conditions of FIDIC 99.

#### 3.6.1.21 Taking Over

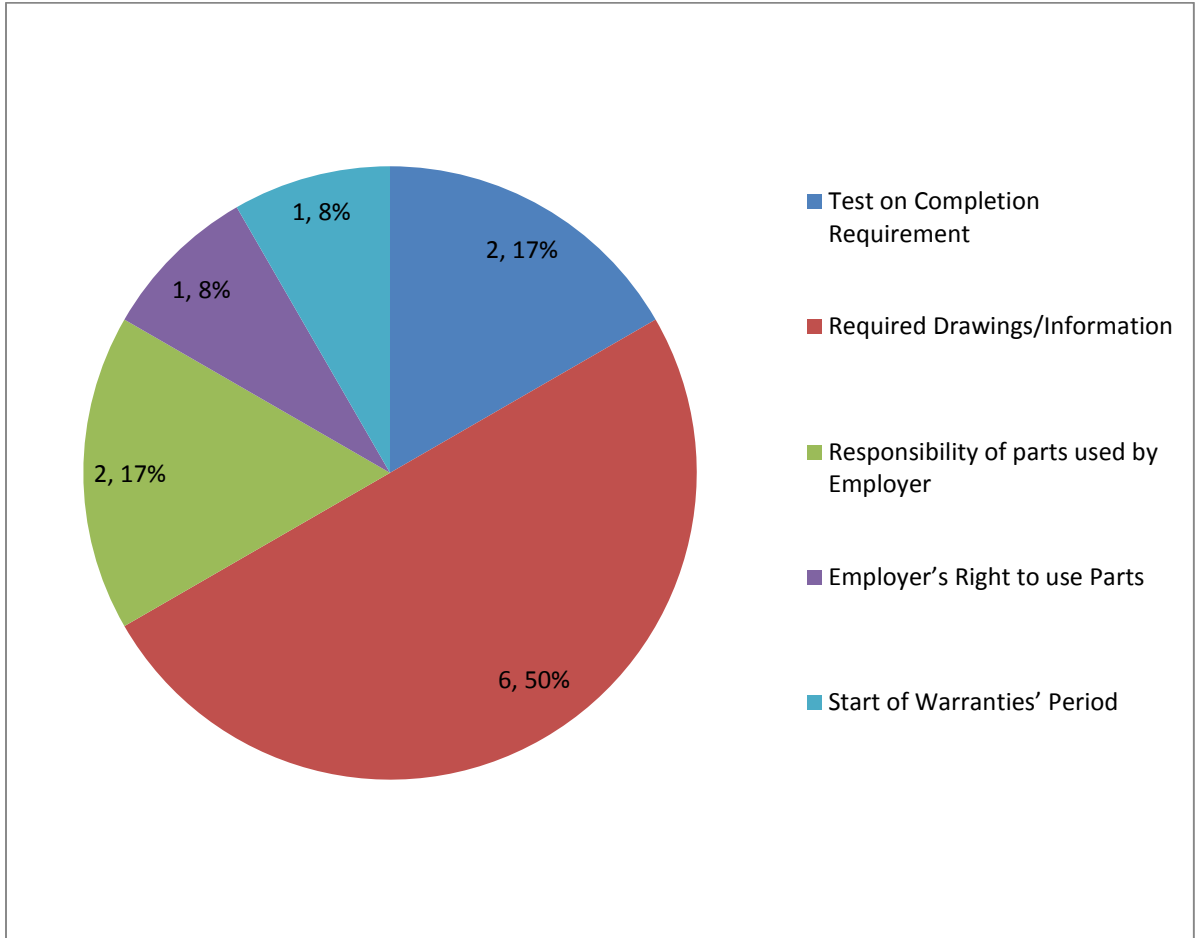
Five additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Test on Completion Requirement: Deeming the completion of Tests on Completion as a condition precedent to issuance of the Taking-Over Certificate.
- Required Drawings/Information: Deeming the submission of As-Built Drawings, Operations and Maintenance Manuals and/or others as condition precedent to issuance of the Taking Over Certificate.
- Responsibility of parts used by Employer: Deeming the Contractor responsible for the care of the parts of the Works that may be used by the Employer prior to Taking Over.
- Employer's Right to use Parts: Entitling the Employer to use any part of the Works without deeming this part as handed-over.
- Start of Warranties' Period: Specifying that the period of warranties related to any part of the Works shall not commence by the Taking Over of that part but by the Taking Over of the Whole of the Works.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "6,50%" signifies



that 6 contracts out of 28 have addressed the subject matter provision representing 50% of the total identified provisions relevant to Taking Over.



*Figure 30: Taking Over*

### 3.6.1.22 Delay Damages

Six additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Re-Fund of Delay Damages: Entitling the Contractor to receive a re-fund of any payments received due to its failure to comply with Intermediate Milestone Dates in case it recovers such delays prior to the overall Time for Completion.
- Additional Costs: Imposing additional costs to be paid by the Contractor in case it fails to comply by the Time for Completion related to the Employer and Engineer's representatives fees.
- Actual Damage: Specifying that delay damages shall be applied irrespective of any damage occurred upon the Employer.
- Formalities of Application: Specifying that the application of delay damages may take place irrespective of any formalities including but not limited to legal proceedings.
- Times of Application: Identifying the times or circumstances by which payments of delay damages shall be made.
- Grace Period: This is related to adding of a grace period prior to the application of delay damages.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "5,31%" signifies that 5 contracts out of 28 have addressed the subject matter provision representing 31% of the total identified provisions relevant to Delay Damages.

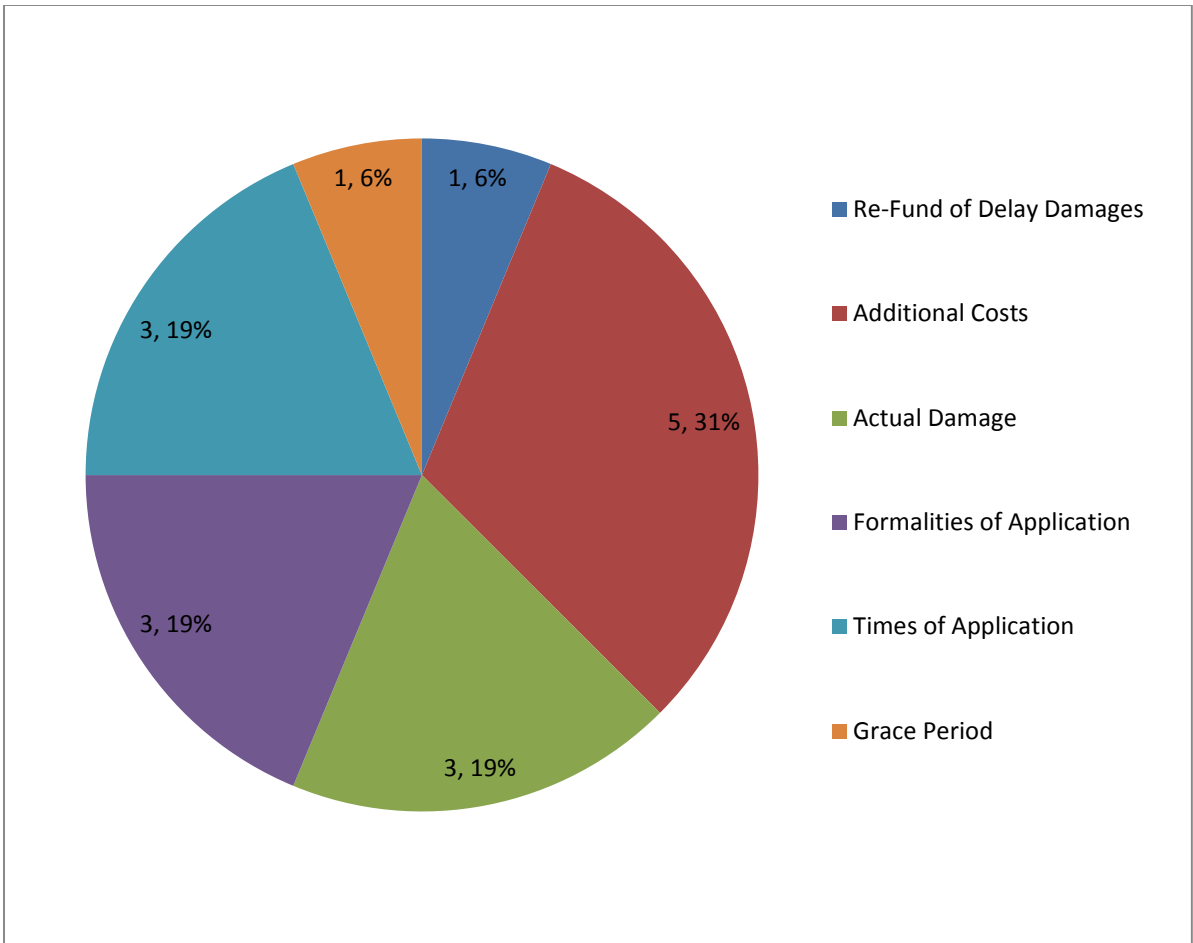


Figure 31: Delay Damages

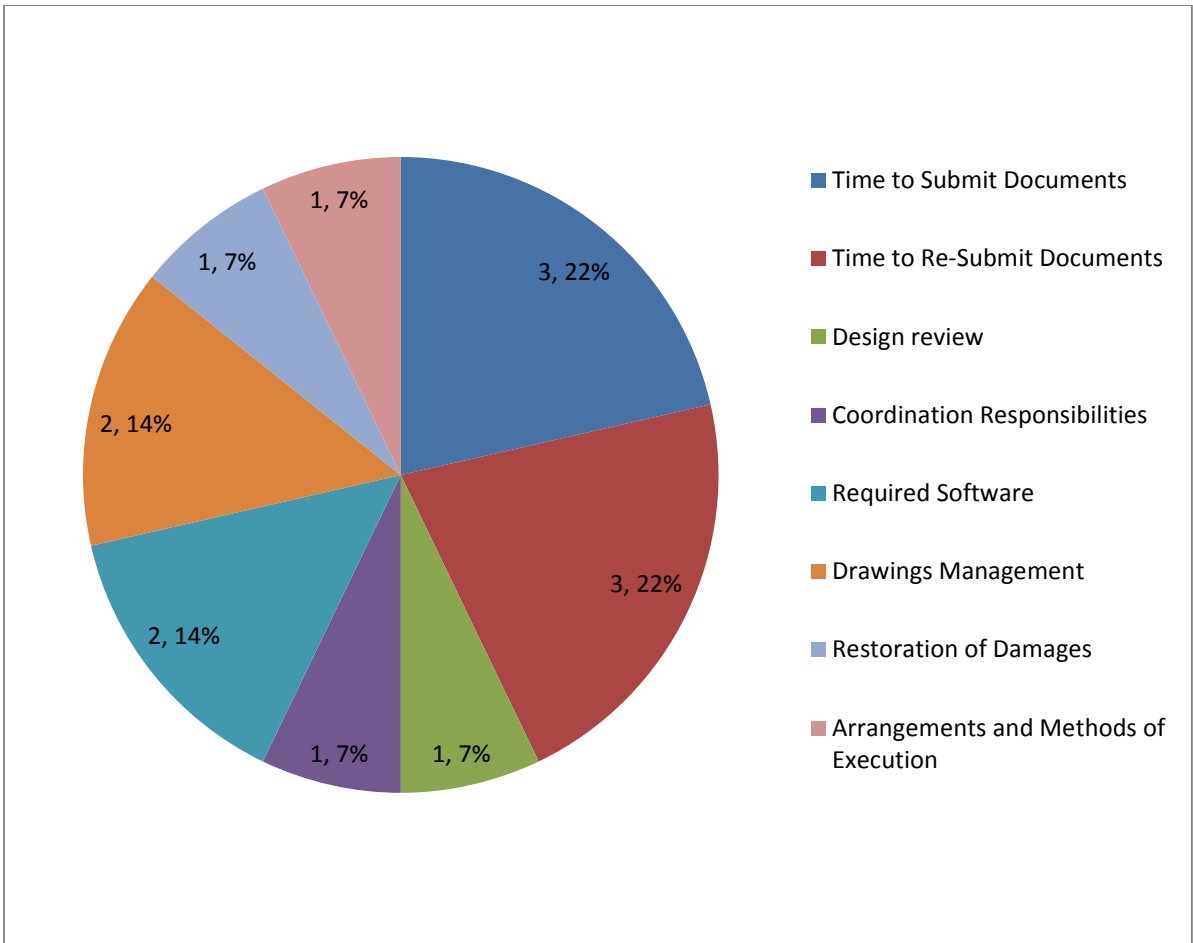
### 3.6.1.23 Contractor’s General Obligations

Eight additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Time to Submit Documents: Requiring the Contractor to provide its submittals under the Contract to the Engineer within a certain time duration prior to the start date of the relevant activities on site.

- Time to Re-Submit Documents: Identifying a time frame within which the Contractor is required to re-submit any rejected submittal.
- Design review: Requiring the Contractor to review the design of the Works and inform the Engineer in case of technical errors.
- Coordination Responsibilities: Addressing the Contractor's coordination responsibilities and deeming it responsible for any unfinished or incomplete part of the Works
- Required Software: Identifying the software and relevant versions to be used for the preparation of drawings, documents and others.
- Drawings Management: Requiring the Contractor to follow a certain criteria managing the number of drawings being produced under the Contract.
- Restoration of Damages: Identifying a certain time frame within which the Contractor is obliged to restore any damages part of the Works upon receipt of the Engineer's instructions in this regard.
- Arrangements and Methods of Execution: Specifying a certain time frame prior to the execution of each stage of the Works within which the Contractor is obliged to submit relevant details of the arrangements and methods of the execution of such a stage.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "3,2%" signifies that 3 contracts out of 28 have addressed the subject matter provision representing 22% of the total identified provisions relevant to Contractor's General Obligations.



*Figure 32: Contractor's General Obligations*

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Drawings Management: This is related to adding a provision requiring the Contractor to follow a certain criteria managing the number of drawings being produced under the Contract.

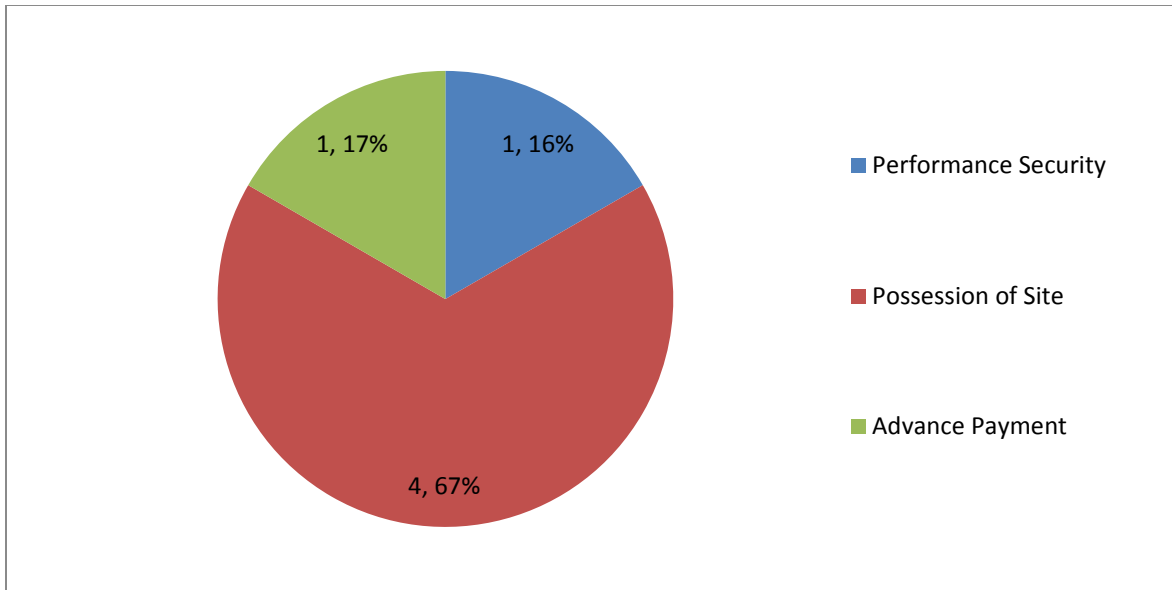
- Reason: This is addressed elsewhere through the herein analyzed provisions related to “Drawings”

#### 3.6.1.24 Commencement Date

Three additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Performance Security: Deeming the submission of the Performance Security as a condition precedent to the Commencement of the Works.
- Possession of Site: Deeming possession of Site by the Contractor as a condition precedent to the Commencement of the Works.
- Advance Payment: Deeming the receipt of the Advance Payment by the Contractor as a condition precedent to the Commencement of the Works.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “4,67%” signifies that 4 contracts out of 28 have addressed the subject matter provision representing 67% of the total identified provisions relevant to Commencement Date.



*Figure 33: Commencement Date*

### 3.6.1.25 Contractor's Representative, Superintendence and Personnel

Eight additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- **Prior-Approval to Delegation:** Requiring the Contractor to obtain the Engineer's consent prior to delegating any of its powers, functions and/or authority to a competent person.
- **Consequences of Absence or Non-Appointment:** Identifying the consequences of the Contractor's Representative absence and/or non-appointment onsite.
- **Time for Replacement:** Requiring the Contractor to replace certain persons within a certain time frame.

- Failure to Replace: Identifying the consequences of the Contractor's failure to appoint/replace certain persons within a certain time frame.
- Syndicate Engineer Requirement: Requiring the Contractor to appoint a syndicate engineer relevant to the field of Works as Contractor's Representative.
- Self-Appointment: Prohibiting the Contractor to appoint itself as a Contractor's Representative.
- Required Personnel: Requiring the Contractor to provide certain personnel with certain experience.
- Foreign Staff and Labor: Addressing the requirements to be fulfilled in relation to any appointed foreign staff and labor in relation to visas, work permits, travel arrangements, etc.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "5,26%" signifies that 5 contracts out of 28 have addressed the subject matter provision representing 26% of the total identified provisions relevant to Contractor's representative, superintendence and personnel.



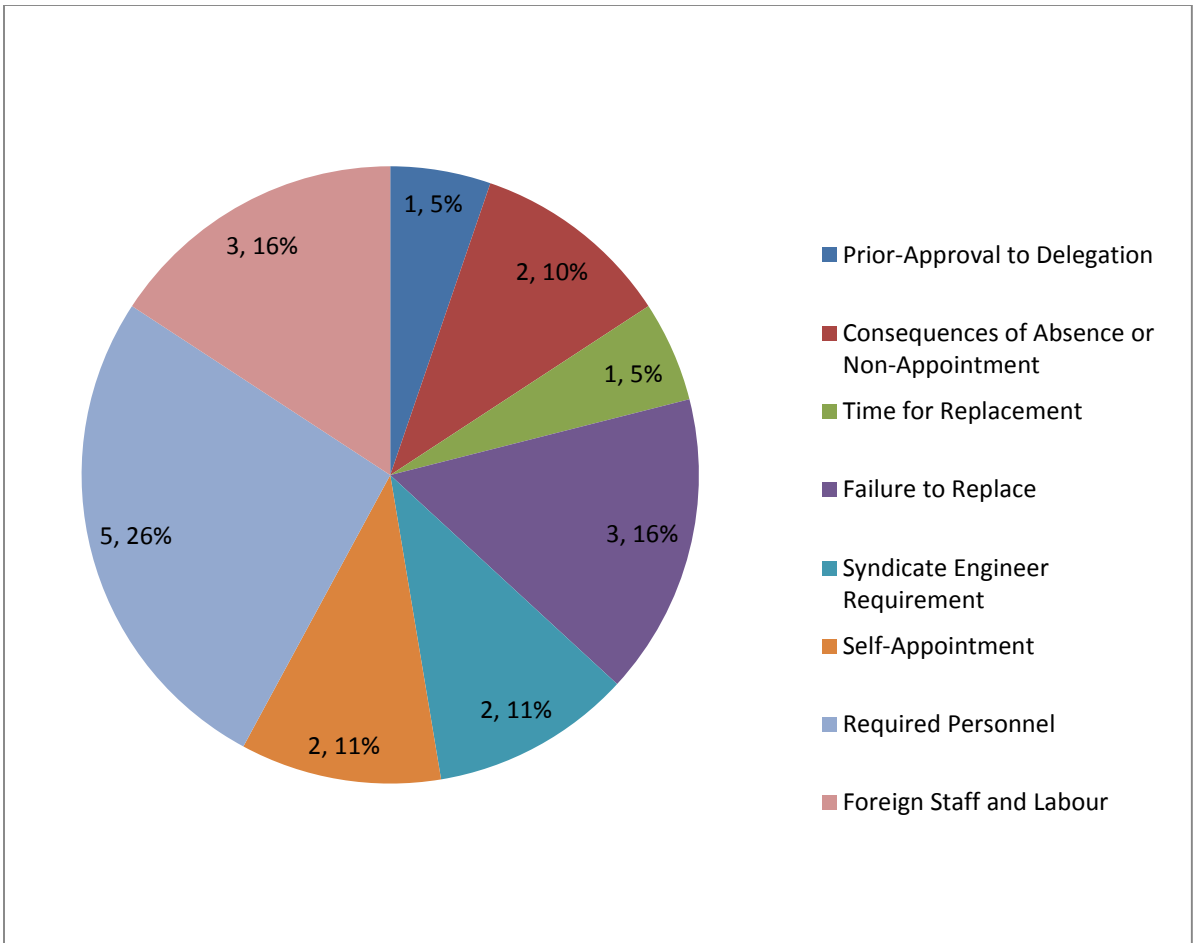


Figure 34: Contractor's representative, superintendence and personnel

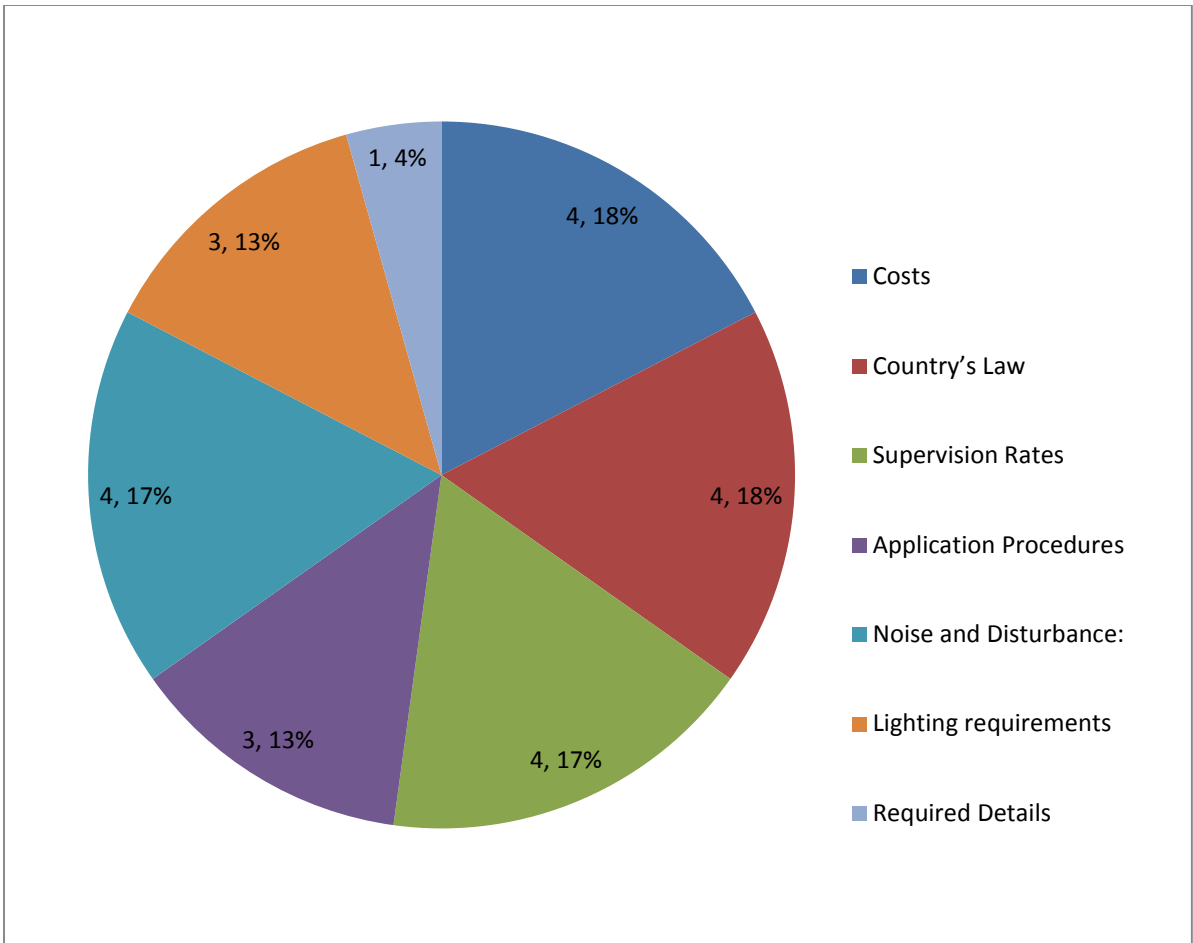
### 3.6.1.26 Working Hours

Seven additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Costs: Entailing that any work that would be carried out outside the Working Hours would be on the own cost of the Contractor.
- Country's Law: Requiring the Contractor to comply with the relevant requirements of the Country's Law.

- **Supervision Rates:** Specifying the rates of working hours related to the Employer and Employer’s Representative which shall be used to calculate the costs to be incurred by the Contractor should it require their supervision outside the Working Hours.
- **Application Procedures:** Stipulating the procedures related to the Contractor’s application to execute Works outside the Working Hours.
- **Noise and Disturbance:** Requiring the Contractor to avoid noise and/or disturbance in case of having granted a permission to work at night.
- **Lighting requirements:** Requiring the Contractor to maintain adequate lighting in case of executing Works outside the Working Hours.
- **Required Details:** Requiring the Contractor to submit details of the personnel and equipment to be used within any application for executing Works outside the Working Hours.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “4,18%” signifies that 4 contracts out of 28 have addressed the subject matter provision representing 18% of the total identified provisions relevant to Working Hours.



*Figure 35: Working hours*

*Disregarded Provision(s) from Survey*

The following provision(s) have been disregarded from the analysis for the relevant below-stated reason(s).

- Country's Law: This is related to adding a provision requiring the Contractor to comply with the relevant requirements of the Country's Law.
  - Reason: This is generally addressed through Sub-Clause 1.13 (Compliance with Laws) of the Conditions of FIDIC 99.

### 3.6.1.27 Termination by Employer

Seven additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Liquidation of Performance Security: Specifying the Employer's entitlement to liquidate the Performance Security in order to recover any amounts due to the Employer resulting from termination due to a Contractor's Default.
- Legal Actions: Entitling the Employer to terminate the Contract without resorting to courts and/or any legal notices or judicial actions.
- Co-operation upon Termination: Requiring the Contractor to fully co-operate with third parties or other contractors appointed in relation to the Works upon the termination of the Contract.
- Failure to Co-operate: Identifying the consequences of the Contractor's failure to co-operate with third parties or other contractors appointed in relation to the Works upon the termination of the Contract.
- Payment to Subcontractors: Entitling the Employer, at its sole discretion and without any obligation to do so, pay Subcontractors amounts payable in accordance with their subcontracts, upon termination of the Contract due to a Contractor's Default.
- Delay Damages Cap: Entitling the Employer to terminate the Contractor in case of reaching the cap of liquidated damages due to delays.
- Insurances: Entitling the Employer to terminate the Contractor in case of the Contractor's failure to obtain the insurances required by the Contract.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as “4,37%” signifies that 4 contracts out of 28 have addressed the subject matter provision representing 37% of the total identified provisions relevant to Termination by Employer.

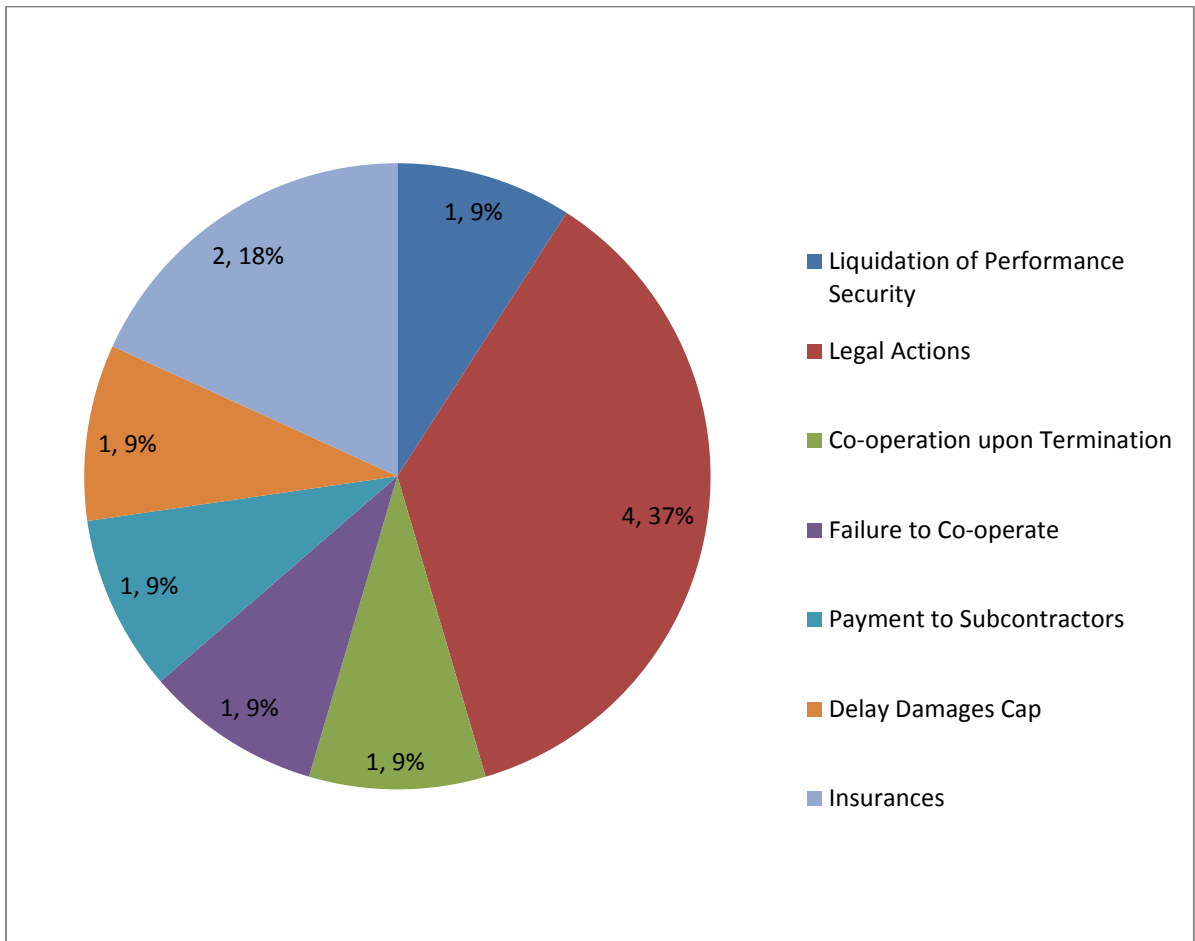


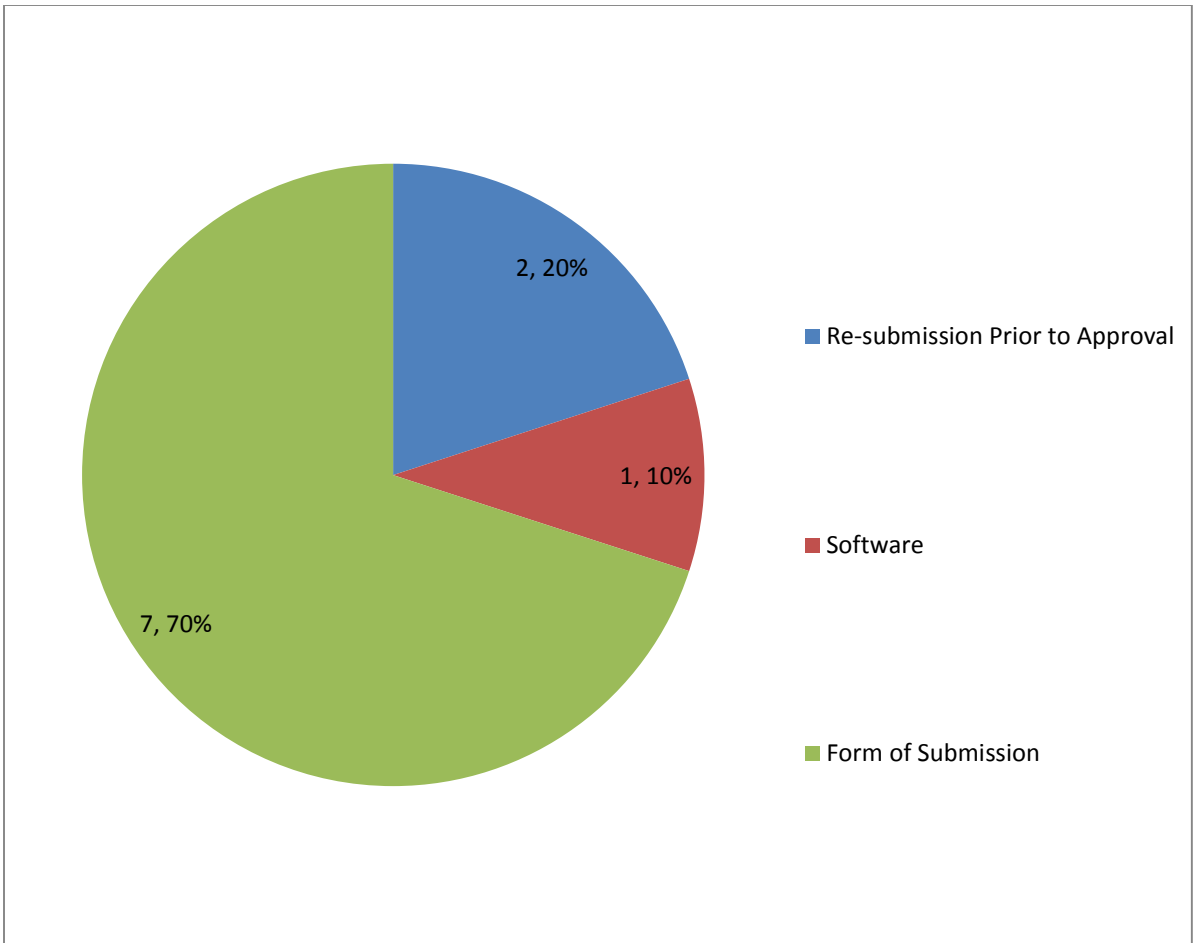
Figure 36: Termination by Employer

### 3.6.1.28 Cash Flow

Three additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Re-submission Prior to Approval: Entailing that any required resubmission prior to obtaining the Engineer's approval shall be made within a certain time frame from a written notice by the Engineer.
- Software: Identifying the software to be used for producing cash flows.
- Form of Submission: Requiring the Contractor to submit cash flows in a form acceptable by the Engineer or in a certain form.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "7,70%" signifies that 7 contracts out of 28 have addressed the subject matter provision representing 70% of the total identified provisions relevant to Cash Flow.



*Figure 37: Cash flow*

### 3.6.1.29 Plant, Materials, Equipment and Temporary Works

Thirteen additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Ownership of Equipment and/or Temporary Works: Deeming the ownership of the Contractor's Equipment to be the Employer's upon their arrival to the Site and until receipt of the Taking Over Certificate of the Works by the Contractor or becoming

entitled to remove them from Site, without affecting the responsibilities of both Employer and the Contractor under the Contract.

- Use of Contractor's Equipment by Others: Allowing other contractors of the Employer to use certain Contractor's Equipment at no cost to the Employer.
- Provision in accordance to Programme: Requiring the Contractor to provide and use the Plant, Temporary Works, Materials and others by the times specified within the Programme of the Works.
- Failure to Provide by Specified Time: Identifying the consequences of the Contractor's failure to make available of any Equipment when required onsite.
- Provision in accordance to Requirements: Requiring the Contractor to provide the Plant, Materials, Temporary Works and others in such relevant type, capacity, power, quantity and design.
- Weather Proof Sheds: Requiring the Contractor to provide weatherproof sheds for storage of materials and equipment subject to the Engineer's approval.
- Cost of Re-export: Stipulating that the costs related to any re-export of Equipment upon completion to be the Contractor's responsibility.
- Suppliers' Claims: Deeming the Contractor responsible for any claims that might be raised by suppliers in relation to materials.
- Marking Materials: Requiring the Contractor to mark the Materials for distinguishing those that have become Employer's property, and those that are yet to be transferred to the Employer.



- Failure to Remove upon Completion: Identifying the consequences of the Contractor failure to remove Equipment, Temporary Works and unused materials within a certain time duration upon the completion of the Works.
- Priority of Materials' Supply: Deeming local materials to have a priority over imported materials.
- Quality of Materials, Equipment and Plant: Requiring the Contractor to provide all materials, Equipment and Plant as new, unused and best quality specified in accordance to the Contract.
- Failure to Maintain Minimum Number of Equipment: Identifying the consequences of the Contractor's failure to maintain the minimum number of Equipment onsite as specified within the Contract on the times by which they are needed.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "6,26%" signifies that 6 contracts out of 28 have addressed the subject matter provision representing 26% of the total identified provisions relevant to Plant, Materials, Equipment and Temporary Works.

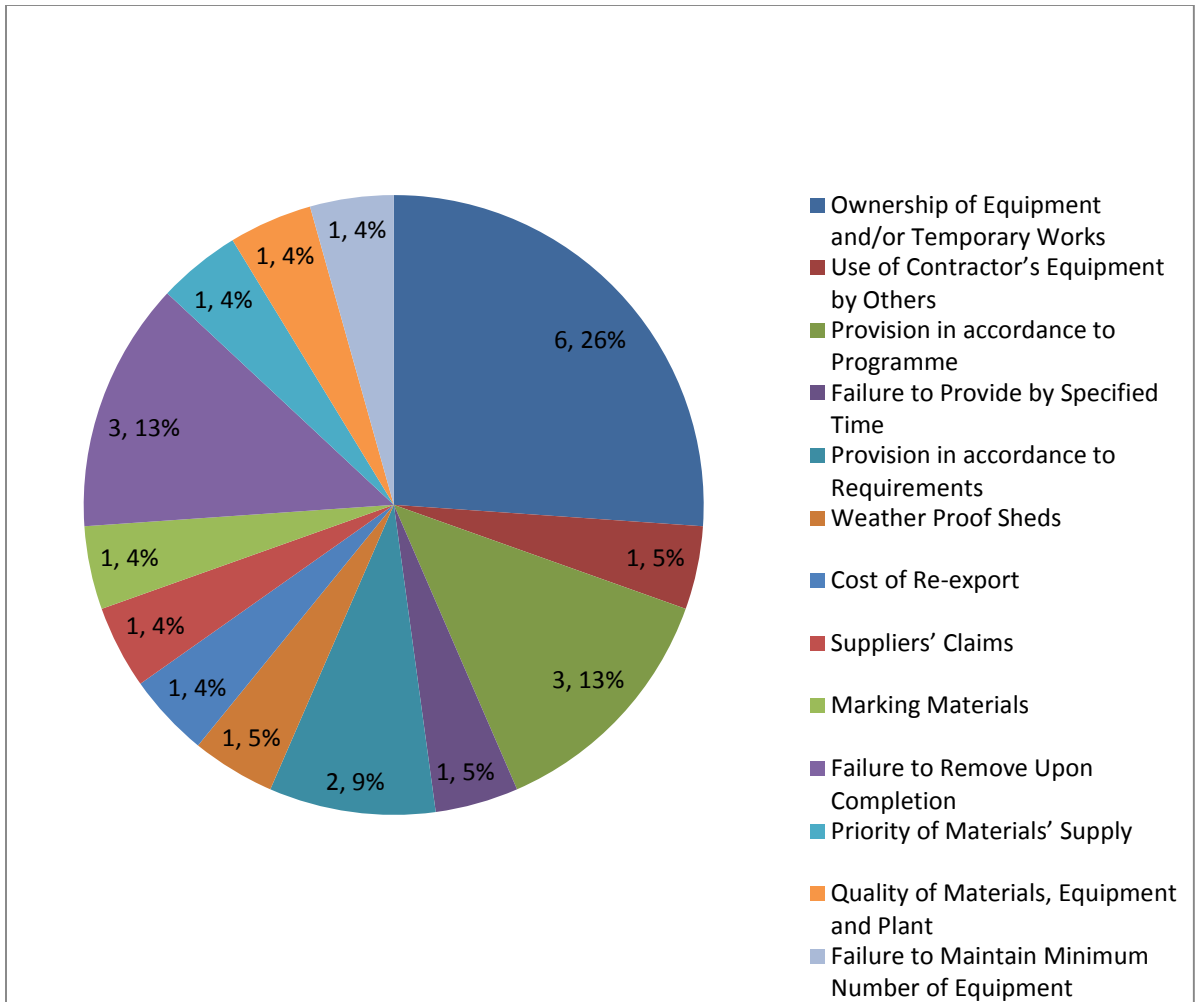


Figure 38: Plant, Materials, Equipment and Temporary Works

### 3.6.1.30 Adjustments for Changes in Legislation

Ten additional provisions / modifications to FIDIC 99 have been identified through the analysis of the particular conditions of the Contracts under analysis, as follows:

- Deletion of Sub-Clause: This is related to adding a provision deleting the relevant Sub-Clause of the General Conditions.

- Duties, Levies and Others: Deeming the Contract Price inclusive of costs of all duties, levies and charges payable to the Government under any current Law of the Country.
- Adjustment of Contract Price: Specifying that the Contract Price shall be adjusted due to changes in legislation.
- Contractor's Cost Entitlement: Stipulating that the Contractor's entitlement to cost under this Sub-Clause shall have no allowance for overhead or profit.
- Required Notice: Requiring the Contractor to notify the Engineer within a certain time duration from the time it becomes aware of any changes in legislation.
- Proof and Evidence: Requiring the Contractor to submit certain proofs and evidence in relation to any changes in legislation.
- Records: Entitling the Engineer to examine any original records of the Contractor.
- Waiver of Entitlement: Waiving any entitlement to the Contractor in relation with any changes in legislation.
- Limitation of Application: Limiting the application of this Sub-Clause to Taxation and Custom Duties.
- Time for Compensation: Entitling the Contractor to receive any compensation arising from this Sub-Clause within a certain time duration.

The below chart shows the identified provisions and the frequency of usage through the Contracts under Analysis. Note that the annotations on the chart such as "10,26%" signifies that 10 contracts out of 28 have addressed the subject matter provision representing 26% of the total identified provisions relevant to Adjustments for Changes in Legislation.

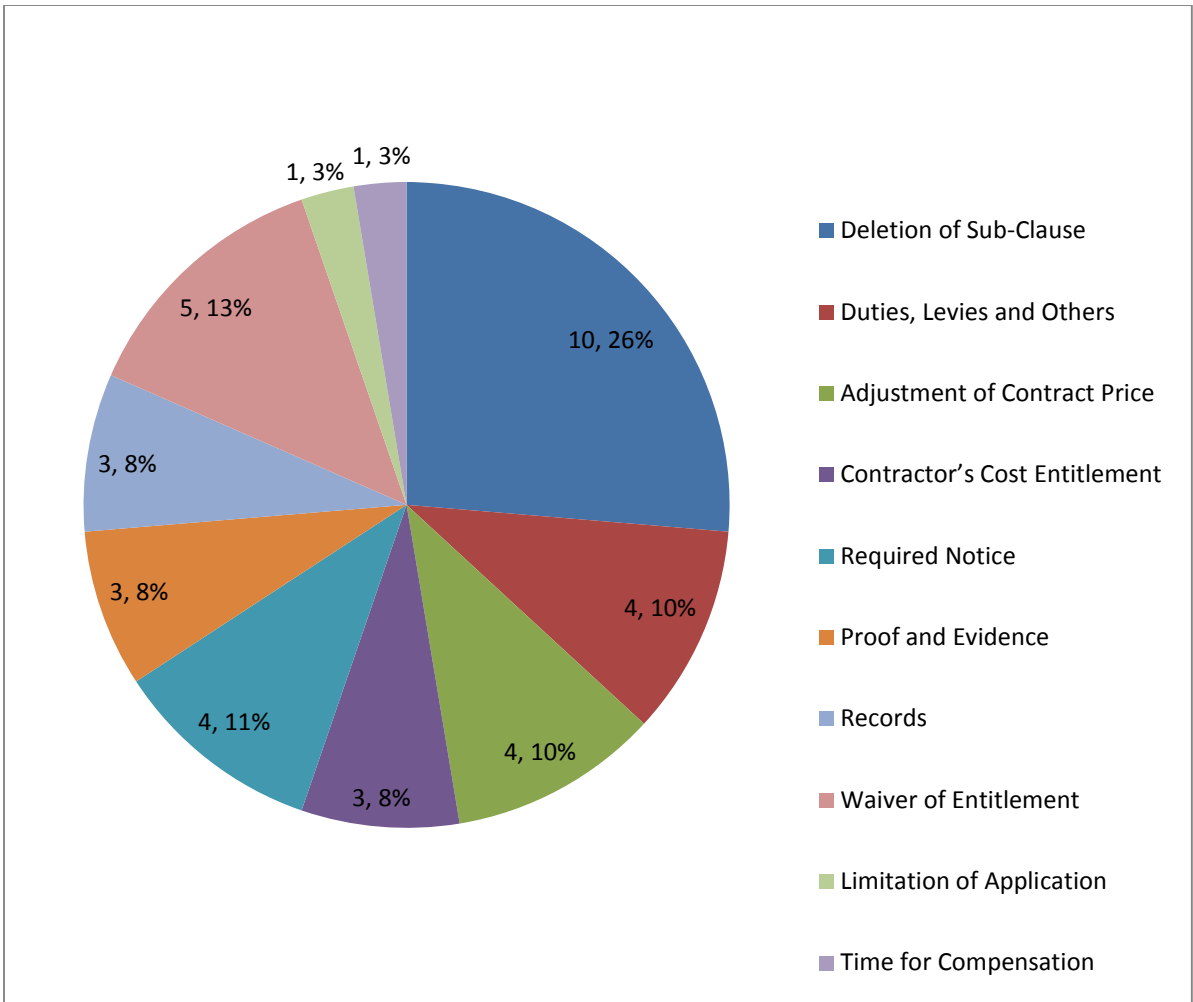


Figure 39: Adjustment for changes in legislation

## CHAPTER 4: SURVEY

This Chapter mainly incorporates the survey conducted to verify the results derived from Chapter 3 being the analysis. The purpose of the survey is to verify the importance of the identified provisions derived from the top 30 clauses throughout the analysis process and ensure that merely the important provisions are retained in the findings of this research. The analysis shows that some of the provisions were addressed once or twice within the analyzed contracts, for which reason could be that such provisions are not common or significant in general, but could be suiting the specific nature and circumstances of their respective projects. Thus, the survey will eliminate such provisions so that the remaining ones would be actually deemed as significant and crucial for their inclusion within the particular conditions of contracts in Egypt.

Due to the high number of identified provision within the 30 top clauses, being 207 in total, and the uncertainty regarding the importance of each one of them, the survey was made into the two following stages:

- Stage 1: Filtering the identified provisions by highly experienced experts in the field who have over 10 years of experience specifically in the field of construction contracts. This stage is conducted on three experts only, who were basically asked to remove any provisions that they see insignificant or ineligible to enter Stage 2 survey by ticking the fields named as “Enter Survey” and “Do Not Enter Survey”. The purpose of this stage is to narrow down the massive number of provisions entering Stage 2 survey as they may include a number of insignificant provisions, which, for instance, could have been added by less experienced contracts’ drafters. Stage 1 Survey was conducted through E-mails with three pre-chosen experts in the

field meeting the below selection criteria, for which three surveys in the form of excel spreadsheets were distributed and collected from these experts. All communications were made through E-mails and telephone messages/calls. The results included the provisions that were agreed by at least two out of three experts to enter the survey.

- Stage 2: This stage includes the filtered provisions through Stage 1, and is conducted on 25 experts, of which outcome will be considered within the findings chapter of this research. The validity of the sample size is determined using two criteria, being as follows:
  - Qualitative Approach: Gentles et al. (2015) has defined sampling in qualitative research as “the selection of specific data sources from which data are collected to address the research objectives”. This survey matches the qualitative type based on the use of a specific type of source being construction contracts’ professionals meeting certain criteria as shown below in point no. 4.1. The survey approach is phenomenology for which the said authors has suggested that a sample size of at least 30 would suffice. The phenomenology approach is adopted “when what is selected is restricted to people only – a single type of data source”, which is the criteria matching this research (Gentles et. al, 2015). Morse (2015) has suggested a similar sample size of at least 30 for semi-structured interviews in which same questions are asked in the same order for all participants, being a criteria that matches this survey.

- Quantitative Approach: the below formula based on a normal distribution utilizing 50% is used. The population size could not be derived from official organizations such as the Egyptian Engineers Syndicate since such records are not available; thus, three experts meeting the criteria of stage 1 survey were asked to provide an indication to the population size. The highest number provided was less than 500. Accordingly, a population size of 500 is used in this survey as the population. While such a criteria of deriving the population size may not be considered reliable; however, experimenting higher sizes of population, it was noted that using any higher size than 500 would not change the sample size statistically. Adopting a confidence level of 90% and a margin error of 15%, a sample size of 25 respondents to the survey was derived.

$$Sample\ Size = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

*(Reference: SurveyMonkey.com)*

Where N is the population size, e is the margin error and z is the z-score

- It must be noted that both approaches lead to the approximately similar results considering a margin of error of 15 to 16.5%.

The experts were basically asked to identify the importance of each provision as to “High”, “Medium” and “Low”. Stage 2 Survey was conducted through an online survey for which respondents were provided with the link through online messages or through E-mails. 38 field specialists were contacted directly by the author of this

research and around 10 others were contacted through referrals from the 38 specialists to others in the field. The online survey was started by 45 experts and fully completed online by 20 experts, leading to a response rate of around 42%. Around 9 experts, who did not complete the survey and actually meet the criteria of the expert's selection, were re-contacted through online messages or E-mails to complete the remaining points in the form of a re-created online survey or excel spreadsheets. 5 respondents provided their completed responses leading to a total number of 25 responses to Stage 2 Survey with a final response rate of 52%.

#### 4.1 Selection Criteria of Experts

- Stage 1:
  - Minimum 10 years of experience in the field of construction contracts
  - Extensive experience with the forms of FIDIC
  - Working experience in Egypt of at least 10 years
- Stage 2:
  - Various years of experience subject to a minimum of 5 years of experience in the field of construction contracts
  - Minimum of 10 years of experience in the construction industry.
  - Experience with the forms of FIDIC
  - Working experience in Egypt of at least 5 years

#### 4.2 Results of Stage 1 Survey

Stage 1 survey has led to the exclusion of 96 provisions, which were deemed as insignificant by the majority of the experts who responded to the survey. This has decreased



the number of provisions from 207 to 111 provision eligible to enter stage 2 survey. The list of the eligible provisions are herein listed in Appendix D.

#### 4.3 Results of Stage 2 Survey

A number of 25 respondents have participated in stage 2 survey after having met the criteria set above, of which 60% have experiences over 15 years in the contracts and claims field while 76% have experiences over 15 years in construction industry, as illustrated through Figures 41 and 42. The responses have showed that 95 out of 111 (86%) of the provisions included in the survey were deemed as of high importance, 16 out of 111 (14%) were deemed as of medium importance, while none were deemed of low importance to be included within the particular conditions of construction contracts (Figure No. 43). A full record of the survey results is furnished in Appendices E.

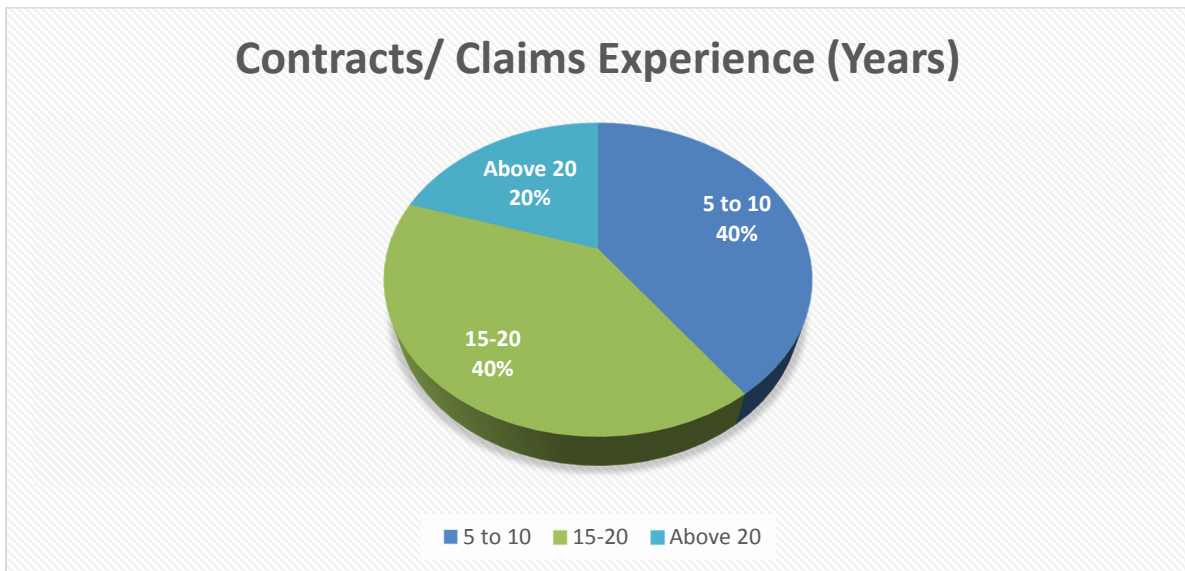


Figure 40: Contracts/Claims experience of respondents

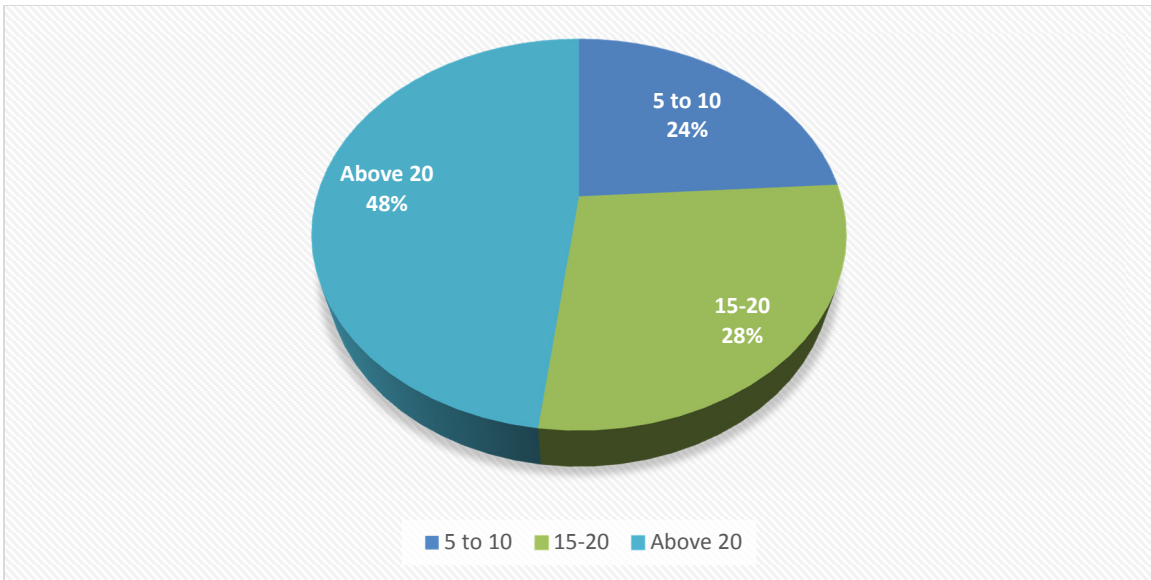


Figure 41: Construction experience of respondents in years

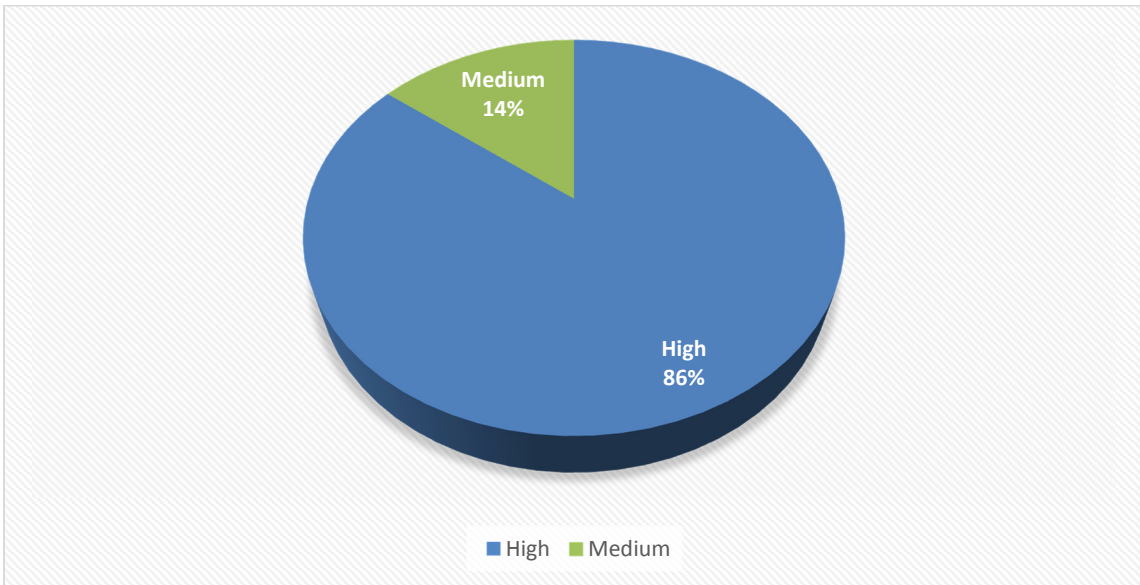


Figure 42: Survey provision's rating

The following provisions were deemed as of high importance by stage 2 survey respondents to be considered by contracts' drafters and practitioners while drafting new construction contracts:

*Table 4: Stage 2 Survey Results*

<b>Stage 2 Survey Results</b>					
<b>Provisions Ranks' by Respondents</b>			<b>Percentages of Respondents' Ratings</b>		
<b>Prov. No.</b>	<b>Provision</b>	<b>Rating</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>
<b>High Importance Rating</b>					
<b>Performance Security</b>					
<b>1</b>	Identify the requirements acceptable to the Employer (i.e. form, value, bank, etc.) in relation with the Performance Security.	High	92%	8%	0%
<b>2</b>	Identify the consequences of failing to submit/re-submit the Performance Security as required.	High	76%	20%	4%
<b>3</b>	Specify the party responsible for the costs associated with issuing or re-issuing the Performance Security.	High	64%	28%	8%
<b>4</b>	Apportion the Performance Security amounts to each Section or Portion of the Works.	High	40%	36%	24%
<b>Programme of Works / Revised Programme</b>					
<b>6</b>	Specify re-submission period of a rejected programme.	High	68%	32%	0%
<b>8</b>	Include a reference to detailed programme requirements within the specifications of a contract or through the Particular Conditions.	High	52%	40%	8%

9	Define the consequences of failing to submit or obtain approval to programme.	High	72%	24%	4%
10	Require the Contractor to submit periodical programme/progress updates.	High	80%	20%	0%
11	Require the Contractor to fulfil its obligations disregarding obtaining the approval on the Programme of Works.	High	68%	28%	4%
<b>Contract Price, and its relation to customs, taxes, etc.</b>					
12	Identify the party responsible for the sales tax payment, social insurance payment, custom duties and other import charges.	High	76%	24%	0%
13	Specify and define each of the types of taxes required to be paid by the Contractor.	High	60%	32%	8%
14	Entitle the Employer to get reimbursed any costs related to taxes and other charges that the Contractor becomes excused of.	High	60%	20%	20%
<b>Language and Law</b>					
15	Define the party responsible for any costs associated with complying by the language requirements in dealing with authorities and others.	High	40%	40%	20%
16	Oblige the Contractor to submit translated versions of any document made in another language as well as Identify the Party responsible for any costs related to translation services.	High	48%	28%	24%
<b>Priority of Documents</b>					
17	Specify the accepted interpretation in case a contradiction between Drawings and/or Specifications and/or the Bill of Quantities was identified.	High	96%	4%	0%

18	Deem the higher standard between two documents of same priority as the binding one.	High	52%	40%	8%
19	Deem the Engineer's determination whenever a contradiction is identified between certain Contract Documents as binding and identify the consequences of its failure to provide a determination.	High	60%	32%	8%
<b>Health, Safety and Environment</b>					
20	Provide extensive details and requirements related to safety regulations to the Contractor.	High	52%	44%	4%
21	Require the Contractor's submission of safety procedures/plan.	High	60%	40%	0%
22	Require the Contractor's submission of environmental procedures.	High	48%	40%	12%
23	Identify the party responsible for the costs related to safety measures.	High	56%	40%	4%
24	Identify the consequences of the Contractor's failure to fulfil his obligations in relation to Health, Safety and/or Environment, and deem it responsible for any relevant costs.	High	72%	24%	4%
25	Require the Contractor to comply by the regulations of the local authorities in the event of any outbreak of illness of an epidemic nature.	High	52%	40%	8%
26	Require the Contractor to notify the Engineer of any accident or fatality within a certain duration through different means.	High	68%	28%	4%
<b>Variations</b>					
27	Oblige the Contractor to proceed with instructed variations regardless of whether	High	76%	20%	4%

	an agreement on price has been reached or not.				
28	Require the Contractor to submit particulars related to variations in certain times.	High	76%	20%	4%
29	Address loss of profit due to variations.	High	48%	36%	16%
30	Identify the percentage of overhead and profit to be used for evaluation purposes.	High	76%	24%	0%
<b>Payment</b>					
33	Allow the Contractor to provide reasons of objection on payment certifications within a certain duration.	High	52%	36%	12%
34	Identify the consequences of the Contractor's failure to provide all supporting documents related to payment certificates.	High	60%	24%	16%
36	Require the Contractor to notify the Employer within a certain time duration prior to suspending the Works in case of the Employer's failure to make the Contractor's payment within the agreed durations.	High	80%	12%	8%
37	Entitle the Contractor to receive payments against certain agreed Milestones.	High	48%	40%	12%
<b>Insurance</b>					
38	Indemnify the Employer against all losses and claims arising from the Contractor's failure to comply by the conditions related to insurance policies.	High	76%	12%	12%
39	Require the Contractor to insure against loss or damage to the Plant prior to its delivery and during its unloading to Site.	High	72%	16%	12%
40	Require the Contractor to insure third party automobiles.	High	56%	32%	12%

41	Require the Contractor to obtain a waiver by insurance companies of any and all rights of subrogation they might be able to exercise against the Employer or its representatives.	High	56%	28%	16%
42	Entitle the Employer of a notice from the insurers prior to changes of cover or failure to renew policies.	High	64%	24%	12%
43	Detail each of the required insurances' covers.	High	72%	20%	8%
<b>Extension of Time for Completion</b>					
44	Entitle Engineer to take account of any omitted works when determining an extension of the Time for Completion.	High	64%	24%	12%
<b>Arbitration</b>					
45	Name a certain International Arbitration Centre to be used for arbitration purposes.	High	56%	40%	4%
46	Deem the decision of the arbitrators as final and binding on which basis judgment may be entered to the court of jurisdiction to be enforced.	High	60%	32%	8%
47	Identify the time or conditions by which arbitration may commence.	High	60%	32%	8%
48	Specify confidentiality of the arbitration proceedings and disclosures.	High	60%	24%	16%
<b>Engineer's Duties and Authority</b>					
49	Identify the matters that require the Employer or Employer's Representative's approval.	High	96%	4%	0%
50	Entitle the Engineer to give instructions to the Contractor in the absence of the Employer's approval whenever an emergency occurs relevant to safety.	High	68%	24%	8%

51	Specify that all or certain communications shall be through the Engineer.	High	60%	32%	8%
<b>Advance Payment</b>					
52	Identify the number, value and/or timings of instalments of advance payment.	High	80%	16%	4%
54	Entitle the Contractor to request the release of the guarantee prior to the Completion of the Works and upon full repayment of its amount.	High	48%	40%	12%
<b>Confidential Details</b>					
55	Oblige the Contractor to treat all details of the Contract as private and confidential banning it from disclosing any information without a prior approval, and identifying the consequences of failing to comply with such a provision.	High	48%	40%	12%
57	Deem the Employer's decision final whenever a dispute arises as to the necessity of any disclosure related to the Contract.	High	48%	32%	20%
<b>Drawings</b>					
59	Identify the party responsible for the costs related to issuing and/or re-issuing of drawings and/or other submissions.	High	44%	28%	28%
60	Specify the drawings required to be submitted by the Employer to the Contractor, and the consequences of failing to do so.	High	72%	24%	4%
61	Require the Contractor to submit As-Built Drawings, operation and maintenance manuals and/or others.	High	72%	24%	4%
<b>Payment Certificates</b>					



62	Identify the nature and/or conditions of the listed materials that would entitle the Contractor for payment upon delivery.	High	80%	20%	0%
63	Detail the information that are required to be included within the interim certificates in relation to the Plant.	High	72%	24%	4%
64	Identify the consequences of experiencing slow rate of progress in relation to the certification of the amounts stated within the monthly statements.	High	68%	24%	8%
65	Detail the actions to be followed whenever certain rates related to the executed Works are not available within the Contract Documents.	High	80%	20%	0%
66	Confirm that the inclusion of any work or materials delivered to the Site within the statements does not constitute the Employer's acceptance nor does it affect his rights under the Contract.	High	60%	28%	12%
<b>Adjustments for Changes in Cost</b>					
67	Identify the items for which cost may be adjusted through a certain criteria.	High	76%	20%	4%
68	Specify the particulars required and/or actions to be taken to determine any adjustment to cost.	High	80%	20%	0%
69	Specify the condition(s) for any cost adjustments to take place.	High	80%	20%	0%
70	Identify the criteria to be followed in relation to cost adjustment occurring during a period granted an extension of time.	High	84%	12%	4%
<b>Currencies of Payment</b>					
71	Specify the currency of payment as the local currency.	High	60%	36%	4%

72	Deem the Contract Price inclusive of all costs that may be incurred in the event of currency restrictions.	High	68%	32%	0%
<b>Risks / Force Majeure</b>					
73	Specify that each party shall not be entitled to claim any loss from the other due to a default arising from Force Majeure events.	High	76%	16%	8%
<b>Subcontractors</b>					
74	Require the Contractor to submit certain information related to the proposed Subcontractors prior to their appointment and detail the minimum standards for their appointment.	High	64%	36%	0%
75	Entitle the Engineer to remove incompetent Subcontractors and/or related personnel from Site.	High	72%	20%	8%
76	Identify the consequences of assigning the Whole or part of the Contract Works to Subcontractors.	High	60%	32%	8%
77	Specify that the Employer and the Engineer shall not be deemed as a party related to any subcontract, for subcontractors may not raise any claims against the Employer, being a condition that shall be included within each subcontract.	High	56%	32%	8%
<b>Taking Over</b>					
78	Deem the completion of Tests on Completion as a condition precedent to the issuance of the Taking Over Certificate.	High	84%	16%	0%
79	Deem the submission of As-Built Drawings, Operations and Maintenance Manuals and/or others as condition precedent to issuance of the Taking Over Certificate.	High	76%	24%	0%

80	Deem the Contractor responsible for the care of the parts of the Works that may be used by the Employer prior to Taking Over.	High	56%	24%	20%
<b>Delay Damages</b>					
81	Entitle the Contractor to receive a re-fund of any payments received due to its failure to comply with Intermediate Milestone Dates in case it recovers such delays prior to the overall Time for Completion.	High	72%	12%	16%
83	Identify the times or circumstances by which payments of delay damages shall be made.	High	60%	28%	12%
<b>Contractor's General Obligations</b>					
84	Require the Contractor to provide its submittals under the Contract to the Engineer within a certain time duration prior to the start date of the relevant activities on site.	High	68%	28%	4%
85	Identify a time frame within which the Contractor is required to re-submit any rejected submittal.	High	80%	16%	4%
86	Identify the software and relevant versions to be used for the preparation of drawings, documents and others.	High	56%	28%	16%
87	Specify a certain time frame within which the Contractor is obliged to restore any damages part of the Works upon receipt of the Engineer's instructions in this regard.	High	72%	20%	8%
88	Specify a certain time frame prior to the execution of each stage of the Works within which the Contractor is obliged to submit relevant details of the arrangements and methods of the execution of such a stage.	High	52%	40%	8%
<b>Commencement Date</b>					

89	Deem possession of Site by the Contractor as a condition precedent to the Commencement of the Works.	High	76%	16%	8%
90	Deem the receipt of the Advance Payment by the Contractor as a condition precedent to the Commencement of the Works.	High	52%	16%	32%
<b>Contractor's Representatives, Superintendence and Personnel</b>					
91	Require the Contractor to obtain the Engineer's consent prior to delegating competent person.	High	68%	28%	4%
92	Require the Contractor to provide certain personnel with certain experience.	High	68%	32%	0%
<b>Working Hours</b>					
94	Specify the rates of working hours related to the Employer and Employer's Representative for calculating the costs incurred by them for supervision outside the Working Hours.	High	48%	44%	8%
<b>Termination by Employer</b>					
96	Specify the Employer's entitlement to liquidate the Performance Security in order to recover any amounts due to the Employer resulting from termination due to a Contractor's Default.	High	96%	4%	0%
97	Entitle the Employer to terminate the Contract without resorting to courts and/or any legal notices or judicial actions.	High	88%	4%	8%
98	Require the Contractor to fully co-operate with third parties or other contractors appointed upon the termination of the Contract due to default and identify the consequences of failing to do so.	High	80%	20%	0%

<b>99</b>	Entitle the Employer, at its sole discretion and without any obligation to do so, pay Subcontractors amounts payable in accordance with their subcontracts, upon termination of the Contract due to a Contractor's Default.	High	72%	16%	12%
<b>100</b>	Entitle the Employer to terminate the Contractor in case of reaching the cap of liquidated damages due to delays.	High	64%	12%	24%
<b>101</b>	Entitle the Employer to terminate the Contractor in case of the Contractor's failure to obtain the insurances required by the Contract.	High	68%	20%	12%
<b>Cash Flow</b>					
<b>103</b>	Require the Contractor to submit cash flows in a form acceptable by the Engineer or in a certain form.	High	52%	36%	12%
<b>Adjustments for Changes in Legislation</b>					
<b>108</b>	Deem the Contract Price inclusive of costs of all duties, levies and charges payable to the Government under any current Law of the Country.	High	72%	20%	8%
<b>109</b>	Specify that the Contract Price shall be adjusted due to changes in legislation.	High	68%	20%	12%
<b>110</b>	Specify that the Contractor's entitlement to cost under this Sub-Clause shall have no allowance for overhead or profit.	High	60%	36%	4%
<b>111</b>	Require the Contractor to notify the Engineer within a certain time duration from the time it becomes aware of any changes in legislation as well as to submit relevant evidence and proofs of original records whenever required.	High	56%	28%	16%
<b>Medium Importance Rating</b>					

<b>Performance Security</b>					
5	Specify a certain reduction in the value of the Performance Security upon issuance of the Taking Over Certificate.	Medium	40%	44%	16%
<b>Programme of Works / Revised Programme</b>					
7	Specify a certain software for producing a programme.	Medium	40%	52%	8%
<b>Variations</b>					
31	Deem the Engineer's decision as final and binding whenever they fail to agree on prices or rates related to variations within a certain duration.	Medium	32%	48%	20%
<b>Payment</b>					
32	Deem the Engineer's decision binding whenever a discrepancy is identified within monthly statements.	Medium	36%	48%	16%
35	Entitle the Contractor of a certain percentage of payment against the direct cost delivered to Site	Medium	40%	48%	12%
<b>Advance Payment</b>					
53	Specify the purpose behind issuing the Advance Payment, being mobilization, for which failure to adhere to may entitle the Employer to an immediate recovery to such amounts.	Medium	24%	56%	20%
<b>Confidential Details</b>					
56	Prohibit the Contractor from erecting advertisements and/or placards without a prior approval from the Employer.	Medium	32%	44%	24%
<b>Drawings</b>					
58	Entitle the Contractor to propose any improvements or modifications within a	Medium	32%	48%	20%

	certain duration with the inclusion of relevant justifications.				
<b>Delay Damages</b>					
<b>82</b>	Impose additional supervision costs to be paid by the Contractor in case it fails to comply by the Time for Completion.	Medium	40%	60%	0%
<b>Working Hours</b>					
<b>93</b>	Deem the Contractor responsible for any costs that may be incurred due to executing Works outside the Working Hours.	Medium	32%	56%	12%
<b>95</b>	Specify the procedures related to the Contractor's application to execute Works outside the Working Hours.	Medium	28%	56%	16%
<b>Cash Flow</b>					
<b>102</b>	Specify that any required resubmission prior to obtaining the Engineer's approval shall be made within a certain time frame from a written notice by the Engineer.	Medium	28%	64%	8%
<b>Plant, Materials, Equipment and Temporary Works</b>					
<b>104</b>	Identify the consequences of the Contractor's failure to make available of any Equipment when required onsite.	Medium	36%	52%	12%
<b>105</b>	Require the Contractor to provide weatherproof sheds for storage of materials and equipment subject to the Engineer's approval.	Medium	32%	52%	16%
<b>106</b>	Deem the Contractor responsible for any claims that may raised by suppliers in relation to materials.	Medium	28%	60%	12%
<b>107</b>	Identify the consequences of the Contractor's failure to maintain the minimum number of Equipment onsite as	Medium	32%	52%	16%

	specified within the Contract on the times by which they are needed.				
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## **CHAPTER 5: Findings of the Research**

This chapter sets out the findings obtained from the analysis of both the literature review and the contracts' analysis after having been verified through experts' surveys. The findings of this research are mainly concluded in a list of all provisions considered as high important to be included within the particular conditions of construction contracts as derived through the information and analysis within this research. The first part of this chapter will ensure that the common/significant conditions identified through the literature review (see Appendix A) are incorporated within the list of common conditions derived from the contracts' analysis. The second part will list each of the highly significant provisions and provide a high level overview over why such provisions are deemed as such based on the author's view. Those conditions which were deemed as of medium importance by the experts are maintained with no further commentary for the contracts' practitioners' to decide themselves on whether they would like to consider any of them in their projects based on the associated circumstances.

### **5.1 Part 1: Significant conditions identified through literature review**

5.1.1 The identified conditions through the literature review which were addressed through the analyzed contracts are as follows:

#### 5.1.1.1 Variations/Change Orders

- Variations/change orders are covered under Clause 13 of FIDIC 99.
- Further provision(s) were recognized through the analysis, as shown in table 4 above.

#### 5.1.1.2 Exceptionally adverse weather conditions

- Although FIDIC 99 has entitled the contractor to extension of time for exceptionally adverse weather conditions, it has not provided information as to how such conditions would be deemed as exceptionally adverse. This has been raised as a concern throughout the literature review as a potential cause of disputes.
- Specifying the conditions by which weather conditions would be deemed as exceptionally adverse was recognized through the particular conditions of the analyzed contracts; however, it did not pass Stage 1 survey, possibly due to the unlikely nature of this condition to take place in Egypt. Nevertheless and considering the importance of such a provision as highlighted by the literature review, this provision shall be retained in the findings section.

#### 5.1.1.3 Early Completion Schedules

- Early completion is not addressed through FIDIC 99, but through the literature review as a potential cause for disputes. This is related to experiencing delays by the contractor after having planned to complete earlier than the completion date.
- This provision shall be considered as a high important provision within the findings of this section.

#### 5.1.1.4 Time delay and extension

- Time delays and extension are covered under Clause 8 of FIDIC 99.
- Further provision(s) were recognized through the analysis, as shown in table 4 above.

#### 5.1.1.5 Quantification of prolongation costs

- Criteria of quantifying prolongation costs due to eligible extension of time was not addressed within FIDIC 99.
- The literature review highlighted that disputes may occur if the basis of quantifying prolongation costs was not specified within the contract as to whether they should be calculated from the time by which a delay event has occurred or by the extended time by the end of the project. Accordingly, this provision shall be included in the list of common provisions of this research.

#### 5.1.1.6 Concurrent Delays

- Concurrent delays and their effects on cost compensation was not addressed through FIDIC 99; however, it was addressed by one of the analyzed contracts (C4) through an additional Sub-Clause titled “Unabsorbed Overhead” where a demonstration of no concurrency was made as a condition precedent to recovery of unabsorbed overhead costs and/or prolongation costs.
- Based on the importance of concurrent delays as highlighted by the literature review, it will be included in the list of common provisions of this research.

#### 5.1.1.7 Termination

- Termination by both the employer and contractor is covered under Clauses 15 and 16 of FIDIC 99.

- Further provision(s) were recognized through the analysis as shown in table 4 above.

#### 5.1.1.8 Price Escalation

- Price escalation is covered under Sub-Clause 13.8 of FIDIC 99.
- Further provision(s) were recognized through the analysis as shown in table 4 above.

#### 5.1.1.9 Handing over of Site / Possession of Site

- Handing over of site / Possession of site is covered under Clause 2.1 of FIDIC 99.
- A relevant provision was recognized through the analysis where possession of site was deemed as a condition precedent to Commencement of Works.

#### 5.1.1.10 Release of Mobilization Advance

- Sub-Clause 14.2 of FIDIC 99 addressed the advance payment, which is relevant to mobilization; however, it did not address the consequences of delaying its release.
- A relevant provision was recognized through the analysis where the release of advance payment was deemed as a condition precedent to the Commencement of Works; thus, reducing the potential risk of disputes on this matter to a great extent.

#### 5.1.1.11 Late / Receipt / Checking / Approval Duration of Drawings

- Delayed Drawings or Instructions is covered under Sub-Clause 1.9 of FIDIC 99.

- Further provision(s) were recognized through the analysis as shown in table 4 above.

#### 5.1.1.12 Force Majeure

- Force Majeure is covered under Clause 19 of FIDIC 99.
- Further provision(s) were recognized through the analysis as shown in table 4 above.

#### 5.1.1.13 Suspension

- Suspension of the works is covered under Sub-Clauses 8.8 to 8.12 of FIDIC 99.
- Further provision(s) were recognized through the analysis as shown in table 4 above.

#### 5.1.1.14 Payment terms and delay of payments

- Payment is covered under Clause 14 of FIDIC 99.
- Further provisions were recognized through the analysis as shown in table 4 above.

#### 5.1.1.15 Dispute Resolution

- Dispute resolution is covered under Clause 20 of FIDIC 99, including amicable settlement.
- No further provisions were recognized as of high importance through the analysis.

#### 5.1.1.16 Reservation of Rights

- Sub-Clause 20.1 addressed the procedures of claims including the required notices and particulars as well as the relevant time frames.

- No further provisions were recognized through the analysis.

#### 5.1.1.17 Time Impact Analysis Requirement

- Delay analysis methods are generally not covered under FIDIC 99.
- Based on the importance of this requirement as highlighted through the literature review, specifying the delay method requirement shall be added within the findings of this section. Although Time Impact Analysis is a delay analysis method in itself, it is understood that there are many other methods that can be considered by a project's parties based on the nature and circumstances of every project. Thus, it is recommended that a delay analysis method to be agreed upon regardless of the choice of such a method, which can rely on many factors including, but not limited to, time, cost and complexity.
- No relevant provisions were recognized as of high importance through the analysis.

#### 5.1.1.18 Loss of productivity / Efficiency claims

- Loss of productivity / Efficiency claims are not specifically covered under FIDIC 99.
- According to literature review, the “measured mile” technique is recommended to be specified within contracts in order to avoid relevant disputes. Thus, this provision shall be included in the list of common provisions of this research.
- No relevant provisions were recognized as of high importance through the analysis.

#### 5.1.1.19 Total cost claims

- Total cost claims are not covered under FIDIC 99; however, it is considered as a claiming technique and a cause of disputes through the literature review.
- As concluded through the literature review, adding a condition requiring cost loaded construction schedules, project trending and earned value analysis on routine basis shall be considered within the findings of section.
- No relevant provisions were recognized as of high importance through the analysis.

#### 5.1.2 Literature Review Provisions to be Added to the Findings of the Research

A number of seven provisions will be added to the list of high important provisions as recognized through the literature review of this research. The seven provisions are as follows:

- Specify the conditions by which weather conditions would be deemed as exceptionally adverse.
- Specify the consequences of experiencing delays by the contractor due to employer's delay events after having planned to complete earlier than the completion date.
- Specify the criteria of quantifying prolongation as to whether they should be calculated from the time by which a delay event has occurred or by the extended time by the end of the project.

- Require a demonstration of concurrency by the contractor as a condition precedent to recovery of unabsorbed costs and/or prolongation costs, and specify the consequences of its occurrence.
- Specify the delay analysis method for calculating time delays.
- Specify the measuring techniques for loss of productivity / efficiency claims. (i.e. measured mile)
- Require the contractor to submit cost loaded construction schedules, project trending and earned value analysis on routine basis.

**5.2 Part 2: Final list of common provisions highly recommended for consideration within the particular conditions of construction contracts**

The below table includes the final list of the common/significant provisions as concluded through the earlier chapters of this research. The list includes a commentary providing a high level overview on why such provisions are deemed as of high importance based on the author’s view. It should be noted that the below table includes the findings obtained from the above parts 1 and 2 as well.

*Table 5: Final List of Common Provisions*

<b>Final List of Common Provisions</b>		
<b>No.</b>	<b>Provisions</b>	<b>Commentary</b>
<b>Performance Security</b>		
1	Identify the requirements acceptable to the Employer (i.e. form, value, bank, etc.) in relation with the Performance Security.	Disputes may arise over form, value and bank of performance security if not agreed during the contract signing stage.
2	Identify the consequences of failing to submit/re-submit the Performance Security as required.	Failing to submit/resubmit a performance security may lead to delaying a project's activities and affect the rights of a project's party. If the consequences are not agreed upon through the contract, then the affected party may intend to take severe measures against such failure leading



		to a dissatisfaction from the other party, which would then lead to possible disputes. Thus, agreeing on the consequences of such failure reduces such possibility.
3	Specify the party responsible for the costs associated with issuing or re-issuing the Performance Security.	Specifying such a matter would definitely avoid related disputes as each party may claim that it has not accounted for such costs within its contract sum or budget.
4	Apportion the Performance Security amounts to each Section or Portion of the Works.	The inclusion of this provision helps in avoiding contractor's claims relevant to apportionment and makes a clear understanding between the parties in this regard.
<b>Programme of Works / Revised Programme</b>		
5	Specify re-submission period of a rejected programme.	Specifying a re-submission period avoids contractors' excessive delays in re-submitting a rejected programme and interpretation arguments as to the reasonable time for re-submission.
6	Include a reference to detailed programme requirements within the specifications of a contract or through the Particular Conditions.	This enables providing clear instructions to the contractor on how the programme should be prepared and submitted especially that such requirements could be lengthy; thus, it would be more appropriate to have a dedicated section within the specifications for this significant matter.
7	Define the consequences of failing to submit or obtain approval to programme.	Defining such consequences helps in setting a clear understanding rather than applying severe or unjust measures whenever such an incident takes place, leading the occurrence of disputes.
8	Require the Contractor to submit periodical programme/progress updates.	Programme/progress updates allows proper analysis to extension of time upon which prolongation costs would be calculated if entitled in accordance to the terms and conditions of the contract. Failing to meet such a provision may lead to significant disputes between the parties over extension of time, concurrency and associated costs.
9	Require the Contractor to fulfil its obligations disregarding obtaining the approval on the Programme of Works.	This avoids disputes over unfulfilled obligations due to pending approval on the Programme of Works.
<b>Contract Price, and its relation to Customs, Taxes, etc.</b>		
10	Identify the party responsible for the sales tax payment, social insurance payment, custom duties and other import charges.	Specifying such a matter would definitely avoid related disputes as each party may claim that it has not accounted for such costs within its contract sum or budget.

11	Specify and define each of the types of taxes required to be paid by the Contractor.	Specifying and defining the types of taxes helps in avoiding disputes over any unmentioned type of taxes, and provides a clear understanding to the contractor as to what is deemed to be included within the Contract Price.
12	Entitle the Employer to get reimbursed any costs related to taxes and other charges that the Contractor becomes excused of.	The inclusion of this provision ensures that Employer is reimbursed for any taxes that were included within the Contract Price and then got waived; thus, avoids relevant Contractor's claims.
<b>Language and Law</b>		
13	Define the party responsible for any costs associated with complying by the language requirements in dealing with authorities and others.	Defining the responsibility of such costs helps in avoiding related disputes as each party may claim that it has not accounted for such costs within its contract sum or budget.
14	Oblige the Contractor to submit translated versions of any document made in another language as well as Identify the Party responsible for any costs related to translation services.	The inclusion of this provision ensures that the parties of a project understand their obligations and liabilities in this regard avoiding later disputes.
<b>Priority of Documents</b>		
15	Specify the accepted interpretation in case a contradiction between Drawings and/or Specifications and/or the Bill of Quantities was identified.	This avoids miss-interpretation of the contract documents and ensures that the parties completely understand the priority of documents; thus, avoiding relevant disputes which could be significant.
16	Deem the higher standard between two documents of same priority as the binding one.	Such an agreement avoids possible misinterpretation to the contract documents and ensures that the parties completely understand the priority of documents; thus, avoiding relevant disputes which could be significant.
17	Deem the Engineer's determination whenever a contradiction is identified between certain Contract Documents as binding and identify the consequences of its failure to provide a determination.	The importance of this provision comes from the fact that it is considered as a dispute resolution condition as it sets out the procedures to be taken whenever a contradiction is identified within the Contract Documents.
<b>Health, Safety and Environment</b>		
18	Provide extensive details and requirements related to safety regulations to the Contractor.	The provision of such safety details reduces the probability of disputes over the safety requirements and the expected level of safety. It also provides details over safety costs that should be deemed included within the Contract Price, including but not limited to, the safety materials and their standards.

19	Require the Contractor's submission of safety procedures/plan.	This provision sets out the expectations of safety procedures/plan avoiding relevant disputes over, for example, the number and grades of safety employees to be employed.
20	Require the Contractor's submission of environmental procedures.	This provision sets out the expectations of the environmental procedures avoiding relevant disputes.
21	Identify the party responsible for the costs related to safety measures.	Specifying such a matter would help in avoiding related disputes as each party may claim that it has not accounted for such costs within its contract sum or budget.
22	Identify the consequences of the Contractor's failure to fulfil his obligations in relation to Health, Safety and/or Environment, and deem it responsible for any relevant costs.	Identifying the consequences of such a failure helps in setting out a clear understanding rather than applying severe or unjust measures whenever such an incident takes place, leading the occurrence of disputes.
23	Require the Contractor to comply by the regulations of the local authorities in the event of any outbreak of illness of an epidemic nature.	This ensures that the Contractor understands its obligations whenever such an incident takes place. It avoids excuses for non-performance such as claiming that the Employer has not issued instructions or approvals to proceed with the application of such regulations.
24	Require the Contractor to notify the Engineer of any accident or fatality within a certain duration through different means.	The provision of such a notice ensures that the Employer is constantly informed with any incidents that may affect the project so that it is granted the right to react as it sees fit avoiding possible disputes over any relevant a matter. This includes blaming the Contractor for hiding information and the relevant consequences of such an act.
<b>Variations</b>		
25	Oblige the Contractor to proceed with instructed variations regardless of whether an agreement on price has been reached or not.	This ensures that unnecessary delays are avoided and that the parties understand their obligations and liabilities in this regard.
26	Require the Contractor to submit particulars related to variations in certain times.	These particulars to be submitted within certain times ensure that the Employer is immediately informed with the consequences of its variations and allowing it to take actions immediately to change such consequences as it may see fit. Thus, it avoids relevant disputes over already completed work.

27	Address loss of profit due to variations.	Addressing loss of profit due to variation ensures that the parties understand their obligations and liabilities in relation variations, and is deemed as an opportunity for the parties to demonstrate their intentions regarding loss of profits avoiding relevant disputes at later stage during the project's execution.
28	Identify the percentage of overhead and profit to be used for evaluation purposes.	This ensures that the parties understands their obligations and liabilities in relation to this matter avoiding later disputes in this regard.
<b>Payment</b>		
29	Allow the Contractor to provide reasons of objection on payment certifications within a certain duration.	Awarding the contractor such a right allows addressing payment issues at the time they occur to avoid delaying the relevant disagreements to a later point of the project when it could be harder to retrieve history.
30	Identify the consequences of the Contractor's failure to provide all supporting documents related to payment certificates.	Identifying the consequences of such a failure avoids later disputes when the Employer proceeds with taking measures against the contractor whenever missing documents are identified which could include delaying payments; thus, affecting the cash flow of the contractor. Agreeing such a matter can lead to stipulating a consequence that is reasonable to both parties.
31	Require the Contractor to notify the Employer within a certain time duration prior to suspending the Works in case of the Employer's failure to make the Contractor's payment within the agreed durations.	Such a notification allows the Employer to take any necessary actions before the expiry of the notification period rather than facing a sudden suspension by the contractor leading to incurring considerable losses on which disputes between the parties might arise.
32	Entitle the Contractor to receive payments against certain agreed Milestones.	Receipt of payments against milestones benefits both parties as it encourages the contractor to expedite completing such milestones to receive bulk payments, and guarantees that the payments made by the employer are against a completed portion of the works.
<b>Insurance</b>		
33	Indemnify the Employer against all losses and claims arising from the Contractor's failure to comply by the conditions related to insurance policies.	This is considered as an allocation of risks which helps in avoiding relevant disputes should such a failure takes place.
34	Require the Contractor to insure against loss or damage to the Plant prior to its delivery and during its unloading to Site.	This is considered as an allocation of risks which helps in avoiding relevant disputes should such a failure takes place.

35	Require the Contractor to insure third party automobiles.	This is considered as an allocation of risks which helps in avoiding relevant disputes should such a failure takes place.
36	Require the Contractor to obtain a waiver by insurance companies of any and all rights of subrogation they might be able to exercise against the Employer or its representatives.	Agreeing such a provision avoids later disputes over such a point should an insurance claim is made. It reflects that the employer does not desire to be involved into subrogation that might be exercised against it by an insurance company, which could affect its stance with its insurance company.
37	Entitle the Employer of a notice from the insurers prior to changes of cover or failure to renew policies.	Receipt of such a notification allows the employer to take any necessary measures prior to the changes or expiry of an insurance cover. This avoids later disputes in case such circumstances take place leading to undesired consequences that could have been avoided had the employer been earlier informed about such changes/expiry of the cover.
38	Detail each of the required insurances' covers.	Providing such details ensures that the parties fully understand their obligations and liabilities towards insurance covers.
<b>Extension of Time for Completion</b>		
39	Entitle Engineer to take account of any omitted works when determining an extension of the Time for Completion.	Accounting for omitted work when determining extension of time ensures that the contractor is receiving its rightful time compensation to the works in his scope. It reflects that a variation should be incorporated within a construction schedule whether such a variation is an addition or omission to the scope of the works.
<b>Arbitration</b>		
40	Name a certain International Arbitration Centre to be used for arbitration purposes.	Naming certain arbitration centres avoids later disputes over their selection should arbitration is resorted to at any point during or after the completion of a project.
41	Deem the decision of the arbitrators as final and binding on which basis judgment may be entered to the court of jurisdiction to be enforced.	Agreeing such a provision binds both parties to the decision of arbitrators and ends a dispute's life cycle, thus, limiting any further expenses in relation to them.
42	Identify the time or conditions by which arbitration may commence.	Identifying the time or conditions for the commencement of arbitration organizes the respective process so that no relevant disputes may arise out of such a matter.
43	Specify confidentiality of the arbitration proceedings and disclosures.	Specifying the confidentiality of arbitration is very important as it could cause significant damages to either parties leading to disputes. Damages could reach affecting the stance and the image of a

		party in the market leading to affecting its businesses.
<b>Engineer's Duties and Authority</b>		
44	Identify the matters that require the Employer or Employer's Representative's approval.	The inclusion of such a provision allows a mutual understanding between the parties to the processes and procedures of a project disallowing the contractor from proceeding with certain matters when the employer would have had other plans.
45	Entitle the Engineer to give instructions to the Contractor in the absence of the Employer's approval whenever an emergency occurs relevant to safety.	Awarding the engineer such a right allows for an expedited action in case of emergencies. Otherwise, the consequences of an emergency could be increased if the employer's approval is awaited. Adding such a provision waives any uncertainty whenever such a situation is encountered so that no relevant disputes may arise.
46	Specify that all or certain communications shall be through the Engineer.	The inclusion of such a provision ensures that the engineer is aware of all matters relevant to a project, which it is responsible for.
<b>Advance Payment</b>		
47	Identify the number, value and/or timings of instalments of advance payment.	Identifying the life cycle of the advance payment ensures that no relevant disputes would arise and allows the contractor to organize its cash flow.
48	Entitle the Contractor to request the release of the guarantee prior to the Completion of the Works and upon full repayment of its amount.	Releasing the advance payment guarantee upon full repayment of its amount allows the contractor to manage its stance with its respective bank and disallows any relevant disputes to arise.
<b>Confidential Details</b>		
49	Oblige the Contractor to treat all details of the Contract as private and confidential banning it from disclosing any information without a prior approval, and identifying the consequences of failing to comply with such a provision.	Agreeing the confidentiality details between the parties disallows any later surprises that may cause damages to any of the parties.
50	Deem the Employer's decision final whenever a dispute arises as to the necessity of any disclosure related to the Contract.	This provision settles any dispute that may arise from breaching confidentiality.
<b>Drawings</b>		
51	Identify the party responsible for the costs related to issuing and/or re-issuing of drawings and/or other submissions.	Identifying the party responsible for such costs is considered as a risk allocation that would avoid relevant disputes to arise.

52	Specify the drawings required to be submitted by the Employer to the Contractor, and the consequences of failing to do so.	Specifying the required drawings and the consequences of failing to provide them allows a mutual understanding between the parties in relation to their obligations and liabilities in this regard.
53	Require the Contractor to submit As-Built Drawings, operation and maintenance manuals and/or others.	Specifying such requirements allows a mutual understanding between the parties in relation to their obligations and liabilities.
<b>Payment Certificates</b>		
54	Identify the nature and/or conditions of the listed materials that would entitle the Contractor for payment upon delivery.	The inclusion of such a provision reflects a mutual understanding between the parties in relation to their obligations and liabilities and allows the contractor to plan its cash flow.
55	Detail the information that are required to be included within the interim certificates in relation to the Plant.	The inclusion of such a provision reflects a mutual understanding between the parties in relation to their obligations and liabilities. These information may be relied upon to assess the contractor's entitlement in relation to the direct costs delivered to site in relation to the plant.
56	Identify the consequences of experiencing slow rate of progress in relation to the certification of the amounts stated within the monthly statements.	Identifying such consequences ensures that the contractor understands the consequences of his delays should they take place; thus, he would be encouraged to take measures in order to avoid such a situation. It also entitles the employer to take an action against the contractor without getting into a dispute.
57	Detail the actions to be followed whenever certain rates related to the executed Works are not available within the Contract Documents.	Detailing such actions sets out the procedures to be followed whenever such a circumstance is encountered in order to avoid relevant disputes throughout the course of a project.
58	Confirm that the inclusion of any work or materials delivered to the Site within the statements does not constitute the Employer's acceptance nor does it affect his rights under the Contract.	Such a confirmation entails that the contractor is required to fulfil his obligations in accordance to the contract documents and that any inclusion to otherwise within the payment certificates does not constitute the employer's acceptance. This shows that there is a separation between the commercial aspects of a project and the technical ones since cost engineers certifying payments may not be technical; thus, it might occur that some non-compliant works or materials are included within a payment certificate which will be later identified and corrected.
<b>Adjustments for Changes in Cost</b>		

59	Identify the items for which cost may be adjusted through a certain criteria.	Agreeing such a provision allows for a mutual understanding between the parties as to what could be adjusted for changes in cost, rather than leaving such a matter silent in the contract leading to potential disputes during the execution of a project.
60	Specify the particulars required and/or actions to be taken to determine any adjustment to cost.	This provision ensures that a mutual understanding between the parties is in place as to what particulars are required and/or actions to determine adjustment to cost.
61	Specify the condition(s) for any cost adjustments to take place.	Specifying the conditions ensures that a mutual understanding is in place as to what would entitle a contractor for a cost adjustment.
62	Identify the criteria to be followed in relation to cost adjustment occurring during a period granted an extension of time.	Identifying such a criteria ensures that a mutual understanding is in place in relation to cost adjustment during a period granted an extension of time.
<b>Currencies of Payment</b>		
63	Specify the currency of payment as the local currency.	Specifying the currency of payment ensures that no disputes would occur over such a point at any point during the execution of a project.
64	Deem the Contract Price inclusive of all costs that may be incurred in the event of currency restrictions.	Stipulating such a provision is considered as a risk allocation should such a circumstance takes place.
<b>Risks/Force Majeure</b>		
65	Specify that each party shall not be entitled to claim any loss from the other due to a default arising from Force Majeure events.	This reflects an agreement between the parties should a force majeure takes place. However, it can be equally useful to include any other different agreements or risk allocation in this regard between the parties.
<b>Subcontractors</b>		
66	Require the Contractor to submit certain information related to the proposed Subcontractors prior to their appointment and detail the minimum standards for their appointment.	Requiring such information to be submitted to the employer ensures its understanding to the capabilities of the subcontractors being proposed and sets out the employer's requirement in a clear manner.
67	Entitle the Engineer to remove incompetent Subcontractors and/or related personnel from Site.	Since contractors are expected to appoint competent subcontractors and personnel onsite, awarding the engineer such a right is reasonable to ensure that competent resources are proceeding with the works and to avoid any relevant consequences onsite.



68	Identify the consequences of assigning the Whole or part of the Contract Works to Subcontractors.	Identifying such consequences of such an action ensures that the parties understand their obligations and liabilities in this regard. The inclusion of such a provision ensures that the entities working on a certain project are allowed by its employer to do so.
69	Specify that the Employer and the Engineer shall not be deemed as a party related to any subcontract, for subcontractors may not raise any claims against the Employer, being a condition that shall be included within each subcontract.	Stipulating such a provision is considered as a risk allocation ensuring that the contractor shall be solely responsible for his subcontracts.
<b>Taking Over</b>		
70	Deem the completion of Tests on Completion as a condition precedent to the issuance of the Taking Over Certificate.	This ensures that a project is completed in accordance to the respective contract documents and provide a clear requirement prior to the issuance of the taking over certificate.
71	Deem the submission of As-Built Drawings, Operations and Maintenance Manuals and/or others as condition precedent to issuance of the Taking Over Certificate.	The inclusion of such a provision reflect the importance of such documents to the employer and sets a clear understanding between the parties that such documents are required prior to issuing the taking over certificate.
72	Deem the Contractor responsible for the care of the parts of the Works that may be used by the Employer prior to Taking Over.	Assigning the contractor such a responsibility reflects the possibility or the intention of the employer to use some parts of the works prior to their taking over and conveying that the care of such parts will the contractor's responsibility during their use. Accordingly, the contractor should account for such responsibility within his price/resources should he is asked to do so.
<b>Delay Damages</b>		
73	Entitle the Contractor to receive a re-fund of any payments received due to its failure to comply with Intermediate Milestone Dates in case it recovers such delays prior to the overall Time for Completion.	Awarding the contractor such an entitlement encourages the contractor to expedite works and mitigate delays, and ensures that the employer is compensated in case delays are experienced. This provision sets out the consequences of failing to meet a deadline and the conditions for a relief so that both parties would fully understand the consequences of their actions.
74	Identify the times or circumstances by which payments of delay damages shall be made.	Identifying the times for paying delay damages avoids later disputes on such a matter.
<b>Contractor's General Obligations</b>		

75	Require the Contractor to provide its submittals under the Contract to the Engineer within a certain time duration prior to the start date of the relevant activities on site.	The inclusion of such a requirement helps in avoiding onsite delays as it allows for reasonable times to review and discuss any submissions prior to the start of relevant activities onsite.
76	Identify a time frame within which the Contractor is required to re-submit any rejected submittal.	Not including such a provision opens a considerable room for delays when it is not stipulated when exactly should a contractor re-submit a rejected submittal.
77	Identify the software and relevant versions to be used for the preparation of drawings, documents and others.	Identifying a software to be used among the project parties allows consistency and easier processing to documents.
78	Specify a certain time frame within which the Contractor is obliged to restore any damaged part of the Works upon receipt of the Engineer's instructions in this regard.	Specifying such a time frame reflects a mutual agreement between the parties that would not later disputed should any damages take place. This ensures that contractors would not be reluctant to proceed with the rectification of any damages.
79	Specify a certain time frame prior to the execution of each stage of the Works within which the Contractor is obliged to submit relevant details of the arrangements and methods of the execution of such a stage.	Specifying such a time frame allows for quick progression to the works as the contractor is not obliged to provide all such details by the start of a project. It also offers more time for a contractor to study the best arrangements and methods of execution for the stages of a project.
<b>Commencement Date</b>		
80	Deem possession of Site by the Contractor as a condition precedent to the Commencement of the Works.	The inclusion of such a provision provides reasonable basis to the commencement of the works avoiding later disputes on the date on which the commencement of the works was effective.
81	Deem the receipt of the Advance Payment by the Contractor as a condition precedent to the Commencement of the Works.	Stipulating such a provision ensures that the parties of the contract understand their obligations and liabilities in this regard avoiding relevant disputes. A contractor may not be financially ready to proceed with the works without the advance payment as opposed to another who actually can proceed. Accordingly, this provision waives any uncertainty in this regard.
<b>Contractor's Representative, Superintendence and Personnel</b>		
82	Require the Contractor to obtain the Engineer's consent prior to delegating competent person.	Such a requirement ensures that the delegated person is acceptable by the employer; thus, it avoids later disputes on his selection.
83	Require the Contractor to provide certain personnel with certain experience.	Such a requirement ensures that the main positions of a project are filled with personnel that are acceptable by the employer; thus, it

		avoids later disputes on their selection and capabilities.
<b>Working Hours</b>		
84	Specify the rates of working hours related to the Employer and Employer's Representative for calculating the costs incurred by them for supervision outside the Working Hours.	Specifying these rates helps in avoiding any potential disputes over the values / expenses to be incurred by the contractor due to the extra hours worked by the employer and its representatives.
<b>Termination by Employer</b>		
85	Specify the Employer's entitlement to liquidate the Performance Security in order to recover any amounts due to the Employer resulting from termination due to a Contractor's Default.	Although the purpose of the performance security is to ensure that the contractor performs his duties in accordance to the contract, this provision appears to be a confirmation of proceeding with liquidating the security specifically whenever a contractor's default takes place.
86	Entitle the Employer to terminate the Contract without resorting to courts and/or any legal notices or judicial actions.	Awarding such an entitlement to the employer ensures that no disputes will arise if the employer exercises such a right as it is already pre-agreed between the parties.
87	Require the Contractor to fully co-operate with third parties or other contractors appointed upon the termination of the Contract due to default and identify the consequences of failing to do so.	Obligating the contractor to co-operate upon termination is crucial for a project's smooth transition from a contractor to third parties who will assume its remaining responsibilities. Identifying the consequences of failing to do so powers this provision as the failure will be met with pre-agreed measures that would not be disputed.
88	Entitle the Employer, at its sole discretion and without any obligation to do so, pay Subcontractors amounts payable in accordance with their subcontracts, upon termination of the Contract due to a Contractor's Default.	Such an option is an important tool for employers whenever they decide to terminate a contract due to a contractor's default, as it provides them with the choice of settling many claims/disputes relevant to their projects on the account of the contractor without being obligated to do so. Not settling a project's relevant disputes may indirectly affect the image and reputation of a project reaching to cause a consequent damage to employers as well being the owners; thus, having such an option could reduce the effects of such a situation.
89	Entitle the Employer to terminate the Contractor in case of reaching the cap of liquidated damages due to delays.	The inclusion of this provision ensures that the contractor understands the extent of the consequences of delays and provides the employer an option beyond the consumption of the liquidated damages.

90	Entitle the Employer to terminate the Contractor in case of the Contractor's failure to obtain the insurances required by the Contract.	Stipulating such a provision reflects the importance of insurances as agreed by the parties and the consequence of failing to satisfy the relevant requirements.
<b>Cash Flow</b>		
91	Require the Contractor to submit cash flows in a form acceptable by the Engineer or in a certain form.	Agreeing on such a requirement between the parties is important to ensure that the submission of cash flows will be accepted by employers; thus, rejections to the cash flow submissions would be avoided.
<b>Adjustments for Changes in Legislation</b>		
92	Deem the Contract Price inclusive of costs of all duties, levies and charges payable to the Government under any current Law of the Country.	This condition is considered as an allocation of risks between the parties so that contractor accounts for such risks within his price/budget, avoiding later disputes on which party would be responsible for such costs.
93	Specify that the Contract Price shall be adjusted due to changes in legislation.	Agreeing whether a contract price shall be adjusted or not for changes in legislation especially in countries where the probability of occurrence of such an event is high is crucial so that no disputes would later take place over who should be responsible for the costs incurred due to such changes. This provision is considered as an allocation of risks between the parties.
94	Specify that the Contractor's entitlement to cost under this Sub-Clause shall have no allowance for overhead or profit.	Although it might appear that it goes without saying that no allowance for overhead or profit would be taking place due to changes in legislation, a confirmation in this regards would add certainty to any misunderstanding that might later appear when such an event takes place.
95	Require the Contractor to notify the Engineer within a certain time duration from the time it becomes aware of any changes in legislation as well as to submit relevant evidence and proofs of original records whenever required.	Such a requirement is mainly considered as the procedures which should be followed in case such an event takes place. Timely reaction might present options to the employer when it can immediately take some measures to reduce any costs that may be incurred, reflecting the purpose of the required notification.
<b>Added through Literature Review</b>		
96	Specify the conditions by which weather conditions would be deemed as exceptionally adverse.	As the parties may disagree on what would deem weather as exceptionally adverse, agreeing on the conditions which would reflect such a situation would avoid disputes on such an issue.

97	Specify the consequences of experiencing delays by the contractor due to employer's delay events after having planned to complete earlier than the completion date.	This provision addresses whether a contractor should benefit from early completion or not, being a benefit that can simply be reflected on the savings achieved from the preliminary/overhead costs when a project's duration is reduced. If the parties mutually agree or disagree on such a benefit, then setting the consequences of experiencing employer's delay events when early completion was achievable should be stated to avoid potential disputes on this matter.
98	Specify the criteria of quantifying prolongation as to whether they should be calculated from the time by which a delay event has occurred or by the extended time by the end of the project.	Agreeing on such a criteria is important as calculations between the time by which a delay event has occurred and the extended time by the end of the project would normally be very different; thus, it is a matter that would potentially lead to disputes if not pre-agreed upon within the contract.
99	Require a demonstration of concurrency by the contractor as a condition precedent to recovery of unabsorbed costs and/or prolongation costs, and specify the consequences of its occurrence.	Since concurrency is known to be a main cause of disputes whenever a project experiences delays, requiring a demonstration by contractors, deemed as a condition precedent to the recovery of costs, is crucial so that parties understand the criteria and procedures of assessing cost compensation due to delays.
100	Specify the delay analysis method for calculating time delays.	The choice of delay analysis method is known as another main cause of disputes whenever a project experiences delays. Although there is a number of methods that could be used of analysing delays, some methods have advantages over others and some require certain conditions to be existent. Agreeing on such a matter at a later stage of a project limits choices due to having to follow certain methods and ignore others based on the existent conditions at that time. Accordingly, if a method is pre-agreed, contractors will be obligated that all conditions required to follow a certain methods are satisfied and made existent; thus, relevant disputes would be eliminated or at least reduced.
101	Specify the measuring techniques for loss of productivity / efficiency claims. (i.e. measured mile)	Specifying the measuring techniques for such type of claims helps in avoiding relevant potential disputes on the choice of such techniques by a later stage of a project.
102	Require the contractor to submit cost loaded construction schedules, project trending and earned value analysis on routine basis.	Such a requirement is considered as a project control tool that can be utilized by employers in order to understand the progress of their

	projects. It also helps in identifying and managing delays as well as cash flow.
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## **CHAPTER 6: CONCLUSION, LIMITATIONS AND FUTURE RECOMMENDATIONS**

### **6.1 Conclusion**

A sound construction contract is a contract that addresses most known construction risks and contract drafting considerations so that a new contract would not be directed to the same potential causes of disputes. Approaching such a sound contract form, this research investigated the current practices and considerations of contract drafting and main causes of disputes, and included an analysis to the common conditions of 28 construction contracts in Egypt. The 30 top common/significant conditions which were addressed by at least 50% of the 28 contracts were analyzed and broken down into a number of provisions, of which importance were verified through expert surveys.

Through the literature review, the current practices and considerations of contract drafting have revealed a number of 19 major causes of disputes that are recommended to be addressed through particular conditions of construction contracts. The analysis and its results validation through expert survey revealed a number of 95 common provisions. Adding the number of the significant provisions from chapters 3, 4 and 5 and removing any similarities, a number of 102 common provision was identified. These provisions are highly recommended to be addressed within the particular conditions of new construction contracts when using FIDIC 99 as the form of general conditions.

## **6.2 Limitations of the Research**

The following points are considered as limitations to the research:

- The analysis did not consider the fact that many of the contracts are related to different type of projects, such as residential, commercial, hospitals, wastewater plants, roads, factories and others. It is understood that different types of projects may entail different particular conditions within the respective construction contracts. However, the approach in this research is to address the top particular conditions that would suit most of the construction projects generally.
- The analysis did not consider that the analyzed contracts are related to the public and private sectors with no differentiation, which might affect the results if considered.
- The provisions recommended to be considered by the contract drafters throughout the literature review were not verified by the experts' survey and were directly included within the final list of findings of this research. However, the experts may have had other suggestions as to the importance of such conditions in Egypt.

## **6.3 Recommendation for Future Research**

The following points are recommended to be considered for future work:

- Specific analysis to the different types of projects is recommended to be implemented in order to obtain the top common conditions based on the type of industry.
- Since the top 30 particular conditions are thoroughly analyzed within this research and the remaining identified conditions are recorded for reference. A model can be



created collecting all of the herein identified particular conditions to allow an optimum formulation to particular conditions, whereby a user may enter some information in the model, and the particular conditions would be created dynamically.

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## **APPENDICES**

**APPENDIX (A)**

**Checklist of Causes of Disputes (Literature Review)**

Checklist of Causes of Disputes (from Literature Review)				
No.	Risk Item	Addressed through identified common conditions		Comments
		Yes	No	
1	Variations/Change Orders			
2	Exceptionally Adverse Weather			
3	Early Completion Schedules			
4	Time Delay and Extension			
5	Quantification of Prolongation Costs			
6	Concurrent Delays			
7	Termination			
8	Price Escalation			
9	Handing Over of Site			
10	Release of Mobilization Advance			
11	Late/Receipt/Checking/Approval Duration of Drawings			
12	Force majeure			
13	Suspension			
14	Payment terms and delay of payments			
15	Dispute Resolution			
16	Reservation of Rights			
17	Time Impact Analysis Requirement			
18	Loss of productivity/efficiency claims			
19	Total Cost Claims			



**APPENDIX (B)**

**Analysis Sheet**

**APPENDIX (C)**

**Comparison between FIDIC 87 and FIDIC 99 with Respect to the Top 30 Clauses**

**APPENDIX (D)**

**Provisions of Stage 2 Survey**

**APPENDIX (E)**

**Results of Stage 2 Survey**