Unforeseen Physical Conditions and their Legal Implications in Construction – A comparative study

الصعوبات المادية غير المتوقعة وآثارها القانونية في مجال الإنشاءات – دراسة مقارنة

By
Essa Ahmad Ali Abdulla Ahmad

Student ID 120048

Dissertation submitted in partial fulfilment of the requirements for the degree of MSc in Construction Law and Dispute Resolution

Faculty of Business

Dissertation Supervisor
Professor Aymen Masadeh

March 2015

Abstract

The obligations and rights of the parties involved are allocated in the agreed terms of the contract, and the parties' actions are generally administered by the governing law. Therefore, legal controls and ample statutory regulations are expected to be provided by the governing law to regulate the terms, in addition to offering adequate guidance to courts in interpreting these terms. This dissertation aims to investigate the notion of unforeseen physical conditions, the different standard form of contracts provisions relating to unforeseen physical conditions, and the other shared common notions of *force majeure*, *imprevision*, and misrepresentation. This study is intended to assess United Arab Emirates (UAE) legislation in comparison with its common law and civil law counterparts. The research findings provide a need for statutory intervention in the UAE in matters of unforeseen physical conditions for the construction industry.

الملخص

إنّ التزامات وحقوق أطراف العقد يتم تحديدها وفق لشروط العقد المتفق عليها، وتخضع تصرفات الأطراف بشكل عام للقانون واجب التطبيق. وبناء عليه، يُفترض أن يوفّر القانون واجب التطبيق الضوابط القانونية والإطار التشريعي الضروري لتنظيم تلك الشروط، كما سيقدم ذلك القانون التوجيه اللازم للمحاكم عند تفسيرها لتلك الشروط. تهدف هذه الأطروحة إلى بحث مفهوم الصعوبات المادية غير المتوقعة، ومختلف الصيغ النموذجية للبنود التعاقدية المتعلقة بالصعوبات المادية غير المتوقعة، وكذلك المفاهيم ذات الصلة كالقوة القاهرة ونظرية الظروف الطارئة والتغرير. كما تهدف هذه الدراسة إلى تقييم تشريعات دولة الإمارات العربية المتحدة ومقارنتها بالقوانين الانجلوسكسونية والقوانين المدنية ذات الصلة. وتظهر نتائج البحث ضرورة إدخال تعديلات تشريعية في الدولة تتعلق بمسائل الصعوبات المادية غير المتوقعة في مجال الإنشاءات.

Acknowledgements

I would like to thank my Supervisor, Professor Ayman Masadah, for his guidance, understanding and patience. You have been a mentor and a true scholar.

I would like to express my deepest gratitude to Dr. Ahmed Saeed bin Hazeem, former General Manager of Dubai Courts. Thank you for your kind support and encouragement.

I would like to thank my friends and colleagues who contributed to this dissertation. I'm grateful to you all.

Last but not least, my eternal thanks and gratitude go to my parents and sisters. I dedicate this dissertation to my Mother, I couldn't have made it without her. Thank you for your unconditional love and support.

Tables of Abbreviations and Definitions

Code	UAE Civil Transaction Law
DMCC	Dubai Municipality Conditions of Contract for Works of Civil Engineering Construction
FIDIC	Fédération Internationale Des Ingénieurs-Conseils
FIDIC Red Book	The International Federation of Consulting Engineers 1999 version
GCC	Gulf Cooperation Council, the Arabian Peninsula consisting Saudi Arabia, Kuwait, Bahrain, Qatar, the United Arab Emirates, and the Sultanate of Oman
Lésion	an intention, purposeful action or inaction to deceive by fraudulent means.
Muqawala	Is a contract under the UAE Code whereby one of the parties thereto undertakes to make a thing or to perform work in consideration of which the other party undertakes to provide.
UAE	United Arab Emirates
UNIDROIT	International Institute for the Unification of Private Law

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Chapter 1: Introduction

1.1 Background

The United Arab Emirates (UAE), particularly the Emirate of Dubai, has witnessed the construction of some iconic structures in recent years. Construction of these structures has put the city (which was, until a few decades back, a relatively small trading port) on the world map for tourism and trade. Plans are now underway to build other attractions that will encourage more businesses to set up shop in the country, and for more tourists to visit Dubai.

The city has also been a pioneer in providing infrastructure facilities for the benefit of residents. For instance, Dubai was the first city in the region to develop a metro transit system, and now many other cities in the region are building one. The construction boom in Dubai is can offer vital lessons to other cities in the UAE and the other GCC countries regarding construction management, geotechnical aspects and innovative engineering technologies.

Construction is thus an important pillar in the development of Dubai. Perhaps the most critical factor in a construction project is that the project is completed within the time period specified and then handed over to the employer/owner, as otherwise there will be huge cost and time implications. Construction contracts, like other agreements, lay down the mutual rights and obligations of the parties to the contract.

What makes the construction contract unique, at least in some respects, is that the site conditions are not entirely static. Since site conditions change, the question arises as to what will happen to the mutual obligations of the parties within the contract.

The unforeseen physical conditions clause is a provision that is seen in standard construction contracts in several mature jurisdictions. It is a tool that is meant to address variations in the site that are encountered following execution of the contract. Encountering unforeseen physical conditions may lead to hotly contested and expensive disputes; therefore, revision and consideration of how the risk of encountering physical conditions is allocated is an appropriate step to take before the contract is tendered or signed.

Unless provisions related to dealing with unforeseen physical conditions are provided, the outcome of unanticipated site conditions is often delays or even suspension to the work due to impossibility of performance or heavy cost; typically, very few owners are willing to pay compensation for this. Consequently, the parties to the construction contract may want to withdraw, and it is likely that they may try to invoke *force majeure* provisions or other

contractual concepts, which will eventually exemplify the parties from their obligation and liabilities.

In the UAE, construction contracts are governed by the commercial transaction code, commercial customs, and the civil transaction code – specifically provisions relating to the so called "Muqawala" contracts. Currently, UAE legislation lacks statutory provisions relating to unforeseen physical conditions; therefore, the contracting parties are left to settle in advance issues relating to unforeseen physical conditions through mutual agreement.

1.2 Research Overview/Problem

This thesis seeks to examine how the risk arising from unforeseen physical conditions is dealt with in construction contracts. The issue is examined with reference to standard contracts and case law in various jurisdictions, and by examining the views of learned commentators.

There is no body of reported decisions in the UAE pertaining to the unforeseen physical conditions clause; therefore, reliance has been placed on the precedents and the works of scholars from other advanced jurisdictions. It is hoped that these will help shed light on the various aspects of the unforeseen physical conditions clause in these advanced jurisdictions, and help UAE legal scholars and lawyers understand the nuances of the unforeseen physical conditions clause.

1.3 Main Research Questions

In this regard, the purpose of this dissertation is to find answers to matters concerning the application of unforeseen physical conditions in the UAE generally comparing these matters between the UAE and other jurisdictions. The topic is approached by giving consideration to the following matters:

- What are the typical site conditions in the UAE, and when is a physical condition treated as unforeseen?
- How do standard construction contracts in advanced jurisdictions allocate risk in the event of an unforeseen physical condition; in particular, what are the different elements of a contractual provision on unforeseen physical conditions?
- What factors differentiate an unforeseen physical conditions clause from other contractual concepts that also deal with unanticipated events?

1.4 Significance of Research

Many construction contracts in the UAE contain provisions referring to unforeseen physical conditions. However, UAE statutory law does not incorporate provisions relating to unforeseen physical conditions. The absence of statutory provisions means that it is left to the parties involved in a contract to decide how risk should be allocated in the event the contractor encounters a physical condition that is not anticipated.

In this regard, a study of the position on unforeseen physical conditions in other jurisdictions is used to identify various elements of the unforeseen physical conditions clause. While there are differences between jurisdictions, the lawmakers and courts in relatively younger jurisdictions, such as the UAE, can profitably learn from the experience of other jurisdictions. It is also hoped that this study will enlighten construction professionals regarding issues related to unforeseen physical conditions.

1.5 Aims and Objectives

The main objective of this paper is to examine and understand provisions related to unforeseen physical conditions from different perspectives. In this regard, the paper seeks to:

- identify the need for an unforeseen physical conditions clause;
- flesh out the different elements of a typical unforeseen physical conditions clause, and analyze the scope and ambit of the unforeseen physical conditions clause and its legal implications; and
- compare the unforeseen physical conditions clause and other similar contractual concepts.

1.6 Research Methodology

This paper analyses journal articles, books, reports, law firm newsletters, and case law from both the UAE and the common law jurisdictions. Furthermore, where relevant, information from other European civil law jurisdictions is relied on in this paper to understand the issue from a comparative perspective. In addition, this paper incorporates the professional opinions of contract law experts of the Government of Dubai Legal Affairs Department.

1.7 Dissertation Structure

a) This dissertation consists of four chapters. Chapter 1 examines the background for this research – i.e. the construction boom in the UAE, particularly Dubai – identifies the

research problem, lays out the main research questions, aims and objectives, outlines the significance of the research and explains the research methodology.

b) Chapter 2 examines the different site conditions in the UAE, and also notes how courts in the UK and US have adjudicated when a physical condition is treated as unanticipated. This chapter examines examples of physical condition clauses in standard contracts, such as the FIDIC, Dubai Municipality Conditions of Contract for Works of Civil Engineering Construction, USA Federal Acquisition Regulation, and Australian AS General conditions. The different elements of the standard unforeseen physical conditions clause is also fleshed out

c) Chapter 3 seeks to compare the unforeseen physical conditions clause with other contractual concepts, such as *force majeure*, *imprevision*, and misrepresentation. Like unforeseen physical conditions, these concepts also arise after the contract is entered into by the relevant parties.

d) Chapter 4 provides a conclusion based on the findings in the previous chapters to present the research outcomes and recommend further studies to incorporate provisions related to the unforeseen physical conditions clause under UAE legislation, especially Civil Transaction Law.

Chapter 2: Contractual Clauses Relating to Unforeseen Physical Conditions: An Examination

2.1 Physical Conditions that are Unforeseen: Different Categories

Typically, unforeseen physical conditions include sub-surface concrete structures, and geotechnical, hydrological and environmental conditions; for instance, the effect of waves, wind and drifted artificial obstructions, such as munitions, wrecks and debris.[1] Therefore, unforeseen physical conditions are recognized as being at the subsurface of the site; however, it is important to note that unforeseen physical conditions are not restricted to below-ground conditions only, but also those that are above the surface but latent, and that cannot be immediately recognized due to the conditions being hidden, obscured, or dormant. Thus, on the one hand it includes within its scope conditions that can only be seen at subsurface, for example:

1- The occurrence of rock, stones, or boulders in an excavation area.

2- While the boring data indicates the existence of sound rock, in reality loose and soft material is encountered at the site.

3- Workability of soils and the behavioral characteristics encountered are physically different and contrast with the types of soils indicated by boring.

4- Higher elevation of groundwater.

5- Solidity or softness of rock material to excavate, drill, or blast.

However, on the other hand, unforeseen physical conditions can also include latent conditions above the ground, such as:

1- The suitability for usage of an existing bridge support.

2- The occurrence or lack of plumbing systems in ceilings or walls.

3- A concrete floor being thicker than anticipated.

4- Drawings showing no topsoil, when in fact this topsoil was hidden by vegetation that has had to be removed.

The second category of unforeseen physical conditions can also include those arising from the unusual nature of the site, or an unknown condition which could not reasonably have been

[1] Christopher M. McNulty, Esquire Peter M. Kutil, Esquire, *Differing Site Conditions*, Annual Meetings of the Beavers and Moles, 2002

foreseen during the stage of analyzing the contract documents and information provided by the employer. This category can include:

1- Encountering excessive hydrostatic pressure during pipe laying.

2- Contractor's dewatering equipment being damaged due to unpredicted and highly corrosive nature of groundwater at the site.

3- Presence of oily substance preventing application of polyvinylchloride to the roof.

However, it is important to note that events that are beyond the reasonable control of the contractor, including economic downturn, adverse weather, labor shortages, wars, criminal damage, sabotage, strike lock-out, and other industrial disturbances, cannot be characterized as unforeseen physical conditions.[2] This is because, due to their very nature, they are not attributable to the actual physical site condition, so that different legal principles and interpretations will apply.

2.2 Site Conditions in the UAE

Site conditions in desert regions of the Middle East, including the UAE, typically experience several hydrological and subsurface impacts. The ground conditions in this region are bisected into various topographic units due to its geological features. These units can include mountain rock formations, dunes, coastal plains, and foothill alluvial fans.[3] The soil in desert regions is extremely variable due to the cruel environment, unique soil formation process and high salt content; therefore, there is a need in this region to evaluate the geotechnical properties separately before attempting any construction program.

Ground conditions in desert regions may also be of a variable nature and experience geotechnical problems, such as the existence of cavities in limestone formations, hydrated gypsum in poorly drained areas, occurrence of weak cementation bonds due to crystallized salt, and the presence of inland and coastal salt-bearing soil, known as Sabkha. Cavities have been encountered constantly

[2] Nancy J. White, Construction Law for Managers, Architects, and Engineers, Thomson Delmar Learning, 2008, P64

[3] A.S. Stipho, *Soil Conditions and Foundation Problems in the Desert Regions of the Middle East,* First International Conference on Case Histories in Geotechnical Engineering Missouri University of Science and Technology, 1984

in this region, and it has been pointed out that the occurrence of cavities in the Middle East region has a strong impact on foundation design.[4]

The desert region of the UAE is experiencing huge international interest from construction specialists in participating in mega-development projects. Therefore, it is important for international practitioners to fully understand the nature of geotechnical problems and soil conditions in this region, since this will allow these practitioners to anticipate unforeseen features of construction techniques by evaluating, assessing, managing, and controlling any adverse physical conditions or obstacles that may interfere in the implementation of construction work.

It is in the best interest of the contracting parties to determine the soil condition in order to avoid risk, and thereby seek certainty within the contractual terms. Questions may arise as to who should bear the risk if the soil appears to differ from that originally anticipated by the contracting parties. In practice, most international standard contracts explicitly distribute the risk of soil condition between the parties, and address the issue by providing references to extension of time and payment at extra cost.

In the UAE, underground utilities are another concern for parties to consider during the tendering, planning, and design process. Generally, the employer provides information regarding the existing utilities; however, the accuracy of this information is not guaranteed. This has led to a situation in the UAE, and especially Dubai, in which public underground utilities may belong to different governmental bodies. For instance, in Dubai, the sewage lines and related equipment belong to the Municipality, while water pipes and electric cables belong to the Water and Electric Authority, the transport infrastructure facilities are the property of the Road and Traffic Authority, telecommunication cables belong to the telecommunication regulation authorities, military and security cables are the property of the armed forces, etc.

The contractor is therefore left to make their own enquires in order to decide on the layout of the structure, pipes, etc., and excavates trial holes to locate accurate utilities. Investigating the site during the tendering stage is generally the sensible option for contractors, since they otherwise have to rely on the location and details of utilities shown in the plans. Therefore, when the information provided to the contractor is inaccurate, utilities often obstruct the performance of

[4] *ibid.*

works, thus necessitating changes to the design or a diversion to the utilities, which complicates the work.[5]

Despite the author's best efforts, it was not possible to identify case law pertaining to unforeseen site conditions in the UAE. Therefore, in the next two sections case law from the US and UK regarding unforeseen physical conditions is examined.

2.3 Examples of unforeseen physical conditions in UK

The case of Humber Oil Trustees Ltd v. Harbour & General Works (Stevin) Ltd[6] concerned the collapse of a jack-up barge due to an unforeseen combination of soil strength. The employer argued that this could not be seen as part of the physical conditions as it was a transient condition. He raised the point that physical conditions should refer to material things, such as running sand or rock, but not to applied stress, which is considered a fleeting situation that may or may not be encountered by contractors. The court of appeal rejected the employer's claim, and held that applied stress can be part of physical conditions since the nature of the ground is such that it cannot be free from some amount of stress.

Another case raised the issue of whether a sheet pile wall being over-stressed could be considered a physical condition. The court in this case (Associated British Ports v Hydro Soil Services NV and Other[7]) considered strengthening work to a quay wall using sheet piles, wherein the sheet pile cracked and bulged outwards. The contractor argued that the sheet pile itself was overstressed and contained plastic hinges, and that this comprised an unforeseen physical condition. The court illustrated that "physical condition" can refer to something that affects works. In addition, it can be an actual element of the work itself; for instance, the physical state of the sheet pile.

2.4 Examples of unforeseen physical conditions in the US

In the case of W. H. Lyman Construction Co. v. The Village of Gurnee,[8] the contractor claimed that subsurface hydrostatic pressure was a physical condition that could not be anticipated. This case involved construction through subsurface soil comprising water-bearing sand and silt. A high groundwater table was discovered and required to install dewatering walls. Due to the high subsurface hydrostatic pressure, the designed seal manhole bases would not hold. The court held

[5] David Kinlan and Dirk Roukema, Adverse Physical Conditions and the Experienced Contractor Test, Terra et Aqua, 2010

[6] [1991], 59 BLR 1

[7] [2006], EWHC 1187 (TCC)

[8] 84 III. App. 3d 28; 403 B.E.2d 1325 [1980]

that the unforeseen physical condition claimed by the contractor did not exist, except with respect to the design of the manhole bases.

It is important to note that unforeseen physical conditions do not emerge only for below ground conditions. This was the finding in the case of Robert W. Carlstorm v. German Evangelical,[9] which involved a roofing project on a church. Interested contractors were invited to inspect the roof; however, the employer refused to remove the attic insulation at the roof, as the church was concerned that if the roof was removed it might have been damaged and increase costs. The contractor commenced the work, and as the old roof was being removed he saw that the structural integrity of the roof was compromised and notified the employer for a variation order. The court held that this was an unusual physical condition, and entitled the employer to additional compensation.

2.5 The Need for the Unforeseen Physical Conditions Clause

The traditional approach to construction contracts was that the contractor should take on the risk for unanticipated physical conditions and protect themselves by providing for a contingency factor in their fees or bid price.[10] The early US case of Stees v. Leonard[11] is an example of this approach. In this case, Stees entered into an agreement with Leonard, an architect/builder to erect a three-story business on Stees' property. However, when the structure was nearing completion, it collapsed because the soil had retained too much water and could not support the weight of the structure. A second attempt to reconstruct also failed, as the building again collapsed when it was nearing completion. Leonard abandoned the project and refused to perform under the contract. Stees filed a suit seeking damages and return of payment. Leonard defended the suit by blaming Stees for failing to provide a suitable location upon which to build. The Court held in favor of Stees and stated the following:

> "The general principle of law which underlies this case is well established. If a man bind himself, by a positive, express contract, to do an act in itself possible, he must perform his engagement, unless prevented by the act of God, the law, or the other party to the

[9] 662 N.W.2d 168

[10] Thomas J Kelleher et al. *Smith Currie and Hancock's Federal Government Construction Contracts: A Practical Guide for the Industry Professional* (Wiley 2nd edn) p.256

[11] 20 Minn. 494 (1874) quoted in *Hazel Glenn Beh* Allocating the Risk of the Unforeseen, Subsurface and Latent Conditions in Construction Contracts: Is Theren Room for the Common Law? 46 U. Kan. L. Rev. 115 1997-1998

contract. No hardship, no unforeseen hindrance, no difficulty short of absolute impossibility, will excuse him from doing what he has expressly agreed to do."[12]

The above position was also articulated in the US case of United States v. Spearin,[13] wherein the US Supreme Court held that:

> "Where one agrees to do for a fixed sum, a thing possible to be performed, he will not be excused or become entitled to additional compensation, because unforeseen difficulties are encountered. Thus, one who undertakes to erect a structure upon a particular site assumes ordinarily the risk of subsidence of soil."

The disadvantage of this approach is that it is impossible to value the unknown. Typically, when contractors put together bids based upon the information in the bid package, they have limited time to investigate site conditions.[14] It has been rightly pointed out that even if a price contingency is incorporated into the bid price, it may end up being "totally inadequate" or "grossly conservative",[15] since if a contractor were to make allowances for all conceivable conditions that may occur it would make his offer noncompetitive. However, the absence of a risk provision is a denial of the uncertainties inherent in a construction project, and may well lead to legal disputes in the future. Employers, on the other hand, may benefit from unforeseen physical conditions clauses since the contractor may bid more truthfully, and not inflate their bid with excessive additional costs intended to take into account the unanticipated physical conditions that may occur.

2.6 Different Types of Unforeseen Physical Condition Clauses

In the previous section, we saw how important an express agreement is needed to regulate the obligations and rights of the parties when facing matters concerning unforeseen physical conditions, whereas in the other hand, it has been shown how express provisions relating to unforeseen physical conditions tend to have an impact on the contract pricing. Normally, the employer does not prefer the contractor bearing all of the risk of unforeseen physical conditions

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[12] *Ibid.* at 503, quoted in *Hazel Glenn Beh* Allocating the Risk of the Unforeseen, Subsurface and Latent Conditions in Construction Contracts: Is There Room for the Common Law? 46 U. Kan. L. Rev. 115, 119.

[13] 248 U.S. 132 (1918)

[14] Donald O'Toole 'Differing Site Conditions - Who Bears the Risk?' available at http://www.troutmansanders.com/files/upload/DifferingSiteConditions.pdf

[15] *Ibid.* at Note 10 .

since the contractor might inflate its bid or include unforeseen events in its price to account for the probability of physical conditions that may not essentially occur. This section will demonstrate an overview of the different types of standard form of contract clauses relating to unforeseen physical conditions.

2.6.1. Unforeseen Physical Conditions Clause under the FIDIC Red Book

The International Federation of Consulting Engineers 1999 (FIDIC Red Book) defines "physical conditions" as "natural physical conditions and manmade and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions".[16] It goes on to provide that "If the Contractor encounters adverse physical conditions which he considers to have been unforeseeable, the Contractor shall give notice to the Engineer as soon as practicable."[17] The term "unforeseeable" is defined to mean "not reasonably foreseeable by an experienced contractor by the date of submission of the Tender".[18] Where the contractor has given notice of the unforeseeable physical conditions encountered, and has suffered a delay and/or incurred a cost due to it, the contractor is entitled to an extension in terms of the time, and payment for any cost that is in addition to contract price. The engineer is required to determine the foreseeability of the physical conditions, and whether or not an extension of time for completion of the works and/or costs incurred by the contractor due to the unforeseen physical conditions is warranted. In this regard, it is relevant to note that, under the FIDIC Red Book, valuation is founded on a bill of quantities with unit rates; it is not a lump-sum contract.[19] In addition, under the FIDIC Red Book, an independent engineer manages the contract on behalf of the employer.[20]

2.6.2. Unforeseen Physical Conditions Clause in the Federal Acquisition Regulation (US)

In the US, unforeseen physical conditions are usually referred to as "differing site conditions". Clause 52. 236-2 of the Federal Acquisition Regulation provides that:

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[16] Clause 4.12 of the FIDIC Red Book

[17] *Ibid.*

[18] Clause 1.1.6.8 of the FIDIC Red Book

[19] Jonathan Hosie, Fidic: Red Yellow and Silver books – the Treatment of Unforeseen Physical Conditions available at http://www.mayerbrown.com/files/News/b5d1460d-3f81-40e8-b917-af43991640bd/Presentation/NewsAttachment/26d78741-0f9e-4442-9a01-eab773393c57/FIDIC_red_yellow_silver_books_hosie.pdf

[20] *Ibid.*

a) The Contractor shall promptly, and before the conditions are disturbed, give written notice to the contracting officer of—

1. Subsurface or latent physical conditions at the site which differ materially from those indicated in the contract; or
2. Unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

b) The contracting officer should investigate the site conditions promptly after receiving the notice. If the conditions do materially differ and cause an increase or decrease in the contractor's cost of, or time required for, performing any part of the work under the contract, whether or not it has changed as a result of the conditions, an equitable adjustment should be made under this clause and the contract modified in writing accordingly.

c) No request by the contractor for an equitable adjustment to the contract under this clause is allowed, unless the contractor has given the written notice required; however, the time prescribed in paragraph (a) of this clause for giving written notice may be extended by the contracting officer.

d) The contractor cannot make any request for an equitable adjustment to the contract for differing site conditions after final payment under the contract.[21]

In Foster Const. C.A. & Williams Bros. Co. v. U.S.[22]., it was held that "The purpose of the changed conditions clause is thus to take at least some of the gamble on subsurface conditions out of bidding. Bidders . . . need not consider how large a contingency should be added to the bid to cover the risk. They will have no windfalls and no disasters. The Government benefits from more accurate bidding, without inflation for risks which may not eventuate. It pays for difficult subsurface work only when it is encountered and was not indicated in the logs."

It has been pointed out that in the US, differing site conditions are usually divided into two categories: Type 1 is a condition that differs substantially from those provided for in the information given to bidders,[23] while Type 2 is an unknown and unusual condition that differs

[21] Federal Acquisition Regulation Vol. 1 available at https://acquisition.gov/far/current/pdf/FAR.pdf

[22] (Ct.Cl. 1970) 435 F2d 873, 887

[23] Bernard Kamine, "Differing Site Conditions" available at http://kamineconstructionlaw.com/publications-and-articles/differing-site-conditions/

materially from what is ordinarily encountered in works of that particular type in the particular locality.[24]

2.6.3. Unforeseen Physical Conditions Clause in the AS General Conditions of Contract (Australia)

In Australia, the equivalent term for "unforeseeable physical conditions" is "latent conditions". Clause 12 of the AS General conditions of contract (AS 2124—1992) defines "latent conditions" as physical conditions on the site or its surroundings, including artificial facets but excluding weather conditions, which differ materially from the physical conditions that should reasonably have been anticipated by the Contractor at the time of the Contractor's tender if the Contractor had:

1- examined all information made available in writing by the principal to the contractor for the purpose of tendering;

2- examined all information relevant to the risks, contingencies and other circumstances having an effect on the tender and obtainable by the making of reasonable enquiries;

3- inspected the site and its surroundings; and

4- noted any other conditions which the contract specifies to be latent conditions.

However, groundwater, tidal movements, or soft spots and unwanted material to be removed are excluded from the definition of "latent conditions". Clause 12.2 requires a contractor who has come across a latent condition to notify the superintendent, and a delay caused by the latent condition may justify an extension of time or a variation to the contractual terms if the latent condition causes the contractor to carry out additional work, use additional constructional plant, or incur extra cost (including, but not limited to, the cost of delay or disruption), which the Contractor could not reasonably have anticipated at the time of tendering. In this case, a valuation is made under Clause 40 of the AS General conditions of contract.

2.6.4. Unforeseen Physical Conditions Clause in the Dubai Municipality Conditions of Contract for Works of Civil Engineering Construction

The unforeseen physical conditions clause in the Dubai Municipality Conditions of Contract for Works of Civil Engineering Construction (hereafter referred to as DMCC) is seen to be similar to those of the FIDIC standard contracts. In fact, the DMCC is derived from the FIDIC 1987 Red

[24] *Ibid.*

Book. Clause 12.2 therein provides that if during the execution of work onsite the contractor encounters "physical obstructions or physical conditions, other than climatic conditions, which obstructions or conditions, were, in his opinion, not foreseeable by an experienced contractor", he is required to:

1- alert the engineer verbally as soon as possible, but no later than the end of the day;

2- give written notice of the condition to the engineer, with a copy to the employer, within three working days;

3- give notice to the engineer of his intention to prepare a claim of additional payment or time extension within 28 days from the event.

However, the written notice to the engineer must describe the following:

1- the event (including date, hour, method of work leading to the event, observations, estimated geometric dimensions, nature of the problem);

2- details of the anticipated effects and consequences thereof;

3- measures the contractor has already undertaken and is proposing to take to overcome the problem; and

4- a preliminary estimate of the anticipated delays to the works program and interference with the contractor's other activities in connection with the works.

Clause 12.4 of the DMCC requires the engineer to conduct a site visit and take one of the steps provided therein, such as instructing the contractor on how to overcome the physical conditions, requiring the contractor to prepare a cost estimate, approving the Contractor's proposed measures, and so on. The engineer has to inform the employer of the situation, and finally make a decision regarding the claim of the contractor for an extension of time and/or an increase in cost.

The Dubai Municipality (the "Employer") has an ongoing arbitration with one claimant (the "Contractor") related to this issue. The contract between these parties is based on the DMCC. The instruction to tenderers issued to all tenderers is also applicable. The Contractor alleges that it was forced to excavate addition rock due to unforeseen ground conditions. In summary, the position of the Employer during the arbitration has been as follows:

1- The contract and instruction to tenderers requires the Contractor to be fully informed about all necessary information for calculating rates and prices for the tender.

2- For example, in Clause 11.1 the contract provides that the Contractor shall be deemed to have inspected and examined the site and its surroundings "and to have satisfied himself" so far as is practical as to the nature of, amongst other things, the sub-surface conditions.

3- Clause 11.1 further provides that the Contractor "shall be deemed to have obtained all necessary information" as to all circumstances that may affect his tender. Additionally, the contract expressly states that the Contractor shall be deemed to have based his tender on the data provided by the Employer, as well as "on his own inspection and examinations".

4- Clause 12.1 provides that the Contractor "shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities".

5- The instructions to tenderers also confirm that the Contractor "is responsible for obtaining all information which may be necessary for the purpose of making a tender and entering into a contract".

6- The contract expressly precludes Contractors from shifting responsibility for correctly calculating the applicable rates to the Employer, as the Claimants are trying to do in this case:

   a) For example, the instructions to tenderers expressly state that the information provided by the Employer is given "without any guarantee that the conditions as shown are truly representative of the entire site", and that the provision of such information "does not absolve the Contractor from responsibility for making his own interpretation and judging the completeness of the information given".

   b) Moreover, the specifications concerning geotechnical information state that soils and materials test results and information provided with the contract documents at the time of tender are for "information only" and that "no claims for additional payment will be considered from the Contractor on the grounds that the information is insufficient, incorrect or misleading".

7- The contract places the burden of investigation and pricing on the claimants. Thus, the Employer cannot be held liable for the Contractor's failure to obtain the information necessary to correctly calculate the applicable rates.

The above case is discussed in order to demonstrate the various defenses that an employer will take when unforeseen physical conditions arise, such as disclaimers, the provisions concerning site investigations, etc.

2.6.5. Comparison of Standard Contract Provisions on Unforeseen Physical Conditions

When comparing the different provisions examined above, it can be argued that the unforeseen physical conditions clause in the four standard contracts are similar, albeit with some specific differences. All of the provisions require notification by the contractor and a decision by a third party (engineer/superintendent/contract officer), rather than the employer, as to whether there should be variation in the time and price originally agreed upon.

The Australian AS conditions, the DMCC, and the FIDIC Red Book specify at the outset what will not be deemed an unforeseen physical condition. While the Australian AS conditions provide that certain specific situations (where these are probably specific to Australia), such as groundwater and tidal movements, will not be treated as latent conditions, the DMCC and the FIDIC Red Book only exclude weather conditions. The US differs from other jurisdictions in splitting unforeseen physical conditions into two categories based on the nature of the physical condition encountered: i.e., is it different from the information provided to the contractor, or is it different what is normally expected during works of a similar nature?. This distinction is not found in any other standard contract examined.

2.7 Different Elements of the Unforeseen Physical Conditions Clause

Unforeseen physical conditions normally arise in two situations, firstly where the conditions encountered at the site significantly differ from those specified in the agreement. Secondly, the actual condition encountered at the site varied from the norm similar contracting work. Most standard form of construction contracts contain a site investigation clause, which entails the experienced contractor to exercise due diligence to find out sensibly foreseeable physical conditions, and disclaims any warranty about the unforeseen physical condition encountered at the site. However, the difficulties will revolve around the test of foreseeability. Furthermore, matters will be raised as to what fundaments that possibly will consider a contractor being experienced. This section will demonstrate number of factors to be taken into account when assessing foreseeability.

2.7.1. Foreseeability: Assessing Site Information

An important limb of the defense raised by the Dubai Municipality in the arbitration case examined in section 2.4.4 is the foreseeability of the physical conditions. It is therefore clear that

a key element in the unforeseen physical conditions clause is that of "foreseeability", as in whether the physical conditions were of such a nature and kind that they could have been anticipated.

Closely linked to the notion of foreseeability is the assessment of site information. Most standard contracts provide for the contractor to assess the site information through an examination of relevant documents and physical investigations. This is probably intended to ensure that the contractor does not rely solely on the information supplied by the employer, and thus, when something unanticipated occurs on the ground, relies on the unforeseen physical conditions clause or sues for misrepresentation or breach of warranty, both of which entail expenditure of time and money for the employer.

In the FIDIC Red Book, for instance, Clause 4.10 requires the employer to make available all relevant data in its possession, both before and after the base date in the contract. On the other hand, the contractor is supposed to have obtained all necessary information as to the risks, contingencies and other circumstances "to the extent which was practicable (taking account of cost and time)"[25]. The DMCC requires the employer to provide relevant data, but places the onus on the contractor for its interpretation. It also requires the contractor to inspect and examine the site and to have satisfied himself regarding the site conditions, as far as practicable, given the constraints of costs and time. With regard to the assessment of site information, while the FIDIC Red Book seeks to strike a balance between the risks posed to both parties, the same cannot be said of the DMCC. Under the DMCC, there is no obligation for the employer to share all information in its possession regarding the site.

In this regard, it has been pointed out that one of the most contentious aspects of site inspection is the extent to which tenderers should be obliged to conduct their own investigations and research from archives, libraries and local sources when evaluating site information made available by an employer. Clearly, the tenderer has limited time and resources, and thus cannot conduct the same level of research as the employer and engineer, who have had many months, and in some cases even years, to collate information.[26]

[25] Clause 4.10 of the FIDIC Red Book

[26] David Kinlan and Dirk Roukema "Adverse Physical Conditions and the Experienced Contractor Test" available at http://www.iadc-dredging.com/ul/cms/terraetaqua/document/2/7/6/276/276/1/article-adverse-physical-conditionsand-the-experienced-contractor-terra-et-aqua-119-1.pdf

It has been reported that in some contract negotiations in the Middle East, the successful bidder is paid by the employer to carry out further soil investigation immediately following signature of the contract.[27] The rationale for this is that if the successful bidder's investigation finds that ground conditions are different from those outlined in the tender documents, the price can be altered. However, after this stage, the contractor bears the risk related to ground conditions.[28] This method is relied on when the contractor is not willing to take on the risk of ground conditions based on the information provided at the time of tender, and certainty of the contract price is an essential consideration for the employer.[29] Such contracts are typically entered into on the basis of a limited notice to proceed, and include a "walk-away" provision if the price adjustment (and time consequences) cannot be agreed upon by the parties.[30]

While theoretically it may appear to be sound, lawyers have pointed out that this method also entails problems. It has been suggested that parties may disagree over what has or should have been allowed for with respect to ground conditions in the existing pricing (based on the data available prior to signature), and reasonable adjustments in the wake of new data.[31] It has been pointed out that the contractor used it as a "stalking horse" to claim that ground conditions were not revealed by the surveys, rather than seeking a price adjustment on a "once and for all' basis, as involved in this method.[32] On the other hand, this method exposes a contractor to risk where the employer refuses adjust the price.[33] It should also be noted that if the difficulty posed by unanticipated ground conditions is not of an acute nature, in that if it does not severely hamper and delay the works, or the work of other contractors, the employer will have no incentive to agree to a price adjustment.[34]

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[27] Peter Stuckey, "Paying the Successful Bidder to Undertake Site Investigations: It is Common Practice in the Middle East" 4 Const. L. Int'l 34 (2009).

[28] *Ibid.*

[29] *Ibid.*

[30] *Ibid.*

[31] *Ibid.*

[32] *Ibid.*

[33] *Ibid.*

[34] *Ibid*.

In the US case of Bumby & Stimpson Inc v Peninsula Utilities Corporation,[35] the contractor agreed to construct a sewage collection system. The ground consisted of soft sand, which made construction much more costly as it necessitated using different equipment and materials for building the sewer lines. In addition, some of the ditches for the sewer lines were under water, and therefore required divers to connect the pipes – an aspect not foreseen by the contractor. The contractor brought a suit to recover the additional costs. The defense was founded on the contract provision, which gave the contractor the right to test the physical conditions, including the groundwater table conditions, and under which the contractor acknowledged its responsibility for conducting such an inspection.[36] The court held that the defendant was not liable. In the absence of fraud, "unexpected difficulty, expense or hardship involved in performance of a contract will not excuse the promisor from rendering due performance of his undertaking".[37] The court went on to hold that the contractor could have protected itself against loss from the adverse conditions encountered by predetermining their existence by conducting relevant investigations.

However, site investigation clauses may not always be beneficial to employers. They should be as specific as possible because, at least in the US, they are construed strictly by the courts.[38] If a site investigation clause is too general, it will be treated as a general or "boiler-plate" provision, which is thus ineffective with regard to negating any specific representations in the contract made by the employer.[39] For instance, in the US case of Andrew Catapano Co Inc v City of New York,[40] the contractor was working on a sewer project and encountered unforeseen and unanticipated subsurface conditions. The court allowed the contractor to recover the excess costs incurred under a differing site conditions clause from that outlined in the contract, despite the site investigation clause which imposed on the contractor "full knowledge of any and all conditions on, about or above the site". The court noted a contract must be strongly construed against the

[35] 169 So 2d 499 (Fla 1964) quoted in Gregory W Hummel, "The US Experience: Contract Approaches to Minimise Ground Condition Risks to Protect Participants" 18 Int'l Bus. Law. 269,273 (1990)

[36] *Ibid.* at 273.

[37] *Ibid.* at 273.

[38] Gregory W Hummel, "The US Experience: Contract Approaches to Minimise Ground Condition Risks to Protect Participants" 18 Int'l Bus. Law. 269, 273

[39] *Ibid.*

[40] 455 NYS 2d 114 (1983) quoted in Gregory W Hummel, "The US Experience: Contract Approaches to Minimise Ground Condition Risks to Protect Participants" 18 Int'l Bus. Law. 269, 274 (1990)

drafter (defendant), and in this site investigation clause there was no reference to conditions "below the site", so the defendant was not divested of its responsibility for such conditions.[41]

Another US case in which the "boiler plate" site investigation clause was found not to be applicable is that of Ideker Incorporated v Missouri State Highway Commission.[42] In this case, the contractor relied on the documents of the employer, Missouri State Highway Commission, to calculate its bid, in spite of a site investigation clause. According to the documents the project was a balanced job, so the that the "excavated material removed from high spots ('cuts') in the right of way could be deposited and contained in low spots ('fills') in the right of way, so there would be no waste to disposed of from the work site".[43] However, considerable waste was generated, and the contractor sought to recover the cost. The employer attempted to rely on the site investigation clause; however, the court found the Commission to be liable. The employer's documents represented the project to be a "balanced job" and the "boiler plate" site investigation clause was insufficient to negate this representation.[44] The court concluded that a general provision requiring an onsite investigation cannot defeat a contractor's reliance on a positive representation of material fact.[45]

2.7.2. Foreseeability: The Test of "Experienced Contractor"

Both the FIDIC and the DMCC refer to the "test of experienced contractor" to determine whether or not the physical conditions encountered by a contractor are reasonably foreseeable by an experienced contractor. If this query is answered in the affirmative, the claim of unforeseen physical conditions will fail. It has been pointed out that engineering arbitrators interpret the test as meaning "reasonably foreseen by a Contractor [that is] experienced in the type of work being carried out".[46]

It has been noted that although the test of experienced contractor is expressed objectively, the intention is plainly to allow or disallow claims by referring to the particular circumstances of the contract, but attributing to the real contractor an objective degree of foresight. It has been agreed

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[41] *Ibid.* 274.

[42] 654 SW 2d 617 (Mo 1983) quoted in Gregory W Hummel, "The US Experience: Contract Approaches to Minimise Ground Condition Risks to Protect Participants" 18 Int'l Bus. Law. 269, 274 (1990)

[43] *Ibid.* at 274.

[44] *Ibid.*

[45] *Ibid.*

[46] Philip Loots and Donald Charret *Practical Guide to Engineering and Construction Contracts* (CCH Australia 2009) p116.

that "determining whether a condition can reasonably have been foreseen habitually gives rise to the greatest difficulty of interpretation in civil engineering arbitration."[47]

In this regard, it is crucial to understand the meaning of the term "reasonably foreseen". Max Abrahamson notes that it may suggest a claim can be excluded only if "an experienced contractor could have foreseen that the conditions or obstruction would occur, or that there was a possibility, however remote, that the conditions might occur.[48] The mere fact that there was some risk of meeting the conditions was foreseeable seems to be insufficient, since an experienced contractor will know that anything can happen, particularly in work conducted underground. It is suggested that a claim may be excluded only if an experienced contractor could have foreseen a substantial risk of the situation in question occurring."[49]

This view was taken in the English case of Pearce (CJ) & Co Ltd v Hereford Corpn,[50] wherein the Court held that it is suitable to describe a risk as foreseeable if it is substantial and could have been foreseen by an experienced contractor. The court noted that the nature of the project, site data, and contractor's investigation are factors in determining how experienced the contractor is.

Academic experts such as geologists may be best placed to enlighten and interpret ground investigations; nevertheless, their knowledge and practice is likely to be of a different nature from that expected of experienced contractors. This point was addressed in the English case of Wimpey Construction Ltd v. Poole regarding a consultant who gave expert evidence. As Mr. Justice Webster explained:

> "He is without doubt an outstanding brilliant exponent of the complexities of soil mechanics and his work in that field has received international acclaim and recognition. For these reasons, and because his experience has given him little contact with the ordinary day to day problems of designing structures in soil, I am able to place little if any reliance upon his evidence as to the standards to be expected of an ordinarily competent designer."[51]

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[47] Vivian Ramsey et al. *Keating on Building Contracts* (Sweet and Maxwell 7th edition 2001) 991 quoted in Stephen W Rae, "Tales of the Unexpected: Focus on the Legal" Building Journal Hong Kong China December 2004 available at http://www.building.hk/forum/2005_04unexpected.pdf

[48] Max Abrahamson *Engineering Law and the I.C.E. Contracts*, (Taylor and Francis, 4th edition 2005) p76.

[49] *Ibid*

[50] [1968] 66 LGR 647

[51] [1984] 2 Lloyd's Rep 499

The question that arises in the UAE context is who can be considered an experienced contractor in the UAE with respect to foreseeing physical conditions. Is it academic qualifications in engineering, geology, etc. that matter, or is it experience gained working on the ground? In this regard, it is worth noting that in the UAE there are highly specialized subcontractors performing niche work, such as pilling, foundation works, geotechnical works, etc., who can perhaps be called upon to provide their expertise in dispute scenarios.

2.7.3. The Notice Requirement

Most standard form construction contracts require the contractor to promptly submit notice within a specified number of days in the event of unexpected physical conditions obstructing execution of the work. Ultimately, the discovery of such obstruction is likely to result in a claim for an extension of time and/or additional cost. Failure to do so may prevent the contractor from conducting future claims and may even expose him to a claim for liquidated damages. The corresponding DMCC clause provides that no claim by the contractor will be allowed unless the contractor has alerted the engineer verbally as soon as possible, but not later than the end of the day of the event, and has given written notice to the engineer within three days. The FIDIC Red Book, on the other hand, states that the contractor shall give notice to the engineer as soon as possible when encountering adverse physical conditions, in order to allow the engineer to inspect the site and make a decision thereon.

It is important to note that the written notice of the alleged physical condition highlighted in the FIDIC Red Book is merely a notice of the conditions encountered, and that the contractor is not under any obligation to submit a formal claim for additional payment in this initial notice. With respect to submission of the initial notice when encountering adverse physical conditions, Clause 12.3 (A) of the DMCC requires that the notice provided to the engineer includes a description of the event, details of the effect and consequences, measures the contractor has undertaken to overcome the problem, and a preliminary estimate of delays to the work program. The FIDIC Red Book requires no specific format to the written notice of conditions encountered, and it is not necessary to describe the conditions in specific, accurate detail in order to satisfy the notice requirement. A notice to the engineer which clearly states that unexpected physical conditions were encountered, together with an overview of the location and nature of these conditions, is adequate.

According to both the FIDIC and the DMCC, after receiving such notice from the contractor, the engineer is required to inspect and investigate these physical conditions, and then determine the extent to which these physical conditions, where identified, were unforeseeable.

In the next chapter, the unforeseen physical conditions clause is compared to other concepts in contract law, such as *force majeure*, *imprevision* and misrepresentation.

Chapter 3: Comparison of the Unforeseen Physical Conditions Clause with *Force Majeure*, *Imprevision*, and Misrepresentation

Chapter 2 examined the traditional legal position governing the contractual relationship between a contractor and an employer. To recapitulate, where a contractor is hired to undertake particular works within a specified time period for consideration payable in this regard by the employer, the burden of risk falls on the contractor regarding all events that may interfere with that time period or consideration, unless those events are:

a) not anticipated by either party (such as *force majeure* or *imprevision*)

b) due to the fault or responsibility of the employer, in which case the "prevention principle" will usually inhibit the employer from insisting on adhering to a time or budget that he himself has disrupted.

In the previous chapter, we saw how the unforeseen physical conditions clause has been relied on to mitigate some of the difficulties arising from the traditional legal position. This chapter compares the unforeseen physical conditions clause with concepts such as *force majeure*, *imprevision*, and misrepresentation on the one hand, and the unforeseen physical conditions clause on the other.

3.1. *Force majeure*

Force majeure is a widely recognized concept under civil law jurisdictions, where it constitutes an absolute excuse from performing according to contract terms, or operates as a suspensory mechanism, so that once the impediment is removed, the duty to perform the contract is restored. Article 273 of the UAE civil code provides that:

> "(1) In contracts binding on both parties, if *force majeure* supervenes which makes the performance of the contract impossible, the corresponding obligation shall cease, and the contract shall be automatically cancelled. (2) In the case of partial impossibility, that part of the contract which is impossible shall be extinguished, and the same shall apply to temporary impossibility in continuing contracts, and in those two cases it shall be permissible for the obligor to cancel the contract provided that the obligee is so aware."[52]

[52] Federal Law No. (5) of 1985 concerning the issuance of the civil transactions law of the United Arab Emirates, and amendments

Notably, the UAE Civil Code does not provide a list of categories for *force majeure* events; instead it provides only the relevant criteria that the event is of an extraordinary nature, unusual and unexpected.[53] The Dubai Court of Cassation has expounded on the meaning of *force majeure*, holding that:

> "it is a prerequisite for being allowed to rely on *force majeure* that it should be the result of an unforeseen event that could not have been averted, namely that the results thereof could not have been guarded against or prevented, in such a way as to make performance of the obligation impossible."[54]

In another decision rendered by the Dubai Court of Cassation,[55] the impact of the *force majeure* event on the obligations of the parties to the contract was examined. The Court held that the *force majeure* event must be of a kind that is incapable of being predicted upon concluding the agreement, and where it is impossible to prevent the same. In other words, the event and its consequences cannot be prevented, thus rendering performance of the obligation impossible, and that performance thereof is not only a source of hardship or trouble for the obligor. The Court of Cassation also found that the party seeking the benefit of *force majeure* doctrine should not have contributed to its occurrence.

Article 273 provides for consequences in which the Court finds that *force majeure* has occurred, stating that the contract shall be either: (a) set aside in its entirety and the mutual obligations of the parties considered at an end; (b) set aside in part – if only some of the obligations are affected by the *force majeure* event, then that part alone is set aside; or (c) suspended until the end of the *force majeure* event if the event is of a temporary nature, wherein all obligations must be performed once the *force majeure* event ceases to have effect.[56]

Clause 19.1 of the FIDIC Red Book defines *force majeure* as an exceptional event or circumstance which:

a) is beyond either party's control;

b) could not have been reasonably provided against by the parties before entering into the contract;

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[53] Dubai Court of Cassation Commercial 109/2007–18-06-2007

[54] Case 188/2009 Judgement dated 18 October 2009

[55] Case 268/2009 -290(215) dated 15 November 2009

[56] Lebanon court of cassation No. 39 dated 21/4/1998

c) having arisen, could not be reasonably avoided or overcome by the parties; and

d) is not substantially attributable to either party.

Force majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

i. war, hostilities (whether war is declared or not), invasion, acts of foreign enemies;

ii. rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war;

iii. riot, commotion, disorder, strike or lockout by persons other than the contractor's personnel and other employees of the contractor and sub-contractors;

iv. munitions of war, explosive materials, ionizing radiation, or contamination by radioactivity, except as may be attributable to the contractor's use of such munitions, explosives, radiation or radioactivity; and

v. Natural catastrophes, such as earthquake, hurricane, typhoon or volcanic activity.

Clause 19.2 states that if a party is or will be prevented from performing any of its obligations under the contract by *force majeure*, then it shall give notice to the other party of the event or circumstances constituting the *force majeure* event, and shall specify the obligations whose performance is or will be prevented. The notice must be given within 14 days after the party becomes aware of the relevant event or circumstance constituting *force majeure*.

Having given notice, the party is excused from performing or meeting the relevant obligations for as long as the *force majeure* event prevents it from doing so.

Notwithstanding any other provisions in the clause, *force majeure* cannot be applied to the obligations of either party to make payments to the other party under the contract.

Clause 19.3 states that each party shall, at all times, use all reasonable endeavors to minimize any delay in the performance of the contract as a result of the *force majeure*.

The affected party must give notice to other party when the former ceases to be affected by the *force majeure*.

Clause 19.4 outlines that if the contractor is prevented from performing any of his obligations under the contract by *force majeure*, or where notice has been given under sub-clause 19.2 [Notice of *Force Majeure*], and suffers delay and/or incurs cost due to the *force majeure* event, the contractor is entitled, subject to sub-clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed under sub-clause 8.4 [Extension of Time for Completion]; and

b) payment of any such cost, if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of sub-clause 19.1 [Definition of *Force Majeure*] and in the case of sub-paragraphs (ii) to (iv) occurs in the country.

After receiving this notice, the engineer must proceed in accordance with sub-clause 3.5 [Determinations] to agree or determine such matters.

Sub-clause 19.5 states that if any subcontractor is entitled, under any contract or agreement relating to the works, to relief from *force majeure* on terms additional to or broader than those specified in this clause, such additional or broader *force majeure* events or circumstances shall not excuse the contractor's non-performance, or entitle him to relief under this clause.

According to clause 19.6, if the execution of a substantial part of the works in progress is prevented for a continuous period of 84 days by reason of *force majeure*, of which notice has been given under sub-clause 19.2 [Notice of *Force Majeure*], or for multiple periods that total more than 140 days due to the same notified *Force Majeure*, then either party may give to the other party a notice of termination of the contract. In this event, the termination takes effect seven days after the notice is given, and the contractor must proceed in accordance with sub-clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

Upon such termination, the engineer must determine the value of the work done and issue a payment certificate, which should include:

a) the amounts payable for any work carried out for which a price is stated in the contract;

b) the cost of plant and materials ordered for the works that have been delivered to the contractor, or of which the contractor is liable to accept delivery; these plant and materials shall become the property of (and be at the risk of) the employer when paid for by the employer, and the contractor shall place them at the employer's disposal;

c) any other cost or liability that, under the circumstances, was reasonably incurred by the contractor in the expectation of completing the works;

d) the cost of removal of temporary works and contractor's equipment from the site, and the return of these items to the contractor's works in his country (or to any other destination at equivalent cost); and

e) the cost of repatriation of the contractor's staff and labor employed wholly in connection with the works at the date of termination.

Under clause 19.7, notwithstanding any other provision of the clause, if any event or circumstance outside the control of the parties (including, but not limited to, *force majeure*) arises that makes it impossible or unlawful for either or both party to fulfill their contractual obligations, or which, under the law governing the contract, entitles the parties to be released from further performance of the contract, then, upon notice by either party to the other of such event or circumstance:

a) the parties will be discharged from further performance, without prejudice to the rights of either party in respect of any previous breach of contract; and

b) the sum payable by the employer to the contractor will be the same as would have been payable under sub-clause 19.6 [Optional Termination, Payment and Release] if the contract had been terminated under sub-clause 19.6.

At first glance, it is clear that the *force majeure* provisions outlined in the FIDIC Red Book are much more comprehensive than those provided for in the UAE civil code. This is understandable, given that while legislation is typically drafted in broad terms to account for all kinds of eventualities, the FIDC Red Book is meant to be a contract between specific persons that provides for the mutual obligations between the parties according to the contract. Notably, the FIDIC Red Book provided several illustrations of what is covered by the term *force majeure*.

From an examination of the provisions in the UAE civil code and the FIDIC Red Book on *force majeure*, it can be safely concluded that, for an event to be regarded as *force majeure*, three conditions must be satisfied: (a) unpredictability, (b) irresistibility, and (c) externality.[57] These three features are explained as follows:

a. Unpredictability: If the event could have been anticipated at the time of contract execution, the party should have provided for it in the contract and is expected to have prepared for it or, conversely, should have provided for it as an instance of *force majeure* under the contract. A party's failure to specify a foreseeable risk gives rise to the assumption that the party intended to take the risk at the time of entering into the contract.

[57] F. Azfar, "The *Force majeure* Excuse" Arab Law Quarterly 26 (2012) 249-253

b. Irresistibility: The event must be insurmountable, wherein the reliant party could not have done anything to mitigate it or avoid its occurrence. Thus, for instance, financial problems or economic hardship cannot be considered *force majeure*. The parties are expected to have reasonable business acumen and to have calculated the economic risks of entering into particular contractual obligations.

c. Externality: the event must not be attributable to the fault of the party relying on it, and said party must have played no role in its occurrence.[58]

3.2. Comparison of *Force Majeure* and the Unforeseen Physical Condition Clause

It is possible to raise a question as to which clause, *force majeure* or unforeseen physical conditions, should apply when the ground conditions have been significantly altered due to, for instance, a natural disaster, or a riot or war. The lack of foreseeability and externality are common factors in both clauses. Ground conditions can be altered substantially due to natural disasters such as earthquakes, floods, tornadoes, etc., which cannot be foreseen by the parties and occur through no fault of their own. Arguably, to a certain extent, there is similarity in the remedies as well, an extension of time for performance of the obligations is contemplated by the both the *force majeure* clause and the unforeseen physical conditions clause.

That said, the *force majeure* clause is concerned with factors, events and circumstances outside of the contract that have an impact on the contract and the parties' mutual obligations thereunder. The test is whether these situations were foreseeable at the time of execution of the contract. The unforeseen physical conditions clause is not concerned with what caused the ground conditions to be altered, but rather with the altered ground conditions per se; i.e., whether the alteration in the ground conditions was foreseeable.

Also, irresistibility or insurmountability of the events in question is an important consideration in determining whether an event qualifies as *force majeure*. This condition of irresistibility is not applicable to the unforeseen physical conditions clause. In fact, quite the opposite, there is an underlying assumption that with an extension of time and provision for additional costs, the contractor will be able to comply with his obligations vis-à-vis ground conditions.

3.3. The Concept of *Imprevision*

Imprevision is a concept derived from civil law. It is based on the notion of rebus sic standibus, which limits the sanctity of a contract (pacta sunt servanda) when there is a change of

[58] *Ibid*.

circumstances.[59] The rationale behind *imprevision* can be explained by the idea that "it is one thing to expound respect for binding agreements, a principle whose merits are beyond dispute, and quite another to turn contracts into instruments of oppressive unfairness".[60] *Imprevision* is applicable "when the change in circumstances is reasonably unforeseen and is such that the obligor can perform only at the cost of an excessive sacrifice".[61]

Generally speaking, the concept of *imprevision* is applicable when "the balance of a contract is upset" due to unanticipated factors that make performance "intolerably onerous", if not literally impossible.[62] The concept has been applied in several civil law countries. In France, where it first arose, *imprevision* is applied only for administrative agreements with the government, as the government has the power to modify or terminate its contracts.[63] In Germany, the judiciary applies a concept of imbalance between parties and permits the setting-aside of contracts in a situation where a "fundamental disequilibrium in the contracts" imposes an "undue burden" on one of the Parties.[64] Articles 1467 and 1468 of the Italian Civil Code allows a party to terminate a contract when "extraordinary and unforeseeable events" make performance "excessively onerous".[65]

A similar concept of hardship has been included in the Principles of International Commercial Contracts, a document drawn up by UNIDROIT ("UNIDROIT Principles") which seeks to harmonize international commercial contracts law.[66] Article 6.2.1 of the UNIDROIT Principles specifies that the binding character of the contract is a general principle; however, Article 6.2.2 provides that hardship is experienced where the occurrence of the events in question fundamentally alters the equilibrium of the contract because the cost of a party's performance has

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[59] Robert Knutson, FIDIC, An Analysis of International Construction Contracts (Wolters Kluwer and International Bar Association 2005) 83

[60] Saul Litvinoff, "*Force majeure*, Failure of Cause and Theorie de L'imprevision: Louisiana Law and Beyond" 46 La. L. Rev. 1, 5 1985–1986

[61] *Ibid*.

[62] Alden Atkins, "Long-Term Contracts in Developing Countries Are at Risk of Being Set Aside Due to Financial Hardship" Vinson and Elkins International Construction Newsletter Fall 2011

[63] *Ibid*.

[64] *Ibid.*

[65] *Ibid*.

[66] UNIDROIT Principles of International Commercial Contracts 2010 available at http://www.unidroit.org/english/principles/contracts/principles2010/integralversionprinciples2010-e.pdf

increased or because the value of the performance a party receives has diminished. Article 6.2.2 goes on to the provide that:

1. the events occur or become known to the disadvantaged party after the conclusion of the contract;
2. the events could not reasonably have been taken into account by the disadvantaged party at the time of conclusion of the contract;
3. the events are beyond the control of the disadvantaged party
4. the risk of the events was not assumed by the disadvantaged party.[67]

It should be clarified that for *imprevision* to apply, it does not entail that performance of the obligation has been rendered inexecutable. Similarly, impracticability or frustration is also not necessary. Rather, it is sufficient for performance to have become "excessively onerous" or "oppressive".

The UAE recognizes the concept of *imprevision* under the so-called "emergency circumstance", and Article 249 of the UAE civil transaction code provides as follows: "If exceptional circumstances of a public nature that could not have been foreseen occur as a result of which the performance of the contractual obligation, even if not impossible, becomes oppressive for the obligor, it shall be permissible for the judge, in accordance with the circumstances and after weighing the interests of each party, to reduce the oppressive obligation to a reasonable level if justice so requires, and any agreement to the contrary shall be void."

In the UAE, as in other civil law countries, the concept of *imprevision* provides a route for the courts to go beyond their restricted role and to modify the parties' rights and obligations. The rationale behind this concept is that the judge has the power to revise an agreement so as to restore economic equivalence and equilibrium among the parties involved in the contract.

The concept of *imprevision* can be found in the civil codes of other Arab countries, such as Egypt. As in France, in Egypt the doctrine of *imprevision* has been mainly relied on in administrative contracts of the public law, although the Egyptian civil law has also applied the doctrine to civil contracts of the private law. However, it is pertinent to note here that the basis of applying the doctrine to administrative contracts differs from that of applying it to civil contracts. The administrative judiciary justified this doctrine on the principle of keeping the public utility

[67] *Ibid*.

continuously functioning in order to perform its services to the public. Moreover, the ordinary judiciary justified the reliance on *imprevision* as it met the requirements of justice and fairness. The following jurisprudential principles are relevant in applying the doctrine of *imprevision* to civil contracts:

1. it justifies the principle of good faith in performing the contracts, wherein the creditor shall not abuse the debtor if the requirements of the doctrine of *imprevision* apply;
2. a principle that determines the debtor is not obliged to pay compensation for damages that are unforeseen;
3. the principle of unjust enrichment applies; therefore, if the judge intervenes and modifies the onerous obligations of the aggravated party, this will prevent enrichment of the creditor against the debtor; and
4. the principle of abuse of right.

The Dubai Court of Cassation has clarified that for the judge to apply Article 249: (a) the unforeseen event must be public and not affect the aggravated party only, or a limited number of people; (b) the unforeseen event should take place following the conclusion of the contract and prior to executing it; and (c) the event should render the performance of the contractual obligations burdensome rather than impossible. In a similar vein, the Federal Higher Court held that if the legislature has authorized in Article 249 of the Civil Transaction Law 1987 the intervention of the judge to respond to the onerous obligation in the event of an emergency circumstance, the circumstance must involve an unexpected and exceptional event, which is public event and affects a range of people, rather than the debtor alone.[68]

Determining the existence of grounds for applying the doctrine should fulfill the objective test as to whether the obligation is rendered burdensome, or whether the potential loss is particularly excessive. Excessive loss in a specific contract can give rise to claim regarding a sudden and unexpected event that is regarded as *imprevision*, regardless of the general and independent wealth of the parties to the contract.

For instance, the concept of *imprevision* has been used in a UAE federal judgment wherein the claimant invoked Article 249 by alleging that the performance of his obligations was rendered impossible due to huge losses incurred by the poor financial status of his company. The court rejected his argument, and held that such an event is common, and that its effects are not

[68] Federal Higher Court – Commercial 16/2010

restricted to one specific person. Interference by the court in reducing contractual obligations to reasonable levels should be due to general events making the performance of duties overly burdensome, although not impossible, and resulting in the occurrence of grave losses. In this case, the court explained that the role of the judge is not to form the contract, but to construe the same by establishing the intentions of the parties with respect to it.[69]

It is important to note that unforeseen physical conditions encountered by the contractor during the implementation of construction work may not merely be considered a sudden event that impacts performance related to the contract. The extent of any such evidence of physical conditions should be assessed and evaluated by the parties during the tender process and submission. In one Kuwaiti case, the defendant invoked the doctrine of *imprevision* but was already in default before the event in question occurred. The court held that the defendant should not benefit from the doctrine, as this would mean allowing him to benefit from his own default.[70]

The Dubai Court of Cassation has held that the concept of *imprevision* applies to any contract performance that has not been completed by the time that the supervening event occurs.[71] The Court of Cassation also states that in order for *imprevision* to apply, there would have to be a grave loss to one of the contracting parties, which falls outside the normal scope of contracts, such that serious economic disruption to the contract would occur.[72] In another case, the Dubai Court of Cassation held that in order for the judge to intervene under Article 249 at the request of the debtor to balance the onerous obligation due to a general exceptional event, it must be shown that the onerous condition entails a substantial potential loss.[73] In another example, the Dubai Court of Cassation held that *imprevision* is applicable not only to fixed-term contracts, but also to any contract where the related performance has been suspended due to an emergency event. It is up to the discretion of the judge to balance onerous obligations to a reasonable extent.[74]

3.4. Comparison of *Imprevision* and the Unforeseen Physical Conditions Clause

Imprevision and the unforeseen physical conditions clause are similar in the sense that both are applicable to events or factors that are (a) not anticipated by the parties to the contract; (b) both

[69] Federal Higher Court – Cassation Petition No. 24/15 (5.10.1993)

[70] Kuwait Higher Court No. 225/98

[71] Dubai Court of Cassation 346/2009: 7 February 2010

[72] *Ibid*.

[73] Dubai Court of Cassation – Real Estate 18/2010: 30 May 2010

[74] Dubai Court of Cassation Civil 346/2009: 7 February 2010

occurred after execution of the contract, and (c) could not have been reasonably taken into account at the time of execution of the contract. In addition, both are inapplicable if the party to the contract contributed to the event or altered ground conditions.

The unforeseen physical conditions clause in all standard contracts examined in the previous chapter does not, under ordinary circumstances, require intervention by the court, since it is structured as a means to readjust cost and time among the parties. The *imprevision* clause, on the other hand, is a remedy that is provided by the court. One of the condition precedents for application of the *imprevision* clause is that the event in question must be a general one, rather than being applicable only to the party who is seeking the remedy. The unforeseen physical conditions clause is specific to the contract in question, and its application is triggered when the ground conditions in the contract in question differ from those originally encountered.

3.5. Misrepresentation

Usually in construction contracts, the employer has no duty to provide the contractor with information concerning known or expected site conditions. However, most standard construction contracts stipulate that, prior the submission of the tender, the employer shall make available to the contractor all relevant data in the employer's possession on the sub-surface and hydrological conditions at the site.[75]

That said, though the employer may provide relevant data and information, the contractor remains responsible for interpreting all such data after gaining access and satisfying himself through investigation of the site. The matter becomes more complicated when the information provided by the employer turns out to be incorrect due to, for instance, factors arising from the fact that the site has been utilized and constructed by a former contractor. Consequently, the site becomes unsuitable for construction and/or the cost and timeframe has to be reconsidered. The general rule is that the contractor has assumed the risk related to the ground and subsoil. Nevertheless, there are a number of ways in which the contractor can challenge this rule.[76]

Usually, the contractor is deemed to have based his tender on data made available to him by the employer, and have derived the accepted contract amount from the data, as well as his interpretations of related information, examinations, and satisfaction as to all relevant matters referred to in the contract. Consequently, the contractor may be in a position in which he relies

[75] Uff J., *Construction Law*, Thomson Reuters (1999)

[76] Adriaanse J., *Construction Contract Law*, Palgrave Macmillan (2010) p.159

upon the information provided by the employer regarding the proposed working site, and that may turn out to be wrong.

What happens if an employer deliberately withholds or hides information relating to site conditions, and the contractor finds that the site conditions differ from those originally stipulated at the time of contract execution? In such a situation, rather than the unforeseen ground conditions clause, what may perhaps be relevant is the concept of misrepresentation. However, whether misrepresentation is successful also depends on the nature of the representations, warranties and disclaimers made by the employer, and the extent to which the contractor has assumed the risk in the contract.

The connection between the warranties made by the parties, the site investigation, and the concept of misrepresentation came to the fore in the US case of Robert E. McKee, Inc. v. City of Atlanta.[77] The contract pertained to a civil engineering project that involved earthwork and rock removal. The City of Atlanta took borings at certain specific locations and provided these to the contractor (the plaintiff) prior to the bidding. However, after commencing the works, the contractor found that the levels of rock were higher than had been shown by the borings, and sued for extra compensation.[78] The City of Atlanta stated that the information supplied in the boring logs was subject to a contract disclaimer as to accuracy, and could not be relied as a representation or warranty; thus, the contractor was held to have expressly assumed the risk of unforeseen problems.[79]

The court held that when a contractor expressly takes on the risk of unforeseen conditions, he must absorb the loss attending to those unexpected conditions, and that the mere presence of unexpected conditions does not relieve the contractor from that obligation.[80] The court further explained that for misrepresentation to be found there must necessarily be a positive statement of a material fact that proves to be false.[81] The court went on to hold that the contractor would have

[77] 414 F. Supp. 957 (1976). The notes on this case have been taken from James Mulvaney, "Contractors' Remedies: Owners' Representations and Warranties"

[78] *Ibid*.

[79] *Ibid*.

[80] *Ibid*.

[81] *Ibid*.

been excluded from asserting his claim if he had determined the true facts by his own investigation, a reference to the site investigation clause in the contract.[82]

In an Australian case, Abigroup Contractors Pty Ltd v Sydney Catchment Authority (No. 3),[83] the Sydney Catchment Authority (SCA) entered into a contract with the Abigroup for construction of a spillway for Warragamba Dam.[84] The contract included a provision that required Abigroup to assume the risk for any unforeseen physical conditions at the site. Abigroup's bid was based on information disclosed by SCA, which contained a representation that there were no plans for a particular outlet pipe; had the plan existed, it would have provided information for Abigroup to determine an accurate drill depth. In fact, plans for this pipe did exist.[85]

The court was called upon to examine the question as to whether the failure to provide the plans amounted to misleading and deceptive conduct. The court found that the SCA's representation was indeed misleading and deceptive, and that the information it provided had been relied upon.[86] The express contractual terms of allocating risk of latent conditions to the tenderer provided no protection to SCA for its incorrect representation.[87] Abigroup was found to be entitled to damages for the extra costs of the additional work required, because the plans had not been made available at the time of the tender.

The position in the UAE with regard to misrepresentation is addressed in the UAE Civil Transaction Code. Article 185 of the Code defines misrepresentation as "when one of the two contracting parties deceives the other by fraudulent means by word or act which leads the other to consent to what he would not otherwise have consented to." The code further illustrates under Article 186 that "deliberate silence concerning a fact or set of circumstances shall be deemed to be a misrepresentation if it is proved that the person misled thereby would not have made the contract had he been aware of that fact or set of circumstances."

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[82] *Ibid*.

[83] (2006) NSWCA 282 The discussion relating to this case has been taken from guide provided by Minter Ellison "Construction Law Made Easy: Latent Conditions" available at http://www.constructionlawmadeeasy.com/Latentconditions

[84] *Ibid*.

[85] *Ibid*.

[86] *Ibid*.

[87] *Ibid*.

However, Article 187 of the same law provides for the consequences arising from a finding of misrepresentation by the UAE court that if a contract was concluded with gross unfairness, it can be canceled by the person who has been misled. However, it is important to note that Article 187 adds "lésion emphasis" as to a gross cheat to the rule for the parties invoking this provision of the law.

It is important to note that the approach of the UAE laws concerning misrepresentation slightly differ from those of common law interpretations. The UAE legislation confirms that there must be an intention action or manifesting purpose to deceive the other party by fraudulent mean, whereas in common law misrepresentation can be seen as a false statement or information that the other party relied upon prior signing the contract.

Since the UAE legislation construes misrepresentation and gross unfairness conjunctively, rather than separately. The Dubai Court of Cassation supported this rule, and held that in order to asses gross unfairness, it should emerge when the actual value of the of the subject of the agreement and the price paid for it by the buyer are extremely unbalanced.[88] Therefore, under Article 187 of the UAE civil code, a contract will be terminated by the court only on meeting the twin requirements of (a) misrepresentation by one of the parties; and (b) gross unfairness that undermines the contract.

3.6. Comparison between Misrepresentation and the Unforeseen Physical Conditions Clause

The unforeseen physical conditions clause and the concept of misrepresentation clause are relied on by contractors in construction contracts when they encounter situations that were not anticipated at the time of contract execution. Employers have sought to overcome the impact of both clauses by means of disclaimers and site investigation clauses. Unlike *imprevision* and *force majeure*, misrepresentation is concerned with representations and warranties that are specific to the contract; it is not concerned with the impact of larger events that are beyond the control of the parties.

[88] Dubai Court of Cassation petition No. 201/2004–15/01/2005.

Chapter 4: Conclusion

As construction contracts become more and more complicated, the importance of incorporating proper risk-management tools cannot be underestimated. The more traditional position that the contractor is responsible for all risks is untenable. The demands of business are such that there is limited time for an extensive and in-depth site investigation; in such a scenario, the contractor will be compelled to inflate its contract price by including a contingency amount to account for all risks that they may encounter. Where a contractor bears the risk of unforeseen conditions, but includes no contingency amount in the bid and thereafter encounters unanticipated site conditions, it has to deal with huge losses, often even resulting in bankruptcy.[89]

In such a scenario, the employer is also hardly in an advantageous situation – it may have to deal with the consequences of cost-cutting measures the contractor will take if it identifies unforeseen conditions to recoup its losses, counter the contractor's claims in the event of a dispute, or deal with an abandoned project. It is therefore clear that the absence of risk-management tools may lead to disputes among the parties, and stall development of the construction industry.

It has been pointed out that, as a first step in any construction project, risks should be recognized and assessed. This is the first step in efficient risk management. Therefore, once a risk has been identified and assessed, decisions may be made to transfer, accept, manage, or share this risk with the other parties.[90] The unforeseen physical conditions clause is one such risk-management tool; it acknowledges that risks may arise, and provides a framework for their management.

The site conditions in the UAE were examined in Chapter 2 to demonstrate how the particularities of the desert conditions and the multiple utility lines that have been laid impact construction, and necessitate the provision of accurate information related to the site. However, as highlighted in Section 2.3, due to time constraints, it is often not possible to conduct extensive site investigations to account for all possible risks from physical conditions; this makes it all the more important to provide an unforeseen physical conditions clause in UAE construction contracts.

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[89] Bernard Kamine, "Differing Site Conditions" available at http://kamineconstructionlaw.com/publications-and-articles/differing-site-conditions/

[90] Saleh Majid**,** Worldwide: Risks Analysis Under Construction And Engineering Contracts available at http://www.mondaq.com/x/141772/Building+Construction/Risks+Analysis+Under+Construction+And+Engineering+Contracts

The foreseeability of the physical conditions in question is a crucial factor in determinations of whether the unforeseen physical conditions clause should apply. In this regard, site investigations and disclaimers have been relied on by employers to avoid their obligations under the unforeseen physical conditions clause. This was seen in the approach taken by the Dubai Municipality in the arbitration case discussed in Chapter 2. The US approach, which involves requiring specific disclaimers and site investigation provisions rather than standard and boiler-plate clauses, is commendable: it clearly informs parties of their responsibilities given the nature of the works, prior to execution of the contract. The unforeseen physical conditions clause seeks to manage risk by getting a third party – an engineer – to determine whether the increase in time and cost is warranted. At least from a theoretical standpoint, the reliance on a third party, rather than either of the contracted parties, brings a modicum of impartiality to the risk-management process.

Among the standard clauses on unforeseen physical conditions, the Australian AS General Conditions of Contract (Australia) is significant in that it specifically provides for what physical conditions will not be treated as unforeseen, whereas the DMCC only excludes weather conditions as unforeseen. The advantage of making clear what physical conditions do not fall within the unforeseen physical conditions clause at the outset is that unnecessary disputes on this count can be avoided. Indeed, there are certain physical conditions that are particular to the UAE, due to its desert conditions, which can be excluded from the ambit of the unforeseen physical conditions clause.

Unforeseen physical conditions may at first glance appear to be similar to *force majeure* and *imprevision* due to the unanticipated nature which is common to all three concepts. However, while *imprevision* and *force majeure* are concerned with the causative factors that impair the performance of obligations, the unforeseen physical conditions clause is concerned with the actual physical site conditions.

A contractor may be tempted to claim under misrepresentation rather than the unforeseen physical conditions clause, because the former claim, if successful, can lead to the contract being rescinded and damages being awarded, which is more advantageous to the contractor compared to the unforeseen physical conditions clause. This makes it important for employers to be absolutely clear about the nature of representations they make that induce the contractor to enter into the contract. Just as blanket disclaimer are discouraged by US courts, a general representation that is later found to be inaccurate may lead to a cause of action for misrepresentation.

This paper has highlighted the relevance of the unforeseen physical conditions clause in construction contracts. Though employers and contractors in the UAE rely on them, it should be noted that such clauses are tailored to benefit the stronger party within the contract. Intervention by law makers is therefore required to formulate an unforeseen physical conditions clause that seeks to balance the risk and provide a proper and equitable procedure for risk management.

Based on the foregoing, the study calls upon the UAE legislature to adopt and enact legal provisions that adequately address cases of unforeseen physical conditions and prescribe rules for its application. The rules shall address the exceptional case where one party seeks to avoid the contract because of unforeseen physical conditions that specifically affect the contracting parties. The study recommends the following rules as basis for further examination on this issue:

1. The notion of unforeseen physical changes should be incorporated as part of the provisions under the UAE Civil Code that deal with construction works "Muqawala" (Articles 872 – 892).
2. Unforeseen physical conditions can only be invoked in situations where the physical condition is specifically associated with the construction contract in dispute and the performance of which remains possible i.e. not being an element of public nature. In other words, unforeseen physical condition is inapplicable in situations where the physical conditions affect different parties or render the construction contract impossible.
3. Unforeseen physical condition cannot be invoked if either of the parties had actual knowledge or would have reasonably had knowledge of the existence of the physical conditions that subject the original terms to possible variation.
4. The party seeking termination bears the burden of proving that the physical condition has materially affected the original terms of the contract. The terms that will be likely at issue are cost and time.
5. The court hearing the issue shall have the power to vary and amend the terms of the contract or be satisfied with avoidance only after it balances the interests of each party and to adhere to its commitment to achieve justice.

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