# CONSTRUCTION CONTRACT & MANAGEMENT ISSUES

In this third quarter issue of Master Builders Journal for 2011, **BK Entrusty**, continues to present the **new series of contract and management articles** in construction related areas of project, commercial, contracts, risks, quality and value, this article entitled "***Ground Conditions – Mysteries Unravelled***"

## INTRODUCTION

The construction industry has often been described as a high risk industry due to various complexities and difficulties involved in the construction of building and engineering projects. The risks involved may stem from many sources, one of which is the risk associated with unexpected or unforeseen ground conditions on project sites. This is usually where things can go wrong, without the proper understanding, appreciation and management of such risk. Whilst the geo-technicalities associated with ground conditions can be rather complex and often uncertain, the contractual risk associated with it can be a mystery and often cause miseries to many contracting parties, contractors and sub-contractors, in particular.

In this article, BK Entrusty aims to provide readers in unravelling such mysteries by providing an understanding and appreciation of the contractual risks associated with ground conditions, especially on the risk allocation due to adverse ground conditions and contractual and legal remedies available to the contracting parties affected by such unfortunate circumstances.

The contents of this article, is sub-headed, as follows;

- What are the differences between good, poor and adverse ground conditions?
- How are contractual risks allocated and managed between contracting parties?
- Who is best able to manage or control ground risks?
- What are the effects on risk allocation of erroneous or misleading information on ground conditions given by the employer (or its representative/consultant) to the contractor?
- Measures to overcome or mitigate problems related to ground conditions.
- Conclusion

## WHAT ARE THE DIFFERENCES BETWEEN GOOD, POOR AND ADVERSE GROUND CONDITIONS?

Contractors and sub-contractors when undertaking construction projects, will usually encounter site conditions which often can be described as good, poor or adverse ground condition. Without going into the geo technicalities of soil stratification and categories, typically, in good ground condition such as firm clay soil, the contractor can undertake the excavation works to construct the substructure with relative ease. However in poor or difficult ground condition such as soft clay soil, peat soil, hard material such as weathered and unweathered rocks, existing underground structures/objects such existing services, war bunkers and decaying tree trunks, and contaminated soil, the excavation works for substructure construction can be difficult, and sometimes involve temporary retaining structure such as sheet piling retaining wall, shoring and raking. Where hard rocks are encountered, rock blasting may sometimes be required. In the case of adverse ground condition, typical soil strata may include very

soft peaty soil and marshland or even running silt or sand or alluvium, the excavation and construction works which ensue, can be very difficult and complex indeed, typified by the use of advance retaining structure system such as cofferdam, RC retaining wall and close boarded shuttering. Such difficulties can be further compounded and complicated when the contractor involved did not expect or foreseen such adverse ground risks at the time of tender.

When such unexpected or unforeseeable adverse conditions are encountered by the contractor, a change in design and/or method of construction is usually called for, often incurring additional time and costs to the construction project. The recovery of such additional time and costs by the contractor would depend very much upon whether the construction contract is a design and build, cost reimbursable or conventional/traditional contracting, as well as the related contractual terms and conditions contained therein.

## HOW ARE CONTRACTUAL RISKS ALLOCATED AND MANAGED BETWEEN CONTRACTING PARTIES?

Contractors should be concern about the increase in construction cost and the risk being liable for the additional time and cost incurred due to adverse ground conditions. Experienced contractors often act prudently in desktop survey of the site and ascertaining the ground condition to determine the financial effects and possible disruption and delay that may ensue which can affect their work performance and completion of the project. Traditionally, some contractors provide for such contingency by making allowance in their tender such as defined and undefined provisional sums, to cover for such unforeseen or unexpected circumstances encountered during the project. However, whilst it is prudent or ideal for contractors in carrying out site investigation, many contractors fail or ignore the provision for allowing such costs in their tender to take account of such unforeseen adverse ground risks. In more modern contract such as fully cost reimbursable contract, due to the great uncertainty posts by this risk, to maintain fair and reasonableness to the contractor, the apportionment of such risk is usually to the employer.

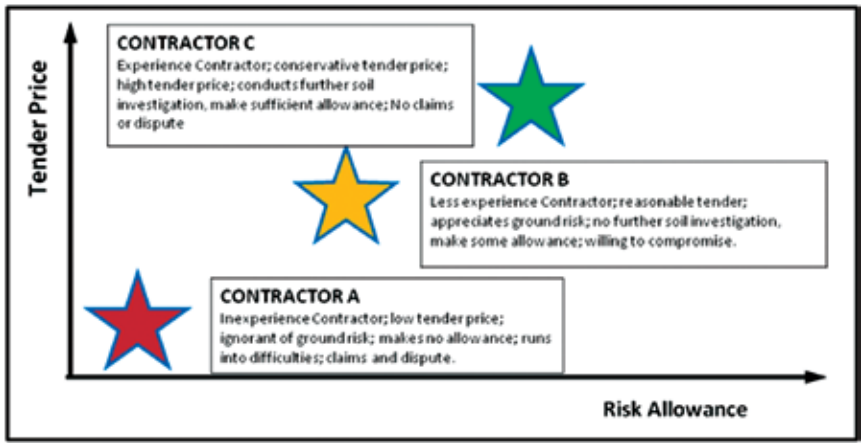
As an alternative to absorbing such ground risk, contractors may, at the outset, seek to negotiate on the contractual terms and conditions with the employers, to either reduce or transfer such ground risk.

In the long term, logistically wide spanning and often involving work in a fully live and operational building maintenance contract, the contractor may transfer such ground risks to an insurer, not only to safeguard the employer and the contractor, but also the leaseholders/tenants.

On the contrary, less experienced contractors are often gamblers and claims perpetrators, winning tenders despite failing to take account of ground risks. In acceptance of their tender submission, the employers will find that their projects invariably costing more ultimately due to variation associated with ground conditions. This may result in dispute between the employer and the contractor, during or after completion of the project, concerning additional cost and the likely prolonged time to complete it. Consequently, it has been often said that the lowest tenderer, may not always submit the most desirable or reasonable tender.

In allocating risks, the contracting party/ies can be at a financial disadvantage should adverse ground risk

occur on the project concern. This can be illustrated below:-




*Tender Price v Risk Allowance by Contractor (Adapted and revised from Wong - 2010)*

Where an employer decides to allocate design and construction risks to a contractor, the employer may consider adopting a design and build lump sum contract or fixed price contract. Generally, such contracts do not compensate for adverse or unforeseen ground condition, unless expressly provided for.

A contractor cannot avoid carrying out the works for the agreed price if, for example, the ground condition was wholly different from those contemplated. According to Rae (2004) *"…it appears to be an established common law principle that where a Contractor undertakes to execute works of construction, the Contractor shall do all that is necessary to bring such works to completion, save to the extent express words provide otherwise (Thorn v London Corporation (1876)".*

This principle is also succinctly stated in Halsbury's Laws of England (2008), *"It is no excuse for non-performance of a contract to build a house or to construct works on particular site that the soil thereof has either a latent or patent defect, rendering the building or construction impossible, it is the duty of Contractor before tendering to ascertain that it is practicable to execute the work on site…."*

## WHO IS BEST ABLE TO MANAGE OR CONTROL CONTRACTUAL RISKS?

Under most building and engineering contracts, the contractor is responsible for the delivery of the project concern. The contractual rights and obligations of the contracting parties of the project should be decided and established at the outset of the project. Usually, the employer and/or its representative/consultant will decide the commercial and contractual arrangement between the contracting parties. Each category of project and construction risk is usually allocated to the party who is best able to manage or control it. The party who is allocated with the risk is normally given the incentive to manage, mitigate and control the risk. The greater the risk, the greater is the incentive, as the agreed incentive will need to cover for any associated consequences should it turns out to be beyond expectation or anticipation. On the contrary, the party who can control the risk but does not bear the risk may have little or no incentive to take measures to ensure that this risk does not occur or is reduced.


It is a challenge to the contracting parties when involving risk in adverse ground condition, particularly when the ground condition turns out to be beyond any competent contractor can reasonably expect or foresee. Very often either party may not have any particular control, special knowledge or specific skills to handle such risk when it comes to dealing with adverse ground condition problems. Consequently, who should really bear the responsibility in handling unforeseen adverse ground

conditions ?
Where a contractor promises to undertake to complete the construction project by a stipulated date and at an agreed price, this is what the contractor had contracted to do. Hence, arguably should the contractor encounter unforeseen ground conditions, the contractor will need to ensure that the work progresses in accordance with agreed terms and conditions stipulated in the contract, unless it allows for specific provisions enabling the contractor to claim for extension of time and/or loss/ expense due to disruption and delays caused by such unforeseen conditions.

According to Bailey (2007), the courts are reluctant to interfere with the disputing parties' allocation of contractual risks, and avoid disrupting or displacing the agreed equilibrium (or disequilibrium) of their contractual rights and obligations. Therefore, it is crucial to establish the contractual obligations of the contracting parties particularly on unforeseen ground conditions right at the outset of signing the contract, preferably even before tendering.

In many standard form of building or engineering contracts, there is no provision which entitles a contractor to claim for extension of time and/or loss and expense incurred due disruption and delay triggered by unforeseen adverse ground condition. Such risk will usually remain with the contractor, unfortunately.

In PAM 2006 Form of Contract, clause 23.8 lists 'force majeure' and 'exceptionally inclement weather' as 'relevant events' potentially entitling the contractor to an extension of time. However, the said contract makes no particular provision for any extension of time or additional compensation in the event of any unforeseen adverse ground condition is encountered. In contrast, the JKR and IEM Forms of Contract, Clause 15 and 14 respectively, similarly worded, state to the effect that,

*"The Contractor shall be deemed to have inspected and examined the Site and its surroundings and to have satisfied himself before submitting his tender as to the nature of the ground and sub-soil, the form and nature of the Site, the extent and nature of the work, materials and goods necessary for the completion of the Works, the means of communication with and access to the Site, the accommodation he may require and in general to have obtained for himself all necessary information as to risks contingencies and all circumstance influencing and affecting his tender. Any information or document given or forwarded by the Government to the Contractor shall not relieve the Contractor of his obligations under the provisions of this Clause. The Government* (IEM – Employer) *gives no warranty for the information or document either as to the accuracy or sufficiency or as to how the same should be interpreted or otherwise howsoever and the Contractor shall make use of and interpret the same entirely at his own risk."*

As a result, the contractor cannot plead ignorance of ground conditions as it is expected that the contractor should have undertaken adequate ground investigations, unless otherwise specified. Usually, there is no specific contract provision that highlights who should bear the risk of ground condition which is not reasonably discoverable, even if a thorough ground investigation had been undertaken.

This is reflected in the case of ***Humber Oil Terminals Trustee Ltd v Harbour and General Works (Stevin) Ltd (1991) 59 BLR 1, CA*** where the contractor who was responsible for the construction of three mooring dolphins and re-construction of a damaged bathing dolphin, succeeded in its claim under ICE contract, proved that the collapse of the barge following an accident was resulted by the applied stress on the barge which caused different ground behavior and substantial increase in ground settlement. This condition could not have been foreseen by an experienced contractor. Although the soil condition encountered was foreseen, but the performance under adverse physical condition was not foreseeable by an experienced contractor. Following an appeal by the Employer, the court upheld the Arbitrator's decision that "*there must have been an unusual combination of soil strength and applied stresses at the base of the barge's leg, which constitute an unforeseeable physical condition.*" Whilst, *"…the condition of the damaged mooring was predictable, but the ground behaved unpredictably when subjected to the Contractor's particular construction methods, may that be temporary or permanent construction works."*

In view of the above case, the risk of unexpected or unforeseeable ground conditions should lie with the employer, particularly when there are contractual provisions which allow for extension of time and additional compensation for delayed work completion due to disruption caused by such ground conditions.

The above position is supported by several international building and engineering contracts, which are succinctly summarised by Bailey (2007), as follows:

- ***ICE Edition 7*** *clause 12 contemplates a Contractor who has encountered physical conditions or artificial obstructions which could not reasonably have been foreseen by an experienced Contractor being granted extension of time and/or payment for additional cost reasonably incurred (plus a reasonable percentage for profit) as a consequence of those conditions or obstructions. It is, however, a condition precedent to this relief that the Contractor gives notice within a prescribed period, of the adverse conditions encountered.*
- ***NEC 3*** *clause 60.1(12) identifies as a 'compensation event' the encountering by the Contractor of physical conditions within the site, other than weather conditions, which 'an experienced Contractor would have judged at the Contract Date to have such a small chance of occurring that it would have been unreasonable for Contractor to have allowed for them'.*
- *The* ***FIDIC Red Book*** *clause 4.12 operates in a similar manner to the ICE and NEC3 conditions. Clause 4.12 " 'Physical conditions' means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the site when executing the Works, including sub-surface and hydro-logical conditions but excluding climatic conditions… 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……. If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be 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, which shall be included in the Contract Price."*

The aforesaid contract provisions seemed to categorized a contractor as competent/experience contractor in assessing all the information given, including the knowledge of expecting what ground condition the project will face based upon the level of ground investigation that deemed suffice for proper construction. At the same time, such contract provisions are effectively protecting the contractor from adverse unforeseen ground conditions that, even with a thorough site investigation, it may not possibly discover or the actual ground condition may turns out to quite different from the information provided. In other words, the employer carries the risk of physical ground conditions unforeseeable by an experienced contractor at date of tender.

## WHAT ARE THE EFFECTS ON RISK ALLOCATION OF INACCURATE OR MISLEADING INFORMATION ON GROUND CONDITIONS GIVEN BY THE EMPLOYER (OR ITS REPRESENTATIVE/CONSULTANT) TO THE CONTRACTOR?

Whether an employer is liable to a contractor for providing inaccurate or misleading information such as soil investigation report would depend upon the circumstances in which the information was given. Often, the employer, through its representative/ consultant provides information such as ground or soil investigation report, which may or may not form part of the tender or contract documents.

The possible scenarios to consider are :

a) What are the implications upon the employer or its representative/consultant who supplies the ground investigation information to the contractor ?

b) When the employer's given information is neither accurate nor disclaims for inaccuracies, is the employer liable should the information turn out to be wrong?

c) What are the implications to the contracting parties when the contractor is aware of any misrepresentation (innocent or fraudulent) found in the tender information given by the employer or its representative/consultant ?

d) What are the implications when a disclaimer is applied to accurate or complete information provided to the contractor?

### a) What are the implications upon the employer or its representative/consultant who supplies the ground investigation information to the contractor?

Most contractors often have to make use of the tender information including ground investigation supplied by the employer or its representative/consultant as part of the tender documents. Such information may be recent or even several years ago, which they would rely on in their tender submission. Where the employer is contractually bound to warrant the contractor that this information, whether expressly or implied, is accurate and complete for the contractor's reliance, but such information turned out to be incorrect or insufficient, and the contractor had relied upon it, to its detriment, the employer will be liable for it. Under such circumstances, the contractor is entitled to damages incurred from relying on such information. Depending upon the circumstances, this may include an entitlement to extension of time and/or loss/expense under the contract or a claim for damages at common law.

This form of entitlement is evident in the case of ***Bacal Construction v Northamption Development Corp (1975) 8 BLR 88*** , whereby the Court of Appeal accepted the Contractor, Bacal's contention that there was an implied warranty when it was instructed to prepare for a foundation design as part of its tender based upon the borehole data provided by the Employer, which then became part of the contract. The borehole data which indicated sand and clay turned out to be rock strata, which lead to the initial foundation design needed to be re-designed, thereby incurring additional cost to the Contractor.

### b) When the employer's given information is neither accurate nor disclaims for inaccuracies, is the employer liable should the information turn out to be wrong?

Where information supplied to the contractor concerning ground condition is neither accurate nor complete, and the contractor has knowledge or is aware of it, it is the duty of the contractor to warn the employer about it, vice versa. Where the employer provided the design or ground investigation information to the contractor, the accuracy of such information should be verified, in fact and context, and if further information is required, provided it is reasonably contemplated to do so. Having undertaken these measures, the contractor can then determine the extent of its contractual liability or limitation and therefore be able allow for such ground condition uncertainties in the tender. In the case where such information does not form part of the contract, it shows that the employer do not warrant its accuracy.

In safeguarding the Employer from this liability, the case *Cooperative Insurance Society Limited v Henry Boot Scotland Limited and Others (2002) EWHC 1270 (TCC),* the contract had defined *'Contract Document' as '…the Contract Drawings, the Contract Bills, the Employer's Requirements, the Contractor's Proposals, the Contractor Design Proposal Analysis, the Articles*

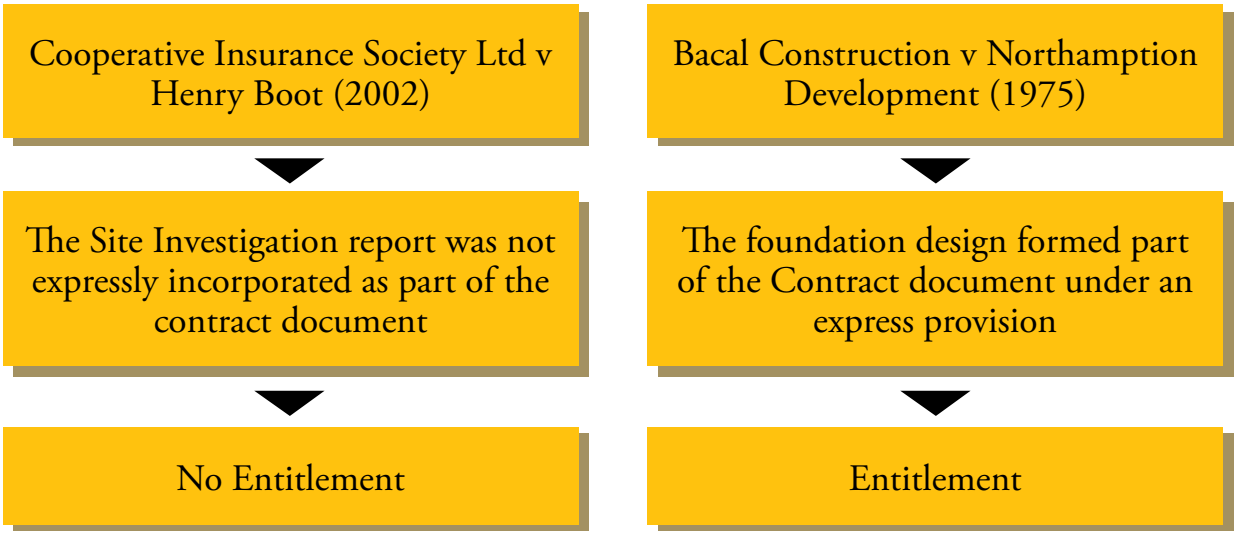
*of Agreement and the Conditions, the Appendix and the Supplementary Appendix.'* The learned Judge Richard Seymour QC held that such (Ground Investigation) reports were not expressly incorporated as part of the contract document and it could not be implied as being incorporated into the contract.

In ***Enertrag (UK) Ltd v Sea & Land Power and Energy Ltd (2003),*** the Contractor has agreed to take responsibility for the operations and work methods to complete the project under the design and build contract. All undertakings by the Contractor are to complete the project for a fixed price or lump sum. From this perspective, the Employer does not warrant the accuracy of information passed on to Contractor, hence protecting the Employer from being liable for any ground uncertainties.

Clearly, the ground investigation information supplied by the employer for tendering purpose may not necessary be part of the contract document. However, it is in the employer's interest in qualifying information released to the contractor for pricing purposes. The contractor can reserves its rights outside the contract to claim for damages if there is a misrepresentation of such information given in assisting the contractor's tender submission.

In conclusion, the employer cannot simply be liable to the contractor who relied on the employer's inaccurate information, neither can the contractor be liable for such information, when it is inaccurate or misleading as it depends upon whether the parties concern know about the inaccuracy or misrepresentation and the action (or inaction) which ensued thereafter.

The following is a comparison of the aforesaid two scenarios due to ground conditions:-




*Entitlement for loss and expense claim (Wong, 2010)*

**c) What are the implications to the contracting parties when the contractor is aware of any misrepresentation (innocent or fraudulent) found in the tender information given by the employer or its representative/consultant ?**

Misrepresentation is a contract law concept which means an incorrect statement of fact made by one party to another party. Broadly there are two types of misrepresentation, namely innocent and fraudulent, the former is not actionable but the latter is.

The following illustrate typical cases of misrepresentation:-

***Fasteners Ltd v Marks Bloom & Co (1983)*** *highlights professional negligence failure in providing duty of care by providing misrepresentation that played a real and substantial part in assisting the Employer in determining and*

*entering the next course of action. However, at common law an innocent misrepresentation that is erroneous statement made without knowledge of its falsity was not actionable.*

***Banque Bruxelles Lambert SA v Eagle Star Insurance Co Ltd (1997)*** *highlights fraudulent misrepresentation resulting in plaintiff recovering all actual damages incurred from the date the contract was entered with defendant. ICE Contracts 4th Edition 'The Courts are obviously disinclined to allow a party to make a groundless misrepresentation without accepting liability for the consequences.'*

In **Co-operative Insurance Society Ltd v Henry Boot Ltd and Others (2002) EWHC 1270,** whether the Soil Investigation reports furnished by the employer represented the actual groundwater level relied upon by the Contractor, the Court held that the said reports did not contain any definite and unqualified statement sufficient to represent the actual groundwater level across the site. In fact, a disclaimer in said SI report stated only an average band of groundwater levels were taken from the boreholes carried out.

When such reports contain disclaimers on statements made in the SI report, it can be difficult to hold the employer liable for misrepresentation. However, still there are cases which employers have been liable for misrepresentation, such as in the case of ***Howard Marine & Dredging Co. Ltd v A.Ogden & Sons (Excavations) Ltd (1978) 2 All ER 1132 C.A.*** which involved dumping of excavated clay at sea using barges, whereby the Plaintiff's manager represented (based on his memory of the Lloyd's Register) to the Defendant that their barges can carry 1,600 tonnes, despite being aware of the correct figure of 1,055 tonnes stated the shipping documents, and the Defendant relied on his representation to proceed with the hire.

When barges turned out to be insufficient to meet the tonnage requirement, the Defendant rightfully refused to pay the full price, which lead to the Plaintiff to terminate the agreement and sued for the shortfall. In defense, the Defendant counter-claimed and cited breach of collateral warranty and negligent misrepresentation by the Plaintiff's manager, which the Plaintiff contended having reasonable grounds to believe the Lloyd's Register as it was the 'Bible' so to say. It was held by the Court of Appeal that the Plaintiff was liable for breach of duty under Sec. 2(1) Misrepresentation Act 1967 for failing to prove reasonable grounds in believing in the truth of statement.

In the case of **Pearson and Son Ltd v Dublin Corporation (1907) AC 351,** the Defendant's Engineer in preparing the drawings for the retaining wall foundation going 9-feet below ground, knew about the true depth of the wall, which is substantially different. The Plaintiff's tender in relying on the drawings was successful, albeit due to a lower tender price. If the Plaintiff knew about the actual depth, the tender price would have been higher, and the Plaintiff subsequently sued for fraudulent misrepresentation.

In defense, the Defendant's Engineer stated that his Employer should not be responsible for accuracy of the information given and relied on a clause, which stated the Contractor should satisfy himself as to '*the dimensions, levels and nature of all existing works*'. The House of Lords held that there was no defense in such when the details contained in the drawings given to the Contractor were in fact a misrepresentation. The learned Lord Atkinson, expounded that: *'… a clause, deliberately introduced into a contract by a party to the contract, designed beforehand to save him from all liability for a false representation made recklessly and without any belief in its truth, is as much 'conceived in fraud' as if the representation had been false to the knowledge of the person who made it…'*

In summary, when there is a misrepresentation, either verbal or in writing by a contracting party, it affects and does shifts the risks allocated between the contracting parties, unless there is a disclaimer put in place to exclude such liability for the risk to be maintained. However, even so, it must not be fraudulently represented.

**d) What are the implications when a disclaimer is applied to accurate or complete information provided to the contractor?**

In some building and engineering contracts, disclaimer or similar contractual provisions or clauses are used to safeguard the interest of the employer from being held accountable to the contractor for any inaccuracies or misleading statements found in ground investigation reports given to the contractor, thereby forming part of the contractor's pricing and the eventual contract documents.

A case in point of such clauses is the Australian case of ***Morrison-Knudsen International Co Inc v Commonwealth,*** involving the construction of runways at Tullamarine Airport in Melbourne, whereby the High Court held that such clauses were, ineffective to exclude the Defendant's liability for the inaccurate and misleading site information concerning

ground conditions provided to the Plaintiff, who was the Contractor. The Defendant relied on two common building and engineering contract terms, one which stated that the Contractor '*shall be deemed… to have informed himself as to the site and local conditions*' and the other '*any failure by the Contractor to acquaint himself with the available information…….will not relieve him from responsibility for estimating properly any difficulty or the cost of successfully performing the work.*' The Plaintiff's claimed that the information provided was false and misleading as it had failed to disclose large quantities of cobbles found in certain locations and claimed an increased costs of A$2.5m.

It is also common in Malaysia for such clauses to be included in building and engineering contracts. One such contract concerning ground condition, provided as follows;
'*…A soil report intended solely as a preliminary and approximate guide to nature of ground satisfaction. The completeness and the accuracy of the information provided is neither guaranteed nor implied……the soil report limits itself to and identifies subsurface conditions only at selected points where soil samples were taken. The actual conditions in areas not sampled may differ from the reported findings…the Contractor shall be obliged to place his own interpretation on the information provided and include in his tender……and make due allowance in his construction operations to ensure the on-time completion of the Works.*'

The above provision typifies a disclaimer clause, sets out in the contract to protect the interest of the employer. Another type of disclaimer clause is the 'no reliance' clause, which requires that the contractor not to rely on any information given by employer when entering into the contract. In essence, the contractor takes upon itself the risks and responsibilities for carrying out the works in accordance with the contract requirements, although contractor may have entirely depended upon such information in its tender submission.

In summary, disclaimer and no reliance clauses stipulated in the contract effectively transfer the employer's risks and responsibilities associated with ground conditions to the contractor, unless the information provided was misrepresented and fraudulent. However, if indeed such information provided to the contractor is so uncertain as to its accuracy and completeness, it would be more prudent for the employer or its representative/consultant not to provide it, but to leave it to the contractor to establish the ground condition itself, thereby rendering such risk squarely on the contractor.

## MEASURES TO OVERCOME OR MITIGATE PROBLEMS RELATED TO GROUND CONDITIONS

Unfortunately, most building and engineering contracts, place the risks solely on the contractor undertaking the works relating to unforeseen ground conditions. Consequently, most contractors will usually include necessary contingency to deal with such risks. Where the risks exceeds the contingency, claims for loss and expense become inevitable, if the contractor do not want to suffer a loss on the project. On the contrary, when it is lesser, the employers end up paying for such risks indirectly to the contractor concern. In both cases, employers pay, ultimately.

Recently, with the increasing awareness of risks and their allocation by the contracting parties in Malaysia, efforts have been made to allocate risks on ground conditions to the party who is best able to manage them and gain long term benefit of the project concern, which is the employer. This position was supported by the Grove Report by Jesse B.Grove, when he reviewed the Hong Kong Government General Conditions of Contract way back in 1998 (Wong, 2010). Unfortunately, many construction contracts in the Malaysia still include provision/s that makes the contractor responsible for such risk, despite the many problems and dispute arising from do so.

Considering that the employers are paying for the construction projects undertaken by the contractors, the following measures should be taken by the employers to avoid or reduce variations and disputes relating to ground conditions :-

- accept (or share) the risks of the unforeseen or unexpected ground conditions with the contractor;
- pre-tender investigation for ground condition should include preliminary and if possible, detail survey of any existing underground utilities, structures, ground contamination report, ground investigation report, where relevant, ground historical search of the area the site is located, etc.
- provide accurate and detail information in tender documents;
- adverse change in the ground conditions should constitute a variation ;
- reasonableness and fair play.

Given that employers or its representatives/consultants usually provide short time period for tender submission, thereby making it almost impossible for the contractors

to undertake proper or any further ground investigation study on the project site, the possible measures for contractors (and sub-contractors) to take to avoid or reduce unnecessary disruptions, delays and disputes relating to ground conditions are :-

- carry out a comprehensive desktop survey of the site. For instance, where surface boulders are observed, there may be existence of rocks in the ground. Photographic evidence and samples should be obtained for records;
- within the time constraints or ask for extension for time and permission to carry out proper ground investigation prior to tender submission ;
- know the actual site conditions, regardless of experience or expectation derived by the given information;
- where possible, use recent ground information from adjoining site or site in near proximity to the site, to counter verify the validity of the ground information provided and to identify risks which may not have been accounted for;
- qualify any misrepresentation of information provided during tender;
- ensure any ground investigation documentation forms part of the contract document;
- quantify the ground risks in tender, where possible;
- duly notify in writing, with supporting details, of any inaccuracies found in the information provided; and
- carry out joint verification survey or investigation, when the unforeseen or unexpected ground conditions occur;
- be conciliatory rather than adversarial in approach.

## CONCLUSION

Effective risks assessment and management is necessary to avoid or mitigate the miseries relating to ground conditions. Positive or proactive measures need to be taken by the contracting parties in addressing any ground risks, in particular those that are unforeseeable or unexpected, which can adversely affect the outcome of the project.

Due considerations and care need to be given by employers and their representatives/consultants when providing ground investigation information to the contractors to ensure its sufficient representation and accuracy of the ground condition prevailing on the project site concerned.

Contractors in relying on such information, whether sufficient or accurate, or otherwise, should be cautious and make diligent efforts to verify them and to safeguard their position by conducting their own ground investigation, prior to submitting their tender, including to qualify and price for any adverse ground risks, when deem appropriate and necessary to do so.

The employer cannot simply be liable to the contractor who relied on the employer's inaccurate information, neither can a contractor be liable for such information, when it is inaccurate or misleading as it all depends upon whether the parties concern know about the inaccuracy or misrepresentation and the action (or inaction) which ensued thereafter.

Recently, concerted efforts have been made internationally to allocate the risks on ground conditions to the contracting party who is best able to manage them so as to gain long term benefit of the project concern, which is the employer. It is high time for such understanding and efforts to be made by the key players in the Malaysian construction industry so as to avert the miseries faced by many contractors (and sub-contractors) in having to unravel the mysteries of the underground, themselves.

In the next issue of the MBAM journal, BK Entrusty article will deal with a common contractual issue on ***"Design and Build Contracts - Implications and Limitations"***

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