



# FOCUS

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## JOURNAL HIGHLIGHTS

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# Message from the **President**

Message for the July 2019 Focus  
from the newly elected  
President of IQSSL



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President of Institute of  
Quantity Surveyors Sri Lanka

I am pleased to pen this message for the FOCUS magazine of July 2019.

With the evolving technologies and innovative products of various service providers and manufacturing industries, the construction industry is demanded to follow new methods and use the latest products. The construction industry products being facilities, in both civil engineering and building construction sectors, where most of other industries' products are used, assembled or installed, there is a substantial pressure for us to be dynamic with the changes.

On the other hand, scarcity of natural and other resources has become a challenge, particularly with the construction industry being a major contributor of natural material extraction.

In this context, linear economy where resource extraction, production, distribution, consumption, and waste or "take, make, dispose" has evidently no future. Hence, designs and products that can be "made to be made again" powered with renewable energy in a circular economy (production, distribution, consumption, reuse, recycled, make again as much as, distribution) have become imperative.

Further, available information suggests that full-scale digitalisation would reduce annual global costs of nonresidential sector initial construction cost between US\$ 0.7 – US\$ 1.2 trillion and operational costs by an average of US\$ 0.4 trillion.

The Quantity Surveyors (QS) forte is to obtain best value for the expenditure. This encompasses sustainable development with reduced environment impact from the resource use. Naturally, QS has to be a resource management professional to achieve this. Thus, QS should be equipped with the new knowledge about Information Technology (IT), use of relevant software for documentation, use of new construction technologies and be dynamic in providing their service. Though we use the traditional name "Quantity Surveyor", the current role of QS is more of an Economist, Analyst, or Evaluator with regard to the construction sector commercial matters. This entails that QS should possess knowledge and skills in Law, Finance, Management, Auditing (technical), Problem Solving, Communication, and similar commercial fields in addition to the mentioned IT and technological aspects.

Consequently, this "Specialist Evaluator" is now entrusted with a highly challenging dynamic role in contributing to deliver construction projects within a digitalised environment with the use of such technologies while managing resources to ensure an optimum use in order to economise and protect the ecosystem.



### **IQSSL Annual Forum Highlights Creating 'Local Identity in Global Reality'**

The Institute of Quantity Surveyors Sri Lanka (IQSSL), the apex body for the Quantity Surveying profession in Sri Lanka, successfully held its Annual Forum recently at Jaic Hilton Hotel, Colombo. Over 300 decision makers, intellectuals, and professionals in the construction industry attended this grand event that was held under the theme of "Local Identity in Global Reality – Protectionism vs. Globalism." Mr. Thilan Wijesinghe, the Chairman of National Agency for Public Private Partnership and former Chairman of the BOI, graced the occasion as the Key Note Speaker. In his thought provoking speech that was commended by all the participants, Mr. Wijesinghe highlighted that 'local identity' cannot be created by being too protective and globalism helped many countries to create its own local identity as well as to strengthen their own economies. He emphasised that global outlook and local know-how together with communication will make businesses succeed. Mr. Wijesinghe further articulated with detailed examples that the secret of success in many developed economies is 'knowhow through human mobility' and that Sri Lankans should view immigration of skilled expatriates with a positive frame of mind. Even though Sri Lanka is highly affected by the brain drain, Mr. Wijesinghe is of the opinion that we should reverse the situation and use the Brain Migration to create identities for local industries. If channeled properly the benefits of globalism will far outweigh the benefits from protectionism.

In addition to the Key Note Speech the event included a discussion forum where many dignitaries and intellectuals from the construction industry expressed their opinion on the above theme. The participants highlighted that Sri Lankan construction industry has the required skilled professionals, contractors and intellects who can drive the industry to the next level of development to create a local identity. However, the policies and regulations must be put forward to encourage such local capabilities while protecting their interests where required.

In conjunction with the Annual Forum, IQSSL held its Annual General Meeting and appointed a new governing council for the year 2019/20 where Ch. QS. Lalith Ratnayake was newly appointed as the President of the IQSSL. Ch. QS. Prof. Mrs. Kanachana Perera was appointed as the Vice President while Ch.QS. Senarath Wettasinghe and Ch. QS. Mr. Indunil Seneviratne was appointed as the Secretary and Treasurer respectively.



# IQSSL ANNUAL TECHNICAL SESSIONS 2019

The Annual Technical Sessions 2019 organised by the IQSSL was successfully held at the BMICH on 14<sup>th</sup> March 2019 under the theme “**Quantity Surveyor’s Adaptability to a Challenging Economy**” in parallel to the Annual Forum. The Chairman of CIDA, Eng. Gemunu Alawaththegama, graced the occasion as the Chief Guest.

The event was well attended by over 500 QS students and practitioners. Dr. Chandana Jayalath, Senior Lecturer, University of Vocational Technology (UNIVOTECH) articulated a thought provoking speech as the Key Note Speaker of the event. In addition, Eng. Samitha Jayakody (Director, Architectural and Building Consultancy, RDC), Mr. Denzel Perera (General Manager, ACL Cables) and Mr. Manoj Herath (Senior Quantity Surveyor, Musanda Project Management, UAE) delivered highly commendable speeches on various aspects relevant to the main theme.





## Unveiling Photographs of Past IQSSL Presidents

The unveiling of the photographs of the Past President Ch. QS. Nishantha Wickramasinghe and Immediate Past President Ch. QS. Upul Shantha took place at the IQSSL Secretariat at the OPA Building on the 9<sup>th</sup> of May 2019.

## **IQSSL NOTICES**

### **Membership Subscription**

The Institute of Quantity Surveyors Sri Lanka (IQSSL), pursuant to the Rules of the Institute and as per the decision made by the Governing Council, hereby informs that Student Members who have not paid their membership subscription fees for the last 10 years and/or who have not upgraded their membership category for the last 10 years will be ceased to be considered as Student Members of the Institute from 26th September 2019 onward.

### **Member Details**

The Institute of Quantity Surveyors, Sri Lanka (IQSSL) is updating the current information of all Technical Members of IQSSL for the year 2019. Hence you are kindly requested to provide your details with immediate effect by contacting Ms. Harshani on 0112595570 or [iqssl@slt.net.lk](mailto:iqssl@slt.net.lk). The Institute intends to organise a get-together of Technical Members in August 2019 and the details will be circulated to the Technical Members in due course.

In addition, all other Members (Student, Graduate, Probationary, Associate and Fellow) are also kindly requested to send in your updated contact details to Ms. Harshani on 0112595570 or [iqssl@slt.net.lk](mailto:iqssl@slt.net.lk).

Thank you.

Secretary  
IQSSL

# Integration of Building Information Modelling into Construction Projects in Sri Lanka to Optimise Cost, Quality and Time



**B.L.S.H. Perera**



**D.M.S. Jayasuriya**



**U. Gunaratne**

Building Information Modelling (BIM), an intelligent 3D model-based process, has recently drawn widespread attention in the construction industry. It gives insight and tools to architecture, engineering, and construction (AEC) professionals to plan, design, construct, and manage buildings and other infrastructure more efficiently. The model created by BIM which is a three dimensional digital representation of the facility, enables reliable decision making throughout the lifetime of the facility. It will contain information pertaining to the contract, personnel, programming, specifications, properties, quantities, costs, space and geometry of the facility. Researchers in recent years have endeavoured to develop BIM models that can also analyse the costs/benefits of BIM implementation.

BIM is a tool that can be used throughout the building lifecycle to ensure a smooth flow of information throughout the planning, design, construction and operation phases of a facility. It improves collaboration among project members and encourages them to share information quickly and easily by bringing together the work of professionals of different disciplines through a centralised model.

In recent years, many companies in the AEC industry have introduced major IT-based change processes to their operations. As a result, the traditional paper-based and two-dimensional computer aided design (CAD) tools are gradually

being replaced by systems such as BIM that use three-dimensional technologies.

This research aims to set out the different stages of BIM implementation to enable cost and time savings and enhanced quality in construction projects undertaken in Sri Lanka.

The construction industry in the country is yet to get conversant with BIM technology. This, however, cannot be a barrier for the industry to implement BIM since technology is a resource that can always be acquired. However, the decision to acquire BIM technology would have to be balanced between costs and benefits of BIM.

In the absence of knowledge of and experience in BIM, the benefits of BIM cannot be expected to be known very much in the country. Since BIM implementation is still not being practiced widely in Sri Lanka, it will take time for AEC practitioners to gain experience in BIM. Therefore, it is necessary at least to become knowledgeable in BIM so that an informed decision about BIM could be made. Knowledge is also important to make the best use of BIM after it has been implemented.

The majority of construction industry stakeholders in the country are not fully aware of BIM. However, those who are knowledgeable about it and adopted it are already pleased with its benefits and are keen to invest further in it to reap more benefits.

To receive the true benefits of BIM, changes in the existing procurement strategies, processes, cultures and attitudes will be necessary. BIM is a requisite for the BIM friendly procurement strategy, Integrated Project Delivery (IPD). However, IPD is still in its infancy in Sri Lanka.

Sophisticated software tools now available help users to master BIM in their own domains and contribute effectively to it. However, when there is resistance to change and when professional boundaries overlap, BIM implementation becomes challenging.

It is also to be noted that collaborative design development and construction will require significant deviations from the practices that are currently being followed.

A construction project has to deal with a wide variety of complex activities and has to maintain relationships with a large number of parties known as 'stakeholders', all of whom will have an interest in the outcome of the project. These stakeholders include the Employer, Architect, Engineer, Project Manager, Quantity Surveyor, Contractors and other involved parties. For the successful implementation of BIM, a strong commitment of all these stakeholders will be a must.

Some of the advantages of using BIM are the ability to do fast, effective and efficient quantity take-offs and cost estimation, computation of reliable and accurate quantities and auto calculations which reduce human errors, ability to hand over a project to another party more quickly and reduce double handling, enhanced collaboration amongst team members, and reduced information loss.

Quantity surveyors use BIM-based quantity taking off to eliminate errors possible with conventional quantity taking off. With BIM, they can do automatic quantity taking off through the automatic extraction of visual information. Similarly, with BIM, a client can improve the performance of a building by using BIM-based energy and lighting designs, reduce financial risks through reliable cost estimates and improve collaboration among project members.

In BIM, a computer-aided system links with the BOQ and other measurement systems to collect quickly all relevant information related to pricing.

BIM visualises how the building will appear after its completion. It can generate a 3D model from a 2D drawing by capturing 2D data and placing them in the 3D model. This will ensure that even minor items in the original drawing will be included in the 3D model and will help to bring in time and cost savings. The productivity and quality of the documentation of 3D modelling (BIM) are better than those of 2D drawings.

BIM reduces the cost, installation time and wastage of construction materials. It saves 80% of the time taken to produce a cost estimate and up to 10% in the contract value through clash detection. It also provides highly accurate cost estimates resulting in savings in project time.

Time, cost and quality, which are interrelated, are the three key aspects of a project, known as 'project characteristics'.

BIM has its own drivers and barriers. The following are the drivers of BIM extracted from the findings of case studies conducted within the Sri Lankan construction industry:

- ▶ Shorter time required to bring in improvements to construction
- ▶ Enhanced collaboration on projects
- ▶ Improved sustainability through increased product quality, reduced leakage and reduced wastage
- ▶ Reduced complexity of facilities as time and cost related factors of construction can be clearly seen
- ▶ Increased ability to respond to requests for information during the early stages of the construction.

The following are the barriers identified:

- ▶ High cost of BIM implementation
- ▶ Fear to change established practices, refusal to be innovative and resistance to any changes in the existing roles
- ▶ Issues that arise when allocating roles, responsibilities and rewards

- ▶ Lack of skilled personnel
- ▶ Lack of contractual documents and technical issues that can arise when using newly introduced software
- ▶ Unsuitability of the projects to BIM
- ▶ Issues that arise pertaining to data updating and maintenance

To overcome the barriers mentioned, a framework with six levels can be developed. This framework will make BIM implementation in construction firms a less complicated, and error-free process. The six levels of the framework are as follows:

*Level 1: Evaluation or Assessment*

Establish the implementation plan and make Building Information Modelling a part of the internal assessment procedure of the organisation.

*Level 2: Compliance with the requirements set out by relevant regulatory bodies*

Comply with the requirements set out by local and international regulatory bodies associated with BIM implementation and understand the changes required in legal contracts and deliverables expected from each party.

*Level 3: Evaluation of Top Management Commitment*

After identifying the relevant regulatory bodies, evaluate the top management's commitment and corporation towards the decision to adopt BIM in the organisation.

*Level 4: Preparation for the transition and project pre-planning*

Project pre-planning is a crucial step that has to be performed before going ahead with BIM transition. It should comprise the following:

- [1] Software interoperability
- [2] Up-to-date technology and integration
- [3] Training of personnel

*Level 5: Accomplishment of plan or design and construction*

The execution of the plan has to be decided in collaboration with all the stakeholders of the project. This phase defines the social interactions of the project team throughout the BIM construction life cycle. A BIM execution plan has to comprise the following:

- [1] Portfolio management
- [2] Planning and implementation of pilot tests
- [3] Organisational arrangements
- [4] Team restructuring
- [5] Information transfer
- [6] Defining roles and responsibilities
- [7] Measuring performance

*Level 6: Operation, Control and Maintenance*

The high-level digital model built in the design phase acts as the basis for operations and maintenance. The building data from this model can be reworked to incorporate the operations and maintenance of the facility.

The systematic process given above can help organisations in laying down a set of rules to follow throughout BIM implementation. Hence, this framework will assist the organisation to implement BIM by reducing the barriers that will have to be overcome during BIM implementation as identified from past research findings. Eventually it will help to reduce waste and control project time, quality and cost.



# The Last Planner System: A Missing Tool for Performance Improvement



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The construction sector of Sri Lanka has presently undergone revolving changes owing to the massive construction boom after the civil war and the construction downturn caused by political instability in the country. It is worth to note that, despite the different construction management techniques adopted so far, Sri Lankan construction industry is continually facing many challenges out of which delays, cost overruns and poor-quality standards turn out to be the most crucial. Government policies and regulations, unstable economy, financial problems of the contractor and the client and low level of technological development are some other construction challenges lie in the background.

Even though these issues have been addressed to a certain extent with the traditional management techniques, the effectiveness of these solutions still lies on uncertain grounds. Hence, a strong platform is required for the upliftment of the construction sector rather than sticking to the traditional construction management techniques. Many researchers argued to get in to lean in the construction industry to minimise the aforementioned construction issues. Amongst all the lean tools, Last Planner system is the most widely used tool in lean construction management endeavours worldwide (Ballard, Hammond, & Nickerson, 2009) to improve the performance of the construction industry. Even though Last Planner system has been widely practiced and gaining benefits worldwide nowadays, it still remains in its infancy as far as Sri Lankan construction industry is concerned. Thus, it is vital to popularise the Last Planner System (LPS) to Sri Lankan construction

industry and investigate the drivers towards successful LPS implementation.

## 1.1. Introduction to LPS

In an era where manufacturing industry had been greatly benefited from lean production principles, the need for a production theory in construction had been strongly perceived. Consequently, culminating all the efforts of Glenn Ballard the Last Planner System, which turned out to be a significant lean construction tool of the era came into being in the early 1990s giving a touch of production control to the construction endeavour. Gregory Howell were further developed the system along with Ballard in 1994 to provide a comprehensive LPS for construction industry.

LPS contains ample benefits of enhancing the reliability of workflow, reducing uncertainty, reducing costs, ensuring timely delivery of projects, improving productivity, ensuring safety, securing quality, improving collaboration among construction team members, improving planning skills of Last Planners and many more (Mossman, 2017; Ballard, 2000). Presently, LPS has emerged as a production control system most widely used in the sphere of construction project management.

## 1.2. Phases of LPS

LPS consists of four major planning processes prepared in different chronological spans; master scheduling, phase scheduling, lookahead planning and weekly work planning (Ballard, 2000). The following figure depicts the LPS phases in brief.

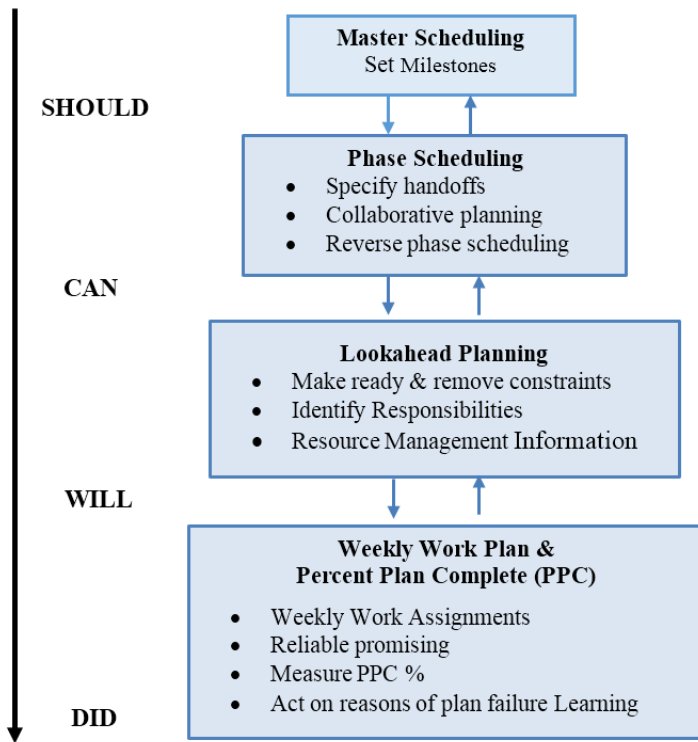


Figure 1:  
Key Planning Processes  
in the LPS

Source:  
(Hamzeh, Ballard, &  
Tommelein, 2008)

**Master scheduling:**

The first phase involves the establishment of milestones for the whole project. The milestones are set to address the requirements of the client by verifying the congruency between project duration and timing of milestones against the client’s expectations (Hamzeh, 2009). Generally, the master schedule is prepared with the involvement of the client and the design team.

**Phase scheduling:**

This phase details the milestones established in the master plan. Activities are planned backward starting from the milestones using reverse phase scheduling technique. All the team members participated for the master schedule, collaboratively involve in this stage of planning (Ballard & Hamzeh, 2007).

**Lookahead planning:**

The middle level of production planning which generally forecasts for a time frame of 4-6 weeks of time span into the immediate future with greater reliability than the two earlier phases. The basic functions of this phase involve breaking processes into operations, identifying and removing constraints, assigning responsibilities to the Last Planners and making them ready. Lookahead plans are prepared with the involvement of the project manager, project engineer and the site engineers with a higher degree of assurance on the tasks being

executed in the near future (Hamzeh, Ballard, & Tommelein, 2008; Hamzeh, 2009).

**Weekly Work Planning (WWP):**

The most detailed level of planning. In order to weekly work plan be more reliable, the assignments made should have to meet several criteria; definition, soundness, sequence, size and learning (Hamzeh, 2009). The involvement of construction foremen and other personnel who immediately supervise the work, turns out to be one of the striking differences of this phase of planning with respect to the former phases which ensures the reliability of planning to a higher degree. Each weekly work plan is evaluated using Percent Plan Complete (PPC) metric which measures the quality of performance of each weekly work plan (Ballard & Hamzeh, 2007). The PPC metric assures the reliability of tasks being performed in the future week and thus improves the performances of the project. Yet, the identification of drivers will pave the way towards successful implementation of LPS in Sri Lankan construction industry.

**1.3. Drivers for LPS Implementation**

► **Planning skills of the Project Manager**

Sri Lankan construction industry has been rich in proficient project managers ever since ancient times. The current accomplishments of the construction

sector bear ample evidence with this regard. Most of the project managers and site engineers in the industry have a wealth of experience and a solid understanding of construction planning. Thus, the planning skills of the workers can be utilised to implement LPS and guide site operations successfully. Similarly, the need for stipulating LPS within the project organisation could be easily perceived once the project manager is fully fledged with planning skills. Thereby the project manager can persuade subordinate staff including workers and subcontractors to adopt LPS by getting them to apprehend the benefits of LPS.

#### ► **Willingness to Work-hard and Commitment**

Even though there are many unskilled workers in the Sri Lankan construction industry, many of them are hardworking and willing to obey their supervisors to get failing projects back on track to achieve the scheduled targets. LPS essentially requires commitment in its implementation. Hence, willingness to work hard and commitment of the workers contribute a great deal in successful implementation of LPS.

#### ► **Elements of LPS being practiced unknowingly**

LPS proposes a well organised hierarchical planning structure. It can be noted that some of the LPS phases already being practice in an ad-hoc manner in the Sri Lankan construction sector. This can be considered as a significant enabling factor for LPS implementation in Sri Lankan context.

#### ► **Fostering Long-term Relationship with Subcontractors**

Most of the construction firms in Sri Lanka typically tend to establish long term relationships with the subcontractors. Hence, the subcontractor and the construction organisation are well aware of each other's capabilities. Further, the lessons learned from previous experience gathered from collaborative projects in the past lead to the success of current projects. Since LPS requires sound communication and coordination among the parties involved, having long term relationships with the subcontractors, accelerate LPS implementation.

### ► **Design and Build Projects**

Design and build projects have become trendy nowadays in the Sri Lankan construction sector. Design and build projects ensure early contractor involvement in the project enabling the construction team to review the design. Hence, the involvement of the construction team in the design stage itself ensures the constructability and buildability of the design following a similar approach of screening and making tasks ready which is adopted in lookahead planning. Thus, the use of design and build procurement path supports LPS implementation.

#### **1.4. Way Forward**

Compared to the traditional planning approaches, LPS provides a solid basis for addressing construction related issues in a far more reliable manner assuring better solutions to improve the performances of the construction industry. Thus, it is indispensable to implement a highly reliable planning tool like LPS in Sri Lankan construction industry which is inherent to a wide variety of challenges. In spite of the barriers in LPS implementation, priority needs to be given for the enabling factors that would assist LPS implementation which has to be backed with enthusiasm and commitment of all the personnel engaged in the construction endeavour.

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# De-scoping of Works: Employer's Entitlement under FIDIC types of Contracts



**Ch. QS Jayantha Jayakody**

Managing Director  
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It is generally considered as an essential element of a construction contract, the Employer's right to vary or change the works after the contract has been entered into. Therefore, it becomes apparent that without such a provision or right stipulated in the Contract, the Contractor would be bound to execute and complete the works as specified in the Contract, and no more or no less. Nevertheless, in actuality the decisions as to the detailed specification of the works are often made after the Contract has been awarded and the needs of the Employer may change. Therefore, in the absence of a right to vary, the Parties would be necessarily required to enter into a submission agreement as to the proposed changes to the works together with the time and cost consequences. Nevertheless, in reality, even though an agreement is preferable, this is not always achievable. Accordingly, the Contracts are being comprised with express provisions for securing both Parties rights to govern the Variations. At the outset, it shall be flagrantly noted that each Variation introduced to a Contract shall not go to the root of the Contract, hence otherwise the Contract would come to an end.

In FIDIC types of Contracts, Variations are being primarily governed by the Sub-Clause 13.1 to 13.3 of the Conditions of Contract. Accordingly, a Variation can be instituted by an instruction or by a request for the Contractor to submit a proposal. The Contractor is expressly required to execute each Variation unless he considers that he has a valid ground to object. Under Sub-Clause 13.3 sets out the basis for evaluating the Contractor's

entitlement to payment in respect of Variation in the event that the Contractor's proposals have not been approved.

In practice, Variations can have significant time and cost implications to the Contractor and thus disputes relating to Variations frequently arise following instructions. The most common types of disputes involve:

- ▶ Whether the instruction constitutes a Variation;
- ▶ Whether the instructed change is within the scope of Variations permitted under the Contract or under the governing law;
- ▶ Where the Contractor has the responsibility for the design of the Works and/or where the Works are specified in terms of performance requirements, the effect of the Variation on design responsibility and/or the performance guarantees; and
- ▶ Ultimately, the Contractor's entitlement to time and money.

## Who can order Variations?

The power to initiate Variations is reserved to the Contract Administrator/ the Engineer. Consequently, the Employer has no power to instruct Variations directly, but instead must direct such instructions through the Engineer. A direct instruction from the Employer will be invalid under the Contract and thus the Contractor is under no obligation to comply with it. Nevertheless, in light of the direct agency role of the Engineer, when initiating Variations, the Employer may wish to place constraints on the Engineer's authority by requiring the Employer's

prior approval before the instruction of certain types of Variation. To provide some protection to the Contractor, where the Engineer instructs a Variation, with which the Contractor is expressly required to comply under Sub-Clause 3.3 [Instructions of the Engineer] and 13.3 [Variation Procedure], but for which instruction the Employer's approval is required, the fourth paragraph of Sub-Clause 3.1 [Engineer's Duties and Authority] provides that "*However, whenever the Engineer exercises a specified authority for which the Employer's approval is required, then (for the purposes of the Contract) the Employer shall be deemed to have given approval.*"

### Right to vary

Sub-Clause 13.1 stipulates;

Each Variation may include:

- a) Changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),
- b) Changes to the quality and other characteristics of any item of work,
- c) Changes to the levels, positions and/or dimensions of any part of the Works,
- d) Omission of any work unless it is to be carried out by others,
- e) Any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or
- f) Changes to the sequence or timing of the execution of the Works.

In very broad terms, these matters represent changes to the work to be carried out by the Contractor from that which was specified in the Contract. It is also clear from the commencing words "each Variation may include" [Emphasis Added] that this list should be considered to be non-comprehensive. Further, the Contractor is expressly prohibited from making any alteration and/or modification of the permanent Works without a Variation.

### Changes in quantities of any item of work included in the Contract

The wordings of sub paragraph (a) of the Sub-Clause 13.1 provides 'changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation)'. The intention behind the qualification is to confirm the underlying principle that the Contractor is required to carry out all work that is included in the Contract and is to be paid on a measurement basis for this work, by applying the rates and prices in the Bill of Quantities (or other schedule) to the measured quantities of work actually carried out (and not on the basis of any quantities set out in the Bill of Quantities (or other schedule). Where the quantities of work exceed the quantities in the Bill of Quantities, such a change does not automatically amount to a Variation. The character point shall be the quantity of any item of work that the contractor was required to carry out in order to execute and complete the Works as specified in the Contract at the time that it was awarded; or, in other words, the issue involves around whether the Contractor was required to carry out this work in any event or whether it represents extra work not included in the scope of the Works as specified in the Contract.

Nevertheless, it should be well understood that in a Contract, the BOQ is the document which defines the quantities of the Works that has been entered into between the Parties. FIDIC 1999 stipulates two provisions for compensating the Contractors for excess quantities of the BOQ for the time and the cost where it provides under the Sub-Clause 8.4 (for time) and 12.3 (for cost) of the Conditions of Contract.

### Omission of Work

The wordings of Sub-Clause 13.1 provide an express power to the Engineer to omit work but subject to the most important qualification 'unless it is to be carried out by others'. In reality, this prohibition provision reflects the position of Law where the decision has been delivered in

Commissioner for Main Roads vs. Reed & Stuart Pty Ltd while imposing limitations for the Engineer's power to instruct Variations.

Therefore, it becomes apparent that de-scoping of the Works would result to reduce the Contract Price as agreed upon by the Parties. Accordingly, it becomes arguable that up to what extent an Engineer can omit/de-scope the works since the Contractors have entered into the construction industry to earn profits and by doing so to sustain their businesses. So, it becomes questionable that even though the Contractors did not incur expenditure due to cost of plant, material and workmanship for the planned works, allocated profit for a particular project cannot be earned through this project. Hence in order to sustain the business in the industry, how should the Contractor recover the loss of profits. Rather than a measure and pay type of Contract, this becomes more crucial in a lump sum Contract.

In the recent Hong Kong case of Ipson Renovation Limited vs. the Incorporated Owners of Connie Towers [2016] HKCFI 2117, the Employer pursued to eliminate certain items from the Contractor's lump sum scope of works (reducing the contract sum by around 13%). The project concerned the performance of important works of a structural, fire safety and public health nature to existing residential towers. The works that the Employer sought to omit included significant aspects of these works. The Employer also refused to make any payment to the Contractor in respect of the omitted works.

The Clause dealing with Variations in the Contract attentive on the Employer's privilege to instruct additions, variations or alterations of work items required to complete the restoration and maintenance project, and included a power to omit works. The Hong Kong Court of First Instance found that:

- ▶ Perfect and express contractual language is compulsory to provide the Employer the authority to omit items of the Contractor's work. Although there was an authority to omit works, the root of the matter was whether, as a matter of construction, the parties projected the authority to be implemented to omit works that characterised important pieces of the project.
- ▶ In this particular case, the court held that the contractual authority to omit works was not enlisted in adequately broad terms to authorisation the Employer to omit the key works in question.
- ▶ The Employer's unlawful attempt to omit the works, without compensating the Contractor in any way, combined with other factors (the Employer also suspended the works) led the court to conclude that the Employer had repudiated the contract.

#### **The extent of possible omissions**

As clearly explained in the above case, the Employers shall have no authority / permission / entitlement to de-scope the entirety of the original scope of Works or a substantial portion of it. The reasoning is that the de-scoping by an Employer of all or a large part of the works denies the Contractor of the opportunity to make a profit on the omitted works; often the basis for the Contractor's entering of the contract.

Additionally, it may be considered a breach of the Employer's duty of good faith to the Contractor, particularly under contracts governed by civil law regimes.

However, provided the Contractor benefits from a suitably-drafted Variations Clause that adequately compensates it for the work taken away, then opportunity exists for de-scoping of works.

