

Research Project Title: **Best Practices in Managing Specialist Subcontracting Performance**

## **Final Report**

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CII-HK set up a Task Force to oversee the research project, as well as to offer guidance and support to the research team. Members of the Task Force included:

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In particular, the Task Force members offered help to the research team in finding survey targets for interviews, which facilitated the researchers to collect information and opinions of industry stakeholders relevant to the research topic. Two Task Force members also acted as interviewees in the survey. All the interviewees offered valuable information and opinions and to whom the research team is greatly indebted but, to avoid disclosing sensitive information, all of them are kept anonymous.

It is CII-HK's policy that it will provide funding support only for covering the expenditures incurred in research projects. For the present project, the funding from CII-HK was used for hiring research assistants to support the research team while other resources that the research team needed were provided by BSE, PolyU. The research team thanks CII-HK and BSE, PolyU for their resources support to the research study.

Notwithstanding that Dr. Edward Yiu, a member of the research team, moved over to the Department of Building and Construction of the City University of Hong Kong during the course of the research project, he continued to work on the project until the project was completed.

Except where expressly acknowledged to be those of others, all standpoints and opinions expressed in the report are those of the research team only, which do not necessarily represent the standpoints and opinions of the funding bodies, the Task Force members or the affiliations of the interviewees.

## **Executive Summary**

Subcontracting is a long-standing practice in construction industries worldwide, which has been proven to be an economical way of project delivery, especially for the specialist works in buildings. However, the nature of specialist works and unsatisfactory subcontracting practices can give rise to problems, such as conflict and disputes between contract parties, substandard work quality, project delays, labour wage disputes, etc., which do arise from time to time in the local construction industry. Such problems should be addressed, as they can undermine the efficiency and competitiveness of the industry.

The key characteristics of specialist subcontract works include:

1. The need for input of specialist knowledge and skills by the specialist subcontractor;
2. The need for special methods or equipment of the subcontractor for work execution;
3. The works comprise proprietary products supplied by the subcontractor; and
4. The works can only be carried out by the subcontractor who is licensed or can deploy licensed persons to carry out the work.

These characteristics imply that the design of the subcontract works cannot be made complete at the tender stage; client's control over work progress and the features and quality of the end-product can be weakened; or the subcontractor can acquire aftermarket monopoly power over future supply of operation and maintenance services and spare parts.

To protect their interest, project clients and consultants tend to incorporate complex and harsh terms and conditions in contracts, so as to ensure the subcontractor will perform and, if not, to hold the subcontractor responsible for any damages so inflicted upon them. As the main contractor will also be held responsible for works of his subcontractors, he will also tend to impose conditions to protect his interest. However, such terms and conditions may be excessive, vague and unfair. Subcontractors may even be forced into taking a game-theoretic approach in tendering, which would jack up tender prices and be prone to mal-practices in project supervision. The problems may also be exacerbated by other unsatisfactory subcontracting practices, such as in handling payments. The quality of specialist works also hinges upon the skill standard of construction workers.

In this study, an interview survey was conducted with stakeholders playing different roles in the industry to collect relevant information and to solicit opinions of the stakeholders, to allow a holistic picture to be obtained about current practices of specialist work subcontracting in the building construction industry of Hong Kong, and the prevalent problems. Attempts made by parties in the private sector and by the government to help the industry address the problems were reviewed, which included the standard forms of contracts in use and the latest revisions made to the standard contracts; the introduction of the voluntary subcontractor registration scheme and the construction workers registration scheme; and the use of partnering as a risk management method in building construction projects. The

need for a security of payment legislation was also reviewed. Furthermore, a review of overseas practices was conducted.

On the basis of the survey and desktop study findings, the following good practices are offered for the attention of project clients:

1. Project clients should carefully assess the need for specialist works for their development projects, especially for new and unconventional specialist works. The benefits and costs of equipping their developments with the specialist works should be thoroughly assessed in making the decision. The costs to be accounted for should include not only the first costs, but also costs for operation and maintenance (O&M) of the works and, if needed, for training the O&M staff to enable them to properly harness the specialist systems.
2. Project clients should select to use appropriate procurement methods for specialist works, taking into account the extent of coordination required between the specialist works and other works, the impact of the specialist work on timely project completion, and the balance between the contract value of the specialist work and the liability for damages that the specialist subcontractor has to bear. Early engagement of the specialist subcontractor will help unite the actual and expected functions and performance of the specialist works, and provide a clearer basis for price negotiation. The use of direct contract may be more appropriate for highly specialised works which would not adversely impact timing of project completion and would require minimal coordination with other works.
3. Contract documents should clearly and unambiguously define the scope of work; the performance and quality standard required of the works; the methods for performance measurement and verification; and the criteria for acceptance. Terms and conditions, especially payment terms and requirements on retention, bond, warranty, defect liability, and liquidated damages should be fair and reasonable and means for efficient dispute settlement should be incorporated.

Recommendations on industry-wide measures include:

1. Expanding and enhancing the voluntary subcontractor registration scheme such that the scheme will: i) embrace all registered contractors lists for public works; ii) include multi-tiers of registration for progressively higher status; iii) provide genuine, current and useful information about the registered contractors; and iv) be implemented in a transparent manner.
2. Augmenting the construction workers registration scheme on its function of enhancing work quality by proactive actions to be taken by various players in the industry to: i) introduce designs and methods that are conducive to high quality works; ii) provide adequate training opportunities for workers to grasp the required skills; and iii) enhance subcontractors' contract, financial and project management skills. Contractors associations should assume an active role on this issue, especially a coordinating role among different parties.
3. Working toward the enactment of a security of payment legislation immediately. Additionally, thorough study should be done to evaluate the benefit and cost to the

industry of enacting also a compulsory insurance system to deal with insolvency of debtors.

Other recommendable general good practices include:

1. Rather than attempting to transfer as much as possible project risks to contractors and subcontractors, risks should be equitably shared between clients and contractors and subcontractors.
2. Wider use of construction management approach for project procurement with clear demarcation of powers and responsibilities between the construction manager and the design team and active participation of the client, especially in making critical decisions.
3. When a security of payment legislation is in force, wider use of named subcontract in lieu of nominated subcontract. Meanwhile, the 2005 Edition of Standard Form of Contracts and Nominated Subcontracts should be used. Additionally, consideration may be given to the use of a trust account for handling payments.

To provide readers with a concise reference, a list was prepared to summarise the good practices identified through the survey interviews and the review studies on various issues relevant to specialist subcontracting practices, including industry-wide institutional arrangements, which is included in the last chapter of this report.

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# **1 Introduction**

## ***1.1 Nature of modern buildings and building development projects***

### **1.1.1 Sophisticated artefacts**

Modern buildings are highly complex artefacts. Contemporary commercial and residential buildings are much bigger and taller than their counterparts of the previous generations. Rather than single purpose buildings, modern building complexes may comprise a variety of premises types, such as offices, hotel guestrooms, retail shops and public transport interchanges, all housed under the same roof. A variety of envelope designs, such as smart glazing systems and double-skin and ventilated facades, have been used to minimise heating, cooling, ventilation and lighting energy use. Standardised components produced off-site by specialist manufacturers are replacing some of the in-situ construction works, which can help reduce construction cost, shorten construction period and reduce construction waste. These changes have made designing the foundation, structure and envelope of modern buildings much more complicated exercises than hitherto.

Besides the foundation, structural frame and envelope components, modern buildings comprise a wide variety of services installations. Systems for heating, ventilating and air-conditioning, electricity supply, lighting, vertical transportation, fire detection and protection, water supply and drainage, etc. have become conventional types of services installations in buildings. Computer-based control systems are nowadays widely used to operate and control various services systems in modern buildings. The intelligence of the systems is being continuously enhanced, such as the abilities of the systems to optimise performance, detect and diagnose faults and adapt to changes in operating conditions. Some modern buildings have also been equipped with devices that permit better utilisation of daylight and natural ventilation, and with renewable energy technologies, such as photovoltaic cells and wind turbines, to improve sustainability of the buildings.

The services systems and some building works, such as foundation, curtain wall, water proofing, etc., are regarded as specialist works in buildings. In addition to the specialist knowledge and skills required to design and construct modern buildings, ‘producing’ a quality and environmentally friendly building economically also requires highly specialised skills to efficiently manage the wide range of works involved. It is envisaged that the increasingly demanding requirements on indoor environmental quality, performance and versatility of services provisions and sustainability of building development will lead to more specialist works being employed in buildings while the design and construction of modern buildings and management of building development projects will be increasingly challenging.

### **1.1.2 Risky business**

Buildings are durable goods. If properly operated and maintained, the asset value of a building can be preserved throughout its lifespan, which typically exceeds half a century. Real estates, therefore, are a common type of investment goods in an economy while

investors range from large corporations to individuals. Demands for buildings in metropolitans for accommodating expanding population and booming business activities will boost property and land prices. The land cost, the design and construction costs and costs for financial arrangements together makes building developments capital intensive projects. However, good sales or rental returns from developing a building are achievable only if there is a strong demand for the same type of buildings when the completed building is launched into the market; its design is appealing; and the services installations in the building are capable of providing quality indoor environments and services that meet or exceed the requirements of the prospective buyers or tenants.

Investing into building development projects can be lucrative but it is also a risky business because the return is highly susceptible to fluctuations in market demand and building costs. During the development stage, the project client has to bear all the costs but returns will be forthcoming only when construction of the building is completed and sales or rental contracts secured. A building development, from acquisition of a suitable piece of land to completion of the development, may span several years during which the economic climate in the region may drastically change; the longer the duration, the greater the uncertainty in the market forecast and the estimated cost of the development. Many other factors will also add risks to the investment, such as unknown ground conditions, inclement weather, etc.

The development of a modern building requires concerted efforts of a range of parties to undertake the various tasks involved, including project management, financial planning and control; architectural, structural and services system designs; construction, installation, testing and commissioning; and marketing and sales or rental arrangements. The project client may undertake some of these tasks in-house but the vast majority of the works will be outsourced through contracts. Contracting out the works allows different parts of the building development works to be undertaken by parties who are specialised in the works, which can largely cut down the overall project cost. Through the contracts, the client will be able to transfer some of the risks to the other contract parties, e.g. fluctuations in material and labour costs. However, the client will also be exposed to risks incurred by the contracting arrangement, e.g. project delay and substandard work quality due to poor performance of contractors.

Construction projects can also be highly risky to the contractors. Changes in the global and local economic climates can lead to large fluctuations in currency exchange rates and demands for labour and materials, and in turn in the equipment, material and labour costs. A contractor will take on this risk, together with other risks (e.g. unknown ground conditions), in whole or in part, when he enters into a contract with the project client, which requires him to deliver the contract works for the agreed sum within the contract period. Thus, a contractor who has won a large contract at a low price during an economic downturn could suffer from huge financial losses when the economic condition recovers. While continuing to fulfil the contractual obligations will incur a huge loss to the contractor, declining to fulfil the obligations will also lead to a similar or an even greater loss to the contractor, as he will become liable to the damages so incurred to the project client and other parties. If the loss exceeds what the contractor can bear, he could run into bankruptcy, in which case all parties would suffer.

## **1.2 Conventional building procurement practices**

### **1.2.1 Design and tendering**

Conventionally, when a developer embarks on a new building development project, he will commission professional firms as his consultants to provide design and project management inputs. Professionals, including an architect, a structural engineer, a building services engineer, a quantity surveyor and other specialist consultants, will be summoned through consultancy contracts to form a consultant team. Based on the client's brief, the consultants will work together to develop designs for the building into sets of specifications and drawings, which define the key characteristics and details of the proposed building and the services installations, for use in calling tenders for various work packages. Normally, bills of quantities will also be prepared to itemise and quantify, as far as possible, every aspect of the building works, to provide a consistent basis for tenderers to work out their bid prices. Where no bills of quantities are provided, a schedule of rates will be included in the tendering document to define the unit prices of items for valuation of increases or reductions in payments due to variations in the quantities of works during the course of the project.

Tendering for building construction works is generally conducted on a competitive or negotiated basis, or a combination of both. The foundation works and the building works for a development are typically covered by discrete contracts executed in sequence, but may also be combined and covered within a single contract.<sup>1</sup> The methods of tendering that may be used include open tendering, selective tendering and negotiated tendering. For public works, the government maintains lists of qualified contractors and will allow all companies on the list commensurate with the estimated contract sum of the project under concern to submit bids. Private developers may also establish lists of pre-qualified contractors and may selectively invite those on list to submit tenders. Such lists may be established on a project-by-project basis or may be used for all projects of the same developer, which will be reviewed periodically. The tendering process may also be staged, with the first stage being a screening process through which a shortlist of companies will be selected and invited to submit detailed tenders for further consideration in the next stage.

The selection of tenderers is an important step to a building development project. A project client will seek to ensure those companies invited to submit tenders will have the required financial and technical capabilities to complete the works. The selection will also consider past track records of those companies. Negotiations with the selected contractor may also be conducted, with or without competitive tendering beforehand, which may be about correction of mistakes in the tender, price reductions and terms of agreement.

### **1.2.2 Subcontracting**

Based on the received tenders, the project client will select and appoint a construction company as the general contractor to build the building in accordance with the conditions and requirements stipulated in the contract. After winning a contract, the construction company

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<sup>1</sup> The use of subcontracting in foundation works is much less extensive than in building works and where it is used, the subcontracted works are rarely specialist works. Therefore, subsequent discussions in this Report will ignore the foundation works of building developments.

will sublet parts of the building works to a number of domestic subcontractors, who will have no contractual relations with the client. Like the project client, the contractor can reduce the overall construction cost through subcontracting and transfer some of the project risks to his subcontractors, but will also be exposed to risks incurred by the subcontracting arrangement.

Depending on the preference of the client, a general building contractor may be required to undertake works for the entire building. However, many clients, especially private sector clients, prefer to set aside a variety of trades of works, which are mostly specialist works, and select contractors and determine contract prices for those work trades by themselves. However, the various trades of works are inter-dependent such that any delays in one work trade can cause delays to other work trades. Therefore, proper coordination of various trades of works in a building construction project is crucial to timely project completion. This coordinating duty needs to be assumed by a party who has contractual power over all the works contractors, but this is regarded by most project clients as both an onus and a risky task for them to assume.

Since both the quantity and cost of the works covered by the general building contract are typically greater than the aggregate total of the specialist works, the general building contractor is conventionally made the main contractor, responsible for all the works in the project. Besides those specialist works that are already parts of the main contract works, which will be undertaken by the main contractor or his domestic subcontractors, all specialist contractors selected by the client will be nominated to the main contractor to also become his subcontractors. In addition to having a single point of responsibility, it is more economical for the main contractor to organise the provisions needed by different parties working on the same site, such as tower cranes, hoists and scaffoldings, site electricity and water supplies, provisions for ensuring site safety and security, etc. The client may also have preference for specific products from certain suppliers, in which case he will also nominate the preferred suppliers to the main contractor to ensure the selected products will be used in the building.

Selection of nominated subcontractors and suppliers may take place after appointment of the main contractor and thus the subcontract sums would remain unfixed by the time the main contract is awarded. To cater for this, provisions will be made in the main contract, in the form of prime cost sums, to cover the costs of the nominated subcontract works and the items to be supplied by the nominated suppliers. These prime cost sums will later be substituted by the nominated subcontract sums.

Subcontracting is a long-standing practice in construction industries worldwide. Specialist works in a building are generally procured through subcontracting, as they are outside the capability of, and would be uneconomical for the general (main) building contractor to undertake. The key role that general building contractors play is increasingly on managing the construction works while the vast majority of the works are actually carried out by subcontractors. Nevertheless, the main contractor will be made responsible for the works carried out by all his subcontractors, including domestic and nominated subcontractors, although there are differences in his contractual liability for the performance of these two types of subcontractors.

The subcontractors, including domestic and nominated subcontractors, may further sublet the works to be undertaken under the subcontract to their own subcontractors, which will allow them to more flexibly cope with the variable work loads and to reduce costs. Further subcontracting to lower tier subcontractors may happen if doing so will allow the

subcontractors to earn a greater profit, but the multi-layer subcontracting practice has also been alleged to be a cause of various types of problems with the construction industry.

### **1.2.3 Contract terms and conditions**

A building development involves complex construction and installation works to be carried out over a time period of considerable length, as well as huge sums of money to be paid to the main contractor and the subcontractors. To safeguard the interests of the contract parties, especially that of the project client, the contract and subcontract documents typically comprise lengthy terms and conditions, supplemented by a set of detailed specifications and drawings, and in most building contracts, also bills of quantities. Although the contract and subcontract documents will be prepared by professionals in the consultant team, standard contract forms are commonly used as templates in drafting the contracts, to ensure the contract terms and conditions are as complete as possible and well-understood by the contract parties.

In Hong Kong, there are general conditions of contracts issued by the government for use in procurement of public works. The standard forms of contracts drawn up jointly by local professional bodies in the field, including institutes of architects, surveyors and construction managers, are widely used in private sector projects. Some private sector developers, such as the Mass Transit Railway Corporation and some big property development companies also develop and use their own versions of standard contract forms. Nevertheless, changes are often made to some clauses in the standard contract forms, to suit the particular requirements of the project client for a specific project.

The most widely used type of contracts in building projects in Hong Kong is lump sum fixed-price contracts or subcontracts. The contract or subcontract sum may be based on the scope of works as described in the drawings and specifications. The lump sum may also be based on bills of quantities. With this type of contract, the unit prices in bills of quantities or schedule of rates will be used for determining additions or deductions to the contract or subcontract sum due to variations in the scope of contract works. Some contracts, predominantly public works contracts, will also include methods for adjusting the contract price to cater for changes in labour and material costs.

The payment terms in a contract or subcontract are important means for ensuring the contractor or subcontractor will perform adequately, in terms of meeting the quality standard and timely completion of the works. First, payments will be made to the contractor and subcontractors in stages whereas the amounts to be paid each time will be determined according to the quantity of works satisfactorily completed at the time and certified as such. Moreover, a percentage of retention on the payments and a defect liability period will be imposed to ensure the contractor or subcontractor will make good any defective works, which may surface later.

To ensure a contractor or subcontractor will complete his works on time, the contract or subcontract will include clauses that will hold the contractor or subcontractor liable for any damages incurred by a delay in completion of his works, which may or may not be liquidated. Clauses are also included to define the conditions under which the contractor or subcontractor will be entitled to an extension of time for work completion due to delays incurred by events

beyond his control. Surety bonds and warranties are also commonly used means for ensuring contractors and subcontractors will perform adequately.

In most building development projects, the architect will assume a key administrative role for the project, responsible for: approving proposals from the contractor; issuing variation orders, interim and final completion certificates; certifying payments, claims for extension of time; etc. Even though other consultants, such as the structural engineer and building services engineer, are also employed by the client to design and supervise various trades of works for the same project, all formal communications with the main contractor regarding the contract and nominated subcontract works are channelled through the architect.

### **1.3 Variations in the building procurement methods**

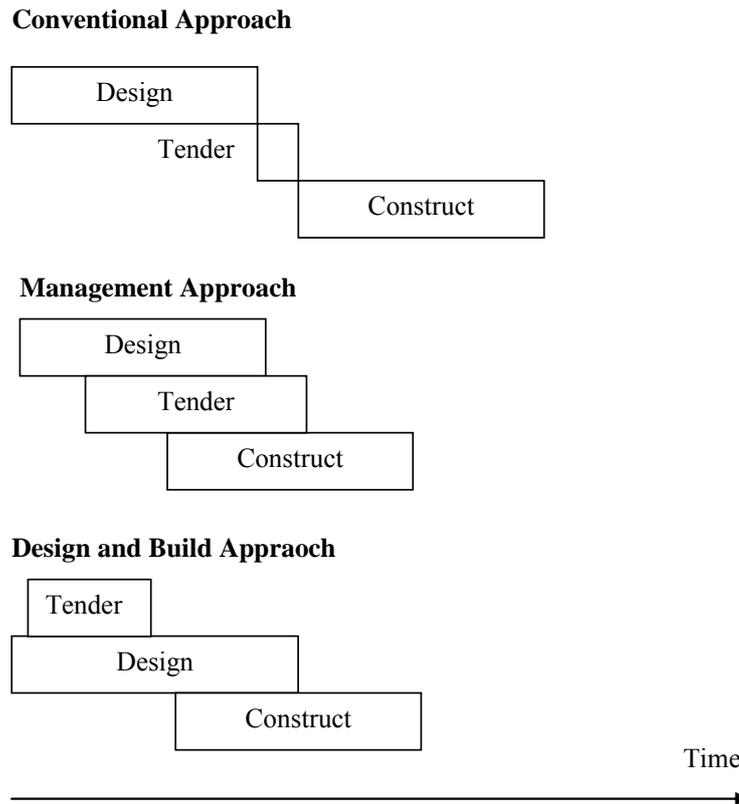
The conventional building procurement approach described above requires that the design for the works to be executed under each contract or subcontract must be basically complete and has been comprehensively described and shown in a set of contract documents and drawings before tenders can be called for the works, which is especially important when a lump sum fixed-price contract is used. This will allow tenderers to more accurately determine the costs for completing the contract or subcontract works, and allow the project client to be certain of the total expenditure on the works as soon as the contract or subcontract is awarded. However, sufficient time has to be allowed for the consultants to complete the detail design work and to prepare the contract documents and drawings during which no site works can proceed.

There are various reasons for which a project client will make effort to shorten the project development period. Examples include the desires to save interest on the land cost, to meet a pre-committed project completion date, to catch an upcoming good market opportunity, to ensure the building will be launched before competitors are able to launch similar buildings into the market, etc. Considerable amount of time can be saved by overlapping the detail design work with the construction work, which is feasible so long as detail design information can be made available before site work for each part of the construction work commences. [Figure 1.1](#) shows the timing of the design, tendering and construction stages of a building project when different procurement approaches are used.

#### **1.3.1 Measurement, cost-reimbursement and guaranteed maximum price**

One method that can shorten the development period of a building project is to call for tenders once skeleton designs have been completed whilst detail designs are still in progress. However, requiring tenderers to put up a price for works with incomplete information increases their risks, which will result in higher tender prices, and ultimately a higher cost to the client. The risks to the contractor can be largely reduced if, instead of a lump sum contract, a measurement or cost-reimbursement contract is used.

With a measurement contract, the contractor would have provided unit prices in the bills of approximate quantities or schedule of rates (with no quantities) during the tender stage, which will become a part of the contract. The payments to be made to the contractor will be ascertained based on the quantities of work actually done and the unit rates in the contract. However, the measurement and valuation of the quantities of work done will take more time and effort, and may give rise to disputes.



**Figure 1.1** Timing of design, tendering and construction stages of a building project for different procurement approaches

In the case where a cost-reimbursement contract is used, the contractor will be paid the actual costs plus an agreed amount, which may be fixed or equivalent to a certain percentage of the total cost. However, this will entail the need for more stringent supervision over the contractor's works, as he will have little incentive to control costs or to ensure efficient operation.

In either case, the total contract sum will remain fluid until the final account is settled after project completion. To avoid budget overshoot, some clients may impose an additional contract condition which requires the contractor to guarantee that the overall amount that the client will have to pay will not exceed an agreed maximum price level. Therefore, through a guaranteed maximum price contract, the risks due to the uncertainties in the quantities of work to be done can be shared between the client and the contractor.

No matter which approach is taken, the client needs to ensure design information will be made available to the contractor on time, as delays in so doing may delay project completion, which will jeopardise the purpose of using the measurement or cost-reimbursement contract, while the contractor has no responsibility for such delays.

### 1.3.2 Design and build

Alternatively, the overall duration of a building development project can be shortened through the use of a design and build (DB) contract. In this case, the DB contractor will be responsible for both the design and the construction of an entire building, including all the services installations. Thus, construction works can proceed even though design development works are still on going, making it possible to complete the project within a shorter time than using the conventional design-bid-build (DBB) approach. With the DB contractor assuming an integrated responsibility, the arrangement will also free the project client from claims arising from any design faults or delays in providing detail designs.

Compared to a contractor working under the conventional DBB arrangement, a DB contractor has much greater control over the works pertaining to the building development project. The designers may be direct employees of the DB contractor, or outside consultants commissioned by the DB contractor to work for him on the project. Before or while the design works are carried out, the DB contractor can select specific construction methods, subcontractors for various work packages as well as suppliers for equipments, components and materials to be used. This permits the contractor to minimise construction cost through adapting the designs to specific methods and input products for constructing the building, or vice versa. Therefore, with the cost for the detailed design work discounted, a DB contract should lead to a lower contract price than when a conventional DBB arrangement is used.

Although the DB contractor will be responsible for designing the building and the services systems, the project client will still need to be assisted by consultants who are design and cost specialists to help him develop a client's brief (this is why the design process precedes the tender process in [Figure 1.1](#) for the DB approach) to provide a basis for tenderers to prepare tender submissions, which will include design proposals as well as the contract price. The client will also need assistance from his consultants to assess design and work proposals from tenderers, as well as detail design proposals from the DB contractor during the post-contract-award stage.

Since tender assessment will include assessment of design proposals, the tender selection and negotiation process will become much more complicated than in the conventional case. This is an important stage to procuring a building through the use of a DB contract, as details of the contract terms and conditions, and the scope and quality standard of the works are subject to negotiation and agreement during this stage, which will impact the contract price and the end-product that the client can expect to get in the end. To the tenderers, the DB approach will substantially increase their costs for tender preparation, which will not lead to any returns if they finally fail to win the contract.

Under a DB contract, the building and services system designs covered in the contractor's proposal will be limited to skeleton designs and statements about methods to be used and features, functions and performance of the works that will be delivered while detail designs are yet to be done after the award of the contract. The design development, however, can significantly impact the construction cost. Therefore, the way in which the contract price is to be determined is an important term in the DB contract between the client and the contractor. In addition to a lump sum fixed-price contract, measurement contract or cost-reimbursement contract with a guaranteed maximum price should also be considered for adoption. The latter type of contracts can help reduce disputes between the client and the DB contractor about

what would have been covered by the original contract, which may not be crystal clear, given the way in which a DB contract is formed.

### **1.3.3 Management contracting and construction management**

In the conventional DBB approach or when a DB contract is used, a main contractor will be appointed to assume an overall responsibility for all the works involved in the construction project, including those works to be executed by nominated subcontractors. For highly complex projects, the management and construction roles of a main contractor may be split and assumed by separate parties, through the use of either management contracting or construction management for project procurement. The key difference between these two procurement methods lies in who will enter into contracts with the works contractors.

In the case of management contracting, the management contractor will normally not undertake any construction works but will enter into contracts with the works contractors. The management contractor will be paid by the client the costs for all the works contracts plus a fee. Where construction management is used, the construction manager simply provides the client with his management services for a fee whilst the client will enter into contracts with the works contractors directly.

The management contractor or the construction manager may be regarded as a member of the consultant team set up by the client for the building development project, who will be appointed at an early stage of the project to provide advice and management services throughout the project. Rather than appointing a main contractor to undertake a dominant part of the building works, the works will be divided into a range of work packages which will be contracted out according to the master work programme under the management of the management contractor or the construction manager. This also allows the design works to be completed in stages, such that works can commence for some work packages while design works for other packages are still on going, thus allowing speedy completion of the project.

Whether management contracting or construction management should be adopted depends on whether or not using such a procurement method can lead to significant benefits to the project client, as compared to using the conventional DBB approach where a main contractor will undertake the management of his own works as well as his subcontractors' works. The general practice of the local construction industry suggests that adopting these procurement methods would be beneficial only for huge and complicated projects.

## **1.4 The Problem Statement**

In [Section 1.2](#), an overview has been given of the conventional building procurement practices in Hong Kong, and the processes involved in various stages of a building development project. The vast majority of the involved processes are undertaken by various parties to the project under the respective contracts. These include architectural, structural and building services design; contract and subcontract preparation for various work packages; foundation and building construction; installation of building components and services systems; management and supervision of the contract and subcontract works; etc.

With the use of the conventional procurement approach, the performance of the main contractor and the subcontractors determines whether serious problems will arise with the main contract and subcontract works. This, in turn, affects whether a building development project can be completed on time, to acceptable quality standards, within budget and without further consequences, such as disputes to be settled through subsequent legal proceedings. However, the causes of many problems can be traced back to the attitude, performance and practices of the other parties, including the client and his team of consultants.

#### **1.4.1 Problems arising from inadequate designs**

To ensure the design consultants will perform to his satisfaction, a project client will lay down in the consultancy contracts the time frame for the consultants to develop the designs, to propose and seek agreement with him on the designs and the budgets, and to further develop the designs into tendering documents and drawings. The consultancy contracts will also contain requirements on the consultants' duties regarding supervision of the works of the contractor and subcontractors and obtaining consent, approval and permits from relevant authorities in good time to ensure timely completion of the building. Apart from these procedural matters, the requirements that the client of a building project can impose onto the design consultants through the consultancy contracts are at best statements of functions and features of the relevant parts of the building that he requires the designers to realise in their designs.

Because design works are to varying degrees ideological, not all aspects of the performance of a designer can be objectively assessed. Measurable performances of designers are limited to the timeliness of the designers in handling procedural matters, the adequacy of the design criteria adopted for various parts of the building and the adequacy of the provisions made in their designs to permit the intended performance to be realised. Other than vetting and approval of designs and budgets, the client will have to rely on the professionalism of the designers in discharging their duties. The performance standard of the designers that the client can expect contractually will be limited to what professionals in the same fields will reasonably perform. As the quality of design works is dependent on the competence and devotedness of the designers, mean clients who appoint incompetent consultants at low consultancy fees are likely to suffer eventually from sub-standard designs and poor project supervision.

Since the ultimate performance of a building and its services systems is dependent strongly on the performance of the contractor and the subcontractors undertaking the works, especially when contractor's or subcontractors' designs are involved, the responsibility of the contractor and the subcontractors will include ensuring their works will meet the performance specified in the contract and subcontracts. However, except for obvious technical mistakes, it is generally rather difficult to prove unsatisfactory performance of the end-product is solely due to poor design. As the client will have to bear any additional costs incurred by design mistakes, both the client and the consultants will incline toward incorporating into the contract and subcontracts terms and conditions that will hold the contractor and subcontractors responsible for checking adequacy of designs and, unless design inadequacies are clearly identified and communicated to the client, they will also be held liable for any measures required to rectify design mistakes at no extra costs.

The abovementioned practices of project clients and designers can create and exacerbate problems with building development projects. A thorough study on design practices in the local construction industry to provide greater understanding of the causes of and the problems with such practices to enable mitigation measures to be formulated, though important and interesting, falls outside the scope of the present study.

#### **1.4.2 Key concerns of the research and definition of scope**

The present research aims to improve practices in managing specialist subcontracting performance in the construction industry of Hong Kong. Specialist subcontracting is used in various sectors of the construction industry, including in infrastructural, civil engineering and building development projects. Embracing all types of construction projects, however, would be too wide a scope for the study. Considering that there are greater varieties of specialist subcontract works in the building construction sector, the study focused on specialist subcontracting in building development projects only. Nonetheless, it is anticipated that many findings obtained from studying subcontracting in the building sector would be applicable to subcontracting in the other sectors of the construction industry.

Even with the study confined to building development projects only, the focus of the study had to be sharpened such that the objectives and the scope of work for the study could be more clearly defined and adequate deliverables could be generated within a study period of 12 months and within the resources available (including the funding support for hiring research assistants and the time and effort that the researchers could afford). For this purpose, an analysis was performed to identify the key areas of concern, and the breath and depth to which issues in each key area of concern should be dealt with in the present study.

The following summarises an analysis of the keywords that the project title embraces, which was meant to identify the key areas of concern for the project to address.

##### **a) Best practices**

The keyword ‘best practices’ implies that the research should find out what are the most effective and efficient means and methods for serving the purpose that concerns the present study, i.e. specialist subcontracting in the local building industry. It further implies that means and methods that are being used, both locally and overseas, should be identified and evaluated. If deemed necessary, improvements, better alternatives or additional measures should be explored.

##### **b) Managing**

Managing is taking action, including devising, selecting and applying appropriate means and methods, and evaluating and improving such means and methods, for achieving defined goals. Here, it is confined to management practices that help ensure transactions through subcontracts in building construction projects are properly and adequately carried out. As works procured through subcontracts are the subject of concern, contract management is a key area of concern to the present study.

A prerequisite to good management of subcontract works is an adequately prepared subcontract document that can clearly define the scope of the works, how and when the

works are to be completed, how payments will be made to the subcontractor and the contractual liabilities that each contract party is to shoulder. Ensuring the subcontract document is well written and contains fair and reasonable terms and conditions is, therefore, one of the key contract management tasks. Therefore, local practices of subcontract document preparation for building developments should be examined such that both good practices and those that would give rise to problems could be identified.

In addition to the terms and conditions stipulated in the contracts, and more generally the prevailing contract and company laws, execution of building construction works is governed by a variety of regulatory controls, which must be observed in managing building construction projects. Furthermore, there are voluntary schemes and good practice guides available, which are meant to mitigate specific problems or to improve current practices. Therefore, whether relevant existing regulatory controls, voluntary schemes and guidelines are adequate and, if not, the improvements that need to be made should be looked into.

Effective contract management cannot be achieved by relying solely upon the authorities conferred by the contract and the laws; its achievement also requires exercising other influential powers and the presence of other factors, such as strong leadership, shared commitment for established common goals, effective communication, fair play, professional ethics, customary practices, good view, etc. Partnering has recently been advocated to be an effective means to minimise adversarial attitudes among contracting parties which would help cultivate harmonious working relations and lead to smooth project execution, timely completion and reductions in disputes and claims. The means and methods outside legal and contractual authorities are important ingredients of good management practices, and are thus relevant to the present study.

#### **c) Specialist**

The term ‘specialist work’ implies that special methods, skills, facilities or statutory status are essential to the performance of certain tasks of the work while those lacking such capabilities, tools or status are unable or are not permitted to perform such tasks. A subcontract work that includes delivering special (proprietary) products is also regarded as a specialist work because proper installation, testing and commissioning of such special products will inevitably involve special knowledge and skills. Such knowledge and skills may also be required in future proper operation and maintenance of the specialist work. The nature and degree of specialties involved in building and building services engineering works are highly influential to the type of management practices needed for ensuring adequate performance. Hence, the implications of ‘specialist work’ are key issues that should be addressed in the present study.

#### **d) Subcontracting**

This is about a (main) contractor subletting to other entities, the subcontractors, parts of the contract work that he is commissioned by the client to undertake. Besides domestic subcontracting initiated by the contractor himself, subcontracting may be initiated by the client who sets aside certain parts of the contract work, and selects and nominates the selected subcontractors to become nominated subcontractors of the contractor. Some clients of building developments in Hong Kong started recently to use named subcontracts as an alternative to nominated subcontracts. Named subcontracts differ from nominated

subcontracts mainly in the procurement procedures and in situations where re-nomination is required.

With the presence of a main contractor in between, the supply chain of a subcontract work involves a subcontract between the subcontractor and the main contractor and, concurrently, a contract between the main contractor and the client. The main contractor's role in this supply chain is significant in terms of contractual issues that concern programme of work, coordination of works of different trades, provision of construction site facilities and utilities, transfer of ownership of completed works, payments, methods for determining liquidated damages and resolution of disputes, subcontract determination, etc. However, the main contractor has little influence to making changes to the scope of nominated subcontract works and the functional performance and quality of the subcontract works.

Subcontracting relieves the client from the burdensome tasks of dealing with a large number of direct contractors and allows the main contractor to manage and coordinate the works of subcontractors of all trades such that the overall building construction work can progress smoothly. On the other hand, its use complicates the contractual relations and lowers the efficiency of communications between the design team and the specialist subcontractors. Subcontracting by itself, if not adequately managed, could be a source of problem irrespective of whether the subcontract works are specialist works. Therefore, potential problems due to subcontracting are also a key area of concern to the present study. Whether the specialties involved in the subcontract works would exacerbate the subcontracting problems and how such problems can be mitigated should be investigated.

#### **e) Performance**

As far as subcontracting building and building services works is concerned, the key aspects of performance may be classified into technical, financial and contractual performances. Technical performance concerns how well the intended (designed) range of functions and features, functional performance (e.g. capacity, efficiency, precision of control, etc.), quality of materials and workmanship of the subcontract work are achieved (delivered). Financial performance is gauged by whether the total cost of the contract work, including the initial contract price, costs of variations and future running costs (energy and maintenance costs), has been optimised. Timeliness of completion of the subcontract works, how smoothly the works have been carried out and whether there are significant time and cost overruns, and disputes, reflect the contractual performance. Good management of subcontract works should help ensure the completed subcontract works would match well with the intended technical and financial performances through using procurement processes and provisions in the subcontracts that are conducive to high contractual performance. How well various means and methods can help enhance these aspects of subcontracting performance was taken into account in comparison and identification of 'best practices' in subcontracting management.

### **1.5 Summary remarks**

In this Chapter, an overview of the nature of building development projects, the conventional procurement practices in the building industry and some alternative procurement methods have been outlined. This sets the scene for further discussions on the specific concerns entailed by procuring specialist works in buildings through subcontracting, and how stakeholders in the industry deal with the problems.

The present research should find out what would be the best practices (means and methods) in managing (the procurement and supervision of) specialist subcontract works such that the specialist subcontractors would deliver subcontract works that would meet the intended technical performance economically, and in a smooth and timely manner. Besides good contract management practices, constraints imposed by relevant regulatory controls, measures implemented through voluntary schemes and recommendations in available good practice guides would need to be examined.

However, sub-standard performance or non-performance of specialist subcontractors may be given rise by a variety of reasons. Besides financial hardship confronting the subcontractor due to underbidding, large increases in material and labour costs, shortage in supply of materials, equipment or labour, etc., the speciality of the work and the practices of subcontracting may also be sources of problems. To ensure good subcontracting performance, the managing practices (means and methods) should be able to minimise potential problems that may arise within the construction programme, and when problems are likely to arise, to detect early enough any problems that are smouldering and to take measures to avoid or to minimise the adverse impacts of the problems.

## 2 Problems with Specialist Subcontracting

As outlined in [Chapter 1](#), it can be envisaged that more and more specialist works will be employed in modern buildings for enhancing performance and sustainability. Subcontracting is an economical way of procuring specialist works for modern buildings but it may also give rise to various kinds of problems. Such problems may originate from the characteristics of the specialist works and from subcontracting as a procurement method.

This chapter begins with a review of the fundamental reason for selecting the subcontracting arrangement from an economic perspective, and the key issues of subcontracting as opined by commentators in the literature. The key characteristics of specialist works are then identified and their implications are analyzed. Through discussing how new technologies penetrate the market, the pricing strategies that vendors of new technologies may adopt together with their implications are unveiled. The problems with procuring specialist works through subcontracting are then reviewed, and the issues that need to be addressed are summarised.

### 2.1 *Why subcontracting in building development projects*

The demands for facilities that can meet the latest and foreseeable future needs of commercial activities; for safer, healthier and more comfortable indoor environments; for more cost-effective methods to build buildings; and for more sustainable buildings are strong impetuses to introducing new technologies into buildings. New technologies are typically introduced into buildings either as a new trade of specialist works (e.g. building automation system) or as additional or enhanced components in traditional trades of specialist works (e.g. variable speed drives in air-conditioning systems and T5 lamps in lighting systems). The contribution of specialist subcontractors is increasingly important to the construction industry and is no longer limited to manufacture, supply and fix activities according to well defined specifications and drawings but increasingly includes also their design inputs ([Gray and Flanagan, 1989](#)).

As discussed in [Chapter 1](#), specialist works are typically procured through subcontracting, for reasons that include: they are outside the capability of, and would be uneconomical for a general building contractor to undertake; and they involve interfacing connections with other works and require proper coordination with other trades of works in the same building ([Olsson, 1998](#)). A more fundamental explanation for why and under what circumstances to subcontract has been offered by researchers based on economic theory. This is worth noting because it highlights the factors that determine whether subcontracting will be preferred, the economic benefits of subcontracting, as well as the need for contract performance governance and the associated costs, which are highly relevant to the issues and problems with procuring specialist works by subcontracting.

Evolved from a number of classical works ([Coase, 1937](#); [Alchian and Demsetz, 1972](#); [Williamson, 1975; 1979](#); [Cheung, 1983](#)), transaction cost economics is a powerful tool for analysing ‘make-or-buy’ decisions and the impacts of institutional and contractual arrangements. Whether or not to subcontract is a decision of the same nature. Empirical studies ([Gonzalez-Diaz et al, 2000](#)) showed that the greater the extent specific assets are needed in the production, the lower the tendency to subcontract. Conversely, modularisation

and specialisation facilitate subcontracting (Eccles, 1981a; 1981b; Veloso and Fixson, 2001; UNIDO, 2003). Institutional constraints, such as labour and tax regulations, can also affect the choice between in-house production and subcontracting (Huges et al, 1997; Gonzalez et al, 1998).

The technologies employed in the construction industry, including plants, equipment and technical know-how, are generally applicable to multiple projects. Where a construction company is specialised in specific construction methods that require the use of special equipment, the company may prefer to use his own employees to carry out the parts of the construction works that utilise such methods. Although such specialised methods may be a comparative advantage of the company, there can be many alternative methods that can serve the same purpose. Therefore, the factor of asset specificity which is unfavourable to subcontracting is limited in significance. On the other hand, construction projects typically comprise a variety of specialised trades of works that require different kinds of skills to accomplish, which is conducive to subcontracting (UNIDO, 2003).

Dividing a construction project into works of specialist trades and subcontracting the works to a number of specialist subcontractors allows each trade of work to be undertaken by a subcontractor who has comparative advantage in the specific trade, thus allowing the project to be accomplished in the most economical manner. The specialist subcontractors gain their comparative advantage by virtue of their specialist knowledge and skills in the trade, which may include technical know-how and their ability to efficiently organise resources input for the works, such as sourcing for appropriate workers, equipment and materials at the right time and at the right prices.

Subcontracting allows the main contractor to transfer the burden of organising parts of the 'production' of his work to the subcontractors but at the same time necessitates measurement and monitoring of the subcontractors' performance. Hence, the costs for organising in-house production of the work are replaced by the costs for governing subcontract performance, while both types of costs are transaction costs (Cheung, 1983; 2002). The transaction cost items that would arise when subcontracting is used include the costs for preparing the subcontract documents, negotiation of price, measurement of progress, verification of work quality standard and performance, handling payments and, when needed, settlement of disputes. The efficiency of subcontracting is dependent on whether the transaction costs can be minimised. Self-interested behaviours of the contract parties, including the client, the main contractor and the subcontractors, can very substantially increase the transaction costs, especially when conflict and disputes arise (Yates and Hardcastle, 2003).

## **2.2 General issues of concern about subcontracting**

In a recent study on the building construction sector of the US, the issues of subcontracting practice were identified, which include: the timeliness of payments by general contractors; the process of selecting subcontractors; subcontractor bonding; construction insurance; safety issues on construction site; partnering arrangements with various parties; and productivity issues (Arditi and Chotibhongs, 2005). The findings of the study, which was based on a questionnaire survey of project clients, contractors and subcontractors, included:

1. Subcontractors are often paid late by general contractors because of ‘pay-when-paid’ and ‘pay-if-paid’ clauses included in most contract forms, which tend to increase total project cost;
2. Retainage is often withheld from subcontractors, although this was not regarded as a major problem except for smaller subcontractors;
3. General contractors often shop bids after the award of a contract to increase profitability;
4. Subcontractor bonds are sometimes required by general contractors, but subcontractors did not think it was a problem;
5. Insurance responsibility is often shifted to subcontractors by general contractors but subcontractors seemed to accept this;
6. General contractors would often consider subcontractor safety practices before entering into an agreement;
7. Subcontractors and general contractors sometimes have a partnering agreement and almost all respondents stated that partnering was beneficial;
8. A major way to improve site productivity would be to engage subcontractors who are familiar with modern production and construction methods.

Although some of the findings may not apply to Hong Kong, the issues are indeed highly relevant to managing subcontracting performance in Hong Kong.

Literally, the frequent occurrence of conflict and disputes in construction projects has been found to be a major factor that impaired the efficiency and competitiveness of construction industries in various countries, which is being actively addressed, e.g. in the Latham (1994) and later the Egan (1998) Reports for the UK construction industry. Use of partnering is being strongly advocated as a means to minimise conflict and disputes in construction projects (see Chapter 6 for more detailed discussions on partnering).

In 2000, the Hong Kong SAR Government appointed the Construction Industry Review Committee (CIRC) to conduct a comprehensive review of the construction industry. Subsequently, CIRC made a long list of recommendations in its report for addressing the problems that confronted the local construction industry (CIRC, 2001), among which a considerable number addressed issues related to subcontracting practices. The issues highlighted in the CIRC Report include poor skills and competence of subcontractors and the workers they employ, multi-layer subcontracting and ineffective coordination between main contractors and subcontractors, which were alleged to be causes for poor construction quality and disputes among the contracting parties in Hong Kong.

CIRC’s recommendations include establishing a voluntary subcontractor registration scheme and a construction workers registration scheme; raising standards of subcontractors by providing them with training on project and contract management and requiring workers to be trade-tested; prohibiting total subletting; tightening control over performance of subcontractors; and requiring wider use of direct labour; etc. More general recommendations

made in the CIRC report include: improving contractor selection for public work projects; reviewing the General Conditions of Contract for public works projects; reviewing the Standard Form of Building Contract, Private Edition; adopting proactive approach in resolving claims and disputes and training of project team on dispute resolution; wider adoption of partnering approach; considering integration of partnering approach into a new Form of Contract; etc., which would impact practices of managing subcontract works in construction projects.

Whereas a wide range of issues pertaining to subcontracting have been studied, few investigations have been made into the problems due to subcontracting specialist works. A UK study presented a broad review of specialist trade subcontracting and discussed the role of specialist subcontractors in the design process and the contractual liabilities of specialist subcontractors for their designs (Hughes et al, 1997). However, the study did not explore the impacts on specialist works beyond the contract period.

### 2.3 Implications of the specific characteristics of specialist works

Figure 2.1 shows the key characteristics of specialist subcontract works, which have different implications to the costs for contractual performance measurement and monitoring. These characteristics impact not only the first cost and the quality or performance of the end-product, but also the future operation, maintenance and replacement costs. They also influence the pricing strategies that subcontractors would adopt in bidding for contracts. Some strategies could lead to high operation and maintenance costs and if the high costs are considered unacceptable, deterioration in system performance and even abandonment of continued use of the systems could result.

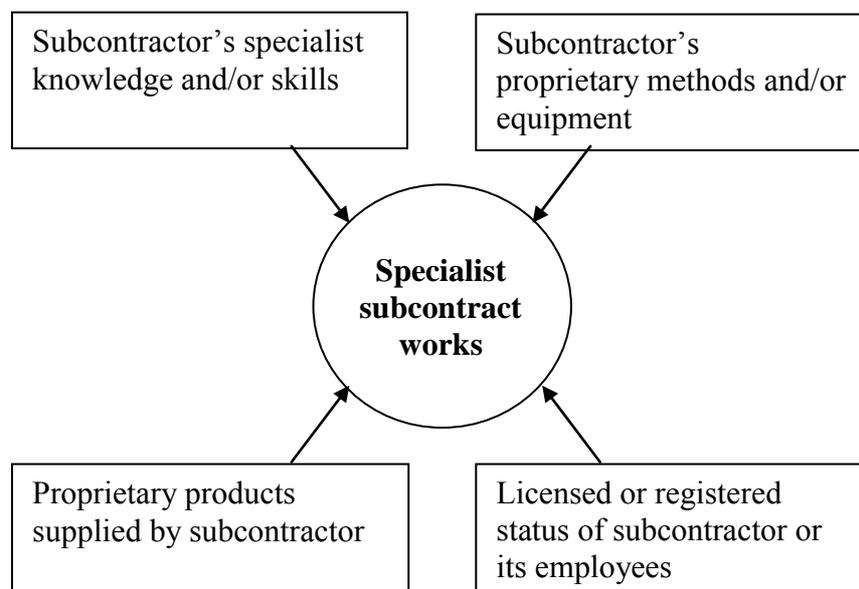


Figure 2.1 The key characteristics of specialist subcontract works

Where completion of a subcontract work or the quality of the end-product relies heavily on specialist input by the subcontractor, such as designs for parts of the subcontracted work or

the use of the subcontractor's special construction/installation methods, it implies that the design for the subcontract work cannot be made complete at the design stage. Therefore, rather than precise and comprehensive requirements, the specifications may simply be statements of the functions and performance required of the completed work. To safeguard their interests, project clients often use onerous contract terms and conditions to hold the specialist subcontractors responsible for their designs (Hughes et al, 1997). Subcontractors are usually permitted to place orders for equipment and materials or to commence work only after their proposals have been vetted and approved, which could be quite time consuming, especially when the subcontractor's proposal involves application of new or special technologies (e.g. those that are new inventions or commercial secrets); do not entirely comply with the specifications; or are highly influential to the construction cost.

The client will have less freedom to choose or change the design or features of an installation, especially after the award of contract, if it involves the use of proprietary methods in the construction/installation work, or proprietary products as composing parts, which may include hardware and software. Successful completion of the work would rely predominantly on proper performance of the specialist subcontractor. Should the subcontractor fail to perform adequately, or the completed work would not entirely fulfil the intended functions, quality or performance, the client would have little chance to foresee and deal with the problems well in advance. Given that construction projects typically involve multiple interdependent works that are carried out by different parties under a tight programme, any delay in a piece of work that falls in the critical path will incur delays to the works of other parties, which could mean considerable financial losses to all so affected. This would 'hold-up' the client in a position where he would hesitate to determine the contract even though a contractor or subcontractor is found not performing satisfactorily.

Where a subcontractor can acquire through the subcontract monopoly in the supply of replacement parts or services required for future operation and maintenance (O&M) of a proprietary system, the client would become 'locked-in'. Such aftermarket monopolization over maintenance of durable goods (Waldman, 2003) could subject the building owner to high O&M costs. If he ignored such costs in making the procurement decision, he may have to defer or even avoid servicing or replacing worn-out parts to save O&M costs, which would degrade the performance of the system. Large property developers with a series of prospective projects at hand would have a much greater bargaining power than those one-off developers. Future O&M cost could be trivialized if the new project development team and the property management team belong to different cost centres within an organization; if the cost can be transferred to tenants; or if the development will be sold once completed.

Scrutiny on works of specialist subcontractors may be less stringent if the subcontractors are licensed or registered persons/companies, but they will be required to shoulder a greater responsibility for the performance of the installed systems, especially when the contractual requirement includes fulfilment of statutory checks. The regulatory requirements vest the specialist subcontractors with an authoritative status which they can take advantage of, e.g. the client may be forced to accept the equipment or materials they offer which are already on the approved list of the authority but it would take time to get new products approved and listed; they may refuse to take client's instructions on design changes on the excuse that such changes violate the regulations or would cause delay in obtaining approval from the authority, or charge high prices for the changes in order that the work can be completed in time for inspection; etc. As regulatory requirements are typically minimum standard requirements and would have been widely practised after the requirements have been imposed for some time,

contractors tend to rely on ‘common trade practices’ which could deliver works of a standard inferior to the client’s requirements.

## **2.4 Pricing strategies for specialist works**

The following review of how new technologies of different natures would penetrate the market and how would the product nature affect the vendors’ pricing strategies provides a better understanding of some of the root causes of the problems with specialist works in buildings. As in making any investment decisions, the benefit of adopting a technology over its cost, i.e. its added value, is the determining factor.

If a new technology can lead to large benefits while demonstrating its value is straightforward, the marketing strategy would be to make the product and its benefits as widely known as possible to potential customers. The benefit may be demonstrated by a few successful pilot applications. The large benefits achievable, when well disseminated, will lead to quick penetration of the technology into the market. If the vendor is initially the sole supplier of the product, he may enjoy a high monopoly rent but the price will eventually drop as similar or alternative products emerge in the market, although there will be a longer time lag for patented products. In a free market, products of this nature should not lead to significant problems as consumers will purchase such products only if they can benefit from using the products; the consumers will benefit more as the price goes down when more suppliers enter the market. In the building industry, solar control glazing, variable speed drives, electronic ballast and energy efficient lamps are examples of technologies of this nature.

If the performance of the product may deteriorate quickly but the deterioration rate is initially unknown, it may lead to disappointment due to a mismatch between the estimated and actual life cycle benefit. Air-to-air heat recovery wheels are an example of such products. For new products, there are always uncertainties about their performance. The cost that needs to be paid to find out the actual benefit of using a new product (e.g. by implementing a pilot installation) is an information cost, which could be the key barrier to market penetration of a new technology. One way to overcome this barrier is to offer long-term warranties. In the long-run, products will be driven out of the market if their benefits are proven to be lower than their costs whilst little improvements could be made.

New technologies may be in demand not only because of their direct benefits; other factors, such as trends or images, can also be influential. Nowadays, environmental claims are often used to promote products, which may just be marginally or may even not be cost effective. Renewable energy equipment like photovoltaic cells and wind turbines are current examples of such technologies as applied to buildings in Hong Kong. For such products, the scale of application would remain limited until the performance of the products improves leading to tangible benefits to the consumers.

The cost-effectiveness of a technology cannot be evaluated with certainty if whether the estimated benefit is realizable or the true implementation cost is dependent on exogenous factors. This will be the case if the technology will yield the claimed result provided only that the other systems that work together with the technology are properly functioning and ensuring this requires considerable efforts and resources input by the consumers. Such technologies may take a relatively long time to penetrate the market, as many potential consumers will prefer to wait until the experience of other users is known.

For some new technologies of the abovementioned nature, which also require regular services or periodic replacement of parts while the vendors are the only source of the needed services and spare parts, the vendors may tend to offer their products at reduced prices, even below cost, to boost market penetration. The vendors may gain back the cost and earn profit from charging for high services fees and spare parts in the future. This pricing strategy, which takes advantage of the aftermarket monopoly power (Waldman, 2003), cannot be regarded as totally unfair, as the consumers are effectively paying for the system in stages: initially the price of the system which is lower than the true price, and later in the form of the excess in price for the spare parts and maintenance services. However, when confronted with a high O&M cost, building owners will re-evaluate if it is worth continuing with using the technology, or would reduce frequency of maintenance, repair and replacement leading to accelerated deterioration in performance of the technology. Building automation systems are a type of technological product that possesses this nature.

Subcontractors for some other types of systems may use the same pricing strategy to win contracts, provided the system requires regular maintenance services and replacement of parts which are obtainable only from the subcontractor. Where there are regulatory controls over the system, such as prescribed maintenance work and inspection procedures, such controls tend to reinforce this situation. Examples of systems in buildings that possess this nature are lifts and escalators. Another drawback of this contract pricing strategy is that the low contract price will force the subcontractor to try every means to cut costs, which may impair work quality, increase costs to the developer for tightening monitoring to guard against this, and if unsuccessful, increase O&M costs.

Standardization of system and component designs will allow parts from different vendors to be used interchangeably and will thus help break the tie with a single supplier but this will emerge only after a new technology has gained wide acceptance while pressures from consumers for free choices of services and parts have built up to a high enough level to trigger actions. The development of standard protocols for data communication among components of building automation systems (e.g. BACnet, LonWorks etc.) is an excellent example of system and component standardization.

## **2.5 Subcontracting of specialist works**

Apart from the economic benefit from specialisation, subcontracting is preferred by project clients as it releases them from the burden of having to coordinate the works of various contractors. Using nominated subcontracts allows clients to retain control over selection of subcontractors, determination of subcontract sums and timing of appointing subcontractors (could be before or after the award of the main contract). To main contractors, they are vested with the power to control subcontractors, including nominated subcontractors, on work progress and payment to ensure smooth project progress. They, however, are not normally liable to the designs of nominated specialist subcontractors and are entitled for extension of time due to delays in nominated subcontract works (Fahey, 1999).

Subcontractors typically prefer nominated subcontracts for the more direct business relations with project clients and consultants, and the more equitable contract terms compared to domestic subcontracts (Uher, 1991), especially in security of payment (Soo, 2003). A further benefit to nominated subcontractors is that in case of insolvency of the main contractor, the

client may make direct payments to subcontractors in order to safeguard work progress. However, [Soo \(2003\)](#) cautioned project clients that the direct payment practice may contravene the *pari passu* principle in law (all unsecured creditors rank equal). Thus, a client who has made direct payments to subcontractors may be required to pay again to the liquidator of the main contractor.

Procuring specialist works through nominated subcontracts may also be problematic ([Hughes et al, 1997](#); [Fahey, 1999](#)). The reasons for the decline in using nominated subcontracts in the UK included: the complex matrix of contracts being prone to disputes and adding complications to litigations; no incentive to main contractors to control expenditure; greater difficulty for main contractors to control specialist subcontractors; desire of the main contractors to have tighter financial control over the specialist subcontractors; and problems with liability of design, coordination and performance of specialist subcontractors' works ([Hughes et al, 1997](#)). The last point is of particular relevance to the subject of discussion of this research. As a means to recover any losses incurred by subcontractor's non-performance, a client may require the nominated subcontractor to provide a performance bond or a collateral warranty ([Walker, 1995](#); [Hughes et al, 1997](#); [Fahey, 1999](#)). Collateral warranties may also be used to fix the liabilities of the designers, contractors or subcontractors to third parties, such as tenants. This, however, further burdens subcontractors with complex legal documents and additional financial burdens for providing the warranties.

Specialist subcontractors may face liabilities for damages due to work delays and other unexpected causes (e.g. negligence of workers causing serious injuries or losses to other parties) to an amount similar to the main contractor and other subcontractors. Since the contract sums of individual specialist subcontract works may be very small compared to the overall construction cost or the rental or sale value of the development, the liability that specialist subcontractors need to shoulder can be largely disproportionate to the subcontract sums. If the damage exceeds the financial capacity of the subcontractor, he, if held liable, could go bankrupt, in which case the affected parties will not be fully compensated for the damages inflicted upon them. To protect themselves, specialist subcontractors would tend to adopt an adversarial attitude. This is a compounded problem that would need to be addressed via multiple measures to be taken by multiple stakeholders.

## **2.6 Summary remarks**

Supplementing the review in [Chapter 1](#), the discussions at the beginning of this chapter provided an economic explanation for why subcontracting is a common method of procurement, especially for specialist works in buildings. Further discussions in the chapter highlighted that while subcontracting is conducive to more economical 'production' of buildings, it necessitates means for governance of subcontract performance, which also incur transaction costs to the contract parties.

Problems with procuring specialists works in buildings through subcontracting may arise due to the nature of the specialists works or the practices of subcontracting as a procurement method. Problems due to the former include imprecise definition of functional and performance requirements; difficulties in foreseeing non-performance of specialist subcontractors; aftermarket monopoly power of subcontractors in the supply of future maintenance and spare parts; and power of subcontractor over works regulated by statutory requirements.

Problems due to the practices of subcontracting are mostly contractual issues, which could have much more significant impacts on smooth completion of a building development project. To protect his interest, the client can incorporate into the contract and subcontract documents terms and conditions that he deems necessary, such as terms for payment and conditions under which retention money, defect liability and liquidated damages will be applied, to govern the performance of the contractor and subcontractors. In addition, he can require the contractor to provide a surety bond, and require each nominated subcontractor to provide him with a performance warranty as a condition of nomination, to indemnify him from any losses that the main contractor may claim against him due to non-performance of the nominated subcontractor.

To a main contractor, for those specialist works that fall under the main contract works which he sublets to his domestic subcontractors, he can also incorporate into the subcontracts such terms and conditions that he deems necessary to safeguard his interest. As a project client will require of him, the main contractor will require his subcontractors, including nominated subcontractors, to provide him with surety bonds, such that he can be ensured that he can recover, at least partially, losses incurred to him due to subcontractors' default.

To a specialist subcontractor, he will have to accept and be abided by all the subcontract terms and conditions as well as the additional requirements imposed by the main contractor, and by the client in the case of a nominated subcontract, unless he declines to enter into the subcontract. Except due to ignorance, the subcontract terms, which are well-known to the subcontractor *ex ante* (prior to his entering into the subcontract), should not cause serious negative impacts on the subcontractor, provided no abnormalities arise throughout the contract period. However, when abnormalities do arise, the subcontract terms and conditions can affect the seriousness of the difficulties that will confront the subcontractor.

The payment handling practices of the client and the main contractor can have serious impacts on the financial health of a subcontractor, and thus his performance. A subcontractor may face cash flow problems when there are delays or large deductions in payment by the client or the main contractor, especially when 'pay-when-paid' or 'pay-if-paid' clauses are incorporated into the subcontract, which is widely used in subcontracts in building development projects. The situation will become more problematic if the labour and material prices are rising but the subcontract is a lump sum fixed-price contract with fixed unit rates for variation works, or should the main contractor or the client become insolvent.

While making effort to protect himself from potential losses, each party to a building development project will tend to take on an adversarial attitude, which is allegedly a major cause for conflict and disputes in the industry. The way in which the risks associated with the building development project are shared among the parties, including the project client, the main contractor and the subcontractor, is the major influential factor.

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## **3 Survey of Stakeholders in the Industry**

### **3.1 Research method**

In order to obtain a comprehensive and up-to-date picture about the problems with specialist subcontracting in building development projects in Hong Kong, to find out the root causes of the problems and to work out effective measures for mitigating such problems, the study included an extensive desktop study to review:

1. Findings and recommendations in reports of major construction industry reviews conducted locally and overseas;
2. Relevant policy instruments in place, including regulatory requirements, voluntary schemes and good practice guides available;
3. Provisions in standard forms of contracts and general conditions of contracts, and in individual contract and subcontract documents used for procurement of general building and specialist subcontract works; and
4. Findings and recommendations of relevant studies reported in the open literature (e.g. books, academic journals, publications of relevant professional bodies, etc.), especially those on contract management for building and specialist works and legal principles that govern such transactions.

Additionally, the study was underpinned by first-hand information about the experience and opinions of the major industry stakeholders, which was obtained through a survey.

The major stakeholders surveyed include relevant government departments, project clients, key players in project design and supervision teams (including architects, structural engineers, building services engineers and quantity surveyors), main contractors and subcontractors undertaking specialist works in building development projects. Given the large number of types of works that may be regarded as specialist works in buildings, those that account for greater contract sums and possess, to greater extents, the key characteristics of specialist subcontract works as outlined in [Chapter 2](#) were selected as the target types of specialist works in the present study. Attempt was also made to obtain key parts in contracts and subcontract documents for specific projects from the interviewees for review.

The information obtained through the survey interviews are analysed in this Chapter, in the light of findings from the desktop study and from reviews of contract documents.

### **3.2 Design of the survey**

As the survey interviews were a key means for obtaining information about the current practices of, and the problems with, specialist subcontracting in the local building construction industry, efforts were made to carefully design the survey method. Rather than preparing a questionnaire and sending it out to a large number of target respondents for them

to complete and return the questionnaire, face-to-face interview was considered a better approach to make possible in-depth discussions and to allow critical opinions to be obtained. As the information sought can be rather sensitive, each interview was conducted individually.

After the draft version of the questionnaire was prepared, two experienced practitioners in the industry, one from a large specialist contracting firm and the other from a leading quantity surveying firm, were invited to review the draft questionnaire and provide feedbacks as to whether the questions were clear and concise, the coverage was adequate, etc., in addition to also sharing with us their own experience and opinions. The questionnaire was then refined in the light of the comments received. Furthermore, the Task Force Chairman and another member of the Task Force had given their comments on the questionnaire and on the survey approach. Two pilot runs, both with members of the Task Force who are affiliated to leading local architectural and building services consulting firms, were conducted prior to full-swing implementation of the survey.

### **3.2.1 Questionnaire design**

A copy of the questionnaire designed for use during interviews is attached to this report as [Appendix A](#). The questionnaire contains an introductory part and a series of questions arranged into three sections. The introductory part, entitled as “Message to Contributors to the Survey”, provides the interviewee with brief background information about the research and the funding source, and the key attributes of specialist works. It also assures the interviewee that the information he provided will be treated as strictly confidential and that any reports and publications arising from the research will contain only aggregated data; no sensitive information that would allow individual persons or projects to be identified will be published. Therefore, no names of specific interviewees, projects and companies are cited in this report.

Section 1 in the questionnaire is for recording personal particulars of the interviewee and his affiliation. Section 2 contains questions that inquire into the particulars of ONE specific building development project that the interviewee has personally handled. The questions probe into:

- The subcontract works that the interviewee would regard as specialist works;
- The types and forms of contract and tendering methods used for their procurement;
- The specialties involved in each subcontract work;
- Provisions made in the subcontract documents to: specify the scope and quality required of the subcontract works; check and verify progress and quality standards; ensure the works would be adequately delivered; and determine future prices for maintenance services and spare parts pertaining to the specialist subcontract works.

Before closing Section 2, the interviewee was requested to outline if any serious problems had been encountered in the project and if so, what were they and how they were settled.

The last section contains a list of less structured questions which were meant for obtaining the experience and opinions of the interviewee about various issues relevant to the research.

Questions were set for different types of stakeholders and are grouped under different subsections: one for clients, one for client's consultants, another one for specialist subcontractors and the last one for main contractors. Supplementary questions were also raised to interviewees who play different roles, such as government departments.

The questionnaire was sent to the target interviewee in advance so that he could complete Sections 1 and 2 prior to the interview. Hence, time would need to be spent on Sections 1 and 2 only for checking the completeness of entries, and thus would allow most of the time of the interview to be spent on free format discussions on the questions in Section 3, and to limit the overall duration of the interview to within two hours. Furthermore, the permission of the interviewee will be sought for the researcher to record the conversations such that the researcher can concentrate on the discussions with the interviewee without being distracted by the need to jot notes simultaneously. This also ensured no important information would be missed. Interviewees were ensured that the voice records would not be divulged to any body outside the research team nor would be kept for an unduly long period, but would be erased once the information needed had been noted.

### **3.2.2 Target interviewees**

The interview survey targeted at senior and experienced members in firms and government departments who were key players in building construction projects. To help the research team source for suitable interviewees, members of the Task Force contributed suggestions and helped made connections with the target interviewees.

## **3.3 Findings of the survey interviews**

The findings from a survey of 30 interviewees are summarised below. These 30 interviewees comprised:

- Three (3) Government Departments
- Three (3) Private Developers
- Two (2) Architects
- Two (2) Structural Engineers
- One (1) Quantity Surveyor
- Five (5) Building Services Engineers (Consultants)
- Two (2) Main Contractors
- Seven (7) Building Services Specialist Subcontractors
- Five (5) Building Specialist Works Subcontractors

### **3.3.1 Personal characteristics of the interviewees**

Table 3.1 summarises the personal particulars of the interviewees.

<b>Particulars of Respondents</b>	<b>Description</b>	<b>No.</b>
Professional Qualifications	Corporate Member or above	27
Years of Experience in the Construction Field	>30 yrs	8
	21-30 yrs	17
	11-20 yrs	5
	6-10 yrs	0
	<= 5 yrs	0
Position/Job Title	Directorate	20
	Senior Professional	10
Building Services Trades Managed	HVAC Only	2
	Electrical Only	3
	Fire Services Only	0
	Lifts and Escalators Only	0
	Plumbing and Drainage Only	2
	Various Building Services	13
	Others	15
Business Nature of Affiliation	Government	3
	Private Developer	3
	Architectural Consultant	2
	Structural Consultant	2
	Building Services Consultant	5
	Quantity Surveyor	1
	Main Contractor	2
	Subcontractor	12
	Others	0
Special Qualification of Affiliation and Employees	Registered Building Contractor	2
	Registered Ventilation Contractor	2
	Registered Fire Services Contractor	3
	Registered Electrical Contractor	5
	Registered Lift Contractor	1
	Registered Gas Contractor	0
	Licensed Plumbers	8
	Registered Lift Engineers	0
	Registered Electrical Workers	9
	Registered Gas Installers	1

**Table 3.1** Summary of personal particulars of interviewees

The interviewees were all at senior positions, being at directorate or senior professional positions in their respective affiliations, and highly experienced, with the majority having 21 to 30 years of experience in the field and most being Corporate Members or above with relevant professional institutes. The contracting companies that the interviewees worked for were registered contractors or were employing registered/licensed workers. Many of those working on building services consulting and contracting firms were managing multiple trades of works.

### **3.3.2 Characteristics of projects selected by the interviewees**

The interviewees were requested to select a specific building project and supply data for the project to facilitate a closer examination of the practices of specialist subcontracting in the local construction industry. The building projects selected by the interviewees included 7 commercial/office developments, 4 government office buildings, 2 hotels, 2 residential

developments, 1 hospital, 1 school and 10 other types of buildings/projects. The 10 other types of projects ranged from specific specialist systems in buildings, e.g. kitchen equipment, to institutional developments for special applications, such as sewage treatment plant, rehabilitation centre, parks, etc. The majority of the buildings/projects were completed within one to three years. Two (2) projects were completed in less than one year but 6 took longer than three years to complete.

Table 3.2 summarises the specialist works in the buildings in the sample, and the type and form of contract used in procurement of the specialist works. Lump sum, nominated subcontract with schedule of rates (LS-SR & NS) was the type and form of contract that was used for the greatest number of specialist works in the sample. Other types and forms of contract used include lump sum with bills of quantities and guaranteed maximum price, which included nominated, domestic and named subcontracts. It was interesting to find that named subcontract had been used in a considerable number of projects in the sample.

Specialist Work	In No. of Buildings	Type and Form of Contract		
		Mode	Next	Named
Building Automation System	12	LS-SR & NS	LS-BQ & DS	3
HVAC System	12	LS-SR & NS	LS-BQ & DS / LS-BQ & NamS	6
Electrical System	21	LS-SR & NS	LS-BQ & DS	5
Fire Services	18	LS-SR & NS	LS-BQ & DS	5
Lift and Escalator	13	LS-SR & NS	LS-BQ & NamS	3
Plumbing and Drainage	16	LS-BQ & DS	LS-SR & DS	0
Security System	10	LS-SR & NS	LS-BQ & DS	4
Curtain Wall / Windows	8	LS-SR & NS	LS-BQ	2
Proprietary Structural Frames	4	LS-BQ / LS-SR	-	1
Water-proofing	6	LS-BQ / LS-SR	-	1
Others	17	LS-BQ & DS	GMP & NamS	7

Table 3.2 Type and form of contract for procurement of specialist works

It is interesting to note that in a number of projects, even though all other services installations were procured through the use of domestic or named subcontracts, the lift installations in those projects were procured using nominated subcontracts. Whilst the responsibility of the project client is higher when nominated subcontracts are used, the extent of coordination work needed and the chances of conflicts between the main contractor's works and the lift installation works would both be much lower than for all other types of specialist works. This should be one of the reasons for adopting nominated subcontracts for the procurement of lift installations in those projects.

Table 3.3 summarises the contract sums of the specialist works in the sampled buildings. The contract values of the specialist works in these projects ranged from less than 1 million HK dollars (for kitchen equipment) to over 500M (for a piling subcontract).

Specialist Work	Minimum (HK\$M)	Average (HK\$M)	Maximum (HK\$M)
A: HVAC	1.17	68.78	270.00
E: Electrical	11.50	58.31	180.00
F: Fire Services	4.40	20.85	70.00
L: Lift and Escalators	6.00	48.92	180.00
P: Plumbing and Drainage	3.80	37.64	79.00
B: Building Automation System	1.30	13.66	45.00
S: Security System	2.90	13.98	40.00
C: Curtain Walling / Windows	3.50	106.12	320.00
T: Proprietary Structural Frames	8.80	269.27	400.00
W: Water Proofing	1.28	1.28	1.28
O: Others	0.73	51.52	514.00

**Table 3.3** Contract sums of specialist works in the sampled buildings

Table 3.4 summarised the tendering methods used in procurement of the specialist works in the sampled buildings. It can be seen that the use of corporate or departmental level pre-qualified or registered list of contractors for selection of tenderers was the most common method. Open tendering and pre-qualification on individual contract basis were less frequently used whereas negotiated contracts were used just occasionally.

Specialist Work	Open	Existing List	Pre-qualification	Negotiated
A: HVAC	2	12	4	1
E: Electrical	2	12	3	0
F: Fire Services	2	12	3	0
L: Lift and Escalators	2	13	2	0
P: Plumbing and Drainage	1	9	2	0
B: Building Automation System	2	10	3	1
S: Security System	2	6	2	0
C: Curtain Walling / Windows	1	4	1	0
T: Proprietary Structural Frames	1	2	1	0
W: Water Proofing	0	3	1	0
O: Others	1	11	2	1
Total	16	94	24	3

**Table 3.4** Tendering method used in procurement of specialist works

The interviewees were required to unveil their perception of the aspects of specialty involved in the specialist works that they handled for the projects, such as specialist design, special method used, special equipment used, special product delivered, and licensed person or company needed for the work. Table 3.5 shows a summary of the frequency counts of individual aspects of specialty, which the interviewees perceived to be the factors that made the works specialist works. The summary shows that specialist design was considered by the interviewees to be the most frequently occurring aspect among the range of specialist works in the sampled buildings, while only small differences exist among the other aspects of specialty.

Specialist Work	Specialist Design	Special Method	Special Equipment	Special Product	Licensed Person/Co.
A: HVAC	10	6	7	3	8
E: Electrical	10	5	4	4	11
F: Fire Services	10	4	3	4	9
L: Lift and Escalators	11	8	12	8	7
P: Plumbing and Drainage	6	3	2	1	7
B: Building Automation System	9	5	5	5	2
S: Security System	4	1	2	1	2
C: Curtain Walling / Windows	4	4	2	2	0
T: Proprietary Structural Frames	3	2	1	1	2
W: Water Proofing	4	1	1	2	0
O: Others	10	9	5	6	3
Sum	81	48	44	37	51

**Table 3.5** Frequency counts of aspects of specialty perceived to be involved in specialist works

The methods used to control progress of the specialist works included:

1. Requiring individual subcontractors to submit their work programmes to the main contractor for coordination to ensure they fit-in well with the master work programme.
2. Requiring subcontractors to submit weekly progress reports to the main contractor.
3. Holding regular meeting between the main contractor and the subcontractors to review work progress.
4. Regular site inspections.

The methods used to control quality and workmanship of the specialist works included:

1. Requiring for submission of method statements for installations
2. Requiring for submission of quality assurance and quality check plan
3. Requiring for submission of shop drawings and materials
4. Requiring for submission of materials sample board
5. Requiring factory tests or tests by independent laboratories
6. Requiring for mock up installation
7. Vetting and approval of technical submissions by consultants
8. Using full time resident site staff such as M&E engineers, inspectors and clerk-of-works
9. Requiring for submission of testing and commissioning procedures conforming to relevant standards or guidelines, before completion
10. Requiring for testing and commissioning for all services works and demonstration of commissioning procedures
11. Subcontractor performance appraisal

Furthermore, retention was applied to payments for the specialist works, at 2.5% to 10%, typically 5%, of the respective subcontract sum. The subcontractors for the specialist works were required to provide surety bond, typically at 10% of the respective subcontract sum, and were held liable for damages due to delays, in some cases liquidated at a certain sum per day, which ranged from HK\$5,000 to HK\$2.3M per day, and in some other cases un-liquidated and unlimited or up to 100% of the contract sum. Defect liability periods applied were typically one year but the warranty periods varied widely, from 6 months through the most typical period of one year to 10 years for curtain wall, structural frame and water proofing works. In one case, a warranty period of 1,000 years was imposed for structural bearings. Incentives, however, were provided in only two projects.

Subcontractors undertaking specialist works may acquire the aftermarket monopoly power which allows them to charge for high prices for operation and maintenance (O&M) services or spare parts for the specialist works. The interviewees were asked to indicate whether the specialist works they handled were of this nature and the measures they used to ensure reasonable future prices. The number of services works requiring post-contract supply of O&M services and spare parts and the measures used for the specialist works in the sampled buildings were as summarised in [Table 3.6](#).

Specialist Work	Post-contract supply needed from Subcontractor		Measures used to ensure reasonable future prices			
	O&M Services	Parts for O&M	Fixed Future Price	Future Services Contract	Fixed Method for Price Determination	Affect Tender Assessment
A: HVAC	7	6	5	1	0	0
E: Electrical	5	4	3	1	0	0
F: Fire Services	8	5	4	1	0	0
L: Lift and Escalators	10	11	7	1	6	5
P: Plumbing and Drainage	4	4	1	0	1	0
B: Building Automation System	7	7	6	1	4	3
S: Security System	3	3	2	1	1	0
C: Curtain Walling / Windows	2	2	1	0	0	0
T: Proprietary Structural Frames	0	0	0	0	0	0
W: Water Proofing	1	1	0	0	0	0
O: Others	6	5	1	3	2	1

**Table 3.6** Number of subcontract works requiring post-contract supply of O&M services and parts and measures to ensure reasonable future prices

The interviewees' responses show that it is quite common that supply of O&M services and spare parts are needed from the subcontractor who undertook the specialist work. However, the problem would be addressed more seriously only for lift and escalator installations and building automation systems, such as by requiring the subcontractor to offer fixed future prices, enter into a future services contract or to agree on a method for determining future prices, and the additional offer was taken into consideration in selecting subcontractor. The type of specialist works treated similarly was a false ceiling installation.

When asked about what types of problems they had encountered in the projects, the interviewees described the following problems/cases:

- Project delays due to late possession of site, delays in work commencement consequent upon revisions of drawings by architect, design changes during the construction period, design changes necessitated by design mistakes of architect/consultant, late completion by the subcontractors, and delays in material delivery
- Unsatisfactory work, including use of unapproved materials, services installation not in accordance with combined services drawings, defects discovered during testing and commissioning, specialist contractor' design was faulty and could not comply with relevant specifications, and budget overshoot due to design changes during the construction period
- Disputes over evaluation of variation works, refusal of the contractor to provide maintenance services during defects liability period because of improper use of the system by the client
- Main contractor gave only partial payment to domestic subcontractor even though the client had paid the main contractor
- Materials wastage

One of the interviewees experienced a case where a delay arose which was outside the control of the subcontractor concerned. He opined that charging the subcontractor for liquidated damages in such situations could not help minimise delay. Rather, offering help to the subcontractor to solve the problem would be more useful to minimise delay, which was the approach taken in that project.

### **3.3.3 Experience and opinions about specialist subcontracting (I)**

This section summarises the experience and opinions about specialist subcontracting expressed by those interviewees who are not specialist subcontractors, and thus may be regarded as parties at the 'demand' side of specialist works. These interviewees included persons working for government departments and private sector project clients; architectural, structural, building services and quantity surveying consultants; and main contractors. The discussions with specialist subcontractors, who are at the 'supply' side of specialist works, are summarised in the next section.

#### **a) The kinds of works that are regarded as specialist works**

When asked about what building and building services works would they regard as specialist works, the answers given by this group of interviewees ranged from just a few trades of highly specialised works to any works in buildings that general building contractors do not do. Among the conventional building services works, building automation (BA) systems and lifts and escalators were regarded by most as more specialised than heating, ventilating and air-conditioning (HVAC), electrical, fire services and plumbing and drainage (P&D) works. Some also opined that all such conventional building services works could no longer be regarded as specialist works. Those who gave this opinion seemed to distinguish specialist works from non-specialist works based on their familiarity with the works.

Other types/trades of works the interviewees encountered and cited as specialist works in buildings include: structural systems, especially steel structures; curtain wall, marble and waterproofing works; sewage treatment plant, swimming pool filtration plant, refrigeration plant for ice skating rink, switchboard, refuse collection system, security system, information technology (IT) infrastructural cables and control systems; and building integrated photovoltaic (BIPV), wind turbines, solar heating system and geothermal system.

Various interviewees collectively defined the key characteristics of specialist works as works that:

- Involve specialist contractors' designs, some of which may be required at the early stage of a project;
- Require specialist or registered or licensed contractors to carry out;
- Include delivery of proprietary products; and
- Require independent laboratory for testing and certification

Some (including interviewees representing developers) opined that for specialist works, the consultants will only provide design intent while specialist contractors are to provide detailed design and shop drawings. One interviewee representing a developer company mentioned that they were prepared to take an active role themselves in coordinating services installations on-site, together with the contractor and the specialist subcontractors, should the building services consulting engineers be unavailable to attend to site matters that would arise from time to time.

The views about whether there will be more and more specialist works in buildings also ranged widely. Some considered that there would be little changes from the current spectrum of specialist works whilst others considered that there would be an increasing trend, and the taller and more complicated the buildings, the more specialist works would be employed. Demands for contemporary IT provisions and sustainable features were generally regarded as main reasons for the increasing trend.

#### **b) Experience with procuring specialist works with no prior experience**

More than half of the interviewees expressed that they had the experience of procuring specialist works that they did not have prior experience. The project client typically raised the requirement for those specialist works and in some cases, the client was the end-user and had in-depth knowledge about those specialist works to the extent that they would supply design information and detailed requirements (e.g. medical equipment in health care buildings). In some other cases, the clients, having been convinced by the sales of the specialist works, instructed consultants to procure such works for their buildings.

Consultants would cope with the clients' requirement by seeking further clarifications and information from the client, vendors of the specialist works and others who had prior experience. Occasionally, study tours would be organised to visit overseas manufacturers or installations. Consultants might be required to conduct evaluation studies to assess the added value to the project that could be gained by equipping the building with the specialist works, which might require outsourcing for expertise for the evaluation work. Consultants would also check availability of such products in the market to ensure there would be more than one

supplier from whom tenders could be invited, and would caution the client of the risks if such products could only be sourced from a single supplier. As far as possible, they would check precedent experience of others, the reliability of the products, compliance with standards and job reference of vendors. Proposals from vendors might also be sourced to help develop specifications for tendering purpose.

One interviewee who worked for a developer company mentioned that he would take a “break-and-conquer” approach, which would involve itemising the problematic specialists work such that items requiring special attention could be singled out. An assessment would then be made to evaluate the risks associated with each item of concern. If necessary, meetings with the design consultant, specialist subcontractor or vendor would be conducted to work out mutually acceptable arrangements, including technical solutions, cost and time implications and sharing of liabilities among the involved parties. His experience was that an apparently intractable problem could be solved in this way when each party involved was given the chance to express his concerns and work out a solution in conjunction with the other parties, including what risks they would be exposed to and how the risks could be shared.

**c) Concerns with specialist works**

The concerns expressed by the interviewees about procuring specialist works included:

- The time and cost implications to the project;
- Design responsibility and liability;
- Risk to client and consultant;
- Quality, performance and safety of the works;
- Limited choices of subcontractors; and
- After sales technical backup

Other more general concerns expressed include poor co-ordination among contractor and subcontractors; difficulties in controlling subcontractors; the need to use performance specification; contractors/subcontractors trying to find consultants’ mistakes; variations; claims; delays; wage disputes; etc.

The interviewees considered the following methods useful for dealing with the problems:

- Conduct background study
- Follow established guidelines
- Advise client associated risks
- Prepare well-written specification
- Define scope of work in specification
- Add special conditions in subcontract
- Require warranty from subcontractor

- Insist in using only pre-qualified / well-qualified / trustworthy subcontractors
- Require the existence of local based company
- Require for submission of Subcontractor Management Plan
- Incorporate extra safety measures
- Actively and regularly monitor and assess performance of contractors/subcontractors, including co-ordination among them
- Control site attendance to address wage disputes
- Discuss with the contractor/subcontractor on details

**d) Measures for ensuring reason prices for future maintenance and spare parts**

As unveiled in the analysis on project characteristics data summarised above, the common means employed to ensure future maintenance services and spare parts could be obtained at reasonable prices from the subcontractor, who would be the sole supplier of such services and parts, include requiring the subcontract to submit, together with the tender:

- Rates for future maintenance services and spare parts, which may be in the form of a separate contract, with the rates fixed or a method defined for determination of the future rates;
- Guarantee of continued supply of spare parts, with or without price guarantee; and
- Tender for a future service contract.

**e) Problems with subcontracts**

Many interviewees in this group indicated that they experienced poor performance of subcontractors, mainly in aspects of workmanship and work progress, although some responded that this was rare. The interviewees perceived the following to be the main reasons for poor performance of subcontractors:

- Contract price too low
- Progress payment by main contactor
- Subcontractor not caring for his own good-will
- Overlooked capacity of subcontractor in selection
- Omitted mock-up

The ways the interviewees suggested to avoid poor subcontractor performance included:

- Select subcontractor with good reputation
- Meet with subcontractor to comprehend situation
- Counselling the subcontractor

- Avoid awarding subcontracts with unreasonably low tender prices
- Use milestone payment
- Issue warning letters
- Write adverse reports on the poorly performing subcontractor to affect his chances of staying on pre-qualified or registered list
- Apply defect liability
- Deduct payment
- Apply liquidated damages
- Apply penalty
- Take away part of the works and assign the works to others
- Determine contract if no changes to situation can be done

However, claims for and evaluation of extension of time could be problematic and would be prone to dispute and could lead to arbitration, due to the difficulties in determining which parties should be held responsible for delays and the large losses involved. Rejection of alternative proposal of subcontractors was also pointed out to be a cause of dispute.

#### **f) Payment arrangement**

The use of interim or staged payments as a means of control over the performance of contractors and subcontractors is nearly universal. Nevertheless, the interviewees also opined that evaluation and certification of payments for equipment and material delivered on site and for actual work done, including payments for variation works should be done in an impartial manner, to ensure good contract and subcontract performance.

The interviewees were of the opinion that payment terms should be clearly stated in contracts and subcontracts; negotiation on payment terms with selected contractor or subcontractor would be a bad practice, as it might extend beyond the award date and would be unfair to other tenderers; and engaging a quantity surveyor could help ensure prompt payment. Furthermore, imposing retention and requirement for bonds were regarded as fair practices.

#### **g) Bankruptcy of subcontractor**

The interviewees indicated that bankruptcy of subcontractor rarely happened and thus the risk would be low. Should this situation arise, the work done should be evaluated and certified and a new subcontractor had to be found by the main contractor in case of a domestic subcontract, or through re-tendering and re-nomination in case of a nominated subcontract. Time would be critical in such a situation.

Precautions suggested by the interviewees include:

- Credibility check before award of subcontract
- Financial vetting – audited account to be submitted every 12 months

- Wage problem alert system, including providing hot-lines for workers to notify main contractor/client about arrears in wage payment
- Surety bond
- Avoid use of direct contract
- Provisions in contract to deal with bankruptcy of subcontractor
- Performance bond
- Beware of any signal of financial problems before bankruptcy occurs

#### **h) Best procurement method for specialist subcontract works**

There was no consensus among the interviewees in this group about which procurement method would be most suitable for procuring specialist works in buildings. Nominated subcontract was preferred by the greatest number of interviewees followed by domestic subcontract, but each had also been explicitly pointed out to be inappropriate. Likewise, design and build contract and direct contract had been regarded as both preferable and not preferable by different interviewees. A number of interviewees considered named subcontract favourable. Furthermore, some of them opined that there was no best method and the method to be used had to be determined on individual case basis.

The use of management contracting and construction management was discussed with a number of interviewees in this group. An interviewee who worked for a developer company expressed that management contracting would be adopted by his company when a project required design and installation works to be carried out simultaneously. Construction management, however, had seldom been used because his company was not prepared to employ the large number of staff required to supervise all the works contractors.

Two other interviewees were in charge of construction companies that worked on construction management primarily for their mother companies, which were property developers. Obviously, these developers preferred construction management for project procurement. However, as far as specialist works are concerned, their procurement practices were not significantly different from common practices.

An interviewee who worked as a building services consultant observed that construction management had become more widely used. However, with this procurement method, consultants might be required to provide all design drawings, even the shop drawings, and to coordinate the works. Another interviewee opined that construction management could be undesirable if the construction manager “had a lot of say but not the final say”.

The large diversity in the responses of the interviewees on this issue suggests that procurement method alone would not be a dominant factor that affects the performance of specialist work subcontracts. Each method has advantages and disadvantages and thus can co-exist with the other methods. For instance, some interviewees favoured nominated subcontract for the lower contract price and the more effective payment control whilst some other interviewees regarded domestic subcontract as more favourable, as the main contractor would be made a single point of responsibility and there would be less problems with coordination and claims.

Combined with the observations made in analysing the building project data collected in the survey, it can be seen that, rather than the degree of specialty involved, the extent of coordination with others' works required in carrying out a specialist work would be more influential to the selection of procurement method. Methods that require the main contractor to shoulder a higher level of responsibility for coordination among various specialist works would be preferred by clients and consultants for a specialist work that require intense coordination with other works, even if the work is highly specialised, e.g. a building automation system.

Most interviewees concurred that careful selection of subcontractors would be a far more important factor to project success than selection of procurement method. Their responses confirmed that pre-approved or registered lists of subcontractors are commonly used to ensure only qualified subcontractors would be allowed to bid for works. Furthermore, performance of individual contractors or subcontractors in on-going and recently completed projects would be taken into consideration in selection of contractor or subcontractor and when the pre-approved or registration lists are updated.

Practices like tender submission in two separate envelopes, one for technical information and the other for price information, and use of pre-assigned weights for technical and price assessments in selection of contractor or subcontract have been adopted, especially for public works. Nevertheless, an interviewee who worked for a main contractor company observed that even with the two-envelope arrangement, there would be little chance to win a contract if the tender price was not one of the three lowest.

#### **i) Good practices**

The following summarises the good practices recommended by the interviewees:

##### **a) Procurement**

- Thorough understanding about the works to be procured, the associated risks and fairness in risk distribution
- Wider use of construction management; consultants to provide detailed design, even down to preparation of shop drawings and select suppliers of major equipment
- Wider use of guaranteed maximum price, allowing cost saving by design and minimise variations
- Use of warranty as a means of assurance of performance because this would incur much lower cost to subcontractors compared with surety and performance bonds
- Pre-qualification and careful selection of subcontractors based on their specialties, experience and track records on similar projects and only select subcontractor with high quality
- Involve main contractor in selecting subcontractor
- Sufficient time for procurement to allow sufficient information to be obtained
- Involving no gentleman agreement; every agreement to be recorded 'black-and-write'
- Procurement to be made transparent involving no specific brand names

- Ensure at least 3-4 subcontractors can tender
- Avoid grey areas in contracts
- Sign contracts as deeds such that contractors can be held liable for as long as 12 years

b) Management

- Maintain good relationship among client, main contractor and subcontractors
- Good management and quality site supervision and coordination, with active participation of the project client
- Main contractor to control and coordinate, assuming responsibility also for specialist subcontract works
- Main contractor to hold regular meetings with nominated subcontractors to review progress and quality of their works and other submissions
- Each party appoints a representative and the representatives should meet periodically to discuss problems with architect and client
- Conduct contract management meeting periodically with top level management of contractors and subcontractors to resolve issues; any agreements recorded and signed as supplementary agreements
- Contractor and subcontractors work as a team
- Reasonable payment practices

j) **Other issues**

a) Partnering

Many interviewees had the experience of project partnering and considered its spirit commendable. Some considered it very useful, as it would nurture honest practices. However, some others had reservation, considering that partnering could be easily misused; would be good for consultants but would bring little advantages to contractors and subcontractors; and would not be practicable with public works. A few even considered partnering as fantastic talk but useless. The success factors mentioned by the interviewees included selection of right partners and rewards and penalties.

b) Voluntary subcontractor registration scheme

Most interviewees opined that the effectiveness of the scheme was uncertain or not useful. Some considered that it could be useful to promoting site safety.

c) Security of payment legislation

A few interviewees strongly agree that there is a need for a security of payment legislation for the building industry but were conscious that main contractors would face greater liabilities when such legislation is in force.

### **3.3.4 Experience and opinions about specialist subcontracting (II)**

This section summarises the experience and opinions about specialist subcontracting expressed by those interviewees who were affiliated to specialist subcontracting companies, and thus may be regarded as parties at the ‘supply’ side of specialist works. These interviewees included persons working on electrical and mechanical services, plumbing and drainage, building automation, false ceiling, water-proofing and marble installations. One of the interviewee was working on production of prefabricated components in buildings and another on interior decoration.

#### **a) Specialties and special products of subcontractors**

Subcontractors for the majority of conventional building services installations do not supply any highly specialised products; most products used in their projects can be sourced from the market. Their competitive edges would be on their abilities to undertake specialist designs and to manage well the services installation works. They may have developed special skills to improve the efficiency of their installation works and to reduce costs, but generally such skills would not be patentable nor could be kept as commercial secrets.

All the companies to which the interviewees were affiliated were included in the pre-qualified lists of various major developers and/or the registered subcontractor lists of the government. However, the government does not have a registered list specifically for plumbing and drainage (P&D) contractors for public works. This enables all companies on the government contractors list to bid for government’s P&D projects, whether or not they are P&D contractors. P&D subcontractors own specialist skills and knowledge but no specialist products. Although submission of design to the Water Authority has to be made by a licensed plumber, which is a qualification of individuals rather than companies, having employees with this qualification was not regarded as an important competitive edge. There are, as yet, no specific requirements on ‘qualifications’ of companies for undertaking drainage work in buildings.

The majority of equipment and components in building automation (BA) systems are proprietary. In Hong Kong, there are several BA system vendors in the market (~7). Two of these companies are significantly larger than the rest but the smaller ones together still accounts for a substantial market share. Being ‘locked-in’ to using products of only one single vendor is always a concern of project clients, due to the loss in bargaining power for prices of spare parts and O&M services. Nowadays, however, some parts in BA systems may be replaced by products of different manufacturers, due to the use of standardised protocols (e.g. LonWork & BACnet), but there could still be limitations in their performance. Generally, a BA system vendor would be unable to provide adequate O&M services for products of other vendors. Nevertheless, according to the interviewees in this field, most clients are prepared to pay the fee for the O&M service, because the sum is rather small compared to the importance of the system performance and hence the losses in cases of system breakdowns or malfunctions.

BA system vendors are keen to make the functions and features of their products known to project clients such that they will use them more extensively and to a greater extent of their full capacities. They will attempt to educate clients about their products through road shows, seminars, sending sale representatives and provision of information. However, to protect their

intellectual properties, only registered users would be allowed to use their software but they do not allow users to copy the software or provide access to the source codes.

False ceiling is a specialist product and vendors possess specialist skills and knowledge, not only for detailed design and installation of false ceiling systems but also for manufacturing the components and parts. There are around 5 or 6 false ceiling specialists in the local market.

Prefabrication is perceived as an efficient and environmentally friendly way of construction, as it reduces requirement for on-site labour and use of timber materials, allows tidy and clean site environment, and ensures better workmanship. However, subcontractors for prefabricated building components have to have good experience, well-supported by research and development (R&D) in prefabrication technology. The ability to improve their products and production processes, such as panel designs and connection details, was regarded by the interviewee in the field to be vital to their competitiveness.

Subcontractors specialised in interior decoration works for building projects would perform design and installation works as well as supply of products, such as metal works. Some products may even be patented products, such as stainless steel column cladding. The nature of their works requires cooperation with multi-interdisciplinary teams.

Water-proofing is a specialist work requiring the use of special products and special knowledge and skills for installation. For instance, the interviewee's company owns more than 10 patented products. Generally, clients would demand for a long guarantee period, e.g. 10 years, in water-proofing work contracts.

As to marble works, there are little market entry barriers, but a company in the business has to be able to master the skills of production and installation of marble works and to have strong management skills and experience to be competitive in the market.

Specialist subcontractors have formed trade associations to protect their interests. The associations will represent them in negotiations with the government and the Hong Kong Construction Association.

## **b) Procurement practices**

The typical procurement methods that clients use to procure various types of specialist subcontract works include nominated (NS), domestic (DS) and named (NamS) subcontracts. Nominated subcontract is widely used in private sector projects, amounting to over 80% of projects. Government departments mainly use domestic subcontract. Design and build (D&B) contract and construction management (CM) are also adopted in some cases. The Housing Authority is promoting the use of D&B and guarantee maximum price (GMP) contracts and subcontracts for their projects.

[Table 3.7](#) summarises the answers given by the interviewees regarding the most common types of contract that they encountered and their preference.

Specialty	Most common	Preferred	Who decides?	Can influence?
Elect. & Mech.	NS/DS	DC; NS	Client	No
Elect. & Mech.	NS	NS	Client	No
Elect. & Mech.	NS		Client	No
P&D	NS	CM	Client	No
P&D	DS	CM	Main Con	No
BA		D&B; NS; DC		Yes
BA		D&B		
False Ceiling	NS	DS		
Prefabrication	LS-BQ	D&B		
Interior Decoration	LS-SR	D&B		No
Water-proofing	Re-measurement	NS		
Marble	DS	D&B; NS	Client	No

**Table 3.7** The most common types of contract the interviewees encountered and their preference

Except a few, the interviewees generally did not favour domestic subcontract. Subcontractors of some particular trades, e.g. plumbing and drainage (P&D), would not favour this type of subcontract because main contractors would typically have preferred subcontractors or have their own subsidiary companies specialised in the trade. Nominated subcontract was preferred by most of the interviewees for its fairer terms than domestic subcontract, but an interviewee also pointed out that there were not many nominated subcontracts for projects of P&D installation.

Nevertheless, a few interviewees pointed out that it is difficult for local subcontractors to acquire insurance coverage, such as for professional negligence; few insurance companies are willing to take the risks to cover subcontracting companies. One of the benefits of domestic and named subcontracts is that the main contractor will buy insurance for the project to cover also the domestic and named subcontract works, but nominated subcontractors would need to acquire insurance coverage by themselves (note that certain improvements to this situation have been made in the new standard form of nominated subcontract; see [Chapter 4](#)).

Preferences of the interviewees in this group included design and build (D&B) contract, re-measurement contract, and construction management. The following summarises the views of some interviewees about various procurement methods:

- Nominated subcontract (NS) – the practice is mature, and is relatively fair
- Domestic subcontract (DS) – generally not favoured by subcontractors
- Design and build (D&B) – contractors would be exposed to high risks in design liability and budget control
- Construction management (CM) – its application is immature; clients generally do not have sufficient experience to play the managing role well

Named, lump-sum subcontract with schedule of rates (LS-SR) was also preferred by some interviewees. However, they considered the requirement for submission of detailed proposal before tendering unreasonable, as this would then allow subcontractors unable to provide such detailed designs to also submit tenders to bid for the work.

Construction management (CM) was also a preferred procurement method. The interviewees opined that without a main contractor, there would be less payment problems, less building services coordination problems and fewer disputes. Services coordination works are generally well defined and well coordinated and, if required, mock-up works will be done before the actual installation, all under the management of the construction manager. However, CM is costly to the client.

An interviewee opined that most subcontractors undertaking conventional building services works do not prefer design and build (D&B) contract because it:

- Requires resource input for preparing a bid, which does not necessarily lead to successful award of a contract
- Requires involvement in the work with much lead time
- Entails heavy design liabilities
- Is risky and the contract requirements can be ambiguous

The interviewee involved in prefabricated building component works, however, preferred the D&B procurement method because of the potential to reduce costs and clearer liability.

The interviewee engaged in water-proofing works preferred re-measurement contract for less deferral in payments.

An interviewee considered that guaranteed maximum price (GMP) contract is beneficial mainly to the clients. Although the terms appear to be fair and clear, he found that those terms were unfavourable to subcontractors because it would be difficult to claim for variation works and the subcontractor would have little bargaining power. However, despite that the subcontractor would not like to undertake variation works, he has to undertake such works when the architect issues instructions.

Most interviewees did not think they can influence the type of contract that the client would adopt to procure the works they undertake. However, one specialised subcontractor expressed that he succeeded before in influencing the type of contract to be adopted in a project, which took place at a very early stage of the project (which has to be the case or else no chance). In that case, the client was reminded that he could suffer from poor workmanship and poor quality of works and products if the specialist work was procured as a subcontract work under a general contractor, who would simply select subcontractor based on lowest tender price. Finally, the company was hired under a separate contract.

According to the interviewees, requiring subcontractors to reduce tender prices at the post-tender stage is a common practice in the private sector but not for public works. Some clients would ask for price reduction once but some other clients might ask for the same several times. Some specialist subcontractors would factor-in this in their original tender but some others considered this unreasonable and unacceptable.

### **c) Contract terms and conditions**

The interviewees perceived the following the most important terms in a contract:

1. Payment method
2. Variations
3. Completion date
4. Clauses on extension of time
5. Liquidated damages and other penalties on delays
6. Bond requirements
7. Warranty requirements
8. Fluctuation in the cost of materials (normally lacking in contracts)
9. Other additional terms and conditions imposed by the main contractor to his favour

The following terms were considered highly undesirable:

1. Unlimited damages, uncapped liquidated damages or liquidated damages at high amounts beyond what subcontractors can bear
2. Back-to-back (transfer of liability from contractor to subcontractor)
3. No payment before “all” works are finished
4. Pay when paid terms
5. Requirement for parent company guarantee
6. Vague definition of scope of work
7. Penalty for safety, which is an additional term main contractors typically impose
8. High administration fee (about 100 thousand) that main contractors would charge should a subcontractor claim for insurance from the main contractor
9. High fees that main contractors would charge for provision of site safety and security measures, refuse disposal, use of scaffolding, and damage penalty
10. Self-employed persons working on site (they are not covered by insurance)
11. Accept site as found
12. Responsibility for making good other builders' works

Some interviewees stressed that when there are unclear terms in the contract, the specialist subcontractor should have the opportunity to raise queries and make clarification during the tendering stage. In the tender assessment interview, the technological capability and skills of the subcontractor should be examined.

#### **d) Payment terms and practices**

Many interviewees had experienced problems with getting payments, less so from clients but more so from main contractors. The interviewees opined that clients and main contractors tend to set unfair payment terms in subcontracts. Provision for payment for materials on-site might be absent in contracts. Delays of payment frequently occur, particularly in domestic

subcontracts. It is not uncommon that a subcontractor would have to wait for a minimum of three months to get an interim payment. Sometimes, the problems were with the payment handling practices, e.g. issuance of variation orders, main contractor not following payment schedule, etc. Disputes could arise on evaluation of the percentage of work completed. An interviewee expressed that if an interim payment was delayed by four to five months, he would stop work until payment was received.

Verification of variation works was also considered problematic, because clients inclined to delay paying variation works. Sometimes, it was due to the long time taken, might be up to two to three years, to finalise project accounts. A subcontractor expressed that they would consider initiating arbitration for getting overdue payments.

The specialist subcontractor for prefabrication works did not consider receiving payment a problem. This may be due to the works that they deliver are more easily verifiable. The specialist subcontractor for interior decoration works would request for 15% of contract sum as deposit, and for milestone payments for fabrication, off-site stock and delivery to site to protect his interest. Generally, specialist subcontractors would prefer receiving deposits, at around 10% - 20% of contract sum.

The interviewees regarded the following measures good practices that would help subcontractors obtain payments more smoothly:

1. Beware of and clarify if in doubt payment terms in contracts
2. Request for deposit and practical milestone payments
3. Employ quantity surveyors to handle payment matters including architect's instructions, site instructions, variation orders, etc.
4. Appoint specific staff members to handle payment matters to ensure prompt payment claim submissions and timely report on completion, and to liaise closely with main contractor, project manager, etc.
5. Keep details of payment documentation and procedures
6. Good management to ensure no pre-mature equipment/material delivery
7. Review payment status periodically, especially the causes in cases of no payment and overdue payment
8. Supplementary communication through the top management
9. Stop work on site (but beware of the pertinent contractual liabilities)
10. Stop all other transactions with the same client withholding payment
11. Take legal steps, if necessary, including issuance of warning or legal letters or even litigation

**e) Money that subcontractors need to pay upfront**

The existence of a time lag between when a subcontracting would have to pay for equipment, materials and labour and when he could receive payment, and the condition on retention, mean that the subcontractor would have to pay upfront money to finance a project. [Table 3.8](#)

summarises the amount of money that the interviewees' companies have to pay upfront in typical projects they handled.

Specialty	Percentage of subcontract sum paid upfront
Elect. & Mech.	5% – 20%
Elect. & Mech.	20%
Elect. & Mech.	30 – 40%
P&D	20% – 30%
P&D	10%
BA	5% – 10%
BA	10% for equipment; difficult to estimate for labour
False Ceiling	10% – 20%
Prefabrication	N/A
Interior Decoration	15%
Water Proofing	20%
Marble	40%

**Table 3.8** The amount of money paid upfront in typical projects

Large payment upfront would occur under the following situations:

1. At the earlier stage of a contract prior to receiving any payments
2. At the stage when equipment/materials have been delivered to site but not yet installed
3. At the final stage of a project for variation works done while the associated variation orders or their approval were still being processed

A specialist subcontractor mentioned that he would stop work when the amount of upfront resources accumulated to 5% of contract sum.

#### **f) Practices of further subcontracting**

Nearly all interviewees indicated that they would further subcontract their projects to lower tier subcontractors, typically from a group of firms that the subcontractor has long-standing work relations, often by tendering (but may also include negotiations). Some regard their lower-tier subcontractors as strategic partners. The content of such lower-tier subcontracts would mostly involve only labour or installation while drawings, materials, plants, equipments and work coordination would be provided and managed by the subcontractors. Works falling outside the core business of the subcontractor, e.g. wet trades for interior decoration and screeding for water proofing works would be subcontracted.

Similar to project clients, some subcontractors have established administrative systems for subcontracting works to lower-tier subcontractors and may also have a registered list of pre-qualified lower-tier subcontractors. Assessment of lower-tier subcontractors for registration would consider the firms' registrations, histories, performances, financial status, job references, safety records and brand names.

The number of in-house workers that the subcontractors directly employ may vary from nearly zero to nearly 100%, depending on the nature of the works that the subcontractors are specialised in, and the need for manpower to attend to urgent works or to make good substandard works done by the lower-tier subcontractors. Some rely also on their lower-tier subcontractors to provide manpower to handle urgent works.

**g) Business strategies**

Many interviewees indicated that their companies were a part of an alliance; some with main contractors and project clients and some with various professional firms. Such alliances may only be informal and ad-hoc, formed on project-by-project basis. Some interviewees regarded alliance with the main contractors, developers and big architect's firms a good business strategy that would help enhance their competitiveness.

The subcontractors opined that the following are the success factors for winning subcontracts:

1. Lowest Price
2. Good reputation built from past good performance and job references
3. Sound technological capability
4. Good management and good service
5. Reliability and trustworthiness
6. Good relationship with all parties including clients, consultants, main contractors and other services contractors

Besides sound quality products, good safety records were also considered a factor of good performance. Some interviewees emphasised good research and development and good marketing to be key factors for their success.

One of the interviewees opined that the ability to provide project management for various kinds of services systems in a building project would be an advantage and this company has been offering such management services to project clients, especially for large scale projects. The electrical and mechanical (E&M) 'management contractor' could supplement the general contractor and give adequate attention to installation processes and their coordination much better than the general contractor.

Some interviewees expressed that they had the experience of being awarded a subcontract because of best compliance with the technical specifications rather than lowest price, but added that this only occurred occasionally and in the private sector. Most had never had this experience and opined that competitive price is the key factor.

When asked to rank the importance of 'good relation' and 'trust' in winning a contract (by a point scale of 1 (unimportant) – 5 (very important)), the interviewees provided their ranking as summarised in [Table 3.9](#). It can be seen that all the interviewees regarded good relations and trust highly important to their business but still less than being able to offer low prices.

Specialty	Good relation	Trust	Price
Elect. & Mech.	4.5	4.5	
Elect. & Mech.	5	5	
Elect. & Mech.	5	5	
P&D	5	5	
P&D	3	3	5
BA	4	4	
BA	4	4	
False Ceiling	4	4	5
Prefabrication	4	4	5
Interior Decoration	5	5	4
Water Proofing	4	4	
Marble:	3	3	
Average:	4.2	4.2	4.8

**Table 3.9** Importance ranks of ‘good relation’ and ‘trust’ in winning a contract

**Table 3.10** summarises the split of their businesses between private sector and public sector projects. Specialist subcontractors prefer private works because nominated subcontracts are used in most cases, where the contract price and the contract terms are fairer.

Specialty	Private (%)	Government (%)
Elec. & Mech.	85	15
Elec. & Mech.	80	20
Elec. & Mech.	100	0
P&D	70	30
P&D	100	0
BA	95	5
BA	N/A	N/A
False Ceiling	>50	<50
Prefabrication	100	0 (Done through another company)
Interior Decoration	100	0
Water Proofing	0	100 (In qualified list)
Marble:	90	10
Average:	79	21

**Table 3.10** Split of interviewee’s businesses between private sector and public sector projects

### **3.4 Summary remarks**

This chapter presented a summary of the findings from an interview survey conducted to collect the experience and opinions of various interviewees who can represent key players in the construction industry. The building project information provided by the interviewees reflects the current practices in procurement of specialist works in buildings. Generally, inviting tenders from pre-qualified or registered subcontractors and lump-sum contracts are the most widely used method and type of contract for specialist work subcontracting. Nominated, domestic and named subcontracts are the widely used forms of contract. Nevertheless, many interviewees have had experience with the design and build and

construction management approaches, and contracts with a sum capped by a guaranteed maximum price.

The need for design input from a specialist subcontractor was regarded as the key factor that characterises a piece of work to be a specialist work. The other factors include the use of special methods and equipment, the delivery of proprietary products, the requirement for licensed company or person to undertake the work, and the need for independent laboratories for testing and certification.

The key concerns of the interviewees about subcontracting specialist works included the design liability to be shouldered by the specialist subcontractors, future prices for operation and maintenance services and spare parts for proprietary products and performance warranty, which are directly related to the specialty of the works. The other concerns that the interviewees had were about contractual issues, such as payment terms and conditions, variation works, extension of time, work delays and the associated penalties, etc. A serious concern shared among specialist subcontractors was about unfair contract terms and conditions, especially those imposed by the main contractor in addition to those general ones in typical subcontracts.

All parties agreed that the selection of subcontractors is a key process for ensuring smooth project completion, with reputation, technical capability, financial health and management skill of subcontractors, and effective communication among parties, being the key factors. However, there was no consensus among the interviewees about which particular procurement method would be the most suitable for procuring specialist works. Among the specialist subcontractors, those engaged in works that require substantial specialist inputs from them preferred the design and build approach whilst the others preferred contract forms that allow them to have a closer relationship with the project client, such as a greater preference for nominated subcontract than domestic subcontract and the preference for construction management approach. In another words, specialist subcontractors would like to avoid, as far as possible, the influences of a main contractor. This highlights the importance of fair-play among all parties in a building construction project, which needs to be underpinned by fair contract terms and conditions and fair practices.

Nearly all specialist work subcontractors will further sublet, to varied extents, their project works to lower-tier subcontractors. Such subcontracts typically cover only labour supply or installation works whereas equipment and materials supply and provisions of design information, facilities and management are undertaken by the specialist subcontractors. Also, specialist subcontractors tend to sublet works that fall outside their own core business.

Interviewees who were plumbing and drainage contractors pointed out that while most specialist works in public buildings can only be carried out by contractors on the respective lists of registered contractors of the relevant government departments, a list of registered plumbing and drainage contractors is currently absent.

## 4 Contract Terms and Conditions

### 4.1 Functions of standard forms of contract

A written contract is a legal document intended to protect the rights of the contract parties in a transaction by clearly defining the considerations to and the obligations of each party. Given the highly complex nature of building construction projects, and the huge sum of money involved, a building contract, through which a client commissions a contractor to construct a building for him (Figure 4.1), needs to be precise and comprehensive and thus is inevitably complicated. Therefore, a building contract is typically prepared by specialists commissioned by the client (e.g. collectively by the architect, engineer, quantity surveyor and, sometimes, also legal advisor), with the contract terms and conditions tailor-made to suit the specific requirements of the project, including any specific requirements that the client would deem necessary for safeguarding his interest. Similar applies to works procured through subcontracts, such as specialist works.

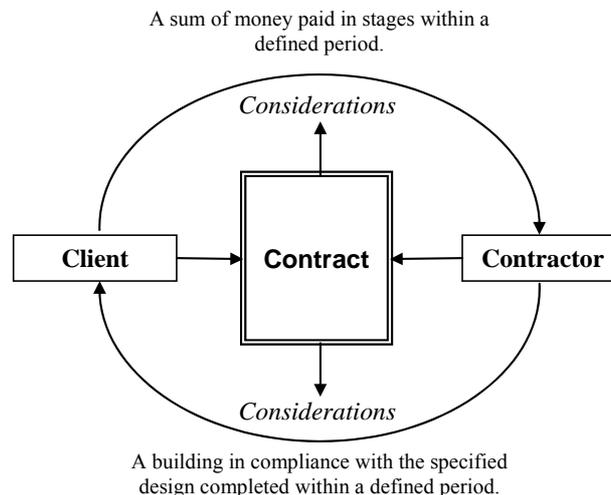


Figure 4.1 A contract between the client and the contractor defining the considerations to each party

Standardisation of the general conditions in contracts for building and related works will benefit all parties involved in bidding, forming, executing and managing the contracts, as this will help:

- Reduce the time and cost for drafting the highly complicated contracts.
- Ensure the terms and conditions in the contracts are sufficiently comprehensive and effective to equitably safeguard the interests of the contract parties, including methods for determining damages should either contract party fails to fulfil his contractual obligations.

- Ensure the terms and conditions incorporated in contracts are well established, familiar to the involved parties and widely accepted in the industry, which can help prevent disputes from arising due to misunderstanding or misinterpretation.
- In the event that any disputes arise, provide a clear frame of reference for settlement of the disputes, which may include definition of the means to be used for dispute resolution, such as mediation, adjudication and arbitration.

Standard forms of contracts have been made available for use in construction projects for about a century and have evolved and diversified to cope with changing needs over time. In this chapter, the standard forms being used in different types of public and private sector building construction projects are listed. Furthermore, a review of the general conditions of contract for public building works conducted by a consultant appointed by the government for this purpose are described. Since new versions of the private sector standard forms of building contract, nominated subcontract and nominated supply subcontract have been issued in 2005, the changes are discussed in greater detail in this chapter, largely based on comments and views expressed by experts in the field. As named subcontracts have been used in recent years in the local construction industry, this type of subcontracting practice is also described and discussed.

## **4.2 Standard forms of contract in use in Hong Kong**

### **4.2.1 Public works**

The Government of Hong Kong SAR General Conditions of Contracts includes several versions of standard contract form for use in procurement of public works. At present, the following versions are available for new building development works ([HKSAR, 1999a](#); [1999b](#); [1999c](#)):

1. General Conditions of Contract for Building Works, 1999 Edition
2. General Conditions of Contract for Electrical and Mechanical Engineering Works, 1999 Edition
3. General Conditions of Contract for Design and Build Contracts, 1999 Edition

The HKSAR Government General Conditions of Contracts were modified from the Institution of Civil Engineers (ICE) Conditions of Contract. It is a re-measurement contract under which the employer (the Government) undertakes to pay the actual quantities of work executed ([Cheng et al, 2004](#)), which are measured according to stipulated methodologies with reference to the bills of quantities.

### **4.2.2 Private sector works**

There are a number of standard forms of contract in use in the private sector of Hong Kong, including those developed by individual private developers for their own use and the generic standard form: Agreement and Schedule of Conditions of Building Contract (Standard Form

of Building Contract) for Use in Hong Kong, Private Edition (With Quantities or Without Quantities). The Standard Form of Building Contract is similar to the Joint Contracts Tribunal (JCT) Standard Form used in the UK. The latest (2005) version of the Standard Form of Building Contract was the outcome of the joint efforts of the Hong Kong Institute of Architects (HKIA), the Hong Kong Institute of Construction Managers (HKICM) and the Hong Kong Institute of Surveyors (HKIS).

Corporations such as the Mass Transit Railway Corporation (MTRC) have a full set of standard contract documents, including conditions of contract and particular specifications (MTRC, 2000). They represent improved and modernised versions of standard forms of contracts from those in use by the Government and the private sector.

### **4.2.3 Other standard forms**

The abovementioned general conditions of contract for public sector works and standard forms of contract for private sector works in Hong Kong were prepared with reference to and thus resemble in contents with similar contract documents developed for use in the UK or for international applications. This helped ensure the terms and conditions therein match well with internationally accepted practices and thus facilitate foreign and international construction companies to participate in local construction projects, which are especially important to huge infrastructural developments, e.g. the Airport Core Program, which require importation of specialist technologies unavailable locally. Among such conditions of contract include:

- Joint Contracts Tribunal for the Standard Form of Building Contract, Standard Form of Building Contract, Private with Quantities (1980 Edition, and its amendments in 1998)
- Joint Contracts Tribunal for the Standard Form of Building Contract, Standard Form of Building Contract with Contractor's Design (1981 Edition, and its amendments in 1998)
- The Institution of Civil Engineers (UK), The Engineering and Construction Contract (1998)
- The Institution of Civil Engineers (UK), Association of Consulting Engineers, and Federation of Civil Engineering Contractors, ICE Conditions of Contract (6th Edition, 1997)
- International Federation of Consulting Engineers (FIDIC), Conditions of Contract for Works of Civil Engineering Construction, Part I, General Conditions (1992)

## **4.3 Reviews of standard forms of contracts in Hong Kong**

### **4.3.1 General condition of contract for public construction works**

In 1998, the Hong Kong SAR Government commissioned a consultant to conduct a fundamental review of its General Conditions of Contract (GCCs) to seek advice on any

modifications necessary in the interest of public finance based on best international practice, to enable it to make policy decisions on specific issues and to facilitate a revision of the procurement procedures and the GCCs, if necessary. Allocation and management of risk in the procurement of works projects was a key theme of this review. In his final report, the consultant made a number of recommendations, which included (Grove III, 1998):

- *Government should move away from the “independent engineer” concept toward express, reserved authority of the employer;*
- *Government should move away from the re-measurement delivery system in favour of fixed price contracts with schedules of rates for variation valuation only;*
- *Government should express and operate a preference for forward, lump sum pricing of variations;*
- *Government should make clear that breach of contract is subject to valuation and resolution in accordance with the contract terms;*
- *Government should introduce the right to terminate for convenience;*
- *Government should introduce the right to accelerate the works;*
- *“Catch-all” clauses should be avoided;*
- *Government should accept the risk of unforeseeable physical conditions;*
- *Government should not emasculate Clause 15 (the impossibility clause);*
- *Government should require All Risk insurance coverage;*
- *Government should accept the risk of lawful third party interferences including utility undertakings;*
- *Government should accept the risk of changes in law;*
- *Government should let market forces operate regarding sub-contractor payment;*
- *Failure of notice should give rise to damages not forfeiture;*
- *Variation valuation should be simplified and tightened;*
- *Government should use dispute resolution advisers widely, and make “no-decision” mediation “voluntary”.*

However, not all the recommendations made by the consultant have been accepted by the Government and addressed in the 1999 Edition of the General Conditions. Table 4.1 shows the summary the initial response of the Government to the recommendations given in the Grove Report, as presented in Rahman and Kummaraswamy (2001). However, the Government has also been urged to reconsider the recommendations in the CIRC Report (CIRC, 2001).

<b>A: Risk Allocation / Management</b>			
<b>Risk</b>	<b>Existing provision</b>	<b>Recommendation</b>	<b>Govt. response</b>
Changes in law	Contractor	Client	Accept
Subcontractor payment	Only for nominated subcontractor	Let market forces operate	Accept
Ground conditions	Contractor	Client	Reject
Legal and physical impossibility	Client	Allow the Engineer to relax contractual requirement to issue variation	Reject
Third party interference	Contractor – cost, client - time	Client should accept both	Reject
Breach of contract by employer	No specific provision	Should be introduced	Reject
Need to terminate	No provision to terminate without default	Should be introduced	Accept
Client's need to accelerate	No provision	Should be introduced with compensation to contractor	Reject
Care of the works	Contractor's risk except damage, loss or injury from 'expected risk'	Require All Risk insurance coverage	Accept – on a needs basis
<b>B: Risk Allocation / Management Related Practices</b>			
<b>Item</b>	<b>Existing practice</b>	<b>Recommendation</b>	<b>Govt. response</b>
Notice and time bar provisions for claim	Notice – 28 days, particulars – 180 days after completion	Failure of notice should give rise to damages not forfeiture	Reject
Lump sum contracts	Either re-measurement or lump sum contract	Move away from re-measurement contracts	Reject
Role of Engineer	Independent Engineer concept	Move towards greater client authority	Independent ≤ HK\$300,000
Profit on claims for 'loss and expense'	No profit	Profit should be allowed	Reject
Lump sum forward pricing of variations	Similar item/ contract as 'basis' for valuation/ Engineer's decision	Client should express and operate a preference for 'lump sum forward pricing' of variations	Reject
Head office overhead recovery	No fixed rate	Either eliminate or fix the rate at a very low percentage of costs	Reject
Fixed rate of profit mark-up on variations	No provision	Client should fix the rate	Reject
Global claim	No contractual prohibition	Should be contractually prohibited	Reject
EOT for the events not included in contract	Allowed for special circumstances	Should be avoided	Reject
Escrow estimating files of contractor	No provision	Should be escrowed and used in disputes requiring arbitration only	Reject
Liquidated damages	Only for delay damages	Apply to performance deficiencies as well	Provide through special conditions
Dispute resolution	Engineer's decision, voluntary mediation and arbitration	Wider use of DRA and voluntary use of 'no-decision' mediation	Not yet decided
Contractor's post-contract alternative design	No provision to incorporate as a variation	Should be considered. Variations preferably issued on a daywork basis	

**Table 4.1** Summary of the initial response of the Government to the recommendations given in the Grove Report (Source: [Rahman and Kummaraswamy \(2001\)](#))

### 4.3.2 Standard form of building contract, private edition

Whereas the earlier version of the Standard Form of Building Contract (Private Edition) has been in use for around 25 years during which the local construction industry has changed drastically, little changes had been made to the Standard Form until the year 2005 version was launched to replace it. It was one of the recommendations made in the CIRC report (CIRC, 2001) that the standard form of contracts should be reviewed, which should have provided a strong impetus to the release of the new version of Standard Form.

The latest version of the Standard Form of Contracts (Figure 4.2) was intended to make available a contract that is fair and equitable to both the employer and the contractor, with a sensible allocation of risks, and can facilitate effective dispute resolution. It was also the aim that the new contract should be concise but fully comprehensive, precise and clear in wording, consistent throughout, free from ambiguity and user-friendly.

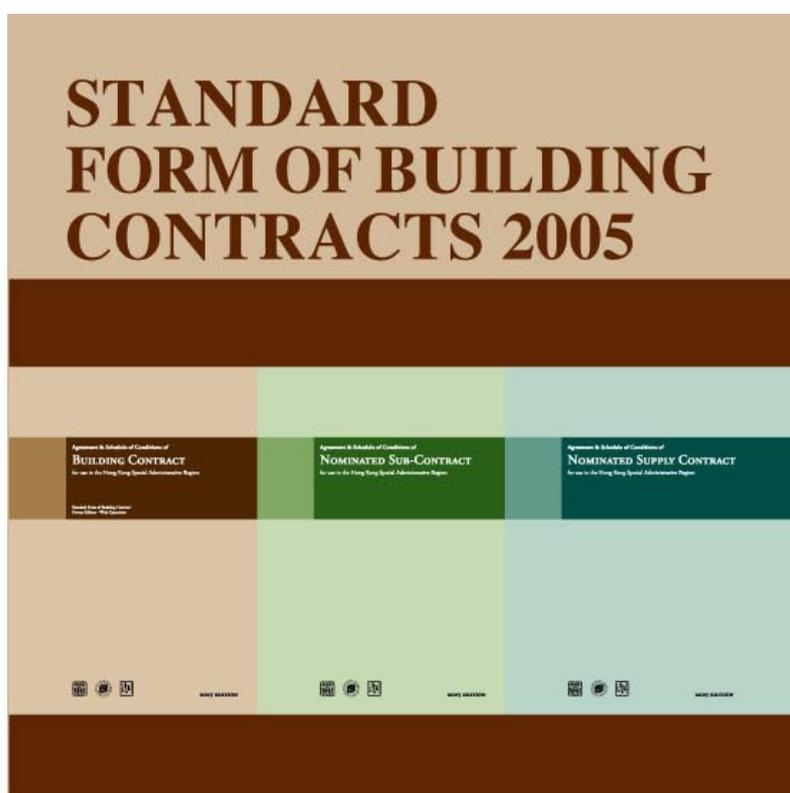


Figure 4.2 Standard form of building contracts 2005; Left: Building Contract; Middle: Nominated Subcontract; Right: Nominated Supply Contract (Source: HKIA website)

Cheng et al (2004) and Levett (2004) reviewed the new form of contract before it was formally launched. The following summarises those intended changes (as reviewed by Cheng et al and Levett), which are relevant to subcontract works:

1. The contractor's obligations are widened considerably to reflect the roles that contractors play in today's construction projects. Design responsibilities are established and the use of warranty in favour of the employer is provided for. The nominated subcontractor (NSC) and supplier are made directly responsible to the employer for their design through providing a warranty whilst the contractor's design responsibility has been limited to designing the temporary works and any work involved in the development of the architect's design that may be specified in the contract.
2. The employer retains the choice of capability and price in selecting a NSC but the contractor has a strong right of objection to the selection of a NSC. However, once the contractor agrees to the appointment of a NSC, the contractor takes full responsibility for him in virtually the same way as he does for his domestic subcontractors.
3. The contractor only gets extension of time (EOT) for delay by a NSC or supplier where the NSC or supplier is entitled to EOT under the subcontract or supply contract.
4. The architect has to nominate a new NSC as soon as practicable in the event of the determination of the employment of the original NSC.
5. An extension of time is given to the contractor for the re-nomination of a NSC provided the determination was not caused by the fault of the contractor but the contractor is not given additional payment for direct loss and/or expense.
6. Where the determination was caused by the default of the NSC, the extra cost, i.e. the difference between the original subcontract sum and the new subcontract sum is borne by the employer. In this case, the contractor is granted an EOT for the re-nomination but no direct loss and expense.
7. Where the determination was due to the breach of contract or other default of the contractor, the extra cost of employing a new NSC is borne by the contractor and no extension of time will be granted.

#### **4.3.3 Standard form of nominated subcontract, private edition**

##### **a) Comparison between the old and the new versions of the standard form for nominated subcontract, private edition**

Because of the much greater relevance to the present study, a table has been prepared and included in this report as [Appendix B](#) in which the clauses in the 1986 version and the latest 2005 version of the Standard Forms for Nominated Subcontract are listed in two side-by-side columns in the table to ease comparison. The clauses in the new Form, listed in the middle column, were organized in consecutive order as they appear in the Form whereas clauses in the old Form, listed in the left column, were put by the side of the respective clauses of the closest match in the new Form. Remarks on individual clauses are also included in the third column.

The following summarises the general observations made in the comparison:

1. Compared to the 1986 version, the 2005 version of the nominated subcontract form defines the subcontract terms and conditions much more clearly and comprehensively, and conforms more closely to current practices in the industry.
2. The subcontractor's obligations have been more clearly and comprehensively defined, including subcontractor's design, work management and coordination duties.
3. Detailed requirements on the procedures to be followed by relevant parties in handling incidents of different kinds are laid down.
4. Time limits for individual parties to serve a notice of an impending action to the affected party or to act upon a notice or claim from another party are also defined in much greater detail.
5. Quantity surveyor's role and duties in valuation of payments, claims, final account, etc. are defined.
6. Terms that can help better protect the interest of the nominated subcontractor are incorporated.
7. A new provision has been made for determination by subcontractor in case the main contractor defaults or becomes insolvent.
8. More detailed, flexible and equitable means are provided for settlement of disputes.

Apparently, the aims of issuing the new Standard Form of Contract, as stated at the beginning of [Section 4.3.2](#) above, have been, to a large extent, realised. It is also clear that the new Standard Form of Contract has addressed most of the recommendations stated in the CIRC report ([CIRC, 2001](#)) for improving security of payment to contractors and subcontractors. However, some concerns still exist, which are further discussed below.

#### **b) Experts' view**

On 23 February 2006, The Hong Kong Institute of Surveyors (HKIS) conducted a seminar on the topic: *Standard Form of Building Contract 2005 – Road Map for Professional Liabilities and Relationship between Main and Subcontractors*, which was meant to be a continuous professional development event for HKIS members. The seminar included a presentation on a review of the new private form of nominated subcontract (referred to below as 'NNSC'), highlighting the differences between the clauses with relevant clauses in the earlier version (referred to below as the 'Green Form'). A summary of the key points highlighted by the speakers is given below:

1. Clause 2 in the NNSC combines Clauses 1 & 3 in the Green Form. The conditions that the Nominated Subcontractor (NSC) shall be deemed to have full knowledge of all the provisions of the Main Contract and shall observe, perform and comply with the provisions in the Main Contract, which are related to the Subcontract Works, remain applicable.
2. Clause 3 in the NNSC extends the NSC's obligations to include organize and coordinate.

3. Under the NNSC, the Main Contractor is responsible for care of the Subcontract Works (Clause 4), but does not have this responsibility if the loss and damage arise from Excepted Risks (Clause 4(1)). However, under Clause 22.2, the NSC shall be responsible for restoration of lost or damaged subcontract works except for those covered by the Main Contractor's All Risk Insurance (CAR), by Excepted Risks or by the Main Contractor's/Employer's default. Who is responsible for damages caused by Excepted Risks is unclear.
4. If damages to the Subcontract Works are not covered by CAR, the NSC is responsible for restoration. Clause 22.4(2) limits the NSC's recovery for damages covered by CAR to its share under the CAR.
5. Contrary to Clause 4(1), Clause 22 requires the NSC to take care of the Subcontract Works. These two clauses, therefore, do not sit well with each other.
6. Clause 14(1) says the quantity and quality of work included in the Subcontract Sum shall be deemed to be that set out in the Subcontract Bills and thus, does not cater for situation where the Subcontract is let on specification and drawings.
7. Under Clause 23, two alternative treatments are stated regarding completion of Subcontract Works, one based on Subcontract completion date and the other on Main Contract completion date.
8. Clause 24 governs damages of delay in completing the Subcontract Works, viz the NSC is liable to the Main Contractor for its loss and damages and liquidated damages incurred which are caused by the Subcontractor's failure to complete.
9. Clause 25 deals with Extension of Time (EOT). Two notices are required (28 + 28 days).
10. Clause 28 deals with the NSC's claim for loss and expense but, unlike the Green Form, it now covers those caused by the Main Contractor's breach. Notice is required under Clause 29 and it shall be a condition precedent to the NSC's entitlement to additional payment that the NSC shall comply with the requirement for notice and submission of particulars.
11. Clause 33.1(7) is still a 'pay-when-paid' clause.
12. Under Clause 33.13, late payment carries interest. Under Clause 33.14, late payment entitles to suspension of works.
13. Clause 33.9 to 33.11 deal with the conclusiveness of the final certificate. Clause 34 deals with surety.
14. Under Clause 37, the NNSC now provides for NSC's determination.
15. Clause 41 is about the Main Contractor's power to set-off subject to the pre-condition of serving notice by special delivery to the subcontractor at least 7 days before deduction.

16. Clause 42 deals with dispute resolution. At request of either party, the Architect has to refer dispute to designated representatives. If not resolved, mediation, then arbitration may follow. Decision on certificate, if final and binding under Main Contract, is also final and binding on Subcontract.
17. Clause 43 allows NSC to borrow Main Contractor's name as plaintiff in arbitration proceedings with the Employer.

During the seminar, the speakers deliberated on the 'pay-when-paid' clause in the Subcontract with reference to a case where:

- The subcontractor has completed its works satisfactorily, with no delay and no defects;
- Final payment certificate has been issued which states that the subcontractor is entitled to a final payment in the sum of \$X;
- The main contractor has not received any money under the final payment certificate from the Employer because there is nothing due to the main contractor after the deduction of liquidated damages for delay on the part of the main contractor; and
- The subcontractor claims against the main contractor for \$X because the main contractor has failed and/or refused to make final payment to the subcontractor.

The main contractor's argument is that Clause 33.1(7) of the Subcontract only requires the main contractor to pay the subcontractor within 14 days after the main contractor has received payment from the Employer, i.e. the 'pay-when-paid' principle. As the main contractor was not paid any cash, he considered it not an obligation for him to pay the subcontractor.

For the above case, no definite conclusion could be drawn as to whether the main contractor shall pay the subcontractor the sum \$X, which shows a weakness in the Clause.

**c) Contractor's right to set-off and 'pay-when-paid' practices**

It has been an industry wide practice that the main contractor has the power to deduct from any monies due to a nominated subcontractor any direct loss, expense or damages caused to him, which are, in his opinion, due to the subcontractor's fault. Nominated subcontractors are further disadvantaged by the 'pay-when-paid' principle in getting payment. These often give rise to conflict and disputes between a main contractor and a subcontractor while the subcontractor can only rely on the dispute settlement mechanism provided in the subcontract to resolve the problem. Failing this, the subcontractor will need to go for litigation to regain from the main contractor the money due to him.

In the 2005 Nominated Subcontract Form, clause 28.5 requires the main contractor to give prior notice to the subcontractor and to agree with the nominated subcontractor on the amount to be deducted, if the subcontractor has incurred direct losses to the main contractor. Clause 28.4 allows the nominated subcontractor to notice the main contractor of similar losses incurred to him due to the main contractor's fault and to agree with the main contractor on the amount that the main contractor should pay him. Under clause 33.12, the nominated

subcontractor is entitled to interest for any late payments and, under clause 33.14, the subcontractor may even suspend work. Furthermore, clause 42 allows either party to make requests for dispute settlement, including negotiation, mediation and arbitration.

Even though these are already significant improvements over the conventional practice, the contractual rights of the main contractor and the nominated subcontractor to recover losses incurred by the other party remain highly asymmetric. The subcontractor is further disadvantaged by the condition that his technical mistakes, e.g. failing to serve a notice to claim for additional payment within the time limit set will lead to forfeiture of his entitlement whereas it remains his duty to claim for losses incurred to him due to similar technical mistakes made by other parties.

If the relatively fairer and more equitable terms and conditions in the Standard Subcontract Form are widely accepted and used in building projects, it will establish a new convention of practices in the local construction industry. However, the Standard Form is typically used only as a template in drafting subcontracts, during which some of the terms and conditions may be modified or struck out, and other terms and conditions added, which may put the subcontractor into more difficult situations. When a subcontractor further sublets subcontract works to his sub-subcontractors, similar or even less equitable terms, including power to set-off and pay-when-paid, may also be used, which will exacerbate the problem. Institutional arrangements with compelling power, e.g. regulatory control, may be needed to ensure fair dealings, such as a security of payment legislation. This issue will be further discussed in [Chapter 5](#).

#### **4.4 Named subcontracting**

The term “named subcontractor” conventionally refers to a contractor who has already been commissioned directly by the client to commence with a specific part of work prior to the main contract is formed between the client and the successful tenderer for the main contract. The already appointed contractor is made known to the tenderers during tendering stage and is subsequently made a subcontractor of the main contractor when the latter is appointed. This requires a ‘novation’ process to convert the contractual relation, initially between the client and the named subcontractor direct, into one between the main contractor and the subcontractor, which may not lead to entirely satisfactory contractual relationships among the client, the main contractor and the named subcontractor.

The named subcontract arrangement introduced by Swire Properties into Hong Kong in the late 1980’s is slightly different from that described above. As [Rawling \(2001\)](#) outlined, this named subcontract arrangement is meant to address the problems with the conventional nominated subcontracts, which include: the contractor’s right to object the architect’s nomination of subcontractors and the problems that could arise if this right is removed; and the need for re-nomination in case of determination of a non-performing NSC.

The named subcontractor arrangement essentially involves letting the ‘would-be’ subcontractors known to the main contractor at the tender stage and the main contractor may make enquires and has the opportunity to object any named subcontractors on the list but is allowed to do so only during the tender stage. The main contractor then leads the named subcontract tender process, including assembly of tender documents, issuance of tender documents, receiving tenders, holding post tender meetings and making proposals to the

architect if not the lowest tender is to be appointed. The architect, however, has the right to veto any proposed appointment and can issue an instruction to the main contractor to accept any of the tenderers. After the subcontract is awarded, the named subcontractor is for all intents and purposes, a domestic subcontractor. The main contractor is paid the rates in the accepted subcontract or the lowest tender if he has to find a replacement subcontractor and there is no obligation on an employer or an architect to re-nominate. Minor fine-tuning of the provisions has been made since, including allowing an architect to select a tenderer rather than a main contractor to make proposals.

#### **4.5 Summary remarks**

Fair and equitable contract terms are crucial to building procurement processes to ensure timely contract completion and minimisation of conflict and disputes. As reviewed in this chapter, efforts have been made to improve terms and conditions in standard form of contracts and subcontracts. However, some terms, especially the main contractor's power to set-off and the pay-when-paid principle in the standard form for nominated subcontracts, are still to the disadvantage of subcontractors. Therefore, it is worthwhile to look into whether regulatory controls are required to ensure fair dealings in subcontracting, especially on payment practices.

Nominated subcontract is a contractual arrangement preferred by many clients as well as subcontractors, but the more complicated contractual relations among the client, the main contractor and the nominated subcontractor is prone to disputes. The use of named subcontracts allows greater participation of the main contractor in selecting subcontractors but at the same time, it increases the responsibility of the main contractor to manage the subcontractors and the liability of the main contractor for the performance of the subcontractors. As [Rawling \(2001\)](#) remarked, no matter whether a subcontractor is a nominated or named subcontractor, his failure in fulfilling the contract obligations would still incur losses both to the client and to the main contractor and pre-award scrutiny remains the key check.

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## 5 Industry-wide Institutional Arrangements

The industry-wide review conducted by the Construction Industry Review Committee (CIRC, 2001) mapped out the directions for improving the efficiency and competitiveness of the Hong Kong construction industry. The long list of recommendations made in the CIRC Report include the establishment of an industry co-ordinating body to deliberate and generate consensus on strategic issues affecting the industry, and communicate to the Government the industry's needs and aspirations through regular dialogue. At the moment, a Provisional Construction Industry Co-ordination Board (PCICB) is in operation, basically to assume the role to be played by the proposed industry co-ordinating body until a formal body is formed. Legislation is on going for the establishment of a Construction Industry Council (CIC), which, once formed, will replace PCICB.

To address the problems with subcontracting practices in the industry, CIRC recommended the establishment of a voluntary subcontractor registration scheme (VSRS). CIRC also supported the implementation of a mandatory construction workers registration scheme (CWRS) to help ensure, through skill certification, the quality of construction workers; to facilitate implementation of initiatives to upgrade the competence level of the workforce; and to provide data on labour supply for manpower planning purposes. To help increase the security in getting payment for contractors and subcontractors, CIRC also recommended that considerations should be given to the enactment of a security of payment legislation, having regard to local circumstances and in the light of overseas experience.

In response to the CIRC recommendations, the Government has already established a VSRS and more recently a CWRS. The VSRS is in its initial phase of implementation, with the number of registered subcontractors growing steadily. Although the regulatory control which permits only registered workers to carry out specific classes and trades of works on construction sites has not been enforced yet, construction workers can now apply for registration under the CWRS. However, no significant progress has been made so far toward the enactment of a security of payment legislation.

Since both the VSRS and CWRS are registration schemes, the generic functions of a registration scheme is discussed before the functions that the VSRS and CWRS are intended to serve and the latest state of their development are reviewed in this chapter. The functions that a security of payment legislation can serve and the key elements to be covered by the legislation are then discussed.

### **5.1 General considerations for implementing a registration scheme**

The fundamental purpose of establishing a registration scheme is to confer a qualification on individuals, firms or products to signify that such persons, firms or products have passed certain threshold criteria in the assessment for the qualification. Those qualified will have their names registered on a list maintained by the qualifying body from which confirmation can be sought as to whether a specific person, firm or product is on its list. The registration or the issuance of a certificate to that effect will provide a degree of assurance that all the registered persons, firms or products have fulfilled the criteria set for registration under the scheme. Graduate lists of universities, membership lists of professional bodies, lists of

approved contractors of various government departments and product lists of various energy labelling or eco-labelling schemes are examples of such registration lists.

### **5.1.1 Conditions for success**

A registration scheme will meet with success provided that:

1. The qualification that the scheme confers is relevant to the abilities or performance of persons, firms or products which their potential employers or consumers will consider to be important to their decision to employ or purchase them;
2. The assessment and verification is costly to the society if every one intending to employ such persons or firms, or to purchase such products, has to conduct the assessment and verification by himself from time to time; and
3. It is a trustworthy scheme, i.e. the assessment of applicants for the qualification can faithfully reflect the ability or performance standard of the applicants, while only those at or above the declared threshold standard will be allowed to register.

A registration scheme will become well recognised and widely used if it can fulfil the above basic conditions. However, for the scheme to be sustainable, on top of continuous existence of the demand for the on-list persons, firms or products, means must be provided for newcomers to acquire the ability or performance required for registration whereas those on-list must be re-assessed periodically and only those passing the re-assessment can stay on-list.

### **5.1.2 Voluntary or mandatory**

A registration scheme may be implemented on a voluntary or mandatory basis. The major function of a voluntary registration scheme will be limited to providing information to people to enable them to distinguish between registered and unregistered persons, firms or products such that they can make informed choices. Any individuals or firms or suppliers of products who are targets of the scheme may ignore the scheme, although they may be disadvantaged if their potential employers or consumers do make reference to the registration list in making employment or purchasing decisions. The price for ignoring the registration scheme is then dependent on how widely accepted is the scheme; a widely accepted voluntary registration scheme, therefore, can also be highly effective.

A mandatory scheme will impact on all relevant persons, firms or products, as well as on all consumers of the services that such persons or firms provide, or of such products. Therefore, great care must be exercised in deciding whether to make a registration scheme mandatory and, if the decision is to make it mandatory, in setting the registration criteria and the penalty for violation. If the criteria are too stringent such that few persons, firms or products can meet the criteria, it will limit the supply of the type of services or products in an economy. When there is strong demand for such services or products, their price will soar while illegal supplies will emerge to meet the demand unless the penalty is extremely high. This will entail more resources to be spent on policing and prosecuting violations, i.e. higher transaction costs to the society, or will render the mandatory scheme ineffective. If, instead, the criteria

are too low, the scheme will boil down to just a formality for market entrance but will fail to achieve its objectives.

The choice between making a registration scheme voluntary or mandatory should be made based on a holistic evaluation of the associated benefits and costs to the society. Generally, a voluntary scheme will be much more flexible to implement and will incur much lower transaction costs, but, if well designed, promoted and accepted, can also be highly effective. Implementing a mandatory scheme, however, will be less flexible and more costly, as any changes to it requires corresponding amendments to the legislation, and its implementation requires the establishment of an administrative arm in the government and detailed regulations and procedures for compliance checks and prosecution of violations. Therefore, unless the consequences that the scheme serves to guard against are highly costly to the society, such as losses of human life or huge economic losses, voluntary schemes are preferred to mandatory schemes.

## **5.2 Voluntary subcontractor registration scheme**

### **5.2.1 About the VSRS**

The declared objective of the voluntary subcontractor registration scheme (VSRS) is to build up a pool of capable and responsible subcontractors with specialised skills and strong professional ethics (see PCICB's website: [www.pcicbvrs.com.hk](http://www.pcicbvrs.com.hk)). The VSRS aims to elevate the standard of trade subcontractors taking on part of building or engineering development and, for achieving this aim, the VSRS should cater for (PCICB, 2003):

- (a) A convenient source of reference for players actively engaged in the subcontracting business;
- (b) A launch-pad of new initiatives aimed at improving the professionalism and upgrading the management training of subcontractors; and
- (c) A system of capability assessment, performance tracking and disciplinary procedures for the subcontracting trade.

The original intention was to structure the scheme such that it can provide an indication on the type, size and complexity of projects that each subcontractor can undertake. Developing such a scheme, however, would take time. Therefore, a phased approach was taken, which has started off with a Primary Register. A second layer, tentatively referred to as the Premier Register, may be incorporated to form a two-tier system in due course. Currently, registration is based on trade classifications for the Primary Register. Individual subcontractors may also indicate their specialties.

The requirements for registration are (PCICB, 2005):

Requirement R1: Completion of at least one job within the last five years as a main contractor/subcontractor in the trades and specialties for which registration is applied OR comparable experience by the applicant or its proprietors, partners or directors within the last five years.

Requirement R2: Listings on one or more Government Registration Schemes relevant to the trades and specialties for which registration is sought.

Schedule 3 in the Rules and Procedures for the Primary Register of the VSRS (PCICB, 2005) makes clear that registration can be sought through either one of the two requirements above.

Approved registration will be valid for two years from the approval date, whereas the registration can be renewed, which will be assessed based on the same requirements. Renewed registration will also be valid for two years.

## 5.2.2 Current status of the VSRS

As at 2 June 2006, the status of registration with the VSRS is as follows (as summarised at PCICB's website: [www.pcicbvsrs.com.hk](http://www.pcicbvsrs.com.hk)):

No. of applications submitted:	3,130
No. of applications fully approved:	2,686
No. of applications partially approved:	167
No. of applications not approved:	138

Partial approval refers to cases where only part of the applied trades or specialties was approved.

The following summarises the status on formulation/implementation of complementary measures, which are for boosting participations in the VSRS:

- Airport Authority Hong Kong has introduced contractual provisions requiring its main contractors to include appropriate terms in their subcontracts to require subcontractors to apply for registration under the voluntary subcontractor registration scheme (VSRS) within one month upon the official launching of the scheme.
- Environment, Transport and Works Bureau (ETWB) is drafting new contractual provisions requiring public works contractors to engage domestic subcontractors (excluding nominated subcontractors and specialist subcontractors who will be selected under the ETWB Approved Lists only) who are either registered under the VSRS or will complete their registration under the VSRS before the execution of the relevant subcontracted works. Subject to consultation with the relevant parties, ETWB targeted to introduce the new requirements by mid-2004.
- Hong Kong Housing Authority (HA) will mandate the employment of registered subcontractors in all new building, maintenance and improvement contracts and intended to implement the requirement in all new contracts to be tendered out from 1 April 2004 onwards.
- Kowloon-Canton Railway Corporation (KCRC) will include mandatory requirement for employment of registered subcontractors in its new construction contracts.

- With effect from 1 January 2004, Mass Transit Railway Corporation (MTRC) will require main contractors and their subcontractors to employ registered subcontractors to undertake works covered by the trade classification of the VSRS.
- The Real Estate Developers Association of Hong Kong (REDA) has requested its members to lend support by encouraging subcontractors to register and specifying the engagement of registered subcontractors for future contracts.
- Hong Kong Construction Association (HKCA) will continue to encourage its members to engage registered subcontractors and to convince subcontractors in the lower tiers to do so.
- Hong Kong Federation of Electrical and Mechanical Contractors (HKFEMC) will continue to encourage its members to engage registered subcontractors and to convince subcontractors in the lower tiers to do so.

It can be seen that the strongest support for the VSRS has been from the public sector although the private sector has also shown their warm support. It can be seen that the remarkable number of subcontractors already registered with the scheme is a result of the complementary measures.

### **5.2.3 Comments on the VSRS**

As stated in the Operational Framework of the VSRS (PCICB, 2003), the entry requirements for the Primary Register were set to be “accommodating”, so as to attract a critical mass of subcontractors at the outset. The Primary Register, therefore, will function mainly as a general directory of subcontractors. The requirements for the tentative Premier Register will be more demanding, which would cover duration of experience, qualifications and experience of key managerial and technical staff, manpower resources and financial capability, historical performance records, internal quality assurance systems, referees and strategic partners, etc.

Apparently, the Primary Register of the VSRS, as it is, can contribute little to the realisation of the aim of the scheme, i.e. to elevate the standard of trade subcontractors taking on part of building or engineering development. The greatest function that it can serve is limited to function (b) mentioned above, i.e. being “a launch-pad of new initiatives aimed at improving the professionalism and upgrading the management training of subcontractors”. Given that various government departments and many private developers already maintain lists of qualified contractors and subcontractors, or will establish one based on recommendations of consultant architects and engineers on a project-by-project basis, which are based on assessment procedures and criteria that are typically far more extensive and stringent than the requirements for registration with the VSRS, being listed in the Primary Register will add little value to subcontractors.

When the Premier Register is launched, the influence of the scheme will remain limited unless the registration schemes that various government departments currently maintain will be absorbed into the VSRS and the requirement is also imposed that contractors and subcontractors qualified to undertake public works can only employ domestic subcontractors who are also on the list, which may be a lower-tier list. Private developers are likely to prefer using their own lists for project procurement but may require their contractors and

subcontractors to sublet works only to subcontractors registered under the VSRS. The usefulness of the scheme, however, would still hinge on whether the assessment criteria are effective and reliable in reflecting the ability of subcontractors to turn out quality works and their financial capacity.

It should be understood that what the VSRS can do at best is to provide information for reference about the technical and financial capacities of registered subcontractors as well as their past job references; registration under the scheme can hardly be taken as an assurance of adequate performance and professional ethics. Therefore, although registered subcontractors may be preferred, clients of subcontractors are unlikely to relax on the terms and conditions in the contracts with the subcontractors and on the requirement for the subcontractors to provide warranties.

The scheme, as it is, does not permit companies without prior experience to register, not even on a provisional basis. The only possible route for a new company to gain registered status with the scheme is to employ one with suitable experience as a partner or director of the company. This may become a problem when registration with the scheme becomes a universally adopted requirement for tendering for subcontract works, as it will become a barrier to entry to new companies.

### **5.3 Construction worker registration scheme**

#### **5.3.1 About the CWRS**

In July 1999, the then Construction Advisory Board (CAB) formed a Working Group to study the proposal for implementing a registration system for construction workers. In May 2000, the Working Group recommended the Government to implement a mandatory registration system by legislation. The Report of the Construction Industry Review Committee (CIRC, 2001) concurred with CAB's recommendation.

The Construction Workers Registration Bill was introduced into the Legislative Council in March 2003 and was passed on 2 July 2004. The Construction Workers Registration Authority was subsequently established on 18 September 2004 to administer the implementation of the Construction Workers Registration Ordinance (Cap 583).

The declared objectives of implementing the mandatory registration system are to:

- ensure the quality of construction works through assessment and certification of the skill levels of all construction workers;
- ensure the availability of more reliable data on labour supply to facilitate manpower planning and training;
- raise the status of construction workers by statutorily recognising their skill levels;

- provide the workers with a clear career path with a view to motivating them for higher skill levels for higher position and remuneration and hence fostering a quality culture in the construction industry;
- help combating the hiring of illegal workers on construction sites; and
- assist in resolving wage disputes between contractors and workers with the availability of site entry and exit records.

The Construction Workers Registration Ordinance (Cap 583) (the Ordinance) prohibits people who are not Registered Construction Workers from personally carrying out construction work on construction sites. Under the Ordinance, all construction workers will register under one of three categories:

1. Registered general worker
2. Registered semi-skilled worker
3. Registered skilled worker

The trades of works that are put under the control of the Ordinance are listed in Schedule 1 in the Ordinance, which comprises three parts. Only skilled works can register for those work trades listed in Part 1. Both skilled and semi-skilled workers can register for those work trades in Part 2. Part 3 includes at the moment only two work trades, namely painter and builder's lift operator, for which a person may be registered only as a registered semi-skilled worker, for the relatively low level of skills required for such works.

Registration for the classes of skilled and semi-skilled workers may be on a provisional basis, if a worker does not hold, at the moment, the prescribed qualification but has already had the required period of experience. The prerequisites for a person to register as a Registered Construction Worker include:

1. He/she holds a certificate of attendance at safety training course referred to in Section 6BA(2) of the Factories and Industrial Undertakings Ordinance (Cap 59) (commonly referred to as the 'green card');
2. He/she is a Hong Kong permanent resident or is not subject to any conditions of stay and employment in Hong Kong; and
3. For registering as a general worker, there are no further requirements. For registering as a semi-skilled or skilled worker, he/she must hold the certificate relevant to the class and trade of worker as stipulated in the Ordinance or, for provisional registration, has a minimum relevant experience of two years for a registered semi-skilled worker, and six years for a registered skilled worker.

Note that the Ordinance permits registered construction workers to carry out works in a trade that falls outside the class and trade that the workers are qualified to carry out provided that they are working under the instruction and supervision of a registered worker who are suitably qualified to carry out the works. Those registered on provisional basis, however, cannot supervise and instruct other unqualified workers to carry out those works that they are

qualified to carry out. For work trades that are under other regulatory controls in force which permit only workers possessing the prescribed qualification to undertake, registration on provisional basis and permission for unqualified workers to carry out such work under the instruction and supervision of a suitably qualified worker are not applicable to such work trades.

The registration will remain valid for three years. Renewal of registration requires attendance of a 'refreshment' course on construction site safety and, in addition for semi-skilled and skilled workers, successful completion of the relevant development courses.

Being legislative requirements, the Construction Workers Registration Ordinance are applicable to all parties engaged in construction works in Hong Kong, including the workers and their employers. A person who contravenes the Ordinance commits an offence and is liable to a fine. The fine for an unregistered worker working on a construction site will be at level 3, i.e. an amount between HK\$5,001 and HK\$10,000, and that for employing an unregistered worker to work on a construction site will be at level 5, i.e. from HK\$25,001 to HK\$50,000.

The operation of the Construction Workers Registration Authority is sustained by a levy at 0.03% of the value of all construction operations undertaken or carried out in Hong Kong, with the exception of works with a total value less than one million dollars. A worker applying for registration as a registered construction worker are also charged a fee, which is HK\$78 if the application is made between 29 December 2005 and 28 February 2006, and will be raised progressively to HK\$100 after 31 August 2006.

### **5.3.2 Current status of the CWRS**

As mentioned above, the Construction Workers Registration Ordinance has already become a part (Cap 583) of the laws of Hong Kong. The Construction Workers Registration Authority formed under this Ordinance has commenced work and is accepting applications for registration. However, the date that the Ordinance will come into operation is yet to be announced by the Secretary for the Environment, Transport and Works, by notice published in the Gazette.

The training programmes, including site safety courses, and trade tests in support of the construction workers registration scheme are offered by the Construction Industry Training Authority (CITA), Vocational Training Council and other relevant recognised organisations.

### **5.3.3 Comments on the CWRS**

As can be seen from the declared objectives of the Construction Workers Registration Ordinance, the regulatory control is intended to serve multiply purposes. In fact, the requirement that every worker must have had safety training before he/she is allowed to carry out work on a construction site is not new (the requirement for holding a 'green card'). Prohibition of illegal workers on site is also governed by other regulatory controls already in force (immigration and labour laws). Means are also in place to protect workers on wage matters (labour laws), although the existing means may not be regarded as sufficiently effective and can be tightened when the construction workers registration system is operative.

Therefore, the new, and core function that the mandatory construction workers registration system can serve is on ensuring that workers have the required skills to carry out the respective types of construction or installation works on site.

The construction workers registration system will be able to serve its core function well provided that:

1. The skill levels required for passing the assessments can meet the minimum requirements for proper performance of the respective trades of construction works; and
2. There are sufficient and appropriate training courses available for new workers to acquire the skills and for existing workers to upgrade their skills to cope with emerging construction methods and quality standard requirements.

The skills to be demonstrated by workers in the qualifying tests must be relevant and up-to-date skills needed by contemporary construction practices. Otherwise, the registration system will be rendered a formality for workers to enter the job market but cannot help ensure quality work output.

There should also be sufficient training programmes available to cope with the demand for registered construction workers from time to time, to avoid shortage of labour supply. Since the demand for workers is dependent on the number and scale of construction projects that are ongoing concurrently at a particular time, which can fluctuate largely from time to time, vendors of recognised training programmes and trade tests may have difficulties in adjusting their resources to meet the fluctuating demand.

Under the current Ordinance, shortage in supply of registered skilled and semi-skilled workers will be coped with by engaging more registered general workers to work under the instruction and supervision of the suitably qualified skilled or semi-skilled workers. It can be seen that this provision is needed to cope with short-term increases in demand for skilled and semi-skilled workers. However, given that a registered general worker may only have satisfied the safety training (through attending a one day or two evening course) but may not have undergone any specialist skill training, it will become more difficult to ensure quality of the works will be maintained. The core function of the registration system will thus be undermined.

The situation will become critical if there is a shortage in supply of registered general construction workers, which could arise should the volume of construction works exceeds the capacity of the available workforce. Restricted by the condition of stay and employment on workers, short-term shortage of workers could not be quickly addressed through importing workers. This remains a potential and critical problem for which a solution needs to be devised. The way in which the construction industry of Macau copes with the recent boom in construction activities, which has benefited Hong Kong construction workers while the Hong Kong construction industry is in a slump, shows the importance of this issue.

The mandatory construction workers registration scheme may be an effective integrated means for dealing with site safety, workers' wage and illegal worker problems but its effect on improving quality standard of construction works will be limited. A mandatory scheme will only be effective in ensuring basic requirements are met but will lead to problems if the

passing standard is raised to higher levels. Provisions for training of skilled and semi-skilled workers are important to raising work standards but, with the regulatory control in force, emphasis of training courses will tend to be put on meeting the requirements for certification rather than to meet market demands for continuously enhanced specialist skills, and the gap between the two could become wider and wider.

## **5.4 Security of payment legislation**

### **5.4.1 Function of a security of payment legislation**

One of the most disturbing situations that contractors and subcontractors may face is not getting paid on time the amount of money commensurate with the amount of works that they have done under the contracts or subcontracts. This can have serious impacts on the cash flow of the contractors and subcontractors and, in turn, on their ability to complete the contract or subcontract works for the project concerned, and possibly also for other projects that they are concurrently undertaking.

Generally, a contract or subcontract should have included payment terms that define the conditions for payments and the handling procedures to be observed by the contract parties. These will typically include the timing for submission of interim payment claims, the substantiating information to be included in the claims, the methods and procedures for determining and certifying how much money is to be paid and when payments are to be made. A deliberate refusal to making payment, be it just an interim payment, can amount to a repudiation of contract.

In the adverse situation where the client of a building construction project becomes insolvent, his inability to make any payments will lead to termination of the main contract and, in turn, termination of all associated nominated subcontracts and nominated supply contracts. Otherwise, a project client will normally be keen to see construction works for his project are completed on time and, to ensure timely and satisfactory project completion, he will fulfil his contractual obligations, including making prompt payments according to the amounts certified by the architect.

However, the certified amounts that the client will pay may be less than what the contractor claimed for himself and on behalf of the nominated subcontractors. Payment deductions will happen if the quantities of works certified to be complete are less than the claimed quantities, or if the architect finds some of the works are unacceptable. As reviewed in [Chapter 4](#), a main contractor will not pay a nominated subcontractor (and possibly also his domestic subcontractors) unless and until he is paid by the client the sum that the subcontractor entitles, i.e. the pay-when-paid practice, and may also set-off monies from payments due to a subcontractor. Disputes among the client, the contractor and the subcontractors could arise whenever payments are withheld or deducted.

A contract or subcontract may also include dispute resolution methods, which can be used to settle disputes on payments and, if necessary, the contractor or subcontractor may take legal actions to enforce payment. However, much time, effort and cost would need to be paid to obtain payments through such means, and payments, if any, may come too late by which time

the contractor or subcontractor might have suffered from other losses, e.g. lost of opportunities to win other contracts due to lack of cash flow, or run into bankruptcy.

As project clients predominate in setting terms and conditions in contracts and nominated subcontracts, such terms and conditions will be set to their favour. In turn, main contractors have control over payments to nominated subcontractors while domestic subcontracts are subject to terms and conditions that favour the main contractor. A client or a main contractor may also withhold payments to off-set monies the payee owns him under the current contract or other contracts (the latter is referred to as cross-contract set-off).

Compared to main contractors, subcontractors are subject to greater risks of having payments withheld due to the power of the main contractor to set-off and the pay-when-paid clause in the subcontracts. Legislative control over the obligation of a party to pay for goods or services rendered to him by another party under contract can override unfair payment terms in contracts and provide speedier and less costly means for enforcing payment.

In order to reduce the number of disputes and minimise costly and time consuming arbitrations or litigations on payment matters in the construction industry, regulatory control over security of payment has been enacted in some states or countries, such as UK, New South Wales of Australia and Singapore. Hong Kong does not yet have a security of payment legislation and little progress has been made on enacting such legislation, notwithstanding that the CIRC report (CIRC, 2001) did recommend the matter be looked into.

#### **5.4.2 Essential features of a security of payment legislation**

The purpose of enacting a security of payment legislation is to help contractors and subcontractors obtain payments to which they are entitled, and without undue delays. The legislation will make it a legal obligation to make prompt payment for goods or services delivered under a contract, which cannot be overridden by private agreements in contracts.

The legislation must define an appropriate set of procedures, including the time limits for the contract parties to take actions, such as the number of days from the payment claim submission date within which the amount of payment to be made must be determined and a certificate confirming the payment amount issued; the number of days thereafter by which payment must be made; and when the party suffering from unfair payment assessment or overdue payment can initiate actions to compel payment according to provisions made in the legislation.

Disputes would have already arisen when one contract party had to rely on the provisions in a security of payment legislation to obtain payment. Therefore, the means for settling disputes over payment matters must be defined in the legislation. Since adjudicating on such matters requires expert knowledge about construction contracts and other relevant laws, the legislation must define who can act as an adjudicator and who is to pay for the adjudicating service. A source of supply of suitably qualified adjudicators must also be established to ensure adjudicating services can be sourced whenever needed. The power of the adjudicator and his decision, whether the adjudicator's decision would be final and, if not, means for appealing against the decision; and penalties for not complying with the decision must all be clearly defined.

In the security of payment legislations currently in force overseas, cross-claims and pay-when-paid or pay-if-paid practices are prohibited, and will be overturned even if such clauses appear in contracts. Some security of payment legislations apply only to written contracts (e.g. Singapore) but some others cover also contracts that are not in written form (e.g. NSW, Australia).

Banning the set-off and pay-when-paid practices will allow subcontractors to enjoy more equitable treatment, and thus should become a legal requirement, even though this will increase the risks to parties employing subcontractors. However, to main contractors who are required by contract to enter into subcontracts with nominated subcontractors, this may not be considered to be entirely fair (see discussions below).

The argument in favour of insisting the existence of written contracts is about the concern that without a written contract, it would take much time and effort to establish genuine and unambiguous contract conditions during an adjudication process, which will paralyse the function of the legislation to provide speedy settlement of payment disputes. However, considering that the contracts used by lower tier subcontractors in the local construction industry are typically not well written or may even be oral contacts, insisting in basing adjudications on written contracts will render the security of payment legislation not being able to also protect the right of lower tier subcontractors. The requirement for written contracts is one important issue that must be carefully considered in drafting the legislation.

A security of payment legislation will still fail to ensure contractors or subcontractors will be paid for the works that they have done in case the project client becomes insolvent. In this case, the suffered parties may have to institute proceedings to wind up the insolvent party. To subcontractors, they will face a similar situation if the main contractor becomes insolvent, but provisions may be made in the legislation to allow the project client to make direct payments to them.

Greater protection for creditors of an insolvent party may be provided by implementing in parallel with the security of payment legislation a compulsory insurance legislation requiring each client, contractor or subcontractor who will contract out works to take out insurance for the benefit of those to whom they let out works. This policy, however, will increase the costs of construction projects and could be abused, leading to ethical players subsidising unethical players in the industry (similar to how the Protection of Wages on Insolvency Fund is often being criticised). Furthermore, the insurance companies could face unbearable burdens should a catastrophic situation arise, where many companies become insolvent at the same time. Appropriate means for guarding against abuse of the policy must be established and the benefit and cost of the policy must be carefully evaluated, before a decision is made on whether to implement a compulsory insurance legislation.

### **5.4.3 Problems with nominated subcontracts**

A security of payment legislation will significantly increase the risk and financial burden that main contractors will have to bear due to their obligation to pay subcontractors for their works. For works that a main contractor sublets to his domestic subcontractors, it is reasonable to impose this obligation on the main contractor, as his responsibility to pay for the works of his domestic subcontractors is very much the same as the project client's responsibility to pay for his works. Furthermore, the increase in financial burden on a main

contractor will be compensated by the greater certainty in obtaining payment on time from the project client. Although payment to a main contractor is subject to evaluation by the quantity surveyor and certification by the architect while a deduction in the payment amount will be made if some of the works are found unacceptable, this is not unfair to the main contractor as he is wholly responsible for the works of his domestic subcontractors.

As to nominated subcontract works, provided the evaluation and certification of the amount to be paid for the nominated subcontract works can be completed, and payment from the client of the certified amount can be made, within the period by which time the main contractor is obligated to pay the nominated subcontractors, the main contractor will have no difficulties in fulfilling his obligation to pay the nominated subcontractors. However, in the event that payment from the project client for the nominated subcontract works is delayed, the banning of the pay-when-paid practices implies that the main contractor will have to pay the nominated subcontractor upfront while he has to request for an adjudication to force the client to pay. Should the project client becomes insolvent, the main contractor will also be liable to pay the subcontractor any amounts due to him but he may not get the money back from the insolvent client. Since nominated subcontractors are hand-picked by the client, imposing this liability on the main contractor may not be considered entirely fair and reasonable.

In the UK Construction Act, pay-when-paid clauses are made ineffective but are invoked in case of an 'up-stream' party being subject to insolvency proceedings. In the recent review of this provision (DTI, 2005), no clear conclusion could be drawn if this exception to banning pay-when-paid clauses in contracts should be removed.

## **5.5 Summary remarks**

Since the publication of the Construction Industry Review Committee's report in January 2001, institutional arrangements established in Hong Kong for enhancing work quality standard and competitiveness of the construction industry, which are relevant to subcontracting, include the establishment of a voluntary subcontractor registration scheme (VSRS) and a mandatory construction workers registration scheme (CWRS). The enactment of a security of payment legislation, however, is still pending.

The VSRS can serve to provide information about the technical and financial capacity of individual registered subcontractor companies and their job records for reference of employers of subcontractors for building works. It can also serve as a launch-pad of new initiatives for improving the professionalism and upgrading the management training of subcontractors. However, because both public and private sector clients will select tenderers for subcontract works based on their own assessments of the tenderers, the value of being a registered subcontract under the scheme is limited, except for small size subcontractors provided that contract or subcontract conditions are included to require the contractor and subcontractor to sublet their works only to registered subcontractors. The scheme, however, will have limited effect on improving quality of construction works and on reducing burdens on subcontractors in respect of retention of payment, requirement for bond and provision of warranties.

The mandatory CWRS will help provide an integrated control over the identity of workers on construction sites, keep more accurate records of workers' work hours on site, ensure workers

have had basic training on site safety measures and provide more reliable data on supply of skilled, semi-skilled and general construction workers. Its ability to enhance quality of works depends on the passing standards required for acquiring the qualifications for registration as construction workers at different skill levels but, being a mandatory scheme, such standards can only be set at levels that are not difficult to meet. Otherwise, the scheme could lead to shortage in labour supply in the construction industry and can paralyse the ability of the industry to cope with times with large increases in the volume of construction works.

Although work has been done to incorporate more equitable conditions in standard forms of contracts and nominated subcontracts (see [Chapter 4](#)), such conditions will fail to help contractors and subcontractors if they are modified or struck out from contracts and subcontracts. For ensuring that payment terms in contracts will be fair and equitable, regulatory control which cannot be overridden by terms in contracts is necessary, but little progress has been made yet on the enactment of a security of payment legislation in Hong Kong to help contractors and subcontractors obtain prompt payments. Admittedly, this is a rather complicated issue while international experience is still limited.

This chapter discussed the key issues that should be considered in the drafting of a security of payment legislation for Hong Kong, and the increased financial burden and risk to main contractors due to their obligations to make payments to subcontractors. In drafting the legislation, careful considerations should be given to whether the legislation will apply to unwritten contracts and to the situation where the project client or the main contractor becomes insolvent. Furthermore, it entails consideration to be given to whether a compulsory insurance policy needs to be implemented to ensure security of payment even in cases of insolvency of debtors.

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## 6 Partnering in Building Development Projects

### 6.1 Origin and functions of partnering

The construction industry has been criticised to be highly fragmented, with adversarial relations among the players (clients, contractors and subcontractors). Such a situation would arise as multiple, potentially conflicting interest parties are summoned through contracts to undertake works that are interdependent (Newcombe, 1996), which is the case for typical construction projects that are procured through contracting and subcontracting. As a UK study observed (NEDC, 1991):

*The adversarial relationship established by the traditional contractual framework does not stop with the completion of the project; claims and counter-claims continue often for years afterwards, exhausting the industry from energy, resources and cost respects.*

Great concern has been expressed about the frequent occurrence of conflict and disputes in the construction industries of many countries (e.g. Baker, 1990; Cowen et al, 1992; NEDC, 1991; Latham, 1994; CIRC, 2001), which have led to high direct costs (lawyers, claim consultants, management time, delays to project completions) and indirect or consequential costs (degeneration of working relationships, mistrust between participants, lack of teamwork and resultant poor standards of workmanship) (Yates and Hardcastle, 2003). The Latham Report (Latham, 1994) and later the Egan Report (Egan, 1998) advocated wider adoption of partnering in the UK construction industry, as a means to avoid (or minimise) conflict and disputes in construction projects. Similar recommendation has also been made for the construction industry of Hong Kong (CIRC, 2001). But, what is partnering? Construction Industry Institute (US) defined partnering as (Baker, 1990):

*... a long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources. This requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based upon trust, dedication to common goals, and an understanding of each other's individual expectations and values. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of quality products and services.<sup>2</sup>*

Partnering that exhibits or attempts to establish long-term commitment and sustained business relationship for long-term mutual benefits is referred to as strategic partnering. However, the primary objective of adopting a partnering approach in a construction project will be for establishing cooperative working relations among project team members for as long as the project lasts, notwithstanding that the cooperative working relation could be a continuation of partnering among the parties in a previous project and may lead to the same in a future project. Cowan et al (1992) described project partnering as:

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<sup>2</sup> See also [http://construction-institute.org/scriptcontent/more/ir102\\_2\\_more.cfm](http://construction-institute.org/scriptcontent/more/ir102_2_more.cfm)

*... a method of transforming contractual relationship into a cohesive, cooperative project team with a single set of goals and established procedures for resolving disputes in a timely and effective manner.*

Partnering is not a legally binding relationship but it involves a commitment to (Mak, 2001):

- *participate in structured, facilitated team-building sessions and joint training to acquire the skills needed to work together as a team;*
- *remove organisational impediments to open communication within the team, regardless of organisational affiliation;*
- *provide open and complete access to information (except information specifically excluded by law, regulations or ethical requirements);*
- *empower the working-level staff to resolve as many issues as possible;*
- *reach decisions by consensus as much as possible and when consensus is not possible, achieve resolution in a timely manner using an agreed-upon process for resolving disagreements;*
- *take joint responsibility for consultation with other affected agencies, groups or individuals; and*
- *take joint responsibility for maintaining and nurturing the partnering relationship.*

It is a way of managing the client/supplier relation proactively, based on:<sup>3</sup>

- *shared mutual objectives and compatible benefits;*
- *agreed problem resolution methods;*
- *shared risks according to who can best manage them; and*
- *an active search for continuous measurable improvements.*

Reportedly, partnering was pioneered and successfully implemented by the United States Army Corps of Engineers in 1988, and pilot implementations were most active in the construction industries of the US, UK and Australia (Baker, 1990; Mak, 2001; Bayliss, 2002). Although there is still a concern that there is little empirical evidence to support that partnering would be widely accepted by participants in the construction industry and would lead to cultural changes (e.g. Bresnen and Marshall, 2000; National Audit Office, 2001), it has also been observed that adoption of partnering approach is widening rapidly (e.g. Fortune and Setiawan, 2005; Wood and Ellis, 2005). More and more success stories are being reported in the literature about application of partnering overseas (e.g. Baker, 1990; Bennett and Jayes, 1995; Bennett and Jayes, 1998; Barrick, 1998; Gransberg et al, 1999; Lamont, 2001) as well as in Hong Kong (e.g. Bayliss, 2002; CII-HK, 2004).

Recently, the Construction Industry Institute, Hong Kong (CII-HK) and The Hong Kong Polytechnic University (PolyU) have jointly completed a study on project partnering practices in Hong Kong (CII-HK, 2004). The researchers presented in the final report of that

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<sup>3</sup> As in the definition of partnering stated in the Reading Construction Forum in UK, see Mak, 2001 & Bayliss, 2002.

study (Chan et al, 2004) a categorised summary of the benefits of partnering that they compiled from their extensive literature review, which include:

1. *Reduced litigation*
2. *Better cost control*
3. *Better time control*
4. *Better quality product*
5. *Efficient problem solving*
6. *Closer relationship*
7. *Enhanced communication*
8. *Continuous improvement*
9. *Potential for innovation*
10. *Lower administrative cost*
11. *Better safety performance*
12. *Increased satisfaction*
13. *Improved culture*

## **6.2 Experience of application of partnering in construction projects in Hong Kong**

Bayliss (2002) described the experience of Mass Transit Railway Corporation Ltd. (MTRC) in their debut of applying project partnering to their HK\$18 billion railway system project – the Tseung Kwan O Extension (TKE). The partnering arrangement was implemented in two stages; in the first, the partnering arrangement was for addressing primarily the relationship aspect whereas in the second, incentivisation arrangements were included in six civil and eight electrical and mechanical contracts. The incentivisation scheme included setting a target cost for each contract and a pain share/gain share arrangement whereby the savings or overrun against the target cost was shared between MTRC and the contractor in accordance with an agreed formula. The maximum risk to the contractor was also capped.

MTRC's experience with applying project partnering to the TKE project was regarded, on the whole, as a success. Even though the partnering parties, including MTRC and the contractors, had no prior experience with partnering, they achieved, up to the time of reporting, early completion of 90% or the works, a saving of HK\$1 billion and much reduced number of claims and accelerated settlement of claims compared to other projects. Nevertheless, as Bayliss (2002) remarked, the impact on the different contracts varied from being very effective and beneficial to being of limited benefit, depending on the readiness of the involved personnel to embrace the concept. The positive effect of partnering compounded on those contracts where working relationships were already cooperative, although for those not going so well, there was still a consensus that partnering had made the job better through improved relationships and reduced costs.

The CII-HK and PolyU joint research (CII-HK, 2004; Chan et al, 2004) included case studies on six construction projects where partnering was adopted. The six projects studied include two private commercial building developments, two public residential estate developments and two infrastructural developments (a station and tunnel construction project and a platform

screen doors installation project, both being MTRC projects). The research found that all the six projects adopted rather similar partnering and problem resolution processes, basically in line with the recommendations of the Latham Report (Latham, 1994).

The case studies found that all the six projects were completed on time (with the two infrastructural projects ahead of schedule by 5%), at reasonable costs and to satisfactory quality. The two infrastructural projects were more complex and involved the use of non-standard designs and construction methods while the stakeholders welcomed partnering for the more informal communication for solving problems, and thus had benefited more from partnering. The more frequent interim workshops and the presence of incentivisation agreements were believed to have contributed significantly to the success.

The benefits to the two private commercial building development projects were mainly in quality performance and professional image establishment. The benefit of partnering was found to be less noticeable for the public building works, which the researchers ascribed it to the lower flexibility in building design and working procedures due to public accountability. Furthermore, the research found that domestic sub-contractors responded more positively to partnering than nominated subcontractors, presumably due to the perceived prospect of having long-term business relationship with their main contractors.

### **6.3 Key factors of success and difficulties**

The CII-HK and PolyU joint research (CII-HK, 2004; Chan et al, 2004) pursued to identify the critical success factors for and the difficulties of partnering. The critical success factors and difficulties identified from the literature were summarised in the final report of the project, as follows:

#### ***Critical success factors for partnering:***

- 1. Adequate (and shared) resources*
- 2. Support from top management*
- 3. Mutual trust*
- 4. Long-term commitment*
- 5. Effective communication*
- 6. Efficient co-ordination*
- 7. Productive conflict resolution*

#### ***Difficulties of partnering:***

- 1. Misunderstanding of partnering concept*
- 2. Culture barrier*
- 3. Relationship problems: adversarial relationship, distrust, failure of sharing risk and over-dependency on others*
- 4. Uneven commitment*
- 5. Communication problems*
- 6. Lack of continuous improvement*
- 7. Inefficient problem solving*

8. *Insufficient efforts to keep partnering going: inadequate training, not involving key parties and lack of top management support*
9. *Discreditable relationship*

From the case studies in the same research project, the researchers concluded that the top three success factors for partnering were: (1) mutual trust; (2) early implementation of partnering process; and (3) commitment to a win-win attitude. The top three difficulties in implementing partnering were found to be: (1) dealing with large bureaucratic organisations; (2) uneven levels of commitment; and (3) commercial pressure compromising the partnering attitude.

Black et al (2000) and Ng et al (2002) cited several studies into the key elements of successful partnering and identified issues such as commitment, trust, understanding, the development of mutual goals, use of project and strategic long-term partnering, stakeholder empowerment and a willingness to share the consequences of mistakes or risks as being features of successful partnering alliances. In another study (Cheng and Li, 2001) which also aimed to determine the critical success factors for partnering in construction projects, the authors found from a questionnaire survey that top management support, mutual trust, open communication and effective co-ordination were four critical factors to the success of both strategic and project partnering; the use of facilitators in the partnering process was also critical to project partnering whereas for strategic partnering, the additional critical success factors would include long-term commitment, continuous improvement, learning climate and partnering experience. The findings of these studies as well as those of the CII-HK and PolyU joint research, as summarised above, are generally in agreement.

## **6.4 Legal issues of partnering**

While widening adoption of partnering is being advocated to allow construction projects to be delivered on time, within budget and with minimal claims, parties to a partnering arrangement should be aware of the attendant legal issues. Mak (2001) cautioned that being a non-binding arrangement initiated *ex post*, the partnering arrangement may inadvertently affect the legal relationship and allocation of risk between the owner and the contractor. Quoting Capelli<sup>4</sup>, Mak urged parties to a partnering arrangement to consider the following factors:

1. Waiver and estoppel
2. Privileged discussions
3. Confidentiality
4. Fiduciary relations
5. Good faith

Mak's article (Mak, 2001) should be consulted for more detailed discussions on these factors. Briefly, the key messages include that the parties may make representations to each other during the partnering process, which may not be consistent with the provisions of the contract but upon which they will rely. Should the process break down and disputes arise, they could

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<sup>4</sup> Cited reference: Capelli S, Australia – Construction: Partnering, Some legal issues, Hieros Gamos Comprehensive Internet Sites for the Legal Profession (<http://www.hg.org>) 1319 April-June 1994. This reference, however, could not be retrieved from the given source.

be unable to enforce their strict contractual rights because of the operation of the doctrines of waiver and estoppel. The statements they made in the course of the partnering process are not privileged and could become evidence in subsequent adversarial proceedings. The process may also lead to disclosure of confidential information. The partnering process may impose upon the parties fiduciary obligations to act in the best interests of the other parties which impinge upon their freedom to act in their own self-interest. Furthermore, there are also discrepancies between the US and the English common law systems in regard of the duty to perform a contract in good faith.

Accordingly, the parties must take care to ensure that adequate provisions are made in the partnering process to accurately record the extent to which changes to contract conditions and concessions they are prepared to accept and the duties and obligations that the parties must assume, and that representations made and information disclosed in the course of the partnering process are used only for the intended purpose, while they develop the 'single team' spirit in the partnering process.

Another article (Clayton, 2000) described a recent court case: *Thiess Contractors Pty Ltd v Placer (Granny Smith) Pty Ltd*.<sup>5</sup>, which showed that the 'moral' element in a partnering contract is subject to any specific entitlements spelt out in the contract. Thiess was the contractor of a partnering contract, which was based on a schedule of rates for work on Placer's open-cut gold mine. The schedule of rates included a margin for profit and was to be reviewed periodically. Finding that Thiess' operating costs were higher than those available from the market, Placer terminated the contract pursuant to a termination clause and Thiess commenced proceedings for repudiation. Placer counter-claimed on the basis that Thiess had falsely represented that certain plant costs, details of which it had provided to Placer, were its genuine estimates. Placer claimed they contained elements of profits, which was upheld. On appeal, the Full Court upheld the trial judge's decision.

The insight into the issues of good faith, fiduciary duty, estoppel and termination in the context of a partnering scenario provided by the appeal and trial decisions on this case were discussed in the article, which are briefly summarised below:

- The trial judge disagreed with Thiess' argument that Placer has an express duty of good faith to act reasonably when exercising its entitlement to terminate the contract, and stated that the termination clause was clear and unambiguous and therefore not affected by the duty of good faith and, further, that the express clause imposing the duty of good faith was applicable to the operation of the contract, not its termination.
- Thiess appealed and argued that Placer was estopped from relying on the termination clause because Placer had made representations that: i) the contract would be for the life of the mine; and ii) Placer could not see any situation in which it would invoke the termination clause. The Full Court, however, held that there was nothing inconsistent between these representations and the termination clause – it was clear that the representations had always been subject to the clause. The mere fact that Placer had stated that it could not see any situation in which it would invoke the clause did not mean that Placer had represented that such a situation would never arise.

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<sup>5</sup> WA Full Ct, Ipp, Steytler and Wheeler JJ, 14 April 2000.

- The contract did require the parties to act in good faith in all matters relating both to carrying out the works, derivation of rates and interpretation of the contract document whilst Thiess had acted in bad faith in relation to derivation of rates.
- Both Placer and Thiess argued that the other owed a fiduciary duty in the course of the negotiations but the trial judge rejected this on the basis that the relationship was arm's length. However, a fiduciary relation was owed by Thiess in respect of the derivation of rates throughout the term of the contract because the contract put Thiess in a position in which it was required to act in Placer's interest as well as its own. This duty was not subsumed in the duty of good faith but was separate and imposed different obligations.

The article (Clayton, 2000) concluded by expressing that the case illustrates that an obligation to act in good faith may have limited effect where the contract provides a clear and unequivocal entitlement. Partnering, while creating moral obligations, does not prevent parties from acting in self-interest in certain circumstances. The responsibilities as well as the benefits of partnering must be understood and appreciated before a partnering agreement is implemented.

Our literature review came across with yet another case<sup>6</sup> (review by Brown (2001) and cited in Wood and Ellis, 2005) where a signed partnering charter drawn up at a team building seminar agreed to “produce an exceptional quality development within the agreed time frame, at least cost, enhancing our reputation through mutual cooperation and trust”. It, however, ended up with a dispute over the existence (or not) of a concluded contract which resulted in litigation.

## **6.5 Standard form of contract with partnering**

Partnering was originally meant to be a form of ‘post-award’ risk management and was non-contractual but there is a trend to make the arrangement part of the deed between the parties (Mak, 2001). As reviewed in Section 5.1, the Association of Consulting Architects (ACA) introduced the Standard Form of Contract for Project Partnering, commonly referred to as PPC2000 (ACA, 2000), which is regarded as a step towards the alignment of contractual relationships with project relationships within construction project teams (Pryke, 2004).

The benefits of adopting PPC2000 include (see Section 5.1 and the website for promotion of PPC2000: <http://www.ppc2000.co.uk>):

- *PPC2000 offers a single contractual hub, allowing all team members to ‘contract as a team’ on identical terms.*
- *Its unique Project Partnering Agreement sets the scene for successful partnering from day one and avoids the uncertainty of ‘letters of intent’.*
- *Its Commencement Agreement confirms the readiness of the project to proceed on site.*
- *Additional members join the team by signing a Joining Agreement and specialist sub-contractors sign the back-to-back SPC2000 specialist contract for project partnering.*

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<sup>6</sup> Brice Construction Ltd. v St. David Ltd [1999] 4 BLR 194.

- *The multi-party contract replaces the many bilateral contracts that the Client would normally sign, and avoids the separate partnering agreement sometimes bolted on to the traditional contract forms.*
- *The Core Group reviews and stimulates progress, and reaches decisions by consensus.*
- *Partners give Early Warning of problems so that the Core Group can take prompt action to minimise their impact and avoid disputes.*

The CIRC Report (CIRC, 2001) also called for consideration to integrate partnering approach into a new Form of Contract for use in the Hong Kong construction industry.

## 6.6 Summary remarks

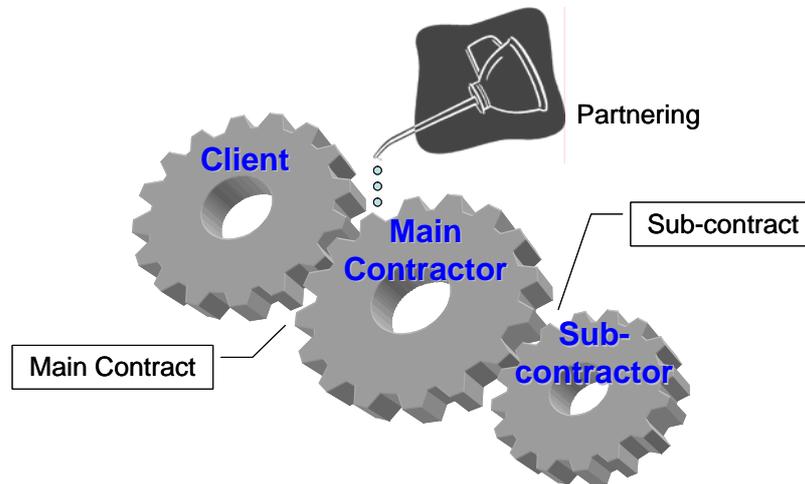
Project partnering is seen by many as an effective means to minimise conflict and disputes in construction projects, which is achievable by virtue of the agreement among the participating parties to work as a ‘single team’ toward shared objectives. Many others, however, remain sceptical. Besides concerns about the readiness and wholeheartedness of the parties to embrace and to make effort to realise the concept, and the potential of weakening in the determination of the parties to adhere to their commitments due to circumstantial changes, such as economic climate changes (Yates and Hardcastle, 2003), there are concerns about the impacts of the agreements made in the course of the partnering process on the contractual obligations and risk allocation among the parties. Even authors of reports on success stories (e.g. Bayliss, 2002; Chan et al, 2004) cautioned that partnering should not be taken as a panacea for all sorts of problems that may be encountered in construction projects. The following clauses in the conclusion part of Brown’s article (Brown, 2001) serve as an excellent reminder on the legal concern of partnering:

*... An expression of your intention to cooperate may have the undesired effect of diluting the protective certainty which you aim to achieve by including specific terms in the construction contract ... if, in the circumstances, such reliance would derogate from the spirit of the partnering agreement.*

*... If the aim is to make the partnering agreement binding, the provisions should be clear, precise and mutually enforceable ... In the hands of a court a non-binding expression of cooperation gives rise to unintended legal consequences. A party who wants to avoid duties being implied into the construction contract should go further and explicitly state in the contract that the partnering agreement has no legal effect in general and specifically that it has no legal effect on particular contractual rights. ... Whether this will be effective is unknown – but clearly a party who expresses such an intention in the contract is in a better position than one who does not. ... a partnering agreement which has no legal force is arguably a meaningless document.*

Traditional Chinese wisdom advises that “one should be mean at the onset before behaving in good faith”. Clear and fair contract terms and conditions, and good faith in contract execution remain the essential factors to contract success. With these in place, smooth execution of contracts is likely to be achievable, even without partnering, but implementing partnering on this platform has the potential to largely boost contract performance, in respect of timeliness of project completion, work quality standards and costs. However, if such essential factors

are lacking, it is unlikely that implementing partnering can help avoid conflict and disputes. Rather, when disputes arise, it may complicate the dispute resolution process, as the process will need to account for any inconsistencies between representations made by the parties during the partnering process and provisions in the contracts, and the 'moral' duty imposed by the partnering agreement.



The diagram above shows an interpretation of the function of partnering. The partnering function is paralleled to the function of a lubricant in a gear train, with the gears representing the client, the main contractor and the subcontractor, and the gear teeth the contract and the subcontract. Given each and every tooth of each pair of meshing gears is of the right size and shape, the gears will engage well while the lubricant will help reduce friction and thus lead to smooth rotation of the gear train with minimal work loss. However, if there are mismatches in the teeth geometry among the gears, when one of the defective teeth meshes in, the gear train will be stuck irrespective of whether there is lubricant.

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## 7 International Practices

Having reviewed the practices of specialist work subcontracting in the local construction industry, through survey interviews with stakeholders (see [Chapter 3](#)) and reviews of contractual practices (see [Chapter 4](#)) and related institutional arrangements (see [Chapter 5](#)), a summary of findings from a review of overseas practices is given in this chapter to allow good practices being used elsewhere to be contrast against local practices. This includes the use of partnering for which a review has been presented in [Chapter 6](#).

### 7.1 Major recent construction industry reviews in UK

Over the past 50 years, the UK government has sponsored several reviews of its construction industry, with the view to improve the way the industry is organised and the way construction work is procured ([Ashworth and Hogg, 2000](#)). The major recommendations made in the more recent ones are given in the report entitled “*Constructing the Team*” published in 1994 (often referred to as the Latham Report), and the one entitled “*Rethinking Construction*” published in 1998 (often referred to as the Egan Report). The major recommendations in these reports that are relevant to the present study are summarised below.

#### 7.1.1 The Latham Report

Commissioned in 1991, a joint review of the procurement and contractual arrangements in the UK construction industry was conducted under the leadership of Sir Michael Latham. Following the interim report “*Trust and Money*”, issued for consultation in December 1993, the final report of the review (the Latham Report), published in July 1994, set out an agenda for reforming the construction industry and made over thirty specific recommendations. A number of the main categories of the recommendations are highlighted below ([Morton, 2002](#)):

- *Government should take the lead in improving clients’ knowledge and practice, particularly of how to brief designers and select procurement methods*
- *The whole design process should be reviewed and the link between design and construction improved*
- *Building contracts should be simpler, clearer, more standardised and less likely to lead to disputes*
- *There should be simpler faster means to resolve disputes where they do occur*
- *There should be a Construction Contracts Bill, outlawing some unfair practices, the introduction of adjudication as the normal method of dispute resolution and the establishment of trust funds for payment*
- *Government should maintain lists of approved consultants and contractors for public sector work*
- *The traditional methods of tendering should be revised and improved*
- *Training and research programmes should be rationalised and improved*

- *The industry should aim for a 30% reduction in costs by the year 2000*

Whilst the recommendations in the Latham Report do not pinpoint on specialist subcontracting issues, a few key matters relevant to the current research work are highlighted in the report, including (Latham, 1994):

- *Design responsibilities in building services engineering should be clearly defined.*
- *A list of contractors and subcontractors seeking public sector work should be maintained by the Department of the Environment (DOE). It should develop into a quality register of approved firms. The proposed industry accreditation scheme for operatives should also be supported by the DOE.*
- *A joint Code of Practice for the Selection of Subcontractors should be drawn up which should include commitments to short tender lists, fair tendering procedures and teamwork on site.*

### **7.1.2 The Egan Report**

As a continuation of the Latham report, Sir John Egan chaired a Construction Task Force to produce the report “*Rethinking Construction*” in 1998. On reporting the scope for improving the quality and efficiency of UK construction, the Egan report proposed some radical changes, for which five key drivers are identified (Egan, 1998):

- *Committed leadership*
- *A focus on the consumer*
- *Integrated processes and teams*
- *A quality-driven agenda*
- *Commitment to people*

The Egan report emphasizes the importance of setting ambitious targets and effective measurement of performance in order to attain improvements of the UK construction industry. Particular targets include annual reductions of 10% in construction cost and construction time, and reduction of defects in projects by 20% per year. In addition, it was suggested that the reliance on written contracts should come to an end, while effective delivery of construction work should be built upon long term relationships or alliances throughout the supply chain on the basis of mutual interest.

Like the Latham report, the Egan report did not specifically address in-depth the problems with specialist subcontracting. However, the following excerpts from the report signify that problems with “subcontracting”, mainly arising from compartmentalisation of different construction trades or fragmentation of the construction process, are common and they need to be rectified:

- “... the extensive use of subcontracting has brought contractual relations to the fore and prevented the continuity of teams that is essential to efficient working.” (p. 11)
- “The conventional construction process ... may well minimise the risk to constructors by defining precisely, through specifications and contracts, what the next company in the process will do. Unfortunately, it is less clear that this strategy protects the clients and it often acts as an effective barrier to using the skills and knowledge of suppliers and constructors effectively in the design and planning of the projects.” (p. 22)
- “... there is not enough **multi-skilling**. The experience of other industries is that heavily compartmentalised, specialist operations detract from overall efficiency. More building techniques require fewer specialist craftsmen but more workers able to undertake a range of functions based around processes rather than trade skills.” (p. 29)

### 7.1.3 Initiatives for implementation of the Egan Report

On concluding his report, [Egan \(1998\)](#) laid down a series of initiatives, which call for commitments from major clients, the construction industry and Government. They include:

- **Demonstration Projects** – The major clients represented on the Task Force agreed to take the lead and demonstrate their own commitment to improving performance by undertaking demonstration projects to develop and illustrate the ideas of the report. The ambition was to extend the demonstration across the whole industry to make a start with at least £500 million worth of projects.
- **A Movement for Change** – The movement as a group of people who are committed to improving the delivery of their projects and the performance of their companies by applying the ideas proposed in the report was envisaged. The movement would be a network through which members could collaborate with each other in developing construction techniques and skills and exchanging ideas for increasing efficiency and quality. The body set up in 1998 for such purpose was ‘Movement for Innovation’ (known as M4I), which was linked to the ongoing ‘Best Practice Programme’ ([Morton, 2002](#)).
- **Knowledge Centre** – It was proposed to urgently set up a knowledge centre through which the whole industry and all of its clients can access to knowledge about good practices, innovations and performance of companies and projects; in particular the knowledge gained from demonstration projects.
- **Public Sector Clients** – Through Public-Private Partnerships and the Private Finance Initiatives, the Government has demonstrated its ability to make radical and successful changes in its procurement policies. The Government was recommended to commit itself to leading public sector bodies towards becoming best practice clients.
- **Occasional Clients** – While occasional and inexperienced clients may commission major projects from time to time, they are often unfamiliar with the construction process and unable to provide the environment in which the industry can meet their

*needs efficiently. It was recommended that the ideas given in the report should also be made clear to them such that performance improvements can be realised throughout the whole industry.*

- ***Branded Products*** – *It was suggested that the construction industry must develop products and brands which exceed customers' expectations and give customers confidence in the reliability and integrity of industry, in order to create supply chains for one-off clients and a single-point of contact on projects.*

The influence of the Egan report on the UK construction industry has been considerable. It catalysed, directly or indirectly, the implementation of a number of programmes, forums and task forces, as well as the publication of some important reports and guides, in pursuit of attaining the recommendations. A summary of them, given by [Constructing Excellence \(2004\)](#), is listed below:

- Movement for Innovation, 1998
- Construction Best Practice, 1998
- KPIs, 1998
- Achieving Excellence, March 1999
- The Housing Forum, 1999
- Local Government Task Force, 2000
- Respect for People, 2000
- The Clients' Charter, 2000
- PPC 2000
- 'Modernising Construction' The National Audit Office Report, January 2001
- Construction Skills Certification Scheme, June 2001
- Rethinking Construction, 2002
- A guide to project team partnering, April 2002
- Design Quality Indicators, 2002
- Accelerating Change, 2002
- Respect for People Toolkits, 2002
- Beacon Council Scheme, 2003
- ODPM Sustainable Communities Plan: building for the future, February 2003
- Building on Success, The Future Strategy for Achieving Excellence in Construction, February 2003
- Construction Industry Training Board – Sector Skills Council, September 2003
- Strategic Forum Integration Toolkit, December 2003
- Constructing Excellence, 2003

#### **7.1.4 Emergence of partnering contract forms in the UK**

One of the essential improvements recommended by [Latham \(1994\)](#) and [Egan \(1998\)](#) is to abandon reliance on written contracts where adversarial attitudes of the contracting parties often persist throughout the contract period. Instead, they advocated that more emphasis should be placed on fostering good partnered relationships between the contracting parties (see [Chapter 6](#) for more detailed discussions on this topic).

The relational theory of contract (Macneil, 1974) that emerged in the early 70's asserts that it would be more economical and thus advantageous to the contracting parties if they cooperate to work as partners on contracts. The good relationship established in a current contract would be critical to the benefit of the many prospective contracts in future. However, it appears that Macneil's theory has seldom been practised, probably because a relational relationship is by its nature hard to be verified. Regardless of such difficulty, first publication of the *Standard Form of Project Partnering Contract (PPC2000)*, the *Standard Form of Specialist Contract for Project Partnering (SPC2000)*, and more recently the *Standard Form of Contract for Term Partnering (TPC2005)* by the Association of Consulting Architects (ACA) are regarded as milestones towards the goal of achieving partnering culture in construction contracts (ACA, 2003).

All aiming to bind a partnering working relationship between the parties who enter into the contract, these standard forms of contracts contain the following features which are distinct from those other standard forms (ACA, 2000; 2003; 2005):

- *Team-based multi-party approach.* It allows multiple contracting parties to sign a single Partnering Contract. This avoids the need for several two-party professional appointments and a separate building contract and/or partnering agreement, and substantially reduces Project paperwork. Such single, integrated contract encourages a team-based commitment to the Project, and should reduce the temptation to hide behind unconnected two-party agreements.
- *Integrated Design/Supply/Construction Process.* It provides for the early selection of a Project Partnering Team and the collaborative finalisation of designs, prices and members of the supply chain. It covers the full duration of the partnering relationships, and thereby encourages the contributions of the Constructor and its sub-contractors, suppliers and sub-consultants (together "Specialists") during the key period prior to start on Site, as well as during supply and construction.
- *Egan Objectives.* The recommendations of "*Rethinking Construction*" are expressly recognised and linked to the objectives of the Partnering Team. Achievement of these objectives is measured against agreed Key Performance Indicators (KPIs).
- *Supply Chain Partnering.* It provides for finalisation of the supply chain on an open-book basis, encouraging partnering relationships with all Specialists, and includes provision for key Specialists to become full members of the Partnering Team.
- *Core Group.* The forms provide for a Core Group of key individuals representing Partnering Team members, who operate an Early Warning system for problems and who undertake regular reviews of progress and performance.
- *Controls.* The forms provide for a Partnering Timetable to govern the contributions of all Partnering Team members to partnered activities, including development of designs, prices and the supply chain, and for a Project Timetable to govern their activities after commencement on Site. Signature of the Project Partnering Agreement initiates the partnering process, with flexibility for the Constructor to undertake early work on Site under a Pre-Possession Agreement.

- *Incentives.* The forms provide for agreement of Profit, Central Office Overheads and Site Overheads, with encouragement for Partnering Team members to agree shared savings and shared added value incentives. Payments can also be linked to performance against KPIs. Value Engineering and Value Management exercises are expressly recognised.
- *Risk Management.* It provides a clear system for reducing, managing and sharing risks and for agreeing Changes openly and equitably in advance. Risk management is a duty of Partnering Team members, and there is a facility to agree the balance and sharing of risk appropriate to the contract work.
- *Non-Adversarial Problem Resolution.* It provides for a Problem-Solving Hierarchy of increasingly senior individuals within each Partnering Team member's organisation, working to strict time limits, with further reference of a problem to the Core Group. It also includes a facility for conciliation or other forms of alternative dispute resolution. These options are without prejudice to Partnering Team members' legal right to refer a dispute to adjudication.
- *Partnering Adviser.* The forms recognise the role of Partnering Adviser recommended in the Construction Industry Council Guide, an individual with relevant experience who can guide the partnering process, who can document the relationships, commitments and expectations of Partnering Team members and who can provide an additional facility for problem resolution.

However, the ACA standard contract forms differ in their application for different natures of construction work or where the contracting parties are different. In general, PPC2000 is applicable to any type of partnered project in any jurisdiction, with the support of legal or other professional advice on its implementation (ACA, 2000). But SPC2000, being wholly consistent with PPC2000, should be entered into between the Constructor and its Specialist sub-contractors, including those Specialist sub-contractors who are also signatories to the PPC2000 Agreement or a Joining Agreement (ACA, 2003); whereas TPC2005 can be used for any type of term works and services in any jurisdiction (ACA, 2005).

### 7.1.5 Specialist subcontracting in the UK

Although neither the Latham nor the Egan report had delved into the problems with specialist subcontracting, one of the many issues raised by Latham (1994) – *the important consequences of the relationships between contractors and subcontractors* was dealt with through the 1996 Housing Grants Construction and Regeneration Act (generally known as the Construction Act). There were two major provisions in the Act (Morton, 2002):

1. Section 108 of the Act (HMSO, 2005) provides a new faster and cheaper system for disputes resolution. This was to be achieved by the requirement that contracts would have to include provision for the appointment of an adjudicator who was to make a 'final' decision within 28 days.
2. By banning the 'pay-when-paid' clauses, sections 109 and 110 ensure fair contract payments from the contractor to its subcontractors through providing clear durations and dates for stage or periodic payments, except section 113 which poses conditions on payment provisions in cases of insolvency of the employer (HMSO, 2005) or other

situations as elaborated in [BSJ \(2000\)](#) where the withholding of payments to subcontractors are just.

With regard to specialist subcontracting issues, a separate research project had been conducted in the UK by the Construction Industry Research and Information Association (CIRIA). The project included a postal questionnaire survey, which attracted 83 responses out of 1,000 randomly selected ‘Specialist Trade Contractors’ (STCs) in the UK in 1992, as well as in-depth interviews with some clients, contractors, consultants, STCs and lawyers (the numbers are unavailable).

The findings of the research project were published in a review report entitled “*Specialist Trade Contracting*” ([CIRIA, 1997](#)), which offered 65 recommendations under four headings. The majority of the recommendations are largely general for “contracting” or “subcontracting” rather than specific to the focus of the current study, i.e. “specialist subcontracting”. The salient points of the report which are relevant to the latter are highlighted as follows:

- *Significant commercial and contractual issues in Specialist Trade Contracting*
  - Design warranties should be relevant and appropriate
- *The role of specialists contractors in the design process*
  - There should be clear statements of responsibility for design with, where appropriate, demarcations of responsibility, explicitly allocated through contractual terms
  - Forms of contract should be developed which adequately deal with early design input from specialist contractor’s design work
- *The STC’s role in the manufacture, delivery and supply process*
  - Innovative products should not be imported from outside the UK until research has shown how they will perform in the UK environment
  - Designers should undertake ‘buildability’ studies to ensure the effectiveness of both process and product
- *The STC’s role on building sites*
  - When assembly is particularly complex, it can be expedited by establishing a strong presence of appropriate designers on site
  - Effective work area control should be planned as part of the design and fabrication processes
  - Zoning of the work must extend into a rational commissioning policy, or to meet any section occupation requirements which enables zones to be independently tested

It can be noted from the above that dimensions other than the “design” issues, such as specialist skills of labour and installation methods for work execution, licensed workers and registered companies stipulated by law for undertaking specialist works, and prospective operation and maintenance for the completed specialist works etc. did not lie in the focus of the [CIRIA’s \(1997\)](#) report. Furthermore, the relative importance of the reviewed issues was not indicated in the report and thus the suggested recommendations were not prioritized for implementation.

## **7.2 The construction industries in North America**

### **7.2.1 Characteristics of general contracting and subcontracting**

According to census data ([US Bureau of the Census, 2004](#)), the US construction industry is characterised by a myriad of small firms and extensive subcontracting, reflecting the fragmented structure of the industry. The practice of subcontracting in construction offers several advantages, e.g. production efficiency and organisational flexibility, but it adds coordination costs. The thrust toward decreasing these costs has led firms to develop informal organisation arrangements that take advantages of the lower coordination costs of hierarchies and, at the same time, maintain most of the market's features, e.g. price competition and independence of transacting firms.

The US construction industry is market oriented, where barriers to entry is generally low in general contracting ([Oyegoke, 2001](#)). The design professional's supply chain is in the form of multidisciplinary architectural/engineering practices. Unlike the UK practice where the project cost management is carried out by quantity surveyors, there is no core of quantity surveyors or independent cost managers.

Subcontracting develops a set of stable relationships between the general contractor and special trade subcontractors, called 'quasifirm' ([Eccles, 1981](#)) which, on a project basis, takes the form of classical contracting but, as parties cooperate over the years, the same relationship takes the form of relational contracting. From the results of a recent survey of subcontracting practice by homebuilders and non-residential general contractors in US ([Costantino and Pietroforte, 2002](#)), the evidence of the quasifirm was revealed in the homebuilders with the following characteristics:

- The surveyed homebuilders are very small firms having operations with an average start of 10.4 residential units.
- Very few subcontractors are used for each category of work.
- Homebuilders and subcontractors cooperate in a highly recurrent way over long periods of time.
- There is a sizable use of labour-only subcontracting.
- Formal competitive bidding is used in only 18% of the cases; negotiated subcontracts prevail.
- High rate of subcontracting with little self-performed work.
- Higher quality, value to the owner, faster construction time, reduced overhead cost and overall construction cost are the main reasons for subcontracting.

The general contractors, operating in non-residential building construction market in US, which are medium and large firms having sales averaged US\$169 million with an average of 35 on-going projects, show characteristics different from that of the homebuilders. The findings of the survey revealed the following characteristics of the general contractors:

- A large number of subcontractors are used for each category of work.
- General contractors and subcontractors may not cooperate in a highly recurrent way; nevertheless, they entertain long-term business relations.
- No labour-only subcontracting exists.
- Various forms of negotiated subcontracts are used, depending on market conditions. There is more emphasis on creating competition among subcontractors. When a negotiated agreement is held, the choice of subcontractors was based on the best price from a qualified and proven subcontractor, or based on the lowest price after negotiation; only a small minority used competitive bidding with no questions asked.
- Very high rate of subcontracting with minimal self-performed work.
- Main reasons for subcontracting are: reduction of liability exposure, lower overhead costs, market volatility and shorter construction time.

General contractors are very sensitive to liability exposure problems. The practice of subcontracting attempts to transfer this risk to subcontractors. In this regard, the use of more “complete” contractual agreements than those used by homebuilders is expected. The surveys by [Costantino and Pietroforte \(2002\)](#) have shown that the contractual relationship between general contractors and subcontractors is strongly dependent on the type of relationship between the owner and general contractor in a given project. Negotiated contracts with the owner foster a type of business relationship with subcontractors similar to the quasifirm.

## 7.2.2 Project delivery systems for building construction

According to the Associated General Contractors of America, the basic project delivery systems for building construction can be classified as lump sum, cost-plus a fee with or without a guaranteed maximum price, design-build, design-bid-build and construction management, with many variation and modification of these forms ([Dorsey 1997](#), [Konchar and Sanvido 1998](#)).

The construction management contracting system was developed in the 1970s in response to owners’ requests for improved construction industry performance, and is better for projects which take longer time to complete and are technically complex involving diverse technologies and subsystems. In the US, construction management as a project delivery system is practised in two general forms, namely fee-based and at-risk. For the success of any construction contracts the risks must be acknowledged and clearly allocated between project stakeholders. Risk distribution varies in the US practice between the fee-based and the at-risk construction management system, depending on who holds the contracts and whether the construction manager is acting as a constructor during the construction phase ([Oyegoke, 2001](#)).

The primary objectives of every general contractor and subcontractor are to successfully deliver to the owner the specified project safely, on time, at the contract price and achieve a reasonable profit in return for performance of its work. No general contractor can deliver a project successfully without the cooperation of competent subcontractors and each general

contractor and subcontractor on a project should be regarded with equal respect. To address this need and concern of the construction industry, a set of Guidelines for a Successful Construction Project was developed with the joint efforts and approval of the Associated General Contractors of America, the American Subcontractors Association and the Associated Specialty Contractors, and was issued in 2003. In particular, it provides suggestions for mutually profitable and ethical general contractor-subcontractor relations.

### 7.2.3 Construction surety bond

The construction surety bond has become essential in today's construction, in the US as well as elsewhere. This is mainly due to construction industry complexity and high expectancy on contract performances of contractors. A surety bond is an agreement under which one party (the surety) guarantees to another, the owner (obligee), that a third party, the contractor (the principal) will perform a contract in accord with the contract documents.

In North American contracts, the surety has the following alternatives available to bond obligations when a contractor defaults:

- Completion by the surety itself.
- Secure another contractor to complete the balance portion.
- Finance the default contractor to finish the project.
- Completion by owner after the surety has paid the bond amount.

The differences between North American and international bonding procedures can be summarised as follows ([Ruwanpura and Ariaratnam, 1999](#)):

- In North America, the main objective of the surety is to guarantee that the construction project is completed. If the contractor fails to fulfil obligations, the surety must arrange for project completion. This is an “*obligatory*” type of bonding. In international contracts, all the bonds are of the *forfeiture* type. If the contractor fails to complete the obligations, the bonds are forfeited and the owner can claim the bond amount as damages or losses.
- There are noticeable differences in bond amounts as a result of the differentiation between the *obligatory* and the *forfeiture* types of bonding. Percentages in North American contracts are typically 5-10 times higher than those of international contracts.
- The surety's obligations are greater in North America as they carry full obligation to finish the project if the contractor defaults.
- Most international contracts issue “letters of credit”, where the issuing banks consider these as extending the line of credit.

## 7.2.4 ISO 9000 certification in the US construction industry

The construction industry in the US has generally lagged behind other industries and other countries in the implementation of ISO 9000 standards (Chini and Valdez, 2003). Following the 1994 revisions scheme, ISO 9001 and 9002 can be applied to construction-related firms. However, few construction firms in the US have adapted these standards to their management systems. According to the “ISO 9000 Registered Directory for North America” published in 2000, there are 18 building construction firms certified for ISO 9000. These firms ranked obtaining a competitive edge for US markets as their most important reason, followed by obtaining improvement in the company’s quality management system. Many more firms argue that they have internal quality system in place and choose not to pursue ISO 9000 certification, and are unwilling to go through the burden of cost and duration of the certification process.

## 7.3 The construction industry of Australia

### 7.3.1 Australian construction industry pre-qualification criteria

In Australia, the Construction Industry Development Agency (CIDA) has developed the Australian Construction Industry Pre-qualification Criteria to provide the clients, contractors, consultants and subcontractors with a consistent and objective framework to determine which companies will pre-qualify for work or register for particular projects. The criteria adopt the percept of quality management: that the heart of improved efficiency and effectiveness of industry is the efficacy of management systems, adopting Best Practice processes as the key to meeting the standards of an internationally competitive industry. The criteria are integrated with a number of other management tools including the Project Initiation Best Practice Guide, the Contracts Users’ Guide, the Building Best Practice in the Construction Industry manual, and the Creating Productive Partnerships guide. The Pre-qualification Criteria are:

- *client focused*, giving clients criteria to judge the capacity of companies to complete proposed projects in terms of time, cost and quality.
- *data driven*, providing information to bring greater objectivity into the decision making process.
- *system based*, calling for evidence of management systems rather than relying on rigid standards or fixed ratios.
- *continuously improving*, encouraging self assessment and objective setting, based on attaining world best practice.

For clients, with full implementation since 1995, the Pre-qualification Criteria will provide reliable and objective assessment of the capacity of an organisation to complete work required; and optimise the predictability of project outcomes including time, cost and quality. The Clients and their consultants must make a greater effort to ensure full and proper definition of the project.

There are three documents published as Interim Australian Standards setting out the obligations of clients as well as those of tenders and consultants in the tendering and procurement process, namely the Code of Tendering, Code of Ethics and Procedures for the Selection of Consultants, and General Conditions for Engagement of consultants. Clients have an obligation to arrange the project funding before commencing the tendering process, and should notify their contractors of adverse changes in their financial positions.

In accordance with the Australian Construction Industry Pre-qualification Criteria, clients are required to work in partnership with their contractors to ensure the quality assurance requirements, and to specify clearly and unambiguously the qualities of the installations and services it wishes to acquire. To assure time performance of the contract, the client should ensure factors they control, including adoption of fair and reasonable contract conditions that are equitable to all parties; complete and accurate design documentation; clear and precise definitions of the scope of work; realistic contract duration; speedy resolution of technical and commercial questions; and administration of the contract in a fair and reasonable manner to reflect the goodwill of all parties.

The client has a duty to act reasonably in relation to the allocation of risk and in settlement of claims. Contractors and their subcontractors should not be forced to accept risk which is unreasonable or beyond their control to manage. The client should conduct themselves in a manner likely to avoid the losses that arise if the client provides inadequate documentation of the project; substantially amends the scope of work during the tender period; writes discretionary terms in specifications; fails to act in a timely manner; and supplies late or defective customer supplied product.

For contractors, subcontractors and consultants the Australian Construction Industry Pre-qualification Criteria will provide a consistent basis upon which to tender or negotiate for work; recognize excellent performance and reward those organisations which strive for world class performance; and provide the basis for marketing their abilities measured against an objective framework.

Companies are required to comply with the Pre-qualification Criteria to be eligible to tender on projects in the following circumstances:

- For contractors: tender value in excess of AUD 5m.
- For subcontractors: where the subcontract value is in excess of \$750,000 and the total project cost is in excess of \$5m.
- For consultants: where the value of consultancy is in excess of \$250,000.

The pre-qualification criteria for contractors and subcontractors include both mandatory items and additional items. The latter are at the discretion of the client, in relation to the contractors' claimed performance in the past years and their involvement in disputes, arbitration and litigation, and the contractors' record of any convictions as a result of non-compliance of legislative requirements. The mandatory criteria are:

- *Assessment of technical capacity.* The purpose is to enable the company to demonstrate it has the technical capacity to perform the work for which it is seeking pre-qualification or registration for specific projects.

- *Financial capacity.* The purpose is to enable the client to reach an informed opinion regarding the overall financial position and capacity of a company. The company will be required to be externally audited to comply with this Criterion. Where subcontracts exceed \$750,000, it is the responsibility of the general contractor to satisfy the client that subcontractors comply with the criterion, prior to the award of the subcontract. Subcontractors can comply with this obligation by supplying the general contractor with their most recent externally audited return or by in-confidence communication between the head contractor and subcontractor respective auditors.
- *Quality assurance.* The key elements of this criterion focus on the extent of documentation and implementation of a quality system to Australian Quality Standards. The company is required to achieve third party certification, which is the process of assessment of a company's quality system by an independent organisation to the requirements of the Joint Accreditation Scheme – Australia and New Zealand.
- *Time performance.* This criterion is to enable the client to assess the company's ability to manage and deliver projects within the specified time. The company is required to produce evidence of its track record in time management, and is expected to adopt appropriate time management techniques including regular reviews, forecasting, recording and controlling of necessary resources. Contracts exceeding AUD\$5m, or subcontracts exceeding \$750,000 are expected to adopt critical path analysis linking to resources planning.
- *Occupation health and safety.* The purpose is to encourage employers to establish and maintain effective systems to manage the risks to the health and safety of their employees. The contractor is required to have a documented occupational health and safety management system, provision for self-assessment of the performance of the system, and verification of the system's performance by third party audit.
- *Human resources management.* This criterion is concerned with industrial relations, employee involvement, job satisfaction, productivity and workplace culture. The purpose is to encourage best human resource management and industrial relations practice as a means of minimising industrial disputation and maximising workforce productivity.
- *Skill formation.* The purpose of this criterion is to ensure that the skill levels in the construction industry are continuously improved. The company must demonstrate that it meets its statutory obligations in relation to training and produce evidence of a skill formation policy and strategy. Skill formation includes all industry specific training and management/professional development.

### **7.3.2 Partnering in the Australian construction industry**

Partnering was taken as an important component of the Building and Construction Industry Reform Strategy which was formulated by the Australian Government in 1991. Numerous initiatives were put forward in an effort to define a new strategy for improving productivity of the NSW building industry (Gyles, 1992). The key element in the strategy was partnering. As a result of these initiatives, most government agencies and some private clients across Australia expressed a firm commitment to partnering.

The NSW Public Works Department moved rapidly towards putting partnering into practice. It has been using partnering since 1992 on a variety of projects such as hospital, schools, universities and civil projects (Uher, 1994). However, despite the completion of many partnering projects, it is unclear how well or poorly these projects have performed. The lack of standard performance evaluation parameters prevented the accurate measurement of partnering performance. One of the most successful projects was the Nepean Hospital which won the prestigious National Partnering Award in 1994.

The implementation of partnering in Australia closely followed the US experience. Success of partnering in the USA was underpinned by the use of performance bonds and 'good faith'. In the absence of these concepts in Australia, construction lawyers warned of the risk of disputes arising from the breakdown of partnering agreements but had so far been unable to agree on the most acceptable and workable remedy. A solution offered to this problem (Daveport, 1994) was to promote the concept of fairness and equity for determining disputes arising from breakdowns in partnering agreements.

### 7.3.3 Other contracting practices in Australia

Competitive tendering and contracting has been widely used in both the private and the public sectors in outsourcing or contracting out delivery of services traditionally produced in-house within an organisation. There has been a sharp increase in its use in the 1990s, particularly in the public sector (Industry Commission, Commonwealth of Australia, 1996). Services and activities most commonly contracted include cleaning, construction, maintenance and technical services.

In 1994 the Government of Victoria (Australia) legislated for compulsory competitive tendering in all local councils within the state. The results of a survey on this practice (Domberger and Rimmer, 1994) suggested that the introduction of competitive tendering and contracting had yield significant benefits in the provision of public services. The effect of competition on costs and prices was unambiguous and the evidence indicated that substantial savings were typically achieved in the order of 20%, but the evidence on quality was not clear. This uncertainty of quality in outsourcing, when the operation of buildings for health, safety and energy conservation and maintenance of the building services are involved, clearly points to the need of detailed provisions for building operation and maintenance in the design and installation phase.

In another survey in Australia on the factors preventing organisations from implementing risk management (Lyons and Skitmore, 2004), the results showed no dominant reason for it. All factors rated a moderate response with 'lack of time' relatively the highest and 'cost effectiveness' rated the lowest. Among the risk response practices, the survey found a preference for 'contingencies' and 'contractual transfer' over 'insurance'. This contrasted with Akintoye and MacLeod (1997) who found that project managers resorted to 'professional indemnity insurance' to transfer risks, and contractors transferred risks to their domestic and specialist sub-contractors through 'insurance premiums'.

## **7.4 The construction industry of Singapore**

### **7.4.1 The general concern**

[Lim and Alum \(1995\)](#) reported ten years ago that there was a boom in construction work in Singapore due to an unexpected high demand for private residential properties, an increase in public-sector projects, including housing and infrastructural projects, and developers rushing to bring their commercial projects on stream. However, Singapore's construction industry was perceived as a low-productivity sector ([CIBD, 1992](#)). Concluded from their survey study, [Lim and Alum \(1995\)](#) pointed out that the low productivity of the Singaporean construction industry was due to a shortage of suitably trained skilled workers and supervisors, a large unskilled foreign workforce and a weakening local workforce base. To address these issues, they recommended greater use of automated construction processes, enhancing buildability ([CIRIA, 1983](#)) through standardisation and prefabrication, and enhancing training and upgrading management and technical skills of supervisory staff.

### **7.4.2 Legislative control over buildability of design**

With the objectives to reduce the number of workers on site and to achieve better site productivity through adopting more labour efficient designs and pre-assembled products, regulatory control is in force in Singapore since 1 January 2001 on the buildability of building designs. The control is imposed through the Building Control Act, augmented by a Code of Practice (COP), which requires building designs to have a buildability score, to be determined according to the method as stipulated in the COP, that meets the minimum score stipulated in the same COP. Calculation of the buildability score is based on a set of Labour Saving Indices for various types of structural, wall and other building elements, and the extent to which such elements are used in a building. The latest version of COP on Buildable Design was published in January 2004 ([BCA, 2004a](#)).

### **7.4.3 Performance-based building regulations**

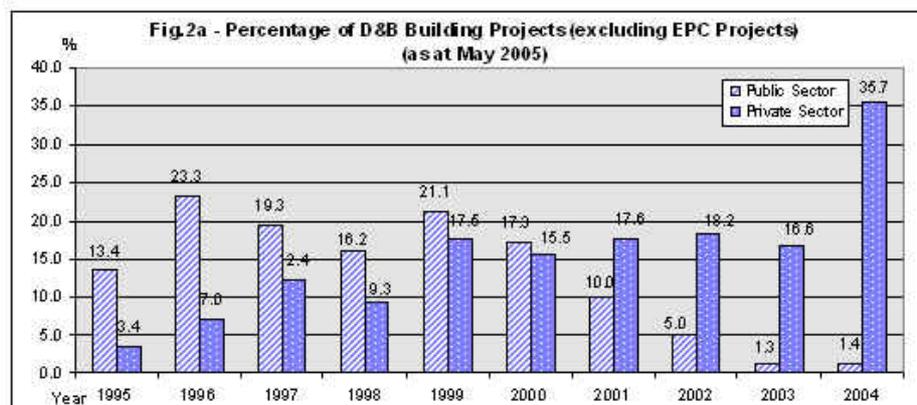
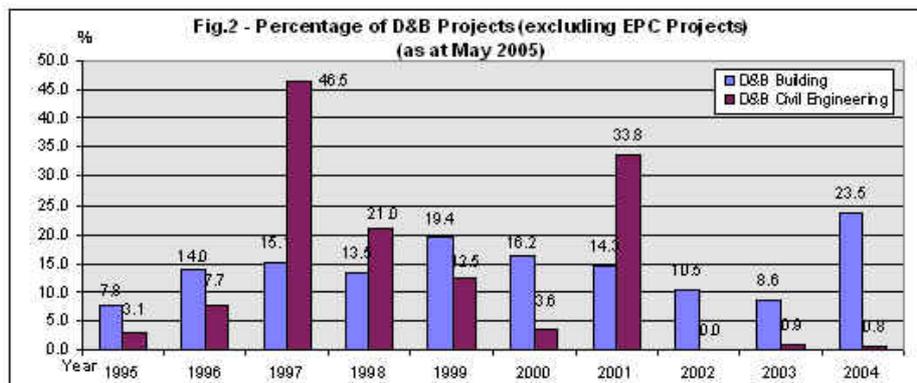
To allow design flexibility and innovation, an alternative, performance-based approach may be adopted to demonstrate compliance of a building design with the Building Control Regulations of Singapore. The Building and Construction Authority (BCA) sets out the basis for the performance-based compliance route in the "Approved Document – Acceptable Solutions" ([BCA, 2004b](#)). The Approved Document covers structural designs and construction, headroom and ceiling height, barrier-free accessibility, staircases, lighting, ventilation, safety from falling, energy efficiency, roof, lifts and escalators, lightning protection and safety of windows. The Acceptable Solutions are deemed to be in compliance with the prescribed objectives and performance while alternative solutions that differ completely or partially from the respective Acceptable Solutions are deemed as acceptable provided that they meet the prescribed objectives and performance.

## 7.4.4 Contractors registry

BCA of Singapore also administers a Contractors Registry to serve the procurement needs of government departments, statutory bodies and other public sector organisations. There are six major groups of registration heads, namely Construction Workheads (CW), Construction Related (CR) Workheads, Mechanical & Electrical (ME) Workheads, Maintenance (MW), Supply (SY) Workheads and Regulatory Workheads (RW). There are 7 financial grades for CW, 6 financial grades for CR, ME, MW, SY and no grading for CR03 (Demolition) and RW01 (Window Contractors). The requirements for registration against which applicants for inclusion in the registry will be assessed include: Track Record and Performance, Financial Capacity, Personnel Resources, and Company Status with the Accounting & Corporate Regulatory Authority (ACRA) (BCA, 2005a). However, unlike public sector projects, it is not a requirement for the private sector to use only registered contractors.

## 7.4.5 Design and build procurement

BCA provides in their website (<http://www.bca.gov.sg>) statistics of engineering and construction projects procured through the design-build (DB) procurement method in Singapore in the past ten years. As shown in the following figures obtained from this source, the overall percentage of DB construction works varied from year to year without an apparent patent but in recent years, the trends of adopting DB contracts for public and private sector projects started to diverge, with a declining trend for public sector projects but an increasing trend for private sector projects.



Studies have been conducted by Singaporean researchers into the performance of DB projects (Ling, 2004; Ling et al, 2004). The studies concluded that DB contractor has to be selected with care, to ensure the DB contractor has adequate staffing level, appropriate plant and equipment, good financial management, excellent quality control and superior technical and design capabilities. For project success, there should be minimum design completion and design decisions made when tenders are invited while the contractor should be allowed to prepare as much design as possible. This may explain why there has been a decline in DB contracts in public sector projects as there would be more procedural requirements to be observed by the contractor and more stringent scrutiny on his performance in public sector projects than in public sector projects.

#### **7.4.6 Security of payment act**

A Building and Construction Industry Security of Payment Act (2004) has been enacted in Singapore, which has come into operation in April 2005. The key provisions under this Act (with details omitted) include:

1. Any person who has carried out any construction work, or supplied any goods or services, under a contract is entitled to a progress payment.
2. The amount of a progress payment to which a person is entitled under a contract shall be the amount calculated in accordance with the terms of the contract; or if the contract does not contain such provision, the amount calculated on the basis of the value of the construction work carried out, or the goods or services supplied, by the person under the contract.
3. Where a construction contract provides for the date on which a progress payment becomes due and payable, the progress payment becomes due and payable on the date as specified in or determined in accordance with the terms of the contract; or the date immediately upon the expiry of 35 days after a date to be determined according to the relevant provisions in the Act.
4. Where a construction contract does not provide for the date on which a progress payment becomes due and payable, the progress payment becomes due and payable immediately upon the expiry of 14 days after a date to be determined according to the relevant provisions in the Act.
5. The interest payable on the unpaid amount of a progress payment that has become due and payable shall be at the rate specified in or determined in accordance with the terms of the contract; or where the contract does not contain such provision, shall be at the rate prescribed in respect of judgment debts under the Supreme Court of Judicature Act (Cap. 322).
6. A pay-when-paid provision of a contract is unenforceable and has no effect in relation to any payment for construction work carried out or undertaken to be carried out, or for goods or services supplied or undertaken to be supplied, under the contract.
7. A respondent named in a payment claim served in relation to a construction contract shall respond to the payment claim by providing, or causing to be provided, a

payment response to the claimant by the date as specified in or determined in accordance with the terms of the construction contract, or within 21 days after the payment claim is served, whichever is the earlier; or where the construction contract does not contain such provision, within 7 days after the payment claim is served.

8. If a claimant fails to receive payment by the due date of the response amount which he has accepted; or where the claimant disputes a payment response provided by the respondent; or the respondent fails to provide a payment response to the claimant by the date or within the allowed period, the claimant is entitled to make an adjudication application in relation to the relevant payment claim.
9. An adjudication application shall not be made unless the claimant has, by notice in writing containing the prescribed particulars, notified the respondent of his intention to apply for adjudication of the payment claim dispute.
10. The authorised nominating body shall, upon receipt of an adjudication application, refer the adjudication application to a person who is on the register of adjudicators and shall, within 7 days after receipt of the adjudication application, serve a notice in writing confirming the appointment of an adjudicator on the claimant, the respondent, the principal (if known) and the owner concerned.
11. A respondent shall, within 7 days after receipt of a copy of an adjudication application lodge with the authorised nominating body a response to the adjudication application.
12. An adjudicator shall determine: (a) the adjudicated amount (if any) to be paid by the respondent to the claimant; (b) the date on which the adjudicated amount is payable; (c) the interest payable on the adjudicated amount; and (d) the proportion of the costs of the adjudication payable by each party to the adjudication, and shall include, in the determination, the reasons.
13. An adjudication determination shall be binding on the parties to the adjudication unless or until: (a) leave of the court to enforce the adjudication determination is refused; (b) the dispute is finally determined by a court or tribunal or at any other dispute resolution proceeding; or (c) the dispute is settled by agreement of the parties.
14. Where a respondent fails to pay the whole or any part of the adjudicated amount to a claimant, the claimant may: (a) serve a notice in writing on the respondent of the claimant's intention to exercise a lien on goods supplied by the claimant to the respondent under the contract concerned that are unfixed and which have not been paid for; (b) serve a notice in writing on the respondent of the claimant's intention to suspend carrying out construction work or supplying goods or services under the contract concerned; and may apply for and enforce the adjudication determination as if it were a judgment debt.
15. Where a respondent fails to pay the whole or any part of the adjudicated amount to a claimant, the principal of the respondent may make payment of the amount outstanding, or any part thereof.

Note that the Act shall apply only to contract that is made in writing and makes no provision for the case where the upstream party becomes insolvent.

### **7.4.7 General conditions of contract for public works**

BCA makes available in their website (<http://www.bca.gov.sg>) the Public Sector Standard Condition of Contract (PSSCOC), which includes the following versions:

1. PSSCOC for Construction Works 2005 (4<sup>th</sup> Ed., Mar. 2005)
2. PSSCOC for Design and Build 2005 (3<sup>rd</sup> Ed., Mar. 2005)
3. Standard Conditions of Nominated Sub-Contract 2005 (4<sup>th</sup> Ed., Mar. 2005)

For each version of PSSCOC, a List of Amendments (to the last version) and a Supplement document are also provided. The PSSCOC was developed to enable a common contract form to be used in all public sector construction projects, which helps allow familiarity among users, reduce tendering efforts and promote greater efficiency in contract administration, especially to industry practitioners who are interested to tender for public sector construction projects. The Supplement document comprises a collection of documents relevant to the contract or subcontract, including an Appendix to the PSSCOC, a Form of Tender, an Agreement and a Performance Guarantee. For the version for nominated subcontracts, there is additionally a Subcontract Letter of Acceptance.

The PSSCOC for Construction Works, first published in 1995, had undergone several reviews. The second and third editions were launched in July 1999 and January 2004 respectively. The PSSCOC for Construction Works was reviewed in November 2004 to be in line with the Building and Construction Industry Security of Payment Act. The current version is the PSSCOC for Construction Works (Fourth edition March 2005). The PSSCOC for Design and Build was launched in May 2001. The current version is the PSSCOC for D&B (Third edition March 2005).

For projects where the sub-contract is nominated, the Standard Conditions of Nominated Sub-Contract (NSC) is to be used in conjunction with the PSSCOC for Construction Works. The NSC, also first published in 1995, had undergone several reviews. The current version is the NSC (Fourth edition March 2005), in which the requirements of the Building and Construction Industry Security of Payment Act have been incorporated. According to the latest version of the NSC:

- The contractor shall within 14 days of receipt of the subcontractor's payment claim issue a notification to the subcontractor (referred to as the Payment Response), notifying the amounts (referred to as the Response Amount) to which the subcontractor is entitled.
- The contractor shall substantiate with reasons in this Payment Response if the Response Amount is less than the claimed amount or if payments are withheld.
- With conditions for Goods and Services Tax Act aside, the contractor is basically required to pay the subcontractor the Response Amount within 28 days of the subcontract's receipt of the Payment Response.

- The subcontractor is entitled to interest should the contractor fails to make payment within the times stipulated.
- In the event of dispute, the subcontractor is entitled to make an adjudication application in accordance with the Building and Construction Industry Security of Payment Act.

Note that no mention is given about the involvement of the Superintending Officer (equivalent to the Architect in the Standard Form of Contract in Hong Kong) in certification of payment for the subcontractor. Apparently, the contractor is now required to shoulder this responsibility and will have to apply deductions or set-offs to payments due to the subcontractor should his own payment claims, which include the subcontractor's works, be deducted due to unsatisfactory works of the subcontractor.

## **7.5 Overseas procurement practices**

In this study, an attempt has been made to find out the common practices employed in overseas construction industries for procurement of building and specialist works but little directly relevant information could be found from the open literature. Nevertheless, nothing that is drastically different from the local practices had been observed, including in the literature reviews conducted on various other topics during the course of this study. The following presents a brief summary of the information gathered in the literature search.

### **7.5.1 General practices**

Generally, project clients obtain services from professional consultants on architectural, structural and electrical and mechanical system designs, contract document preparation, tendering and tender assessments and supervision of works, and to deal with matters that are subject to regulatory control. A single agent may provide in-house, or through outsourcing, all the professional services that the project client needs, or the client may select different members to form a consultant team to provide the services (see e.g. [AIA, 2000](#)). However, engagement of quantity surveyors in building construction projects is not a conventional practice in the North America ([Ashworth and Hogg K, 2000](#)). Subcontracting is widely used in building projects, especially for specialist works (see review in [Chapter 2](#)) while various forms of subcontracts are in use ([Uher, 1991](#)).

### **7.5.2 Classification of work trades**

The subdivision of building and building related works and building services works into specific work trades in Hong Kong are rather similar to the practices elsewhere. This is to be expected as it is technology and product driven while the technologies and products are generally not geographically specific. For example, the classifications of work trades in building, building related and mechanical and electrical works in Singapore are shown [Tables 7.1 to 7.3](#), which are extracts from the Contractors Registry of Singapore.

<b>Workhead</b>	<b>Title</b>	<b>Description</b>
CW01	General Building	All types of building works in connection with any structure, being built or to be built, for the support, shelter and enclosure of persons, animals, chattels or movable property of any kind, requiring in its construction the use of more than two unrelated building trades and crafts. Such structure includes the construction of multi-storey carparks, buildings for parks and playgrounds and other recreational works, industrial plants, and utility plants. Scope of work includes the addition and alteration works on buildings involving structural changes and installation of roofs (firms which undertake waterproofing work should register under CR13).
CW02	Civil Engineering	(a) Works involving concrete, masonry and steel in bridges, sewers, culverts, reservoirs, retaining walls, canals, drainage systems, underground structures, cutting and filling of embankment, river banks, excavation of deep trenches, scraping of sub-soil, surface drainage works, flexible pavement, rigid pavement or laterite roads, bus bays, open carparks and related works such as kerbs and footways. (b) Works involving dredging in canal, river and offshore for the purpose of deepening and extraction of mineral or construction material. It also includes reclamation works. (c) Works involving marine piling and the construction of marine structures such as jetties, wharves, sea and river walls. The head does not cover the construction and fabrication of marine crafts, pontoons and oilrigs or any floating platform.

**Table 7.1** Workhead classification and description (Building works) in Singapore

<b>Workhead</b>	<b>Title</b>	<b>Description</b>
CR01	Minor Construction Works	Minor building and civil engineering works that are not governed by the Building Control Act. Examples include drainage, minor road work, minor A&A, formwork and reinforcements, bricklaying, etc.
CR02	Corrosion Protection	Corrosion protection work on metal surfaces and structures. Includes processes such as cathodic, anodic, and electrolytic protection.
CR03	Demolition	This head covers all general demolition works. Since no financial grade is given to this registration head, applicants must meet the L1 requirements and complete at least ONE demolition project as a prerequisite for registration.
CR04	Fencing & Ironworks	Erection of perimeter fences and gates.
CR05	Concrete Repairs	This head covers the reinforcement of structures and joints through the use of cement-sand-mortar mix or the injection of slurry into joints and cracks in concrete structures and the application of spraying of cement-sand mortar onto surfaces of reinforced concrete works.
CR06	Interior Decoration & Finishing Works	Interior design, planning and the decoration of buildings. This includes ceiling panels, partitions, built-in fitments, raised floor works, plastering and tiling.
CR07	Cable/Pipe Laying & Road Reinstatement	Installation of underground cables/pipes and the subsequent reinstatement of roads and other surfaces. Firms specializing in supplying the cables should register under SY05. Firms specialized in supplying pipes should register under SY12.
CR08	Piling	Installation of all heavy sheet piles, driven precast reinforced and prestressed concrete piles, bored cast-in-situ piles, and timber piles. Applicants applying for L6 must own at least 4 piling rigs and executed a piling project of at least \$3million on its own.
CR09	Repairs & Redecoration	Repainting and minor non-structural repair of buildings and existing structures. These works should not include addition & alteration works involving structural changes.
CR10	Precast Concrete Products	Supply and installation of precast concrete products including slabs, panels and beams. Firms must possess permanent fabrication facilities or yards in Singapore to fabricate precast concrete products and must have the factory licence from Ministry of Manpower.
CR11	Signcraft Installation	Planning and installation of an integrated signposting system for complexes, airports, shopping centres. It includes the setting up of exhibition stands and signs along roads.
CR12	Soil Investigation & Stabilization	Services involving sampling, investigation and testing services to determine soil classification, strength and composition. It also includes soil stabilization works such as micro piling, ground anchoring, sand drain and ground grouting.
CR13	Waterproofing Installation	Waterproofing of basements, roofs and walls. Firms which undertake only roofing works should register under CW01.
CR14	Asphalt Works & Road Marking	Supply and laying of asphalt, marking and painting of roads. Applicants are required to have asphalt plant, vibratory roller and bituminous pavers.
CR16	Curtain Walls, Windows & Doors	Supply and installation of curtain walls, windows, louvres, glass, ironmongery, sliding and folding doors.

**Table 7.2** Workhead classification and description (Building related works) in Singapore

<b>Workhead</b>	<b>Title</b>	<b>Description</b>
ME01	Air-conditioning, Refrigeration & Ventilation Works	The installation, commissioning, maintenance and repairs of air-conditioning, refrigeration, cold rooms, and ventilation systems.
ME02	Building Automation, Industrial & Process Control Systems	Installation and maintenance of microprocessor or computer based building control systems (e.g. integrated environmental control, fire and security computer control system), industrial process control systems. Firms involved in supply of control instruments and equipment should register themselves under SY05.
ME04	Communication & Security Systems	(a) Installation and maintenance of communications system (e.g. intercom & wireless radio) and security systems (e.g. CCTV, security alarm, car park security control and card access system). (b) Installation and maintenance of Central Antenna Television (CATV) systems.
ME05	Electrical Engineering	The installation, testing, commissioning, maintenance and repair of electrical based systems such as switchgears, transformers and large generators. It also includes the electrical installations in building and marine vessels. Applicants must employ a full-time employee who has a valid electrical licence. Firms, which are suppliers of electrical equipment or materials, should register under the relevant supply heads.
ME06	Fire Prevention & Protection Systems	Installation and maintenance of fire alarm, prevention and protection systems. This head may include the supply of fire extinguishers and fire hoses if these items are part and parcel of the system installation or maintenance contract. Supplier of fire extinguishers and fire hoses should register under the relevant Expenditure & Procurement Policies Unit (EPPU) head.
ME07	High & Low Tension Overhead Line Installation	(a) Installation and maintenance of low and high-tension overhead cables. (b) Installation of poles for overhead cable and street lighting.
ME08	Internal Telephone Wiring for Telecommunications	Wiring work within a building for telecommunications purposes. Applicants must possess a valid IDA telecommunication wiring contractor's licence.
ME09	Lift & Escalator Installation	This covers the installation, commissioning and maintenance of lifts, escalators and travellers.
ME10	Line Plant Cabling/Wiring for Telecommunications	Laying of underground telecommunication cables.
ME11	Mechanical Engineering	The installation, commissioning, maintenance and repair of mechanical plant, machinery and systems. It includes the installation and maintenance of power generation and turbine systems. Firms which only supply the hardware should register under the relevant supply heads.
ME12	Plumbing & Sanitary Works	Installation, repairs and servicing of water and gas pipes, sanitary works and plumbing fixtures. Applicants must possess a valid PUB Water Service Plumber Licence, EMA Gas Service Worker Licence or SPS Plumber Licence.
ME13	Traffic Light Systems	Installation and maintenance of traffic light systems.
ME14	Underground Pipeline for Telecommunications	Laying of underground pipes for the purpose of telecommunications only.
ME15	Integrated Building Services	The installation, commissioning, maintenance and repairs of building services, which include some or all of the following: ME01, ME02, ME04, ME05, ME06, ME08, ME11, and ME12. ( <i>please refer to the registration requisites in Appendix B, Table B3</i> )

**Table 7.3** Workhead classification and description (Mechanical and electrical works) in Singapore

### 7.5.3 Contract form

The report of [Hughes et al. \(1997\)](#) was the only source of information that could be found in the open literature, which dealt specifically with the practices of procuring specialist works for building constructions. The study was based on a questionnaire survey of UK specialist and trade contractors where 16%, 22% and 61% of them specialised respectively in civil engineering (e.g. piling, ground work), services engineering (mechanical and electrical services) and building work (e.g. structural steelwork, curtain walling).

[Table 7.4](#) summarises the incidence of different combinations of standard forms used for procuring specialist works. However, it is difficult to identify from the information given in the table which contract form is the dominant one, except that the prevalent combination is domestic subcontract (DOM/1), used in conjunction with the JCT80 standard form of contract, which involved also the use of collateral warranty ([Hughes et al., 1997](#)).

Sub-Contract	Main-Contract	Collateral Warranty	Frequency (%)	Value (%)
DOM/1	JCT80	Dev Own	13.1	23.1
DOM/1	JCT80	Other	9.2	5.6
DOM/1	JCT80	None	11.2	3.1
DOM/1	JCT81+	Various	2.5	1.5
DOM/1	Total use		36.6	33.5
NSC/4	JCT80	Dev Own	2.3	0.6
NSC/4	JCT80	Other	3.9	6.8
NSC/4	JCT80	None	3.5	0.5
NSC/4	Total use		10.5	8.1
NAM/SC	JCT80		2.3	1.3
NAM/SC	IFC84	Various	1.7	1.0
NAM/SC	Various		1.0	1.2
NAM/SC	Total use		5.4	3.5
FCEC/B	ICE5-6+	Various	4.9	5.1
WC/2	JCT87	Dev Own	1.9	5.1
Con Own	JCT80	Various	5.4	6.2
Con Own	Various	None	5.4	8.2
Con Own	Various		9.9	10.7
Con Own			23.0	26.3
Others			16.6	17.8

<sup>7</sup> Note: Con Own – contractor own; Dev Own – developer own; DOM – Domestic; NAM/SC – Named subcontract; NSC – Nominated subcontract; WC/2 – Works contract; FCEC/B, ICE, IFC; & JCT – references to various standard contract forms

[Table 7.4](#) Standard forms used for procuring specialist works in UK

Other survey studies found in the literature review were on general practices of procuring building construction works. Based on a survey undertaken by the Royal Institute of Chartered Surveyors (RICS) in the UK, [Harvey & Ashworth \(1997\)](#) derived the distribution

<sup>7</sup> The abbreviations shown in this report repeat those presented in [Hughes et al. \(1997\)](#), and their full names are inferred based on the best knowledge of the authors.

of contracts in use and that of the methods of procurement, as shown in [Table 7.5](#). The survey covered 3,827 projects that worth almost £2.5 billions.

Contract form	Number (%)	Value (%)
JCT80	19.36	33.55
JCT63	0.31	0.81
Minor works	26.49	1.75
With contractor's design	13.21	28.91
IFC84	21.98	10.40
Other JCT	0.96	4.96
Other standard forms	5.28	8.63
Employer devised	12.41	11.01

Note: JCT - Joint Contracts Tribunal; IFC - JCT Intermediate Form

Procurement method	Year 1984 (% by value)	Year 1993 (% by value)
Bills of quantities	58.73	41.63
Specification	13.13	9.98
Design and build	5.06	35.70
Remeasurement	6.62	2.43
Prime cost	4.45	0.15
Management contract	12.01	6.17
Construction management	0	3.94

**Table 7.5** Contracts and procurement methods in UK (Source: [Harvey & Ashworth, 1997](#))

It is clear that “bills of quantities” was a common method of procurement while contracts based on prime cost were unpopular. There was an increasing trend of using construction management but an opposite trend in the use of management contract. Probably because of the increasing demand for design input from specialist contractors, the increase in popularity of design and build contract was obvious.

In addition, the findings of another study based in the UK ([Holt et al., 1995](#)), although using slightly different classification of procurement method, show a similar trend ([Table 7.6](#)). Again, the use of contracts incorporated with bills of quantities was found to be common. While construction management was not common in 1984, it recorded a significant increase in popularity in 1991.

Procurement method	Year 1984 (% by value)	Year 1991 (% by value)
Lump sum – firm bills of quantities (BQ)	58.7	48.2
Lump sum – approximate BQ	6.6	1.2
Lump sum – specification and drawings	13.1	8.3
Prime cost + fixed fee	4.4	0.1
Design and build	5.0	14.7
Management contract	12.0	7.8
Construction management	0	19.3

**Table 7.6** Procurement method in UK (Source: [Holt et al., 1995](#))

On the procurement methods in the US, Eccles (1981) conducted interviews with 38 homebuilders in 1978 and found from the 26 usable interviews the following distribution of contract types between contractors and subcontractors:

Type of contract	(%)
Fixed price contracts for the total job	71.6
Fixed price contracts on a unit of work basis	25.1
Hourly rates and time and material contracts	3.3

Subcontracting homebuilding works through fixed price contracts was dominant. On the other hand, subcontracts on the basis of hourly rates were seldom used. Additionally, Eccles's (1981) survey revealed the following modes of subcontractor selection:

Selection of subcontractor	(%)
Competitive bidding	19.6
Negotiated selection and price	24.5
Negotiated fixed unit price	23.4
Competitive bidding with discretion in selection	18.5
Accept the price quoted by subcontractors	14.0

While selection of subcontractors based on competitive bidding (19.6%) and competitive bidding with discretion in selection (18.5%) accounted for more than one-third of the surveyed samples, selecting subcontractors involving negotiations and by means of inviting quotations from subcontractors aggregated to 55.9%, indicating their popularity in use.

Twenty years after the survey of Eccles in 1978, Costantino & Pietroforte (2002) compared the findings (percentage of cases) based on two surveys on 16 homebuilders and 23 general contractors (commercial contractors) in 1998-99. Table 7.7 summarises the results.

Homebuilders	(%)	General contractors (GC)	GC1 (%)	GC2 (%)
Competitive bidding	18.00	Lowest bidder	4.55	9.55
Negotiated price	82.00	Lowest negotiated price	24.77	51.59
Other	0.00	Best price from a proven subcontractor	60.23	19.55
		Sharing work to maintain business relationship with subcontractors	10.00	8.86
		Other	0.45	0.45

GC1: General contractor has a negotiated contract with owner

GC2: GC has a non-negotiated contract with owner

**Table 7.7** Procurement method in US (Source: Costantino & Pietroforte, 2002)

Similar to the findings of Eccles (1981), competitive bidding or selecting contractors based on the lower bid were not commonly used for homebuilding or commercial construction contracts. Instead, contracts based on negotiation were widely used in the US.

The above highlighted the findings of some representative, although by no means exhaustive, surveys in the building construction industries of the UK and the US. Because the different surveys were conducted based on invariably different categorisations of contract types and procurement methods, their cross comparisons were infeasible. Nevertheless, the majority of

contracts between the contractors and subcontractors were generally formed on the basis of fixed price or lump sum with firm bills of quantity. Although the contracts were commonly procured through competitive tendering, price negotiations with the subcontractors were common in their selection.

## **7.6 Summary remarks**

This chapter described an overview of the major industry-wide reviews conducted in UK, US, Australia and Singapore, as found from a review of relevant reports and articles in the open literature. Also, a summary is given of the findings from the literature review on the common procurement practices in UK and US.

Although there are issues of concern that are specific to individual countries (e.g. lack of skilled construction workers in Singapore), they have common concerns on a number of major issues, such as frequent occurrence of conflict and disputes in their construction industries and the needs for registration schemes for contractors in the industry and for regulatory controls over terms and conditions in contracts, especially payment terms, which are also highly relevant to the construction industry of Hong Kong.

Actions have been taken in Hong Kong along the lines of those taken in UK, US, Australia and Singapore, such as improvement of contract terms and conditions, the establishment of a voluntary subcontractor registration scheme and the enactment of the Construction Workers Registration Ordinance. The Australian and Singaporean contractor registration schemes should serve as good references when the Hong Kong Government considers expanding and enhancing the voluntary subcontractor registration scheme.

Reference should also be made to the legislative requirements in UK, NSW of Australia and Singapore on security of payment when Hong Kong proceeds to enact legislation on this issue for the local construction industry. The standard form for nominated subcontract for public works in Singapore also provides a framework for modification of the terms and conditions in nominated subcontract forms for use in Hong Kong.

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## **8 Recommended Practices in Managing Specialist Subcontract Performance**

The preceding chapters reviewed the current practices of specialist work procurement in the building construction industry of Hong Kong, the concerns of various stakeholders, and the existing institutional arrangements in the local construction industry. On the basis of the review findings, a range of good practices in managing procurement of specialist works for buildings through subcontracting for ensuring good contract performance are discussed in this chapter. Further developments of the institutional arrangements that can help ensure adequate performance of contractors and subcontractors, and fair dealings, are highlighted. To ease reference, a list of good practices to be observed by project clients, consultants, main contractors and specialist subcontractor, as well as measures that the government should take, has been compiled, which is included at the end of this chapter.

### ***8.1 Assessing the need for a specialist work***

Good practices in the conception, design and contract formation stages of a building development project can help minimise problems with procuring specialist works through subcontracting. Among the involved parties in these stages of a building development project, the project client has a dominant role to play in ensuring good practices are adhered to.

First and foremost, the client's decision to adopt a particular specialist work for a building development is critical, as it entails the need for all the other considerations. The decision should be based on good understanding of the value of the work to the project and the associated costs. Although value judgement may be subjective (e.g. for works that enhance the aesthetics of the building), the benefit of having the specialist work and how certainly the benefit can be realised should be quantified wherever possible and thoroughly assessed. The decision should be informed by realistic costing, which should cover not only the contract price but also the costs for operation, maintenance, repair, enhancement and replacement of the system throughout the life span of the building.

The assessment should include evaluation of whether the operation and maintenance (O&M) personnel have adequate knowledge and skills to effectively operate and maintain the system. If deemed necessary, the vendor of the specialist work should be required, e.g. through expanding the scope of the contract or a separate contract, to provide training to O&M personnel to equip them with the knowledge and skills needed to properly harness the specialist system, and to provide assistance and advice during the early phase of operation. Otherwise, staff with such knowledge and skills should be recruited. Proper O&M is crucial to realisation of the benefits, which entails a cost, but this often overlooked.

### ***8.2 Selection of procurement method***

The selection of procurement method should take into account the nature of the specialist work and the mutual impacts among the progress of the work and other works. For highly specialised works that few companies or just one single company can offer, advanced selection and engagement of the prospective contractor(s) during the design stage will help

the client obtain a realistic picture about the functions, features and performance of the systems that he may expect. This will also provide a clear basis for price negotiation; for proper definition of the scope, the performance and quality expected of the work and other contractual requirements; and for identification of provisions that need to be made in related contract or subcontract works for proper integration of the different but interdependent trades of works.

Decision on the contract arrangement to be used to procure specialist works should take into account the extent of co-ordination required to ensure proper interface between the specialist works and other systems in the building, the contract sums, the contractual liabilities that the specialist contractors should shoulder and the ability of the contractors to bear the liabilities. Negotiation and direct contract could be better options than open bidding and nominated subcontract for procurement of highly specialised works.

For common trades of specialist works, clients may establish a list of pre-qualified tenderers to ensure only those companies having the required capacity, both technically and financially, are allowed to tender. This, however, would have little use if the specialist works under concern is an emerging technology that is only available from one or a few companies, and little past experience exists. In this case, thorough understanding of the functions and limitations of the specialist work becomes even more important.

Generally, careful selection of the main contractor and the specialist subcontractors is crucial to good controls over the quality, progress and cost of a building development project. With a good main contractor, the use of named subcontracts in lieu of nominated subcontracts for procuring specialist works can reduce the burden of managing the specialist works on the project client. Consideration should be given to the use of construction management for complex developments such that construction management and execution of construction works can be separated and put in the hands of experts in the respective fields.

### **8.3 Contract document**

A contract document should be prepared with great care as it defines the obligations of the contract parties in the transaction and, in case of dispute, is the key reference for judging which party has breached his obligations and thus should be held liable to damages inflicted upon the other party. In the contract document, especially in the specification, all the key deliverables should be clearly and precisely defined. The specification should also detail the quality and performance required of the deliverables, objective methods and criteria for their measurement and verification, and the range of measurements to be recorded and submitted, including those for staged inspections and pre-handover inspection. Clearly defining milestone dates for staged completion and quality and performance checks for an installation, as well as the testing methods, performance indicators and acceptance criteria to be applied, will help ensure prompt completion and adequate performance of the end-product.

Building construction and services installation works are so complex that it is difficult to define in the contract documents every single detail of the works. To ease preparation of contracts, many clients or design firms, especially government departments responsible for public works, use a general specification to cover aspects of works that are not specifically defined in the particular specification in the contract document. However, for new and highly

specialised works, such general specifications would help little and thus clearly drafted particular specifications are a must.

Besides imprecise specifications of the scope, quality and performance of the works, a good contract shall not contain terms that are intended to hold the contractor responsible for any vague, conflicting or unforeseen requirements, or design omissions and mistakes. Presence of such terms in contracts would introduce opportunism such as moral hazard (Williamson, 1985) into the contract process, which will increase the likelihood of disputes and add transaction costs (Yates and Hardcastle, 2003).

Furthermore, consequent upon the presence of imprecise and unfair contract terms and the desire to win contracts, tenderers may be forced into taking a ‘game-theoretic’ approach: a tenderer would speculate which requirements would be seriously enforced and which would not be; assess the probabilities and costs of mistakes in this speculation; and guess whether other tenderers would make similar speculations in determining tender prices. Rational contractors would make allowances in the contract sum to cover the risk (McMillan, 1992), which will jack up tender prices. However, contractors who are prepared to gamble by ignoring such risks in tendering would have a better chance to win contracts than more cautious contractors, but they are also more prone to financial failure and to turning out substandard works (Grove III, 1998). Also, ambiguous contract terms would offer rooms for bargaining between a contractor and the client’s project supervision team, which could lead to bribery or quality of work being sacrificed.

Payment terms in a contract are a key means that clients use to control performance of contractors. Determination of progress payment should be commensurate with the value of work satisfactorily completed while the assessment should include fulfilment of performance and quality requirements. While contractual arrangements that include performance incentives like shared saving and cost-plus are so far not widely used, other means for ensuring satisfactory contract performance, such as retention money, surety bond, defect liability period, warranty period, liquidated damages etc., should be judicially selected and set such that the means are equitable and enforceable. Inevitably, using such measures will increase contract price. Similarly, embedding terms in a contract to transfer risks from the client to the contractor or subcontractor will jack up the contract price. Sharing of the risks of losses among the client, the main contractor and the subcontractor should be dealt with in a reasonable and fair manner.

Regional, local or in-house standard forms of contracts and subcontracts have been developed by government departments, professional institutions and individual developers, to provide a uniform framework to guide contracting practices that are widely known and acceptable to the contract parties (Hills, 1998). The 2005 version of Standard Form of Contracts and Nominated Subcontracts for private building developments, although may still have imperfections (see Chapter 4), already represents significant improvements over the older version, especially on delimitation of design liability, the right of the main contractor to object nominations, and the procedures for handling payments, cost and time extension claims, disputes, and determination of a nominated subcontract. Project clients, therefore, should consider adopting the new version but, as yet, it has hardly been used.

In the survey, it was found that none of interviewees had encountered projects where the new Standard Contracts were used. Hence, the professional institutes responsible for developing the new Standard Contracts should play a more active role in eliciting the differences of the

new Standard Contracts from the old contracts, the enhancements incorporated and the spirit behind the changes, so as to widen adoption of the new Standard Contracts.

It has been increasingly recommended that parties of construction contracts should partner to deliver the contracted works rather than over-relying on written contract terms and conditions (Latham, 1994; Egan, 1998). On this issue, readers' attention is drawn to the functions and limitations of partnering as reviewed in [Chapter 6](#).

#### **8.4 Good practices for vendors of new technologies**

Increasingly, specialist works are procured through subcontracts to enhance performance of buildings, but realising this objective cost-effectively requires efficient organisation and management of the specialist subcontract works. [Chapter 2](#) discussed the problems that may originate from the characteristics of specialist works and from procuring the works through subcontracting.

Vendors of new technologies that require periodic services and replacement of parts which will be available only from them may be tempted to set a low price for the initial installation to boost demand, and gain back later from higher rates for the services and spare parts. This practice should be abandoned, as it has the drawbacks that the high running costs could render the technologies not being used or lead to rapid deterioration in their performance, which is a waste of resources. Less or cessation of orders for spare parts and services would also result, leading to a 'lose-lose' situation.

#### **8.5 Pro-active management of specialist subcontract works**

Pro-active participation of the project client and design consultants in overseeing work execution is regarded by many interviewees as highly important. Active monitoring will help detect potential problems, especially financial problems of contractors and subcontractors which may lead to bankruptcy and arrears in labour wage payments and consequently project delays. When problems arise or are foreseen, summoning the top management of the involved parties to formulate mutually agreeable solutions, including, where necessary, making new or supplementary agreements among the parties, is a good practice that project clients should adopt.

As an interviewee pointed out, helping contractors or subcontractors to solve their problems would lead to better results than simply holding them responsible for the consequences and applying the related contractual penalties to them, such as liquidated damages for project delays. Another interviewee also pointed out that allowing the parties to frankly express their concerns and working with them to find a solution, especially identifying the risks that they would be exposed to and, if considered appropriate, sharing their risks, is a good approach which project clients should adopt. A 'break-and-conquer' approach may be taken to help unveil the key problem area, which would ease formulation of a solution.

## **8.6 Contractors and subcontractors registration**

The voluntary subcontractor registration scheme (VSRS) should serve to provide prospective employers of subcontractors for building works with information about the technical and financial capacities and past performance of subcontractors to facilitate them to select trustworthy subcontractors for their projects. As reviewed in [Chapter 5](#), the VSRS currently in place is still at its first stage of implementation. The current criteria for registration are unable to serve the objective of the scheme, i.e. to ensure companies on-list are responsible subcontractors with adequate skills for the specific type of specialist works for which the respective companies are registered, and are with strong professional ethics. Furthermore, the value to subcontractors to be on-list is insignificant.

Suggestions are offered below to expand and enhance the scheme so that it can achieve the objective:

1. The scheme should be expanded to embrace contractors and subcontractors and be integrated with the registered contractor lists of various government departments for public works. Registration that qualify the contractor or subcontractor to undertake public works of a specific kind may be taken as a higher level registration, with registration at a lower level being a pre-requisite to registration at this higher level.

Registration should reflect capacity and performance rather than business strategy of the companies. Although selection of contractors and subcontractors for public works should be made from the appropriate list at this level, contractors and subcontractors not intending to undertake public works should also be allowed to apply and be assessed by the same set of criteria for registration and renewal of registration at this level.

Furthermore, provisional registration should be allowed such that newly formed companies with good technical and financial back-up can also register. Without this, the scheme will become a barrier to market entry.

2. Applicants should be required to provide genuine data to reflect their:
  - Financial capacity, substantiated by audited accounts that show their assets and liabilities, and profit and loss for the past years;
  - Technical abilities, substantiated by qualifications of directors and management and supervisory staff, and numbers of skilled and semi-skilled workers in different trades of work who are permanent employees of the companies;
  - Credentials of the companies including job references, past performance records and current projects at hand.

Including information about current projects at hand allows others to see the current commitments of individual companies, which can affect their ability to take on new projects.

3. To support the registration scheme, appropriate criteria for assessment for registration and renewal of registration should be established and the assessment process should be made as transparent as possible. Applicants should be informed of the reasons of decisions and be allowed to appeal against the decisions on their applications.
4. The scheme should remain a voluntary scheme. Whether contractors and subcontractors would apply for registration and whether private sector project clients would only employ contractors and subcontractors who are on the registration list should be left as market decisions.

## **8.7 Construction workers training, certification and registration**

Since the current construction workers registration scheme is a mandatory scheme, its implementation can impact the supply of construction workers and could lead to shortage of supply at times of high demand. Flexibility is, therefore, a key attribute of the scheme but this would paralyse its effectiveness in enhancing quality of construction works. Therefore, the scheme can only serve to ensure construction workers undertaking a specific trade of work at a particular skill-level will meet the threshold requirement for that trade and at that skill-level.

Rather than relying solely on the construction workers registration scheme, the objective of enhancing quality of construction works can be better achieved through proactive actions taken by stakeholders in the industry, to augment the scheme:

1. Project clients and consultants should introduce designs that permit achievement of higher quality standards, specify clearly the required quality standards as well as the associated methods of performance measurement and verification, and draw the attention of contractors and subcontractors to such requirements.
2. Contractors and subcontractors should ensure methods and work skills that can meet the tightened requirement will be made available for the works. When better methods and skills are emerging while workers need to be trained to grasp such methods and skills, adequate training should be provided to their workers.
3. The organisations entrusted with the duty to provide training and certification for workers have to be proactive with the needs of the construction industry, and should make available programmes that would enhance knowledge and skills, which may fall outside those needed for registration. Apart from skill training, programmes that can enhance subcontractors' knowledge and skills in contract, financial and project management should be provided to permit more extensive use of written contracts for lower-tier subcontract works.
4. The range of stipulated trades and skill levels embraced by the scheme, the qualification for registration, and the training and certification requirements should be reviewed periodically to ensure they remain timely from time to time.

Furthermore, contractors associations should act proactively, including finding out emerging requirements for higher quality works, devising and/or introducing work methods and skills that can cope with the requirements and communicating to providers of training programmes the emerging requirements and the required methods and skills to be imparted to workers.

## **8.8 Security of payment legislation**

Firms and individuals in an economy should be allowed the greatest degree of freedom to negotiate and enter into contracts for transactions between each other. However, governance by laws is also essential to ensure contract terms and conditions are fair and equitable, the transactions will take place in accordance with the contract terms and conditions, and in case a party breaches his obligation, the other party's contractual rights are well-protected by law. A security of payment legislation to supplement the existing contract laws is considered necessary to override unfair terms in contracts, to deter unethical practices and to provide a lower cost means for settlement of disputes over payment in construction projects.

Considering that fair and equitable payment terms and conditions in contracts and payment handling practices of parties to contracts are essential to the competitiveness of the local construction industry and that adverse practices are not uncommon, the government is urged to immediately start working toward the enactment of a security of payment legislation that would apply to the construction industry, to help ensure equitable payment practices in the industry. The key features that should be incorporated into the legislation, and the institutional arrangements required, such as provisions for efficient settlement of disputes and arrangements for ensuring qualified adjudicators will be available when needed, have been outlined in [Chapter 5](#). Additionally, the need for an insurance scheme to deal with insolvency of debtors should also be looked into, taking into account the benefits and costs of having a mandatory insurance policy to the industry.

## **8.9 Alternative procurement methods**

The construction industry should explore further the use of unconventional procurement methods that will allow project risks be shared among players in a more equitable manner, and will help remove conflicts among players. The following offers a few recommendations:

- Provisions should be made in contracts for adjustment of material and labour rates during the contract period, which may be capped by a guaranteed maximum price, such that the risks of fluctuations in material and labour costs could be shared between the client and the contractors and subcontractors. Likewise, sharing of other contract risks should be made more equitable, taking into account which party would be in the best position to deal with the risks.
- Wider use of construction management should be encouraged, which will help remove conflicts between main contractor and subcontractors and ensure clearer demarcation of responsibilities of individual parties; fairer payment methods and better coordination among different trades of works. More construction companies should be encouraged to specialise and concentrate on construction management to meet the market demand. It has been observed that some property developers have already set up subsidiary companies to provide construction management services for themselves, but this needs to be expanded into a discipline of professional service of its own right.

- Wider use of named subcontracts in lieu of nominated subcontracts should be encouraged when a good security of payment legislation is in force. With the protection made available by the security of payment legislation, the use of nominated subcontracts will bring little extra advantage to specialist subcontractors. The use of named subcontracts would already allow project clients to select subcontractors that they prefer while the greater responsibility that a main contractor will have to shoulder for the subcontract works will help unite the objectives of the main contractor and the subcontractors, and thus nurture better cooperation between them. Meanwhile, the 2005 Edition of Standard Form of Contracts and Nominated Subcontracts should be used. Additionally, consideration may be given to the use of a trust account for handling payments.

### ***8.10 Plumbing and drainage contractors list for public works***

The interviewees who were specialised in plumbing and drainage (P&D) works in buildings pointed out that this discipline of works had already become an established specialist work while large private property developers as well as semi-government organizations had already established their own lists of pre-qualified P&D contractors for their development projects. However, the current requirement on contractors for undertaking P&D works in government building projects, including those of Housing Department and departments under the Environment, Transport and Works Bureau (ETWB), is limited to possession of the licensed plumber qualification. A list of approved P&D contractors for public works is still lacking, which is inconsistent with various other specialist works in government projects ([Section 3.3.4](#)) and industry-wide practices. As P&D works are no less important provisions in modern buildings, such a list should be established to help foster improvement of quality of P&D works in public buildings.

### ***8.11 Summary list of good practices***

To provide readers with a concise reference, the following list was prepared to summarise the good practices identified through the survey interviews and the review studies on various issues relevant to specialist subcontracting practices, including industry-wide institutional arrangements, which concludes this report.

#### **8.11.1 For project clients**

*For new or highly specialised works:*

- Thoroughly assess the value of the specialist work to the building development, including obtaining a realistic picture of the functions, features and performance of the system that may be expected, and the associated costs, which should also include the operation and maintenance (O&M) costs and the costs for imparting the required knowledge and skills to the O&M personnel to enable them to properly harness the specialist system.

- Take into account the extent and complexity of interfacing and co-ordination works required to integrate the specialist work with other works in the building in deciding the form of contract or subcontract to be used for its procurement and the terms and conditions to be put into the contract/subcontract, especially on the liabilities of the contractor/subcontractor for design, work quality and timely work completion, and the associated penalties for failures in performing the duties.
- Ascertain the number of suitable suppliers in the market and consider the need for early engagement of a specialist contractor to inform building and services system designs, including the provisions that need to be made in other related works.

#### *General good practices*

- Carefully select consultants for the project and clearly define their power and responsibilities; clearly communicate project requirements to the consultants; and closely monitor the design development process, especially when critical decisions need to be made.
- Allow design consultants sufficient time to develop design solutions, evaluate technical and cost implications of design alternatives and co-ordinate designs of different disciplines. This is especially important to unconventional projects and projects that target at good environmental performance.
- Participate in voluntary environmental assessment scheme(s), set the target level of attainment and provide sufficient resources to achieve the target.
- Adopt fair and reasonable contract terms and conditions and build into contracts and subcontracts requirements for fair dealings, including between the main contractor and the subcontractors, and ensure means are in place for efficient settlement of disputes. For private sector projects, consider using the 2005 Edition of the Standard Form of Building Contract and Nominated Subcontract.
- Consider making provisions in contracts and subcontracts for adjustment of material and labour rates within the contract period, which may include a guaranteed maximum price; and measures that would lead to more equitable sharing of project risks between the client and the contractor and subcontractors. Where appropriate, consider the use of construction management or, if the appointment of a general contractor is preferred, the use of named subcontract.
- Carefully select the main contractor and the subcontractors for the building project, taking into account not only tender prices but also past performance and technical, financial and management capacities of the tenderers. Include pre-qualification of tenderers and involve the main contractor in selecting subcontractors, wherever possible.
- Pro-actively participate in managing contract and subcontract works, including ensuring safety requirements are always met, prompt payments to various parties are made, conflict and disputes are settled and problems are resolved efficiently and fairly. In dealing with problems, allow each party to frankly express his concerns and where possible and appropriate, help the contractor or subcontractors solve their problems, such as sharing with them the associated risks. Attention should also be paid to any signs

of insolvency of contractor or subcontractors, especially their ability to pay workers' wages.

- Adopt means that can help improve communication and resolve problems, such as periodic meetings with top management of consultants, contractors and subcontractors and, where required, formulate mutually agreeable new or supplementary agreements.

### **8.11.2 For clients' consultants**

*For new or highly specialised works:*

- Advise the project client of the realistic benefits and costs of adopting the work, and the likely risks, such as uncertainties in achieving the benefits; limited number of suppliers; aftermarket monopoly power of selected supplier over the supply of maintenance services and spare parts; high first and/or recurrent O&M costs; etc.
- Acquire a good understanding about the technology and conduct quantitative evaluation of the benefits and costs of the specialist work so as to guide the client in making the decision of whether to adopt the specialist work. Where required, recommend the client to appoint specialist to provide in-depth study results for reference.
- Identify technically and financially sound contractors or subcontractors capable of undertaking the work and advise the client the contractors or subcontractors from whom tenders should be invited. Where required, assess and advise the client of the need to engage a specialist contractor/subcontract in the early stage of the design process to provide needed information.
- Based on the nature of the specialist work, advise the project client the most appropriate form of contract or subcontract for procurement of the work and the contractual terms for governing performance of the contractor/subcontractor, including design liability, surety bonds, payment terms, retention, liquidated damages, defect liability, etc., and, where required, means for obtaining future supply of O&M services and spare parts at reasonable prices.
- Write into the particular specification clear definitions of the scope, functions, features, quality and performance required of the work; the submission and approval procedures required of the specialist contractor/subcontractor during the course of the installation work; and the methods of testing and commissioning to be carried out by the contractor/subcontractor at different stages of the installation programme.

*General good practices*

- Adopt fair and reasonable contract terms and conditions and build into contracts and subcontracts requirements for fair dealings, including between the main contractor and the subcontractors, and ensure means are in place for efficient settlement of disputes. If needed, advise the client of the consequences of using harsh contract terms and conditions. For private sector projects, consider using the 2005 Edition of the Standard Form of Building Contract and Nominated Subcontract and advise the client of the differences in implications to him between using the earlier version and the latest

version, and of any modifications to the clauses in the Standard Contract or Nominated Subcontract.

- Provide accurate and comprehensive information in tender documents and drawings to enable tenderers to fully understand the scope and requirements of the works that they are bidding for, especially if there are special requirements that are not commonly found in conventional contracts or subcontracts.
- Allow sufficient time for tenderers to study the tender documents and drawings and prepare their bids, and ensure the selected tenderer is fully aware of the scope and requirements of the works.
- Provide the client with accurate estimates of contract and subcontract sums and advise the client not to accept tender offers that fall far below the estimates.
- Ensure the contractor and subcontractors comply with requirements of the works they undertake, the quality and progress of works are satisfactory, payment claims are fairly assessed and certified on time, and contractors and subcontractors are promptly notified of the certified amounts.
- Ensure effective communications and co-ordinations are maintained among consultants, the main contractor and the subcontractors, including requiring suitable representatives from each party to be available on-site to resolve urgent problems.
- Handle with care and fairness claims for variations, especially works without clearly defined rates in the original contract or subcontract, and for extension of time by contractor and subcontractors.
- Pro-actively manage the contract and subcontract works, including ensuring safety requirements are always met, conflict and disputes are settled and problems are resolved efficiently and fairly. Attention should also be paid to any signs of insolvency of contractor or subcontractors, especially their ability to pay workers' wages.

### **8.11.3 For main contractors**

- Treat subcontractors fairly and reasonably. In particular, avoid introducing extraneous additional conditions into subcontracts and applying set-offs to payments unreasonably and without prior notice.
- Assist subcontractors to obtain insurance cover and avoid charging subcontractors high administration fees for insurance claims.
- Coordinate well the works of subcontractors and provide subcontractors with adequate site services support and safety measures without charging them an unreasonably high fee.
- Monitor well subcontract work progress, ensure workers comply with safety requirements while working on-site and maintain good records of attendance of workers.

- Handle progress payments promptly and fairly and pay attention to any signs of insolvency of subcontractors, especially their ability to pay workers' wages.

#### **8.11.4 For specialist subcontractors**

*For new or highly specialised works:*

- Provide designers with sufficient information to enable them to evaluate the realistic benefits and costs of adopting the specialist work and to develop tender or contract/subcontract document and drawings for the specialist work and for other related works.
- Avoid taking advantage of the aftermarket monopoly power in setting prices for operation and maintenance services and spare parts.
- Offer good services to operation and maintenance (O&M) personnel to facilitate them to properly operate and maintain the specialist work in the post-contract stage.

*General good practices*

- Ensure the scope and requirements of the subcontract work and the contract terms and conditions are well understood and well catered for in preparing a tender submission.
- Pay attention to terms on design liabilities, bonds, retentions, liquidated damages, warranties and defect liabilities in the subcontract as well as to terms and conditions in the main contract that will impact the subcontract and the provisions that the main contractor is and is not obliged to provide. Seek clarifications in case of doubt.
- Ensure the company has sufficient technical and financial capacity and manpower to complete the subcontract work before submitting a tender, with due allowances made for likely fluctuations in labour wages and material costs throughout the contract period.
- Well manage orders for equipment and materials to ensure compliance with specified requirements; prompt submission of technical information and samples for approval; no premature delivery or delays; and needed means are in place for protection of the equipment and materials on-site.
- Ensure sufficient supervisory staff is available to co-ordinate work execution with the main contractor and other subcontractors, and to attend to any urgent matters that need to be resolved on-site.
- Ensure workers have the required skills to execute the work and, if parts of the work are to be sublet to lower tier subcontractors, carefully select subcontractors with good past track records and clearly communicate to them the requirements. Ensure sufficient direct labour is maintained to handle urgent works and works that require specialist skills not available from lower tier subcontractors.
- Closely monitor the quality and progress of the subcontract work to ensure compliance with specifications, conformance to the master programme of the main contractor and

compliance with relevant statutory requirements, including, where applicable, making all necessary submissions to the authorities in good time. Ensure sufficient workers and materials can be deployed when required to catch up with programme or to accelerate work.

- Closely monitor and keep good records of work progress, variation orders and payment claims. Observe any specific requirements that apply, e.g. in serving notice for a claim and any substantiations required. Follow-up with main contractor and client on any delays in progress payment and be watchful of any signs of insolvency of the main contractor.
- Ensure wages for workers and monies due to suppliers and lower tier subcontractors are paid on time.
- Seek to develop more efficient project delivery methods to enhance competitiveness and provide employees with, or facilitate them to obtain, training to enhance their technical, contractual and management abilities such that projects can be completed more efficiently and at lower costs.
- Strive to establish strategic business relations with clients, main contractors, equipment and material suppliers and lower tier subcontractors, and to upkeep established good will by maintaining quality of contract deliverables and services.

### **8.11.5 For the government**

*On the voluntary subcontractor registration scheme (VSRS):*

- PCICB/CIC should ensure the VSRS can serve well the intended function of providing potential employers of subcontractors with useful information about the registered subcontractors to facilitate them to select trustworthy subcontractors for their projects and advance the present scheme to enable it to perform this function.
- They should ensure assessment of applications for registration is sufficiently rigorous to allow the scheme to serve its purpose and provide for provisional registration for newly formed companies.
- Furthermore, they should consider expanding the VSRS to embrace the lists of approved contractors for public works currently being maintained by various government departments, including a list for plumbing and drainage contractors.

*On the construction workers registration scheme (CWRS):*

- CWRA should ensure the assessment of workers for registration can truly reflect their level of work skills and only workers with the relevant skill at the required skill level are permitted to register for the trade and level sought for.
- Responsible organizations (CWRA, CITA, VTC and others) should pro-actively review the needs of the construction industry for workers of various types and levels of skills to cope with contemporary construction technologies employed in modern construction and,

when needed, update the categories and levels of registration and the corresponding requirements for registration.

- They should also ensure sufficient training programmes are in place to meet the market demand in respect of up-to-date work skills and number of suitably qualified workers.

*On the enactment of security of payment legislation*

- PCICB/CIC should take a leading role and work jointly with relevant government bureaux and departments toward the enactment of a security of payment legislation that will nullify unfair payment terms in contracts and subcontracts and provide for means for efficient settlement of payment disputes.
- In so doing, they should consider if the legislation should embrace also unwritten contracts and how problems with insolvency of debtors are to be dealt with.

*On the lack of a list of approved plumbing and drainage contractors for public works*

- ETWB and HA should proceed to establish a list of approved plumbing and drainage contractors for public works.

#### **8.11.6 For stakeholders in general and professional institutions and trade associations in particular**

- Promote fair and ethical practices in the construction industry. In particular, HKIA, HKICM and HKIS should promote wider adoption of the 2005 Edition of Standard Form of Contract and Nominated Subcontract.
- Introduce designs and methods that are conducive to efficient and high quality works and means to help subcontractors enhance their technical, contractual, financial and project management skills.
- Disseminate knowledge and experience of alternative procurement and project management methods, such as design and build, construction management, prime contracting, project partnering etc., to facilitate their development and enhancement for beneficial application in the Hong Kong construction industry.
- Pro-actively review the needs of the construction industry in respect of knowledge and skills of workers to cope with contemporary and emerging construction methods that can enhance the efficiency and competitiveness of the industry, and communicate the needs to Government and organizations responsible for worker training.

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## **Appendix A: Questionnaire**

## Questionnaire

For

### **A Survey of Practices and Opinions of Stakeholders (Client / Designer / Main Contractor / Sub-contractor)**

On

Research Project Title: **Best Practices in Managing Specialist Subcontracting Performance**

Funding Body: **Construction Industry Institute – Hong Kong**

Research Team: Prof. Francis Yik (Principal Investigator)  
Ir. Joseph Lai &  
Dr. K T Chan  
Department of Building Services Engineering and  
Dr. Edward Yiu  
Department of Building and Real Estate  
**The Hong Kong Polytechnic University**

Date: July, 2005

## Message to Contributors to the Survey

Dear Sir/Madam,

On behalf of the Research Team, I would, first of all, thank you for your kind contribution to our research study. The data that we shall collect from you through this questionnaire survey will form a key basis of our research entitled: **Best Practices in Managing Specialist Subcontracting Performance**. The research is funded by the Construction Industry Institute – Hong Kong (CII-HK). CII-HK is a joint initiative developed by the construction industry and academia in Hong Kong seeking to improve all aspects of safety, quality, cost effectiveness and environmental performance of construction through innovation and collaborative researches.

In this research, we shall explore the issues that affect regulation, procurement and coordination of specialist subcontract works in buildings in the local construction industry, and to formulate guiding solutions to help improve current situations and implement effective management of specialist subcontractors. To sharpen the focus of our study, we confine the study to specialist subcontract works that possess one or more of the following characteristics:

1. Execution of the work requires input of specialist knowledge and/or skills by the subcontractor.
2. The work involves use of proprietary methods and/or equipment provided by the subcontractor.
3. Proprietary products form part of the subcontracted work.
4. The work, or parts thereof, can be undertaken only by a licensed or registered company or by licensed or registered persons while the subcontractor is one such company or is able to deploy qualified persons for the work.

The questions in this questionnaire were set to help us explore your experience and opinion about specialist subcontract works, which will allow us to more thoroughly understand the key problem issues and challenges in managing specialist subcontractors.

Please be assured that the information you supply will be kept strictly CONFIDENTIAL to the Research Team. Reports and publications that will be generated from the research will include aggregated data only; any sensitive information that will permit readers to identify specific buildings, companies or persons will NOT be divulged. Please, therefore, feel free to provide us information and opinions. Should you require further information about our research project or this questionnaire survey, please contact me at phone number: 2766 5841, fax number: 2774 6146 or through email to [bewhyik@polyu.edu.hk](mailto:bewhyik@polyu.edu.hk).

Thank you once again for the time and effort you spent to help us conduct this research, which will ultimately help our construction industry improve its efficiency and competitiveness.

Yours faithfully,

Professor Francis W H Yik  
Principal Investigator

## Section 1 Personal Particulars

Please fill-in as far as possible all the information sought in this Section.

1.1 Name \_\_\_\_\_

1.2 Contact Tel. No.: \_\_\_\_\_ Email: \_\_\_\_\_  
Fax. No.: \_\_\_\_\_

1.3 Professional Qualifications \_\_\_\_\_

1.4 Years of Experience in the Construction Field

<input type="checkbox"/> > 30 years	<input type="checkbox"/> 6 – 10 years
<input type="checkbox"/> 21 – 30 years	<input type="checkbox"/> ≤ 5 years
<input type="checkbox"/> 11 – 20 years	

1.5 Name of Affiliated Company / Organisation \_\_\_\_\_

1.6 Your Position / Job Title

<input type="checkbox"/> Managing Partner	If related to Building Services, please indicate the trade(s) you worked on:
<input type="checkbox"/> Partner	
<input type="checkbox"/> Director	
<input type="checkbox"/> Associate	
<input type="checkbox"/> Project Manager	
<input type="checkbox"/> Contract Manager	
<input type="checkbox"/> Chief* / Senior* Architect	
<input type="checkbox"/> Chief* / Senior* Engineer	
<input type="checkbox"/> Chief* / Senior* Surveyor	
<input type="checkbox"/> Others (please specify):	

\_\_\_\_\_

\* Delete as appropriate

1.7 Business Nature of the Company / Organisation

<input type="checkbox"/> Government	If related to Building Services, please indicate the trade(s) below:
<input type="checkbox"/> Private Developer	
<input type="checkbox"/> Property Management	
<input type="checkbox"/> Project Management	
<input type="checkbox"/> Architectural Consultant	
<input type="checkbox"/> Structural Consultant	
<input type="checkbox"/> Building Services Consultant	
<input type="checkbox"/> Quantity Surveyor	
<input type="checkbox"/> Main Contractor	
<input type="checkbox"/> Subcontractor	
<input type="checkbox"/> Others (please specify):	

\_\_\_\_\_

1.8 Special qualification  
of the Company /  
Organisation

- Registered Building Contractor with the Government (Grade \_\_\_\_)
- Registered Ventilation Contractor
- Registered Fire Services Contractor
- Registered Electrical Contractor
- Registered Lift Contractor
- Registered Gas Contractor
- Have employees who are Licensed Plumbers
- Have employees who are Registered Lift Engineers
- Have employees who are Registered Electrical Workers
- Have employees who are Registered Gas Installers
- Others (please specify):

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## Section 2 Particulars of a Selected Project

Please pick one of the recently completed construction projects that you were engaged in personally where specialist subcontracting was involved, and provide information about that specific project.

2.1 Name of Project \_\_\_\_\_

2.2 Type of Project

- |   |   |
|---|---|
| <input type="checkbox"/> Commercial/Office Building | <input type="checkbox"/> Sports Centre            |
| <input type="checkbox"/> Government Office Building | <input type="checkbox"/> Market                   |
| <input type="checkbox"/> Hotel                      | <input type="checkbox"/> Library                  |
| <input type="checkbox"/> Retail / Shopping Centre   | <input type="checkbox"/> Others (please specify): |
| <input type="checkbox"/> Residential Development    | _____   |
| <input type="checkbox"/> Hospital                   |   |
| <input type="checkbox"/> School                     |   |

2.3 Construction Period

From: \_\_\_\_\_ To: \_\_\_\_\_

2.4 Types of Specialist Subcontract works in the Project

Specialist Subcontract Works:	Type and Form of Subcontract*:
<input type="checkbox"/> Building Automation System	_____
<input type="checkbox"/> HVAC System	_____
<input type="checkbox"/> Electrical System	_____
<input type="checkbox"/> Fire Services	_____
<input type="checkbox"/> Lifts and Escalators	_____
<input type="checkbox"/> Plumbing and Drainage	_____
<input type="checkbox"/> Security System	_____
<input type="checkbox"/> Curtain Walling/Windows	_____
<input type="checkbox"/> Proprietary Structural Frames	_____
<input type="checkbox"/> Water-proofing	_____
<input type="checkbox"/> Others (please specify):	_____
_____	_____
_____	_____

\* Please use the following code, where applicable (specify otherwise):

For Type of Contract:

- LS-BQ – Lump Sum Contract with Bills of Quantities (for measurement of staged payments and VO)
- LS-SR – Lump Sum Contract with Schedule of Rates (for VO)
- MC-BQ – Measurement Contract based on Bills of Quantities
- MC-SR – Measurement Contract based on Schedule of Rates
- CP-% – Cost Plus Percentage
- CP-FF – Cost Plus Fixed Fee
- CP-VF – Cost Plus Variable Fee
- GMP – Guaranteed Maximum Price
- D&B – Design and Build

For Form of Contract:

- DS – Domestic Subcontract
- NS – Nominated Subcontract
- NamS – Named Subcontract
- DC – Direct Contract

2.5	Types of Specialist Subcontract works that YOU HANDLED in the Project (please tick the relevant boxes and take note of the letters used to denote the Subcontract works; answers to later questions refer to these letters – see footnote below.)	Specialist Subcontract Works: <input type="checkbox"/> A: HVAC System <input type="checkbox"/> E: Electrical System <input type="checkbox"/> F: Fire Services <input type="checkbox"/> L: Lifts and Escalators <input type="checkbox"/> P: Plumbing and Drainage <input type="checkbox"/> B: Building Automation System <input type="checkbox"/> S: Security System <input type="checkbox"/> C: Curtain Walling/Windows <input type="checkbox"/> T: Proprietary Structural Frames <input type="checkbox"/> W: Water-proofing <input type="checkbox"/> O: Others (please specify):  <hr/> <hr/>	Contract Sum (HK\$) and Contract Period (months) <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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2.6	What were the “Specialties” involved in the Specialist Subcontract works?	Specialty: 1. Specialist Design 2. Special Construction / Installation Method of Subcontractor 3. Use of Proprietary Equipment of Subcontractor 4. Proprietary Product formed part of the Work 5. Subcontractor being Licensed Person / Company  Other Specialty (please specify): 6. _____ 7. _____ 8. _____ 9. _____	Applicable to*: A   E   F   L   P   B   S   C   T   W Others: A   E   F   L   P   B   S   C   T   W Others: A   E   F   L   P   B   S   C   T   W Others: A   E   F   L   P   B   S   C   T   W Others: A   E   F   L   P   B   S   C   T   W Others: A   E   F   L   P   B   S   C   T   W Others: A   E   F   L   P   B   S   C   T   W Others: A   E   F   L   P   B   S   C   T   W Others:
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\* Please CIRCLE the relevant letters used to denote Specialist Subcontract Works as follows:

A: HVAC System	E: Electrical System	F: Fire Services
L: Lifts and Escalators	P: Plumbing and Drainage	B: Building Automation System
S: Security System	C: Curtain Walling/Windows	T: Proprietary Structural Frames
W: Water-proofing		



2.9 What procedures were employed for checking work progress and verifying quality standards and workmanship (e.g. testing and commissioning procedures, factory tests, etc.)? (Please supply copy of relevant pages in the Subcontract Document and, where applicable, drawings for reference)

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2.10 What measures were taken to ensure the Subcontract works would be adequately delivered?	Measures	Applicable to*:
	1. Retention money: _____ (Please indicate amount / percent of contract sum)	A   E   F   L   P   B   S   C   T   W Others:
	2. Incentive: _____ (Please indicate amount / percent of contract sum)	A   E   F   L   P   B   S   C   T   W Others:
	3. Surety Bond: _____ (Please indicate amount / percent of contract sum)	A   E   F   L   P   B   S   C   T   W Others:
	3. Liquidated damages: _____ (Please indicate amount / percent of contract sum)	A   E   F   L   P   B   S   C   T   W Others:
	4. Defects liability period: ____ (Please indicate period)	A   E   F   L   P   B   S   C   T   W Others:
	5. Warranty period: _____ (Please indicate period)	A   E   F   L   P   B   S   C   T   W Others:
	Other Measures (Please specify):	
	6. _____	A   E   F   L   P   B   S   C   T   W Others:
	7. _____	A   E   F   L   P   B   S   C   T   W Others:

\* Please CIRCLE the relevant letters used to denote Specialist Subcontract Works as follows:

A: HVAC System  
L: Lifts and Escalators  
S: Security System  
W: Water-proofing

E: Electrical System  
P: Plumbing and Drainage  
C: Curtain Walling/Windows

F: Fire Services  
B: Building Automation System  
T: Proprietary Structural Frames

2.11 Would any of the Subcontract works require operation and maintenance services which are obtainable only from the Subcontractors concerned? If yes, please circle relevant specialist works\*:  
 A | E | F | L | P | B | S | C | T | W  
 Others:

2.12 Would any of the Subcontract works require spare parts for operation and maintenance, which are obtainable only from the Subcontractors concerned (i.e. proprietary supplier)? If yes, please circle relevant specialist works\*:  
 A | E | F | L | P | B | S | C | T | W  
 Others:

2.13 If the answer to either 2.11 or 2.12, or both, is Yes, what measures have been taken to ensure the services and spare parts would be obtained at reasonable prices?

The Subcontractor was required to provide binding future prices – Applicable to\*:  
 A | E | F | L | P | B | S | C | T | W | Others:

The Subcontract was bundled to a service contract – Applicable to\*:  
 A | E | F | L | P | B | S | C | T | W | Others:

An agreement on how future prices are to be determined has been made – Applicable to\*:  
 A | E | F | L | P | B | S | C | T | W | Others:

Others (please specify):

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Applicable to\*: A | E | F | L | P | B | S | C | T | W | Others:

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Applicable to\*: A | E | F | L | P | B | S | C | T | W | Others:

2.14 Were the measures stated in 2.13 a critical part of the considerations in deciding award of the relevant Subcontracts? If yes, please circle relevant specialist works\*:  
 A | E | F | L | P | B | S | C | T | W  
 Others:

\* Please CIRCLE the relevant letters used to denote Specialist Subcontract Works as follows:

A: HVAC System  
 L: Lifts and Escalators  
 S: Security System  
 W: Water-proofing

E: Electrical System  
 P: Plumbing and Drainage  
 C: Curtain Walling/Windows

F: Fire Services  
 B: Building Automation System  
 T: Proprietary Structural Frames



### **Section 3      Experience and Opinions**

*Questions in this Section will be raised in a less structured way such that you can share your experience and opinions with us in a relaxed manner. Although the interviewer will jot notes, it would greatly help us obtain more accurate records of your comments and opinions **if you would permit the interviewer to record the conversations**. Please be assured that the record will be deleted once we have noted down all the key points. We shall not keep the record for an unduly long period and while the record is in our custody, we shall not allow any other persons outside the Research Team to access the record.*

#### **3.1      For Building Developers / Clients**

- 3.1.1    What types of building or building services works would you regard as Specialist works? How extensively your buildings are installed with such Specialist works? Are there more and more such specialist works being included in your building developments? Why?
- 3.1.2    Have you had the experience of procuring any special systems or equipment that you had no prior experience with? If you have, what were they and from which sources did you know of the systems or equipment? How did you assess the value of those systems or equipment to help you make the decision to procure them?
- 3.1.3    Have you had experience with any Specialist works the specialties of which went beyond the knowledge of your building development team or consultant team? What were they and how did you make sure the works procured would be value for money?
- 3.1.4    What would you concern most with Specialist Subcontract works for buildings that your company/organisation develops? What measures have been taken to address the concerns?
- 3.1.5    What measures have you taken to ensure you can continue to obtain at reasonable prices specialist services or spare parts that are needed for operation and maintenance of the Specialist Subcontract works after completion of a building project?
- 3.1.6    What would you think would be the best procurement method for Specialist Subcontract works? What was your experience with applying the method?
- 3.1.7    Does your company/organisation maintain lists of qualified/preferred tenderers for a range of works? If so, what types of works are the lists for? How the lists were drawn?
- 3.1.8    Would your company/organisation award contract works to contractors with good track records, even though their tenders may not be those of the lowest prices?
- 3.1.9    Have you had the experience that a Specialist work procured did not fulfil entirely your expectations? If you have, in what way the completed work failed to perform what you expected it to perform? What gave rise to the situation and how did you handle the case?

- 3.1.10 How does your company pay the contractors / specialist subcontractors in a project? What are the criteria to approve payment to your contractors / specialist subcontractors?
- 3.1.11 If your contractor / specialist subcontractors ran into bankruptcy, how would it affect your project? What precautions you have adopted or may adopt to minimise the impact of bankruptcy of a contractor / specialist subcontractors?

### **3.2 For Client's Agent / Architect / Surveyor / Consultant Engineer**

- 3.2.1 What types of building or building services works would you regard as Specialist works? How extensively buildings that you have handled are installed with such Specialist works? Are there more and more such specialist works being included in new building developments? Why?
- 3.2.2 Have you had the experience of procuring for your client any special systems or equipment that you had no prior experience with? If you have, what were they and from which sources did you know of the systems or equipment? How did you assess the value of those systems or equipment to help you make the decision to procure them?
- 3.2.3 Have you had experience with any Specialist works the specialties of which went beyond your knowledge? What were they and how did you make sure the works procured would be value for money?
- 3.2.4 What would you concern most with Specialist Subcontract works for buildings that you are involved in developing? What measures have been taken to address the concerns?
- 3.2.5 What measures have you taken to ensure the client will continue to obtain at reasonable prices specialist services or spare parts that are needed for operation and maintenance of the Specialist Subcontract works after completion of a building project?
- 3.2.6 What would you think would be the best procurement method for Specialist Subcontract works? What was your experience with applying the method?
- 3.2.7 How often your clients maintain lists of qualified/preferred tenderers for a range of works? If so, what types of works are the lists for? How the lists were drawn?
- 3.2.8 Would your clients award contract works to contractors with good track records, even though their tenders may not be those of the lowest prices?
- 3.2.9 Have you had the experience that a Specialist work procured did not fulfil entirely your expectations? If you have, in what way the completed work failed to perform what you expected it to perform? What gave rise to the situation and how did you handle the case?

- 3.2.10 How do your clients pay the contractors / specialist subcontractors in a project? What are the criteria to approve payment to contractors / specialist subcontractors?
- 3.2.11 If a contractor / specialist subcontractor ran into bankruptcy, how would it affect a project? What precautions you have adopted or may adopt to minimise the impact of bankruptcy of a contractor / specialist subcontractor?

### **3.3 For Direct Contractors or Domestic / Nominated Subcontractors**

- 3.3.1 Does your company have any Specialist products, processes or skills and knowledge that allow your company to bid for Specialist contract or subcontract works in buildings? If so, what are they? Is your company the sole supplier of such products or services in Hong Kong? If not, who are your competitors and how many? How big is your market share? Do you prefer to have or not to have competitors? Why?
- 3.3.2 Are the Specialist works your company supply or undertake patented or commercial secrets? If so, how do you market your products or services to your clients? How would your products or services help add value to buildings? What conditions do you impose in the contracts between your company and your clients to protect your intellectual properties and to safeguard your interest?
- 3.3.3 Do the Specialties of your company allow your company to acquire a monopolistic status in supplying products or services to the local construction industry? How do you educate clients and consultants about your Specialties? What are their typical concerns with hiring your Specialties for their projects? What do they typically require as contract conditions to address their concerns?
- 3.3.4 Is you company a qualified/preferred contractor/subcontractor of any building developer? If yes, how many developers include your company in their lists and how did you acquire this status? What vetting processes did you undergo to acquire this status? Has such a status help you secure more contracts?
- 3.3.5 What are the typical procurement methods that clients use to procure the type of Specialist subcontract works that your company undertake? Do you find the methods fair and reasonable? If not, what aspects do you think are unacceptable or undesirable? How did you cope with such procurement methods?
- 3.3.6 Do you find contract conditions and specifications generally fair and clear? Have you had any experience of entering into contracts with unclear specifications or unfair terms? Did they lead to problems? If so, what were the problems and how did you deal with the problems?
- 3.3.7 Does your company sub-contract project works to other smaller contractors? How do you select the contractors and determine their scope of work?

- 3.3.8 Does your company have any domestic contractors? If yes, how many? How much work (%) of a project is handled by domestic contractors?
- 3.3.9 Does your company employ direct workers? How many?
- 3.3.10 Is your company part of an alliance with any Main Contractors / developers / consultants? Are such arrangements beneficial to your company and if so, in what ways?
- 3.3.11 What are the important factors that allow your company to be successful in bidding for contracts? Does your company obtain contracts normally because your bids were the lowest price? Have you had the experience of being awarded a contract because of best compliance with the technical specifications? Which is more frequent?
- 3.3.12 At the late stage of a competitive tendering process, have you been required by the client to reduce the tender price? If so, do you consider the price reduction reasonable?
- 3.3.13 In your opinion, is 'good relation' and 'trust' important in winning a contract? How do you weigh its importance (by a point scale of 1 (unimportant) – 5 (very important))?
- 3.3.14 What proportions of the works that your company undertake are for the private sector and for the government? Do you have any preference of doing private work and government work? Why?
- 3.3.15 What are the common types of contracts used in your company's projects? Who decides the type of contract? Can your company influence the type of contract to be adopted?
- 3.3.16 What is your most preferred form of contract? Why? Have your company had any experience with design and build contracts? Is this form of contract preferable to your company? Why?
- 3.3.17 In your opinion, which are the most important terms in a contract? Are there any contract terms that you consider to be fatal to the subcontractors? Are there any terms in contracts that are often not fulfilled or can hardly be fulfilled?
- 3.3.18 Have you had problems with getting payments from the client and/or main contractor? Are the terms and method of payment generally clear in contracts? What are the common ambiguities?
- 3.2.19 How much money (% of the contract sum) does your company have to pay upfront to finance or maintain the cash flow for a project?
- 3.2.20 What measures you may adopt in a project to enable you to obtain payments more smoothly?

### **3.4 For Main Contractors**

- 3.4.1 What types of building or building services works would you regard as Specialist works? How extensively those buildings you built are installed with such Specialist works? Are there more and more such specialist works being included in your building projects? Why?
- 3.4.2 Does your company have any Specialist products, processes or skills and knowledge that your company apply to building projects? If so, what are they? How often the specialist products or skills are applied to your building projects? Were such specialist products and/or skills needed because the clients specified that they should be used or you proposed to use them for the benefit of the projects? Is your company the sole supplier of such products or services in Hong Kong? If not, who are your competitors and how many? How big is your market share? Do you prefer to have or not to have competitors? Why?
- 3.4.3 Are the Specialist works your company supply or undertake patented or commercial secrets? If so, how do you market your products or services to your clients? How would your products or services help add value to buildings? What conditions do you impose in the contracts between your company and your clients to protect your intellectual properties and to safeguard your interest?
- 3.4.4 Do the Specialties of your company allow your company to acquire a monopolistic status in supplying products or services to the local construction industry? How do you educate clients and consultants about your Specialties? What are their typical concerns with hiring your Specialties for their projects? What do they typically require as contract conditions to address their concerns?
- 3.4.5 Is your company a qualified/preferred contractor of any building developer? If yes, how many developers include your company in their lists and how did you acquire this status? What vetting processes did you undergo to acquire this status? Has such a status help you secure more contracts?
- 3.4.6 Have you encountered any special procurement methods that clients used to address certain special characteristics of or concerns for specific building projects? Do you find the methods fair and reasonable? If not, what aspects do you think are unacceptable or undesirable? How did you cope with such procurement methods?
- 3.4.7 As a main contractor, what do you consider to be the most important role you should play in regard of the specialist subcontract works in your building projects? Do you prefer to have nominated subcontractors or your own domestic subcontractors to undertake specialist works in building projects? Why? How differently you would manage domestic and nominated subcontractors?
- 3.4.8 Do you consider ensuring the quality of nominated subcontractor works part of the responsibilities of a main contractor? If so, what quality assurance measures have you taken? If not, who do you think should shoulder this responsibility?

- 3.4.9 How do you select subcontractors and determine their scope of work? Do you allow them to further subcontract out the work you assign them? How do you ensure your subcontractor will deliver works that would satisfy the client's requirements?
- 3.4.10 Does your company have any domestic contractors? If yes, how many? How much work (%) of a project is handled by domestic contractors?
- 3.4.11 Does your company employ direct workers? How many?
- 3.4.12 Do you find contract conditions and specifications generally fair and clear? Have you had any experience of entering into contracts with unclear specifications or unfair terms? Did they lead to problems? If so, what were the problems and how did you deal with the problems?
- 3.4.13 Is your company part of an alliance with any developers / consultants / subcontractors? Are such arrangements beneficial to your company and if so, in what ways?
- 3.4.14 What are the important factors that allow your company to be successful in bidding for contracts? Does your company obtain contracts normally because your bids were the lowest price? Have you had the experience of being awarded a contract because of best compliance with the technical specifications? Which is more frequent?
- 3.4.15 At the late stage of a competitive tendering process, have you been required by the client to reduce the tender price? If so, do you consider the price reduction reasonable?
- 3.4.16 In your opinion, is 'good relation' and 'trust' important in winning a contract? How do you weigh its importance (by a point scale of 1 (unimportant) – 5 (very important))?
- 3.4.17 What proportions of the works that your company undertake are for the private sector and for the government? Do you have any preference of doing private work and government work? Why?
- 3.4.18 What are the common types of contracts used in your company's projects? Who decides the type of contract? Can your company influence the type of contract to be adopted?
- 3.4.19 What is your most preferred form of contract? Why? Have your company had any experience with design and build contracts? Is this form of contract preferable to your company? Why?
- 3.4.20 In your opinion, which are the most important terms in a contract? Are there any contract terms that you consider to be fatal to the subcontractors? Are there any terms in contracts that are often not fulfilled or can hardly be fulfilled?

- 3.4.21 Have you had problems with getting payments from the client and/or main contractor? Are the terms and method of payment generally clear in contracts? What are the common ambiguities?
- 3.4.22 How much money (% of the contract sum) does your company have to pay upfront to finance or maintain the cash flow for a project?
- 3.4.23 What measures you may adopt in a project to enable you to obtain payments more smoothly?

**Appendix B: Comparison of Old and New Standard Form of  
Nominated Subcontract**

## Comparison between the 1985 and 2005 Versions of Standard Forms for Nominated Subcontract

Sub-Contract 1986	Nominated Sub-Contract 2005	Remarks
	<b>1. Interpretation and definitions</b>	A new section not available in the old version.
<p><b>1. Notice of the Main Contract to the Sub-contractor</b> The Sub-Contractor shall be deemed to have notice of all the provisions of the Main contract except the detailed prices of the Main contractor included in schedules and Bills of Quantities.</p> <p><b>3. Sub Contractor's liability under incorporated provisions of the Main Contract</b> The Sub-Contractor shall: (a) observe, perform and comply with all the provisions of the Main Contract on the part of the Main Contractor to be observed, performed and complied with so far as they relate and apply to the Subcontract works (or any portion of the same) and are not repugnant to or inconsistent with the express provisions of this Sub- Contract as if all the same were severally set out herein; and (b) indemnify and save harmless the Main Contractor against and from: (i) any breach, non-observance or non-performance by the Sub-Contractor, his servants or agents of the said provisions of the Main Contract or any of them; and (ii) any act or omission of the Sub-Contractor, his servants or agents which involves the Main Contractor in any liability to the Employer under the Main Contract; and (iii) any claim, damage, loss or expense due to or resulting from any negligence or breach of duty on the part of the Sub-Contractor, his servants or agents (including any wrongful use by him or them of the scaffolding referred to in clause 18 of this Sub-Contract or other property belonging to or provided by the Main Contractor);and (iv) any loss or damage resulting from any claim</p>	<p><b>2. Sub-Contractor to comply with the provisions of the Main Contract that relate to the Sub-Contract</b> <i>Sub-Contractor to comply with the provisions of the Main Contract that relate to the Sub-Contract</i> (1) Contractor shall be deemed to have full knowledge of all the provisions of the Main Contract except the Contractor's rates (2) The Sub-Contractor shall observe, perform and comply with all the provisions of the Main Contract which the Contractor has to observe, perform and comply with insofar as they relate to the Sub-Contract Works and are not inconsistent with the provisions of the Sub-Contract as if these provisions were set out in the Sub-Contract Conditions. (3) The Sub-Contractor shall indemnify and save harmless the Contractor against and from any breach, non-observance, non-performance or non-compliance by the Sub- Contractor or any person for whom the Sub-Contractor is responsible of any of the provisions of the Main Contract referred to in clause 2(2) which involves the Contractor in any liability under the Main Contract or any other contract in connection with the Works (4) Any loss and/or expense and/or damages incurred by the Contractor under clause 2(3) shall be reimbursed to the Contractor by the Sub-Contractor or shall be recoverable as a debt. (5) No amendment made to the terms of the Sub-Contract by the Contractor and the Sub-Contractor shall be valid without the Architect's consent</p>	<p>Clause 2 in the new version covers Clauses 1 and 3 in the old version. The requirement that the subcontractor shall be fully aware of and comply with the contract conditions that affect the subcontract is basically the same. Clause 2(5) is an added sub-clause.</p>

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<p>under any statute in force for the time being by an employee of the Sub-Contractor in respect of personal injury arising out of or in the course of his employment.</p> <p>Provided that nothing in this Sub-Contract contained shall impose any liability on the Sub-Contractor in respect of any negligence or breach of duty on the part of the Employer, the Main Contractor, his other sub-contractors or their respective servants or agents nor create any privity of contract between the Sub-Contractor and the Employer or any other sub-contractor.</p>		
<p><b>2. Execution of the Sub Contract Works</b>  The Sub-Contractor shall execute and complete the Subcontract works subject to and in accordance with this Subcontract in all respects to the reasonable satisfaction of the Main Contractor and of the Architect for the time being under the Main Contract (hereinafter called 'the Architect') and in conformity with all the reasonable directions and requirements of the Main Contractor including all reasonable rules of the Main contractor (so far as they may apply) for the time being regulating the due carrying out of the Main Contract works.</p>	<p><b>3. Sub-Contractor's obligations</b>  <i>Sub-Contractor's obligations</i>  3.1(1) The Sub-Contractor shall in compliance with the Sub-Contract: (a) organize, manage, plan and supervise the carrying out of the Sub-Contract Works;  (b) co-ordinate the carrying out of the Subcontract works with the work carried out by other sub-contractors, Specialist Contractors, statutory undertakers and utility companies;  (c) design sufficient, safe and adequate temporary works to enable the Sub-Contractor to comply with his other obligations under the Sub-Contract, except where the design of any temporary works is a statutory obligation of any person other than the Sub-Contractor or a person for whom the Sub-Contractor is responsible;  (d) carry out the design or the development of the design and the selection of materials and goods for the Sub-Contract works where and to the extent that this is required by the Sub-Contract to be carried out by the Sub-Contractor;  (e) prepare all shop drawings and co-ordination drawings required by the Sub-Contract; and  (f) carry out the construction of and complete the Sub-Contract works using materials, goods and workmanship of the types, standards and quality specified in the Sub- Contract.  3.1(2) where the Sub-Contract requires the Sub-Contractor to carry out the design or the development of the design of the whole or a part of the Sub-Contract works, unless the requirement of fitness for purpose is specifically stated, the design or the development of the design shall be carried out with reasonable skill and care.  <i>Sub-Contractor's responsibility</i>  3.2 The Sub-Contractor shall remain wholly responsible for carrying out and completing the Sub-Contract works in accordance with the Sub-Contract whether or not the Architect or the Architect's representative, if appointed:  (a) visits the works or a place where the Sub-Contract materials or goods are being manufactured or stored, work is being prepared or design is being carried out;  (b) inspects or tests any materials or goods;  (c) exercises or fails to exercise his powers under clause 8; or  (d) includes the value of any of the Sub-Contractor's materials, goods or work in an Interim Certificate.  <i>Sub-Contractor's skill and care</i></p>	<p>Subcontractor's obligations are much more clearly defined here and also in other clauses.  Subcontractor's obligations on design and management of the subcontract works and on coordination with the main contractor and others are more clearly spelt out.  The subcontractor is given the responsibility to notify through the contractor the architect of any ambiguities in subcontract documents.</p>

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	<p>3.3 The Sub-Contractor shall exercise in the performance of his obligations under the Sub- Contract all the skill, care and diligence to be expected of a competent sub-contractor experienced in carrying out work of a similar scope, nature and size to the Sub-Contract Works.</p> <p><i>Sub-Contractor to notify Contractor if he finds ambiguities in documents</i></p> <p>3.4(1) The Sub-Contractor shall immediately inform the Contractor if the Sub-Contractor finds an ambiguity or discrepancy in or divergence between the following documents:</p> <p>(a) the Sub-Contract Drawings;</p> <p>(b) the Specification;</p> <p>(c) the Sub-Contract Bills;</p> <p>(d) the descriptive schedules and other similar documents referred to in clause 6.2(d);</p> <p>(e) the further drawings, details, descriptive schedules and similar documents referred to in clause 6.3 provided from time to time during the carrying out of the Sub-Contract Works.</p> <p>3.4(2) The Contractor shall notify the Architect and shall with the Architect's consent issue an instruction to resolve the ambiguity, discrepancy or divergence as soon as practicable after receipt of the notice from the Sub-Contractor and the instruction shall, if considered appropriate by the Architect, require a Variation.</p> <p><i>Sub-Contractor to provide information to the Contractor regarding the master programme</i></p> <p>3.5(1) The Contractor is required, under clause 3 of the Main Contract Conditions, to submit a master programme, method statement, list of site management personnel and list of plant, equipment and temporary works to the Architect within the time stated in the appendix to the Main Contract Conditions and to regularly update the programme.</p> <p>3.5(2) The Sub-Contractor shall provide the Contractor with all the information relating to the Sub-Contract that the Contractor may reasonably require to enable the Contractor to comply with clause 3 of the Main Contract Conditions.</p>	
<p><b>19. Plant, Tools etc., of Sub-Contractor</b></p> <p>The plant, tools, equipment, or other property belonging to or provided by the Sub-Contractor, his servants or agents (other than materials and goods properly on the site for use in the Subcontract works) shall, subject to the provisions of clause 5 hereof, be at the sole risk of the Sub-Contractor, and any loss or damage to the same or caused by the same shall be the sole liability of the Subcontractor who shall indemnify the Main Contractor against any loss, claim or proceedings in respect thereof. Any insurance against any such loss or claim shall be the sole concern of the Sub-Contractor.</p>	<p><b>4. Care of the Sub-Contract works</b></p> <p><i>Contractor to be responsible for the care of the Sub-Contract works</i></p> <p>(1) The Contractor is required under clause 2.1 of the Main Contract Conditions to be responsible for the care of the works and shall therefore be responsible for the care of the Sub-Contract works except for loss or damage arising from the Excepted Risks or breach of contract or other default of the Sub-Contractor or any person for whom the Sub-Contractor is responsible. The period of responsibility is from the Commencement Date until 14 days after Substantial Completion of the works or 14 days after the determination of the Contractor's employment under the Main Contract, whichever is earlier except that the Contractor's responsibility for the care of the Sub-Contract works shall terminate in relation to a Section or Relevant Part 14 days after the Employer takes possession of that Section or Relevant Part.</p> <p>(2) All materials, goods and manufactured components whether stored on or off-site and the plant, tools and equipment belonging to or provided by the Sub-Contractor shall be at the sole risk of the Sub-Contractor except for loss or damage caused by breach of contract or other default of the Contractor or any person for whom the Contractor is responsible.</p>	<p>Contractor's obligation on care of subcontract works has been increased.</p> <p>Demarcation of the responsibility between the main contractor and the subcontractor, however, remains unclear.</p>
	<p><b>5. Contractor's instructions</b></p> <p><i>Contractor's instructions</i></p> <p>5.1(1) The Contractor may issue instructions to the Sub-Contractor that he is empowered to issue under the Sub-Contract Conditions at any time up to the issue of the Final Certificate including during the time that the Sub-Contractor may be carrying out work after the Date of Substantial Completion.</p>	<p>Procedures for instructions are more clearly spelt out.</p> <p>Subcontractor's</p>

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	<p>5.1(2) The Architect may issue instructions to the Contractor that relate to the Sub-Contract Works at any time up to the issue of the Final Certificate but he shall not instruct a Variation after the issue of the Defects Rectification Certificate for the works, a Section or a Relevant Part, as the case may be.</p> <p>5.1(3) Immediately after the Contractor receives an Architect's instruction that relates to the Sub-Contract works the Contractor shall issue a corresponding instruction to the Sub-Contractor including an instruction that requires a Variation.</p> <p><i>Architect to issue instructions to the Sub-Contractor through the Contractor</i></p> <p>5.2(1) The Architect is required to issue all instructions to the Sub-Contractor through the Contractor.</p> <p>5.2(2) The Architect is required to issue all instructions in writing in accordance with clause 4.2 of the Main Contract Conditions. If the Architect gives an or all instruction that the Contractor relays to the Sub-Contractor and the Sub-Contractor believes that the instruction requires a Variation it shall have no effect until confirmed by the Architect.</p> <p>5.2(3) The Sub-Contractor shall confirm the oral instruction that he believes requires a Variation in writing to the Contractor within 7days of it being issued. The Contractor shall follow the confirmation of oral instructions process set out in clause 4.2(1) of the Main Contract Conditions and shall inform the Sub-Contractor in writing whether the Architect has agreed with or dissented to the Sub-Contractors confirmation of the oral instruction within 10 days after the Sub-Contractor's confirmation of that instruction.</p> <p><i>Compliance with Contractor instructions</i></p> <p>5.3(1) Subject to clauses 5.2(2) and 5.3(2), the Sub-Contractor shall comply with all instructions that the Contractor is empowered by the Sub-Contract Conditions to issue as soon as practicable. If there is a disagreement between the Contractor and the Sub- Contractor as to whether an instruction involves a Variation, the Sub-Contractor shall comply with the instruction and may, if he is not satisfied, require the disagreement to be resolved under clause 42.</p> <p>5.3(2) If the Sub-Contractor disagrees that the Contractor is empowered by the Sub- Contract Conditions to issue an instruction he may within 7days of receipt of that instruction require the disagreement to be resolved under clause 42.</p> <p>5.3(3) If the Sub-Contractor does not begin to comply with an instruction within 7days after receipt of a written notice from the Contractor requiring compliance with that instruction in accordance with clause 5.3(1) and the Architect issues a certificate to that effect by special delivery, the Contractor may, if permitted to do so by the Architect, without prejudice to his other rights and remedies, engage other persons to carry out that instruction. All additional costs incurred by the Contractor in connection with the employment of the other persons to carry out that instruction may be recovered from the Sub-Contractor under clause 41 or as a debt.</p> <p>5.3(4) The Sub-Contractor shall provide reasonable access to the persons engaged by the Contractor under clause 5.3(3) and shall permit them to carry out their work without hindrance.</p>	<p>obligation to comply with instructions; main contractor's right to engage others to carry out instruction and subcontractor's right to seek for dispute settlement are stipulated.</p>
	<p><b>6. Documents forming the Sub-Contract and other documents</b></p> <p><i>The documents forming the Sub-Contract</i></p> <p>6.1 (1) The documents forming the Sub-Contract shall be:</p> <p>(a) the Articles of Agreement and the Appendix;</p> <p>(b) the Form of Tender submitted by the Sub-Contractor together with the Contractor's letter of acceptance of the Sub-Contractors tender and any correspondence between the parties expressed to form part of the Sub-Contract;</p> <p>(c) the Special Conditions, if any;</p>	<p>Documents forming the subcontract and other documents that have an impact are defined in this clause, taking into account current practices, e.g.</p>

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	<p>(d) the Sub-Contract Conditions; and  (e) the Sub-Contract Drawings, the Specification and the Sub-Contract Bills or Schedules of Quantities and Rates, as the case may be.</p> <p>6.1(2) The order of precedence of the documents forming the Sub-Contract shall be as listed in paragraphs (a) to (e) above and:  (a) for the purpose of adjusting the Sub-Contract Sum the Sub-Contract Bills shall take precedence over the Sub-Contract Drawings and the Specification; but  (b) for all other purposes including carrying out the construction of and completing the Sub-Contract Works the Sub-Contract Drawings and the Specification shall take precedence over the Sub-Contract Bills.</p> <p>6.1(3) As provided for in clause 1.7(2), the accuracy of the quantities in the Schedule of Quantities and Rates shall be at the Sub-Contractors risk. The quantities shall not form part of the Sub-Contract but the rates shall form part of the Sub-Contract.</p> <p><i>Copies of documents for Sub-Contractor</i>  6.2 As soon as practicable after the acceptance of the Sub-Contractor's tender the Architect shall provide the Sub-Contractor, without charge, with:  (a) 1 certified true copy of each of the documents forming the Sub-Contract;  (b) 2 further copies of the Sub-Contract Drawings and the Specification;  (c) 2 copies of the unpriced bills of quantities; and  (d) 2 copies of any descriptive schedules or similar documents prepared by or under the direction of the Architect before the acceptance of the Sub-Contractor's tender and necessary for use in carrying out the Sub-Contract Works.</p> <p><i>Further drawings, details, descriptive schedules and similar documents</i>  6.3(1) The Architect shall provide the Sub-Contractor, through the Contractor, without charge, and from time to time during the carrying out of the Sub-Contract Works, with 2 copies of all further drawings, details, descriptive schedules or similar documents (referred to in clause 6 as 'The supplementary documentation') that, in the Architect's opinion, are reasonably necessary for use in carrying out the Sub-Contract Works, or to explain or amplify the Sub-Contract Drawings.  6.3(2) If in the Subcontractor's opinion he requires more supplementary documentation than that provided by the Architect under clause 6.3(1) he shall submit a written request to the Architect through the Contractor specifying what further supplementary documentation he requires.  6.3(3) It shall be at the sole discretion of the Architect to decide which, if any, of the supplementary documentation requested by the Sub-Contractor the Architect will provide.</p> <p><i>Documents to be provided to Sub-Contractor on time</i>  6.4(1) The supplementary documentation referred to in clause 6.3 shall be provided when, having regard to the progress of the Sub-Contract works and the Sub-Contractors procurement, fabrication and other lead in times, it is reasonably necessary for the Sub-Contractor to receive it.  6.4(2) The Sub-Contractor shall inform the Architect through the Contractor sufficiently in advance of the time that he requires the supplementary information to enable the Architect to fulfil his obligations under clause 6.4(1).</p> <p><i>Electronic copies of drawings</i>  6.5 If, within 14 days after the acceptance of the Sub-Contractor's tender, the Sub-Contractor requests the Architect, through the Contractor in writing to do so, the Architect shall provide the Sub-Contractor, without</p>	<p>electronic copies of drawings.</p>

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	<p>charge, with electronic copies of all of the drawings required to be provided under clauses 6.2 and 6.3 that have been produced electronically in lieu of the hard copies referred to in those clauses.</p> <p><i>Return of drawings</i></p> <p>6.6 The Sub-Contractor shall return to the Architect, through the Contractor, all drawings, specifications, details, descriptive schedules and similar documents provided under clause 6, if required by the Architect to do so, either upon the issue of the Final Certificate or the final conclusion of any proceedings to which the Sub-Contractor is a party whichever is later and the Sub-Contractor may take copies for his own records.</p> <p><i>Submission of manuals and assignment of warranties</i></p> <p>6.7(1) The Sub-Contractor shall submit to the Contractor all the operation and maintenance manuals received by the Sub-Contractor for the Sub-Contract Works.</p> <p>6.7(2) The Sub-Contractor shall assign to the Employer through the Contractor (so far as he is lawfully able to do so) the benefits of all suppliers' and sub-sub-contractors' warranties, guarantees or other ancillary agreements for materials, goods or work relating to the Sub-Contract Works insofar as they are required by the Sub-Contract, within 50 days after the issue of the Substantial Completion Certificate for the whole of the Works.</p> <p><i>Submission of as-built drawings</i></p> <p>6.8(1) The Sub-Contractor shall submit to the Contractor 2 copies of a complete set of the as-built drawings that are required by the Sub-Contract within 50 days of the issue of the Substantial Completion Certificate for the whole of the Works.</p> <p>6.8(2) Where the drawings referred to under clauses 6.2 and 6.3 have been issued electronically, the Sub-Contractor shall, if required by the Contractor, provide the as- built drawings electronically.</p> <p><i>Limit to use of documents</i></p> <p>6.9 The Sub-Contractor shall not use any of the documents referred to in clause 6 for any purpose other than the Sub-Contract Works and any proceedings relating to the Sub-Contract.</p> <p><i>Issue of Architect's certificates</i></p> <p>6.10 The Architect shall issue all certificates to the Contractor and shall, at the same time, issue a copy of each certificate to the Sub-Contractor.</p> <p><i>Copy of notice to be given to Architect</i></p> <p>6.11 Whenever the Contractor or Sub-Contractor issues a notice to the other by special delivery he shall issue a copy of the notice to the Architect at the same time.</p>	
	<p><b>7. Statutory obligations</b></p> <p><i>Statutory Requirements</i></p> <p>7.1 The Sub-Contractor shall comply with and give the notices required by any Ordinance, regulation, rule, order or by-law applicable to the Sub-Contract works ('the Statutory Requirements') which are to be complied with by the Sub-Contractor.</p> <p><i>Compliance with the Statutory Requirements</i></p> <p>7.2(1) The Sub-Contractor shall immediately notify the Contractor if the Sub-Contractor finds that carrying out the Sub-Contract works in compliance with the Sub-Contract or with an Architect's instruction requiring a Variation will infringe the Statutory Requirements.</p> <p>7.2(2) If the Contractor agrees with the Sub-Contractor, the Contractor shall, with the Architect's consent, issue an instruction to resolve the infringement as soon as practicable after receipt of the notice and the instruction shall, if considered appropriate by the Architect, require a Variation.</p>	<p>The clause makes clear that changes to subcontract works for compliance with statutory requirements may entitle subcontractor to variations.</p>

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<p><b>9. Defects, Shrinkages, etc.</b>  (a) All defects, shrinkages or other faults in the Sub-Contract Works which the Main Contractor (whether at his own cost or not) shall be liable to make good under the Main Contract, shall be made good by the Subcontractor within a reasonable time after the receipt by him from the Main Contractor of the Architect's written instructions or a copy thereof relating to the same.  Provided that where the Main Contractor is liable to make good such defects, shrinkages or other faults but not at his own cost, then the Main Contractor shall secure a similar benefit to the Sub-Contractor and shall account to the Sub-Contractor for any money actually received by him in respect of the same.  (b) If the Main Contractor (whether by himself or any other sub-contractor) shall execute any work (whether permanent or temporary) to the Main Contract Works or to any part of the same required by the Architect or rendered necessary by reason of defects, shrinkages or other faults in the Sub-Contract Works due to materials or workmanship not being in accordance with this Sub-Contract then the Sub-Contractor shall pay to the Main Contractor the cost of the execution of such work.  Provided that if the Main Contractor shall pay or allow to the Employer the value of or other agreed sum (not exceeding such cost as aforesaid) in respect of such work instead and in satisfaction of executing the same, then the Sub-Contractor shall pay to the Main Contractor such value or other agreed sum as aforesaid.  (c) If the Sub-Contractor shall execute any work to or in connection with the Sub-Contract Works (whether permanent or temporary) required by the Architect of rendered necessary by reason of any defects, shrinkages or other faults in the Main Contract Works due to materials or workmanship not being in accordance with the Main Contract then the Main Contractor shall pay to the Sub-Contractor the cost of the execution of such work.</p>	<p><b>8. Materials, goods, workmanship and work</b>  <i>Types, standards and quality</i>  8.1(1) The Sub-Contractor must provide all materials and goods of the types, standards and quality described in the Sub-Contract to the Contractor's and the Architect's satisfaction that the Sub-Contractor has met these requirements.  8.1(2) Where the Sub-Contractor is responsible for the selection of the materials and goods in accordance with a performance specification or otherwise, the materials and goods must be fit for the purpose stated in the Sub-Contract.  8.3(3) If any of the specified materials or goods are not procurable, then the Sub-Contractor shall submit alternative proposals for materials or goods of similar type and standard and of comparable quality and price to the Contractor for him to obtain the Architect's approval; and  (a) if the proposed alternative materials or goods are of similar type and standard and of comparable quality and price to those specified, the Contractor shall seek the Architect's approval to the substitution of the alternative materials or goods for those specified with no adjustment to the Sub-Contract Sum; or  (b) if the proposed alternative materials or goods are not of similar type and standard or comparable quality or price to those specified, and if the Contractor obtains the Architect's approval the Architect shall instruct a Variation to adjust the type, standard, quality or price.  8.1(4) The Sub-Contractor shall provide the Contractor, upon his request, with vouchers, test certificates or other evidence to satisfy the Contractor and the Architect that the materials and goods comply with the Sub-Contract.  8.1(5) The sub-Contractors workmanship must be of the standard and quality described in the Sub-Contract to the Contractor's and the Architect's satisfaction.  8.1(6) All work must be carried out in a proper and workmanlike manner in accordance with the Sub-Contract or, in the absence of any specific performance requirements, to the Contractors and the Architect's satisfaction.  <i>Inspection and tests</i>  8.2(1) The Sub-Contractor shall carry out or, if so required by the Sub-Contract, arrange for a third party to carry out, the tests specified in the Sub-Contract in compliance with the specified testing procedures  8.2(2) In addition to the tests specified in the Sub-Contract, the Architect may instruct the Sub-Contractor to open up for inspection any work covered up and to carry out, or arrange for a third party to carry out, tests of materials or goods (whether or not already incorporated in the Sub-Contract works) and work which has been carried out.  8.2(3) The cost of the testing, the opening up for inspection and any consequential making good shall be added to the Sub-Contract Sum unless:  (a) the inspection or test is provided for in the Sub-Contract Bills or Specification if there are no Sub-Contract Bills;  (b) the inspection or test shows that the materials, goods, workmanship or work are not in accordance with clause 8;  (c) the inspection or test was considered necessary by the Architect because, as a result of the failure of a previous inspection or test, further investigation of similar materials, goods or work was required to establish to his satisfaction their compliance with clause 8;or  (d) the work was carried out without the inspection notice required by the Sub-Contract.  <i>Materials, goods, workmanship or work not in accordance with Sub-Contract</i></p>	<p>The clause further elaborates on the subcontractor's obligations.  Architect can instruct a variation for alternative, substandard materials or goods to adjust the type, standard, quality or price.  The main contractor and the subcontractor are mutually responsible for reimbursing the other party costs for any abortive works incurred to him by the other party.</p>

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<p>Provided that if instead of the Sub-Contractor actually executing such work and in satisfaction of the same the Main Contractor shall pay or allow to the Employer the value of or other agreed sum (not exceeding such cost as aforesaid) in respect of such work, then the Main Contractor shall indemnify the Sub-Contractor against any claim, damage or loss in respect of failure to execute such work.</p>	<p>8.3 The Architect may, if any materials, goods, workmanship or work are not in accordance with the Sub-Contract, instruct:</p> <p>(a) the removal from the Site and the replacement of materials and goods that are not in accordance with clause 8;</p> <p>(b) the repair or demolition, removal and reconstruction of any work which, in respect of materials, goods or workmanship, is not in accordance with clause 8;</p> <p>(c) the acceptance, without replacement or reconstruction, of some or all of the materials, goods or work that are not in accordance with clause 8, subject to a reasonable reduction in the Sub-Contract Sum having regard to the reduction in the value of the materials, goods or work; and</p> <p>(d) a Variation for alternative remedial work to some or all of the materials, goods or work as is reasonably necessary in consequence of them not being in accordance with clause 8, with no extension of time or addition to the Sub-Contract Sum.</p> <p><i>Sub-Contractor to be reimbursed by Contractor for abortive work</i></p> <p>8.4 Where compliance by the Contractor with an Architect's instruction under clause 8.3 of the Main Contract Conditions to demolish, remove and reconstruct any defective work results in disturbance to the Sub-Contract Works:</p> <p>(a) the Sub-Contractor shall, if so instructed by the Contractor, take down and reconstruct Sub-Contract Work that had been properly carried out and re-fix, repair or re-supply materials or goods that had been properly fixed;</p> <p>(b) the Contractor shall reimburse the Sub-Contractor for the cost incurred by the Sub-Contractor in carrying out the abortive work by a fair valuation; and</p> <p>(c) the payment to the Sub-Contractor shall not be added to the Sub-Contract Sum.</p> <p><i>Sub-Contractor to reimburse Contractor for costs caused by Sub-Contractor</i></p> <p>8.5 The Sub-Contractor shall reimburse the Contractor for the cost incurred by the Contractor due to the rectification of the Sub-Contractors own defective work by the Sub-Contractor.</p> <p><i>Rectifying defects</i></p> <p>8.6 The Architect may instruct the Sub-Contractor to rectify defects which appear before the commencement of the Defects Liability Period.</p> <p><i>Dismissal from the Sub-Contract works</i></p> <p>8.7 The Contractor may instruct the Sub-Contractor to dismiss any individual from the Sub-Contract works for incompetence, misconduct or other similar reasons.</p>	
	<p><b>9. Intellectual property rights</b></p> <p><i>Treatment of royalties</i></p> <p>9.1 The Sub-Contractor shall pay the cost of any royalty, license fee or other sum legally demandable for the use of intellectual property in connection with the design of the Sub-Contract Works and the incorporation of materials and goods, other than materials and goods supplied by a Nominated Supplier; into the permanent Sub-Contract Works and;</p> <p>(a) if the design of the Sub-Contract works and/or the selection of the materials and goods was carried out by the Sub-Contractor the cost shall be deemed to have been included in the Sub-Contract Sum; but</p> <p>(b) if the design of the permanent Sub-Contract works and/or the selection of the materials and goods was carried out by others the cost shall be added to the Sub-Contract Sum.</p> <p><i>Payment of royalties included in Valuation</i></p>	<p>The clause elaborates on the subcontractor's obligations and entitlement to variation in respect of using intellectual property that requires payment of royalty.</p>

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	9.2 If the Sub-Contractor uses any intellectual property in compliance with an Architect's instruction requiring a Variation, any royalty, license fee or other sum legally chargeable which the Sub-Contractor pays in connection with that instruction shall be included in the Valuation of the Variation.	
	<p><b>10. Sub-Contractor's site management team</b>  <i>Sub-Contractor's site management team</i>  (1) The Sub-Contractor shall maintain an experienced and competent site management and supervisory team ('the team') on the Site for as long as is necessary for the satisfactory fulfilment of his obligations under the Sub-Contract.  (2) The team shall be headed by an experienced and competent site manager approved by the Contractor and shall be of sufficient strength with personnel of appropriate qualifications, seniority and experience, having regard to the size, complexity and nature of the Sub-Contract Works, to organize, manage, plan, supervise and co-ordinate the carrying out of the Sub-Contract works.  (3) An instruction issued by the Contractor to the site manager shall be deemed to have been issued to the Sub-Contractor.  (4) The Contractor may instruct the Sub-Contractor to replace the site manager or a member of the team for incompetence or misconduct.  (5) The Sub-Contractor shall not remove or replace the site manager or any member of the team unless requested by or agreed to by the Contractor.</p>	The clause deals with requirements for site staff of the subcontractor for ensuring good work management and coordination.
<p><b>14. Right of Access of Main Contractor and Architect</b>  The Main contractor and the Architect and all persons duly authorised by them or either of them shall at all reasonable times have access to any work which is being prepared for or will be utilized in the Sub-Contract Works, unless the Architect shall certify in writing that the Sub-Contractor has reasonable grounds for refusing such access.</p>	<p><b>11. Access for Contractor and Architect to the Sub-Contract works</b>  <i>Sub-Contractor to give access</i>  The Sub-Contractor shall give the Contractor and the Architect and any person authorized by any of them access, at all reasonable times, to the Sub-Contract Works or any place where materials or goods are being manufactured or stored, work is being prepared or design is being carried out for the Sub-Contract Works.</p>	Requirements in the new and old versions are basically the same.
	<p><b>12. Architect's representative</b>  <i>Architect's representative</i>  (1) Under clause 12 of the Main Contract Conditions the Architect and/or the Employer may appoint an architect, engineer, clerk of works or other person as the Architect's representative to be resident on the Site acting under the direction of the Architect, and his duties and powers are defined in that clause.  (2) The Sub-Contractor shall give the Architect's representative every reasonable facility for the performance of these duties in connection with the Sub-Contract works.</p>	Subcontractor's obligation to facilitate the Architect's representative to perform his duties clearly spelt out.
<p><b>7. Variations, etc.</b>  (1) In the event of the Main Contractor issuing in writing to the Sub-Contractor a copy of any instructions of the Architect (whether written or, if oral, subsequently confirmed in writing either by the Architect or the Main Contractor and, in the latter case, not dissented from by the Architect within seven days) in relation to the Sub-Contract works (whether</p>	<p><b>13. Variations, Provisional Quantities, Provisional Items and Provisional Sums</b>  <i>Architect's authority to issue instructions requiring a Variation</i>  13.1(1) The Architect may issue an instruction requiring a Variation to the Sub-Contractor provided that:  (a) the instruction is issued to the Sub-Contractor through the Contractor;  (b) the Sub-Contractor has the right of reasonable objection to a Variation which imposes or changes an obligation or restriction on the Sub-Contractor regarding access to the Site, use of any part of the Site or limitation of working space or working hours and the Architect shall, upon receipt of the objection, either confirm or withdraw the instruction and if the instruction is confirmed, the Sub-Contractor may refer the</p>	The procedures of issuing and acting upon an instruction requiring a variation are defined in greater detail in the clause. Subcontractor's

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<p>in regard to variations or in regard to any other matter in respect of which the Architect is expressly empowered by the conditions of the Main Contract to issue instructions), then the Subcontractor shall forthwith comply with and carry out the same in all respects accordingly. Save as aforesaid no variation of the Sub-Contract works shall be made or allowed by the Subcontractor.</p> <p>The expression 'variation' shall have the same meaning assigned to it as in the Main Contract.</p> <p>(2) Upon receipt of what purports to be an instruction of the Architect issued in writing by the Main Contractor to the Subcontractor, the Sub-Contractor may require the Main Contractor to request the Architect to specify in writing the provision of the Main Contract which empowers the issue of the said instruction. The Main Contractor shall forthwith comply with any such requirement and deliver to the Sub-Contractor a copy of the Architect's answer to the Main Contractor's request. If the Sub-contractor shall thereafter comply with the said instruction, then the issue of the same shall be deemed for all purposes of this Sub-Contract to have been empowered by the provision of the Main Contract specified by the Architect in answer to the Main Contractor's request. Provided always that if before such compliance the Sub-Contractor shall have made a written request to the Main Contractor to request the Employer to concur in the appointment of an arbitrator under the Main Contract in order that it may be decided whether the provision specified by the Architect empowers the issue of the said instruction then, subject to the Subcontractor giving the Main Contractor such indemnity and security as the Main Contractor may reasonably require, the Main Contractor shall allow the Subcontractor to use the Main Contractor's name and if necessary will join with the Sub-Contractor in arbitration proceedings by the Sub-Contractor to decide the matter as aforesaid.</p> <p><b>10. Sub-Contract Sum -Valuation of Variations</b> The price of the Sub-Contract Works (hereinafter</p>	<p>matter to arbitration under clause 42; and</p> <p>(c) the Sub-Contractor's written consent is given to an instruction omitting work included in the Sub-Contract which is to be carried out by the Sub-Contractor in order for it to be carried out by others.</p> <p>13.1(2) An instruction requiring a Variation shall describe the change required to the design, quality or quantity of the Sub-Contract works or the imposition of or change to any obligation or restriction on the Sub-Contractor and where appropriate the Architect shall issue revised drawings and/or schedules.</p> <p><i>Instructions for Provisional Quantities and Provisional Sums</i></p> <p>13.2 The Architect shall issue an instruction under clause 13.2 of the Main Contract Conditions through the Contractor for:</p> <p>(a) the carrying out of work covered by Provisional Quantities or Provisional Items in the Sub-Contract; and</p> <p>(b) the expenditure of Provisional Sums included in the Sub-Contract.</p> <p><i>Valuation of Sub-Contractor's work</i></p> <p>13.3 The Quantity Surveyor shall measure and value work carried out by the Sub-Contractor in response to an Architect's instruction under:</p> <p>(a) clause 13.1 requiring a Variation;</p> <p>(b) clause 13.2(a) of the Main Contract Conditions for the re-measurement of Provisional Quantities and Provisional Items in the Sub-Contract; and</p> <p>(c) clause 13.3(b) of the Main Contract Conditions to expend a Provisional Sum included in the Sub-Contract, and the Valuation shall be made in accordance with the rules set out in clause 13.4.</p> <p><i>Valuation rules</i></p> <p>13.4(1) where the Valuation relates to the carrying out of:</p> <p>(a) additional or substituted work which can be properly valued by measurement;</p> <p>(b) work which is the subject of Provisional Quantities or Provisional items; or</p> <p>(c) work involved in the expenditure of a Provisional Sum,</p> <p>the work shall be measured and shall be valued in accordance with the following rules:</p> <p>(i) where the work is the same as or similar in character to and is carried out under the same or similar conditions to work priced in the Sub-Contract Bills, and the Variation does not substantially change the quantity of that work, the rates in the Sub-Contract Bills for that work shall determine the Valuation;</p> <p>(ii) where the work is the same as or similar in character to work priced in the Sub-Contract Bills but is not carried out under the same or similar conditions, or the Variation substantially changes the quantity of that work, the rates in the Sub-Contract Bills for that work shall determine the Valuation but with a fair adjustment for the difference in conditions or quantity;</p> <p>(iii) where the work is not the same as or similar in character to any work priced in the Sub-Contract Bills the work shall be valued at fair rates; and</p> <p>(iv) the word 'conditions' in clause 13.4(1) shall mean physical conditions and not financial conditions.</p> <p>13.4(2) where the Valuation relates to work which cannot be properly measured and valued under clause 13.4(1) the work may, with the prior consent that the Contractor with the Architect's approval, be carried out as daywork and provided that the Sub-Contractor:</p> <p>(a) gives at least 7 days' notice to the Architect through the Contractor before carrying out the work, or where the work is required urgently, as much prior notice as practicable; and</p> <p>(b) submits vouchers specifying the time spent daily carrying out the work, the workmens' names, the materials and goods and the plant and equipment employed to the Contractor for verification by the Architect</p>	<p>right to object to a variation defined. Methods for valuation of variations more clearly defined.</p>

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<p>referred to as ‘the Sub-Contract Sum’) shall be the sum named in or determined by the provisions of Part III of the Appendix to this Sub-Contract or such other sum as shall become payable by reason of any authorised variations, or amounts ascertained under clause 8(c) hereof. The value of all authorised variations shall be determined by the Surveyor for the time being under the Main Contract (or if none the Architect) in accordance with the applicable provisions (relating to the ascertainment of prices for authorised variations) laid down in the Agreement and Schedule of Conditions of Building Contract currently issued under the sanction of The Hong Kong Institute of Architects, The Hong Kong Institute of Surveyors and the Society of Builders, Hong Kong; save that where the Sub-Contractor has with the agreement of the Main Contractor annexed to this Sub-Contract a schedule of prices for measured work and/or a schedule of daywork prices, such prices shall be allowed to the Sub-Contractor in determining the value of authorised variations in substitution for any prices which would otherwise be applicable under this clause.</p>	<p>within 14 days of the work being carried out, the work shall be valued at prime cost comprising labour, materials, goods, plant and equipment plus overheads and profit; and:</p> <p>(c) priced at the daywork rates in the Sub-Contract Bills; or</p> <p>(d) where there are no daywork rates in the Sub-Contract Bills, priced at:</p> <p>(i) the labour rates contained in the record of Average Daily wages of workers Engaged in Government Building and Construction Projects published by the Census and Statistics Department of the Government of the Hong Kong Special Administrative Region current at the date when the work is carried out;</p> <p>(ii) the net cost of materials and goods plus the cost of packing, carriage and delivery;</p> <p>(iii) the cost of hiring plant and equipment specifically provided for the work together with the cost of transportation, fuel, maintenance and insurance; and</p> <p>(iv) the percentages for overheads and profit on the prime cost of the labour, materials, goods, plant and equipment that are included in the Sub-Contract Bills or, where no such percentages are included in the Sub-Contract Bills, at 15 percent.</p> <p>13.4(3) Where the Valuation rebates to the omission of work included in the Sub-Contract Bills:</p> <p>(a) the rates for the work in the Sub-Contract Bills shall determine the Valuation of the work omitted; and</p> <p>(b) if, in the Quantity Surveyor's opinion, the Sub-Contractor has reasonably incurred expense which has become wholly or partly unnecessary as a result of the omission of the work, a fair adjustment shall be made to the Valuation in respect of that expense.</p> <p>13.4(4) Where the Valuation does not relate to additional or substituted work or the omission of work but relates only to other matters not involving measured work such as the imposition of or change to an obligation or restriction and the rules in clauses 13.4(1), 13.4(2) or 13.4(3) cannot reasonably be applied a fair valuation shall be made.</p> <p>13.4(5) An appropriate allowance shall be made in any Valuation under clause 13.4 for any percentage or lump sum adjustment made to the Sub-Contract Bills.</p> <p>13.4(6) If compliance with a Variation instructed under clause 13.1 or a deemed Variation under clause 14.3 substantially changes the conditions under which other work comprising part of the Sub-Contract works is carried out, and results in the rates in the Sub-Contract Bills for this work becoming unreasonable or inapplicable, then new rates shall be determined based upon the Sub-Contract rates adjusted by a fair allowance for the difference in the conditions.</p> <p>13.4(7) In addition to the Valuation by daywork under clause 13.4(2) of work which cannot be properly measured and valued under clause 13.4(1) the Contractor, with the approval of the Architect, may instruct the Sub-Contractor, with the Sub-Contractors agreement, to carry out any other work, including work which can be properly measured and valued under clause 13.4(1), to be valued in accordance with clause 13.4(2).</p> <p>13.4(8) If the Architect instructs a Variation for additional work after Substantial Completion, clause 13.4(1) shall not apply and a fair valuation shall be made.</p> <p>13.4(9) No allowance is to be made under clause 13.4 for direct loss and/or expense due to delay to the progress of the works, disruption, or any other cause for which the Sub- Contractor can be reimbursed by payment under any other provision of the Sub-Contract Conditions.</p> <p><i>Adjustment of Sub-Contract Sum</i></p> <p>13.5 Effect shall be given to a Valuation under clause 13.3 by adjustment of the Sub-Contract Sum.</p> <p><i>Sub-Contractor's right to be present during measurement on Site</i></p>	

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	<p>13.6 Where it is necessary to measure work on the Site for a Valuation, the Quantity Surveyor shall give the Sub-Contractor an opportunity to be present and to take his own measurements.</p> <p><i>Variation necessitated by fault of Sub-Contractor</i></p> <p>13.7 If and to the extent that the issue of an instruction requiring a Variation arose as a result of a breach of contract or other default by the Sub-Contractor or any person for whom the Sub-Contractor is responsible the Quantity Surveyor shall take the effect of the breach or default into account in the Valuation of the Variation.</p>	
	<p><b>14. Sub-Contract Bills</b></p> <p><i>Quality and quantity of work included in Sub-Contract Sum</i></p> <p>14.1 The quality and quantity of the work included in the Sub-Contract Sum stated in Article 2 shall be deemed to be that which is set out in the Sub-Contract Bills which shall be read in conjunction with the Specification to amplify and supplement the descriptions in the Sub-Contract Bills.</p> <p><i>Standard Method of Measurement of Building works</i></p> <p>14.2(1) The Sub-Contract Bills, except where expressly stated to the contrary in those bills, have been prepared in accordance with the procedures set out in the Hong Kong Standard Method of Measurement of Building works current at the time the Tender Documents were issued.</p> <p>14.2(2) Any departure from the Standard Method of Measurement of Building works in measuring any work shall be specifically stated in the 'preliminaries' or 'preambles' sections of the Sub-Contract Bills and the same method as used to measure that work shall be used for the measurement of any similar work that may be required to be measured and valued under clause 13.</p> <p><i>Errors in Sub-Contract Bills</i></p> <p>14.3(1) An error in description or in quantity or omission of an item from the Sub-Contract Bills shall not vitiate the Sub-Contract nor release the Sub-Contractor from any of his obligations or liabilities.</p> <p>14.3(2) The error in quantity or omission referred to in clause 14.3(1) shall be corrected and shall, for the sole purpose of adjusting the Sub-Contract Sum, be deemed to be a Variation required by the Architect and valued in accordance with the Variation rules under clause 13.4.</p> <p>14.3(3) An error in description of an item shall be corrected, and, if in the Quantity Surveyor's opinion, the rate for that item in the Sub-Contract Bills is no longer fair by reason of that correction, the Quantity Surveyor shall fix a new rate that is fair to both parties and the Employer.</p>	<p>Not applicable to subcontract without bills of quantities.</p>
	<p><b>15. Sub-Contract Sum</b></p> <p><i>Adjustment of Subcontract Sum</i></p> <p>(1) The Sub-Contract Sum stated in Article 2 shall only be adjusted in accordance with the Sub-Contract and as soon as the amount of the adjustment is calculated in whole or in part, the Contractor shall include the amount so calculated in his next submission under clause 32.1 of the Main Contract Conditions for it to be taken into account in the next interim Certificate following the calculation.</p> <p>(2) Subject to clause 14.3 the parties are deemed to have accepted any error whether of arithmetic or not in the calculation of the Sub-Contract Sum named in Article 2.</p>	<p>The clause requires consistent updating of the subcontract sum.</p>
	<p><b>16. Materials and goods for the Sub-Contract works on or off-site</b></p> <p><i>Materials and goods on or off-site</i></p> <p>(1) Materials and goods for the Sub-Contract works delivered to or adjacent to the Site shall not be removed without the consent of the Contractor as approved by the Architect. If they have become the property of the Contractor; the Sub-Contractor shall remain responsible for loss or damage to them except to the extent that the loss or damage is due to an act or neglect of the Contractor or any person for whom the Contractor is</p>	<p>Shall be read in conjunction with Clause 4(2). Division of the responsibility between the</p>

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	<p>responsible.</p> <p>(2) The Sub-Contractor shall indemnify the Contractor against loss or damage to materials and goods stored off-site that have become the property of the Contractor, shall be responsible for the cost of their storage, handling and insurance and shall not remove them from where they are being stored except for use upon the Sub-Contract Works.</p>	<p>contractor and the subcontractor not clearly defined.</p>
	<p><b>17. Substantial Completion and defects liability</b></p> <p><i>Substantial Completion of Sub-Contract Works to be completed by the Sub-Contract Completion Date</i></p> <p>17.1(1) If it is stated in the Appendix that the Sub-Contract works are to be carried out within a set period of time and completed by the Sub-Contract Completion Date:</p> <p>(a) the Sub-Contractor shall notify the Contractor when the Sub-Contract Works are substantially complete;</p> <p>(b) the Contractor shall immediately submit the Sub-Contractors notice to the Architect;</p> <p>(c) the Architect shall issue the Substantial Completion Certificate for the Sub-Contract Works to the Contractor with a copy to the Sub-Contractor when he is satisfied that the Sub-Contract Works have been substantially completed and have passed the inspections and tests that are required by the Sub-Contract to be carried out and completed before Substantial Completion and all unfinished items of work shall be completed as soon as practicable after the issue of the Substantial Completion Certificate, or as instructed by the Contractor, and in any case before the expiry of the Defects Liability Period; and</p> <p>(d) the Defects Liability Period shall be as stated in the appendix to the Main Contract Conditions.</p> <p>17.1(2) Where clause 18 applies, Substantial Completion of the Sub-Contract Works in a Relevant Part shall be deemed to have occurred on the Relevant Date.</p> <p>17.1(3) If sectional completion of the works is provided for in the Main Contract the Architect is required to issue a separate Substantial Completion Certificate upon Substantial Completion of each Section and the whole of the works and, in a similar manner the Architect is required to issue a separate Substantial Completion Certificate for each Section and the whole of the Sub-Contract Works.</p> <p><i>Substantial Completion of Sub-Contract Works to be completed at the same time as the Works</i></p> <p>17.2 If it is stated in the Appendix that the Sub-Contract Works are to be carried out and completed at the same time as the works, Substantial Completion of the Sub-Contract Works shall be deemed to have taken place on the date stated in the Substantial Completion Certificate for the works or any Section or on the Relevant Date and the Architect shall issue a copy of the Substantial Completion Certificate to the Sub-Contractor.</p> <p><i>Sub-Contractor to leave Sub-Contract Works clean and tidy</i></p> <p>17.3(1) The Sub-Contractor shall upon Substantial Completion clear up and leave the Sub-Contract Works and all areas made available to him clean and tidy to the Contractor's satisfaction.</p> <p>17.3(2) If the Sub-Contract Works are substantially complete under clauses 17.1 and 17.2 before the Main Contract Works, the Sub-Contractor shall maintain the Sub-Contract Works up until completion of the Main Contract works except and to the extent of damage caused by the Contractor or any person for whom the Contractor is responsible.</p> <p><i>Rectifying defects</i></p> <p>17.4(1) The Sub-Contractor shall rectify all defects, shrinkages, or other faults in the Sub-Contract Works which are identified during the Defects Liability Period of the works, a Section or a Relevant Part stated in the appendix to the Main Contract Conditions and are caused either by materials, goods or workmanship which are not in accordance with clause 8, by natural causes or as a result of a Specified Peril occurring during the</p>	<p>Two options for defining completion date of subcontract works: a date defined in the subcontract or the date for completion of the main contractor works. The Architect may instruct the contractor not to rectify certain defects in conjunction with a reduction. The subcontractor is subject to his share of the deduction for works not rectified for which he is responsible.</p>

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	<p>construction period prior to Substantial Completion.</p> <p>17.4(2) The Sub-Contractor shall rectify the defects specified in the schedules of defects issued by the Architect under clause 17.3(2) of the Main Contract Conditions in accordance with the directions of the Contractor and to the Architect's satisfaction within a reasonable time after receipt of those schedules.</p> <p>17.4(3) If the Sub-Contractor does not comply with the requirements of clause 17.4(2) and rectify the defects listed in the schedules of defects within a reasonable time the provisions of clauses 5.3(3) and 5.3(4) shall apply.</p> <p>17.4(4) where under clause 17.3(5) of the Main Contract Conditions the Architect has instructed the Contractor not to rectify some or all of the defects in the works and a reduction has been made to the Main Contract for the defects that were not rectified then to the extent that the reduction is relevant to the Sub-Contract Works a proportional share shall be borne by the Sub-Contractor and may be deducted by the Contractor from any monies due or to become due to the Sub-Contractor or may be recoverable as a debt.</p> <p><i>Defects Rectification Certificate for the Works</i></p> <p>17.5(1) The Architect is required to issue the Defects Rectification Certificate under clause 17.4 of the Main Contract Conditions when the requirements of that clause have been fulfilled.</p> <p>17.5(2) Where sectional completion of the works is provided for in the Main Contract or the Employer takes possession of a Relevant Part, the Architect is required to issue separate Defects Rectification Certificates for each Section, Relevant Part and the whole of the Works.</p> <p><i>Damage by a Specified Peril</i></p> <p>17.6 The Sub-Contractor is not required to rectify at his own cost any damage caused by a Specified Peril occurring after Substantial Completion.</p> <p><i>Other rights and remedies</i></p> <p>17.7 The issue of a Defects Rectification Certificate for the whole of the works shall discharge the Sub-Contractor from any further obligation to carry out the work of rectifying defects on the Site (except for the fulfilment of his obligations under a warranty) but it shall not prejudice the Contractor's other rights and remedies under the Sub-Contract or at law regarding defective work or other breaches of contract.</p>	
	<p><b>18. Partial possession by Employer</b></p> <p><i>Partial possession</i></p> <p>(1) Under clause 18 of the Main Contract Conditions the Employer may, with the Contractors consent, take possession of a part of the works or where sectional completion is provided for in the Main Contract a part of a Section before Substantial Completion, and that part of the works or part of a Section shall be referred to as the Relevant Part.</p> <p>(2) If the Employer takes possession of a part of the works or a part of a Section under clause 18 of the Main Contract Conditions the Architect is required to issue a certificate to that effect:</p> <p>(a) identifying the Relevant Part taken into possession;</p> <p>(b) giving the Relevant Date when the Employer took possession of the Relevant Part; and</p> <p>(c) stating his assessment of the estimated amount contained in the Contract Sum, in respect of the Relevant Part for the purposes of reducing the amount of liquidated and ascertained damages that may be payable for the works or a Section under clause 24 of the Main Contract Conditions.</p> <p>(3) Substantial Completion of the Relevant Part will be deemed to have occurred on the Relevant Date and the following will take effect:</p> <p>(a) the commencement of the Defects Liability Period and the rectification of defects under clause 17;</p>	<p>Effects of partial possession by Employer, in respects of substantial completion of the relevant part, liquidated damages, defect liability, release of retention money, etc. defined in the clause.</p>

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	<p>(b) the exemption from liability for damage by a Specified Peril under clause 17.6;</p> <p>(c) the release of one-half of the Retention under clause 33.5; and</p> <p>(d) the Architect will issue a Defects Rectification Certificate for the Relevant Part upon the completion of rectifying defects to that part.</p> <p>(4) Where the Sub-Contract works are part of the works or part of the Section taken possession of by the Employer under clause 18 of the Main Contract Conditions the provisions of that clause shall apply to the Sub-Contract Works.</p> <p>(5) The Sub-Contractor is not required to rectify at his own cost any damage to the Relevant Part caused by a Specified Peril occurring after the Relevant Date.</p>	
<p><b>15. Sub-letting of Sub-Contract Works</b>  The Sub-Contractor shall not assign this Subcontract nor sub-let the Sub-Contract Works or any portion of the same without the written consent of both the Main Contractor and the Architect; provided that the consent of the Main Contractor shall not be unreasonably withheld, and that in case of any difference of opinion between the Main Contractor and the Architect the opinion of the Architect shall prevail. Provided always, that the provision of labour on a piece-work basis shall not be deemed to be a sub-letting under this Sub-Contract.</p>	<p><b>19. Assignment and sub-letting</b>  <i>Sub-Contractor not to assign the Sub-Contract without consent</i>  19.1 The Sub-Contractor shall not assign or transfer any of his rights or obligations under the Sub-Contract without the written consent of the Contractor and approval by the Architect.</p> <p><i>Sub-letting</i>  19.2 The Sub-Contractor shall be permitted, unless prohibited by the Sub-Contract, to sub-let parts of the Sub-Contract Works provided that:</p> <p>(a) he does not sub-let the whole of the Sub-Contract Works or incrementally sub-lets parts of the Sub-Contract Works to the same person to indirectly attain sub-letting of the whole, or substantially the whole, of the Sub-Contract Works and retains his management role of the Sub-Contract Works and completely fulfils his obligations as the Sub-Contractor under clause 3.1(1) at all times;</p> <p>(b) the terms of the agreement to sub-let are, so far as is reasonable, consistent with the terms of the Main Contract and Sub-Contract;</p> <p>(c) he submits a plan of his sub-sub-contracting arrangement giving the names of his key sub-sub-contractors with their scope of work and such other particulars as may be required by the Contractor.</p> <p>(d) he does not sub-let any part of the Sub-Contract Works to a sub-sub-contractor against whom the Contractor has made an objection giving his reasons;</p> <p>(e) he removes from the Sub-Contract Works any sub-sub-contractor he is instructed by the Contractor to remove; and</p> <p>(f) the sub-letting of a part of the Sub-Contract Works does not relieve the Sub- Contractor from any liability or obligation under the Sub-Contract and he remains responsible for designing to the extent required by the Sub-Contract, for carrying out and completing the Sub-Contract Works in all respects in accordance with the Sub-Contract and for the acts, defaults, omissions and neglect of all sub-sub- contractors of any tier as fully as if they were his own acts, defaults, omissions or neglect.</p> <p><i>Sub-Contractor not to object to assignment of Sub-Contract to Employer</i>  19.3 The Sub-Contractor shall not object and shall do all things necessary to facilitate the assignment of the Sub-Contract to the Employer, if the Contractor is required to do so by the Employer, upon the determination of the Contractor's employment under the Main Contract.</p>	<p>Total subletting prohibited. Subcontract to assume all responsibility when parts of the works are sublet. Subcontractor must not object to assignment of subcontract to Employer in case of determination of the contractor's employment.</p>
	<p><b>20. Injury to persons and property and indemnity to Contractor</b>  <i>Sub-Contractor to indemnify Contractor</i>  The Sub-Contractor shall be liable for and shall indemnify the Contractor against any damage, expense, liability or loss in respect of any claim or proceedings for:</p> <p>(a) bodily injury to, disease contracted by or the death of any person arising out of, or in the course of, or by</p>	<p>The subcontractor's liability to injury to persons and property defined.</p>

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	<p>reason of the carrying out of the Sub-Contract Works and whether arising on or off the Site, except to the extent that the injury, disease or death of that person is due to any act or neglect of the Contractor or the Employer or any person for whom the Contractor or the Employer is responsible; and</p> <p>(b) injury or damage to real or personal property arising out of, in the course of, or by reason of the carrying out of the Sub-Contract Works and whether arising on or off the Site, to the extent that the injury or damage, is due to a breach of contract or other default of the Sub-Contractor or any person for whom the Sub-Contractor is responsible.</p>	
<p><b>4. Insurance against injury to persons and property</b>  The Main Contractor and Subcontractor respectively shall, so far as is reasonably practicable, effect and keep in force during all material times policies of insurance with such insurance company or other insurers and of such an amount as shall be approved by the other against their respective liabilities under any statute in force for the time being in respect of injuries to persons and at Common Law in respect of injuries to persons or property arising out of and in the course of the execution of the Main Contract works and the Sub-Contract works and/or arising out of and in the course of the employment of any workmen employed by them respectively or caused thereby or due thereto respectively; subject as regards loss or damage by fire, lightning, typhoon, flood, earthquake, aircraft or aerial devices or articles dropped therefrom and riot to the provisions of clause 5 of this Sub-Contract.</p> <p><b>5. Damage by Fire</b>  (a) The Sub-Contract works (including materials and goods of the Sub-Contractor properly on the site for use in the Sub-Contract works) shall as regards loss or damage by fire (whether such fire be caused by the negligence of the Sub- Contractor or those for whose actions the Sub-Contractor is responsible or otherwise), lightning, typhoon, flood, earthquake, aircraft or aerial devices or articles dropped therefrom and riot be at the sole risk of the Main Contractor.  (b) In the event of any loss or damage by fire, lightning, typhoon, flood, earthquake, aircraft or aerial devices or articles dropped therefrom and riot being caused to the Sub-Contract works (including</p>	<p><b>21. Insurance against injury to persons or property</b>  <i>Employee's Compensation Insurance</i>  21.1(1) The Contractor is required to effect and maintain employees, compensation insurance in compliance with the provisions of the Employees Compensation Ordinance in the joint names of the Contractor, his sub-contractors (including the Sub-Contractor) and their respective sub-contractors of all tiers, against all liabilities arising in respect of bodily injury to, disease contracted by or death of the Contractor's or any sub-contractors of all tiers employees arising out of and in the course of their employment on the works or in connection with the Main Contract.  21.1(2) The insurance cover is to be against the liabilities referred to in clause 21.1(1) of the Main Contract Conditions sustained during the period from the Commencement Date until the Defects Rectification Certificate for the whole of the works has been issued and the Contractor has finally left the Site.  21.1(3) As soon as the Sub-Contractor becomes aware of any workman or other person employed on the Sub-Contract Works or in connection with the Sub-Contract suffering any bodily injury, contracting a disease or dying he shall notify the Contractor.  <i>Third party liability insurance</i>  21.2 (1) Either the Employer or the Contractor, whichever of them is the party responsible for effecting the Contractors' All Risks Insurance of the works, is required, unless otherwise stated in the Main Contract, to effect insurances in the joint names of the Employer, the Contractor, his sub-contractors (including the Sub-Contractor) and their respective sub-contractors of all tiers against all liabilities of the insured under the Main Contract or otherwise in respect of:  (a) bodily injury to, disease contracted by or the death of any person arising out of, or in the course of, or by reason of the carrying out of the works, and whether arising on or off the Site; and  (b) injury or damage to real or personal property other than the works insofar as the injury or damage arises out of, or in the course of, or by reason of the carrying out of the works and whether arising on or off the Site, including injury or damage caused by any act or neglect of the Employer or any person for whom the Employer is responsible or by collapse, subsidence, heave, vibration, weakening or removal of support or lowering of ground water due to any cause other than:  (i) ionizing radiation or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosive or other hazardous properties of any explosive nuclear assembly or nuclear component thereof;  (ii) pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds; or  (iii) non-negotiable exclusions imposed by the insurance market.  21.2(2) The insurance cover will be against the liabilities referred to in clause 21.2(1) of the Main Contract Conditions sustained during the period from the Commencement Date until the Defects Rectification Certificate for the whole of the works has been issued and the Contractor has finally left the Site.</p>	<p>Subcontractor shall join the contractor in effecting and maintain employees' compensation insurance.  Subcontractor's responsibility to indemnify the contractor under clause 20 remains.</p>

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<p>any of the materials and goods of the Sub- Contractor properly on the site for use in the Sub-Contract works) the Main Contractor to the extent of such loss or damage shall pay to the Sub-Contractor the full value of the same, such value to be calculated in accordance with clause 10 hereof.</p> <p>(c) The Main Contractor shall for the benefit of himself and the Sub-Contractor at all material times insure for the full value thereof the Sub-Contract works (including materials and goods of the Sub-Contractor properly on the site for use in the Sub-Contract Works) and keep them or have them kept insured against loss or damage by fire, lightning, typhoon, flood, earthquake, aircraft or aerial devices or articles dropped therefrom and riot.</p> <p>(d) The Sub-Contractor shall observe and comply with the conditions contained in the policy or policies of insurance of the Main Contractor against loss or damage by fire, lightning, typhoon, flood, earthquake, aircraft or aerial devices or articles dropped therefrom and riot.</p>	<p>21.2(3) The insurances will include:</p> <p>(a) a cross liability clause to the effect that the insurances will cover the Employer, the Contractor, his sub-contractors (including the Sub-Contractor) and their sub- contractors of all tiers as separate insured; and</p> <p>(b) a waiver of any right of subrogation which the insurers may have against any of the insured.</p> <p>21.2(4) The third party liability insurances against injury or death to any person and injury or damages to real or personal property under clause 21.2(1) of the Main Contract Conditions are each required to be effected with the limit of indemnity stated in the appendix to the Main Contract Conditions for any one occurrence or series of occurrences arising out of one event but unlimited in the aggregate amount for the period of the insurance.</p> <p><i>Insurance without prejudice to Sub-Contractor's obligation to indemnify Contractor</i></p> <p>21.3 The effecting and maintaining of insurances by either the Employer or the Contractor under clause 21 of the Main Contract Conditions is without prejudice to the Sub-Contractor's obligation to indemnify the Contractor under clause 20.</p>	
<p><b>6. Policies of Insurance</b></p> <p>The Main Contractor and the Sub-Contractor shall each respectively at all reasonable times at the request of the other produce for his inspection the policy or policies of insurance referred to in clauses 4 and 5 of this Sub-Contract and the receipts for the premiums paid.</p> <p>Provided always that the production by either the Main Contractor or the Sub-Contractor, as the case may be, of a current certificate of insurance from the company or firm which shall have issued the policy or policies as aforesaid, shall be a good discharge of the Main Contractor's or the Sub-Contractor's obligation to produce the policy or policies and the receipts in respect of premiums paid.</p>	<p><b>22. Insurance of the works</b></p> <p><i>The Contractors' All Risks Insurance of the Works</i></p> <p>22.1(1) The Contractors' All Risks insurance of the works will be effected and maintained by either the Employer or the Contractor in the joint names of the Employer, the Contractor and his sub-contractors (including the Sub-Contractor) their sub-contractors of all tiers and suppliers from the Commencement Date until 14 days after Substantial Completion of the works, a Section or Relevant Part or 14 days after the determination of the employment of the Contractor, whether valid or not.</p> <p>22.1(2) The basic requirements for the Contractors, All Risks Insurance of the works are set out in clause 22.2 of the Main Contract Conditions and the specific terms and conditions, if required to be different to the basic terms, are either set out in the Specification or the Contract Bills or are to be as agreed between the parties to the Main Contract but in any case the terms cannot be beyond the best terms currently available.</p> <p>22.1(3) The Contractor shall, prior to the commencement of the Sub-Contract works, ensure that the Contractors' All Risks insurance of the Works policy has been issued and endorsed so that the Sub-Contractor is recognised as an insured under the policy and that the insurers waive any right of subrogation they may have against the Sub- Contractor.</p> <p><i>Responsibility of Sub-Contractor for restoration of Sub-Contract works</i></p> <p>22.2 The Sub-Contractor shall be responsible for the cost of the restoration of Sub-Contract Work lost or damaged, the repair or replacement of materials or goods that are the property of the Sub-Contractor or for which the Sub-Contractor is responsible while on the Site, being fabricated or stored off-Site or in transit and for the removal and disposal of any debris except to the extent that the loss or damage is due to:</p> <p>(a) a peril covered by the Contractors, All Risks Insurance of the works whether or not caused by a breach of</p>	<p>Subcontractor is responsible for the cost of restoration of subcontract work lost or damaged.</p>

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	<p>contract or other default of the Sub-Contractor or any person for whom the Sub-Contractor is responsible;</p> <p>(b) the effect of an Excepted Risk;</p> <p>(c) a breach of contract or other default by the Contractor or the Employer or any person for whom the Contractor or the Employer is responsible or by any statutory undertaker or utility company carrying out work which, by law, only they may carry out.</p> <p><i>Parties' obligations if loss or damage occurs</i></p> <p>22.3(1) In the event of loss or damage to work, materials or goods caused by a peril covered by the Contractors, All Risks Insurance of the Works the parties' obligations shall be as described in clauses 22.3(2) and (3).</p> <p>22.3(2) The Sub-Contractor shall:</p> <p>(a) notify the Contractor of the extent, nature and location of the loss or damage to the Sub-Contract works immediately upon discovering it;</p> <p>(b) assist the Contractor to follow all of the requirements in the insurance policy, in preparing the insurance claim and where required in negotiating with the insurers;</p> <p>(c) restore lost or damaged Sub-Contract Work, remove and dispose of any debris, repair or replace materials or goods which have been stolen, lost, destroyed or damaged, immediately after being instructed by the Contractor to do so and proceed with carrying out the Sub-Contract Works with due diligence and in accordance with the Sub-Contract.</p> <p>22.3(3) The Contractor shall pay to the Sub-Contractor his share of the proceeds from the insurance of the works for making good the loss or damage to the Sub-Contract Works.</p> <p><i>Contractor's payment not more than insurance proceeds</i></p> <p>22.4(1) The Contractor will not be entitled to any payment in respect of the replacement, repair or restoration of the loss or damage and the removal and disposal of debris other than the amount received under the Contractors' All Risks Insurance of the works unless and to the extent that the loss or damage was caused or contributed to by a breach of contract or other default by the Employer or any person for whom the Employer is responsible.</p> <p>22.4(2) The Sub-Contractor in turn will not be entitled to any payment in respect of the replacement, repair or restoration of the loss or damage to the Sub-Contract Works and disposal of debris other than his fair share of the amount received under the Contractors, All Risks Insurance of the works.</p>	
<p><b>8. Completion</b></p> <p>(a) The Sub-Contractor shall commence the Sub-Contract Works within an agreed time or, if none is agreed, then within a reasonable time after the receipt by him of an order in writing under this Sub-Contract from the Main Contractor to that effect and shall proceed with the same with due expedition. The Sub-Contractor shall complete the Sub-Contract Works and each section thereof within the period specified in Part II of the Appendix to this Sub-Contract or within such extended period or periods as may be granted pursuant to the provisions hereinafter contained.</p>	<p><b>23. Possession, commencement and completion</b></p> <p><i>Date for Possession of the Site and the Commencement Date</i></p> <p>23.1 The Date for Possession of the Site and the Commencement Date are stated in the appendix to the Main Contract Conditions.</p> <p><i>Commencement and completion of Sub-Contract Works</i></p> <p>23.2(1) The Sub-Contractor shall commence the Sub-Contract Works on the Commencement Date of the Sub-Contract Works stated in the Appendix or if no date is stated, within 14 days of a notice to commence work from the Contractor and shall proceed regularly and diligently with the Sub-Contract Works.</p> <p>23.2(2) If it is stated in the Appendix that the Sub-Contract Works and any Section are to be completed on or before the Sub-Contract Completion Date the Sub-Contractor shall complete the Sub-Contract Works and any Section on or before the date stated in the Appendix as the Sub-Contract Completion Date.</p> <p>23.2(3) If it is stated in the Appendix that the Sub-Contract Works are to be carried out and completed at the same time as the works the Sub-Contract Works shall be carried out to suit the progress of the works and shall</p>	<p>More elaborated requirements pertaining to site possession, work commencement and completion given in clauses 23, 24 and 25. Clause 25 is for the case where completion date is defined in the subcontractor. Contractor to notify</p>

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<p>If the Sub-Contractor fails to complete the Sub-Contract Works or any section thereof within the period specified or any extended period or periods as hereinafter provided, he shall pay or allow to the Main Contractor a sum equivalent to any loss or damage suffered or incurred by the Main Contractor and caused by the failure of the Sub-Contractor as aforesaid. The Main Contractor shall at the earliest opportunity give reasonable notice to the Sub-Contractor that loss or damage as aforesaid is being or has been suffered or incurred.</p> <p>Provided that the Main Contractor Shall not be entitled to claim any loss or damage under this clause unless the Architect shall have issued to the Main Contractor (with a duplicate copy to the Sub-Contractor) a certificate in writing stating that in this opinion the Sub-Contract Works or the relevant section thereof ought reasonably to have been completed within the specified period or within any extended period or periods as the case may be.</p> <p>(b) Upon it becoming reasonably apparent that the progress of the Sub-Contract Works is delayed, the Sub-Contractor shall forthwith give written notice of the cause of the delay in the progress or completion of the Sub-Contract Works or any section thereof to the Main Contractor, who shall inform the Architect thereof and of any representations made to him by the Sub-Contractor as to such cause as aforesaid.</p> <p>If on receipt of such information and representations as aforesaid the Architect is of the opinion that the completion of the Sub-Contract Works is likely to be or has been delayed beyond the period or periods stated in Part II of the Appendix hereto or beyond any extended periods previously fixed under this clause.</p> <p>(i) By reason of any of the matters specified in clause 7(1) of this Sub- Contractor by any act or omission of the Main Contractor, his sub- contractors, his or their respective servants or agents; or</p> <p>(ii) For any reason (except delay on the part of the Sub-Contractor) for which the Main Contractor could obtain an extension of time for completion under the Main Contract</p>	<p>be completed sufficiently far in advance of the works to allow adequate time for the Contractor to complete the works or any Section on or before the Completion Date of the works or that Section.</p> <p><i>Postponement or suspension</i></p> <p>23.3 The Architect is authorized to issue instructions regarding:</p> <p>(a) the postponement of the Date for Possession of the Site or a part of the Site;</p> <p>(b) the postponement of the Commencement Date of the whole or a part of the works; and</p> <p>(c) the postponement or suspension of the whole or a part of the works.</p> <p><b>24. Failure of Sub-Contractor to complete on time</b></p> <p><i>Failure of Sub-Contractor to complete on Sub-Contract Completion Date</i></p> <p>24.1(1) If under clause 23.2(2) the Sub-Contract requires the Sub-Contract Works or any Section to be completed on or before the Sub-Contract Completion Date and the Sub- Contractor fails to complete the Sub-Contract Work or any Section on or before that date the Contractor shall notify the Architect of this failure and issue a copy of the notification to the Sub-Contractor.</p> <p>24.1(2) If the Architect issues a certificate to that effect to the Contractor under clause 29.1.1 of the Main Contract Conditions the certificate shall confirm that all extensions of time have been addressed in accordance with clause 25 and state the date by which the Sub-Contract Works or Section ought to have been completed.</p> <p>24.1(3) The Architect shall issue a copy of the certificate referred to in clause 24.1(2) to the Sub-Contractor and the Sub-Contractor shall pay or allow to the Contractor a sum equivalent to the loss and/or expense and/or liquidated damages incurred by the Contractor due to the failure of the Sub-Contractor to complete on time.</p> <p><i>Failure of Subcontractor to complete on time where the Sub-Contract Works are to be completed at the same time as the Works</i></p> <p>24.2 If under clause 23.2(3) the Sub-Contract requires the Sub-Contract Works to be carried out and completed at the same time as the Works and the Sub-Contractor, having been notified by the Contractor of any revised Completion Date for the works, fails to complete the Sub-Contract Works or any Section in accordance with clause 23.2(3) the Sub-Contractor shall pay or allow the Contractor a sum equivalent to any loss and/or expense and/or liquidated damages incurred by the Contractor due to the failure of the Sub-Contractor to complete on time.</p> <p><i>Contractor to give notice that loss and/or expense and/or liquidated damages are being or will be incurred</i></p> <p>24.3 The Contractor shall at the earliest opportunity give reasonable notice to the Sub-Contractor that loss and/or expense and/or liquidated damages are being or will be incurred due to failure of the Sub-Contractor to complete on time.</p> <p><i>Refund if Main Contract Completion Date Revised</i></p> <p>24.4 If the Architect fixes a later Completion Date under clause 25.3 of the Main Contract Conditions and the Employer refunds to the Contractor the amount of liquidated and ascertained damages paid or allowed to the Employer for the period from the original Completion Date up to the later Completion Date plus interest at 1% below the judgment debt rate prescribed from time to time by the Rules of the High Court (Chapter 4A, Laws of Hong Kong) and the Sub-Contractor has recompensed the Contractor under clause 24.2 for loss and/or expense and/or liquidated damages incurred by him, the Contractor shall reimburse the Sub-Contractor accordingly.</p> <p><b>25. Extension of time for the Sub-Contract works to be completed by the Sub-Contract Completion Date</b></p> <p><i>Sub-Contractor's first notice of delay</i></p>	<p>the Architect of subcontractor's delay.</p> <p>The Architect to issue certificate and subcontractor to pay the contractor any loss, expense and liquidate damages incurred to the contractor due to his delay, taking into account all extensions of time granted.</p>

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<p>then the Main Contractor shall, but not without the written consent of the Architect, grant a fair and reasonable extension of the said period or periods for completion of the Sub-Contract Works or each section thereof (as the case may require) and such extended period or periods shall be the period or periods for completion of the same respectively and this clause shall be read and construed accordingly. Provided always that if the Sub-Contractor shall feel aggrieved by a failure of the Architect to give his written consent to the Main Contractor granting an extension of the said period or periods for completion of the Sub-Contract works, then, subject to the Sub-Contractor giving to the Main Contractor such indemnity and security as the Main Contractor may reasonably require, the Main Contractor shall allow the Subcontractor to use the Main Contractor's name and if necessary will join with the Sub-Contractor as plaintiff in any arbitration proceedings by the Sub-Contractor in respect of the said complaint of the Sub-Contractor.</p> <p>(c) If upon written application being made to the Main Contractor by the Sub- Contractor, both the Main Contractor and the Architect are of the opinion that the Sub-Contractor has been involved in direct loss and/or expense for which he would not have been reimbursed by a payment made under any other provision in this Sub-Contract by reason of the regular progress of the Sub-Contract Works or any part thereof having been materially affected by any of the circumstances in which the Main Contractor would under the Main Contract be entitled to recover such direct loss and/or expense as aforesaid, then the Main Contractor shall request the Architect to ascertain or cause to be ascertained the amount of such direct loss and/or expense. Any amount from time to time so ascertained shall be, added to the Sub-Contract Sum and if an interim certificate is issued after the date of ascertainment, the Main Contractor shall request the Architect to add any such amount to the amount which would otherwise be stated as due in such certificate.</p>	<p>25.1(1) If under clause 23.2(2) the Sub-Contract requires the Sub-Contract Works to be completed on or before the Sub-Contract Completion Date, as soon as practicable, but in any case within 28 days of the commencement of an event likely to cause delay to the completion of the Sub-Contract Works or a Section beyond the Sub-Contract Completion Date becoming apparent the Sub-Contractor shall give notice (referred to in clause 25 as the 'first notice') to the Contractor.</p> <p>25.1(2) The first notice shall:</p> <p>(a) state the likelihood and estimated length of the delay beyond the Sub-Contract Completion Date;</p> <p>(b) set out the material circumstances including the cause of the delay; and</p> <p>(c) state if the Sub-Contractor considers that he is or may become entitled to an extension of time due to the effects of an event listed in clause 25.1(3) (referred to in clause 25 as a 'listed event') and if so identify which of the listed events he believes to be the cause of the delay.</p> <p>25.1(3) The listed events are as follows:</p> <p>(a) force majeure;</p> <p>(b) inclement weather conditions, being rainfall in excess of twenty millimeters in a twenty-four hour period (midnight to midnight) as recorded by the Hong Kong Observatory station nearest to the Site, and/or its consequences adversely affecting the progress of the Sub-Contract works;</p> <p>(c) the hoisting of tropical cyclone warning signal No.8 or above or the announcement of a Black Rainstorm warning;</p> <p>(d) the Excepted Risks;</p> <p>(e) loss or damage caused by a Specified Peril;</p> <p>(f) an instruction under clause 3.4 to resolve an ambiguity, discrepancy in or divergence between the documents listed in that clause;</p> <p>(g) an instruction under clause 8.2 requiring the opening up for inspection of work covered up or the testing of materials, goods or work and the consequential making good where the cost of that opening up, testing and making good is required by that clause to be added to the Sub-Contract Sum;</p> <p>(h) an instruction under clause 13.1 requiring a Variation;</p> <p>(i) an instruction under clause 13.2 of the Main Contract Conditions resulting in an increase in the work to be carried out under the Sub-Contract of sufficient magnitude to cause delay, provided that the variance was not apparent from the Sub-Contract Drawings;</p> <p>(j) an instruction under clause 23.3 of the Main Contract Conditions regarding:</p> <p>(i) the postponement of the Date for Possession of the Site or a part of the Site;</p> <p>(ii) the postponement of the Commencement Date of the whole or a part of the Works or the Sub-Contract Works; or</p> <p>(iii) the postponement or suspension of the whole or a part of the Works or the Sub-Contract Works; unless:</p> <p>- notice of the postponement or suspension is given in the Main Contract or the Sub-Contract; or</p> <p>- the postponement or suspension was caused by a breach of contract or other default by the Sub-Contractor or any person for whom the Sub- Contractor is responsible.</p> <p>(k) late instructions including those to expend a Prime Cost Sum or a Provisional Sum, or the late issue of the drawings, details, descriptive schedules or similar documents referred to in clause 6.3 except to the extent that the Sub-Contractor failed to comply with clause 6.4(2);</p> <p>(l) delay caused by a delay on the part of a nominated sub-contractor (other than the Sub-Contractor) or nominated supplier in respect of an event for which the nominated sub-contractor or nominated supplier is</p>	<p>Subcontractor to serve two notices of delay, including in the first, estimated length of the delay, reasons for delay and claims for extension of time. Valid conditions for granting extension of time defined. In the second notice, the subcontractor shall provide substantiation and particulars of the cause, effect and length of delays.</p>

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	<p>entitled to an extension of time under the sub-contract or supply contract;</p> <p>(m) delay caused by a nominated sub-contractor (other than the Sub-Contractor) or supplier nominated by the Architect under clause 29.2(6) of the Main Contract Conditions despite the Contractor's valid objection, subject to clause 29.2(7) of the Main Contract Conditions;</p> <p>(n) delay caused by the nomination of a replacement nominated sub-contractor or nominated supplier under clause 29.13 of the Main Contract Conditions including any prolongation of the period of the relevant sub-contract or the time for the supply and delivery of materials and goods, provided that the determination of the employment of the original nominated sub-contractor or the termination of the original nominated supply contract was not in the opinion of the Architect a consequence of a breach of contract or other default by the Sub-Contractor or any person for whom the Sub-Contractor is responsible;</p> <p>(o) delay caused by a Specialist Contractor;</p> <p>(p) delay caused by a statutory undertaker or utility company referred to in clause 6.4(1) of the Main Contract Conditions failing to commence or to carry out its work in due time;</p> <p>(q) the failure of the Employer or Contractor to supply or supply on time materials, goods, plant or equipment that he agreed to provide for the Sub-Contract Works;</p> <p>(r) the failure of the Employer to give possession of the Site or, under clause 23.1(2) of the Main Contract Conditions, a part of the Site on the Date for Possession of the Site or the part of the Site stated in the appendix to the Main Contract Conditions, or the Employer subsequently depriving the Contractor of the whole or a part of the Site;</p> <p>(s) delay to the Sub-Contract Works due to time not reasonably foreseen by the Sub-Contractor in obtaining approval or consent from a Government department;</p> <p>(t) a special circumstance considered by the Contractor and agreed by the Architect as sufficient grounds to fairly entitle the Sub-Contractor to an extension of time; and</p> <p>(u) an act of prevention, a breach of contract or other default by the Contractor or any person for whom the Contractor is responsible.</p> <p>25.1(4) The Sub-Contractor shall:</p> <p>(a) continuously use his best endeavours to prevent or mitigate delay to the progress of the Sub-Contract Works however caused and to prevent the completion of the Sub-Contract Works being delayed or further delayed beyond the Completion Date, provided that the words 'best endeavours', shall not be construed to mean that the Sub-Contractor is obliged to spend additional money to accelerate the carrying out of the Sub-Contract works to recover delay the Sub-Contractor did not cause, without re-imburement under clause 27; and</p> <p>(b) do all that may reasonably be required to the Contractor's satisfaction to proceed with the works.</p> <p>25.1(5) The Contractor shall send a copy of the Sub-Contractor's first notice under clause 25.1 to the Architect immediately he receives it</p> <p><i>Sub-Contractor's second notice</i></p> <p>25.2(1) The Sub-Contractor shall, as soon as practicable but in any case within 28 days of giving the first notice, submit a second notice (referred to in clause 25 as the 'second notice') to the Contractor giving:-</p> <p>(a) substantiation that the listed event is the cause of the delay; and</p> <p>(b) particulars of the cause, effect and length of the delay to the completion of the Sub-Contract Works or a Section beyond the Sub-Contract Completion Date in sufficient detail to enable the Contractor to make a decision under clause 25.3(1).</p>	

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	<p>25.2(2) Where the delay envisaged by the Subcontractor's first notice of delay commences later than 28 days after the Sub-Contractor has given the first notice to the Contractor, the Sub-Contractor shall give the Contractor a statement to this effect and shall submit the second notice within 28 days of the commencement of the delay.</p> <p>25.2(3) Where the listed event has a continuing effect the Sub-Contractor shall:</p> <p>(a) give the Contractor a statement to that effect together with:</p> <p>(i) substantiation that the listed event is the cause of the delay, and</p> <p>(ii) interim particulars including details of the cause and effect and an estimate of the length of the delay to the completion of the Sub-Contract works or a Section beyond the Sub-Contract Completion Date;</p> <p>(b) make further submissions to the Contractor at intervals not exceeding 28 days giving further interim particulars and estimates of the length of the delay until the delay ceases;</p> <p>(c) within 7 days after the delay ceasing, submit to the Contractor final particulars of the cause, effect and predictable length of the delay to the Sub-Contract Works or a Section beyond the Sub-Contract Completion Date in sufficient detail to enable the Contractor to make a decision under clause 25.3(1).</p> <p><i>Fixing new Sub-Contract Completion Date</i></p> <p>25.3(1) After receipt of the Sub-Contractors second notice the Contractor shall give an extension of time to the Sub-Contractor by fixing a later Sub-Contract Completion Date:</p> <p>(a) if he is satisfied that the completion of the Sub-Contract Works or a Section is being or is likely to be delayed beyond the Sub-Contract Completion Date by the listed event stated by the Sub-Contractor in his first and second notices to be the cause of the delay; and</p> <p>(b) the Contractor has obtained the Architect's consent under clause 29.9 of the Main Contract Conditions to the extension of time that he intends to give for the completion of the Sub-Contract Works.</p> <p>25.3(2) The Contractor shall give the extension of time by fixing a later Sub-Contract Completion Date, and the reasons for his decision, as soon as practicable but in any case within 60 days of receipt of the particulars submitted with the second notice under clause 25.2.</p> <p>25.3(3) If, after receiving the first and second notices, the Contractor decides not to fix a later Sub-Contract Completion Date or the Architect is unwilling to give his consent:</p> <p>(a) the Contractor shall notify the Sub-Contractor of this, giving the reasons for the decision, as soon as practicable but in any case within 60 days of receipt of the particulars submitted with the second notice under clause 25.2; and</p> <p>(b) the Contractor may, with the Architect's consent, revise his decision and fix a later date as the new Sub-Contract Completion Date if the Sub-Contractor provides further and better particulars within 28 days of the Contractors notification under clause 25.3(3)(a).</p> <p>25.3(4) If the Sub-Contractor fails to submit the notices within the time frame prescribed under clause 25.1 or clause 25.2 but a first notice is nevertheless submitted, the Contractor shall, if he is satisfied that the completion of the Sub-Contract Works or a Section has been delayed by the listed event stated in the Sub-Contractor's first notice, with the Architect's consent, give an extension of time to the Sub-Contractor under clause 25.3 to the extent that he is able to on the information available.</p> <p>25.3(5) If after fixing a new Sub-Contract Completion Date under clause 25.3 the Architect issues an instruction under:</p> <p>(a) clause 13.1 for the omission of work or the omission or diminution of an obligation; or</p> <p>(b) clause 13.2 resulting in a substantial reduction of the work to be carried out under the Sub-Contract,</p>	

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	<p>provided that the variance was not apparent from the Sub- Contract Drawings, the Contractor, with the consent of the Architect or as he may be required to do so by the Architect, may fix an earlier Sub-Contract Completion Date, though not earlier than the Sub-Contract Completion Date stated in the Appendix, if it is fair and reasonable to do so.</p> <p>25.3(6) If the Contractor, with the Architect's consent, gives an extension of time to the Sub-Contractor under clause 25.3 because of a listed event that occurs in the period of delay after the Sub-Contract Completion Date but before the date of Substantial Completion of the Sub-Contract Works, he shall add this extension of time to the total of any extensions of time previously granted when fixing a new Sub-Contract Completion Date, even though the listed event may have occurred later than the date that the Architect fixes as the new Sub-Contract Completion Date.</p> <p>25.3(7) The Contractor may, with Architect's consent, fix a new Sub-Contract Completion Date, under clause 25.3 earlier or later than that previously fixed, during the period of delay between the Sub-Contract Completion Date and the date of Substantial Completion of the Sub-Contract Works (if Substantial Completion of the Sub-Contract works takes place later than the Subcontract Completion Date) if it is fair and reasonable to do so having regard to any of the listed events, whether by reviewing a previous decision, by taking into account any further and better particulars that may be submitted by the Sub-Contractor or any extension of time granted under clause 25.3(6).</p> <p>25.3(8) The Contractor, with the Architect's consent, shall finally decide the over all extension of time, if any, that the Contractor considers the Sub-Contractor is entitled to under clause 25, whether by reviewing any extension of time previously granted or otherwise, and shall fix the Sub-Contract Completion Date, which may be the same as but not earlier than the Sub-Contract Completion Date previously fixed, within 90 days after substantial completion of the Sub-Contract Works or such later date as may be agreed by the parties.</p> <p><i>Sub-Contractor's default involved in the delay</i></p> <p>25.4 Where and to the extent that a listed event resulting in delay to the completion of the Sub-Contract Works or a Section beyond the Sub-Contract Completion Date was, in the Contractor's opinion and agreed by the Architect, contributed to, or aggravated by a breach of contract or other default by the Sub-Contractor or any person for whom the Sub-Contractor is responsible, the Contractor shall take the effects of that contribution or aggravation into account in fixing the new Sub-Contract Completion Date.</p> <p><i>Rate of progress of Sub-Contract Works</i></p> <p>25.5(1) If, in the Contractor's opinion, the rate of progress of the Sub-Contract Works is, at any time, too slow to ensure that the Sub-Contract Works will be completed by the Sub-Contract Completion Date for any reason which does not entitle the Sub-Contractor to an extension of time under clause 25.3, the Contractor may notify the Sub-Contractor accordingly.</p> <p>25.5(2) After receiving the Contractor's notification the Sub-Contractor may, at his own discretion and with no entitlement to receive additional payment, take the measures that he considers necessary to expedite the progress to complete the Sub-Contract Works by the Sub-Contract Completion Date.</p>	
	<p><b>26. Extension of time for Sub-Contract Works to be completed at the same time as the Works</b>  <i>Extension of time for Sub-Contract Works to be completed at the same time as the Works</i></p> <p>26.1(1) If under clause 23.2(3) the Sub-Contract requires the Sub-Contract Works to be carried out and completed at the same time as the works, as soon as practicable but in any case within 28 days of the commencement of an event likely to cause delay to the completion of the Sub-Contract Works or a Section becoming apparent the Sub- Contractor shall give notice to the Contractor.</p>	<p>Clause 26 is an alternative to clause 25 if completion date is to follow main contract.</p>

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	<p>26.1(2) If the Sub-Contractor considers that he is or may become entitled to an extension of time for the completion of the Sub-Contract Works in addition to the extension of time given for the completion of the works under clause 25.3 of the Main Contract Conditions because of delay due to a breach of contract or other default of the Contractor or the Employer or any person for whom the Contractor or the Employer is responsible, he shall notify the Contractor accordingly.</p> <p><i>Rate of progress of the works</i></p> <p>26.2(1) If under clause 25.5 of the Main Contract Conditions the Contractor is notified by the Architect that in the Architect's opinion the rate of progress of the works is too slow to ensure that the works will be completed by the Completion Date and the Contractor at his own discretion decides to take such measures as he considers necessary to expedite the progress of the works, the Contractor shall notify the Sub-Contractor accordingly.</p> <p>26.2(2) The Sub-Contractor shall then take such measures to accelerate the Sub-Contract Works as required by the Contractor to complete the Sub-Contract Works sufficiently far in advance of the works so as to allow the Contractor adequate time to complete the works by the Completion Date.</p> <p>26.2(3) The Contractor shall reimburse the Sub-Contractor for the cost incurred in accelerating the Sub-Contract Works except to the extent that the delay to the progress of the Sub-Contract Works was contributed to or aggravated by a breach of contract or other default by the Sub-Contractor or any person for whom the Sub-Contractor is responsible.</p>	
	<p><b>27. Delay recovery measures</b></p> <p><i>Delay recovery measures</i></p> <p>27.1(1) Clause 26 of the Main Contract Conditions empowers the Architect to instruct the Contractor to carry out delay recovery measures that would extinguish or reduce any extension of time the Contractor would otherwise be entitled to.</p> <p>27.1(2) The Architect is required to state the saving in time that he wants the Contractor to achieve.</p> <p>27.1(3) The Contractor is required to make delay recovery proposals including a description of his delay recovery measures, a detailed quotation and his own estimate of the saving in time that could be achieved if the Contractor has reservations about achieving the saving in time requested by the Architect.</p> <p>27.1(4) The Architect may instruct the Contractor to carry out the delay recovery measures if he agrees with the Contractor's proposals or if the Architect cannot reach agreement with the Contractor he may instruct the Contractor to carry out the delay recovery measures and instruct the Quantity Surveyor to ascertain the amount of additional payment to be made to the Contractor for carrying out those measures.</p> <p><i>Sub-Contractor to liaise with the Contractor</i></p> <p>27.2(1) The Sub-Contractor shall liaise with the Contractor as required by him in drafting the delay recovery proposals including preparing a detailed quotation in respect of the Sub-Contract works and agreeing this with the Contractor and where the Contractor is required to comply with the Architects instructions in relation to the delay recovery measures the Sub-Contractor shall comply with the Contractor's instructions.</p> <p><i>Contractor to re-imburse Sub-Contractor for carrying out delay recovery measures</i></p> <p>27.3(1) The Contractor shall re-imburse the Sub-Contractor for carrying out the delay recovery measures to the Sub-Contract Works as follows:</p> <p>(a) where the Architect agrees with the Contractor's delay recovery proposals and instructs the Contractor to carry out the measures in accordance with the agreement under clause 26.3(1) of the Main Contract Conditions, at the amount agreed between the Contractor and the Sub-Contractor; or</p> <p>(b) where the Architect cannot reach agreement with the Contractor and instructs the Contractor to carry out</p>	<p>The Architect can ask the contractor to propose delay recovery measures and if he agrees with the proposal instruct the contractor to carry out the measures for an amount of additional payment to be ascertained by the Quantity Surveyor. The subcontractor shall cooperate with the main contractor and comply with the Architect's instruction on this matter and is entitled for his share of the additional payment.</p>

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	<p>the delay recovery measures in the absence of an agreement under clause 26.3(2) of the Main Contract Conditions, at the amount included for the Sub-Contractor in the Quantity Surveyor's ascertainment of the additional payment to the Contractor for carrying out the measures.</p>	
	<p><b>28. Direct loss and/or expense</b>  <i>Sub-Contractor's notice of claim for additional payment</i>            28.1(1) If in the Sub-Contractor's opinion, he has incurred or is likely to incur direct loss and/or expense because the progress of the Sub-Contract Works has been or is likely to be delayed or disrupted by an event set out in clause 28.1(2) (referred to in clause 28 as a 'qualifying event' and the Sub-Contractor intends to claim additional payment for this he shall follow the procedures set out in clause 29 and shall also identify in his notice of dairy which of the following qualifying events he believes to be the cause of the direct loss and/or expense.            28.1(2) The qualifying events are as follows:            (a) an instruction under clause 3.4 to resolve an ambiguity, discrepancy in or divergence between the documents listed in that clause;            (b) an instruction under clause 8.2 requiring the opening up for inspection of work covered up or the testing of materials, goods or work and the consequential making good where the cost of such opening up, testing and making good is required by that clause to be added to the Sub-Contract Sum;            (c) an instruction under clause 13.1 requiring a Variation;            (d) an instruction under clause 13.2 of the Main Contract Conditions resulting in an increase in the work to be carried out of sufficient magnitude to cause delay or disruption, provided that the variance was not apparent from the Sub-Contract Drawings;            (e) an instruction under clause 23.3 of the Main Contract Conditions regarding:            (i) the postponement of the Date for Possession of the Site or a part of the Site;            (ii) the postponement of the Commencement Date of the whole or a part of the works or the Sub-Contract Works; or            (iii) the postponement or suspension of the whole or a part of the works or the Sub-Contract Works; unless:            - notice of the postponement or suspension is given in the Contract or the Sub-Contract; or            - the postponement or suspension was caused by a breach of contract or other default by the Sub-Contractor or any person for whom the Sub- Contractor is responsible;            (f) late instructions including those to expend a Prime Cost Sum or a Provisional Sum or the late issue of the drawings, details, descriptive schedules or similar documents referred to in clause 6.3, except to the extent that the Sub-Contractor failed to comply with clause 6.4(2);            (g) delay caused by a nominated sub-contractor (other than the Sub, Contractor) or supplier nominated by the Architect under clause 29.2(6) of the Main Contract Conditions despite the Contractors valid objection, subject to clause 29.2(7) of the Main Contract Conditions;            (h) delay or disruption caused by a Specialist Contractor;            (i) the failure of the Employer to supply or supply on time materials, goods, plant or equipment that he agreed to provide for the Sub-Contract Works;            (j) the failure of the Employer to give possession of the Site or, under clause 23.1(2) of the Main Contract Conditions, a part of the Site on the Date for Possession of the Site or the part of the Site stated in the appendix to the Main Contract Conditions, or subsequently the Employer depriving the Contractor of the whole or a part of the Site.</p>	<p>This clause defines the events that qualify the subcontractor for addition payment for direct loss and/or expense and the procedures for claiming such payment.</p>

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	<p>28.1(3) The Contractor shall send a copy of the Sub-Contractors notice of claim under clause 29 for additional payment for direct loss and/or expense to the Architect immediately he receives it <i>Quantity Surveyor's ascertainment of Sub-Contractor's claim</i></p> <p>28.2(1) Upon receipt of the Sub-Contractor's claim under clause 28 the Architect shall instruct the Quantity Surveyor to ascertain, under clause 27.4 of the Main Contract Conditions, the amount of any additional payment for direct loss and/or expense incurred by the Sub-Contractor if the Architect is satisfied that:</p> <p>(a) the direct loss and/or expense was incurred because the progress of the Sub- Contract Works was delayed or disrupted by the qualifying event set out in the sub-Contractor's claim;</p> <p>(b) the Sub-Contractor has not been and will not be reimbursed by a payment under any other provisions of the Sub-Contract; and</p> <p>(c) the Sub-Contractor has complied with clause 29.</p> <p>28.2(2) The ascertainment of the Sub-Contractor's claim shall be made as soon as practicable but in any case within 60 days of receipt of the build-up of the claim and the particulars under clause 29.2. <i>Sub-Contractor's default involved in the delay or disruption</i></p> <p>28.3 Where and to the extent that a qualifying event resulting in delay to the progress of the Sub-Contract Works or disruption was in the Architect's opinion, contributed to or aggravated by a breach of contract or other default by the Sub-Contractor or any person for whom the Sub-Contractor is responsible, the Architect shall instruct the Quantity surveyor to take such contribution or aggravation into account in ascertaining the amount of direct loss and/or expense due to the Sub-Contractor. <i>Sub-Contractor's claim from Contractor</i></p> <p>28.4 (1) If in the Sub-Contractor's opinion he has incurred or is likely to incur direct loss and/or expense because the progress of the Sub-Contract Works has been delayed or disrupted by a breach of contract or other default by the Contractor or any person for whom the Contractor is responsible, the Sub-Contractor shall give notice of this to the Contractor within a reasonable time after the delay or disruption becomes apparent.</p> <p>28.4(2) The amount of any direct loss and/or expense caused to the Sub-Contractor shall be agreed between the Contractor and the Sub-Contractor.</p> <p>28.4(3) The agreed amount shall not be added to the Sub-Contract Sum but shall be paid to the Sub-Contractor by the Contractor or may be recovered as a debt. <i>Contractor's claim from Sub-Contractor</i></p> <p>28.5(1) If in the Contractor's opinion he has incurred or is likely to incur direct loss and/or expense and/or damages because the progress of the works has been delayed or disrupted by a breach of contract or other default by the Sub-Contractor or any person for whom the Sub-Contractor is responsible the Contractor shall give notice of this to the Sub-Contractor within a reasonable time after the delay or disruption becomes apparent.</p> <p>28.5(2) The amount of any direct loss and/or expense and/or damages caused to the Contractor shall be agreed between the Contractor and the Sub-Contractor and where not recovered by the Contractor under clauses 24.1 or 24.2 may be deducted from any monies due to or become due to the Sub-Contractor or may be recovered as a debt.</p>	
	<p><b>29. Notice of claims for additional payment</b> <i>Sub-Contractor to give notice of claim</i></p> <p>29.1(1) If the Sub-Contractor intends to claim any additional payment under the Sub- Contract the Sub-Contractor shall give notice to the Contractor of his intention to do so within 28 days of it becoming apparent</p>	<p>This clause that defines the procedures for the subcontractor to</p>

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	<p>to the Sub-Contractor that an event has occurred which gives rise to a claim and he shall include in the notice the contractual provisions upon which the claim is based.</p> <p>29.1(2) The Sub-Contractor need not give the notice required under clause 29.1(1) in the case of an Architect's instruction under clauses 13.1 or 13.2 insofar as that instruction is subject to a Valuation under clause 13.</p> <p>29.1(3) The Contractor shall send a copy of the Sub-Contractors claim under clause 29.1(1) to the Architect immediately he receives it</p> <p><i>Sub-Contractor to submit particular</i></p> <p>29.2(1) The Sub-Contractor shall keep such records as may reasonably be necessary to support the claim.</p> <p>29.2(2) The Sub-Contractor shall as soon as practicable but in any case within 60 days of giving notice under clause 29.1, submit to the Contractor:</p> <p>(a) particulars of the circumstances giving rise to the claim;</p> <p>(b) the amount of the claim;</p> <p>(c) a detailed build-up of that amount; and</p> <p>(d) a copy of the records kept in accordance with clause 29.2(1).</p> <p>29.2(3) Where the effect giving rise to the claim set out in the Subcontractor's notice of claim commences later than 60 days after the Sub-Contractor has given notice of his intention to claim, the Sub-Contractor shall give the Contractor a statement to that effect and submit the information under clause 29.2(2) within 60 days of the commencement of the effect of the event giving rise to the claim.</p> <p>29.2(4) Where the qualifying event giving rise to the claim has a continuing effect the Sub- Contractor shall:</p> <p>(a) give the Contractor a statement to that effect together with:</p> <p>(i) interim particulars of the circumstances giving rise to the claim;</p> <p>(ii) an estimate of and build-up the amount of the claim which shall be considered to be an interim amount; and</p> <p>(iii) a copy of the records kept in accordance with clause 29.2(1);</p> <p>(b) make further submissions to the Contractor at intervals not exceeding 28 days giving:</p> <p>(i) further interim particulars;</p> <p>(ii) up to date estimates of the amounts of the claim with further build-ups of these amounts; and</p> <p>(iii) further records to support the claim, until it becomes possible to ascertain the total claim; and</p> <p>(c) within 7 days after it becomes possible to ascertain the total claim, make the final submission to the Contractor as required under clause 29.2(2) paragraphs (a) to (d).</p> <p>29.2(5) The Contractor shall send a copy of each of the Sub-Contractor's submissions to the Architect as soon as he receives them.</p> <p><i>Condition precedent to Sub-Contractor's entitlement to additional payment</i></p> <p>29.3 It shall be a condition precedent to the Sub-Contractor's entitlement to additional payment that the Sub-Contractor shall comply with the provisions of clauses 29.1 and 29.2 and if he fails to comply with these provisions in respect of any claim that claim will be deemed to have been waived by the Sub-Contractor.</p>	<p>claim for additional payment excludes those resulting from Architect's instructions. Serving a notice in the prescribed manner is a condition precedent to entitlement to additional payment.</p>
	<p><b>30. Nominated Suppliers</b></p> <p><i>Prime Cost Sums</i></p> <p>Where a Prime Cost Sum for materials or goods to be supplied by a nominated supplier is included in the Sub-Contract or arises as a result of an Architect's instruction under clause 13.2 of the Main Contract Conditions to expend a Provisional Sum the provisions of clause 29 of the Main Contract Conditions shall apply with the</p>	<p>Subcontract may include materials and goods to be supplied by a nominated supplier.</p>

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	necessary changes.	
	<p><b>31. Other sub-contractors, statutory undertakers, utility companies and Specialist Contractors</b>  <i>Sub-Contractor to fully co-operate with other sub-contractors etc.</i>  The Sub-Contractor shall fully co-operate with and co-ordinate the Sub-Contract works with the work of all other sub-contractors, statutory undertakers, utility companies and persons engaged by the Employer under clause 30.1 of the Main Contract Conditions.</p>	The reinforces the subcontractor's duty to coordinate.
<p><b>16. Provision of water, etc., for Sub-Contract Works</b>  (a) If and so far as it is so provided in the Main Contract (but not otherwise) the Main Contractor shall supply at his own cost all necessary water, lighting, watching and attendance for the purposes of the Sub-Contract Works. Subject as aforesaid the Sub-Contractor shall make all necessary provision in regard to the said matters and each of them.  (b) Save as otherwise provided in the Main Contract the Sub-Contractor at his own expense shall provide and erect all necessary workshops, sheds or other buildings for his employees and workmen at such places on the site as the Main Contractor shall appoint and the Main Contractor agrees to give all reasonable facilities to the Sub-Contractor for such erection.</p> <p><b>17. Sub-Contractors Use of Scaffolding of Main Contractor</b>  The Sub-Contractor, his employees and workmen in common with all other persons having the like right shall for the purposes of the Sub-Contract Works (but not further or otherwise) be entitled to use any scaffolding belonging to or provided by the Main Contractor, while it remains so erected upon the site. Provided that such use as aforesaid shall be on the express condition that no warranty or other liability on the part of the Main-Contractor or of his other sub-contractors shall be created or implied in regard to the fitness, condition or suitability of the said scaffolding.</p> <p><b>18. Main Contractor and Sub-Contractor not to make wrongful use of or interfere with the property of the other</b>  The Main Contractor and the Sub-Contractor</p>	<p><b>32. General attendance</b>  <i>General attendance</i>  32.1 Unless otherwise provided in the Specification or Sub-Contract Bills general attendance shall be provided by the Contractor free of charge to the Sub-Contractor and shall include the use of the Contractor's temporary roads, pavings and paths, standing scaffolding, standing hoists, Clearing away rubbish, provision of space on the Site for the Sub-Contractor's offices and for the storage of his plant, materials and goods, the use of mess rooms, sanitary accommodation and welfare facilities.  <i>Clearance of rubbish during Sub-Contract Works</i>  32.2 The Subcontractor shall from time to time during the carrying out of the works dear away all rubbish resulting from the Sub-Contract Works to a place provided on the Site and shall keep access to the works clear at all times.  <i>Provision of services for the Sub-Contract Works</i>  32.3 The responsibility for the provision of water, lighting, power and other services for the Sub-Contract works as between Contractor and Sub-Contractor shall be as stated in the Specification or Sub-Contract Bills and if not so stated shall be the responsibility of the Contractor.  <i>Sub-Contractor's workshops</i>  32.4 Unless otherwise provided in the Specification or Sub-Contract Bills the Sub-Contractor shall provide, erect and maintain all the workshops, sheds or other temporary buildings required for the Sub-Contract Works on the areas of the Site allocated to him by the Contractor and subsequently remove them.  <i>Use of the Contractor's or the Sub-Contractor's erected scaffolding</i>  32.5 The Contractor and the Sub-Contractor in common with all other persons having a like right shall for the purposes of the works be entitled to use any erected scaffolding belonging to or provided by the Contractor or the Sub-Contractor as the case may be while it remains on the Site. Provided that no warranty shall be created or implied under the Sub-Contract in regard to the fitness, condition or suitability of the scaffolding.  <i>Contractor and Sub-Contractor not to make wrongful use of or interfere with the property of the other</i>  32.6 Neither the Contractor nor the Sub-Contractor shall wrongfully use or interfere with the plant, ways, scaffolding, temporary works, appliances or other property belonging to or provided by the other.</p>	No significant differences between the old and the new versions.

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<p>respectively their respective servants or agents shall not wrongfully use or interfere with the plant, ways, scaffolding, temporary works, appliances or other property respectively belonging to or provided by the other of them or be guilty of any breach or infringement of any Act or Ordinance of Government or bye-law, regulation, order or rule made under the same or by any local or other public or competent authority; provided that nothing herein contained shall prejudice or limit the rights of the Main Contractor or of the Sub-Contractor in the carrying out of their respective statutory duties or contractual duties Under this Sub-Contract or under the Main Contract.</p>		
<p><b>11. Main Contractor to apply for Certificates of Payment</b>  (a) The Main Contractor shall subject to and in accordance with the Main contract from time to time make application to the Architect for certificates of payment and for the inclusion therein of the amount which at the date thereof fairly represents the total value of the Sub-Contract Works and of any variations authorised and executed, or amounts ascertained under clause 8(c) hereof and of the materials and goods delivered upon the site for use in the Sub-Contract Works; provided that the application shall only include the value of the said materials and goods as and from such time as they are reasonably, properly and not prematurely brought upon the site and then only if adequately stored and/or protected against weather and other casualties. The Main Contractor shall give the Sub-Contractor fourteen days notice prior to making application for certificates of payment and the Sub-Contractor shall within the said fourteen days provide to the Main Contractor full details of the amount which at the date thereof represents the total value of the Sub-Contract Works as aforesaid for inclusion in such application for certificates of payment.  The Main Contractor shall also embody in or annex to the said application any representations of the Sub-Contractor in regard to such value.</p>	<p><b>33. Certificates and payments</b>  <i>Interim Certificates and interim valuations</i>  33.1(1) The Architect is required under clause 32.1 of the Main Contract Conditions to issue an Interim Certificate at the end of each Period of interim Certificates stated in the appendix to the Main Contract Conditions commencing not later than 42 days after the Commencement Date.  33.1(2) The interim Certificate is to state the amount due to the Contractor from the Employer and the Contractor will be entitled to payment of the amount stated, less any monies deductible by the Employer, within the period for payment of certificates stated in the appendix to the Main Contract Conditions.  33.1(3) The Sub-Contractor shall submit to the Contractor a statement of the gross valuation of the Sub-Contract work in progress showing the amount of each of the relevant items listed in clause 33.2 supported by all accounts, vouchers, receipts and other documents that may be reasonably required by the Quantity Surveyor within 7 days of the Contractor's requirement for the Sub-Contractor to do so.  33.1(4) The Contractor is required under clause 32.1 of the Main Contract Conditions to submit to the Quantity Surveyor a statement setting out the Contractor's estimate of the gross valuation of the work in progress, at least 14 days before the date on which an Interim Certificate is due to be issued and to include the amount set out in the Sub- Contractor's statement under clause 33.1(3) together with supporting documentation in his submission.  33.1(5) The Quantity Surveyor is required to make an interim valuation of the work in progress in accordance with clause 32.1 of the Main Contract Conditions to determine the estimated amount due in an Interim Certificate and to submit his valuation to the Architect at least 7 days before the Interim Certificate is due to be issued.  33.1(6) The Quantity Surveyor is required under clause 29.7 of the Main Contract Conditions to calculate the amount owing to the Sub-Contractor in each Interim Certificate in accordance with the Sub-Contract and to notify the Contractor and the Sub-Contractor of that amount and the amount of Sub-Contract Retention held by the Employer.  33.1(7) The Contractor is required to pay the Sub-Contractor the amount included for him in each Interim Certificate, less any amount properly deductible within 14 days, or such other time as may be stated in the Sub-Contract, of the Contractor receiving payment from the Employer.</p>	<p>Role of Quantity Survey spelt out. Timing for Quantity Survey to act upon payment claims specified. Clause 33.1(8) provides for direct payment by Employer to subcontractor. Under clause 33.13, late payment by main contractor to subcontractor carries interest.</p>

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<p>(b) within fourteen days of the receipt by the Main Contractor of payment from the Employer against any certificate from the Architect the Main contractor shall notify and pay to the Sub-Contractor the total value certified therein in respect of the Sub-Contract Works and in respect of any authorised variations thereof and in respect of any amounts ascertained under clause 8(c) hereof less: -</p> <p>(i) Retention Money, that is to say the proportion attributable to the Sub- Contract Works of the amount retained by the Employer in accordance with the Main Contract ;and</p> <p>(ii) The amounts previously paid.</p> <p>(c) The Retention Money referred to above shall be dealt with in the following manner: within fourteen days of receipt by the Main Contractor of payment from he Employer against any certificate which includes in accordance with the Main Contract the amount of any part thereof retained by the Employer under the Main Contract the Main Contractor shall pay to the Sub-Contractor such part of the Retention Money as is included in the certificate.</p> <p>(d) If the Sub-Contractor shall feel aggrieved by the amount certified by the Architect or by his failure to certify, then, subject to the Sub-Contractor giving to the Main Contractor such indemnity and security as the Main Contractor shall reasonably require, the Main Contractor shall allow the Sub-Contractor to use the Main Contractor’s name and if necessary will join with the Sub-Contractor as claimant in any arbitration proceedings by the Sub-Contractor in respect of the said matters complained of by the Sub-Contractor.</p> <p>(e) If the Main Contractor shall fail to make any payment to the Sub-Contractor as hereinbefore provided and such failure shall continue for seven days after the Sub-Contractor shall have given the Main Contractor written notice of the same, then the Sub-Contractor may (but without prejudice to any other right or remedy) suspend the further execution of the Sub-Contract works until such payment shall be made and such period of suspension as aforesaid</p>	<p>33.1(8) If the Contractor withholds an amount due to the Sub-Contractor and fails to satisfy the Architect that he has good cause for doing so, the Architect is required under clause 29.8 of the Main Contract Conditions to issue a certificate to that effect and the Employer will be entitled, but not obliged, to pay that amount to the Sub-Contractor direct.</p> <p>33.1(9) Under clause 29.12 of the Main Contract Conditions, the Architect may include the amount of the final payment to the Sub-Contractor in an interim Certificate as early final payment to that Sub-Contractor before final payment is made to the Contractor; provided that the Sub-Contractor indemnifies the Contractor in a form of indemnify satisfactory to the Contractor, against defects that may appear, omissions, or faults in the Sub- Contract Works caused by the Sub-Contractor for which the Contractor may become liable to the Employer.</p> <p>33.1(10) If the Employer has exercised a right under the Main Contract to deduct from monies due to the Contractor, to the extent that the deduction is due to a breach of contract or other default of the Sub-Contractor or any person for whom the Sub- Contractor is responsible the monies deducted may be recovered by the Contractor from any monies due or to become due to the Sub-Contractor or as a debt.</p> <p><i>Estimate of amount due to the Sub-Contractor in Interim Certificate</i></p> <p>33.2(1) The amount due to the Sub-Contractor in an Interim Certificate shall be the estimated gross valuation of the Sub-Contract work in progress as referred to in clause 33.2(2) less:</p> <p>(a) the Sub-Contract Retention; and</p> <p>(b) the total amount in respect of the Sub-Contract Works stated as due in each Interim Certificate previously issued.</p> <p>33.2(2) The gross valuation of the Sub-Contract Work in progress shall be the total of the amounts listed in clause 33.2(3) less the total of the amounts listed in clause 33.2(4).</p> <p>33.2(3) The following estimated amounts shall be included in the gross valuation:</p> <p>(a) the value of the Sub-Contract permanent work properly carried out including any additional work or obligation instructed as a Variation to the extent that this additional work or obligation has been competed or fulfilled in whole or in part;</p> <p>(b) the proportion of the value of temporary works properly carried out where their value is included as a separate sum in the Sub-Contract Bills;</p> <p>(c) the proportion of the value of a preliminary item properly provided or carried out by the Sub-Contractor where its value is included as a separate sum in the Sub- Contract Bills;</p> <p>(d) the value of materials or goods on or adjacent to the Site provided that:</p> <p>(i) they are to be incorporated into the permanent Sub-Contract Works;</p> <p>(ii) they have not been prematurely delivered; and</p> <p>(iii) they are adequately protected against weather, other damage or theft;</p> <p>(e) the value of materials or goods to be incorporated into the Sub-Contract Works before they are delivered to or adjacent to the Site and to be included in an Interim Certificate in accordance with clause 33.3;</p> <p>(f) the amount of any disbursement paid by the Sub-Contractor in accordance with the Architect's instructions as to the expenditure of Provisional Sums;</p> <p>(g) the cost incurred for opening up and testing materials, goods or work under clause 8.2;</p> <p>(h) the amount ascertained as additional payment for direct loss and/or expense under clause 28;</p> <p>(i) the amount payable for reimbursement for increases in the cost of labour and/or materials under clause 39 if applicable; and</p>	

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<p>shall be deemed to be an extension of and be added to the period or periods for completion (as the case may be) as provided in Part II of the Appendix to this Sub-Contract or to any extended period or periods previously authorised Under clause 8(b) hereof and shall not be deemed a delay for which the Sub-Contractor is liable under this Sub- Contract.</p> <p>(f) If after the issue of the last Interim Certificate but before the issue of the Final Certificate in accordance with the Main Contract the Sub-Contractor shall have completed any work upon the Sub-Contract Works, he may request the Main Contractor in writing to make application to the Architect for certificates certifying the value of the work executed upon the Sub-Contract Works, and the Main Contractor shall make such application.</p> <p>The provisions of this clause shall apply to such certificates as if they were certificates of payment expressly provided for in the Main Contract.</p> <p>(g) If before the issue of a Final Certificate to the Main Contractor under the Main Contract the Architect desires to secure final payment to the Sub-Contractor on completion of the Sub-Contract Works and in accordance with and subject to the provisions of the Main Contract relating to prime cost sums issues a certificate to the Main Contractor including an amount to cover such final payment, then the Main Contractor shall within fourteen days of receipt of such final payment from the Employer pay to the Subcontractor the amount so certified by the Architect as aforesaid: but such payment shall only be made if the Sub-Contractor indemnifies and secures the Main Contractor to the reasonable satisfaction of the Main Contractor against all latent defects in the Sub-Contract Works and if by such final payment the Main Contractor will be discharged under the Main Contract from all liabilities in respect of the Sub-Contract Works except for any latent defects.</p> <p>(h) The Main Contractor's interest in the Retention Money, whether it is included in the amounts retained by the Employer under the Main Contract and held by him or whether it is held by the Main Contractor, is</p>	<p>(j) any other amount which is required by the Sub-Contract to be added to the Sub-Contract Sum.</p> <p>33.2(4) without prejudice to the Contractor right of set off, the following estimated amounts shall be deducted from the gross valuation:</p> <p>(a) the amount deductible in lieu of replacement or reconstruction of materials, goods or work under clause 8.3(c);</p> <p>(b) the amount allowable to the Employer for decreases in the cost of labour and/or materials under clause 39 if applicable; and</p> <p>(c) any other amount which is required by the Sub-Contract to be deducted from the Sub-Contract Sum.</p> <p><i>Off-site materials or goods</i></p> <p>33.3 The Architect may, at his discretion or where expressly provided in the Sub-Contract, include the value of materials or goods intended for inclusion in the Sub-Contract Works in an Interim Certificate before the materials or goods are delivered to or adjacent to the site and if this is the case he shall instruct the Quantity Surveyor to estimate the value of those materials or goods for inclusion in the Quantity Surveyor's interim valuation of the work in progress under clause 32.1(5) of the Main Contract Conditions.</p> <p><i>Calculation of Sub-Contract Retention</i></p> <p>33.4(1) The Sub-Contract Retention on the payment for the Sub-Contractor's work in progress shall be calculated by applying the percentage stated in the Appendix as the Sub-Contract Retention Percentage to the estimated gross valuation referred to in clause 33.2 exclusive of the amounts payable under clause 28 and any adjustment for fluctuations in the cost of labour or materials under clause 39.</p> <p>33.4(2) The amount held as the Sub-Contract Retention shall not exceed the amount stated in the Appendix as the Limit of Sub-Contract Retention, as may be reduced in accordance with the Sub-Contract. Once the Limit of Sub-Contract Retention has been reached no further amounts shall be retained.</p> <p><i>Retention rules</i></p> <p>33.5(1) The Sub-Contract Retention shall be held upon trust by the Employer for the Sub- Contractor (without obligation to invest) subject to the rights of the Employer to have recourse to it for payment of any amount which he is entitled to under the Sub-Contract or at law or to deduct from it any sum owed to him by the Sub-Contractor.</p> <p>33.5(2) The Architect is required to issue an Interim Certificate for the payment of one-half of the Sub-Contract Retention held in respect of the whole of the Sub-Contract Works, a Section or Relevant Part, as the case may be, 14 days after Substantial Completion of the whole of the works, that Section or Relevant Part.</p> <p>33.5(3) The amount of the Sub-Contract Retention held in respect of a Section or Relevant Part shall be deemed to bear the same relationship to the Sub-Contract Retention held for the whole of the Sub-Contract Works as the estimated amount contained in the Sub-Contract Sum for that Section or Relevant Part bears to the Sub-Contract Sum.</p> <p>33.5(4) The Architect is required to issue an interim Certificate for payment of all remaining Sub-Contract Retention within 14 days after the issue of the Defects Rectification Certificate for the whole of the works.</p> <p><i>Quantity Surveyor to prepare Final account</i></p> <p>33.6(1) The Quantity Surveyor is required to prepare the final account, which is a statement of all adjustments to be made to the Sub-Contract Sum as set out in clause 33.7, within the period for completion of the final account stated in the appendix to the Main Contract Conditions commencing on the date of Substantial Completion of the whole of the works.</p> <p>33.6(2) The Quantity Surveyor is required to send draft copies of the final account to the Sub-Contractor from</p>	

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<p>fiduciary as trustee for the Sub-Contractor (without obligation to invest) and if the Main Contractor attempts or purports to mortgage or otherwise charge such interest or his interest in the whole of the amount retained as aforesaid (otherwise than by floating charge if the Main Contractor is a limited company), the Main Contractor shall thereupon immediately set aside and become a trustee for the Sub-Contractor of a sum equivalent to the Retention Money and shall pay the same to the Sub-Contractor on demand; provided that upon payment of the same to the Sub-Contractor the amount due to the Sub-Contractor upon final payment under this Sub-Contract shall be reduced accordingly by the amount so paid.</p>	<p>time to time as the preparation of the final account progresses.</p> <p>33.6(3) The Sub-Contractor shall submit to the Quantity Surveyor all the documents that are, in the opinion of the Quantity Surveyor, reasonably necessary for the adjustment of the Sub-Contract Sum not later than 6 months after Substantial Completion of the whole of the works or 3 months before the end of the period for the completion of the final account referred to in clause 33.6(1) whichever is earlier.</p> <p>33.6(4) The submission of the documents referred to in clause 33.6(3) shall not be a condition precedent to the Quantity Surveyor preparing the final account and if the Sub-Contractor fails to comply with that clause the Quantity Surveyor shall prepare the final account based on the information that is available to him.</p> <p>33.6(5) The Sub-Contract final account shall state:</p> <p>(a) the Sub-Contract Sum adjusted in accordance with clause 33.7;</p> <p>(b) the sum of the amounts already stated as due in each Interim Certificate; and</p> <p>(c) the difference between the two sums expressed as a balance due to the Sub- Contractor from the Contractor or to the Contractor from the Sub-Contractor.</p> <p>33.6(6) The balance referred to in clause 33.6(5) shall be a debt payable either by the Contractor to the Sub-Contractor or by the Sub-Contractor to the Contractor as the case may be.</p> <p>33.6(7) The Quantity Surveyor shall issue a copy of the Sub-Contract final account signed by the Quantity Surveyor and the Sub-Contractor to the parties by special delivery.</p> <p><i>Adjustment of the Sub-Contract Sum</i></p> <p>33.7(1) The Sub-Contract Sum shall be adjusted as described in clauses 33.7(2) and (3).</p> <p>33.7(2) The following amounts shall be deducted from the Sub-Contract Sum:</p> <p>(a) all Provisional Sums and the value of all work for which Provisional Quantities or Provisional items are included in the Sub-Contract Bills;</p> <p>(b) the total of all Valuations under clause 13.4 which result in a reduction in the Sub-Contract Sum;</p> <p>(c) the amount deductible in lieu of replacement or reconstruction of materials, goods or work under clause 8.3(c);</p> <p>(d) the amount allowable to the Employer for decreases in the cost of labour and/or materials under clause 39 if applicable;</p> <p>(e) any other amount which is required by the Sub-Contract to be deducted from the Sub-Contract Sum.</p> <p>33.7(3) The following amounts shall be added to the Sub-Contract Sum:</p> <p>(a) the total of all Valuations under clause 13.4 which result in an increase in the Sub-Contract Sum;</p> <p>(b) the total of the Valuation of work carried out by and any amount paid by the Sub-Contractor in accordance with the instructions of the Architect as to the expenditure of a Provisional Sum and of all work for which Provisional Quantities and Provisional items are included in the Sub-Contract Bills;</p> <p>(c) the cost incurred for opening up and testing materials, goods or work under clause 8.2;</p> <p>(d) the amount assessed as additional payment for direct loss and/or expense under clause 28;</p> <p>(e) any amount payable for reimbursement for increases in the cost of labour and/or materials under clause 39, if applicable; and</p> <p>(f) any other amount which is required by the Sub-Contract to be added to the Sub-Contract Sum.</p> <p><i>Issue of Final Certificate</i></p> <p>33.8(1) The Architect is required to issue the Final Certificate to the Employer and the Contractor as soon as practicable after the issue of the Defects Rectification Certificate for the whole of the works but not until at least 28 days after a copy of the signed final account has been given to the Employer and the Contractor.</p>	

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	<p>33.8(2) At the same time as the Architect issues the Final Certificate to the Employer and the Contractor, he is required under clause 32.8 of the Main Contract Conditions to notify the Sub-Contractor of the date it was issued and the amount included for the Sub-Contract Works.</p> <p><i>Effect of Final Certificate</i></p> <p>33.9(1) Subject to clauses 33.10 and 33.11 and except where any defect in or omission from the Sub-Contract Works was not reasonably discoverable at the time of the issue of the Defects Rectification Certificate, the Final Certificate shall be conclusive evidence in any proceedings arising out of the Sub-Contract whether by arbitration or otherwise that :</p> <p>(a) the materials, goods, workmanship and work were provided or carried out in accordance with the requirements of clause 8 to the Contractor's and the Architect's satisfaction;</p> <p>(b) the necessary effect has been given in the final account to all the terms of the Sub-Contract requiring an adjustment to be made to the Sub-Contract Sum;</p> <p>(c) all and only such extensions of time, if any, as are due under clauses 25 and 26 have been given; and</p> <p>(d) any additional payment for direct loss and/or expense under clause 28 arising out of the occurrence of any of the qualifying events referred to in that clause is in full and final settlement of all claims for breach of contract, duty of care, statutory duty or otherwise;</p> <p>except and insofar as the Final Certificate shall have been rendered erroneous by reason of fraud, dishonesty or fraudulent concealment.</p> <p>33.9(2) The issue of the Final Certificate shall not otherwise prejudice any common law rights and remedies regarding defective work.</p> <p><i>Proceedings commenced before Final Certificate</i></p> <p>33.10 If proceedings under clause 42 are commenced by either party before the Final Certificate is issued, the Final Certificate shall still have effect as conclusive evidence as provided in clause 33.9 after either:</p> <p>(a) the proceedings have been concluded whereupon the Final Certificate shall be subject to the terms of any award or judgment in or settlement of the proceedings; or</p> <p>(b) 12 months have passed without either party taking a further step in the proceedings unless there is reasonable cause for not taking this step, where upon the Final Certificate shall be subject to any terms agreed in partial settlement;</p> <p>whichever is earlier.</p> <p><i>Proceedings commenced after Final Certificate</i></p> <p>33.11 If proceedings under clause 42 are commenced by either party within 28 days of the issue of the Final Certificate, the Final Certificate shall still have effect as conclusive evidence as provided in clause 33.9 except in respect of the matters to which those proceedings relate.</p> <p><i>Effect of Architect's certificates</i></p> <p>33.12 No Architect's certificate shall constitute or be construed to provide evidence that any materials, goods, workmanship or work to which the certificate relates are in accordance with clause 8 save and except as is provided by the Sub-Contract Conditions in regard to the Final Certificate.</p> <p><i>Late payment</i></p> <p>33.13 If the Contractor does not pay the Sub-Contractor the amount included for the Sub- Contractor in an interim Certificate as required to be paid to the Sub-Contractor under clause 33.1(7) within the time stipulated in that clause, the Sub-Contractor, without prejudice to his other rights and remedies, shall be entitled to payment, together with the certified amount outstanding, of interest at 1% below the judgment debt rate</p>	

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	<p>prescribed from time to time by the Rules of the High Court (Chapter 4A, Laws of Hong Kong) on the amount outstanding 7 days after the latest date on which the certified amount should have been paid.</p> <p><i>Right of Sub-Contractor to suspend the carving out of the Sub-Contract Works</i></p> <p>33.14(1) In addition to his entitlement to interest for late payment by the Contractor under clause 33.13 the Sub-Contractor, without prejudice to his other rights and remedies, may suspend the carrying out of the Sub-Contract Works, if:</p> <p>(a) the Contractor does not pay the Sub-Contractor the amount required to be paid to him under clause 33.1(7) (referred to in clause 33.14 as 'the amount' within 14 days after the latest date by which the amount is required to be paid to him under that clause;</p> <p>(b) the Sub-Contractor gives notice to the Contractor, by special delivery, of the Contractor's failure to pay the amount to the Sub-Contractor stating his intention to suspend the carrying out of the Sub-Contract Works pending payment of the amount; and</p> <p>(c) the Contractor fails to pay the amount to the Sub-Contractor within 14 days of the receipt of the Sub-Contractor's notice.</p> <p>33.14(2) The Sub-Contractor shall re-commence the carrying out of the Sub-Contract Works as soon as practicable but in any case within 14 days of the receipt of the amount from the Contractor.</p>	
	<p><b>34. Surety bond</b></p> <p><i>Sub-Contractor to obtain guarantee from insurance company or bank</i></p> <p>(1) The Sub-Contractor shall obtain the guarantee of an insurance company or bank, approved by the Contractor; to be jointly and severally bound with the Sub-Contractor to the Contractor in the sum stated in the Appendix for the due performance of the Sub-Contract under the terms of a surety bond.</p> <p>(2) The Sub-Contractor shall deliver the bond duly executed by the insurance company or bank within 28 days of the acceptance of the Sub-Contractor's tender.</p> <p>(3) The surety bond shall be in the form set out in the Sub-Contract Bills or Specification or, if not set out in either of those documents, in the form set out in Schedule 1 of the Sub-Contract Conditions, and the cost of obtaining the bond shall be borne by the Sub-Contractor.</p> <p>(4) The insurance company or bank shall be released from the surety bond upon the issue of the Substantial Completion Certificate for the whole of the works.</p> <p>(5) If the Sub-Contractor fails to deliver the bond, the Contractor may withhold an amount not greater than the value of the bond stated in the Appendix until the bond is delivered to the Contractor; at which time the amount withheld shall be released in the next Interim Certificate following the delivery of the bond.</p>	Requirement for bond spelt out.
<p><b>12. Sub-Contractors claim to Rights and Benefits under the Main Contract</b></p> <p>The Main Contractor will so far as he lawfully can at the request and cost of the Sub-Contractor obtain for him any rights or benefits of the Main Contract so far as the same are applicable to the Sub-Contract Works but not further or otherwise.</p>	<p><b>35. Benefits under Main Contract</b></p> <p><i>Contractor to obtain rights and benefits under Main Contract for Sub-Contractor</i></p> <p>The Contractor shall so far as he lawfully can at the Sub-Contractor's request and cost obtain for him any rights and benefits of the Main Contract as far as they are applicable to the Sub-Contract Works.</p>	Basically the same between the old and new version.
<p><b>20. Determination of this Sub-Contract by the Main Contractor</b></p> <p>(a) If the Sub-Contractor shall make default in any of the following respects viz.:</p>	<p><b>36. Determination by Contractor</b></p> <p><i>Default by Sub-Contractor</i></p> <p>36.1(1) The Contractor may, with the Architect's consent, give a notice of default to the Sub-Contractor before Substantial Completion of the whole of the works if the Sub-Contractor defaults by:</p>	The conditions and consequences of determination more clearly stated.

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<p>(i) If without reasonable cause he wholly suspends the carrying out of the Sub-Contract Works before completion thereof;</p> <p>(ii) If he fails to proceed regularly and diligently with the Sub-Contract works;</p> <p>(iii) If he refuses or persistently neglects after notice in writing from the Main Contractor to remove defective work or improper material;</p> <p>then, if such default shall continue for ten days after a notice by registered post or recorded delivery specifying the default has been given to him by the Main Contractor, the Main Contractor may without prejudice to any other rights or remedies thereupon by notice by registered post or recorded delivery determine the employment of the Subcontractor under this Sub-Contract; provided that notice in pursuance of this clause shall not be given unreasonably or vexatiously and shall be void if the Main Contractor is at the time of the notice in breach of this Sub-Contract; or</p> <p>(b) If the Sub-Contractor commits an act of bankruptcy or makes or enters into any deed or arrangement or composition with his creditors or being a company enters into liquidation, whether compulsory or voluntary, except liquidation for purposes of reconstruction, or suffers or allows any execution, whether legal or equitable, to be levied on his property or obtained against him, then the Main Contractor may without prejudice to any other rights or remedies by written notice forthwith determine the employment of the Sub-Contractor under this Sub-Contract.</p> <p>(c) In case of the employment of the Sub-Contractor under this Sub-Contract being determined under (a) or (b) of this clause, then the Sub-Contractor shall be deemed to be in breach of this Sub-Contract and the Main Contractor shall only be liable for the value of any work actually and properly executed and not paid for at the date of such determination, such value to be calculated in accordance with clause 10 of this Sub-Contract, for the value of any unfixed materials and goods delivered upon the site for use in the Sub-</p>	<p>(a) completely or substantially suspending the carrying out of the Sub-Contract Works without good cause;</p> <p>(b) not proceeding regularly and diligently with the Sub-Contract Works;</p> <p>(c) not complying with an instruction from the Architect under clause 8.3 for the replacement, repair or reconstruction of materials, goods or work not in accordance with the Sub-Contract resulting in the Sub-Contract works being materially affected;</p> <p>(d) not complying with clause 19.1; or</p> <p>(e) not complying with clause 19.2 by sub-letting the whole or substantially the whole of the Sub-Contract Works to the same person-</p> <p>36.1(2) The notice of default shall specify the default and state that a notice of determination may be served if the default continues for a further 14 days after receipt of the notice of default.</p> <p>36.1(3) The Contractor may, with the Architect's consent, give a notice of determination of the employment of the Sub-Contractor if:</p> <p>(a) the Sub-Contractor continues the default for 14 days after receipt of the notice given under clause 36.1(1);</p> <p>(b) the Architect certifies this during the continuation of the default; and</p> <p>(c) the notice of determination is given to the Sub-Contractor within 14 days of the issue of the Architect's certificate under clause 36.1(3)(b).</p> <p>36.1(4) The determination of the employment of the Sub-Contractor under clause 36.1(3) shall take effect on the date of receipt of the notice of determination.</p> <p>36.1(5) where the Sub-Contractor ends the default, or the Contractor does not give a notice of determination, the Contractor may still determine the employment of the Sub- Contractor if:</p> <p>(a) the Sub-Contractor continues the default or resumes it at any time;</p> <p>(b) the Architect certifies this during the continuation or resumption of the default; and</p> <p>(c) the notice of determination is given to the Sub-Contractor within a reasonable time after the issue of the Architect's certificate under clause 36.1(5)(b).</p> <p>36.1(6) The determination of the employment of the Sub-Contractor under clause 36.1(5) shall take effect on the date of receipt of the notice of determination.</p> <p><i>Insolvency of Sub-Contractor</i></p> <p>36.2(1) The Contractor may, with the Architect's consent, give a notice of determination of the employment of the Sub-Contractor if the Sub-Contractor:</p> <p>(a) becomes bankrupt;</p> <p>(b) makes a composition or arrangement with his creditors;</p> <p>(c) has a petition for compulsory winding-up presented or made against him;</p> <p>(d) enters into compulsory or voluntary liquidation except for the purpose of reconstruction; or</p> <p>(e) has a provisional liquidator or receiver appointed.</p> <p>36.2(2) The determination shall take effect on the date of receipt of the notice unless the Employer, the Contractor, the Sub-Contractor and his trustee in bankruptcy, liquidator or receiver, as the case may be, agree in writing to the continuation of the Sub- Contractor's employment.</p> <p><i>Contractor's rights upon notice of default or determination</i></p> <p>36.3(1) If the Contractor serves a notice of default upon the Sub-Contractor under clause 36.1 or determines the employment of the Sub-Contractor under clause 36.2:</p> <p>(a) the Sub-Contractor shall not remove any materials, goods, temporary buildings, plant or equipment from the Site until instructed to do so by the Contractor under clause 36.4(3); and</p>	

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<p>Contract Works the property in which has passed to the Employer under the terms of the Main Contract and for no other sum or sums whatsoever; and the Main Contractor shall have the right to recover, or to deduct from or set off against any such amount, the amount of damage suffered and/or of loss and expense incurred by him by reason of the determination of the employment of the Sub-Contractor under this Sub-Contract.</p>	<p>(b) the Contractor shall be given a lien upon all materials, goods, temporary buildings, plant and equipment belonging to the Sub-Contractor.</p> <p><i>Consequences of determination</i></p> <p>36.4(1) In addition to their other obligations under the Sub-Contract, the parties shall act in accordance with clause 36.4 upon determination by the Contractor under clause 36.</p> <p>36.4(2) The provisions of clauses 20 and 21 shall remain in effect until the Sub-Contractor has left the Site notwithstanding determination of the employment of the Sub-Contractor.</p> <p>36.4(3) If the Contractor so instructs, the Sub-Contractor shall immediately remove his materials, goods, temporary buildings, plant and equipment with care so as to prevent injury, death or damage to persons or property and ensure that other owners remove theirs with similar care except to the extent that:</p> <p>(a) they have become the property of the Contractor; or</p> <p>(b) the Contractor instructs that some or all of them are to be left on the Site for use in completing the Sub-Contract Works.</p> <p>36.4(4) If the Sub-Contractor does not comply with clause 36.4(3) within a reasonable time, the Contractor may, without being responsible for any loss or damage, remove and sell the Sub-Contractors, property and hold the proceeds, less the expenses incurred, to the credit of the Sub-Contractor.</p> <p>36.4(5) The Architect may nominate a new sub-contractor to complete the Sub-Contract Works and to rectify defects of the kind referred to in clause 17.4, and that sub-contractor shall be permitted to enter upon the Site and use the materials, goods, temporary buildings, plant and equipment left on the Site under clause 36.4(3).</p> <p>36.4(6) If instructed to do so by the Contractor, the Sub-Contractor shall assign to the Contractor, so far as he is legally able to do so, without payment:</p> <p>(a) all suppliers' manufacturers, and sub-subcontractor's warranties, guarantees or other ancillary agreements for materials, goods and work relating to the Sub-Contract Works insofar as they are required by the Sub-Contract within 28 days of the date of determination; and</p> <p>(b) the remaining assignable benefit of any agreements for the supply of materials or goods, carrying out of work and the hiring of plant and equipment within 14 days of the date of determination.</p> <p>36.4(7) The Contractor shall pay for materials, goods, work, plant and equipment, supplied, carried out or hired after determination at the rates stated in the relevant agreements between the Sub-Contractor and his sub-sub-contractors and/or suppliers.</p> <p>36.4(8) The Contractor, if so directed by the Architect, shall pay a sub-sub-contractor or supplier for materials or goods delivered to the Site and work carried out if the materials, goods or work have not already been paid for by the Sub-Contractor. If the Sub-Contractor has been paid for the materials, goods or work but has not paid the sub- sub-contractor or supplier, the Contractor may recover the sum paid to the Sub-Contractor under clause 41 or as a debt.</p> <p>36.4(9) The Contractor shall not have to make any further payment to the Sub-Contractor until the final settlement is made under clause 36.6.</p> <p><i>Quantity Surveyor to prepare Final account</i></p> <p>36.5 The Quantity Surveyor shall prepare the final account as soon as practicable after the final account for the completion of the Sub-Contract Works by the new Sub-Contractor nominated by the Architect has been finalised and it shall set out:</p> <p>(a) the expenses incurred by the Employer in completing the Sub-Contract Works excluding the cost of Variations instructed after determination;</p>	

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	<p>(b) the amount of any damage and direct loss and/or expense caused to the Employer by the determination;</p> <p>(c) the payment made or otherwise discharged in favour of the Sub-Contractor; and</p> <p>(d) the total amount that would have been payable for completing the Sub-Contract Works calculated in accordance with the Sub-Contract if the determination had not occurred.</p> <p><i>The final settlement</i></p> <p>36.6(1) The Architect shall certify, for the purpose of the final settlement, the amounts included in the final account under clause 36.5 as:</p> <p>(a) the sum incurred by the Employer in completing the Sub-Contract Works represented by the total of the items in paragraphs (a),(b)and (c) in clause 36.5; and</p> <p>(b) the amount that it would have cost the Employer to have carried out and completed the Sub-Contract Works but for the determination, represented by the items in paragraph(d) in clause 36.5.</p> <p>36.6(2) The difference between the two amounts in clause 36.6(1)(a) and (b) shall be expressed in the certificate as a debt due to the Sub-Contractor from the Employer, through the Contract, or to the Employer from the Sub-Contractor, as the case may be, and shall be payable within 28 days after the issue of the Architect's certificate.</p> <p>36.6(3) The Contractor in discharging his obligation to pay the Sub-Contractor any amount due to him under the final settlement may, without prejudice to any other rights that the Contractor may possess, deduct from that amount the amount of any direct loss and/ or expense caused to him by the determination.</p> <p><i>Other rights and remedies</i></p> <p>36.7 The provisions of clauses 36.1 to 36.6 are without prejudice to any other rights and remedies that the Contractor may possess.</p>	
	<p><b>37. Determination by Sub-Contractor</b></p> <p><i>Default by Contractor</i></p> <p>37.1(1) The Sub-Contractor may give a notice of default to the Contractor if the Contractor defaults by:</p> <p>(a) completely or substantially suspending the carrying out of the works without good cause;</p> <p>(b) not proceeding regularly and diligently with the works without good cause so that the progress of the Sub-Contract Works is seriously affected; or</p> <p>(c) not paying the Sub-Contractor, without good cause, the amount due under clause 33.1(7) and the Architect has certified this under clause 29.8(3) of the Main Contract Conditions;</p> <p>and a remedy under any other provision of the Sub-Contract would not adequately recompense the Sub-Contractor for causes (a)and (b).</p> <p>37.1(2) The notice of default shall specify the default and state that notice of determination may be sewed if the default continues for a further 14 days after receipt of the notice of default</p> <p>37.1(3) The Sub-Contractor may give a notice of determination of his own employment to the Contractor if:</p> <p>(a) the Contractor continues the default for 14 days after receipt of the notice given under clause 37.1(1) and in the case of cause (c) the Employer does not make direct payment of the amount due to the Sub-Contractor under clause 29.8 of the Main Contract Conditions; and</p> <p>(b) the notice of determination is given to the Contractor within a further 14 days.</p> <p>37.1(4) The determination shall take effect on the date of receipt of the notice of determination.</p> <p>37.1(5) where the Contractor ends the default, or the Sub-Contractor does not give a notice of determination, the Sub-Contractor may still determine his own employment if:</p> <p>(a) the Contractor continues the default or resumes it at any time; and</p>	<p>New provision for determination by the subcontractor due to default by contractor.</p> <p>The conditions and consequences of determination stated.</p>

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	<p>(b) the notice of determination is given to the Contractor upon or within a reasonable time after the continuation or resumption of the default.</p> <p>37.1(6) The Sub-Contractor shall not be entitled to give notice of determination under clause 37.1:</p> <p>(a) for a default of the Contractor if it was caused or significantly contributed to by a breach of contract or other default of the Sub-Contractor or any person for whom the Sub-Contractor is responsible; or</p> <p>(b) in respect of a dispute as to a deduction or set-off made by the Contractor under the Sub-Contract.</p> <p><i>Insolvency of Contractor</i></p> <p>37.2(1) The Sub-Contractor may give a notice of determination of his own employment if the Contractor:</p> <p>(a) becomes bankrupt;</p> <p>(b) makes a composition or arrangement with his creditors;</p> <p>(c) has a petition for compulsory winding-up presented or made against him;</p> <p>(d) enters into compulsory or voluntary liquidation except for the purpose of reconstruction; or</p> <p>(e) has a provisional liquidator or receiver appointed.</p> <p>37.2(2) The determination shall take effect on the date of receipt of the notice of determination.</p> <p>37.2(3) The obligation of the Sub-Contractor to carry out and to complete the Sub-Contract Works, other than the supply of materials and goods already paid for, shall be suspended immediately after the occurrence of any of the events set out in clause 37.2 and before any notice of determination of his own employment takes effect.</p> <p><i>Consequences of determination</i></p> <p>37.3(1) In addition to their other obligations under the Sub-Contract, the parties shall act in accordance with clause 37.3 upon determination by the Sub-Contractor of his own employment under clause 37 unless the employment has been reinstated.</p> <p>37.3(2) The provisions of clauses 20 and 21 shall remain in effect until the Sub-Contractor has completed his activities on the Site notwithstanding determination of the employment of the Sub-Contractor.</p> <p>37.3(3) The Sub-Contractor shall immediately remove his materials, goods, temporary buildings, plant and equipment that have not become the property of the Contractor with care so as to prevent injury, death or damage to persons or property and ensure that others remove theirs with similar care.</p> <p>37.3(4) If instructed to do so by the Contractor, the Sub-Contractor shall assign to the Contractor, so far as he is legally able to do so, without payment:</p> <p>(a) all suppliers', manufacturers, and sub-sub-contractors, warranties, guarantees or other ancillary agreements for materials, goods and work relating to the Sub-Contract works insofar as they are required by the Sub-Contract, within 28 days of the date of determination; and</p> <p>(b) the remaining assignable benefit of any agreements for the supply of materials or goods, carrying out of work and the hiring of plant and equipment within 14 days of the date of determination.</p> <p>37.3(5) The Contractor shall pay for materials, goods, work, plant and equipment supplied, carried out or hired after determination at the rates stated in any relevant agreement between the Sub-Contractor and his sub-sub-contractors or suppliers.</p> <p><i>Sub-Contractor to submit final account</i></p> <p>37.4(1) The Sub-Contractor shall submit a final account to the Quantity Surveyor for checking, as soon as practicable, setting out the sum of:</p> <p>(a) the estimated value of the work in progress properly carried out up to the date of determination calculated in accordance with clause 33.2(2);</p> <p>(b) any amount not included in clause 37.4(1)(a) for the cost of materials and goods that were properly ordered</p>	

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	<p>for the Sub-Contract Works and delivered to or adjacent to the Site which the Sub-Contractor has paid for, or is legally bound to pay for, and has or will transfer the property in these materials and goods to the Contractor;</p> <p>(c) the reasonable cost of removal of materials and goods that have not become the property of the Contractor and temporary buildings, plant and equipment; and</p> <p>(d) the amount of any direct loss and/or expense caused to the Sub-Contractor by the determination.</p> <p>37.4(2) The estimated value of the work in progress referred to in clause 37.4(1)(a) shall be broken down into separate amounts for each of the relevant items listed in clause 33.2(3).</p> <p>37.4(3) The Sub-Contractor's submission shall be supported by detailed and annotated dimension sheets, measurements, accounts, vouchers, receipts and the like that may reasonably be required by the Quantity Surveyor to ascertain the amounts properly due to the Sub-Contractor.</p> <p><i>Quantity surveyor to check final account</i></p> <p>37.5 The Quantity Surveyor shall check, verify or amend the final account as soon as practicable after receiving sufficient supporting documentation.</p> <p><i>The final settlement</i></p> <p>37.6(1) Upon verification or amendment of the Sub-Contractors final account under clause 37.5, the Architect shall certify for the purpose of the final settlement:</p> <p>(a) the amount of the final account being the total of the amounts under clause 37.4; and</p> <p>(b) the payments made or otherwise discharged in favour of the Sub-Contractor.</p> <p>37.6(2) The difference between the two amounts in clause 37.6(1)(a) and (b) shall be expressed in the certificate as a debt due to the Sub-Contractor from the Contractor or to the Contractor from the Sub-Contractor as the case may be and shall be payable within 28 days after the issue of the Architect's certificate.</p> <p><i>Other rights and remedies</i></p> <p>37.7 The provisions of clauses 37.1 to 37.6 are without prejudice to any other rights and remedies which the Sub-Contractor may possess.</p>	
<p><b>21. Determination of the Main Contract</b></p> <p>If for any reason the Main Contractor's employment under the Main Contract is determined (whether by the Main Contractor or by the Employer and whether due to any default of the Main Contractor or otherwise), then the employment of the Sub-Contractor under this Sub-Contract shall thereupon also determine and the Sub-Contractor shall be entitled to be paid: -</p> <p>(i) The value of the Sub-Contract Works completed at the date of such determination, such value to be calculated according to clause 10 of this Sub-Contract.</p> <p>(ii) The value of work begun and executed but not completed at the date of such determination, such value to be calculated according to clause 10 of this Sub-Contract.</p> <p>(iii) The value of any unfixed materials and goods</p>	<p><b>38 Determination of the Contractor's employment under the Main Contract</b></p> <p><i>Determination of Contractor's employment by Employer</i></p> <p>38.1 If the Contractor's employment is determined under clause 35 of the Main Contract Conditions then the employment of the Sub-Contractor under the Sub-Contract shall also determine at the same time and the provisions of clauses 37.3(1) to (3) and 37.4 to 37.7 shall apply.</p> <p><i>Determination of Contractor's employment by Contractor</i></p> <p>38.2 If the employment of the Contractor is determined under clause 36 or 37 of the Main Contract Conditions then the employment of the Sub-Contractor under the Sub-Contract shall also determine at the same time and the provisions of clauses 36.4(1) to (3) shall apply. The entitlement of the Sub-Contractor to payment shall be the proportion fairly and reasonably attributable to the Sub-Contract Works of the amounts paid by the Employer to the Contractor under clause 36 or 37 of the Main Contract Conditions, as the case may be.</p>	<p>This clause refers to provisions in clauses 36 and 37 in defining the consequences of determination by the contractor's employment under the main contract.</p>

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<p>delivered upon the site for use in the Sub-Contract Works the property in which has passed to the Employer under the terms of the Main Contract.</p> <p>(iv) The cost of materials or goods properly ordered for the Sub-Contract Works for which the Sub-Contractor shall have paid or of which he is legally bound to accept delivery. On such payment by the Main Contractor any materials or goods so paid for shall become the property of the Main Contractor.</p> <p>(v) Any reasonable cost of removal from the site of his temporary buildings, plant, machinery, appliances, goods and materials.</p>		
	<p><b>39. Fluctuations</b>  <i>Fluctuation provisions only applicable if expressly stated to be</i>  39.1 The Sub-Contract Sum shall be adjusted upwards or downwards to take account of fluctuations in the cost of labour and materials in accordance with the provisions set out in the Sub-Contract only if it is expressly stated in the Appendix that the Sub-Contract Sum is to be adjusted for fluctuations.  <i>Adjustment for fluctuations occurring after the Completion Date</i>  39.2 If the Sub-Contractor fails to complete the works by the Completion Date and the Architect has issued a certificate to that effect under clause 24.1 the adjustments for fluctuations occurring after the Completion Date shall be calculated based on the cost of labour and materials relevant at the Completion Date.</p>	<p>Provision is made for adjustments for fluctuations, if so provided in the subcontract.</p>
	<p><b>40. Notices, certificates and other communications</b>  <i>Submission of notices, certificates and other communications</i>  (1) All notices, certificates and other communications under the Sub-Contract shall be submitted to the Employer, the Architect or the Contractor on the Site or sent to the address stated in the Articles of Agreement or such other address in Hong Kong as may be advised.  (2) Except for notices, certificates or other communications required to be sent by special delivery, a notice, certificate or other communication shall be given by hand, sent by post or, if both parties agree, sent by facsimile or electronic mail.  (3) Any notice, certificate or other communication sent by prepaid post shall be deemed to be received two clear days, excluding general holidays, after posting.</p>	<p>Defines issues relevant to notices, certificates and other communications.</p>
<p><b>13. Main Contractor's right to Deduction or Set Off</b>  The Main Contractor shall notwithstanding anything in this Sub-Contract be entitled to deduct from or set off against any money due from him to the Sub-Contractor (including any Retention Money) any sum or sums which the Sub-Contractor is liable to pay to the Main Contractor under this Sub-Contract.</p>	<p><b>41. Recovery of money due to the Contractor</b>  <i>Contractor's power to recover damages etc.</i>  (1) The Contractor may make any deduction authorised by the Sub-Contract or at law including without limitation, deductions for costs, damages, debts, expenses or other sums for which the Sub-Contractor is liable to the Contractor from amounts due to the Sub-Contractor.  (2) It is a condition precedent to the Contractor's right of deduction under clause 41(1) that he gives a notice to the Sub-Contractor by special delivery stating the amount of the deduction and the reason for it at least 7 days before making the deduction.</p>	<p>A condition precedent is included for the contractor to serve a notice before making deduction to payment to subcontractor.</p>
<p><b>22. Arbitration</b>  In the event of any dispute or difference between the Main Contractor and the Sub-Contractor, whether</p>	<p><b>42. Settlement of disputes</b>  <i>Procedures and Designated Representatives</i>  42.1(1) Subject to clause 42.5 dealing with early arbitration the parties agree to follow the dispute settlement</p>	<p>More detailed and flexible means for settlement of</p>

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<p>arising during the execution or after the completion or abandonment of the Sub-Contract Works or after the determination of the employment of the Sub-Contractor under this Sub-Contract (whether by breach or in any other manner), in regard to any matter or thing of whatsoever nature arising out of this Sub-Contract or in connection therewith, then either party shall give to the other notice in writing of such dispute or difference and such dispute or difference shall be and is hereby referred to the arbitration of such person as the parties hereto may agree to appoint as Arbitrator or failing such agreement as may be appointed on the request of either party by the President or Vice-President for the time being of The Hong Kong Institute of Architects co-jointly with the President or Senior Vice President for the time being of the Hong Kong Institute of Surveyors and in accordance with and subject to the provisions of the Arbitration Ordinance or any statutory modification thereof for the time being in force, and in either case the Award of such Arbitrator shall be final and binding on the parties.</p> <p>Provided that such Arbitrator shall not without the written consent of the Architect or the Main Contractor and in any case of the Sub-Contractor enter on the arbitration until after the completion or abandonment of the Main Contract works, except to arbitrate upon the question whether or not a certificate has been improperly withheld or is not in accordance with the terms of the Main Contract. And Provided further that in any such arbitration as is provided for in this clause any decision of the Architect which is final and binding on the Main Contractor under the Main Contract shall also be and be deemed to be final and binding between and upon the Main Contractor and the Sub-Contractor.</p>	<p>procedures outlined in clause 42.</p> <p>42.1(2) Each party shall designate one of its own senior executives as its representative (referred to in clause 42 as the 'Designated Representatives' within 14 days of acceptance of the Sub-Contractors tender and the Designated Representative shall endeavour to settle disputes that arise during the carrying out of the Sub-Contract Works.</p> <p>42.1(3) The Designated Representatives shall have the authority to settle disputes and shall not be involved in the day to day administration of the Sub-Contract.</p> <p><i>Reference to Designated Representatives</i></p> <p>42.2(1) If a dispute arises under or in connection with the Sub-Contract, the Architect shall at the request of either party, immediately refer the dispute to the Designated Representatives.</p> <p>42.2(2) The Designated Representatives shall meet within 7 days of receipt of a notice from the Architect requesting them to resolve the dispute.</p> <p><i>Reference to mediation</i></p> <p>42.3(1) If the dispute is not resolved by the Designated Representatives within 28 days of the dispute being referred to them by the Architect under clause 42.2 either party may give a notice to the other party, by special delivery, to refer the dispute to mediation and the person to act as the mediator shall be agreed between the parties.</p> <p>42.3(2) If the parties fail to agree on the person to act as the mediator within 21 days after either party has given to the other a written request to concur in this appointment, the mediator shall on the written request of either party be appointed by the President or Vice-President for the time being of The Hong Kong Institute of Architects co-jointly with the President or Vice-President for the time being of the Hong Kong Institute of Surveyors.</p> <p>42.3(3) The mediation shall, unless otherwise agreed by the parties, be conducted in accordance with and subject to the Hong Kong international Arbitration Centre Mediation Rules except those provisions in the Rules relating to the appointment of the mediator.</p> <p><i>Reference to arbitration</i></p> <p>42.4(1) If the dispute is not settled by mediation within 28 days of the commencement of the mediation, either party may give a notice to the other party, by special delivery, to refer the dispute to arbitration and the person to act as the arbitrator shall be agreed between the parties.</p> <p>42.4(2) If the parties fail to agree on the person to act as the arbitrator within 21 days after either party has given to the other a written request to do so, the arbitrator shall, on the written request of either party, be appointed by the President or Vice-President for the time being of The Hong Kong Institute of Architects co-jointly with the President or Vice-President for the time being of the Hong Kong Institute of Surveyors.</p> <p>42.4(3) The Presidents or Vice-Presidents referred to in clause 42.4(2), if in agreement to do so, may, at their discretion, request the Hong Kong International Arbitration Centre to appoint the arbitration by a joint letter to the Chairman of that organization.</p> <p>42.4(4) If the Presidents or Vice-Presidents referred to in clause 42.4(2) fail to appoint the arbitrator within 60 days after receiving the written request to do so under clause 42.4(2) then the arbitrator shall on the written request of either party be appointed by the Hong Kong International Arbitration Centre.</p> <p>42.4(5) The arbitration shall be a domestic arbitration conducted in accordance with the Arbitration Ordinance (Chapter 341, Laws of Hong Kong) and, unless otherwise agreed by the parties, with the Domestic Arbitration Rules of the Hong Kong International Arbitration Centre except those provisions in the Rules relating to the</p>	<p>disputes provided for under this clause.</p>

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	<p>appointment of the arbitrator.</p> <p><i>Timing of arbitration</i></p> <p>42.5(1) The arbitrator shall have jurisdiction to hear the parties and commence the arbitration of a dispute arising under or in connection with the Sub-Contract at any time on a question of whether:</p> <p>(a) the Contractor is empowered by either the Main Contract or the Sub-Contract to issue an instruction;</p> <p>(b) a certificate has been improperly withheld or is not in accordance with the Sub-Contract Conditions;</p> <p>(c) the Sub-Contractors objection to a Variation referred to in clause 13.1(1)(b) is reasonable; and</p> <p>(d) determination by Contractor or Sub-Contractor.</p> <p>42.5(2) The hearing of disputes other than those listed in clause 42.5(1) shall not commence until after Substantial Completion or alleged Substantial Completion of the whole of the works or determination or alleged determination of the Contractor's employment or abandonment of the works unless the written consent of the parties to the hearing is given after the dispute has arisen.</p> <p><i>Architect's decision</i></p> <p>42.6 In an arbitration under clause 42 any decision of the Architect which is final and binding on the Contractor under the Main Contract Conditions shall be deemed to be final and binding between and upon the Contractor and the Sub-Contractor under the Sub-Contract Conditions.</p> <p><i>Arbitrator's powers</i></p> <p>42.7 The arbitrator's powers include:</p> <p>(a) rectifying the Sub-Contract to accurately reflect the true agreement made by the parties;</p> <p>(b) directing measurements or Valuations to determine the rights of the parties;</p> <p>(c) assessing and awarding any sum which ought to have been the subject of or included in a certificate; and</p> <p>(d) opening up, reviewing and revising, without limitation, the giving, submitting or issuing of any agreement, approval, assessment, authorisation, certificate, confirmation, consent, decision, delegation, direction, dissent, determination, endorsement, instruction, notice, notification, opinion, request, requirement, statement, termination or Valuation.</p> <p><i>The place of arbitration</i></p> <p>42.8 The place of arbitration shall be Hong Kong.</p> <p><i>Related dispute between parties to Main Contract</i></p> <p>42.9(1) If a dispute arises which would fall to be referred to arbitration in accordance with clause 42 which is substantially the same as or connected with issues raised in a related dispute between the parties to the Main Contract then the Contractor and the Sub- Contractor hereby agree that the dispute under the Sub-Contract shall be referred to the arbitrator appointed to determine the related dispute.</p> <p>42.9(2) The arbitrator shall have power to make such directions and all necessary awards in the same way as if the procedure of the Courts in Hong Kong as to joining defendants or third parties or others was available to the parties and to him.</p> <p><i>Sub-Contractor to continue to proceed diligently</i></p> <p>42.10(1) The Sub-Contractor shall continue to proceed regularly and diligently with the Sub- Contract Works despite a dispute having arisen, and shall continue to give effect to all instructions from the Contractor and the Architect unless and until revised by agreement between the Designated Representatives, by mediation or in arbitration under clause 42.</p> <p>42.10(2) The Sub-Contractors compliance with clause 42.10(1) is without prejudice to any other rights and remedies that he may possess.</p>	

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	<p><b>43. Contractor to join with the Sub-Contractor in arbitration proceedings</b>  <i>Contractor to join with the Sub-Contractor in arbitration proceedings</i>            If the Sub-Contractor feels aggrieved by:</p> <ul style="list-style-type: none"> <li>(a) the Quantity Surveyor's Valuation under clause 13;</li> <li>(b) an Architect's failure to give the consent required under clause 29.9 of the Main Contract Conditions to permit the Contractor to grant an extension of time to the Sub-Contractor under clause 25.3, or the terms of the consent;</li> <li>(c) an amount certified by the Architect in respect of the Sub-Contractor in an Interim Certificate or by his failure to certify; or</li> <li>(d) any other involvement of the Architect or the Quantity Surveyor in the Sub-Contract which the Sub-Contractor considers to be unfair;</li> </ul> <p>then subject to the Sub-Contractor giving the Contractor such indemnity and security as the Contractor may reasonably require, the Contractor shall allow the Sub-Contractor to use the Contractor's name and if necessary join with the Sub-Contractor as plaintiff in arbitration proceedings with the Employer at the instigation of the Sub-Contractor to decide the matter.</p>	<p>A single clause replacing similar sub-clauses in the old version.</p>