



TRAINING GUIDELINES



CONTRACTING LOCAL INFRASTRUCTURE WORKS



Bjørn Johannessen



International Labour Organization

Copyright © International Labour Organization 2009

First published 2009

Publications of the International Labour Office enjoy copyright under Protocol 2 of the Universal Copyright Convention. Nevertheless, short excerpts from them may be reproduced without authorization, on condition that the source is indicated. For rights of reproduction or translation, application should be made to ILO Publications (Rights and Permissions), International Labour Office, CH-1211 Geneva 22, Switzerland, or by email: pubdroit@ilo.org. The International Labour Office welcomes such applications.

Libraries, institutions and other users registered with reproduction rights organizations may make copies in accordance with the licences issued to them for this purpose. Visit www.ifro.org to find the reproduction rights organization in your country.

Johannessen, Bjørn

Contracting Local Infrastructure Works

Bangkok, ILO, 2009

Rural infrastructure, poverty alleviation, contracts management, labour-based works technology, decentralisation, local government capacity, institutional capacity development, employment, contractor development

ISBN 978-92-2- [redacted] (print)

ISBN 978-92-2- [redacted] (web pdf)

The designations employed in ILO publications, which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the International Labour Office concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers.

The responsibility for opinions expressed in signed articles, studies and other contributions rests solely with their authors, and publication does not constitute an endorsement by the International Labour Office of the opinions expressed in them.

Reference to names of firms and commercial products and processes does not imply their endorsement by the International Labour Office, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

ILO publications can be obtained through major booksellers or ILO local offices in many countries, or direct from ILO Publications, International Labour Office, CH-1211 Geneva 22, Switzerland. Catalogues or lists of new publications are available free of charge from the above address, or by email: pubvente@ilo.org

Visit our website: www.ilo.org/publns and www.ilo.org/eiip

Layout by Sync Design Co. Ltd. Thailand

Printed in Thailand

Contracting Local Infrastructure Works

Bjørn Johannessen



International Labour Organization



Table of Contents

Introduction	6
1 General Features	7
1.1 Parties to a Contract	7
The Client	8
The Engineer	8
Contractors	10
The Users	14
The Designers	15
1.2 Contracting Methods	16
General Contractor	16
Subcontracts	17
Separate Contracting	19
Supply Contracts	20
Design and Construct	20
Community Contracting	21
Petty Contracts	21
Performance Contracts	21
Lengthman system	22
Force Account	22
1.3 Decentralised Procedures	23
Funds Transfer to the Districts	24
2 Bidding Procedures	26
2.1 General	26
2.2 International Competitive Bidding	27
2.3 National Competitive Bidding	28
2.4 Domestic Canvassing	29
2.5 Negotiated Contracts	29
2.6 Preference to Local Contractors	30
2.7 Externally Financed Projects	31
2.8 Bid Packaging	32
3 Announcement of Works	34
3.1 Invitation to Bid	34
3.2 Private Contracts	36
3.3 Purchasing Bid Documents	36
3.4 Engineer's Estimate	36
3.5 Qualified Bidders	37
3.6 Addenda	39
3.7 Bid Closure	39

4	Submission of Bids	40
4.1	Instructions to Bidders	40
4.2	Submitting the Bid	41
	Disqualifying Bids	42
4.3	Modification or Withdrawal of Bids	43
4.4	Alternative Bids	44
5	Bid Opening	45
5.1	Purpose	45
5.2	Time and Venue	45
5.3	Clarification of Bids	46
5.4	Examining the Bids	46
5.5	Bid Validity	47
5.6	Reporting	48
6	Evaluating Bids	50
6.1	Time and Venue	50
6.2	Bid Evaluation Committee	50
6.3	Ranking	51
6.4	Deviations	53
	Clarifications	54
6.5	Reporting	54
7	Contract Award	56
7.1	The Process	56
7.2	Notification of Award	56
7.3	Contents of the Agreement	58
7.4	Notifying Unsuccessful Bidders	59
8	Contract Documents	61
8.1	Preparation of Contract Documents	61
8.2	General Conditions of Contract	62
8.3	Contract Data	63
8.4	Special Conditions of Contract	64
8.5	Work Specifications	65
	Types of Specifications	65
	Preamble	66
	Technical Manuals	67
8.6	Technical Drawings	68
9	Mobilisation	70
9.1	General	70
9.2	Advance Payments	70
9.3	Work Programme	71
9.4	Recruitment of Labour	72
9.5	Site Camp	74
10	Contract Implementation	76
10.1	Management Responsibilities	76
10.2	Work Programming	77
	Time Management	77
	Site Meetings	78
	Supply of Materials	79
	Inspection of Works	79
	Timely Payment of Works	80

10.3	Time Extensions	80
10.4	Liquidated Damages	82
10.5	Risks and Insurances	83
	Injuries	84
	Damages to Property	84
	National Legislation	84
	Safety and Health	85
	Financial Risks	85
10.6	Reporting and Monitoring	86
	Monitoring Progress	87
	Contents of Reporting	88
	Cost Control	89
	Quality Control	90
11	Changes	92
11.1	General	92
11.2	Clauses Governing Changes	93
11.3	Major Changes	94
11.4	Change Orders	94
11.5	Authority to Order Changes	96
11.6	Contractor's Reaction to Change Orders	97
11.7	Changing Site Conditions	97
11.8	Pre-bid Site Investigations	98
12	Payment of Works	99
12.1	General	99
	Payment Schedule	100
	Minimum Amount of Interim Certificate	101
12.2	Measurement of Works	101
12.3	Interim Payment Certificate	103
	Payment Breakdown	103
12.4	Retention	105
12.5	Practical Completion	106
12.6	Final Completion	107
13	Settlement of Disputes	108
13.1	Finding Solutions	108
13.2	Arbitration	109
13.3	Adjudication	110
13.4	Disputes Review Board	111
14	Contracts Register	112
14.1	General	112
14.2	Budget Control	112
14.3	Performance History	113
Annex 1	Glossary	114
Annex 2	References	125

Introduction

Public infrastructure works are increasingly being carried out through the involvement of the private construction industry. This can also be a feasible approach to the sustainable provision of local infrastructure such as access roads, water supply, irrigation systems, market facilities, schools, health care centres, government offices, assembly halls and other facilities.

The use of local contractors for the development and maintenance of local infrastructure has several advantages. These firms are already operating in the area where their services are required with established supply lines for materials, tools and equipment as well as skilled and semiskilled labour. They have a proven track record of doing business in the construction industry and their skills and competence can be traced through previous works they have carried out. These are firms that can also be relied on for future maintenance works as they have chosen to establish their operations and business in vicinity of where the infrastructure is located.

In many countries, access to basic services such as health, education, clean water, markets and other economic services is still lacking. Therefore there is still a large demand for improving local infrastructure. As a result, there is a large demand for the services of competent local construction firms who can take on the challenges of developing and maintaining the infrastructure facilities in both rural and urban communities.

Providing the local construction industry with access to these market prospects, require an efficient contracts management organisation, capable of planning and supervising the works as well as taking care of all financial and administrative activities. This capacity can be established in local government institutions by equipping them with the necessary systems and procedures and with personnel with the skills and knowledge required to take on this management role.

Good governance and accountability is directly linked to how public funds are utilised. Infrastructure development and maintenance is often a major part of government expenditure so it is important to have clear and transparent procedures for the procurement of the services of the private construction industry. In addition to sound procedures, the institutions in charge need trained staff conversant with the systems and procedures, thereby delivering the public works programmes in an efficient manner and according to basic principles of good governance.

Transparency and fairness in procurement is also a key issue in order to provide the private sector with a conducive environment in which they can survive and prosper. Public works constitutes a major part of the construction sector in any country. Allowing local builders and contractors access to such market opportunities can have a significant impact on local industries, thus generating new jobs, developing the skills of the local labour force and boosting local economies.



Chapter 1

General Features

The main purpose of a civil works contract is to establish a written agreement in which a client requests a contractor to carry out certain works and services for a specified amount of money. In addition to specifying the works and payments, contract documents address commonly encountered issues and possible reasons for disputes, thereby clarifying how to deal with such eventualities in advance.

Before entering into a contract, the client will canvass the market for the most appropriate company to render the required services. The best candidate would obviously be someone who can provide the works at a reasonable price and to a good quality. When the government procures the services of a contractor, the process of identifying the best firm needs to abide by a set of procedures governing the use of public funds. These procedures are essentially introduced to ensure certain levels of good governance (avoiding misuse and corruption) and accountability, and well as providing all qualified contractors with an equal chance to access the works.

There exist a wide variety of contract documents, many of which have been standardised. Standard contract documents have also been developed for various types of works. Despite the differences, they all follow some basic principles which are applied throughout the industry.

1.1 Parties to a Contract

Contract agreements are entered into between a Client, i.e. the owner of the assets to be created, and a contractor, the party who carries out the works. In addition, it is common practice to engage a supervising engineer to control and verify that works are carried out to the specified quality and quantities. A set of general conditions in contract defines the roles and responsibilities of these three basic parties.



For every works project these three parties need to be identified. Once the local institutions, which take on these roles have been clearly identified, it is possible to carry out a detailed assessment of their current capacity and if

required strengthen them through training and further technical, managerial and financial support, thereby ensuring that the parties to the contract can fulfil their respective operational responsibilities.

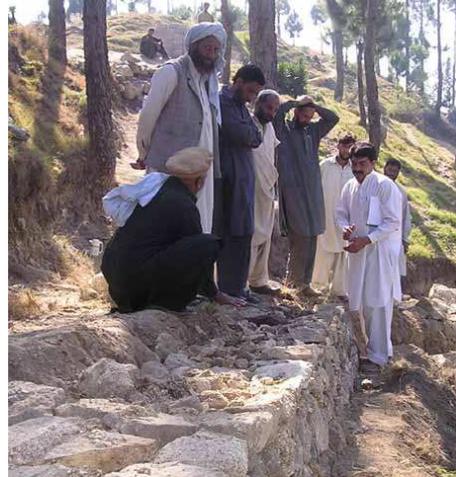
Construction contracts basically relate to three major parties, the client, the contractor and a supervising engineer. However, during the planning stage as well as during

works implementation, it may also be necessary to maintain the involvement of the users and the design team.

(i) The Client

Similar to when purchasing other goods and services, a works contract will have an owner, commonly referred to as the Client. The client can be an individual, such as someone building a private house, or it may be a company or a government organisation constructing or installing some kind of infrastructure facility. The client is usually identified as the organisation who takes ownership of the infrastructure assets, and which has the authority and money to order and pay for its construction.

When the project is financed from public funds, whether it is with financial assistance from an international development agency or from regular government budget sources, the government is identified as the client. For public works projects, the client can be specified more in detail, such as a national roads authority planning to rehabilitate a road, or the Ministry of Health building a health clinic. It can also be a district council embarking on the construction of a new school building.



A basic assumption when dealing with any contract agreement is that the client is also the provider of the financing of the contracted works. Although funds may originate from various sources such as the government treasury, road user funds, donors or local tax revenues, certain financial obligations are made when the client enters into a contractual agreement. In order to honour those obligations, it is essential that the required funds are readily available to the client. If these funds are not available, then the client is legally not in a position to award a contract.

In some contract documents the client may also be referred to as the owner, employer or the principal.

(ii) The Engineer

When implementing the works, the client often chooses to delegate the supervision responsibilities to a third party, the Engineer (also referred to in some contract documents as the Contracts Manager or the Superintendent). The role of the engineer is delegated to an organisation or individual who possess the technical skills required to supervise the works. This responsibility can be given to a technical agency or a private consulting firm which employs staff with the skills and knowledge relevant to the works.

Public works departments and also local government institutions often employ technical staff who can take on the role as the supervising engineer. Despite this, it may be decided to use a private firm to take on this function, particularly in large or technically complicated projects requiring increased levels of supervision or specialised skills. For smaller works projects, in which mainstream and standardised technology is applied, it is common practise to appoint a local technical agency to act as the supervising engineer. In situations where the work is dispersed over a large geographical area, it would seem natural for the client to choose an institution well represented at local level.

The duties of the Engineer, in the context of a works contract, are summarised in the table below.

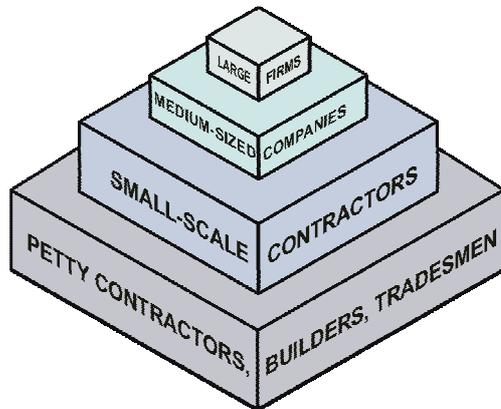
Duties of the Engineer	
The Engineer appointed by the Client to supervise the works is in charge of administrative, technical and financial control of the works, daily on-site supervision, measurement of work, issuing payment certificates and the final completion documents. The Engineer is responsible for the following detailed activities:	
Administrative duties:	
<ul style="list-style-type: none"> ✓ maintaining daily site records and preparing progress reports on the status of the project, ✓ liaising with local authorities and institutions, particularly on matters such as land disputes, authorisations to carry out surveys, access to quarries, etc., ✓ issuing payment certificates, 	<ul style="list-style-type: none"> ✓ playing the role of mediator in the settlement of minor disputes between the Contractor and the Client, ✓ ensuring that workers are paid according to the schedule and rates agreed, ✓ arranging site meetings.
Technical duties:	
<ul style="list-style-type: none"> ✓ ensuring that the works comply with technical standards and follow the schedule of works specified in the contract, ✓ promptly informing the Client of any defects for which the Contractor is responsible and which are detrimental to the quality of the project, 	<ul style="list-style-type: none"> ✓ providing technical and managerial advice to the Contractor, ✓ advising the Client on possible modifications in the plans, specifications and work methods, ✓ ensuring proper execution of remedial works before final handing over of works, ✓ assessing additional or unforeseen works.
Financial duties:	
<ul style="list-style-type: none"> ✓ liaise with the client to ensure regular budgetary provisions for the work under contract, ✓ carry out surveys with the Contractor to calculate the quantities of works actually completed, 	<ul style="list-style-type: none"> ✓ certifying monthly statements and submitting interim certificates to the Client for payment, ✓ liaise with the client representative to ensure the timely payment of completed works.

Work supervision is the responsibility of both the contractor and the client. While the contractor is directly in charge of the workforce and the use of materials and equipment, the client needs to make sure that works are carried out according to planned designs and specifications. If the client needs to hire competent staff for this purpose, this poses an additional cost to the project which it is important to budget for at an early stage of project preparations. Depending on the nature of works, these supervision costs can range between 5 and 20 percent of the total project costs.

(iii) Contractors

The construction industry consists of a multitude of organisations including both public and private sector institutions. Although some government agencies try to operate on a commercial basis, the majority of contractors are private sector business entities.

Most contractors specialise on certain type of work activities, such as building works, road construction, bridges, or technical installations. Others may specialise on carrying out certain trade related works, such as electrical installations, plumbing and water supply or masonry works. In the road sector, it is common to find



countries. Large contracting firms are normally relatively few in numbers, often based in urban areas. Medium and small-scale contractors are found in larger numbers, some with a permanent presence in the more rural parts of the country. In addition, the construction industry consists of a great number of smaller business entities consisting of local builders, plumbers, electricians, carpenters, masons, etc. Although these smaller businesses, comparable to petty contractors, are often not registered as contractors, they constitute a significant part of the local construction industry.



specialist contractors for works activities such as piling works, quarrying and transporting materials, bridge construction and laying asphalt.

Larger contracting firms are able to deliver a wide range of works services as they possess a comprehensive fleet of equipment and employ sufficient technical staff to cover a wide variety of specialist skills and technologies.

The distribution of large, medium-sized and small contracts follows the same patterns in most

Contractors range in size from multinational firms, with turnovers equivalent to several countries' national budgets, to small firms operating within local communities. In a civil works contract, however, the contractor is identified as the party who executes the physical works as defined in a contract agreement. It can be a large firm or one of the local builders available in the community close to the work site.

Classification of Contractors

In order to secure the client with a qualified contractor with the right skills and capacity, construction firms are categorised and certified according to their experience and size thereby indicating their abilities to carry out a certain type and amount of work.

When the client prepares an invitation for contractors to submit tenders, it is common practise to specify that only qualified bidders will be considered. This implies that an eligible contractor needs to be registered with the classification that matches the size and nature of works being advertised.

The most commonly used criteria are (i) financial capacity (looking at the size of the annual turnover, size of previous contracts and total assets) and (ii) technical capacity, represented by the skills of its staff and the equipment owned by the company.

The size of the contracting firms is important to bear in mind when identifying and selecting appropriate contractors for a specific type of work. The appropriate size contractor for a specific works project is directly linked to the bid packaging. If the works are packaged into large lots of relatively high contract values, there will be a demand for attracting larger firms. If the works is split into smaller contracts, it may be possible to attract local firms already operating in the vicinity of the project areas. Works may also be split into different packages according to the type or contents of work. A good example of this arrangement is when the

client decides to award bridge works as separate contracts and not part and parcel of a road works contract.

For projects where the client has decided to apply labour-based work methods, the optimal solution is to target contractors who are prepared to use this technology to carry out the works. Larger contractors may not be interested in using such technology as they already possess a considerable fleet of equipment and prefer to use this plant when taking on new contracts.

Before a works programme is formulated and the appropriate modes of procurement is chosen, it is important to identify the various types of contracting firms which operate

Types of Contractors		
Type	Description	Works Capacity
Petty contractors	<ul style="list-style-type: none"> single person labour only limited skills not registered 	<ul style="list-style-type: none"> labour only contracts minor repair works, routine road maintenance
Small-scale contractors	<ul style="list-style-type: none"> local builders possess basic equipment and hand tools registered as tradesmen low capital security some technical skills but limited managerial experience 	<ul style="list-style-type: none"> building construction subcontracts for special skills construction and repair of simple structures rural road rehabilitation works
Medium-sized contractors	<ul style="list-style-type: none"> registered possess some equipment limited capital security good entrepreneurial skills sound technical and managerial capacity 	<ul style="list-style-type: none"> building construction major rehabilitation works bridge and culvert works road surfacing works
Large-scale contractors	<ul style="list-style-type: none"> registered good access to equipment and capital proven entrepreneurial skills good technical and managerial capacity 	<ul style="list-style-type: none"> large infrastructure projects complex building projects capable of providing a wide range of construction equipment

in the country. The adjacent table provides a general description of the different types of contractors, categorised according to their size and the type of works they are capable and interested in carrying out.

Petty Contractors

This category of contractors usually consists of one-man firms, sometimes assisted by a limited amount of unskilled workers. They may be labour only contractors, subcontracted to carry out specific work, mainly relying on casual labour. Local artisans such as bricklayers, carpenters, plumbers and electricians together with a group of semi-skilled or unskilled workers can be

classified as a petty contractor.

Local community groups such as farmers associations and village welfare groups can also be classified in this category.

A common feature for this group is that they are not formally registered. They possess limited capital and are therefore vulnerable to cash-flow distortions such as late payments. These contractors seldom operate their accounts through a bank. Local banks will often not consider them as attractive clients and therefore do not provide them any credit services.



Besides some simple hand tools, petty contractors normally do not possess any equipment and lack their own means of transport. Due to their lack of mobility, they need to be recruited from the vicinity of the work sites. These contractors are mainly used for maintenance works or simple, clearly defined subcontracts requiring a minimum of skilled labour and equipment.

After receiving appropriate training and some development assistance, these contractors can prove to be highly efficient in carrying out minor rehabilitation works and routine maintenance. Some show good entrepreneurial drive, and given favourable conditions for their operation, such as a steady supply of work and regular and timely payment, they can prosper and eventually emerge as small-scale construction firms and constitute an important component of the domestic construction industry.

Small and Medium Size Contractors

Small and medium size contractors are often characterised as the firms on the lower level of a formal classification scale. They are located all over the country and often constitute the majority of the construction firms available in a country.

A common feature with this type of firms is that their financial capacity is limited. Some conduct their business through banks while others obtain their credits and maintain their savings and profit through informal financial channels. Equally, their equipment fleet is limited and is even more restricted in terms of heavy plant requiring large capital investments.

The strength of this group is their proven capacity as entrepreneurs. These firms have all carried out works contracts before and evidently managed to secure a profit from their business activities in the construction industry. This implies that they also possess a certain technical and managerial capacity.

As they are also found in the more remote parts of the country, they are attractive partners in decentralised civil works programmes since they do not need much time and resources in order to mobilise. Equally, they are well known in their local neighbourhood so their strengths and weaknesses are generally known among potential clients.

Due to their limited financial capacity, they are also vulnerable to cash flow distortions. Late payments of work may cause immediate delays in work progress since their liquidity is limited.

Before these entrepreneurs are taken on as full implementation partners in a rural infrastructure development programme, it is useful to ensure that they have the specific skills and capacity required. This may entail some form of training and development programme as an up-front quality assurance measure. If the contractors are unknown to the project management, it is also wise to allocate a good amount of supervision resources for the early stages of works implementation, thereby ensuring that the contractors commence works according to prescribed specifications and work methods. When attempting to boost the capacity of small-scale contractors, it is also important to ensure that the authorities are able to supply a steady amount of works. In order to defend investments in terms of project development and training costs, a firm government commitment on future work prospects would be expected.



Large-scale Contractors

Large construction companies are normally only available in limited numbers. In some countries they are subsidiaries of multinational companies or established as joint ventures between multinationals and local companies.

The strength of the large contractors is their solid financial capacity and ability to raise additional capital through commercial banks and other lending institutions. For this reason, they are also able to provide any type of equipment required for the works. Equally, they can tolerate substantial delays in payments without experiencing serious cash flow problems. Due to their size, they are also able to influence government officials and thereby obtaining their payments within reasonable time.

Their main disadvantage is that they are mainly found in the major cities and have limited knowledge of local conditions in more remote places. Due to their normal area of operation, they require longer and costlier mobilisation before they are ready to operate in remote areas. Although they may be prepared to mobilise if the construction contracts are large enough, it is difficult to secure their involvement in ensuing small-scale work or works dispersed over a large geographical area.

As these firms rely on their extensive equipment fleet for works execution they are often reluctant to replace it with the use of labour-based work methods. These firms prefer to engage their own equipment and staff and will allow for very limited involvement of local industries and labour in the works implementation.

Certain type of projects obviously requires the involvement of large contractors due the size and complexity of the works. When developing rural infrastructure, this is however often not the case. Most rural infrastructure works are small-scale using mainstream technology also mastered by local firms and builders.



The involvement of large contractors is only cost-effective for projects with a substantial amount of works confined to a limited geographical area. Smaller works widely dispersed over a large region would be less attractive to large contractors.

It can be argued that by packaging the works into one or few large contracts makes it easier to manage. The counterargument to this is that it may be safer to distribute the work through several smaller works contracts

and thereby reducing the risks of non or poor performance.

Lastly, it is important to note that large contracts require more complex procurement procedures, sometimes also involving international competitive bidding. This is a time consuming process, which can be avoided if the works is portioned into smaller lots at contract values for which local bidding procedures are allowed.

The Users

In addition to the above three key players, it is important to take into consideration the future users of the assets created through a works contract. The users are more important during the design stage, in order to secure the desired level of functionality in the project. The future users have an important say in the location, size and design of the project.

The users also need to be consulted to avoid any negative social or environmental effects caused by the project. Land encroachment issues are a common problem of civil works projects. It is therefore important to consult with local residents on the exact alignment of a road passing through their village as the improved road may



require additional land. Equally, when designing the drainage system for a road, it is important to discuss the detailed solutions for discharging the water with the local farmers in the vicinity of the road. Finally, it is important to note that the works itself may cause some disturbance during the construction period, including temporary closure of access and other services (i.e. water supply, electricity, drainage, etc).

The Designers

Designers have an important role during the planning and design stage. These consist of draughtsmen, architects, structural engineers, electrical and mechanical engineers, civil engineers and other specialists.

Not every project requires the services of all these professions. Smaller projects often combine the services of these professionals. The design work from a previous project can be used again, and often the client have standard drawings for a number of structures such as schools, clinics, irrigation structures, bridges and culverts. However, all these standard designs need to be adapted to fit into the real topographic conditions at each of the individual sites.

The designs need to observe geometrical and functional standards (i.e. axle loads, max loads for bridges, etc.) and statutory requirements regarding construction standards and safety. Roofs must be able to withstand specified wind loads and fire regulations must be adhered to. The health and safety of people working in the buildings, both during works implementation and after completion, is safeguarded by legal regulations and these may have a substantial effect on the design and choice of work methods applied.

Although the role of the designers are central during the identification and planning stages of a project, it may be necessary to revise plans and drawing when unexpected site conditions are discovered during the construction period. Also, the client may decide to carry out further changes to the design during the course of the construction. Equally, the users may demand improvements and changes to the original design once works have commenced.



1.2 Contracting Methods

At an early stage during the preparatory phase, the project management needs to decide on the most appropriate contracting arrangement.

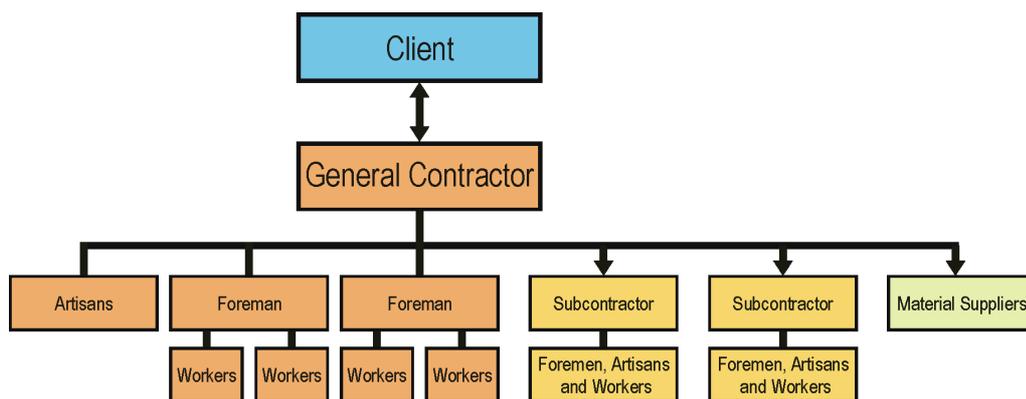
Depending on the size and complexity of a project, the client may need specialised services from several different construction firms in order to complete the works. The engagement of these firms can be organised in several ways with varying degrees of control and supervision required from the client.



General Contractor

The most common approach is to engage a general contractor who then takes charge of all works in a project. The general contractor is then in charge of all specialised services obtained from a number of subcontractors, thereby limiting the daily interaction from the client to one main contractor. In this arrangement the client signs one single agreement with one contractor, leaving as much of the implementation responsibilities as possible with this firm.

For public works, government agencies need to adhere to stringent procedures in terms of how to recruit the contractor. As part of standard contract documents there will be specific clauses regulating the relationship between the contractor and the client during the construction period. The figure below shows a typical organisation for a general contract agreement.



When engaging a general contractor, it is expected that this firm carries out a substantial part of the works relying on its own in-house resources, including skilled workers, tools and equipment. Furthermore, it is common practice that this contractor supplies all the building materials and takes full charge of the supervision of all subcontractors. As the general contractor is in charge of all the works, he/she needs to employ a wide variety of qualified personnel, ranging from foremen, technicians, surveyors, engineers as well as administrative support staff.

An extreme situation is when the general contractor subcontracts all the work on a project (sometimes referred to as a briefcase contractor). This arrangement can lead to a situation where the client is charged a profit mark-up two times, first by the general contractor and secondly by all the subcontractors. Furthermore, since the general contractor is not carrying out any works himself, there are no real incentives for him/her to complete the works on time. A contractor's profits are normally regulated by his/her ability to complete works on schedule and receive timely payments. With all the works carried out by subcontractors, this incentive is diminished. This is obviously not in the interest of the client, and the client may take measures to avoid such situations. One way of doing so is to set a limit on how much works can be subcontracted.



To avoid a situation where a general contractor subcontracts all the works, the client can also (i) include clauses in the contract agreement clearly stating that any subcontracting needs prior approval from the client and (ii) demand that a specific amount of skilled personnel and equipment is provided by the main contractor in order to remain being regarded as a qualified construction firm. If the criteria for qualification are clear and the conditions for subcontracting is clearly spelt out before the start of the bidding exercise, this situation can easily be avoided.

A general contractor is normally engaged for his/her unique skills in order to obtain a high quality product at the lowest possible construction costs. The required skills include the efficient management of all construction activities, the coordination of all



work activities and direct supervision of all inputs required (personnel, equipment and materials). An experienced contractor normally provides such abilities through employing a team of trained and skilled engineers, foremen and artisans. By gaining access to a contracting firm who possess this competence, the project has a fair chance of obtaining the final outputs at the envisaged costs and level of quality.

Subcontracts

Any contractor may choose to engage another firm to carry out certain work activities included in a contract agreement. Sometimes, this work consists of specialised skills or particular equipment which the main contractor does not possess. The reason may also be that the main contractor is overloaded with work and seeks additional capacity from other firms to meet all contractual commitments. For such services the main contractor enters into an agreement with a subcontractor.

The most significant feature of a subcontract is that it is an agreement between the main contractor and the subcontractor. It is important to note that the client or project owner is not a party to this agreement. As far as the client is concerned, the works of the subcontractor are included in the main contract and represented by the general

contractor. The reason for this arrangement is that the client wishes to identify one sole party which assumes the overall responsibility for all work progress.

Equipment Hire

Hire of equipment is a very common form of subcontracting. Many contractors choose to limit their equipment fleet and instead rely to a large extent on other firms for their equipment. The reasons for this may be the limited financial capacity of a firm to acquire equipment. Also, some firms do not wish to establish large mechanical workshops to maintain and service an extensive equipment fleet. Possessing a large equipment fleet also involves substantial investments, which can be risky when the market prospects are somewhat unclear. If there is a surplus capacity among the contractors, it is wise for the contractors to limit their plant fleets and instead rely on renting equipment when they are awarded the occasional contract.

Equally, the payment of works completed by a subcontractor is normally not processed by the client. When a client appoints a general contractor, the works of the subcontractors are regarded as part of the works regulated by the general contract and not distinguished from any other works to be performed by the main contractor. The client would therefore issue payments to the main contractor only, covering the works of both the main

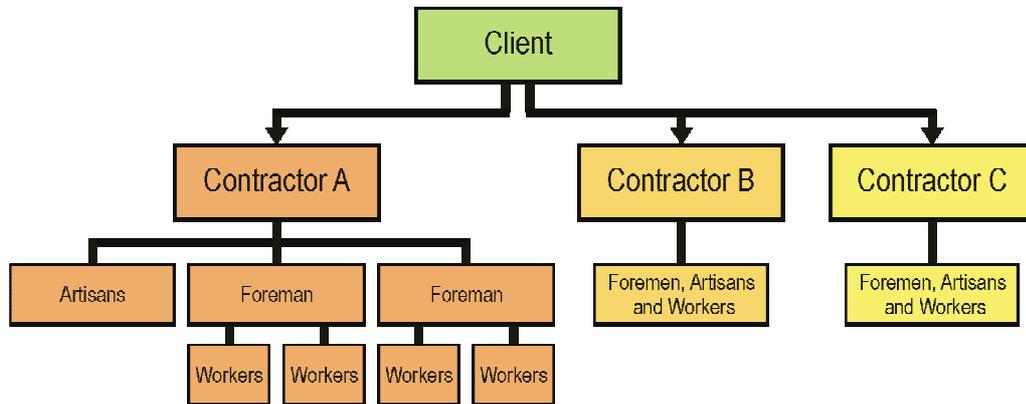
contractor and the subcontractors. Payments for works carried out by subcontractors are then provided by the main contractor according to the agreement with the subcontractors.

In most cases, the main contractor selects the subcontractors. Although the works are part of a public works contract, the recruitment of subcontractors is not subject to government procurement regulations, but instead regarded as a private affair between two private companies. However, the main contract agreement often includes clauses securing the right of the client to approve or disapprove of the selection of subcontractors.

Alternatively, the client may wish to get directly involved in the selection of the subcontractors. This is referred to as nominated subcontractors, which may be identified before or after the bid competition for the main contract.

Separate Contracting

The alternative to appointing a general contractor is to enter into contract agreements directly with each of the contractors involved in a project, instead of leaving some firms to be subcontracted. This way, there is no main contractor, and all the firms report directly to the client. This arrangement leaves more direct management and coordination responsibilities with the client as shown in the figure below.



This solution requires that the client possess a certain in-house technical and managerial capacity to take on the increased management responsibility. Alternatively, the client can engage a consultant to whom this management responsibility is delegated.

Subcontracting Transport Services

Local small-scale contractors are commonly engaged to carry out construction of secondary and tertiary roads using labour-based work methods. Due to these firms' limited possession of equipment, the client may choose to engage separate transport contractors to supply gravel surface materials. By letting these contracts through national competitive bidding instead of allowing the main contractor to subcontract such services, the client can also obtain more competitive prices for this essential work activity.

Equally, it is common practice in the road sector to award separate contracts for the delivery and installation of bituminous surface treatments. This work often requires specialised equipment, normally not available among local contracting firms.

The client can also choose a mixed solution, engaging a general contractor as well as entering into direct contract agreements with some specialist contractors. In public works programmes, the client may be sufficiently knowledgeable about the functional requirements of the works. For example, the client for a road rehabilitation project could be a government road works agency, in which sufficient qualified civil engineers are found to adequately manage the works.

When the client decides to award several contracts for the works of one project there is a need to carefully coordinate the activities of each of the contractors, as well as delineating the responsibilities of each of the contracting firms. Furthermore, the scheduling of the award of each of the contracts needs to be carefully planned so that every activity is carried out at its optimal timing.

Splitting a Road Works Contract

Separate contracts may be let for delivery of gravel, earthworks and construction of culverts and bridges. In this respect, it is important that this planning starts already before the preparation of each individual contract. The ideal situation would be to issue the culvert and bridge contracts first, thereby ensuring proper access when the road works activities commence. Finally, all earthworks and structures need to be completed before the gravelling works.

It is important that the division of works between the various contracts are clear. For example, it must be made clear through the provision of work activities in the bill of quantities, which contractor carries out activities such as traffic and river diversions, backfilling of bridge abutments, etc.



Separate contracting can also be organised by only letting one contract at the time in a project. The client may choose to carry out all bridge and cross-drainage works on a road project during the first construction season and only commence road works during the second year. Finally, when all road and drainage works have been completed, the client mobilises a contractor for the road surfacing works.

Supply Contracts

The client may also choose to organise the supply of equipment and materials through separate contracts with suppliers. Supply contracts may include delivery of

gravel, aggregate, rock, and other building materials. It may also include technical installations such as pumps, ventilations systems, computers and communication equipment. Supply contracts are different from civil works contracts, as the services rendered include limited amounts of works on site. The legal clauses in the contract instead focus on other issues such as who is in charge of transport and delivery, insurance during transport, time of transfer of ownership, installation services, warranty period and initial maintenance services.

Other Configurations

Design and Construct

In a design and construct arrangement, the client awards a single contract for both the design and the construction of a project. This is also known as a turnkey project. This approach is usually only applied to large-scale works and is often more relevant to projects where alternative designs have a large impact on the final cost of the project. For smaller works where standard designs are often available and contract amounts are more limited, this approach is not relevant.

Community Contracting

Community contracting has become a popular arrangement for contracting minor works that is targeted towards a limited group of beneficiaries such as a rural village or a particular neighbourhood in an urban setting. It is an approach often championed by development agencies in order to secure a high level of local participation by the end users in all stages of the project from conception, planning to works implementation.

A common feature in community contracting is that there are normally no formal contracting firms involved in the works. Instead, the role of the contractor is replaced by the community, which takes charge of the works, relying on local labour and individuals who possess the necessary trade skills. In some instances these groups are later recognised as a "contractor" and also utilised during the maintenance and operation phase of a project.



Similarly, the client is often the same group of people which have a common interest, often identified as the end users. These groups normally have no prior experience in the world of contracting and may need considerable external technical and managerial support in order to implement the project works.

While acknowledging the limited technical skills and capacity of local communities acting as a contractor, there is still a need to follow the basic concepts of contracting. This includes establishing a contract agreement in which the works are properly quantified and priced. Equally, this arrangement also requires clearly defined procedures for supervision, measurement and payment of works – similar to conventional contracting of civil works.

Petty Contracts

The traditional concept of contracting presumes that the client engages already established construction firms, already registered as formal business entities and classified to carry out a certain size and type of works. Petty contracting allows contracts to be awarded to small informal contractors, which are not registered and not recognised as commercial firms.



Engaging petty contractors have proven to be an effective approach to smaller works dispersed over a large geographical area. Due to the limited size of the contracts, they are often let through direct selection (with limited competition), applying standardised unit rates and simplified contract documents and procedures.

Performance Contracts

Performance contracts have in recent years become an increasingly popular approach to road maintenance both in industrialised and developing countries. The basic

principle is to define a desired condition of the road structure to which the contractor needs to maintain during a certain period of time, instead of specifying the works activities based on a bill of quantities. The duration of the contracts span from several months, i.e. throughout a rainy season, to several years.

The contracts are awarded to established road contractors who in turn sublet some of the works to smaller contractors, operating in the area where the road is located. Alternatively, the road authorities may choose to let performance contracts directly to petty contractors.

Lengthman System

The lengthman system was originally designed to improve road maintenance works in England in the 17th century. The basic concept is to contract individuals living in the proximity of a road to provide routine maintenance. Although the road is a public property, the lengthman or lengthwoman is not regarded as a government worker but a "mini-contractor", providing his/her services based on a set of measured quantities of



work for an agreed contract amount. As for petty contractors, the works is normally limited to small amounts so that competitive bidding can be waived. A lengthman would be awarded new contracts as long as his/her services are satisfactory performed. Only if the performance is inadequate would the client disengage his/her services and select a new lengthman.

Similar to when utilising petty contractors for road maintenance, lengthman contracts are normally based on standard task rates and a fixed wage rate for the calculation of the contract amount.

An important feature of the lengthman system is that it normally involves a substantial amount of contracts being under execution at a given time. Although these contracts are simplified to contain only the basic essentials and

focus on the works activities, they still need to be administered. Their large numbers therefore prescribe certain performance requirements from the agency in charge of the management and supervision.

Force Account

Force account or direct administration has been the most common approach to implementation of public works throughout the history of civil engineering. Force account basically means that the works are carried out directly by the client, by employing all the personnel and purchasing the required equipment and materials. In short, the client is carrying out the works, which could have been performed by a private contractor. When this arrangement is chosen, there is normally no need to prepare any contract documents.

In recent years, there has been a push to reduce the amount of civil works carried out by force account and instead allow a greater share of the works to be carried out by private construction firms. The reason behind advocating for more private sector involvement

in the construction sector has been that by allowing private firms to compete for the works, the works can be achieved at lower prices.

Public works agencies today use both force account and private contractors when implementing civil works. Sometimes, both methods are applied in a single project. Many technical agencies have privatised only certain work operations. For example, it is common practice today for road works agencies to rely on the private sector for services such as material haulage and asphalt works in order to limit their own equipment fleet. In such cases, the public agency can still choose to carry out certain works by force account and subcontract private firms for other activities.

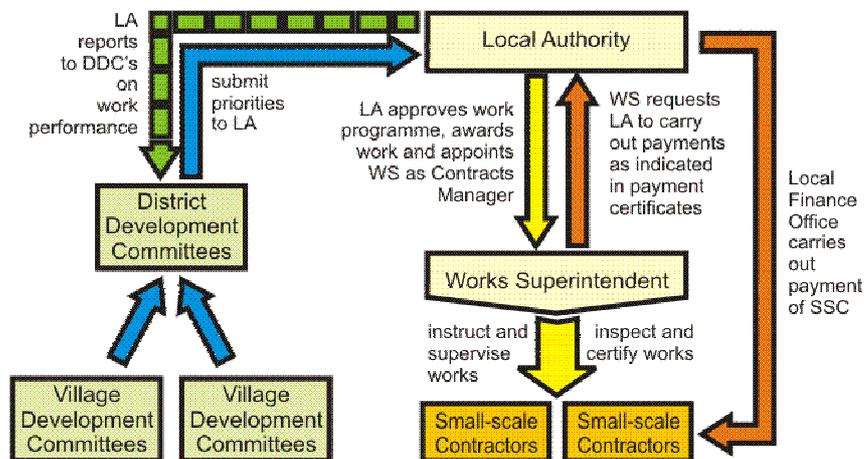
1.3 Decentralised Procedures

Local infrastructure works are in most cases more effectively carried out through civil works contracts awarded to local contractors managed and supervised by local authorities. Local firms are easier to mobilise for construction works, and are also available and interested in participating in the maintenance required at a later stage for the infrastructure assets developed.

The decentralisation of responsibilities and authority, which is also essential for local decision-making, is a key factor for the successful implementation of geographically dispersed programmes. It is particularly important in relation to small-scale works, for which the management resources of central government departments are seldom sufficient to provide adequate supervision. Genuine decentralisation also enables local organisations to "exert pressure" and therefore to defend their projects better because, at that level, the negotiating partners and the needs and priorities of the population are better known. It enables beneficiaries to have a greater influence on the technical choices and designs, methods of implementation as well as operation and maintenance. In addition, the users then know who in the community is responsible and who they should turn to in case of difficulties.

Prior to the implementation stage, the planning and prioritisation of the works should be carried out through the various levels of local development committees and finalised at district or provincial level with the assistance of an appropriate technical line agency (i.e. District Works Office, Provincial Road Maintenance Authority, etc.).

The civil works contracts are managed by the local authorities, including announcement of bids, bid opening, bid evaluation, award of contract, inspection and supervision of works, certification and payment of works and finally issue of final completion certificates as shown in the figure below:



Local political assemblies are responsible for the approval of the budget for the works programme based on the priorities of the local development committees. The programme budget is based on estimates prepared by local technical staff for each of the sub-projects.

Once bidding documents have been prepared for a specific project, the local authority announces the works. Works are then awarded on the basis of bids submitted from qualified local contracting firms.

The bids received are examined by technical staff for their accuracy and adherence to the bidding instructions, before the local project tender committee carries out the final evaluation. The tender committee typically consist of representatives from the local assembly, the appropriate development committees, key technical staff and possibly someone from the local budget or finance office.

The local technical office or a private consultant can prepare the contract agreements. Based on the decision of the tender committee, the contract agreement is signed by an authorised representative of the local authority (i.e. a Council Secretary).

Funds Transfer to the Districts

Budgets for infrastructure works are usually split between investment projects and recurrent activities. Funds allocated for new construction or improvement works are allocated under the government capital investment budget and are usually available to during the entire duration of a project. Recurrent budgets cover expenses relating to the operation and maintenance of existing infrastructure (such as buildings, roads, water supply systems and markets), as well as expenses related to permanent government staff and the operation of public offices. Recurrent budget are allocated on an annual basis and needs to be used before the end of the budget year.

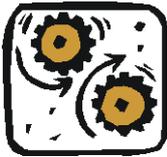
For capital investment projects, local authorities often establish a District Development Fund, which can be utilised for the implementation of infrastructure development works financed by both regular government sources and external financing institutions. There may also be appropriate procedures established by some specific development programmes, relying on special accounts dedicated uniquely for a single project. Since adequate cash flow is vital to the timely payment of works, it is useful to establish dedicated project accounts for larger development projects. In order to further ease accounting, each works project should have a separate bank account. For maintenance works, a separate recurrent expenditure account should be established to cover works in a certain region.

Funds sourced from central headquarters are transferred to the local authorities in advance on the basis of submission of a detailed work plan, budget and expenditure forecast. The advanced funds should be replenished based on details of actual expenditure and up to date expenditure forecasts. It is good financial practice to replenish funds while there are still sufficient funds available at local level to carry the planned expenditure of at least one or two months.

The detailed procedures adopted in terms



of cash flow from central level to the local authorities and further on through the payments to the contractors, need to be closely monitored for its efficiency. The timely payment of the contractors is crucial to their success and ability to operate. A vital performance criterion for the payment procedures is that the contractors are paid within a maximum of one to two weeks after they have submitted an invoice. Further delays may compromise the contractor's ability operate and turn a profit. It also restricts the contractor from paying the workforce on time, which in the next turn can have a detrimental effect on the job motivation of the workers and result in reduced production rates.



Chapter 2

Bidding Procedures

2.1 General

Before a contractor is hired to carry out civil works, it is necessary to agree on a price for the services required. When purchasing a service or a commodity, the buyer wishes to obtain a competitive price. For this reason it is common practice to request price offers from several contracting firms.

Public works contracts are usually managed by the government agency responsible for operating and maintaining the completed facility. As part of any government agency's attempt to carry out all procurement in a transparent way and obtaining the best price offer, the client will carry out a bid competition, applying a set of house rules with the objective of allowing a fair and equal chance for all qualified firms to compete for the works.

There are several methods for inviting contractors to submit bids for civil works. The government has established procedures to be adhered to in terms of who can participate in the bidding contest and how it is carried out.

Although bidding procedures vary, they are all based on two basic principles:

- (i) the client needs to engage a contracting firm with the skills and resources necessary to carry out the works on time and to prescribed quality standards,
- (ii) the price obtained through the bidding process should be reasonable and reflect the actual costs of carrying out the works. To achieve this, the bidding procedures attempt to allow all competent firms to submit bids in a competitive environment in which all qualified firms are given an equal opportunity to take part.



Depending on the contract value and the amount and type of work to be carried out, the client may wish to use different procedures for the bidding contest. For smaller works, it is preferable to recruit contracting firms located in the vicinity of where the work is to be carried out. If the works are of limited value and do not require any substantial amount of equipment and specialised skills, the simplest solution is to recruit a local construction firm to carry out the works. If the works is very simple



and limited, it may be sufficient to engage a local artisan to carry out the works. The main reason for this is to reduce mobilisation costs. On the other hand, when specialised skills or equipment are required, the client may need to look for contractors from elsewhere.

Bid competitions are essentially carried out using three different approaches, international competitive bidding, local competitive bidding or by inviting a select number of firms to submit bids.

Projects with external financing from international development agencies may require that the bidding procedures conform to specific regulations prepared by these organisations. These agencies may also have a preference to the use of international competitive bidding, however, in the cases where works contracts are comparatively small, it is usually possible to argue for the use of local contracting procedures as long as the funding agency is convinced that the methods of local contracting comply with basic principles in regards to fairness and transparency.



2.2 International Competitive Bidding

International competitive bidding (ICB) is mainly used on large contracts or where highly specialised skills or equipment are required – when such capacity is not commonly available within the country. These procedures are also applied when the client believes that it may be possible to obtain lower prices by inviting international contractors to participate.

In periods when there is high demand for the services of the local construction industry, clients may decide to invite overseas contractors to participate in bid competitions as a means of increasing the capacity of the industry and to limit price escalations caused by the increased demand. Large projects may take up a substantial part of the capacity in the domestic construction industry thereby causing a general price increase in the sector. By inviting foreign firms to participate in the large projects can be an efficient method to stabilise prices in the local market.

Subcontracting to Local Firms

Besides obtaining more competitive prices, the reason for using ICB procedures is to obtain specialised skills and additional implementation capacity by securing the services of foreign contractors. In other words, the client can use this bid procedure to obtain services not readily available in the domestic market. It is therefore expected that the foreign contractors will import a substantial part of the necessary equipment and personnel rather than relying on local subcontractors. For this to take place, the client may insist that a certain percentage of the works need to be carried out by the main contractor and limit the use of subcontractors.

For very large projects, there may not be sufficient local bidders in order to maintain a competitive environment. For this reason, specific measures are taken to attract the interest of foreign contractors.

If there are few available companies qualified to carry out the works and that there is a risk that they may collude during the

bidding process causing an artificial increase in prices, an option is to invite foreign companies to participate in the bid competition.

International competitive bidding is also an effective approach for importing new skills, technology and equipment. Foreign contractors possess technical know-how, which may not be available locally.

International firms are however only prepared to travel overseas if the size of the contracts is sufficiently large to justify the additional cost of doing business overseas. Secondly, the process of advertising and soliciting bids from overseas contractors are more time-consuming. From the point of view of the client, there may be additional risks as well, as the quality and performance of overseas firms are less known.

2.3 National Competitive Bidding

National competitive bidding, also referred to as local competitive bidding, is essentially the same process of collecting price offers as when soliciting international markets, the only difference being that works are only announced within the country or within the specific region where the works will take place.

In most cases, local competitive bidding does not exclude the participation of international firms. The main distinction from ICB procedures is that no particular effort is made to attract price offers from outside the country of project area. Since the works are advertised locally, and because the main contenders for the works are locally based, this procedure normally takes less time to carry out as compared to applying ICB procedures.

With larger contract values, contracting firms from all parts of the country may want to participate in the works. It is then common practice to ensure that the entire industry is informed of the bid announcements. Also, when the works require certain skills or equipment which cannot be found among the local firms in the vicinity of the project, contractors from all over the country are encouraged to participate in the bidding contest. These contracts would normally be larger in value and volume of works, thereby justifying the additional cost of mobilising equipment from one part of the country to another.



Procurement regulations normally set fixed thresholds for when LCB should be used. These thresholds are in most cases linked to the estimated value of the works contracts. Contracts with values above a certain amount need to be procured using ICB procedures. Equally, the regulations may dictate that smaller value works, above a certain amount, needs to be advertised across the nation.

These thresholds are established to ensure that the client manages to secure bids from sufficiently large contractors, which have adequate financial resources to mobilise the

necessary resources to carry out the works. As part of the bid preparation, the contractors are expected to document their financial and technical capacities.

2.4 Domestic Canvassing

For works contracts with a limited value, the procurement procedures may allow for a limited competition through domestic canvassing. This essentially implies that three price quotes need to be obtained from a minimum of three separate qualified companies.

The advantage of using domestic canvassing is that the exercise of advertising is eliminated, thereby reducing the time required to collect bids. Also, the task of engaging a sufficiently qualified contractor is controlled by directly selecting from a short list of firms known to the client.



Domestic canvassing can work well for smaller works for which the implementation responsibility has been decentralised to local authorities. This arrangement may encourage the participation of local contracting firms based in the vicinity of where works are located.

Domestic canvassing should still be used with caution as it may produce complaints from contracting firms not invited to bid. These claims may be justified if the client always limits the invitations to a selected group of firms. Complaints of this nature are normally avoided by inviting a larger group of contractors to participate – soliciting more than just the minimum required three bids.

Also when applying domestic canvassing, it is important to demonstrate the same level of transparency and fairness when opening and evaluating bids.

2.5 Negotiated Contracts

Negotiated contracts imply that works are awarded to a contractor without a bid competition. In exceptional cases, the client may wish to select a particular contractor to carry out the works without soliciting the market for several price offers.

This procedure often results in a higher price and do not guarantee the same objectivity and transparency. It is therefore not a preferred method for selecting contractors. On the other hand, when the contract values are relatively small, the price reduction obtained from a competition may be insignificant in relation to the resources required to carry out the bidding competition. Normally, government procedures would allow for purchases up to a certain amount without any competition.

In certain cases, this approach may have some advantages. The most common reason for using this procurement method is when emergency repair works are required on short notice to quickly reinstate essential infrastructure services such as a damaged bridge or emergency repairs to power and water supplies.

Negotiated contracts can also be based on hourly work rates or pre-determined unit rates, which the contractors have submitted in advance, in case additional or unforeseen works need to be carried out.

Community Contracts

When communities or local community groups are engaged to carry out works, the contract amount is normally based on negotiation. Since the intention is to award the contract to the community where the works are located (and nobody else), there are no other competitors.

In order to establish a reasonable price for the works, it is common practice to base the cost estimates on established task rates for each of the specific work activities and the prevailing daily wage rate. On top of this, it would be justifiable to include some overhead provisions.

As always, the contract needs the concurrence of both parties, and this may involve some negotiations.

In some cases the client may select a particular contractor who has recently carried out similar works. If the contractor is already mobilised in the area where additional works are required, the client may negotiate with the contractor to take on additional work for the same price as the previous works. Another justification may be that the works require highly specialised services, which few contractors possess. If the client can only find a single contractor to carry out

the works required, there is really no point in carrying out a bid competition.

A common example of negotiated contracts is when a road agency decides to engage lengthmen to carry out routine maintenance contracts. The value of the contract is then based on a pre-determined volume of works, for which the contractor is paid on the basis of established task rates and a fixed wage rate.

2.6 Preference to Local Contractors

Established procurement regulations prescribe the appropriate bidding procedure depending on the size of the contract. A central government authority such as the Ministry of Finance will set certain thresholds for when each of these methods can be applied as part of the government procurement system. This implies that all contracts financed by the government need to adhere to the same rules and procedures. Local contracting may be accepted for smaller contracts up to a certain estimated contract value. If this amount is exceeded, then the procedures for national or international competitive bidding must be utilised.

It is the responsibility of the project management to select the appropriate method of announcing and collecting bids for a certain project. If the client finds it appropriate to invite contractors from far away to participate in the bidding exercise, even when the contract values are limited, this can be secured by a wider and more thorough announcement of the works.

The use of local contractors is in most cases the preferred option in terms of choice of contractors. Local contractors are often better known to the client. It is therefore easier to assess their qualifications and skills in relation to the envisaged



works. The quality of their previous work is easy to assess because it was carried out in nearby locations and can easily be inspected. Local contractors are also well known in the neighbourhood and will know best how to operate there. They are also subject to local pressure to perform their best, thereby retaining their good reputation and continuing to do business locally. When provided a steady amount of works, they will have a positive effect on local trade and industries and contribute positively to the local business environment.

Soliciting bids from outside the project area is also a more time consuming process. It may lead to unnecessary delays in starting up works, which in many cases could be avoided if instead relying on adequate and sufficient local capacity.

For the client, it is always easier to engage a firm which is well known, and which has a proven track record and capacity. It is therefore more attractive for local authorities to utilise its local construction industry. In order to allow these firms a fair share of the works programme, it is therefore important to package works in a manner which allows them to participate. By breaking down larger volumes of works into smaller contracts, the local authorities can ensure that local bidding procedures are allowed for. Smaller and more numerous contracts may imply more supervision for the client, however, it is also a good measure for spreading the risk and can also be an effective way of starting up more works activities in parallel. These are important considerations when preparing the work programme.



2.7 Externally Financed Projects

When works are financed by international organisations such as foreign donors or by international finance institutions, they often prescribe conditions and minimum requirements of the procurement process. Some organisations wish to favour contractors from their own country, or they may suggest the use of international competitive bidding for all the works. In such cases, it is important that the concern for the domestic construction industry is addressed at an early stage, already during the project negotiations between the government and the external funding agency.



The decision to use foreign contractors is often based on the assumptions that the local industry does not have sufficient capacity or skills to carry out the envisaged works. In many cases, these assumptions are based on wrong or insufficient information. Also, with some up-front training and development support, it has been proven on numerous occasions that the local construction industry can provide a substantial part of the services required.

Securing higher involvement of the local construction industry is becoming increasingly accepted by donors and international finance institutions. The operational directives of the World Bank define the various modes of procurement on projects fully or co-financed by the WB. The modes of procurement most relevant to local infrastructure works would be National Competitive Bidding and Local Shopping.

The conditions set by the WB for applying local competitive bidding are described in their operational directives and in their procurement guidelines. The use of local contracting can be justified on the basis of limited contract values, works are scattered geographically or spread out over time, or that the works can be secured at a lower price locally. It is interesting to note that these agencies have included guidelines stating that if the works are labour-intensive, the works can be carried out applying Local Competitive Bidding procedures.¹

When to Use National Competitive Bidding (World Bank)

... National Competitive Bidding (NCB) is the competitive bidding procedure normally used for public procurement in the country of the Borrower, and may be the most appropriate way of procuring goods or works which, by their nature or scope, are unlikely to attract foreign competition...

... NCB may be the most appropriate method of procurement where foreign bidders are not expected to be interested because (i) the contract values are small, (ii) works are scattered geographically or spread over time, (iii) works are labour intensive, or (iv) the goods or works are available locally at prices below the international market. NCB procedures may also be used where the advantages of ICB are clearly outweighed by the administrative or financial burden involved...

Source: Guidelines: Procurement under IBRD Loans and IDA Credits, October 2006

In World Bank financed projects, the packaging of works is decided at the time of project preparation. The procurement guidelines state that “*As part of the preparation of the project the Borrower shall prepare and, before loan negotiations, furnish the Bank for its approval, a Procurement Plan acceptable to the Bank, setting forth: (a) the particular contracts for the goods, works, and/or services required to carry out the project during the initial period of at least 18 months; (b) the proposed methods of procurement for such contracts that are permitted under the Loan Agreement, and (c) the related Bank review procedures.*”. As part of the procurement plan, the Bank agrees with the recipient government on specific thresholds for when to use local competitive bidding. Any concerns and preferences to using domestic constructors therefore need to be made already during the project design stage. Otherwise, it may be possible that the procurement of works is designed in a manner favouring international competitive bidding with the result that the local construction industry loses out to the competition with the large overseas firms.

The Asian Development Bank has adopted similar procedures, allowing for local competitive bidding under the same conditions.²

2.8 Bid Packaging

During the design stage, the main attention is given to finding the appropriate technical solutions that give the best value for money in terms of meeting user specifications. At the planning and design stages, there are normally limited concerns

¹ A reference to labour-intensive works is also used in these guidelines when justifying the use of community contracting.

² Ref. Procurement Guidelines, Asian Development Bank, February 2007

made to who will implement the physical works. Good design works should however also take into consideration the availability of local skills and materials and try to adopt local building designs and practices.

The final step in the planning stage is to decide how to organise the implementation of the works. This includes decisions on how the work is distributed among contractors and the supervision arrangements. Some works involve specialist services only available among very few contracting firms. On the other hand, there is often a substantial part of the works that can be carried out relying on the capacity of the local contractors. If the local industry has the necessary skills and capacity and is not too engaged in other works, their involvement is normally the preferred option.

Using the local construction industry does however require a careful analysis of how much and what each contractor can perform. Ideally, the bid packaging should be carried out so the size and contents of the works contracts matches the performance of the category of contractors for which the work is targeted.

Equally, if the project feels that it is necessary to attract contracting firms from outside the vicinity of the project area, it is important that the contracts are packaged into sufficient sizes, thereby making them attractive for outside contractors to participate.

Works can be partitioned into bid packages according to both size and content of works. Specialised works are often separated out to suit the capacity and skills of specialist contractors.



Common examples of this are the use of separate contractors for bridge and road surfacing works. It is also common practice to use specialist firms for the installation of foundations, ventilation systems and other technical installations in buildings.

Contracts are also packaged to limit or contain a certain minimum value of works. If the value of the contract is too large it may exceed the financial capacity of certain contractors who would otherwise be qualified to carry out the works. Equally, the contracts need to be of a certain minimum value in order to attract the preferred category of contractors.

Rather than splitting the works into separate contracts, the client may opt to award the entire works under the supervision of one general contractor who then sub-contracts any required specialist services. There are pros and cons with both arrangements. The main reason for hiring a general contractor is to reduce the supervision demand. On the other hand, in order to have more control of the selection and performance of each contractor, the client may wish to award each of the contracts separately to maintain direct control of the works.



Chapter 3

Announcement of Works

The first step in the process of identifying and selecting a contractor is to make it publicly known that the services of a construction firm are required for a specific project.

When public funds are used to finance civil works, this process needs to be carried out according to established government regulations and procedures in order to ensure that all qualified and interested firms are informed and are given a fair chance to participate. Projects funded by international development agencies may be subject to additional rules on how to identify and engage a suitable contractor.

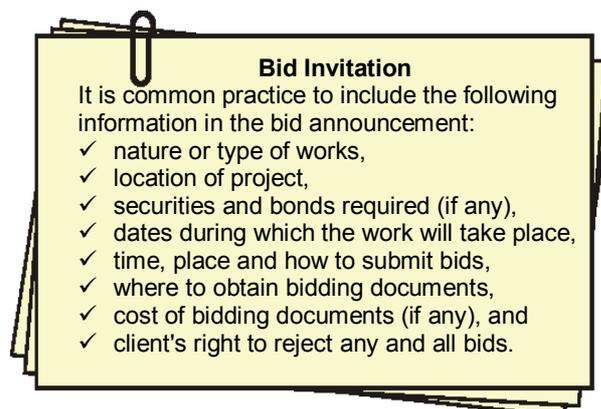
The bidding process can commence when the detailed planning and design works have been completed and the project has obtained the necessary go-ahead and funding approvals.

The bidding process is sometimes supervised by a separate organisation such as a central or regional tender board. Although it may be independent from the executing agency, the client and the project management team may be represented as part of the board. The project manager may be required to provide basic documentation to the tender board and advise on technical issues. In some countries, the entire bidding process is carried out by a separate agency, while in other places the entire bidding process is managed by staff members from the executing agency (i.e. senior technical staff or project management).

3.1 Invitation to Bid

The bid invitation serves as an advance notice to interested and qualified construction firms. It is the first piece of information to the public, essentially announcing the intention to carry out a defined amount of construction works for which qualified contractors are invited to submit price offers. The bid invitation is prepared and announced only after all the works have been properly defined and quantified by preparing a set of bid documents describing the works and how the bid competition will be conducted. The bidders need these documents as a basis for their tendering exercise.

The bid invitation is normally a one-page notice containing key information relating to the project. Further detailed information is obtained from the agency in charge of the project, which is usually mentioned in the announcement, and by acquiring a complete set of bidding documents.



This information is also mentioned in other parts of the bid documents. When preparing the bid invitation, this information needs to be carefully crosschecked with the other documents forming part of the bid documents (i.e. Instructions to Bidders).

Rural Infrastructure Works in Cambodia

In an ADB financed rural infrastructure works project it was decided that for works estimated at more than US\$ 50,000:-, the procedures for national competitive bidding would be applied. The established practice was to advertise the works in a national newspaper two weeks in advance of the bid closure date.

For works with a lower value than US\$ 50,000:-, the project applied domestic canvassing, consisting of inviting a minimum of three bids for each contract.

Although the methods used for announcing the works were different, the procedure for bid opening and evaluation remained the same.

Depending on the government regulations and the size and type of contract, there are normally clear procedures prescribing the frequency at which advertisements should appear in newspapers and the length of time the notices are posted.

If the contracts amounts are relatively large, the work is procured using national or international competitive

bidding. ICB requires the longest announcement period in order to reach all potential bidders and allow them reasonable time to prepare bids. When applying local competitive bidding this period is reduced to three or four weeks with advertisements only posted in the national or local press. For smaller contracts, appropriate procedures for local shopping can be applied, thus necessitating only a couple of weeks notice.



The announcement period is also the period during which the bidders are required to prepare and submit their bids. When determining the duration of the notice period it is important to allow the bidders sufficient time to prepare their offers and also inspect the project sites. Preparing bid proposals is done while the contractors are engaged in other works projects. If too little time is available, there is a risk of making costly errors when preparing the bid. Contractors are fully aware of this fact and for this reason may include a larger mark-up when the bidding time is short. Equally, when contractors are busy with other work, they may be reluctant to participate bid competitions with very short deadlines as the staff available for such work is already tied up with ongoing works contracts.

These are important issues to take into account when deciding on the appropriate bidding period. Despite the client's wish to start works as soon as possible, it is also important to allow time enough for as many qualified bidders as possible to prepare realistic bids, which in the next turn may result in more competitive environment and lower prices.

During the bidding period, the contractors also need to carry out site inspections and verify the information provided in the bidding documents and obtaining a real overview of the conditions on site. If there are questions related to the contents of the bidding documents, there needs to be sufficient time to clarify these before the bid closure date.

In addition to newspapers and direct invitations, the works announcements should also be posted at a public notice board at the office of the government agency representing the client. Such practice allows potential bidders to obtain a general overview of all the work available to contractors at any given time.



A secondary effect of announcing works is that it makes the programme more visible. Frequent announcements of work give the impression that the programme or agency in

charge is involved in a substantial amount of works and seem to initiate new projects on a continuous basis. This is good publicity which may build confidence in the programme, and which may in turn facilitate additional funding support in the future.

In recent years, the use of the Internet to advertise works is becoming more common. Many government agencies are now using this media as their main tool to disseminate business opportunities to the public. There are also dedicated websites focussing on distributing information on job opportunities and tenders.

3.2 Private Contracts

When contracts are awarded in the private sector, there are no well-defined rules and procedures which have to be followed as is the case when using government funds. This also applies to the appointment of sub-contractors on public works contracts, unless the client chooses to select the sub-contractors.

The bidding process can then be summarised as follows:

- ✓ the client is free to select the contractor by any means,
- ✓ advertising is used to obtain the advantages of open and free competition,
- ✓ the client may choose to negotiate a contract with a single contractor, or
- ✓ the client may decide to invite a limited number of contractors to bid for a job. This process has the advantage of the competitive market while restricting the bids to a selected group of qualified and reliable contractors.

3.3 Purchasing Bid Documents

If a contractor decides to submit a bid on a project, he/she may be required to pay a certain fee to obtain the bidding documents. The purpose of this fee is basically for the client to cover its expenses in producing the bid documents in sufficient numbers. This payment is not refundable, whether a bidder is successful or not in winning the contract.

It is worth noting that these proceeds, when received by the client, should be considered as public revenue and therefore needs to be properly accounted for in the same manner as all other public funds.

Posting Bid Documents on the Internet

Bid documents can also be distributed using the Internet. The website, where the documents can be downloaded, then needs to have free and open access, thereby allowing anyone access to all the information available relating to a specific contract. When downloading the documents from the web, there is normally no fee to be paid.

If the client is demanding a fee for the tender documents it is normally stated in the bid announcement. When a contractor purchases the bid documents, he/she should make sure that a receipt is issued to the amount required.

For smaller contracts, the fee is often waived since the work related to accounting for such funds creates

additional administrative work. The cost of stationary related to a small contract is rather limited as it would consist of less documentation.

3.4 Engineer's Estimate

Before the tenders are announced, the project management prepares its own estimates of the costs of the works. During the various stages of the identification and planning process, estimates are prepared with various degree of detail. During project identification, decision makers are provided with rough cost estimates used as a basis

for considering various alternative technical solutions. During the final planning stage, more detailed estimates are prepared to ensure that sufficient budgets are secured before a contract is awarded. The final cost estimates prepared for the project management is referred to as the Engineer's Estimate.

Some programmes try to keep these cost estimates confidential until the bidding process has been completed, while others choose to post this information as part of the information provided to bidders. It is recommended that the engineer's estimate is published. Some clients may be reluctant to do so because they are afraid it may lead to an increase in prices. This may be a valid point, however, it is difficult to ensure that these estimates are kept secret from all the bidders. The best incentive for a fair competition is for everyone to have equal access to all information relating to the project. If the engineer's estimate reflect the real costs of the works and relies on up to date prices of materials and equipment, these estimates will not cause any inflation of prices.

3.5 Qualified Bidders

Ensuring that competitive bids are obtained from qualified bidders is a fundamental measure in attempting to ensure that the works are carried out in time and prescribed quality standards. When bids are invited for carrying out public works, the authority in charge requires that the bids are submitted by *eligible bidders*, i.e. firms which are qualified to carry out the works.

A common practice is to categorise all contractors according to their financial capacity and specific skills. This task is commonly taken care of by a technical agency such as a public works department with extensive experience in contract management. Alternatively, an independent body such as a national construction council carries out the classification. It may also be organised by the professional body representing the contractors.

Contractor Classification in the Philippines

The Philippine Contractor's Accreditation Board has a sophisticated system of categorising contractors, based on several criteria:

- ✓ financial capacity, based on paid-up capital,
- ✓ equipment capacity, based on net book value of equipment and plant,
- ✓ technical personnel, based on qualifications and experience,
- ✓ number of years the company has been in operation,
- ✓ average annual volume of work over the preceding three years.

Points are awarded for each of the above, resulting in minimum qualifying points as shown in the table below:

Category	AAA	AA	A	B	C	D
General Engineering	1150	515	185	82.5	39.5	11.5
General Building	1110	495	181	80.5	38.4	11.5
Speciality	710	240	131	75.5	33.3	6.1

The classification is often related to the type of work as well as the size of the contracts. In order to obtain a certain classification, the contractors need to demonstrate a certain financial solidity, possession of certain types of equipment and employ skilled personnel. For example, before a contractor can qualify for asphalt works, the firm would need to possess the type of equipment used for asphalt surfacing.

Prequalification

Prequalification of contractors is sometimes carried out as a means of canvassing the market before the actual bidding contest takes place. Prequalification

may be a useful exercise to carry out in places where a contractor classification system has still not been established. The advantage of this exercise is that it separates the discussion on eligibility from the stage when price offers are evaluated. The practice

of prequalification does however increase the risk of price collusion, as all parties know the limited number of participating bidders before the bid contest starts.

Prequalification normally relates to a specific project in which a single or a batch of contracts is planned. Essentially it consists of interested bidders submitting specific information regarding similar works successfully completed by the firms in the past, the skills, education and experience of the personnel employed and their financial capacity. The result of a prequalification process is a short list of selected firms, which have convinced the client or project management that they are able to carry out the works.

Since this process does not relate to any price offers, it is a method used to eliminate unqualified contractors, and also avoiding a situation where such firms submit very low bids. However, the elimination of contractors through this process needs to be transparent and based on clear criteria, and should not be so restrictive that it eliminates the competition element.

When the works mainly consist of standard civil works activities for which there are a great number qualified contractors, the practice of prequalification is not recommended. A better solution is to define clear eligibility criteria and make use of existing contractor classification systems. When bids are evaluated, the management can then carefully assess whether the bids are from qualified companies that possess the required skills and equipment necessary to carry out the works on time and to the right quality.

Eligibility for Labour-based Works

For works, which the client wishes to carry out using labour-based methods, it is important that bids are obtained from firms that are conversant in applying such works methods.

A major concern of the client is then to secure the services of contracting firms with staff who have the necessary experience in using labour-based technology. This implies that the bidders need to provide evidence showing that their personnel have (i) received adequate training in labour-based works technology and (ii) can show document prior experience in carrying out this type of works.

Depending on the magnitude of the works, the bidder needs to provide details of the site supervisory staff from overseers, semi-skilled workers and artisans. Furthermore, if these staff members choose to leave the company during the execution of the contract, the contractor is obliged to recruit new personnel with similar work experience and training.



3.6 Addenda

Despite the fact that the bidding documents have been well prepared and due consideration has been taken to all aspects of the envisaged works, there is always a chance that changes are required after the works have been announced. During further reviews of the plans, either by the bidders or by the project management, it may be necessary to make changes to the drawings or the specifications. In other cases, there may be no need to make any changes, but rather clarify some issues which may seem unclear to the bidders.

Changes or clarifications should be communicated to all bidders, and should be done in a formal manner by issuing an addendum to the bidding documents. It is important that all potential bidders have access to this information, thereby ensuring that everyone has an equal chance to consider the additional information and if need be modify their proposals. Addenda are issued in writing and should be sent to all the bidders who have received the bidding documents. For this reason, it is useful to obtain the contact details of all participating firms, thereby leaving no doubt where to send any eventual addenda.

Addenda are issued during the bidding period. If changes are made after the award of a contract, they are regarded as a change order, and it is only the successful contractor who won the bid competition who needs to be informed. It is decent practice to avoid sending out addenda immediately before the bid closure date, since some of the bidders may have already completed their bids and even submitted them to the client. Also, if such notices are sent out in the last minute, they may not reach all bidders before the bid closure date.

In the event of any substantial amendments to the bidding documents, adequate time should be allowed for the bidders to make the necessary changes to their bids in response to such amendments - in other words, delaying the bid closure date.

The addenda form part of the bidding documents. Once a contract has been awarded, these instructions are regarded as part of the contract.

3.7 Bid Closure

It is common practice to arrange the bid opening immediately after bid closure thereby eliminating any attempts to submit bids after the bid closure date and time. This provides more accountability in the bid submission and closure procedures. If it is not possible to conduct the bid opening at the date and time of bid closure, it is recommended that the bid closure date is changed to a suitable time when bid opening can take place.

When fixing the bid closure date and time, it is therefore important to make sure well in advance that the members of the bid opening committee are present and that the location indicated in the bid announcement is available.



Chapter 4

Submission of Bids

When a government agency requests bid proposals from private contractors, this process follows a set of established procedures. These procedures have been developed to ensure that the price offers received are comparable and that they are based on the relevant information describing the works to be carried out. For this purpose, the client prepares a set of bid documents, essentially consisting of two parts. The first part describes how to prepare the bid and where to submit it. The second part, which is also included in the final contract agreement, describes the actual works to be provided.

The first part describing the process of preparing and submitting the bid is referred to as the bidding instructions. In addition to the price offered, these instructions also list all the other information required from the contractor, how the bid competition is carried out and how to submit the bid.

4.1 Instructions to Bidders

The main purpose of the Instructions to Bidders is to provide detailed directions to the tenderers on how to prepare and submit their proposals. Most of this document contains standard clauses that remain unchanged for all contracts let by the government. These instructions are an essential part of the bidding documents, providing the basic rules and regulations for how the bidding exercise is conducted. It describes in detail all the procedures for submitting a tender as well as defining the terms on which the bids are evaluated. This document serves as information to the bidders and as such, it is not necessary to return it when submitting a tender.

The Instructions to Bidders is a document which is relevant only during the bidding stage. It does not form part of the final agreement, once a contract is awarded. Although the Instructions may describe some of the general conditions set for carrying out a contract, these are included for bid preparation and estimating purposes.

The Instructions to Bidders include the following information:

- (i) how to prepare and submit the bid, including:
 - ✓ to whom and when to submit the bid,
 - ✓ how to seal and mark the bid,
 - ✓ standard forms to be used when preparing the bid,
 - ✓ all items in the bid schedule must be priced,
 - ✓ each bidder may only submit one bid,
 - ✓ alternative bids are not considered unless requested for,
 - ✓ procedures for modifications.
- (ii) documentation required to prove the experience and capability of the contractor, i.e. trade licences, classification, available technical staff and equipment, previous work, etc.,
- (iii) a list of all the documents which form part of the bidding documents, i.e. drawings, specifications, conditions of contract, sample agreements, bid form, etc.,
- (iv) requirement for bid securities (if any) as well as any other securities,

- (v) the duration of the construction period, normally determined by the client, including a start date and a finish date,
- (vi) the duration of the bid validity period, including procedures relating to how the validity period can be extended,
- (vii) site inspection and pre-bid conferences,
- (viii) procedures for dealing with bid irregularities,
- (ix) criteria used for evaluating the bids,
- (x) appropriate clauses relating to collusion and other corrupt practices.

The bid instructions can be quite comprehensive and involve considerable pages of clauses in "legal language". In order to avoid any confusion, the contents of the Instructions to Bidders are standardised so that any contractor who has carried out prior work for this particular client is familiar with its contents.

The most important instructions relate to the clauses directly linked to a particular works project, such as the bid closure date, duration of the contract, venue of the bid opening ceremony and the bid validity period.

By establishing a set of standardised bidding procedures, documented through the Instructions to Bidders, allows the Client to develop a code of practice both among his/her own staff as well among the contractors in terms of how the bidding competition should proceed. By adhering to the established practices bidders feel more secure in their treatment as it provides a feeling of fairness and creates a good reputation of discipline and transparency.

4.2 Submitting the Bid

A common feature in most bidding procedures is to use a standard set of forms when preparing a bid proposal. The bid documents normally includes samples of the forms to be used. Besides the bill of quantities, in which the offered prices are provided, the client may request the bidders to fill out forms describing the company's financial capacity, the equipment to be used and staff assigned to this particular contract. Finally, the bid proposal needs to be signed by an authorised representative of the firm.

If any last minute amendments are made to these documents, these should be duly initialled by the authorised representative of the contractor. Bids are required to be delivered in a sealed envelope before the deadline specified in the bid announcement.

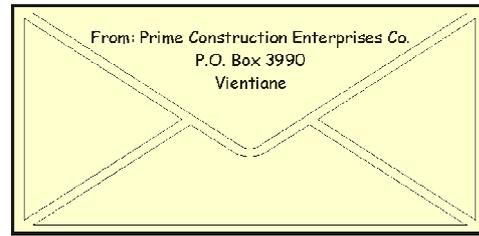
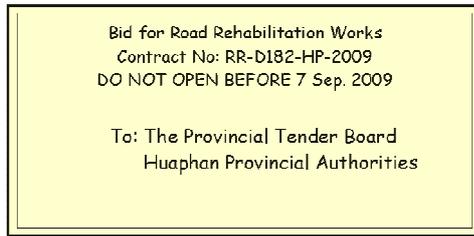
Contents of a Bid Proposal:

- ✓ Bid Form, including the total price of the works,
- ✓ priced Bill of Quantities or Activity Schedule,
- ✓ Bid Security (if required),
- ✓ list of Basic Wage and Equipment Rates,
- ✓ copies of trade licences and certifications,
- ✓ proposed list of staff and equipment allocated to the project,
- ✓ copies of any addenda provided by the Client during the bidding period, and
- ✓ alternative bids (if allowed for).

The contractor needs to make sure that the bid is sent off with the prescribed number of copies to the correct address as stated in the bidding instructions. It is worth noting that this address may not necessarily be the office address of the client. Instead, it could be the address of a tender committee located elsewhere.

Sealed bids are marked with information such as the name of the contract, the address of the client and the return address of the bidder. To avoid that the bid is opened by

mistake before the bid closure date, it is useful to clearly mark it with a message stating: "Do not open before [*the bid closure date*]".



Bids delivered in advance of the deadline should be stored unopened in a secure place until the bid opening ceremony takes place. The client is obliged to provide the bidder with a signed receipt, acknowledging the receipt of a bid submitted before the date and time of the bid closure.

No bids should be accepted after the announced deadline for submission. Any bids received after the final deadline should be disqualified and returned unopened to the address of the tenderer as marked on the envelope.

It is common practice to use a standard Form of Tender when submitting a bid. The bid form normally includes two important messages:

- (i) By signing the standard bid form, the bidder accepts all the conditions of the contract. If the contractor makes reservations to any of the conditions or technical specifications, he/she may be disqualified. If there are any errors in the bidding documents, these should be clarified before the deadline for submission of bids.
- (ii) The price offered for the work is expected to include all the work activities described in the contract, including provisions for overheads such as mobilisation, supervision, administration, profits, etc. In short, the quoted prices are the total amount paid for the work activities mentioned in the contract. The contractor will not be able to claim additional payments during the course of the works for the quantities already specified in the contract.

Disqualifying Bids

The Instructions to Bidders provide clear directions as to how the bid competition should be conducted. If bidders do not adhere to these rules, they run the risk of being disqualified.

It is important to note that when disqualifying a bidder, the bid price is not recorded. If the reason for disqualification is related to how the bid was submitted, the bid is returned unopened to the contractor.

If the bids are late, not sealed or lack some of the required documents, these are reasons sufficient to disqualify a bidder. There are a number of other common reasons for which a bidder may be disqualified:

- ✓ standard bid form not used,
- ✓ insufficient copies of the bid,
- ✓ several offers provided from the same bidder,
- ✓ the bid contains reservations to parts of the works – price offered does not include all work items,

- ✓ bidder did not submit a bid security before the bid closure time, or
- ✓ collusion or corrupt practices have been discovered.

The most common reason for the disqualification of a bid is lacking knowledge and experience among the contractors in how to correctly submit a bid. Contractors who already have an established working relationship with the client seldom fall into such an unfortunate situation. Disqualification should be regarded as a necessity in order to maintain a certain discipline in the bid competition. On the other hand, it is in the interest of the client to receive and be able to evaluate as many bids as possible. To avoid a situation in which several bidders are disqualified, the client may choose to arrange a pre-bid conference to brief potential bidders. During such conferences, the rules of the bidding contest can be clearly explained in order to secure a high participation of bids during the bid evaluation.

It is important to differentiate between disqualification and rejection of a bid. Disqualifying a bid is done on the grounds that the bidding procedures have been violated, while a bid rejection is normally done on the basis of the evaluation of the price offered or the competence of the contractor. In other words, bids may be rejected although the bidder adhered to all the bid instructions.

4.3 Modification or Withdrawal of Bids

The proper preparation of a bid is a time consuming exercise involving the processing of many price quotations from sub-contractors and material and equipment suppliers. This information is often obtained shortly before the deadline for submitting the bid. The bidder is also expected to carry out a field inspection and on this basis make his/her own judgements of the site conditions and the true costs of the works. Finally, the contractor needs to make a proper assessment of the market situation and attempt to predict a competitive price for the works.

Obviously, there is little room for error in the calculations of a bid. Also, due to the strict time schedule imposed by the client, all the details of pricing need to be ready before the bid submission. In some cases, the bidder will not have access to all detailed prices before a bid is submitted, and needs to estimate the prices expected from sub-contractors and suppliers.

Once the deadline for bid submission is reached, the bid needs to be in the hand of the client, and from then on the bidder cannot make any changes to the price offered. A bid may have to be submitted days before the deadline to ensure that it arrives on time according to the bidding instructions.

Once a bid is submitted, it is common practice to allow bidders to withdraw or modify their offers, provided that this is done prior to the bid opening and carried out in writing. The instructions to bidders describes in detail how this should be carried out. Written correspondence from a bidder related to a bid modification or withdrawal should be treated in a similar fashion as the original bid. It needs to be submitted in a sealed envelope before the bid closure date and should only be opened by the client at the time of bid opening.

Some clients permit contractors to withdraw unopened bids after the deadline if bids are being accepted for several projects at the same time. This allows a firm who is the apparent lowest bidder on one contract to withdraw any unopened bids submitted for other contracts. When this practice is allowed, it needs to be clearly stated in the instructions to bidders.



4.4 Alternative Bids

Alternative bids are modifications to the design or work methods described in the bidding documents. They may include changes in the structure or design of a project, alternative quality and type of materials, additional items of work, variations or cancellation of work activities - as compared to the plans prepared by the client.

The use of alternative bids provides the client with more advice in making decisions about changes to a planned project with the full knowledge of the cost impact of such options.

Ideally, among a group of qualified contractors bidding for a job, the contract is awarded to the lowest bidder. The determination and selection of the best offer are made more complex when the client allows for alternative bids.

Most clients demand that the bidders submit their offers based on the design and work specification prescribed by the client without any alterations. In some instances, however, the client may allow bids in which some alterations to the design or work methods are proposed. These changes may cause the total price to increase or decrease, depending on the nature and extent of the changes.

The award of contracts becomes more complex when alternative bids are allowed. For a public works agency, it may be difficult to maintain a certain impression of fairness and equal competition when dealing with alternative bids. The immediate concern would be that the client is then in a position to manipulate the alternatives that are accepted so that a preferred contractor is awarded the contract. Equally, the acceptance of alternatives leads to a situation in which the contractors are submitting several bid prices with varying contents of works.

In order to avoid accusations of unfair practice, most government agencies do not allow the bidders to offer any alternative bids. Instead, it is assumed that the elaboration of alternative designs and work methods have been adequately addressed during the design stage of the project. If the client is represented by a technical line agency, such as the Ministry of Works, there would be even less demand for alternative bids, since these agencies rely on standardised designs for most of their works and possess the technical capacity to provide realistic cost comparisons for different designs, materials and work methods.





Chapter 5

Bid Opening

5.1 Purpose

The purpose of the bid opening session is to (i) record the prices received as a result of a bid competition, and (ii) to check that the bids contain all the information as prescribed in the bidding instructions. The start of the bid-opening meeting is often considered as the very last moment at which a bid can be submitted. Once the first bid has been opened, no additional bids, changes or withdrawals of bids are allowed. Bids received after the time stipulated in the bidding documents should not be considered. Any late bid should be returned un-opened to the bidder.

The process of opening bids received for a public works contract needs to adhere to a fixed set of procedures in order to ensure that all bid contestants are treated equally in a fair and transparent manner. By doing so, it is possible to award contracts in a timely manner avoiding complaints from bidders who feel that their bids have not been given adequate consideration.

The bid opening session for public works contracts is normally organised as a public meeting. This implies that all information recorded and decisions made during this meeting are available to the public. The outcome of the bid opening session is a listing of the prices from all eligible bids received. These findings are then announced to the public through notice boards or on the internet.

It is important to note the difference between a bid opening and bid evaluation session. The purpose of the bid opening session is only to open and record the prices offered by bidders who have submitted offers on time and according to the bidding instructions. At this stage, no decision is made as regards to the ranking of bids and selection of a proposal.

5.2 Time and Venue

The time and venue needs to be properly announced to allow bidders to meet on time and locate the bid-opening venue. This information is normally included in the bid invitation. Thereafter, it is the responsibility of the bidders and their representatives to arrive in good time to participate in the opening session.

Bids should be opened at the stipulated time in public, i.e. bidders or their representatives should be allowed to be present. Bidders are not obliged to be present during the bid opening. Also, there is no requirement as to who is representing a particular bidder. It may be the manager, a technician or a clerk employed by the contractor.



Although they are not obliged to be present, most contractors chose to be represented at bid opening sessions. The main reason is obviously to obtain first hand information as regards to how competitive their offer is, but also to see the prices of their competitors. In addition, their presence may contribute to a fair and clean bidding procedure. Finally, it gives them the opportunity to correct any minor clerical errors, if the client allows this.

First the number of bids is announced. Thereafter, the name of the bidder and total amount of each bid, and of any alternative bids if it has been permitted, should be read aloud and recorded when opened.

5.3 Clarification of Bids

No bidder should be requested or allowed to alter a bid after the first bid has been opened. A bidder may be asked to clarify a given point for purposes of evaluation, however, no request should be made to alter the substance or price offered once the bid opening session has commenced.

A common issue during bid opening is whether to accept bids with price offers that differ substantially from the Engineer's Estimate. First of all, the rejection of a bid on the basis of the price should be done during the bid evaluation and not during the bid opening session. However, the bid opening meeting serves as a good opportunity to request bidders to

provide additional information as related to how they have arrived at their quoted prices. During such questioning, however, it is important to stress that this is an information gathering exercise and not an evaluation. The answers provided are at the discretion of the bidder and depends on whether he/she is present during the bid opening and whether the staff present is competent to provide adequate answers. Any opinions related to whether a certain bidder has submitted appropriate prices or not should be spared until the bid evaluation take place.

Contractor Training:

In a contractor development programme, the bid opening session can be used to gauge the level of competence of the firms in tendering for the works. By requesting the contractors to break down their unit rates into detailed costs of labour, materials, tools and equipment, the client can quickly discover the effectiveness of past training provided.

5.4 Examining the Bids

Following the opening of the bids, the bid opening committee needs to ascertain whether the bids have been submitted according to the instructions to bidders.

Recording the Bids

During the bid opening, it is useful to enter the bids into a standard form in which the prices offered are recorded. This form would also include a checklist of items against which each of the bids is checked. It is common procedure to check that the bids:

- ✓ have been properly signed,
- ✓ are accompanied with the required securities,
- ✓ are substantially responsive to the bidding documents,
- ✓ contain no material errors in computation, and
- ✓ are otherwise generally in good order.

A central question in relation to any irregularities is whether a particular offer still constitutes an acceptable bid. If a bid is not substantially responsive, i.e. it contains deviations from or reservations to the terms, conditions and specifications in the bidding documents, it should be disqualified and not be considered. The bidder should not be permitted to correct or withdraw material deviations or reservations once bids have been opened. Equally, a bid without a bid security (bid bond, cheque or cash) or one with an insufficient bid security should be disqualified. Late bids are never admitted to a bid opening.

As a general rule, failure to comply explicitly with the instruction to bidders should result in disqualification however some minor irregularities can still be accepted. These would be limited to clerical errors, where it is clear that the bidder has no intent of deviating from the rules of the competition. Bids without a signature but accompanied by a proper bid security, would clearly prove that the bidder is in good intent and the irregularity should have no bearing. Equally, a bid with a missing date or a bid with minor arithmetical errors should still be accepted after the errors have been rectified.

There is a tendency among clients to show some flexibility in regards to minor irregularities during bid submission. After all, it is in the interest of the client to receive and evaluate proposals from as many contractors as possible. However, if the client is too liberal in this regard, it may lead to discontent among some of the tenderers and finally leave an impression that the bidding rules are either less important or that the client is favouring some particular firm(s). This situation should be avoided at all costs, as it may not only discredit the client, but may also delay the planned start of works if complaints are lodged.

5.5 Bid Validity

The bidding instructions state how long the bids should remain valid. This implies that the client will not accept any price increases during this period. The contractors need to incorporate any possible cost increases during the bid validity period into the prices offered. For the client, it is important to complete the bid opening, tender evaluation and contract award before this period expires.

Once the bid opening session has commenced, the bidders are not allowed to withdraw or modify their bids. If a bidder still insists on withdrawing a bid after the bid closure date, the bid security will be forfeited.

Once a contract has been awarded, the signed agreement between the contractor and the client will contain a new set of clauses on how to deal with cost increases during contract execution. The bid validity period is normally set to a duration of 30 to 90 days. A longer bid validity period may lead to the contractors increasing their prices to secure themselves against any future cost increases. For this reason, the bidding process should be streamlined and kept to the shortest possible duration.

If it is not possible to award a contract within the period of the bid validity, the client may request the bidders for an extension. This should be done in writing and it should be done under the assumption that the bidder may choose to deny the client this option. If a particular bidder is not willing to extend the bid validity period, he/she is then free to withdraw his/her bid without forfeiting the bid security.

Bidders should not be requested nor permitted to change the price or other conditions of their bids when the client requests an extension of the bid validity period. If bid securities are applied, it is also necessary to request the bidders to extend the validity of the bid securities.

In order to retain all bid proposals, it is therefore important that the client makes sure that (i) the bid validity period provides sufficient time to complete all stages of the bid competition, and (ii) the process is streamlined in such a manner that a contract can be awarded before the bid validity expires.



5.6 Reporting

The conduct of the bid opening session needs to be properly documented for later reference - in particular for the purpose of bid evaluation. It is common practice to use a standardised form in which all the bids and the result of the bid examination are recorded.

It is also normal procedure to record all the participants to the bid opening session. Government procedures may require participation from a finance unit or from the Ministry of Finance. Equally, the client may wish to see the project manager present during the bid opening, and for this reason, it is important to document their presence, thereby showing proof that the bid opening was conducted according to established procedures with the required participants. In government agencies where contracting of works is common, there may be a permanent bid opening committee with a predefined number of members.

The details of the bids need to be recorded in an official report. This includes:

- ✓ name of bidders,
- ✓ prices offered,
- ✓ any alternative bids,
- ✓ whether the bid conformed to the instructions to bidders,
- ✓ any rejected bids and the reasons for disqualification, and
- ✓ submission of bid securities.

If there are any irregularities in the bids, these need to be recorded properly. If any corrections have been allowed, these also need to be documented. Normally, minor arithmetic errors in a bid offer may be rectified. If the bids are not too comprehensive, the client may wish to check for such errors already during the bid opening session. For example, when bids are based on a bill of quantities, it may be common procedure to check that each of the cost items is the product of the unit rates and the quantities. If any discrepancies are found, the procedures applied may define how to rectify such errors.

Bid Opening Check List				
Contract No: CS 0607 – No 2		Opening Date: 14 Aug 2009 at 14.30 hours		
Construction of the Soukhuma to Mounlapamok Road from Chainage 19+300 to 43+955				
	Oudomxai Joint Venture	Sunshine and Partners Co. Ltd.	Precision Construction Co.	Lucky National Builders Co. Ltd.
Is the bid properly sealed?	Yes	Yes	Yes	Yes
Is the bid form duly filled and signed?	Yes	Yes	Yes	Yes
Bid validity	Yes	Yes	Yes	Yes
Authorisation letter for signing of bid	Yes	Yes	Yes	Yes
Bid security 2% of total bid price	8,200:-	8,700:-	9,000:-	9,500:-
Discount	No	5%	No	10%
Substitution, withdrawal or modification	No	Yes	No	Yes
Three copies submitted	Yes	Yes	Yes	Yes
Contractor's profile	Yes	Yes	Yes	Yes
Completeness of bid	Yes	Yes	No	Yes
Name of bidders representative present	Mr. Tan	Mr. Li	Mr. Vansana	Ms. Moo
Total bid price	406,431.00	432,986:-	430,170:-	474,832:-

If any bids are disqualified, the reasons for this decision must be clearly documented in the report of the bid opening. If this is not carried out, the client may at a later stage face difficulties in justifying such actions in case the disqualified contractor lodges a complaint on the basis of unfair treatment.

The report of the bid opening session needs to be properly filed as it is subject to inspection as part of the regular audit of project accounts. If the project is financed from outside sources, i.e. through donor support or through an international finance institution, these organisations may require a copy of the report. Equally, a copy may be required by central headquarters or by the Ministry of Finance.



Chapter 6

Evaluating Bids

6.1 Time and Venue

Bid evaluation is carried out as soon as possible after the bid opening. This is a distinct exercise separate from the bid opening exercise. While the purpose of the bid opening session is to record the bid proposals received, it is during the evaluation that the bids are actually studied in detail and the decision is taken to accept a particular proposal.

The timing of the bid evaluation is important since it needs to be completed within the period of the bid validity. For this reason, it is useful to organise this exercise as soon as possible after the bid opening session, only allowing a limited time for the project manager or other technical staff to carry out an in-depth review of the most attractive bids.

The time and venue of the bid evaluation should be established well in advance, thereby securing the attendance of all the committee members. Equally, the date of this meeting requires the technical staff to allocate sufficient time during the period between the bid opening and the evaluation to carry out their review of the tenders. On very small contracts, this review is simple and may not require any additional time, and the evaluation can be carried out immediately after the bid opening ceremony.



While the bid opening session is open for the public including the firms from which bids have been received, the bid evaluation is an

internal management meeting in which all discussions are confidential. This implies that only the members of the bid evaluation committee are present during this exercise. Their final selection of most successful bidder(s) should not be announced before the final approval of the evaluation has been secured. Information relating to the examination and evaluation of bids and recommendations concerning awards should not be disclosed to other persons than those directly involved in this process.

6.2 Bid Evaluation Committee

In most government agencies the individual members of the bid evaluation committee are pre-selected, consisting of key management staff from the technical agency in charge of the works as well as representatives from the finance and administration units. There can also be participation from other ministries, such as the Ministry of Finance. Also, the headquarters office may demand some form of involvement in the tender evaluation. Usually, the project manager is also required to participate in this exercise.

In several countries, government organisations have established permanent tender boards. Local tender boards often consist of elected representatives of the community, such as village councillors. At central level, the tender boards can be organised as a committee serving several government agencies and departments. The tender boards may consist of politically elected officials, civil servants or a mixture of the two groups. It is important to note that the tender board may not necessarily consist of technical staff.

When the evaluation is carried out by a permanent tender board, it is common practice that the technical agency in charge of the works carried out a detailed analysis of the bids and provides these findings to the tender board, on which basis a final selection and ranking is made.

It is useful for the project manager or a representative for the project to attend the tender evaluation in order to (i) provide advice on the technical requirements of the works and (ii) act as a resource person in terms of additional information related to the technical assessment of the bid proposals.

Before the bid evaluation committee convenes, there are a series of preparatory activities. The most important tasks before conducting the bid evaluation are (i) to prepare the Engineer's Estimate (if not already completed), (ii) assembling the evaluation criteria, (iii) perform a final check of the bids for any arithmetic errors and (iv) check that the bids are responsive, i.e. they cover all the services required and makes no reservations to any of the conditions in the contract. In addition, there might be a demand for verifying the firms qualifications, whether they have the necessary capacity to carry out the works, current work load, their past performance, their staff availability, the condition their equipment, etc.

This information is presented in a summary table to the bid evaluation committee when it convenes, thereby assisting its individual members in making the right assessment of the bidders and finally taking a correct and informed decision in terms of the best bid proposal.

The ratings given by the committee are summarised in a Bid Evaluation Report. This report lists the most successful evaluated bidder, the second best, the third best, etc. (if any). If for any reason the most successful bidder decides not to carry out the contract, the evaluation committee has thereby already decided that the second best bidder should be awarded the contract.

6.3 Ranking

Although it is normal practice to award the contract to the lowest bidder, most procurement procedures are actually far more sophisticated in terms of selecting the most appropriate bid. In addition to cost, there are other equally important criteria taken into consideration before a particular contractor is selected to carry out the works. It is useful to clarify this when the bidding process commences, so that the competing firms are informed in advance what criteria are applied during the evaluation. The criteria for selecting a bid can be described in the instructions to bidders. The instructions normally prescribe that the contract is awarded to the *lowest responsive bidder* who has submitted a bid according to the prescribed bid procedures.

Therefore, the bid evaluation committee is not obliged to choose the lowest bid received. The selection of the best offer is based on several factors such as bid price, past performance, staff qualifications, present capacity, equipment availability – not only looking for the cheapest offer but also attempting to secure a contractor who can deliver the works within time and to the right quality.

The bidders therefore need to meet certain qualification criteria. It is good practice to define these requirements in advance thereby ensuring that the bids received are from companies with the right qualifications.

Normally, this would require the contractors to be classified in a certain category according to their size and type of skills. The classification system can avoid incompetent, under-financed or inexperienced firms from being considered during a bid competition. However, in addition to the classification requirements, the client may want to obtain further detailed information pertaining to the capacity and skills of the firms participating in a tender.

Technical Capacity

When evaluating bids, the client would obviously look for a contractor who has carried out similar works in the past, thereby demonstrating that he/she possesses the necessary experience and skills. For this reason the bidders may be requested to document the works contracts they have carried out in the past to prove that they possess the relevant experience. By providing details of their previous work also allows the client to check with the contractors' former clients how they have performed in the past – both in terms of quality of works as well as timeliness.

Equally important is the capacity and availability of the contractor during the period envisaged when the work needs to be carried out. If it is evident that a firm cannot deliver the works between the start and completion dates envisaged in the bidding documents, this particular proposal should be given a lower rating or rejected.

Particular Case of Low Bids

A potential danger of competition, when it is very lively, is that bidders are encouraged to quote unrealistically low prices. Although, the Client may be tempted to select such a low priced bid, the result may be that the contractor eventually becomes unable to complete the works, as the terms of the contract are insufficient to cover the actual cost of the works.

To avoid this situation, the client may establish a minimum amount for a bid to remain responsive. This amount is either linked to standard costs published by a government agency or by using the engineer's estimate as a reference. This arrangement may however be an inadequate solution. In the first place, the process to establish the minimum threshold can become influenced by vested interests.

Secondly, the staff in charge of cost estimating is not always better informed than the contractor concerning the actual cost of the works. When a very low bid is offered, the contractor should instead be requested to provide a detailed explanation on how the low unit rates can be justified. If there are obvious errors of computation, the bid should not receive further consideration. It does however happen that the contractor can offer an acceptable explanation leading to a price regarded as very low.

The client may also define a minimum of inputs in terms of equipment and skilled manpower. The bidders are then requested to identify the specific personnel and equipment which the contractor intends to use if they win the contract. If a bid proposal does not seem to meet the defined requirements, the bid should be regarded as not responsive and for this reason rejected. There is no reason for the client to consider bids, which are not expected to meet the defined performance requirements.

For example, if the client estimates that the works require a minimum of six tipper trucks in order to deliver building materials at a certain pace to a construction site, the bids should provide evidence that such equipment will be made available. If a bidder proposes to use a fleet consisting of fewer trucks, and which are old and in poor condition, the evaluation committee may decide that the bid is not responsive and reject it.

Financial Capacity

It is in the interest of the client to secure the services of a contractor who has a healthy financial position. This implies that contractor should have good access to credit

either from financial institutions, suppliers or other sources. Equally, the client should ensure that the selected contractor has the financial capacity to advance the required expenses on materials, equipment and labour, expected during the course of the contract. Once again, to ensure that bids are received from firms with sufficient financial capacity, the bidders may be requested to provide information such as their annual turnover and sizes of previous contracts.

Selecting the Best Bids

When evaluating bids, it is essential to bear in mind that the best bid is the one submitted from the company that appears to provide the best proposal both technically and financially. The evaluation committee therefore has a duty to ensure that their decisions are contributing to the most efficient execution of the works, by selecting the contractor who is not only competitive in terms of price but also competent enough to carry out the works on schedule and to the right quality. This task is obviously more demanding than just finding the cheapest offer that adheres to the bidding rules.

It is important that only bids from competent firms are given a priority rating. This implies that any bid which is deemed too expensive or not qualified should be rejected

Price Negotiations

A common question is whether to enter into price negotiations with one of the bidders during the final stage of the tendering process. As a general rule, the purpose of having a bid competition is to avoid long and tedious negotiations with selected contractors. Likewise, when entering into price negotiations, the level of transparency required may be compromised. Therefore, it is good practice to treat the prices submitted by the tenderers as their final offers and refrain from any price negotiations at any stage with individual firms. If this practice is made clear to all contractors and established as a standard, the contractors will take this into consideration when calculating their prices. If the client has a habit of further negotiating the price offered in bids, there is a chance that the contractors regard this practice as an additional risk and increase their prices. If the client does not deem any of the bids submitted as attractive, this message should be provided to all the bidders by rejecting all bids and call for a re-tender.

as a whole and for these reasons not to be considered from then on as possible contenders.

Rejecting All Bids

Finally, it should be noted that the bid evaluation committee has the authority to reject any bid or all bids. If none of the bids are deemed to be sufficiently attractive and they are all rejected, the client needs to arrange a re-bid.

In order to obtain more competitive prices during the second bidding round, the

client has to ensure that more firms are prepared to submit bids, this way increasing the chances of obtaining more attractive offers.

Re-bidding is a situation the client wishes to avoid, since it implies that the entire bidding process needs to be repeated. Not only is this a waste of resources, but it also causes considerable delays in commencing the actual works. On the other hand, if all the prices offered in a first bidding round are regarded as too expensive, it may be justifiable to repeat the bid exercise. Before the second bidding round, it is important to make an assessment of why the prices were too high and to take active measures to avoid that the second bidding round ends up with a similar result. One solution may be to take active measures to encourage more firms to participate in the second round. Equally, it may be necessary to revise the contract documents, allowing for a longer construction period or provide more detailed information about the works, thereby reducing the risk levels perceived by the contractors.

6.4 Deviations

During the process of evaluating the bids, it is important that the project manager confirms that the bids are responsive in terms of actually providing price offers which cover all the envisaged works as described in the drawings, work specifications and

bill of quantities. Also, all materials and envisaged works need to conform to established performance requirements and established quality standards.

During the review of the bid proposals, it may be discovered that a bidder has made changes, variations, omissions to the works prescribed in the bidding documents.

For minor deviations, it is common practice to determine the monetary value of the deviation and add/subtract this to the total bid price, thereby arriving at a total price representing the real cost of the entire works as defined in the bid documents, and which can be compared to the prices submitted by other bidders.

If the deviations consist of substantial changes to the original design and quantities of work, the bid should be regarded as not responsive and disqualified (unless alternative bids are allowed for). Equally, if it is difficult to establish the monetary value of a certain deviation, it is recommended that the bid is rejected.

Clarifications

In certain cases, it may be unclear whether a bid proposal conforms to the requirements of the bidding documents. The bid evaluation committee, or the project manager while reviewing the tenders, may for this reason seek clarification as regards to some of the information provided in the bid proposal. The bidder may also be contacted to clear any arithmetic errors in the proposal. Such clarifications are only done in relation to bids which the client considers as most responsive. Clarifications should be limited to obtaining additional information as regards to the contents of the works. It should not include any soliciting of price reductions or changes to the conditions of the future contract.

The procedure for dealing with deviations is a matter of discipline and how strict/flexible the client decides to be in terms of adherence to the bidding instructions. This needs particular consideration when managing projects with external funding. In projects with financial support from international donor agencies, the evaluation process would be under external scrutiny. To be fully sure of obtaining the timely clearance of the funding agency, it is wise to maintain strict rules and practices.

6.5 Reporting

The summary findings of the bid evaluation committee are documented in a bid evaluation report. When external funding is involved, the findings of a bid evaluation may have to be approved by the financing institution.

This report would normally contain the short list of evaluated responsive bids, with a justification of the selection, i.e. the evaluation criteria and the assessment of the qualifications of the bidders and their offers, the basis for rejecting and disqualifying certain bids, the composition of the tender committee and when the evaluation was carried out.



The evaluation report needs to be filed as it forms part of the documents subject to financial audits. As mentioned earlier, this report may also be subject to scrutiny by an external funding institution (bank, donor, NGO, etc.).



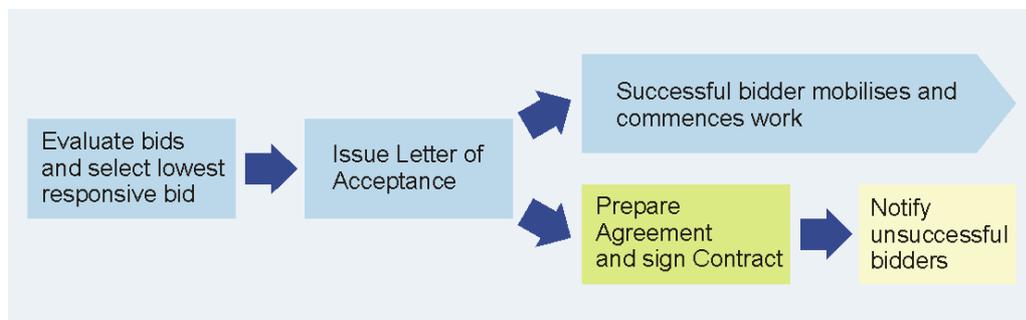
Chapter 7

Contract Award

7.1 The Process

With the final approval of the findings of the bid evaluation, a contract can be awarded to the most successful bidder. The contractor should be notified as soon as possible after the bid evaluation, thereby securing the timely commencement of works.

The contractor is expected to mobilise as soon as possible after receiving a notification of award. Often, the contractor is expected to commence even before a contract agreement has been signed. The contract award process is summarised in the figure below:



Contracts should be awarded within the period of the validity of the bids. A contractor should not be required, as a condition of contract award, to undertake responsibilities for work or services not stipulated in the bid documents. Equally, no attempt should be made to force bidders to reduce prices or to modify a bid as a condition of contract award. Further price negotiations at this stage can lead to substantial reductions in profit margins and can cause difficulties for the contractor to perform the works as originally envisaged. Adverse effects of such last minute price reductions can be attempts to cut costs by reducing quality of works and building materials or in the worst case forcing the contractor to abandon works at some stage of the contract.

7.2 Notification of Award

When all (if any) queries related to the lowest responsive bid have been cleared, a letter of acceptance can be issued informing the bidder that his/her proposal has been selected. This letter also includes instructions related to when and where a final contract agreement will be signed.

Once the contractor has been informed, it is actually possible to start the civil works. Normally, the letter of acceptance from the client will stress this point making it clear to the contractor that although an agreement has still not been signed, the contractor can at this point mobilise and commence works.

It is common practice to request the contractor to acknowledge receipt of the letter of acceptance. This letter is normally issued to the contractor by courier or by hand carrying it, thereby making sure that the news is quickly and safely delivered. To

confirm the receipt of the notification, the contractor is expected to sign and return the notification as soon as possible.

The letter of acceptance will also invite the contractor to sign a contract agreement within the next two to three days. If the contractor is not based in the project area, it is necessary to allow for a longer duration of time from notification to contract signature.

If the contractor does not sign the agreement within this period, the client may interpret this as if the successful bidder is no longer interested in carrying out the contract. The client is then free to award the contract to the next best tenderer.

If a performance bond is required, the contractor will receive instructions in the letter of acceptance on how this security is provided to the satisfaction of the client. The

client may attach the standard forms used for this purpose.

Finally, the letter of acceptance will inform the contractor of the location for signing the contract, and where and when the bid security is returned.

In some cases, a contractor who is notified as the lowest bidder may not want to enter into an agreement. This may be the case when the bid price is substantially lower than the engineer's estimate. Equally, the contractor may have commenced other works during the bidding process and therefore has no remaining capacity to carry out the newly awarded works.

Alternatively, a contractor may wish to increase the bid prices before accepting the contract. Unless the reason for this is due to minor arithmetic errors

not discovered during the bid review, such demands should not be accepted. Even if the bidder demands an increase which results in a price which still remains lower than the next lowest evaluated bid, the client should refuse to enter into such negotiations. If the selected contractor does not honour the offered bid price, he/she should be disqualified.

This situation can easily be catered for during the tender evaluation, by ranking a number of bids. This way, the project management can therefore award the contract to

To Sunshine Construction Co. Ltd.
P.O. Box 5639
Phuket

Pang Nga, 11 February 2008

Dear Sir,

Notification of Award - Road Rehabilitation Works

We have the pleasure of informing you that your tender dated 5 January 2008, has been accepted for the road rehabilitation works situated at:

District Road 535, Chainage +2,650 to +17,900, from Pang Nga to the junction with National Road 23, subject to the Conditions of Contract, Form of Tender, Bill of Quantities and the Works Specifications in the tender documents and this Notification of Award.

The total tender amount of the above items is USD 85,230:- (*eightyfive thousand two hundred and thirty US dollars*).

The Contracts Documents have now been completed for your signature. Please call at the District Council to complete the signing of the Contract at your earliest convenience and latest within three days of your receipt of this letter.

Until a formal agreement is prepared and executed, your Tender, together with this Notification of Award shall constitute a binding contract between us.

Yours sincerely,

M. Bigwig

Chief Executive Officer
District Council

The undersigned hereby acknowledges the receipt of the above letter, a copy which has been retained, and confirms that no terms, conditions or stipulations to those contained in the Tender Documents have been imposed by the issue of this letter, except as have been advised in writing by the undersigned.

Name: Mr. Fixit
Contractor

Date: *15 February 2008*

the second best tenderer if the highest ranked tenderer loses interest in the contract. Obviously, if the lowest evaluated tenderer refuses to sign the contract agreement, the bid security will be forfeited.

7.3 Contents of the Agreement

Government agencies use standard agreements when awarding a contract. During the bidding process, a sample of this document is issued as general information to the tenderers. When preparing a bid, it is not necessary to fill in any information in this form. The complete agreement is prepared by the client and issued to the contractor for signature only once the bid evaluation has been carried out.

Contents of a Civil Works Contract:

The following documents are included as part of the contract agreement:

- ✓ Form of Agreement
- ✓ General Conditions of Contract
- ✓ Special Conditions of Contract
- ✓ Appendix to Conditions of Contract
- ✓ Addenda
- ✓ Works specifications
- ✓ Technical drawings, maps and volume tables
- ✓ Form of Tender submitted by the bidder
- ✓ Bill of Quantities with rates offered by the bidder
- ✓ Day work rates

The contract includes several of the documents issued during the bidding process in addition to the prices offered by the contractor. When preparing the contract agreement, no changes should be made to the conditions of contract as compared to the information provided during the bidding stage.

As can be seen from the adjacent list, the instructions to bidders do not form part of the contract agreement. Those instructions are only relevant during the bidding exercise, which has already been completed by the time a contract

is awarded. Instead, general rules and regulations are provided in the general and specific conditions of contract.

The contract agreement is signed by an executive officer on behalf of the client and an authorised representative of the contractor. Once both parties have signed the contract, a full copy should be sent to the project management office and made available to the supervision staff. Although the role and responsibilities of the supervising engineer is referred to in the contract, he/she is not a signatory to the contract.



The contract agreement serves as supporting evidence for any payments processed during the implementation of the contract. Therefore, it needs to be readily available to be used for justification of payments of works and finally to be subject to the annual audit.

Bid Securities

For contracts of a certain size, the client may insist that all bidders submit a security, thereby demonstrating that they intend to stick to the prices offered in their bid proposals. Bid securities can be provided in the form of cash, a cheque or as a guarantee issued on behalf of the contractor by a bank or a finance company. Once a contract has been signed, there is no longer any need for this assurance, as the prices offered in the most successful bid are reflected in the schedule of rates (i.e. Bill of Quantities) in the contract agreement. For this reason, the validity of a bid security covers the period up until a contract has been signed. At this point, the bid securities are returned to all the bidders.

Performance Bonds

A performance bond is provided by the contractor as a guarantee, providing the client with financial assurance that the contractor meets all obligations in terms of completing the works described in the contract. Most important, this is a guarantee to ensure that the contractor does not abandon the works at any time during the course of the contract. When a performance bond is required, the client will request the contractor to provide this security at the time of signing the contract. In other words, this security is only required from the bidder who won the bid competition.

This security can also be accepted in the form of a cashier's check, certified check or cash provided by the contractor upon signing the contract. Alternatively, it can be provided as a bond issued by a private bank or finance institution. Public works contracts normally prescribe the legal wording to be used if the performance bond is issued by a third party. The performance bond is returned to the contractor upon completion of works.

This practice is normally not applied to small contracts.

7.4 Notifying Unsuccessful Bidders

Once a contract agreement has been signed with the most successful bidder, it is good practice to inform the other bidders that their tenders have been unsuccessful. At the same time, the client is obliged to return the bid securities to all the bidders.

The decision of the bid evaluation committee needs to be made public. For public works contracts, the government follow established procedures for disseminating the decisions of the bid evaluation. The final ranking may be announced in a government gazette or simply by posting it on a dedicated notice board, often the same place as where the bid competition was first announced. These days, many government agencies have established their own websites in which they include a section containing information on business opportunities. As part of this section they may chose to post the decisions of the tender evaluations.

For larger contracts, it is appropriate to notify all the unsuccessful tenderers in writing. This should be done after the successful bidder has been notified and has signed a contract. If the selected tenderer for some reason, decides not to sign the contract, it is then still possible to offer the contract to the bidder who submitted the second best offer.

If bid securities are applied, and they are provided in the form of cash or cheque, the client needs to obtain evidence of receipt from the bidders when they are returned.

Bid securities should be treated in the same manner as all other cash. In other words, it needs to be accounted for according to established government procedures when received as well as when it is returned. The bid securities can be sent to the contractors, or alternatively, the client may instruct the bidders in the notification where and how it can be collected from a designated finance unit.



Chapter 8

Contract Documents

8.1 Preparation of Contract Documents

Contracts form the legal agreement between two parties for the supply of goods or services. A civil works contract relates to the construction or improvement of some infrastructure facility. The size, complexity and cost of such facilities may vary widely. All contracts need to be legally valid and meet certain basic requirements in order to effectively serve their purpose. With care, they can be written to cover the essential issues in appropriate detail according to the size and complexity of the works.

Government agencies usually rely on a standard set of documents when preparing a public works contract. These documents often form part of the government procurement regulations and as such must be applied and adhered to. Making use of standardised documents, simplifies contracts management. As the same procedures are applied again and again, contractors are familiar with the prevailing regulations and conditions applied in public works contracts.

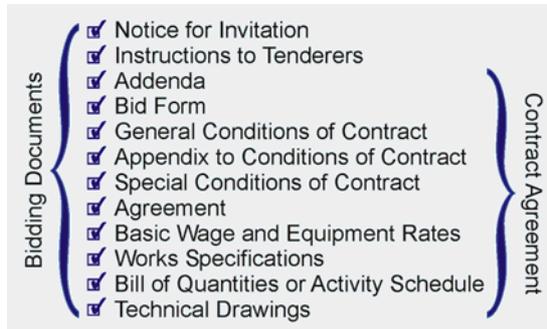
Standard civil works contracts are designed to cater for a certain size of works. The larger and more complicated projects use more comprehensive documents. Smaller works contracts do not need the same level of sophistication, therefore containing less clauses and regulations. Experience shows that smaller jobs can be managed using simplified documents, thereby reducing the time necessary for contract preparation.



Even if documents of greater or less detail are used for the varying size and complexity of works, one essential element is to attain continuity throughout the different documents in use. The procurement system needs to be designed in an orderly sequence as contractors move through the various types of contracts. A contractor or contracts manager understanding the concepts of a contract in its simplest form can then find a familiarity with more detailed documents used for larger projects.

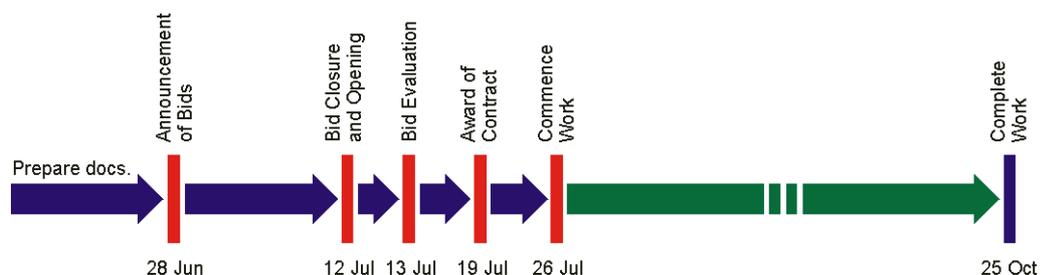
Contract documents are either prepared by the client's representative or a private consultant engaged for this purpose. When the client is a technical agency such as a public works office, the preparatory work is often carried out by in-house technical personnel.

In cases where the client decides to engage a private consultant as the supervising engineer, the preparation of the contract documents may be included as part of the assignment. Alternatively, the design engineer is requested to carry out this work as the final task of the design stage.



As mentioned earlier, the documents used during the bidding stage are similar to the documents included in the civil works contract - the main difference being that the invitations and the instructions to bidders are not part of the final contract agreement.

When the client intends to engage several contractors, it is important that a time schedule is prepared during contracts preparation. Important dates include date of announcement, bid closure, commencement and completion of each of the works contracts. These dates need to conform with the overall work programme of the project as well as any other contracted works planned for any other components of the project (i.e. bridges, culverts, surfacing works, etc.). The project manager needs to coordinate the various inputs and ensure that they fit into the overall work programme.



8.2 General Conditions of Contract

The general conditions of a contract define the overall rules and terms to be adhered to when carrying out a civil works contract. In order to create a conducive environment, in which the contractors can succeed on a long-term basis, the conditions of contract need to give emphasis on clear and fair terms. To this end, the contractors, the client and the supervising engineer need to be fully aware of the rights and obligations set out in the contract and, most importantly, how the clauses are interpreted in practice during the course of a contract.

There are some basic requirements for all conditions of contract for civil works, and these can be summarised as follows:

- ✓ definitions and responsibilities of those involved in the contract,
- ✓ general obligations of the parties to the contract,
- ✓ undertaking of works (start, completion, work standards and methods, defects),
- ✓ payment procedures (by whom, when, on what basis, advances, retention),
- ✓ liabilities and insurances (responsibilities of both parties), and
- ✓ how to settle disputes.

Several institutions have developed standard conditions for civil works contracts. In addition to the standards applied at national level, the most well known is the Conditions of Contract for Construction for Building and Engineering Works

Designed by the Employer, published by the International Federation of Consulting Engineers (FIDIC). This is a rather comprehensive document catering for all eventualities in any size civil works projects. In addition, FIDIC has recently developed a Short Form of Contract, more appropriate for smaller works such as local infrastructure.

Some of the international finance institutions, including the World Bank¹ and the Asian Development Bank have also developed a set of contract documents to be used for works that they finance. For larger works involving international competitive bidding, they refer to the use of FIDIC documents, however, for smaller works, these agencies have issued their own standard documents. Efforts have been made to standardise these documents and harmonise the procedures, allowing government authorities to establish a single system rather than having to apply different procedures depending on the origin of the financing.

All parties in the construction industry prefer the use of standardised general conditions. Similar to standard work specifications, well established conditions of contract have the advantage of being familiar to all parties and its content is clearly understood. By using standard documents time is saved during preparation instead of redrafting the conditions for each project. Furthermore, these standardised conditions have been tested in court so that their legal interpretation is known.

When applying standard conditions of contract, there is normally no need to make any changes from one works contract to another. These documents only contain general clauses which relate to all works contracts. Any details relating to a specific project are referred to and contained in the Contract Data or Appendix to Conditions of Contract.

8.3 Contract Data

This document is issued as part of the bidding documents and it also forms part of the final contract agreement. By collecting all project specific information in an appendix to the conditions of contract, the bidders can easily identify the key data which change from one contract to another. During works implementation, the appendix then acts as a short and concise reference to all the specific details relating to a particular project.

Contract Data

The appendix contains project specific information only referred to in general terms in the general conditions of contract. This includes:

- name of the Client,
- name of the Engineer,
- name of Contractor,
- location of works,
- dates of commencement and completion,
- performance bonds and other securities,
- retention monies,
- duration of defects liability period,
- advance payments, if any,
- minimum amount of interim certificate,
- time for payment to be made after issue of certificate,
- payment schedule,
- insurance requirements.

The main purpose of using an Appendix to the Conditions of Contract is to leave the contents of the general conditions unchanged for all contracts and instead collect the project specific information in the appendix. This simplifies the contracts preparation as well as provides a clear distinction between fixed terms and the project specific conditions.

The Appendix to Conditions of Contract

¹ Standard Bidding Documents, Procurement of Works - Smaller Contracts, World Bank,

forms part of the contract. Since all procurement is subject to audit, this document needs to be properly filed together with the contract agreement.

8.4 Special Conditions of Contract

For certain projects, the client may wish to include additional conditions to the contract. Equally, the client may wish to incorporate important concerns in relation to environmental issues, labour standards or other considerations relevant to the performance of the works. Instead of changing or adding to the contents of the general conditions, the normal practice is to place the additional clauses related to the overall conditions of a contract in a separate document, referred to as the special or additional conditions of contract.

When a client intends to apply labour-based works technology, this imposes certain contractual constraints which need to be clarified. The proper place for this is in the Special Conditions of Contract. The issues which need to be covered include:

- ✓ the application of labour-based techniques for the implementation of works,
- ✓ the preparation of a detailed work programme showing the mix and balance of labour and equipment, subject to approval by the engineer before commencing works,
- ✓ the authority of the engineer to limit the contractor's use of plant and equipment on site during the construction,
- ✓ the need for the contractor to keep comprehensive and accurate employment records,
- ✓ the system for the recruitment of workers to be on a local basis as the construction progresses (e.g. village-by-village),
- ✓ guidelines on who is eligible to seek employment including clauses regulating the minimum age, securing a reasonable gender distribution, preference to youth, etc,
- ✓ the access of the supervising engineer to inspect labour records and payment sheets,
- ✓ the power of the client in the event of a default by the contractor in paying the workers' wages,
- ✓ the power of the client to deduct directly from the monies owed to the contractor any agreed repayment instalments for materials and tools provided to the contractor under the contract,
- ✓ the conditions covering the use of sub-contractors.



8.5 Work Specifications

The work specifications contain the detailed instructions on how various work activities are to be carried out. In addition, the specifications normally include instructions on the quality of the materials and workmanship. Good specifications

Example:

The drawings provided in a contract may show the geometrical features and dimensions of a bridge abutment. In addition, the quality of the works needs to be clearly defined. The works specifications prescribe the quality of the cement, water and aggregate, the method of mixing, placing and curing, how the foundation should be prepared and the compaction of the backfill. The specifications may also prescribe that the foundation and casting forms are inspected before placing the concrete. Finally, the specifications describe how the works are measured, thus forming the basis for payments.

also describe the method of measurement and payment of completed works, with detailed descriptions of which activities are included in an activity or bill item and which activities are not included.

The work specifications may also include instructions on when certain works need to be inspected and approved before further works may proceed. For example, the contractor

may have to wait until the supervising engineer has inspected the formworks and reinforcement before pouring concrete is allowed.

Types of Specifications

Work specifications can be prepared in several ways. A common approach is to describe the works by issuing method specifications. This implies that the works are defined by prescribing the specific work methods to be applied and the type of materials to be used.

The alternative to such specifications are performance specifications, in which the resulting quality requirements of the completed works are described. In this type of specifications, the decision on how to carry out the work is left with the contractor, only ensuring that the end product meets certain performance and quality requirements. If the selection of materials and work methods prove to be inadequate, the fault is then entirely with the contractor who then needs to redo the works using higher quality materials and improved work methods.

The advantage of using performance-based specifications is that it is then possible to fully utilise the experience

Specifying Soil Compaction

A good example of performance specifications is commonly used for soil compaction, when the quality requirement is prescribed by the level of density to be achieved. This allows the contractor to select any type of equipment and application method, as long as the end result meets the prescribed density.

Some specifications however still specify the methods to be used in addition to certain performance criteria. This can be done by prescribing the size of equipment and how it should be used, e.g. number of times it is applied.. Although this approach may be desired in order to install additional quality assurance measures and ensuring high production outputs, such specifications may be inappropriate on certain projects such as for smaller works or on sites with restricted access.



and knowledge of the contractor in terms of executing the works. Often, the specifications consist of a combination of the two principles, i.e. prescribing specific work methods and materials as well as the end result.

Closed specifications prescribe a specific product or equipment to be used when carrying out the works. The purpose of this type of specifications is to ensure that only products of a particular brand are used. Normally this is not allowed for in public contracts since it limits competition. In private contracts, however, it is quite common that the client specifies the preferred brand names for certain building materials.

In public contracts, the specifications must be open, i.e. the contractor is free to choose the manufacturers of materials and equipment as long as they conform to defined quality and performance standards. This implies that the client is not allowed to prescribe the use of materials or equipment from a particular manufacturer.

In some cases, it may be easier to specify a certain brand instead of the performance requirements. In order for the specifications to remain open, it is possible to add a clause allowing for products of similar quality (i.e. Diamond Brand cement or approved equivalent). This still places the final determination of the acceptability with the client and also allows for free competition between various manufacturers.



Government agencies have developed standardised work specifications for the construction and maintenance of facilities such as roads and bridges, buildings, water supply and sanitation. In addition, the client can refer to standard work procedures and test methods developed by other national and international professional associations (i.e. BS, DIN, SI, ASTM²).

The intention of these standards is obviously to achieve certain performance and quality standards for all public infrastructure facilities and are therefore applied to all public works contracts. When standard specifications exist, it is common practice to only include any deviations made from them as part of the contract documents. It is expected that contractors are familiar with the standard documents and only need to be furnished with information regarding the particular sections of the specifications which have been altered.

Preamble

Work specifications often include a general section before the various work activities are described in detail. This section provides general instructions on how the specifications should be interpreted as well as general provisions applicable to the works as a whole.

² British Standard (BS), Deutsche Institut für Normung (DIN), Système Internationale d'unités (SI), American Society for Testing and Materials (ASTM)

A basic principle often included in the preamble, is a clause stating that the bill of quantities are all inclusive, meaning that any sub-activity which is not explicitly listed as a bill item, is treated as part of the other work activities listed in the Bill of Quantities. This is a clause commonly applied to activities such as arrangements dealing with traffic diversions, temporary works, signboards and the operation of a site camp. Unless such work is listed as distinct items in the bill of quantities, the cost of such activities is assumed to be included under the listed bill items.

The preamble may also regulate the contractor's dealings with privately owned land. In general, all issues related to land acquisition including for buildings and other structures should be handled by the client as the owner of the project. The client may identify a suitable location for the site camp, or alternatively, leave this for the contractor to sort out.

The preamble normally provides instructions on when and at what frequency the contractor should produce work plans and have them updated. However, the preamble will not say what happens if a work programme is not adhered to. That is regulated by the general conditions of contract.

The method of measurement and payment needs to be clearly described in the contract to avoid any disputes between the client and the contractor. For this reason, appropriate clauses are included in the work specifications

describing how work activities are measured and paid for. A common feature when dealing with bill of quantities contracts is a clause stating that (i) payments are based on the actual quantities of authorised work, and (ii) tendered unit rates should apply irrespective of whether the actual quantities are more or less than the billed quantities. This implies that the contractor cannot take for granted that the exact quantities listed in the contract will be carried out and paid for. Equally, the client is not secured against any additional quantities and increased costs when the contract is based on a bill of quantities.

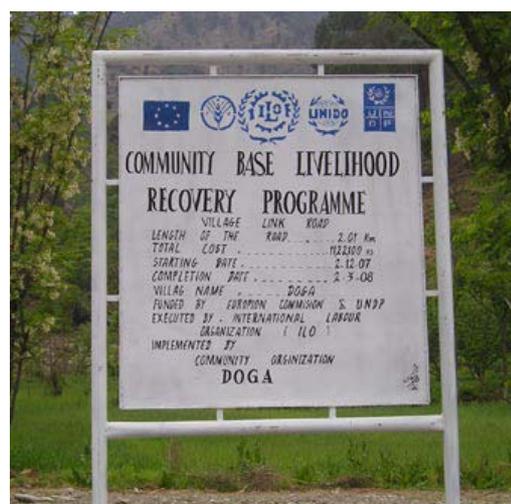
Finally, each activity listed in a contract should cover the costs of procuring and transporting materials, all labour costs, surveying, supervision, tools and equipment, wastage, testing, insurances and any other related costs, in addition to carrying out the described works.

Technical Manuals

In addition to the work specifications and drawings, technical manuals may also form part of the contract and used as a reference when the above mentioned documentation proves insufficient. This can be arranged by including appropriate clauses in the preamble, referring to other technical manuals which standardise how works should be carried out and how completed works and materials should be tested.

If such references are made, the client should make sure that the contractor, have sufficient copies of such manuals and that they are readily available to the site supervision staff.

In programmes where local contractors are required to carry out the works using labour-based work methods, the client may decide to include a general reference to the choice of technology in the preamble.



Example:

..... These Specifications are written on the basis that the Works shall be constructed using a labour-based works technology. The Contractor will be expected to maximise the use of labour for all operations where it can be effectively used to attain the required standards.....

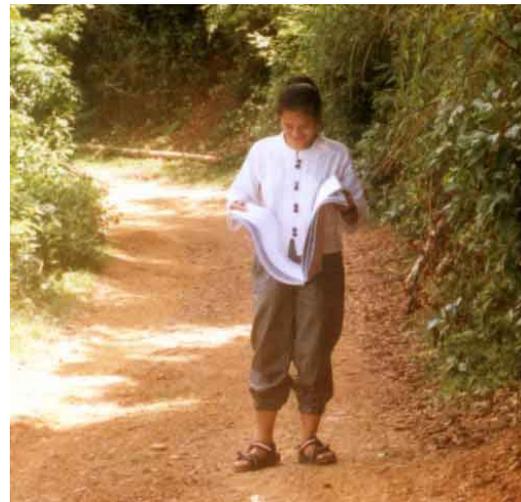
Including a specific reference to appropriate literature can further strengthen this:

.... *The Technical Manual for the Construction of Rural Roads using Labour-based Work Methods shall be construed to form a part of these*

specifications, and shall be referred to for any item not covered in this Works Specification. The Employer shall provide the Contractor with sufficient copies of the Manual for this purpose....

8.6 Technical Drawings

Civil works contracts normally include a set of drawings, which graphically describes the works to be carried out. The level of detail in the drawings varies depending on the complexity of the works and to what extent the works adhere to common building practices and standards. Some contracts only contain rough sketches of the works, while others may include detailed drawings showing all aspects of the work, details of joints, roofs, ventilation, electrical and plumbing schemes, etc. The drawings may also include results of soil tests, location of quarries, site photographs, flood maps, condition inventories, etc.



For lump-sum contracts, the bidding documents do not contain any bill of quantities. In such cases, the contractor needs to calculate the volume of works and materials based on the drawings provided.

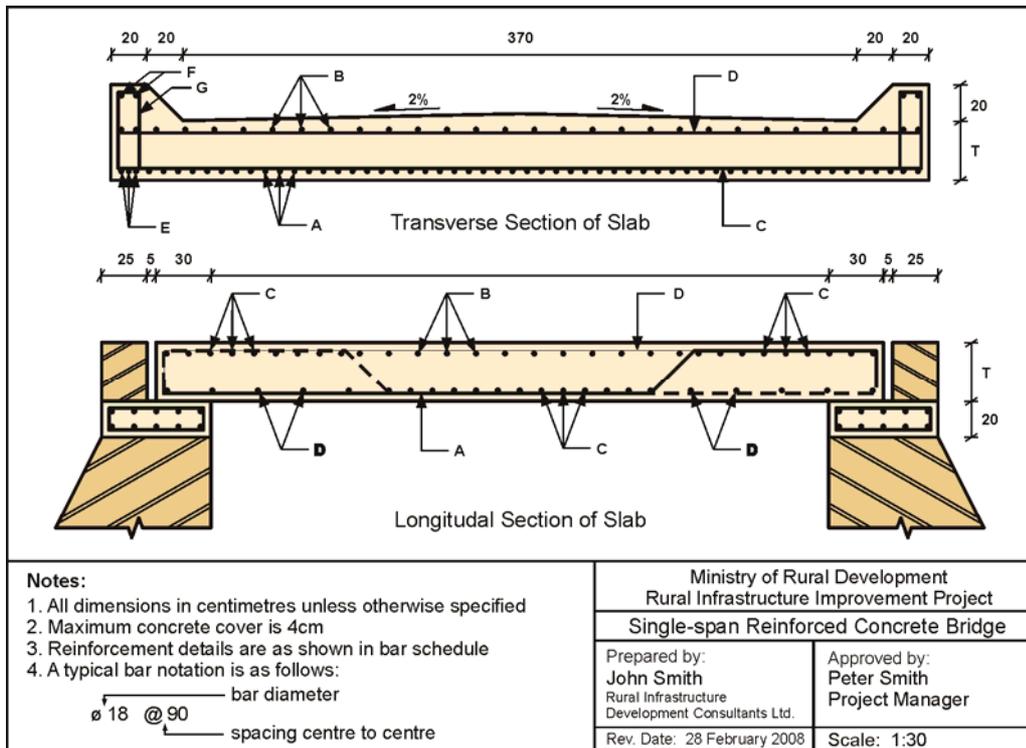
When the project involves the construction of new buildings or structures, the drawings provide a clear presentation of the works. On rehabilitation projects, however, the actual works to be carried out may not be equally clear from the drawings provided. The drawings often present the final product and do not necessarily describe the current condition of the structures for which improvement works are planned. Therefore, it is crucial that contractors bidding for such work visit the site during the bid preparation.

Government agencies commonly rely on standardised designs. In such cases, the contract may only contain these drawings, and not provide any information about the conditions at the project site. Again, it is crucial that the contractor inspects the site to establish the exact topography, soil conditions, drainage, etc.

For road works, the client normally provides standard drawings of the road cross-section, the design of the cross drainage structures and any particular designs which deviate from the standards. In addition, there will be surveys of the alignment for new construction with road condition inventories describing the exact location and condition of existing roads and estimates of the volumes of work.

Road condition surveys form the basis for the calculation of the Engineer's Estimate. If the survey was completed some time ago, the current condition of the road may

have changed considerably. If the road surveys were carried out before the last rainy season, there has most probably been a further deterioration of the road, and the contractor may find that the volumes of work have increased. If the contract is based on a bill of quantities, there is an in-built mechanism for compensating the contractor for additional work. In a lump-sum contract, however, the contractor may be expected to complete the works on the basis of the actual site conditions without any possibility to adjust the price.





Chapter 9

Mobilisation

9.1 General

Once a contract agreement has been signed, the contractor is expected to commence works as soon as possible. The first step in this process is to mobilise all necessary resources to commence the first work activities as described in the work programme. This requires a site camp or depot close to the location of the project where temporary storage, workshop and office facilities need to be established. Once a camp has been set up, it is possible to mobilise equipment, building materials and labour.

Before all this takes place, the client may demand that the contractor prepares a revised work programme. Furthermore, the contract may prescribe that the contractor submits a performance bond and evidence of holding the required insurances. Equally, the client may be obliged to grant the contractor an advance payment before works commence.

9.2 Advance Payments

Advance payments are commonly applied to facilitate the mobilisation of equipment and purchase of initial materials required when a contractor embarks on a new contract.

Any advance payment is normally balanced with an advance mobilisation security required from the contractor. The purpose of this security is to safeguard the client from a situation in which the contractor abandons the contract after receiving the advance payment.

The advance payment security is normally organised through a bank to the same amount which the client is providing as an advance payment. Obtaining such services from banks may be difficult for small contractors. Securities are also costly for the contractor - and thus ultimately for the client. For this reason, it is useful to carefully assess whether a contract requires any advance payment. It should not be included as a matter of course but carefully considered for each project.



For smaller works, funds required for mobilising equipment is limited, as the main expenses are normally related to purchase of materials when the contractor starts works. Often, the suppliers of building materials will grant the contractors sufficient credit against a signed contract with a reliable client. In such cases, the contractor in effect obtains the initial credit requirements from the material suppliers.

Rural Road Works

When carrying out rural road works using labour-based work methods, the need for initial capital is minimal. Experience shows that the costs of building materials are commonly less than 10 percent of the total construction costs. For this reason, it is generally recommended that the use of advance payments is omitted. Instead, it may be required to install specific measures to ensure that the contractor possesses the means to provide timely payments of the labour force, as described in the following chapters.

The contractor may also have access to other informal lending sources other than the banks, and prefers to use these instead of having to secure an advance payment security from a bank.

When engaging petty contractors to carry out small works, a common solution is that the client carries out the purchase of tools and materials required to commence the works. Most petty

contractors do not have access to formal credit services, nor do they have the necessary capital to advance expenses related to commencing work activities. On the other hand, the type of works expected from petty contractors would normally not involve any construction equipment thereby limiting necessary inputs to hand tools, building materials and labour.

9.3 Work Programme

Following the notification of the award of the contract, the contractor is expected to prepare a work programme indicating the start and duration of the various work activities. Also, the mix of labour and equipment and the type of equipment the contractor intends to use for the execution of works may need to be presented to the client. The contractor is expected to submit the work programme for approval by the supervising engineer before commencing works.

If the works is carried out using labour-based technology, it is important that the contractor prepares a schedule clearly demonstrating how the number of workers is gradually increased in line with the level of activities on site.



As part of the work programme, the contractor may be required to submit a list of the specific equipment to be used for carrying out the works. The supervising engineer is expected to review this information and if necessary instruct the contractor on any required changes to the proposed equipment fleet. If the client has decided to use labour-based work methods, the project management may impose certain restrictions on the use of heavy equipment for certain work activities.

The bidding procedures may also require the tenderers to submit work programmes as part of their bid proposals. The advantage of this arrangement is that the quality of the proposed work programmes can provide some indication of the skills and competence

of the contractors in carrying out the envisaged works. On the other hand, it is unlikely that the contractors are sufficiently motivated to spend any serious time and resources on developing a realistic and comprehensive work plan before they have been awarded a contract.



Work plans are best presented graphically, either as bar charts, or when dealing with road works, as time location charts. The work plans act as the basis for monitoring work progress and the performance of the contractor. They need to be regularly updated - at least on a monthly basis.

Work plans are also necessary for the effective coordination of services provided from the various contractors and suppliers, making sure that works are carried out in the correct order.

Example:

In a road works project, the construction of culverts and bridges and surfacing works may be contracted out to separate firms. The various work components then need to be scheduled so they are carried out in the correct sequence. The ideal situation would be to issue the culvert and bridge contracts first, thereby securing proper access for the ensuing road works activities. Finally, the surfacing works need to be ready to commence immediately after the completion of base course works. It is therefore important that the planning starts already before the preparation of each individual contract.

9.4 Recruitment of Labour

Before the contractor mobilises, it is useful for the project management to visit the villages in the vicinity of where the works will take place. The purpose of this visit is to (i) inform that a private firm has been appointed to carry out the works and request the local authorities and population to collaborate with the contractor, and (ii) explain that the works will provide certain employment opportunities for the local villagers.

When applying labour-based methods, the contractor is expected to recruit workers from these villages so an early notice to the villagers allows them to prepare themselves for work away from their regular economic activities and commitments.



During these visits, it is important to emphasise that the workers are employed by the contractors and not by the government authorities. This implies that any grievances relating to their employment should in the first instance be directed to and settled with their employer, the contractor.

It is useful for the project to brief the villagers on the general conditions of employment which the contractor is expected to abide by.

These include the conditions of employment, i.e. use of incentive schemes and basic wage rates, working hours, duration of work, various parties to the contract and the role of the supervising engineer, and benefits or the lack of them.

The contractors are bound by the prevailing labour regulations and social legislation in force in the country. They need to comply with regulations such as hours and conditions of work, minimum wages, freedom of association and general health and safety regulations. The client should ensure:

- ✓ that the workers are paid on time, to the full amount and directly to the workers;
- ✓ equal remuneration for men and women, and that a reasonable gender distribution is achieved;
- ✓ that the contractors comply with existing legislation on minimum wages and collective agreements in the construction industry;
- ✓ that safety standards are maintained and that the contractor holds prescribed insurances; and
- ✓ access to employment for unskilled labour and artisans from the local communities.

Existing laws and regulations already cover a number of these issues and all contractors need to adhere to such rules. Still, the client may wish to emphasise these issues by including appropriate clauses in the conditions of contract.

Incentive Schemes for Labour-based Works

When works are carried out using labour-based methods, it is important that appropriate incentive schemes are introduced to motivate the workforce, secure the effective organisation of the work sites and obtaining acceptable production rates. In most labour-based works programmes the use of task work has proven to be an effective way of organising the work force.

When introducing labour-based works technology to private contractors, it is often claimed that piece work is a more effective incentive which may enhance the profits of the contractors through increased production.

Experience shows that the use of task work is the easiest method to introduce to inexperienced site supervisory personnel when attempting to organise a large workforce. When applying task work the supervisors need to assign each worker to a specific location and amount of work for each day. When this task has been completed, the individual worker is entitled a day's wage and free to leave the work site. Through this arrangement, each worker receives clear instructions on work duties and conditions of work.

While task work follows clear and simple routines, the use of piece work requires more effort from the overseers to supervise and control. Although it may provide higher production rates once it is efficiently organised, it is not recommended before the site supervisory staff have a full understanding of task work and demonstrate that they are capable of organising a site and its work force in an efficient manner.

The contractor should keep up to date records of the workers employed, their period of employment and the wages paid. Pay sheets should be made available to the project management for inspection when requested.

The labour force needs to be paid at regular intervals according to common practice in the area. In order to ensure the timely payment of wages, the client may include appropriate clauses in the contract stating that should complaints arise against the contractor for non-compliance to timely payment of wages, the client may proceed with direct payment of any outstanding wages and charge them against the amounts due to the contractor.

Example - Payment of Labour Wages

In the event of default by the Contractor in paying the labour after not more than one month of working, the Supervising Engineer shall have the power to arrange payments covering the outstanding wages and allowances (if any) in accordance with the pay sheet records and to deduct the amount from any monies due to the Contractor. Continuing default by the Contractor may be a cause for suspension of work under the provisions of the contract.

Source: Special Conditions of Contract, Rural Infrastructure Improvement Programme – Cambodia

The timely payment of wages is crucial for maintaining work moral on any work site. When a project relies on the use of labour-based work methods, regular payments are crucial for achieving good production rates. For this reason, it may be useful to install some kind of mechanism whereby the contractor can be paid for wage expenses before measurement of works have been completed. This can be arranged through the insertion of appropriate clauses in the special conditions of contract as shown below:

Example - Advance Payment for Wages

.... At the request of the Contractor for immediate payment of the labour wages, the Superintendent may agree to certify, at intervals of not less than one month, the total amount of the Contractor's labour wages in accordance with the pay sheets, with an additional 10 percent for administrative overheads.....

.... The amount of any payment made under this Clause shall be deducted from any monies due to the Contractor, for work completed, under a subsequent interim payment certificate....

Source: Special Conditions of Contract, Rural Infrastructure Improvement Programme – Cambodia

9.5 Site Camp

The contractor needs to find a suitable location for a site camp. When works are relatively limited, it is important that cost-effective solutions are found since the budgeted provisions for this purpose will be limited.

The camp needs to have sufficient capacity to accommodate the site staff, materials, tools and equipment. The camp should be carefully planned to provide staff with basic comfort and adequate storage and security for equipment and materials. The contractor needs to carefully consider the following when selecting a campsite:

- ✓ proximity to the construction site, preferably in walking distance,
- ✓ good access to drinking water,
- ✓ located on high, well-drained land,
- ✓ sufficient space for parking equipment after working hours, and easily accessible to vehicles delivering equipment and materials.



The access road to the site camp may need some improvements. During the rainy season, it may be necessary to carry out some limited road maintenance works.

In many cases, the site camp is set up in a local village in the vicinity of the work site. Then, suitable accommodation and stores can be rented from the villagers. In more remote places, the entire site may need to be built by the contractor.

Requirements for a Site Camp

- ✓ good access
- ✓ accommodation for the supervisors and equipment operators,
- ✓ a site office,
- ✓ safe storage for plant and materials,
- ✓ unloading area for tools and materials
- ✓ workshop facilities,
- ✓ adequate work space for assembly of building components
- ✓ appropriate cooking facilities,
- ✓ clean water
- ✓ toilet and bathing facilities, and
- ✓ a separate store for fuel, oil and lubricants.

For road construction projects covering more than 7 to 8 kilometres, the camp probably has to be moved once, twice or even several times. These moves have to be planned well in advance so that the necessary transport can be arranged and so that minimum disruptions are caused to the on-going works.

The preamble to the bill of quantities normally contains specific clauses related to the payment of activities related to the establishment,

operation and finally the removal of the site camp. In some cases, the client will provide free access to the land where the work site is located. In other cases, the contractor may be required to negotiate and pay for any occupation of land or property for the purpose of running a site camp.

Upon completion of works, the contractor is expected to remove all temporary structures, yard and workshops including removing drains and culverts, back-filling of trenches, filling of pit latrines, etc. and restore the site as far as practicable to its original condition.



Chapter 10

Contract Implementation

10.1 Management Responsibilities

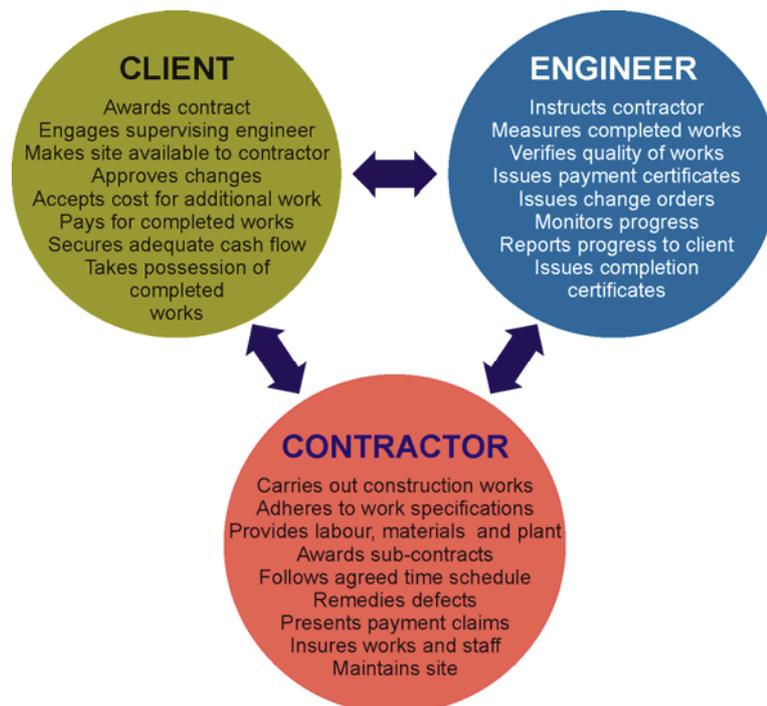
The main essence of a civil works contract is to describe the expected outputs to be carried out by a contractor against which the client will pay an agreed amount of payment. The work is inspected and verified to meet certain performance criteria by a third party, the supervising engineer.

When engaging a contractor, it is expected that the contractor possesses sufficient experience and capacity to effectively mobilise the required inputs of labour, materials and equipment in order to create the desired outputs in a timely and cost effective manner.

To provide the contractor with clear instructions, the contract is prepared in sufficient detail, clearly describing all work activities and the final performance requirements of the completed works. To make sure the contractor adheres to the drawings and the technical specifications, the client appoints a supervising engineer to oversee the works.

With the civil works awarded to an entrepreneur and the supervision and management organised through a supervising engineer, the client is basically left with the responsibility of making the project site available to the contractor, overall progress monitoring and paying for completed works.

The general conditions of the contract define the roles and responsibilities of the three parties. The figure below summarises the main divisions of responsibilities when implementing a civil works contract.



10.2 Work Programming

The contractor is responsible for the efficient organisation of the construction works, making the best use of available labour, materials, tools and equipment. This requires detailed work planning, taking the following items into account:

- ✓ scheduling work operations and activities, establishing the appropriate *construction sequence*,
- ✓ allocating the appropriate number of workers to the various work activities, i.e. *gang size* and *balancing*,
- ✓ the appropriate combination of labour and equipment,
- ✓ scheduling the timely provision of tools, equipment and materials,
- ✓ how to motivate the labour, establishing appropriate production targets, using *incentives* such as task work, and
- ✓ the effective organisation of site supervision and quality control.

The work plan forms the basis against which progress of works is assessed. Without

this plan it is impossible to assess whether the project is moving at the right pace and whether it will be completed on time. A proper work plan allows the client and the supervising engineer to maintain effective time management of the project as a whole as well as monitor the progress of individual work activities.

Sequencing Road Rehabilitation Works

Road construction works are divided into a number of *operations*, each sub-divided into a series of *activities*, which needs to follow each other in a logical sequence as shown in the table below:

Operation	Activities
Support	site camp, setting out alignment
Site Clearing	detailed setting out, bush clearing, grubbing, tree and boulder removal
Earthwork	excavation and filling, spreading and levelling, drainage, embankments and camber formation
Compaction	watering, compacting and final levelling of earth works
Structures	drifts, culverts and bridges
Surfacing Works	Supply of surfacing materials, unloading, spreading and compaction
Erosion Protection	Stone pitching, grass planting, etc.

When commencing a new project, the start of each operation needs to be staggered, allowing approximately a week before starting the next operation. This allows for proper work organisation and sufficient time to give basic instructions and training to newly recruited workers before the next team is taken onboard.

A separate team normally carries out each activity. If the activities are too close to each other, the work might be disrupted (e.g. excavation works have to wait for the clearing activity to finish). On the other hand, when activities are spaced too far apart, the length of the site becomes too long for effective supervision.

Efficient work programming provides an early warning in cases where work progress falters and starts to lag behind schedule. It is then possible for the project management to intervene at an early stage to rectify the situation and ensure that original deadlines are being met.

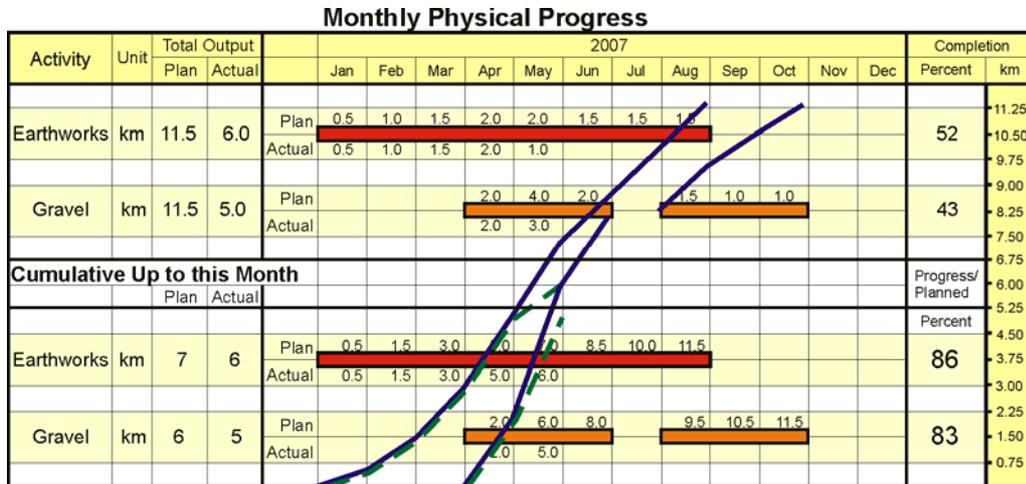
The work programme prepared by the contractor needs to be approved by the supervising engineer. If the contractor wishes to make changes to the agreed plan, it

is important that the supervising engineer is informed as soon as possible. Minor changes to a work schedule are entirely dealt with by the engineer and the contractor however, when major changes are necessary it would be prudent also to consult the client.

Time Management

Work schedules are best described through graphical presentations such as bar charts and time-location diagrams. Bar charts are often applied for structural works, while

road works are better described with time-location charts. Progress of works is also described by defining milestones at which particular activities need to be completed and others reaching a certain percentage completion. The figure below shows how the work plan and physical progress for the construction of a gravel road can be presented using a combination of a bar chart and a time-location diagram.



Preparing a work programme is the first step in the time management process. Once works commence, it is important that progress is compared with the original work schedule throughout the course of the project. The third activity is to continuously assess the validity of the original work plan. When changes and deviations occur, the original plan needs to be revised to accommodate the decisions relating to change of contents and schedules of work.

Work programmes should be updated at least on a monthly basis, thus allowing the project management to incorporate the schedules of individual contracts in the overall progress plans for a project or a larger programme.

Equally, all parties involved in the project should be informed about any work plan revisions. The contractor needs to inform the site supervisory staff about the new decisions and equally important discuss how this affects their daily work and how the revised targets can best be achieved.

Site Meetings

In order to ensure a good working relationship between the contractor and the supervising engineer, it is common practice to arrange regular site meetings between the two parties during the course of a contract. The conditions of contract may specify the frequency of these meetings and who has the authority to call the meetings. This implies that the parties referred to in regards to progress meetings have a contractual obligation to attend.

The main purpose of these meetings is to ensure that work schedules are adhered to. Secondly, these meetings act as an important forum in which the contractor and the supervising engineer can discuss and solve technical and managerial problems arising during the course of the works.

Written minutes should be maintained on all decisions made during the site meetings. The minutes should include any instructions regarding the volumes of work which deviate from the original bill of quantities as well as instructions issued relating to improved work methods, quality, replacement of staff, changes in work programme, etc. During the next meeting, it is important that the instructions issued and

agreements made during the previous site meeting are carefully reviewed before new decisions are made.

Supply of Materials

In addition to carrying out the construction works, the contractor is usually in charge of supplying materials to the work site. Work stoppage is very often caused by late provision of materials. For this reason, it is important that the project management monitors the timely supply of goods and materials.

In some cases, the client may decide to take responsibility for certain material supplies. For example, when contractors have a limited financial capacity and the client does not wish to provide any cash advance, the solution may be to assist the contractor in providing the materials and/or equipment. Alternatively, the client may decide to engage a separate contractor for the supply of certain materials (i.e. supply of gravel by transport entrepreneurs).

In both cases, it is important that the supply of materials is planned well in advance of when they are required on site, thereby avoiding any possible delays due to a shortage of building materials on site.

Inspection of Works

The main function of the supervising engineer is to carry out work inspections on a regular basis. Certain types of work require a specific approval from the supervising engineer before the contractor is allowed to proceed with ensuing activities. A good example is the prior inspection before pouring concrete. The work specifications often prescribe (i) that the supervising engineer inspects and approves the form works and the reinforcement works prior to pouring concrete and (ii) the physical presence of the engineer during the pour.

In order for the contractor to proceed with such work at a certain date, it is therefore important that the supervising engineer is notified well in advance enabling him/her to be present at the time requested by the contractor. If the contractor notifies the engineer in the last minute that a site visit is required, this will most likely lead to delays due to other commitments of the engineer. The best solution is for the contractor to plan such dates well in advance, to ensure the engineer's availability, using such dates as milestones for the work to be completed prior to inspection.

The supervising engineer is often in charge of several contracts at different locations. In order to streamline logistics and effectively allocate his/her working hours, it is important to provide early notice of such key events at the work sites.



Timely Payment of Works

Paying the contractors on time is crucial for their timely performance of works and ability to survive as healthy enterprises. A vital performance criterion of the contracts management system is that the contractors are paid within a maximum of two to three



weeks after they have submitted a claim. Delays in payment may compromise the contractors' ability to perform their work, and in the long term restrict smaller firms from participating in this market.

When contractors are engaged in labour-based works, late payment restricts the contractor from paying the labour on time, which in turn has a detrimental effect on the job motivation of the workers and finally leading to poor production rates.

When managing public works contracts, commitments resulting from future payments

for contracted works need to be carefully planned. The client needs to ensure that necessary funds are made available on time to avoid any cash flow problems. When dealing with decentralised contracts management, it is important that these funds are transferred well in advance to local authorities thereby enabling them to pay on time. For these reasons, it is important that the project management:

- ✓ regularly liaise with the local finance unit to ensure that sufficient advance transfers are made on time from central authorities,
- ✓ monitor and oversee that the local authorities promptly process the payment certificates.

10.3 Time Extensions

The contract specifies the duration of the works and a date when all works should be completed. Some contracts include clauses allowing the client to exercise penalties if the works are delayed. If a project suffers from considerable delays, the client may decide to terminate the contract. There are a number of reasons why works are delayed, and some of these are beyond the control of the contractor. These reasons may be traced back to actions or lack of action by the client or its representative. Obviously, when the contractor is not to blame for the delays, he/she is entitled to time extensions and possible financial compensation for having to extend the duration of the works.

Contract documents clearly spell out the division of risks between the contractor and the client. Any delays caused by the client, would justify a time extension to be granted to the contractor.

Definition of Risks

FIDIC identifies some of the risks of the Clients as follows:

- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, within the country,
- (b) rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war, within the country,
- (c) riot, commotion or disorder by persons other than the Contractor's personnel and other employees, affecting the Site and/or the Works,
- (d) ionizing radiations, or contamination by radio-activity.....,
- (e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
- (f) use or occupation by the Employer of any part of the Works, except as may be specified in the Contract,
- (g) design of any part of the Works by the Employer's personnel or by others for whom the Employer is responsible, and
- (h) any operation of the forces of nature affecting the Site and/or the Works, which was unforeseeable or against which an experienced contractor could not reasonably have been expected to take precautions,
- (i) physical obstructions or physical conditions other than climatic conditions encountered on the Site during the performance of the Works, which obstructions or conditions were not reasonably foreseeable by an experienced contractor and which the Contractor immediately notified the Employer,

Source: FIDIC Short Form of Contract

From the FIDIC clauses, it is interesting to note that the clients risks are basically limited to typical force majeure events (a-e), damages caused by the client (f), design faults (g), unforeseen natural forces (h) and unexpected adverse site conditions which are only discovered after contract award. Any other reasons are risks to be borne by the contractor.

It is the responsibility of the supervising engineer to determine whether the contractor should be excused for the delays and granted an extension of time to complete works and possibly any compensation for the increase of costs incurred due to the delays. At the

same time, the engineer should also explore the possibility of accelerating some of the work activities thereby compensating for any delays incurred.

Adverse Weather

Delays are accepted for exceptionally adverse weather conditions. However, the normal seasonal variations of weather conditions would not be sufficient reason for allowing a time extension. The contractors are expected to take into consideration that excessive amounts of rainfall occur during certain periods of the year, which may have an impact on work progress. Equally during the dry season, the contractor must make time and cost allowances for transporting water over longer distances. For these regular weather variations, the contractor is expected to take the necessary precautions.

Time extensions due to adverse weather are only justified when the weather does not follow the normal patterns, such as prolonged rains beyond the normal duration of the seasons or excessive floods, droughts, hurricanes, etc. These are conditions which the client does not want the contractor to include as risks when preparing a price offer.



Delayed Provision of Drawings

A common problem in many construction projects is delays in providing the contractor with all the detailed drawings required for carrying out the works. This is more common when the client decides to carry out changes to the original design and new or revised drawings are required.

When changes are made, it is important that the contractor immediately assesses the need for any time extensions and notifies the client through the supervising engineer at the same time as dealing with the change orders.

Approval of Works

Before certain activities can commence, the work specifications require that preceding works are inspected and approved. If the supervising engineer is unable to carry out the inspection at the desired time, the ensuing works are delayed. If the contractor has given due notice as regards to when the inspection is required, any delays in inspecting the works are the responsibility of the engineer and on this basis the contractor is entitled to a time extension. The important issue here is that the contractor has written evidence to



prove that the engineer was duly notified. Written minutes from a site meeting or an agreed work plan indicating when the inspection is required would be sufficient evidence to justify such an extension.

Unforeseen Works

Time extensions are also granted for additional work identified after the contract has been awarded and works have commenced. Although the client carried out proper field surveys prior to awarding the contract and the contractor inspected the site during the bidding stage, there may still be aspects of the site conditions which were overseen by both parties. These issues often relate to subsurface conditions which are only revealed when excavation works commence, such as unexpectedly shifting soil strata, hidden obstacles such as cables and drainage systems, unforeseen water tables, rock deposits, poor building foundations, etc. Discovery of archaeological artefacts may also delay works.

10.4 Liquidated Damages

Liquidated damages are penalties or fines inflicted on the contractor for not completing works on time as defined in the contract. The amount of the penalties is intended to compensate for losses incurred by the client as a result of late completion of works. When applied, they are normally prescribed on a daily or weekly basis.

Liquidated damages may appear as an attractive way for the client to enforce the timely completion of works by the contractor. However, the full picture is more complicated when it comes to implementing such measures.

In many cases, the reasons for the delays are beyond the control of the contractor. In such cases, the penalties should not be applied. On this basis, the contractor may even lodge a counter claim for additional compensation.

The delay of works may be due to the contractor facing cash flow problems. If the client has been slow in processing payments, the contractor may once again return the blame to the client. Even if the delays are caused by the contractor, it would not be effective to impose penalties on a contractor who is already facing financial difficulties. The end result may be that the contractor abandons the site - which is not in the interest of any party.

Contractors see the application of liquidated damages as an additional risk, which need to be seriously considered when preparing a bid proposal. For the client, this often results in higher costs of the works, since the bidders may decide to increase their prices to protect themselves against the risk of having to pay penalties if works are delayed.

For the above reasons, the application of penalties should be done with great caution. Once again, it is important to revisit the original purpose of liquidated damages as a financial compensation for a delayed start in using the facilities under construction. In many cases, it can be argued that alternative arrangements can be sought while a contractor is given additional time to complete the works.

Most contracts only allow penalties to be applied for a certain period limiting the total amount that can be claimed to a certain percentage of the contract. Once this limit has been reached, the client has to make other arrangements in order to secure the completion of works within a reasonable timeframe. Maybe such action should have been taken at an earlier stage (i.e. reducing the works agreed in the contract, termination of contract, faster processing of payments, accepting additional payments for unforeseen works, etc).

Finally, it is important to bear in mind that small contractors, by definition, have a limited financial capacity. Adding the burden of penalties may make the conditions too difficult for them to operate effectively. After all, it is in the interest of the client to have access to a good choice of healthy construction firms who are interested and able to participate in the works at competitive prices.

10.5 Risks and Insurances

Risks related to managing and executing civil works contracts can be divided into three basic categories. There are risks of injury to people engaged by the project or to third persons, damage to property and financial risks.

The general conditions of the contract normally provide directions on how to deal with the most common risks. The contract identifies the party who has to bear certain types of risks and how the parties should prepare for risk related incidences. The contract may require the contractor to take out insurance against some potential risks. National laws and other regulations require that



insurance is obtained for certain work activities, equipment and personnel. It is important that all parties to the contract are fully conversant with the risk mitigation measures prescribed by law and other related regulations.

It is common practice to place the responsibility for preventive measures against accidents and damages with the contractor. Exceptions are made to this general rule for certain defined risks for which the client as the owner of the project has to bear. Risks related to design faults may be portioned to the design consultant.

Injuries

Injuries to employees of the contractor are normally addressed by both the contract as well as national legislation. Most contracts require the contractor to hold insurances protecting the safety of their workers. In addition, national law and other regulations define the employer's obligation in terms of safety and health in the work place.

Most countries today cover this issue in their national legislation through specific labour regulations dealing with injuries inflicted on the workforce. This legislation holds the contractor responsible for taking out insurance, providing compensation for disability and medical treatment for injuries resulting from accidents occurring as a result of employment, regardless of fault - commonly known as worker's compensation.

The contract may also require the contractor to take out third party insurance, covering any injuries to people and property not directly involved in the project.

Damages to Property

The contractor is responsible for any damages to the construction site until the time when the client takes possession of the site and starts using the created assets. It is therefore common practice to require the contractor to take out insurance to cover the completed works as well as all the materials stored on site. Although the created assets on a construction site would legally be regarded as the property of the client, it is the contractor who is responsible for its safeguarding and is expected to cover any damages or losses. To make sure that the contractor meets this obligation, the contract may include clauses requiring the contractor to insure the works and materials.

In addition, it is normal practice to require the contractor to take out a third party insurance thereby indemnifying the client from any claims due to damages to other property in the vicinity of the work site, its access roads and camp site.

National Legislation

National laws and regulations place several demands on the contractor as regards to liability and insurance. These laws and regulations may not necessarily be mentioned in the contract however the contractor is still obliged to meet such requirements. If a contract contains any conditions that contravene national laws and regulations, those clauses should be ignored and instead the contents of the law should be applied.

Third Party Insurance

As mentioned above, the contractor may be required to hold a general third party insurance for any damages to property or people which may come in contact with the work site. In addition, national laws normally require third party insurance on all vehicles and equipment registered for travelling on the public road network.

Workers Compensation

National legislation in most countries requires employers to hold worker's compensation insurance for all of their employees. Although the contract may not necessarily specify this, the client may still demand that the contractor show evidence of holding such insurance.

Special Works

Specific laws and regulations govern a number of specialised work activities and materials. A good example is rock blasting. This activity requires a certified supervisor to take charge of such work. Also, the works then need to follow certain safety procedures, the explosives require safe storage and the works may only be permitted during certain hours of the day. The contractor is expected to adhere to all such regulations although they are not specifically mentioned in the contract.

Safety and Health

The contractor needs to abide to all laws and regulations relating to security and health on the work site. If such regulations are violated, this may have an impact on an insurers acceptance of insurance claims in case an accident occurs. If the insurer finds

Safety on Site

The best approach to safety on site is to assess the risks related to each work activity and take adequate preventive measures, thereby to the extent possible avoiding that accidents occur. Compared to other industries, construction sites are potentially dangerous places to work, however, in most cases accidents can be avoided by taking adequate preventive action. A key issue is therefore to organise work in a manner in which the exposure to risks is minimised.

Simple measures such as the use of fencing around open pits and work places in tall buildings, avoiding large cuts which may collapse, and generally ensuring that the location of the workers is safe reduces the risk exposure.

Traffic passing through roadwork sites need to be directed away so no harm is inflicted on the public or the workers. Manual labour should be separated from locations where heavy equipment is operated.

Workers and plant operators need to be equipped with the necessary protective clothing, such as goggles, ear protection, hard hats and boots depending on their specific work activity.

Finally, if an accident occurs, it is important that adequate first aid is available and that transport is available to evacuate the injured to proper medical facilities.

evidence of gross negligence or violations of standard safety regulations, this may relieve the insurer of any obligations to the insurance policy purchased by the contractor.

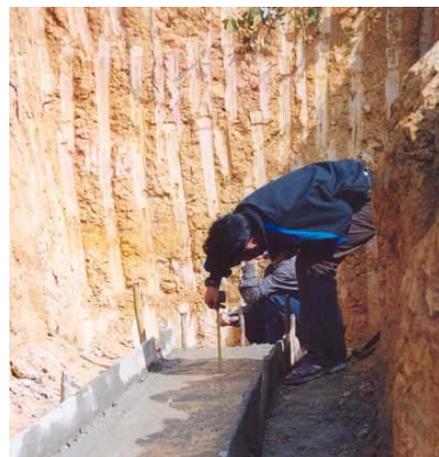
It is the responsibility of the contractor to know the relevant regulations in terms of safety and health on the work site. In addition to installing appropriate measures to protect its workers, the contractor is also responsible for protecting the general public against any hazards caused by the works both during and after working hours.

Despite the fact that the contractor is in charge of safety and health at the work sites, the client as the

owner of the project has an overall responsibility to make sure that adequate safety and health measures are established and observed. If the contractor ignores such regulations and the client takes no action to improve the situation, then both parties may be accused of negligence. It is therefore common practice that the supervising engineer is given the task to enforce safe working conditions on site.

Financial Risks

Financial risks relate to potential cost increases due to unforeseen or unexpected changes to the working conditions of the project. When the payments are based on a bill of quantities, the client may face a risk of cost increases due to additional volumes of work. When dealing



with lump-sum contracts, there is a risk of unforeseen additional work for the contractor for which no additional payment is made.

Contractors face a number of other financial risks as well. Having to replace or repair defective or substandard work is always a risk encountered by the contractors. This may occur during the course of the contract or during the defects liability period. As with spillage of materials, the contractor needs to ensure that quality standards are adhered to and that the workers are fully informed about such performance requirements.

A common problem with public works contracts are the delays in payment of completed works with the result that the contractor needs to find alternative sources of cash to meet payments for materials, equipment and workers. This often implies that they have to obtain cash loans or credit services which are normally rendered for a certain fee, which is difficult to recuperate from the contract.

As mentioned earlier, contractors regard liquidated damages as a financial risk. Some clients may demand a performance bond which runs the risk of being forfeited. Finally, any work delays tying up equipment and workers for an extended period of time can lead to additional costs. An extended contract duration also leads to added overhead costs.

Compensation may be claimed for some of the unexpected works and delays, however the contractor often has to bear some of these unforeseen costs. In order for the contractor to secure a certain level of income and profits, it is necessary to incorporate these potential costs in the price offers submitted during the bidding stage. If the contractor does not include any provisions for unforeseen costs, there is a risk of ending up in a situation not being able to complete the works.

This is an undesirable situation for both the contractor as well as for the client. For this reason, it is always important to treat very low bids with great caution, since such offers give little room for unexpected works. They may not necessarily lead to the contractor abandoning the site, however, such contracts may involve frequent requests and tedious negotiations for compensation due to the unexpected additional works.

10.6 Reporting and Monitoring

Reporting and control is an essential part of the management of civil works projects. A proper reporting system enables the project to objectively monitor the progress and quality of work, and assess at an early stage whether planned targets are being reached. When delays occur, it is then possible to revise plans and take remedial action at the right time to improve performance and secure the original targets. Reporting and monitoring also form the basis for developing and improving planning figures, used when preparing future civil works projects.



Slow progress is caused by a number of factors and is not necessarily the fault of anyone particular in the project. It may be due to incorrect assumptions made during

the planning stage, bad weather, delays in securing equipment and materials, delays caused by slow performance of others involved in the project and many other reasons. The main intention of works monitoring is to keep track of progress from an early stage and to be in a position to deal with the delays at an early stage when they occur.

The purpose of a reporting system is to:

- measure performance of ongoing works,
- provide a uniform method of collecting production data,
- ensure the correct and efficient use of funds, machines, materials and labour,
- identify weak links in the production chain,
- enable the management to effectively re-plan and reschedule remaining works,
- calculate payment of completed works,
- provide reliable information to others about the project activities, and
- collect experience data to improve planning of future new projects.

Reporting and control also form a central part of the payment system. Contractors engaged on civil works projects are paid at regular intervals, on the basis of progress of works.

Before the contractor is paid, the completed work must be controlled to verify that it has actually been carried out and that it has been delivered to the prescribed quality standards.

Planning and progress data needs to be assembled to varying degrees of detail. Short-term plans are more detailed, containing information relating to each work unit (i.e. work-site, operation, team of workers, etc.) and are more useful for monitoring individual activities

With this information as a reference, combined with good reporting of resource inputs and actual work outputs, the project is in possession of an effective management information system.

Planning Ahead

Before commencing construction works, it is important to establish:

- targets on productivity,
- targets on resource inputs (labour, materials and equipment),
- technical work details, and
- estimated unit costs for all inputs.

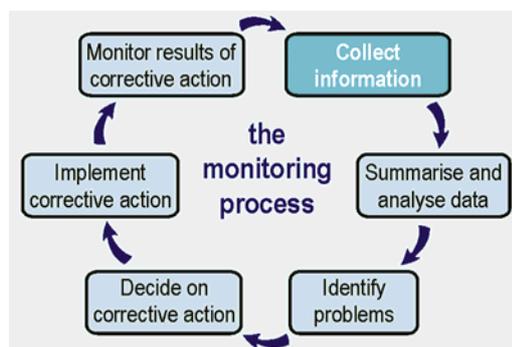
Monitoring Progress

In order to effectively evaluate the data recorded, the engineers and supervisors must be well informed about the desired productivity and performance targets. Production targets are part of the estimates carried out during the planning stage, however they need to be reassessed on a regular basis during the course of the project. In addition to progress, the monitoring system needs to ensure that the quality of works meets the standards defined by technical drawings and work specifications.

Apart from field inspections, the most important monitoring activity is the desk

review. On a regular basis, the site manager needs to carefully analyse the information provided from the work sites and compare the actual progress with the most recent plan.

When actual performance differs from the plan, it is important to investigate the possible implications of targets not being achieved, in terms of both cost and time over-runs and explore how the works can be reorganised in order to get back on schedule.

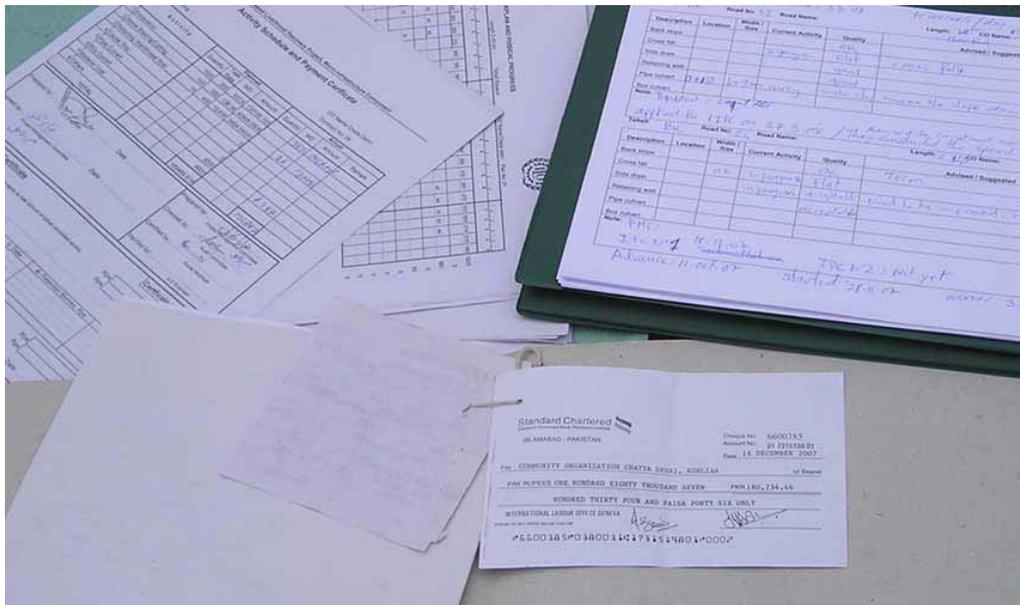


Contents of Reporting

The reporting system basically consists of a set of standardised report forms in which the use of various resource inputs and outputs on all work activities are recorded. Forms for reporting cover the following information:

- ✓ progress of works,
- ✓ vehicle and equipment use,
- ✓ cost and expenditure control,
- ✓ stores control,
- and
- ✓ personnel.

Most reporting systems consist of three levels. Production data, labour attendance, consumption of materials and use of equipment are recorded on a daily basis at site, collated into weekly and monthly summaries and finally presented in quarterly, bi-annual and annual reports.



The basic data is recorded on a daily basis by the site supervisory staff. Information relating to construction progress also forms the basis for payment claims. Data collected on the use of equipment, consumption of materials and employment figures are essential for the contractor to control costs.

An important factor in a reporting system is that all parties are thoroughly instructed in how the report forms are used and that all information is recorded in a uniform manner, thereby enabling project management to compare and evaluate the results from the various work sites and contracts.

(i) Daily Work Progress

The reporting of physical works starts on site where the foremen record daily work progress and inputs of labour, materials and equipment for each work activity. The site manager should verify this information. When weekly summaries are prepared, the physical work progress reports are reconciled with the information from the muster rolls. Payments are based on progress reports and visual inspection to verify that completed work is in good order and the quantities recorded are correct.

(ii) Labour Attendance

The reporting of labour attendance starts on site through the daily recording of workers attendance in the muster roll. At regular intervals, depending on how frequently wages are paid, the muster roll is reconciled to calculate the wages for the workers. This exercise determines the exact amount of payments required at each site and for each worker.

(iii) Use of Tools, Equipment and Materials

Usage and consumption of tools, equipment and materials need to be carefully monitored. The issue of tools to the workers is recorded in a tools issue form. The workers should be instructed that they are held personally responsible for the items received until they are returned to the storekeeper. Defect or worn-out tools should be returned to the stores immediately for repair or replacement.

Each piece of construction equipment, including project vehicles should have a logbook in which all usage is recorded together with consumption of fuel, lubricants and spare parts.

The use of materials is recorded in stores record forms when released from the site store.

Cost Control

Monitoring costs is important to avoid cost over-runs and to prevent unauthorised expenditure. Every civil works project needs to operate within the budgetary limits set in contract agreements and annual work programmes. The three most common reasons for cost overruns are ineffective work organisation, inefficient utilisation of available resources and inaccurate estimates of the quantities of work. There may also be unforeseen circumstances at the project site, which increase the overall cost of the works.

Whatever the reasons for cost increases, it is important that they are detected at an early stage. The reasons for the change in costs need to be closely examined and on this basis new projections are made. With the new projections, there may be a need for adjusting contract agreements and budgets. This involves major decision-making by senior managers and can only be done on the basis of reliable cost monitoring and projections.

Item	Description	Unit	Quantity	Unit Rate	Amount
1.1	Clear site of grass and light bush	m ²	24,000	0.01	240.00
1.2	Grubbing and stump removal	m ²	5,600	0.02	112.00
1.3	Tree felling and removal	no	75	4.50	337.50
Sub-Total					689.50
2.1	Excavate side drains to form camber	m ³	7,710	1.37	10,562.70
2.2	Construct mitre and catch-water drains	m	281	1.12	
2.3	Construct scour checks	no.	300		

the unit rates are the budget ceilings for each work activity

The majority of costs incurred on a civil works project are related to the individual work activities. The bill of quantities provides the budget, within which the project needs to operate. Each line item in the BoQ provides the detailed budget available for each work activity. Although there may

be deviations from the quantities of work estimated in the BoQ, the final outputs of work should not deviate too much from the original estimates. In any case, the unit rate provided for each work activity acts as a budgetary limit for that specific type of works.

This implies that the cost monitoring needs to look into the detailed costs of each activity. All inputs such as labour, equipment and materials used on a particular activity need to be closely monitored and costed, and compared to the original estimates used when the unit rates were calculated.

Special attention should be given to overhead costs (supervision, administration, transportation, etc.). The percentage of funds spent on overheads can easily become excessive if it is not controlled. When production is running at a low level, it is important to keep overhead costs at a minimum (such as reducing the site administration, rationalising the use of vehicles and sharing of office facilities).

Vehicle operation is expensive and needs to be carefully monitored. High fuel consumption, frequent repair costs and vehicle misuse are common causes of over-expenditure.

As with performance monitoring, all relevant information must be carefully scrutinised when costs are monitored. For example, the proper utilisation of hauling equipment cannot be found from the vehicle cost reports alone. It is necessary to cross check with the quarry operations, haulage distances and equipment availability for the same period in order to obtain a clear picture.

Equally, it is important to focus attention on the large work operations, which carry the largest quantities of works. This work incurs the highest costs, so any savings and productivity increases here have a higher impact on the overall project cost.

Quality Control

Testing of materials is an essential part of ensuring that works reach prescribed quality standards. The work specifications provide detailed descriptions of the material requirements as well as the final work outputs. The work specifications also include directions on when and how tests and inspections are carried out. Tests are performed both on site and in a controlled environment such as a laboratory. The results are presented in writing and submitted to the client for review and approval.

Common quality controls include:

- ✓ Soil testing which includes analysing the distribution of particle sizes of the material, its moisture content, achieved degrees of compaction, material strength and plasticity;
- ✓ Control of levels to ensure that the completed levels correspond to the work drawings, evenness and gradients;
- ✓ Inspection of foundations before structures are erected;
- ✓ Inspection of the formwork and binding of reinforcement steel before pouring concrete;
- ✓ The quality of concrete and reinforcement steel, and the final quality of the concrete works after curing.

The results of laboratory tests are recorded in specific forms designed for each test. These forms are normally standardised and clearly show the prescribed quality requirements and compare these with the achieved test results.



Testing of materials is carried out throughout the implementation of a civil works project. Some tests are carried out already during the design stage as the results may have an impact on the final design solutions, such as soil conditions where foundations are placed, quality of gravel and aggregate, etc.

Once a civil works contract has been awarded, it is usually the contractor who is responsible for carrying out material testing. The contract specifies how and at what frequency tests should be carried out. In order to analyse the material samples, it is necessary to identify suitable laboratory facilities. Some of the tests can be carried out on site, using simple and inexpensive testing equipment which it is expected that the contractor possess. Other tests such as concrete compression tests need to be carried out in a laboratory.

Advanced testing facilities may only be available at a few select places such as in larger public works agencies, research laboratories, universities or large contracting firms. In most cases, these institutions can be contracted to carry out the necessary testing. It does, however require that there are sufficient provisions made in the contract to cover the costs of such testing services.



Chapter 11

Changes

11.1 General

Civil works projects are complex undertakings. Building the works involves many skills, materials, equipment, work methods and literally hundreds of different operations. To some degree, every project is unique and no two jobs are ever alike. The project management through its designers and contractors brings together all the diverse elements of and inputs to the construction process into a single coordinated effort. The works are designed in accordance with applicable codes and standards, culminating in drawings and specifications that aim to describe the work in sufficient detail for satisfactory implementation in the field.

Despite the extensive amount of information collected and compiled during the design stage, there is often a demand for making additional adjustments during the course of the works. The contract documents therefore include a mechanism for making changes to the contents of work after the contract has been signed. Such changes may involve additions to or deletions from the contract, modifications of the work, changes in work methods, changes in contract duration and revisions of the cost estimates. The contractor should not proceed with any changes before they have been authorised in writing by the client or the supervising engineer.



Disputes and claims arise for a wide variety of reasons. Disagreements take place between the contractor and the client concerning the interpretation of time, damages for client-directed acceleration, additional costs caused by delays, inaccurate drawings or specifications, changes to site conditions and similar matters that affect construction time and cost. Every effort should be made by the client and the contractor to resolve such claims, issues and problems as quickly as possible in an amiable atmosphere in order to avoid or minimise delays.

Despite the fact that the technical staff spends a considerable amount of time on the design and surveys for a specific project, there may still be a need for modifications once the works commence. Modifications are required to work which was not considered or apparent during the design stage. Other changes are simply due to the client wishing to modify the design during the construction period. The most common reason for changes occur when site conditions end up being different from the original impression given when the surveys were carried out.

Although it is desirable to keep changes to a minimum, it is impossible to avoid them all. Eliminating all modifications would require extensive preparations in terms of surveying and design, which is too costly and time consuming.

Since changes do occur on most construction projects, the parties to a contract must be aware of the terms under which a contract allows for modifications to the agreed work. Most contracts therefore contain specific procedures to follow when changes are made.

11.2 Clauses Governing Changes

Most contracts include clauses on how to deal with modifications. Such clauses normally address the payment and time issues. In addition, it is good practice to adhere to the following principles and practices when dealing with changes:

- ✓ the client have the right to make changes as long as it is within the general scope of the contract,
- ✓ the contractor is expected to carry out the work as a result of the change,
- ✓ the contractor should not initiate any changes before receiving explicit instructions from the client,
- ✓ the instructions to carry out the modified works should be in writing,
- ✓ any adjustment to the contract price and contract duration should be considered according to already agreed unit rates and estimates of time required to carry out a particular type of work,
- ✓ the contractor and the client should agree on payment and time extensions up front before additional works are commenced.

When modifications are required, due to unforeseen site conditions or decisions made by the client, a change order needs to be submitted to the contractor. In a sense, a change order is a mini-contract to perform a specific item of work. In practice, a



change order is an adjustment made to the original contract and as such it must satisfy all the prerequisites of the contract. This implies that all the general obligations agreed to by the two parties also apply to the additional or modified work contents.

If the change has no impact on the duration of the contract or the original contract prices, it can be referred to as a field change. Field

changes can often be authorised by the supervising engineer without direct approval from the client. Field changes are typically minor and to facilitate progress, the approval of these changes is given by the client's representative on site.

11.3 Major Changes

Although contracts contain appropriate clauses to deal with changes, there are limitations to the extent to which modifications of a contract can be made. Changes which go beyond the general scope of the contract are not covered by the change clauses and should be avoided.

If a contractor is requested to carry out major works that are beyond the scope of the contract, this can be considered as a breach of the contract (by the client). The reason for this is that when the modifications totally alter the contents and scope of a contract, the original contract has been replaced with a different job.

On private contracts such changes are not a problem if both parties agree to the terms of those changes. However, on public works contracts this issue is more complicated. Even if the contractor agrees to these changes, there are other considerations related to transparency and fair competition. The rationale here is that when a modification is beyond the scope of the original contract, the change constitutes a new project and a new process of competitive bidding should be arranged on the basis of the actual works.

The definition of major changes which are outside the scope of the original contract are normally related to (i) an alteration in which the identity of the project is significantly changed, and/or (ii) when work methods are substantially changed.

For example, increasing the length of a bridge by changing the design from a single span bridge to a multi-span bridge, and introducing piling works which were not envisaged in the original contract, would be a major change beyond the scope of the original contract. Although current practice allow for substantial increases of volumes of work, this type of change involves both substantial changes to the project identity and the introduction of new work methods.

In public works projects, the issue of fair competition then becomes an issue, since other contractors were not invited to bid for this revised project. Finally, the current contractor who was awarded the original contract may not be the most suitable firm, or in a worst situation scenario may not be qualified to carry out this type of works. The contractor may lack the financial and technical capacity to carry out this type of works, as well as lacking the necessary equipment to carry out the newly introduced work (i.e. the piling works).

11.4 Change Orders

Change clauses commonly state that payments are only made for changes specifically ordered by the client or the client's representative. If the contractor initiates any changes without prior consultation and approval from the engineer, there is a fair chance that the client may refuse to approve such work and the related payment claims.

Whether or not it is stated in the contract, most clients only approve payments when the changes were agreed to in advance and confirmed in writing. The reason for this is that all payments need to be justified with supporting evidence. When no changes are made to the contracted works, then the contract itself provides sufficient justification for the expenses incurred. When changes are made, which are not covered by the existing contract, the accounting section may object to releasing payments despite the contractor submitting a detailed invoice describing the works carried out.

In such cases, the pay officer needs to seek clarification from the supervising engineer to establish whether any changes were ordered. If the engineer confirms that changes

were agreed, then payments can go ahead. If not, the contractor is at risk of not receiving payment for this work, also in cases where an oral agreement was made.

Change orders come in many fashions. They can be communicated in letters, notices, revised drawings or specifications, notations on old drawings, minutes of site meetings, field records and daily reports. The most common practice is still through verbal instructions. If these change orders have financial implications, it is important that they are confirmed in writing before the contractor starts the modified works.

When changes occur in the form of either written or verbal instructions, it is good practice for the contractor to inform the client or its representative in writing whenever additional compensation is sought from the orders which are considered as changes to the contract.



World Bank Procurement Regulations

Changes are referred to in the procurement guidelines of the Bank under Section 3.7 Direct Contracting where it states that:

.... An existing contract for goods or works, awarded in accordance with procedures acceptable to the Bank, may be extended for additional goods or works of a similar nature. The Bank shall be satisfied in such cases that no advantage could be obtained by further competition and that the prices on the extended contract are reasonable. Provisions for such an extension, if considered likely in advance, shall be included in the original contract....

Source: Guidelines Procurement under IBRD Loans and IDA Credits, October 2006

The General Conditions of the smaller works contract used by the World Bank describe how to deal with the variations – stating that:

Payments for Variations

40.2 *If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in Sub-Clause 38.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.*

40.3 *If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.*

Source: Standard Bidding Documents, Procurement of Works - Smaller Contracts, May 2007

FIDIC

The Short Form of Contract prepared by FIDIC states that the Employer may instruct variations, which are valued according to the following procedures:

- "(a) at a lump sum price agreed between the Parties, or*
- (b) where appropriate, at rates in the Contract, or*
- (c) in the absence of appropriate rates, the rates in the Contract shall be used as the basis for valuation, or failing which*
- (d) at appropriate new rates, as may be agreed or which the Employer considers appropriate, or*
- (e) if the Employer so instructs, at daywork rates set out in the Appendix for which the Contractor shall keep records of hours of labour and Contractor's Equipment, and of Materials used."*

11.5 Authority to Order Changes

Since work changes may result in additional costs to a project, most contracts contain specific clauses indicating who is authorised to take such decisions. These decisions are often regulated by the conditions of contract. In most construction contracts, the engineer acts as the client's representative, clearing payment certificates, rejecting inferior works, interpreting drawings and with certain limitations have the authority to order or approve changes to the works.

World Bank Regulations

In the general conditions of contract used by the World Bank, a Project Manager is appointed to represent the client. He/she is responsible for supervising the execution of the works and administering the contract. The authority vested in the project manager as related to changes is mentioned several places in the general conditions of contract used by the bank for smaller civil works:

Changes in Quantities

38.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change.

38.2 The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.

Compensation Events

44.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.

Source: Standard Bidding Documents, Procurement of Works - Smaller Contracts, May 2007

FIDIC

The FIDIC Short Form Contract leaves the authority to carry out variations with the client. The reason for this is that this particular contract does not make any specific reference to a supervising engineer. Although it accommodates the common practice of appointing an engineer as the client's representative, this contract generally refers to the client in terms of managing and interacting with the contractor.

11.6 Contractors Reaction to Change Orders

Whenever a directive for a change is given to the contractor, the contractor needs to ask the following questions before carrying out the works:

- ✓ Is this within the scope of the contract?
- ✓ Has there been proper authorisation?
- ✓ Is the directive provided in a proper manner?
- ✓ If the work is carried out, will the client pay for it?

If the contractor feels that these questions can be answered positively, prompt written notice should be provided to the client, concerning the cost impact of the change. Only when the costs of the additional work have been agreed by both parties (i.e. methods of measurement, unit rates and total costs) should the contractor commence works. By simply performing the work and later seeking compensation is a poor strategy which may lead to conflicts and jeopardise a good relationship between the client and the contractor.

11.7 Changing Site Conditions

In an ideal situation, all the site conditions are clearly and correctly documented and understood by both parties when a contract is signed. The site conditions are described in the plans, drawings, work specifications and any addenda. With this information, it is assumed that the project can be implemented as described in the contract. This of course is based on the assumption that the conditions at the project location essentially have been accurately described and remains unchanged until the works commence. Unfortunately, this is not always the case - the actual conditions may have changed by the time works commence. When this occurs, the cost of construction may increase or decrease, and the contract may need to be modified.

The differences in site conditions are often related to subsurface conditions. It can be problems related to high a water table, unsuitable soils for foundations, rock or in the case of quarries, the volumes of material are insufficient or not to the prescribed quality.

Example:

The client has carried out field tests of a new gravel quarry and through test digging established that the material is suitable for road surfacing. After the contractor commence works, it becomes evident that the quarry does not provide sufficient material at the prescribed quality. The client therefore decides to utilise an alternative quarry, however, at a location which extends the hauling distance. At this stage there is a need for negotiating a new price for the transport of the materials adopting the changed transport distances.

The best way of avoiding a situation where unforeseen changes in site conditions occur is to carry out proper and detailed surveys before a contract is advertised. Alternatively, the client may shift the risk of changing conditions to the contractor, in order to secure that the project does not exceed the agreed contract amount. The drawback with this arrangement is that the contractors may increase their bid prices to cover any eventualities and safeguard themselves

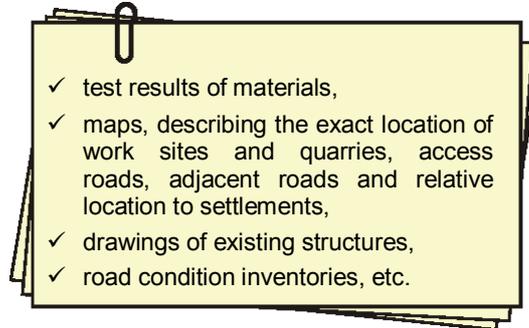
against any unforeseen cost increases.

In most cases, it is advisable for the client to bear this risk. This will lower the bid prices and avoids the contractor from defaulting on a contract in which insufficient funds have been allowed for to cover such contingencies. Alternatively, the client may include a contingency line in the project budget to cover any unforeseen work.

The World Bank contract documents relate to changed site conditions under their clauses for compensation (see Section 11.4). Again, it is important that the contractor notifies the client and agrees in advance on a price for the additional or changed work.

11.8 Pre-Bid Site Investigations

Although the client is prepared to take the risk and related costs of unforeseen site conditions, this does not relieve the contractor from all responsibilities related to the actual conditions on a project site. In the bidding documents the client normally provides some information related to the project site. This can be in the form of:



Although this information has been meticulously prepared and provides a good presentation of the actual situation, it is expected that the contractor also carries out a site inspection before submitting a bid. The reason for this is simple. It is important that the contractor makes an independent judgement of the site conditions and on this basis assesses the project site.

Outdated Road Condition Inventories

A common problem encountered by contractors is the issue of out-dated road condition inventories submitted as part of the bidding documents for road rehabilitation works. During the period when carrying out the bid competition, the condition of the road may further deteriorate, which is not reflected in the final contract documents. If the contract is based on Bill of Quantities, the changed conditions can be covered by the allowed variations to the volumes of work, applying the agreed unit rates. However, the overall site conditions may also have changed, resulting in increased costs for several work activities. For this reason, it is therefore important that the contractor inspects the road before submitting a bid to establish the differences between the recorded road condition and the real situation.

For example, an access road may be in very poor condition. The client would expect the contractor to provide and maintain all access to the site. If the contractor overestimates the quality of the access road, additional expenses may be encountered for which the client is unwilling to pay. Equally, the quality of roads leading to the site may have a severe cost impact on the transport of materials. It will be the duty of the contractor to adequately cater for such items in the submitted bid.

A similar situation may occur as a result of floodwater during the rainy season. The client expects the contractor to accommodate the additional cost of carrying out works during a period when rains and wet conditions are envisaged. It is therefore important for the contractor to visit the site and examine the possible impact of rainy weather. It is only in the case of unexpected extreme weather (i.e. floods, storms, etc) that the client accepts additional claims related to the works.

As a general rule, differing site conditions are typically those that were not reasonably foreseeable based on close examination of the bidding documents and the project site.



Chapter 12

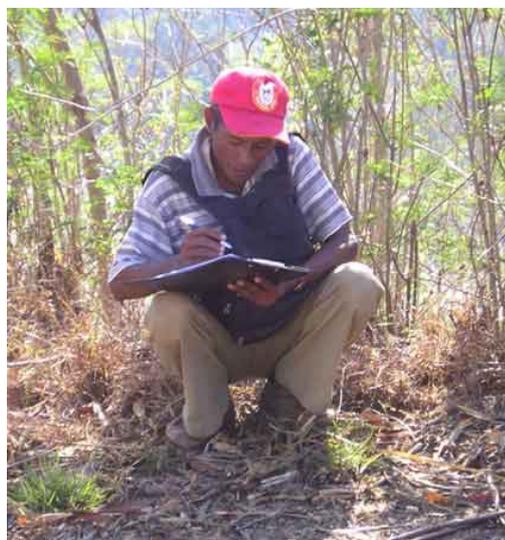
Payment of Works

12.1 General

Any payment made to the contractor should be based on completed works which have been measured and approved by the engineer and deemed compliant to the quality standards prescribed in the contract. Under no circumstances should any payments be made for works not completed or carried out to sub-standard quality.

How and when payments are made are defined in the conditions set in the contract. Civil works contracts are often based on a bill of quantities in which each work activity is specified with a unit price offered by the contractor and an estimated volume of works or materials. Smaller works can be awarded on a lump-sum basis with simplified payment procedures.

Payment of completed work is approved on the basis of inspections carried out by the supervising engineer. The engineer is responsible for measuring the exact quantities of completed works and verifying that the quality of materials and workmanship conforms to the technical specifications. The approved volumes of work are documented in a payment certificate prepared by the engineer. The payment certificate is submitted to the client, basically stating that a certain amount of works have been completed and is now due for payment.



This endorsement of the works acts as the sole justification for the client to pay the contractor. There is no need for any additional verification before payments are processed. This process should be swift and free from bureaucratic red tape in order to avoid delays in paying the contractor. Processing of a payment certificate should not take more than one or two weeks.

Processing Payments

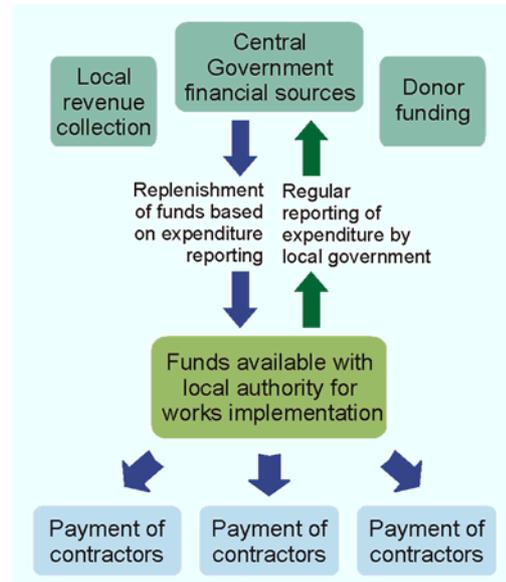
Timely and swift processing of payment for works carried out by small-scale contractors is a crucial issue in terms of providing a conducive environment in which local entrepreneurs can survive and prosper. If payments are delayed, contractors may easily encounter cash-flow problems which can force them to slow down or stop works. When works are carried out using labour-based work methods, this issue is even more important. Without timely payments, the contractor is not in a position to pay the labour force on time, which in turn leads to poor morale among the workers, lowered production rates and poor labour attendance.

Although rural infrastructure work is usually managed by local authorities, its funding may originate from central government sources. Equally, when a project is funded by international agencies, the funds are usually channelled through a central government organisation. The detailed procedures adopted in terms of cash flow from central level

to local authorities and further on to the payments to the contractors, need to be closely monitored for its efficiency. In order to avoid any disruptions in the cash flow, experience show that the funds need to be made available at local level three months in advance of when required for payments.

The timely payment of the contractors is crucial to their success and ability to operate efficiently. A vital performance criterion for the payment procedures is that the contractors are paid within a maximum of one to two weeks after they have submitted a claim. Appropriate procedures for preparing cash flow projections and requesting the funds well in advance need to be established to ensure that funds arrive on a timely basis and at regular intervals.

There are three different types of payment certificates issued during the course of a contract. The Interim Payment Certificate is used for partial payments during the course of works

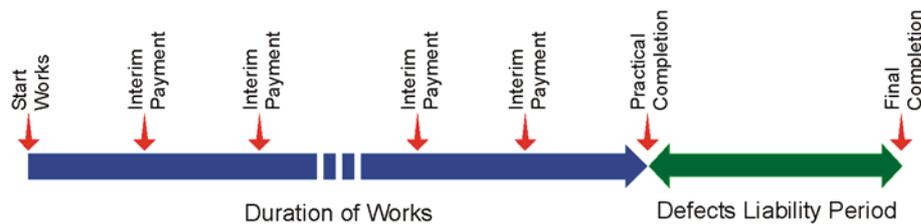


Defects Liability Period

Any client who embarks on a civil works project wants to make sure that the outputs from the construction works are made to last. For this reason, the client may insist on a certain guarantee arrangement for a period of time during which the contractor is held responsible for any possible defects. To ensure that the contractor regards this guarantee period as a serious commitment, the client may decide to withhold a portion of the payments due to the contractor as a security and which can be used to repair any defects discovered during the defects liability period. If the contractor does not carry out the work according to the obligations related to the guarantee period, the client can use the retained funds to engage another contractor to carry out the remedial works.

implementation. The number of interim payment certificates to be issued depends on the duration of the contract and the payment schedule as agreed to in the conditions of contract.

When all works have been completed, the final remaining payment is processed using a Certificate of Practical Completion. This marks the start of the Defects Liability Period. At the end of the Defects Liability Period and after the contractor has completed any remedial works, the Final Certificate of Completion is issued.



Payment Schedule

The schedule of payments has a major impact on the cash flow for the contractor. The specific schedule prescribed in a particular contract therefore needs to be carefully studied by the contractor at the time when preparing a bid. Some contracts only allow for payments upon satisfactory completion of all works, while other contracts may be more lenient providing intermittent payments during the course of the contract. The

payment schedule dictates how much of the works and materials the contractor needs to advance from his/her own pocket during the construction period.

The payment schedule is normally included in the general conditions of the contract or in the appendix to the conditions (or contract data). For larger projects, it is common practise to establish monthly payments of works. This implies that the contractor requests the engineer to visit the work site at the end of each month to measure the amount of completed works since the previous month and prepare a payment certificate on this basis.

For smaller contracts the client may decide to limit the number of payment certificates. For example, a lump sum contract may prescribe that the first payment is only made when 50 percent of the works are complete, and the second payment only on completion of all works.

Minimum Amount of Interim Certificate

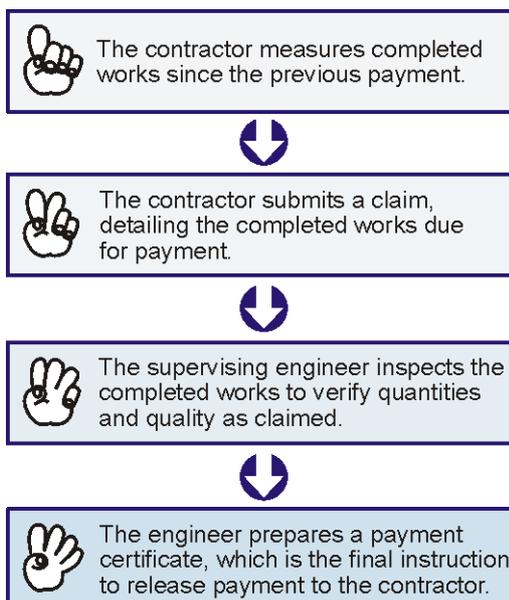
To avoid processing very small amounts in the interim certificates, the client may also decide to set a minimum limit to which it is prepared to accept a payment claim. This implies that if a contractor has achieved very little progress during the period since the last time he/she was paid, the client will not process any payments. In other words, when a contract includes a minimum amount for the interim certificates, a contractor may not necessarily be paid every month although this is indicated in the contract.

12.2 Measurement of Works

It is a common misconception among contractors that the client guarantees payments equivalent to the amounts indicated under each item in the Bill of Quantities. During the course of works implementation, it is expected that deviations occur from the originally estimated quantities. *Therefore, payments to the contractor are based on the quoted unit rates and the actual measured quantities - not the amounts as listed in the Bill of Quantities.* Variations to the estimated quantities is a common feature in civil works contracts and for this reason, the original quantities are treated merely as an estimate and a basis for the bid competition.

Payments are to some extent also performance based when dealing with lump-sum contracts. The basic principle of a lump-sum contract is that it states that the contractor completes a certain service, normally producing a specific end product at which time the

client pays a fixed amount regardless of the inputs required. The contract normally prescribes a schedule of payments, indicating when payments are made. The timing of the payments can be based on the progress of works, i.e. first payment made after 30 percent of works completed, second payment after 60 percent, etc. Assessing when such percentages have been completed may be difficult. Instead, payments can be scheduled to more distinct stages of work progress such as after foundations have been completed, roofing completed, etc. Such milestones are easier to determine. Still, the engineer needs to inspect and verify that work



has been fully completed and on this basis recommend payment.

Before the contractor carries out any works different from the bill of quantities and drawings, it is important to obtain written approval for such works from the supervising engineer. Claims should not be accepted for any additional works which have not received prior clearance.

Payment of works in a civil works contract is carried out according to the basic steps as shown in the diagram above. Although this describes the principle method of processing payments, there are several variations to this practice. A common practice is to omit the claim submitted by the contractor. Instead, the contractor and the supervising engineer jointly calculate the quantities of completed works, which forms the basis for the payment request.

For lump-sum contracts, work measurement is less time-consuming since there is no need to verify the detailed quantities. However, it is still important to check that the works are carried out to the prescribed dimensions and technical standards and ensuring that the contractor adheres to standard building practices and workmanship.

Item	Description	Unit	Quantity	Unit Rate	Amount
1.1	Clear site of grass and light bush	m ²	24,000	0.01	240.00
1.2	Grubbing and stump removal	m ²	5,600	0.02	112.00
1.3	Tree felling and removal	no	75	4.50	337.50
Sub-Total					689.50
2.1	Excavate side drains to form camber	m ²	7,710	1.37	10,562.70
2.2	Construct mitre and catch-water drains	m	281	1.12	
2.3	Construct scour checks	no.	300		

the unit rates are the budget ceilings for each work activity

Measuring completed works is a common cause of disputes between the contractor and the client. For this reason, the method of measurement is often described in detail in the work specifications. It is

important that the volumes of work due for payment is recorded using the same unit of measurement as stated in the bill of quantities or the activity schedule. If the contract documents have been properly prepared, the units of measurement in the bill of quantities correspond to the ones referred to in the work specifications.

The units of measurement need to be strictly adhered to when a contract has been agreed to on the basis of unit rates. By applying the established units of measurement, there is never any doubt as to the rates on which payments are based. Introducing

other units of measurement complicates the management of payments as this implies that the client needs to negotiate new rates with the contractor.

Measurements for Payment

Earth embankment construction shall be measured by taking the cross sections in the original position before the work starts and in the final position after its completion.

Volumes of earthwork shall be computed by the method of average end areas and be given in cubic metres.

The measurement of fill material from borrow areas shall be the difference between the net quantities of compacted fill and the net quantities of suitable material brought from roadway and drainage excavation. It shall be assumed that one cubic metre of suitable material brought to site from roadway and drainage excavation forms one cubic metre of compacted fill if the measurement has already been done under the item of excavation. Since the measurement was taken for undisturbed earth prior to excavation, no allowance for any shrinkage/bulging shall be made.

Sample from the Technical Specifications for labour-based construction work of agricultural and rural roads, DoLIDAR, Ministry of Local Development, Nepal

Any introduction of new units or methods of measuring works during the course of the contract can also be construed as a major change to the contract. Even if the client has very good reasons to do this and has agreed to new rates with the contractor, it may compromise the

transparency of the contracts management.

Also, with lump-sum contracts, it is important to adhere to the payment schedule prescribed in the contract. Any changes to the payment arrangements may lead to complaints from other firms, with accusations that the contractor is being given more favourable conditions after the contract was awarded - and cause suspicion that the selected bidder was aware of this during the bid competition.

12.3 Interim Payment Certificate

The interim payment certificate acts as a standardised statement from the supervising engineer informing the client that works completed since the previous payment have been satisfactory carried out according to the drawings and work specifications and are now due for payment.

It is the responsibility of the supervising engineer to prepare this certificate. It should only be prepared once the works for which the contractor is claiming payment have been inspected and found in good order, and conforms to the prescribed quality.

Interim certificates are prepared on the request of the contractor, i.e. upon the receipt of a claim. Still, a certificate should only be prepared if it conforms to the agreed payment schedule and the minimum amount mentioned in the conditions of contact.

A new payment certificate is prepared for each payment due to the contractor. The certificate acts as the payment justification, and once it is issued, the client needs to process the payment as soon as possible. The processing of payments should not take more than one to two weeks once the supervising engineer has submitted the certificate.

The sample payment certificate shown below contains the essential information required in terms of advising the client how to pay the contractor. Basically, the information provided consists of the total value of the measured works (1), amount of deductions (2), and the net amount to be paid to the contractor (3). In addition, it is

common practice to include details of previous payments (4) and the balance of payments as related to the total contract value (5 & 6).

	% completed	Amount		
1. Measured Works:	23	14,657.54		
2. Deductions:				
Less 15% Retention	(1)×0.15	1,099.32		
Other: <u> repayment of tools </u>		1,500.00		
3. Total Amount Due:	(1)-(2)	12,058.22		
4. Details of previous payments				
Cert No.	Date	% Completion	Measured Works	Retention
1	15.07.08	14	9,015.36	1352.25
2	15.08.08	20	12,853.25	1927.95
3	16.09.08	21	13,476.87	2021.53
Total Previous Payments			35,345.48	5301.73
5. Total Contract Value			63,007.18	
6. Contract Balance		(5)-(4)-(3)	15,603.48	

Actual payments to the contractor should be issued by cheque or by direct bank transfer in favour of the contracting firm or its authorised representative. It is expected that most contractors carry out their financial transactions through the services of a bank. Only in cases where there is no access to banking services should the contractor be paid in cash.

Payment certificates form part of the financial system for a project, acting as supporting evidence for expenditures against specific budget items. Therefore, they need to be filed according to established accounting procedures and are subject to regular audits.

Payment Breakdown

The interim certificate would normally not contain details of which bill items the contractor have completed. Its main purpose is to advise the client that a certain

amount is now due for payment. In order to monitor the payments made against each of the items in the bill of quantities, the supervising engineer needs to keep track of the details as regards to work progress on each activity and towards which bill items works have been charged.

A Payment Breakdown contains the details for the calculation of interim payments. When the contractor requests payments for completed works, the supervising engineer visits the site and measures the works carried out since the previous payment. The measured works is then entered into a form against each of the work items in the bill of quantities. For comparison, the accumulated payments of previously issued certificates are also recorded in this form, thereby allowing for proper cost control during the course of the works.

Once works have been measured and found in good order, the completed quantities under each bill item are entered into this form. The total amount from the Payment Breakdown is then transferred to the payment certificate.

The sample below shows the payment breakdown, forming the basis for the sample payment certificate presented above.

PAYMENT BREAKDOWN									
Activity		Bill of Quantities				Previous Payments		Current Payment	
Item	Description	Unit	Qty	Rate	Total Amount	Qty	Amount	Qty	Amount
1.1	Setting out alignment	m	15,000	0.12	1,800.00	9,000	1,080.00	6,000	720.00
1.2	Clear site of grass and light bush	m ²	120,000	0.01	1,200.00	72,000	720.00	48,000	480.00
1.3	Grubbing and stump removal	m ²	28,000	0.02	560.00	16,800	336.00	11,200	224.00
1.4	Tree felling and removal	no.	375	4.50	1,687.50	260	1,170.00	115	517.50
	Sub-Total				5,247.50		3,306.00		1,941.50
2.1	Break and remove boulders	m ³	250	2.74	685.00	244	668.56		
2.2	Excavate side drain to form camber	m ³	6,200	1.07	6,634.00	4,960	5,307.20	1,240	1,326.80
2.3	Excavate, haul and compact soils	m ³	31,750	1.12	35,560.00	22,225	24,892.00	9,525	10,668.00
2.4	Construct scour checks	no.	1,850	0.22	407.00			437	96.14
2.5	Construct mitre and catch-water drains	m	1,924	0.87	1,673.88	1,347	1,171.72	577	502.16
2.6	Shape and compact gravel	m ³	11,700	0.85	9,991.80				
	Sub-Total				54,951.68		32,039.48		12,593.10
3.1	Turfing	m ²	30,000	0.09	2,700.00			1,228	110.52
3.2	Tree planting	no.	1,200	0.09	108.00			138	12.42
	Sub-Total				2,808.00		0.00		122.94
GRAND TOTAL					63,007.18		35,345.48		14,657.54

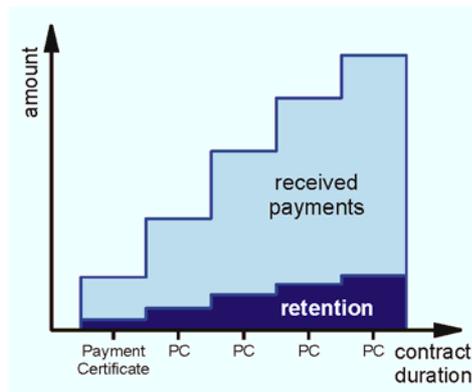
12.4 Retention

Retention money is an additional security which the client may wish to apply to a contract. As opposed to bid and performance securities, the retention money requires no action or financial outlays from the contractor. It is merely a procedure in which the client retains a portion (normally a percentage) of the interim payments until all works have been satisfactory completed.

The main purpose of the retention money is to safeguard the client against any faulty or substandard work. If such works are not rectified the client may choose to withhold the retention money. The client can then use the retention money to correct the faulty works by other arrangements than relying on this particular contractor.

If the contractor repairs all substandard work within the contract period, the client is obliged to release all the retention money at the end of the contract.

Although the intention of retention money is to take care of remedial works, it also acts as an additional performance security for the client. Since the retention money is calculated on the basis of invoiced works, the amount withheld increases as work progresses.



This obviously acts as an additional motivation for the contractor to complete works on time and to the right quality so the retention can be released. In other words, retention may have the same effect as a performance bond.

When applying retention, the exact amount is stated in the contract. Retention money is deducted from the amount due to a contractor in each of the interim payment certificates. For most contracts, it is recommended that a retention of 10 to 15 percent is applied. This percentage is

deducted from the amount due in the interim payment certificates (not the total contract value). By subtracting the deducted retention from the invoiced amount, the final amount due for interim payment is calculated. This net figure is then used to record the expenditure in the project accounts. The retention money is at the same time recorded as a financial commitment, i.e. an expense which is expected to occur at a later stage.

The use of retention is normally combined with a defects liability period. In this arrangement, the full amount of retention monies is only released at the end of the defects liability period, once the client has verified that all works are in good order.

Remember that retention monies are always deducted from the amount due for payment to the contractor according to the amount of works completed since the previous payment. Retention on interim payments should *not* be calculated from the total contract value.

Finally, for monitoring purposes, the retention money together with the actual payment is recorded in the contracts register, together with the total contract value and the remaining contract balance.

12.5 Certificate of Practical Completion

The certificate of practical completion is used for processing payment for the last remaining works towards the end of a contract. At the same time as paying for the remaining works, it is common practice to release a portion of the retention money. Contracts commonly allow for 50 percent of the retention to be returned to the contractor when issuing the practical completion certificate, assuming that any deficiencies discovered earlier have been rectified. The exact conditions for the return of retention moneys are specified in the conditions of contract.

If the supervising engineer discovers that all works have still not been completed, he/she should withhold the certificate of practical completion and can instead issue an interim certificate.

Certificate of Practical Completion																																		
1. Measured Works:				13,004.16																														
Deductions:																																		
2. Less 15% Retention	(1)×0.15			1,950.62																														
3. Other: <u> none </u>				0																														
4. Balance of Remaining Payment:	(1)-(2)-(3)			11,053.54																														
5. Details of previous payments																																		
<table border="1"> <thead> <tr> <th>Cert No.</th> <th>Date</th> <th>% Completion</th> <th>Measured Works</th> <th>Retention</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>15.07.08</td> <td>14</td> <td>9,015.36</td> <td>1352.25</td> </tr> <tr> <td>2</td> <td>15.08.08</td> <td>20</td> <td>12,853.25</td> <td>1927.95</td> </tr> <tr> <td>3</td> <td>16.09.08</td> <td>21</td> <td>13,476.87</td> <td>2021.53</td> </tr> <tr> <td>4</td> <td>14.10.08</td> <td>23</td> <td>14,657.54</td> <td>2198.63</td> </tr> <tr> <td colspan="3">Total Previous Payments</td> <td>50,003.02</td> <td>7500.36</td> </tr> </tbody> </table>	Cert No.	Date	% Completion	Measured Works	Retention	1	15.07.08	14	9,015.36	1352.25	2	15.08.08	20	12,853.25	1927.95	3	16.09.08	21	13,476.87	2021.53	4	14.10.08	23	14,657.54	2198.63	Total Previous Payments			50,003.02	7500.36				
Cert No.	Date	% Completion	Measured Works	Retention																														
1	15.07.08	14	9,015.36	1352.25																														
2	15.08.08	20	12,853.25	1927.95																														
3	16.09.08	21	13,476.87	2021.53																														
4	14.10.08	23	14,657.54	2198.63																														
Total Previous Payments			50,003.02	7500.36																														
6. Total Retention Monies	(2)+(5)			9,450.98																														
7. Return of Half of Accrued Retention	(6)/2			4,725.49																														
8. Total Amount Due	(4)+(7)			16,104.18																														
9. Total Contract Value				63,007.18																														
10. Balance Due after Defects Liability Period	(7)			4,725.49																														

The following table provides a sample of the essential information contained in a practical completion certificate. Once the remaining works have been inspected and found in good order, the contractor is eligible for payment of (i) the remaining works and (ii) half of the retention monies. The amount of retention money paid out at this stage is half of all retention monies with-held so far, including half of the retention calculated for the final works due under this payment. The other half of the retention money is withheld until the end of the defects liability period.

Once again, only the actual payment issued to the contractor is recorded in the project accounts as expenditure.

The remaining retention money is recorded as a commitment.

Since this is the last payment directly related to completed works, there is no minimum amount limit to this certificate.

The date of issuance of the Practical Completion Certificate is the starting date of the defects liability period and should be the same as when the remaining works were inspected and approved.

It is the responsibility of the supervising engineer to ensure that payments are made only for completed works. Work is inspected to verify that it has been carried out to the technical standards and quality prescribed in the contract. Incomplete or substandard work should not be included in the certificate.

12.6 Final Certificate of Completion

The final certificate of completion is issued at the end of the defects liability period after all remedial works have been completed and found in good order.

Similar to all the other payment certificates, it is the responsibility of the supervising engineer to prepare the final certificate. The purpose of this certificate is to advise the client that works have been completed and all defects have been rectified - also those discovered during the defects liability period and recommend that the remaining retention money is released to the contractor. Following the format used for the certificate for practical completion, the final certificate may look like the sample shown below.

Certificate of Final Completion		
Project Name: Bridge at Chouk Prey		Contract No: RB128-2008-3
Province: Kampot		Certificate No: 6
Contractor: Sunny Construction Co. Ltd.		
Address: P.O. Box 354 Kampot		
<p>This is to certify that works at the above mentioned location(s) have been fully completed as specified in the Contract and accepted to the satisfaction of the Supervising Engineer after inspection following the Defects Liability Period in accordance with the terms and conditions of the Contract.</p>		
1. Remaining Retention Monies		4,725.49
2. Deductions: <u> none </u>		0
3. Total Amount Due	(1)-(2)	4,725.49
4. Date of Practical Completion		15-Nov-08
5. Date of End of Defects Liability Period		15-Feb-09

If all defects have still not been rectified at the end of the defects liability period, the supervising engineer may allow additional time for the contractor to carry out the remaining work. If the contractor refuses to rectify any remaining defaults, the engineer may advise the client to find someone else to finalise the works, using the remaining retention money.

Deductions are entered for any deficiencies the contractor has failed to correct after receiving reasonable notice. The deductions entered in this certificate are final and the contractor will have no further possibility to take any remedial action nor receive any later payments.

Once payment of the remaining retention money has been made, all obligations of the parties to the contract are regarded as fulfilled. This also constitutes the final completion of the contract. Only at this stage should the remaining retention money be recorded as expenditure.





Chapter 13

Settlement of Disputes

13.1 Finding Solutions

There will always be some differences of opinion between the client and the contractor regarding the interpretation of the contract documents and the way the works should be carried out. The interest of the contractor is on the one hand to satisfy the client, and on the other hand to make sure that a reasonable profit is achieved. In cases of dispute, it is necessary to work out a compromise.

Disputes should be resolved as soon as possible, to allow the works to continue without any delays. It is in the interest of both the contractor and the client to achieve this goal. When a dispute occurs, works may have to stop while sorting out the disagreement. This leads to loss of income to the contractor and delays in work progress.

Some general advice on how to handle disputes:

- The contractor should inform the client through the supervising engineer at an early stage of any problem or issue which may lead to a disagreement.
- Every effort should be made to resolve a dispute within the framework of the contract.
- Both parties should record all necessary data and decisions in relation to the development of a dispute or a potential one.
- Always make sure that instructions deviating from the contract are issued in writing and confirm in writing oral agreements reached during discussions or meetings. Prepare minutes of site meetings and make sure that all parties present sign these minutes.

Contract documents commonly prescribe that when a claim for variations occur the contractor is obliged to notify the client in writing within a specified number of days after the occurrence of a particular event or discovering any unforeseen works. Obviously, it is important that the contractor notifies the client or the supervising engineer within this period, thereby not forfeiting the right to submit a claim.

Most disputes can be settled through dialogue and through the established channels of communication such as regular site inspection and progress meetings. If the parties submit their claims and discuss their positions in a calm and civilised manner, there is normally a good chance of finding a solution acceptable to both parties.

It is important that both parties are willing to deal with the issues as soon as possible. Delaying the settlement of a dispute can easily be regarded as intentional to avoid the problem or attempting to postpone a decision until the issue is dropped by the claimant. This may lead to contention and make ensuing negotiations more difficult.

As the unresolved dispute becomes more advanced, each of the parties has a greater interest in trying to prevail. The position of each party then becomes more unyielding as each focuses on winning no matter what, rather than attempting to deal with the issues at hand.

In many cases, the settlement of a dispute is necessary in order to continue works. For example when a dispute is related to foundation works, the variation claim needs to be

settled in order to complete the ground works and allow the following building works to continue. Works stoppage leads to additional aggravation from the client since the dispute is then tied to the overall progress of works.

In such cases, it is important that the parties find intermediate solutions thereby avoiding that all works under a contract stop.



Holding a client at ransom by threatening to stop all works is a poor approach to negotiations. Equally, a claim related to one work activity gives no reason for halting other work activities that are not affected by the dispute.

If a dispute cannot be resolved through direct negotiation between the contractor and the client, the next step is for the two parties to commence a process of dispute settlement following pre-defined procedures. These procedures are often spelt out in

the national laws regulating civil works contracts. In other cases, the conditions of contract may specify a set of procedures which the parties are obliged to follow.

A basic principle with most of these systems is that the courts will not accept any civil suits before the established mechanism of direct negotiations between the parties have first been tried. In some countries, the contract law prescribes that such procedures are to be used instead of litigation.

13.2 Arbitration

Arbitration is a procedure for settling disputes without going to court. Resolving disputes in court is a time consuming and expensive way of settling a disagreement. Also, the courts involve non-technical personnel such as judges, laymen and lawyers to establish the correct portioning of blame and amounts of compensation. Instead, the construction industry has developed procedures which attempt to settle disputes in a less complicated manner with the assistance of professionals with extensive experience from this particular industry.

Arbitration is a process which is often defined by a professional organisation. Alternatively, the specific process to be applied can be agreed in the contract. The arbitration rules basically describe:

- ✓ how to initiate the proceedings,
- ✓ how the arbitrators are selected,
- ✓ how to conduct the proceedings, and
- ✓ the time allowed for making statements and award.

For large contracts, disputes may finally be taken to an international arbitration panel. However, for small contracts, the cost of international arbitration is prohibitive and local solutions need to be sought.

While a single arbitrator may be appointed for a small dispute, it is commonplace to use several arbitrators for larger disputes. In such cases, each of the disputing parties selects one individual and the appointed arbitration institution selects a third arbitrator. Alternatively, the agreed arbitration association may appoint all members of the panel.

The arbitration process should only start once the parties have exhausted all channels of informal negotiations. Some dispute procedures may also insist on a series of negotiations before going to arbitration. The appointment of arbitrators is normally swift, and the process can start when the nominated arbitrators are available. The process would normally include hearings where the parties are allowed to present their cases and evidence. As compared to litigation, arbitrators are not bound by rulings in previous cases, and the courts' strict rules of evidence are eased.

When an arbitration panel rules on a particular dispute, the decision is normally binding and final. In other words, this decision cannot be appealed to higher levels or other institutions.

Although arbitration is more efficient than litigation, it is still a costly and time-consuming process and therefore it is in the best interest of both the contractor and the client to solve disputes before they reach this stage. For this reason, most disputes are also solved immediately when they arise. By applying the good practices mentioned earlier, the occurrence of difficult disputes may be avoided.

13.3 Adjudication

The alternative to arbitration is the appointment of an adjudicator. An adjudicator is a single person, normally jointly appointed by the parties to a contract, preferably before a conflict arises.

When appointing an adjudicator, it is also normal procedure to agree on the rules for adjudication. The most common practice is to adopt rules already established by a professional institution.

An adjudicator acts as an independent third person who is only called upon when disputes arise. Normally, this would be a professional with expert knowledge and experience in the type of works covered by the contract. In addition, this person would possess extensive experience in the field of contracts management.

FIDIC

In the FIDIC Short Form of Contract, settlement of disputes is carried out by adjudication. Appropriate clauses refer to the role of the adjudicator in the general conditions of the contract. In addition, FIDIC has prepared a set of rules of adjudication for this specific contract, as well as a sample agreement for the engagement of the adjudicator.

In addition to a retainer for providing these services on a short notice, the adjudicator is remunerated for the specific work carried out in connection with a particular dispute. It is common practice that these costs are shared between the two disputing parties, thereby maintaining a balance between the contractor and the client.

When a dispute arises, the adjudicator has the authority to determine the necessary actions required in order to obtain sufficient information to make a decision. He/she may decide to visit the site, review any relevant documentation and conduct hearings. All information made available to the adjudicator is confidential and should not be disclosed without prior written consent of the parties.

The adjudicator is expected to provide a ruling within a certain number of days after a dispute has been referred to him/her by one of the parties. If any of the parties is dissatisfied with this decision, a written notice is required within a set number of days. If there are no notices of dissatisfaction within this period, this is regarded as an acceptance of the ruling.

Although a contract specifies the use of adjudication, the outcome of this process can be appealed if one of the parties remains dissatisfied. The normal procedure would then be to settle the dispute through arbitration.

However, even if one of the parties expresses their dissatisfaction with the decision of the adjudicator, both parties need to adhere to it until it is revised by an arbitrator.

The appointment of the adjudicator lasts until all the works under the contract have been completed and all disputes have been settled.

13.4 Disputes Review Board

Similar to adjudication, disputes can be resolved by appointing a Disputes Review Board. This board is also assembled shortly after a contract has been signed. There are various ways of establishing this board. One approach is that each party selects one nominee, and these two nominees then select the third member, normally the chair of the board. The remuneration of the board members is split between the client and the contractor.

Cases brought to the board should be those for which the client and the contractor have exhausted other means within their organisations to resolve. The board then provides specific recommendations on how to settle the dispute, which the parties then, within a given period of time, are entitled to accept or reject.

If the decision of the board is rejected, it can be brought back for reconsideration or other methods of dispute resolution may be applied. In other words, the decision of a dispute review board may not necessarily be final and binding.

Although the decisions of the board are not binding, the parties to the contract would still be motivated to accept its recommendations, since pursuing the case through other methods such as arbitration or litigation involves additional costs and further delays to the works. The board would normally consist of highly qualified professionals, so there is a good chance that using any other dispute settlement mechanism would result in similar recommendations.





Chapter 14

Contracts Register

14.1 General

The main purpose of a contracts register is to assist management in keeping track of progress and payments on all contracts awarded during a given period of time. The contract register is used to maintain data on all payments issued, the total commitments made through contract awards and the outstanding balance of payments and retention monies kept by the client.

All contracts should be recorded in this register at programme headquarters as well as with the project office. The contract register is a useful tool for expenditure forecasting. It also provides an excellent overview of all the contractors who have carried out works in the past, as well as providing a summary of all the construction firms currently engaged in a particular programme.

14.2 Budget Control

The Contract Register assists the project management in monitoring progress of contracts and keeping track of all financial commitments. This register is normally organised through two forms. One form is used to record payments carried out under a specific contract and another form is used to log all the contracts active under a specific project or programme.

The contract register is based on information obtained from the payment certificates. The register maintains information on:

- ✓ dates of commencement and completion of contracts,
- ✓ name of contractor,
- ✓ advance payments,
- ✓ invoices submitted by the contractor,
- ✓ date and amount of interim payments and
- ✓ retention monies.

With this information it is possible for the project management to obtain a clear overview of progress of payments and to forecast cash flow requirements.

The contracts register is kept in a designated file at the project management office. Records of ongoing contracts are normally submitted together with the monthly progress and expenditure reports.

CONTRACT REGISTER									
District:									
Name and Address of Contractor:									
Contract Date:					Contract Value:				
Contract Reference Number:					Date Started:				
General Ledger Account Code:					Date of Completion:				
Reference		Category of Works	Invoice Amount	Progress Payment			Deductions	Retention on Payment	Posted to G/L Y/N
Date	No.			Date	Amount	Contract Balance			

14.3 Performance History

The contracts register is also a useful reference source when carrying out a bid evaluation. Through the contracts register, it is possible to establish whether a particular company has carried out previous works for the organisation. If contractors have a prior track record, the contract register may provide some valuable information relating to past performance and the ability to conform to the planned time schedules agreed to in the contracts.

It is also possible to quickly establish whether a contractor is currently or in the process of being engaged by the organisation for other works. This information may affect the assessment of the contractor's current capacity to take on new work. If the contractor is already engaged on other works, this firm may have already committed all equipment and qualified staff to on-going works.

This type of information has a direct impact on the final selection of the best bid during a tender evaluation. As mentioned earlier, it is important that the evaluation committee selects a bid from a firm that can commence works with the required equipment and personnel according to the time schedule specified in the bidding documents.



Glossary

- Addenda:** Formal changes or clarifications issued by the client to all bidders during the tendering stage.
- Additional Work:** Works which were not recognised during bid preparation to be carried out in order to complete a project as planned.
- Adjudicator:** A person appointed to judge, arbitrate, decide and determine a matter in dispute between the parties to a contract.
- Advance Payment:** Payment provided to the contractor before commencing work. Advance payments are also referred to as a mobilisation advance, to cover expenses incurred before the first payment certificate is issued.
- Adverse Weather:** Unexpected weather conditions that may slow down work progress and cause additional costs to the project.
- Advertisement:** A public announcement inviting tenders for goods, works or other services.
- Alternative bid:** A second tender submitted by a bidder which does not conform to the drawings or specifications but still meet the performance requirements of the project. Alternative bids are only accepted if the client has specifically requested it.
- Appendix to Contract:** Document attached to the conditions of contract, containing key information pertaining to a specific contract such as names and addresses of the contractor and client, contract duration, payment schedule, bonds, insurance, etc.
- Arbitration:** Established mechanism used to resolve a dispute between the client and the contractor relying on an impartial third party or panel of experts with the objective of making a final decision.
- Authorised Representative:** Individual empowered to make binding decisions in relation to works or contractual (and financial) issues on behalf of the parties to a contract.
- Award of Contract:** Informing a bidder that his/her bid proposal has been accepted. Also see Notification of Award.
- Balanced Bid:** Prices quoted in BoQ items accurately reflect the actual anticipated price of each work activity.
- Bid:** Price offer in response to an invitation to bid for a specified amount of goods or services, also referred to as a tender or proposal.
- Bid Evaluation:** Process for reviewing bids for determining the best offer, often referred to as the lowest responsive bidder, carried out according to prescribed qualification and evaluation criteria.
- Bid Form:** A standard format for presenting a priced offer to carry out all the works as described in the bidding documents. A bidder who does not use this form may be disqualified.
- Bid Modification and Withdrawal:** The bidder may modify or withdraw a bid, provided that written notice of the modification or withdrawal is received by the client before the deadline for submission of bids. Modifications and withdrawals need to be submitted the same way as the original bid and should not be opened before the bid opening session.
- Bid Opening:** Formal and public meeting during which all the bids for a specific contract is opened, and during which prices offered are recorded.

- Bid Packaging:** Dividing planned works in a project into separate contracts on the basis of type and quantity of services, goods or works to be carried out.
- Bid Prices:** The total amount quoted by bidders for the services, goods or works to be procured.
- Bid Period:** The time allowed for the preparation of tenders. The Bid Period starts at the time of bid announcement and ends at a date and time shortly before the bid opening takes place. Procurement regulations often set a minimum period during which the contractors are allowed to prepare their bids. For local contracting, this period would normally be between 2 to 4 weeks.
- Bid Security:** Also known under the term "bid bond", it consists of a bank guarantee, certified cheque or cash designed to provide financial assurance that the bidder will honour the price offered for the entire duration of the bid validity period. Its purpose is to protect the client against loss or damage resulting from the premature withdrawals of bids, to avoid bidders refusing to sign the contract, or failing to provide a performance bond, when required.
- Bid Validity Period:** Duration expressed in days or weeks during which a bid remains valid. Bid securities are required to be valid for the same duration.
- Bidder:** A corporate body, agency or organisation submitting a bid proposal.
- Bid Documents:** A set of documents prepared by the client, containing essential information relating to bidding instructions, evaluation criteria, conditions of contract and a description of works, made available to any bidder interested in providing a price offer.
- Bidding Procedure:** A general reference to type of bid competition i.e. national competitive bidding, domestic canvassing, direct purchase, etc. Can also refer to how a specific bid competition is conducted and how bids are evaluated.
- Bidding Process:** The line of activities from the preparation of bidding documents, announcement of works, bid submission, opening and evaluation of bids to contract award.
- Bill of Quantities (BoQ):** An itemized list of work activities with estimated volumes of works to be performed. Contracting firms are invited to submit unit prices for each of these work items. The unit prices form the basis for the cost of each work activity as well as the total contract value. The BoQ also forms the basis for measurement and payment of completed works.
- Cash Flow:** The timely provision of funds making it possible to meet all cash payments on time during the course of a project.
- Certificate of Practical Completion:** A statement issued by the supervising engineer verifying that all works described in a contract have been completed to the prescribed quality. This certificate acts as an advice to the client to pay the contractor for the remaining works and part (usually half) of the retention money.
- Chainage:** The distance from a fixed reference point along a road or survey line, used for identifying a specific location along the road line.
- Change Orders:** Written instructions to the contractor to carry out works which deviate from the works specifications, drawings or bill of quantities.
- Clarification of Bids:** During tender evaluation, the client may seek additional information from a bidder. This is carried out without asking for any change in the price or substance of the bid.
- Client:** Equivalent to employer, principal and owner - the party requesting and paying for the goods and services described in a contract.

- Closed Specification:** A specification that is expressly restrictive prescribing that only specific products, identifying brand names, satisfy the quality requirements, or when performance is so narrowly prescribed that only one or two products satisfy the requirements.
- Commencement Date:** The day on which the contractor needs to start work according to the contract.
- Competitive Bidding:** Procedure allowing a select number or any qualified bidders to submit prices for a specific contract. See also Local and International Competitive Bidding.
- Completeness of Bid:** Compliance with requirements specified in the bidding instructions, normally in the sense that all items in the BoQ have been priced and the bidder has not expressed any reservations against carrying out any of the works.
- Completion Date:** A specified date when all works mentioned in a contract should be completed.
- Conditions of Contract:** Requirements included in a contract agreement, setting out general obligations, rights and liabilities of the parties to the contract.
- Consultant:** Individual, firm or organization engaged to provide professional or expert advice.
- Contingencies:** An amount (often 10-15 % of the total costs) allowing for additional work resulting from unforeseen circumstances.
- Contract:** A legally binding agreement signed by two parties, involving a client who agrees to pay a specified amount to a contractor for carrying out certain works or services within a certain period of time.
- Contract Amount:** The agreed total sum of money to be paid for the works, services and/or materials described in the contract.
- Contract Documents:** All documents forming part of the contract. In a civil works contract, these include general terms and conditions, specifications, drawings, volumes of work and agreed prices for the services rendered.
- Contract Duration:** The time specified in the contract for completing the work.
- Contractor:** Individual, association, corporation or other entity, engaged to carry out works or services for an agreed amount of money.
- Cost Estimates:** The expected cost of carrying out a stipulated amount of works, services or purchasing certain goods.
- Cost-Plus Fee Contract:** A contract under which the contractor is paid for incurred costs, plus an additional allowance to cover overheads such as supervision and profit.
- Delivery Schedule:** Expression normally used in supply contracts, referring to when goods and materials will be supplied to the premises of the client. When used in the context of works contracts, it is equivalent to the work plan, in other words at what date the various work activities start and finish.
- Defects Liability Period:** Also referred to as the Maintenance Period. Following the completion of all works in a contract, there may be a warranty period, during which the contractor is responsible for remedying any substandard work.
- Direct Costs:** Expenses related to specific work activities such as labour wages, operation of tools and equipment or purchase of materials. Indirect costs such as supervision, risks, profits and other overheads are often estimated as a percentage of the direct costs.
- Direct Purchase:** Procurement carried out based on one single tender/quote from a single supplier. Direct purchase normally includes some form of price negotiations between the client and the contractor.

- Dispute:** Disagreements between the contractor and the client relating to the scope of services with the framework of the contract which cannot be settled amicably. Disputes then need to be dealt with according to the appropriate clauses in the contract describing how the dispute should be resolved.
- Drawings:** Part of the contract, providing a graphical presentation of the works.
- Design-Construct Method:** Contract arrangement by which the client awards a single contract for both the design and the construction works - also referred to as a turnkey project.
- Designer:** Person responsible for developing the technical proposal for the works, based on user needs and other performance requirements. Preliminary designs are further developed into detailed designs and work drawings to be used for guiding the works.
- Design Specifications:** Instructions describing in detail the work methods, level of accuracy and quality of materials to be applied in order to reach defined quality requirements.
- Eligible Bidders:** Firms and organisations adhering to the prescribed minimum requirements to qualify as a bidder.
- Employer:** Term commonly used in contracts referring to the owner of the project (same as the Client).
- Engineer:** Person or party appointed by the client to act as its representative for the supervision of the contractor, as specified in the contract.
- Equipment and Plant:** Refers to tools, apparatus, vehicles, excavators, rollers and other machines mobilised by the contractor for carrying out the works.
- Equivalent Specifications:** Works specifications which refer to brand names or catalogue numbers as minimum requirements, however, also allowing for equipment or solutions of similar quality or performance. The supervising engineer would normally assess whether the alternative to the specified brand names qualifies to the term “equivalent”. By allowing equivalent alternatives to the prescribed brand names, the client maintains the principles of competitive bidding and allows the tenderers to choose their suppliers of equipment and material.
- Evaluation Criteria:** The qualities to which bids are assessed and ranked, taking into consideration financial and technical capacity, equipment availability and skills requirements.
- Evaluation Report:** Document stating the findings of the bid evaluation committee, detailing the ranking of the bidders, reasons for rejecting certain bids, participants to the evaluation meeting, any clarifications obtained, etc.
- Expressions of Interest:** A written notification to the client stating the interest of a company to bid for and carry out works on a certain project. Normally, the interested firm will include information proving their competence and experience relevant to the works. Submitting an expression of interest may be required in order to participate in the bid competition.
- Feasibility Study:** Preliminary engineering and architectural designs, cost estimates, economic and socio-economic and environmental assessments forming the basis for deciding whether and how to carry out a project.
- Final Payment Certificate:** Statement issued by the engineer instructing the client that (i) completed works are in a satisfactory condition and all defects have been rectified by the contractor and (ii) remaining payments and retention money can now be released.
- Final Completion:** All works have been completed to the satisfaction of the engineer and any defects appearing during the defects liability period have been repaired. At this stage, the client takes full possession of the site.

- Final Payment:** Payment due to the contractor according to the Final Certificate issued by the engineer.
- Fixed Price Contract:** A contract in which the total amount to be paid to the contractor is fixed and cannot be altered irrespective of any changes in conditions. Basically, the contractor is required to guarantee a total price for the entire works. Also referred to as a lump sum contract.
- Force Account:** Also referred to as works carried out by direct administration, meaning that instead of engaging a contractor, the client employs its own workforce and equipment to carry out a project. Although some of the works may be subcontracted to private firms, it is still regarded as a force account operation as long as the client agency is directly in charge of works execution and progress.
- Force Majeure:** An event which cannot be anticipated or controlled and which may seriously affect the works. Such events include outbreak of war, storms, floods, earthquakes, general strikes and civil unrest. In the context of a contract they are also referred to as Acts of God. Most contracts acknowledge that work delays caused by such events are beyond the control of the contractor.
- Front-loading:** A deliberate plan by a bidder to obtain a disproportionate share of the payments at an early stage of works implementation by overpricing the work activities or bill items scheduled during the initial period of the project.
- General Conditions of Contract:** Part of the contract documents, containing the general clauses related the overall obligations of the parties to a contract.
- General Contract Method:** Contract arrangement in which the client engages a single firm, often referred to as the main contractor, to take charge of delivering all the works. This firm may subcontract parts of the works to other companies however the client only enters into a contract agreement with the general contractor.
- Identification Stage:** The initial stage of a project dedicated to creating an overall outline of the project design based on user requirements and available financial resources. This stage also includes the decision whether to proceed with the project.
- Implementation Stage:** Period during which physical works are actually being carried out as intended in the project design.
- Incomplete Bids:** A bid lacking essential information, making it difficult to compare it with other offers. Also, if bids are submitted without the required securities, signatures or with prices only covering parts of the works, they are considered incomplete.
- Indemnification:** Holding the other party harmless or not responsible for certain actions or results thereof. Taking the responsibility for something which could be blamed on another party.
- Inspection:** Verifying through visits to the project site that works and materials conform to the agreed quantities and quality standards as prescribed in the contract.
- Instructions:** Orders given by the engineer to the contractor during the construction works in relation to works, interpretation of drawings and specifications or change orders.
- Instructions to Bidders:** Rules detailing the procedures to which the bidders *and* the client are obliged to adhere during a bid competition. These rules cover all stages of the bidding process, from announcement, how to submit a tender, bid opening and evaluation to final signing of a contract.
- Interim Payment Certificate:** A statement specifying the amount to be paid for approved work completed by a contractor. Interim certificates are issued by the engineer at agreed intervals during the course of a contract.

- Insurance:** A contract in which a company guarantees to cover any financial damages as a result of potential loss, damage or injury in return for paying a premium. Contractors are required to carry insurance for their workers, against damages to third parties and on goods and materials supplied under the contract.
- International Competitive Bidding (ICB):** Tender procedure in which bids are announced internationally and qualified firms from any country are invited to participate. Common procedure applied for large-scale projects.
- International Shopping:** Procedure for soliciting bids from a select number of overseas contractors or suppliers, based on invitations furnished directly to qualified firms. IS is used on projects where the size of the works is not large enough to justify the use of international competitive bidding.
- Invitation to Bid:** Announcement, requesting prospective bidders to submit prices for a specific project. The invitation includes a brief description of the works, the name and address of the client, bidding rules and deadline for submitting bids.
- Invoice:** A claim for payment issued by a contractor or supplier for goods or services provided.
- Joint Venture:** A registered partnership consisting of two or more persons, firms or organisations established for the purpose of carrying out a commercial undertaking. In bid competitions, contractors may decide to submit a joint bid, thereby improving their chances to win the tender. Normally, the client will not accept bids from joint ventures consisting of bidders already represented in other joint venture bids.
- Letter of Acceptance:** Also referred to as a Notification of Award. Written instructions to a bidder stating that his/her tender has been accepted as the best offer and that the client now wishes to sign a contract on the basis of the prices offered in the tender.
- Liquidated Damages:** Amount specified in the contract to be paid by the contractor to the client for each day that completion of work is delayed. This sum, also referred to as Penalties, is intended to compensate the client for losses incurred due to late completion of the works.
- Litigation:** Process of resolving a dispute in court and engaging the services of lawyers.
- Local Competitive Bidding (LCB):** Competitive bidding among domestic firms. LCB procedures normally allow foreign bidders to participate, however, the works are only advertised locally.
- Lowest Evaluated Responsive Bid:** A tender considered to be the lowest bid among the responsive bids reviewed by the bid evaluation committee. This includes other evaluation criteria than only the price level.
- Lowest Priced Bid:** The lowest bid is established during bid opening, however, this is merely a price comparison carried out before a detailed review of the bids. In other words, before an assessment of responsiveness has taken place.
- Lump Sum Contract:** See Fixed Price Contract.
- Lump Sum:** A fixed amount payment not based on a unit price and volumes of work.
- Major Change:** Orders which significantly change the original intentions of a project or which involve substantial changes in the volumes of work to the extent that it would be more appropriate to establish a new contract.
- Major Deviations:** Irregularities in a bid making it difficult to compare with other bids. A bid proposal may be considered as containing major deviations when the bidder has made reservations to the prescribed work methods, have not quoted prices on all work items, cannot adhere to the specified delivery schedule, do not agree to all the general conditions of contract, i.e. payment schedule, sureties, warranties, etc.

- Mediation:** Attempting to resolve a dispute through an informal process assisted by a neutral third party used to facilitate the negotiations.
- Methods of Procurement:** Refers to the bidding procedures applied, i.e. direct contracting, domestic canvassing, national or international competitive bidding.
- Minor Deviations:** Irregularities in a bid which are so small that there is no justification for disqualification. Through minor corrections the bid can still be evaluated and compared to other competing bids.
- Modification (or Withdrawal) of Bids:** See bid modification.
- Negotiated Contract:** Instead of arranging a bid competition, a contract is awarded on the basis of price negotiations with one single company. See Direct Purchase.
- Negotiation:** Price bargaining between two or more parties.
- Nominated Subcontractor:** Subcontractor selected by the client without the involvement of the main contractor. Nominated subcontractors are identified either before or after the award of the main contract. It is expected that the subcontractor enters into an agreement with and report to the main contractor who has the overall responsibility of coordination and progress of all parts of the works.
- Non Compliance:** Not adhering to certain requirements of the bidding documents or conditions of contract.
- Notification of Award of Contract:** See Letter of Acceptance.
- Obligations:** Duties of the parties to a contract.
- Offer:** A priced bid or quotation for a certain amount of goods or services.
- Operating Costs:** In the context of civil works, refers to expenses incurred when operating and maintaining vehicles and construction equipment. Operating costs can also be the costs related to maintaining a building (including costs of water, electricity, etc.).
- Open Specification:** Specifications that does not prescribe the use of any particular brand or product, but instead leaves this choice to the contractor as long as prescribed levels of performance and quality are met.
- Output:** Quantifiable assets created from the completion of work activities and supply of goods and materials.
- Overheads:** Indirect costs normally not itemised in a contract, linked to the direct costs, such as profits, supervision, risks and administrative costs.
- Owner:** Same as Client, Principal or Employer.
- Partial Completion:** The contractor hands over completed parts of the works to the client before the entire project has been completed (i.e. a section of a road). The defects liability period can then commence for this section and some of the retention money can be released. It also implies that the client takes early possession of some of the assets and is then responsible for the maintenance and operation of these parts.
- Payment Schedule:** A timetable included in the conditions of contract indicating when and at what intervals payments are due to the contractor.
- Performance Bond:** Also known as performance security, consisting of a bank guarantee providing the client with financial assurance that the contractor meets all obligations in terms of completing the works described in the contract. This security can also be accepted in the form of a cashier's check, certified check or cash provided by the contractor upon signing the agreement. Normally not applied to small contracts.
- Performance Specifications:** Work specifications emphasising the required performance or quality requirements instead of describing the materials or work methods to be applied.

- Postqualification:** Procedure in which the qualifications of the bidders are assessed after they have submitted their bids, rather than in a separate and distinct procedure before the bid competition takes place.
- Certificate of Practical Completion:** Statement issued by the engineer informing the client that all works as defined in the contract have been completed, and instructing the client to process the remaining payments and release parts of the retention money. The date of issuing this certificate constitutes the start of the defects liability period.
- Prequalification:** Procedure for screening bidders to avoid receiving tenders from un-qualified firms or firms who do not have the required capacity to undertake the works. Prequalification helps to reduce the time spent on evaluation and review of offers since bids are only accepted from a pre-selected number of firms meeting certain criteria.
- Price Adjustment:** Provisions in the contract allowing the contractor to increase prices due to increased costs of labour, equipment and materials. Appropriate clauses in the contract describe in detail how to calculate the increased price of the works, based on the higher cost of a particular input. Normally not applied in small contracts with short duration.
- Procurement:** Purchase of goods or services to create the desired outputs of a project. This includes the award of civil works contracts, consultancy services, supply of materials and hiring of personnel and equipment. When using public funds, this needs to be carried out according to government rules and regulations with the objective of achieving full transparency in all transactions and allowing fair competition to all qualified suppliers.
- Procurement Plan:** A plan detailing how the work is divided into separate contracts and subcontracts, the method of procurement, and when the goods and services are expected to be delivered. Detailed procurement plans also include key events such as dates for bid announcements, tender opening and evaluation, and contract awards.
- Project Manager:** Person engaged by the client to supervise all project activities. A project manager may be recruited already during the identification stage, taking the project from the initial design phase through to final completion of works. Some contract documents refer to the supervising engineer as the project manager. In public works projects, the client may recruit a project manager from a technical agency.
- Provisional Items:** Work, which is provided for in a contract, but cannot be determined with certainty before the work commences.
- Quantity Surveyor:** Person in charge of estimating volumes of work and quantities of materials on civil works projects.
- Ranking:** Order of merit of bids, based on the decisions of the bid evaluation committee.
- Reasonable Competition:** Applying the minimum degree of competition necessary for a certain method of procurement. For example, in the case of domestic canvassing, a minimum of three bids from separate bidders may be required.
- Rebidding:** When none of the bids are found responsive or financially attractive or the client has received too few bids, it may be decided to reject all the bids. The client can then repeat the bidding exercise and invite for new tenders. When rebidding, it is useful to take measures to ensure that additional bidders will participate during the second round.
- Rejection of Bids:** During the bid evaluation, some bids may be deemed not responsive or financially unattractive. These bids are discarded and are not given further consideration. If all bids are treated this way, the client needs to rebid.

- Resident Architect/Engineer:** A person employed as the representative of the client on site – also referred to as the supervising engineer.
- Resolution of Disputes:** The process of finding solutions to disagreements between the client and the contractor. In order to limit the time spent on disputes, contract documents prescribe specific procedures to follow if an agreement cannot be found through informal negotiations. Refer to Arbitration.
- Responsive Bid:** A bid abiding to all bidding instructions and which does not deviate from or contain any reservations to the terms and conditions of contract. Non-responsive bids are rejected during the bid evaluation.
- Retention:** Withholding a percentage of the payments due to the contractor as an incentive to ensure that the contractor rectifies any defects occurring during the course of the contract or during the defects liability period. It is common practice to release a portion of the retention when the Certificate of Practical Completion is issued, and the rest at the end of the defects liability period.
- Scope of Services:** A description of activities to be carried out under a contract, normally in consultancy contracts, also referred to as the Terms of Reference (ToR).
- Separate Contracts Method:** Instead of relying on the main contractor to engage subcontractors, the client engages all contractors directly on separate contracts for various portions of the work.
- Sketch Plans:** Preliminary drawings prepared during the identification stage describing the main features of the project.
- Statutory Obligations:** Laws and regulations that all parties to a contract must follow and which cannot be overruled by clauses in a contract.
- Short List:** Select list of qualified firms or individuals, derived from a long list, regarded as the most qualified and suitable to be invited to submit tenders for a particular project.
- Site:** Location where works are carried out.
- Site Conditions:** Physical environment and working conditions prevailing at the location where the works take place.
- Site Investigation:** Studies carried out at or in the vicinity of a work site to obtain information relevant to the execution of works, such as hydrology, soil conditions, suitable building materials, etc. The findings of these investigations may be included as part of the bidding documents. In addition, bidders are often expected to carry out a site inspection as part of the bidding process.
- Site Management:** Normally refers to the supervisory and administrative staff employed by the contractor and stationed at the work site. May also include the organisation and work methods applied by this staff in terms of dealing with management issues related to the works performed by the main contractor, suppliers and subcontractors.
- Special Conditions of Contract:** Additional clauses to a standardised General Conditions of Contract, relevant to a certain type of works or to a specific project.
- Specifications:** A comprehensive description of how the works should be carried out. In a wider sense, specifications refer to all the technical documents contained in a contract agreement, i.e. work specifications, drawings, maps, photographs, site investigations, etc.
- Standard Specifications:** A general document produced by a government agency or professional association to be applied to all projects containing certain types of works. For example, a public road works agency will have standard specifications for road construction works. This standard document is used in all road works contracts managed by this agency.

- Standard Designs:** Technical drawings and specifications describing a uniform practice of construction to be applied for all projects of a certain nature. I.e. the Ministry of Health may have standard drawings of rural health clinics. Local government units may apply a standard cross section design for rural roads.
- Subcontract:** A contract or purchase order, other than the main contract, required for the performance of certain works, material supply, consultancy services or equipment hire. This contract is not entered into with the client or owner of the project. Instead, the contract is awarded and supervised by the main or general contractor, who is held responsible for the quality, payments and timely provision of the subcontractors' services.
- Subcontractor:** Individual or firm entering into an agreement with the main contractor, usually to carry out parts of the works.
- Supplier:** Individual or company manufacturing, trading or shipping goods or materials required in a works project.
- Submission of Bid:** Providing a priced proposal for the goods or services described in the tender documents. The bid is submitted to the client according to the procedure prescribed in the Instructions to Bidders.
- Substantial Completion:** When progress of work has reached the stage when the client can start using the created assets, although some minor works have still not been completed.
- Supply Contract:** A contract for the purchase of equipment and materials, which may include activities such as manufacturing, transport, customs handling and temporary storage until final inspection and handing over to the buyer.
- Surety:** See Bid Security or Performance Bond.
- Suspension of Works:** Temporary halt in works caused by a variety of reasons such as lack of labour, materials or equipment, bad weather, the client failing to carry out certain obligations, force majeure or other reasons. Other common reasons are property disputes or the supervising engineer failing to inspect works on time before the next activity can proceed. Works are normally continued after the reasons for delay have been dealt with.
- Technical Specifications:** Part of the contract documents describing in detail the work methods and quality requirements for works and materials.
- Tender:** Same as bid and price offer.
- Tenderer:** Individual or firm submitting a bid.
- Tender Documents:** See Bid Documents.
- Termination of Contract:** Client or contractor discontinuing the obligations and commitments as agreed in a contract. The conditions of contract specify how and when a contract can be terminated. The most common reasons are default by the contractor to provide the services according to set schedules, contractor refuses to rectify defects, the client failing to pay the contractor or a contracting firm declared bankrupt. A contract may also include clauses regulating a termination for convenience, i.e. for no specific reason which can be blamed on the other party.
- Terms of Reference (TOR):** See Scope of Services.
- Time Extensions:** Changes to a contract in which the duration for completing the works is increased, normally granted when the reasons for delays are beyond the control of the contractor.
- Unbalanced Bids:** Pricing of the various items of work which does not reflect the actual costs but redistributes costs to serve specific intentions, such as receiving a disproportionate

amount of payments at an early stage of the contract (front-loading). It may also consist of increasing the cost of certain bill items under which the contractor expects that the quantities will be substantially increased during the course of the contract.

Unit Price: A price offered for a work activity based on a defined unit of measurement, i.e. per cubic metre, linear metre, etc. The total cost of the works is then calculated on the basis of completed quantities of work.

Unit Price Contract: Contract where the total price is based on quoted prices per unit of work or materials and estimated volumes of work and materials. The contract then includes a Bill of Quantities.

Variations: Changes (ordered by the engineer or client) to the agreed works during contract execution for which the contractor is normally entitled additional payment.

Warranty: A statement promising that the goods and services delivered are in conformity with the specifications of the contract, free of any defects and delivered within a specified period of time. If the contractor does not adhere to these assurances, the client may regard this as a breach of contract.

Work Plan: Schedule describing the sequence of work to be undertaken, by whom, and its appropriate timing.

Worker's Compensation: Insurance covering the safety of the employees during working hours. This type of insurance would normally not be subject to any portioning of blame in order to provide the compensation.

Works: Reference to the services defined in a contract to be provided by the contractor.

References

1. Labor-based Construction Programs: A Practical Guide for Planning and Management, *Coukis et al*, World Bank, 1983
2. Improving Site Productivity in the Construction Industry, *Heap*, ILO 1987
3. Guidelines for the Development of Small-scale Construction Enterprises, ILO, 1987
4. Summary of Training Survey and Proposal for the Training at Wiawso of Contractors' and DFR Staff, Ghana Feeder Roads Improvement and Maintenance by Contract, *Hernes*, ILO 1987
5. Improving Community-based Construction Skills - for Training local Community Works Organisers and Village-level Artisans, Nepal SPWP Manual No. 4, ILO
6. Managing Construction Projects, A Guide to Processes and Procedures, *Austen and Neale*, ILO, 1990
7. Developing Domestic Contractors in Road Maintenance in Africa - Contracting Out of Road Maintenance Activities, *Lantran*, The World Bank and the Economic Commission for Africa, Road Maintenance Initiative 1990
8. Contracts for Road Maintenance Works - Agreements for Works by Direct Labour, *Lantran*, The World Bank and the Economic Commission for Africa, Road Maintenance Initiative 1991
9. The Administration of Labour-intensive Works Done by Contract - Practical Guide, *Garnier and Van Imschoot*, ILO 1993
10. Managing Small Contracts - Contracting Out of Road Maintenance Activities, *Lantran*, The World Bank and the Economic Commission for Africa, Road Maintenance Initiative 1993
11. Development of Small-scale Labour-based Contractors for the Rehabilitation of Feeder Roads in Tonkolili, Port Loko, and Kambia Districts, Project Proposal, Sierra Leone, *Johannessen*, ILO 1993
12. Construction Contracts, *Hinze*, Irwin McGraw Hill, 1993
13. Improve Your Construction Business, Pricing and Bidding, Handbook, *Andersson, Miles, Neale and Ward*, ILO 1994
14. Procurement in World Bank Projects, International Training Centre, ILO Turin, 1994
15. Tendering Procedure, FIDIC, 1994
16. Procurement and Disbursement Manual for Projects with Community Participation, *Gopal*, World Bank 1995
17. Small-scale Contractor Training - Development of Contract Documents, Labour-based Infrastructure Rehabilitation Project, CMB/92/008, ILO Phnom Penh 1995
18. Improve Your Construction Business, Site Management, Handbook, *Andersson, Miles, Neale and Ward*, ILO 1996
19. Employment-intensive Infrastructure Programmes: Capacity Building for Contracting in the Construction Sector, *Bentall, Beusch and de Veen*, ILO 1999

20. Short Form of Contract, Agreement, General Condition, Rules for Adjudication, Notes for Guidance, FIDIC 1999
21. Contracts Management - Labour-based Road Construction, *Johannessen*, Ministry of Rural Development, Cambodia 1999
22. Rural Road Maintenance Management, *Johannessen*, Ministry of Rural Development, Cambodia 1999
23. Procurement in World Bank Financed Projects, International Training Centre, ILO Turin, 1999
24. Start and Improve Your Construction Business, Contracting Entrepreneurial Training Programme, South African Edition, ILO, 1999
25. Technical Specifications for Labour-based Construction Work of Agricultural and Rural Roads, ILO Nepal 2000
26. Sample Bidding Documents, Procurement of Simple Works (of Small Value, Short Duration and Low Risk), Trial Edition, World Bank, 2000
27. Developing Labour-based Small-scale Contracting, Central Region Infrastructure Maintenance Programme, Mission Report, *Johannessen*, CARE International, 2000
28. Contract Documents for Small Contracts in the Road Sector, *Stiedl*, ILO ASIST-Africa, 2001
29. Community Contracts in Urban Infrastructure Works, Practical Lessons from Experience, *Tournee and van Esch*, ILO ASIST-Africa, 2001
30. Sustainable Community-managed and labour-based Upgrading of Urban Low-income Settlements, Trainers Notes, Handbook and Workbook, *Goldie Scot, Franssen and van Esch*, International Training Course for Engineers and Town Planners, ILO ASIST-Africa, 2002
31. Site Supervisor Course for Labour-Based and Community-Managed Upgrading of Urban Low-Income Settlements – Skills Course Manual, *Beusch and Winsvold*, ILO ASIST-Africa, 2002
32. Communities Taking the Lead, A Handbook on Direct Financing of Community Sub-projects, *de Silva*, World Bank 2002
33. Guidelines: Procurement under IBRD Loans and IDA Credits, World Bank, May 2004, Revised October 2006
34. Procurement Guidelines, Asian Development Bank, 2007
35. Standard Bidding Documents, Procurement of Small Works, World Bank, Washington DC, 2008
36. Standard Bidding Documents, Procurement of Works, Small Contracts, User's Guide, Asian Development Bank
37. Building Rural Roads, *Johannessen*, ILO ASIST-AP, 2008
38. Community Infrastructure in Urban Areas, Creating Jobs while Improving Low-income Settlements, ILO ASIST-AP, 2008