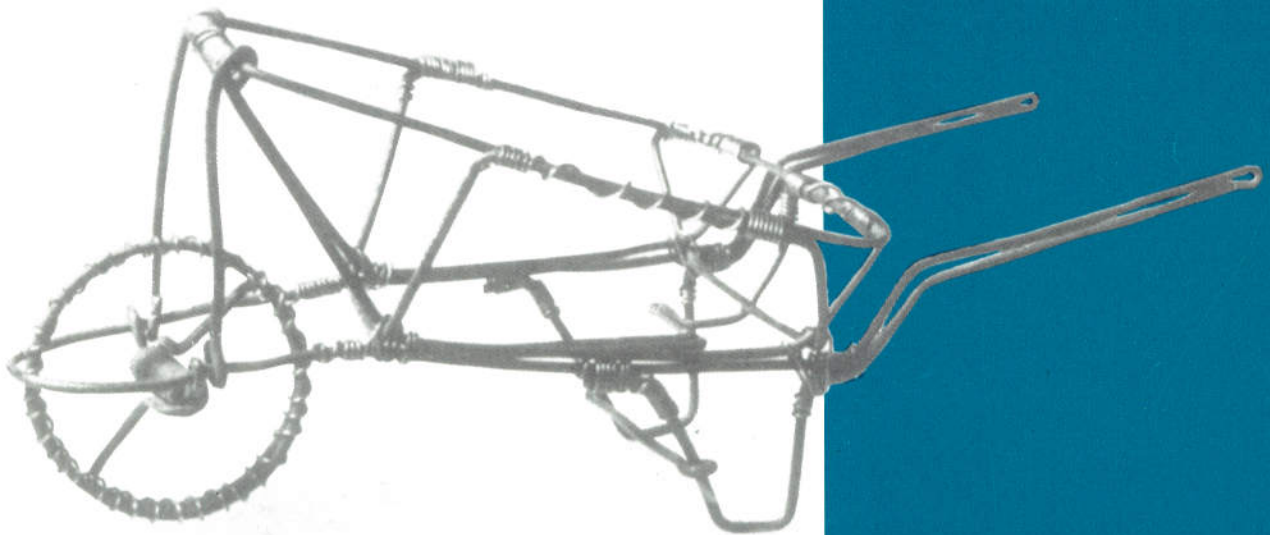




An estimating framework for projects using emerging contractors

Construction and
development

Andre Ten Krooden
Chris Milne
Herbert Atkins



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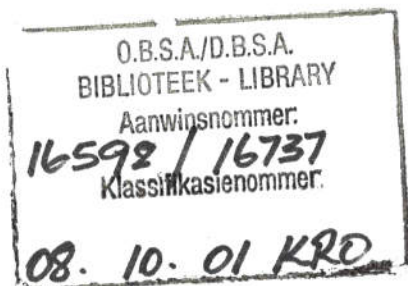
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Series preface

The formulation of policies and strategies to promote development in South Africa is arguably as important a product of the Development Bank of Southern Africa as its loan finance and technical assistance programmes.

This series of publications on 'Construction and development' illustrates this point.

Development projects in South Africa have traditionally been undertaken to meet only the physical needs of the recipient community. South Africa's changing social and economic environment demands that such projects be executed in a manner that ensures that the community's other needs are also addressed. To achieve this, projects should be structured so that opportunities for employment and the development of skills and entrepreneurial abilities are maximised.

Construction is an essential sector in any growing economy. In South Africa, it has historically been both an important employer and an industry which typified the over-capitalisation which has bedevilled the economy. These considerations, together with the fact that a large proportion of DBSA's lending goes to construction projects, suggested that it would be helpful to put forward practical proposals to assist the industry to adapt and contribute to development in the new circumstances.

GJ Richter
General Manager

The publications in this series present an approach to development that focuses on

- the identification of the broad economic and social needs of communities
- optimal use of available resources
- ways in which communities can exploit the opportunities of development projects
- approaches to making best use of labour, an abundant but underutilised resource
- appropriate design and methods of building and construction
- the use of, and misconceptions about, building regulations
- entrepreneurial development.

The publications are thus designed to help alleviate the constraints which have inhibited poorer communities from developing the skills at both individual and community level that can lead to the development of entrepreneurship and genuine empowerment.

This is perhaps the most important message of the series. It is above all through active participation in the process of development that individuals and communities can improve their quality of life. And it is to this end that the series is dedicated.

JH de V Botha
Programme Manager

Mission of the Development Bank of Southern Africa

The Development Bank of Southern Africa is a development finance institution whose primary aim is to facilitate development and empower people economically in the region.

Acknowledgements

This paper followed from the realisation that estimating costs for emerging contractors is distinct from estimating for established contractors. The 'framework' sets out a methodology to break down and categorise costs. The paper reflects DBSA's experience and that of an external consultant. The framework was devised by Chris Milne; Andre Ten Krooden provided technical input and with Herbert Atkins compiled the document. The initial draft was reviewed by Peter Copley, Helga Switala and Glenn Havemann. Typing and formatting were done by June Ntuli and Sandra Calitz.

The responsible General Manager is Deon Richter and the Policy Programme Manager is JH de V Botha.

Modifications and additions

The readership is requested to share their comments, recommendations and experiences. Those who wish to contribute to further editions should contact the compiler.

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Part One: Overview

1. Purpose

This paper highlights concerns estimators may have when budgeting for projects to be implemented by emerging contractors. Although focused on the building industry the principles also apply to civil works.¹

A framework has been devised to analyse project cost components and allocate responsibilities. It is not a comprehensive estimating guideline intended to replace current professional practice. The purpose is to draw attention to factors that have to be addressed when appointing contractors. Rates should be based on material and labour costs and be sensitive to productivity.

Other publications in this series on 'Construction and development' are referred to. They should be consulted for clarification and supplementary information on labour-based construction and contractor development, and for an understanding of the impact construction can have on poor communities when projects are identified, designed, implemented, operated and maintained with development in mind.

2. Background

The White Paper on Reconstruction and Development (RDP) is clear in that it must be a people-driven process focused on developing human resources through meeting basic needs and building infrastructure. Programmes and their constituent projects therefore have to satisfy developmental objectives over and above the creation of physical assets. These people-focused

objectives are the socio-economic benefits to the people resulting from the project: job creation, entrepreneurial development (small-scale contracting and related activities) and increased economic activity. The project must also be the vehicle for training and capacity building of the various sectors of the community. At project level, the RDP objectives – translated as mobilising local resources of manpower, materials, machinery and money to benefit local people – have led to identifying contractors as a sector in need of support.

Some institutions have small business support programmes for emerging entrepreneurs. Efforts have primarily been directed at contractors in the housing sector. In the past contractors have been supported with mixed success.

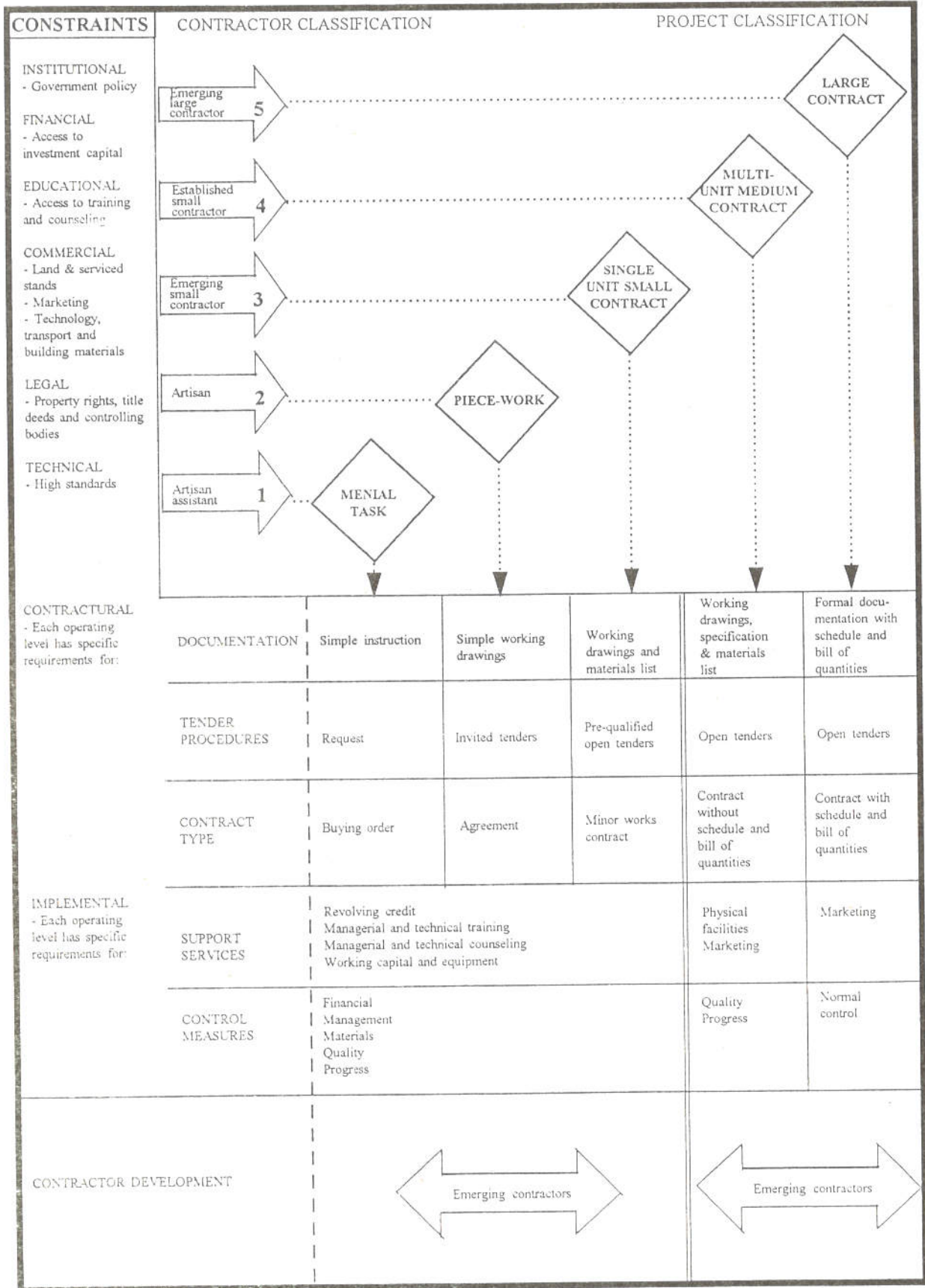
Shortcomings include

- pricing difficulties
- inability to meet deadlines
- incomplete work and abandonment of site
- deviation from plans and specifications
- poor workmanship
- budgetary overruns.

Some of the difficulties faced by contractors are estimating and pricing. Rates of established contractors normally include such cost items as managerial support, administration and training. Contractors (as previously defined) lack much of this capacity and consequently these services have to be provided separately. This paper advocates establishing contractor rates by analysing the specific cost components. An item such as support services should be carefully analysed and each component estimated separately in order to develop costs specific to contractors.

¹ Where possible in the text that follows, *emerging* or *small-scale* contractor is referred to as the contractor; other levels are referred to as the established contractor.

Figure 1: Contractor development framework



3. Contractor development framework

Contractor development can be viewed as occurring within a framework, as illustrated in Figure 1:

- *Contractor classification* defines operating levels according to managerial, technical and financial competencies. Levels 1 to 5 show a growth path from artisan assistant to an established large contractor.
- *Project or task classification* defines the complexity of work. This classification matches the contractor classification.
- *Procurement and contractual arrangements* define the documentation, tender procedures and contract types that match the capabilities of contractors. Each level of the project classification scale has its own implementation and contractual needs.
- *Support services* define areas of contractor support. If the procurement and contractual needs are not satisfied they become constraints. Constraints fall into two categories: *external*, when they reflect structural impediments which the contractor is unable to overcome; and *internal*, when the contractor or the community can overcome them (such as deficiencies in numeracy and literacy, if such courses exist and are attended).
- *Control measures* apportion risk among the parties involved and provide cover similar to conventional approaches. This includes financial, managerial, materials and quality control, and monitoring progress.

Contractor development has to consider

- *management options* that encourage contractor development
- *institutional roles* that ensure coordination and project success
- *project options* that match the project with developmental objectives.

Contractors operating beyond their capacity are a risk to themselves, a possible cost to the client and a liability to development projects intended to promote small-scale contracting.

Advancement will depend on a contractor acquiring technical, managerial and entrepreneurial skills while strengthening the financial resources and goodwill of the business. Project support will facilitate this process. A contractor's entrepreneurial development is not automatic. Ultimately, it depends on business acumen and a willingness to take risks. Success will follow from opportunities being regularly available.

Projects should not be one-off events providing temporary relief. To be effective they should be components of programmes having medium and longer term objectives. A single project can build up expectations which only a long-term programme of work can hope to satisfy.

If support and training are available the opportunities and incentives to grow will be greater. Growth can occur along the contractor classification scale from levels 1 to 5, and beyond or horizontally by specialisation in one particular area of contracting. The latter is the subcontracting route.

Contractors are better able to compete and perform when trained immediately before a project starts, but should not be trained if work is not to be made available to them. Training builds up expectations which, if not satisfied, will generate disenchantment and ultimately cynicism. However, once a development programme or project is in place, training and capacity building for the community at large and specifically for contractors should be regarded as necessary on-going activities. Lessons from one project will help resolve problems in others.

Part Two: Estimating framework

4. Guidelines

There are close links between contractors and the communities they serve as the community is both client and beneficiary of a project and a resource of labour and skills. Contractors and small-scale entrepreneurs are usually actively involved in community affairs. Their success can be taken as a measure of the success of their community.

In areas of high unemployment *who* will build and *how* are vital concerns. Contractor development is important to maximise the developmental impact of projects on poor communities. Estimating is a component of this process.

A framework has been devised to help identify, categorise and estimate costs and assign responsibilities for contractual obligations. Table 1 is a blank estimating framework for project and contract activities, depicting four categories along the vertical axis and the parties responsible for them along the horizontal axis.

In terms of the RDP the public sector has a general mandate to encourage local development and the upliftment of the poor. When involving contractors the design, procurement, support services and control mechanisms should be appropriate to them. The project process has to address impediments that hinder performance. If the design is too complicated, or if the specifications call for the use of materials not readily available, or of technologies that are too complex, the contractor is disadvantaged.

Paying debts on time may constrain contractors, therefore the client and the implementing agent must process and pay interim claims promptly to ease the

contractor's cash flow. Often payments must be weekly or fortnightly. It is important that contractors establish a good track record with suppliers and credibility in the community by paying on time. This is goodwill that will ensure first survival, and then growth and recognition.

The constraints on contractors will vary from place to place as will the support and resources available to overcome them. The estimating framework provides a mechanism for categorising and assigning costs to project components, keeping in mind that they differ from the project cost structure of an established contractor. As an entrepreneur, the contractor must fully understand pricing, if not he or she is forced to rely on others. Contractors who are unable to address these issues cannot improve their performance and better the price of their goods and services. Often contractors are not aware of the extent and consequences of these limitations.

When the engagement of contractors is not an established practice, there is a risk that the approach could be discredited and thus discouraged if not carefully planned and implemented. Demonstration and pilot schemes are recommended as ways of introducing the practice and coming to grips with practical problems.

5. Participants

A participatory delivery system requires that *conventional* project roles be reassessed and modified where necessary. If a project is identified without sufficient involvement of the community, then a divorce exists between the originators of the project and

the community. The community is relegated to a passive or at best to a reactive role. Such projects, which are conceived by others are external to the community. Speed of decision, certainty of purpose and the replication of habitual practices are the hallmarks of those who would presume to know what needs to be done and proceed without involving the beneficiaries. The community receives the project without having participated in it and is in effect marginalised. The responsibility for the success of the project in such cases rests with the local authority or the funder.

In the conventional *top-down* approach contracts are usually awarded on their financial merits with little or no regard to social and economic considerations. The benefit to the community is limited to the resultant product such as a school, road or water scheme. The disadvantage of this approach is that ownership is vested in outsiders; the project risks being rejected by the community because it was not consulted; and often optimal use is not made of local resources. Priorities identified by outsiders are not necessarily significant to the intended beneficiaries.

A local authority intent on implementing for instance a master plan of long standing, may budget funds for the purpose. Even if local people benefit from the jobs created, the project may not be relevant to the community if the master plan objectives are not at one with those of the RDP. These are issues which will have to be established for each local authority.

It is essential that the local authority and the community agree on objectives and on a participatory delivery system. The community will, in this way, be drawn into the development process, gradually assuming responsibility for decisions affecting it. These decisions may involve a commitment to pay for the services provided. In this way the traditional role of recipient becomes a

partnership with shared objectives. For implementation to be successful, issues such as local employment, entrepreneurial development, transfer of skills and income distribution need to be regarded as equal in importance to the *physical asset*.

5.1 Client(s)

In local public sector projects a distinction has to be drawn between the roles of the local authority as the *client* or *facilitator* of a project and the community as *client* or *recipient* of a product and other ensuing benefits.

A client or facilitator (local authority or others) should

- participate with the community in identifying a need
- prepare a brief for the project in collaboration with the community to satisfy the identified need(s)
- obtain resources to implement the project by including it in the annual budget
- appoint, as may be required, project consultants who understand development principles
- determine how the project is to be managed
- facilitate identification of the organisations that provide training and capacity building.

A client or recipient (community) should

- help identify and prioritise its needs in terms of affordability and acceptability of the facility or service to be provided
- participate as a resource to build, operate and maintain the physical asset
- avail itself of the training and capacity-building programmes to improve skills
- commit itself through a social compact to pay for the costs (capital and recurrent) previously agreed upon
- assume ownership and responsibility for the asset created

- agree to the taking of such actions as may be necessary in the event of default.

The clients as previously defined have shared responsibilities for preparing or approving a project brief for the design consultants to work from. The brief should describe in detail the needs to be satisfied and should be the outcome of interactions between the parties concerned. If there is no *in-house* capacity to prepare such a brief the process should be facilitated by the appointment of consultants who are conversant with developmental principles, sensitive to community issues and acceptable to the community.

When engaging contractors it is possible for the overall project management function to be provided by the client or facilitator with unused *in-house* capacity. The local authority as client or facilitator or other funder should assess whether it can effectively manage and assist contractors. If there is no spare capacity the local authority should consider whether it would be cost effective to build up such capacity and carry the cost of newly appointed staff as an overhead between contracts. This option is viable when a development programme provides a continuous flow of work. The benefit is that the training of technicians and facilitators adds to the pool of local resources. If the flow of work is intermittent a less costly option would be to appoint, for the duration of the project, a project manager (an established contractor or consultant).²

5.2 Contractor(s)

The size and complexity of a project will determine its managerial requirements. An established contractor can provide a managerial service either as part of a consortium of emerging contractors,

² See Construction and development series, No 5, 'Guidelines for emerging contractor development'.

therefore *with* a financial interest in the project; or as a professional *without* a financial interest in the project contract other than in the fee for services rendered.

The project management responsibilities are

- managing the project
- programming the project
- interpreting project documentation
- assisting emerging contractors with their tenders and contractual arrangements
- facilitating access to bridging finance, credit facilities and reasonably priced materials
- facilitating contractor training and counselling.

5.3 Consultants

Some consultants³ may have to reappraise their roles and skills during the project cycle when engaged with small-scale contractors.

There are several categories of consultants:

- management
- brief writing
- design and supervision
- community
- support
- control
- training
- capacity building.

Table 2 gives a comparative breakdown of the fee structures of a project undertaken by an established contractor and by an emerging one.

5.3.1 Management consultant

The project management functions can be done on behalf of the client by an established contractor, by a professional, or by a project manager when the ability of the contractors to manage themselves is in doubt. The

³ The role of consultants in development projects is the subject of publication No 11 of the Construction and development series.

Table 2: Professional managerial and support cost estimates

	Established contractor Total fee	% of fee per activity	Emerging contractor Total fee	Support costs	% of fee per activity
Architectural design		75,0%			46,0%
Supervision	6-8%	25,0%	6-8%		27,0%
Additional support Supervision				1,5%	27,0%
Quantity surveyor					
Documentation		50,0%			40,0%
On-site valuation	4%	25,0%	4%		20,0%
Additional valuation costs (support)				1%	20,0%
Final account		25,0%			20,0%
Engineer's design	1%	85,0%	1%		53,0%
Supervision		15,0%			13,0%
Additional support Supervision				0,5%	33,0%
Project manager (support) Daily, full-time presence			4-6%	4-6%	100,0%
Community consultant				1,5%	100,0%
Sundry fees: legal, land surveyor, etc	1%	100,0%	1%		100,0%
Disbursements Additional support	1%	100,0%	1%	0,5%	100,0%
Totals	12-15%		16-21%	9-11%	

The established contractor requires less professional input and supervision than the emerging contractor. The differences are as indicated above and would be for a typical R3 000 000,00 contract.

The above will also be dependent on the level of input required as well as the total value of the project. The greater the value of the project, the lower will be the overall percentage of fees.

project management functions are detailed in section 5.2.

5.3.2 Brief

Brief writing for developmental projects requires a clear understanding of the design principles to be applied to achieve the RDP objectives previously referred to in section 2. If in-house capacity should be lacking the brief will have to be compiled by others.

5.3.3 Design and supervision consultant

The physical design function is to interpret the brief. Physical design consultants are town planners, land surveyors, architects (landscape and building), engineers (civil, mechanical, electrical) and quantity surveyors. Project requirements will determine the precise composition of the core team, which will have to interpret the brief within the developmental parameters set for the project, with special emphasis on the use of local resources. The team will be responsible for design, contract documentation and supervision.

5.3.4 Community consultant

This consultant has the task of organising and briefing the community and articulating their input in the project brief. The latter can be done by the persons responsible for the brief or the design consultants if suitably qualified. Clarification of the brief and interaction with the community will require the services of a community consultant to ensure that the perceptions of the design consultants match those of the community.

The community liaison officer will have the task of keeping open the lines of communication and information flowing between parties. The expanded role of the community both as client and recipient of an asset and as a resource to build, operate and maintain the asset, highlights the role that the community consultant has in meeting project objectives.

5.3.5 Support consultant

Project support is required by small-scale contractors to improve their performance. The areas of support are finance, training, counselling and marketing, as discussed in section 6.2.2.

5.3.6 Control consultant

Control is designed to ensure the successful implementation of the project. Control must not be confused with normal supervision and the two functions should be kept separate. Areas requiring control are quality, progress, finance, materials, labour and management.

5.3.7 Training consultant

Training for development projects has to provide the project skills that may be lacking in the community.

5.3.8 Capacity-building consultant

This service attempts to meet more general community educational needs such as improving literacy and numeracy.

The manner in which these functions are performed will depend on the internal capacity of the client. Alternatively they should be assigned to the providers of the services.

Each project will have its own particular support needs. It should be appreciated that dedicated funds over and above the project funds will be required to finance the training and capacity-building programmes.

A client with the full complement of skills and spare capacity can undertake all five functions. A client with less capacity will have to rely on outside assistance, such as consultants or non-governmental organisations (NGO's).

The functions listed should not be taken to imply that each should be performed by a

separate consultant or service provider. As long as there is not a conflict of interests, the same consultant could carry out more than one function. Large projects are better placed to keep the functions separate.

6. Factors affecting estimating

The items for estimating are shown along the vertical axis of the framework in Table 1. The four headings are

- management
- support
- indirect cost
- direct cost.

6.1 Management

The project management objectives when engaging contractors are to ensure that

- the financial obligations resulting from the contract are understood
- the client is not placed at undue risk
- support is available as and when required.

These objectives can only be met if the manager – whatever the managerial option – is actively engaged in appraising the contractor's credibility to perform. This exposure will give the manager an understanding of individual strengths and weaknesses (financial, managerial and technical). The manager then will be able to focus attention where it is most needed and secure the necessary support services.

A contractor's ability to manage his or her affairs and those of the project will be an important consideration when identifying support requirements. The factors to be appraised are

- level of contractor development
- financial standing
- plant and labour available
- past record as a contractor
- size of project
- complexity of project.

The assessment of the contractors will

determine the responsibilities to be entrusted to each and the type of contract best suited to the project and the level of contracting.

The assessment can be done *in house* by the local authority or through the management system for the project, or by an outside consultant.

6.1.1 Access to land, services and building permits

The following requirements will have to be satisfied before work on site can proceed:

- access to land
- access to services
- building permits
- legal requirements.

The successful contractor – depending on the conditions of the contract – may be obliged to attend to one or more of the above listed requirements if not paid directly by the project manager. The payment of levies could have cash flow implications.

A contractor's scarce financial resources makes it imperative that reimbursements and payments be done without delay. This implies that consultants, the project manager and the client (local authority or funders) set up systems that circumvent normal bureaucratic delays. If a contractor cannot pay on time, whatever the reasons, his/her credibility is at once questioned. A similar situation might not obtain if an established contractor were to delay payment.

6.1.2 Financial management

This is crucial to a contractor's viability. A contractor may have the project rates and tasks documented and priced, but if the accounts are not in order the profitability of the business will not be known. Accurate financial management is crucial. Simple records of effected and received payments must be kept for the contractor to determine his or her financial status at any time during the project cycle.

If a contractor does not have sufficient capital his or her financial standing is determined by access to

- bridging finance
- credit from suppliers
- discounts on materials.

The contractor's credit rating with suppliers and financial institutions has to be known. Without credit the contractor will have to pay cash for labour and materials. If the credit rating is low support actions may be required and will have to be negotiated. The precise nature of the support is discussed later. The cost implications of these negotiations will be reflected in the management fee.

6.1.3 Programme management

The contractor should be able to programme the project work and accurately time the delivery of materials to the site.

Programming is a managerial skill essential for monitoring progress and managing the workforce. Falling behind schedule will increase project costs and reduce profit. Running ahead of schedule may increase profitability.

Programming has two complementary aspects: one dealing with the work to be done and the other with timing the delivery of materials to the site so as not to incur unprofitable standing-time. Early delivery of materials carries the risks of theft, damage and fire. Allowance for this must be made in the contract price, if unforeseen costs are to be avoided. Practical experience shows that active community participation resulting in empowerment and ownership limits theft, since the community perceives itself as the owner of the project.

A short completion time is likely to favour established contractors with financial resources and equipment. A contractor who relies on a less skilled workforce and has less equipment is likely to need a longer

completion time. The contractor's ability to meet deadlines will have to be ascertained. The project completion time should be set with this in mind as the contractor is not likely to be concerned with having to pay for plant standing-time.

In areas where employment is cyclical, development projects should be planned to take up the slack between periods of work. This is a common situation in rural areas where the seasons dictate the agricultural activities.

6.2 Support

Contractor support has to be assessed and estimated separately from other project components. As a contractor develops and can operate in the formal sector, he or she will have the skills to perform more project functions without support. These functions would be estimated in the conventional way under direct or indirect project costs. Support at the higher levels of contractor development is likely to be for financial and credit facilities and the marketing of services. Other needs, as discussed below, apply only to the less developed contractors.

6.2.1 Financial management

A contractor's credit rating with financial institutions and suppliers will determine the support that may be required. Typical arrangements are the following.

- *Cession of payment.* When weekly or fortnightly payments are to be made to the contractor, the implementing agency may pay suppliers directly subject to agreements having been reached.
- *Guarantees.* The implementing agency may guarantee payment of materials supplied to the contractor.
- *Bridging finance.* Some banks have special loan facilities, but they usually carry high interest charges. More favourable

terms may be secured if the implementing agency guarantees the loan. Conditions should be attached to the drawing of cheques to ensure that the loan is only used for the purpose intended.

- *Forward funding.* The client or implementing agency may choose to advance a sum of money at the start of the contract. Conditions should determine the way funds may be spent.
- *Insurance and performance bonds.* The client or implementing agency eventually will have to pay for these items, which are upfront costs that may strain a contractor's resources. Direct payment by the client is preferable and likely to be less expensive. Care should be taken to ensure that all insurances and performance bonds are clearly understood and in place at the start of the contract.
- *Credit and other loan requirements.* A contractor needs different types of credit facilities and loan arrangements. Revolving credit for running costs is normally project linked. Working capital is required for equipment vehicles and is for a longer period of about five years. Long-term finance is for permanent facilities such as office and storage space.

Credit and financial arrangements involve an element of risk. A series of small loans, therefore, is preferable to a single large loan. Regular weekly or fortnightly payments to the contractor is good practice which limits loan amounts, consequent risk and establishes a method of operating that helps a contractor to keep better track of his payments.

A large payment for work done over a long period (eg, one month) as is customary when engaging an established contractor, requires careful management and may convey an image of profitability not in keeping with the work on site. In these

circumstances the contractor must not be tempted to divert funds to non-project uses without first giving the matter careful thought. A contractor working for a private client would be better served by submitting a series of small claims rather than one large claim, which the client might not be able to meet if the cost of the project were more than had been anticipated. Weekly payments would limit the risk for both parties.

6.2.2 Training

Training is intended to improve a contractor's performance and is a vital part of any development programme.

Some training is free and is provided by manpower upgrading programmes or NGO's. Other training has to be paid for. Costs vary significantly with the duration and intensity of the programmes and currently range between R1 800 and R3 000 per person a month for technical training.

Training in managerial skills can be more expensive. Development corporations often have loan schemes to assist with fees as part of their manpower training support programmes.

A contractor's training support should be focused on developing

- technical competence
- business and managerial skills
- programme management.

6.2.3 Counselling

Counselling monitors the impact training has on a contractor's performance and identifies needs for development. Each contractor has specific handicaps which should be addressed individually. The project manager will have to identify the need for counselling and the appropriate sources of support. Training and counselling costs should be paid directly to the person or institution providing the service.

6.2.4 Marketing

A local authority programme to employ contractors should ensure that work opportunities are available. This will prevent investment in the contractor, by way of the support previously referred to, from dissipating once the initial project is completed. In order for contractors to consolidate their position and grow they must be able to keep their core team employed.

The standard of workmanship must be acceptable regardless of the level of the contractor. The view that a contractor's work is inferior should be dispelled by proper accreditation and marketing. The marketing function is facilitated when contractors in an area form an accreditation body that sets standards of workmanship for its members. Membership depends on a contractor meeting and maintaining set standards. Marketing affects a contractor's credibility; without it a small-scale contractor will not be able to develop.

6.2.5 Consultants

The cost of the consultancy services should be determined by agreements between the parties. Table 2 provides an indication of professional, managerial and support costs. Care should be taken to ensure that when several professionals are involved in project work, the duties of each are clearly demarcated to avoid overlap with the consequent risk of duplicating functions or fees.

Agreements between the parties should regulate duties and the remuneration due to the contracting parties. Agreements apply to management and the community support and control functions. A consultant might bid for one or more of the project functions but each should be kept separate for accounting purposes. Savings could result from a consultant carrying out two or more functions. Care should be taken to ensure

that payments are not duplicated as a result of ambiguity in the wording of agreements.

6.3 Indirect cost

Indirect costs are commonly referred to as overheads. They are a contractor's establishment cost and include office costs, office staff, vehicles, telephones, telefaxes, printing, stationery, rental and lease of equipment.

These costs vary with a contractor's size and turnover. A small-scale contractor may only have a bakkie or pick-up truck and is likely to do all the administration on site or at home. An overhead may not be entirely attributable to a project if the contractor has many contracts. In such a case the overheads will normally be included in the tender as a percentage of the project cost.

The contractor has the advantage of having relatively few overheads but these have to be carried by a correspondingly small workload, which may oblige him or her to increase the percentage allowed for overheads. The large established contractor with considerable overheads can spread them over several projects. Large contractors have overheads between 3 and 5 per cent of project cost. Increased managerial efficiency lowers the *add-on* percentage for overheads.

As a contractor consolidates his or her business there will be a shift in the support requirements. At the lower levels the need will be for credit, training and working capital. At the higher levels the need will be for networking and marketing. The shift demonstrates greater capacity and will be reflected in the estimating framework by a corresponding cost shift from indirect to direct support.

6.4 Direct cost

These costs are project specific.

6.4.1 Materials

In traditional contracting, materials constitute 60 to 70 per cent of the total direct cost of a contract. The exact percentage depends on the project's design, specification and whether some materials can be manufactured on site.

The quantity of material has to be calculated to obtain prices from suppliers. The individual contractor is disadvantaged when negotiating prices; the established contractor is better able to negotiate a discount, particularly if he or she is a regular customer. The conditions of payment are also likely to be less onerous for the established contractor. Contractors may be required to pay cash on delivery or order.

The implementing agency or project manager has a facilitative role improving suppliers' terms and conditions. If the project is one of many being undertaken by the implementing agency, or if the contractor is one of several on the project, the list of materials can be that more attractive. Consequently, suppliers are likely to improve their prices and incentives. If the implementing agency agrees to guarantee payment, prices and credit conditions are likely to be further improved. This is a departure from the conventional client/contractor relationship and has consequences that need to be investigated for contractors to reap the full benefit of bulk purchasing.

These arrangements are likely to benefit all parties. The client can receive a cheaper bid, the supplier of materials has his or her risk substantially reduced, and the contractor benefits from having a regular and reliable supply of materials. Legal aspects that have to be resolved before materials are procured or paid for by others are

- ownership
- stock control

- spoilage and loss
- security
- insurance.

Materials have to be on site when needed. Standing-time, that is when labour is idle because materials are not at hand, escalates costs, disrupts the programme of work, may delay other work on the project's critical path and can result in the contractor foregoing profit. These events may be difficult to estimate beforehand but should they arise, they will be reflected in the contractor's final project cost and in the profit.

6.4.2 Transportation of labour and materials

Some contractors own a vehicle for the collection of labour and small materials, relying on the supplier for the delivery of other materials. Other contractors have to make use of taxis or similar forms of transport. This must be taken into account when preparing bids. Transport constitutes a percentage of the cost of material on site. The use of locally available materials is an obvious way of reducing this cost. For this to happen the design consultant has to be sensitive to the availability of local materials and skills, and design and specify accordingly.

The use of local materials helps to improve the contractor's expertise in a technology that will be in constant use. A technology not commonly used in the area may require considerable effort to learn and may not be as rewarding as the use of materials and a technology with which the contractor is familiar. As a general rule, the less common the technology and materials specified for the project, the higher should be the level of the contractor.

6.4.3 Labour availability

The quantity and the quality of the local labour force have to be assessed beforehand when designing projects suitable for local

contractors. This information is provided by a local resource (supply) analysis. The inventory of local and regional resources is important for project planning as it helps to identify shortfalls and those materials and components that will have to be imported from other areas, thus adding to the cost of the project. When skills are lacking they may have to be imported. Bringing in people is always a sensitive issue and one to be handled with care if the local community is not to be antagonised, especially in areas of high unemployment.

The work programme may justify expenditure on training for the local workforce. The decision is likely to depend on whether the skills can be used in the medium and longer terms. It is important for a community to be aware of its strengths and weaknesses in the skills it can market. Managerial and entrepreneurial skills are an asset regardless of the nature of the project; technical skills are job or industry specific.

RDP-sponsored projects have capacity building and training as developmental objectives, the project being the vehicle for the delivery of these services to disadvantaged communities. Skills training is intended to improve the performance of local human resources and will benefit the labour force and contractors alike. The cost of training and capacity building should be budgeted separately.

6.4.4 Wages

Determining the right pay for the job is complicated particularly when the free play of market forces is distorted. Although the industrial councils establish wage structures for their jurisdictions, these wages are often disregarded in high unemployment areas.

The relationships between labour supply and demand are shown in Figure 2. At point A

(industrial council rates) there is a high demand for work paying above market rates. The employer can then be selective. There is a low turnover of labour and productivity is high.

At point B (market rates) there is an equilibrium between the demand and supply. The better qualified and probably the more productive members of the workforce are likely to move to better jobs if higher wages should be offered.

At point C (below market rates) the following conditions are likely to outweigh the benefit to the contractor of paying a low wage:

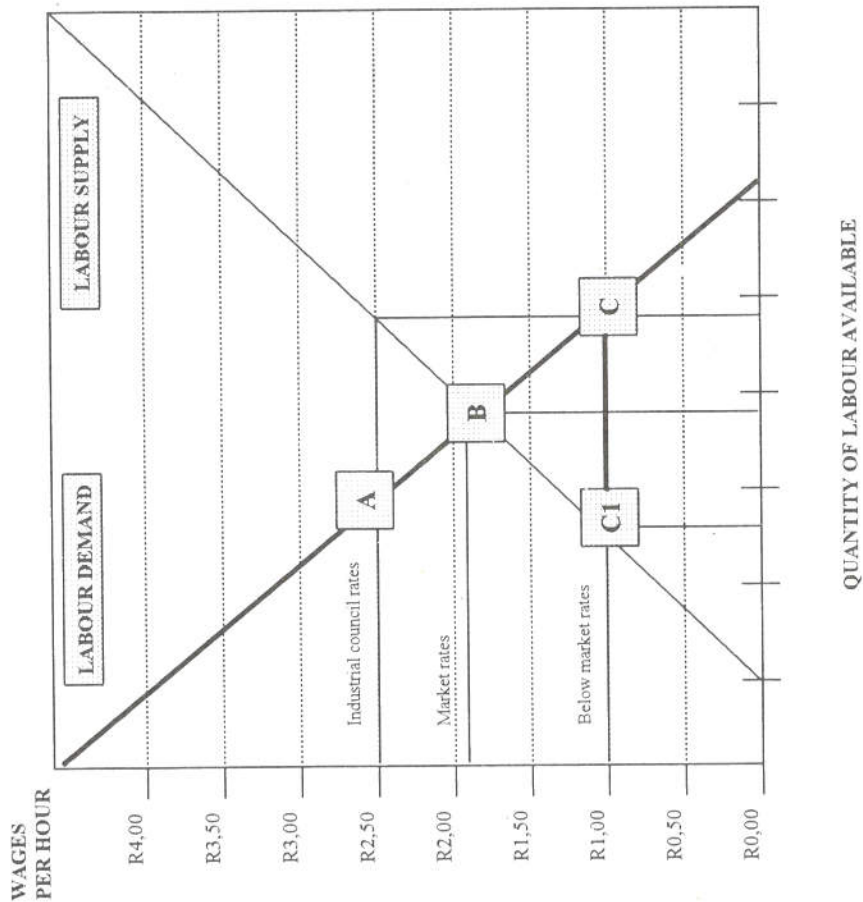
- the demand depends on the jobs available in the area
- the turnover of the workforce is high, if better opportunities exist elsewhere
- absenteeism is high
- training costs have to be repeatedly incurred due to labour turnover
- there is no incentive to produce
- morale is low.

A disadvantaged community may willingly accept a lower rate of pay on condition that the 'saving' is used in a way that it perceives as a benefit to itself, such as greater job creation or a larger physical asset. This situation could arise in a development project.

6.4.5 Tasks

A task such as building a wall involves both materials and labour. A daily wage regardless of the amount of the work done in the day is feasible when the workforce is self-motivated or enjoys such benefits as job security by being on the permanent staff of an established contractor. Otherwise wages will have to be task related to ensure that the budget is not exceeded. Time

Figure 2: Relationships between labour supply and demand



**INDUSTRIAL COUNCIL LABOUR RATES – 19 NOVEMBER 1994
(FORMER PWV AREA)**

Basic wage per day (40-hour week)	AREA A	AREA B	AREA C
Craftsman	R141,60	R106,24	R77,92
Artisan	R106,40	R79,84	R58,56
Specified skills employee	R59,60	R44,72	R32,80
General worker – construction	R37,60	R26,32	R20,72
Add contributions by employer	AREA A	AREA B	AREA C
Craftsman	R35,52	R29,28	R20,56
Artisan	R29,28	R20,56	R14,80
Specified skills employee	R15,12	R10,48	R8,56
General worker – construction	R6,24	R4,32	R3,12
Total daily rate per 8-hour day (cost to employer)	AREA A	AREA B	AREA C
Craftsman	R177,12	R135,52	R98,48
Artisan	R135,68	R100,40	R73,36
Specified skills employee	R74,72	R55,20	R41,36
General worker – construction	R43,84	R30,64	R23,84
Less daily contribution by employee	AREA A	AREA B	AREA C
Craftsman	R19,44	R17,04	R11,68
Artisan	R17,04	R11,68	R7,76
Specified skills employee	R10,40	R6,72	R5,84
General worker – construction	R2,56	R2,00	R1,44
Total daily rate per 8-hour day (receipt by employee)			

management is also crucial if the contractor's profitability is not to be at risk because of late completion.

6.4.6 Productivity

Before a rate can be set for a task the productivity of the workforce has to be measured. Table 3 gives the labour cost analysis of brickwork by measuring the output of an artisan and two assistants in a nine-hour day. It should be noted that the pay due is the same whether the area of bricks laid is 3,5m² or 12,0m².

These are the lowest and the highest output analysed. The productivity of the bricklayers varies from R85,28/m² to R53,41/m². The team with the low productivity takes 3,4 times longer to complete the job than the one with high productivity. The longer completion time signifies that the contractor's overhead costs with low productivity will be greater than with high productivity. In these circumstances the contractor with low productivity might be impeded from taking advantage of new employment opportunities as he or she would continue to be engaged on the existing project. Productivity highlights the cost of unproductive and underproductive time.

On average, a small-scale contractor is likely to be laying about 400 to 600 bricks per working day with productivity rates of between R79,66/m² and R66,53/m². The example shows that there is considerable scope for the contractor to improve the productivity of the labour force and avoid incurring time-related costs.

For small-scale contractors to have a clear understanding of the productivity levels of their business, a similar exercise to that for the brickwork will have to be done for each of the activities in the programme of works. This will allow contractors to know what they can reasonably expect to build in a

given time and with a given labour productivity.

Once an equitable measure is agreed upon with the workforce, such as the number of bricks to be laid per day or the cubic metres of trenching to be dug per day, the payment due for each task can be calculated. The reward for the task is known and targets can be set. The contractor is then in a position to hand-pick a core team. He or she will select persons who work efficiently, are punctual and who come to rely on their employer for work.

The contractor has to know the level of productivity of the workforce before he or she can establish a price for a project. Often a contractor does not know how to calculate productivity and will need assistance in the form of labour schedules to measure and record it. The productivity analysis can simplify a contractor's pricing exercise as each project activity can be broken down into tasks, materials and skills.

Table 4 shows the build-up of a contractor's price estimate starting from the productivity of the labour force.

6.4.7 Preliminary and general (P+G's)

These costs are difficult to apportion among the task rates. They cover such diverse items as insurances, plant, and foremen. Depending on the type, size and duration of the contract the preliminary and general component can vary between 6 and 15 per cent of the cost. The smaller the contract, the higher will be the cost relative to the total.

Table 5 provides a typical list of preliminaries with a cost estimate.

Table 6 relates the P+G components of projects to contract values. The incidence at the lower contract values is significantly higher than at the higher values.

Table 3: Labour cost analysis of brickwork

230 mm stock brick wall	Area of laid bricks in m ²	R/m ² labour	R/m ² materials	R/m ² total
Output/9 hr day	385 bricks	R 49,26	R 45,78	R 95,04 cost/m ²
Output/9 hr day	440 bricks	R 43,10	R 45,78	R 88,88 cost/m ²
Output/9 hr day	495 bricks	R 38,31	R 45,78	R 84,09 cost/m ²
Output/9 hr day	550 bricks	R 34,48	R 45,78	R 80,26 cost/m ²
Output/9 hr day	605 bricks	R 31,35	R 45,78	R 77,13 cost/m ²
Output/9 hr day	660 bricks	R 28,73	R 45,78	R 74,51 cost/m ²
Output/9 hr day	715 bricks	R 26,52	R 45,78	R 72,30 cost/m ²
Output/9 hr day	770 bricks	R 24,63	R 45,78	R 70,41 cost/m ²
Output/9 hr day	825 bricks	R 22,99	R 45,78	R 68,77 cost/m ²
Output/9 hr day	880 bricks	R 21,55	R 45,78	R 67,33 cost/m ²
Output/9 hr day	935 bricks	R 20,28	R 45,78	R 66,06 cost/m ²
Output/9 hr day	990 bricks	R 19,16	R 45,78	R 64,94 cost/m ²
Output/9 hr day	1 045 bricks	R 18,15	R 45,78	R 63,93 cost/m ²
Output/9 hr day	1 100 bricks	R 17,24	R 45,78	R 63,02 cost/m ²
Output/9 hr day	1 155 bricks	R 16,42	R 45,78	R 62,20 cost/m ²
Output/9 hr day	1 210 bricks	R 15,67	R 45,78	R 61,45 cost/m ²
Output/9 hr day	1 265 bricks	R 14,99	R 45,78	R 60,77 cost/m ²
Output/9 hr day	1 320 bricks	R 14,37	R 45,78	R 60,15 cost/m ²

The labour component in this example is one artisan and two labourers:

One specified skills employee (R74,72 per day) and two labourers (R97,68 per day total) = R172,40 per day

The table is indicative of the cost per m² of brickwork should the productivity increase while still using the same daily total wage rate of R172,40 per day.

Table 4: Example of a labour estimating table

Item	Brief description	Productivity rates			Labourer rate per day	Productivity rates		Labour productivity	Units	Amount payable to subcontractor unit	Unit	Mark-up	Total labour cost per unit	Amount allowed for main contractor's responsibility	Total estimated rate
		Artisan rate per day	Labourer rate per day	Artisan's number		Labourer's number	Artisan's number								
1.	Foundations etc														
1.1	Clear site	R0,00	R43,84	0,00	1,00	1,00	18,00	m ² per day	R2,44	m ²	15,00%	R2,80	10,00%	R3,08 per m ²	
1.2	Excavations	R0,00	R43,84	0,00	1,00	1,00	2,00	m ³ per day	R21,92	m ³	15,00%	R25,21	10,00%	R27,73 per m ³	
1.3	Concrete	R74,72	R43,84	1,00	11,00	11,00	27,00	m ³ per day	R20,63	m ³	15,00%	R23,72	10,00%	R26,09 per m ³	
1.4*	One brick wall	R74,72	R43,84	1,00	2,00	2,00	7,00	m ² per day	R23,20	m ²	15,00%	R26,68	10,00%	R29,35 per m ²	
2.	Superstructure														
2.1*	One brick wall	R74,72	R43,84	1,00	2,00	2,00	7,00	m ² per day	R23,20	m ²	15,00%	R26,68	10,00%	R29,35 per m ²	
2.2	Facings	R74,72	R43,84	1,00	2,00	2,00	15,00	m ² per day	R10,83	m ²	15,00%	R12,45	10,00%	R13,70 per m ²	
3.	Internal finishes														
3.1	Plaster	R74,72	R43,84	1,00	2,00	2,00	25,00	m ² per day	R6,50	m ²	15,00%	R7,47	10,00%	R8,22 per m ²	
3.2	Paint	R74,72	R43,84	1,00	1,00	1,00	38,00	m ² per day	R3,12	m ²	15,00%	R3,59	10,00%	R3,95 per m ²	

Labour rates are indicative only and will need to be established for each task or activity.

* One specified skills employee (R74,72 per day) and two labourers (R97,68 per day total) = R172,40 per day

6.4.8 Profit

Profit motivates a contractor and a fair percentage of the overall project cost has to be allowed. Percentages vary from 2,5 to 5 per cent on large projects, to 10 to 15 per cent on small ones. Anticipated profit depends on volume of work and the economic circumstances at the time of tendering. The contractor is particularly vulnerable when productivity falls or in the event of an accident, theft or illness. Profit is then the only buffer should the contractor meet with an unexpected event resulting in an extra cost.

Initially, the small-scale contractor's expectations may be a wage which he or she may have had difficulty in securing in the past. It is only when the contractor grows that other needs have to be met from profits. Without capital accumulation the contractor cannot develop. A fair return allows this to happen.

6.4.9 Cost escalation

Most contracts are likely to be for a lump sum and of a relatively short duration. Where the possibility exists that costs will escalate, the project management should alert the contractor of the implication of this

during the project period. If necessary an allowance for the escalation of costs should be made in the submissions.

Anticipating the eventuality by setting up a mechanism to deal with it in the contract is good practice as it obviates the need for future negotiations between the contracting parties at a time when project funds may have been fully committed. Furthermore, the existence of such a mechanism in the contract clarifies any lingering doubt the contractor might have about how to deal with escalation as it becomes an issue during the contract period.

6.5 Conclusions

The level of the contractor will determine the level of support needed. Contractors at less developed levels will have broad needs which will include a variety of technical and managerial aspects. At higher levels, when contractors have mastered the technical and managerial problems of the business, the support needed will be for finance and marketing. Networking, trade information and work opportunities become critical for survival and growth in a highly competitive environment.

Table 5: Typical cost allocation for preliminaries

As most preliminary items are time related it is necessary to calculate or assess the time needed to complete the project. Once that has been done, then the assessment of costs is relatively simple. Note costs are May 1995 based. Preliminaries would apply to contracts from small emerging upwards and would be typically based on contracts upwards of R100 000,00.

Preliminary and general items

(a)	Foreman	Cost per month. Costs include salaries, vehicles, bonuses, leave pay, medical aid, stationery and petty. In some emerging contractor cases the entrepreneur fulfils this role.
(b)	Setting out of the works – land surveyor's fee	Usually ± 1% for small contracts and 0,3% for larger contracts
(c)	Defects after completion	Usually 0,05% of contract value
(d)	Provision of plant and fuel	± 3% of contract value and 1-2% for large contracts
(e)	Provision of small tools	± 0,3% of contract value
(f)	Notice boards	If required R1 000-R1 200
(g)	Liaison with the public authorities	Not usually priced; part of foreman's responsibilities
(h)	Provision and use of water Temporary plumbing Use	Approximately R500
(i)	Provision and use of electricity Temporary connections Use	Roughly R13,50 per R10 000 of contract value
(j)	Telephones – for larger sites only Temporary installation Use	R840-R2 500 Roughly R13,80 per R10 000 of contract value Approximately R120 per month R160-R250
(k)	Insurances	Approximately R120 per month
(l)	Storage sheds and yard	0,5-1% of contract value
(m)	Office shed	R300-R500 per month
(n)	Toilets	R300-R500 per month
(o)	Cleaning	R125-R150 per month for water-borne type. Pit latrines are cheaper.
(p)	Hoarding	0,25-0,3% of contract value
(q)	Scaffolding	If required check with local authority. Measure and price.
(r)	Watchman and security	Normally included in small tools but if more than single storey, then obtain quotes.
(s)	Transportation of staff and materials	R840-R1 200 per week
(t)	Site clerk	Cost of leasing a bakkie, fuel and repairs
(u)	Interest on bridging finance	Weekly wage When a small-scale contractor needs bridging finance the cost of interest, which could be as high as 33 per cent, must be included in the preliminaries. It is necessary to determine the amount of bridging finance required. In some instances the bridging finance is given interest fee as a forward funding by the support institution.

Table 6: Typical example of estimating preliminary and general for various contract values

TIME TAKEN IN MONTHS VALUE OF PROJECT RATE	4		4		5		6	
	Rate	R250 000	Rate	R500 000	Rate	R1 000 000	Rate	R3 000 000
(a) Foreman	R4 000	R16 000	R4 000	R16 000	R5 000	R25 000	R5 000	R30 000
(b) Setting out of the works – land surveyor's fee	1,00%	R2 500	1,00%	R5 000	0,60%	R6 000	0,40%	R12 000
(c) Defects after completion	0,50%	R1 250	0,50%	R2 500	0,50%	R5 000	0,50%	R15 000
(d) Provision of plant and fuel	3,00%	R7 500	3,00%	R15 000	2,50%	R25 000	2,00%	R60 000
(e) Provision of small tools	0,30%	R750	0,30%	R1 500	0,30%	R3 000	0,30%	R9 000
(f) Notice boards						R1 200		R1 200
(g) Liaison with the public authorities								
(h) Provision and use of water								
(i) Temporary plumbing	R500	R500	R500	R500	R500	R500	R500	R500
Use	R338	R338		R675		R1 350		R4 050
(i) Provision and use of electricity								
Temporary connections					R1 000	R1 000	R1 500	R1 500
Use						R1 380		R4 140
(i) Telephones – for larger sites only								
Temporary installation								
Use						R200		R200
(k) Insurances	1,00%	R2 500	1,00%	R5 000	0,75%	R7 500	0,60%	R18 000
(l) Storage sheds and yard	R350	R1 400	R350	R1 400	R400	R2 000	R1 200	R7 200
(m) Office shed	R350	R1 400	R350	R1 400	R400	R2 000	R400	R2 400
(n) Toilets	R60	R240	R60	R240	R280	R1 400	R420	R2 520
(o) Cleaning	0,30%	R750	0,30%	R1 500	0,30%	R3 000	0,30%	R9 000
(p) Hoarding								
(q) Scaffolding								
(r) Watchman and security	R840	R3 360	R840	R3 360	R950	R4 750	R950	R5 700
(s) Transportation of staff and materials	R2 000	R8 000	R2 000	R8 000	R2 000	R10 000	R4 000	R24 000
(t) Site clerk	R350	R1 400	R400	R1 600	R500	R2 500	R500	R3 000
(u) Interest on bridging finance per annum	30,00%	R3 750	30,00%	R7 500	23,00%	R11 500	18,00%	R27 000
Borrowing roughly one month's turnover								
TOTALS		R51 638		R71 175		R115 180		R237 490
Percentage of project value		20,66%		14,24%		11,52%		7,92%

Part Three: Project example

Table 7 shows the contracting parties and their areas of responsibility. Under 'Consultants', for example, are listed the professional disciplines that intervene in the project being considered. It also shows the project budget line items under the headings 'Management', 'Support', 'Indirect' and 'Direct'.

X in the framework indicates budget costs. The horizontal reading from a particular X symbol indicates the project item and the vertical reading the party responsible for providing the goods or service for the item.

In Table 8 actual values are assigned to the X's. Under 'Indirect', for instance, project timing and programming has a budget cost of R8 250 paid to the project manager in

keeping with the conditions of service. This payment signifies that the contractor was assisted with programming and timing. Had the contractor done the work in-house the payment would have been recorded under 'Levels of contractors'.

The amount of R3 774 937,27 (bottom right-hand side of the framework) is the sum total cost of the project. Every project cost, regardless of the source of funding, should be indicated. Some costs would not be charged directly to the client if funded from other sources, such as could be a free training programme provided by a government agency or an NGO. Such a cost would be deducted from the total project cost to reflect the actual expenditure incurred.

Selected additional reading

Croswell, JA. 1989. *Labour-intensive construction: Practical details for success*. October.

De Gasparis, PR, Jardine-Orr, AF. 1991. *Discussion paper: DBSA approach to people participation*. DBSA: April.

International Bank for Reconstruction and Development; Scott, Wilson, Kirkpatrick & Partners. 1978. *Guide to competitive bidding on construction projects in labour-abundant economies*. June.

Kritzinger-Van Niekerk, L, Eckert, JB, Vink, N. 1992. *Towards a democratic economy in South Africa – an approach to economic restructuring*. DBSA, May.

McCutcheon, RT, Van Zyl, CWL, Croswell, J, Meyer, D, Watermeyer, R. 1992. *Interim guidelines for appropriate contract*

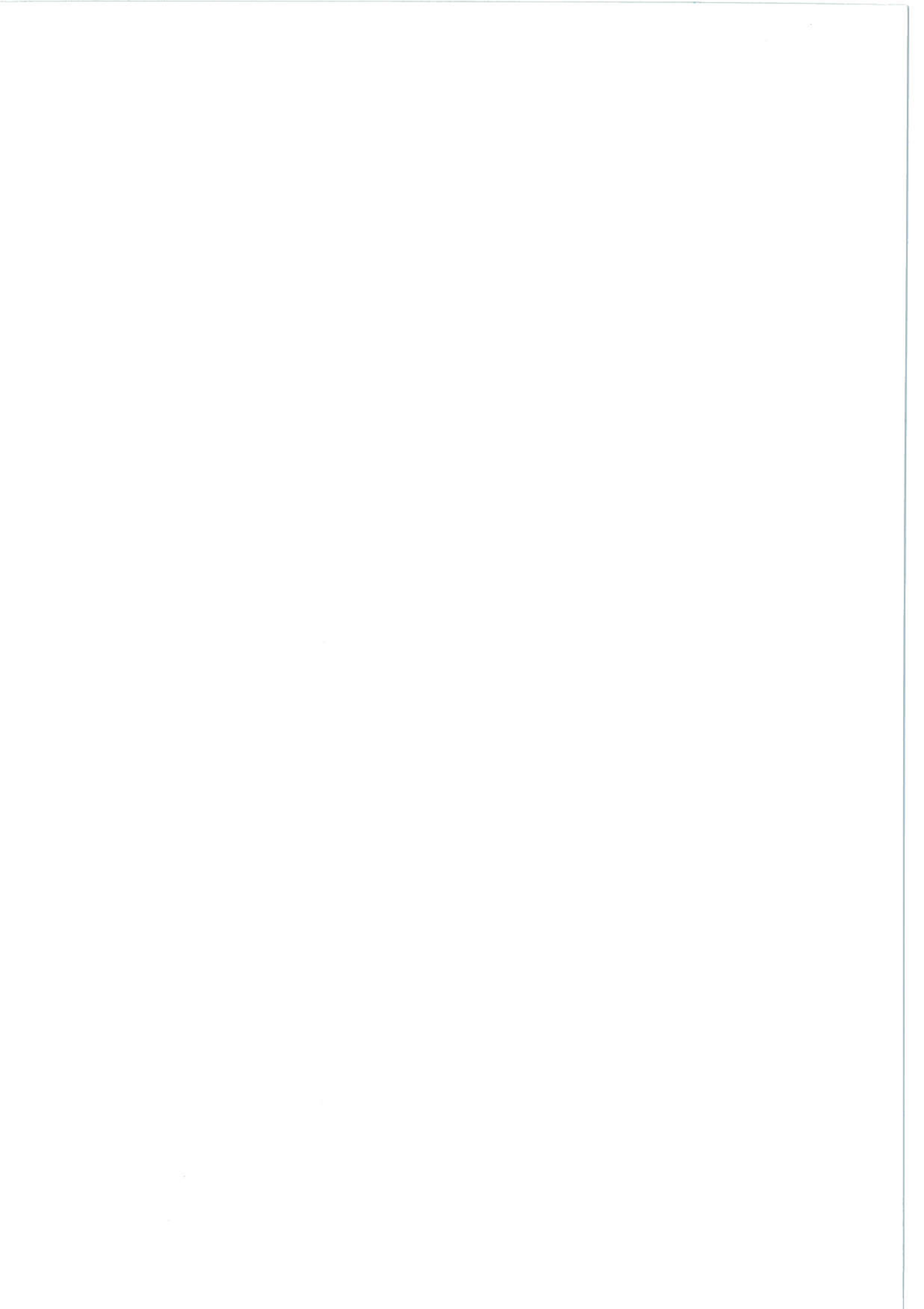
procedures and documentation for labour-based construction. DBSA, July.

Milne, JC, Jackson, BM *et al.* 1993. *An approach to enhance the socio-economic impact of development projects*. DBSA: February.

Soweto City Engineers Department; BS Bergman & Partners Inc.; GM Hattingh & Partners; DLM Project Management cc. Project Management Techniques cc. 1992. *Contractor development in labour-based construction*. June.

Van Wyk & Louw Inc. 1991. *Guidelines to consultants to enhance the use of local communities' labour and skills during the implementation of RKDP projects*.

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