Regional Seminar Papers 1995

4.2 *An Overview of Soweto's Contractor Development Programme*

R.B. Watermeyer, Soderlund & Schutte Inc

Introduction

Soweto's Contractor Development Programme (CDP) is a unique programme which embraces labour-intensive methods and labour-based technologies. It furthermore encourages and trains the community to participate in the managerial, commercial and administrative aspects of construction. The programme, by its very structure, increases the labour-content of a construction project and, at the same time, trains local entrepreneurs in labour-based construction methods of installing services. In this way, technical, commercial, managerial and administrative skills are developed within the community with a concomitant increase in earning capacity. At the same time, the community retains and cycles a significant proportion of the money spent on a project. Local entrepreneurs who are from the outset, employers in the community can, with sufficient technical, financial support and instruction, become fully fledged contractors and, as such, provide greater earning opportunities for others in the community. Thus the project may be described as a job creation programme with the potential for sustainability through entrepreneurial development.

The programme objectives of the CDP may be described as being to structure and to execute construction projects using labour-based technologies and labour-intensive methods in such a manner that through the construction process:

- Employment and entrepreneurial opportunities are created for members of the community.
- Skills and competencies in technical, commercial, managerial and administrative areas are transferred to participants.
- The percentage of the construction cost retained by the community is maximised.

Project objectives, on the other hand, may be described as being to have the works constructed to specification within a specified period and a given budget using community-based contractors and labour-

based construction practices in such a manner that:

- Opportunities for employment and training are created for the local community.
- As much as possible of the project expenditure is retained by the community.
- Community-based contractors (local entrepreneurs) are developed from within the community.
- A sense of participation within the community is fostered.
- Members of the local community are, as far as is practicable, employed by the Construction and Materials Managers to assist them in the execution of their duties.

The reconstruction and development programme

The Reconstruction and Development Programme (RDP) suggest that one of the first priorities in meeting basic needs is to provide jobs (cl 1.4.2). In regard to construction, it suggests that *our people must be involved in these programmes by being made part of the decision-making on where infrastructure is located, by being employed in its construction and by being empowered to manage and administer these large scale programmes ... (cl 1.4.3) ... infrastructural programmes must take into account the implications for micro enterprises (cl 4.4.7.10).*

The RDP makes specific reference to public works and sets out that programmes of this nature should:

- involve communities in the process so that they are empowered (cl 2.3.6).
- create assets which are technically sound (cl 2.3.6).
- not abuse labour standards (cl 2.3.9).
- give priority to job creation and training (cl 2.3.9).
- encourage and support self-employment through small and medium enterprise creation to ensure sustainability of skills (cl 2.3.9).

The RDP in terms of housing and services suggests that a housing programme should:

- incorporate the development of small, medium sized and micro enterprises owned and run by black people (cl 2.5.6).
- introduce support mechanisms in order to maximise the use of local materials (cl 2.5.19).
- encourage community-controlled building materials suppliers (cl 2.5.19).
- involve beneficiary communities at all levels of decision-making and in the implementation of their projects (cl 2.5.21).
- benefit the beneficiary community in matters such as employment, training and award of contracts (cl 2.5.21).

The project and programme objectives of Soweto's CDP are not dissimilar to the requirements of the RDP. Although they were developed before the formulation of the RDP, they are in harmony

with the RDP in that projects which are executed in terms of the programme create jobs, develop skills, address affirmative action and target disadvantaged communities.

Current projects

Township roads (R 70 So)

Background

Approximately 300 km of the total road network of 850 km of minor roads (residential and minor collectors) in Soweto are unsurfaced, in poor condition and are difficult to maintain as gravel roads. The roads are susceptible to severe storm damage during the rainy season. Apart from the high cost of maintenance of the roads, the Soweto City Council spends in excess of R2 million per annum, a figure well below which it should expend, in removing silt that has washed from the roads into the stormwater system. At the same time, these unsurfaced roads are located in fully developed areas and give a rundown appearance to these areas.

Scope of project

The project entails the surfacing of streets, the provision of kerbing to accommodate the flow of stormwater and, where necessary, the installation of underground stormwater drains to allow for efficient run-off.

Project status

Approximately 30 000 m2 of roads have already been constructed in terms of this programme and construction on a further 21 000 m2 has commenced in terms of the current DBSA/CWRSC loan agreement.

Water house connections (W5 So) and the upgrading of secondary water mains (W22 So)

Background

When Soweto was originally developed, most secondary water mains were laid along mid-block boundaries. The need for connecting pipe work was largely eliminated, since latrines and standpipes were located within a meter or two of the mid-block water mains. The piping used was 50 mm diameter black steel piping, with screwed and socketed joints.

The use of small diameter mid-block water mains resulted in the water supply system suffering from several inherent defects, principally:

- The small size of the mid-block water mains meant that the quantity of water that could be supplied to consumers was severely limited.
- The system of fire hydrants in roadways was, unavoidable, sub-

standard, since most road reserves did not contain water mains.
- Metering of water consumption was impractical because of the difficulty of reading inaccessible meters on private properties.
- Maintenance of mid-block water mains by the local authority was hampered by limited access to the mains.

The following problems arose and became serious:

- Furring up of pipes.
- The original reticulation of small steel pipes could not meet the consumers' increasing water demands.
- External corrosion of the steel pipes due to stray electrical currents and acidic soil conditions resulted in leakage of alarming proportions.
- The number of fractures in secondary water mains average between 350 and 400/month.

The upgrading programme was implemented to remedy the situation.

At the outset of the upgrading programme, it was recognised that the new secondary reticulation could be broken down into water loss management districts. Accordingly, the districts which have been created incorporate 3,8 to 6,5 km of secondary mains and depending on the size of erven, comprise between 250 and 750 erven. Each district has been designed and constructed in such a manner that the districts:

a) Can be permanently isolated from adjacent districts by the closure of not more than 5 inter-district valves.

b) Are supplied, when isolated with water from a single off-take from a primary main.

c) When isolated, can supply water to erven at the minimum rate of flow under residual peak flow and fire conditions.

d) Can be supplied with water from preferable, an alternative primary main, or adjacent district at a reduced pressure and flow rate, in the event of repairs being required on the primary mains serving the district.

Thus, should a meter be installed at the inlet to the district, this meter could be used to establish the following:

a) average flows.

b) peak flows.

c) night flows.

Changes in peak and average flows, as well as high night flows, would indicate the presence of leaks. District inspection and further investigations may then be carried out to locate the leak.

District meters could also provide valuable information relating to design parameters which may lead to more economical designs on future upgrading projects and new townships. At the same time, the information obtained from these meters could be used to monitor consumer usage patterns, so that future extensions to reservoirs and the upgrading of primary mains may be undertaken on a just in time basis, i.e., only when the actual consumer demand necessitates increased storage capacity or supply.

Scope of project

The work includes the construction of 90 to 200 mm diameter secondary mains in the road reserves and their connection to the existing plumbing installations on erven.

The design approach is as follows:

- All small diameter secondary water mains are to be replaced by new secondary mains, with a minimum nominal diameter of 90 mm, located within the road reserves.
- Fire hydrants are to be provided of the new mains in accordance with the requirements laid down in the Department of Community Development's "Blue Book" for a low-risk, Group 2 fire-risk category.
- The new reticulation will be able to supply residential areas with an annual average water demand of 900 litres/day/erf.
- The new reticulation will be broken down into water loss management districts, in order to facilitate the early detection of water losses. (typically, approximately 5 km of secondary mains can be isolated from the trunk mains and be metered.)

Project status

The project when completed will have involved the laying of some 560 km of secondary mains and the replumbing of 56 000 erven. To date, approximately, 30 000 erven have been replumbed and 290 km of secondary water mains have been laid.

Evaluation of project

Background

The Soweto City Engineer's Department and their consultants have developed a procedure to appraise projects in terms of the objectives set out in paragraph 1. In terms of this procedure, the following items are examined:

- the multiplier in employment opportunities.
- expenditure per unit of employment generated.
- the amount of construction cost retained by the community.
- the cost of the proposed construction compared to that of conventional construction.

The above mentioned parameters are then used to compute a Project

Index for the project. Thereafter the delivery of the programme as a whole is examined.

Evaluation of parameters

The multiplier in employment opportunities in construction activities using the proposed labour-based construct methods are:

- excavate and backfill for water reticulation 1,9
- excavate, lay pipes and backfill water reticulation 1,4
- construct concrete block paved roads 2,3
- construct waterbound macadam roads 4,7

The remaining key parameters which have been established on specific projects following a rigorous analysis are as follows:

Project	Type of Construction	Estimated cost/man-hour (Rand/man-hour)	Percentage of construction cost retained by the community(%)
R70	Waterbound macadam roads	17.9	37
R70	Concrete block paved roads	18.4	37
W22	Secondary watermains	17.4	39
W5	House connections	17.1	50

All of the projects, with the exception of R70 (township roads) are expected to have construction costs less than or equal to conventional and/or plant-based costs. A study has shown that road construction is expected to be approximately 15% more expensive than plant-based construction.

By way of comparison the average cost per man-hour in the civil engineering industry as a whole is R37,50. A NHF report has shown conventionally constructed roads to be well above this average value. The Framework Agreement labour-based projects which are currently in progress in the Western Cape have only 12% retained by targeted labour, i.e. the community.

It should be noted in this regard that a National Housing Forum report entitled "The Development of Small Scale Enterprises, Skills, Entrepreneurship and Employment Opportunities through the provision of Housing" makes the observation that *when comparing costs, it should also be borne in mind that labour-based construction practices will probably become more cost competitive since current cost comparisons with conventional construction practices have been undertaken in a recessionary period where plant on most projects have been priced at unrealistically low levels.*

Project Indices

The Project Index may be evaluated from the following formulae:

PI = 20/EEC + 1,75 PCR/100 + ECC/EPC

where ECC/EPC <= 1,0

where ECC	=	Estimated cost of conventional >construction
EEC	=	Estimated expenditure per man-hour of employment generated
EPC	=	Estimated project construction costs
PCR	=	Percentage of construction cost retained by the community

The Project Indices in respect of the various projects which have been analysed on a rigorous basis are as follows:

Project No.	**PI**
R70 So	2,6
W22 So	2,8
W5 So	3,1

(A threshold value of 2,3 has been proposed. Projects having a PI below this are considered to be unacceptable. By way of comparison, plant-based construction has a PI below 2,0 and the current Framework Agreement labour- based projects in the Western Cape, a value of 2,1).

Conclusion

All the projects proposed have Project Indices above Soweto's threshold limit and therefore comply with Soweto's programme objectives. At the same time, all the projects produce employment at a unit cost below the average for the construction industry and hence may be regarded as being labour-based.

[TOP]

[Back] [TOC] [Next]

Updated by BC. Approved by TT. Last update: 3 October 2000.

[EIIP >> ASIST]

For further information on the Employment Sector's activities, please contact:
Tel: +41.22.799.6853 or e-mail: MSU@ilo.org
For inquiries about job opportunities in the ILO, please contact the Human Resources Department, e-mail: recruit@ilo.org

Employment SECTOR: [Top | Employment Home | Enterprise | Skills | Reconstruction | Employment Strategy | | Multinationals | Promotion of Gender | Social Finance | Publications]

International Labour Organization (ILO): Contact us | Site map |