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## URBAN LOW COST SANITATION

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URBAN LOW COST SANITATION:  
SELF HELP, GOVERNMENT DIRECT LABOUR OR  
CONTRACTOR BUILT?

### 1. Summary

Contractor built latrines located in urban developments are more likely to lead to the success of a pit latrine project than either direct labour or self help construction.

Contractors are not constrained by government regulations and can often, for example, use alternative methods to obtain materials in short supply, or pay incentive wages to the labour force for work not just attendance.

A self help construction project is likely to be successful in a rural environment where the community is united under a central figure - the village elder. But the fight to survive in an urban habitat often results in materials being sold for more important things such as food and medicine, and not the construction of the latrine.

Urban Government direct labour built latrines can suffer from the severe restrictions of government rules and regulations which dictate the purchasing procedures, but not how much is necessary to bribe store keepers to release materials to the project.

### 2. Introduction

You are the Town Engineer: The town's population has doubled in the last 8 years, but the supply of housing has failed to keep up with demand. The rural migration has moved into slum (squatter) quarters along the river banks where the town council has not financial interest because it is waste land. There has just been an outbreak of cholera. The daily papers are clamouring for somebody's blood and blaming the Government for failing to implement election promises of providing sanitation to all people. You are perilously close to being sacked in order to assuage a political blunder and allow the government to be seen to take action. In the meantime, by working through the nights with the Ministry of Health you manage to contain the cholera outbreak.

A court of enquiry, after the cholera outbreak, establishes poor sanitation and the public's poor personal hygiene to be the main contributory factors. The enquiry established cholera to have a minor contributor to the mortality rate far outstripped by gastroen-

teritis, measles and malaria as infantile killers. In addition the Ministry of Health point out that clinic and hospital records indicate only the "tip of the iceberg".

An inspection of the squatter areas shows bare footed children walking through pools of sewage, sullage and surface water, only a token water supply and refuse in partly covered pits with flies buzzing around the decaying matter.

The politicians authorize finance for consultants to study the water and sanitation problems. Bilateral agencies support the project and eventually, years later, the detailed designs are underway. However, the lending agencies are short of money and have limited the Projects to a standpipe water supply, sewerage for the town centre, latrine project. It is agreed that the Health Education Unit of the Ministry of Health will join forces with the Sanitation Extension Unit under the Town Engineer, and under their combined umbrella oversee the construction of the pit latrines. But how? Self help, Government Direct Labour or Contractor built?

### 3. Self Help Latrine Construction?

Since independence, the country's philosophy and policies have been based on socialist ideology. Great emphasis has been placed on self help and this has worked well. Village water supply schemes have been constructed under the authority of the village elder, with technical assistance from central government. The personal relationship the villages hold with the construction works has resulted in continuing interest in maintaining the plant to a high level. From a financial view, the village self help projects are very effective. Not only are the labour costs practically nil, but the indirect foreign exchange element is low. Little imported machinery is needed to undertake the works; diesel fuel is only required to transport materials to site and for the technical design and supervision staffs' transport.

The reason that self help philosophy does not work for an urban project is not technical, but human. The village elder is a paternal figure. He knows by name and personality everyone in his village. In turn he is respected by the villagers; his advice

and arbitration is sought after. A misdemeanour by a villager is soon brought to the attention of the village elders and dealt with. In fact, it is a "close-knit" society working for a common good - socialism at its most successful.

In an urban environment these village attributes are quickly lost and scorned in the daily battle to survive. The dream of streets "paved with gold" is rapidly dispelled by the lack of work, food and housing the lot of too many rural migrants. The problems are compounded by disease, most of which is water related - children that might survive measles in their home village die in an urban community, as they are, in addition, fighting diarrhoea, ascaris (round worm), fevers and malnutrition etc.

In the past, "Sites and Service" projects have occasionally been implemented on a self help basis. The problems encountered are along the lines that "if it can happen it will happen". For example, one individual used his loan for a luxurious week in the country's best hotel. Others sold part of their cement allocation to buy food for the children. It was not long before sites and services projects we contractor built.

#### 4. Government Direct Labour?

The direct participation of the town or governments' public works department in a latrine construction programme seems very attractive. It should be possible to save, at least, the contractors' element of profit in addition to savings on Costs incurred in tendering and administering the works. But, to operate the project by complying with all government regulations can lead to an expensive latrine.

The hiring of a direct labour force is often at the mercy of the regulations: Governments commonly pay labourers the minimum wage: sufficient for the man to arrive each day, but not to do a days work. Overtime rates are pityfully small unless the supervisor awards four to five hours as an inducement for hard work.

Many financial regulations for example restrict the employment of casual labour to three months. After the three months period, labourers become full time government employees and are entitled to redundancy payments. Often after this three month period the labourer or craftsman has become effectively trained when the regulations require him to be sacked. The supervisor then has the dilemma of retraining a new labour force or "bending" the regulations to maintain the present one.

The financial accounting procedures can effect the output of the labour force. Wages are paid weekly and once the total bill is more than, say, US \$ 100 some financial regulations require a police escort! It can be very difficult to arrange and may result in the work force spending half a working

day in collecting their wages from the central office.

Financial regulations on the purchase of materials and equipment are often very frustrating. Local purchasing orders must be placed with government parastatal bodies. If the parastal is unable to provide the requisite materials, than a proforma must be obtained from three private establishments and the purchase placed with the lowest tender. Even after payment for the goods failures can still occur, especially with scarce and valuable commodities such as cement. The delay between obtaining a proforma and presenting the money for payment can take weeks because of all the necessary authorization signatures, by which time the materials may have been allocated elsewhere. And for cement, which is often in short supply, it is nearly always necessary for the allocation officer in the cement works to be bribed - very difficult word to use on your government expense sheet! In developing country, government transport is a highly valued commodity as public transport is often on point of collapse. Cars and Landrovers are used to ferry workers to and from work by which time the weekly quota of petrol is half consumed or has been syphoned off by the driver in order to pay for his food. Thus, the use of a government car to supervise a construction project is often not available. To borrow a lorry to transport cement materials is arranged in advance of the day for cement allocation, only to be foiled by the cement works who default on supplying either because of non payment of the bribe or a mechanical breakdown of the plant. The author knows of occasions where three attempts had to be made to obtain 7 tons of cement from a parastal cement works, although all payments had been made and the highest authorities given had priority clearance.

Two other areas affecting government transport are the purchase of fuel and repairs to the vehicle. Additional petrol to the weekly quota (often 70 litres), requires the authorization of the department's director and the most senior civil servant in that Ministry - no mean feat to obtain these approvals. But then the ration must be drawn from the Government fuel depot. Which can entail queues of upto a mile long more wasted time and energy. Repairs and servicing of vehicles with a few exceptions have to be undertaken by the government garage. Spare parts require money which is the reason why a vehicle can be laid up for months to the detriment of the project.

The cost of educating and training professional and technical staff in a developing country is a great burden on the economy. In some cases this has suffered from Britain's dramatically increasing overseas students fees. The limited number of qual-

ified professional staff are rapidly promoted to high positions where they are enmeshed in administration and have little chance in controlling the engineering projects. This is left to inexperienced staff who can often be daunted by the administrative procedures, let alone the technical requirements.

But a latrines project, constructed by direct labour will require full time engineers to supervise the works. However a degree of the routine work can readily be undertaken by IVth and VIth form leavers, if given the appropriate induction course.

#### 5. Contractor Built?

Contractors have the reputation of making large profits, which is considered consistent with a capitalist and not socialist ideology. But, by open tendering procedures it is possible, in many cases, to keep the profit percentage low.

The advantage of a contractor over a Ministry direct labour force is that he is not confined by the government financial arrangements that are long overdue for revision. The purchase of materials can be completed in a pragmatic manner, where necessary by paying the appropriate bribes - in other words the free market price. Petrol and vehicles are rarely a constraint to a contractor.

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A great advantage for a latrine construction project is the hiring of local labour to undertake the works. Labourers and craftsmen are employed for the duration of the works. They will learn new skills, such as precasting latrine floor slabs on leveled ground rather than insitu floor slabs that require detailed shuttering. At the completion of the labour force will be disbanded but the acquired skills will remain within the district. A few craftsmen and labourers are likely to establish a latrine construction service to satisfy the demands of the area. Once this process has been successfully operated throughout the district the private "entrepreneur" craftsmen are in a position to undercut a contractor's price for any future works. It may not be by direct tendering, as that requires the formal establishment of a company, but by the refusal of the people to pay the higher price.

Supervision of the latrine construction by government or town council employees will still be required. But, the frustrations should be greatly reduced and confined to paying the contractor for satisfactorily performed work. But a word of warning,

contractors are better equipped than private citizens to use inferior quality materials than those Specified. Unless there is satisfactory supervision of the works the contractor will profit to the detriment of the works.

#### 6. Cost Comparison

It is extremely difficult to compare the costs of building a pit latrine by self help, direct labour or a contractor. There has never been a project where all three approaches have been fully tried under identical conditions. Often, the government supervision and administrative costs are excluded in the analysis.

The average cost of a direct labour built pit latrine was obtained from a recent construction project in Africa and calculated to cost US \$ 610 including government supervision and transport costs. The break down of costs is given in Table 1

Table 1

#### The cost of a Single VIP Latrine

(January 1981 prices)

a) Materials:	US \$	
Cement	126	
Steel	12	
u PVC pipe	16	
Timber	34	
G.I. roof	22	
Miscellaneous*	28	
	<u>238</u>	: 39%
b) Labour	<u>372</u>	: 61%
	<u>US \$ 610</u>	

Or, if the black market (ie free market) exchange rate is used : US \$ 226. The above costs take account of labour, standing time when materials were not available and cover the half a day's working time a week to collect wages.

A contractor built latrine should be financially more expensive than the US \$ 226 and a self help built latrine cheaper. If there is no wastage of materials. But as with cost comparison between all systems the results will depend upon circumstances within each country.

\* covers a proportion of tools and equipment such as steel squat plate moulds.