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**WHAT IS MAINTENANCE  
OR  
REHABILITATION  
OF  
BUILDINGS?**

**AN INTRODUCTION**

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## **Maintenance or Rehabilitation means: -**

**“ To keep or to make the building sound or weatherproof to a standard where safety and security are assured and where the required services can be dispensed from.”**

### **NOTE:**

This document was first produced in 1993 when DFID first began encouraging the health and education sectors in the states of Orissa and Andhra Pradesh to become more concerned with maintaining their physical social infrastructure. As the content is considered to still have considerable relevance today it has been reproduced for general distribution again. There has been enormous amounts of work and acceptance by a few people in both states to the need for a well organised and properly resourced social infrastructure maintenance programme. However, within the bulk of officials it is felt that there still remains a sense of apathy and disinterest in the subject. It is hoped that this easy to read document may help the unconvinced to become converts to the subject of building maintenance and the wider aspects of asset management.

## INTRODUCTION to MAINTENANCE

Buildings are a fundamental requirement for practically every sector of national development, usually a structure of one form or another is required to be in place before the corresponding sectors of the economy can fulfil their contributions to the development process. Apart from being one of the physical indicators of the national development process, buildings represent a very large proportion of the national and state governments fixed assets.

The maintenance of buildings is an issue consistently overlooked in investment and development programmes throughout the world. The overwhelming tendency is to assume that the construction of new buildings is the most effective form of investment, whereas the country might be suffering greater losses from lack of maintenance of existing buildings than it is gaining from construction of new buildings.

Maintenance of buildings has great significance to the national economy. If maintenance is not taken seriously, governments will be faced with the unpleasant dilemma of premature rehabilitation of building stock or premature refinancing of capital investment for reconstruction, such a programme would involve a cost many times that of the original capital investment.

Maintenance or lack of it is also significant in affecting the daily operation and therefore the productivity of a building.

In many rural settings the levels of construction skills are low with the added problems that basic quality control practices on site are often not adhered to. Plus, the building materials themselves do not always conform to accepted standards. Added together these issues predetermine that many rural buildings will fail and become a maintenance nightmare.

However, even where acceptable standards of construction are adhered to, buildings are still subject to one form of deterioration or another. In principle though, a building which has been well designed and constructed and is occupied by a caring person should require little or no maintenance, at least in the early stages of its life.

If effectively planned, building maintenance could be a basis for promoting national contracting skills, any strategy which could be devised to upgrade the skills of small local contractors would go a long way to generating employment at the local level. There are many construction tasks within the scope of building maintenance

which could be used to shift construction expenditures into tasks within the competence of small contractors, with a possible added bonus of allowing small local contractors to gain experience and maybe the ability to expand into large-scale operations. The bulk of physical building maintenance demands only basic artisan skills and a relatively small scale of management that most reasonable contractors could competently handle.

## TRAINING for MAINTENANCE

The low performance of existing building maintenance systems is partly due to lack of appropriate know-how amongst the technical staff. Organising on-the-job training programmes covering specific aspects of building maintenance technology can overcome this problem. The training programme would cover all aspects of building maintenance technology i.e.

- Management of maintenance
- Systematic preventive maintenance
- Construction operations for repair and rehabilitation of buildings

Ultimately, any strategy to improve local technical capacity to deal with the problem of unsatisfactory maintenance will require an approach more comprehensive than simply upgrading the technical skills available. First there is a need for comprehensive training in fault detection, damage analysis and repair or rehabilitation of buildings, covering a wide array of components i.e. substructure, superstructure, fixtures, finishes, electrical and plumbing installations. Secondly, the training should be geared to a preventive maintenance approach i.e. attention to design and construction details which would eliminate errors that generate maintenance and repair needs.

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## MANAGEMENT of MAINTENANCE

Once a decision has been made to respond to a lack of building maintenance, the first task should be to set up a central data bank on the subject. An evaluation of existing building stock has to be made, to assess the types of repair work pending or most likely to emerge in the near future. The key to such an evaluation exercise is to select a good sampling technique. The nature of social infrastructure (health and education buildings) tends to ensure that the buildings are spread throughout the states, with no natural starting point for determining the relative importance of one building over another. Therefore, because of obvious resource limitations, the exercise could be initially limited to one or two districts. Possibly chose districts with differing climatic and geographic conditions, as the information collected from the same type of institution but located in differing types of area can be very different.

Having decided which district or districts to start with it is now important to decide what information is actually required. First questions to ask are on a purely technical basis i.e. construction technologies used, dimensions of structures, electrical installations etc. Gathering this type of information is technically demanding and requires professional expertise to select buildings in a manner that will reflect differences in maintenance requirements. Secondly look at the age of the buildings, most engineers will have knowledge on the rate of building deterioration in local conditions. Using informed assumptions regarding age coupled with the collected field information should give an idea of the magnitude of maintenance and rehabilitation required.

In addition to the above information there will be a need for at least one field visit to every site. The majority of data collection will take the form of professional assessments on building condition from site observations. An experienced engineer will make judgements on the performance and condition of each building component purely on the basis of visual appearance or by touch or smell. Despite its simplicity the observation method is capable of revealing obvious defects or visible trends towards deterioration i.e. roof leakage, cracks in masonry, subsidence, unworkable water pumps, termite attacks on timber components etc.

Having completed data collection on maintenance requirements, the next task is to collect data on resources available for carrying out maintenance tasks i.e. staff, skills, vehicles, equipment and materials etc. At this stage carry out a thorough analysis of all data collected on both assessment of maintenance needs and assessment of capacity to deal with the situation. The ultimate target in this exercise is to arrive at a comprehensive management plan that identifies;

- what is required to be done?
- when required work should be done
- what resources are available for carrying out the operation?
- what additional resources are required and
- a monitoring procedure to ensure conformity with the management plan.

## FUNDING of MAINTENANCE

Finding the required funding and mobilising resources effectively are fundamental to tackling the problem of lack of building maintenance. Any government funding annually allocated for building maintenance, no matter how small, is usually the first target for cuts when public expenditure is too great. Therefore, it is a sensible precaution to consider alternative sources of funding.

One of the ways in which the financial requirements for building maintenance can be partly met is to include the cost of routine maintenance in the financial estimates for the initial construction of the school or health facility. The cost of routine maintenance is often minimal in relation to the initial construction cost. Most indicators show preventive maintenance as low as 2% of initial construction cost. In normal building contract practice, provision is made for a contingency sum, usually about 10% of total contract price. It may be possible to allocate a fraction of the contingency sum as a maintenance corpus fund. It would be important to ensure that the maintenance corpus funds are allocated separately in such a manner that they can be utilised correctly.

Another way of generating funds for the maintenance of health and education buildings is by levying a user-charge. This requires an annual estimate of requirements for maintenance and repair work. The schools enrolment or the hospital's average annual patient attendance could divide this. Such a system would require appropriate financial management to ensure that funds generated for maintenance purposes are actually available solely for that purpose.

It is also worth considering how local business individuals can be induced to contribute to maintaining the health or education facility. General stores, stationary suppliers and pharmacies all derive reasonable business from the communities health and education institutions. On the strength of this it may be possible to encourage collective or individual support from this sector on a one off or better still on an annual basis. Likewise, it may be possible to encourage a local business-person to become a 'friend' to the health or education institution. To make

either a substantial one-off contribution that could be utilised to bring the health or education facility to a reasonable condition or to make smaller regular annual contributions for the regular upkeep of the facility.

## The **COMMUNITY** and **MAINTENANCE**

Another way of maintaining health and education facilities is to use community participation or self-help methods.

In many countries construction projects for schools, clinics and similar communal facilities have been realised solely through funds mobilised as voluntary community contributions. This same approach could be adopted for maintaining and repairing the health and education structures. A key point in this exercise is the timing of the fund raising. Community festive occasions are usually the best time to mobilise funds voluntarily. In agricultural communities, harvesting periods or soon after farmers have received payment for their surplus commodity sales would also be good timing.

Besides financial contributions the skills of the community can be mobilised on a voluntary basis to actually carry out operations of building maintenance and repair. Ideally it would be beneficial to aim at both categories of resource mobilisation from the community i.e. people contributing their cash or their skills, preferably both. If building maintenance is undertaken in a systematic and preventative manner, the task actually requires relatively simple skills, which can normally be acquired through community participation. Tasks such as painting of buildings, cleaning compounds, removing harmful vegetation from the immediate vicinity of the buildings can all be undertaken by labour gangs with little or no skills in construction, but even in areas of carpentry or plumbing repairs there is usually somebody within the village with the necessary skills who could be mobilised.

Research tends to show that for any community participation project to succeed, it requires a dynamic, well-respected opinion leader to generate and maintain the community's enthusiasm. The research also supports the theory that the resident medical officer and head teacher, if they have shown care for the community and a professional interest in the communities well being is usually in a good position to become the catalyst for ensuring the community gets involved in the ongoing building maintenance activities.

## **INSTITUTIONAL ARRANGEMENTS**

Existing institutional arrangements for maintenance of health and education buildings can be basically described in three forms;

The health or education department responsible for maintenance takes charge of both the management issues as well as the actual physical activities.

The health or education department responsible for maintenance limits itself to over-all management whilst contracting out the physical activities.

The health or education department responsible for maintenance rely 100% on the line engineering departments to both manage and implement the physical activities.

The majority of government departments appear to prefer the latter. However, such an approach cannot and will not work without 100% co-operation by both parties in all sectors and management levels. The line engineering departments are usually too involved in supply processes of new social infrastructure to have much time or energy to devote to major programmes of building maintenance. Nor is it going to generate many favourable impressions within the actual village setting. Which ultimately will not encourage any concept of community ownership or participation.

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