

27

Management problems of executing building projects—a few suggestions

N. C. Bhagat* and Ajay Singh+

Managers at any project would always strive for its timely completion, due to various advantages associated with it. On time completion of projects always offers a challenge and is not an easy task. It is important to note that an opportunity cost is always associated with any delay in completion of a project. These costs may be like, enhanced establishment charges for the period of delay, delay in start of production if it happens to be an industrial project, store rent and holding charges of materials, price hike and social costs due to delay in availability of public facilities such as health building, educational building and godown etc. It has also been observed that a delayed project has led to a number of disputes, litigations and claims whereas timely completed or before time completed projects were comparatively free of such eventualities. Sometimes disputes and litigations have been the main cause of delay and should be avoided by skilful handling by the management.

Management of activities

A project is comprised of a number of activities and there are many constraints in carrying out these activities which may lead to delays. A few such points which may require to be dealt by a manager and could be useful for execution of projects are being presented through the paragraphs that follow.

a) *Material requirement planning (MRP)*: The requirement of materials is estimated in the beginning of a project but procurement schedules are not prepared based on the likely consumption at site. In material requirement planning method, a detailed

scheduling of the work is done and the material requirement is analysed on the realistic grounds. As an example (Figure 1) If we arrange supply of cement based on average requirement during the year or life of the project, we may have excess stock inventory during the months of February, March, May and September when there is no requirement at all. Similarly we fall short of the required quantity of cement during April and August when the requirement is much higher than the average.

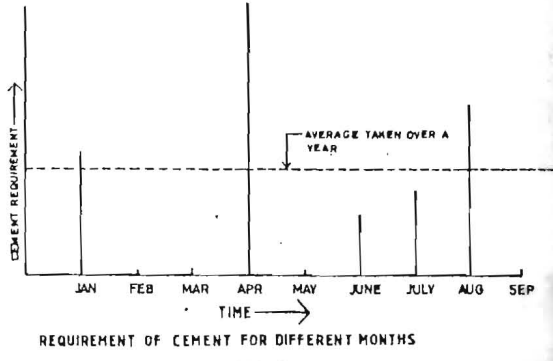


FIG-1

To overcome such a situation which not only disturbs the progress and budgetary requirements of a project, the requirement if based on the work-execution schedule, would prove to be quite useful for the managers. As an example the table 1 given below could be used for determining the quantities for placing orders.

TABLE -1

LEAD TIME - 3 DAYS, ORDER QUANTITY=100

REQUIREMENT		50	0	30	20	0	0	70
SCHEDULED RECEIPT			100					100
ON HAND QUANTITY	60	10	110	80	60	60	60	30
PLANNED ORDER RELEASED					100			

M.R.P — BASED ON MASTER SCHEDULE

This system permits the inventories only when it is actually required. This will save from blocking of money on account of stores and wastages during storage. However, still there is need for making

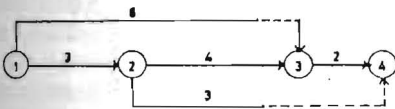
* Scientist Coordinator (PME), CBRI, Roorkee.
+ Senior Scientific Assistant, CBRI, Roorkee.

provision to cover various uncertainties by way of safety stocks, which is very nominal.

b) *Rescheduling of activities*: The network drawn in the beginning of a project is a tentative plan which cannot be followed for the entire duration of the project, because during progress of construction there may be many slips and unforeseen events causing delay in construction activities. Such deviations need to be corrected and modified periodically during the progress of the project. Uncertainties are a part of any project and hence needs proper planning right in the beginning itself. provision of some flexibilities for such uncertainties is necessary for the timely completion of projects. Some of these uncertainties are:

- Unknown Geological soil structure forming basis of foundation work.
- Unpredictable time and duration of monsoon.
- Non availability of funds due to political reasons.
- Floods and cyclone may disturb the area of the project.
- Workers & labour unrest leading to strikes etc.
- Unforeseen problems like power shut down and spoilage of material during storage.

Any of the uncertainties may delay and activity which may compel for rescheduling the activities during execution of a project. While rescheduling the activities, resource allocation may be one of the problem. For example in a time-scaled network the requirement of workers on different days can be easily computed as shown in Figure 2.



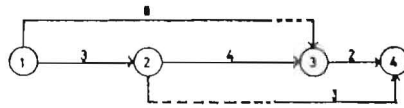
8	8	8	12	12	12	4	4	4	LABOUR REQUIREMENT BASED ON EARLY START
1	2	3	4	5	6	7	8	9	DAY NO.

TIME- SCALED NETWORK

FIG-2

The figure shows the envisaged requirement of workers in the beginning. It shows a peak requirement of 12 workers on days 4, 5 and 6.

Now if there is a constraint on the availability of labour and maximum available labour on any day being 8. The question arises if the project can still be completed on time (i.e. in 9 days)? As shown in Figure



8	8	8	8	8	8	8	8	8	8	REQUIREMENT OF WORKERS ON RESCHEDULING
1	2	3	4	5	6	7	8	9		DAY NO.

NETWORK RESCHEDULING

FIG.-3

3 the project may still be completed in 9 days.

Thus the float of activities are useful in rescheduling or reallocation of resources. A feed-back from the earlier projects may be a guiding factor for rescheduling. The main object of the rescheduling is not to delay the overall final completion time of any project.

c) *Just in-time decision*: Sometimes it is not possible to collect the needed data required for proper planning of the construction programme. It could be due to non-availability of financial resources to conduct survey and collect data in advance in absence of sanction of the project. The project time being limited does not permit for surveys to collect data and the project is started right away without any waiting after the sanction. For such situations Just In-time Decision may be needed. In order to take such decisions we need the prior or advance information about the facilities which are available within the organisation or in the vicinity of the project which could be used when required.

Other requirement which may help in Just-In-time Decision is to keep abreast the execution and planning staff with the latest developments in the field. Since for Just In-time decisions up-to-date information and good management capabilities are needed; the concept of "Ready-Set-Go" is of much help. No waiting time, quick decision, quick action are the basic requirements, and may prove to be a booster for expeditious and timely completion of the project.

d) *Quality management*: Though the major worry of the managers is to complete the projects in time, still the quality concept can also not be overlooked. the quality works help in their acceptability by the clients/users and ensures longer life of the structures. this also adds to the credibility of the executing staff. There is a need to control the quality in workmanship

and materials for each item and individual jobs forming the overall project. The main aim of quality management is to minimise and restrict the human errors and to do the right job in the first instance. The quality control saves from re-doing the things and ultimately save in time, labour and materials which constitute the cost of project and thus help in restricting project costs.

e) *Management of human resources*: It is through the human resources that the project progresses and takes shape. The human involvement is as such of paramount importance for any project. A manager who can successfully make use of available manpower succeeds in his mission of achieving the targets and the one who fails in its proper utilisation is not likely to be successful. A few things to be kept in view are:

(i) *Supervisory staff efficiency*:

Frustration with the job is not uncommon. Where there is no variety in the job and it does not provide any scope for challenge or incentives for the good workers, the by-product is frustration. The situation can be avoided by periodical job redesign which can be done through (a) Job Enrichment (b) Job Enlargement and (c) Job Rotation.

- (a) Job Enrichment can be provided by introducing job satisfaction measures coupled with a challenge when assigning work to any individual worker. He may be provided with an opportunity to work independently with more responsibilities of higher cadre. He will feel elevated and put in his best efforts in execution and completion of the job assigned.
- (b) Job Enlargement can be of much help where job enrichment is not possible. The increase in the variety of tasks may be termed as job enlargement. But in this the level of responsibility of individual remains the same. Introduction of variety of jobs, keeps the frustration away and helps in getting the best of efficiency of the workers.
- (c) Job Rotation is assigning the job different nature (of the similar status or level) to create change and enthuse interest. As an example an individual could be put on construction, maintenance, design and R&D Sections in rotation. Any redesign means "Change" for the

workers and it requires a great deal of care. It is not a juggling of different tasks and levels, it is the part of a good management in order to maintain high efficiency of a person.

(ii) *Innovative and new techniques*:

In order to save money, scarce materials, manpower and time and to optimise the use of available resources, it is necessary to make use of the latest knowledge and systems developed or available. In the field of construction of a building project Central Building Research Institute, Roorkee is a pioneering organisation which has developed the new technologies and alternate materials for construction.

- (iii) Preventive and safety measures
Engineer-in-charge at site should ensure that proper safety measures are being adopted during execution so that the chances of accident and loss of human life could be avoided. Proper maintenance of equipments used at site should be ensured before start of execution programme. Preventive maintenance or replacement of parts etc. is chalked out in advance, to avoid failures/accidents.

Conclusion

The management of a construction project is not an easy task and is full of challenges. A good manager is one who has foresight of possible problems and is ready with solution before the problem is met. He should have the skill to face situation and come out with solution where he has not thought of any problem and has to face it suddenly. Experience, skill and attaining knowledge about the latest developments in the field provides a manager confidence and capabilities to complete the project in-time.

References

- Chary, S.N., "Production and Operation Management", TMH, New Delhi-1988.
- Chandra, P., "Projects Preparation, Appraisal, Budgeting and Implementation," TMH-1967.
- E.E. Adam. & R.J. Ebert, "Production and Operation Management", 4th Edition Prentice Hall Int. 1990.