

## Topic 6 Section 9

# Controlling Construction Processes

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# Controlling Construction Processes

## Purpose of Job Control

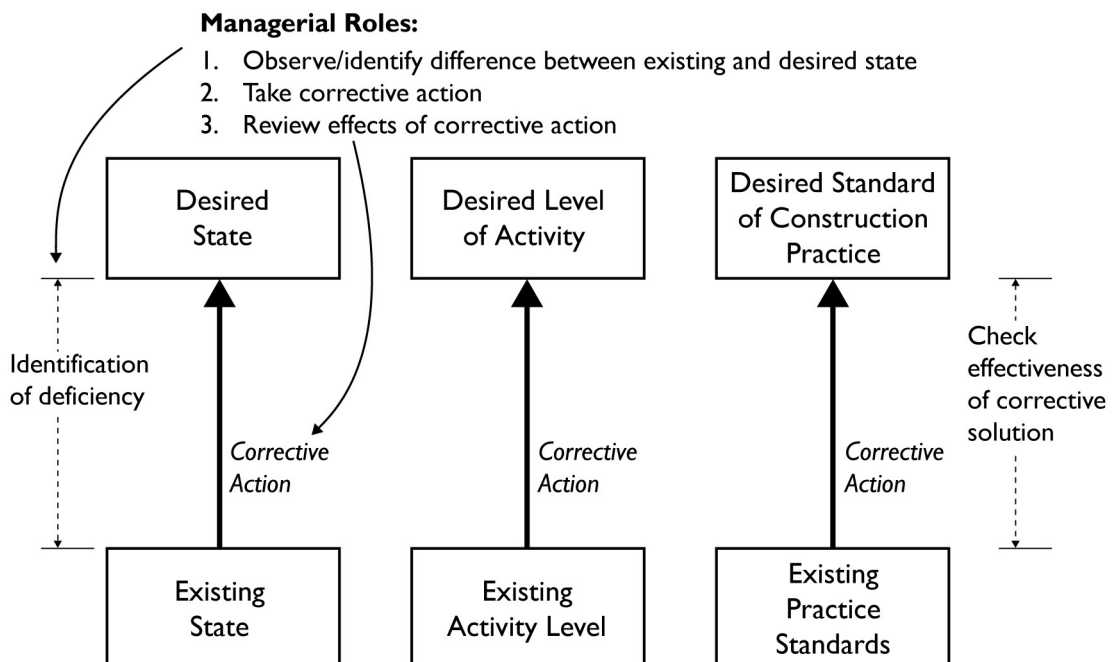
The first and foremost reasons for controlling the job are to ensure that it is carried out safely and profitably. It does not matter whether the person exercising control over the job is a leading hand, foreman or project supervisor; the main objectives— safety and profitably— remain unchanged.

The need to maintain effective control of the job, and the methods of achieving control, have been discussed in greater detail in other parts of this topic, and elsewhere in this learning resource:

- Managing personnel (Section 5)
- Managing plant (Section 6)
- Managing resources (Section 7)
- Estimating and cost control (Topic 3).

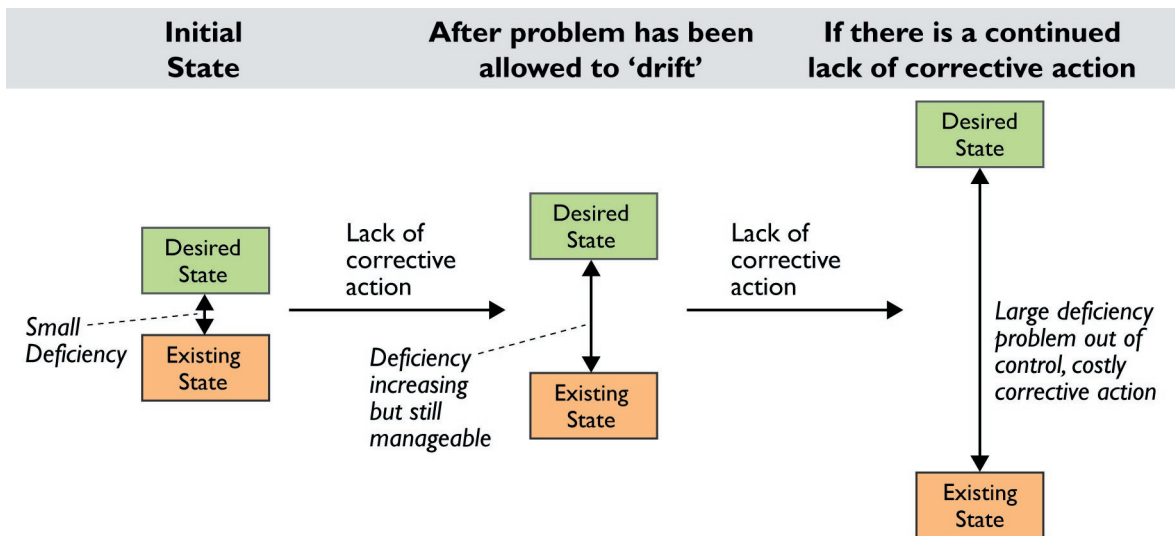
## Effective Control

‘Effective Control’ means checking regularly to find out what has been achieved and comparing that with what should have been achieved; taking action to correct any deficiencies; and reviewing the effectiveness of corrective actions.



Desired states and levels of activity, and standards of practice, are determined primarily by reference to the contract documents. This means constant attention to the standards of the work being achieved, and comparing them with the requirements stated in the project plans and documents. Topic 4 in this training series, Contract Administration, covers in more detail the reasons why it is essential for all work on the project to meet the contract requirements, and the importance of quality assurance and quality control.

If the person in charge of an item of work does not constantly check progress and standards, and make any required corrections, the standard of the work will tend to ‘drift’ away from the desired standard or condition.



The plans and specifications should not be regarded as being completely inflexible, and the job supervisor is expected to bring to the attention of the supervising engineer any aspect of the job he or she feels may need changing. For example, it may be acceptable to raise a grade-line for economy when unrippable rock is encountered. However, no change may be made without first obtaining the necessary approvals.

Other functions of the person responsible for job control include ensuring that:

- Construction plant is properly used and maintained.
- The programmed rate of construction and expenditure is maintained or bettered.
- Treatment of job personnel and sub-contractors is in accordance with principles of equity and fairness.
- Conditions set down in the various industrial awards are implemented and maintained.
- Company policies are implemented and maintained.
- Proper records of completed work are maintained.
- All safety requirements are observed.



Any person in a supervisory position who is exercising control over some aspect of the job must observe the required standards and controlling factors as set out in the following documents:

- Working drawings
- Specifications
- Standards
- Estimates
- Works program
- Materials schedule
- Safety codes, Acts and regulations.

## Control Methods

The form of control must be simple, easily understood and practical. Factors affecting the method of control exercised over a job include:

- Size of the job
- Skills and abilities of personnel employed on the work
- The amount of direct supervision that can be given by the job supervisor
- The rate of construction.

The success of labour control is dependent on regular inspections of the site, and discussions with gangs and crews so that they know not only what they are expected to do, but also the consequences if it is not done.

A supervisor may only supervise effectively if he or she has a detailed, intimate knowledge of all the construction operations and techniques relating to the work. This requires careful study of the plans and specifications.

Other staff on the job, such as for the supervising engineer, the foreman, cost clerk, soil tester, etc may be valuable as sources of information that may be useful for job control.

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### **Remember!**

*When in doubt, ask.*

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The supervisor must be able to detect quickly any deficiencies before they become serious. The following rules should be observed:

- Inspections must be timely, thorough and systematic. Always read the relevant clauses of the specification just before going out to inspect. Make a list of points which must be checked.
- Make more detailed inspections at the start of operations, rather than assuming that things will be all right. For example, it is better to remove 10 m<sup>3</sup> of faulty material at the start of paving operations, than 100 or 1000 m<sup>3</sup> later.

- Observe each operation and think about how it can be simplified or improved.
- Plan the testing and costing procedures of the job so that they yield the necessary information promptly and efficiently.
- When deficiencies are observed, decide immediately what corrective action is required and make sure that it is carried out. For example, when supervising earthmoving operations, never stand by and watch a dozer working uphill when you know it should be working downhill. Act promptly to reconsider and reorganise the plant operations.
- Observe the resources (manpower, materials and plant) that are currently in use, make an honest assessment of the actual need, and act accordingly.

## Materials Control

The effective control of materials is essential to the efficient management of resources and overall job control. Therefore, the job supervisor has a responsibility to:

- Order the correct types and quantities of materials.
- Have them in the right place at the desired time. Ordering material well ahead of requirement is essential to the job, and assists the company's purchasing personnel to satisfy the requirements of all jobs on the company's books.
- Check that the materials are of the specified quality.
- Comply with all regulations affecting the removal of natural materials (e.g. environmental licences), as non-compliance may be costly.



## Plant Control

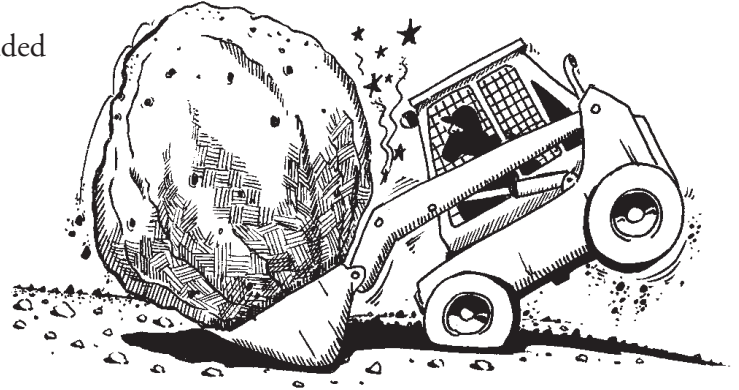
A similar approach to that applicable to materials applies to the control of construction plant and equipment. A good supervisor ensures that:

- Construction plant is not being used merely because it is available, when other plant (perhaps hired) would be more efficient. The person responsible for overall plant needs should be consulted if an item of plant is not the most suitable for that activity.

- Plant is organised on site so that all items of plant are kept working as efficiently as possible.
- Plant is being skilfully operated and properly maintained.

There are occasions when the use of a particular machine is unwise, as adverse site conditions result in a poor job requiring corrective work later. This is undesirable, uneconomical and bad for morale.

Plant requirements are usually included in the works program. By regularly referring to the works program, the supervisor has another source of information about the efficiency and effectiveness of plant use on site.



## Cost Control

The control of job expenditure is the responsibility of the project manager, but this person expects the job supervisor to make sure that day to day expenditure on all items is controlled to produce the most economical job to the specified standards.

It is therefore the supervisor's responsibility is to keep the project manager informed on the current cost situation for the major items.

Some items, such as those listed below, can rapidly add cost to a job and must therefore be tightly controlled:

- Preliminary site operations (setting out, construction of haul roads etc)
- Indirect site expenses (telephone, gas etc.)
- Unproductive work items (e.g. fire-breaks etc.)
- Final clean-up.

Fixed site expenses, i.e. those incurred when establishing and maintaining site facilities and clearing temporary works and access roads, need to be tightly controlled.

The initial stages of the job require special control, so that the desired rate and method of construction is achieved at an early stage. Tight cost control in this phase is essential to ensure that cost escalation does not set in.

Time (man hours and machine-hours) is the measure by which all efforts, both productive and unproductive, are controlled against the estimates. It is also used to assess progress against the job program. Essentially, time means money. If the supervisor can reduce the time that men and plant spend on an operation, this is a saving in the overall cost of the job.

It is essential that the supervisor maintains full communication with the cost clerk or other person who supplies cost information. A good working relationship will help the supervisor to ensure that costing and production information is available promptly.