Topic 2 Section 5

Maintain a Works Program

Contents

Section 5 – Learning Objectives

Level 1: Demonstrate/simulate/explain, at Ganger/Leading Hand levels of supervision, the ability to understand the process of maintaining a works program for a representative construction activity.

Level 2: Demonstrate/simulate/explain, at Foreman levels, the ability to understand the process of maintaining a works program for representative construction activities.

Level 3: Demonstrate/simulate/explain, at Supervisor level, the ability to understand the process of maintaining a works program for a representative construction project.
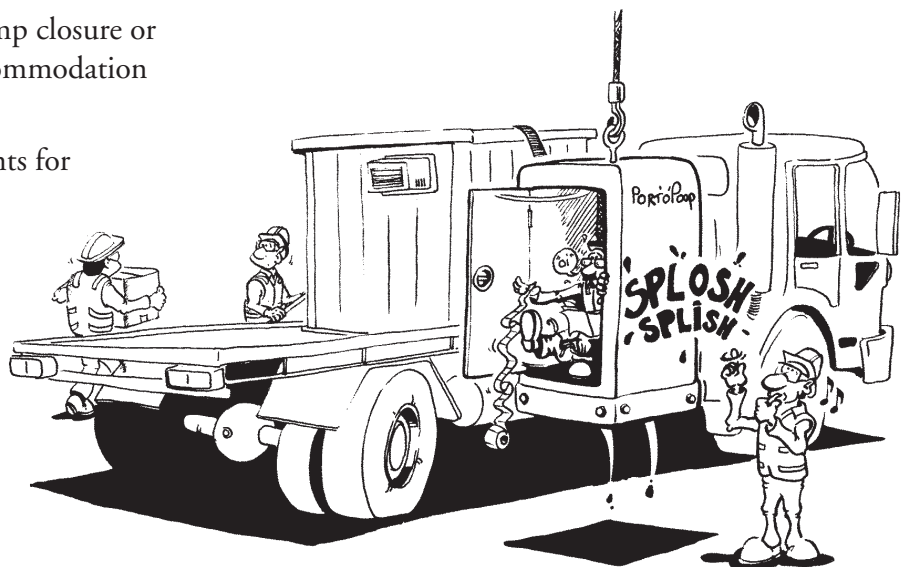
Adjust the Works Program

Adjusting the works program means making changes to the bar charts as conditions change on the job.

There are many reasons why a works program may need to be adjusted as the job progresses, including.

- bad weather (e.g. a long spell of hot weather or heavy rain)
- failures of plant to arrive on time
- breakdowns of machinery or equipment
- ill-health
- industrial problems.

Such changes may indicate the need to make changes to day-to-day operations, such as:

- moving workers on to another job or terminating their employment
- giving notice of camp closure or termination of accommodation arrangements
- making arrangements for dismantling camps
- moving plant and equipment to other parts of the site
- moving plant and equipment on to another job or returning items to their owners
- arranging for more deliveries of materials or for removal of excess materials
- addressing industrial issues.

The need for changes such as these may arise on a daily basis, and you must constantly be prepared to handle such situations.

Each of these conditions usually signals a need to use more resources on the job.

The responsible person (whether at leading hand, foreperson or supervisor level) must review the appropriate bar charts, line charts or CPM/PERT charts each time an operational change affects the resources used on the project.

The following are examples of what 'adjusting the works program' may mean:

- Changing the length of a bar on a bar chart if the activity takes longer than expected or is completed sooner than expected

- Overlapping bars when savings are made by organising activities so that they take place concurrently

- Inserting gaps in the bar chart where wet weather causes delays or unexpected events intervene.

Each time you adjust the project to meet changing conditions, you are having an effect on the final outcomes, such as:

- completion date

- standard of work achieved

- durability of the product

- amount spent compared to budget.

Usually, the end results of the various adjustments made as the project progresses are that the job is finished in a shorter or longer time than was scheduled, or at a higher or lower cost.

Amend the Works Program

The difference between an adjustment and an amendment to a works program is in the size and effects of the change.

Adjustment vs. Amendment

Adjustments result in changes at the operational level, without affecting the overall under which the works are being carried out.

An amendment to a works program is said to occur where the change is large enough to affect the terms and conditions of the contract. It may be the leading hand or foreperson who first notices a major change— for example, if a road built on a hillside is affected by a landslip, the people on the job will be the first to detect the early warning signs. Whatever the cause of the amendment, it will usually involve the project supervisor, and other people in the organisation. Negotiations will be needed to ensure the contract itself is either enforced or terminated, or the terms and conditions are changed to reflect changed conditions.

Using Charts for Project Amendment

During the process of negotiating an amendment, there will be a need to look closely at bar charts to find possible ways of making changes, whether to activities, tasks or machines.

Leading hands, forepersons and supervisors will need to ask and answer questions about the progress of the job, based on their prior knowledge and work with the charts. For example:

- The leading hand may need to ask: Am I on schedule? If not, what is the problem? How can I fix it?

- The foreman may need to ask: Are my activities balanced? For example, if machinery is available to dig and cart 100 m³/hr, is the machinery to place and compact the dirt capable of matching this rate?

- The supervisor may need to ask: Is the work sufficiently organized? For example, will final trim be needed while the road is still under traffic?

When using charts in this way, the following ideas are useful:

- Effort driven area: sections of the project that we can accelerate by providing more resources.

- Resource conflict area: where two or more discrete sections of the project may be competing for the same resources.

- Resource levelling area: where resources can be 'borrowed' from one discrete section of the project to enable another to catch up, minimising the impact of delays on the overall project.

- Time lag: clearly defined areas within the project where there may be delays between dependent tasks.

- Slippage: clearly defined areas within the project that are falling or have fallen behind schedule.

At the end of negotiations, you will be advised of the amendments that are to be made to the project. You will then need to either change existing bar charts, or to use new information. Your supervisor will advise the correct course of action.

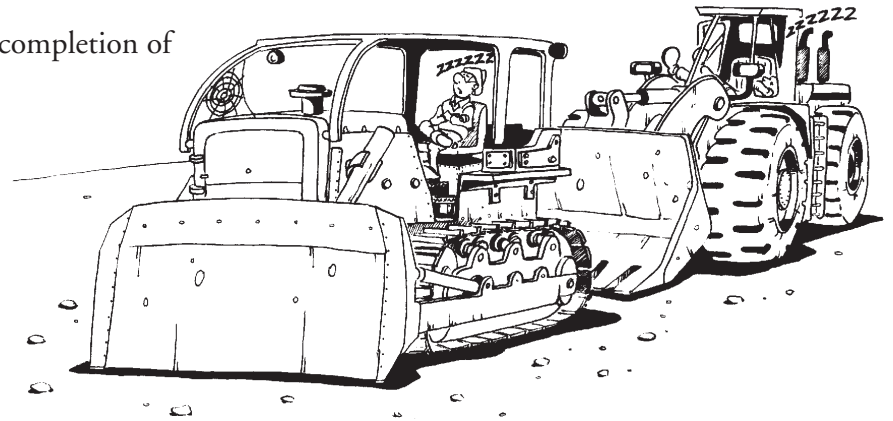# Update the Works Program

Updating the works program means adjusting the bar charts so that they show the current state of progress on the job. In practice, this means:

- timely recording of start and finish dates of activities and tasks.

- regular recording of numbers of hours and dollars spent.

- highlighting of areas where the activity or project is ahead of or behind schedule.

- entering new information as soon as possible after it is received.

Each time you check progress of the job against the schedule, you will need to decide whether the job is running ahead of or falling behind schedule or running ahead. While it is

easy to identify consequences (such as increased costs) when a job falls behind schedule, there may be equally serious results when a job gets too far ahead of schedule, such as:

- plant and equipment lying idle, incurring daily stand-by charges

- over-utilisation of particular plant and equipment items, causing unscheduled breakdowns

- rapid depletion of stockpiles of materials, leading to delays while more materials are delivered

- personnel waiting on completion of particular tasks

- damage to buried services as the job becomes more rushed

- inability of utility service providers to make required system alterations on time.

If the program is up-to-date, people can more readily agree on what has been achieved so far in a project, and the effects of adjustments and amendments that have occurred to date.

Contractors involved in a project are paid in instalments, depending on whether they have achieved the project milestones by the due date.

Keeping accurate, up-to-date information about progress of a project is therefore essential.

Report on Progress of the Works

Your responsibilities for managing the job start from the time you receive the plans, specifications and other documents, and continue until the job is satisfactorily and economically completed.

As a responsible person, you must achieve the following:

- A sound result. When all allocated funds have been spent, the people who have paid for the work want a completed, functional asset— not a liability.

- An economical job. Your supervisors are relying on your knowledge and sense of improvisation, as well as your ability to co-ordinate and utilise the skills of others, to produce the required asset as economically as possible.

- A safe job. As the job manager, and in keeping with your legal safety obligations, you must resist any temptation to relax safety standards or practices for what may appear to be 'economy'.

Your supervisor is responsible for the overall management and technical content of the project. He or she and he must keep the next line supervisor informed of progress on the job and of rate of expenditure against the job budget. As well as this, your supervisor has to report anything that may adversely affect the successful completion of the job.

Making regular reports to your supervisor to advise him or her of the progress on the job is therefore an important responsibility. When we make the effort to constantly adjust, amend, and update the work plan for the job, we are also increasing our ability to make reports to meet supervisors' needs.

Reporting Requirements

People in your organisation will advise you of the kinds of reports you are required to submit, and how often to submit them. Your responsibilities may include any of the following:

- verbal reports during the supervisor's visits to the site

- completion of paper forms showing rate progress or rate of expenditure

- reports on major incidents, such as accidents, damage to or loss or plant, and equipment breakdowns

- completion and submission of charts and returns on-line, using the organisation's computer network.

As the person responsible for the detailed management and day-to-day running of the job, your task is to achieve, under the direction of the supervisor, the objectives set for your part of the project.

To do this you will need, in addition to the skills described in this topic, skills in a number of other areas:

- Contract administration

- Communication

- Leadership.

Training material covering these skills is presented in separate training topics in this series.

Section 5 – Assessment Activities

For information on how these assessment activities may be used as part of the learning process, see the section on 'Assessment' in the 'Topic Descriptor' section at the front of this topic.

Theory Questions

The following questions allow you to assess your progress in understanding the material presented in Section 5. The questions may be of any of the following types:

- multiple choice (identify correct answer or answers)
- multiple choice (identify incorrect answer or answers)
- fill in the gaps in a sentence or statement
- identify a sentence or statement as TRUE or FALSE
- write a few sentences or a short paragraph.

Answers to the question are shown in the separate 'Answer' section.

Question 1

List four reasons why a works program may need to be adjusted as a job progresses.

_____

_____

_____

_____

Question 2

(Fill in missing words) An adjustment to a works program means making changes at the

_____ level, while an amendment involves changes affecting _____

_____ .

Question 3

The project supervisor says he wants the drainage work to be more effort-driven. He means that:

Drainage is competing with other sections of the project for the same resources. ☐

Resources can be 'borrowed' from another section of the project to enable drainage to catch up. ☐

Drainage is causing delays to other, dependent tasks. ☐

This section of the project could be accelerated by providing more resources. ☐

Question 4

List four possible consequences that may follow from work that is a long way ahead of schedule.

_____

_____

_____

_____

Practical Exercises

Practical Exercise 1

Study bar charts for a construction project in your area. Identify three or four tasks that form part of the job. What effects would there be on the project as a whole if:

- Any one of the tasks was completed in 50% of the planned time?
- Any one of the tasks was completed in 150% of the planned time?
- All of the identified tasks were completed in 50% of the planned time?
- All of the identified tasks were completed in 150% of the planned time?

Practical Exercise 2

Study bar charts for a construction project in your area. Identify three or four activities that form part of the job. What effects would there be on the project as a whole if:

- Any one of the activities was completed in 50% of the planned time?

- Any one of the activities was completed in 150% of the planned time?

- All of the identified activities were completed in 50% of the planned time?

- All of the identified activities were completed in 150% of the planned time?