4

PROJECT PLANNING AND SCHEDULING

Project planning and scheduling, an initial procedure in a construction process, have been covered in this chapter. Planning and scheduling are critical aspects of the project lifecycle. Hence, a detailed impression has been devised to deal with those crucial segments that are significant in the initial phase of a construction project.

4.1 PROJECT PLANNING

Planning is defined as "determining a course of action by establishing milestones, selecting alternatives, and making decisions"[42]. Planning must be systematic, flexible, disciplined, iterative, and must be performed throughout the life of the project [43]. Adequate planning leads to the correct completion of the project. Whereas inadequate and insufficient planning leads to frustration towards the end of the project and poor project performance. Planning is an essential parameter of any construction project and errors in it can lead to the crucial collapse of the project. Effective construction project planning requires the appropriate technology selection, work team selection, cost estimation, resources and duration, and risk identification. With efficient planning, the project goals can be achieved as it captures the details of processes, procedures, and policies. Creating a plan is highly critical due to various challenges in construction projects. Technical aspects, organisational decisions, and relationships with other project parties also need consideration while planning. Over time, major advancements have been brought in the construction projects where the planning becomes easier due to various tools in comparison to old methods. The types of planning are pre-project planning, pre-bid planning, pre-construction planning and during-construction planning.

1. Pre-project Planning
   Performed by the owner as a part of the feasibility analysis stage of a project. The pre-project planning is defined as "the process of developing sufficient strategic information for owners to address risk and decide to commit resources to maximise the chance for a successful project" [44].

2. Pre-bid Planning
   A general contractor performs the pre-bid planning to prepare for the submission of a bid [45].

3. Pre-construction Planning
   The pre-construction planning begins after a project has been awarded but before the construction work has been executed [45]. It often extends into the construction stage. It is performed by the contractor and endorsed by the A/E and the owner.

4. During-construction Planning
   The during-construction planning occurs after the project has been started and continues throughout the project's life [46]. Its purpose is to address issues that could only be identified or discovered after construction has started.

To establish a sequence of work and timeframe for the performance of construction activities planning is required. The steps for planning are

1. Develop a Work Breakdown Structure (WBS) that identifies work items (activities):

   a. Consider activities that require time.
   b. Consider activities that require a cost.
   c. Consider activities that you need more effort to be arranged.
   d. Consider the activities that need to be monitored.

2. Prepare a network diagram that shows each activity in the order it must be performed to complete the project:

   a. Consider which activities immediately precede each activity.
   b. Consider which activities immediately follow each activity.
   c. The interrelationship of activities is a combination of how the work must be done (constrains) and how you want the work to be done.

3. Determine the time, cost, and resources required to complete each activity:

   a. Review work packages of the WBS.
   b. Obtain input from project team members.