

CHAPTER 4

COMPUTER ANALYSIS

Computer Analysis Computations. When the logic diagram has been developed with descriptions, activity numbers, and estimated duration times for the activities, all other analysis computations can be made by computer with the results listed in tabular format on printouts which are easy to read and use. In the Precedence diagramming system, the input information needed by the computer includes the following for each activity; activity identification number, duration time, activity description, the predecessor and successor activities, and any start to start or finish to finish relationships and lag times. Other information such as activity cost, contractor, subcontractor or Government responsibility can also be entered if desired. The computer should also be told what output information is desired in each report. Information can be sorted by any data desired. Some useful sorts are as follows:

a. **Work Activity Number Sort.** A work item sort for precedence diagrams provides a convenient listing to locate any one activity quickly. It is the "dictionary" sort of activities in order of work item number for the precedence system.

b. **Predecessor/Successor Report.** In the precedence system, a report of what activities precede and what activities follow any activity is available. These reports are necessary for complete analysis of the precedence logic.

c. **Late Start Sort.** A listing of activities by late start dates arranges the activities in chronological order of start dates which must be met to maintain schedule. All activities with must start dates for the next report period can be quickly identified.

d. **Early Start Sort.** A tabulation of activities by early start dates will group those activities which can be started during the next report period. This provides the manager with the work which can start and the dates on which he or she may begin it.

e. **Late Finish Sort.** A listing of activities in chronological order of late finish dates provides a means to quickly locate all activities which must be finished during the next report period, and the dates which must be met to maintain or to regain the schedule.

f. **Early Finish Sort.** A listing of activities in chronological order of early finish dates provides a means to quickly locate all activities which can be finished during the next report period.

g. Responsibility Sort. If contractor, subcontractor, Government, etc. responsibility has been entered as an activity resource, a report can be extracted in groupings of responsibility as coded. These reports are useful to distribute assigned schedule dates to various responsible parties such as subcontractors.

h. Total Float Sort. A listing of activities in order of total float identifies the critical path and other float paths in ascending order of float. As the float value of a path increases its criticality decreases. If the report secondary sort is by early start the paths will appear in order. This listing is very useful for a number of reasons. The date on the early finish of the final critical activity projects the completion of the project. The critical activities controlling this completion are displayed together in order. The next groups of activities which are nearly as critical are displayed together grouped in ascending order of float. Most computer software systems allow the fixation of the late finish of the final critical activity on any date such as the current contract completion date. If the projected early project finish slips beyond this date, a negative float calculation will result on the critical path and perhaps on other nearly critical paths. This provides a display of where, by how much, and on which activities the project must be accelerated to regain schedule. Similarly, if the projected early finish of the last critical activity falls earlier than the fixed contract completion date, the most critical path will display a positive float value.

i. Reports. If activity costs have been assigned to each activity that represents a cost item, cost reports can be generated projecting possible payment based on early or late sort arrangements. These reports allow an early and late fund requirement prediction.