

AACE
INTERNATIONAL
RECOMMENDED
PRACTICE

37R-06

**SCHEDULE LEVELS OF DETAIL -
AS APPLIED IN ENGINEERING,
PROCUREMENT, AND
CONSTRUCTION**

SAMPLE



AAACE® International Recommended Practice No. 37R-06

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TCM Framework: 7.2 Schedule Planning and Development

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SAMPLE

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Disclaimer: The opinions expressed by the authors and contributors to this recommended practice are their own and do not necessarily reflect those of their employers, unless otherwise stated.

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PURPOSE

This recommended practice (RP) is intended to serve as a guideline, not a standard for owners and contractors to establish a common frame of reference and understanding when describing the level of detail for any construction project schedule. This RP identifies four schedule formats based on level of detail, and provides descriptions of schedule levels and the intended use of these schedules by project participants.

This recommended practice provides descriptions of the schedule levels methods with the intent to improve the understanding and communication among project participants and stakeholders involved with preparing and using project schedules. This recommended practice (RP) describes the schedule level methods that are prevalent in the construction industry today for reporting and communicating project schedule plans, results and forecast or “to-go” data to respective stakeholders. This RP excludes “turn-around projects”, and does not necessarily apply to line of balance or linear scheduling applications.

INTRODUCTION

Project participants frequently misunderstand the definition of schedule levels, which limits the quality and value of the information provided to the stakeholders and project participants. Usually there is more than one level of schedule detail required and reported. Project participants and stakeholders require different types of data and levels of detail relative to their schedule usage.

The project owner or client is most likely to be interested in milestones and facility/feature start and completion dates at a higher or summary level. Contractors would monitor and control their subcontractors at an intermediate level and control their direct hire project efforts at a much greater level of detail. Subcontractors and vendors would typically monitor and control their own work at a task list level, even though they will be required to interface with other subcontractors or vendors and report to the construction manager or prime contractor at a higher level. Ultimately, the project contract documents, terms and conditions will determine the format and content of the project or program schedule levels.

Many scheduling specifications in the construction industry discuss “schedule levels” when referring to the volume of activity detail displayed in the project schedule, while other schedule requirements are defined with a descriptive title (e.g. “summary” vs. “control” schedules). The large engineering, procure and construct (EPC) contractors have developed systems within their organizations to describe levels of detail for their typical construction project schedules. Reporting requirements for schedule levels are routinely established in the project planning phase and ultimately incorporated into contract specifications using one of the generally accepted methodologies. There are a variety of accepted methods to describe or identify the levels of schedule details. This RP addresses and compares three generally acceptable methods:

1. Numeric Schedule Levels,
2. Engineering, Procurement, Construction (EPC) Schedule Levels, and
3. Descriptive Methodology.

The mixed use of the schedule levels methods often results in misunderstandings due to the inconsistent numbering systems or confusion regarding the descriptive terms. For example, a “summary schedule” and a “master schedule” are not the same thing. A master schedule is a consolidated schedule that incorporates multiple, related projects or parts of a project so that they can be monitored and controlled as a unit. This prompted the need to clarify the similarities and the distinctive characteristics of these schedule levels methods.

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NUMERIC SCHEDULE LEVELS

Traditionally the schedule levels have been identified by a numeric designator such as the method described in Jelen's^[5] and by the Construction Industry Institute (CII)^[4]. This numeric method is related to the development of project or program approaches that have been documented within the construction industry. This numeric-based approach often correlates the schedule level to the project's work breakdown structure (WBS) but has not always been entirely consistent with the WBS. Both Jelen's *Cost and Optimization Engineering*^[5] and the Construction Industry Institute's (CII's) Publication 6-5, *Project Control for Construction*^[4] endorse the method that describes these numeric schedule levels:

Level 0: This is the total project and in effect is a single bar spanning the project time from start to finish. Functionally there is very little practical application for a schedule that is only a single bar other than to represent an element of a project or program time line. Level zero schedules normally will include the project or program major milestones and bars indicating key scope.

Level 1: This represents the schedule for the project by its major components. For example, a schedule for a process plant may be divided into process area, storage and handling area, service, site areas, and utilities. A Level 1 schedule is normally displayed as a Gantt or bar chart and may include key milestones.

To differentiate between program and project schedules: a Level 1 of a program schedule, for example, would be a combination of Level 0 schedules for each component project. This would give program schedules at least one more level than the most detailed project schedule that constitutes the overall program.

Level 2: Each schedule component is further subdivided for Level 2. For example, utility systems are further subdivided into water, electrical, gas, storm drainage, and sanitary systems, etc. In most cases Level 2 schedules can only be shown as a bar chart although key constraints may also be displayed. Milestones are normally included.

Level 3: The first level that a meaningful critical path network can be displayed and the CPM schedule can be used to monitor and manage (control) the overall project work. Level 3 is a good level for the overall project control schedule since it is neither too summarized nor too detailed.

Levels 4-X: The level of schedule subdivision continues to whatever is appropriate detail for the user. When operating at more detailed levels, the planners generally work with segments of the total schedule. Often the project "rolling schedule" includes a "look-ahead" period of time (30–180 days) and a "look-back" at recent completed work periods.

SCHEDULE LEVELS REQUIREMENTS

The various participants in a construction contract all have different requirements and levels of interest in the project schedule. The owner and the contractor's home office are interested in summary level schedules with key milestones. Project-level personnel are interested in more detail. Thus there are the various schedule levels requirements. There is no universal agreement as to the number of schedule levels and their format. Schedule levels descriptive methods correlate the communicating and reporting relationships to their respective audiences which allows the user to understand the amount of information desired for each level, such as project work area, work groups, work packages and activity/resource elements. The following provide further clarification:

- Schedule levels are determined by the detail required of the key project stakeholders. Since schedules are developed for the purposes of performing that specific phase of the work, all schedules therefore should roll-up from more detailed scope of the activities and tasks.