

How to Develop a Schedule that Confirms to the Contractual Requirements

- By Sagar Raut

Schedule is a tool that helps project team achieves project timely delivery objectives. For construction projects, it is common practice that a contractor is brought onboard. In this arrangement the Contract between the owner/employer and contractor becomes the pivotal tool that sets out obligation of either party, which includes the obligation of timely delivery of information, work front, and completed works. While Schedule remains the tool that help projects to achieve timely delivery objective, however, in the employer-contractor-contract setting, the role of the Schedule as a tool broadens from merely time control to the areas like delay analysis, cost and time claim, internal and external communication.

In this scenario failure by a party to achieve milestone or to complete an activity, as required in Schedule, may have a contractual implication, which may result into claims and disputes. Therefore, it is mandatory that the Schedule must incorporate and confirms to the obligations set in the contract. Reading and understanding contract requirements are, therefore, the first step towards schedule preparation. Contractor's Planner/Scheduler requires a certain degree of skill and knowledge to read the contract, and skim relevant information and obligations to incorporate in the Schedule. Same is valid for the owner (or his representative) scheduler at the time of review/approval of the Schedule.

In large and complex contracts, involvements of the specialist contract professionals are recommended to advise the Scheduler to ensure that all the important contractual information are incorporated in the Schedule.

I have come across several Schedules that have missed important contractual elements. Although, in my experience, such omission have not resulted into issues or disputes all the time, but at several occasions they require correction to the (baseline) Schedule and more often, and importantly, such omissions reduces the efficiency and effectiveness of the Schedule. It would be a good idea to avoid such omission at the first place than revisiting and correcting the Schedule at later date.

Sometime errors caused by not following the contract requirements, may result into rejection of schedule and in some cases it may turn out to be a financial implication to the contractor. In few instances, this may cause contractor failure to submit the schedule within the duration stipulated in the contract and eventually lead to nonpayment or withholding of contract specified sum from the interim invoices. In their more complex form, these shortcomings may weaken the position of one party in a claims situation.

As said, the contract sets out the contractor and employer obligations. For scheduling point of view, these obligations boil down into three broad categories of:

- a) Contractor obligations - to deliver the project within timelines.
- b) Employer (and/or his representative) obligation to provide inputs (in a timely manner specified in the contract or requested by the contractor) to enable the contractor to complete the works.
- c) Schedule Preparation/update methodology

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Let us discuss each in detail. To simplify and avoid any confusion I have used FIDIC Red Book 1999 references in the forthcoming discussions. References to the clause are based upon General Conditions of the Contract. It is obvious that the Particular Conditions and appendices linked to the clauses should also be referred. Logical parallelism can be drawn with other contract forms too. To use the same terminology throughout, I have used term Schedule to refer the Contract Programme or Contract Schedule.

Contractor obligations

I. Project completion milestone(s) - Clause § 8.2 'Time for Completion' provides the project completion milestone. Some projects are handed over in parts. Clause § 10.2 'Taking Over of Parts of the Works' sets the requirement for the project to be handed over in parts.

II. Mobilization at site milestone – Although Red Book does not explicitly define contractor mobilization events; however some contracts set timelines for contractor's temporary facility installations. This information is generally available in the relevant appendices to the contract.

III. Intermediate project delivery milestones – Again Red Book does not explicitly define the intermediate project delivery milestones. However, in order to ensure the timely completion of the project or other requirements, owner may insert intermediate milestone(s). For example, for building projects these milestones can typically be 'Completion of Sub-structure', 'Completion of Super-structure' etc., if inserted, it is general practice to link liquidity damages or penalty against the intermediate milestones. This information should be available in the relevant contract appendices.

IV. Days from the contract award within which the Schedule must be submitted – Clause § 8.3 'Programme' requires the contractor to submit detailed Schedule with 28 days of award. Sometime, this time limit is amended in the Particular Conditions.

Employer obligations

I. Project start milestone(s) – While the contractor is obliged to start work on the dates specified in the contract, owner on the other side has the responsibility to provide the contractor site access and other relevant input to start work.

Clause § 8.1 'Commencement of Works' defines the commencement date of works. This clause defines Issue of Letter of Acceptance (LOA) date and the number of days from the LOA date when the works shall commence, i.e. Commencement of Works date. This is the date when the owner should handover site for construction. Projects where the site front is released in phases, the information about the front release can be found in relevant Particular Conditions or appendices.

II. Dates for the employer to provide design and other information – Red Book (Clause § 8.3 'Programme' and Clause § 1.9 'Delayed Drawings or Instruction') requires the contractor to inform the owner about the requirement of drawing or instruction to carry out the works. Therefore, the Schedule

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should identify those owner input items and show dates for the respective items. This can be done by introducing the milestone event for each item and connecting with them subsequent activity(s).

III. Owner (and/or his contractors) installation handover milestones – If a certain part of works is to be carried out by the owner (or the contractor nominated by the owner) is always recommended that the shown start and completion date of such work in the schedule. Date and duration information for such activities are generally not mentioned in the contract. However, they can be derived by linking with predecessor and successor activities.

IV. Owner (and/or his consultants) approval turnaround time – Contractor is always required to obtain Owner's (and/or his consultant's) approval on materials, shop drawings etc. Turnaround duration for such approvals is generally mentioned in the appendices. If no duration is mentioned in the contract, it is recommended that the contractor should consider a reasonable duration and highlight as the basis of schedule in the Schedule supporting document.

Schedule preparation and update Methodology

Clause § 8.3 'Programme' briefly set the schedule preparation/update requirements. This is the most important clause for schedule point of view. For the benefit of the readers let me refer this in here -

The Contractor shall submit a detailed time programme to the Engineer within 28 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:

- (a) the order in which the Contractor intends to carry out the Works including the anticipated timing of each stage of design (if any). Contractors Documents procurement manufacture of Plant, delivery to Site construction erection and testing.
- (b) each of these stages for work by each nominated Subcontractor (as defined in Clause 5 Nominated Subcontractors).
- (c) the sequence and timing of inspections and tests specified in the Contract and
- (d) a supporting report which includes:
 - (i) a general description of the methods which the Contractor intends to adopt and of the major stages in the execution of the Works. and
 - (ii) details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance

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with the programme subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.

The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work increase the Contract Price or delay the execution of the Works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances and/or a proposal under Sub-Clause 13.3 [Variation Procedure].

The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances and/or a proposal under Sub-Clause 13.3 [Variation Procedure].

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions the Contractor shall submit a revised programme to the Engineer in accordance with this Sub-Clause.

It is general practice to extend the schedule requirement through Particular Conditions or appendix. The appendices defining schedule requirement are generally titled as 'Schedule Specification', 'Programme Requirement' etc. Particular Conditions and the contract appendices should be search for the following information -

I. Level of Schedule detailing – this is generally defined in two ways. First, maximum duration of an activity. This may be either defined in terms of '%' of the overall project durations or in weeks. Long lead procurement items are generally excluded in maximum duration limit.

Second is Work Breakdown Structure (WBS) drill down level. Some contracts require for approval of WBS by the employer (or his representative) prior to the Schedule preparation. In this scenario, level of detailing in the WBS would govern activity level definition (and, therefore the level of detail) of the Schedule.

II. Requirement of Schedule supporting document – In order to confirm that the Schedule submitted by the contractor is achievable, the contractor has meticulously sequenced the project activities, identified the resources requirements etc., all the Contracts require the contractor to submit backup on as to how the Schedule has been developed. As mentioned above, the Clause § 8.3 'Programme' briefly sets two basic requirements for the supporting documents a) General construction methodology, and b) number of personnel and equipment requirements. Generally more elaborate requirement are added through the Particular Conditions or through the contract appendices. These requirements may be as –

1. WBS for the project

2. Weekly/monthly trade wise manpower histograms

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3. Typical Cycles – for repetitive activities like formwork cycles etc.
4. Productivity rates of workmen and equipments
5. Format of submission – number of hard and soft copies
6. Software used to develop the Schedule
7. Cost, quantity and resource loading requirements

III. Reporting Requirement – Updated Schedule is one of the main documents in progress reports. Clause §4.21 'Progress Reports' defines the reporting requirements. Although, the reporting requirements do not largely influence the schedule preparation. However, preparing the Schedule keeping the reporting requirement in mind is a good idea. It helps in activity code structuring, and deciding the resources and time requirement for Schedule updates.

IV. Ownership of float – This is one of the contentious topics in claims management. Red Book General Conditions is silent on it. However, if the Particular Conditions or appendices are biased toward owner (it cannot be biased toward the contractor as this is the owner, of his representative, who drafts the contract), the scheduler is should seek expert contractual advice at the time of preparing the Schedule.

The items I discussed in this blog are can be treated as minimum information for which the contract must be referred. However, depending on the contract and the industry you operate, there might be additional information which might require the attention of the scheduler while preparing the schedule.