

The great philosopher and athlete Yogi Berra once said, “If you don’t know where you’re going, chances are you will end up somewhere else.” If Yogi had been involved in construction, rather than the trade of swatting a baseball, he might have known having a good plan is also important to being able to successfully arrive at the final destination of a construction project. If Yogi’s path in construction led him to be involved in resolving delay claims, which is unlikely given his sense of time (“I usually take a two hour nap from one to four”), he probably would have run across a few CPM schedules that were not much better in modeling the plan for construction than a foil wrapper of a ballpark hotdog.

For an owner, one of the best means to help elevate the schedule from the food wrapper category is through the scheduling specifications. The specifications are the owner’s chance to define what level of service and quality it wants, as well as to lay out some of the ground rules with respect to the schedule.

Sometimes however, CPM schedule specifications are lacking, which in turn affects the quality of the service and product delivered. Perhaps this is because the CPM schedule specification has not kept up with the increased sophistication of scheduling. Perhaps it is because the spec writer thinks the contractor will be producing schedules anyway, so why get overly involved. The facts are scheduling has evolved, and contractors use it to different extents. A proactive approach is needed make sure an owner gets what it wants out of the process.

What follows is a list of the top five specification requirements that, I believe, can have the greatest influence on the quality and usefulness of a CPM schedule.

SPECIFY SCHEDULER QUALIFICATION AND EXPERIENCE – The scheduler should have reasonable knowledge about how the project is going to be built, which means being familiar with the specific type of work and with what management and subcontractors are thinking of doing. The scheduler should also be able to ascertain how long the various steps will take and any resource constraints. The scheduler also needs to be proficient with computers and the specified scheduling software. This is a tall order, and as you can imagine, the person that fits the bill is going to have at least several years’ exposure to construction in order to know the process from award to completion.

Sometimes, specifications are silent about the scheduler qualifications and schedulers are put in place that lack one of these important qualities. This scenario can be avoided by requiring a certain number of years experience with scheduling and perhaps narrow that experience down to the type of project being built.

To make sure the “total scheduler package” is there, the contractor can also be required to request approval for the individual they propose to fulfill the position. Resumes and references can be asked for. You may also want to consider

specifying a quick process for plan B, in case the contractor’s proposed scheduler does not meet requirements, leaves or gets reassigned because in all likelihood the project will march on with or without the person.

SET THE GROUND RULES ABOUT THE TIMING OF SCHEDULE SUBMISSIONS – Imagine paying someone for last week’s weather forecast. The information probably wouldn’t be very valuable to you, unless it extended past whatever day it was, but even then, a more up to date forecast would be more reliable. A schedule is a forecast and the same principle holds true.

“We’re lost, but we are making great time.” – Yogi Berra

In addition to using the schedule to predict and coordinate the future, a schedule is also used to evaluate progress, to tell you where you stand compared to where you thought you would be, in part, so you can determine what direction you need to go. Yogi knew where he stood on his journey by great directional intuition. With the complexities of construction, having some science behind the assessment is a better idea. That science would be a timely schedule update.

A vital component to the quality and usefulness of a schedule is the timing of schedule submissions and specification language that defines it. The specifications should seek the submission of the initial schedule as soon as practically possible. When this should happen depends on the project. The scope of the work and duration along with the process that leads from bid through notice to proceed are a few factors that come into play.

Sometimes the initial schedule can be submitted prior to the notice to proceed and other times it is not practicable. With larger projects, the development of the schedule can be done in stages, with the first stage occurring with the submission of a preliminary schedule detailing the near term work, and then later, with a full detailed baseline schedule. This will enable everyone to know what the near term plan is and also give the contractor time to develop its detailed plan for the remainder of the job and line up and coordinate with its subcontractors. In any case, the date of the expected initial schedule submission and any updates of the schedule should be clearly defined.

Having a schedule in place in a timely manner is also dependent upon the review process. Thus, the specifications should also address this. Items to consider addressing include who is going to review the schedule, how long they will have to review it, and what is the process to work out any potential edits. Again, the review process should be designed so it occurs as soon as practicable after the contractor’s submission.

Finally, it is also a good idea that the specifications contain some provision(s) to compel the Contractor to make the submissions in a timely manner. There are a number of ways to do this, including making the schedule a payment

item in unit priced contracts, or requiring the contractor to include a specified minimum amount for it on its schedule of values and then tying the timeliness of the submission to the amount of payment. Some contracts have provisions allowing the withholding of progress payments or not allowing the contractor to start work in the event that a schedule is not submitted on time or in conformance with the specifications. These provisions are an option, but not a great one since enforcing them can be counterproductive to getting the job completed on time.

SPECIFY REQUIREMENTS ABOUT THE EXPECTED LEVEL OF DETAIL – The level of detail is important because if activities are too long or broad you don't get a good picture of the plan. Additionally, if there are too many activities the schedule is harder to work with and view. The level of detail can be influenced by including provisions governing how many total activities the schedule should have, what the maximum allowed activity duration is or what the maximum allowed activity dollar value is.

The contractor will be making choices about what activities to include in its schedule. Should all submissions be included in the schedule or just certain significant ones? Should it include just the first material delivery that allows an activity to commence or the subsequent deliveries that are needed to keep that work moving? Should it include inspections by third parties? What offsite work should be included and what milestones should be called out?

The specifications can be drafted to influence the contractor's decisions and enable the development of a schedule that contains the work an owner specifically wants to see or work that by virtue of its importance, warrants representation. Consider adding a list of activities or types of activities that the owner wants included.

INCLUDE GUIDELINES ON THE FORMATION OF THE NETWORK LOGIC AND CONSTRAINT USE - The various network logic options and constraints features that are available in the software can have an affect on the quality of the schedule if used improperly. The specifications should give guidelines on the use of these options.

For example, consider date constraints, which generally make an activity start or finish on or no earlier or later than a specified date. The SureTrak manual explains an early start constraint as follows: "It pushes the early start

forward (later) to a specified date and prevents the activity from starting too early. It affects the schedule only if the specified constraint date is later than the calculated early start date."

You can see how this sort of constraint can trump the network logic and reduce the amount of calculated float time to activities downstream of wherever the constraint is. There are certainly situations where the use of an early start constraint makes sense, but it can also be used improperly, in lieu of network logic, merely to position an activity in time. As a precaution, the specifications can restrict the use of constraints and allow them only to be used when the contractor requests and demonstrates the need for their use.

REQUIRE A SCHEDULE NARRATIVE – The typical schedule submission consists of a transmittal letter, a floppy disk or CD containing the schedule file, a few thick stacks of tabular reports showing various dates, activity IDs and other data that the user selects to be printed, and a bar chart showing some or all of the activities and their respective early dates. Not one complete sentence is contained in this massive pile of documents. Maybe, there is a phrase in the title block of one of the bar charts. Despite all the available data, it can be difficult, especially for non schedulers, to see what has been accomplished and what is planned.

If possible, consider requiring the submission of a schedule narrative with each schedule. Here, the contractor can elaborate on such items as: its proposed network logic and why it is doing things in the order it is; any changes to the critical path; the critical work; any changes made to the network logic or activity durations and the reason for those changes; the work completed since the last update versus the last update's plan and any problem areas and potential workarounds. With a few pages of plain language text, the aims of the scheduled can be better communicated and reach more people. They are especially useful for project executives and senior managers who are pressed for time.

Yogi also said, "It gets late early out there." I am sure he was talking about the sun conditions in the outfield, rather than how some projects seem to be behind from the start. With better scheduling specifications come higher quality schedules and perhaps a better start to a project. This can help you arrive at the final destination without surprises because as you might expect, "it ain't over till it's over."

ABOUT THE AUTHOR-

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