March 24, 2020

CONSTRUCTION SCHEDULE CONTROLS TO DOCUMENT COVID-19 IMPACTS

BASIC OVERVIEW OF SCHEDULING

The primary purpose of a construction schedule is to provide Contractors the ability to plan and prosecute its work. The baseline schedule is developed based on contract requirements / restrictions and represents the projected sequence and logic of schedule activities necessary to achieve on-time completion while employing the staffing and resources commensurate with the budgeted schedule of values. As the project progresses, adjustments to the planned sequence of events may be necessary, but should be limited to:

Utilize fragmentary networks to incorporate schedule logic modifications in a two-step process.

- ✓ Introduction of additional scope (i.e., change orders and extra work);
- ✓ Measurable change in availability of resources (e.g., 2nd tower crane)
- ✓ Measurable change in staffing (e.g.., 2nd shift work); and
- ✓ Correcting clear errors in the baseline schedule logic or activity level detail (e.g., starting building conditioning prior to completion of building enclosure)

Fragmentary networks should be utilized to incorporate these schedule logic modifications in a two-step process. A fragnet represents a small grouping of activities that is developed to project the order and sequence of new work activities required to perform added or changed scope. Upon development of the fragnet, and review / approval by the Owner if required under the contract, it is inserted into the activity before re-calculating the projected project completion. A comparison of the schedule before and after project schedule is then performed to measure the impact of the fragnet or new activities.[1]

Simply stated, outside of schedule modifications to account for the above, the only other changes that should be made at the end of the month, or bi-weekly, to the then-current project schedule is to activities on which work was performed to reflect a change in: 1) percent completion; and 2) remaining duration.

PROSPECTIVE VS. RETROSPECTIVE SCHEDULING

The problem that members of RMC have observed concerning improperly prepared schedule updates concerns the schedule software user's attempt to have the construction schedule serve as both a prospective and retrospective planning tool. Most baseline schedules are the purest example of a prospective and forwarding looking scheduling tool – the projected plan of performance before any progress in the work has been recorded. Conversely, an as-built schedule at project end, with all work complete, is the purest representation of a retrospective schedule.

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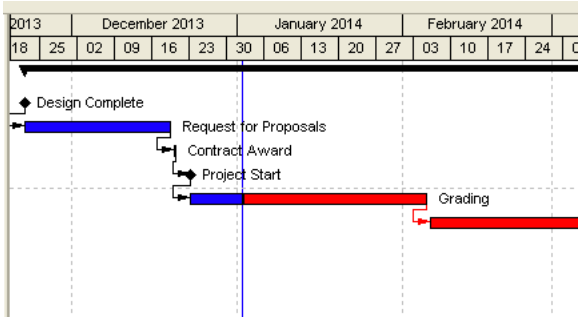
[1] Reference Attachment "A".

Prospective scheduling is for forecasting and planning work that has yet to be performed.

Retrospective scheduling is utilized to analyze events that have already occurred.

In contrast to the prospective schedule, the retrospective schedule is utilized to analyze events that have already occurred and not plan or forecast the completion of work yet to be performed. This is further self-evident when reviewing a schedule that has been progressed and a data date established.[2] This as-built information only serves to provide a record of the dates work was started and completed.



Schedule delay analyses performed after all work is complete represent a *look back* at progress that was recorded and is used to measure / quantify delay. The accuracy of these retrospective analyses is dependent on the accuracy and completeness of the as-built information that has been recorded and the documentation that has been preserved to associate the impacts that were realized to a specific event(s). Unfortunately, in a zealous attempt to record the *potential* impact that an event may have on work performance, project schedulers will incorrectly insert activities into a schedule before the effects of the event are truly known or can be measured. Similarly, in an effort to produce a schedule that projects on-time completion, despite progress and/or events that would reasonably suggest otherwise, schedulers artificially restrain the completion of the work by making changes to activity durations and schedule logic without the introduction of a change in means and methods that would warrant such a schedule modification.

In light of the COVID-19 crisis and the realization that the ill effects will most likely impact the ability for Contractors to complete work as initially planned and within the contract time requirements, RMC has developed the following guidance for Contractors to monitor and update the project schedule. The intention of these guidelines is to memorialize, to the extent possible, the schedule impacts and delay that may be attributed to the COVID-19 crisis and place the Contractor in a position to present a cause-effect analysis in its recovery efforts for time-related cost overruns.

[2] In scheduling a data date represents that date on which the work has been progressed. Work activities to the left of a data date (i.e., completed progress) do not retain logic and are not factored into the projection of work yet to be performed.

Construction Schedule Monitoring / Updating during COVID-19 Pandemic

1. Preserve / Archive a Snapshot of the progress achieved on the project prior to the start of the impact on your project due to the COVID-19 pandemic (which may have begun prior to any governmental declarations) relating to the work performance. Assuming you use March 11 or 13 as the date that the pandemic was declared:

Preserve a snapshot of the progress attained on the Project prior to the occurrence of impacts that may be attributed to the COVID-19 crisis.

   a. Most projects update the project schedule on a monthly or bi-weekly basis. This schedule update should be preserved and archived consistent with current project procedures – assuming that such update occurs prior to the aforementioned dates.

   b. If possible, an additional schedule update ("snapshot") should be taken of the project progress that was achieved between that most recent periodic update and the notice that the COVID-19 crisis has been declared a pandemic and the local / federal government restrictions that are being implemented that impacted your project.

   c. If it is not possible (or too late) to prepare an interim schedule update, upon completion of the proceeding update that follows that impact date, an analysis should be undertaken to assess whether and how progress was impacted by the recent COVID-19 crisis. The manner in which this analysis should be performed is addressed below.

2. Establish a Plan Forward on how the firm will address potential changes in work activity logic and sequence that may have to be implemented to mitigate potential impacts:

   a. Do not alter the then-current project schedule to plan such work activity logic and sequence changes, but rather create a *duplicate* schedule in which to first introduce these changes or work around activities that are likely to change from day-to-day.

      i. New activities should be assigned an activity number and code that identifies it as an activity or task specifically added

to mitigate the impacts attributed to the COVID-19 virus impact.

ii. Should it be necessary to stagger work sequences of trades, or introduce shift work, activity codes should be assigned to these existing or new activities.

iii. Since the purpose of this *duplicate* schedule is to allow planning, including re-sequencing of work to mitigate the potential impacts attributed to the COVID-19 virus, it is likely that modifications in logic may be required on a weekly or even daily basis – as this may particularly concern last minute notices from trades that are unable to sufficiently staff its workforce.

Utilize a duplicate schedule to establish work-around plans in an effort to mitigate impacts. Preserve the then-current project schedule to serve as a baseline to measure progress that was attained during the impact period.

b. Schedule Activity Codes should be used to identify and allow for segregation of work activities by responsibility and whether the completion of the work requires specific equipment, materials, inspection and/or commissioning. To facilitate the work-around schedules that may have to be generated over the crisis impact period, it is advisable to verify that coding of the following has been properly prepared:

i. Self-performed work

ii. Trade work

iii. Heavy / special equipment required to perform task(s)

iv. Procurement of specialized equipment or long-lead materials to be incorporated into the work:

1. It is best to include separate procurement activities and logically restrain the start or completion of work for which the material or equipment is required for completion of the work activity.

v. Inspection by department or agency

c. Prepare two-week and similar look ahead schedules utilizing the *duplicate* schedule to plan work, including the scheduling of trades.

The *duplicate* schedule should be viewed as a draft work schedule that evolves as events unfold. The purpose of such a draft schedule is to provide a planning tool while preserving the then-current project schedule that serves as a baseline to measure progress that was attained.

3. Update the then-current Project Schedule to reflect the actual progress attained:

   a. At the next planned periodic schedule update, the progress attained on each work activity should be updated – similar to any other normal update period.

   b. Compare the then-updated project schedule with the prior-period updated project schedule to evaluate progress.

      i. Utilizing the *duplicate* work schedule(s) that were developed throughout the work period, identify the activities and tasks that lost progress to determine whether this lost time was caused by:

         1. Impact directly attributable to delays or disruption caused by the COVID-19 crisis; and

         2. Indirect impacts that were experienced as a result of mitigation measures that were employed (i.e., re-sequencing of work to accelerate completion of an activity(ies) viewed as being more susceptible to the potential impacts caused by the COVID-19 crisis.

Re-evaluate the success of mitigation efforts on a periodic basis.

Through a comparison of the then-updated project schedule with the prior-period updated project schedule will show whether mitigation measures implemented were successful in progressing the project.

4. Re-Evaluate the Current Work Plan to determine whether the mitigation measures employed were successful or require change.

   a. Repeat Steps 1-4.

IN SUMMARY

It is anticipated that the current pandemic crisis will create cost and performance impacts that will negatively impact the ability for Contractors to complete work within the budget and time requirements of the contract, as modified, pre-crisis. To recover the increased cost and lost time, Contractors will have to submit requests for additional compensation that comply with the contract requirements and clearly delineate the costs and time-related impacts that can be attributed to COVID-19 crisis. Some requests may be rather straightforward, while others may include many types of costs that emanate from a suspension of the work or performance-related issues that had to be overcome to advance work and maintain current progress during the crisis environment. While these particular types of compensation requests (evolving from a pandemic or health emergency) may not happen often, the types of costs claimed and the manner of evaluating whether the costs claimed to have merit is not new. Applying proper dispute avoidance, documentation and resolution principles will place the impacted Contractor in a position to be fairly compensated for the ill effects of the COVID-19 pandemic.

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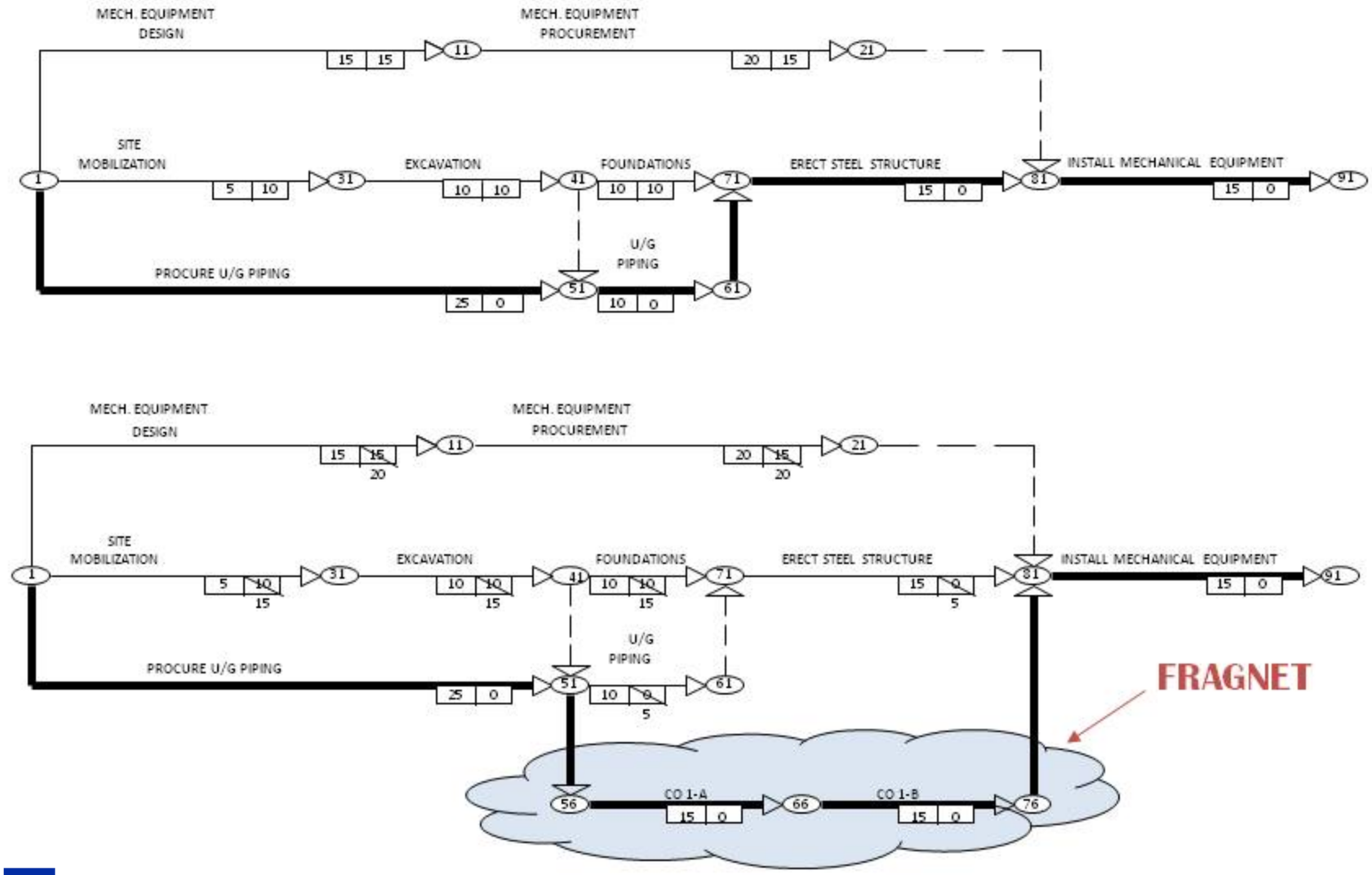
Attachment A

Change Order Fragnet



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