Getting Back to Basics: Update Schedule Review by the Numbers (Recommended Practice Numbers, that is)

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Introduction

The owner of a planned project is either a public entity, a private organization such as a corporation, or even a well-financed individual. This entity typically realizes that they do not have the time, knowledge, and experience to construct the project in an optimal manner. For this, they often employ a team of professionals who do have this ability to turn the plan into reality. This paper refers to the team hired to perform the work as contractors. The owner creates documents that describe the work to be performed and contracts that work out to a contractor.

If the contractors are responsible for the timeliness, cost, and quality of the work, they must be allowed to make their own decisions on the means and methods of the work. The owner should keep the project at 'arms reach' and only monitor the work from afar unless the contract says otherwise. The project schedule is normally the method of communication and reference for decisions on the project.

The contract typically requires the contractor to show their work plan by submitting a project schedule to the owner. Reviewing this schedule usually requires the expertise of a professional scheduler, who is hired by the owner to represent owner's interests. The schedule reviewer evaluates this schedule for compliance to contractual requirements and professional scheduling norms and best practices. The schedule reviewer may negotiate with the contractor for changes to the schedule that would allow for better monitoring and could be used as a reference for dispute resolution. The goal of this process is for the contractor to submit a qualified project schedule and for the schedule reviewer to accept it as the basis for completing the work. This 'baseline schedule' will be used to monitor and record progress throughout the project.

This paper does not cover the process of reviewing a baseline schedule. Reviewing a schedule update is very different from reviewing a baseline schedule. Instead, it is presumed that the baseline schedule review process has already occurred, and the next step is covered: monitor and update the project schedule to reflect progress and changes to the work plan.

Instead of presenting the author's opinions, this work is based upon professionally recognized AACE International publications, namely recommended practices (RPs), and technical papers. To assist the reader in finding more on each subject, references are liberally placed throughout, with more detail available in the reference section at the end. This paper straightforwardly presents performing a schedule review by the numbers.

Inputs of Performing an Update Schedule Review

Schedule management/control is the third significant section of the traditional planning and scheduling phases (the first two defined as project planning and scheduled development). During this phase, actual project progress is reviewed, activities are monitored, especially critical and near-critical activities that impact the project, variances and trends are analyzed, and reports are prepared to deliver the project's status to the owner and stakeholders. [1]

Performing an update schedule review is the process of analyzing the schedule update submittal for the accuracy and rationality of changes that reflect project status and progress. [2] This process can be broken down into the three stages of review: inputs, process, and outputs. Figure 1 depicts the data flow diagram of the process.

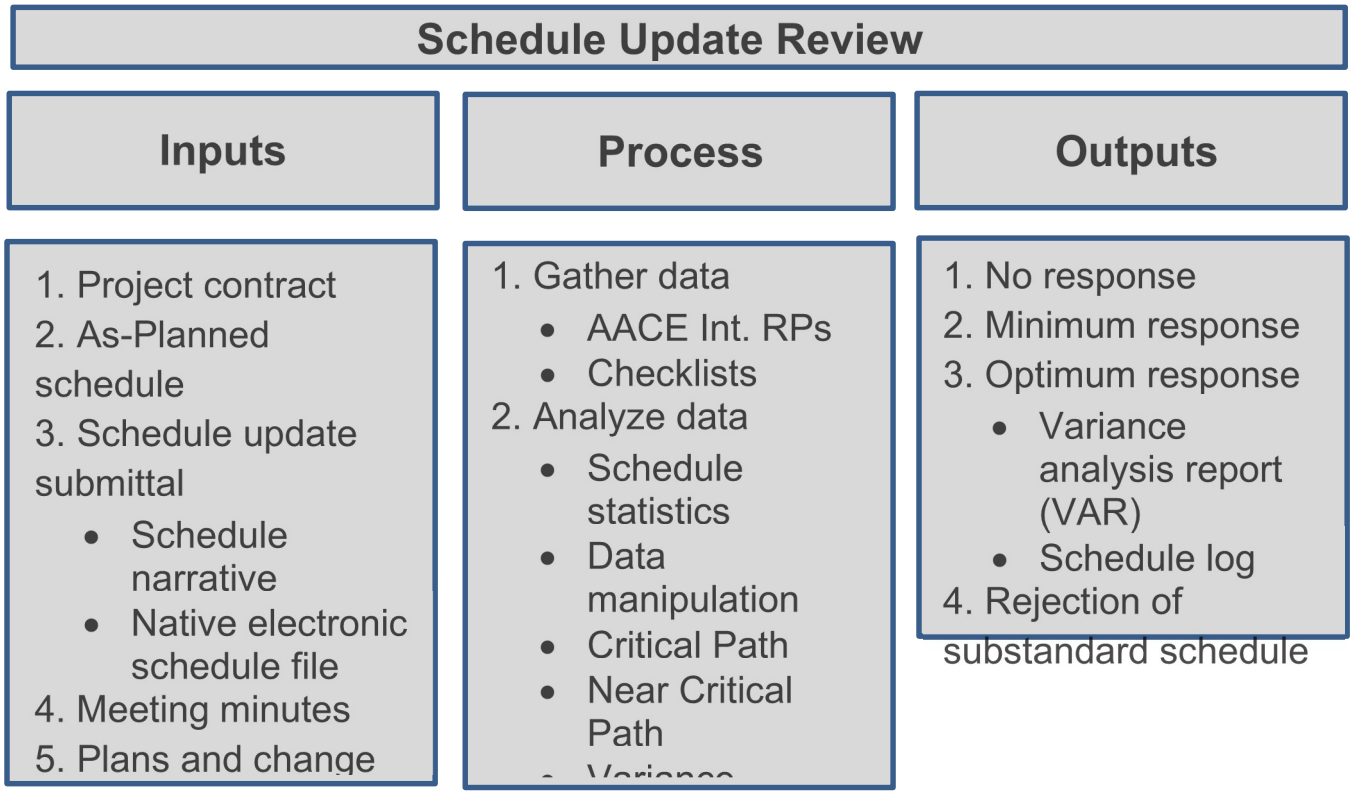

Figure 1 – Schedule Update Review: Inputs, Process, and Outputs

In the first instance, the reviewer must have the appropriate knowledge to describe,

communicate, and perform the schedule control and review tasks. Recommended Practice No. 14R-90, *Responsibility and Required Skills for a Project Planning and Scheduling Professional*, states that the person should be able to explain and understand concepts and methods involved in the schedule performance assessment such as schedule variance and trends, and performance reporting and variance methods. In addition, the reviewer should evaluate the following information during the schedule review process: [2]

- Contract specification requirements.
- Contract plans specifications and instructions.
- Availability of the resources.
- Professional scheduling practices and guidelines.

Consequently, when the reviewer receives the schedule, and before starting the review process, he or she needs to have a good understanding of the project and the type of work that has been performed. Therefore, the reviewer must read the documents related to the schedule's development to have a factual basis to conduct a fair and objective review.

Another consideration is to review as-built facts recorded in coexistent project documents. For instance, some available sources to confirm the project's status correctness are daily reports, meeting minutes, progress photographs, submittal, and production logs, request for information, change order logs, productivity reports, and weekly or monthly progress reports. [3] Therefore, the reviewer should start by reading and understanding the following project documents:

Contract

A contract is the "legal agreement between two or more parties." [4, p. 29] The contract is considered the "rule book" for the project. It is one of the most essential and primary project documents that need to be considered while performing an update schedule review because it establishes the schedule and review report's requirements. [5]

The contract includes vital information such as general conditions, methods, project specifications, drawings, start and completion dates, the baseline schedule, completion milestone dates, modifications to the contract or scope of work, delay clauses, types of delays, and the plans to execute and complete the project that will help the reviewer to compare the updated schedule to the specified information on the contract and determine if it is in accordance with the terms of the agreement and other contract documents.

Examining the contract helps the reviewer to:

- Have a proper understanding of the contract.
- Check if all scope areas, milestones, and contract completion dates are represented in the schedule correctly.
- Identify if all submittals required in the contract are included in the update deliverables, such as the schedule narrative and the native electronic schedule file.

As a result, the reviewer should perform the schedule update review based on the requirements included in the contract specifications and other contract documents. While other factors, such as industry norms and recommended practices, may also guide the reviewer, the wording of the contract still takes precedent.

As-Planned Schedule

Another project document that needs to be examined by the reviewer is the as-planned or baseline schedule. This schedule is one of the key project documents that the contractor develops to execute the work. It must be approved and includes relevant information related to the original scope of work, such as activity duration dates, milestones, constraints, resources, logic relationships, cost, and project deliverables. The As-planned schedule is the primary document used to compare update schedules and track project progress (unless supplanted by an updated, approved baseline typically reflecting the requirements of a change order). [5] [2]

Schedule Update Submittal

Schedule update submittals should be developed based on the contract specifications. The owner either accepts them for meeting requirements and specifications or rejects them for not satisfying those requirements. [2] There are many possible components of the schedule update submittal that the contract might require, such as:

- A written narrative.
- A native electronic schedule file.
- Printed reports like critical path method (CPM) reports and table of schedule changes.
- Graphics like progress and budget S-curves.
- Other required documents on the contract, such as recovery schedules or time impact analysis.

Of the schedule update submittal components, the reviewer should at least have and review the schedule narrative and the native electronic schedule file.

Schedule Narrative

Schedule narratives are essential documents that help the reviewer understand the changes to the schedule, issues, and project status. Schedule narratives should record the reasons for the significant changes that the program has had during the reporting period. [5] This document should address the following information:

- Identification of the longest path / critical path.
- Changes that have altered the critical path include changes to logic relationships and activity durations or added or deleted activities.
- Project's status and progress.
- Explanations of any project issues and opportunities.
- Work completed during the reporting period.
- A list of the activities that are scheduled to progress during the next reporting period (Forecasted work)
- Any other topics required by the contract.

It is in the best interest of the submitting contractor to include a schedule narrative with the schedule. This narrative can state what the contractor intended to submit, even if the actual schedule fails to deliver the intended message.

Native Electronic Schedule File

Once the reviewer receives the native electronic schedule file, for instance, a Primavera or Microsoft Project file, it is recommended that he or she imports the file to the software as soon as possible to review the integrity of the data and identify possibly corrupt data. The reviewer shall request a new file in case of damage.

If obtaining an uncorrupted file is not feasible, the reviewer could employ procedures or use third-party software to repair and access the schedule. The resources listed below explain methods available to the reviewer if Primavera P6 scheduling software is utilized:

- "A Practical Application of Identifying and Correcting P6 Corrupt Data" AACE's technical paper focuses on the different ways to avoid or mitigate corrupted data issues. Offered solutions involve SQL queries, third-party software, or revision and edition of the XER or XML files. [6]
- Another method is presented in the "P6 File Corruption, Part 2" AACE technical paper, which entails the application of Oracle Primavera P6 technical solution to purge XER file from corrupted records, such as the public operational breakdown structure (POBS). [7]

It is important to note that schedules in portable document format (PDF) do not qualify as electronic files because they show only a view of the current status instead of all the

information that is included in an electronic schedule file, which can be imported into scheduling software. [2]

Meeting Minutes

Project meeting minutes are records produced to accurately represent the project's status and the plan for the forecasted work. [3] [5] Meeting minutes become a reliable document because it is assumed that the information mentioned in it is agreed upon by all the stakeholders that were present in the meeting. The reviewer should read the meeting minutes because of their valuable information. Usually, these minutes contains the following topics:

- Safety issues
- Review of open issues from previous meetings
- Project schedule: identification of delays and time extensions, review of permit approvals, critical work, and contractual milestones
- Review of drawings and RFIs
- Change order status
- Payment logs
- Work inspections

When the reviewer cannot find the cause of a specific change in the schedule narrative, he or she should check the meeting minutes, which are likely to include an accurate and fact-based accounting of possible causes.

Plans and Change Orders

The schedule revision is a fundamental process in schedule management and control that should be clarified in the contract scheduling specification plans. [5] It is beneficial for the reviewer to identify these plans as they will help him/her to have a better understanding of the process and what should be included in the schedule updates. Schedules that are not updated are not valuable to the project due to their inaccuracy; they do not reflect actual and ongoing work. Likewise, if the owners fail to approve change orders on time, this can affect schedules' reliability and accuracy since they will not include changes and will not reflect what is actually occurring with the project. [8] These are some key elements in schedule management and control that the reviewer should identify: "frequency of progress status updates, method of reporting impacts and/or delays, incorporation of change orders, and level of detail to be reported." [5, p. 8]

Progress Photographs

Project completion photographs are significant additional project documents to be obtained and reviewed for accuracy of the schedule. Construction photography should

be done professionally and by a person who is aware and understands the schedule, issues, and construction methods.

Photographs are important for the following reasons:

- They can support the issues that are being referenced in the request for information (RFI).
- They can be utilized to confirm and show that progress has been made.
- Using photos on the status reports can avoid confusion and misunderstanding of the progress or issues.
- Construction photographs can also be used to support or defend claim disputes.

Photographs clearly communicate and present "more information than any other medium." [9, p. 2]

Process of Performing an Update Schedule Review

The task of performing a substantial review of the schedule update can be overwhelming not only for a novice reviewer, but also for a knowledgeable scheduler who is accustomed to providing expert judgments. This could be attributed to the fact that the auditing/evaluating process is inherently stressful. To help alleviate some of this stress and successfully navigate the task of performing a schedule update review, a process roadmap is laid out in this section. It includes a list of most relevant RPs, checklists of items to be considered, data analysis techniques, and practical recommendations.

Gather Data

Described below are the two methods of collecting data to perform an update schedule review. The first one is utilizing information from the relevant AACE International recommended practices and published technical papers. The second method is employing checklists of the points that must be considered during an update schedule review.

AACE Int. RPs & Technical Papers

Gathering relevant information from the published RPs and technical papers aids a reviewer in applying the best practices vetted and widely accepted by fellow professionals. This approach also frames inputs of performing an update schedule review into the appropriate context.

Table 1 below lists inputs specified earlier in this paper in relation to referenced RPs and technical papers.

Input	AACE Int. RPs & Technical Papers
Project Contract	No. 10S-90, Cost Engineering Terminology No. 45R-08, Scheduling Claims Protection Methods
As-Planned Schedule	No. 45R-08, Scheduling Claims Protection Methods No. 53R-06, Schedule Update Review – As Applied in Engineering, Procurement, and Construction
Schedule Update Submittal	No. 53R-06, Schedule Update Review – As Applied in Engineering, Procurement, and Construction
Schedule Narrative	No. 45R-08, Scheduling Claims Protection Methods No. 53R-06, Schedule Update Review – As Applied in Engineering, Procurement, and Construction
Native Electronic Schedule File	PS-3555, A Practical Application of Identifying and Correcting P6 Corrupt Data PS-2427, P6 File Corruption, Part 2 No. 53R-06, Schedule Update Review – As Applied in Engineering, Procurement, and Construction
Meeting Minutes	No. 45R-08, Scheduling Claims Protection Methods No. 90R-17, Statusing the CPM Schedule – As Applied in Construction
Plans and Change Orders	No. 45R-08, Scheduling Claims Protection Methods
Progress Photographs	No. 95R-18, Construction Photography to Document Project Status

Table 1 – Schedule Update Review: Inputs by Recommended Practices & Publications

Checklists

The method of creating a checklist is a simple but very useful tool that can assist a reviewer of schedule update in identifying and focusing on the most relevant indicators of a project status and potential schedule issues. It is also an effective way of capturing and tracking the status of items that have been identified during previous reviews. The authors recommend that reviewers build and maintain such schedule update checklists and capitalize on lessons learned and consistent approach to the task at hand.

In addition to providing a structured and focused schedule update review, checklists also aid in maintaining consistency from one review to the next. This benefits both - the contractor's scheduler, as well as the reviewer - setting the stage for the understanding and expectations.

Analyze Data

The data analysis techniques described below can be used for the process of performing an update schedule review. These techniques include, but are not limited to:

- ✓ Compilation of schedule statistics
- ✓ Pinpoint of data manipulation
- ✓ Critical path analysis
- ✓ Near critical path evaluation
- ✓ Variance analysis

Compilation of Schedule Statistics

Close attention must be paid to all changed items in the schedule, because even changes that presently appear insignificant have a potential of becoming crucial during the next review. [2] Most scheduling software can provide information about deleted, added, or modified scheduling components, such as activities and work breakdown structure (WBS). Third party applications can also aid in the process of gathering the changes in one packaged report.

Recommended practice No. 53R-06 lists changes that should be noted during the schedule update review. Note that list below is a high-level outline of notable changes, and the reviewer must refer to the above RP for details. For example, 'Activity data' category unfolds into granular specifics, including not only information about deleted, added, or modified data, but also particulars such as milestones, constraints, and codes:

- Scheduling software system checks
- Work breakdown structure (WBS)
- Activity data
- Relationships
- Activity logs, memos, or notebooks

Data Manipulation

A schedule update reviewer must be able to identify techniques which are used to manipulate the schedule to the contractor's advantage. The technical paper authored by Mr. Christopher W. Carson, and presented at the 2012 AACE International Annual Meeting in San Antonio, lists the following 'scheduling tricks' [10]:

- Logic and activity duration manipulation
- Float suppression or sequestering
- Misuse of relationship types or lags
- Forced or predefined critical paths
- Misuse of calendars

- Out of sequence work

Critical Path Analysis

The reviewer must have a solid understanding of how to determine the critical path, as well as how to analyze it. The term critical path denotes only activity paths identified by float calculation using early and late dates and represents the longest continuous chain of activities' which establishes the minimum overall project duration'. [4]

The frequently used and industry accepted methods of determining the critical path are: [11]

1. Lowest Total Float
2. Negative Total Float
3. Longest Path
4. Longest Path Value Method

Each of the methods above has its own list of factors that must be considered when reviewing schedule update data. Referenced RP No. 49R-06 is an instrumental resource for the reviewer because it details out these factors and describes how it affects the critical path activities.

Near Critical Path Evaluation

The necessity of including the review of near-critical path is dictated by the understanding that activity duration estimates can change during project execution, thus making near critical activity potentially becoming critical if this activity is delayed significantly. [11]

There are deterministic and probabilistic methods that can be applied to identify near-critical paths. [12] Deterministic methods include:

- Near-critical float (with established ranges of a total float)
- Near-longest path
- Professional judgment

Probabilistic methods consist of techniques like program evaluation and review technique (PERT) or the graphical evaluation and review technique (GERT).

Variance Analysis

An update schedule review is focused on changes made to the schedule after the most recent accepted update. Therefore, it is recommended that the reviewer should establish a routine that aids in making the change identification process more efficient. [2] Most scheduling software packages provide the ability to automatically compare the current update to the previous schedule.

Some of the practical recommendations include, but are not limited to the following: [13]

- ✓ Technical checkup via schedule recalculation
- ✓ Confirmation of data integrity utilizing custom graphical reports
- ✓ Comparison of current schedule to the last version via custom layouts or reports
- ✓ Identification of variances and trends by calculating the schedule performance index (SPI) and cost performance index (CPI)
- ✓ Updates validation with the project team

Formulate Recommendations

The reviewer should formulate recommendations to the owner based on the findings from the process outlined in Analyze data section of this paper. The recommendation can be to either accept or reject submitted schedule update, and the justification and explanation must be provided. Existing compliance metrics should provide the reviewer with the minimum standards applicable to CPM schedule. [14]

Outputs of Performing an Update Schedule Review

Once the schedule update review process is complete, the schedule reviewer has another, all-important process to perform; respond to the owner and contractor as to their findings. The schedule reviewer's response can run a spectrum of no response, minimal response, or one of an optimum response. Finally, this section covers the question of what a schedule reviewer should do when they are unable to negotiate a schedule that can be approved.

No Response

Some reviewers may be tempted to not comment on their review findings, thinking that gives them the least exposure to later schedule failure. This is usually the worst plan possible. A failure to either accept or reject a schedule submission generally has been interpreted to consider the submission as accepted. [8]

In fact, it is the owner's responsibility (and thus, the schedule reviewer's job) to review and accept schedules. [5] If the owner contractually requires the contractor to submit a schedule, then it is their responsibility to review and respond. The response should be made in writing and directed to the contractor. [2]

Minimum Response

It is in everyone's best interest to achieve a workable, approved project schedule depicting all of the significant work to be performed. An approved schedule allows for

agreement as to project status, variances from planned, schedule analysis, trend assessment, a record of scope changes, and projected project completion. [1] [2]

The project's contract sets the requirements of what should be in the reviewer's report. Items typically covered include the categories and responsibility for delays, the methods for managing and controlling change, and methods for delay analysis. [3]Part of the review output also should be a listing of those activities that the schedule reviewer believes to be critical and near-critical. [11] [12]

If the contract calls for a schedule submittal, then the schedule reviewer must state their reasons for rejection in writing. [8] For the sake of the project and in the interests of helping the scheduling process progress with as little friction as possible, there is nothing wrong with approving the schedule submittal with the proviso that certain, small schedule issues be corrected in the next schedule submittal. [2]

Should the owner not object, it is also permissible for the schedule reviewer to wave scheduling specifications that the contractor finds objectionable or too costly to observe in the interest of project success. To maintain scheduling contractual enforceability, the explicit contractual issue being waved should be stated in writing. [2]

Obtaining a good schedule that contains all the work to be performed and properly depicts reasonable durations, and correct relationships between them can be a difficult and arduous process. This process may require cooperative work from both the contractor and owner to achieve. [6]Properly explaining the reasons for rejecting a schedule submittal can be just a step in that process and not the end. The suggestions for schedule improvement should be general in nature, so as to not be considered a directive. [15]

If a revision to the schedule submittal will be required, the schedule reviewer should clearly state the requirements as quickly as possible. This will allow the contractor to respond with a schedule revision before the next schedule update cycle occurs. Having the contractor update an unapproved schedule should be avoided, if possible. [3] Additionally, the schedule reviewer must be aware of the difference between requesting a schedule update that recovers lost time and a recovery schedule that requires acceleration. [5] [16] The later may contractually require additional costs to be borne by the owner.

Before the owner can accept a project schedule submission, the contractor and owner must first reach agreement on the current project status. If the owner disagrees with the

contractor about the project's status, they must clearly state their position in an expeditious manner in writing. [2]

The owner should make every effort to provide time, resources, and motivation for the contractor to adequately plan the project before proceeding to construction. The owner might postpone the notice to proceed to allow for the necessary time. Financial penalties or rewards may be included in the contract to encourage timely schedule submittals. Progress payments should be set up to encourage preparation of long-lead material items (a common early critical work process). [10]

Before formally rejecting a schedule submission, the schedule reviewer is encouraged to hold a joint meeting between the owner's and the contractor's project controls personnel. There they can discuss the objections and possibly prevent misunderstandings. Negations and considerations for compromise may be worked-out, increasing the possibility of a quick and successful turn-around. Delays in resolving a particular schedule submission risk impacting the next schedule update submission, complicating the resolution of both updates. [10]

Optimum Response

A written narrative review is only one way that the schedule reviewer can communicate their objections or findings of the schedule. Good communication will enhance the understanding and perhaps the increase the likelihood of both parties being successful. A joint schedule review meeting should be considered so that the schedule reviewer can explain the intent and meaning behind the observations. [15] Other means and analysis should also be considered.

A written variance analysis report (VAR) can be created to enumerate significant variances from the plan and begin the documentation of the reasons for these variances. While the contractor often creates this document, there is nothing to prevent the schedule reviewer from taking the initiative. This VAR should be freely shared with all interested parties to encourage feedback and to reach consensus. [17]

An optimum VAR should contain information on root causes, corrective actions, changes to the budget, and estimate for project completion. It is an excellent place to also document needed management actions. [17] The VAR can also prove to be a trigger to create or update the project risk register to add a new risk strategy. [12]

Like a VAR, a schedule log may be created to enhance communication between parties. Such a log helps explain the project history, explain the current status of the project, provide for review continuity, as well as a verified source for developing time

impact analyses (TIA) to adjust contractual requirements. Just as with a VAR, schedule logs are often created by the contractor but may be created and maintained by the schedule reviewer as well. All interested parties should have free access to this document. The contractor should be encouraged to raise objections to the contents of the log so as to perhaps be able to negotiate a common, agreed consensus. [18]

The schedule reviewer's report can be vastly enhanced using graphics. It is best if the schedule reviewer makes their own graphics for analysis so that the parameters involved in their creation are known and accepted. Time scaled diagrams make for wonderful platforms for discussing the timing and the flow of upcoming work. Most CPM software already has built-in graphics capability, so this process usually does not require additional resources in order to accomplish.

A good review technique entails adding crew resources to a schedule if it is submitted without resources. A graphical display of daily or weekly crew loading can be a great help in communicating the owner's concerns as to the reasonableness of the timing of the work. They can be optimized to display complicated reactions in the processes that make it easier for non-technical observers to understand the issues being discussed. [19]

Negotiations can be as straightforward as making a simple logical compromise. A common source of disagreements as to project status sometimes involves out-of-sequence progress. Out-of-sequence progress is normally an inevitable occurrence on projects. Some CPM scheduling software has various settings to handle the resolution of out-of-sequence activity float calculations. A retained logic setting may be thought to be too restrictive, and a progress override setting too liberal. A compromise change of replacing the finish-to-start logic with a finish-to-finish relationship and then recomputing the schedule using retained logic often gives the most realistic answer in these circumstances. [20]

Rejection of Substandard Schedule

It is always in the project's best interest for the schedule reviewer and contractor to be able to agree on the use of a single schedule to represent the project's progress. Such an approved schedule allows for a single interpretation of project status, progress trending, projected project completion, as well as the basis for dispute resolution. It also allows other involved parties to coordinate their efforts. This is especially helpful in coordinating submittal review. [10]

But what should the schedule reviewer do when they cannot approve the schedule update? Perhaps no schedule is submitted for review. Perhaps significant portions of

the work are omitted, and the contractor refuses to correct this. Perhaps changes to the schedule are not in accordance to contract requirements. In such cases, it is likely that the schedule reviewer's acceptance of that schedule would compromise the contract and lead to increased time and costs. In this case, is the owner to do nothing?

In situations where the owner is unable to accept a schedule update, the owner has a lot more work to perform than under 'normal' conditions. If the contractor is going to be shirking scheduling duties, it will fall upon the owner to step-up and perform more. They should ensure that a very competent full-time scheduler is in place to oversee the owner's interest. The scheduler should create an independent CPM schedule to monitor the work, even if they have to guess at the contractor's means and methods. This schedule should be modified as needed to keep-up with changes. [10]

Without an approved schedule to use as a framework for monitoring progress, the owner will need to heavily rely on good, contemporaneous documentation. Processes and procedures should be formalized and communicated to the owner's staff. As-built progress should be recorded daily by the owner's project control staff in a method that facilitates its retrieval later. One such process is called a daily specific as-built (DSAB) record. In addition, a force account procedure should be established and published so that the contractor is aware of the informational requirements beforehand. [10]

Conclusion

AACE International offers a wide variety of recommended practices and technical papers that aim to present valuable information and technical foundation to enhance skills and knowledge in the schedule update review process. These resources provide the schedule reviewer with the technical guidance and the information necessary to execute every stage in the process of performing an update schedule review: inputs, process, and outputs.

The schedule reviewer has a wide range of data sources that they must draw from in order to accomplish a thorough review. Besides the update submittal, the reviewer must be intimately familiar with the project contract. Seeing as this update schedule is a continuation of the previous ones, earlier schedules must be available to reference for changes. A written narrative should accompany the electronic CPM submittal. Plans, meeting minutes, and change orders must be properly reflected in the schedule basis. Whenever possible, the reviewer should physically observe the work being documented. Professionally created photographs documenting the critical progress and work disruptions or quality failures are needed to ensure that the reviewers can back-up their findings.

The reviewers are not alone in performing their job; numerous AACE recommended practices exist to assist the process. Hundreds of selfless scheduling professionals have collaborated in writing guides to the review process. Checklists should be created to help orchestrate the review process. Schedule statistics should be amassed to help spot trends and benchmark the quality of the data. These processes will help spot any possible data manipulation. Critical path analysis (along with near-critical) and variance analysis is a must for understanding the importance of the schedule changes.

Finally, a schedule review is of very little value if the reviewer fails to formulate and communicate the opinion as to the quality of the schedule submittal. The optimum response can be multi-faceted including a narrative, VAR schedule log, as well as graphics depicting technical analyses of various schedule quality indicators. The reviewer can negotiate with the contractor for changes in the schedule to improve schedule's ability in depicting the accurate project status, should shortcoming be detected. This allows the project schedule to become the common source of project measurement and control.

The authors encourage the first-time reviewers or even experienced schedulers to read every reference listed. This paper merely gathers all relevant – in author's opinion – materials, summarizing the schedule update review. It is a roadmap for what it would take to conduct a successful schedule update review. The task might seem daunting for both knowledgeable scheduler and inexperienced reviewer, if for no other reason that auditing process is inherently stressful. The reviewer now has an opportunity to not only provide identification of deficiencies, but also recommend improvements to the schedule for the update to be accepted.

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