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SCHEDULING CLAIMS PROTECTION METHODS

TCM Framework: 6.4 – Forensic Performance Assessment

7.2 – Schedule Planning and Development

8.1 – Project Control Plan Implementation

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INTRODUCTION

Purpose

This recommended practice (RP) is intended to serve as a guideline, not establish a standard for schedule claims protection. The RP is intended to provide the scheduling practitioner with an overview of topics related to schedule delays as well as the various schedule practices and procedures that should be considered when developing and managing the project schedule. This RP will explain items to consider when creating and maintaining a critical path method (CPM) schedule in order to be prepared for potential delay claims. This RP begins by describing schedule delay terminology and outlining potential causes and required actions related to schedule delays. The sections following are related to some of the planning considerations recommended when developing a project schedule, plus good practices related to the management and control of the schedule throughout the project.

RECOMMENDED PRACTICE

Projects are supposed to be completed on time. Despite the best of efforts, delay situations arise that often result in a condition not anticipated in the original contract. Schedule delay claims are the acceptable processes for requesting adjustments for impacts to the project schedule. Prompt resolution of these delay issues are key to continued harmonious execution of the project. By implementing the appropriate processes and procedures the scheduler can help to facilitate the early resolution of schedule related disputes and claims. The accuracy and completeness of the project schedule is important to the early and successful resolution of the schedule delay claim issues. When the schedule is properly developed, accurately maintained and supported by the project documentation it is a vital element for successfully resolving delay claims. The project CPM schedule is a multi-functioning management tool that serves several purposes:

- For project planning and communication of the intent of that project plan
- To monitor project progress and alert the project team to deviations from the plan
- To evaluate project time impacts and help focus on the alternatives for timely completion
- To forecast the time required to complete the project and to alert the project to the possible need to accelerate or develop schedule recovery plans
- To provide a historic time record of what happened on the project

There are two groups of schedule delay topics that need to be considered by the planning and scheduling professional. In the first group are those topics that will help the scheduler to understand the potential issues related to schedule delays: Why is schedule claims protection required? What are the causes of project delays? The definitions of important terms related to schedule delay are included in that group of topics. Secondly, are the schedule protection processes and prevention measures: How should the CPM schedule be designed (modeled) and developed? How will the activities be structured and what will be the level of detail for monitoring and progress reporting? What processes should be considered for schedule management and control during the various phases of the project? Do any of these scheduling considerations change if alternate project delivery methods are employed?

Schedule Delay Claims

In the introduction to their 5th edition book *CPM in Construction Management*^[28] authors Jim O'Brien and Fred Plotnick unequivocally state "There are NO WINNERS in delay." Both the project owner and the contractors suffer when there is a project delay: the loss of productive use of the project facility or product; increased finance costs both direct and indirectly; extended staffing costs and contractor overheads; the list goes on. If the project is delayed to the stage of dispute resolution, there are the costs for attorneys, claims consultants, depositions, discovery, mediation, arbitration, and litigation. Very rarely will anyone recover the full costs for those time impacts and none of these dispute resolution costs will bring back the project time that was lost. Therefore, professional schedulers need to be more effective in developing and using the CPM schedule as a tool not only to get the project completed on time, but also to communicate to all of the project stakeholders the delay issues.

The scheduler should consider the potential for claims when developing and maintaining the project schedule. By taking appropriate actions the scheduler can help to minimize the potential of the project incurring unanticipated schedule related claims. During schedule development as well as by diligently performing specific actions during the project execution phase, the scheduler enables the project to provide an as-built schedule that can be validated to the project records to be an effective tool to facilitate the preparation for and/or defense of a schedule related claim.

What Should the Scheduler Know About Schedule Delays?

It is important for schedulers to understand the potential contract issues that are related to delay issues when developing, managing, and controlling the project schedule. It is not enough to just create a "good working schedule", the scheduler should also consider potential claims when building and maintaining the project schedule. Schedulers must understand the important terms and definitions in relation to the contract: excusable; compensable; concurrent or serial; non-excusable; cure notice; and liquidated damages, as well as differentiate between such terms as "delay" and "disruption" which are not synonymous.

The scheduler should read and fully understand the project contract. The contract is the "rule book" for the project and contains a variety of time (schedule) related topics in the contract documents: "no damage for delay" clauses; ownership of schedule float; treatment of concurrent delays; client notification requirements; definitions and categories of delays; schedule change management and acceptable methods of demonstrating time impact analysis (TIA) issues. When reviewing the contract there are also key *legal elements* to consider related to the schedule:

- Risk allocation (sharing) in construction contracts
- Responsibility for mitigation of delay, regardless of source
- Format for dispute resolution
- Timely written notice
- Project (schedule) documentation

Causes of Schedule Delays

Schedulers need to know the probable causes of construction delays and extra work. There are only a handful of major delay categories. However, dependent on the type of contract agreement a myriad of delay issues are possible from these few sources: owner caused delays and changes; claims relating to the design professional; contractor caused delays and changes; differing site conditions; and *force majeure* events.

The owner is defined as the public or private entity ultimately responsible for the proper execution of the project. Examples of owner caused delays include:

- Late notice to proceed
- Lack of site access
- Administrative delays
- Extended submittal reviews
- Funding changes
- Owner enhancements
- Change directives/orders
- Directed suspension of work
- Delayed owner furnished equipment
- Delayed installation (or performance) by the owner's contractors
- Defective contract documents

Design professionals are routinely employed by the owner and include the architect/engineer, and all related design consultants. Examples of designer caused delays include:

- Defective design/contract documents (drawings and technical specifications)
- Delayed and/or incomplete design
- Design bulletins resulting in change orders
- Untimely responses to requests for information (RFIs)
- Late approvals/extended submittal reviews
- Excessive RFIs required due to incomplete design
- Unreasonable inspections

The contractor is the organization or individual responsible for performance of the work in accordance with the plans, specifications and contract documents. The work includes providing and controlling the labor, material, equipment, vendors and subcontractors. Examples of contractor's delays include:

- Poor workmanship requiring rework
- Insufficient labor and/or equipment
- Low productivity
- Insufficient planning, coordination, or management of the work
- Delayed administration of the work, such as late subcontract or purchase order awards
- Delay in processing required material/equipment submittals
- Failure to obtain contract approvals
- Failure to order materials or equipment in time to meet the schedule requirements

Most contracts specifically define the *force majeure* delay events. Examples of *force majeure* delays include unusually severe weather; acts of war; acts of god; extraordinary economic disruptions; fires; strikes and other events not foreseeable at the time of contract. Generally the contractor will be granted additional time without added compensation for delay related to a *force majeure* event.

The owner has the duty to disclose the construction project site conditions. If the contractor encounters "differing site conditions" that generally means:

- Subsurface or latent conditions that materially differ from what was shown or indicated in the contract documents (plans and specifications)
- Physical conditions of an unusual nature that materially differ from those ordinarily encountered

Often the contract will include owner disclaimers (which may or may not be contractually enforceable), site inspection requirements, or "variation in quantities" clauses such as: "Any increase or decrease in cost or time resulting from such changes in site conditions shall be adjusted in the manner specified in the contract changes clause." Differing site conditions issues have experienced a wide range of

interpretations and varying degrees of success during contract dispute resolutions. It is important to remember that when encountering differing site conditions, it is extremely important for the contractor to provide prompt and proper “notice” to the owner.

The Project Scheduler and Schedule Impacts

The project scheduler should know that in order to receive compensation (time and/or money) for a project delay, it is the contractor who is responsible to provide reasonable proof:

1. That the delay was not caused by the contractor;
2. That a critical project milestone or the entire project was delayed; and
3. The amount of time delayed.

Additionally the contractor must prove that reasonable efforts were made to mitigate the delay and its impacts. Mitigation is working to reduce risk by lowering its chances of occurring or by reducing the effect of that occurrence. Mitigation also refers to revising the project's scope, budget, schedule or quality, preferably without material impact on the project's objectives, in order to reduce uncertainty.

The project scheduler may be asked to develop a special schedule and the scheduler should know that there is a difference between recovery and acceleration. A *recovery schedule* is a special schedule showing the special mitigation efforts to recover time lost compared to the approved baseline schedule. That is often a contract requirement when the projected finish date is no longer showing on time completion. “Recovery” does not necessarily imply owner or contractor fault; it just indicates recovering lost time. *Acceleration* is when the contractor is required to complete performance of a contracted scope of work faster than previously scheduled. Unlike mitigation, which is usually a no or low-cost effort, acceleration generally has cost implications for the contractor. *Directed acceleration* occurs when the owner formally directs earlier project or milestone completion. *Constructive acceleration* generally occurs when a contractor is entitled to and requests a time extension which the owner declines to grant, or grants in an untimely manner, and the contractor reasonably believes that he must accelerate in order to comply with his contract. These terms may have slightly different definitions in the contract from those defined in the AACE International Recommended Practice 10S-90 *Cost Engineering Terminology*^[1].

When the project scheduler is confronted with impacts to the timely progress of the project, there are a variety of reference sources that provide guidance and direction for the appropriate actions and procedures to follow for resolution of those schedule impacts. The project contract agreement and scheduling specifications are the primary source of guidance regarding schedule development, schedule management, and schedule control. Additional sources for guidance could be found in the contractor's corporate procedures related to schedule management. Beyond the above, then project level procedures and directives will guide the majority of appropriate actions for the schedulers to properly perform their work.

Schedule Development Preventive Methods

During the schedule development phase of a project there are several contract items that should be considered regarding the schedule. The contract terms and conditions often contain specific information concerning the appropriate level of detail and durations for the activities, and will outline the complete scope of work required for the project schedule. Additionally, the project scheduler needs to consider how to handle the integration of engineering, procurements and equipment deliveries, owner furnished fixtures or equipment (FFE), or commissioning “by others”.

It is important to establish the acceptable scheduling techniques and types of software to be used on the project. The project schedule should be both structured and flexible for efficient use by all of the project participants. Schedule software compatibility should be required so that there is no data lost in conversion or interpretation of the subcontractor's or vendor's time phase plan. The definitions have to be established

for multiple project calendars and planning units (work days, calendar days or hours) used in the schedule. Something that may seem easy such as establishing conventions for developing activity IDs and the activity coding structure/dictionary can become a very complex planning task. The project participants should be in agreement and compliance with the contract scheduling specifications for the routine scheduling tasks such as: accepted logical relationships; use of “mechanical” constraints; “leads/lags”; preferential logic; and the definition of the critical path. Unless the contract requires a different definition, it is recommended that the longest path criteria (if available) be the accepted definition for the project critical path in order to minimize future conflicting terms.

The project lead scheduler is normally involved in establishing the work breakdown structure (WBS) as well as taking the responsibility to develop the mechanics (rules of the road) for the schedule change order process; periodic schedule integration; and the progress reporting process. In addition, the organization breakdown structure (OBS) should be integrated in the schedule structure to facilitate the assignment of primary responsibility for each of the schedule activities. If the schedule is to be resource loaded with labor hours or crews, there should be a standard resource codes dictionary to avoid confusion.

Each project schedule participant (subcontractor, vendor, design consultant) should document the basis of their schedule. By exercising a graded approach based upon their level of participation, the subcontractors and vendors schedule narrative should address the following:

- Scope of work
- Work breakdown structure
- Key assumptions and constraints
- Issues and impacts (risk)
- Inclusions and specific exclusions
- Key procurements and submittals

Schedule Management and Control Procedures

The scheduling management and control phase includes implementing the schedule procedures and processes required to maintain the project schedule during the project execution phase, to accomplish progress updates, critical path and near critical activity analysis, schedule change management, forecasts and recovery planning, progress reporting, and providing timely output and deliverables to the project team. During the schedule management phase actual progress is tracked, critical and near critical path activities are monitored; and variances or trends analyzed and reported to the project participants.

There should be an understanding between the owner and the contractor(s) concerning the schedule updating and progress reporting process and this should be clarified in the contract scheduling specification. This process can be much more powerful in minimizing claims if there is a mechanism to resolve all outstanding issues during each schedule update. A major cause of unresolved and complicated claims is allowing individual issues that have caused delay to accumulate without resolution until the intertwining and interaction of individual issues become almost impossible to resolve fairly and clearly. The scheduler should be involved with the establishment of these processes and methods for the integration and coordination of the vendor or subcontractors' schedules. A very clear division of responsibilities (DOR) is suggested when there is a master project schedule. Who will be responsible for the maintenance and configuration control: the owner's representative?; the general contractor?; or a construction manager? The schedule revision process is very important and often can be the focus of contention when a project ends up with time impact claims. Clarification about what constitutes “revising” the schedule logic and how the project “manages” out of sequence progress are important to resolve. Including a schedule change management process in the update process will help isolate and resolve impacts from changes (see later section.)

Key items to resolve in schedule management and control include:

- Frequency of progress status updates
- Level of detail to be reported upward to owner
- Method of reporting impacts and/or delays
- Incorporation of change orders
- Method of highlighting schedule “issues”
- Float ownership and use

The schedule management understanding should try to resolve how the project parties will manage potential schedule impacts and risks before the project moves into the execution phase. Incorporating risk management will help to produce a schedule that provides better claims avoidance since it will protect against the identified risks. The parties should discuss how they will handle potential schedule risks and impacts such as:

- Weather days – Adjustments for seasonal averages? Defining severe or adverse weather? There are various options to consider when including potential adverse weather days in the project schedule. One option is to allow for these potential days in the month or season when that adverse weather normally occurs. Another option is to add the total potential number of adverse weather days at the end of the project as weather contingency and make adjustments as time progresses and the adverse weather day is “consumed”.
- Acceleration – Options to improve schedule with a “time versus cost” comparison within the project budget. If the project anticipates risks in the performance of the project and has factored in additional cost contingency, then a potential amount of schedule contingency should also be considered and included. The contingency should be clearly identified and “bounded” so that adjustments are appropriately made if the risk events occur. If the risk events are mitigated or do not occur and that portion of the schedule contingency is unused, then the project should remove that unused portion from the schedule.

The schedule update process when several subcontractors are involved can become very confusing and can consume valuable project resources. It is important to establish and implement an agreement about how, when, and where to obtain schedule progress and status, as well as the accepted sources of input for validating schedule updates regarding changes, delays, and impacts. Another important consideration involves maintaining records of as-built facts that are can be verified through contemporaneous project documents such as:

- Daily reports/weather reports
- Procurement expediting and submittal log
- Production logs
- Request for information (RFI) log
- Deficiency logs or reports
- Trends and potential change order log
- Change directives
- Meeting minutes/project correspondence
- Photographs or videotapes - at critical times

Schedule Reviews

It is the owner’s responsibility to review and accept (or approve) the project schedules; both the baseline schedule and the periodic schedule progress updates submittals. The processes for baseline and progress update schedule reviews are significantly different, and require an experienced scheduler to perform these tasks.

The Schedule Baseline: Review of the baseline schedule includes among other things:

- Verify that the baseline matches the contract bid assumptions
- Ensure that the baseline is incorporated into the appropriate subcontracts
- Clarify the activity scope, details, and assigned responsibilities
- Identify possible claims situations
- Review the predecessor/successor logic

The development phase for the baseline schedule is a dynamic period of time and often is accomplished simultaneously with the contract award and execution of work on the project. Every reasonable effort should be made to maintain only one project schedule and working jointly toward agreement on the project schedule with all participants. That will reduce the probability of errors resulting from schedule redundancy and minimize, if not eliminate, wasted project resources.

The Schedule Update Submittal: The periodic schedule update submittal should be reviewed for accuracy of reported progress and verification that there have not been any previously unreported changes. Schedule narratives included with the submittal need to address key resource assumptions underlying the schedule as well as changes that affect critical path work such as revised logic links, or activity durations; change to activity descriptions, or previously reported progress should be clearly explained to the owner. Providing careful resource logic review will help minimize resource-related claims when the project conditions change. Any changes in previously reported actual dates should include justification for the change. This should be accomplished by providing a written schedule narrative with each update submittal to clarify the content and reasons for all significant schedule changes. There are mixed opinions about whether there should be both electronic and printed copies of the schedule included in the schedule submittal and that should be resolved at the project coordination and kickoff meeting. There are also a variety of opinions about whether or not to designate a sum of money in the contract for prompt and accurate submittal of the schedule for review and acceptance. As a relatively new process, many projects are participating in joint progress reviews with the objective of more timely resolution of schedule issues than may have been experienced in the past. Refer to AACE International Recommended Practice 53R-06 *Schedule Update Review – As Applied in Engineering, Procurement and Construction*^[5] for more details.

Schedule Impact Analysis

When the project experiences or anticipates an impact to the planned completion date, it is important to perform a time impact analysis (TIA) prior to the impact of the delay event and resolve the schedule issues as quickly and as contemporaneously as possible. The resolution of the cost impacts to the project should be kept separate and can be negotiated and resolved at some future date. The steps for performing a TIA are detailed in several technical publications, and may be uniquely specified in the project contract. Refer to AACE International Recommended Practice 52R-06 *Time Impact Analysis – As Applied in Construction*^[4] for additional details.

Schedule Change Management

Schedule change management refers to the process of managing any change to the scope of work and/or any deviation, performance trend, or change to an approved or baseline project control plan. It is important to recognize that change management is necessary in every project due to a variety of conditions or events. The scheduler's change management responsibilities are to revise the approved baseline schedule only when an approved change order indicates a change in scope or duration. The scheduler should be able to differentiate between schedule variances, trends, and changes, and should be able to make timely recommendations to the project management team for corrective actions. The scheduler should be capable of providing schedule-related recommendations to the project management team on strategies to recover from project delays. If the project has established a schedule contingency,

the use of that contingency should be in strict compliance with the change management process. The schedule change management procedure should address the contract time limits for notification, submittal, and approval as well as the format for the schedule change submittal such as a fragnet and a TIA narrative, if required.

As-Built Schedule

The most important schedule for the project execution phase is the baseline schedule. However, the second most important schedule is the “as-built” schedule when related to the successful resolution of delay claims. The scheduler is responsible to provide an as-built schedule that can be validated to the project records to be used as an effective tool to facilitate the preparation for and/or defense of a schedule related claim. The contract terms and conditions should address this requirement for both the prime- and sub-contracts to improve opportunities for timely delay resolution and settlement. The procedure for maintaining records of as-built facts that are verified through contemporaneous project documents is also important.

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