

CDR.2818

Criticism of the ASCE Schedule Delay Analysis Offsetting Delay Concept

Mark Nagata, PSP

Abstract—The American Society of Civil Engineers (ASCE) published its Schedule Delay Analysis Standard in August 2017. Not as ambitious as AACE’s Recommended Practice for Forensic Schedule Analysis, ASCE’s Standard is largely composed of concepts pioneered, proven, and standardized by others. However, the Standard includes an unproven concept – offsetting delay. Offsetting delay is controversial, both, because it is unproven and, because it is biased towards the interests of contractors.

The concept of offsetting delay states that an owner may be required to grant the contractor a time extension for an owner-caused, non-critical-path delay at any point during the project. This aspect of the concept modifies what has long been one of the basic laws of time extensions – the contractor is only entitled to a time extension to the project completion date when an excusable delay delays the project’s critical path and forecast completion date.

The ASCE’s concept of offsetting delay is biased against the interests of the owner because it provides a time extension for non-critical-path delays to contractors, but does not provide relief to the owner from the contractor’s delay costs in identical circumstances. This paper evaluates the issues of criticality, concurrency, the redefinition of key terms, and other aspects of the ASCE Schedule Delay Analysis Standard’s offsetting delay concept in arguing for its removal from the standard.

Table of Contents

Abstract 1
Introduction 3
What is an Offsetting Delay? 4
How the SDAS’s Offsetting Delay Concept Violates Widely Understood 8
CPM Scheduling Principles and Concepts
 An Offsetting Delay is Not a Critical Path Delay 8
 An Offsetting Delay is Not a Concurrent Delay..... 9
 Acceptance of Offsetting Delays Requires Additional, Unnecessary 11
 Project Management Efforts
 The SDAS Unnecessarily Redefines the Term “Critical Activity” 12
 The SDAS Offsetting Delay Concept Conflicts with the Writings of SDAS Committee Members..... 15
Suggestions for Owners to Protect Themselves from Offsetting Delays 19
Conclusion..... 19
References 19

Introduction

In August 2017, the American Society of Civil Engineers (ASCE) published its Schedule Delay Analysis Standard (SDAS), ANSI/ASCE/CI 67-17. According to the SDAS, the presence of an offsetting delay may enable a contractor to avoid its responsibility to pay liquidated damages when it delays a project.

The concept of offsetting delays is, or should be, controversial for several reasons as discussed in this paper:

- It recommends that owners grant time extensions to contractors for delays that did not delay the critical path of work or the actual or forecast completion date of the project to avoid payment of liquidated damages.
- It does not apply equally and fairly to both owners and contractors.
- It significantly complicates the management of a construction project by requiring owners to focus limited management and administration time to tracking delay to not just the critical path, but all non-critical work paths.
- It modifies long-established and accepted definitions of basic scheduling and project management terms such as “critical activity” and “critical delay.”

This paper will address the following topics:

- What is an offsetting delay?
- Why the offsetting delay concept is unfair and could incentivize a contractor’s late completion.
- How the SDAS’s offsetting delay concept violates widely understood CPM scheduling principles and concepts.
 - An offsetting delay is not a critical path delay
 - An offsetting delay is not a concurrent delay
 - Acceptance of offsetting delays requires additional, unnecessary project management efforts
 - The SDAS unnecessarily redefines the term “Critical Activity”
 - The SDAS offsetting delay concept conflicts with the writings of the SDAS committee Members
- Suggestions for owners to protect themselves from offsetting delays

While the views expressed in this technical paper are based on industry recommended practices and technical references, there are certain positions in the paper which were sourced by interviews, legal research, and personal experiences of the author and are solely the views of the author.

What is an Offsetting Delay?

Authors of the SDAS who are advocates of the offsetting delay concept assert that this theory of recovery is necessary to protect the rights of contractors. These same authors also argue that a contractor should not be assessed liquidated damages when an owner delays a non-critical-path activity that might hinder the contractor's ability to recover its delay.

The SDAS defines offsetting delay as follows:¹

A delay that may occur when a contractor is behind schedule and the owner later causes a delay to the contract completion date. Time entitlement and damages depend on the measure of delay caused by each party.

The SDAS describes how an offsetting delay, which is an owner-caused delay to a non-critical path activity, can limit an owner's ability to assess liquidated damages in Guideline 4.6, "IN SITUATIONS WHERE THE COMPLETION DATE IS ADJUSTED PROPERLY FOR CHANGE ORDERS AND THE CONTRACTOR IS BEHIND SCHEDULE, OWNER DELAYS THAT OCCUR THEREAFTER ON A SEPARATE PATH MAY HAVE MITIGATING EFFECT ON ASSESSMENT OF DAMAGES," as follows:²

In certain situations when the current as adjusted contract completion date has passed or the current updated schedule is projecting a completion date that is later than the contract completion date, owner-responsible delays occurring thereafter may mitigate the assessment of liquidated damages. This type of delay is referred to as "offsetting delay," recognizing that an owner-caused delay may result in recognizing a noncompensable time extension to offset all or a portion of any potential liquidated damages.

Delay damages can be measured and determined by the effect of each path on activities that impact the current contract completion date, based on chronology of delay, responsibility for delay, magnitude of delay, and how both contractor and owner delays affect the current contract completion date at specific times. Such situations may affect the assessment of owner damages previously projected as a result of the contractor's late performance and the owner's right to assess damages for late completion.

Examples are often useful to explain and illustrate concepts. Therefore, to illustrate what an offsetting delay is, consider the following example. Assume that a project 12-month project has progressed up through its first nine months. The project is forecast to finish 60 calendar days late and this late finish was caused by a 60-calendar-day critical path delay that was the fault and responsibility of the contractor. (The 60-calendar-day delay was "non-excusable.") If the project

finished as forecast by the schedule at the beginning of month 10, the owner would be entitled to assess liquidated damages for the 60-calendar-day late completion of the project and the contractor could be obligated to pay the assessed liquidated damages. Figure 1 is a graphical depiction of this circumstance.

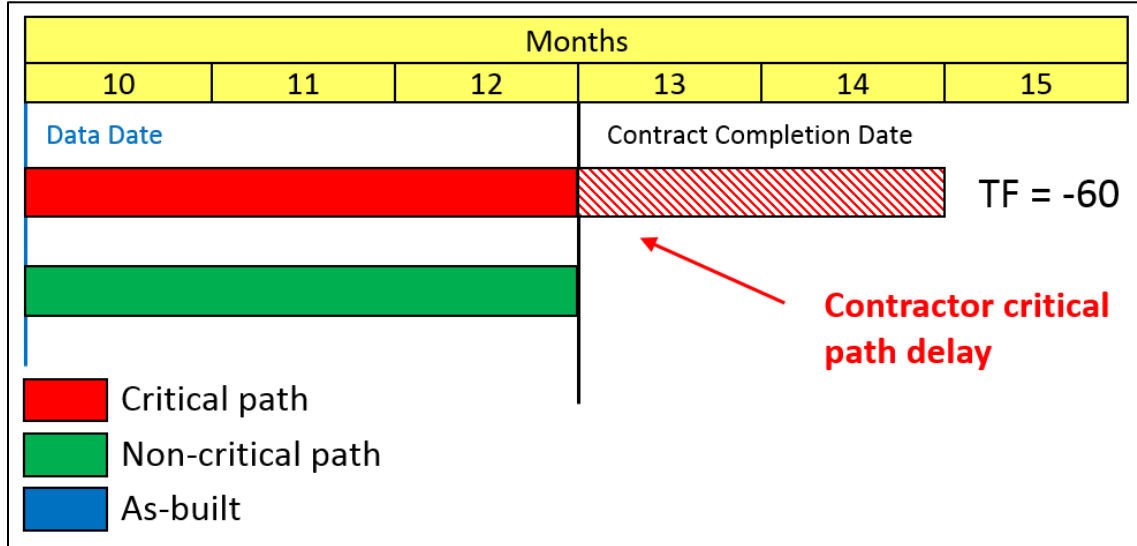


Figure 1—Forecast 60-CD Contractor Delay at the Beginning of Month 10

Assume that during Month 10 the owner delayed a non-critical work path 30 calendar days. In this scenario, the contractor’s 60-calendar-day delay is still responsible for the project’s forecasted late completion date. The 30-calendar-day owner delay is depicted in Figure 2.

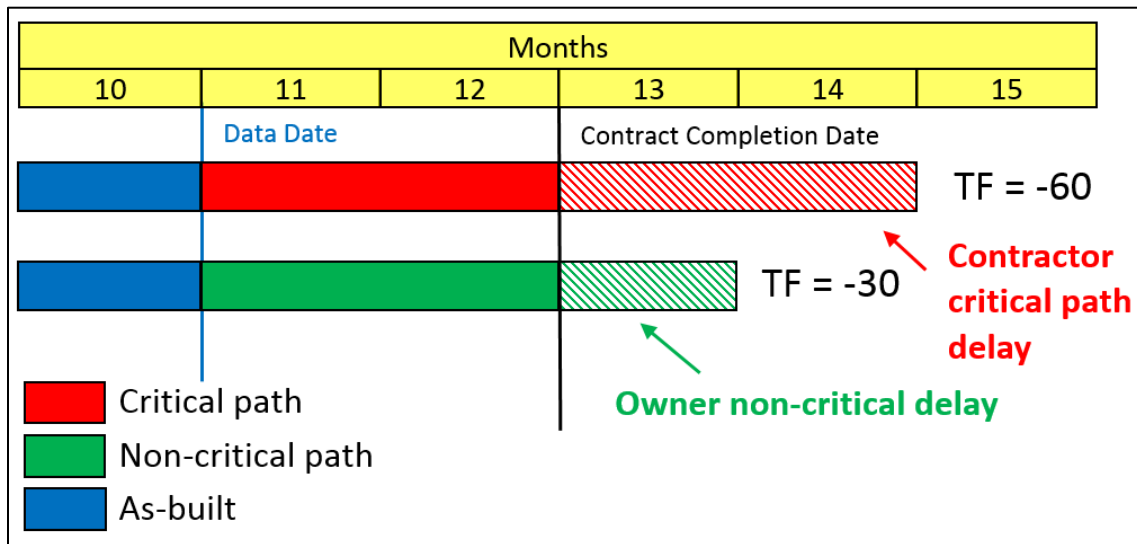


Figure 2—30-day Owner Non-Critical Delay in Month 10

In Figure 2, the project was forecast to finish 60 calendar days late due to the contractor’s critical path delay. The owner delayed a non-critical work path. As a result, this non-critical work path was forecasted to finish later than the contract completion date, but NOT later than the project’s

forecast completion date. The non-critical work path that was forecasted to finish after the contract completion date had 30 calendar days of float relative to the forecast completion date.

Based on the SDAS, the 30-day non-critical-path owner delay identified in this example is an offsetting delay. Because it is an offsetting delay, the SDAS recommends that the contractor's liquidated damages assessment should be reduced 30 days from 60 days to 30 days. According to the SDAS, the assessment of liquidated damages would be reduced even though the owner's delay was not critical and had no effect on the forecast project completion date.

Additionally, as will be discussed in more detail later in this paper, the SDAS's definition and description of an offsetting delay does not place any temporal limitations on the occurrence of an offsetting delay. By not placing a limitation on when an offsetting delay can occur, the SDAS effectively states that an offsetting delay can occur at any time during the project, from the notice-to-proceed through the project's actual completion. The SDAS's position that offsetting delays can occur at any moment during the project, and not just AFTER the contract completion date, is not based on established case law or technical basis.

Why the Offsetting Delay Concept is Unfair and Could Incentivize a Contractor's Late Completion

The issue that appears to be truly at heart of the offsetting delay concept is equity. Based on discussions with proponents of the offsetting delay concept, they believe that it is unfair for owners to fully assess liquidated damages when an owner's non-critical-work path delay creates negative float. This perceived unfairness is based on the presumption that this owner-caused, non-critical-path delay could potentially prevent the contractor from fully recovering its delay and completing the project on time should it try to do so.

For example, returning to Figure 2, offsetting delay proponents argue that the contractor should be entitled to a 30-day time extension that would offset or alleviate the owner's assessment of liquidated damages for 30 of the 60 days that the project was delayed. They believe that this 30-day extension is justified because the owner's 30-day, non-critical delay would prevent the contractor from fully recovering all 60 days of contractor-caused critical delay, if the contractor decided to attempt to recover its delay.

The first major flaw with the SDAS's offsetting delay concept is its inherent unfairness. This unfairness exists on two levels.

First, if the tables are turned, where the owner critically delayed the project and the contractor delayed a non-critical work path, the same rules that applied to the owner, do not apply to the contractor. To illustrate this lack of reciprocity, consider the example project depicted in Figures 1 and 2. Rather than the contractor causing the delay, assume that the tables are turned and the owner was responsible for delaying the project 60 calendar days and, in Month 10, the contractor delayed a non-critical work path 30 calendar days causing that work path to finish 30 days after

the contract completion date, creating 30 calendar days of negative float along that non-critical work path. This example is depicted below in Figure 3.

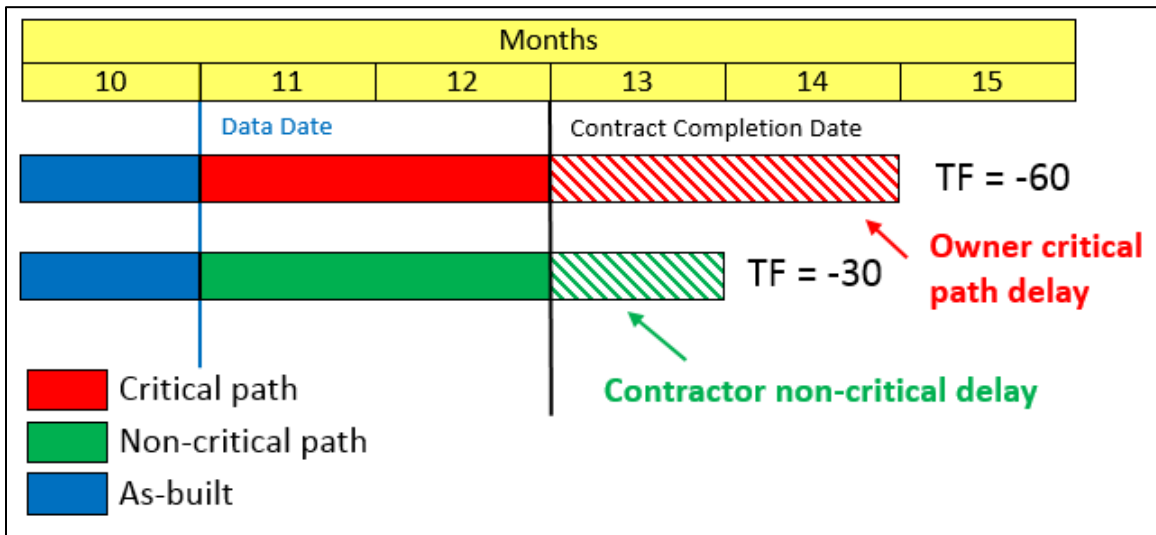


Figure 3—Existing 60-day Owner Delay with 30-day Contractor Non-critical Delay in Month 10

If this situation were to occur on a project, authors of the SDAS who are offsetting delay proponents assert that the contractor’s 30-day non-critical-path delay would not offset or negate 30 of the 60 days of delay-related damages (assuming that the owner’s delay is compensable) that the owner would owe the contractor for the owner’s critical path delay.

This lack of reciprocity or mutual benefit from the offsetting delay concept is inherently unfair and biased towards to the contractor. This lack of fairness alone should have been and should be sufficient to cause ASCE to strike the concept of offsetting delays from the SDAS.

The second major flaw with the SDAS’ offsetting delay concept is that it doesn’t require the contractor to mitigate any of the critical project delay, which is its responsibility, in order to establish its entitlement to a time extension and relieve it of responsibility for liquidated damages. The only requirement identified by the SDAS is the presence of an offsetting delay. The contractor need not make any attempt to recover its delays to be entitled to a reduction in the assessment of liquidated damages.

It is essential to examine how this flaw would play out on an active construction project. If a contractor could delay the project, yet point to an owner-caused, non-critical-path delay to offset or relieve it from being assessed liquidated damages, what incentive would a contractor have to mitigate its own delay? In reality, the application of the offsetting delay concept as described by the SDAS would significantly reduce the incentives for a contractor to mitigate its own delays once they are encountered.

Many construction contracts include “time of the essence” language that requires the parties to complete the project as quickly as possible. The SDAS’s offsetting delay concept would run counter to this common contract language and common law concept. Instead, it would incentivize contractors, who have already delayed the project, to try to find owner-caused, non-critical-path delays to avoid the assessment of liquidated damages, rather than implementing recovery measures to mitigate their project delay. These non-critical, owner-caused delays may be delays that have already occurred and have had virtually no effect on the project end date, yet the SDAS would enable the contractor to offset this owner delay against its critical project delay and its responsibility to pay liquidated damages.

Additionally, in the event that the contractor does, in fact, attempt to mitigate its delays, it would be unfair to allow the owner’s delay, without consequence, to stand in the way of the contractor’s recovery all of its delay. Addressing this circumstance requires a more precise analysis, not the SDAS’s far-reaching application of its offsetting delay concept.

However, one of the fatal flaws with the SDAS’s offsetting delay concept is that it does not require the contractor to have tried to recover its own delay to assert an offsetting delay argument. In fact, in accordance with the SDAS, a contractor would be entitled to this reduction in the assessment of liquidated damages, even if the project finishes late solely due to the contractor’s delay and even when the contractor made no effort to mitigate its delay. Clearly, such an outcome is unjust and contrary to established industry best practices. There is little doubt that once owners understand this unfairness hidden in the SDAS, they will reject not only the concept of offsetting delay, but the entire standard.

How the SDAS’s Offsetting Delay Concept Violates Widely Understood CPM Scheduling Principles and Concepts

In order to identify and measure offsetting delays, the SDAS chose to redefine widely understood CPM scheduling terms and concepts, ignore accepted schedule delay analysis concepts, and ignore established case law to validate the offsetting delay theory. These topics are addressed herein.

An Offsetting Delay is Not a Critical Path Delay

First, there is a long-standing concept that is written into the vast majority of construction contracts, which is: Owners only grant time extensions for excusable delays to the project’s critical path.

In the vast majority of construction contracts, the only way to relieve the contractor from the assessment of liquidated damages is the granting of a time extension. However, as described above and depicted in Figures 1 and 2, the SDAS’s offsetting delay language suggests that a contractor should be granted a time extension for a non-critical-path delay.

This recommendation conflicts with established CPM scheduling and schedule delay analysis principles and runs counter to how most construction contracts grant time extensions in that it obligates owners to grant time extensions for owner-caused, non-critical-path delays.

An Offsetting Delay is Not a Concurrent Delay

In addition to not requiring an offsetting delay to be a critical-path delay, the SDAS also does not require an offsetting delay to be a concurrent delay. In fact, an offsetting does not qualify as an concurrent delay as addressed herein.

For decades, construction professionals have argued about how to properly identify and evaluate concurrent delays. The prime motivator is to establish how concurrent delays effect the assessment of delay damages, whether they be liquidated damages assessed by the owner or extended general conditions and home office overhead costs to be paid to the contractor. For example, when an owner delays a project and owes a contractor a time extension and corresponding delay damages, the owner may attempt to minimize the compensation it owes the contractor by identifying concurrent contractor delays that would offset any delay-related compensation the owner might otherwise owe the contractor. Likewise, when a contractor delays a project and is assessed liquidated damages, the contractor often tries to minimize the liquidated damages that it owes the owner by identifying concurrent owner delays to offset its liquidated damages exposure.

The US construction industry has made progress in its effort to define exactly what constitutes a concurrent delay and what requirements must be met for delays to qualify as being concurrent, like in the AACE International Recommended Practice No. 29R-03, Forensic Schedule Analysis (RP-FSA).³

The starting point is the SDAS's definition of a concurrent delay. In Chapter 3, DEFINITIONS, the SDAS defines both the terms "concurrent" and "concurrent delay." It defines concurrent as "happening at the same time; existing side by side; operating at the same time," and defines the term concurrent delay as "delay to the project critical path caused concurrently by multiple events not exclusively within the control of one party." Additionally, in Chapter 8, CONCURRENT DELAY, the SDAS describes a concurrent delay as:

In general terms, concurrent delay can be described as a situation where two or more critical delays are occurring at the same time during all or a portion of the delay time frame in which the delays are occurring. Concurrent delay is a position often taken by both contractors for avoidance of liquidated damages and owners for mitigation of contractor claims for compensable delay.

Whether such delays are excusable depends on the terms of the contract, chronological sequence of the delays involved, cause of delays, responsibility for delays, timing and duration of the delays,

availability of float, and the effect any delay has on a contract milestone or the project completion date.

This description of a concurrent delay identifies two very important requirements with regard to concurrent delays. First, it states that, for two delays to be considered “concurrent delays,” both of the delays have to be “critical delays.”

Second, the SDAS states that for two “critical delays” to be considered “concurrent delays” they have to occur at the same time. This is a significant concurrent delay qualification: for two critical delays to be considered concurrent they have to occur at the same time. This is an important qualification to remember when discussing how the AACE RP-FSA defines a concurrent delay.⁴

From the perspective of both the AACE RP-FSA and, more generally, recognized industry standards and practices as understood and applied by the author of this paper, the SDAS properly identifies the project facts and circumstances that an analyst must consider when determining whether delays are concurrent. Those project facts and circumstances include, but are not limited to the “contract, chronological sequence of the delays involved, cause of delays, responsibility for delays, time and duration of the delays, availability of float, and the effect any delay has on a contract milestone or the project completion date.”⁵ Clearly, the effect that a delay would have on a contract milestone or the project completion date is essential because, for delays to qualify as concurrent delays, they must first both be critical and delay the project’s forecast completion date.

Interestingly, AACE’s RP-FSA takes a slightly different approach to defining a concurrent delay. In the RP-FSA, AACE acknowledges that another one of its Recommended Practices, RP 10S-90, Cost Engineering Terminology, lists five definitions for a concurrent delay.⁶ The RP-FSA includes a thorough discussion of the factors and circumstances that are necessary for two or more delays to be considered concurrent and, ultimately, narrows those five definitions down to two: Literal and Functional Concurrency.⁷

The primary difference between literal concurrency and functional concurrency, as described in the AACE RP-FSA, is the exact timing of the alleged concurrent delays.⁸ For example, the literal concurrency theory is the more strict or conservative version of the two current delay theories and requires that the alleged concurrent delays start at exactly the same time, which results in a limited number of instances of true concurrency. The RP-FSA further describes this distinction as:⁹

An advocate of literal concurrency prefers to view concurrency in the context of day-to-day performance. Under this theory, if the first delay started on day one, and the second delay started on day two, they would not be concurrent – the delay associated with the first event would create float in the entire project so the second delay could not also be on the co-critical path.

So, as acknowledged in the SDAS's definition and description of concurrent delay, the availability of float to different work paths is an essential factor to consider in determining when concurrency occurs.

Functional concurrency is the more liberal definition of concurrent delay in that it only requires the alleged concurrent delay to occur in the same time period. The AACE RP-FSA further describes functional concurrency as:

An advocate of functional concurrency believes that if the two delays occur within the same measurement period [usually a month] they can be concurrent. For example, analyses that are based upon monthly update submissions will manifest delay only at the end of the month. It is quite possible therefore, that an Owner-caused delay occurring in the first week of the update period may appear concurrent with a Contractor-caused delay occurring in the last week of the update period. These delay events could nonetheless be concurrent so long as the other tests are met. Accordingly, the functional application of concurrent delay theory does not necessarily require the delay events to occur on the same days.

Therefore, the AACE RP-FSA suggests two approaches to define concurrency and they differ in that the more strict or conservative definition requires that the alleged concurrent delays must start on the same day and the more liberal definition requires that the alleged concurrent delays must occur within the same measurement or analysis period, which is at most a month. At the very least, for delays to be considered concurrent, they have to occur in the same analysis period.

The SDAS's definition of a concurrent delay aligns with the RP-FSA's definition of literal concurrency, which is the more conservative or strict definition of concurrency described in the RP-FSA. For example, both the SDAS's definition of concurrent delay and the RP-FSA's definition of literal concurrency require the alleged concurrent delays to occur at the same time. In this case, this is an example of a circumstance where the SDAS reflects a long-established and widely understood and accepted standard of practice in the US construction industry.

Offsetting delay, as described in the SDAS, does not meet these two requirements. First, as established earlier, it is not a critical path delay. Second, the SDAS's committee has confirmed that the owner-caused, non-critical-path delay, which is the offsetting delay, does not have to occur at the same time as the contractor's critical path delay. Therefore, it's clear that the SDAS's offsetting delay fails to qualify as a concurrent delay within its own document.

Acceptance of Offsetting Delays Requires Additional, Unnecessary Project Management Efforts

It's unclear whether the proponents of offsetting delays have considered the effect that the acceptance of the offsetting delay concept would have on the management of projects. A direct

consequence of the acceptance of offsetting delay would be that the both the contractor's and the owner's burden for tracking and managing impacts and delays to non-critical work paths during the project would increase significantly.

Contractors and owners expend significant resources to correctly identify the project's critical path and to properly identify to what extent the project's critical path is delayed and why. If contractors and owners had to begin tracking all non-critical path delays, they would have to apply substantially more resources than they currently do and the schedule would be a much more contentious project management tool than it already is.

Having to identify and measure offsetting delay would unnecessarily increase the burden of already strained project management staff to track delays to non-critical work paths and would lead to managing and tracking the use of float values to nearly every work path of the project. This would be particularly true at the end of the project when the demands on the project management team are often greatest. This added requirement to track non-critical delays to the level of detail incentivized by the SDAS is well beyond the current capacity and skillset of most contractor and owner project manager teams.

The SDAS Unnecessarily Redefines the Term "Critical Activity"

The SDAS redefines the term "critical activity" to ensure that an offsetting delay would be considered a critical delay.

Let's begin with the SDAS's definition of the Critical Path, which is defined as "the series of logically connected tasks that define the minimum overall duration for completion of the project, also known as the longest path."¹⁰ The SDAS defines the Longest Path as a "path through a logic-driven schedule controlling the schedule or anticipated completion of the work. This also is referred to as the critical path."¹¹ Combining these definitions, the SDAS takes the position that the critical path is the path of work that forecasts when the project will finish and is the same as the longest path.

The SDAS's critical path definition closely aligns with the industry recognized definition of the critical path. It has been in place for many years and is widely accepted.

Logically, an activity on the critical path should be defined as a critical activity. The converse should also be true, a critical activity should be an activity on the critical path.

However, the SDAS has chosen not to use the critical path as the basis for defining a "critical activity." It defines "critical activities" as "activities with zero or negative float in a schedule reflecting a current adjusted completion date, some of which may not be on the critical path." There are at least two problems with this definition of "critical activities."

First, choosing to define a critical activity by its total float value is a step backward in the standard of practice of CPM scheduling. In Guideline 5.2, ACTIVITIES WITH FLOAT ARE NOT CRITICAL, the

Standard attempts to disconnect the determination of criticality from the critical path/longest path.

...just because an activity falls on the longest path does not necessarily mean it is critical. Activities with float can fall on the longest path, and critical activities with no float can fall on paths that are not the longest path.¹¹ For example, the use of multiple calendars may result in additional float on activities that fall on the longest path and cause fluctuation between float values along a continuous path of work.

After stating that “...critical activities with no float can fall on paths that are not on the longest path,” the SDAS cites an article by Ted Trauner and Brian Furniss titled, *The Critical Path: Definition and Understanding*, to support the idea that activities with zero float that are not on the longest path can be critical.¹² This completely misstates the conclusions presented in that article. Based on conversations with the authors of this article, they were not asserting that activities with zero float that are not on the longest path were “critical,” rather they acknowledge that only activities on the critical path or longest path are critical activities and that an activity’s total float value is an important tool for project managers to be mindful of when managing their projects. In fact, they stated that activities with total float values that are close to zero, zero, or negative should be given special attention because if they are delayed, the critical path could shift to them and, then, they could delay the project.

A quick review of how other industry publications define or describe critical activities is informative and shows that the SDAS’s definition of critical activities does not represent the US construction industry.

The Associated General Contractors of America, *Construction Planning and Schedule*, Second Edition defines a critical activity as:¹³

critical activity Activity on the critical path.

CPM Scheduling for Construction, by Chris Carson, Pete Oakander, and Craig Relyea, defines a critical activity as:¹⁴

Critical Activity: An activity on the critical path. Any delay to a critical activity will result in a delay to the entire project.

AACE International Standard 10S-90 defines a critical activity as:¹⁵

An activity on the project’s critical path. A delay to a critical activity causes a corresponding delay in the completion of the project. Although some activities are “critical,” in the dictionary sense,

without being on the critical path, this meaning is seldom used in the project context. (June 2007)

In CPM in Construction Management, Sixth Edition, O'Brien and Plotnick define a critical activity as:¹⁶

critical activity An activity on the critical path.

Clearly, these definitions all refer to the project's critical path as the basis for identifying "critical activities," whereas the SDAS appears to intentionally broaden the definition of critical activities beyond just activities on the critical path, without a complete and detailed explanation and without establishing a basis for departing from standard industry practice.

Additionally, the SDAS ignores the fact that Oracle Primavera's Project Management P6 CPM scheduling software recognizes the unreliability of total float values to identify critical activities, as follows.¹⁷

If your project uses multiple calendars, defining critical activities based on the longest path in the project provides an alternative to viewing critical activities based on float. Defining float in a multicalendar project is more complicated, since P6 Professional bases float calculations on calendar definitions, including work periods, holidays, and exceptions. **Using float to identify critical activities may prove misleading, since some activities have large float values due to their calendar assignments but are still critical to the completion of the project.** [emphasis added]

Oracle Primavera states that using float to identify critical activities may prove misleading.

Notwithstanding the US construction industry's generally established definition of critical activities, another important factor is the actual contract entered into by the parties. The contract will govern in the first instance and may include a "Definitions" section or an attachment or exhibit that defines such terms. Those definitions may not be in direct alignment with AACE, ASCE or other general industry definitions.

Based on the following factors, it stands to reason that the SDAS's definition of critical activities is not founded on the industry practices:

- 1) the software developer of the most-widely used CPM scheduling software in the world states that float values should not be used to identify critical activities and that activities with large total float values on the longest path are, in fact, critical to the completion of the project,
- 2) many CPM Schedule books and treatises define critical activities as activities on the critical path or longest path, and

- 3) the industry's professional organizations also define critical activities as those activities on the critical or longest path.

The SDAS "new" definition of critical activities is an outlier.

It appears that the reason that the SDAS has chosen to define critical activities as activities with zero or negative float is specifically to allow for the characterization of an offsetting delay as a critical delay. Even if this is not the reason, it is clear that the SDAS's definition of critical activity and Guideline 5.2 do not reflect the standard of practice in CPM scheduling within the US construction industry. Therefore, the committee should consider revising the SDAS's definition of critical activities as activities on the critical path, and not by total float values, to ensure conformity with the US construction industry and good scheduling practice.

The SDAS Offsetting Delay Concept Conflicts with the Writings of SDAS Committee Members

Note that the SDAS's description of an offsetting delay significantly departs from the definition and description of an offsetting delay from the book *Construction Schedule Delays*, authored by W. Stephen Dale and Robert D'Onofrio (D'Onofrio is the Chairman of the committee that prepared the SDAS). In § 3:12 of the book, the authors describe the concept of offsetting delay. This paragraph is entitled, *Concurrency–Offsetting delay*, and states:¹⁸

§ 3:12 Concurrency–Offsetting delay

Offsetting delay provides another flavor of concurrent delay. Offsetting delay is a delay to work that could be considered critical but not necessarily on the longest path to completion of the work.¹ Technically speaking, an owner-caused delay to a subcritical path of work that has no available float, and subsequently would have delayed project completion but for a more critical path of work, presents an "offsetting delay" and may entitle the contractor to an excusable time extension to offset liquidated damages.² **More simply put, after the contract completion date has passed, all activities become critical to a greater or lesser extent.³ Any given activity may not be on the longest path to completion, but nevertheless, with the passage of the contractual completion date, remaining float on the project has evaporated.** Accordingly, an additional owner-caused delay to any path of work may be an excusable delay and service to offset liquidated damages [emphasis added].⁴

...The legal genesis for **the concept of offsetting delays arises in the "take them where you find them" theory since application of the offsetting delay theory generally arise only where the contractor has already been delayed.**⁵ The concept also seems to arise from

the equities of the circumstances, namely that where the contractor is endeavoring to overcome its own delays, fairness would discourage further penalties for additional government-caused delays...[emphasis added]

...The best articulation of the issue arose in Framlau Corp.¹¹ The contractor entered into a contract for the construction of a Naval Reserve Training Center at Wilkes-Barre/Scranton, Pennsylvania. The contractor called for completion by June 26, 1968, but the government issued 14 change orders during performance of the work resulting in an extension of the contractor period by 170 days, to December 13, 1968. Nevertheless, the contractor completed the work after the extended completion date, and the government took beneficial occupancy on May 28, 1969. As a result, the government sought liquidated damages for 166 days of delay, the number of day between December 13, 1968, and May 28, 1969.

The board confronted the issue that the government had identified errors in the plans in January 1969, after contract completion but prior to substantial completion. Although the parties disagreed over the terms of an equitable adjustment, the work to address the design error took approximately nine days. The government denied the request for an extension of time to address the nine days “on the ground that the work could be performed concurrently with items of uncompleted work under the basic contract.”¹² The board rejected the government’s argument and awarded the contractor an extension of time.¹³

The concept of offsetting delay aligns with the legal concept waiver of completion.¹⁶ In essence, **an owner’s failure to grant excusable time extensions for change orders after the expiration of contract time, even if not on the longest path, may equate to a waiver of completion and thereby forfeit an owner’s right to assess liquidate damages.** [emphasis added]

According to the authors, offsetting delays can be applied “after the expiration of contract time.” The SDAS ignores this limitation and suggests that offsetting delays can be applied any time, including before the expiration of contract time. The SDAS provides no justification or support for this substantial expansion of the period during which an offsetting delay might be applied. This unsupported expansion further provides another reason for the SDAS committee and the ASCE to revise the SDAS to eliminate the offsetting delay concept or, at a minimum, to warn users that the “standard” reflects the opinion of the committee, but is has no foundation in industry literature or case law. It may express the opinion of the committee, but it does not reflect the judgment of the industry as reflected in other industry publications and practices or those of the

many authors that have written on the subjects of schedule delay analysis and management of time on construction projects.

The Framlau ruling is almost 50 years old. One measure of the value of a case as legal precedent is the number of times it is cited in support of subsequent decisions. One source of information to identify the frequency of citation is a Shepard's Citation Service. The "Shepardizing" report for Framlau shows that Framlau has never been cited by subsequent rulings as the basis for the application of offsetting delay. While a full analysis of the case law surrounding the application of offsetting delay is beyond the scope of this paper (and, in any event, should be completely irrelevant to an engineering standard), using Framlau as justification for a massive shift in the way the construction industry manages time extensions and the assessment of liquidated damages appears to be ill-conceived and unwarranted..

Additionally, one of the SDAS committee member's position on excusability of non-critical path delays both conflicts with offsetting delays as described in the SDAS and appears to overrule the SDAS's inferred offsetting delay concept from Framlau.

In in § 9.08[K] of the book entitled, *Construction Scheduling: Preparation, Liability, and Claims*, Thomas Driscoll explained the long-standing concept that a delay to the project's critical path is the only way to establish a contractor's entitlement to a time extension, as follows:¹⁹

The argument typically asserted by the contractor in addressing the issue of delays to chains of activities extending after the completion date is that any activities showing negative float are critical, because by definition they will delay the project past the contract completion date. This view of negative float activities fails to acknowledge, however, that there is still a critical path represented by the negative slack activities with the highest numerical designation (for example, -180 days versus -50 days). The activity chain representing the highest negative slack (for example, the -180 days) represents the longest chain of activities through the project in terms of time. This view is consistent with some of the earliest network analysis materials. For example, in the 1962 *NASA PERT & Companion Cost Guide*,²⁹⁶ the critical path was defined as "[t]he particular sequence of activities in a network that comprise the most rigorous time constraint in the accomplishment of the end event. The path with the smallest amount of positive slack or largest amount of negative slack."

The issue of delays of activities with negative float was considered in 1984 in *Santa Fe, Inc.*,²⁹⁷ in which the contractor asserted that any work sequence or CPM path of activities that runs past the contractually required completion date is critical and

delays on these work sequences due to changes are on the critical path.

The contractor argues that the impact of changes or unchanged work cannot be demonstrated by regular CPM rules because “all uncompleted work becomes negative and therefore critical once the schedule completion date has been reached.”²⁹⁸

In rejecting the contractor’s assertion that changes issued after the schedule completion date automatically entitled it to a time extension, the Board noted that delays that do not affect the extended and predicted contract completion dates, shown by the critical path in the network, should not be the basis for a change to the contract completion date. The Board stated:

a close examination of . . . cases cited by Appellant reveals that the important issue is not when the change order was issued, but the impact that change had on the completion of the project.

In this connection see *Electronic & Missile Facilities, Inc.*, GSBCA No. 2787, 71-1 BCA ¶ 8785 where the Board said at 40,809-40,810:

It is our view that where a change is ordered the extension of time for completion is measured by the amount of delay attributable to the change, whether the change is ordered before or after the original contract completion date. *M.S.I. Corporation, VACAB 626*, 68-1 BCA ¶ 6773.²⁹⁹

Wickwire’s and Driscoll’s conclusion is based on more current case law than Framlau and establishes the legal basis to reject the offsetting delay concept as described by SDAS.

Lastly, despite these significant flaws and weaknesses, when defending the offsetting delay concept, its authors of the SDAS who are proponents of the offsetting delay concept have argued that the purposeful insertion of the word “may” in the title of Guideline 4.6 and in the guideline’s first sentence places a restriction on the ability of someone to argue that an offsetting delay mitigates the assessment of liquidated damages.

This argument fails because, as written, the word “may” conveys exactly the opposite message. The online Merriam-Webster dictionary defines the word “may” as “1a: have the ability to; 1b: have permission to, be free to; 1c: used to indicate possibility or probability.”²⁰ The use of the term “may” places no limit on the application of an offsetting delay, rather it provides unrestricted permission. In fact, the word “may” as used in the Guideline 4.6 can and will be

interpreted by nearly all users as permission to rely upon the offsetting delay concept to reduce the assessment of liquidated damages in every instance where it occurs.

Suggestions for Owners to Protect Themselves from Offsetting Delays

To protect themselves against offsetting delays, owners should better define the terms that the SDAS has altered. Additionally, owners should more specifically describe how their contracts identify and measure critical project delay that establishes the basis of a time extension for the contractor. It is recommended that contracts include the following components:

1. A “critical activities” definition that states a “critical activity” is an activity on the project’s critical path; the definition of this term should not rely on an activity’s total float value.
2. A “critical delay” definition that states a “critical delay” as a delay that delays the project’s critical path and, thus, the project’s forecast completion date.
3. The time extension provision should require the contractor to demonstrate its entitlement to a time extension by showing that the project’s critical path and, thus, the project’s “predicted” or “forecasted” completion date was delayed by an excusable delay as defined by the contract.
4. A time extension provision that expressly prohibits the extension of time or relief of time-related damages (LDs) for delays that occur on a non-critical path.

Conclusion

An offsetting delay, as described in ASCE’s new Schedule Delay Analysis Standard establishes that owners should grant time extensions, or provide contractor’s relief from the assessment of liquidated damages, for owner-caused delays that are both not a critical delay and not a concurrently critical delay. To assert that a contractor is entitled to a time extension for owner-caused delays that are not critical or not concurrently critical ignores decades of established CPM scheduling and project management principles, concepts, and established case law; and would place an increased and unnecessary burden on the project management staff of active projects. The concept as promoted by the SDAS is also demonstrably unfair and ill-conceived. ASCE’s Schedule Delay Analysis Standard committee should immediately remove the concept of offsetting delay from ASCE’s Schedule Delay Analysis Standard.

References

-
- ¹ “ASCE Schedule Delay Analysis Standard, ANSI/ASCE/CI 67-17,” ASCE, Reston, VA, 2017 (page 5)
 - ² “ASCE Schedule Delay Analysis Standard,” ASCE, Reston, VA, 2017 (page 8)
 - ³ “Recommended Practice 39R-03, Forensic Schedule Analysis,” AACE International, 2011 (pages 104-106)
 - ⁴ “Recommended Practice 39R-03, Forensic Schedule Analysis,” AACE International, 2011 (pages 104-106)
 - ⁵ “ASCE Schedule Delay Analysis Standard,” ASCE, Reston, VA, 2017 (page 15)
 - ⁶ AACE International, “Recommended Practice 29R-03, Forensic Schedule Analysis,” AACE International, 2011

- ⁷ "Recommended Practice 39R-03, Forensic Schedule Analysis," AACE International, 2011 (pages 104-106)
- ⁸ "Recommended Practice 39R-03, Forensic Schedule Analysis," AACE International, 2011 (pages 104-106)
- ⁹ "Recommended Practice 39R-03, Forensic Schedule Analysis," AACE International, 2011 (page 105)
- ¹⁰ "ASCE Schedule Delay Analysis Standard," ASCE, Reston, VA, 2017 (page 5)
- ¹¹ "ASCE Schedule Delay Analysis Standard," ASCE, Reston, VA, 2017 (page 5)
- ¹² "The Critical Path: Definition vs. Understanding," Brian J. Furniss & Theodore J. Trauner, ABA Construct, Spring 2010
- ¹³ "The Associated General Contractors of America Construction Planning and Schedule Second Edition," Glavinich, Thomas E., Associated General Contractors of America, 2004 (page 335)
- ¹⁴ "CPM Scheduling for Construction," Carson, Oakander, Relyea, Project Management Institute, Inc., 2014, (page 272)
- ¹⁵ "Standard 10S-90," Cost Engineering Terminology, AACE International, 2016, (page 34)
- ¹⁶ "CPM in Construction Management," O'Brien & Plotnick, McGraw-Hill, 2006, (page 636)
- ¹⁷ Oracle Primavera's Project Management P6 Software – Critical Activities
- ¹⁸ "Construction Schedule Delays," Dale, W. Stephen & D'Onofrio, Robert, Thomson Reuters, 2015, (pages 169-175)
- ¹⁹ "Construction Scheduling: Preparation, Liability, and Claims, Second Edition," Wickwire, Jon, Driscoll, Thomas J., Hurlbut, Stephen B., & Hillman, Scott B., Aspen Publishers, 2003, (pages 376-377)
- ²⁰ Merriam-Webster online definition of the word "may" viewed on January 15, 2018

Mark Nagata, PSP
Trauner Consulting Services, Inc.
mark.nagata@traunerconsulting.com