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The Importance of Reality Checks in Forensic Delay Analyses

Eric Davies, P.Eng., Director, Eastern Canada
Robert Garven, P.Eng., MBA, Director, Central Canada

Eric Davies, P. Eng.
Director, Eastern Canada

Robert Garven, P. Eng., MBA
Director, Central Canada

Introduction

Delays are a common source of dispute on construction projects. It is therefore often necessary to perform forensic delay analyses to determine the cause of delays and, where possible, attribute responsibility for delays. There are many methods available to calculate delays during a forensic delay analysis. Industry associations such as the Association for the Advancement of Cost Engineering International (AACEi) and the Society of Construction Law (SCL) have published recommended practices and protocols outlining various methods for analyzing delays and disruptions, and other scheduling issues. Employing these recommended practices lends credibility to forensic delay analyses.

This article is not intended to discuss which delay analysis method is most appropriate given the available project documents. Instead, we will emphasize the importance of performing reality checks regardless of the method used. To do so, we will use the contemporaneous period analysis (often referred to as "windows analysis"), since this method has gained popularity due to its acceptance in US court decisions over the years.

Reality Checks in Forensic Delay Analyses

Briefly, a windows analysis consists of dividing the project duration into windows and comparing the schedule updates prepared at the start and end of each window. By analyzing the critical path during a given window, the analyst can identify the activities causing the variance between the two schedule updates. Depending on the nature of the delay, responsibility for the delay may be attributed to a certain party or parties. This process is repeated until all windows are analyzed. Typically, the analyst logs their conclusions in a table as they proceed through the various windows.

Windows analysis has been considered a preferred method because it relies on contemporaneous project schedules, which in theory, provide the analyst with a real-time perspective of the critical path at specific points in the project. As a result, analysts often turn to this method of analysis. However, **all too often windows analysis is performed in name only** and disregards what actually transpired on the project.

To fully benefit from a windows analysis, the analyst must ensure that the contemporaneous project records truly reflect the project's actual progress and schedule logic. However, analysts often take these factors for granted, leading to conclusions which defy common sense or disregard the true causes of delays on the project.

It is important to note that forensic delay analyses should always be fact-based and corroborated by the project records. It should also be noted that the different methods of analysis are simply tools used to calculate delays. As such, regardless of the method used, the importance of performing "reality checks" when conducting forensic delay analyses cannot be overstated. Reality checks are necessary to ensure that the conclusions are logical and align with the facts of the project.

This article does not delve into all possible shortcomings of an improperly conducted windows analysis, instead it highlights two frequently observed issues with this type of analysis. To that end, we will use a case study to show how:

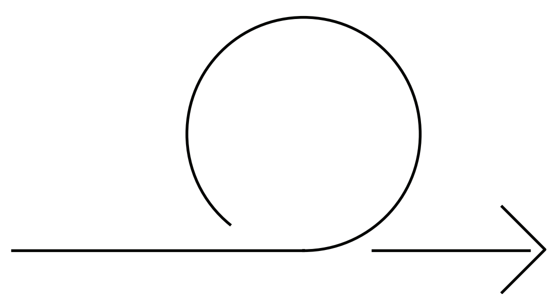
1. Projected delay events may end up being shorter than initially forecasted.

2. Schedule logic may identify incorrect activities as driving the critical path.

The case study will also demonstrate how an as-planned vs as-built analysis, used jointly with a windows analysis, can be a valuable tool to assist in identifying and overcoming these issues.

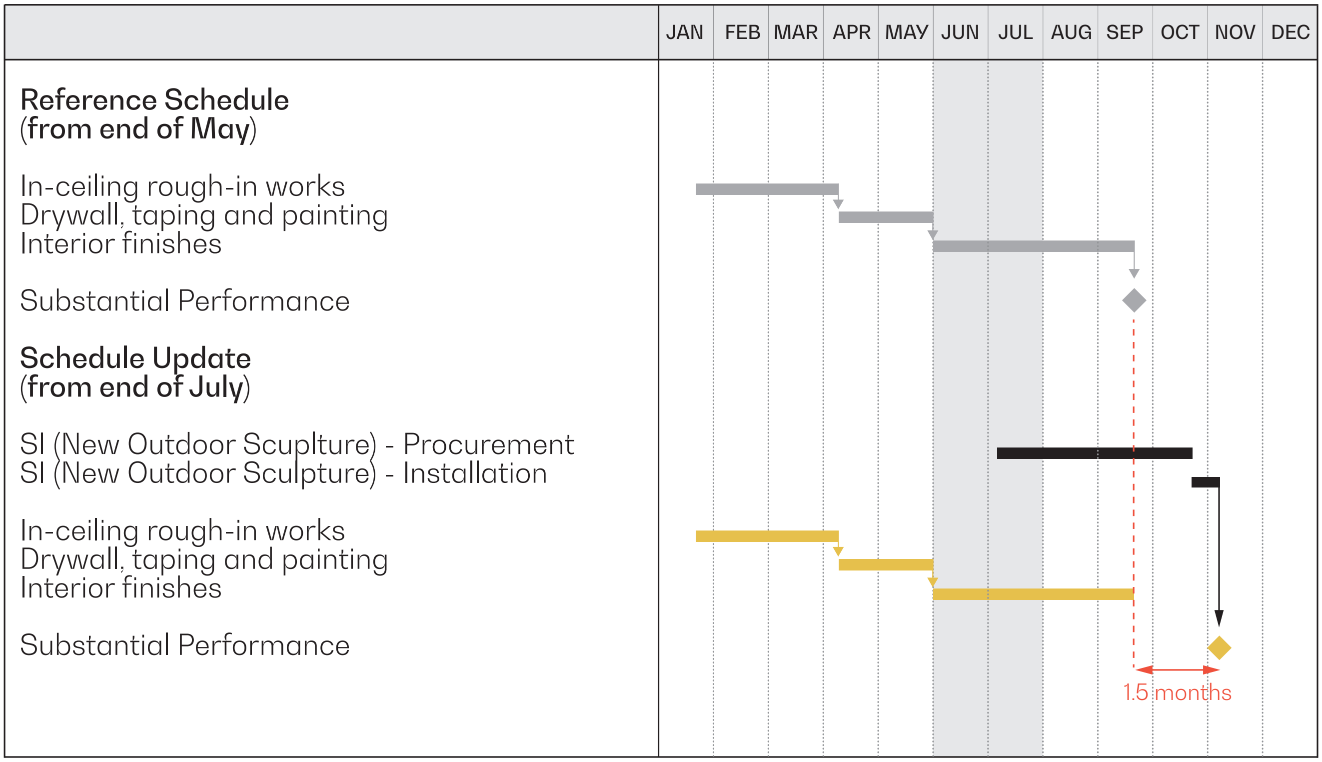
Case Study

In this case study, three periods (or "windows") will be analyzed to determine the critical delays at specific points during the project. For the purposes of this case study, we will be looking at a simplified version of the schedule which focuses only on interior fit-out activities (in-ceiling rough-in works, drywall, taping and painting, along with interior finishes).



Window 1

The first analysis window takes place between June and July (shaded in light grey), as shown in Figure 1. The activities in the reference schedule prepared at the end of May (the schedule update at the start of the window) are shown in grey, and the activities in the schedule update at the end of July (at the end of the window) are shown in gold.



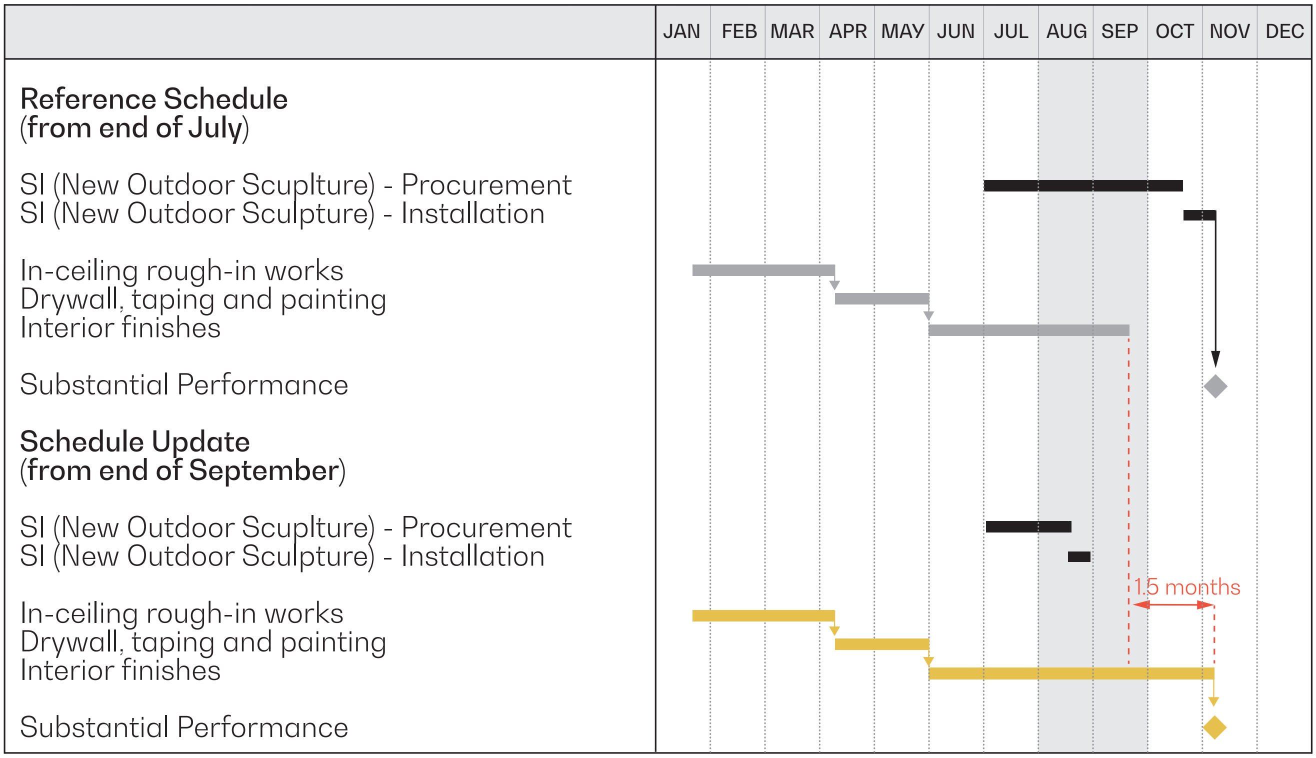
	Total Delay	Incremental Delay	Cause of Delay
Window 1: June & July	1.5	1.5	SI - New Outdoor Scuplture

Figure 1 – Graphical representation of Window 1 analysis comparing the May to July schedule updates

A comparison of these two schedules illustrates a delay to Substantial Performance of 1.5 months. During this window, the only difference between the two schedules is the addition of two activities relating to a site instruction (SI), shown in black in Figure 1, which required the contractor to procure and install a new outdoor sculpture. According to the July schedule update, Substantial Performance could not be achieved before the sculpture was installed. Consequently, Substantial Performance was delayed by 1.5 months.

Window 2

The second analysis window takes place between August and September, as shown in Figure 2.



	Total Delay	Incremental Delay	Cause of Delay
Window 1: June & July	1.5	1.5	SI - New Outdoor Scuplture
Window 2: August & September	1.5	—	—

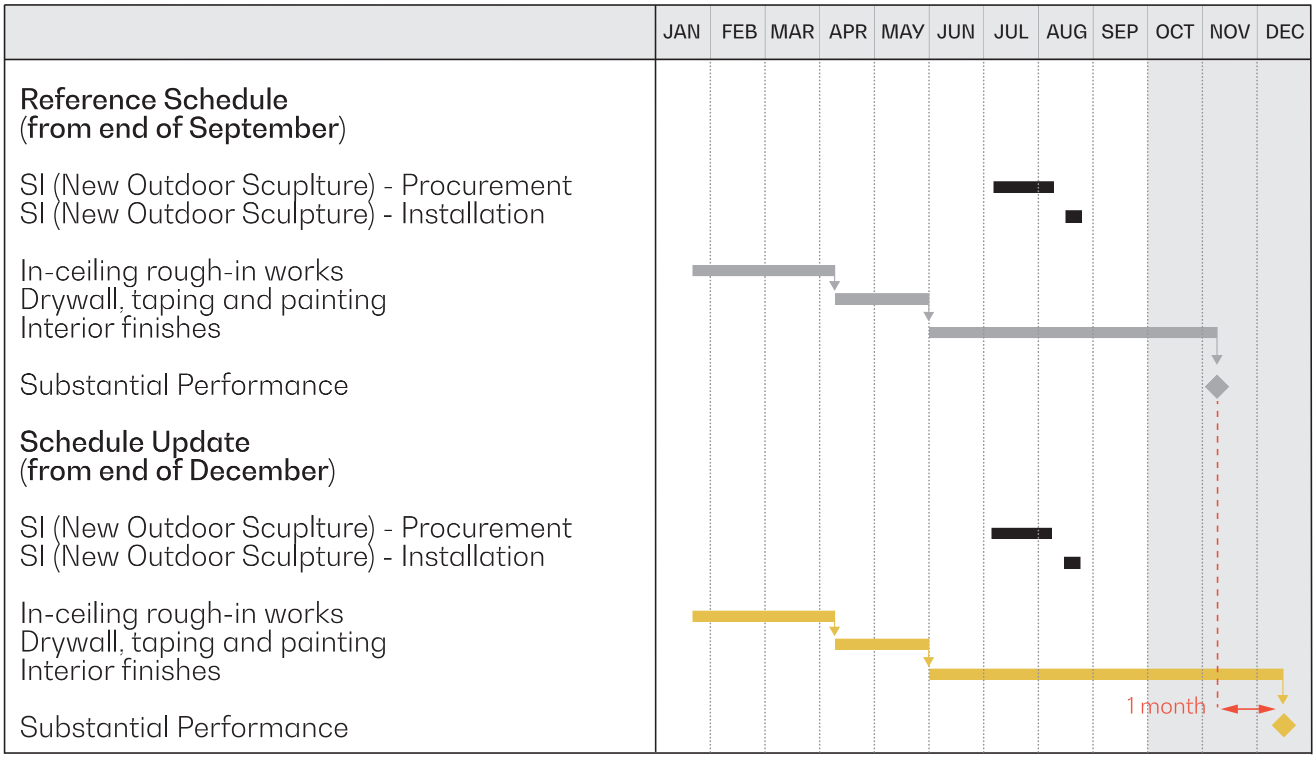
Figure 2 – Graphical representation of Window 2 analysis comparing the July to September schedule updates

The procurement of the sculpture, which had been initially forecasted to take close to four months, actually took about one month. This allowed the sculpture to be installed in August rather than in October and November, as previously forecasted.

During this window, interior finishes were impacted by an unrelated delay event and took longer than planned, extending this work to early November. However, despite the longer than planned duration of interior finishes, Substantial Performance was not further delayed as compared to the previous window. Therefore, according to the windows analysis, no additional delay was incurred on the project, as reflected in the table above.

Window 3

The third analysis window takes place between October and December, as shown in Figure 3.



	Total Delay	Incremental Delay	Cause of Delay
Window 1: June & July	1.5	1.5	SI - New Outdoor Scuplture
Window 2: August & September	1.5	—	—
Window 3: October to December	2.5	1	Delayed Interior Finishes

Figure 3 – Graphical representation of Window 3 analysis comparing the September to December schedule updates

In this window, interior finishes continue to be delayed, delaying Substantial Performance by an additional month.

Conclusions of the Case Study

At the end of this simplified windows analysis, the analyst concluded that the project was delayed by 2.5 months — with 1.5 months attributable to the new sculpture and 1 month attributable to the slower than forecasted progress of interior finishes.

Avoiding the Pitfalls

Concluding the delay analysis at this stage would however be incorrect because, as evidenced by Window 2, the installation of the new sculpture did not actually delay the project. Instead, work was delayed due to unrelated factors. As such, when performing a windows analysis, blindly accepting these results without examining the facts can lead to erroneous and/or unrealistic conclusions.

In fact, these results should have raised certain questions, such as:

- Was the forecasted duration for the procurement of the new sculpture accurate?
- Were any mitigation measures implemented to expedite the installation of the new sculpture, which are reflected in future windows?
- Was the schedule logic correct? Was it accurate to link the installation of the new sculpture to Substantial Performance?

The SCL protocol reflects on the importance of reality checks, however, analysts often overlook these important factors when performing windows analyses.

> For each [schedule update] the analyst needs to verify that the historical components reflect the actual progress of the works and that its future sequences and durations for the works are reasonable, realistic and achievable and properly logically linked within the software.[1]

Supplementing the windows analysis with an as-planned vs. as-built analysis, as shown in Figure 4, provides answers to many of the above questions. For instance, the forecasted procurement duration (as previously shown in the July schedule update in Figure 1) does not appear to be realistic — the actual duration was one month compared to the forecasted four-month duration. Furthermore, the actual progress on the project reveals that the new sculpture was installed well before Substantial Performance, meaning that in the absence of any other delays, the project would still not be affected by this change. The as-planned vs as-built analysis reveals that the driving delay on the project was the extended duration of interior finishes, and that Substantial Performance was never driven by the installation of the new sculpture. More particularly, the as-planned vs. as-built analysis, corroborated by the investigation of project records, reveals that the 2.5 months of delay is entirely attributable to the extended duration of the interior finishes. This conclusion would have been missed by blindly applying a windows analysis without conducting a rigorous investigation of project records.

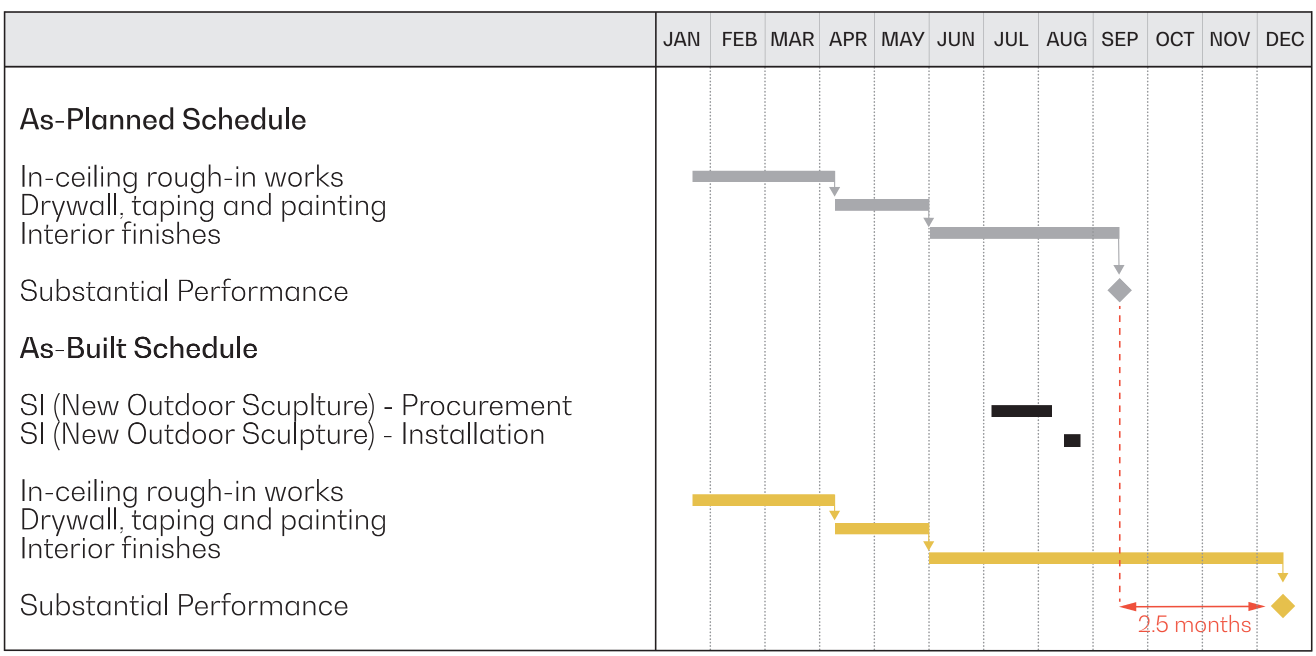


Figure 4 – Graphical representation of the as-planned vs. as-built schedules

Conclusion

While our case study focused on the windows analysis method, the pitfalls of blindly applying a delay analysis method without due consideration to common sense extend to all other delay analysis methods.

It is important that a delay analysis be both logical and representative of the actual events that transpired on the project. Ensuring the accuracy and reliability of a delay analysis is crucial, as it forms the basis for understanding project delays. Every delay analysis should include a reality check to confirm its validity and relevance.

Significant delay events should not be overlooked, as they may have considerable impact on the overall project duration and outcome. To that end, it is necessary to perform a thoughtful examination of project records to ensure that major delay events have been adequately considered.

The critical path should be scrutinized to ensure that it accurately reflects the key activities and realistic logic of the project.

One of the most effective ways to validate a delay analysis is through an as-planned vs. as-built analysis. This straightforward approach serves as a valuable reality check. By performing such an analysis, one can better detect discrepancies and identify areas where a delay analysis may fall short of presenting the true project conditions.

Ultimately, a meticulous and comprehensive approach, grounded in reality and reasonableness, is essential for arriving at accurate results in any forensic delay analysis.

1 Society of Construction Law, *Delay & Disruption Protocol*, 2nd edition, February 2017, p. 36.

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MONTREAL
(514) 932-2188
montreal@revay.com

TORONTO
(905) 858-1303
toronto@revay.com

CALGARY
(403) 777-4904
calgary@revay.com

VANCOUVER
(604) 428-8350
vancouver@revay.com

www.revay.com