Fearnsides and Associates

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Due to the inaccuracy in updated construction progress programmes, the establishment of the as-built critical path can therefore never be literal. As such, only a functional approach to the determination of the concurrent delay can be made?"

What are construction industry thoughts?

In the construction industry claims world, concurrent delay is often used as a defence to reduce payment of prolongation cost claims. However, the establishment of concurrent delay has many thorny issues, not least the approach to determining concurrent delay. Should a literal approach or a functional approach be used, for example? What is a literal approach, as opposed to a functional approach?

However, before anything can be said to be concurrent or otherwise, an as-built critical path (ABCP) first needs to be established, but by which method: dynamic or as-built v as-planned? After establishing the ABCP, which method of deducing if competing events are concurrent or not, upon the ABCP, should be used to establish concurrency? Is it the literal as opposed to the functional approach? The literal approach being where the two competing events impact an activity on the APCB at exactly the same time, whereas, the functional approach, looks at both the ABCP and near ABCP critical activities and also considers the competing events impacting at the same time or near the same time. But how near should the competing events be? What degree of accuracy in terms of criticality should parallel critical paths be, for them to be considered concurrent?

In a recent discussion, what I was getting at (in a blog on linked-in, which was the spur for my thinking) was that if a functional approach was considered, and in my view due to the inaccuracy in determining the as-built Critical Path, then two competing events that impact near one another on say a single critical activity that is determined to be in on the ABCP would have a concurrent impact. In this instance I was thinking more about the "overlap". In the paper I referred to (in the blog) "Livengood Concurrent ASCE Journal 2017", it was suggested that a reasonable amount of time to take in to account the consideration of programming inaccuracies was "within 6 days" critical of one another, this it was suggested would be sufficient for both to be considered concurrent (which seems a sensible approach to me, however, the programming would have to be considered on a case by case basis). Hence, the literal approach and the "sucking up of float" by the second event created by the first event, is not considered if they are within 6 days critical of one another. Although I consider that, the first event, until the second event impacts, should be considered as sequential until

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the competing event (second event) overlaps and at that point is concurrent, until one or the other competing event ceases (This, however, unfortunately, pushes a functional approach to a literal stance in terms of its overlap, which is an oxymoron, if my stance is: "due to the inherent inaccuracy in updated programmes, the establishment of the As-built critical path can therefore never be literal. As such, only a functional approach to the determination of the concurrent delay can be made").

I am looking at the delay analysis methods of determining the as-built CP via the factual as-built v as planned approach, and whilst this can be calculated via a computer code for multiple updates and then the As-built CP and the near ABCP can be identified, there still has to be a subjective review of what were the controlling ABCP activities. But of course, the computer code would greatly speed up the process (I have discounted the dynamic contemporaneous approach using programme updates, as the criticality is based on a theoretical statement made from as-planned for activities to the right of the data date line. Although they still can be used to place oneself in the position/mind of the project manager "at the moment time" (retrospectively) certain decisions were made. This therefore can be a useful source of information and possibly useful if pacing decisions had been made).

What is of interest, however, is that subjective methods of determining the ABCP can be the cause of argument. Whereas, a more calculated approach could be become an accepted method of establishing the ABCP, and then, hopefully, arguments could be dispensed with and then concurrency parameters could be set that enable its determination to be accepted by all which would go some way to stopping "time, no money" arguments dependent upon whom is making them.

In respect of the legal burden of proof i.e. "he who asserts, must prove" then, possibly, a prescriptive method could be approached. However, given any method to be undertaken, there will have to be some degree of subjectivity. For example, the as-built critical path (ABCP) for both the dynamic and the as-planned v as-built methods can be calculated via computerised means. However, the controlling activities after the calculations for both have been performed would need to examined and a sanity check made to check for any obvious errors. If errors were found (and they probably would be), they would have to be subjectively considered and amended and the calculations run again or the calculations just amended and left with the subjective change which then determines the ABCP and the near ABCP's.

I am seeking construction claims industry opinion on concurrent delay determination, as many seem to have an opinion on concurrency, the question is, can those opinions be backed up? And does the construction claims industry consider that with a more detailed prescriptive methodological approach to its determination, once parameters for what is to be considered as concurrent have been set out in a contract specification, would it help reduce argument (I personally would have thought so) or would it create more argument?

For myself ,at Fearnsides and Associates, I put all multiple programme information into Excel and refer to the ABCP via each day of the defined critical activities graphically in to Excel, this being one day is equal to one cell, so a 10 day critical activity duration would equal 10 cells in Excel. A time line

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runs across the top to identify the dates (again each date is one cell). The criticality in days is referred to at each update regime (monthly, for example) and is written on the activity it effects at the date the criticality amount impacts, and hence the ABCP is then graphically depicted (one day is, one cell). This is done also for the near ABCP's. Once the ABCP and near ABCP's have been established, the events are then streamed above the activities they effect Again, one day is equal to one cell, so if a shop drawing was late and was a cause of delay to a critical activity it delayed, the start and finish date of the shop drawing and all its predecessor consequential causes that were the subject of the incumbent shop drawings delayed availability can be seen. Then, once liability for the competing events that impact the critical path at the same time has been established, concurrent statements can be made for how long did the concurrency effect the progress of the works on the critical path. Hence, how much delay was caused to the completion date can then be clearly seen. From this information, the costs incurred or "time, no money" statements can be made where the concurrent delay actually occurred.

The following links refer to examples of how the ABCP is calculated and how the concurrency, in real time, can be demonstrated:

https://www.fearnsidesandassociates.net/copy-of-delay-analysis-simple-float

and

https://www.fearnsidesandassociates.net/copy-of-delay-analysis-cause-effe

and

https://www.fearnsidesandassociates.net/copy-of-time-line-application

Regards.

Jeremy Fearnsides