

## CDR.14

# Proposed Specification Language Regarding Pacing

Mr. Kenji P. Hoshino PSP

**T**his paper proposes contractual language intended to specify and predetermine rules for applying the pacing concept to delays that would otherwise be determined as concurrent delays.

## WHAT IS PACING?

*Pacing delays* and concurrent delays share an uneasy coexistence. They complicate the resolution of delay claims, despite the involvement of sophisticated analysis techniques and experienced forensic practitioners. Although the concept of pacing is as old as the concept of work, the concept of pacing delay was likely introduced as the contractor's response to the owner's concurrent delay defense against the contractor's compensable delay claim <sup>1</sup>.

Concurrent delay occurs where another activity independent of the subject delay is also delaying the ultimate completion of the chain of activities. Pacing delay occurs when the delay in the independent activity is the result of a conscious and contemporaneous decision to pace progress against the subject delay. The quality that distinguishes pacing from concurrent delay is the fact that while the former is a result of conscious choice by the performing party to pace the work, in the latter case, the work is involuntarily delayed by factors independent of any problems arising from the subject delay. One commentator, James G. Zack, defines pacing delay as follows:

*Deceleration of the project work, by one of the parties to the contract, due to a delay to the end date of the project caused by the other party, so as to maintain steady progress with the revised overall project schedule. [1]*

While I do not disagree with Zack, I define pacing delay more generally as:

*A delay resulting from a conscious and contemporaneous decision to pace progress of an activity against another activity experiencing delay due to an independent cause.*

Pacing delay is a real-life manifestation of the principle that work durations expand to fill the time available to perform them.

It can take many forms. Work can be slowed down, resulting in extended work durations, or temporarily suspended, or performed on an intermittent basis. Whatever form it takes, the key is that it results from the performing party's reasoned decision to keep pace with another activity, which I call the *parent delay*, which is experiencing a delay. By pacing the work, the performing party is exercising its option to reallocate its resources in a more cost effective manner in response to the changes in the schedule caused by the parent delay and thereby mitigating or avoiding the cost associated with the resource demands if one were to 'hurry up and wait'. In other words it is consumption of float created <sup>2</sup> by the occurrence of the parent delay.

There are two distinct circumstances to which the term, pacing delay, is often applied. The first circumstance, often referred to as *direct pacing* occurs where the duration of an activity is extended due to a delay in a predecessor activity on which the progress of the subject activity is directly dependent. An example would be the pacing of electrical conduit rough-in when the duration of metal stud installation is extended by delays. In such a case, because there is not enough work to sustain the continuous utilization of a full crew, the electrical subcontractor may order a crew size reduction, by temporarily reassigning some workers to other areas, slowing the progress. In either case it extends the overall duration of electrical rough-in <sup>3</sup>. Although this is definitely pacing, it is not considered a pacing delay for the purpose of the proposed contract language.

What I focus on as pacing delay is the second type where the paced activity has no direct dependency on the parent delay activity. If refer to this as indirect pacing. The fact that it shares the same time frame is a function of schedule timing as opposed to construction logic. An example of this type of pacing would be the landscaping subcontractor who demobilizes its crew and returns at a later time because critical-path work in the building has been delayed.

In this type of pacing, the sole relationship of the paced activity to the parent delay is the fact that the parent delay creates additional relative total float available for consumption by the paced activity. The deceleration is achieved typically by reassignment or reduction of resources or entirely foregoing to procurement of resources that would have been otherwise necessary.

contemporaneous notices are rare in any form, let alone specific, written notices.

## U.S. CASE LAW: KEY ISSUE UNRESOLVED

In the United States, the case most often quoted for the subject of pacing is *John Driggs Company, Inc.*, [ENGBCA Nos. 4926, 5061 & 5081, 87-2 BCA 19,833 (1987)].

*The occurrence of a significant delay generally will affect related work, as the contractor's attention turns to overcoming the delay rather than slavishly following its now meaningless schedule.* [4]

There are other cases addressing concurrent delays that indirectly address the subject of pacing delays. But *Driggs* is one of the few cases that directly address the issue of pacing delays. It is not the scope of this paper to explore the legal interpretation of these cases. Suffice to say that commentators [1,2] agree that this case along with others, seems to have established the fact that the contractors have the right to pace. That is, contractors will not be penalized for pacing their work. This is consistent with the majority view that float, a shared commodity, is available for consumption on a 'first come first served' basis.

What has not been settled by case law is the issue of compensability. The courts' recognition of the contractors' right to pace failed to directly address the question of whether that recognition should lead to the compensability of the parent delay.

## DERIVED CONVENTIONAL WISDOM

The assertion that the contractor's right to pace would essentially remove the owner's defense of concurrent delay, and thereby make an otherwise non-compensable parent delay a compensable one, is a conclusion logically derived from case law, not one that is explicit in the legal opinions. On the contractual front, the author is unaware of any construction contract provisions that directly address the issue of pacing delays.

In the absence of clear legal precedence and contractual language, the community of attorneys and other forensic professionals developed some common-sense guidelines for determining the legitimacy of pacing delays where compensable delays are at issue in a claim.

The first requirement is the existence of the parent delay. By definition pacing delay cannot exist by itself. It exists only in reaction to another delay which is more critical or is determined to become more critical than the paced activity. This need to compare the criticality or the relative total float between the parent delay and the pacing delay often creates a fertile ground for technical disputes between scheduling experts during claim resolution. Also, in cases where many different activities are being performed at the same time, it is unclear who is pacing whom<sup>4</sup>.

Second, there must be some showing that the pacing was a conscious and deliberate decision that was made at the time of pacing. Without a notice signifying contemporaneous intent to pace, it is exceedingly easy to use pacing as a hindsight excuse to concurrent delay by offering after-the-fact testimony. Currently

Third, even with the contemporaneous intent, pacing is not realistic unless the contractor can show that it had the ability to resume progress at a normal, un-paced rate. Implicit in the contractor's ability to show that it could have completed the activity on-time if necessary is the fact that the contractor was able to reasonably determine or reliably approximate when the parent delay would end. Considering the typical realities of the types of projects in which delay issues arise, such determination or even approximation is difficult.

Despite these obstacles to proof, anybody with some field experience would agree that pacing occurs frequently. In fact, many contractors would assert that pacing is an integral part of the detailed implementation of their means and methods whose practice is second nature to any competent project manager, barely worth explicit deliberation let alone formal notice.

The relevant question is why is it done? The answer, like the ultimate answer to most things contractual, is money. Pacing is done because it is believed that it will result in savings of money or effort to the pacing party without any penalty of net loss of time<sup>5</sup>. Herein lays the key to effective contractual solution to the issue.

## PROPOSED FRAMEWORK FOR NEW SPECIFICATIONS

### APPROACH

Any attempt to introduce new contract provisions must seek to avoid any inconsistencies with existing provisions and find the path of least resistance. In this case, such a path can be found as an extension of an existing principle of joint ownership of float<sup>6</sup>.

If pacing is the consumption of float for the purpose of saving money or effort, those savings should accrue to the joint owners of float. As suggested earlier in a footnote, while the overall effect of the parent delay is to decrease project float, it increases float on the path of the paced activity relative to the float on the path carrying the parent delay. Therefore, given that the overall critical path has been impacted with potential cost impacts, any reactive measures, including pacing, would have to result in mitigation of damages or at the very least be cost-neutral. As long as those cost savings are shared by the parties, pacing is mutually beneficial.

In other words, pacing is a benefit, the taking of which is opportunistic and purely voluntary on the contractor's part. It benefits the contractor by allowing the reallocation of resources to one that is more efficient than if the contractor executed the original plan for the parallel path. To be fair, pacing must also be considered the contractor's satisfaction of its duty to mitigate damages by minimizing costs during an alleged period of the parent delay. As such, all savings realized by pacing should be credited against any monies that may become contractually due the contractor as a result of the parent delay.

Thus, the path of least resistance is for the owner to fully recognize pacing and assure that it receives an equitable share of the benefits. However, note that unlike value engineering, the savings here are not real gains but rather savings against the

potential added and unmitigated cost of the delay. Therefore the contractual provision should offset the entire savings against any amount that may later become due for payment of delay compensation to the contractor.

#### DEFINITIONS CLAUSE <sup>7</sup>

Because of the relative obscurity of the terminology pacing delay should be clearly and narrowly defined in the contract by stating what it isn't as well as what it is.

- **Pacing delay:** *the consumption of float created by an alleged owner-caused delay in performing work on an activity not directly dependent on the progress of the work experiencing the alleged owner-caused delay.*

In the above definition, the use of the phrase 'alleged owner-caused delay' is intended to mitigate the risk that the acceptance of a notice of pacing delay by the owner may constitute an admission of liability for the parent delay prior to a full determination of the merits.

The next definition paragraph is designed to prevent the contractor from claiming pacing on a 'total time' basis.

- *For the purpose of this section, **pacing delay** shall refer only to specific events or to the slowed or delayed performance of specific schedule activities. While cumulative pacing may cause the overall project to be concurrently delayed, this resulting aggregate effect, per se, is not considered a pacing delay in this contract.*

In addressing the owner's burden of proof in asserting the defense of concurrent delay, the Board's opinion in the *Driggs* case states, "Merely, speculative or theoretical contractor-caused delays are not adequate to establish a concurrent delay defense." The above provision symmetrically extends a similar burden of specificity to the contractor in establishing pacing delays. The focus is on determining the concurrence of the causal events to the delay rather than the concurrence of the effect of the delay <sup>8</sup>.

Although it is not absolutely necessary, the adoption and definition of the terms 'parent delay' and 'relative total float' is recommended.

- **Parent delay:** *the alleged owner-caused delay that created or increased the relative total float consumed by the pacing delay. The parent delay must start or exist prior to the pacing delay. Also the parent delay must be on the critical path<sup>9</sup> or have a lower float value than the pacing delay.*
- **Relative total float:** *the difference in total float values between two activities or logic paths.*

#### OPERATIVE PROVISIONS <sup>10</sup>

The primary operative provision requires specific written notice of each pacing delay.

- *The contractor shall notify the owner in writing within 14 calendar days of commencing pacing an activity. The notice shall contain the following information:*

- *Activity(ies) being paced*
- *Alleged parent delay(s)*
- *Estimated duration of pacing*
- *How pacing will be achieved*
- *Additional resources necessary if pacing was not implemented*
- *How those resources would be procured if pacing was not implemented*
- *Amount of cost saving sought by pacing*

The requirement that the savings be disclosed or declared <sup>11</sup> is the key operative provision. Recall that in the absence of other provisions, the owner does not have any leverage over the contractor's decision to pace or not to pace. But with the notice and the pricing, the owner has the foothold to 'buy' the right to pace from the contractor.

- *The owner may, at its option, purchase the contractor's right to pace the work for the declared amount of cost savings sought by pacing, or apply the greater of the entire amount of costs saving sought or that actually realized by pacing as a credit against any compensation that may become properly due the contractor for additional costs resulting from the alleged owner-caused delay.*

The choice allowed the owner is designed to elicit a reasonable estimate from the contractor. In theory, the pricing would follow the middle ground since the contractor does not know whether it is quoting a selling price or bidding a buying price in the form of a credit.

Undoubtedly the most significant practical issue is that of reliably pricing the savings within the notice period. While difficult, this is no more burdensome than reliably quantifying the delay impact within the notice period of existing contract provisions requiring notices of delay.

- *In the absence of specific declaration of the amount of cost savings sought by pacing, the undefined benefit accrued to the contractor by such pacing is deemed to completely offset any and all costs resulting from the delay, including but not limited to extended field overhead, unabsorbed home office overhead, equipment standby costs, cost escalation, financing, loss of productivity, that the contractor may incur during the delay period defined by the duration of the parent delay.*

The above provision is not as draconian as you may think on first impression. Although estimating the savings is difficult, if the pacing of a particular activity is valuable to the contractor, such as for example using one tower crane instead of two, it is likely that the savings can be quantified. On the other hand, if pacing has marginal or intangible returns such as reduced supervisory effort<sup>12</sup>, the provision will discourage casual or trivial pacing.

In order to minimize burdening project management with more paperwork than necessary the notice requirement should be limited to pacing delays on chains of activity that are near-critical. The following provision is one suggestion at such limitation<sup>13</sup>.

- *The specific notice requirement does not apply to activities with total float value greater than 30 calendar days<sup>14</sup> over the float carried by the most critical activity path on the network.*

This would typically apply to activities carrying large float values in the baseline, or whose work content is relatively trivial or unimportant for timely progress. Note that competent and regular updating of the schedule along with constant vigilance to the float values is essential since an activity with adequate float in one update may fall under the notice provision in a later update.

Ideally, every notice requirement needs ‘teeth’. The consequences of non-compliance suggested here bars the contractor from using pacing as a reason for claiming compensation later in the project.

- *Failure to meet these notice requirements will result in the characterization of the delay as a concurrent delay which will bar any compensation for the alleged owner-caused delay for the period equivalent to the duration of such concurrent delay.*

## IMPLICATIONS, COMPLICATIONS & OTHER CAVEATS

There are always technical countermeasures, legitimate or not, that emerge sooner or later in reaction to schedule-related contract provisions. Because these proposed provisions hinge on the sharing of float, any float sequestering measures would subvert the proper working of these provisions. Of particular note is the use of resource leveling and smoothing as a continuous, ongoing project management tool. Some would maintain that resource leveling is the technical embodiment of pacing. While there are many instances of contracts requiring the resource loading of schedules, I have not seen any contract provisions addressing resource leveling.

Who is pacing whom? So the race is on to shed the parent delay status. In a close call, the first to notice may establish herself as the pacing party. Of course this imaginary race assumes that the owner has the same obligation or, in this case, opportunity to provide notice. Without such formal opportunity it is important for owner’s to respond to any inaccuracies in notices from contractors.

The practice of pacing is not the sole province of contractors. owner tasks can be paced just as effectively and beneficially as contractor tasks. This raises the intriguing concept of discounted assessment of liquidated damages where owner-activities were paced against a critical contractor-caused delay acting as the parent delay. That subject will be left for another day, another paper.

**I**n the US, the contractor’s right to pace its work in reaction to a critical path delay is a generally accepted concept. However, the issue of compensability has not been clearly

decided by the courts. Contractual language currently in use does not adequately address this issue. One way to contractually address pacing delays is to treat it as the joint use of float to mitigate delay damages whereby the benefits accrue towards the mitigation of potential delay damages. By focusing directly on cost offsets as opposed to prescribing complex formulas for apportioning float, this approach gains the advantage of bringing the parties one step closer to the resolution of this thorny issue.

## REFERENCES

### Papers

1. “Pacing Delays – The Practical Effect” by James G. Zack, Jr., 1999 AACE International Transactions.
2. “Pacing: An Excuse for Concurrent Delay?” by Ronald J. Rider; Thomas E. Finnegan, 2005 AACE International Transactions.
3. “Collapsed As-Built CPM Analysis” by Kenji P. Hoshino, 1995 PMI Annual Symposium Transactions.

### U. S. Cases

4. John Driggs Company, Inc., ENGBCA Nos. 4926, 5061 & 5081, 87-2 BCA 19,833 (1987).
5. Essex Electro Engineers, Inc. v. Danzig, 224 F.3d 1283 (Fed. Cir. 2000).
6. George Sollitt Construction Co. v. United States, 64 Fed. Cl. 229 (U.S. Claims 2005).

## ENDNOTES

1. The author’s first use of the concept and the terminology was in 1989 in a delay claim by a contractor on a public works contract. The delay analysis involved the use of the collapsed as-built method to argue but-for entitlement to compensable delay.
2. The term ‘creation’ should not be interpreted to mean that total float is increased. In fact, the opposite is true. The parent delay adversely impacts the overall critical path of the project, thereby decreasing total float. What it creates (increases) is relative total float on the path of the paced activity relative to the total float on the path carrying the parent delay.
3. For those who are technically inclined for a hands-on demonstration, direct pacing can be simulated and automated by using the interruptible duration mode in Primavera in conjunction with the replacement of a conventional FS tie with a pair of SS and FF logic ties where the SS lag value is equivalent to the duration of the predecessor and the FF lag value is equivalent to the duration of the successor.
4. For example, during the final finishes phase of a high-rise building project.
5. See the recent AACE paper by Rider and Finnegan [3] for similar observations regarding the contractor’s primary motivation for pacing.

6. In theory, one way to negate the contractor's right to pace is to contractually bestow ownership of all float to the owner. But this will be met by extreme resistance by contractors. This author has never seen such a one-sided and unrealistic contract provision.
7. Although I offer definitions only for the terms specific to this paper, I urge the would-be implementer to examine whether it would be prudent to also provide definitions for 'Concurrent Delay' and 'Float'. Should the specifications already contain definitions for those terms, they need to be closely examined for logical consistency with the system proposed in this paper.
8. In apparent contradiction, the *Essex Electro* case the court opined (as paraphrased in, *Sollitt*, a later case) that the approach of comparing one party's overall delays with the other party's overall delays is more reliable than checking each delay from one party against a possible concurrent delay from the other party for a series of subtotal period of entitlement. However, I believe the *Essex Electro* language actually refers to the determination of the total delay impact to be apportioned between the parties. In essence it is stating that it would better to try to apportion the total critical path delay than to attempt the apportionment by adding up the delay incidents without regard to criticality.
9. Based on the longest path criterion for project completion or for contractual milestones.
10. Assumes that the contract contains competent specifications for a baseline schedule and monthly updates.
11. Rider & Finnegan [3] recommends an 'open and immediate' discussion of the benefits of pacing by the contractor.
12. Allowing the project manager more time for family, golf and other civilian indulgences falling under the category of extra-contractual floral stimulation of olfactory neural receptors.
13. Note that the applicability of this provision in its current wording depends on which float philosophy the parties subscribe to. Briefly, there are two major schools of thinking: the "Longest Stick School" which determines criticality based on the longest logical path controlling the overall duration of the network, and the "Negative Float School" which determines criticality based on the total float value, in particular, asserting that any activity with float less than one duration-unit is critical. The current wording rests on the concept of relative total float which is a concept of the "Longest Path School". Once the projected completion date has slipped past the contractual completion date and the network is in negative float territory, relative total float is irrelevant in the thinking of the "Negative Float School."
14. Assumed to be the duration of each update/reporting period. This allows for the 14-day notice period plus another half-month of reaction time by the owner.

Mr. Kenji P. Hoshino PSP  
Project Controls & Forensics  
448 South E Street  
Santa Rosa, CA 95404-5162  
E-mail: khoshino@pcfconsultants.com