



Assessing Delay Damages

By Stacy Moon,
Neil L. Wilcove, and
Stephanie A. Stewart

A consideration of the legal system's views on a scheduling experts' methodology.

How Critical Is the Critical Path?

In the fast-paced world of construction, anyone in the industry knows that things do not always go according to plan. Invariably, the schedule for construction will change, halt, accelerate, or end up ignored, and sometimes

all of these things will happen at once. If and when a construction project becomes delayed, one of the first steps for an owner, general contractor, or project manager is to determine which, if any, contractor is responsible for the delay. Sometimes the delay may be caused by weather, unforeseen ground conditions, defective materials, or a contractor's inefficiencies, among other possibilities. If the contractor who is thought to have delayed the project and the general contractor or owner cannot agree on fault or damages or more than likely both, litigation often is a likely next step.

Having an idea or "judgment" on the cause of delay on a construction project is one thing. Being able to *prove* the cause of delay in a court is another. In most cases, a

plaintiff will be required to hire a scheduling expert to prove the cause of delay, the duration of the delay, the effect on the project as a whole of the delay, and the damages caused by the delay. A scheduling expert is usually a project manager or engineer with experience with forensic scheduling analysis of delays on construction projects. Scheduling experts use various methods to prove a plaintiff's case, and most methodologies are extremely technical, mathematical, and complicated.

This article does not address the qualifications of a scheduling expert, only the methodology that one generally will use. As will be shown below, courts have difficulty interpreting a scheduling expert's methodology and opinion. From a defense standpoint, it is important to recognize

■ Stacy Moon is a shareholder at F&B Law Firm PC in Huntsville, Alabama, where she practices in the areas of municipal liability, employment law, commercial litigation, construction litigation, and personal injury defense. She is a past chair of the DRI Lawyers' Professionalism and Ethics Committee and also active in the DRI Law Practice Management, Commercial Litigation, Governmental Liability, and Construction Law Committees. Neil L. Wilcove is a partner and Stephanie A. Stewart is an associate of Freeman Mathis & Gary LLP in Atlanta, in the construction law and commercial litigation practice groups. Mr. Wilcove is a member of the DRI Construction Law Committee and Ms. Stewart is a member of the DRI Young Lawyers Committee.



which methodologies courts consistently find reliable or unreliable to know under which circumstances a defendant can challenge an expert's report. And, of course, this knowledge will also help an attorney advise clients and experts on the best methodology to use and the considerations to take into account on current and future construction projects.

Although experts

commonly extrapolate from existing data, district courts are not required to admit opinion evidence that is connected to existing data only based on the ipse dixit ("because I said so") of the expert.

How a Scheduling Expert's Methodology Intersects with the Legal System: The *Daubert* Standard

Federal Rule of Evidence 702 and the principles announced in *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469 (1993), specifically governs admitting expert testimony as evidence in federal court proceedings, although many states have also adopted the standard.

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case. Fed. R. Evid. 702.

Under this rule, a district court has a critical "gatekeeping" function under which it must "conduct an exacting analysis of the foundations of expert opinions to ensure they meet the standards for admissibility." See *United States v. Frazier*, 387 F.3d 1244, 1260 (11th Cir. 2004). The gatekeeping role is "especially significant since the expert's opinion 'can be both powerful and quite misleading because of the difficulty in evaluating it.'" *Id.* (quoting *Daubert*, 509 U.S. at 595). An expert's "knowledge" "connotes more than subject believe or unsupported speculation." *Daubert*, 509 U.S. at 590.

The trial court must apply a "rigorous three-part inquiry" to determine whether (1) the expert is qualified to testify competently regarding the matters he intends to address; (2) the methodology by which the expert reaches his conclusions is sufficiently reliable as determined by the sort of inquiry mandated in *Daubert*; and (3) the testimony assists the trier of fact, through the application of scientific, technical or specialized expertise, to understand the evidence or to determine a fact in issue.

Frazier, 387 F.3d at 1260 (quoting *City of Tuscaloosa v. Harcros Chem., Inc.*, 158 F.3d 548, 562 (11th Cir. 1998)).

And "[w]hile there is inevitably some overlap among the basic requirements—qualification, reliability, and helpfulness—they remain distinct concepts and the courts must take care not to conflate them." *Frazier*, 387 F.3d at 1260. The trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable. *Daubert*, 509 U.S. at 589.

Although experts commonly extrapolate from existing data, district courts are not required to admit opinion evidence that is connected to existing data only based on the ipse dixit ("because I said so") of the expert. See *Hendrix v. Evenflo Co., Inc.*, 609 F.3d 1183, 1194 (11th Cir. 2010). The burden is on the proponent of expert testimony to prove its admissibility under Federal Rule of Evidence 702. *Cook ex rel. Estate of Tessier v. Sheriff of Monroe Cnty., Fla.*, 402 F.3d 1092, 1107 (11th Cir. 2005) (stating that "the proponent of the expert testimony carries a substantial burden under Rule 702"); *United States v. Frazier*, 387 F.3d 1244, 1260 (11th Cir. 2004) ("The burden of establish-

ing qualification, reliability, and helpfulness rests on the proponent of the expert opinion...."); *U.S. ex rel. Duncan Pipeline, Inc. v. Walbridge Aldinger Co.*, CV411-092, 2013 WL 1338392 (S.D. Ga. Mar. 29, 2013) ("The burden of establishing that these requirements are met rests with the proponent of the expert testimony, and not the *Daubert* challenger.") (citing *McCorvey v. Baxter Healthcare Corp.*, 298 F.3d 1253, 1257 (11th Cir. 2002)). Further, the admissibility of expert testimony must be proved by the proponent by a preponderance of the evidence. *Cook*, 402 F.3d at 1107.

As explained in subsequent court decisions, a district court has four guideposts to consider when assessing the reliability of expert testimony under *Daubert*: (1) whether the expert's methodology has been tested or is capable of being tested; (2) whether the technique has been subjected to peer review and publication; (3) the known and potential error rate of the methodology; and (4) whether the technique has been generally accepted in the proper scientific community. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 149–50 (1999); *Hendrix*, 609 F.3d at 1194; *McDowell v. Brown*, 392 F.3d 1283, 1298 (11th Cir. 2004); *Hall v. Thomas*, 753 F. Supp. 2d 1113, 1129 (N.D. Ala. 2010). A court should meticulously focus on an expert's principles and methodology, and not on the conclusions that they generate. See *Kumho Tire Co.*, 526 U.S. at 137, 149–50. Courts may conclude that there is simply too great an analytical gap between the data and the opinion proffered. *Allison v. McGhan Med. Corp.*, 184 F.3d 1300, 1315 (11th Cir. 1999) (internal citations omitted).

With these standards in mind, courts have the rigorous task of determining if a scheduling expert's methodology is sufficiently reliable to be admitted into evidence. Many courts have found, or at least suggested, that a "critical path analysis" is a necessary prerequisite to the finding that an expert's methodology is reliable.

What Is the Critical Path?

One of the most common methods of scheduling a construction project is called the "critical path method." As will be shown further, the critical path method is also a common methodology used by scheduling experts in litigation.

The CPM (Critical Path Method) scheduling technique is one which requires a breakdown of the entire work into individual tasks and an analysis of the number of days required to perform each task. The analysis is then programed into a computer which produces a chart showing the tasks and a line which controls the completion of the over-all work. The line through the nodes, the junction points for completion of essential tasks, is known as the critical path.

Appeal of Cont'l Consol. Corp., ENGBCA No. 2743, 67-2 B.C.A. (CCH) ¶ 6624 (Sept. 27, 1967).

[T]he critical path method is an efficient way of organizing and scheduling a complex project which consists of numerous interrelated separate small projects. Each subproject is identified and classified as to the duration and precedence of the work. (E.g., one could not carpet an area until the flooring is down and the flooring cannot be completed until the underlying electrical and telephone conduits are installed.) The data is then analyzed, usually by computer, to determine the most efficient schedule for the entire project. Many subprojects may be performed at any time within a given period without any effect on the completion of the entire project. However, some items of work are given no leeway and must be performed on schedule; otherwise, the entire project will be delayed. These latter items of work are on the critical path. A delay, or acceleration, of work along the critical path will affect the entire project. *Fireman's Fund Ins. Co. v. United States*, 92 Fed. Cl. 598, 666 (Fed. Cl. 2010) (internal citations omitted); *Morrison Knudsen Corp. v. Fireman's Fund Ins. Co.*, 175 F.3d 1221 (10th Cir. 1999) ("Critical Path Methodology" (CPM) is a term of art for a method of scheduling and administrating construction contracts.... CPM enables contractors performing complex projects to identify a critical path of tasks that must each be completed before work on other tasks can proceed.").

Viewpoint from the Bench on Critical Path Methodology

The critical path methodology is so entrenched in the construction industry as to be a de facto analytical requirement,

and failing to submit a CPM analysis with a delay claim may create grounds for a trier of fact to disregard expert testimony. 1 No. 1 Journal of the American College of Construction Lawyers 7; *Morrison Knudsen Corp.*, 175 F.3d at 1221 ("CPM provides a useful, well-developed nomenclature and analytic framework for expert testimony. While CPM has generated a technical terminology, the legal requirement that it is used to analyze is general and commonsensical: a contractor must prove that a delay affected not just an isolated part of a project, but its overall completion.").

Taking the critical path analysis into account is especially crucial because only work that delays the critical path is subject to recovery for damages. *Fireman's Fund Ins. Co.*, 92 Fed. Cl. at 666; *Wilner v. United States*, 26 Cl. Ct. 260, 274 (1992) *aff'd*, 994 F.2d 783 (Fed. Cir. 1993) *on reh'g*, 24 F.3d 1397 (Fed. Cir. 1994) and *vacated*, on other grounds 24 F.3d 1397 (Fed. Cir. 1994) ("An *ex post facto* determination of the critical path is crucial to the calculation of delay damages in that only construction work on the critical path had an impact upon the time in which the project was completed.") (internal citations omitted); *G.M. Shupe, Inc. v. United States*, 5 Cl. Ct. 662, 728 (1984) ("The reason that the determination of the critical path is crucial to the calculation of delay damages is that only construction work on the critical path had an impact upon the time in which the project was completed."). See also *Appeals of Santa Fe Engineers, Inc.*, ASBCA No. 28687, 94-2 B.C.A. (CCH) ¶ 26872 (Apr. 7, 1994) (stating that the court was unable to accept the delay's expert's opinion as reliable because of the expert's decision to use an as-built analysis in lieu of a critical path analysis); *Mega Const. Co., Inc. v. United States*, 29 Fed. Cl. 396, 426-28 (Fed. Cl. 1993) (noting the importance of referencing the original project plan with the critical path because "one must have a starting point and the contractor's original intent in order to show how and when the contractor intended to perform each phase of the work").

Another crucial consideration when considering competing methodologies is whether or not the methodology used has eliminated the possibility of multiple delays occurring simultaneously. A com-

mon defense to delay claims is that there were concurrent delays to a project and the claimed delay cannot be untangled from the other concurrent delays. So a plaintiff cannot prove causation and damages. *Wilner v. United States*, 26 Cl. Ct. 260, 274 (1992), *aff'd*, 994 F.2d 783 (Fed. Cir. 1993), *on reh'g*, 24 F.3d 1397 (Fed. Cir. 1994), and *vacated on other grounds*, 24 F.3d 1397 (Fed. Cir. 1994) ("Without a critical path analysis, the court cannot exclude the possibility that the contractor caused concurrent delay on the project."); *George Sollitt Const. Co. v. United States*, 64 Fed. Cl. 229, 241 (Fed. Cl. 2005) ("To recover for the delayed completion of the project, not only must plaintiff disentangle its delays from those allegedly caused by the government, but the delays must have affected activities on the critical path.") (internal citations omitted); *Fireman's Fund Ins. Co.*, 92 Fed. Cl. at 673 ("The expert's analysis does not correct reflect the overall progress and interrelationships of the Project activities as it temporally links as critical the activities for which plaintiffs seek compensation, while discounting the impact of activities that occurred simultaneously or concurrently and that ran through the Project to its substantial completion."); Bruner and O'Connor on Construction Law §15:67 ("Because the party seeking damages for delay must prove that delay to the critical path would not have occurred but for an event within the control of the other party, proof of a concurrent cause of delay outside of the other party's control precludes the recovery of damages.").

Furthermore, courts have consistently discounted the use of alternative forensic scheduling methodologies. *Manuel Bros., Inc. v. United States*, 55 Fed. Cl. 8, 53 (Fed. Cl. 2002) *aff'd*, 95 F. App'x 344 (Fed. Cir. 2004) (The mere allegation that delays caused work to be disrupted or performed out of sequence, or caused costs to be increased, will not satisfy plaintiff's burden of proof) (internal citations omitted); *Morganti Nat., Inc. v. United States*, 49 Fed. Cl. 110, 134 (Fed. Cl. 2001), *aff'd*, 36 F. App'x 452 (Fed. Cir. 2002) (finding that the expert's total time approach which "simply takes the original and extended completion dates, computes therefrom the intervening time or overrun, points to a host of individual delay incidents for which defendant was

allegedly responsible and which ‘contributed’ to the overall extended time, and then leaps to the conclusion that the entire over-run time was attributable to defendant” is of no value). However, it has been noted that a critical path analysis is not necessary when the cause of delay is clear. *See David Hill Dev’t, LLC, v. City of Forest Grove*, No. 3:08-cv-266-AC, 2012 WL 5381555 (Oct. 30,

Courts have consistently discounted the use of alternative forensic scheduling methodologies.

2012). However, on most large construction project, things are rarely opaque, let alone clear.

Scheduling Requires Frequent Analysis Beginning Immediately

While courts rely on after-the-fact analysis in litigation, undertaking proper scheduling during a project is as important to success with a delay claim if not more so. It should go without saying that an expert cannot after a project is over use a critical path methodology to calculate delay damages if proper scheduling was not in place during the project itself. Several courts have noted the importance of employing sound scheduling techniques during a construction project and how doing so translates to an expert’s ability to perform a proper forensic scheduling analysis after the fact.

For example, in *United States v. Metric Constr. Co., Inc.*, No. 02-1398JB, 2007 WL 1302606 (D. New Mex. Mar. 1, 2007), a subcontractor, Belt Con Constr., Inc., sued Metric for failure to pay related to its work on the construction of dormitories and physical training and security buildings in Artesia, New Mexico. *Id.* at *1 (applying California and federal law to apportioning liquidated damages for delay). Metric alleged and counterclaimed that Belt Con caused significant delay damages, including liquidated damages imposed by the General Services Administration (GSA) for

delay. *Id.* After a bench trial, Metric filed a motion to alter or amend, asking the court to amend its decision regarding causation of the delay, as well as some scrivener’s errors.

The court, in considering who did what to whom, and whether it mattered, specifically noted, “[a] major problem with the project was the lack of good scheduling.” *Id.* at *3. The court also repeatedly referenced the bad schedules as a hindrance to its decision, as well. *See, e.g.*, 2007 WL 1302606, at *3–4 (“This problem was also a difficulty for the Court trying to create a benchmark for all the parties.... Accordingly, not only was scheduling a problem for other subcontractors, the revised schedules were of minimal assistance to the Court in determining whether there were other delays, how long the additional delays lasted, and to whom the additional delays were attributable.”). Further, “[o]ne of the great hurdles for this project was the lack of good, reliable schedules.” *Id.* For example, Metric was required to submit updated schedules. Of the 19 updated schedules submitted to the GSA by Metric, not one was accepted. *Id.* During the trial, the court concluded “that Metric, as the contractor, was responsible for such poor scheduling.” *Id.* According to the court, between the parties’ disputes and the scheduling issues, the two trial experts could not even agree on what the critical path of the project was. *Id.* Eventually, in part because Metric had submitted a delay analysis that attributed all delay to the GSA, rather than to Belt Con, the court found Belt Con’s expert witness to be credible and found Metric’s expert not to be credible.

In short, by not having a clear and proper schedule in place and by failing to update and analyze the schedule properly during the project, Metric gave the court room to analyze and to interpret the schedules, losing the case before it even knew that it had one.

Importance of Making Common Sense of Critical Path

Courts have also expressed frustration with litigants when they only confuse a court when the litigants attempt to prove a case and inundate the court with unnecessary paper. For example, in *United States v. Harrop Construction Company*, the court

noted that the trial was lengthy, and was interrupted by a hurricane, the expert reports were filed up to, and even during, the trial itself, and the record was massive, entangling the court in a paper war between the parties. *United States v. Harrop Constr. Co., Inc.*, 131 F. Supp. 2d 882 (S.D. Tex.). Further, “The case would not have been complete without Safety Steel’s lengthy and protracted *Daubert* attack of [Harrop’s experts] who [were] engaged by Harrop to analyze and testify on the cause and extent of Safety Steel’s failures.” *Id.* After reviewing this massive record, “[t]he court found that the methods used by [Harrop’s experts] were within toleration limits of *Daubert* and construction delay analysis. The court admitted their testimony and overwhelmingly long reports.” *Id.* The court’s comments are a warning to all construction litigants that more does not always mean more effective. Construction schedules are already complicated. Experts, especially scheduling experts, need to be prepared to simplify the schedules so that a jury or a judge is not overwhelmed by the information contained in the evidence.

The court in *Harrop* further recognized, “[c]onstruction cases are driven by detail and are expert dependent.” *Id.* While the experts agreed on many general conclusions on a basic level, they disagreed about the degree of these conclusions. For example, both sides’ experts determined that Safety Steel delayed the project, but they disagreed on how long the delay was. *Id.* In analyzing the delay, the court noted that it “has done its best to determine which of these experts is more likely to be correct than the other.” *Id.* at 891. Further, “The Court feels no duty to be any more precise than the experts, and it is apparent to the Court that there is much judgment that must be applied by whomever is making the analysis and by what method.” *Id.* Based on the multiple expert witnesses’ testimony, the court determined that the overall project delay for all three projects was “in the neighborhood of four months.” *Id.* That amount was slightly more than Safety Steel’s expert estimated, slightly less than one of two reports prepared by Harrop estimated, and about the same as the other of the two reports from Harrop’s expert witness.

The decision by the court to essentially “split the baby” demonstrates the importance of providing a court with clear, concise information. Because the court was also the trier of fact, it had to make credibility determinations, as well as legal decisions. The opinion makes clear the court’s displeasure with the fairly inaccurate, or at least less than accurate, calculations and opinions of the various experts. More importantly, the comments make clear that the schedules were not used effectively in trial. Technical analyses, including scheduling, can be difficult to explain to any trier of fact. But *Harrop* makes clear the importance of overcoming that hurdle.

One example of a scheduling expert helping a trier of fact and the court is *Weitz Co., LLC, v. MH Washington, LLC*, No. 06-0559-CV-W-DGK, 2008 WL 8625902 (W.D. Mo. Aug. 19, 2008). MH moved to exclude the testimony of Weitz’s expert witness because he used a “Windows” analysis of construction schedule and delay, rather than the critical path. *Id.* at *1. The expert, Brannon, compared the original Project schedule to updated schedules-events, prepared contemporaneously. *Id.* MH argued that the delay analysis had to begin with a critical path schedule. *Id.* at *2.

According to the court, MH exposed weaknesses in Brannon’s analysis, but not sufficient weaknesses to make his testimony “unreliable.” *Id.* at *3. Specifically, Brannon used what is referred to as a “Windows” analysis. *Id.* However, MH did “not dispute that ‘Windows’ analysis is common in the industry, and it is well-settled that all expert opinion will necessarily involve some speculation.” *Id.* Further, the court believed that the Windows analysis would help a jury understand how construction projects are organized and the importance of difference tasks. *Id.*

At trial, a jury awarded Weitz damages, attorneys’ fees, costs, and interest based, in part, on the testimony by Brannon regarding the delays caused by MH. On appeal, MH again argued that Brannon should not have been permitted to testify. *Weitz Co., v. MH Washington*, 631 F.3d 510 (8th Cir. 2010). “Brannon used a methodology known as ‘windows analysis,’ which distinguishes activities on the ‘critical path,’ where a delay causes a delay in the overall project, and those activities with ‘float’

time, where a delay does not affect the overall job.” *Id.* at 526. The court noted that Brannon’s report “was sufficiently specific to allow MH... to identify specific documents that arguably demonstrated flaws in the delay analysis.” *Id.* at 527. Additionally, it noted that “at some point most construction activities become critical if they are all there is left to complete on the job.” *Id.* Therefore, the criticisms raised by MH went more to the weight of Brannon’s opinions, not the admissibility.

No matter the method used, the jury apparently felt that the evidence supported Weitz, not MH, and Brannon’s opinion presumably aided Weitz in convincing the jury. With a Windows analysis and the CPM, technical information must be presented to jurors who may not be familiar with scheduling and may not have any background in construction. Having an expert and an expert report that can translate the information into layman’s language is essential to winning any case, but especially a construction case.

Conclusion

At the beginning of this article we acknowledged the reality that events on a construction site do not always go according to plan. Actually, they very rarely do. We recommend that *all* construction experts have a plan and that the scheduling expert analyze that plan and incorporate the analysis into the methodology upon which the expert will base his or her opinion. Based on a review of the applicable case law, it appears that the trend is to use a critical path methodology when assessing delay damages by scheduling experts. Because a construction schedule is always changing, and, as a consequence the critical path may always be changing, it is especially crucial to update the critical path during the project itself. After the project and during litigation, employing a scheduling expert who can make common sense of the critical path methodology is especially crucial. For the defense, the goal is always to exclude the testimony of the plaintiff’s expert and make sure your scheduling expert’s methodology does not fall victim to the same pitfalls. Hopefully this article brings to your attention some of the key cases involving scheduling expert’s methodology and helps you

understand that utilizing the critical path methodology really is critical. 