

Defining the Schedule Expert's Role, Scope, and Approach: Key Considerations for Coordination Between Attorneys and Experts

By Laura B. Arrigo and Samantha L. Brutout



Laura B. Arrigo



Samantha L. Brutout

Schedule analysis can be complicated, but working with your schedule expert does not have to be. Taking steps at the outset to set the stage and coordinate key factors can help attorneys and experts alike clarify expectations and achieve successful outcomes. In this article, we will review factors that help define the expert's role and scope, as well as key points of coordination between attorneys and experts. To do so, we have framed a series of questions on this topic and incorporated responses from both the expert and attorney perspectives.

Why Engage a Schedule Expert?

Expert Answer

Owners, contractors, and subcontractors may question the expense or necessity of hiring an outside consultant to evaluate project schedules, quantify delays, or otherwise assist during the claims process. The opinions of several affected parties and consideration of a number of variables will have bearing on the decision to engage a schedule expert. Consider perhaps the simplest scenario in which formal claims have been filed, delay issues form the primary basis for the dispute, and the opposing side is engaging its own schedule expert. The decision on whether the client in this scenario should engage its own schedule expert appears to be self-evident (yes!). However, when the situation is not quite as simple, other factors become more relevant and the decision is not so clear. Of course, every

Laura B. Arrigo is a project executive in the Pittsburgh office of The Rhodes Group. Samantha L. Brutout is an attorney practicing in the Pittsburgh office of Dingess, Foster, Luciana, Davidson, & Chleboski LLP.

client and every situation is unique, but the following considerations often play a role in the client's decision-making process:

1. Would the client or matter benefit from the incorporation of schedule expertise?

The term "expert" is defined by the Merriam-Webster Dictionary as "having, involving, or displaying special skill or knowledge derived from training or experience." True to this definition, most schedule experts (particularly those that specialize in construction) tend to spend the vast majority of their time dealing with delay analyses and claims situations. Therefore, through practice and by necessity, schedule experts tend to be skilled at quantifying delays with the use of industry-accepted methodologies and addressing unique delay-related claims issues. Some experts also are readily familiar with delay-related legal considerations and have experience coordinating with counsel on these issues. While not limited to the following list, by way of example, some unique issues that may lend themselves best to assessment by a schedule expert include: planned early completion, allegations of concurrent delay, unique delay-related contract provisions, considerable mitigation, repeated changes to the scheduled sequencing, or schedule files that are known to be of poor quality. When encountering these types of issues, it may be best to seek an expert's perspective.

In addition, some experts are especially skilled at the preparation and presentation of clear, concise, and substantiated delay claims to a finder of fact or opposing party. Again, given their regular focus on delay claims and practice with respect to these types of presentations, schedule experts often can assist with creating substantiated and compelling presentations that make the issues at hand simpler and easier to understand.

2. Would an independent perspective be useful?

The answer to this question may be influenced by the status of the delay claim at issue. As with the example noted above, as the matter proceeds towards litigation, the necessity of an independent perspective generally increases. However, the value brought by an objective (and expert) perspective may be beneficial earlier in the claims process. For instance, we have had clients involve us in the claims process during the project to evaluate the substantiation of their company's position(s) based

on available project documentation. The involvement of an objective perspective at this stage of the process ultimately assisted upper management during negotiation meetings. The company representatives were not only aware of the detailed support for the claim, but they also were informed as to potential future challenges that may be encountered should they be unable to negotiate resolution of the claims.

3. What are the client's internal capabilities to analyze the project delays?

When considering engaging a schedule expert, in some situations, the client prefers to avoid additional expense and considers its own staff capable of performing the required delay analysis. In my experience, quite a few companies have highly skilled schedulers and claims analysts on staff. When this is the case, and it is early enough in the claims process that an independent schedule expert is not necessarily required, the client should carefully consider their in-house capabilities with respect to the above noted considerations. Is their own staff objective in relation to the alleged delays? Do their analysts have an appreciation for what is considered proper substantiation? Do they have the necessary expertise on staff to address any unique delay-related issues? Maybe it does make sense to keep the analysis in-house. If so, it may be helpful to involve a schedule expert in an advisory role during the in-house delay analysis, which can bring focus to the in-house analysis.

A further consideration with respect to utilizing internal resources for schedule delay analyses is whether the proper resources are available to commit the time and effort required for the delay analysis. Often, individuals that may possess the proper skill set are high performers and play key roles in the successful execution of projects. In these cases, while internal resources may be able to perform the necessary analysis, the organization recognizes that these individuals' time is best spent elsewhere, usually driving revenue and profits and preventing additional claims on ongoing projects.

In summary, the decision to engage an expert should be made on a case-by-case (and client-by-client) basis. The above considerations hopefully will provide some guidance in determining the right decision for each individual client and given situation.

Attorney Answer

More and more, the question of whether to hire an expert has become one of "when" instead of "if." In the current era of construction litigation, it has become increasingly difficult—if not altogether impossible—to litigate a construction dispute without hiring an expert for at least one issue. Even if you are fortunate to have client representatives who lived and breathed (or who are living and breathing) the project to give valuable insight and information, independent experts can bring a fresh perspective to the issues and see potential pitfalls that someone closely

engaged with the project may not anticipate. Seasoned experts also know how to present complex, technical issues in a manner that can be understood by laypeople, including judges and juries, which can provide an enormous strategic advantage in a complex matter.

Clients sometimes are inclined to engage in-house experts as opposed to hiring outside experts, but there can be disadvantages to having someone very close to the project act as an expert, particularly if they have limited experience with construction disputes. Another potentially overlooked consideration is whether there are likely to be limitations in providing all relevant and necessary data to the employee expert. If the employee expert only needs to review his or her employer's data, it should be fine, but if the employee expert is going to need to review the opposing party's data, there could be limitations on what data that employee expert is allowed to review. In cases where competitors are parties or where there is sensitive or proprietary information exchanged by the parties, protective orders may limit or even completely restrict an employee of a party from reviewing certain information. If there is any chance that information could be relevant to the analysis, you may have to hire an independent expert to ensure that the expert will have access to the necessary documents.

In my experience, the best experts are those that can be a piece of the overall case narrative while telling their own story in their own voice. A great expert will be able to offer highly technical testimony while weaving a narrative that a jury, judge, or tribunal will be able to follow and remember. It can be technical or scientific, but it must be logical and comprehensible to the average person. Ensuring the expert's story is well aligned with the overall case strategy, however, takes a lot of work, communication, and coordination with the attorney. It is the attorney's job to ensure that communication and coordination is occurring and that the expert has the information he or she needs to provide a compelling opinion.

Is There a Right Time to Engage a Schedule Expert?

Expert Answer

Timing of engagement varies widely depending on a number of considerations, including client and/or counsel preference. In some cases, we have been engaged particularly early in the construction process to assist with the review of schedule impacts as they arose on the project. In other cases, we were engaged with very little time remaining prior to the court-appointed date for submission of expert reports.

On projects that have engaged our services early in the claims process (even before any claims have arisen), the authors have seen such benefits as increased access to project personnel and better alignment between contemporaneous positions and eventual expert analysis. In addition, early expert involvement can help inform negotiations and avoid the pursuit of claims that cannot be substantiated. Drawbacks (or perceived drawbacks) to

engaging an expert early in the claims process may include less definition of the claim and, therefore, the expert scope may be more difficult to define, or access to key records may be limited since the expert may have access to only one party's documentation.

Benefits and drawbacks to engaging an expert later during the claims process are generally the reverse to the above noted points: easier scope definition and access to a wide set of project records versus potentially limited access to project personnel and an increased potential for inconsistencies between contemporaneous positions and the expert's findings. In addition, if engaging an expert later in the claims process, be aware that limiting the time for analysis will not necessarily limit the expert's fees. To the contrary, with limited time, the schedule expert may be forced to be less strategic with the progression of its analysis—progressing multiple avenues of analysis simultaneously rather than awaiting the results of one assessment before beginning another. Furthermore, if the timeframe for analysis is particularly limited, the scope may need to be reduced to allow the expert to focus its efforts on adequately supporting its conclusion(s). Such reduced scope may prove limiting to the overall case.

Attorney Answer

There are many strategic considerations that go into hiring an expert, but the timing for hiring the expert is becoming increasingly important. There are advantages to engaging an expert as soon as it looks like litigation could occur. First, the earlier that you engage an expert, the greater the likelihood that the expert you want (or arguably need) will be available. In multiparty construction cases, particularly those that involve specialized equipment or a more specialized type of project, a race to the expert can occur. The longer a party waits to engage an expert, the greater the likelihood of not getting their first (or second or third) choice. Early engagement also gives a party an opportunity to research and interview multiple experts and select the one that is the best fit for the engagement.

Engaging an expert early in the process also may increase the likelihood that the expert will have access to the project site. This can be particularly helpful if there is a key piece of equipment or critical component of the project at the center of the dispute. Early engagement also may afford the expert the opportunity to work with key project personnel. It also can allow the expert to have access to "realtime" data as it is being created, as opposed to having to reconstruct the information months or even years after it was originally created. Additionally, data that might not typically be kept in an organized fashion for a project could be requested and kept in the ordinary course for use in the dispute. For example, productivity data that may be used to perform a measured mile analysis could be contemporaneously tracked.

With the advent of electronic discovery protocols, if your experts are engaged when discussions about the

exchange of documents and search terms, custodians, and other sources of documents are occurring, it could be very advantageous to have your expert become involved in these discussions. Often experts need very specific pieces of information, which may or may not be amenable to collection through search terms. Involving your expert in these discussions ensures that your expert will have the information that he or she needs to provide a thorough report.

Engaging an expert later in the process, however, can have some of its own advantages. If an expert is engaged after a lawsuit has been filed and the issues in dispute are more clearly defined, the expert's work and, ultimately, his or her testimony, can be more narrowly tailored to the specific issues in dispute. If the other parties have disclosed their experts, it also may allow a party to hire an expert who is perfectly suited to providing counter—or rebuttal testimony to the opposing party's expert.

How Can Venue Impact Selection of Experts?

Attorney Answer

When hiring an expert, qualifications and breadth of expertise typically are the main factors in selecting a testifying expert, but one of my first considerations when selecting or working with an expert is whether the case will be tried before a jury. Presenting testifying experts—especially experts who are opining on a highly technical or scientific area—is always difficult, and consideration must be given to how this expert's testimony and methodology are going to play to a jury. The expert can have all sorts of experience and expertise, but, at the end of the day, if the expert cannot convey that expertise in a way that is comprehensible by a jury of laymen, then the expert's knowledge could be for naught. If the expert's testimony is critical or potentially determinative, it may be worth considering a focus group or mock trial to not only test the expert's theories but also whether the expert's testimony can be understood by a jury.

Beyond a jury, there are other factors relating to venue and jurisdiction that should be considered when selecting and working with an expert. For example, if you are before an international arbitration panel of seasoned construction litigators, the expert's testimony is likely to be understood on a different level than it would before a federal or state court judge that has a general docket. Similar to considerations for expert testimony before a jury, if it is a bench trial, consider how the expert's testimony will play before the judge. Even small things like demonstratives or analogies to realworld situations could make the difference between the expert's testimony being understood and it being considered incomprehensible.

Additionally, if you are in an international litigation or arbitration proceeding outside of the United States, choosing an expert who is familiar with the procedures and protocol in that jurisdiction could be very beneficial, particularly if the legal team is not experienced in that jurisdiction. It is similar to hiring a knowledgeable,

experienced local counsel. You want to build a team—including experts—who know the particular quirks of that jurisdiction. It may not always be possible, but when it is, it could be incredibly beneficial, particularly when trying to determine whether particular strategies will work in certain jurisdictions and venues.

How Does an Expert's Role or Scope Change Depending on the Venue?

Expert Answer

In general, a schedule expert's scope has the most flexibility in less formal venues and more implied definition in more formal venues. In a less formal venue, like mediation, the expert's scope is typically defined based on agreements made between the attorneys engaged by the parties. Based on the direction of the legal team, in mediation, the schedule expert may play a very limited role or may be extremely involved. For instance, the role may be limited in that a schedule expert in this scenario may be asked to perform a preliminary assessment of the delays associated with certain issues, but may not perform a full, detailed critical path method (CPM) schedule analysis or issue an expert report. The schedule expert may not attend the mediation. In this case, the goal is to know enough about the schedule-related issues to understand the strengths and weaknesses of each parties' arguments. With this information, the expert must be able to explain the issues to the legal team in a simple manner that they can effectively present to the mediator. The expert's role in this case is to strategically manage its scope and level of effort and assist the legal team in its attempt to settle at mediation before a full detailed CPM schedule analysis becomes a necessary effort.

In other cases, a schedule expert's role during mediation may not differ much from the role required during litigation. The expert may perform a complete and detailed CPM schedule analysis, author an expert report, and present at the mediation (which can be similar to providing direct testimony). While most mediations include the exchange of reports that are confidential and "for mediation purposes only," depending on the instructions provided to the expert, the substance of a mediation report may differ very little from an expert report that would be issued for litigation purposes. The degree of difference may depend on the timing of the mediation—if it is early in the dispute process or just weeks before the start of trial, or if it is before or after the discovery process. In mediation, the scope and the role of the expert are flexible considerations based on attorney and client strategic decisions.

On the other hand, in an arbitration or trial, the expert's scope and role, while still subject in some ways to client direction, is generally more defined and pre-determined by the rules of the specific case's jurisdiction. The expert generally must appear and testify. The expert commonly must submit a formal report (and often a rebuttal report as well). The expert may be deposed. These are all

examples of factors that are determined by the venue, rather than by the legal team's determination of the expert's involvement.

The parties in these venues do play a role in determining the expert's scope by their agreements as to issues like breadth of discovery. For example, the discovery process in arbitration proceedings can be more limited; therefore, the expert will be able to rely only upon those records that are made available through discovery, which may or may not include all the records to which the schedule expert would prefer to have access. Therefore, it is important for the legal team and the expert to coordinate discovery requests such that discovery limitations do not affect the expert's ability to perform the most applicable analysis. In some arbitrations, depending upon the forum, venue, and rules, as well as the agreement of the parties in some cases, there may be more latitude to dictate how the expert report and testimony will be regarded and the weight that these may hold as evidence. For example, the parties may decide that the expert reports essentially will serve as the direct testimony and the verbal testimony at arbitration only will pertain to cross-examination. Another area where arbitration may differ from litigation is the incorporation of "hot-tubbing" of experts in arbitration proceedings. This process would involve the addition of expert scope that is unique to arbitration proceedings and rarely used as part of the litigation process.

Overall, venue certainly affects the role and scope of the expert. The type of venue and the related aspects of the expert's scope should be considered and discussed between the attorney, client, and the expert early in the engagement, so that the scope and role is well defined and understood by all.

What Role Do Attorneys Play in Defining the Expert's Scope?

Attorney Answer

Lead attorneys on a matter should oversee everything that is going on in the dispute and be the chief architects of case strategy. Because experts are a key piece of that overall strategy, the attorneys need to be involved with setting the scope of the expert's report and testimony from the beginning. Ideally, before engaging the expert, the attorney should have a plan for the expert. As the expert begins working on the matter, it is important that the attorneys and the experts continue to communicate regularly regarding scope. Communication is particularly important if the scope evolves or if there is disagreement over the scope.

Managing the scope of an expert's work becomes even more difficult in a case with millions of documents because there can be a temptation, albeit generally unintentional, to make tangential arguments and expand scope because there is so much data available to support different arguments. In cases with terabytes of data, managing the data can become critical. Often, you want your expert to have access to all of the data, but when the data

is eight, nine, or ten terabytes, if the expert is not used to parsing through that much data or does not have a team to assist him or her, it could become overwhelming and lead to a jumbled opinion.

Taking the opposite approach and providing the expert key information can be more efficient, but it is critical that the expert get the needed information in a timely, organized fashion. For cases with large amounts of data, it may make sense to establish a point person on the legal team who is familiar with the electronic data that the expert can contact when he or she needs additional data. Otherwise, the expert may go extended periods of time without the information necessary to complete the analysis.

Attorneys do have to be careful, however, not to totally take over and try to control the expert. You hired the expert to be independent and to share his or her thoughts, so the attorney needs to listen to the expert, even if the attorney disagrees. While the expert's report may need polish or even focus, it is the expert's story and should be in the expert's voice, not the voice of the attorney. If the attorney and expert disagree on something fundamental, the attorney needs to quickly determine whether the legal team can live with the disagreement and work from it or, if it is fundamental enough, whether another expert needs to be hired. I have been in situations where we continued working with an expert even though the best course for everyone would have been to part ways and find a new expert. This can be tough (and expensive), but sometimes it is necessary and, in the long run, may be more cost effective.

How Does a Schedule Expert Determine Which Methodology to Use?

Expert Answer

The simple answer to this question is that every schedule expert, for every analysis, should always choose to use the best available methodology. The next question becomes, "Which industry-accepted methodology is the best one?" Similar to any heavily debated question about legal issues or analytical theories, the answer is, "it depends." While an expert's determination of the best available methodology depends on many factors, in the interest of brevity, arguably some of the main considerations include availability and sufficiency of progress-related records, the issues in dispute and resource limitations (available time and/or money).

The availability and sufficiency of certain progress-related records will determine which analysis methodologies may not be available for use on a case. Often, the more preferred analysis methodologies require that a wide range of progress-related records be available for use. However, sometimes certain desired progress-related records simply do not exist. In these instances, an expert may be limited in the methodology available for use. For example, two methodologies that are often referred to as, "Impacted As-Planned" and "Collapsed

As-Built," require only limited progress-related records. An Impacted As-Planned Analysis requires no as-built information, and a Collapsed As-Built Analysis requires no as-planned information. Therefore, when a lack of records or poor quality of the available records creates limitations as to the use of other methodologies, these methodologies still may be available for use.

Not surprisingly, in instances where sufficient as-planned and as-built records are available for use by the analyst, the use of either of these methodologies is often criticized because of inconsistencies between the results of the analysis and the contemporaneous schedules. For example, when the Impacted As-Planned schedule represents a critical path that is not consistent with the critical path reflected in the contemporaneous schedule update, the reliability of that Impacted As-Planned Analysis becomes questionable at best.

To the extent all desired progress-related records are available, the factor determining which methodology is used may become the sufficiency of those records to use as the basis for the intended analysis. When looking to use methodologies that generally require complete sets of progress-related records, considerations regarding the sufficiency of these records may include:

- the level of detail included in the schedules (how many activities represent the work);
- the reasonableness of the planned sequencing included in the baseline schedule and updates (was the project able to be constructed in the sequence reflected in the schedules);
- consistency of schedule updates (are schedule updates issued monthly? Are the schedule updates consistent enough in structure and content such that comparison between updates would make sense?);
- accuracy of the as-built dates recorded in the schedule updates; or
- consistency between the sequencing represented in the schedule updates and the tools used by field management to plan and manage the work.

To the extent that the necessary records are available and sufficient for use in a CPM analysis, the selection of methodology also may depend upon the issues in dispute. For example, certain methodologies are not sufficient for assessing concurrent delays or mitigation efforts. In order to assess these issues, the analysis methodology typically needs to consider periodic updates to the critical path of the schedule, rather than assess delays based on a static or baseline critical path without updates. Depending on the issues in dispute, there may be other considerations the expert needs to evaluate in order to select the best available methodology. Therefore, attorneys should be sure to provide the expert with background regarding the issues in dispute prior to the expert's selection of a methodology.

Finally, resource limitations are another major factor that can play a part in the selection of a methodology. Due to the complexity of certain methodologies, external limitations on the time or cost to perform a CPM analysis

may prevent the use of these methodologies. Exerting time or cost restrictions on the schedule expert may make sense in early assessment stages before formal claims are filed. However, a methodology chosen primarily because of limits on time or cost may not adequately satisfy other objectives, or may not be useful beyond a certain stage of the dispute resolution process. To the extent an analysis methodology is chosen based upon restricted resources, the attorney, expert, and client should discuss the potential risk of this approach, including the potential risk related to changing to an alternate methodology at a later point in time.

Why Does It Matter Which Approach or Methodology an Expert Chooses?

Expert Answer

Selection of an approach or methodology is important and should be important to the attorney, because it has implications as to the kinds of opinions that may be substantiated by the schedule analysis. It matters which methodology a schedule expert uses because each methodology has its own advantages and disadvantages and some methodologies are better for assessing certain issues than others. Some methodologies involve long, laborious processes of assessing technical details, while other methodologies are simpler and more straightforward. While the long laborious analyses are more robust, stand up to potential criticisms better, and may establish entitlement or defend against claims for unique delay-related issues, like concurrency, these methods also tend to be more expensive, require the availability of more records, and can be more difficult to understand by anyone not involved in the analysis, including perhaps the trier-of-fact.

To the contrary, simpler methodologies may not be suitable for assessing all of the issues in dispute or all of the issues that may be relevant to the recovery of the client's damages. For example, not all methodologies are effective for identifying and isolating mitigation, and the resultant increased direct costs. In short, it matters which methodology the schedule expert chooses because CPM schedule analysis methodologies are not one-size-fits-all. What may be the perfect choice of methodology for one case and client may be the wrong choice for another case or client. Too many times, the schedule expert chooses the methodology and it is not even a point of discussion between attorney and expert. Attorneys who regularly deal with construction delay cases should educate themselves on CPM analysis methodologies, ask questions, test the schedule expert's conclusion as to his or her choice in methodology, and generally confirm that the chosen methodology is a good fit for the case at hand.

Attorney Answer

Similar to scope, it is important that the attorney and the expert discuss the expert's methodology to ensure that it is defensible given the facts and available data for the particular case. The attorney and the expert both

should feel comfortable with the methodology that the expert is using. A methodology that worked in one case may not work in another. Defensibility is always key, but if it is a jury trial or even a bench, the expert's analysis has to be presented in a way that can be understood by laypeople or a judge that may not have a lot of construction experience. Further, if only limited records are available to the expert, he or she is not going to be able to use a methodology that requires complete project data. The same is true for time. An expert is almost certainly going to perform a more thorough analysis if he or she was hired in the early stages of a project or a litigation proceeding than if he or she was hired four weeks before the expert report is due.

Ideally, the attorney and the expert also are communicating with the client about the expert's methodology and scope. Because the methodology likely will impact the budget, the client should be kept apprised of these decisions so that there are no unpleasant surprises when the expert's report is finished and costs significantly more than the client anticipated.

How Can Data Influence the Choice of Methodology and How Can Attorneys Assist Experts in Accessing Key Data?

Expert Answer

Arguably, the most influential factor in determining which method of delay analysis will be used is the availability of certain key records. Therefore, it is important that attorneys assist in this process by providing access to key records. Attorneys also should consider, if possible, coordinating with the expert during discovery to help ensure that key records are located and provided, or requested from the opposing side if necessary. Some methods of analysis are more widely accepted than other forms; however, generally, the more widely accepted forms of analysis also require the availability of a wider set of planning and progress-related records. For example, the Impacted As-Planned approach is typically criticized for not considering the as-built progression of the work. However, if there were no schedule updates utilized during the project, or the schedule updates were not made available to the expert, the expert's ability to use a more robust or less criticized method of analysis is limited. Key records that contribute to the expert's ability to use a more preferred methodology include: as-planned schedules and related data (like the bid estimate), detailed as-built information from various sources (like daily, weekly, and monthly reports, meeting minutes, or even detailed cost-coded reporting), and contemporaneous schedule updates that reflect the periodic re-planning of the work based on the progress of the project to date. In addition, records that can be referenced to explain the cause of delays to planned progress also are a critical set of documents for the schedule expert.

Another recommendation to ensure the use of the best available methodology is to openly discuss and coordinate

this decision between the schedule expert, client, and counsel. Ideally, this coordination would occur early in the process of engaging the expert and prior to the expenditure of the majority of the schedule expert's efforts to conduct the delay analysis. Open discussion between all parties will help to ensure that an opportunity to use a more preferred method of analysis is not overlooked. If the expert is missing key information, counsel may be able to request this information during discovery, or project personnel may be able to locate other available data sources from the project files.

Finally, it is important to note that in some cases, limited availability of schedule and progress information, or the provision of key data in the wrong format (i.e., schedules only in .pdf format instead of native P6 file format) may prevent the use of a more preferred methodology. In cases where the progress information is available, but provided in the "wrong" format, the effort necessary to conduct the analysis may increase. In such cases, the available data may require the expert to spend more time compiling, summarizing, and, in some cases, interpreting the data prior to conducting its CPM schedule analysis. Incorporation of these additional efforts into the expert's work scope may be simple, but in limited instances, the amount of additional effort may be prohibitive. Therefore, attorneys should seek input from schedule experts for document requests, including inquiring as to the most useful format for the requested information or files.

Attorney Answer

As the amount of data in large construction disputes explodes, figuring out what information an expert needs and how to efficiently get it to them has turned into a monumental task in and of itself. For years, one of the primary theories was to make sure that the expert had access to all data, but that theory is becoming increasingly unrealistic. Now, even if the expert has access to all of the data, it may prove impossible for the expert to get through all of it, making it even more critical that the expert can efficiently get his or her hands on whatever is needed. In addition to the expert's staff (if he or she has one), the expert may need assistance locating documents from the litigation team or project personnel who can quickly locate key project records.

Indeed, one of the primary advantages in engaging your expert early (or while a project still is ongoing) is that early engagement hopefully will allow your expert access to project personnel who can provide the expert with necessary information and, more importantly, the location where the expert may be able to find the information that he or she needs. In an era of search terms, if a routine report is called something unorthodox for this particular project, it could be significant. For example, if a "job cost report" is called a "monthly cost analysis" the search term "cost w/5 report" may not pick up the documents that the expert needs to complete the analysis. Similarly, if two million documents have been produced in a case, a term like schedule without

any other limiting terms may be included in several hundred thousand documents. Access to project personnel would likely give the expert and the litigation team valuable assistance about how to locate the information that is needed to complete the expert's analysis as well as insight into day-to-day life on the project.

As discussed earlier, if the expert is engaged at the time of negotiation of search term, custodian and discovery protocols, it can be tremendously beneficial to have discussions with your experts to ensure that the information that they think they need will be exchanged in discovery. For example, if you are negotiating an e-discovery protocol that dictates the manner in which the parties are to produce documents, if you know your expert is going to need native P6 files to run through his or her own program, you will want to agree that native P6 files will be exchanged. The same goes for CAD files. If photos or videos are important, you also may want to negotiate a protocol for the production of other types of nontext files. Data analytics and other technology-assisted review techniques also can be used to get experts the information and data that they need.

For cases with a huge amount of data, during routine meetings with experts, it is important to discuss whether the expert has access to the information that he or she needs to be able to complete his or her analysis. Usually, the expert is quick to note when information is needed, but that is not always the case, particularly if the reason that he or she does not have it is because he or she cannot find it among the other data. One of the downsides to providing access to an expert of all of the produced data is that the expert potentially could become overwhelmed with the data and lose focus on what is critical for his or her analysis. Or, the expert simply could not be able to find what he or she needs in terabytes of data.

On the opposite side of the spectrum are those cases where there is not much data or where the data that the expert needs is either difficult to access or entirely unavailable. In these cases, I work closely with the expert and the client to try to obtain whatever data is available. Unfortunately, if certain data is not available (for whatever reason), that may impact the methodology and the analysis that is performed.

What Other Factors Affect a Schedule Expert's Planned Approach to an Analysis?

Expert Answer

The overall approach to a delay analysis typically will consider methodology and may be influenced by consideration for the types of impacts alleged, the types of damages incurred, as well as any other unique circumstances existing on any given project. All of these considerations together form the basis for the overall approach and scope of the schedule expert's analysis.

1. Types of Impacts

Some types of impacts are unique and deserve special

consideration when determining the overall approach and level of effort needed for an analysis. For instance, engineering and fabrication scopes often are planned and executed based on sequencing and prioritization of deliverables or production, but not necessarily planned to a detailed task level. On many projects, the amount of detail incorporated into the CPM schedule for engineering and fabrication activities is limited; and therefore, evaluating the driving cause of delays to these types of activities based on the schedule alone can be difficult, impossible, or at least potentially misleading. Thus, in order to evaluate the planned and achieved progress for engineering and fabrication, it may be necessary to perform a supplementary analysis alongside a typical CPM delay analysis. For example, an analysis of engineering or fabrication progress using S-curves can demonstrate impacts and critical work sequencing that may not be evident from a review of the corresponding schedule activities alone. If engineering and/or fabrication issues form a primary theme within a dispute, the schedule expert should be given access to sources of progress information for this work other than just the schedules. Through a review of available progress data for engineering and fabrication work, the expert can then determine the best overall approach to the analysis.

Another example of an impact that may require a supplementary analysis is labor availability, or more specifically, a lack of labor available for use on the project due to issues that are outside of the control of the contractor. In such instances, the contractor may assert inefficiencies due to lack of skilled labor or poor quality of the labor that was available. This assertion is then paired with the allegation that the inefficiencies were so severe, unavoidable, and unable to be overcome, that they resulted in critical path delay. From the schedule expert's perspective, these circumstances now potentially tie delay to productivity issues and, as a result, a supplementary assessment of labor productivity may be necessary.

2. Types of Damages

A CPM schedule analysis serves to support delay-related damages. The project schedules also may be a useful source of information for substantiating other types of damages, but the underlying analysis need not be a CPM analysis. Sometimes additional costs are incurred due to changes to the sequencing of a scope of work that is not on the critical path. In this instance, an analysis focused on why the critical path was delayed would serve little purpose. Although, an assessment of the as-planned vs. as-built sequencing of the impacted work may demonstrate the need for increased resources. A schedule expert's overall scope and approach should align with the types of damages that are in dispute.

3. Unique Circumstances

The consideration of "unique circumstances" on construction projects has the potential to be a far-reaching

topic. Some examples of unique circumstances that affect the overall scope and approach to a schedule analysis include:

- **Contract Structure:** Delay-related provisions in cost reimbursable contracts can differ from lump sum contracts and should be considered when determining the approach to the delay analysis. For example, the provisions related to the ownership and allocation of risk on cost reimbursable contracts may be relevant to how certain types of delays are treated in the analysis of project delays.
- **Unique Delay-Related Contract Provisions:** For example, contract provisions may dictate that the owner or contractor owns all of the float in the schedule. The existence of float is a core concept in critical path method scheduling, and thus also in CPM delay analysis. Float also is typically considered a shared resource, to be used on a first come, first served basis. Therefore, a unique contract provision citing that one party owns the float should be discussed and considered before settling on the overall approach to the delay analysis.
- **Multiple Milestones:** Where the contract requires completion of multiple milestones by set dates, a critical path delay analysis may become more complex. In theory, any required milestone could have its own driving path; therefore, twelve milestones with contractually required dates may require delay analysis of twelve separate paths. However, some milestones may occur sequentially along one overall path. Therefore, the schedule expert may need to assess the schedules and how the milestones relate to one another within the schedule (i.e., how the multiple milestones are linked logically) in order to determine the best overall approach to the delay analysis.
- **Modular Construction:** Projects that incorporate modules into the plan for significant portions of the work and/or utilize structural modules can involve a unique situation with respect to the critical path. In these instances, the schedule may very well show parallel or concurrent critical paths leading up to module installation. One path proceeds through fabrication and pre-assembly of the module(s), and the other path through completing necessary site construction in order to support setting of the module(s). Two critical paths with roughly the same duration can give rise to concurrent delays, or allegations of concurrent delays. The situation may involve a critical path through work that does not take place on the construction site, but rather off-site in module fabrication yards. Moreover, the details regarding the planned and actual progress of the off-site module fabrication effort may be recorded outside of the main project schedule. In such a case, the schedule expert would need to consider all the related data sources as well as

the planned and actual sequencing of the modules in order to develop the best overall approach for assessing critical path delays.

How Can Attorneys Support the Schedule Expert in Providing a Credible Analysis?

Expert Answer

Credibility is best established when the expert testimony, the fact witness testimony, and the records all are consistent. As a result, unexpected inconsistencies between a schedule expert's analysis and fact witness testimony can erode an expert's credibility. Therefore, to help inform an expert's understanding of the project, the expert may request to conduct interviews of fact witnesses (project personnel), or discuss preliminary findings with the project team.

While the expert will do his/her best to develop a thorough understanding of what happened on the project through a review of the project records, there are limitations to what can be understood from documentation alone. There is no substitute for first-hand knowledge of project progress and schedule impacts. Having project personnel share their account of the issues in dispute can streamline an expert's analysis. Discussions between experts and project personnel may involve discussion of available supporting records, or assist with the expert's understanding of the contractor's or owner's conduct during the project, as well as provide background or context for schedules and progress-related information upon which the expert may plan to rely.

Attorneys play a critical role in this effort. The expert's task is greatly aided when the attorney helps make personnel available and stresses to both the project team and the client that the interviews are important and should be met with full cooperation.

What Would You Consider the Most Important Factor for Coordination Between Attorneys and Experts?

Attorney Answer

In my opinion, the most important factor in working with experts is open, honest, and frequent communication. In huge litigation matters with a hundred depositions and lots of moving parts, it can be difficult to set aside time for frequent expert meetings and to review draft reports, but it is critically important. Without frequent communication, you have no way of knowing whether you and your expert are on the same page. If you are not on the same page, it increases the likelihood of draft expert reports that do not meet the needs of the matter. That increases the work (and stress!) on everyone. It also can destroy the budget. Without frequent communication, there also could be inconsistencies between the fact witness testimony, the documents, and the expert, which could lead to the credibility of the expert being challenged. Something as simple as a ten-minute weekly or bi-weekly call could greatly reduce the potential for error because it requires both the lawyers and experts to provide status updates, discuss scope, and summarize work to be performed.

Expert Answer

In my opinion, one of the most important factors in the coordination between attorney and expert is clear scope definition. Scope definition is the first step in establishing a shared understanding of the objectives that the attorney-expert team is trying to achieve. Even when scope is fluid or may be evolving, an early discussion of the purpose of the expert analysis and how it fits with the overall case strategy helps to define where the expert will focus his or her time. In addition, through increased communication regarding expert scope, attorneys may identify gaps in the overall case strategy if they have assumed an expert can speak to a particular issue, when in fact, he or she cannot. It is best to identify this issue early, so the attorney may work to fill the potential gap sooner rather than later, either through the use of other experts, fact witnesses, or other reasonable means as may be available.

Conclusion

To recap, there are many considerations that apply to defining the schedule expert's role, scope, approach and determination of the best available methodology. We hope this article provided some insight into the types of considerations that may be important for coordination between attorney and expert. As a take-away, below are some questions to be discussed between attorney and client that apply to defining the expert's role, scope and approach.

- Do the issues and circumstances of the case require assessment by an independent schedule expert?
- Can the owner or contractor scheduling team provide an early delay analysis?
- Do we want to obtain input from an objective party based on industry-accepted approaches earlier rather than later?
- What kinds of records will the schedule expert need and through what means can we obtain them?
- Is the project team available to provide an introduction to the project (or kick-off) to the schedule expert team?
- Which CPM delay analysis methodology will the schedule expert utilize? And why?
- Does the chosen CPM delay analysis methodology align with the facts and circumstances of the case at hand?
- Are there unique delay-related contract provisions?
- Do the types of alleged impacts require additional supporting analyses other than CPM delay assessment?
- Are the damages at issue delay-related damages? Or is some other analysis of cause-and-effect relationships besides a CPM analysis more applicable?
- Does the venue provide for flexibility in defining the schedule expert's role? If so, what sorts of considerations in scope definition would best serve the client? 