Wayne A. DeFlaminis

Wayne DeFlaminis, PE is a construction industry expert with 20 years of claims resolution experience providing critical path method (CPM) scheduling, delay analysis, claims preparation, damages quantification and construction management advisory services. Wayne is a recognized delay and cost expert and has provided testimony on matters involving CPM scheduling, delay analysis, cost impact issues, construction management principles, and construction finance issues. Wayne has written published articles and given speeches and presentations on topics including construction claims avoidance, CPM scheduling, construction auditing, and fraud prevention. Wayne has worked in the Bahamas, Canada, Chile, Qatar, and across the USA.

Wayne currently serves on the Board of Directors of the Greater Washington, DC Affiliate of the ACE High School Mentoring Program. ACE, which stands for “Architecture, Construction, and Engineering,” is a nationwide non-profit, workforce development program whose mission is to engage high school students and inspire them to pursue careers in the construction industry.

William A. Lascara

Bill Lascara is a firm shareholder focusing his practice on public procurement and government contract law, construction law, litigation, real estate, and corporate and transactional law.

For more than 20 years, Bill has represented small and large businesses as well as individuals providing his experience and knowledge in corporate transactions, public procurement and government contracts, business, real estate, labor, construction, creditors collection actions, insurance and administrative law issues, including general trial litigation and appellate practice. For 13 years, Bill served as Pender & Coward’s CFO and he was in-house general counsel for a ship repair, electronics, construction and computer graphics industry company and its subsidiaries for all their legal requirements in these same areas of the law for over ten years.
K. Brett Marston

Brett Marston chairs the Construction Law practice group at Gentry Locke. Brett has extensive experience in construction contract negotiations and preparation, payment disputes, mechanic’s liens, bond claims, construction defects, delay claims, insurance and OSHA matters. He handles significant construction matters in federal and state courts, arbitration and mediation for general contractors, subcontractors, owners, design professionals and suppliers. In addition, Brett is consistently noted as a Virginia Super Lawyer, has consecutively made their Virginia Top 10 and Top 100 lists, and has thrice been awarded Roanoke Lawyer of the Year for Construction Law by The Best Lawyers in America. In 2018, Brett was named to the 2018 class of “Leaders in the Law” by Virginia Lawyers Weekly.

The biographical information is provided by the speakers or collected from their websites.
VBA
The Virginia Bar Association
Time Impact Analyses Relating to Delay, Disruption and Inefficiency Claims

January 25, 2019 | Williamsburg Lodge | Williamsburg, VA

Written Materials
TIME IMPACT ANALYSES RELATING TO DELAY, DISRUPTION, AND INEFFICIENCY CLAIMS

129th Annual Meeting
Virginia Bar Association
What is a Construction-Related Delay Claim?

• Back to Basics: Construction projects today often encounter coordination issues, suspensions, stop work orders, bad weather, and other unplanned disruptions

• Many construction projects are completed late, and then a dispute will arise over who is at fault for the late delivery
Evolving Construction Technologies & Forums

- P6 / Open Plan / Phoenix / TILOS
- BIM / VDC / CDE
- 4D and 5D Scheduling
- Big Data
- Robots, Drones and Autonomous Vehicles
- Virtual and Augmented Reality
- 3D Printing
- Satellite and Geospatial Systems
- Document Management Systems
- Collaboration Tools
- Mobile Apps
- Wearable Tech
- E-Discovery Software
- Artificial Intelligence
- Specialized Courts (DIFC TCD)

There is limited case law and history for disputes arising from evolving technology. There is less certainty and more risk in any related disputes.
When Do You Need To Make A Delay Claim?

• As a Contractor:
  • To make a claim for additional time and/or money
  • To fight the imposition of Liquidated DAMAGES by the Owner
  • To show that a subcontractor was responsible for delaying a project

• As an Owner, you might need to conduct your own delay analysis to show that a Contractor’s delay claim or analysis is incorrect
Making a Delay Claim

• In order to succeed on a delay claim, the contractor needs to prove:

  • That it is entitled to the claim

  • That it suffered a specific amount of damages
To prove its entitlement, the contractor needs to show that the contract allows the delay claim and allows for recovery of damages.

Does the contract permit recovery in this situation?

* AIA A201-2017 General Conditions:

§ 8.3 Delays and Extensions of Time
§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor’s control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.
Contractual Analysis

• Carefully follow any steps and notice requirements in the contract:
  • AIA A201-2017 General Conditions:

§ 15.1.3 Notice of Claims
§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.6 Claims for Additional Time
§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor’s Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.
Contractual Analysis

• Sample notice requirements from a municipal contract:
  • The Contractor acknowledges and agrees that time extensions will be granted only to the extent that: (1) excusable delays exceed the available flexibility in the Contractor's schedule; and (2) Contractor can demonstrate that such excusable delay actually caused, or will cause, delay to the Contractor’s schedule that will extend the Contract Time. . . .
  • The Contractor shall not be entitled to any extension of time for delays resulting from any conditions or other causes unless it shall have given written Notice to the Owner, within seven (7) calendar days following the commencement of each such condition or cause, describing the occurrence, the activities impacted and the probable duration of the delay. . .
  • The Contractor’s complete claim submittal for a time extension shall be submitted no later than twenty (20) calendar days after cessation of the delay or within such other longer period as the Owner may agree in writing to allow.

• If any requirements in the contract were missed by the contractor, consider whether the Owner waived these requirements
Contractual Analysis

• Is there a “No Damages for Delay” clause in the contract?
  • Valid for private projects, but invalid for public projects
  • Sample:

§ 8.3.3 Notwithstanding anything to the contrary in the Contract Documents, an extension of the Contract Time, to the extent permitted under Section 8.3.1, shall be the sole remedy of the Contractor for any (i) delay in the commencement, prosecution, or completion of the Work; (ii) hindrance, interference, suspension or obstruction in the performance of the Work; (iii) loss of productivity; or (iv) other similar claims (items i through iv herein collectively referred to in this Section 8.3.3 as "Delays") whether or not such Delays are foreseeable, unless a Delay is caused by the acts of the Owner constituting intentional interference with the Contractor’s performance of the Work, and only to the extent such acts continue after the Contractor furnishes the Owner with notice of such interference. In no event shall the Contractor be entitled to any compensation or recovery of any damages, in connection with any Delay, including, without limitation, consequential damages, lost opportunity costs, impact damages, or other similar remuneration. The Owner’s exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling, or correction of the Work), regardless of the extent or frequency of the Owner’s exercise of such rights or remedies, shall not be construed as intentional interference with the Contractor’s performance of the Work.
Factual Analysis

• Project documents and data
  • The likelihood of success in pursuing a claim is directly proportional to how well the contractor documented the costs incurred, the duration of the delays, and other impacts

• Project personnel
  • Identifying the right on-site personnel and office personnel is key to gathering the facts and information necessary to prove entitlement
Factual Analysis

• Typically, a critical path schedule analysis is performed by a scheduling expert to identify and quantify excusable and compensable delays.

• Several methods of schedule analysis exist – case law in your jurisdiction and the facts and circumstances of your project can affect the methodology employed.
Common Causes of Delay

- Design Variations
- Site Conditions
- Contractual
- Regulatory
- Financial
- Environmental
- Weather
- Resource Availability
- Performance
- Defects
- Resource Availability
- Site Conditions

Causes of Delay
Categories of Delay

Non-Critical Delays
- Non-Excusable
  - Non-Compensable
    - No Time
      - No Money
    - No Time
      - No Money
- Excusable
  - Compensable
  - Concurrent
    - Non-Compensable
      - Time
      - No Money
- Critical Delays
  - Time & Money
    - Compensable
  - Time
    - No Money
    - No Money
## Industry Recognized Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>As-Planned vs. As-Built</td>
<td>Simple comparison of original as-planned schedule to as-built schedule</td>
</tr>
<tr>
<td>Time Slice Analysis (Windows)</td>
<td>Calculation of delay using critical path activities from progress schedule updates over a series of time slices (or windows)</td>
</tr>
<tr>
<td>Collapsed As-Built</td>
<td>Removal of delay events from the as-built schedule</td>
</tr>
<tr>
<td>Impacted As-Planned</td>
<td>Addition of delay events to original as-planned schedule</td>
</tr>
<tr>
<td>Time Impact Analysis</td>
<td>Addition of actual delay events to the progress schedules immediately prior to the delay occurrence</td>
</tr>
</tbody>
</table>
## Delay Method Categorization

<table>
<thead>
<tr>
<th>Method</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>As-Planned vs. As-Built</td>
<td>Retrospective ‘Effect and Cause’</td>
</tr>
<tr>
<td>Time Slice Analysis (Windows)</td>
<td>Retrospective ‘Effect and Cause’</td>
</tr>
<tr>
<td>Collapsed As-Built</td>
<td>Retrospective Prospective ‘Cause and Effect’</td>
</tr>
<tr>
<td>Impact As-Planned</td>
<td>Prospective ‘Cause and Effect’</td>
</tr>
<tr>
<td>Time Impact Analysis</td>
<td>Prospective &amp; Retrospective ‘Cause and Effect’</td>
</tr>
</tbody>
</table>
# Delay Method Comparison

<table>
<thead>
<tr>
<th>Information Needed</th>
<th>Contemp. Windows</th>
<th>Time Impact (TIA)</th>
<th>As-Planned vs. As-Built</th>
<th>As-Built “But For”</th>
<th>Impacted As-Planned</th>
<th>Total Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Schedule</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Schedule Updates</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As-Built Record</td>
<td>YES</td>
<td></td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact Data or “Fragnets”</td>
<td></td>
<td>YES</td>
<td></td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract Finish Date</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Actual Finish Date</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Acceptance by Courts &amp; Forums</td>
<td>HIGH</td>
<td>HIGH</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>LOW</td>
<td>VERY LOW</td>
</tr>
<tr>
<td>General Risk Using Method</td>
<td>LOW</td>
<td>LOW</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>HIGH</td>
<td>VERY HIGH</td>
</tr>
</tbody>
</table>
Credibility = Defensibility

Common Delay Methods

➢ Contemporaneous Windows Analysis
➢ Time Impact Analysis
➢ As-Planned / As-Built Analysis
➢ Collapsed As-Built Analysis
➢ Impacted As-Planned Analysis
➢ Total Time Analysis
Delay vs. Disruption vs. Acceleration

- **Delay**: Postponement of an activity or prolongation of the project duration.
- **Disruption**: Loss of labor productivity caused by changes in the working conditions.
- **Acceleration**: Performance of work at a faster pace than anticipated to mitigate delay resulting in increased cost.

Interaction of causes and effects.
For More Information...

Four (4) Recent Industry References and Standards on Delay Analysis

AACE Recommended Practice 29R-03 “Forensic Schedule Analysis” © 2011

Society of Construction Law “Delay and Disruption Protocol 2nd Ed.” © 2017

“Construction Schedule Delays” WS Dale RM D’Onofrio © 2015

ASCE/ANSI Standard “Schedule Delay Analysis” © 2017
Forensic Schedule Analysis Challenges

Goal

Identify and quantify the project’s critical delays

Challenges

• Case facts and initial due diligence
• Record imperfections
• Underlying methodology assumptions and limitations
Key Delay Terms

• Delay Event vs. Delay Impact
• Prospective Analysis vs. Retrospective Analysis
• Delay Fragnets
• “Window” or “Time Slice”
• Critical Path Shift
The Time Impact Analysis Process

1. **Update** to as close as possible before the start of the delay event
2. **Compare** the completion date of this schedule to the previous position
3. **Allocate** any critical delay at this point to the contractor
4. **Record** results
5. **Impact** the schedule with the delay event using appropriate duration and logic links ("fragnet")
6. **Recalculate** the schedule
7. **Allocate** any critical delay based on which party caused the event(s)
8. **Record** results
9. **Repeat** updating for progress before impacting each in chronological order
Time Impact Analysis Method - Strengths

• Considers the chronological order of delays
• Most effective when done in real-time over the course of the project
• Requires several sources of schedule information to perform
• Takes into consideration changes to the critical path as they occur on the project
• Takes contractor’s delays and slow progress into account
• Can address concurrency and acceleration
• Often specified in US Military Contracts (Unified Facilities Guide Specifications)
Time Impact Analysis Method - Weaknesses

• Begins with an assumption as to the cause of the delay
• Can be susceptible to “cherry-picking” of delay events
• Most useful when a project is ongoing (i.e. a limited timeframe)
• Requires reliable and consistent CPM schedule updates throughout the project
• May produce results that disagree with actual performance at the time of the delay event or during the impact period
• The actual critical path, in hindsight, may be different from that shown in the schedule updates
Damages Recoverable Under A Delay Claim

• Does the contract allow you to recover the damages you seek?
  • As mentioned earlier, is there a “No Damages for Delay” clause?
  • Is there a waiver of consequential damages?
    • AIA A201-2017 General Conditions:

§ 15.1.7 Waiver of Claims for Consequential Damages
The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

1. damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

2. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party’s termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.
Damages Analysis

• Time-related damages
  • Field office overhead / Extended general conditions
  • Continuing insurance premiums and bond premiums

• Escalation damages
  • The incremental cost for labor, material or equipment due to a compensable delay
  • The contractor can use material cost indices to demonstrate escalation of material costs
Damages Analysis

• Extended or idle equipment costs
  • The contractor can use the “Rental Rate Blue Book” to show equipment costs

• Unabsorbed home office overhead
  • Includes office space rent, office expenses and salaries for executives, estimating personnel, accounting staff and personnel department
  • Use the Eichleay formula:
    • Multiply the contractor’s total home office overhead by the ratio of project revenues to total company revenue
    • Divide this by the number of days of duration of the project to get the daily overhead rate
    • The daily overhead rate is then multiplied by the number of days of compensable delay to determine the damages for unabsorbed home office overhead
    • Finally, show that the contractor could not reasonably recoup its home office overhead from other work or new work
Damages Analysis

• Acceleration and inefficiency
  • Includes increased costs due to overtime, labor inefficiency, or lost productivity
  • A contractor may recover for the increased costs of acceleration if it can show:
    • That any delays giving rise to the order were excusable,
    • That the contractor was ordered to accelerate, and
    • That the contractor in fact accelerated performance and incurred extra costs
Proving the Delay Damages

• Analyze project documentation:

  • Original project estimates
  • Detailed job cost reports
  • Certified payrolls and/or labor reports
  • Equipment records detailing the cost of owned or rented equipment
  • Financial statements
  • Project change orders
  • Claim files
  • Labor productivity reports
  • Installation rate information, both planned and actual

  • Daily reports
  • Time sheets
  • Equipment utilization logs/reports
  • Labor agreements detailing labor rate breakdowns
  • Material invoices
  • Project correspondence and meeting minutes
  • Any other relevant documents that may be available
Proving the Delay Damages

• Interview project personnel:
  • Home office management and field management
    • In a good position to offer background and insight on the impacts the contractor experienced and the resulting damages
    • Can also aid in identifying, locating and understanding the documentation available on the project
  • Field personnel
    • Can provide insight into the discrete impacts felt in the field
    • Foremen can provide input on how craft labor productivity was impacted or how changed or added scope affected the labor, material and equipment used on the project
    • Field personnel are often passionate about their work, so it is important to try and separate facts from personal feelings
  • Home office support and accounting staff.
    • Can help in understanding the job cost records, invoicing, time keeping and how accounting records were maintained
Conclusion

• The preparation of a construction delay claim is a complex task
• The claim must have a contractual basis, factual entitlement, and a reasonable quantification of damages
• The key to success with preparing a good, well-founded construction claim starts with the client
  • Understanding their contract, having good communication protocols, maintaining adequate documentation, preparing accurate schedules, and having good cost tracking systems (preferably with the ability to segregate and track costs)
• With these “tools” in place, attorneys will be in a better position to help their clients prepare a well-supported and defensible delay claim
Questions?
I. INTRODUCTION TO CONSTRUCTION-RELATED DELAY CLAIMS

Delays are common on construction projects today. While the Empire State Building only took fourteen months to build, that was eighty-eight years ago, before the increase in regulations, red tape, and third-party involvement in projects that we see today. Now, construction projects almost always take longer (and cost more) than the parties anticipate. That has led to the inevitable increase in disputes related to these delays, and to delay claims made by contractors.

In order to pursue a delay claim successfully, a contractor must prove both its entitlement to the claim and its amount of its damages. Entitlement, or the right to make a claim, has both legal and factual elements that must be established to present a successful claim. The calculation of the allowed or appropriate amount of damages also has legal and factual elements related to entitlement, appropriateness and recoverability of the damages.
This paper and presentation will provide an overview of delay claims on construction projects, and then will discuss more particularly a leading method of proving delay impacts – the time impact analysis.

Contractors often face suspensions, stop work orders, or other unplanned disruptions that prevent them from prosecuting the work in a timely and efficient manner. When this happens, the contractor often makes a delay claim. From the outset, it is important to understand, and for attorneys to help their clients understand, that the objective of a claim is to make the harmed party whole. Stated another way, the purpose of a delay claim is to reimburse a party for costs it would not otherwise have incurred but-for the delay. With that in mind, we begin with the assumption that the client, for example a general contractor, believes it has been impacted by the owner and incurred significant additional costs on a project. The claim team, consisting of counsel, a scheduling expert, and a damages expert, has been assembled to help the contractor prepare its claim. Where does the claim team begin?

A contractor might make an acceleration claim, if the contractor employed more laborers, added equipment, and worked multiple shifts or overtime to achieve timely completion with a deadline looming. In the event of an excusable delay for which the owner will not grant a time extension, the contractor may be forced to accelerate its performance of the contract work to achieve timely completion. To recover its increased costs the contractor must have experienced an excusable delay. The potential recovery of its increased costs is enhanced if it properly requested a time extension at the time of the delay event, which was denied by the owner. If a time extension was not previously requested, the claim team will need to demonstrate that an excusable delay occurred and the owner was aware of the delay but directed the contractor to finish according to the original schedule, thus, constructively accelerating the contractor.
Or a contractor might make a weather delay claim if the contractor experiences long periods of particularly bad weather. In this case, how does the contractor differentiate between anticipated weather events and unanticipated weather events? Although these delays are often excusable, these delays may or may not be compensable.

II. CONTRACTUAL PROVISIONS THAT APPLY TO DELAY CLAIMS

To establish that the contractor is entitled to the damages it claims, the contractor must first establish that the contract permits it to recover the damages sought, or that the owner has waived any contract provisions that would prohibit the contractor to recover. The claim team must carefully review the contract documents to determine if the damages sought are recoverable, waived, or barred. If the contract permits the recovery of the damages sought, the claim team must collect documents, data and witness information to determine if the facts support the claim. In addition to contractual and factual entitlement, analysis is often required from a scheduling expert to identify and quantify excusable and compensable delays.

A. Contractual Entitlement

The claim team must carefully examine the contract to determine if the contract permits the claimant to recover the damages sought. As an example, the AIA A201-2017 General Conditions of the Contract for Construction lists the recoverable delays events:

§ 8.3 Delays and Extensions of Time
§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor’s control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.
The claim team should also pay careful attention to the steps the claimant must follow to assert a claim and recover its damages. If one or more of the contract provisions restrict or prohibit the claimed damages, the claim team should consider if the contractor can argue that the owner waived the provision.

1. “No Damage For Delay” Clauses

Does the contract contain a “no damage for delay” clause? Pursuant to Virginia Code § 2.2-4335(A), “no damages for delay” clauses in public contracts are void. The general consensus of Virginia courts is that these clauses are enforceable in private contracts, however. Virginia courts have also enforced such clauses for other types of contracts.

2. Notice Requirements

One of the most troublesome contractual provisions for claimants is the notice clause. Virginia courts usually strictly enforce these notice provisions. As an example, below is the sample notice provision from the AIA A201-2017 General Conditions of the Contract for Construction:

§ 15.1.3 Notice of Claims
§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

The A201-2017 contains additional steps to take in order to make a claim for additional time:

§ 15.1.6 Claims for Additional Time
§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section
Another sample provision, this one from a municipal contract, states that:

The Contractor acknowledges and agrees that time extensions will be granted only to the extent that: (1) excusable delays exceed the available flexibility in the Contractor's schedule; and (2) Contractor can demonstrate that such excusable delay actually caused, or will cause, delay to the Contractor's schedule that will extend the Contract Time. . .

The Contractor shall not be entitled to any extension of time for delays resulting from any conditions or other causes unless it shall have given written Notice to the Owner, within seven (7) calendar days following the commencement of each such condition or cause, describing the occurrence, the activities impacted and the probable duration of the delay. . .

The Contractor’s complete claim submittal for a time extension shall be submitted no later than twenty (20) calendar days after cessation of the delay or within such other longer period as the Owner may agree in writing to allow.

Remember, when advising a client, you can never give too much notice, or give notice too early. If the contractor has a potential notice problem, the claim team should consider any potential waiver of the contract notice requirements by the owner’s course of conduct, or whether any alternative communications from the contractor might be considered to be forms of notice.

3. Claim Procedures

A claimant must strictly comply with the claims and dispute resolution procedures and deadlines in the contract documents or applicable statutes. The claim team should note what procedures and deadlines apply and make every effort to comply with them. Again, the claim team
should consider whether the contractor can argue waiver of any claim procedures and requirements that it has inadvertently missed.

**B. Factual Entitlement**

To establish that the contractor is entitled to recover the damages claimed, the claim team must develop facts that support its entitlement under the contract. These facts can be developed from project documents and data and project personnel.

1. **Project Documents And Data**

   The likelihood of success in pursuing a claim is directly proportional to how well the contractor documented the costs incurred, the duration of the delays, and other impacts. Such documentation is necessary to tell the story of the claim, and to demonstrate entitlement under the contract. Documents are also necessary to prove that the contractor complied with the contractual notice requirements and claims procedures. As soon as the claim team is assembled, the team should work with the contractor to ensure that all documents and data are preserved and organized to permit the claim team to effectively use them to tell the story of the claim.

2. **Project Personnel**

   Project personnel are instrumental in gathering the facts and information necessary to prove entitlement. The claim team should identify the on-site personnel and office personnel who possess information that will assist the claim team in the evaluation and preparation of the claim.

**C. Analysis To Support Entitlement**

Typically, a critical path schedule analysis is performed by the scheduling expert to identify and quantify excusable and compensable delays. There are a number of methods used to quantify delays, but some are more accurate and accepted than others. Likewise, the experts will typically analyze the impact of lost productivity experienced on a project and use a combination of schedule
and/or disruption analyses to establish entitlement for the lost productivity experienced. Case law should be reviewed to determine the acceptability of the various methods by the courts in the particular jurisdiction where the dispute will be litigated or arbitrated. This issue should also be discussed with the scheduling expert. Like many issues in disputes, the facts and circumstances are often varied and unique and can affect the methodology employed.

Various methods of schedule analysis include “collapsed as-built,” “as-built critical path, impacted as-planned,” and the “total delay theory.”

The schedule analysis methods described as “time impact analysis” or “windows analysis” are the most commonly used methods to determine and demonstrate the effect of individual delays on the project as a whole. The idea behind a time impact analysis is to use the schedule that was in effect before the delay as the basis for assessing the impact of the delay. If the project’s schedule has been updated and kept current throughout the project, this will enable the delay expert to determine the effect that the particular delay event in question had on the project.

III. CHALLENGES WHEN EVALUATING DELAY CLAIMS

Forensic schedule analysis is the field of study devoted to the causes and effects of project delays. As commonly practiced today, the field applies the principles of Critical Path Method (“CPM”) schedule theory. The basic premise of CPM theory is that critical delays, or delays to critical path activities, will delay a project’s finish date. All other, non-critical activities have total float (“float”) which is the amount of time the activity can be delayed before it becomes critical. Float is typically measured in days, but can be measured in hours on time-sensitive projects. Float customarily belongs to the project and is available to the party that uses it first. Critical activities by definition are the most urgent, have zero or minimal float, and must be completed exactly as they are planned in order for the Project to finish on time.
The primary objective when preparing a delay analysis is to correctly identify and quantify the project’s critical delays. This is true regardless of the particular delay analysis method that is chosen or scheduling techniques that are employed. While this goal is seemingly objective and straightforward, the process for analyzing project delays is often fraught with controversy. First, as previously stated, the schedule expert must first consider the case facts, the project records (including the project schedules), and other circumstances before deciding which of several, distinct delay analysis methods to apply. Often this process is irresponsibly omitted as such due diligence may be time-consuming depending on the complexity of the project, the quantity and quality of the project schedules, and the specifics of the delays being evaluated.

Second, there is a profusion of schedule analysis and CPM jargon in use today. Even the names of the various delay analysis methods are non-standardized and used interchangeably. This often makes the process for evaluating the delay analysis, determining how it was performed, and understanding the assumptions inherent within it, quite challenging.

Third, the schedule records and related correspondence are often imperfect, contradictory, or incomplete with respect to the delay issues in dispute. In such instances, the schedule expert may need to make assumptions leading to further controversy. Finally, it has been widely reported that the different delay analysis methods can provide divergent results regarding the timing of critical delays, even when based on the same case facts.\textsuperscript{15} These differences can affect apportioning responsibility for delay.

CPM delay analysis is both an art and a science. Clients should be aware that any delay analysis, whether prepared by an independent schedule expert or by in-house staff, is likely to be challenged and scrutinized. Each of the most common delay analysis methods has relative strengths and weaknesses and no delay analysis method is completely devoid of assumptions or
subjectivity. Nevertheless, preparing a delay analysis using an objective, peer-tested delay analysis method, such as the time impact analysis method, is one way to maintain credibility.

IV. THE TIME IMPACT ANALYSIS METHOD

According to the Association for the Advancement of Cost Engineering International (“AACEI”), there are two general families of delay analysis methods, the “observation methods” and the “modeled methods.” The time impact analysis method is situated within the “modeled methods” family. The time impact analysis method is performed by comparing at least two schedules, but usually a series of schedules, by “impacting” the schedule in order to calculate the change(s) to the plan that caused the project’s critical delays.

A. Other Delay Analysis Terms

The following terms are especially relevant when discussing the time impact analysis method.

1. Delay Event (“Cause”) And Delay Impact (“Effect”)

A delay event can be any variance from the planned schedule that results in critical path delay. Delay events are simply causes of delay. In a CPM schedule, a delay event may be represented by a milestone (which has zero duration), a task (which has finite duration), or a series of milestones and tasks interconnected with schedule logic. Delay events occur contemporaneously and trigger “delay impacts” or effects of delay at later points in time.

For example, let’s assume that a site-wide labor strike begins today on a construction project (the delay event). If the strike lasts ten days, it will delay the uncompleted activities on the project’s critical path including the project completion date (the delay impact). The delay impact will occur unless acceleration, resequencing, or some other mitigation strategy is performed.
Delay analysis methods can be characterized by the order in which delay events and delay impacts are evaluated. The time impact analysis method is characterized as a “cause and effect” method as will be further explained below. In contrast, the “as-planned vs. as-built,” another well-known delay analysis method is characterized an “effect and cause” method because: (1) the reported gain or slippage to each critical activity is measured; and (2) the project records are reviewed to ascertain the cause(s) of the delay.

2. **Prospective Analysis And Retrospective Analysis**

Delay analyses can be prepared prospectively or retrospectively. A prospective delay analysis is prepared contemporaneously, usually while a project is ongoing. In a prospective analysis, delay events usually occur on or close to the present day and delay impacts are forecasted into the future. The time impact analysis method is generally considered to be a forward-looking analysis method and should be used only in the prospective mode.\textsuperscript{17}

A retrospective delay analysis, on the other hand, is performed using historic schedule data—usually after project delays have occurred and typically after the project is complete. Retrospective delay analyses have the distinct advantage in that they are based on finalized, as-built information. While as-built schedule information should never change once it has become actualized, this sometimes does not occur in practice due to schedule updating errors, reporting inaccuracies, etc.

3. **Delay Fragnets**

Delay events may consist of, or affect, one schedule activity or many activities. Delay events are added to the CPM schedule via interconnected milestones, activities, and schedule logic—the fragmentary network or “fragnet.” Individual fragnets for each known delay event should be added to the schedule to determine whether critical impact resulted or may result.
4. Windows Or Time Slices

It is generally considered to be a best practice to subdivide the project duration into shorter periods of time called or “windows” or “time slices” and evaluate delay events that occurred during each period independently. This practice will typically lead to reduced error, especially when the schedules closest in time to when the delay events occurred are used. Today, construction contracts often require monthly schedule update submittals. Therefore, a one-month delay analysis window is often the optimal period of focus. Alternatively, longer windows or windows of varying lengths may be chosen by the schedule expert based on important project milestones or other delay events that are relevant to the analysis.

5. Critical Path Shift

It is important to realize that CPM concepts such as critical path and float are dynamic and will likely change throughout the project duration. A critical path shift occurs when a delay event or change to the schedule causes a different path of work that was not previously critical to become critical. Critical path shifts may occur frequently when there are multiple “near-critical” paths in the project schedule—as often occurs toward the end of projects when delays have compressed the remaining work. Critical path shifts reflect the dynamic nature of CPM theory and the project’s critical path. A delay analysis that systematically and accurately identifies critical path shifts will generally be regarded as more credible than one that does not. The time impact analysis method, when properly prepared, also accounts for dynamic critical path shifts.

B. TIME IMPACT ANALYSIS METHOD PROCEDURE
A complete listing of tests and considerations that the schedule expert must make when preparing a delay analysis using the time impact analysis method will not be provided here. However, the basic steps for performing the time impact analysis method are as follows:

**STEP 1:** Select the appropriate unimpacted schedule update for evaluation.

**STEP 2:** Model the delay event being evaluated during the update period as a “fragnet” with interconnected activities, milestones, and schedule logic. The technical terms “delay event” and “fragnet” are further defined below. Prepare individual fragnets for each delay event being evaluated.

**STEP 3:** Connect the fragnet into the unimpacted schedule through appropriate schedule logic to all activities that were affected by the delay event. Set the durations for all activities in the fragnet to zero. Repeat as needed for each fragnet. Recalculate the unimpacted schedule.

**STEP 4:** Replace the fragnet’s zero durations with durations reflecting actual circumstances or the anticipated delay. Recalculate the unimpacted schedule to create the impacted schedule. Repeat as needed for each fragnet.

**STEP 5:** Record the impact or change to the project’s completion date (or other contract milestone being evaluated) as compared to the unimpacted schedule. Repeat for each fragnet in their chronological sequence to determine the individual contributions of each delay event being evaluated during the update period.

**STEP 6:** Catalogue the number of days of delay between the unimpacted and impacted schedules. Again, this step is performed for each fragnet to determine the days of delay caused by each delay event evaluated during the update period.
STEP 7: Repeat the previous steps using the next schedule update through the completion date of the project.

Optimally, fragnets (activities, milestone, and logic) will become actualized and incorporated into subsequent schedule updates. This sometimes does not occur in practice as the parties may disagree about the fragnets before they are accepted as part of the schedule.

V. PREFERRED USAGE OF TIME IMPACT ANALYSIS METHOD

Among other delay analysis methods, the time impact analysis method is a generally preferred method that has received favorable treatment by courts and boards. When properly performed, the method has notable strengths. First, it is prepared using a “time slice” approach using regularly scheduled updates, which should minimize delay measurement errors. The method also will account for critical path shifts. The method is also sufficiently accurate to address concurrent delay and acceleration claims—topics for which other delay analysis methods, such as the “total time method” and “impacted as-planned method,” are not appropriate to use.

Finally, the time impact analysis method is best utilized when the contract specifically requires it. For instance, on US Government projects administered with the Unified Facilities Guide Specifications (“UFGS”), a time impact analysis is required to support all time extension requests.19 The question of which delay analysis method to use once the project is complete, however, is a matter of intense debate. Representatives of the government have rejected retrospective delay claims that were prepared using other delay analysis methods on grounds of their purported failure to follow the contract requirements. However, the UFGS only requires submission of a forensic schedule analysis, not specifically a time impact analysis, in retrospective situations.20
As previously stated, all delay analysis methods have weaknesses and the time impact analysis method is no exception. Its biggest weakness is, perhaps, that the expert begins with an assumption of the cause of the critical delay—the delay event itself. Has the analyst considered all delay events? Were other delay events not modeled into the schedule? These questions have great relevance and could significantly affect the delay analysis results. For this reason, the time impact analysis method is susceptible to bias. “Cherry-picking” delay events can occur unintentionally, but it is a common form of manipulation. For instance, a contractor who is asserting a delay claim may impact the schedule with all owner delays, but fail to account for its slow progress and self-caused issues. This can produce a biased, one-sided analysis that fails to identify the true causes of the project’s critical delays.

Second, as previously stated, the time impact analysis method should be utilized on ongoing projects in the prospective mode. When considering that completed projects stay complete forever, this presents a relatively limited timeframe in which to apply the method. Preparing a time impact analysis method in the retrospective mode—that is, after the project is complete—is of limited value because the schedule information has become actualized and should already reflect all possible delay events. Attempting to impact schedules retrospectively can be construed as attempting to rewrite history.

Finally, the time impact analysis method can produce results that differ from actual performance: (1) at the time of impact and; (2) during the actual performance of the fragment. If the unimpacted schedules are overly-optimistic, or unreasonable, then the recorded delay results could be erroneous and inflated. As with any delay analysis, the schedule expert must test all results to determine whether they are reasonable, whether they adequately reflect actual project events, and whether they conform to the terms of the contract.
VI. DAMAGES UNDER DELAY CLAIMS

Several types of damages are potentially available to a contractor bringing a delay claim. The computation of the damages that the contractor incurred will include an assessment of whether the damages are allowed or not allowed under the contract, and the identification of the types of damages encountered. It will also include gathering and assessing the information available to support the damage analysis. Based on this information, the claim preparation team will be in position to evaluate the types of damages and determine the appropriate methods for quantifying those damages.

A. Are The Damages Allowed Under The Contract?

At the outset of the damage analysis, the claim team should evaluate whether the damages sought are allowed or disallowed by the parties’ contract. For example, does the contract contain a “No Damage for Delay” clause? As previously discussed, the Virginia Supreme Court has previously held that these clauses are enforceable in non-construction contracts, and therefore it is generally understood that a “No Damage for Delay” clause in a private construction contract likely precludes the contractor from recovering any time-related costs it incurred due to an extended schedule. However, the Virginia Public Procurement Act prohibits “No Damages for Delay” clauses for all public construction contracts.

Does the contract allow for consequential damages? In many instances consequential damages are not allowed by contract. The claim team should review the contract to determine if any specific types of costs are not recoverable under the contract, particularly in contracts that involve any type of public funding. Overall, the claim team should review the pertinent contract provisions, so that everyone understands any contractual issues that may impact claims preparation and everyone is on the same page at the beginning of the damages analysis.
B. Time-Related Damages

If the project experienced delays in completion, the contractor may be able to recover time-related damages if the delays are compensable. Time-related costs are typically driven by the length of the project. One type of time related cost is field office overhead. These costs typically include salaried project management staff, field office rental, rented office equipment, portable toilets, water, vehicles, cell phones or radios, and other types of costs that would increase if the project completion date was delayed. These costs may also be referred to as general conditions costs. Sometimes these costs include home office personnel specifically assigned to and also charged to the project, such as office engineers, project managers, and accountants. Other time-related costs may include continuing insurance premiums and bond premiums. The damages consultant should review the contractor’s job cost reports to identify potential time-related costs and discuss the responsibilities of the project management staff and other general conditions costs to confirm that their cost is time-related. Extended general conditions costs can be a significant component of a contractor’s claim if it experiences compensable delays that extend the project completion date.

C. Escalation Damages

Delays in project completion may also cause the contractor to experience damages as a result of escalation. Escalation damages are the incremental cost for labor, material or equipment a contractor may experience, if a project is compensably delayed. For example, if a project extends into a new labor union contract period, the contractor may have to pay increased wages for work anticipated to be done at a lower rate. While the scope of work has not changed, the contractor’s cost for completing that work has. A contractor may also experience escalation in material costs or equipment operation costs if material is procured or work is performed in later periods of time.
Examples of this may include: a contractor being delayed in procuring material due to extended or late submittal reviews if the material has volatile pricing; or, the project is compensably delayed, and the contractor pays a higher price for equipment or fuel in the extended contract period. A Virginia Circuit Court has previously recognized escalation costs as recoverable damages.\textsuperscript{25} The contractor may use material cost indices to demonstrate the escalation of material costs.\textsuperscript{26} The damages expert should evaluate the work that was impacted by a delay(s) and determine if the contractor potentially experienced any damages resulting for cost escalation.

\textbf{D. Extended Or Idle Equipment Costs}

In the event of a compensable project delay, a contractor may incur extended or idle equipment costs. Extended equipment costs are associated with operating equipment for longer than anticipated. Idle equipment costs are associated with equipment remaining on site, unused, as a result of a compensable delay. The Virginia Supreme Court has recognized delay damages for extended and idle equipment costs and has permitted a contractor to calculate equipment cost damages using the “Rental Rate Blue Book.”\textsuperscript{27} The claim team should review and discuss whether the contractor can claim equipment cost damages.

\textbf{E. Unabsorbed Home Office Overhead: Eichleay Formula}

Also, if a project is delayed, a contractor may experience unabsorbed home office overhead. A contractor typically not only has job-related costs, but also incurs other costs such rent of an office space, office expenses and salaries for executives, the estimating personnel, accounting staff and personnel department. These types of costs are often referred to as home office overhead. In order to be profitable, a contractor needs to make enough money to cover its project costs and its home office’s overhead costs. When bidding a project, a contractor typically allocates a portion of its home office overhead costs to each project it estimates in order to recover
those costs through the projects it is awarded. In some cases, when a project is significantly delayed, a contractor may not be able to bid and take-on new work. When this occurs, the contractor may be unable to recover the costs of its home office expenses through new projects, which is known as unabsorbed home office overhead. The Virginia Supreme Court has recognized that a contractor may recover extended home office overhead. The Court has also recognized that the *Eichleay* formula is an acceptable measure of extended and unabsorbed home office overhead.

The basic approach to the *Eichleay* formula is to first determine the amount of home office overhead allocable to the project. This is done by multiplying the company’s total home office overhead (cleansed for certain items that are typically not allowed) by the ratio of project revenues to total company revenues. Once the amount of project home office overhead is determined, it is then divided by the number of days of duration of the project to determine the daily overhead rate. The daily overhead rate is then multiplied by the number of days of compensable delay to determine the damages for unabsorbed home office overhead. While the application of the *Eichleay* formula is relatively straightforward, the claim for unabsorbed home office overhead damages has another step. The Virginia Supreme Court recently held that merely calculating a per diem rate and multiplying it by the duration of the delay was insufficient to recover unabsorbed home office overhead. To receive its unabsorbed home office overhead, the contractor must present evidence that it could not reasonably recoup its home office overhead from other work. If it can be shown that the contractor could not take on new work, then the consultant may apply the *Eichleay* formula to calculate extended unabsorbed home office overhead damages. The Claim team should carefully examine whether the contractor can claim its unabsorbed home office overhead.
F. Acceleration And Inefficiency

Increased cost due to labor inefficiency or lost productivity is another delay-related claim. When a project experiences a compensable delay, the owner may request that contractor accelerate the work to make-up lost time. The contractor can increase its work force or re-sequence the work which may cause the project to become crowded or congested. This situation can impact the productivity of the labor force. Working extended periods of overtime may also impact the productivity of the workers leading to increased costs for the contractor. For example, if additional work is performed using significant overtime to avoid potential impact to the project’s completion date, then those workers may be less efficient over time, resulting in overall higher labor costs for the contractor. The productivity of the contractor’s labor force can have a significant impact on the cost of a project, and it is frequently a component of a contractor’s damages claim. The claim team should carefully evaluate whether the contractor’s labor force was impacted by the owner’s actions.

In connection with express acceleration under Virginia law, courts applying Virginia law have held that “a contractor may only recover for the increased costs of acceleration if it can establish three predicates: (1) that any delays giving rise to the order were excusable, (2) that the contractor was ordered to accelerate, and (3) that the contractor in fact accelerated performance and incurred extra costs.” Discussing constructive acceleration claims, the United States District Court for the Western District of Virginia noted that, although the parties had not cited to any case law from the Fourth Circuit or the Virginia Supreme Court recognizing or applying a constructive acceleration claim, constructive acceleration “is recognized in many jurisdictions” and that the parties did not dispute that such a claim is viable under Virginia law.

G. Proving The Delay Damages

19
Once the claim team determines the potential damages incurred by the contractor, then they need to identify what information is available to aid in the quantification of damages. The two typical sources of information include contemporaneous project documentation and project personnel. The documentation, depending on the quality of the information, will provide you with the information to quantify the additional costs, and the project personnel will help you with understanding potential impacts, who was impacted and how. In addition, they may aid the claim team in assembling and assessing the project documentation.

1. Project Documentation

Preparing a construction claim can be a document intensive task. There are many types of project documents that will likely be needed when preparing the claim. These documents may include original project estimates, detailed job cost reports, certified payrolls and/or labor reports, equipment records detailing the cost of owned or rented equipment, financial statements, project change orders, “claim” files, labor productivity reports, installation rate information, both planned and actual, daily reports, time sheets, equipment utilization logs/reports, labor agreements detailing labor rate breakdowns, material invoices, project correspondence and meeting minutes and any other relevant documents that may be available. An important aspect of the claim preparation process is the availability of documentation. Projects that are well documented and that maintain good cost records, aid in the claim preparation process and often provide better support for the damages claimed.

2. Project Personnel

Another central element of information to aid in the preparation of damages is the project personnel. This includes management, both home office and field, field personnel, and home office support or accounting staff. Management personnel are generally in a good position to offer
background and insight on the impacts the contractor experienced and the resulting damages. They can also be a valuable aid in identifying, locating and understanding the documentation available on the project. Field personnel can provide insight into the discrete impacts felt in the field. Foremen can provide input on how craft labor productivity was impacted or how changed or added scope affected the labor, material and equipment used on the project. Field personnel are often passionate about their work, so it is important to try and separate facts from personnel feelings. Lastly, home office staff or accounting personnel can help in understanding the job cost records, invoicing, time keeping and how accounting records are maintained.

Having a good understanding of the documentation that is available and having a good rapport with project personnel will go a long way in aiding with the claim preparation process.

VII. CONCLUSION

As stated at the outset, the preparation of a construction claim is a complex task. The claim must have a contractual basis, factual entitlement, and a reasonable quantification of damages.

The key to success with preparing a good, well-founded construction claim starts with the client. They need to: understand their contract, have good communication protocols, maintain adequate documentation, prepare accurate schedules, and have good cost tracking systems (preferably with the ability to segregate and track costs). With these “tools” in place, attorneys will be in a better position to help their clients prepare a well-supported and defensible delay claim.


2 See Robert F. Cushman, John D. Carter, Paul J. Gorman, and Douglas F. Coppi, Construction Disputes: Representing the Contractor, 3rd ed. (Aspen Law & Business, 2001), p.477 (“By far the most commonly and hotly litigated claims of contractors involve delays caused by the owner or by persons for whom the owner is responsible.”).  

3 See Cushman, et. al., Construction Disputes: Representing the Contractor, pp. 477-78 (“As a general rule, if a contractor agrees to do certain work within a specified time, but is prevented from performing the contract by the act or default of another party... the contractor is entitled to the economic loss sustained as a result of the delay.”)
11 Id.
12 Id. at 610-11.
18 Id., p. 6.
20 Id., p. 21.
27 AMEC Civil, 280 Va. 296 (2010).
29 Id.
30 AMEC Civil, 280 Va. 296 (2010).
31 Id.
32 Id.